

# Distribution and ecological characteristics of Potamogeton L. species in the rivers of the Pannonian ecoregion in Croatia

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University of Zagreb  
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**Ecological characteristics and distribution of  
*Potamogeton* species in the rivers of  
Pannonian ecoregion of Croatia**

Master thesis

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Ovaj rad je izrađen na Botaničkom zavodu Prirodoslovno-matematičkog fakulteta u Zagrebu, pod voditeljstvom prof. dr. sc. Antuna Alegra. Rad je predan na ocjenu Biološkom odsjeku Prirodoslovno-matematičkog fakulteta Sveučilišta u Zagrebu radi stjecanja zvanja *magistra Znanosti o okolišu*.

# TEMELJNA DOKUMENTACIJSKA KARTICA

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Sveučilište u Zagrebu  
Prirodoslovno-matematički fakultet  
Biološki odsjek

Diplomski rad

## Ekološke karakteristike i rasprostranjenost roda *Potamogeton* u rijekama panonske ekoregije Hrvatske

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Ovaj rad donosi uvid u rasprostranjenost i ekološke karakteristike mrijesnjaka (*Potamogeton* L.) u rijekama Panonske eko-regije Hrvatske. Podaci o rasprostranjenosti vrsta i njihovoj brojnosti, te fizikalno-kemijski parametri vode prikupljeni su na 166 postaja u razdoblju 2016.-2020. Podaci korišteni u radu su dijelom obrađeni u programskom jeziku R, dijelom u QGIS-u te u programima Canoco 5 i Juice 7. U radu su se koristile statističke multivarijantne metode: CCA, DCA, GAM i TWINSPAN. Fizikalno-kemijski parametri vode vezani za nalazišta vrsta mrijesnjaka pokazuju visoke razine trofije. Od devet vrsta koje se spominju u radu, 3 vrste su pokazale najveću pojavnost, ali i toleranciju na eutrofne uvjete. To su *P. nodosus*, vrsta koja je bila zastupljena u svim vrstama vodnih tijela s najvećom pojavnošću, te *P. crispus* i *P. pectinatus*. Ove vrste mogu poslužiti kao bioindikator eutrofne vode. Druge vrste su pokazale manju pojavnost, ali i manju toleranciju na eutrofikaciju. Najosjetljivijom na eutrofikaciju se pokazala vrsta *P. lucens* koja može poslužiti i kao indikator bolje kvalitete vode.

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## BASIC DOCUMENTATION CARD

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University of Zagreb  
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Department of Biology

Master Thesis

### Ecological characteristics and distribution of *Potamogeton* species in the rivers of Pannonian ecoregion of Croatia

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This thesis gives an insight of ecological characteristics of pondweeds (*Potamogeton* L.) in the rivers in the Pannonian ecoregion of Croatia. Data on distribution of species and their abundances were collected on 166 sample sites in the period 2016-2020, as well as physicochemical parameters of water. The data used in the paper was processed partly in the R programming language, partly in QGIS and in the Canoco 5 and Juice 7 programs. Statistical multivariate methods were used in the paper: CCA, DCA, GAM and TWINSPAN. Physicochemical parameters of water related to pondweed species sites show high levels of trophy. Of the nine species mentioned in the paper, 3 species showed the highest incidence but also tolerance to eutrophic conditions. These are *P. nodosus*, the species that was present in all species of water bodies with the highest incidence, and *P. crispus* and *P. pectinatus*. These species can serve as bioindicators of eutrophicated water. Other species showed lower incidence, but also lower tolerance to eutrophication. The species *P. lucens* proved to be the most sensitive to eutrophication, which can also serve as an indicator of better water quality.

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## Abbreviations

CCA – Canonical correlations analyses

CA – Correspondence analysis

DCA – Detrended correspondence analysis

DEM – Digital elevation model

GAM – Generalised additive model

TWINSpan – Two-way indicator species analysis

## 1. Introduction

### 1.1. Water and aquatic plants

The Earth is called a blue planet because 70% of its surface consists of water. Yet not all of it is drinking water. Freshwater, the Earth's most precious resource, makes less than 3% of all the water on Earth, where more than 90% goes to ice glaciers and groundwater. Rivers and lakes contribute with less than 0.016% with a total of 225,000 km<sup>3</sup> of water (O'Sullivan and Reynolds, 2007).

Surface waters, especially rivers and marshlands, are important ecosystems. These water-rich areas are home to many species of plants. Some plants can grow in water, but not all year round. Others spend their entire lifecycle in water and are called macrophytes or hydrophytes. These plants form aquatic vegetation that has an important role in the ecosystem (Marion and Paillisson, 2003; Silva *et al.*, 2008). They can be found on riverbanks, lake margins, in small rivers, ponds, streams and marshes, as well as in coastal ecosystems, like mangroves. The roles of macrophytes are numerous; they provide shelter and food, form habitat and change the environment they live in.

### 1.2. Macrophytes

Except for contributing to the taxonomic diversity, aquatic vegetation is essential for the functional diversity or the number of new functions and niches in an ecosystem it offers. Macrophytes come in a great variety of forms, and one of the most accepted and most widely used classifications of main life-forms distinguishes four groups based on their relation to the water surface (Mitchell, 1974):

1. Free-floating plants
2. Submerged plants
3. Rooted plants with floating leaves
4. Emergent plants with leaves normally emerging out of waters

The adaptations of macrophytes to life in water are morphological, anatomical, physiological and ecological. Adjustments are different: stomata on the upper side of the floating leaves, shallow



root system, long stems, leaves adapted to float on the surface, excretion of large amounts of water by gutting through stomata, adapted flowering cycle, etc. (Pevalek-Kozlina, 2003).

### 1.3. The chemistry behind the abundance

Macrophytes influence water quality and *vice versa*. Their production releases nutrients which affect the metabolism and trophic level of the water bodies, while water has the minerals essential for macrophytes (Marion and Paillisson, 2003). Water quality influences the composition, distribution and dynamics of aquatic vegetation. Macrophytes, as well as other organisms, are involved in nutrient cycles and affect their composition and concentration (Duarte, 1995). Nutrients which are dissolved in the surface waters have their biogeochemical cycles and their concentrations vary among different seasons as well as different types of water bodies. The most influential elements of aquatic ecosystems are the biogenic ones, i.e., hydrogen, oxygen, carbon, phosphorus, nitrogen, and sulphur. They build compounds that are fuel for the productivity of aquatic ecosystems. Regarding the productivity or trophic level, aquatic habitats can be classified from oligotrophic to eutrophic (Vollenweider and Kerekes, 1982). Eutrophication is a term that implies water enrichment with nutrients, mostly phosphorus and nitrogen. This leads to intensified growth of photosynthetic organisms and can result in algal blooms, extensive mats of floating macrophyte species and submerged macrophyte agglomerations. Moreover, decaying plant material causes depletion of oxygen, sometimes enhancing secondary problems such as increased fish mortality (Vollenweider, 1989).

Human activity has a heavy impact on eutrophication. Development of industry, agriculture, traffic and economy, as well as urbanisation leave a significant footprint in the water environment; shaping the water vegetation, directly or indirectly (Mitchell, 1974). On that account, aquatic vegetation is an indicator of water quality. Namely, plant species sensitive to water pollution and eutrophication die out from polluted water bodies so that their absence or low abundance can indicate poor water quality, while their presence, especially in greater abundance indicates a good water quality (O'Sullivan and Reynolds, 2007).

#### 1.4. *Potamogeton* L.

The genus *Potamogeton* L. (pondweeds) is cosmopolitan and includes about 90 species, of which 18 come in Croatia. The name *Potamogeton* comes from old greek *Potamos* = river, and *geton* = close (Cirujano *et al.*, 2014). They are submerged or floating macrophytes, i.e., plants that grow in the beds of mostly shallow streams and rivers and in standing waters (Preston, 1995). They form an important component of aquatic vegetation, and form also several specific communities included in the vegetation class *Potamogetonetea* Klika in Klika et Novák 1941 (Mucina *et al.*, 2016). Due to the specific ecological requirements, species of this genus can serve as indicators of the ecological status of the waters in which they grow (Olodorff, Krautkrämer and Kirschey, 2017). They are important as a source of food in ecosystems, especially for waterfowl (Preston, 1995). As their distribution in Croatia is poorly known, this thesis will investigate the distribution and ecology of *Potamogeton* species in the Pannonian ecoregion of Croatia and analyse their indicator potentials based on recent field data.

The description of the main ecological requirements of the nine species (Preston, 1995) which will be analysed is given below.

*Potamogeton berchtoldii* Fieber is found in still or slow-moving water in a great variety of habitats. On the other hand, it is absent from the most oligotrophic habitats. It has submerged leaves that are very long, linear, narrow, straight, and apiculate. Floating leaves are absent (Figure 1).

*Potamogeton crispus* L. is found in a great variety of habitats but is confined to eutrophic and meso-eutrophic waters. It has long, narrow submerged leaves with undulate and serrate margins (Figure 1).

*Potamogeton lucens* L. is a lowland species that prefers deep and calcareous waters. It grows in lakes, sluggish rivers, canals and drains. Submerged leaves are elliptical, long and wide, while floating leaves are absent (Figure 1).

*Potamogeton natans* L. is the most tolerant *Potamogeton* species, it can grow from fast-moving streams to deep lakes and from oligotrophic to eutrophic habitats. It can grow in depths up to 6 m

in clean waters. Leaves are elliptical, longer than wide, olive green or slightly brownish when mature (Figure 2).

*Potamogeton nodosus* Poir. is found in a great variety of habitats, mostly in slow and moderately moving water. It has long elliptical leaves, wider than in other *Potamogeton* species, and more or less apiculate. Submerged leaves are longer than floating leaves (Figure 2).

*Potamogeton pectinatus* L. is found in eutrophic and brackish waters and in a wide range of habitats. It is known to be more tolerant to pollution than other *Potamogeton* species. Submerged leaves can be very long, linear to filiform. Floating leaves are absent (Figure 2).

*Potamogeton perfoliatus* L. is a species of wide ecological tolerance, inhabiting oligotrophic to eutrophic lakes, canals, rivers and reservoirs. Usually grows in over 1 m deep water but can be found in shallower water as well. Submerged leaves are narrowly lanceolate to broadly ovate. Floating leaves are absent (Figure 3).

*Potamogeton pusillus* L. has similar ecological requirements as *P. berchtoldii* but has slightly more tolerance to brackish waters and may be more frequent in eutrophic waters. Submerged leaves are thin, long and linear. Floating leaves are absent (Figure 3).

*Potamogeton trichoides* Cham. & Schltl. is found in a wide range of habitats, it often behaves like pioneer species. It is tolerant of and may even favour eutrophic waters. Submerged leaves are long, narrow and linear ending with an acuminate apex. Floating leaves are absent (Figure 3).

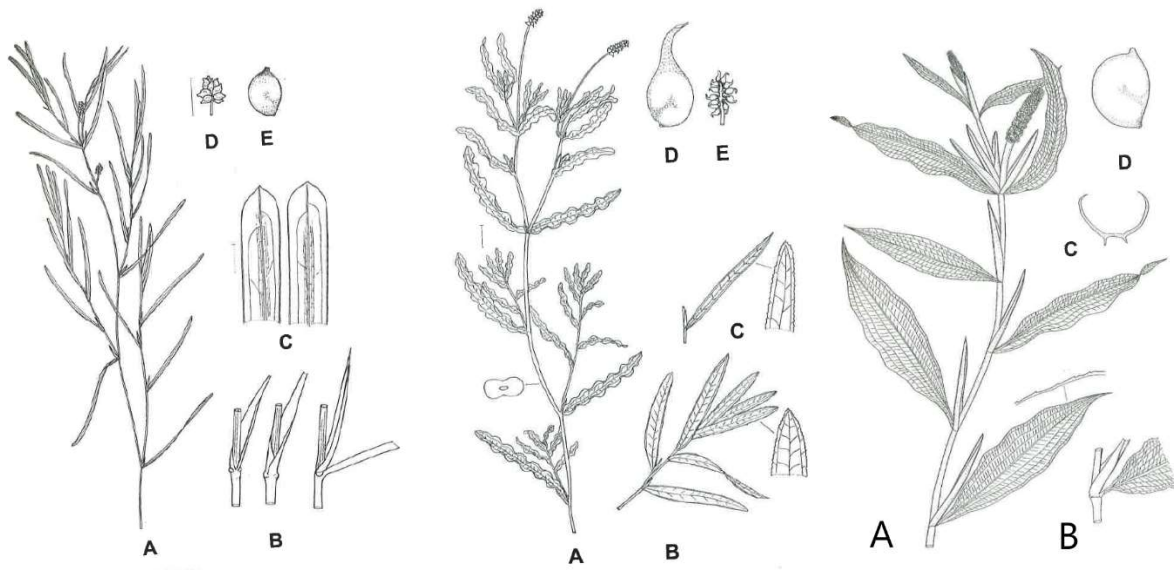


Figure 1. From left to right – *P. berchtoldii*, *P. crispus* and *P. lucens* (Weyer *et al.*, 2018)

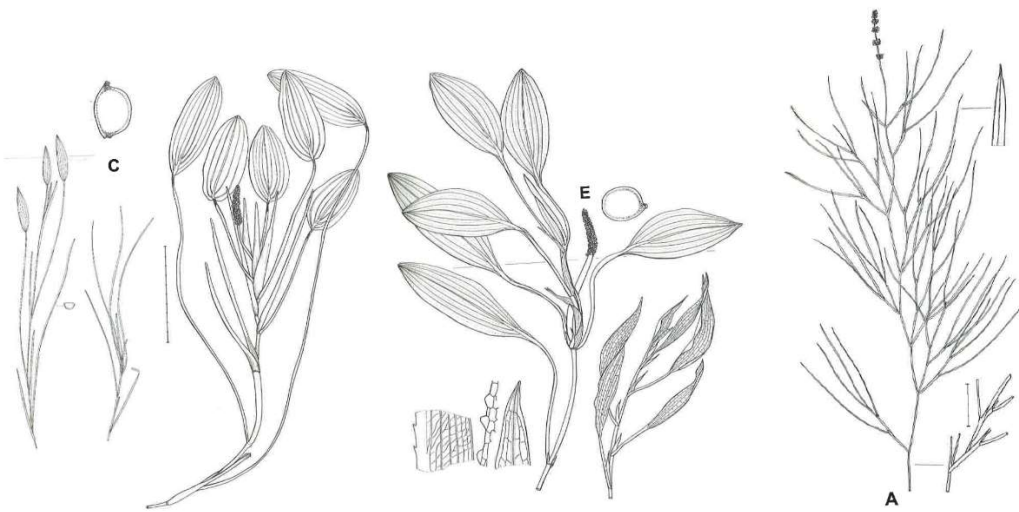


Figure 2. From left to right – *P. natans*, *P. nodosus* and *P. pectinatus* (Weyer *et al.*, 2018)



Figure 3. From left to right – *P. perfoliatus*, *P. pusillus* and *P. trichoides* (Weyer *et al.*, 2018)

## 2. Goals of the thesis

The main aims of this thesis are:

- to analyse the distribution of species of the genus *Potamogeton* in the Pannonian ecoregion of Croatia
- to analyse the species composition of communities in which species of the genus *Potamogeton* occur
- to analyse the water physicochemical parameters in the habitats of species of the genus *Potamogeton*
- to analyse the dependence of the occurrence and abundance of the species from the genus *Potamogeton* on environmental parameters
- to determine possible indicator potentials of certain species from the genus *Potamogeton*

### 3. Studied area

#### 3.1. Pannonian ecoregion of Croatia

The study area is the Pannonian ecoregion of Croatia situated in the Sava-Drava interfluvium. This area is characterized by low altitude, high groundwater levels and a wide reign of river land and river valleys. A large amount of available freshwater and a great number of different water bodies supports the growth of lush aquatic vegetation. The geological base of the Pannonian rivers of Croatia is mostly Holocene alluvium, i.e., silicate sediment. Not all the Pannonian ecoregion is river lowland, this area is cut in half by Pannonian hills and mountains. Relief representation of the Pannonian Croatia along with the distribution of *Potamogeton* species is shown in Figure 4.

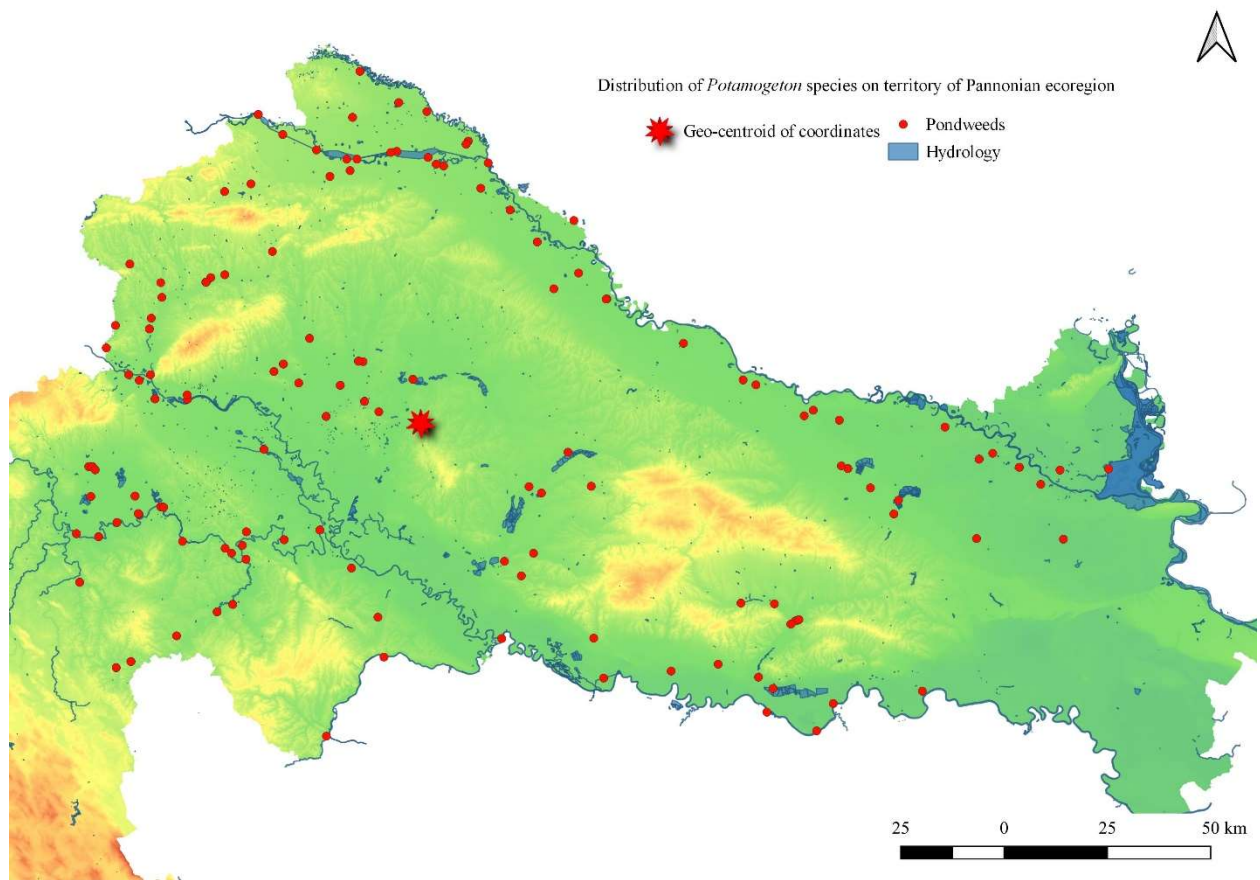


Figure 4. Pannonian ecoregion of Croatia. Distribution of all *Potamogeton* species found during the aquatic vegetation survey in Croatia.

In Croatia, the water bodies are classified according to the classification developed for the Water Framework Directive purposes. This classification is based on abiotic parameters such as catchment area, geological and lithological substrate, elevation, substrate size. Types and descriptions of water bodies present in the Pannonian ecoregion are given in Table 1 (NN 96/2019).

Table 1. List of surface water types according to Regulation on water quality standards (NN 96/2019).

| Type name   | Type label |
|---|------------|
| <b>Pannonian ecoregion</b>  |            |
| 1. Small mountain and sub-mountain watercourses   | HR-R_1     |
| 2. Small lowland watercourses   |            |
| 2. a. Small lowland watercourses on a clayey-sandy substrate  | HR-R_2A    |
| 2.b. Small lowland watercourses on gravel substrate   | HR-R_2B    |
| 3. Small alluvial watercourses  |            |
| 3.a. Small alluvial watercourses with gravel substrate  | HR-R_3A    |
| 3.b. Small, medium and large alluvial watercourses with a clayey-sandy substrate  | HR-R_3B    |
| 4. Medium and large lowland watercourses  | HR-R_4     |
| 5. Very large lowland watercourses  |            |
| 5.a. Very large lowland watercourses with the source in Dinaric ecoregion   | HR-R_5A    |
| 5.b. Very large lowland watercourses with silicate and carbonate geology – the lower reach of Mura and middle reach of Drava and Sava | HR-R_5B    |
| 5.c. Very large lowland watercourses with silicate geology – lower reaches of Drava and Sava  | HR-R_5C    |
| 5.d. Very large lowland watercourses silicate base – Danube   | HR-R_5D    |

### 3.2. Rivers of Pannonian ecoregion of Croatia

The Sava River is the longest river passing through Croatia with a length of 946 km, having a catchment area of 95,835 km<sup>2</sup>. It is a significant river for Croatian river traffic – it is navigable for heavy shipment up to Sisak and lightships up to Zagreb. Except for the Danube, historically there has been more industry concentrated on the Sava River than on any other river that flows through Croatia. A lot of pollutants are released into it, and it is rich in organic matter (Hrvatska Enciklopedija, 2021c).



The Drava River with a length of 707 km and a catchment area of 40,150 km<sup>2</sup> is the second longest river in Croatia. At the beginning of the lower basin, in eastern Slovenia and northern Croatia, several dams have changed its course, have influenced the influx of sediment in the lower course, as well as the appearance of the landscape and the composition of vegetation around the Drava River and overall river continuum. On average, Drava is cleaner and less polluted than Sava (Hrvatska Enciklopedija, 2021a).

The Kupa River is the third longest river in Croatia with a total length of 294 km and a catchment area of 10,226 km<sup>2</sup>. From the source in the Gorski Kotar Region, it flows through Croatia at its full length reaching the confluence with the Sava River in Sisak (Hrvatska Enciklopedija, 2021b).

The Danube River is the second longest river in Europe and widest and the biggest river in Croatia, with only 137,50 km of its 2,850 km long flow making a national border between Croatia and Serbia. It has always been an important corridor for river traffic through Europe and is home to many species. It is one of the most polluted rivers in Europe today.

Other small, medium-sized or large rivers situated in the Pannonian ecoregion belonging to the Black Sea Basin represent significant parts of water ecosystems, which harbour different water habitats supporting the macrophyte diversity. These are Mura, Una, Korana, Dobra, Mrežnica, Bednja, Česma, Bosut etc.

## 4. Materials and methods

### 4.1. The input data

Input data used in this paper are vegetation collected in river macrophyte survey from 2016 to 2020 and annual averages of monthly measurements of physicochemical parameters for each survey station.

The first part of the input data consists of 166 vegetation relevés ultimately representative of most of the territory of the Pannonian ecoregion of Croatia. Field research was conducted during the summer months, i.e., during the vegetation season. In that period macrophyte vegetation is fully developed, which ensures macrophyte species identification and cover and abundance estimation. Furthermore, low water levels and sunny days are the most appropriate weather conditions for macrophyte survey. The extended nine-degree Braun-Blanquet scale (Barkman *et al.*, 1964; Braun-Blanquet, 1964; Dierschke, 1994) was used to estimate species cover and abundance and plot size was determined according to the macrophyte vegetation sampling standard (Alegro, 2019). The extended Braun-Blanquet scale is shown in Table 2.

Table 2. Extended Braun – Blanquet scale used for the estimation of the species abundance and cover in the vegetation relevés.

| Scale     | Range of plot covered           |
|-----------|---------------------------------|
| <b>r</b>  | Less than 1%, 1-2 individuals   |
| <b>+</b>  | Less than 1%, 3-5 individuals   |
| <b>1</b>  | 1-5 % cover, 6-50 individuals   |
| <b>2m</b> | 1-5% cover, over 50 individuals |
| <b>2a</b> | 5-15% cover                     |
| <b>2b</b> | 15-25% cover                    |
| <b>3</b>  | 25-50% cover                    |
| <b>4</b>  | 50-75% cover                    |
| <b>5</b>  | 75-100% cover                   |

The vegetation survey's sampling plots were 50 m long transects. The starting point for each transect was geo-location of sampling station of Hrvatske vode. These geo-locations were later used in the analysis. If there were no new plants species after the 25 m of the inspected transect the sampling was stopped, or it was continued up to 100 m, if an increase in the number of plant

species was present after 50 m (Hrvatske vode, 2016). Collected plant material was examined and determined in the laboratory of Division of Botany of the Department of Biology and stored in Herbarium Croaticum (ZA).

The second part of the input data represents the data on monthly measured water physicochemical parameters provided by Hrvatske vode, i.e. Central Water Management Laboratory (Hrvatske vode, 2021). The most important parameters are temperature, conductivity, alkalinity, ammonium, pH, dissolved oxygen, nitrates, total nitrogen, orthophosphates and total phosphorus. These were later tidied, calculated and shown as annual mean values. These data wrangling operations were carried through R studio software (RStudio Team, 2021), which is based on R programming language (R Core Team, 2019), as well as some further steps of analysis.

In the context of data science, data consists of variables and observations. Each observation presents one finding of a plant on the location. Variables are characteristics or what describes each observation such as abundance of each plant, name of station where plant was found, year of sampling, mean annual pH of water etc.

The second part of data was partly problematic due to the lack of observations for some stations. Such measurements were not taken into analysis and are not considered as existing. This is achieved by using function *drop\_na()* or by using *na.rm = T* argument in base r functions. NA or “Not Available” is a programmatic way to describe non-existing data.

The two parts of the input data were joined. Each observation of data vegetation was joined with the parameters of the measuring station. The basis for joining were location names and codes. Joining is a simple operation that was carried through *join()* function family from the dplyr package that is part of Wickham’s Tidyverse mega package (Wickham *et al.*, 2019). The combined data now includes location names, coordinates, abundance and incidence of species, type of water body and physicochemical parameters. This data was further used in the analysis (Appendix 1).

## 4.2. Geodata

QGIS software (QGIS, 2021) was used for geographic data, their analysis and display. Geographical data primarily served to make cartographic representations of the distribution of *Potamogeton* species. Base layer of each map is Digital elevation model (DEM) made by State Geodetic Administration of Croatia (DGU, 2021). DEM simplifies the representation of the surface of the Earth. On top of the base layer was added hydrology layer, taken from Open Street Map (OSM). The hydrology layer represents larger or smaller surface water bodies. Points on maps are locations of stations where *Potamogeton* species were found. Since each observation has geo-location, point data were easily added to GIS. Geo-centroid from the station points was calculated using *Mean coordinate(s)* function from vector analysis package. Therefore, centroid is mean of coordinates, it shows the central tendency or gravitation point of data.

## 4.3. Analysis

Statistical analyses included univariate statistics to describe ecological parameters in habitats of individual species, and a range of multivariate statistics methods such as canonical correlations analysis (CCA), detrended correspondence analysis (DCA) and generalized additive model (GAM) to establish a connection between species occurrences or abundances and environmental parameters. Two-way indicator species analysis (TWINSPAN) was used for vegetation classification.

Graphic representations, which summarize the data and describe its interrelationship, were partly created in the ggplot2 package (Wickham, 2009). DCA and CCA were made in Canoco 5 (Šmilauer, 2012).

### 4.3.1. GAM

The generalized additive model is a generalized linear model where a linear predictor involves smoothing functions of covariates (Hastie and Tibshirani, 2017; Wood, 2017). This makes it more suitable for some sets of data because, unlike general linear models, it incorporates nonlinear forms of predictors. It also incorporated other data distributions as a type of generalized linear model. This way it is not a limiting model for some data, unlike standard linear regression models (Wood, 2017). Poisson distribution was used in this GAM analysis.

#### 4.3.2. DCA

Detrended correspondence analysis is a modification of correspondence analysis (CA) that overcomes two major drawbacks (Hill and Gauch, 1980). The first modification – detrending - gives the technique its name, it attempts to remove the “arch effect” of the data. The second modification is rescaling of the axes which provides interpretable units of length and removes distortion (Peet *et al.*, 1988). The positions of the points in the DCA graph are calculated and based on the composition of species communities. Environmental variables are projected on an ordination graph.

#### 4.3.3. CCA

Canonical correlation analysis serves for finding a relationship between two sets of variables. It addresses the question of explaining or predicting one set of two or more variables with another set of two or more variables (Thompson, 1985). This is a type of constrained analysis or direct gradient analysis. It tries to explain the variability of data directly through the set of explanatory variables, unlike DCA, which is why it needs to take only the most significant environmental parameters to keep the variation well fit. To achieve this, *step forward selection* in Canoco 5 was used since CCA becomes less reliable with more parameters selected.

#### 4.3.4. TWINSpan

In order to investigate whether vegetation relevés can be grouped into statistically significant groups, a TWINSpan analysis (Hill, 1979) modified according to Roleček *et al.* (2009) was carried out in the program Juice 7.1 (Tichý, 2011). Initially, the division into a maximum of 10 groups was selected, and those that were statistically the most significant were retained. Relationships between the groups are shown by the dendrogram.

Based on the groups obtained in the TWINSpan analysis, a synthetic vegetation table was made in which vegetation groups are summarized, and for each species the frequency of occurrence in each group expressed as a percentage, and a fidelity index indicating how much is a single species related to a vegetation group were calculated (Tichy and Chytry, 2006). Furthermore, in order to visualize the relationship between the groups, they were included in the detrended correspondence analysis (DCA) conducted in R 3.5.2. through the Juice program.

## 5. Results

### 5.1. Incidence and frequency of species

Figure 5 shows the results of incidence of *Potamogeton* species on sampling sites. The most found species was *P. nodosus*, followed by *P. crispus* and *P. pectinatus*. The least found species were *P. lucens* and *P. trichoides* which along with *P. natans*, *P. pusillus* and *P. berchtoldii* had frequencies below 5%. There was one undetermined species as well.

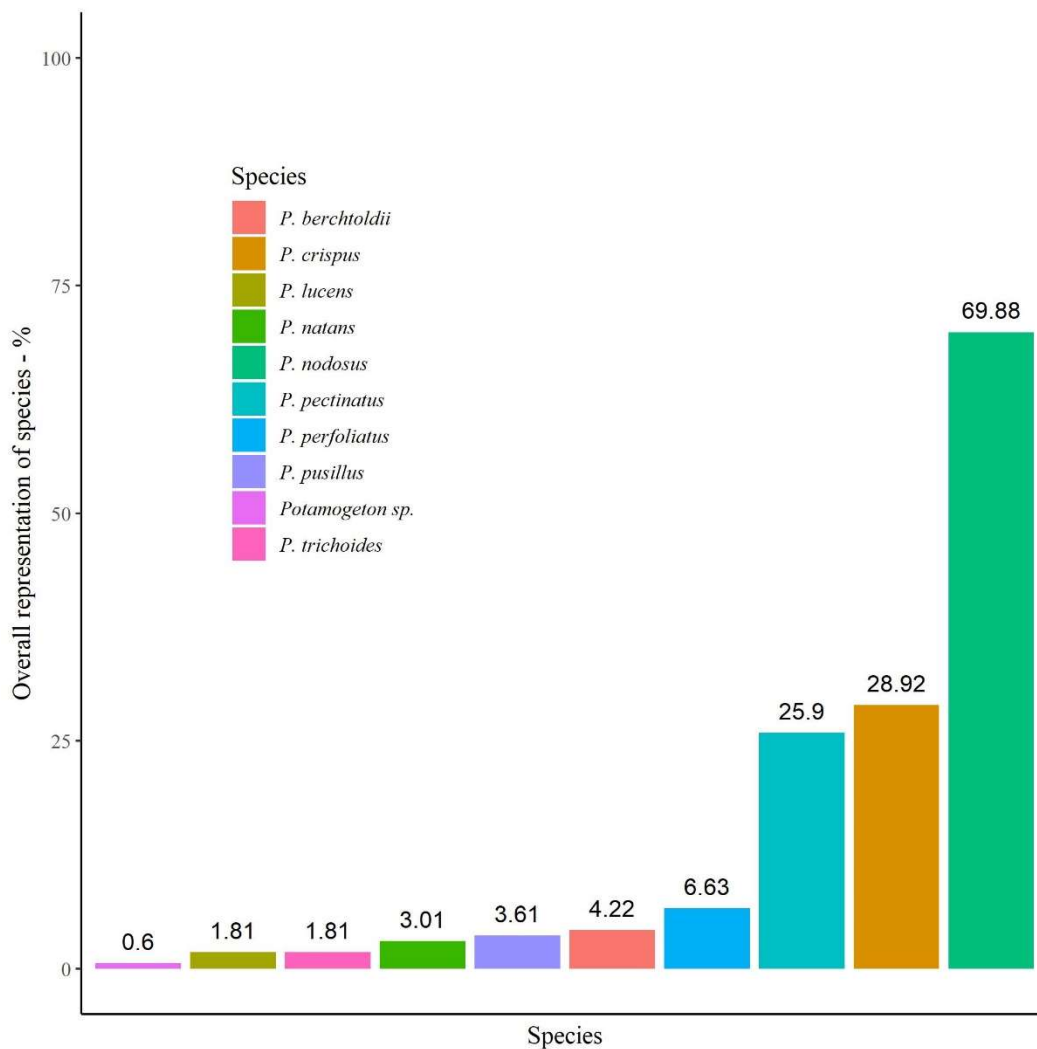


Figure 5. Incidence of *Potamogeton* species in the Sava Drava interfluvium. The value of each bar represents the percentage of the species found in the total number of findings. *Potamogeton* sp. (0.6%) represents the samples that were not identified to the species level.

The occurrences of *Potamogeton* species found in different surface water types (classification given in Table 2) are presented in Table 3.

Table 3. Occurrences of species in different surface water types.

| Species / Abiotic type                         | HR-R_2A   | HR-R_3B   | HR-R_4    | HR-R_5A   | HR-R_5B   | HR-R_1   | HR-R_2B   | HR-R_3A  |
|--|-----------|-----------|-----------|-----------|-----------|----------|-----------|----------|
| <i>Potamogeton berchtoldii</i> Fieber          | 2         | 1         | 1         | 2         | 1         |          |           |          |
| <i>Potamogeton crispus</i> L.                  | 18        | 1         | 15        | 1         |           | 2        | 11        |          |
| <i>Potamogeton lucens</i> L.                   | 1         |           | 2         |           |           |          |           |          |
| <i>Potamogeton natans</i> L.                   |           |           | 4         |           |           |          | 1         |          |
| <i>Potamogeton nodosus</i> Poir.               | 34        | 8         | 49        | 5         | 3         | 1        | 12        | 2        |
| <i>Potamogeton pectinatus</i> L.               | 6         | 2         | 17        | 4         | 6         |          | 6         | 1        |
| <i>Potamogeton perfoliatus</i> L.              | 2         |           | 1         | 5         | 3         |          |           |          |
| <i>Potamogeton pusillus</i> L.                 | 3         | 1         |           | 2         |           |          |           |          |
| <i>Potamogeton trichoides</i> Cham. & Schltdl. |           | 1         |           |           | 1         |          | 1         |          |
| <b>Total</b>                                   | <b>66</b> | <b>14</b> | <b>89</b> | <b>19</b> | <b>14</b> | <b>3</b> | <b>31</b> | <b>3</b> |

Most of the species were found in the following abiotic types of surface waters: small lowland watercourses on gravel substrate (HR-R\_2B), small lowland watercourses on a clayey-sandy substrate (HR-R\_2A) and medium and large lowland watercourses (HR-R\_4). The lowest number of the species was found in small mountain and sub-mountain watercourses (HR-R\_1) and small alluvial watercourses with gravel substrate (HR-R\_3A).

## 5.2. Distribution of species

*Potamogeton* species are well distributed in the Pannonian ecoregion in Croatia, as seen in Figure 4. The distribution is not even, they were mostly found in the western part of the Pannonian ecoregion. The centroid of the distribution falls in the central-western part of the region.

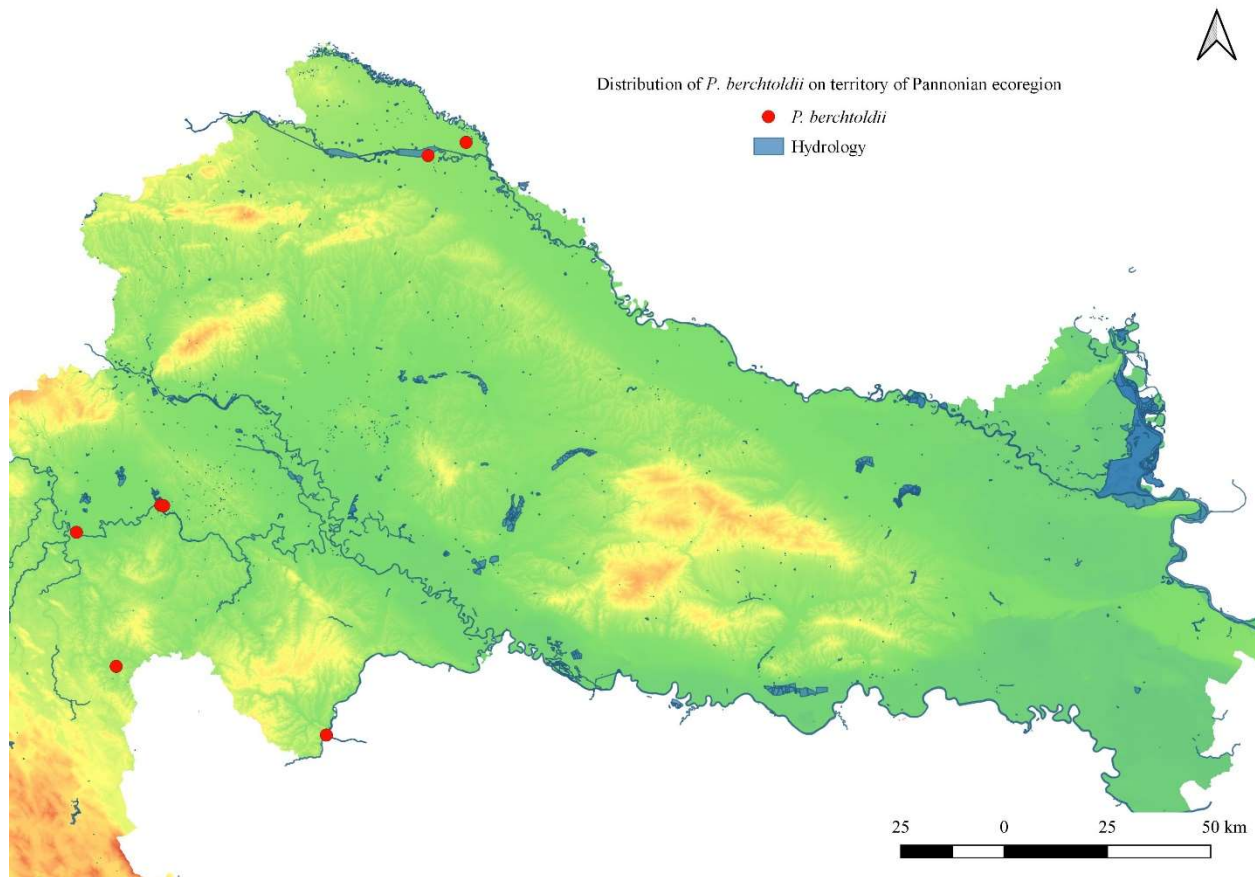


Figure 6. Distribution of *P. berchtoldii* found in Pannonian ecoregion of Croatia.

*Potamogeton berchtoldii* was found in the middle streams of the Drava and the Kupa rivers as well as small water bodies around these rivers. There was also one finding in the Ruševica River, near the Korana River, and one in the Una River.



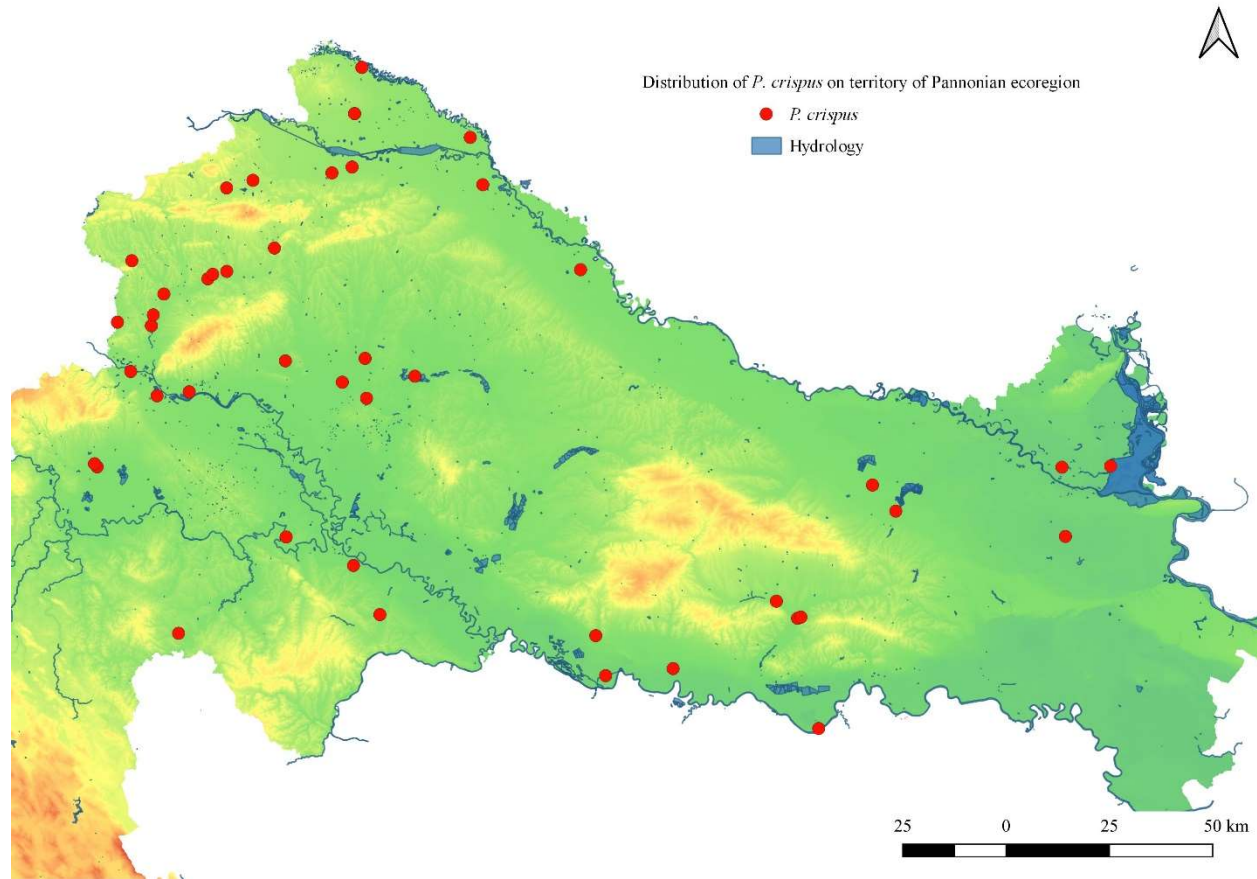


Figure 7. Distribution of *P. crispus* found in Pannonian ecoregion of Croatia.

*Potamogeton crispus* was very frequent throughout the Pannonian ecoregion of Croatia. It covered all the abiotic types of surface water bodies except small alluvial watercourses with gravel substrate (HR-R\_3A) and very large lowland watercourses with silicate and carbonate geology – the lower reach of Mura and middle reach of Drava and Sava (HR-R\_5B) but was almost entirely found in small lowland watercourses on a clayey-sandy substrate (HR-R\_2A), medium and large lowland watercourses (HR-R\_4) and small lowland watercourses on gravel substrate (HR-R\_2B).

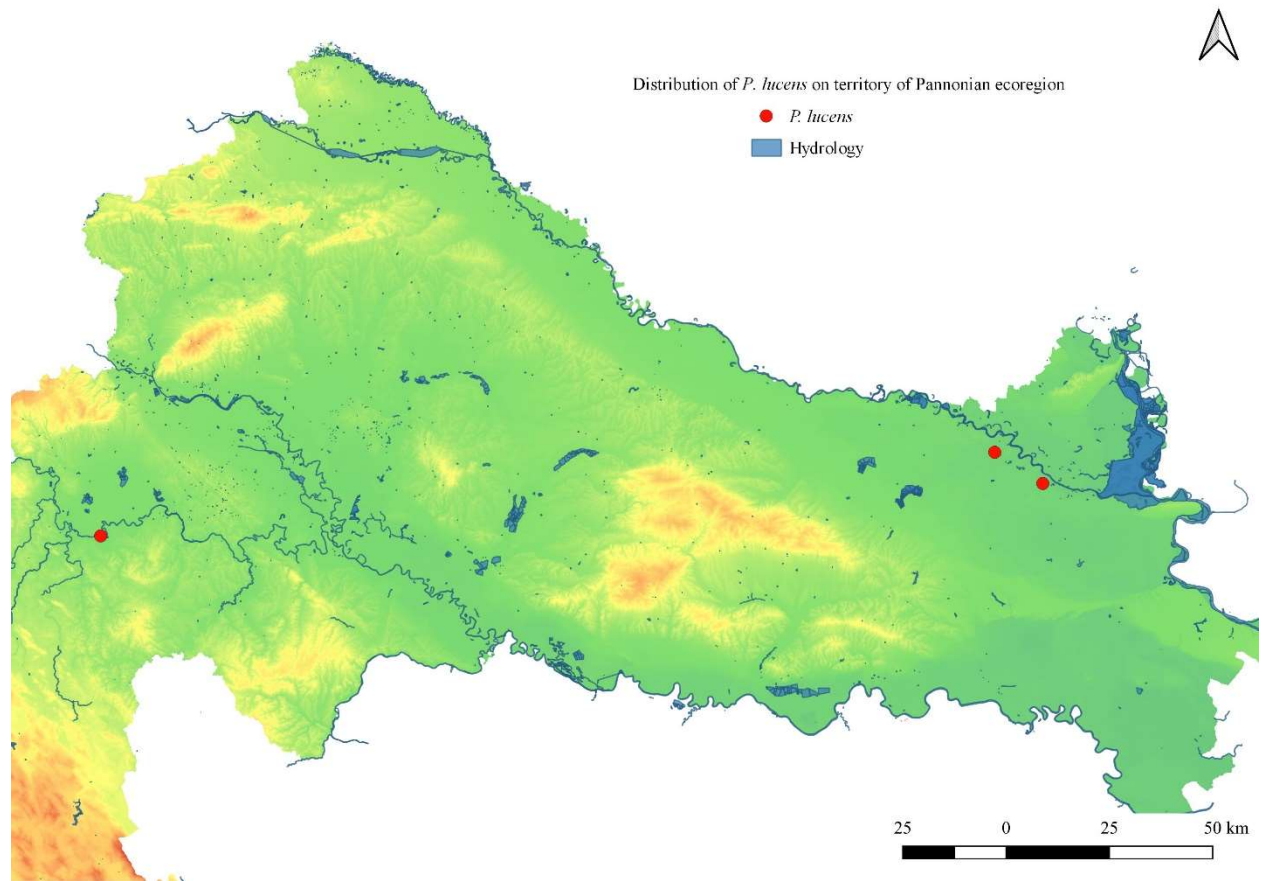


Figure 8. Distribution of *P. lucens* found in Pannonian ecoregion of Croatia.

*Potamogeton lucens* was found only in three locations: one in the middle stream of the Kupa River, and two in the lower stream of Drava. It had the lowest number of occurrences along with *P. trichoides* among all the species in this study.

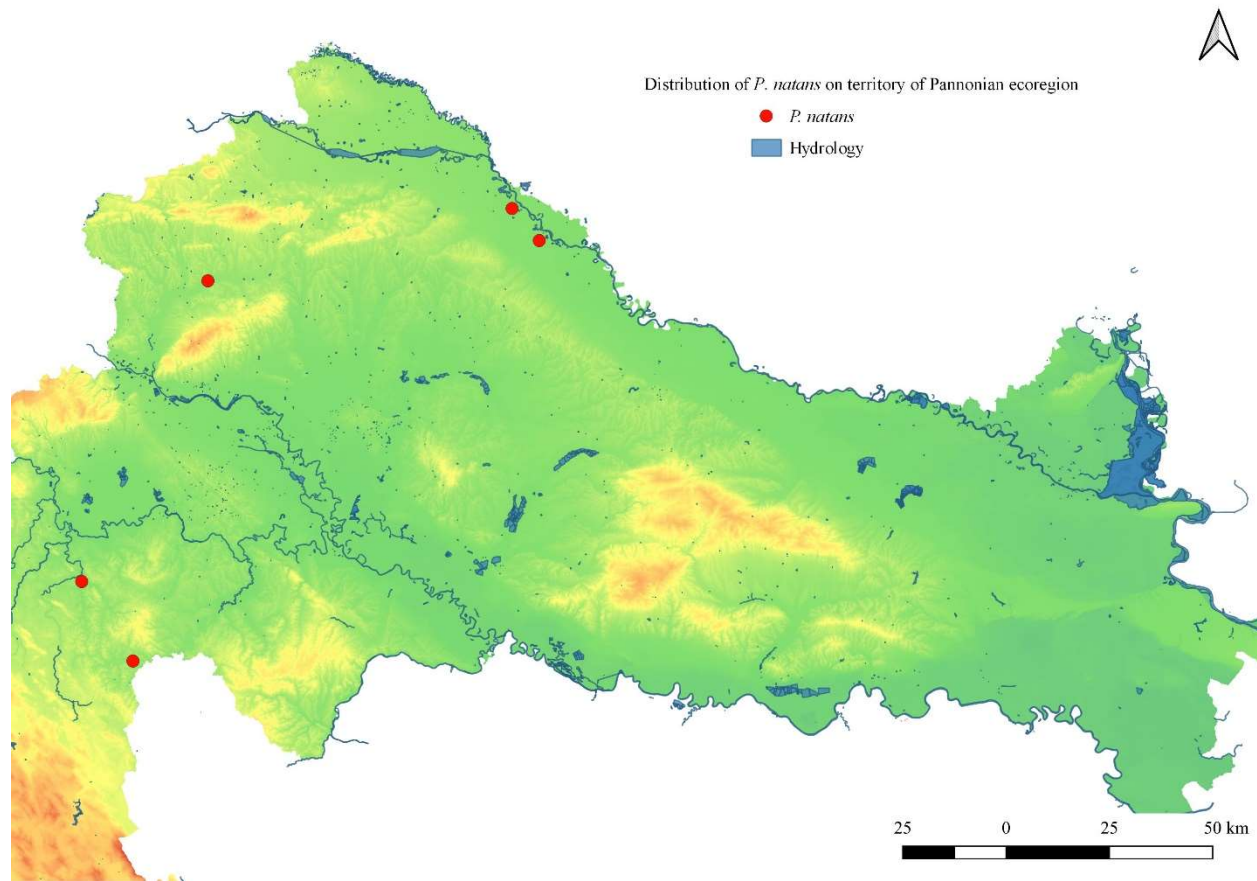


Figure 9. Distribution of *P. natans* found in Pannonian ecoregion of Croatia.

*Potamogeton natans* was found mostly on small rivers and streams, tributaries of bigger rivers. The species was found in two localities close to the Drava River in a small channel of the Gliboki Stream and one in the Bistra Koprivnička. Furthermore, one locality was recorded on the following rivers: Krapina, a small river in Croatian north-western micro-region of Zagorje, in the Radonja River, which is a tributary of the Kupa River and in the Ruševica River near the upper stream of the Korana River.

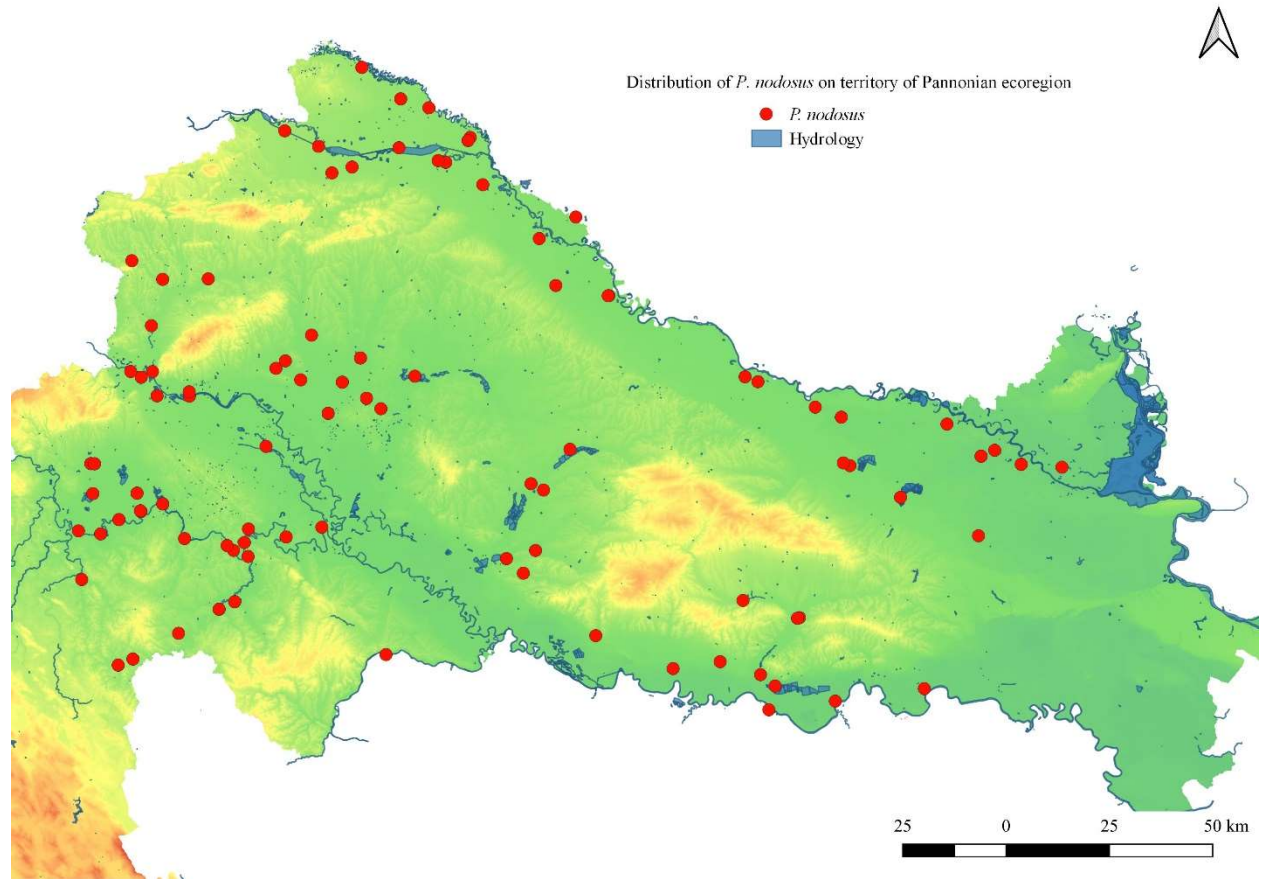


Figure 10. Distribution of *P. nodosus* found in Pannonian ecoregion of Croatia

*Potamogeton nodosus* was found with the highest frequency of all *Potamogeton* species and in great abundance. It was found in all types of surface water bodies and throughout the Pannonian ecoregion, with the majority of localities concentrated in the western part of the Pannonian ecoregion.

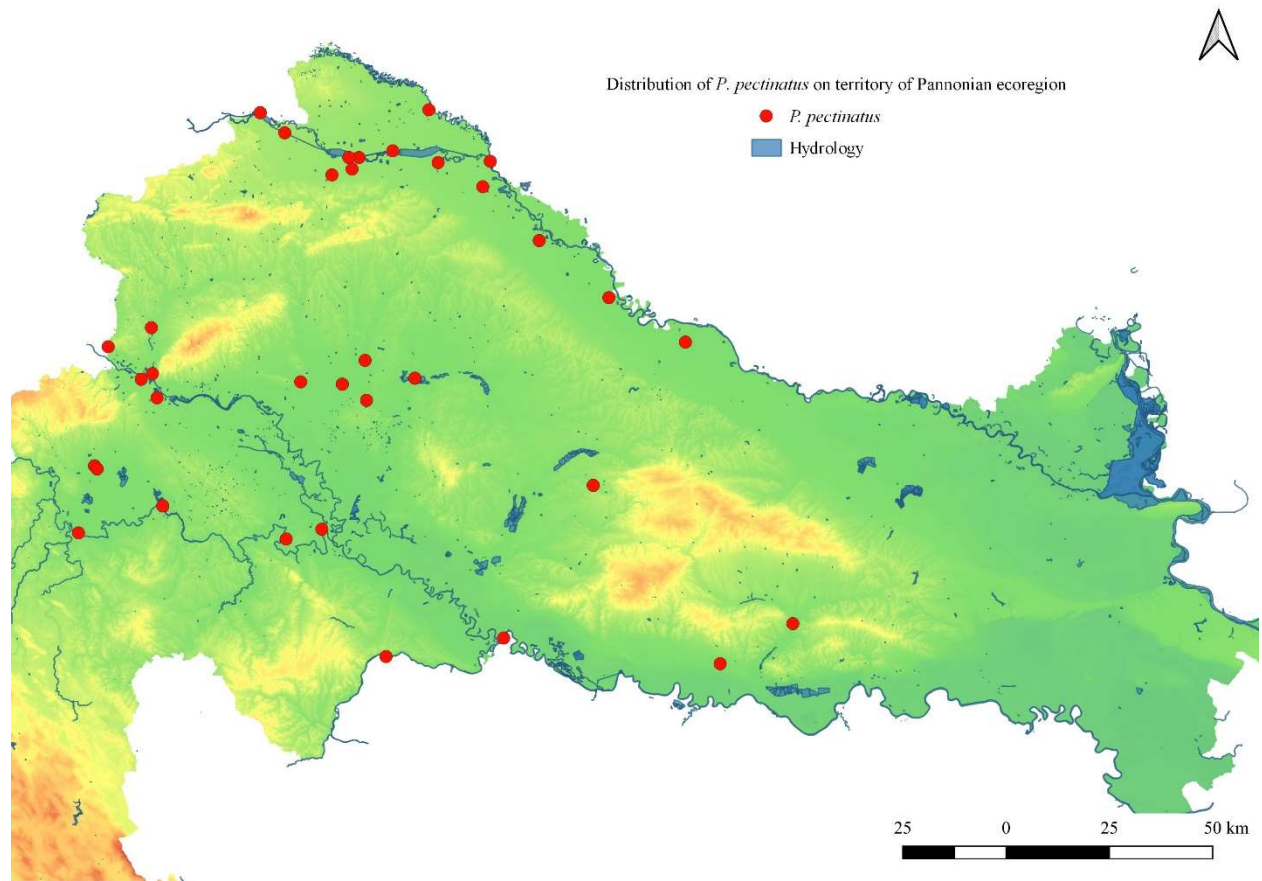


Figure 11. Distribution of *P. pectinatus* found in Pannonian ecoregion of Croatia.

*Potamogeton pectinatus* was found with higher frequency mostly in the upper streams of Drava, Sava and Kupa rivers as well as in rivers Mura and Una. It was found in all types of surface water bodies except in small mountain and sub-mountain watercourses (HR-R\_1).

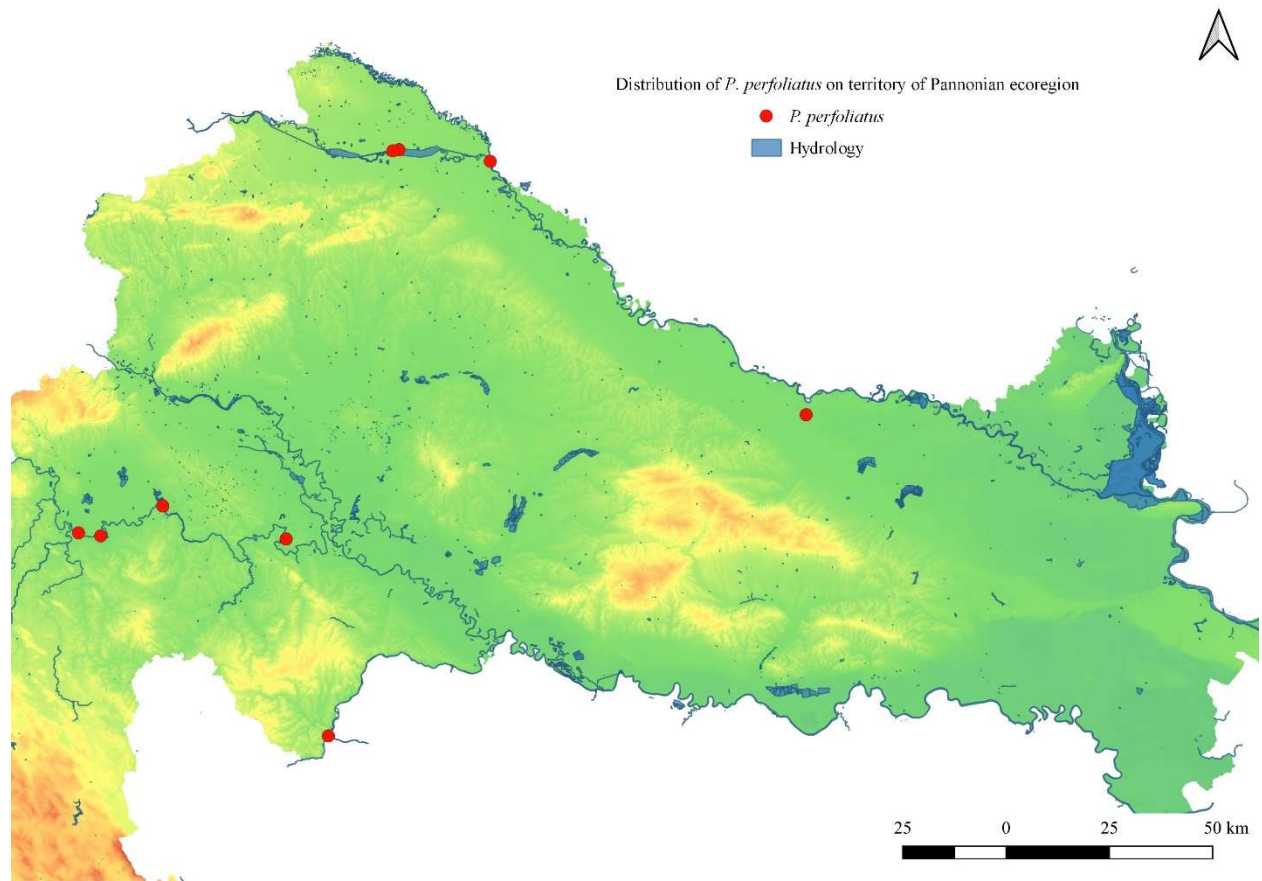


Figure 12. Distribution of *P. perfoliatus* found in Pannonian ecoregion of Croatia.

*Potamogeton perfoliatus* was found with a low frequency in upper streams of the Una and the Kupa rivers but also in the upper stream of the Drava River in accumulation lake as well in a small pond near the lower stream of Drava.

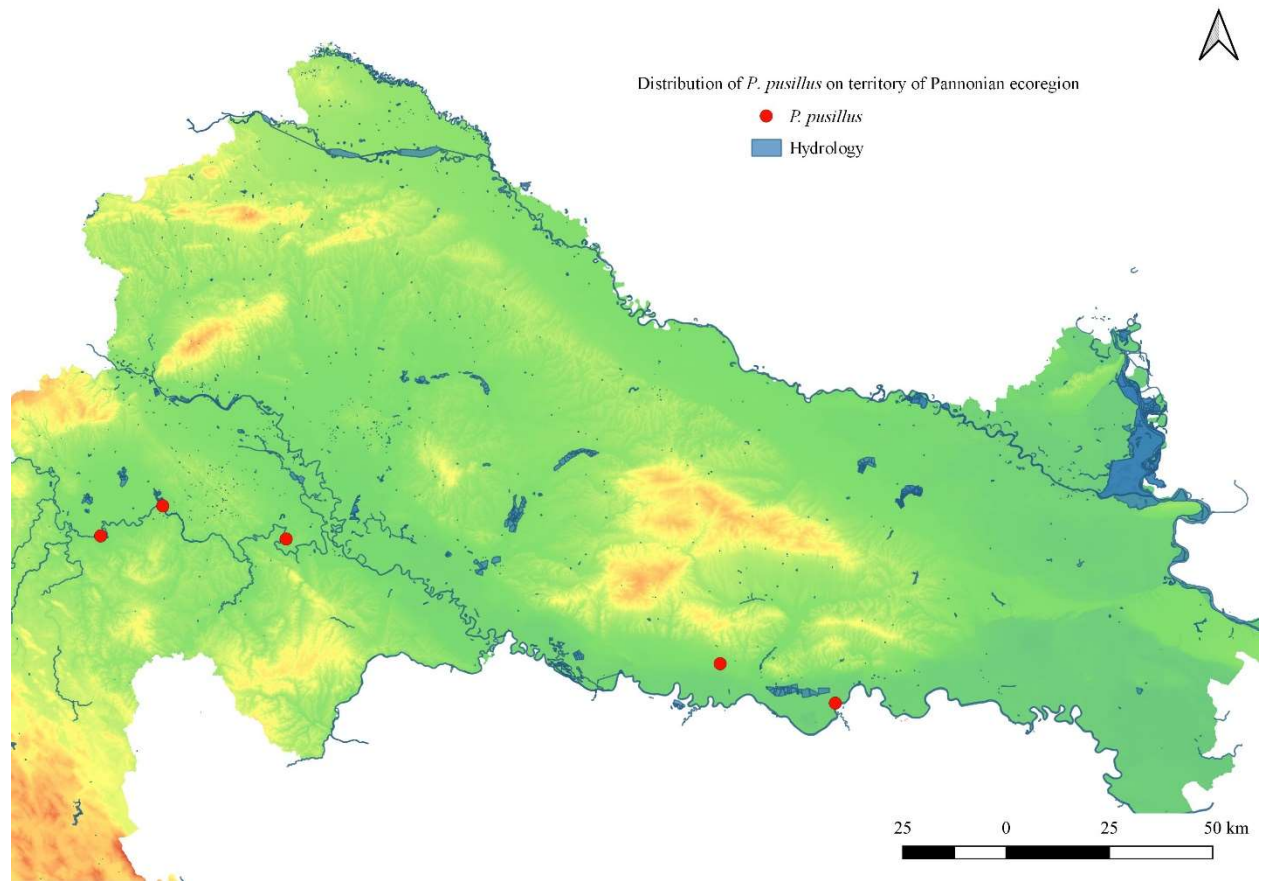


Figure 13. Distribution of *P. pusillus* found in Pannonian ecoregion of Croatia.

*Potamogeton pusillus* was recorded with a low frequency on three localities on the Kupa River, as well as on one on the Sava River and one on its tributary, the Orljava River.

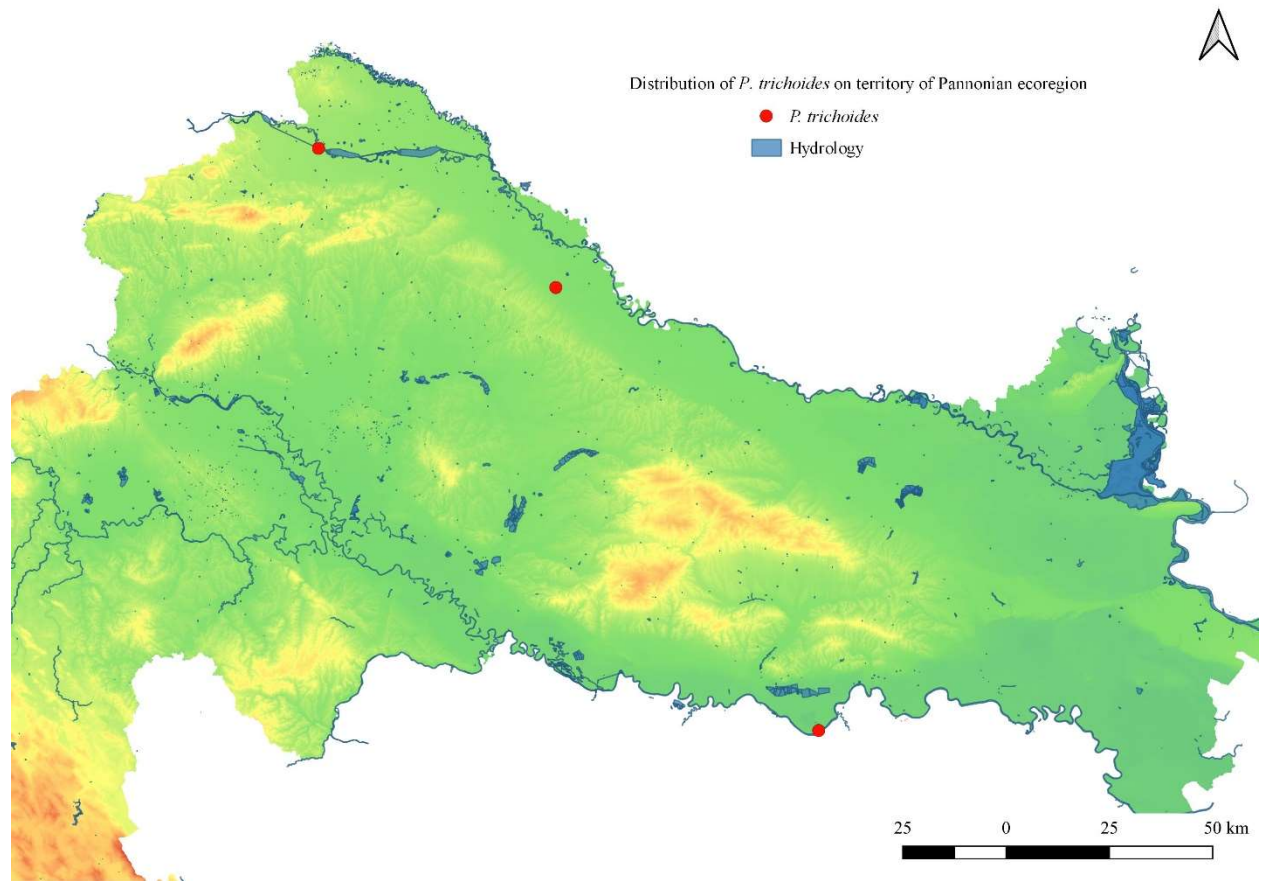


Figure 14. Distribution of *P. trichoides* found in Pannonian ecoregion of Croatia.

*Potamogeton trichoides* was found with a low frequency on three localities: one on the Sava, one on the canal of the accumulation lake of the Drava and one in the canal Đurđevac near the Drava River.



### 5.3. Physicochemical parameters of water

A summary of measured physicochemical parameters is given in Table 4. Separate box plots were made for each parameter (Figures 15-19). The values show that all *Potamogeton* species were found in mostly eutrophic waters. Average electrical conductivity is high and dissolved oxygen is low, while nitrates, ammonium, total nitrogen and total phosphorous concentrations are in the acceptable ranges according to Croatian legislative – Regulation on water quality standards (NN 96/2019).

Table 4. Annual mean values of physicochemical parameters for each *Potamogeton* species.

| Species               | Temperature (°C) | Electrical conductivity (µS/cm) | Alkalinity (mgCaCO <sub>3</sub> /l) | Ammonium (mgNH <sub>4</sub> /l) | pH   | Dissolved oxygen (mgO <sub>2</sub> /l) | Total nitrogen (mgN/l) | Nitrates (mgNO <sub>3</sub> /l) | Orthophosphates (mgP/l) | Total phosphorus (mgP/l) |
|-----------------------|------------------|---------------------------------|-------------------------------------|---------------------------------|------|--|------------------------|---------------------------------|-------------------------|--------------------------|
| <i>P. berchtoldii</i> | 13.67            | 504.03                          | 230.75                              | 0.20                            | 7.92 | 9.96                                   | 1.68                   | 1.08                            | 0.03                    | 0.07                     |
| <i>P. crispus</i>     | 14.45            | 562.45                          | 259.49                              | 0.49                            | 7.83 | 8.43                                   | 2.62                   | 1.29                            | 0.13                    | 0.26                     |
| <i>P. lucens</i>      | 13.36            | 379.74                          | 230.50                              | 0.18                            | 7.79 | 8.27                                   | 1.44                   | 0.93                            | 0.07                    | 0.17                     |
| <i>P. natans</i>      | 13.04            | 535.59                          | 240.22                              | 0.13                            | 7.89 | 8.92                                   | 1.30                   | 0.85                            | 0.07                    | 0.13                     |
| <i>P. nodosus</i>     | 13.94            | 487.62                          | 231.32                              | 0.70                            | 7.84 | 9.11                                   | 2.50                   | 1.48                            | 0.10                    | 0.20                     |
| <i>P. pectinatus</i>  | 14.56            | 502.58                          | 229.27                              | 0.56                            | 7.85 | 8.54                                   | 2.70                   | 1.43                            | 0.15                    | 0.29                     |
| <i>P. perfoliatus</i> | 14.50            | 405.39                          | 192.28                              | 0.61                            | 8.01 | 9.34                                   | 1.70                   | 0.65                            | 0.12                    | 0.22                     |
| <i>P. pusillus</i>    | 13.29            | 426.88                          | 205.14                              | 0.18                            | 7.84 | 9.22                                   | 1.49                   | 0.87                            | 0.04                    | 0.21                     |
| <i>P. trichoides</i>  | 12.90            | 391.68                          | 210.19                              | 0.53                            | 7.71 | 8.47                                   | 1.83                   | 0.60                            | 0.07                    | 0.14                     |

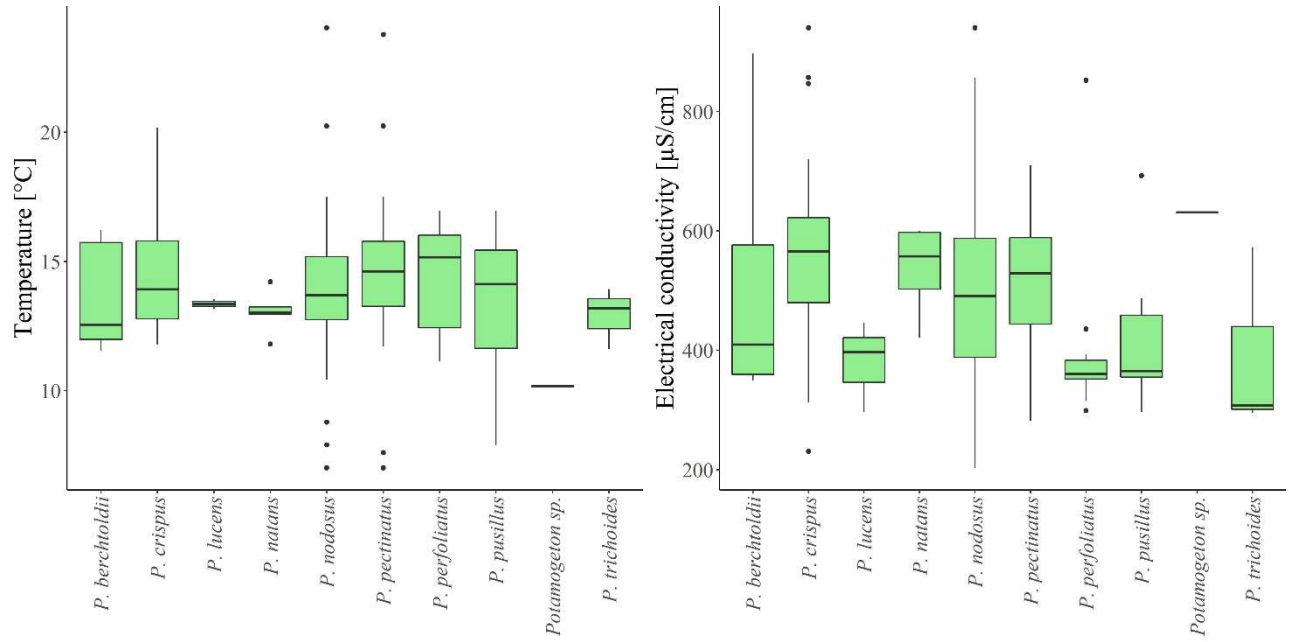


Figure 15. Boxplots of water temperature and electrical conductivity for *Potamogeton* species.

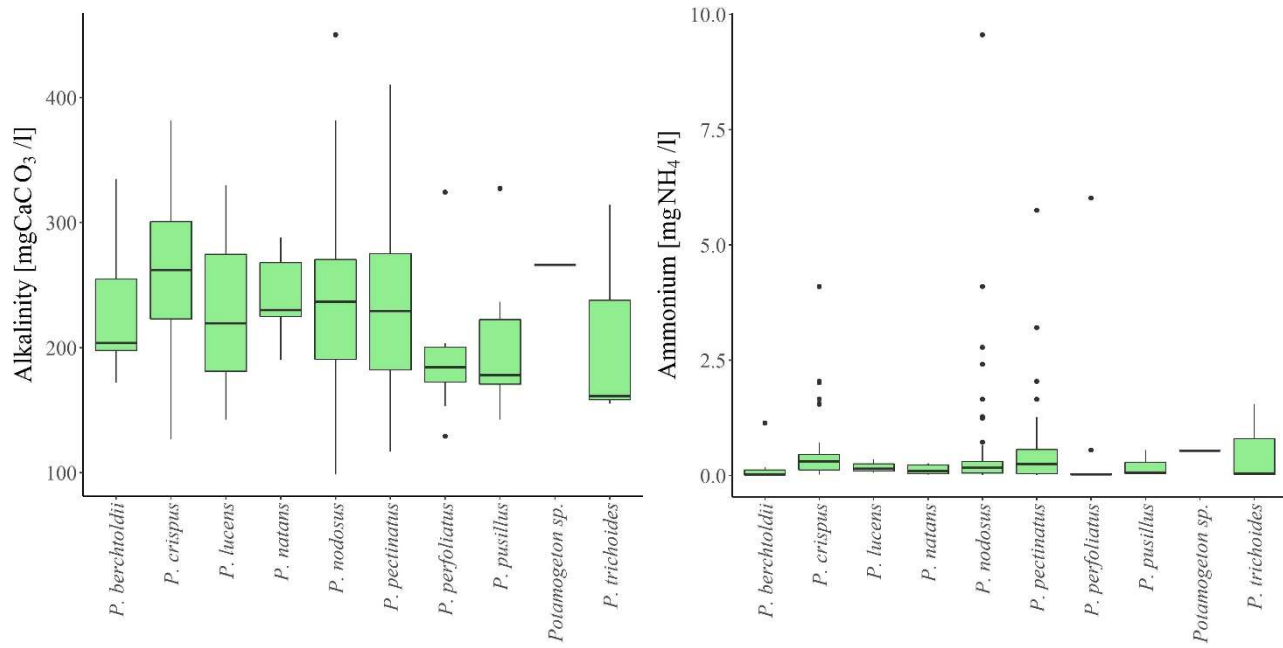


Figure 16. Boxplots of alkalinity and ammonium concentration for *Potamogeton* species.

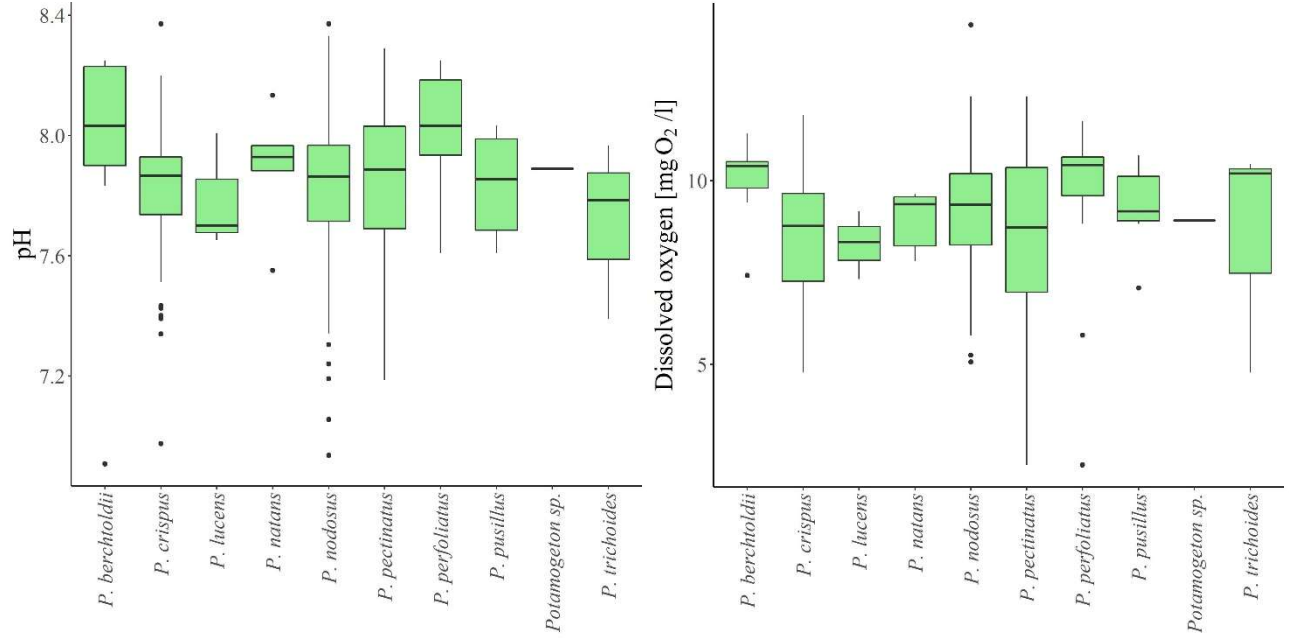


Figure 17. Boxplots of pH and dissolved oxygen for *Potamogeton* species.

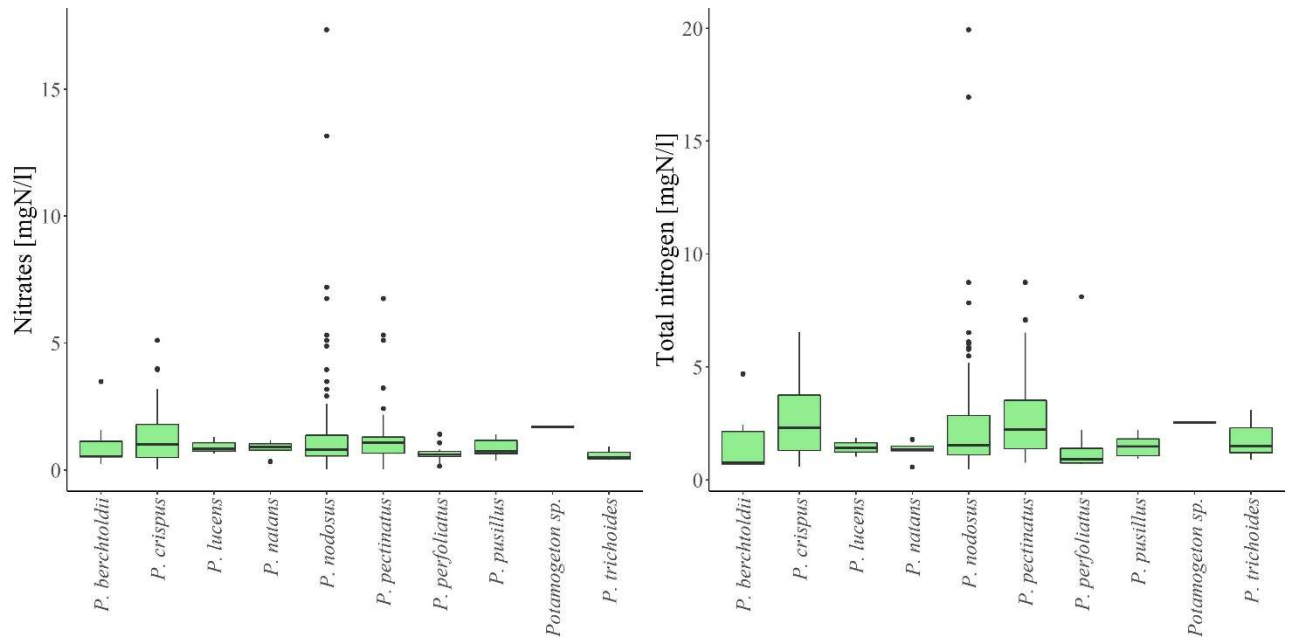


Figure 18. Boxplots of nitrates and total nitrogen concentration for *Potamogeton* species.

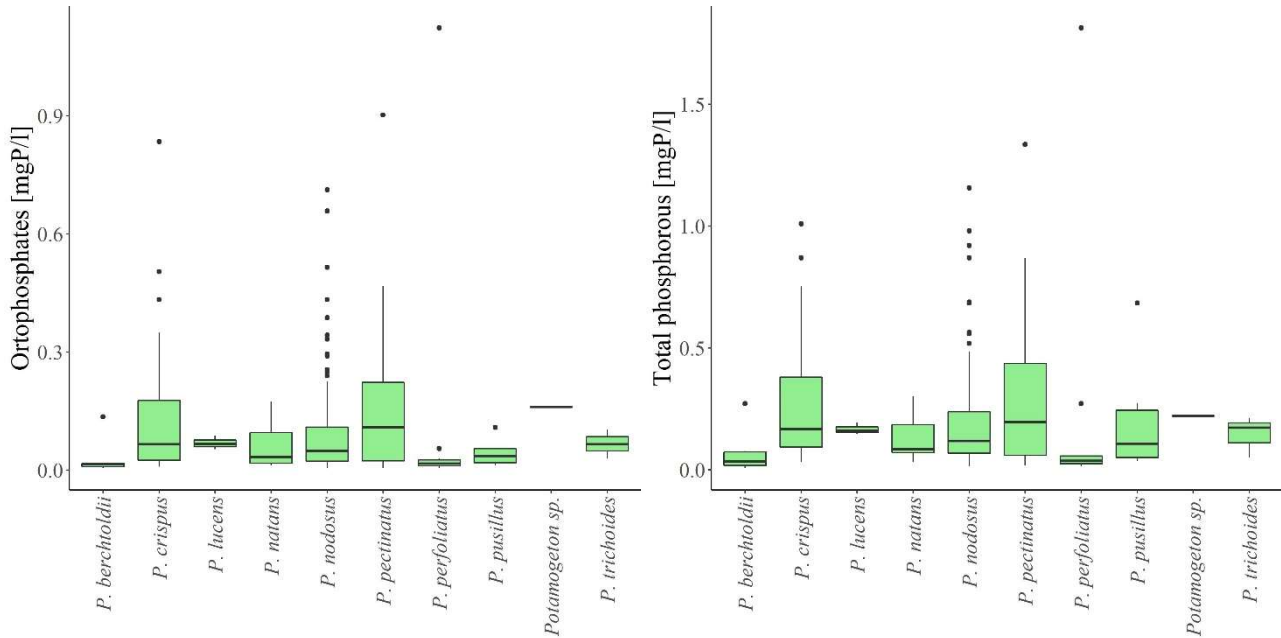


Figure 19. Boxplots of orthophosphates and total phosphorus for *Potamogeton* species.

#### 5.4. Species response curves GAM

Species response curves give us more information about the characteristics of *Potamogeton* species. *P. pectinatus*, *P. crispus* and *P. pusillus* responded greatly to biological oxygen demand (BOD), while *P. nodosus* abundance was relatively high along most of the BOD gradient. On the other hand, *P. perfoliatus*, *P. natans*, *P. berchtoldii*, *P. lucens* and *P. trichoides* had a negative response to BOD.

Concerning dissolved oxygen, *P. pectinatus* and *P. crispus* had a negative response to higher concentrations, *P. nodosus* had a strong positive response in the middle of the gradient and *P. perfoliatus* and *P. berchtoldii* had positive responses to the higher concentrations of dissolved oxygen. Other species showed a weak response to dissolved oxygen; *P. trichoides* to the lower concentrations of dissolved oxygen and *P. lucens*, *P. natans* and *P. pusillus* to those in the middle of the gradient (Figure 20).

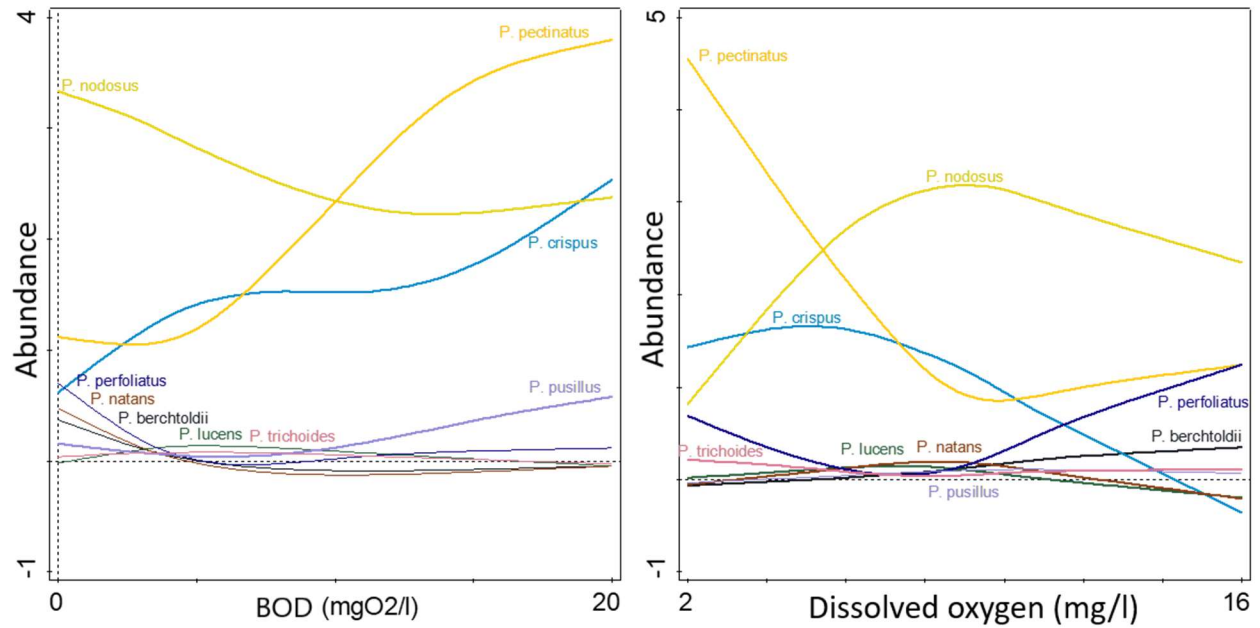


Figure 20. Response curves of *Potamogeton* species abundances to BOD and dissolved oxygen concentration.

*Potamogeton nodosus* showed a clear negative response to COD-Mn, while that of *P. perfoliatus*, *P. berchtoldii*, *P. natans* and *P. pusillus* was less pronounced. *Potamogeton crispus* and *P. pectinatus* gave a high positive response, while *P. lucens* and *P. trichoides* gave only a low positive response. *Potamogeton nodosus* showed a high positive response to the concentration of nitrates, as well as *P. pectinatus*, *P. crispus* and *P. berchtoldii* whose responses were also quite clear. Positive response to the lower concentration of nitrates was noticed for *P. lucens*, *P. natans*, *P. pusillus* and *P. trichoides* (Figure 21).

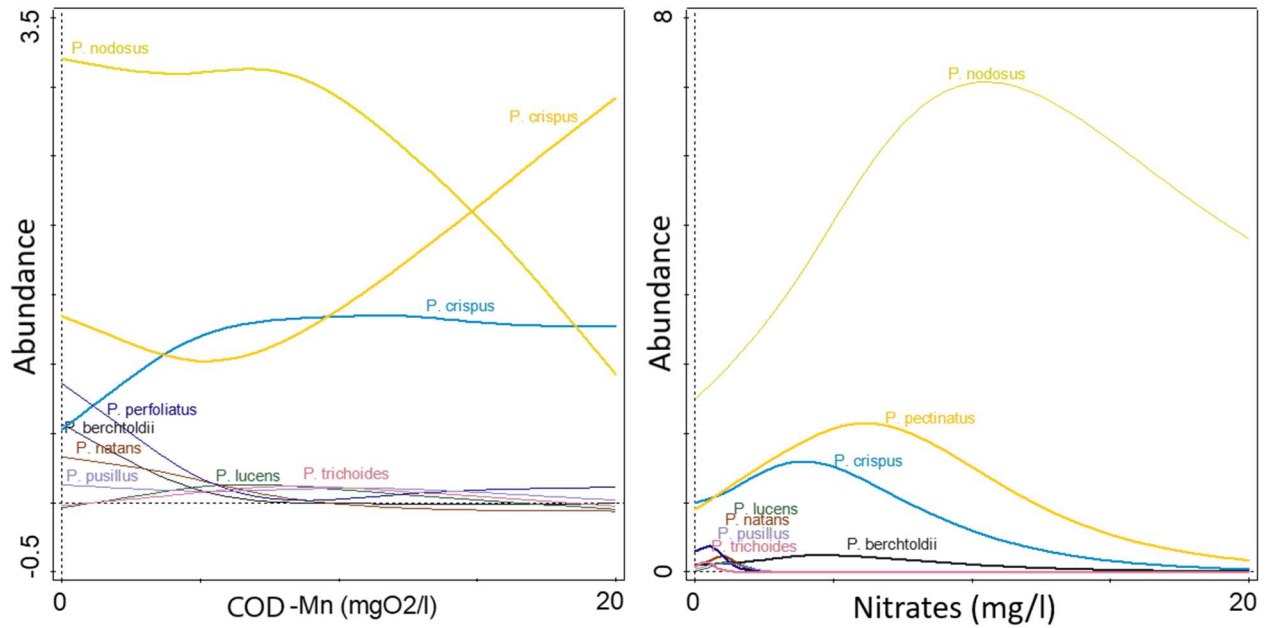


Figure 21: Response curves of species abundances to COD-Mn and nitrate concentration.

Concerning the concentration of nitrites, *P. pectinatus* and *P. crispus* gave clear and high responses to higher concentrations. *Potamogeton nodosus* had a rather negative response, and other species had a clear negative response to higher concentrations of nitrites. *Potamogeton nodosus* showed the highest response to high total nitrogen concentration, while *P. pectinatus* and *P. crispus* had a lower affinity towards high concentrations of total nitrogen. *Potamogeton perfoliatus*, *P. natans* and *P. berchtoldii* had a better response to lower concentrations of total nitrogen, while *P. pusillus*, *P. lucens* and *P. trichoides* had a weak response to moderate concentrations of total nitrogen (Figure 22).

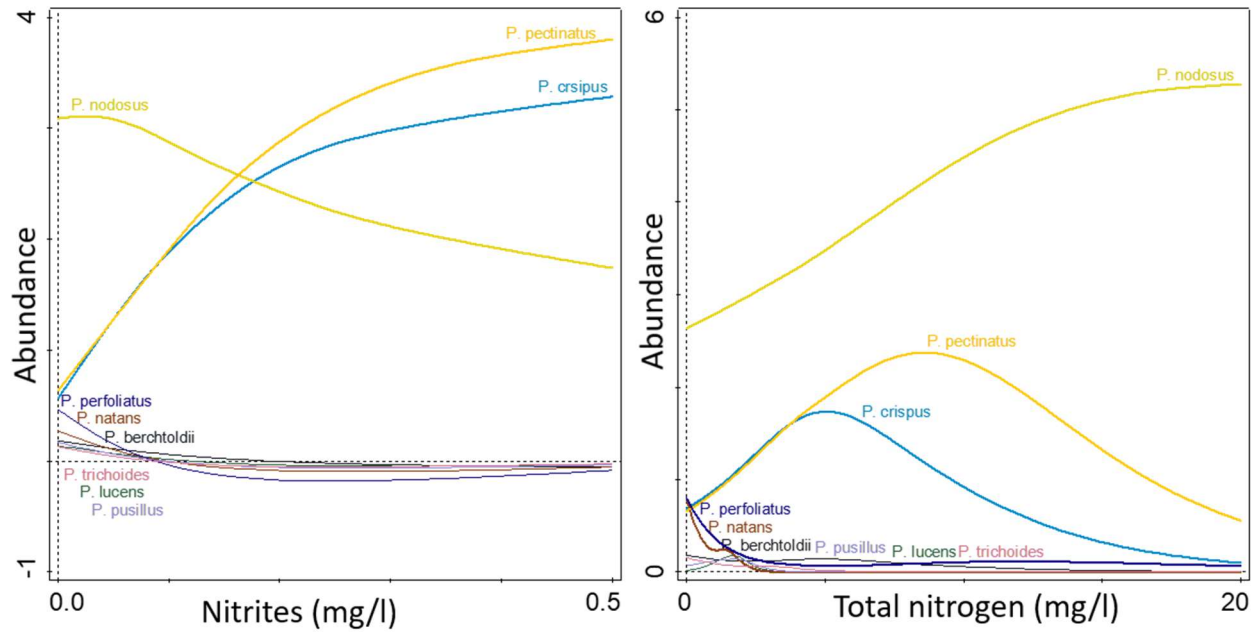


Figure 22: Response curves of species abundances to the concentration of nitrites and total nitrogen.

*P. pectinatus* and *P. crispus* had the highest affinity for high concentrations of total phosphorous, while *P. nodosus* had a linear and clearly negative response to rising concentrations of total phosphorous. *P. berchtoldii*, *P. perfoliatus*, *P. natans*, *P. pusillus*, *P. lucens* and *P. trichoides* had a weak response to lower concentrations of total phosphorous. *P. nodosus* was the only species with a strong positive response to high concentrations of total suspended solids. *P. crispus* and *P. trichoides* responded strongly to moderate concentrations of total suspended solids, while *P. pectinatus* responded strongly to lower concentrations. The response of *P. perfoliatus*, *P. natans*, *P. berchtoldii*, *P. lucens* and *P. pusillus* was rather weak to this measured water parameter.

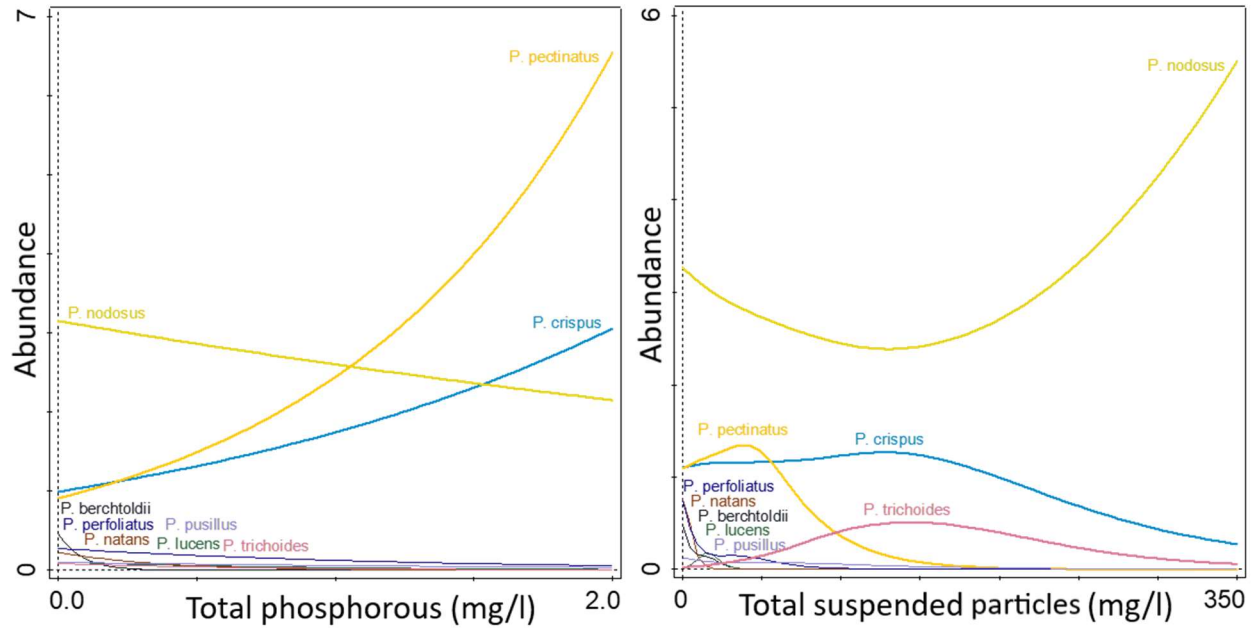


Figure 23: Response curves of species abundances to the total phosphorus concentration and total suspended particles.

### 5.5. Ordination analyses

Figure 24 shows the DCA ordination plot in which variables with longer eigenvectors have more significance as parameters that influence the occurrence of species. Orthophosphates, nitrites, electrical conductivity, alkalinity, suspended solids, oxygen saturation and pH value are recognized as the most important variables explaining the species occurrence. *P. pectinatus* and *P. natans* are placed in the directions of orthophosphates, total phosphorous and total nitrogen eigenvectors. *P. crispus* is placed in the direction of electrical conductivity, alkalinity and total suspended solids eigenvectors. *P. trichoides* is placed in the direction of total suspended solids eigenvector. The rest of the species are placed in a cluster in a direction of dissolved oxygen concentration, oxygen saturation and pH eigenvectors, but on the opposite side of nitrates and electrical conductivity eigenvectors. These species are *P. lucens*, *P. nodosus*, *P. berchtoldii*, *P. pusillus* and *P. perfoliatus* and they are placed opposite to *P. crispus*.





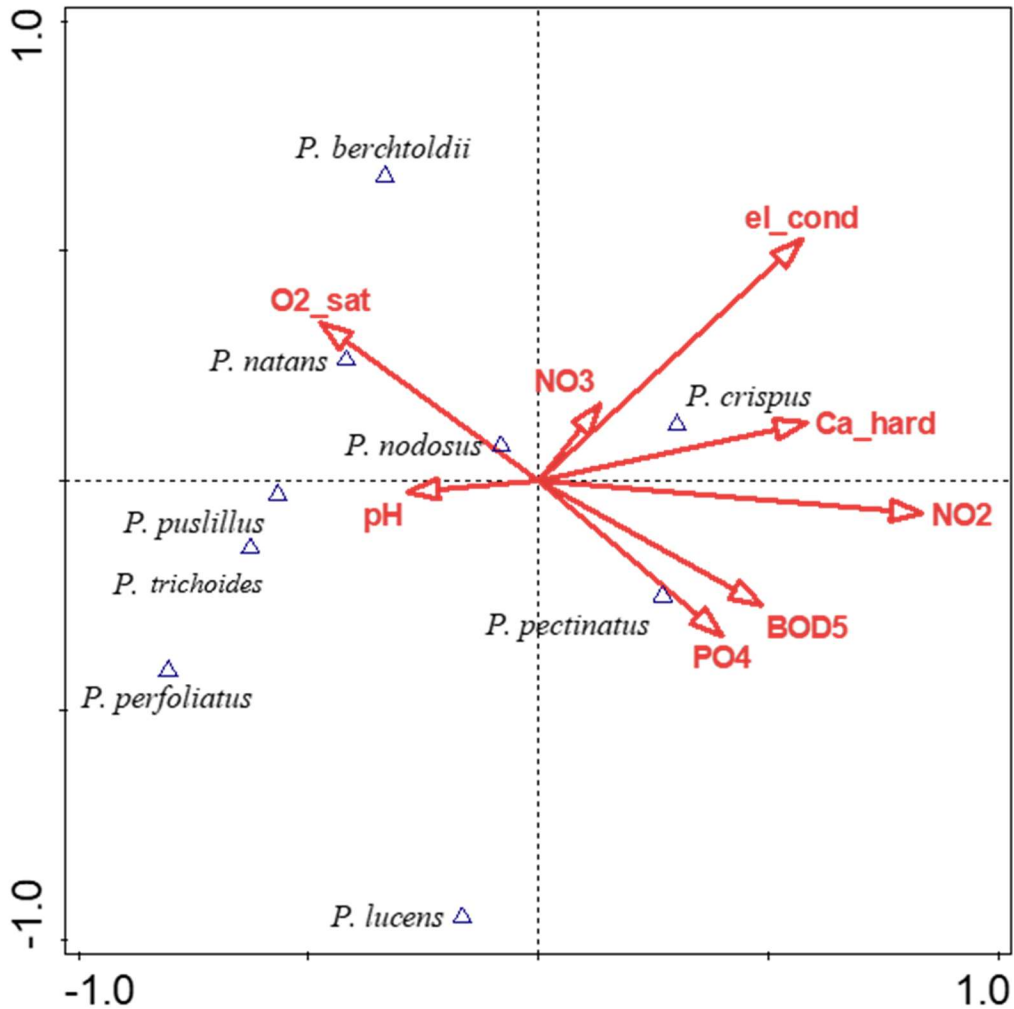


Figure 25: CCA – Explained variation: 1st axis 3.56% (41.15% fitted variation), 2nd axis 2.27% (26.21% fitted variation).

In Figure 26 we can see species responses to the components of environmental parameters on the first axis of CCA (parameters are shown in Appendix 2). The figure shows response of *Potamogeton* species to the increase of trophicity from left to the right. *P. pectinatus* and *P. crispus* show correspondence with the higher levels of nutrients and indicate eutrophication. In the middle are optimums for *P. nodosus* and *P. lucens*, and the rest of the species have their optimum on the left side, which indicates negative correspondence with parameters connected to higher trophicity levels of water. This is especially prominent for *P. perfoliatus*.

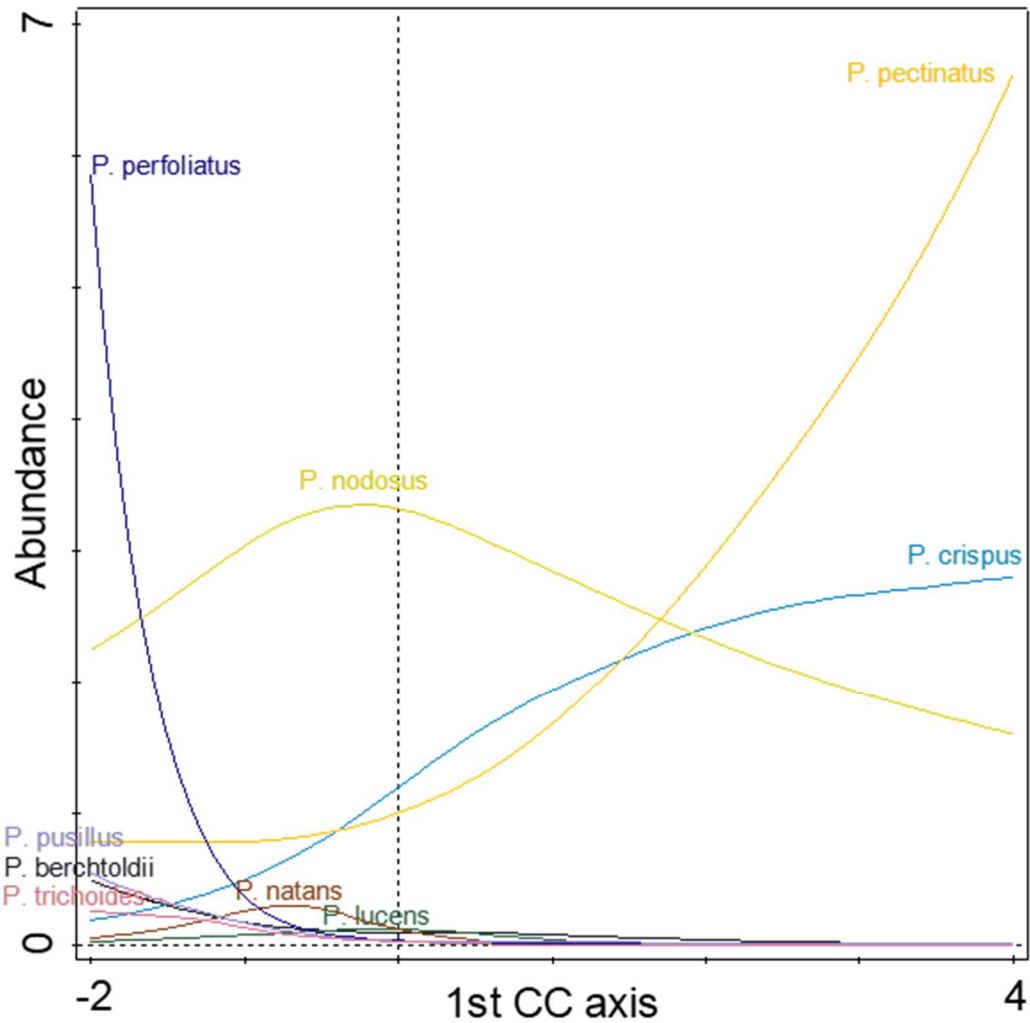


Figure 26: GAM of dependence of species abundances on components from the first CCA axis regarding environmental variables showed in Figure 25.

### 5.6. Vegetation analysis

The TWINSPLAN analysis was performed so that the largest number of clusters into which the total set of relevés was divided was 10, but that the highest value of average Sørensen dissimilarity was for two (0.729) and three clusters (0.721). Due to similar values, three groups were retained to obtain a more detailed insight into the vegetation structure. The results are shown in Table 5.

Table 5. Synoptic table with percentage frequency and modified fidelity index.

| Group No.<br>No. of relevés                     | 1<br>28 | 2<br>78 | 3<br>60 |
|---|---------|---------|---------|
| <i>Potamogeton nodosus</i> Poir.                | 50      | 79      | 67      |
| <i>Sparganium erectum</i> L.                    | 4       | 68      | 65      |
| <i>Potamogeton crispus</i> L.                   | 7       | 17      | 55      |
| <i>Agrostis stolonifera</i> L.                  | 7       | 9       | 43      |
| <i>Lythrum salicaria</i> L.                     | .       | 15      | 38      |
| <i>Phalaris arundinacea</i> L.                  | .       | 8       | 38      |
| <i>Myriophyllum spicatum</i> L.                 | 71      | 29      | 37      |
| <i>Mentha aquatica</i> L.                       | .       | 8       | 33      |
| <i>Berula erecta</i> (Huds.) Coville            | 4       | 17      | 30      |
| <i>Alisma plantago-aquatica</i> L.              | 7       | 37      | 25      |
| <i>Leersia oryzoides</i> (L.) Sw.               | .       | 22      | 25      |
| <i>Phragmites australis</i> (Cav.) Trin. ex Ste | 4       | 10      | 22      |
| <i>Iris pseudacorus</i> L.                      | .       | 6       | 22      |
| <i>Lemna minor</i> L.                           | .       | 58      | 18      |
| <i>Typha latifolia</i> L.                       | 4       | 8       | 17      |
| <i>Callitriche</i> sp.                          | .       | 5       | 17      |
| <i>Potamogeton pectinatus</i> L.                | 68      | 19      | 15      |
| <i>Veronica anagallis-aquatica</i> L.           | 4       | .       | 15      |
| <i>Sparganium emersum</i> Rehmman               | 4       | 13      | 12      |
| <i>Alisma lanceolatum</i> With.                 | 4       | 4       | 12      |
| <i>Nasturtium officinale</i> W. T. Aiton        | 4       | 1       | 12      |
| <i>Scirpus lacustris</i> L.                     | .       | 5       | 12      |
| <i>Leptodictyum riparium</i> (Hedw.) Warnst.    | 14      | 3       | 10      |
| <i>Polygonum mite</i> Schrank                   | 7       | 19      | 10      |
| <i>Elodea canadensis</i> Michx.                 | 4       | 5       | 10      |
| <i>Juncus effusus</i> L.                        | .       | .       | 8       |
| <i>Spirodela polyrrhiza</i> (L.) Schleid.       | 4       | 62      | 8       |
| <i>Myosotis scorpioides</i> L.                  | .       | 1       | 8       |
| <i>Scirpus sylvaticus</i> L.                    | .       | .       | 8       |
| <i>Glyceria maxima</i> (Hartm.) Holmb.          | .       | 14      | 8       |
| <i>Rorippa sylvestris</i> (L.) Besser           | 4       | 4       | 7       |
| <i>Rumex hydrolapathum</i> Huds.                | .       | 1       | 7       |
| <i>Juncus articulatus</i> L.                    | .       | .       | 7       |
| <i>Veronica beccabunga</i> L.                   | .       | 4       | 7       |
| <i>Solanum dulcamara</i> L.                     | .       | 1       | 7       |
| <i>Nuphar lutea</i> (L.) Sm.                    | 29      | 47      | 7       |
| <i>Potamogeton natans</i> L.                    | .       | 3       | 5       |
| <i>Juncus inflexus</i> L.                       | .       | .       | 5       |
| <i>Persicaria hydropiper</i> (L.) Delarbre      | .       | 4       | 5       |
| <i>Ceratophyllum demersum</i> L.                | 21      | 71      | 5       |
| <i>Echinochloa crus-galli</i> (L.) P. Beauv.    | .       | 4       | 3       |
| <i>Pellia endiviifolia</i> (Dicks.) Dumort.     | .       | .       | 3       |
| <i>Lycopus europaeus</i> L.                     | .       | .       | 3       |
| <i>Fontinalis antipyretica</i> Hedw.            | 18      | .       | 3       |
| <i>Lemna trisulca</i> L.                        | 4       | 10      | 3       |
| <i>Leersia oryzoides</i> cf.                    | .       | .       | 3       |
| <i>Glyceria fluitans</i> (L.) R. Br.            | .       | .       | 3       |
| <i>Mentha longifolia</i> (L.) Huds.             | .       | .       | 3       |
| <i>Potamogeton berchtoldii</i> Fieber           | 7       | 4       | 3       |
| <i>Rorippa amphibia</i> (L.) Besser             | .       | 6       | 3       |
| <i>Pohlia melanodon</i> (Brid.) A. J. Shaw      | .       | .       | 3       |
| <i>Baldellia ranunculoides</i> (L.) Parl.       | 4       | .       | 2       |
| <i>Sagittaria sagittifolia</i> L.               | 11      | 33      | 2       |
| <i>Nitella opaca</i> (C.Agardh ex Bruzelius) C. | 7       | .       | 2       |
| <i>Ranunculus trichophyllus</i> Chaix           | 4       | .       | 2       |
| <i>Physcomitrella patens</i> (Hedw.) Bruch et S | .       | 1       | 2       |
| <i>Butomus umbellatus</i> L.                    | 11      | 29      | 2       |
| <i>Najas marina</i> L.                          | 11      | 18      | 2       |
| <i>Marsilea quadrifolia</i> L.                  | .       | 1       | 2       |
| <i>Marchantia polymorpha</i> L.                 | .       | .       | 2       |
| <i>Typha angustifolia</i> L.                    | .       | 1       | 2       |
| <i>Salvinia natans</i> (L.) All.                | .       | 12      | 2       |
| <i>Drepanocladus aduncus</i> (Hedw.) Warnst.    | .       | 1       | 2       |
| <i>Persicaria maculosa</i> Gray                 | .       | 1       | 2       |
| <i>Brachythecium mildeanum</i> (Schimp.) Schimp | .       | 1       | 2       |
| <i>Equisetum arvense</i> L.                     | .       | .       | 2       |
| <i>Pellia neesiana</i> (Gottsche) Limpr.        | .       | .       | 2       |
| <i>Cyperus glomeratus</i> L.                    | .       | 4       | 2       |
| <i>Myriophyllum verticillatum</i> L.            | .       | 4       | 2       |
| <i>Urtica dioica</i> L.                         | .       | .       | 2       |
| <i>Brachythecium rivulare</i> Schimp.           | .       | .       | 2       |
| <i>Myosoton aquaticum</i> (L.) Moench           | .       | .       | 2       |
| <i>Nitella gracilis</i> (J.E.Smith) C.Agardh    | .       | .       | 2       |
| <i>Barbarea vulgaris</i> W. T. Aiton            | .       | .       | 2       |

|   |           |             |          |             |   |      |
|---|-----------|-------------|----------|-------------|---|------|
| Ranunculus repens L.                                | .         | ---         | .        | ---         | 2 | 10.6 |
| Hydrocharis morsus-ranae L.                         | .         | ---         | 8        | 18.6        | 2 | ---  |
| Cratoneuron filicinum (Hedw.) Spruce                | .         | ---         | .        | ---         | 2 | 10.6 |
| Oxyrrhynchium hians (Hedw.) Loeske                  | .         | ---         | .        | ---         | 2 | 10.6 |
| Pulicaria dysenterica (L.) Bernh.                   | .         | ---         | .        | ---         | 2 | 10.6 |
| Eleocharis palustris (L.) R. Br.                    | .         | ---         | 3        | 6.9         | 2 | 1.5  |
| Brachythecium rutabulum (Hedw.) Schimp.             | .         | ---         | .        | ---         | 2 | 10.6 |
| Potentilla reptans L.                               | .         | ---         | .        | ---         | 2 | 10.6 |
| Epilobium hirsutum L.                               | .         | ---         | .        | ---         | 2 | 10.6 |
| Callitriche cophocarpa Sendtn.                      | .         | ---         | .        | ---         | 2 | 10.6 |
| Rumex palustris Sm.                                 | .         | ---         | .        | ---         | 2 | 10.6 |
| Ranunculus circinatus Sibth.                        | 4         | 15.5        | .        | ---         | . | ---  |
| Cinclidotus riparius (Host ex Brid.) Arn            | 14        | 31.6        | .        | ---         | . | ---  |
| Rhynchosstegium riparioides (Hedw.) Cardo           | 7         | 22.1        | .        | ---         | . | ---  |
| Fissidens fontanus (Bach.Pyl.) Steud.               | 7         | 22.1        | .        | ---         | . | ---  |
| Lindernia dubia (L.) Pennell                        | .         | ---         | .        | ---         | . | ---  |
| Chiloscyphus pallescens (Ehrh. ex Hoffm.            | 4         | 15.5        | .        | ---         | . | ---  |
| Fissidens crassipes Wilson ex Bruch & Sc            | 4         | 15.5        | .        | ---         | . | ---  |
| Palustriella falcata (Brid.) Hedenäs                | 4         | 15.5        | .        | ---         | . | ---  |
| Lysimachia nummularia L.                            | 4         | 15.5        | .        | ---         | . | ---  |
| Cinclidotus fontinaloides (Hedw.) P. Bea            | 7         | 22.1        | .        | ---         | . | ---  |
| Fontinalis hypnoides Hartm. var. duriaei            | 4         | 15.5        | .        | ---         | . | ---  |
| <b>Potamogeton trichoides Cham. &amp; Schltldl.</b> | <b>4</b>  | <b>7.6</b>  | <b>3</b> | <b>2.6</b>  | . | ---  |
| Scirpus maritimus L.                                | .         | ---         | 3        | 13.1        | . | ---  |
| Persicaria lapathifolia (L.) Delarbre               | .         | ---         | 4        | 16.1        | . | ---  |
| Riccia fluitans L.                                  | .         | ---         | 3        | 13.1        | . | ---  |
| Nitellopsis obtusa (N.A.Desvieux) J.Grove           | 7         | 15.6        | 3        | ---         | . | ---  |
| Lysimachia vulgaris L.                              | .         | ---         | 3        | 13.1        | . | ---  |
| Ricciocarpos natans (L.) Corda                      | .         | ---         | 3        | 13.1        | . | ---  |
| Nymphoides peltata (S. G. Gmel.) Kuntze             | .         | ---         | 3        | 13.1        | . | ---  |
| Polygonum amphibium L.                              | .         | ---         | 3        | 13.1        | . | ---  |
| Ludwigia palustris (L.) Elliott                     | .         | ---         | 4        | 16.1        | . | ---  |
| Lemna minuta Kunth                                  | .         | ---         | 8        | 22.9        | . | ---  |
| <b>Potamogeton perfoliatus L.</b>                   | <b>21</b> | <b>29.6</b> | <b>6</b> | <b>---</b>  | . | ---  |
| Trapa natans L.                                     | .         | ---         | 18       | 35.7        | . | ---  |
| Najas minor All.                                    | 11        | 11.9        | 9        | 6.9         | . | ---  |
| <b>Potamogeton pusillus L.</b>                      | <b>4</b>  | <b>1.0</b>  | <b>6</b> | <b>12.2</b> | . | ---  |
| <b>Potamogeton lucens L.</b>                        | .         | ---         | <b>4</b> | <b>16.1</b> | . | ---  |
| Utricularia vulgaris L.                             | .         | ---         | 4        | 16.1        | . | ---  |
| Lemna gibba L.                                      | 4         | 2.8         | 5        | 9.4         | . | ---  |
| Vallisneria spiralis L.                             | 14        | 22.5        | 5        | ---         | . | ---  |
| Elodea nuttallii (Planch.) H. St. John              | 4         | 7.6         | 3        | 2.6         | . | ---  |
| Polygonum hydropiper                                | .         | ---         | 1        | 9.3         | . | ---  |
| Chara contraria A.Braun ex Kützing                  | .         | ---         | 1        | 9.3         | . | ---  |
| Oenanthe aquatica (L.) Poir.                        | .         | ---         | 1        | 9.3         | . | ---  |
| Azolla filiculoides Lam.                            | .         | ---         | 1        | 9.3         | . | ---  |
| Stratiotes aloides L.                               | .         | ---         | 1        | 9.3         | . | ---  |
| Ranunculus fluitans Lam.                            | 7         | 18.6        | 1        | ---         | . | ---  |
| Ludwigia peploides (Kunth) P. H. Raven              | .         | ---         | 1        | 9.3         | . | ---  |
| Carex elata All.                                    | .         | ---         | 1        | 9.3         | . | ---  |
| Portulaca oleracea L.                               | .         | ---         | 1        | 9.3         | . | ---  |
| Bryum klinggraeffii Schimp.                         | .         | ---         | 1        | 9.3         | . | ---  |
| Cyperus fuscus L.                                   | .         | ---         | 1        | 9.3         | . | ---  |
| Zannichellia palustris L.                           | .         | ---         | 1        | 9.3         | . | ---  |
| Riccia cavernosa Hoffm.                             | .         | ---         | 3        | 13.1        | . | ---  |
| Calystegia sepium (L.) R. Br.                       | .         | ---         | 1        | 9.3         | . | ---  |
| Veronica anagalloides Guss.                         | .         | ---         | 1        | 9.3         | . | ---  |
| Callitriche stagnalis Scop.                         | 4         | 10.9        | 1        | ---         | . | ---  |
| Bryum argenteum Hedw.                               | .         | ---         | 1        | 9.3         | . | ---  |
| Leptobryum pyriforme (Hedw.) Wilson                 | .         | ---         | 1        | 9.3         | . | ---  |
| Riccia rhenana Lorb. ex Müll. Frib.                 | .         | ---         | 1        | 9.3         | . | ---  |

In Table 5, the first group consists of relevés with relatively low species diversity and is also the smallest group with only 28 relevés. The second group is made of relevés in which many floating species have been recorded (*Lemna minor*, *Spirodella polyrhiza*, *Nuphar lutea*) as well as the species of highly eutrophic waters (*Ceratophyllum demersum*). The third group consists of relevés with marshland vegetation (*Agrostis stolonifera*, *Phragmites australis*, *Iris pseudacorus*).

*Potamogeton* species that fall into the first group are *P. pectinatus*, *P. berchtoldii*, *P. perfoliatus* and *P. trichoides*, while *P. nodosus*, *P. pusillus* and *P. lucens* fall into the second group.

Furthermore, *P. crispus*, *P. natans* and *P. lucens* fall into the third group in which *P. nodosus* was highly frequent as well. The TWINSPLAN dendrogram shows that groups 1 and 2 are more similar to each other compared to group 3 (Figure 27).

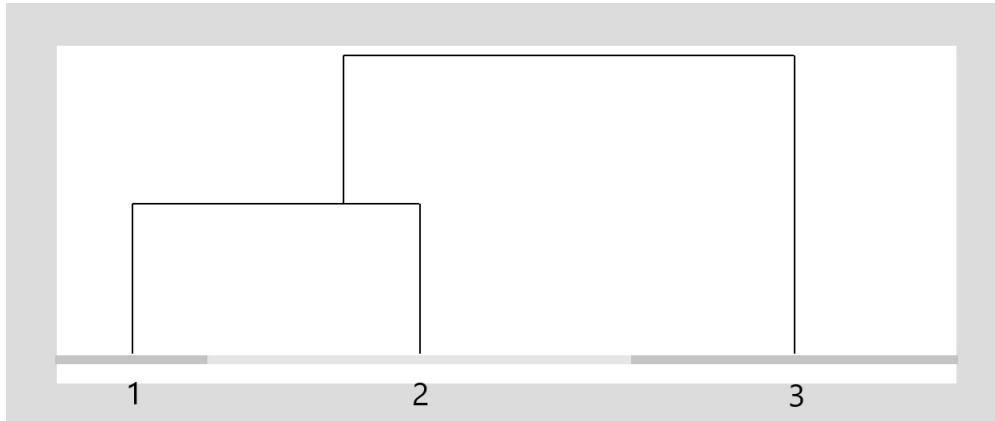


Figure 27. Dendrogram derived from TWINSPLAN analysis of vegetation groups showing divisive clustering and their relationship.

DCA plot made from DCA axes also shows the relationship between the relevés that form 3 groups (Figure 28). It shows quite a clear grouping of 3 types of relevés with only slightly mixing.

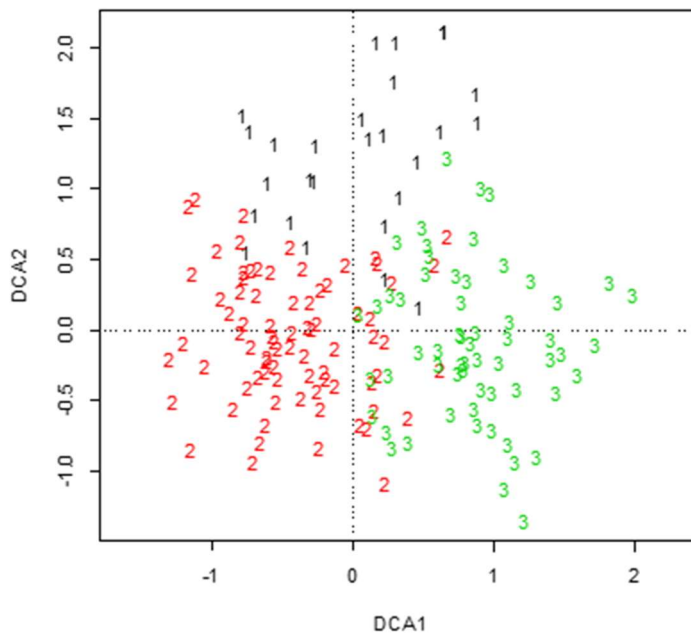


Figure 28: DCA of the interrelationship of vegetation groups. Eigenvalues - 1<sup>st</sup> axis 0.3809 and 2<sup>nd</sup> axis 0.3135.

Different surface water types represented in each group derived from TWINSPAN analysis are shown in Table 6.

Table 6: Surface water types represented in groups derived from TWINSPAN analysis.

| Group | HR-R_1 | HR-R_2B | HR-R_3A | HR-R_4 | HR-R_5A | HR-R_5B | HR-R_2A | HR-R_3B |
|-------|--------|---------|---------|--------|---------|---------|---------|---------|
| 1     | 1      | 3       | 1       | 12     | 4       | 6       |         |         |
| 2     |        | 3       |         | 41     | 3       | 2       | 21      | 8       |
| 3     | 2      | 15      | 2       | 14     |         | 1       | 24      | 1       |

In the first TWINSPAN group, the most common abiotic types were medium and large lowland watercourses (HR-R\_4) and very large lowland watercourses with silicate and carbonate geology – the lower reach of Mura and middle reach of Drava and Sava (HR-R\_5B).

In the second group, which was the richest in species as well as in relevés, the most common types were medium and large lowland watercourses (HR-R\_4) and small lowland watercourses on a clayey-sandy substrate (HR-R\_2A).

In the third group, the most common types were small lowland watercourses on a clayey-sandy substrate (HR-R\_2A), small lowland watercourses on gravel substrate (HR-R\_2B) and medium and large lowland watercourses (HR-R\_4).

## 6. Discussion

### 6.1. Frequency

The most frequent species in the Pannonian ecoregion is *P. nodosus*, followed by *P. crispus* and *P. pectinatus*. This could mean that these species are most adapted to the abiotic parameters of the habitats of the Pannonian ecoregion of Croatia. These three species are mutually very different when comparing their leaf morphology. On the other hand, in other works (Preston, 1995) they were found in a great variety of habitats and ecological conditions. They also share tolerance to eutrophication and pollution. The species represented with low frequency in the Pannonian ecoregion are *P. lucens*, *P. natans* and *P. trichoides*, which share tolerance to a wide range of habitats along with tolerance to deep waters. Overall, these results could imply on eutrophic character of waters of Pannonian ecoregion.

### 6.2. Distribution

Distribution data showed that all the *Potamogeton* species are mostly found in the upper or middle reaches of rivers of the western part of the Pannonian ecoregion or central Croatia, which are characterized by hilly terrain and slow and small to middle-sized rivers. This supports the result of counting the body types. They were mostly found in water bodies which are classified as small lowland watercourses on gravel substrate (HR-R\_2B), small lowland watercourses on a clayey-sandy substrate (HR-R\_2A) and medium and large lowland watercourses (HR-R\_4). These types of surface water present a favourable habitat for *Potamogeton* species which need slow but moving waters and rather shallow but wide rivers in which suitable conditions regarding the light, temperature and nutrient content are present.

### 6.3. Responses to environmental parameters

*Potamogeton* species live in mesotrophic to eutrophic waters, and some of them do not tolerate over-polluted habitats. The average values of water chemistry have shown that the habitat conditions in this study were rated as good and very good according to Croatian Regulation on water quality standards (NN 96/2019). Comparing the nutrient levels present in *Potamogeton* localities in other studies, the nutrients were often far higher in this study.



### 6.3.1. *Potamogeton berchtoldii*

In this study, the results for *P. berchtoldii* have shown the highest value of average dissolved oxygen and the lowest values of total phosphorus and orthophosphates, but with average values of total nitrogen and nitrates compared to other species. Nevertheless, GAMs for the abundance of *P. berchtoldii* dependent of total nitrogen and nitrates suggest that the species prefers higher levels of these nutrients.

However, response curves of the species abundance to other nutrients, along with the lowest average concentration of phosphorous suggest that the species prefers the least eutrophic habitats compared to other *Potamogeton* species. The majority of the rivers in the Pannonian ecoregion has higher trophic levels, and this might support the fact that *P. berchtoldii* was found on only seven sampling sites in total, although the species was so far reported to show a wide tolerance (Preston, 1995).

### 6.3.2. *Potamogeton crispus*

Ranges of water physicochemical parameters previously reported for *P. crispus* in other similar studies (Bolduan *et al.*, 1994) were: pH in range from 8.3 to 9.0, electrical conductivity in range of 358 to 423 ms, alkalinity in range from 118 to 171 ppm, ammonium from 123.5 to 491 ppb, total nitrogen from 1395 to 1760 ppb, nitrates from 52.5 to 495 ppb and total phosphorus from 52.5 to 102.25 ppb. The results of this study differ for alkalinity, total nitrogen and total phosphorus, which are higher. By contrast, the values of the average temperature, electrical conductivity, ammonium and pH value are within the ranges previously known for *P. crispus*. Average electrical conductivity in *P. crispus* localities is the highest when compared to that in localities of all other *Potamogeton* species in this study. The average temperature in *P. crispus* localities in this study was among the highest, being 14.45 °C, while in other available studies it varied from 1 to 18°C. The species was reported to grow mostly on sandy to loamy mud substrates and in lentic or lotic waters with low velocity. This corresponds to the results of this study, i.e., habitats such as small lowland watercourses on a clayey-sandy substrate (HR-R\_2A), medium and large lowland watercourses (HR-R\_4) and small lowland watercourses on gravel substrate (HR-R\_2B) abiotic water types. In vegetation analysis *P. crispus* was grouped into marshland vegetation group. It also has floating leaves which can help it survive anoxic conditions in which it lives. Response curves and CCA have shown that *P. crispus* is associated with higher nutrient

levels and has the highest response to BOD. Therefore, *P. crispus* can be used as an indicator of eutrophication.

#### 6.3.3. *Potamogeton lucens*

*P. lucens* is not tolerable to eutrophication and has a negative response to ammonium. The locations where *P. lucens* was found have the lowest electrical conductivity and the lowest total nitrogen of all the species. This all fits well with the reports that *P. lucens* does not tolerate high concentrations of ammonium (Litav and Lehrer, 1978). Also, only 1.81% of total findings of *P. lucens* could lead to the conclusion that there are a lot of surface waters with high ammonium concentrations or high trophic levels in general. On the other hand, small number of findings could mean that there are not a lot of deep waters which *P. lucens* prefers as reported (Preston, 1995). Still, *P. lucens* has potential to be indicator of waters with lower concentrations of ammonium.

#### 6.3.4. *Potamogeton natans*

*P. natans* locations have the lowest values of total phosphorus among all the *Potamogeton* species in this study as well as low average total nitrogen. On the other hand, it has the highest electrical conductivity. It has a clearly negative response to phosphorous and nitrites and positive to oxygen saturation in CCA. Nitrites in the water generally represent presence of fertilizers from the farmlands nearby and response curve between abundance and nitrites describes that *P. natans* does not tolerate high content of fertilizers. *P. natans* was situated into group of swampy vegetation according to TWINSPAN. It was found almost entirely in the medium and large lowland watercourses (HR-R\_4) abiotic type which fits with the report that loam and clay mud are his favourite rooting media (Ságová-Marecková and Kvet, 1995).

#### 6.3.5. *Potamogeton nodosus*

Abundance of *P. nodosus* is dependent on total nitrogen, nitrates and total suspended particles in water as shown on response curves. Electrical conductivity usually implies a lot of dissolved matter, which can mean higher level of trophic. Higher trophic level goes along with higher concentration of nitrogen compounds in water. Nitrogen, especially in a form of nitrates is essential

for protein synthesis and plant growth. This supports the dependency of abundance of *P. nodosus* on nitrogen, electrical conductivity, and higher trophy level in general.

*P. nodosus* has the highest average values of ammonium and nitrates. It also had a very clear positive response to other nutrients that represent eutrophication in response curves and CCA. Its response curves are also jumping out the most among the other *Potamogeton* species. The ammonium value is far too high when comparing with  $0.255 \pm 0.107$  from other reports, while orthophosphates fitted in a decent interval of  $0.191 \pm 0.116$ . These reports characterised *P. nodosus* even as hypertrophic specie (Haury *et al.*, 2006). Still, response of *P. nodosus* is moderately negative on total phosphorous and BOD and clearly negative on nitrites and COD. Therefore, there is a clear distinction between *P. nodosus* as mesotrophic species and *P. crispus* and *P. pectinatus* as eutrophic species on the other side.

In vegetation analysis it was put in the group of floating plants but also, it had high frequency in the swampy group. The floating leaves allow it to survive in these conditions and to fit in the floating group. It was found in all abiotic types of water bodies, but majority of findings was in medium and large lowland watercourses (HR-R\_4) and small lowland watercourses on a clayey-sandy substrate (HR-R\_2A). All in all, *P. nodosus* can be indicator of high concentrations of total nitrogen in waters.

#### 6.3.6. *Potamogeton pectinatus*

Abundance of *P. pectinatus* is negatively dependent on dissolved oxygen and pH value. Dissolved oxygen is in negative correlation with trophy level since waters with higher trophy level have higher rate of oxygen consumption. This can support previously mentioned tolerance to eutrophication of *P. pectinatus* because its abundance is falling with rise of dissolved oxygen. Abundance of *P. pectinatus* is also in negative correlation with pH value, which can also be a consequence of the eutrophication.

The average temperature of *P. pectinatus* in this study is the highest as well as the total nitrogen, orthophosphates, and total phosphorus. It was found in medium and large lowland watercourses (HR-R\_4), small lowland watercourses on a clayey-sandy substrate (HR-R\_2A), small lowland watercourses on gravel substrate (HR-R\_2B) and very large lowland watercourses with silicate and carbonate geology – the lower reach of Mura and middle reach of Drava and Sava (HR-R\_5B) water types which can support this high values. This fits with the reports that he has high affinity

to phosphorus in water which might be contributed by periphyton on his on leaves (Howard-Williams and Allanson, 1981).

#### 6.3.7. *Potamogeton perfoliatus*

*P. perfoliatus* locations show the lowest alkalinity and it responds negatively on increase of nutrient concentrations in water. In CCA it is on opposite side to the vectors indicating main nutrients. It was reported to tolerate brackish waters and to be sensitive on higher eutrophication and phytotoxins in organic rich sediments of water (Caffrey and Kemp, 1991; Neundorfer and Kemp, 1993). This could support the findings in very large lowland watercourses with the source in Dinaric ecoregion (HR-R\_5A).

#### 6.3.8. *Potamogeton pusillus*

*P. pusillus* locations show the lowest average value of orthophosphates and high value of dissolved oxygen. It was reported that the species prefers mesotrophic habitats and has a good effect on water quality (Takeda *et al.*, 2014), which could explain its low incidence in the data set. Its response to nutrients was low in CCA. Since eutrophic species in this study have higher incidence and *P. pusillus* does not, it could be indicator of better water quality.

#### 6.3.9. *P. trichoides*

One of the two species with lowest incidence in the studied area is *P. trichoides*. Its locations show the lowest values for temperature, electrical conductivity and pH value. In CCA it is on opposite side to the vectors indicating main nutrients. It was reported to be a species connected to eutrophication but did not show that character in this work (Mesters, 1995). His more northern areal in Europe could be the cause of his low incidence in Croatia, which could be supported by low average temperature of its sites in comparison to the other species.

## 7. Conclusion

After discussing the results, we can conclude the following:

- *Potamogeton* species are distributed mostly in the western and central parts of Pannonian ecoregion of Croatia where predominate shallow and comparatively faster running surface waters. The most common species are *P. nodosus*, *P. crispus* and *P. pectinatus*.
- Macrophyte vegetation where *Potamogeton* species occur can be divided in three groups. In the first group, poor in species diversity, the highest incidence have *P. pectinatus*, *P. berchtoldii*, *P. perfoliatus* and *P. trichoides*. In the second group, the richest in species, with the highest incidence are present *P. nodosus*, *P. pusillus* and *P. lucens*. In the third group, characterised by higher occurrence of marshland species, the highest incidences have *P. crispus* and *P. natans*.
- Ranges of the average annual physicochemical parameters of water in the habitats of *Potamogeton* species are the following: temperature from 12.9° C (*P. trichoides*) to 14.56° C (*P. crispus*), electrical conductivity from 379.74 (*P. lucens*) to 562.45  $\mu\text{Scm}^{-1}$  (*P. crispus*), alkalinity from 192.28 (*P. perfoliatus*) to 259.49  $\text{mgCaCO}_3\text{l}^{-1}$  (*P. crispus*), ammonium from 0.13 (*P. natans*) to 0.70  $\text{mg l}^{-1}$  (*P. nodosus*), pH from 7.72 (*P. trichoides*) to 8.01 (*P. perfoliatus*), dissolved oxygen from 8.27 (*P. lucens*) to 9.96  $\text{mg l}^{-1}$  (*P. berchtoldii*), total nitrogen from 1.30 (*P. natans*) to 2.70  $\text{mg l}^{-1}$  (*P. pectinatus*), nitrates from 0.60 (*P. trichoides*) to 1.48  $\text{mg l}^{-1}$  (*P. nodosus*), orthophosphates from 0.03 (*P. berchtoldii*) to 0.15  $\text{mg l}^{-1}$  (*P. pectinatus*), and total phosphorous from 0.07 (*P. berchtoldii*) to 0.29  $\text{mg l}^{-1}$  (*P. pectinatus*).
- The species with the highest positive response to the increase of nutrient concentrations were *P. pectinatus* and *P. crispus*. *P. nodosus* has moderate response to nutrient concentrations, and *P. berchtoldii*, *P. lucens*, *P. natans*, *P. perfoliatus* and *P. pusillus* have low or negative response to the increase of nutrient concentrations.
- *P. perfoliatus* and *P. lucens* have their optima on sites with low levels of nutrients and could serve as indicators of good ecological status of waters, as well as *P. natans* and *P. pusillus*. *P. trichoides* and *P. berchtoldii* show similar optima, even though they have been reported as eutrophic species. Species which have the highest abundances in waters with high amounts of nutrients are *P. pectinatus* and *P. crispus*, while *P. nodosus* has broad

amplitude. However, small number of finding sites of certain species (*P. pusillus*, *P. trichoides* and *P. berchtoldii*) makes them less reliable as bioindicators.

## 8. References

1. Alegro, A. (2019) 'Report on fitting the Croatian classification method for macrophytes in rivers to the results of the completed intercalibration of the Eastern-Continental GIG (R-E2 and R-E3) 3.0', in. Hrvatske Vode, Zagreb.
2. Barkman, W. J., Doing, C. H. and Segal, A. S. (1964) 'Kritische Bemerkungen und Vorschläge zur Quantitativen Vegetationsanalyse', *Acta Botanica Neerlandica*, 13: 394–419.
3. Bolduan, B. R. et al. (1994) 'Potamogeton crispus – the other invader', *Lake and Reservoir Management*, 10(2): 113–125. doi: 10.1080/07438149409354182.
4. Braun-Blanquet, J. (1964) *Pflanzensoziologie, Grundzüge der Vegetationskunde*, 3rd ed, *Pflanzensoziologie*.
5. Caffrey, J. M. and Kemp, W. M. (1991) 'Seasonal and spatial patterns of oxygen production, respiration and root-rhizome release in *Potamogeton perfoliatus* L. and *Zostera marina* L.', *Aquatic Botany*, 40(2): 109–128.
6. Cirujano, S. et al. (2014) *Flora acuática Española*.
7. DGU (2021) Državna geodetska uprava. Available at: <https://dgu.gov.hr/> (Accessed: 30 August 2021).
8. Dierschke, H. (1994) *Pflanzensoziologie: Grundlagen und Methoden*. Stuttgart: Eugen Ulmer Verlag.
9. Duarte, C. M. (1995) 'Submerged aquatic vegetation in relation to different nutrient regimes', *Ophelia*, 41(1): 87–112. doi: 10.1080/00785236.1995.10422039.
10. Hastie, T. J. and Tibshirani, R. J. (2017) 'Generalized additive models', *Generalized Additive Models*, 1–335. doi: 10.1201/9780203753781/GENERALIZED-ADDITIVE-MODELS-HASTIE-TIBSHIRANI.
11. Haury, J. et al. (2006) 'A new method to assess water trophy and organic pollution - The Macrophyte Biological Index for Rivers (IBMR): Its application to different types of river and pollution', *Hydrobiologia*, 570(1): 153–158. doi: 10.1007/S10750-006-0175-3.

12. Hill, M. O. (1979) 'TWINSPAN-a FORTRAN program for multivariate data in an ordered two-way table by classification of the individuals and attributes', *Ecology and Systematics*.
13. Hill, M. O. and Gauch, H. G. (1980) 'Detrended Correspondence Analysis: An Improved Ordination Technique', *Classification and Ordination*, 47–58. doi: 10.1007/978-94-009-9197-2\_7.
14. Howard-Williams, C. and Allanson, B. R. (1981) 'Phosphorus cycling in a dense *Potamogeton pectinatus* L. Bed', *Oecologia*, 49(1): 56–66. doi: 10.1007/BF00376898.
15. Hrvatska Enciklopedija (2021a) Drava | Hrvatska enciklopedija, Leksikografski zavod Miroslav Krleža. Available at: <https://www.enciklopedija.hr/natuknica.aspx?ID=16202> (Accessed: 7 July 2021).
16. Hrvatska Enciklopedija (2021b) Kupa | Hrvatska enciklopedija, Leksikografski zavod Miroslav Krleža. Available at: <https://www.enciklopedija.hr/natuknica.aspx?id=34664> (Accessed: 7 July 2021).
17. Hrvatska Enciklopedija (2021c) Sava enciklopedija - Google Search, Leksikografski zavod Miroslav Krleža. Available at: <https://www.enciklopedija.hr/Natuknica.aspx?ID=54730> (Accessed: 7 July 2021).
18. Hrvatske vode (2016) Metodologija uzorkovanja, Laboratorijskih analiza i određivanja omjera ekološke kakvoće bioloških elemenata kakvoće. Zagreb: Hrvatske Vode.
19. Hrvatske vode (2021) Glavni vodnogospodarski laboratorij | Hrvatske vode. Available at: <https://www.voda.hr/hr/glavni-vodnogospodarski-laboratorij> (Accessed: 7 July 2021).
20. Litav, M. and Lehrer, Y. (1978) 'The effects of ammonium in water on *Potamogeton lucens*', *Aquatic Botany*, 5(C): 127–138. doi: 10.1016/0304-3770(78)90056-6.
21. Marion, L. and Paillisson, J. M. (2003) 'A mass balance assessment of the contribution of floating-leaved macrophytes in nutrient stocks in an eutrophic macrophyte-dominated lake', *Aquatic Botany*, 75(3): 249–260. doi: 10.1016/S0304-3770(02)00177-8.
22. Mesters, C. M. L. (1995) 'Shifts in macrophyte species composition as a result of eutrophication and pollution in Dutch transboundary streams over the past decades', *Journal of Aquatic Ecosystem Health*, 4(4): 295–305. doi: 10.1007/BF00118010.
23. Mitchell, D. S. (1974) *Aquatic Vegetation and Its Use and Control*. UNESCO.

24. Mucina, L. et al. (2016) 'Vegetation of Europe: hierarchical floristic classification system of vascular plant, bryophyte, lichen, and algal communities', *Applied Vegetation Science*, 19: 3–264. doi: 10.1111/avsc.12257.
25. Neundorfer, J. V. and Kemp, W. M. (1993) 'Nitrogen versus phosphorus enrichment of brackish waters: responses of the submersed plant *Potamogeton perfoliatus* and its associated algal community', *Marine Ecology Progress Series*, 94(1): 71–82. doi: 10.3354/meps094071.
26. O'Sullivan, P. E. and Reynolds, C. S. (2007) *The Lakes Handbook: Limnology and limnetic ecology*. doi: 10.1002/9780470750506.
27. Olodorff, S., Krautkrämer, V. and Kirschey, T. (2017) *Pflanzen in Süßwasser*. Stuttgart: Kosmos Verlag.
28. Peet, R. K. et al. (1988) 'Putting things in order: the advantage of detrended correspondence analysis', *American Naturalist*, 131(6): 924–934. doi: 10.1086/284833.
29. Pevalek-Kozlina, B. (2003) 'Fiziologija bilja', *Manualia Universitatis studiorum Zagradiensis*, (1).
30. Preston, C. D. (1995) 'Pondweeds of Great Britain and Ireland', 52(1), p. 251. doi: 10.2307/4117865.
31. R Core Team (2019) 'R: A language and environment for statistical computing'. Vienna: Foundation for Statistical Computing, Vienna, Austria. Available at: <https://www.r-project.org/>.
32. Regulation on water quality standards (in Croatian) (2019). Croatia. Available at: [https://narodne-novine.nn.hr/clanci/sluzbeni/2019\\_10\\_96\\_1879.html](https://narodne-novine.nn.hr/clanci/sluzbeni/2019_10_96_1879.html).
33. Roleček, J. et al. (2009) 'Modified TWINSpan classification in which the hierarchy respects cluster heterogeneity', *Journal of vegetation science*, 20(4): 596–602.
34. RStudio Team (2021) 'RStudio: Integrated Development for R'. PBC, Boston. Available at: <http://www.rstudio.com/>.
35. Ságová-Marecková, M. and Kvet, J. (1995) 'Effects of rooting medium on the growth and nutrient accumulation in *Potamogeton natans* L.', *Acta Botanica Gallica*, 142(6): 693–706. doi: 10.1080/12538078.1995.10515294.



36. Silva, T. S. F. et al. (2008) 'Remote sensing of aquatic vegetation: Theory and applications', *Environmental Monitoring and Assessment*, 140(1–3): 131–145. doi: 10.1007/s10661-007-9855-3.
37. Šmilauer, P. (2012) 'Canoco 5'. Available at: <http://www.canoco5.com/index.php>.
38. Takeda, F. et al. (2014) 'Effect of *Potamogeton pusillus* on Water Quality and Plankton Community', *Journal of Water and Environment Technology*, 12(4): 333–345. doi: 10.2965/jwet.2014.333.
39. Thompson, B. (1985) 'Canonical correlation analysis uses and interpretation', 8(6). doi: 10.1016/0191-8869(87)90162-0.
40. Tichý, L. (2011) 'Juice 7'. Brno. Available at: <https://www.sci.muni.cz/botany/juice/?idm=9>.
41. Tichy, L. and Chytrý, M. (2006) 'Statistical determination of diagnostic species for site groups of unequal size', *Journal of Vegetation Science*, 17(6): 809–818.
42. Vollenweider, R. A. (1989) 'Global problems of eutrophication and its control', in *Symp. Biol. Hung*, 19–41.
43. Vollenweider, R. A. and Kerekes, J. (1982) 'Eutrophication of waters. Monitoring, assessment and control', *Organization for Economic Co-Operation and Development (OECD)*, Paris, 156.
44. Weyer, K. van de et al. (2018) *Bestimmungsschlüssel für die aquatischen Makrophyten (Gefäßpflanzen, Armeleuchteralgen und Moose) in Deutschland*. Ministerium für Ländliche Entwicklung, Umwelt und Verbraucherschutz des Landes Brandenburg. Available at: <https://opus4.kobv.de/opus4-slbp/frontdoor/index/index/docId/4763>.
45. Wickham, H. (2009) *ggplot2: elegant graphics for data analysis*. Springer New York. doi: 10.1007/978-0-387-98141-3.
46. Wickham, H. et al. (2019) 'Welcome to the Tidyverse', *Journal of Open Source Software*, 4(43): 1686. doi: 10.21105/JOSS.01686.
47. Wood, S. N. (2017) *Generalized additive models: An introduction with R*, second edition, *Generalized Additive Models: An Introduction with R, Second Edition*. doi: 10.1201/9781315370279.

## 9. Curriculum Vitae

Nikola Geršak, born on 23. November 1996 in Zagreb has been living in Čakovec since childhood. There he has finished elementary school and high school for mathematics. He continued his studies on Faculty of forestry of University of Zagreb. After obtaining bachelor's in forestry, he signed up for master's in Environmental sciences on Faculty of science of University of Zagreb.

In first few years of studies, he was focused on volunteering in his leisure time, such as volunteering on music festivals or in the Electrical engineering student's club. In this club he had a chance to obtain a valuable organising, management, and workflow skills by organising student parties and concerts as well as to learn artistic DJ skill.

Still, on the masters he has put more effort to learn programmatic skills and work experience. During the pandemics he had a time to focus on programming in python and in 3<sup>rd</sup> semester he signed up for "Introduction to R programming language" subject on Faculty of electrical engineering and computing where he gained this valuable skill. This was a great basis for Erasmus internship in Madrid in his last semester in National institute for Agronomy research and technology (INIA) where he was working entirely in R to analyse the data concerning forest inventories.

Since the end of the 2<sup>nd</sup> semester of masters, he is working as a student intern in a company in the field of sustainable development and environmental protection – Dvokut-ecro ltd.

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I would like to acknowledge my colleagues from my internship at Dvokut-ecro ltd. Your wonderful collaboration and supportiveness pushed me to finish this journey.

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Appendix 1 - The input data

| No. | Station   | Code - Croatian Waters | Stream   | Year | x         | y          | Alkalinity (mgCaCO3/l) | Electrical conductivity (µS/cm) | pH   | Total suspended matter (mg/l) | Temperature | Water hardness (mgCaCO3/l) | DOC (mgC/l) |
|-----|---|------------------------|--|------|-----------|------------|------------------------|---------------------------------|------|-------------------------------|-------------|----------------------------|-------------|
| 1   | Rogstrug, Podravske Sesvete   | 21077                  | Rogstrug   | 2016 | 557853    | 5095768    | 277.17                 | 557.67                          | 7.96 | 5.08                          | 12.94       | 286.33                     |             |
| 2   | Bistrec-Rakovnica II, most na putu polj.dobra D.Dubrava-Kotoriba          | 21050                  | Bistrec  | 2016 | 523783    | 5133214    | 299.42                 | 717.33                          | 8.03 | 14.91                         | 12.34       | 361.25                     |             |
| 3   | Blatnica, Blatnica  | 16109                  | Blatnica   | 2016 | 439268    | 5041705    | 140.67                 | 291.31                          | 7.55 | 14.58                         | 14.16       | 145.17                     |             |
| 4   | Brebernica, Donja Kupčina   | 16111                  | Brebernica   | 2016 | 448640    | 5048082    | 109.08                 | 224.14                          | 7.45 | 53.42                         | 13.79       | 146.17                     |             |
| 5   | Brodac, Peklenica, uz cestu kod osnovne škole                             | 21054                  | Brodac   | 2016 | 498078    | 5150848    | 206.42                 | 482.17                          | 7.92 | 5.00                          | 11.79       | 198.58                     |             |
| 6   | Drava, Ormož  | 29160                  | Drava  | 2016 | 473461    | 5140405    | 116.75                 | 284.36                          | 8.01 | 13.08                         | 23.79       | 138.94                     |             |
| 7   | Glogovnica, prije utoka u Česmu   | 15371                  | Glogovnica   | 2016 | 499190    | 5079988    | 154.17                 | 586.56                          | 7.82 | 36.44                         | 15.59       | 267.28                     |             |
| 8   | Gostiraj, Ježdovec  | 51125                  | Gostiraj   | 2016 | 448484    | 5071592    | 261.92                 | 669.08                          | 8.09 | 25.75                         | 14.08       | 296.83                     |             |
| 9   | Kotoripki kanal, most Donja Dubrava – utok kanala Senešnjak               | 21046                  | Kotoripki kanal                                    | 2016 | 524294    | 5133954    | 305.67                 | 692.33                          | 7.72 | 7.73                          | 12.65       | 334.75                     |             |
| 10  | Krapina, Beđekovića   | 17004                  | Krapina  | 2016 | 460787    | 5099822    | 288.00                 | 597.25                          | 8.13 | 14.88                         | 11.80       | 315.03                     |             |
| 11  | Krapina, Kupljenovo   | 17008                  | Krapina  | 2016 | 447116    | 5088518    | 279.00                 | 628.17                          | 8.09 | 15.15                         | 12.74       | 310.11                     |             |
| 12  | Lonja, Lipovec Lonjski  | 15480                  | Lonja  | 2016 | 489903    | 5067350    | 210.83                 | 534.67                          | 7.89 | 84.33                         | 12.65       | 309.25                     |             |
| 13  | Martince, Beđekovića  | 51157                  | Martince   | 2016 | 461968    | 5100918    | 369.17                 | 663.08                          | 7.82 | 17.08                         | 12.53       | 405.33                     |             |
| 14  | Katina  | 15157                  | Katina   | 2016 | 477268    | 5078212    | 253.17                 | 634.17                          | 7.84 | 4.08                          | 10.43       | 354.58                     |             |
| 15  | Radonja, Tušilović  | 16342                  | Radonja  | 2016 | 430246    | 5027233    | 190.00                 | 502.21                          | 7.88 | 4.75                          | 13.01       | 199.50                     |             |
| 16  | Rečica, prije utoka u Kupu  | 16103                  | Rečica   | 2016 | 434829    | 5038250    | 142.33                 | 296.61                          | 7.65 | 9.67                          | 13.16       | 147.08                     |             |
| 17  | Reka, Domagovac   | 16228                  | Reka   | 2016 | 433352    | 5055177    | 243.08                 | 476.00                          | 8.06 | 32.83                         | 13.56       | 315.67                     |             |
| 18  | Ruševice, kod mjesta Ribici   | 16803                  | Ruševice   | 2016 | 439083    | 5006577    | 209.83                 | 407.23                          | 7.64 | 4.67                          | 12.22       | 228.92                     |             |
| 19  | Spojni kanal Zelina-Lonja-Glogovnica-Česma, crp. st. Poljanski Lug        | 15592                  | Spojni kanal Zelina-Lonja-Glogovnica-Česma         | 2016 | 493331    | 5074872    | 233.58                 | 553.08                          | 7.81 | 18.75                         | 12.13       | 311.92                     |             |
| 20  | Spojni kanal (vrt749), Jastrebarsko-Domagović                             | 16241                  | Spojni kanal (vrt749), Jastrebarsko-Domagović      | 2016 | 433993    | 5054431    | 224.33                 | 561.07                          | 7.64 | 27.17                         | 13.91       | 284.67                     |             |
| 21  | Stari Crmec, Vrbovec  | 15557                  | Stari Crmec  | 2016 | 497735    | 50800713   | 251.83                 | 544.08                          | 7.88 | 23.67                         | 11.83       | 333.33                     |             |
| 22  | Toplica, nizvodno od Daruvara   | 15231                  | Toplica  | 2016 | 554068    | 5050445    | 137.93                 | 476.67                          | 7.70 | 21.33                         | 13.81       | 263.03                     |             |
| 23  | Volavčica, Domagović  | 16227                  | Volavčica  | 2016 | 432456    | 5055217    | 248.25                 | 483.15                          | 8.11 | 37.92                         | 13.43       | 309.75                     |             |
| 24  | Zelina, Laktec  | 15590                  | Zelina   | 2016 | 479560    | 5080019    | 266.17                 | 631.08                          | 7.89 | 6.08                          | 10.18       | 354.75                     |             |
| 25  | Bošak II, most na cesti Domašinec - Kvitrovec                             | 21052                  | Bošak II   | 2016 | 507472    | 5143266    | 98.67                  | 386.83                          | 7.64 | 7.58                          | 11.87       | 178.25                     |             |
| 26  | Kupa, Donje Mekuše  | 16010                  | Kupa   | 2016 | 429470    | 5038981    | 176.90                 | 349.75                          | 8.05 | 4.22                          | 15.28       | 192.13                     |             |
| 27  | Kupa, Jamnička Kiselica   | 16004                  | Kupa   | 2016 | 449858    | 5045490    | 179.58                 | 357.93                          | 8.03 | 4.51                          | 15.06       | 196.18                     |             |
| 28  | Kupa, Mala Gorica   | 16202                  | Kupa   | 2016 | 479748    | 5037509    | 176.30                 | 354.00                          | 8.01 | 6.82                          | 16.97       | 193.38                     |             |
| 29  | Kupčina, Donja Kupčina  | 16225                  | Kupčina  | 2016 | 444466    | 5043830    | 138.50                 | 298.79                          | 7.68 | 23.92                         | 14.21       | 211.08                     |             |
| 30  | Glina, nizvodno od Brusovače  | 16219                  | Glina  | 2016 | 462454    | 5080851    | 222.99                 | 451.15                          | 7.94 | 3.56                          | 13.21       | 245.62                     |             |
| 31  | Glina, Glina  | 16221                  | Glina  | 2016 | 467296    | 5021876    | 194.83                 | 408.93                          | 8.05 | 8.70                          | 13.34       | 214.52                     |             |
| 32  | Glina, Skela  | 16229                  | Glina  | 2016 | 463509    | 5020062    | 241.75                 | 390.88                          | 8.03 | 5.00                          | 14.99       | 237.25                     |             |
| 33  | Bistra Koprivnička, most kod Molvi  | 21079                  | Bistra Koprivnička                                 | 2016 | 541012    | 5109555    | 269.17                 | 589.67                          | 7.68 | 6.19                          | 13.38       | 273.42                     |             |
| 34  | Česma, Sišćani  | 15354                  | Česma  | 2016 | 510900    | 5076317    | 137.60                 | 501.11                          | 7.77 | 47.56                         | 15.10       | 238.19                     |             |
| 35  | Horvatska, Veliko Trgovišće   | 17103                  | Horvatska  | 2016 | 450139    | 5096157    | 315.42                 | 582.00                          | 7.92 | 18.08                         | 13.72       | 338.00                     |             |
| 36  | Ždralica, Ždrala  | 21107                  | Ždralica   | 2016 | 549861    | 5114742    | 310.50                 | 714.75                          | 7.65 | 12.60                         | 8.78        | 382.88                     |             |
| 37  | Ilova, most na cesti Tomašića - Sokolovac                                 | 15223                  | Ilova  | 2017 | 539014    | 5030368    | 242.33                 | 490.00                          | 7.87 | 69.53                         | 13.61       | 247.42                     |             |
| 38  | Slabošćina, Okučani   | 15488                  | Slabošćina   | 2017 | 554683    | 5013690    | 152.26                 | 313.08                          | 7.89 | 8.17                          | 13.24       | 132.51                     |             |
| 39  | Ulinja, Vratčko (prije utoka u Kupu)                                      | 16746                  | Ulinja   | 2017 | 446631    | 5036160    | 257.00                 | 506.60                          | 7.97 | 6.60                          | 15.75       | 237.06                     |             |
| 40  | Velika, uzvodno od Pomanovca  | 17305                  | Velika   | 2017 | 465372    | 5101622    | 305.80                 | 573.00                          | 7.90 | 7.02                          | 17.62       | 327.44                     |             |
| 41  | Vučica, Petrijevci  | 21007                  | Vučica   | 2017 | 657695    | 5055049    | 254.44                 | 542.11                          | 7.72 | 25.89                         | 15.49       | 276.00                     |             |
| 42  | Vučica, Marjančani  | 21020                  | Vučica   | 2017 | 647962    | 5057010    | 220.83                 | 486.00                          | 7.80 | 78.75                         | 13.16       | 237.85                     |             |
| 43  | Slatinska Čadavica, Čadavica  | 21033                  | Slatinska Čadavica                                 | 2017 | 605619    | 5067497    | 324.40                 | 852.40                          | 7.62 | 24.70                         | 15.16       | 363.20                     |             |
| 44  | Bistra, jugozapadno od Darde  | 21038                  | Bistra   | 2017 | 667545    | 5054356    | 381.67                 | 857.00                          | 7.52 | 11.11                         | 15.99       | 427.11                     |             |
| 45  | Voća, Ribić Breg  | 21120                  | Voća   | 2017 | 471698    | 5123605    | 263.33                 | 443.33                          | 7.43 | 16.33                         | 20.17       | 265.33                     |             |
| 46  | Zararivca, Zararivca  | 21121                  | Zararivca  | 2017 | 465324    | 5121772    | 258.75                 | 459.00                          | 7.43 | 14.75                         | 19.30       | 262.90                     |             |
| 47  | Segovina, Delekovac   | 21126                  | Segovina   | 2017 | 527341    | 5122546    | 263.00                 | 535.50                          | 7.73 | 5.60                          | 17.15       | 285.50                     |             |
| 48  | Išćerica, Šepinovići  | 21205                  | Išćerica   | 2017 | 621678    | 5050046    | 213.89                 | 477.22                          | 7.79 | 19.78                         | 15.45       | 248.00                     |             |
| 49  | Našička rijeka, Jelisavac   | 21209                  | Našička rijeka                                     | 2017 | 627322    | 5043746    | 237.22                 | 670.33                          | 7.87 | 25.11                         | 15.32       | 270.22                     |             |
| 50  | Vučica, most na cesti Staro Petrovo Polje - Zokov Gaj                     | 21314                  | Vučica   | 2017 | 616216    | 5054732    | 146.67                 | 294.00                          | 7.86 | 19.89                         | 15.23       | 164.44                     |             |
| 51  | potok Rakovica, Stmec   | 51132                  | Rakovica   | 2017 | 444662    | 5076059    | 269.50                 | 551.80                          | 7.30 | 10.35                         | 20.24       | 301.25                     |             |
| 52  | potok Vrapčak, nakon utoka Črnomera                                       | 51140                  | Vrapčak  | 2017 | 456344    | 5071502    | 189.00                 | 422.40                          | 7.85 | 30.08                         | 24.04       | 221.00                     |             |
| 53  | Lateralni kanal Adžamovka - Orjavanja, na cesti od Vrbove prema autocesti | 13009                  | Lateralni kanal Adžamovka - Orjavanja              | 2017 | 584802    | 5007398    | 327.16                 | 692.73                          | 7.93 | 57.12                         | 15.55       | 241.53                     |             |
| 54  | Orjavanja, ušće   | 13012                  | Orjavanja  | 2017 | 596887    | 4995795    |                        |                                 |      |                               |             |                            |             |
| 55  | Una, most na utoku  | 14001                  | Una  | 2017 | 532402    | 5013598    | 213.33                 | 443.33                          | 8.13 | 7.47                          | 7.60        | 237.57                     |             |
| 56  | Una, Hrvatska Kostanjica  | 14002                  | Una  | 2017 | 503908    | 5009126    | 214.00                 | 446.50                          | 8.25 | 8.40                          | 7.00        | 244.75                     |             |
| 57  | Svinica, Svinica otvoreno   | 16234                  | Svinica  | 2017 | 502428    | 5018769    | 248.80                 | 443.00                          | 7.87 | 12.44                         | 17.83       | 148.96                     |             |
| 58  | Subocka, Novi Grabovac  | 15496                  | Subocka  | 2017 | 537153    | 5028767    | 255.00                 | 491.00                          | 8.02 | 16.00                         | 15.13       | 247.50                     |             |
| 59  | Una, granica Bosanski Lovci   | 14005                  | Una  | 2017 | 489964    | 4989986    | 200.14                 | 435.57                          | 8.23 | 3.50                          | 15.65       | 228.36                     |             |
| 60  | Sutla, Harnica  | 18001                  | Sutla  | 2018 | 436684    | 5083915    | 242.29                 | 534.43                          | 8.14 | 34.36                         | 13.66       | 285.53                     |             |
| 61  | Odra II, Čička Poljana  | 21108                  | Odra   | 2018 | 474858    | 5059371    | 277.14                 | 609.86                          | 7.84 | 5.89                          | 15.67       | 341.74                     | 2.03        |
| 62  | Sutišće III   | 51159                  | Sutišće  | 2018 | 438909    | 5089362    | 256.25                 | 507.92                          | 7.78 | 21.73                         | 14.65       | 260.92                     |             |
| 63  | Rešetarica, Vrbje   | 10502                  | Rešetarica   | 2018 | 573410    | 5057329    | 296.25                 | 632.08                          | 7.91 | 12.68                         | 13.20       | 170.12                     | 2.50        |
| 64  | Zapadni lateralni kanal Bid polja, Poljanci prije utoka u Savu            | 12304                  | Zapadni lateralni kanal Bid polja                  | 2018 | 534218    | 5000885    | 213.04                 | 464.42                          | 7.91 | 13.25                         | 16.03       | 339.87                     |             |
| 65  | Lateralni kanal Adžamovka, Orjavanja - Lužani                             | 13008                  | Lateralni kanal Adžamovka                          | 2018 | 594571    | 5004269    | 237.75                 | 501.75                          | 7.89 | 32.79                         | 13.63       | 148.77                     |             |
| 66  | Londža, most u Pleternici   | 13200                  | Londža   | 2018 | 604003    | 5018043    | 172.17                 | 405.50                          | 7.80 | 301.67                        | 11.30       | 205.25                     | 4.18        |
| 67  | Karasića, Črnkovići   | 21012                  | Karasića   | 2018 | 639705    | 5064765    | 190.71                 | 405.43                          | 7.69 | 19.10                         | 14.01       | 198.79                     | 3.63        |
| 68  | Stara Drava - prema jezeru Sakadai, ustava Kopačevo                       | 21018                  | Stara Drava  | 2018 | 679310    | 5054635    | 296.67                 | 570.33                          | 8.01 | 11.58                         | 16.46       | 344.67                     |             |
| 69  | Karasića, cesta Čmac - Krčenići   | 21019                  | Karasića   | 2018 | 614126    | 5066430    | 181.25                 | 344.83                          | 7.88 | 26.67                         | 14.43       | 195.00                     | 4.46        |
| 70  | Karasića, nizvodno od Valpova   | 21021                  | Karasića   | 2018 | 651266    | 5058431    | 219.58                 | 446.17                          | 7.70 | 19.92                         | 13.55       | 235.67                     | 4.71        |
| 71  | Zupanjanski kanal, Vauka  | 21026                  | Zupanjanski kanal                                  | 2018 | 590839    | 5076171    | 343.75                 | 672.17                          | 7.68 | 13.00                         | 13.68       | 376.00                     |             |
| 72  | Spojni kanal Profesor Bella (Vojlovica-Vocinka - Drava), Čadavica         | 21035                  | Spojni kanal Profesor Bella                        | 2018 | 607626    | 5086848    | 219.17                 | 427.89                          | 7.75 | 34.92                         | 14.54       | 251.67                     |             |
| 73  | Lateralni kanal, most na cesti Čakovec - Mihovljan                        | 21042                  | Lateralni kanal, most na cesti Čakovec - Mihovljan | 2018 | 496304    | 5139701    |                        |                                 |      |                               |             |                            |             |
| 74  | Gliboki II, most kod Sigeteca   | 21082                  | Gliboki  | 2018 | 534432    | 5117292    | 268.08                 | 557.58                          | 7.93 | 5.08                          | 14.22       | 283.50                     | 3.95        |
| 75  | Donji obodni kanal HE Čakovec   | 21113                  | Donji obodni kanal HE Čakovec                      | 2018 | 497381    | 5129590    | 173.33                 | 385.00                          | 7.41 | 12.33                         | 13.40       | 196.67                     | 2.54        |
| 76  | Bistra, Krajnica  | 21125                  | Bistra   | 2018 | 551015    | 5102032    | 294.17                 | 578.58                          | 7.87 | 5.57                          | 13.92       | 308.08                     |             |
| 77  | Poganovečko - Kravički kanal, Josipovac                                   | 21214                  | Poganovečko - Kravički kanal                       | 2018 | 662896    | 5050910    | 329.58                 | 396.45                          | 8.01 | 13.08                         | 13.36       | 351.67                     |             |
| 78  | Obuhvatni kanal Đurđevac, Đurđevac  | 21216                  | Obuhvatni kanal Đurđevac                           | 2018 | 545017    | 5098221    | 161.25                 | 307.25                          | 7.79 | 21.85                         | 13.93       | 166.75                     |             |
| 79  | Zupanjanski kanal, Budurov Lučki  | 21223                  | Zupanjanski kanal                                  | 2018 | 576406    | 5085038    | 410.42                 | 611.65                          | 7.51 | 11.92                         | 13.11       | 421.67                     |             |
| 80  | Drava, Legnja   | 29141                  | Drava  | 2018 | 529130    | 5123673    | 129.00                 | 129.00                          | 8.03 | 9.50                          | 12.59       | 156.66                     | 1.29        |
| 81  | Nova Rijeka, most na cesti Staro Obradovo - Zokov Gaj                     | 21314                  | Nova Rijeka  | 2018 | 614617.69 | 5055389.2  | 132.07                 | 220.19                          | 7.89 | 66.97                         | 16.79       | 137.93                     | 3.10        |
| 82  | Kanal Lonja - Strug, cesta Okučani-St. Gradiska                           | 15488                  | Kanal Lonja - Strug                                | 2018 | 557076.76 | 5004032.34 | 206.38                 | 447.30                          | 7.87 | 126.50                        | 14.75       | 237.83                     | 8.84        |
| 83  | Zupanjanski kanal, Kapinici, 21015  | 21026                  | Zupanjanski kanal                                  | 2018 | 593942    | 5074988    | 331.63                 | 625.43                          | 7.89 | 37.60                         | 17.49       | 340.22                     | 5.54        |
| 84  | Bobotski kanal, Ernestinovo   | 21031                  | Bobotski kanal                                     | 2018 | 668375    | 5037638    | 354.11                 | 846.43                          | 8.20 | 39.09                         | 15.50       | 385.83                     | 7.46        |
| 85  | Ovdojni kanal HE Varaždin, Vara   |                        |  |      |           |            |                        |                                 |      |                               |             |                            |             |

| No. | Station   | Code - Croatian Waters | Stream                                     | Year | x      | y       | Alkalinity (mgCaCO3/l) | Electrical conductivity (µS/cm) | pH   | Total suspended materia (mg/l) | Temperature | Water hardness (mgCaCO3/l) | DOC (mgC/l) |
|-----|---|------------------------|--|------|--------|---------|------------------------|---------------------------------|------|--------------------------------|-------------|----------------------------|-------------|
| 122 | Stari Črnc, Vrbovec   | 15357                  | Stari Črnc                                 | 2020 | 497735 | 5080713 | 320.25                 | 581.92                          | 7.19 | 26.42                          | 13.57       | 291.75                     |             |
| 123 | Zelina, Laktec  | 15590                  | Zelina                                     | 2020 | 479560 | 5080019 | 321.18                 | 720.45                          | 7.94 | 8.52                           | 13.51       | 350.36                     |             |
| 124 | Zelina, Božjakovina   | 15591                  | Zelina                                     | 2020 | 483260 | 5075436 | 282.30                 | 637.20                          | 7.93 | 13.83                          | 14.65       | 309.30                     | 4.46        |
| 125 | Spojni kanal Zelina-Lonja-Glogovnica-Česma, crp.st. Poljanski Lu  | 15592                  | Spojni kanal Zelina-Lonja-Glogovnica-Česma | 2020 | 493531 | 5074872 | 281.11                 | 597.00                          | 7.79 | 32.78                          | 14.59       | 296.89                     | 4.89        |
| 126 | Sainik, na cesti Rakovec - Samoborec                              | 15597                  | Sainik                                     | 2020 | 485889 | 5086229 | 214.17                 | 361.50                          | 6.94 | 24.50                          | 11.64       | 214.42                     |             |
| 127 | Kupa, Šišinec   | 16003                  | Kupa                                       | 2020 | 466999 | 5034260 | 204.90                 | 353.50                          | 8.33 | 2.00                           | 15.77       | 208.00                     | 1.41        |
| 128 | Kupa, Jamnička Kiselica   | 16004                  | Kupa                                       | 2020 | 449858 | 5045489 | 203.60                 | 360.10                          | 8.25 | 2.12                           | 15.81       | 211.80                     | 1.37        |
| 129 | Kupa, Donje Mekušje   | 16010                  | Kupa                                       | 2020 | 429470 | 5038981 | 195.10                 | 350.10                          | 8.23 | 2.00                           | 16.22       | 205.20                     | 1.18        |
| 130 | Rečica, prije utoka u Kupu  | 16103                  | Rečica                                     | 2020 | 434829 | 5038250 | 168.75                 | 372.83                          | 7.61 | 29.92                          | 11.13       | 177.42                     |             |
| 131 | Skopljak, Gradec Pokupski   | 16106                  | Skopljak                                   | 2020 | 450566 | 5045385 | 334.67                 | 896.78                          | 6.91 | 19.17                          | 11.63       | 185.83                     |             |
| 132 | Veliki Potok, Bukovci   | 16107                  | Veliki Potok                               | 2020 | 465450 | 5035442 | 204.83                 | 345.50                          | 7.86 | 7.68                           | 12.33       | 225.75                     |             |
| 133 | Blatnica, Blatnica  | 16109                  | Blatnica                                   | 2020 | 439268 | 5041705 | 178.08                 | 354.67                          | 7.53 | 31.67                          | 11.02       | 187.42                     |             |
| 134 | Trepča, Trepča (vodotok)  | 16110                  | Trepča                                     | 2020 | 455138 | 5037126 | 104.64                 | 205.45                          | 7.81 | 8.80                           | 12.73       | 115.60                     | 3.76        |
| 135 | Brebernica, Donja Kupčina   | 16111                  | Brebernica                                 | 2020 | 443640 | 5048082 | 114.00                 | 202.83                          | 7.24 | 16.33                          | 12.34       | 116.42                     |             |
| 136 | Kupa, Mala Gorica   | 16202                  | Kupa                                       | 2020 | 479748 | 5037509 | 200.67                 | 368.58                          | 8.14 | 2.78                           | 16.51       | 211.67                     | 1.47        |
| 137 | Glina, nizvodno od Brusovače                                      | 16219                  | Glina                                      | 2020 | 442654 | 5008051 | 230.08                 | 420.75                          | 7.97 | 3.31                           | 12.94       | 250.08                     | 2.06        |
| 138 | Glina, Glina  | 16221                  | Glina                                      | 2020 | 467296 | 5021876 | 211.67                 | 393.83                          | 7.97 | 6.17                           | 14.19       | 223.75                     | 1.92        |
| 139 | Glina, Slana  | 16223                  | Glina                                      | 2020 | 470517 | 5032798 | 203.00                 | 374.08                          | 8.05 | 9.77                           | 13.36       | 239.00                     |             |
| 140 | Kupčina, Donja Kupčina  | 16225                  | Kupčina                                    | 2020 | 444466 | 5043830 | 171.58                 | 306.33                          | 7.06 | 40.17                          | 12.38       | 174.50                     |             |
| 141 | Volavčica, Domagović  | 16227                  | Volavčica                                  | 2020 | 432456 | 5055217 | 312.83                 | 545.67                          | 7.47 | 6.00                           | 13.81       | 339.58                     |             |
| 142 | Reka, Domagović   | 16228                  | Reka                                       | 2020 | 433552 | 5055177 | 324.25                 | 532.42                          | 7.51 | 7.00                           | 14.08       | 330.50                     |             |
| 143 | Glina, Skeča  | 16229                  | Glina                                      | 2020 | 463599 | 5020062 | 219.45                 | 418.00                          | 7.90 | 4.71                           | 14.05       | 251.00                     |             |
| 144 | Perna, most nizvodno od vodocipilišta                             | 16233                  | Perna                                      | 2020 | 453693 | 5014262 | 126.32                 | 230.55                          | 7.82 | 4.85                           | 11.95       | 158.30                     |             |
| 145 | Hotjica, Stari Farkašić   | 16240                  | Hotjica                                    | 2020 | 470611 | 5039434 | 156.88                 | 295.63                          | 7.80 | 14.89                          | 14.64       | 167.88                     |             |
| 146 | Spojni kanal (vt749), Jastrebarsko-Domagović                      | 16241                  | Spojni kanal vt749                         | 2020 | 433993 | 5054431 | 366.92                 | 702.08                          | 7.19 | 16.50                          | 14.12       | 339.50                     | 5.61        |
| 147 | Radonja, Tušilović  | 16342                  | Radonja                                    | 2020 | 430246 | 5027233 | 206.25                 | 381.58                          | 8.06 | 6.07                           | 14.63       | 223.42                     | 1.55        |
| 148 | Rusevica, kod mjesta Ribići                                       | 16803                  | Rusevica                                   | 2020 | 439083 | 5006577 | 210.25                 | 409.33                          | 7.83 | 17.33                          | 11.53       | 219.00                     |             |
| 149 | Krapina, Zaprešić   | 17001                  | Krapina                                    | 2020 | 447392 | 5077436 | 291.91                 | 598.73                          | 7.93 | 18.25                          | 13.35       | 321.45                     | 3.08        |
| 150 | Krapina, Bedekovina   | 17004                  | Krapina                                    | 2020 | 460878 | 5099822 | 307.60                 | 596.10                          | 7.96 | 15.49                          | 11.27       | 327.10                     | 3.52        |
| 151 | Krapina, Krapina selo - most                                      | 17005                  | Krapina                                    | 2020 | 476898 | 5107262 | 298.20                 | 585.70                          | 8.00 | 15.13                          | 12.36       | 318.20                     |             |
| 152 | Krapina, Kupljenovo   | 17008                  | Krapina                                    | 2020 | 447116 | 5088518 | 292.83                 | 604.42                          | 7.92 | 17.90                          | 12.74       | 326.00                     | 3.14        |
| 153 | Luka, Luka  | 17012                  | Luka                                       | 2020 | 447572 | 5091128 | 367.50                 | 631.58                          | 6.97 | 22.50                          | 11.86       | 355.50                     |             |
| 154 | Horvatska, Tuhej  | 17102                  | Horvatska                                  | 2020 | 442386 | 5104207 | 331.67                 | 589.33                          | 7.83 | 34.17                          | 12.36       | 353.83                     |             |
| 155 | Kosteljska, Jalje   | 17113                  | Kosteljska                                 | 2020 | 449845 | 5099703 | 305.42                 | 592.92                          | 7.73 | 60.58                          | 14.39       | 335.00                     | 2.93        |
| 156 | Vučica, Petrijevci  | 21007                  | Vučica                                     | 2020 | 657695 | 5055049 | 237.50                 | 522.67                          | 7.75 | 10.83                          | 12.38       | 259.67                     |             |
| 157 | Vučica, Marjančaci  | 21020                  | Vučica                                     | 2020 | 647962 | 5057010 | 252.17                 | 508.33                          | 7.80 | 11.19                          | 14.78       | 266.67                     | 4.27        |
| 158 | Našička rijeka, Ribnjak - uzvodno od ustave                       | 21036                  | Našička rijeka                             | 2020 | 628455 | 5047079 | 184.17                 | 499.00                          | 8.32 | 22.42                          | 13.58       | 207.08                     |             |
| 159 | Lateralni kanal, most na cesti Čakovec - Mihovljan                | 21042                  | Lateralni kanal                            | 2020 | 496304 | 5139701 | 139.17                 | 418.08                          | 7.85 | 14.59                          | 12.90       | 159.83                     | 9.18        |
| 160 | Bistrec-Rakovnica II, most na putu polj.darna D, Dubrava-Kotoriba | 21050                  | Bistrec-Rakovnica II                       | 2020 | 523783 | 5133214 | 450.17                 | 719.75                          | 7.86 | 5.63                           | 13.20       | 300.58                     | 1.00        |
| 161 | Bošak II, most na cesti Domašinec - Kvitrovec                     | 21052                  |  | 2020 | 507472 | 5143266 | 99.83                  | 391.00                          | 7.45 | 5.00                           | 13.15       | 160.67                     |             |
| 162 | Brodac, Peklenica, uz cestu kod ost. škole                        | 21054                  | Brodac                                     | 2020 | 498078 | 5150848 | 181.92                 | 463.50                          | 7.72 | 5.00                           | 12.80       | 187.58                     |             |
| 163 | Rogstrug, Podravske Sesvete                                       | 21077                  | Rogstrug                                   | 2020 | 557689 | 5095742 | 253.08                 | 556.83                          | 8.28 | 5.00                           | 12.93       | 276.17                     |             |
| 164 | Bistra Koprivnička, most kod Molvi                                | 21079                  | Bistra Koprivnička                         | 2020 | 541012 | 5109555 | 224.92                 | 600.17                          | 7.55 | 6.22                           | 13.23       | 253.33                     |             |
| 165 | Drava, Ormož  | 29160                  | Drava                                      | 2020 | 473461 | 5140405 | 130.00                 | 282.08                          | 7.95 | 18.95                          | 12.33       | 148.33                     | 1.23        |
| 166 | Gostiraj, Ježdovec  | 51125                  | Gostiraj                                   | 2020 | 448484 | 5071592 | 292.90                 | 709.50                          | 7.99 | 25.83                          | 14.66       | 270.70                     |             |

| No. | TOC (mgC/l) | Ammonium (mgN/l) | Inorganic nitrogen (mgN/l) | Non-ionized ammonium (mgNH3/l) | Nitrates (mgN/l) | Nitrites (mgN/l) | Organic nitrogen (mgN/l) | Total nitrogen (mgN/l) | Ortho-phosphates (mgP/l) | Total phosphates (mgP/l) | BOD (mgO2/l) | COD-Mn (mgO2/l) | Dissolved oxygen (mgO2/l) | Oxygen saturation (%) | Potamogeton bertholdii Fieber | Potamogeton crispus L. | Potamogeton lucens L. | Potamogeton nutans L. | Potamogeton nodosus Poir. | Potamogeton pectinatus L. |   |   |
|-----|-------------|------------------|----------------------------|--------------------------------|------------------|------------------|--------------------------|------------------------|--------------------------|--------------------------|--------------|-----------------|---------------------------|-----------------------|-------------------------------|------------------------|-----------------------|-----------------------|---------------------------|---------------------------|---|---|
| 1   | 0.12        |                  | 0.69                       |                                | 0.65             | 0.03             | 0.69                     | 1.38                   | 0.040                    | 0.088                    | 1.24         | 2.32            | 8.07                      | 75.55                 |                               |                        |                       |                       |                           | 6                         | 3 |   |
| 2   | 0.05        |                  | 3.55                       |                                | 3.48             | 0.03             | 1.14                     | 4.68                   | 0.018                    | 0.068                    | 1.18         | 1.10            | 9.40                      | 88.08                 |                               |                        |                       |                       |                           |                           | 5 |   |
| 3   | 0.65        |                  | 1.35                       | 0.009                          | 0.68             | 0.02             | 0.27                     | 1.56                   | 0.075                    | 0.272                    | 2.76         | 9.82            | 8.61                      | 79.56                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 4   | 0.59        |                  |                            |                                | 1.39             | 0.07             | 2.26                     | 0.162                  | 0.162                    | 0.226                    | 3.01         | 6.70            | 8.64                      | 79.42                 |                               |                        |                       |                       |                           |                           | 5 |   |
| 5   | 0.28        |                  | 2.96                       |                                | 2.60             | 0.08             | 0.82                     | 3.78                   | 0.046                    | 0.069                    | 1.53         | 1.90            | 9.16                      | 84.46                 |                               | 3                      |                       |                       |                           |                           | 3 |   |
| 6   | 0.03        |                  | 0.93                       | 0.003                          | 0.90             | 0.00             | 0.26                     | 1.19                   | 0.014                    | 0.048                    | 1.18         | 2.25            | 10.32                     | 95.75                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 7   | 0.57        |                  |                            | 0.018                          | 1.94             | 0.29             |                          | 3.70                   | 0.333                    | 0.561                    | 5.60         | 10.93           | 7.24                      | 70.09                 |                               |                        |                       |                       |                           |                           | 4 |   |
| 8   | 1.24        |                  |                            |                                | 2.91             | 0.22             |                          | 5.17                   | 0.387                    | 0.519                    | 4.63         | 5.90            | 9.39                      | 89.92                 |                               |                        |                       |                       |                           |                           | 4 |   |
| 9   | 4.09        |                  | 4.58                       |                                | 0.55             | 0.03             | 0.55                     | 5.03                   | 0.248                    | 0.451                    | 4.04         | 3.57            | 6.82                      | 63.43                 |                               | 6                      |                       |                       |                           |                           | 2 |   |
| 10  | 0.22        |                  | 1.32                       | 0.007                          | 1.03             | 0.06             | 0.47                     | 1.79                   | 0.094                    | 0.184                    | 2.19         | 3.57            | 9.63                      | 86.97                 |                               |                        |                       | 2                     |                           |                           |   |   |
| 11  | 0.32        |                  | 1.64                       | 0.010                          | 1.23             | 0.09             | 0.44                     | 2.07                   | 0.065                    | 0.167                    | 2.15         | 3.93            | 9.39                      | 86.44                 |                               | 4                      |                       |                       |                           |                           | 5 |   |
| 12  | 0.25        |                  |                            |                                | 2.33             | 0.05             |                          | 2.85                   | 0.295                    | 0.486                    | 2.97         | 8.45            | 8.56                      | 78.66                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 13  | 0.36        |                  |                            |                                | 0.97             | 0.08             |                          | 2.07                   | 0.025                    | 0.116                    | 4.28         | 7.60            | 9.07                      | 82.06                 |                               | 4                      |                       |                       |                           |                           |   |   |
| 14  | 0.10        |                  |                            |                                | 1.85             | 0.04             |                          | 2.05                   | 0.090                    | 0.118                    | 1.91         | 3.64            | 10.33                     | 89.98                 |                               |                        |                       |                       |                           |                           | 6 |   |
| 15  | 0.09        |                  | 1.01                       | 0.004                          | 0.92             | 0.00             | 0.28                     | 1.29                   | 0.017                    | 0.070                    | 1.08         | 2.13            | 9.36                      | 87.42                 |                               |                        |                       | 5                     |                           |                           |   |   |
| 16  | 0.35        |                  | 1.21                       | 0.006                          | 0.84             | 0.01             | 0.24                     | 1.42                   | 0.052                    | 0.160                    | 3.22         | 7.16            | 9.17                      | 84.09                 |                               |                        | 3                     |                       |                           |                           | 3 |   |
| 17  | 0.18        |                  |                            |                                | 1.15             | 0.04             |                          | 1.49                   | 0.123                    | 0.192                    | 2.89         | 4.60            | 10.56                     | 98.46                 |                               | 2                      |                       |                       |                           |                           | 2 |   |
| 18  | 0.10        |                  | 0.79                       | 0.003                          | 0.69             | 0.00             | 0.29                     | 1.08                   | 0.011                    | 0.040                    | 1.45         | 2.68            | 10.08                     | 91.30                 |                               | 2                      |                       |                       |                           |                           | 6 |   |
| 19  | 0.37        |                  |                            |                                | 1.70             | 0.07             |                          | 2.37                   | 0.343                    | 0.444                    | 3.00         | 6.67            | 8.77                      | 79.01                 |                               |                        |                       |                       |                           |                           | 4 |   |
| 20  | 2.04        |                  |                            |                                | 0.67             | 0.05             |                          | 3.68                   | 0.314                    | 0.414                    | 3.04         | 6.40            | 6.66                      | 60.84                 |                               | 4                      |                       |                       |                           |                           | 5 |   |
| 21  | 1.27        |                  |                            |                                | 1.63             | 0.08             |                          | 3.45                   | 0.659                    | 0.920                    | 3.15         | 7.01            | 7.78                      | 68.56                 |                               | 2                      |                       |                       |                           |                           | 3 |   |
| 22  | 0.82        |                  |                            | 0.012                          | 1.28             | 0.11             |                          | 3.07                   | 0.224                    | 0.356                    | 7.13         | 8.72            | 7.39                      | 70.02                 |                               |                        |                       |                       |                           |                           | 9 |   |
| 23  | 0.08        |                  |                            |                                | 1.03             | 0.02             |                          | 1.24                   | 0.077                    | 0.148                    | 2.66         | 4.63            | 10.69                     | 100.00                |                               |                        |                       |                       |                           |                           | 8 |   |
| 24  | 0.54        |                  |                            |                                | 1.70             | 0.10             |                          | 2.55                   | 0.160                    | 0.220                    | 2.49         | 4.28            | 8.92                      | 76.37                 |                               |                        |                       |                       |                           |                           |   |   |
| 25  | 0.06        |                  | 13.25                      |                                | 13.15            | 0.05             | 3.70                     | 16.94                  | 0.020                    | 0.064                    | 1.32         | 1.34            | 9.90                      | 91.45                 |                               |                        |                       |                       |                           |                           | 6 |   |
| 26  | 0.02        |                  | 0.65                       | 0.001                          | 0.63             | 0.00             | 0.18                     | 0.83                   | 0.005                    | 0.023                    | 0.69         | 1.57            | 10.68                     | 99.73                 |                               |                        |                       |                       |                           |                           | 4 |   |
| 27  | 0.03        |                  | 0.68                       | 0.001                          | 0.65             | 0.00             | 0.24                     | 0.92                   | 0.012                    | 0.036                    | 0.69         | 1.82            | 10.68                     | 100.41                |                               |                        |                       |                       |                           |                           | 3 |   |
| 28  | 0.02        |                  | 0.69                       | 0.001                          | 0.66             | 0.01             | 0.27                     | 0.96                   | 0.019                    | 0.054                    | 1.11         | 2.56            | 10.43                     | 101.04                |                               |                        |                       |                       |                           |                           | 3 |   |
| 29  | 0.22        |                  |                            |                                | 0.81             | 0.03             |                          | 1.21                   | 0.096                    | 0.144                    | 2.80         | 7.48            | 7.93                      | 72.63                 |                               |                        |                       |                       |                           |                           | 5 |   |
| 30  | 0.03        |                  | 0.37                       | 0.001                          | 0.34             | 0.00             | 0.20                     | 0.57                   | 0.010                    | 0.043                    | 0.65         | 2.22            | 9.71                      | 87.96                 |                               |                        |                       |                       |                           |                           | 8 |   |
| 31  | 0.02        |                  | 0.88                       | 0.001                          | 0.85             | 0.01             | 0.25                     | 1.13                   | 0.022                    | 0.069                    | 0.86         | 2.48            | 10.42                     | 97.89                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 32  | 0.16        |                  |                            | 0.005                          | 0.85             | 0.02             | 1.20                     | 0.023                  | 0.061                    | 0.200                    | 3.01         | 9.45            | 91.35                     |                       |                               |                        |                       |                       |                           |                           | 3 |   |
| 33  | 0.22        |                  | 0.84                       |                                | 0.67             | 0.04             | 0.55                     | 1.39                   | 0.225                    | 0.363                    | 1.20         | 2.47            | 6.12                      | 57.27                 |                               |                        |                       |                       |                           |                           | 7 |   |
| 34  | 0.51        |                  |                            | 0.010                          | 1.97             | 0.25             |                          | 3.80                   | 0.208                    | 0.397                    | 8.03         | 14.12           | 7.93                      | 75.10                 |                               | 2                      |                       |                       |                           |                           | 5 |   |
| 35  | 0.20        |                  |                            |                                | 1.03             | 0.07             |                          | 1.73                   | 0.025                    | 0.143                    | 3.95         | 5.77            | 8.70                      | 81.84                 |                               | 4                      |                       |                       |                           |                           | 2 |   |
| 36  | 0.01        |                  | 0.11                       | 0.000                          | 0.10             | 0.00             | 0.35                     | 0.47                   | 0.016                    | 0.064                    | 2.53         | 4.46            | 7.26                      | 61.44                 |                               |                        |                       |                       |                           |                           | 2 |   |
| 37  | 0.09        |                  | 0.93                       | 0.001                          | 0.83             | 0.02             | 0.45                     | 1.39                   | 0.061                    | 0.301                    | 3.58         | 6.60            | 9.86                      | 94.61                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 38  | 0.05        |                  | 0.54                       | 0.002                          | 0.50             | 0.01             | 0.67                     | 1.21                   | 0.161                    | 0.689                    | 18.87        | 3.31            | 9.31                      | 88.26                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 39  | 0.26        |                  | 0.64                       | 0.010                          | 0.34             | 0.01             | 0.39                     | 1.03                   | 0.022                    | 0.060                    | 1.57         | 3.65            | 8.42                      | 83.81                 |                               | 5                      |                       |                       |                           |                           | 5 |   |
| 40  | 0.14        |                  | 0.52                       | 0.003                          | 0.35             | 0.03             | 0.88                     | 1.35                   | 0.013                    | 0.232                    | 1.27         | 4.15            | 8.93                      | 93.59                 |                               |                        |                       |                       |                           |                           | 7 |   |
| 41  | 0.19        |                  | 0.66                       |                                | 0.46             | 0.03             | 0.63                     | 1.29                   | 0.045                    | 0.108                    | 4.73         | 6.84            | 7.71                      | 76.18                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 42  | 0.17        |                  | 1.51                       | 0.003                          | 1.35             | 0.03             | 0.66                     | 2.17                   | 0.076                    | 0.368                    | 5.30         | 9.00            | 10.26                     | 97.94                 |                               |                        |                       |                       |                           |                           | 5 |   |
| 43  | 6.01        |                  | 6.02                       |                                | 0.15             | 0.04             | 2.08                     | 8.10                   | 1.124                    | 1.814                    | 10.20        | 12.78           | 2.25                      | 22.53                 |                               |                        |                       |                       |                           |                           |   |   |
| 44  | 0.16        |                  | 0.18                       |                                | 0.15             | 0.03             | 0.41                     | 0.59                   | 0.059                    | 0.096                    | 5.10         | 6.37            | 5.25                      | 51.38                 |                               | 2                      |                       |                       |                           |                           | 2 |   |
| 45  | 0.08        |                  | 0.26                       |                                | 0.19             | 0.01             | 0.24                     | 1.00                   | 0.025                    | 0.142                    | 1.92         | 3.21            | 4.84                      | 53.28                 |                               | 4                      |                       |                       |                           |                           | 4 |   |
| 46  | 0.50        |                  | 1.07                       |                                | 0.49             | 0.08             | 0.04                     | 1.00                   | 0.025                    | 0.125                    | 2.75         | 4.71            | 5.57                      | 60.50                 |                               | 8                      |                       |                       |                           |                           | 8 |   |
| 47  | 1.65        |                  | 1.93                       |                                | 0.19             | 0.10             | 1.87                     | 3.80                   | 0.250                    | 0.390                    | 3.30         | 7.71            | 5.06                      | 52.69                 |                               |                        |                       |                       |                           |                           | 2 |   |
| 48  | 0.11        |                  | 0.76                       |                                | 0.64             | 0.03             | 0.33                     | 1.09                   | 0.091                    | 0.153                    | 3.60         | 4.29            | 7.72                      | 75.73                 |                               | 2                      |                       |                       |                           |                           | 2 |   |
| 49  | 0.38        |                  | 4.52                       |                                | 3.99             | 0.12             | 0.38                     | 4.90                   | 0.834                    | 1.010                    | 4.77         | 5.83            | 8.86                      | 87.70                 |                               | 5                      |                       |                       |                           |                           | 5 |   |
| 50  | 0.16        |                  | 0.97                       |                                | 0.78             | 0.03             | 0.12                     | 1.09                   | 0.073                    | 0.133                    | 2.86         | 3.60            | 9.49                      | 92.96                 |                               |                        |                       |                       |                           |                           | 1 |   |
| 51  | 0.72        |                  | 1.45                       |                                | 0.67             | 0.08             | 1.40                     | 2.85                   | 0.217                    | 0.463                    | 3.33         | 1.75            | 5.79                      | 62.04                 |                               |                        |                       |                       |                           |                           | 7 |   |
| 52  | 0.65        |                  | 1.28                       |                                | 0.62             | 0.05             | 0.94                     | 2.18                   | 0.137                    | 0.270                    | 5.77         | 3.26            | 11.43                     | 133.26                |                               |                        |                       |                       |                           |                           | 6 |   |
| 53  | 0.07        |                  | 1.38                       | 0.002                          | 1.28             | 0.03             | 0.53                     | 1.91                   | 0.108                    | 0.685                    | 15.54        | 4.02            | 7.08                      | 69.52                 |                               |                        |                       |                       |                           |                           | 4 |   |
| 54  |             |                  |                            |                                |                  |                  |                          |                        |                          |                          |              |                 |                           |                       |                               |                        |                       |                       |                           |                           |   | 5 |
| 55  | 0.02        |                  | 0.83                       | 0.001                          | 0.80             | 0.01             | 0.12                     | 0.95                   | 0.014                    | 0.026                    | 1.30         | 1.90            | 11.40                     | 95.19                 |                               |                        |                       |                       |                           |                           | 3 |   |
| 56  | 0.01        |                  | 0.68                       | 0.000                          | 0.68             | 0.00             | 0.19                     | 0.87                   | 0.007                    | 0.019                    | 0.85         | 1.75            | 12.30                     | 100.06                |                               |                        |                       |                       |                           |                           | 3 |   |
| 57  | 0.21        |                  | 0.55                       | 0.008                          | 0.30             | 0.01             | 0.38                     | 0.93                   | 0.030                    | 0.074                    | 1.50         | 3.92            | 6.15                      | 63.28                 |                               | 2                      |                       |                       |                           |                           | 4 |   |
| 58  | 0.22        |                  | 0.67                       | 0.009                          | 0.34             | 0.01             | 0.26                     | 0.94                   | 0.010                    | 0.069                    | 2.70         | 4.36            | 9.42                      | 93.91                 |                               |                        |                       |                       |                           |                           | 2 |   |
| 59  | 0.01        |                  | 0.53                       | 0.000                          | 0.52             | 0.00             | 0.17                     | 0.70                   | 0.007                    | 0.034                    | 1.39         | 2.26            | 10.44                     | 103.91                |                               | 2                      |                       |                       |                           |                           |   |   |
| 60  | 3.07        | 0.07             | 1.40                       | 0.003                          | 1.31             | 0.03             | 0.37                     | 1.78                   | 0.037                    | 0.112                    | 2.01         | 4.23            | 10.21                     | 96.96                 |                               |                        |                       |                       |                           |                           | 2 |   |
| 61  | 2.45        | 0.02             | 2.19                       | 0.001                          | 2.15             | 0.02             | 0.29                     | 2.48                   | 0.013                    | 0.042                    | 1.59         | 3.04            | 8.65                      | 87.78                 |                               |                        |                       |                       |                           |                           | 6 |   |
| 62  | 7.91        | 0.51             | 2.52                       |                                | 1.89             | 0.13             | 0.25                     | 2.77                   | 0.349                    | 0.577                    | 5.20         | 11.74           | 9.53                      | 91.84                 |                               |                        |                       |                       |                           |                           |   |   |
| 63  | 3.59        | 0.30             | 1.17                       | 0.016                          | 0.86             | 0.02             | 4.36                     | 5.48                   | 0.069                    | 0.136                    | 3.13         | 3.68            | 9.67                      | 90.70                 |                               | 3                      |                       |                       |                           |                           | 3 |   |
| 64  | 8.49        | 0.18             | 0.72                       | 0.004                          | 0.54             | 0.02             | 2.60                     | 3.32                   | 0.149                    | 0.197                    | 4.60         | 8.69            | 10.53                     | 99.77                 |                               | 2                      |                       |                       |                           |                           | 4 |   |
| 65  | 4.09        | 0.24             | 1.96                       | 0.010                          | 1.66             | 0.06             | 3.81                     | 5.77                   | 0.109                    | 0.188                    | 4.59         | 4.52            | 8.69                      | 80.11                 |                               |                        |                       |                       |                           |                           | 4 |   |
| 66  | 5.01        | 0.10             | 1.71                       | 0.002                          | 1.58             | 0.04             | 0.47                     | 2.19                   | 0.061                    | 0.166                    | 9.53         | 15.90           | 11.07                     | 99.17                 |                               |                        |                       |                       |                           |                           | 5 |   |
| 67  | 4.20        | 0.08             | 1.14                       | 0.001                          | 1.04             | 0.01             | 0.34                     | 1.49                   | 0.063                    | 0.181                    | 2.87         | 5.14            | 7.87                      | 73.47                 |                               |                        |                       |                       |                           |                           | 5 |   |
| 68  | 6.81        | 0.12             | 0.39                       | 0.032                          | 0.01             | 0.68             | 1.08                     | 0.008                  | 0.068                    | 0.665                    | 7.76         | 11.39           | 115.03                    |                       |                               | 3                      |                       |                       |                           |                           |   |   |
| 69  | 5.53        | 0.13             | 0.71                       | 0.600                          | 0.01             | 0.59             | 1.31                     | 0.065                  | 0.116                    | 0.367                    | 5.13         | 9.27            | 87.61                     |                       |                               |                        |                       |                       |                           |                           | 6 |   |
| 70  | 5.00        | 0.14             | 0.76                       | 0.650                          | 0.02             | 0.36             | 1.03                     | 0.087                  | 0.146                    | 3.19                     | 5.08         | 7.32            | 65.07                     |                       |                               |                        | 5                     |                       |                           |                           | 7 |   |
| 71  | 5.87        | 0.31             | 0.90                       | 0.590                          | 0.03             | 0.30             | 1.20                     | 0.062                  | 0.121                    | 3.13                     | 6.03         | 6.08            | 55.14                     |                       |                               |                        |                       |                       |                           |                           | 6 |   |
| 72  | 5.27        | 0.35             | 0.62                       | 0.290                          | 0.01             | 0.32             | 0.94                     | 0.166                  | 0.249                    | 4.18                     | 5.13         | 9.09            | 86.52                     |                       |                               |                        |                       |                       |                           |                           | 6 |   |
| 73  |             |                  |                            |                                |                  |                  |                          |                        |                          |                          |              |                 |                           |                       |                               |                        |                       |                       |                           |                           |   | 3 |
| 74  | 4.16        | 0.04             | 0.81                       | 0.790                          | 0.01             | 0.54             | 1.35                     | 0.033                  | 0.084                    | 0.91                     | 3.61         | 8.22            | 78.30                     |                       |                               |                        |                       | 5                     |                           |                           |   |   |
| 75  | 4.05        | 1.27             | 1.66                       | 0.380                          | 0.04             | 0.88             | 2.49                     | 0.096                  |                          |                          |              |                 |                           |                       |                               |                        |                       |                       |                           |                           |   |   |

| No. | TOC (mg/l) | Amonium (mg/N/l) | Inorganic nitrogen (mg/N/l) | Non-ionized amonium (mgNH3/l) | Nitrates (mg/N/l) | Nitrites (mg/N/l) | Organic nitrogen (mg/N/l) | Total nitrogen (mg/N/l) | Ortho-phosphates (mgP/l) | Total phosphorus (mgP/l) | BOD (mgO2/l) | COD-Mn (mgO2/l) | Dissolved oxygen (mgO2/l) | Oxygen saturation (%) | <i>Potamogeton bercholdii</i> Fieber | <i>Potamogeton crispus</i> L. | <i>Potamogeton lucens</i> L. | <i>Potamogeton nutans</i> L. | <i>Potamogeton nodosus</i> Poir. | <i>Potamogeton pectinatus</i> L. |
|-----|------------|------------------|-----------------------------|-------------------------------|-------------------|-------------------|---------------------------|-------------------------|--------------------------|--------------------------|--------------|-----------------|---------------------------|-----------------------|--------------------------------------|-------------------------------|------------------------------|------------------------------|----------------------------------|----------------------------------|
| 122 | 7.96       | 2.41             |                             | 3.39                          | 0.91              | 0.07              | 1.28                      | 4.67                    | 0.712                    | 0.981                    | 2.67         | 7.85            | 6.04                      | 56.50                 |                                      |                               |                              |                              |                                  | 5                                |
| 123 | 4.27       | 0.39             |                             | 1.73                          | 0.008             | 1.27              | 0.07                      | 0.87                    | 2.59                     | 0.195                    | 0.371        | 4.21            | 6.16                      | 7.51                  | 68.13                                | 4                             |                              |                              |                                  | 5                                |
| 124 | 5.18       | 0.14             |                             | 1.29                          | 0.002             | 1.13              | 0.02                      | 1.37                    | 2.66                     | 0.129                    | 0.199        | 3.31            | 7.09                      | 9.87                  | 94.49                                |                               |                              |                              |                                  | 7                                |
| 125 | 6.22       | 0.31             |                             | 1.66                          | 0.005             | 1.29              | 0.06                      | 1.01                    | 2.67                     | 0.240                    | 0.563        | 6.09            | 9.98                      | 8.72                  | 82.40                                |                               |                              |                              |                                  | 6                                |
| 126 | 6.40       | 0.09             |                             | 0.86                          |                   | 0.75              | 0.02                      | 0.36                    | 1.23                     | 0.077                    | 0.207        | 2.44            | 6.06                      | 9.84                  | 88.86                                |                               |                              |                              |                                  | 2                                |
| 127 | 1.64       | 0.01             |                             | 0.55                          | 0.001             | 0.53              | 0.00                      | 0.20                    | 0.75                     | 0.007                    | 0.019        | 0.75            | 2.38                      | 10.96                 | 110.08                               |                               |                              |                              |                                  | 2                                |
| 128 | 1.62       | 0.01             |                             | 0.56                          | 0.001             | 0.54              | 0.00                      | 0.19                    | 0.75                     | 0.009                    | 0.020        | 1.01            | 2.48                      | 11.29                 | 114.49                               | 3                             |                              |                              |                                  | 3                                |
| 129 | 1.35       | 0.01             |                             | 0.55                          | 0.001             | 0.54              | 0.01                      | 0.16                    | 0.71                     | 0.005                    | 0.014        | 0.98            | 2.25                      | 10.40                 | 104.54                               | 2                             |                              |                              |                                  | 2                                |
| 130 | 11.78      | 0.55             |                             | 1.97                          | 0.006             | 1.40              | 0.01                      | 0.23                    | 2.20                     | 0.054                    | 0.272        | 2.32            | 10.48                     | 8.82                  | 77.49                                |                               |                              |                              |                                  | 5                                |
| 131 | 27.37      | 1.13             |                             | 1.89                          |                   | 0.67              | 0.09                      | 0.54                    | 2.43                     | 0.136                    | 0.272        | 3.51            | 9.39                      | 7.42                  | 65.07                                | 3                             |                              |                              |                                  |                                  |
| 132 | 7.28       | 0.36             |                             | 0.59                          | 0.007             | 0.22              | 0.02                      | 0.46                    | 1.04                     | 0.021                    | 0.092        | 3.12            | 10.71                     | 9.50                  | 86.33                                |                               |                              |                              |                                  | 3                                |
| 133 | 16.83      | 2.77             |                             | 4.51                          | 0.051             | 1.68              | 0.05                      | 1.55                    | 6.03                     | 0.515                    | 1.157        | 2.92            | 15.03                     | 6.99                  | 60.15                                |                               |                              |                              |                                  | 5                                |
| 134 | 4.75       | 0.02             |                             | 0.33                          | 0.000             | 0.30              | 0.00                      | 0.37                    | 0.70                     | 0.038                    | 0.093        | 3.32            | 6.95                      | 14.25                 | 139.81                               |                               |                              |                              |                                  | 3                                |
| 135 | 5.31       | 0.08             |                             | 0.48                          |                   | 0.39              | 0.01                      | 0.37                    | 0.85                     | 0.080                    | 0.113        | 2.33            | 4.90                      | 10.78                 | 99.39                                |                               |                              |                              |                                  | 2                                |
| 136 | 1.71       | 0.01             |                             | 0.63                          | 0.002             | 0.61              | 0.01                      | 0.21                    | 0.84                     | 0.021                    | 0.038        | 1.16            | 2.88                      | 11.62                 | 120.28                               |                               |                              |                              |                                  | 3                                |
| 137 | 2.53       | 0.02             |                             | 0.35                          | 0.001             | 0.34              | 0.00                      | 0.22                    | 0.57                     | 0.012                    | 0.033        | 1.31            | 3.76                      | 9.56                  | 87.48                                | 2                             |                              |                              |                                  | 5                                |
| 138 | 2.42       | 0.03             |                             | 0.64                          | 0.001             | 0.60              | 0.01                      | 0.38                    | 1.02                     | 0.027                    | 0.048        | 1.15            | 3.40                      | 10.29                 | 98.15                                |                               |                              | 6                            |                                  | 7                                |
| 139 | 3.67       | 0.28             |                             | 0.91                          | 0.008             | 0.61              | 0.03                      | 0.39                    | 1.30                     | 0.020                    | 0.081        | 2.63            | 5.33                      | 9.34                  | 86.58                                |                               |                              |                              |                                  | 3                                |
| 140 | 8.35       | 0.21             |                             | 0.75                          |                   | 0.52              | 0.02                      | 0.44                    | 1.18                     | 0.077                    | 0.127        | 2.79            | 7.55                      | 7.88                  | 70.99                                |                               |                              |                              |                                  | 6                                |
| 141 | 1.76       | 0.19             |                             | 0.92                          |                   | 0.71              | 0.02                      | 0.45                    | 1.37                     | 0.075                    | 0.113        | 1.76            | 2.67                      | 10.70                 | 103.27                               |                               |                              |                              |                                  | 3                                |
| 142 | 2.22       | 0.09             |                             | 0.94                          | 0.818             | 0.03              | 0.48                      | 1.41                    | 1.09                     | 0.141                    | 0.147        | 2.37            | 11.79                     | 115.25                |                                      | 3                             |                              |                              |                                  | 3                                |
| 143 | 2.86       | 0.27             |                             | 0.90                          | 0.007             | 0.62              | 0.02                      | 0.48                    | 1.39                     | 0.020                    | 0.073        | 2.40            | 3.14                      | 9.35                  | 88.74                                |                               |                              |                              |                                  | 6                                |
| 144 | 2.63       | 0.26             |                             | 0.43                          | 0.004             | 0.17              | 0.01                      | 0.45                    | 0.87                     | 0.020                    | 0.045        | 2.34            | 3.46                      | 9.36                  | 84.28                                | 6                             |                              |                              |                                  | 3                                |
| 145 | 9.90       | 0.02             |                             | 0.23                          | 0.000             | 0.21              | 0.00                      | 0.58                    | 0.81                     | 0.012                    | 0.032        | 6.29            | 14.86                     | 7.68                  | 73.52                                |                               |                              |                              |                                  | 4                                |
| 146 | 6.65       | 5.75             |                             | 6.14                          |                   | 0.34              | 0.05                      | 1.60                    | 7.08                     | 0.902                    | 1.336        | 1.99            | 5.64                      | 5.76                  | 54.52                                |                               |                              |                              |                                  | 5                                |
| 147 | 1.91       | 0.02             |                             | 0.70                          | 0.001             | 0.67              | 0.01                      | 0.23                    | 0.93                     | 0.011                    | 0.029        | 1.10            | 3.40                      | 9.43                  | 90.17                                |                               |                              |                              |                                  | 3                                |
| 148 | 3.55       | 0.18             |                             | 1.78                          | 0.004             | 1.59              | 0.01                      | 0.07                    | 1.84                     | 0.016                    | 0.076        | 1.58            | 2.68                      | 10.19                 | 91.89                                | 2                             |                              |                              |                                  | 5                                |
| 149 | 3.85       | 0.24             |                             | 1.57                          | 0.005             | 1.25              | 0.08                      | 0.61                    | 2.17                     | 0.057                    | 0.156        | 5.61            | 6.79                      | 9.45                  | 88.15                                |                               |                              |                              |                                  | 3                                |
| 150 | 4.38       | 0.28             |                             | 1.52                          | 0.007             | 1.17              | 0.07                      | 0.68                    | 2.20                     | 0.161                    | 0.234        | 6.18            | 7.11                      | 9.23                  | 81.79                                |                               |                              |                              |                                  | 5                                |
| 151 | 3.14       | 0.12             |                             | 1.18                          | 0.003             | 1.01              | 0.05                      | 0.57                    | 1.74                     | 0.042                    | 0.073        | 4.29            | 5.63                      | 9.76                  | 89.59                                | 6                             |                              |                              |                                  | 6                                |
| 152 | 3.94       | 0.42             |                             | 1.64                          | 0.009             | 1.13              | 0.09                      | 0.58                    | 2.22                     | 0.065                    | 0.172        | 6.41            | 7.18                      | 8.48                  | 77.79                                | 4                             |                              |                              |                                  | 5                                |
| 153 | 4.51       | 0.41             |                             | 2.00                          |                   | 1.53              | 0.07                      | 0.68                    | 2.67                     | 0.097                    | 0.220        | 2.26            | 4.33                      | 8.25                  | 73.24                                | 2                             |                              |                              |                                  | 4                                |
| 154 | 5.24       | 0.34             |                             |                               |                   | 0.96              | 0.04                      |                         | 1.80                     | 0.025                    | 0.170        | 3.28            | 6.59                      | 9.73                  | 89.02                                |                               |                              |                              | 3                                | 2                                |
| 155 | 4.62       | 0.60             |                             |                               |                   | 1.14              | 0.10                      |                         | 2.41                     | 0.057                    | 0.237        | 3.35            | 6.93                      | 7.56                  | 71.48                                |                               |                              |                              |                                  | 4                                |
| 156 | 8.20       | 0.19             |                             | 0.47                          |                   | 0.48              | 0.02                      | 0.56                    | 1.03                     | 0.045                    | 0.094        | 4.45            | 4.97                      | 8.50                  | 76.86                                |                               |                              |                              |                                  | 2                                |
| 157 | 5.38       | 0.27             |                             | 0.93                          | 0.009             | 0.60              | 0.06                      | 0.53                    | 1.45                     | 0.032                    | 0.135        | 5.14            | 7.08                      | 9.16                  | 87.96                                |                               |                              |                              |                                  | 5                                |
| 158 | 11.22      | 0.19             |                             | 0.75                          |                   | 0.64              | 0.06                      | 0.84                    | 1.58                     | 0.255                    | 0.310        | 6.01            | 6.98                      | 9.75                  | 90.88                                |                               |                              |                              |                                  | 1                                |
| 159 | 9.43       | 2.01             |                             | 4.84                          |                   | 2.68              | 0.15                      | 2.23                    | 6.55                     | 0.504                    | 0.753        | 3.74            | 6.59                      | 8.67                  | 78.88                                |                               |                              |                              |                                  | 6                                |
| 160 | 1.00       | 0.03             |                             | 4.94                          |                   | 4.88              | 0.03                      | 0.92                    | 5.86                     | 0.016                    | 0.056        | 1.13            | 1.11                      | 10.77                 | 103.38                               |                               |                              |                              |                                  | 8                                |
| 161 | 1.18       | 0.08             |                             | 17.47                         |                   | 17.33             | 0.06                      | 2.49                    | 19.93                    | 0.018                    | 0.061        | 1.33            | 1.30                      | 11.09                 | 104.87                               |                               |                              |                              |                                  | 4                                |
| 162 | 2.25       | 0.20             |                             | 3.46                          |                   | 3.18              | 0.09                      | 0.40                    | 3.86                     | 0.041                    | 0.092        | 1.32            | 2.03                      | 8.90                  | 83.49                                | 6                             |                              |                              |                                  | 2                                |
| 163 | 2.50       | 0.05             |                             | 0.79                          |                   | 0.73              | 0.02                      | 0.33                    | 1.05                     | 0.027                    | 0.060        | 0.92            | 2.93                      | 8.67                  | 80.88                                |                               |                              |                              |                                  | 8                                |
| 164 | 3.05       | 0.26             |                             | 1.44                          |                   | 1.19              | 0.02                      | 0.42                    | 1.48                     | 0.174                    | 0.301        | 1.48            | 4.08                      | 7.81                  | 72.88                                |                               |                              | 6                            |                                  | 6                                |
| 165 | 1.71       | 0.02             |                             | 0.89                          | 0.001             | 0.85              | 0.02                      | 0.21                    | 1.10                     | 0.012                    | 0.037        | 1.46            | 19.27                     | 10.37                 | 95.40                                |                               |                              |                              |                                  | 4                                |
| 166 | 4.30       | 0.58             |                             | 1.95                          | 0.010             | 1.20              | 0.17                      | 1.00                    | 2.95                     | 0.115                    | 0.344        | 7.69            | 9.49                      | 8.72                  | 85.99                                | 5                             |                              |                              |                                  | 5                                |

| No. | <i>Potamogeton perfoliatus</i> L. | <i>Potamogeton pusillus</i> L. | <i>Potamogeton trichoides</i> Cham. & Schtdl. | <i>Potamogeton</i> sp. | <i>Brachythecium mildeanum</i> Schimp. | <i>Brachythecium rivulare</i> Schimp. | <i>Brachythecium rutabulum</i> (Hedw.) Schimp. | <i>Bryum argenteum</i> Hedw. | <i>Bryum klinggraeffii</i> Schimp. | <i>Chiloscyphus pallescens</i> (Ehrh. ex Hoffm.) Dumort. | <i>Cinclidotus fontinaloides</i> (Hedw.) P. Beauv. | <i>Cinclidotus riparius</i> (Hos. ex Brid.) Arn. | <i>Cratoneuron filicinum</i> (Hedw.) Spruce | <i>Fissidens crassipes</i> Wilson ex Bruch & Schimp. | <i>Fissidens fontanus</i> (Bach. Pyl.) Steud. | <i>Fissidens</i> sp. |
|-----|-----------------------------------|--------------------------------|---|------------------------|--|---------------------------------------|--|------------------------------|------------------------------------|--|--|--|---|--|---|----------------------|
| 1   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 2   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 3   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 4   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 5   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 6   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 7   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 8   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 9   |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 10  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 11  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 12  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 13  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 14  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 15  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 16  |                                   |                                | 2   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 17  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 18  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 19  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 20  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 21  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 22  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 23  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 24  |                                   |                                |   |                        | 5                                      |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 25  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 26  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 27  |                                   | 3                              | 2   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 28  |                                   | 3                              | 4   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 29  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 30  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 31  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 32  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 33  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 34  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 35  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 36  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 37  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 38  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 39  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 40  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 41  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 42  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 43  |                                   | 3                              |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 44  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 45  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 46  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 47  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 48  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 49  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 50  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 51  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 52  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 53  |                                   |                                | 2   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 54  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 55  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 56  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 57  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   | 3                    |
| 58  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 59  | 2                                 |                                |   |                        |  | 2                                     | 2  | 2                            |                                    |  |  |  |   | 3  |   |                      |
| 60  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 61  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 62  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 63  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 64  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 65  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 66  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 67  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 68  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 69  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 70  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 71  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 72  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 73  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 74  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 75  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 76  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 77  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 78  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  | 6   |                      |
| 79  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 80  |                                   | 3                              |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 81  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 82  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 83  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 84  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 85  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  | 2   |                      |
| 86  |                                   | 3                              |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 87  |                                   | 7                              |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 88  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 89  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 90  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 91  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 92  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 93  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 94  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 95  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 96  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 97  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 98  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 99  |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 100 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 101 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 102 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 103 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 104 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 105 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 106 |                                   |                                | 2   |                        |  |                                       |  |                              |                                    |  |  |  |   |  | 3   |                      |
| 107 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 108 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 109 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 110 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 111 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 112 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 113 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 114 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 115 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 116 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 117 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 118 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 119 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 120 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 121 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |



| No. | <i>Potamogeton perfoliatus</i> L. | <i>Potamogeton pusillus</i> L. | <i>Potamogeton trichoides</i> Cham. & Schtdl. | <i>Potamogeton</i> sp. | <i>Brachythecium mildeanum</i> Schimp. | <i>Brachythecium rivulare</i> Schimp. | <i>Brachythecium rutabulum</i> (Hedw.) Schimp. | <i>Bryum argenteum</i> Hedw. | <i>Bryum klinggraeffii</i> Schimp. | <i>Chiloscyphus pallescens</i> (Ehrh. ex Hoffm.) Dumort. | <i>Cinclidotus fontinaloides</i> (Hedw.) P. Beauv. | <i>Cinclidotus riparius</i> (Hos. ex Brid.) Arn. | <i>Cratoneuron filicinum</i> (Hedw.) Spruce | <i>Fissidens crassipes</i> Wilson ex Bruch & Schimp. | <i>Fissidens fontanus</i> (Bach. Pyl.) Steud. | <i>Fissidens</i> sp. |
|-----|-----------------------------------|--------------------------------|---|------------------------|--|---------------------------------------|--|------------------------------|------------------------------------|--|--|--|---|--|---|----------------------|
| 122 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 123 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 124 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 125 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 126 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 127 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 128 |                                   | 6                              |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 129 |                                   | 3                              |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 130 |                                   | 2                              | 3   |                        |  |                                       |  |                              |                                    |  |  | 2  | 2   |  |   |                      |
| 131 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 132 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 133 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 134 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 135 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  | 3   |  |   | 5                    |
| 136 |                                   | 4                              |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 137 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  | 2  |  |   |  |   |                      |
| 138 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 139 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 140 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 141 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 142 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 143 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 144 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 145 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 146 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 147 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 148 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 149 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 150 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   | 5                    |
| 151 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 152 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 153 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 154 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 155 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 156 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 157 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 158 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 159 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 160 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 161 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 162 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 163 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 164 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 165 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |
| 166 |                                   |                                |   |                        |  |                                       |  |                              |                                    |  |  |  |   |  |   |                      |

| No. | <i>Fontinalis antipyretica</i> Hedw. | <i>Fontinalis hypnoides</i> Harm. var. <i>diariaei</i> (Schimp.) Husn. | <i>Leptobryum pyriforme</i> (Hedw.) Wilson | <i>Leptodictyum riparium</i> (Hedw.) Warnst. | <i>Marchantia polymorpha</i> L. | <i>Ocyrhynchium hians</i> (Hedw.) Loeske | <i>Pahstriaella falcata</i> (Brid.) Hedend. | <i>Pellia neesiana</i> (Götsche) Limpr. | <i>Pellia indivivifolia</i> (Dicks.) Dumort. | <i>Pellia</i> sp. | <i>Physcomitrella patens</i> (Hedw.) Bruch et Schimp. | <i>Pohlia melanodon</i> (Brid.) A. J. Shaw | <i>Rhynchostegium riparioides</i> (Hedw.) Cardot | <i>Riccia cavernosa</i> Hoffm. | <i>Riccia fluitans</i> L. | <i>Riccia rhenana</i> Lorb. ex Mull. Frib. | <i>Riccia</i> sp. | <i>Ricciocarpos natans</i> (L.) Corda |
|-----|--------------------------------------|--|--|--|---------------------------------|--|---|---|--|-------------------|---|--|--|--------------------------------|---------------------------|--|-------------------|---------------------------------------|
| 1   |                                      |  |  | 3  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   | 3                                     |
| 2   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 3   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 4   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 5   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 6   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 7   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 8   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 9   |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 10  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 11  |                                      |  |  | 3  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 12  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 13  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 14  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 15  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 16  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 17  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 18  | 3                                    |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 19  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 20  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 21  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 22  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 23  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 24  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 25  |                                      |  |  |  |                                 |  |   |   | 5  |                   |   |  |  |                                |                           |  |                   |                                       |
| 26  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 27  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 28  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 29  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 30  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 31  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 32  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 33  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 34  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 35  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 36  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 37  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 38  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 39  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 40  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 41  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 42  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 43  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 44  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 45  |                                      |  |  | 9  |                                 |  |   |   |  |                   |   |  |  |                                |                           | 3  |                   |                                       |
| 46  | 2                                    |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 47  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 48  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 49  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 50  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 51  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 52  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 53  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 54  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           | 3  |                   |                                       |
| 55  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 56  | 4                                    |  |  | 4  |                                 |  |   |   |  |                   |   |  |  | 3                              |                           |  |                   |                                       |
| 57  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 58  | 7                                    |  |  | 3  | 3                               | 2  | 4   | 3                                       | 2  |                   |   | 2  | 6  |                                |                           |  |                   |                                       |
| 59  | 4                                    |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 60  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 61  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 62  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 63  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 64  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 65  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 66  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 67  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 68  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 69  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 70  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 71  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 72  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 73  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 74  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 75  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 76  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 77  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   | 5                                     |
| 78  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 79  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 80  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 81  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 82  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 83  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 84  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 85  | 2                                    |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 86  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 87  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 88  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 89  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 90  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 91  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 92  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 93  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 94  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 95  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 96  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 97  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 98  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 99  |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 100 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 101 |                                      |  |  | 7  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 102 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 103 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 104 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 105 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 106 |                                      |  |  | 2  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 107 |                                      |  |  |  |                                 |  |   |   |  |                   | 2   |  |  | 2                              |                           |  |                   |                                       |
| 108 |                                      |  |  |  |                                 |  |   |   |  |                   | 2   |  |  |                                |                           |  |                   |                                       |
| 109 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 110 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 111 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 112 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 113 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 114 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 115 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 116 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 117 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 118 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 119 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 120 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 121 |                                      |  |  |  |                                 |  |   |   |  |                   |   |  |  |                                |                           |  |                   |                                       |

| No. | <i>Fontinalis antipyretica</i> Hedw. | <i>Fontinalis hypnoides</i> Harim. var. <i>duriae</i> (Schimp.) Husn. | <i>Leptobryum pyriforme</i> (Hedw.) Wilson | <i>Leptodictyum riparium</i> (Hedw.) Warnst. | <i>Marchantia polymorpha</i> L. | <i>Ocyrhynchium hians</i> (Hedw.) Loeske | <i>Pahstriaella falcata</i> (Brid.) Hedens | <i>Pellia neesiana</i> (Gotsche) Lampr. | <i>Pellia endivifolia</i> (Dicks.) Dumort. | <i>Pellia</i> sp. | <i>Physcomitrella patens</i> (Hedw.) Bruch et Schimp. | <i>Pohlia melanodon</i> (Brid.) A. J. Shaw | <i>Rhynchostegium riparioides</i> (Hedw.) Cardot | <i>Riccia cavernosa</i> Hoffm. | <i>Riccia fluitans</i> L. | <i>Riccia rhenana</i> Lorb. ex Mull. Frib. | <i>Riccia</i> sp. | <i>Ricciocarpos natans</i> (L.) Corda |
|-----|--------------------------------------|---|--|--|---------------------------------|--|--|---|--|-------------------|---|--|--|--------------------------------|---------------------------|--|-------------------|---------------------------------------|
| 122 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 123 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 124 |                                      |   |  |  | 4                               |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 125 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 126 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 127 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 128 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 129 | 2                                    |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 130 |                                      |   |  | 2  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 131 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 132 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 133 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 134 |                                      |   | 4  |  | 4                               |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 135 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   | 2                                     |
| 136 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 137 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 138 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 139 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 140 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 141 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           | 3  |                   |                                       |
| 142 |                                      |   |  |  |                                 | 2  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 143 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 144 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 145 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 146 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 147 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 148 |                                      |   |  |  |                                 | 2  |  |   |  | 2                 |   |  |  |                                |                           |  |                   |                                       |
| 149 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 150 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 151 |                                      |   |  |  |                                 | 4  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 152 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 153 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 154 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 155 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 156 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 157 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 158 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 159 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 160 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 161 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 162 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 163 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 164 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 165 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |
| 166 |                                      |   |  |  |                                 |  |  |   |  |                   |   |  |  |                                |                           |  |                   |                                       |

| No. | <i>Drepanocladus aduncus</i> (Hedw.) Warnst. | <i>Agrostis stolonifera</i> L. | <i>Alisma lanceolatum</i> Wih. | <i>Alisma plantago-aquatica</i> L. | <i>Baldellia ranunculoides</i> (L.) Parl. | <i>Barbarea vulgaris</i> W. T. Aiton | <i>Berula erecta</i> (Huds.) Coville | <i>Butomus umbellatus</i> L. | <i>Calystegia sepium</i> (L.) R. Br. | <i>Carex elata</i> All. | <i>Carex</i> sp. | <i>Cyperus fuscus</i> L. | <i>Cyperus glomeratus</i> L. | <i>Cyperus</i> sp. | <i>Echinochloa crus-galli</i> (L.) P. Beauv. | <i>Eleocharis palustris</i> (L.) R. Br. | <i>Epilobium hirsutum</i> L. | <i>Epilobium</i> sp. | <i>Equisetum arvense</i> L. |
|-----|--|--------------------------------|--------------------------------|------------------------------------|---|--------------------------------------|--------------------------------------|------------------------------|--------------------------------------|-------------------------|------------------|--------------------------|------------------------------|--------------------|--|---|------------------------------|----------------------|-----------------------------|
| 1   |  |                                |                                |                                    |   |                                      | 3                                    |                              |                                      |                         |                  | 2                        |                              |                    |  |   |                              |                      |                             |
| 2   |  | 3                              |                                |                                    |   |                                      | 6                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 3   |  | 2                              |                                |                                    | 5   |                                      |                                      | 2                            |                                      |                         |                  |                          |                              | 3                  |  |   |                              |                      |                             |
| 4   |  | 2                              |                                | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 5   |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 6   |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 7   |  |                                |                                |                                    | 3   |                                      |                                      | 5                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 8   |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 9   |  |                                |                                |                                    | 2   |                                      | 3                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 10  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 11  |  | 2                              |                                | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 12  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 13  |  | 2                              |                                | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 14  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 15  |  | 2                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 16  |  |                                |                                |                                    | 3   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 17  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 18  |  |                                |                                |                                    | 2   |                                      | 3                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 19  |  |                                |                                |                                    | 2   |                                      |                                      | 5                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 20  |  | 2                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 21  |  |                                |                                |                                    | 2   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 22  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 23  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 24  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 25  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         | 2                |                          |                              |                    |  |   |                              |                      |                             |
| 26  |  |                                |                                |                                    | 2   | 2                                    |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 27  |  |                                | 1                              | 1                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 28  |  |                                |                                |                                    |   |                                      |                                      |                              | 2                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 29  |  |                                |                                | 2                                  | 3   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 30  |  |                                |                                |                                    | 2   |                                      | 5                                    |                              |                                      |                         |                  |                          |                              |                    |  |   | 2                            |                      |                             |
| 31  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 32  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 33  |  |                                |                                |                                    |   |                                      | 2                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 34  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 35  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 36  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 37  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 38  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  | 2                                       |                              |                      |                             |
| 39  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    | 3  |   |                              |                      |                             |
| 40  |  |                                |                                | 3                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 41  |  | 3                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          | 2                            |                    |  |   |                              |                      |                             |
| 42  |  | 3                              |                                |                                    | 1   |                                      |                                      | 5                            |                                      |                         |                  |                          |                              |                    |  | 2                                       |                              |                      |                             |
| 43  |  | 5                              |                                |                                    | 2   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 44  |  |                                |                                |                                    | 3   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 45  |  |                                |                                |                                    | 2   |                                      |                                      | 2                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 46  |  | 2                              |                                |                                    |   |                                      |                                      | 2                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 47  |  | 3                              |                                | 2                                  | 2   |                                      |                                      | 4                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      | 2                           |
| 48  |  | 3                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 49  |  | 3                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 50  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 51  |  | 2                              |                                |                                    |   |                                      | 3                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 52  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  | 2                        |                              |                    |  |   |                              |                      |                             |
| 53  |  |                                |                                |                                    | 8   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 54  |  |                                |                                |                                    | 2   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 55  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 56  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 57  |  | 3                              |                                | 2                                  |   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 58  |  | 3                              |                                |                                    | 2   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 59  | 2  | 4                              |                                |                                    |   |                                      |                                      |                              | 2                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 60  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 61  |  |                                |                                |                                    |   |                                      |                                      | 2                            | 2                                    |                         | 4                |                          |                              |                    |  |   |                              |                      |                             |
| 62  |  |                                |                                |                                    | 2   |                                      |                                      |                              |                                      | 3                       |                  |                          |                              |                    |  |   |                              |                      |                             |
| 63  |  |                                |                                |                                    | 3   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 64  |  |                                |                                |                                    | 3   |                                      |                                      | 2                            | 2                                    |                         |                  |                          | 3                            |                    |  | 3                                       |                              | 4                    |                             |
| 65  |  |                                |                                |                                    | 3   |                                      |                                      | 2                            | 3                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 66  |  |                                |                                |                                    | 5   |                                      |                                      | 2                            | 4                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 67  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 68  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 69  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 70  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 71  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 72  |  |                                |                                |                                    |   |                                      |                                      |                              | 2                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 73  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 74  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 75  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 76  |  |                                |                                |                                    |   |                                      |                                      | 9                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 77  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 78  |  |                                |                                |                                    | 2   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 79  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 80  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 81  |  | 4                              |                                |                                    | 4   |                                      |                                      |                              |                                      |                         |                  |                          |                              | 3                  |  |   |                              |                      |                             |
| 82  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      | 5                           |
| 83  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 84  |  |                                |                                |                                    |   |                                      |                                      |                              | 7                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 85  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 86  |  |                                |                                |                                    |   |                                      |                                      | 9                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 87  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 88  |  |                                |                                |                                    |   |                                      |                                      |                              | 8                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 89  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 90  |  |                                |                                |                                    |   |                                      |                                      | 8                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      | 3                           |
| 91  |  |                                |                                |                                    | 2   |                                      |                                      |                              | 2                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 92  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 93  |  |                                |                                |                                    | 2   |                                      |                                      |                              | 3                                    |                         |                  |                          |                              | 3                  |  |   |                              |                      |                             |
| 94  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              | 2                  |  |   |                              |                      |                             |
| 95  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 96  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 97  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 98  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 99  |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 100 |  |                                |                                |                                    |   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 101 |  |                                |                                |                                    |   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 102 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 103 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 104 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 105 |  |                                |                                |                                    | 2   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 106 |  | 2                              |                                |                                    | 5   |                                      |                                      |                              | 6                                    |                         |                  |                          |                              | 4                  |  |   |                              |                      |                             |
| 107 |  |                                |                                |                                    | 3   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 108 |  |                                |                                |                                    |   |                                      |                                      | 3                            | 3                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 109 |  |                                |                                |                                    |   |                                      |                                      |                              | 5                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 110 |  |                                |                                |                                    |   |                                      |                                      | 2                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 111 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 112 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 113 |  |                                |                                |                                    |   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 114 |  |                                |                                |                                    |   |                                      |                                      | 4                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 115 |  |                                |                                |                                    | 2   |                                      |                                      |                              | 2                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 116 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 117 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 118 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 119 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 120 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 121 |  | 4                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |

| No. | <i>Drepanocladus aduncus</i> (Hedw.) Warnst. | <i>Agrostis stolonifera</i> L. | <i>Alisma lanceolatum</i> Wih. | <i>Alisma plantago-aquatica</i> L. | <i>Baldellia ranunculoides</i> (L.) Parl. | <i>Barbarea vulgaris</i> W. T. Aiton | <i>Berula erecta</i> (Huds.) Coville | <i>Butomus umbellatus</i> L. | <i>Calystegia sepium</i> (L.) R. Br. | <i>Carex elata</i> All. | <i>Carex</i> sp. | <i>Cyperus fuscus</i> L. | <i>Cyperus glomeratus</i> L. | <i>Cyperus</i> sp. | <i>Echinochloa crus-galli</i> (L.) P. Beauv. | <i>Eleocharis palustris</i> (L.) R. Br. | <i>Epilobium hirsutum</i> L. | <i>Epilobium</i> sp. | <i>Equisetum arvense</i> L. |
|-----|--|--------------------------------|--------------------------------|------------------------------------|---|--------------------------------------|--------------------------------------|------------------------------|--------------------------------------|-------------------------|------------------|--------------------------|------------------------------|--------------------|--|---|------------------------------|----------------------|-----------------------------|
| 122 |  |                                |                                | 3                                  |   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 123 |  |                                |                                | 3                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 124 |  | 4                              |                                | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 125 |  |                                | 3                              | 3                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 126 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 127 |  |                                |                                |                                    |   |                                      |                                      |                              | 2                                    |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 128 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 129 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 130 |  |                                |                                | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 131 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 132 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 133 |  |                                |                                | 3                                  |   |                                      | 3                                    | 6                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 134 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 135 |  |                                |                                | 3                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 136 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 137 |  | 3                              |                                | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 138 |  | 4                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 139 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 140 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 141 |  | 2                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 142 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 143 |  |                                |                                |                                    |   |                                      |                                      | 3                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 144 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 145 |  |                                |                                | 3                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 146 |  |                                |                                | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 147 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 148 |  |                                |                                |                                    |   |                                      | 2                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 149 |  | 2                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 150 |  | 4                              |                                |                                    |   |                                      | 3                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 151 |  |                                |                                |                                    |   |                                      | 4                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              | 3                    |                             |
| 152 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 153 |  | 4                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 154 |  | 4                              |                                | 3                                  |   |                                      | 2                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 155 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         | 2                |                          |                              |                    |  |   |                              |                      |                             |
| 156 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 157 |  |                                |                                |                                    |   |                                      |                                      | 4                            |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 158 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 159 |  | 4                              |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 160 |  |                                |                                |                                    |   |                                      | 7                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 161 |  | 2                              |                                |                                    |   |                                      | 8                                    |                              |                                      |                         | 2                |                          |                              |                    |  |   |                              |                      |                             |
| 162 |  | 4                              |                                |                                    |   |                                      | 4                                    |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 163 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 164 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 165 |  |                                |                                |                                    |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |
| 166 |  |                                | 2                              | 2                                  |   |                                      |                                      |                              |                                      |                         |                  |                          |                              |                    |  |   |                              |                      |                             |

| No. | <i>Glyceria fluitans</i> (L.) R. Br. | <i>Glyceria maxima</i> (Horn.) Holmb. | <i>Glyceria</i> sp. | <i>Iris pseudacorus</i> L. | <i>Juncus articulatus</i> L. | <i>Juncus effusus</i> L. | <i>Juncus inflexus</i> L. | <i>Juncus</i> sp. | <i>Leersia oryzoides</i> (L.) Sw. | <i>Leersia oryzoides</i> cf. | <i>Lindernia</i> cf. | <i>Lindernia dubia</i> (L.) Pennell | <i>Ludwigia palustris</i> (L.) Elliott | <i>Ludwigia peploides</i> (Kunth) P. H. Raven | <i>Lycopus europaeus</i> L. | <i>Lysimachia nummularia</i> L. | <i>Lysimachia vulgaris</i> L. | <i>Lythrum salicaria</i> L. | <i>Mentha aquatica</i> L. | <i>Mentha longifolia</i> (L.) Huds. | <i>Myosoton aquaticum</i> (L.) Moench |
|-----|--------------------------------------|---------------------------------------|---------------------|----------------------------|------------------------------|--------------------------|---------------------------|-------------------|-----------------------------------|------------------------------|----------------------|-------------------------------------|--|---|-----------------------------|---------------------------------|-------------------------------|-----------------------------|---------------------------|-------------------------------------|---------------------------------------|
| 1   |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 2   |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 3   |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 4   |                                      |                                       |                     |                            |                              |                          |                           |                   | 2                                 |                              | 2                    |                                     |  |   |                             |                                 |                               |                             | 2                         |                                     |                                       |
| 5   |                                      |                                       |                     |                            |                              |                          | 3                         | 2                 |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 6   |                                      | 3                                     |                     |                            |                              |                          |                           | 2                 |                                   |                              |                      |                                     |  |   | 3                           |                                 |                               |                             | 2                         | 5                                   | 4                                     |
| 7   |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 8   |                                      |                                       |                     |                            | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 9   |                                      | 6                                     |                     | 3                          |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     | 3                                     |
| 10  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 11  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 12  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 13  |                                      |                                       |                     |                            | 3                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 14  |                                      |                                       |                     |                            | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 15  |                                      |                                       |                     |                            | 1                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 16  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 17  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 18  |                                      |                                       |                     |                            | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 19  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 20  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 21  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 22  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 23  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 24  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 25  |                                      |                                       |                     |                            |                              | 3                        | 3                         | 3                 |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 26  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 27  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 28  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 29  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 30  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 31  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 32  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 33  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 34  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 35  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 36  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 37  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 38  |                                      |                                       | 3                   |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 39  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 40  |                                      |                                       |                     |                            | 3                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 41  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 42  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 43  |                                      |                                       |                     |                            | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 44  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 45  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 46  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 47  |                                      |                                       | 2                   | 2                          | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 48  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 49  |                                      |                                       |                     | 3                          |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 50  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 51  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 52  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     | 2                                     |
| 53  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 54  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 55  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 56  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 57  |                                      |                                       |                     |                            |                              | 2                        |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 58  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 59  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 60  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 61  |                                      | 9                                     |                     |                            | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 62  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 63  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 64  |                                      |                                       |                     |                            | 3                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 65  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 66  |                                      |                                       |                     |                            | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 67  |                                      | 3                                     |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 68  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 69  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 70  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 71  |                                      | 6                                     |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 72  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 73  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 74  |                                      |                                       | 5                   |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 75  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 76  |                                      | 5                                     |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 77  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 78  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 79  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 80  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 81  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 82  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 83  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 84  |                                      |                                       |                     |                            | 4                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 85  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 86  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 87  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 88  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 89  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 90  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 91  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 92  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 93  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 94  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 95  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 96  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 97  |                                      | 3                                     | 4                   |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 98  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 99  |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 100 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 101 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 102 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 103 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 104 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 105 |                                      |                                       |                     |                            | 2                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 106 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 107 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 108 |                                      | 6                                     |                     | 3                          |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 109 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 110 |                                      |                                       |                     | 5                          |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 111 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 112 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 113 |                                      |                                       |                     |                            |                              |                          |                           |                   | 2                                 |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 114 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 115 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 116 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 117 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 118 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 119 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 120 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 121 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |

| No. | <i>Glyceria fluitans</i> (L.) R. Br. | <i>Glyceria maxima</i> (Horn.) Holmb. | <i>Glyceria</i> sp. | <i>Iris pseudacorus</i> L. | <i>Juncus articulatus</i> L. | <i>Juncus effusus</i> L. | <i>Juncus inflexus</i> L. | <i>Juncus</i> sp. | <i>Leersia oryzoides</i> (L.) Sw. | <i>Leersia oryzoides</i> cf. | <i>Lindernia</i> cf. | <i>Lindernia dubia</i> (L.) Pennell | <i>Ludwigia palustris</i> (L.) Elliott | <i>Ludwigia peploides</i> (Kunth) P. H. Raven | <i>Lycopus europaeus</i> L. | <i>Lysimachia nummularia</i> L. | <i>Lysimachia vulgaris</i> L. | <i>Lythrum salicaria</i> L. | <i>Mentha aquatica</i> L. | <i>Mentha longifolia</i> (L.) Huds. | <i>Myosoton aquaticum</i> (L.) Moench |
|-----|--------------------------------------|---------------------------------------|---------------------|----------------------------|------------------------------|--------------------------|---------------------------|-------------------|-----------------------------------|------------------------------|----------------------|-------------------------------------|--|---|-----------------------------|---------------------------------|-------------------------------|-----------------------------|---------------------------|-------------------------------------|---------------------------------------|
| 122 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 123 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 124 |                                      |                                       |                     |                            |                              |                          |                           |                   | 3                                 |                              |                      |                                     |  |   |                             |                                 |                               |                             | 2                         |                                     |                                       |
| 125 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   | 7                            |                      |                                     |  |   |                             |                                 |                               |                             |                           | 4                                   |                                       |
| 126 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 127 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 128 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 129 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 130 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 131 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 132 |                                      |                                       |                     |                            |                              | 4                        |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             | 3                         |                                     |                                       |
| 133 |                                      |                                       |                     |                            |                              |                          |                           |                   | 4                                 |                              |                      |                                     | 4                                      |   |                             |                                 |                               | 2                           | 2                         |                                     |                                       |
| 134 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     | 2                                      |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 135 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 136 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 137 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   | 2                           |                                 |                               |                             | 3                         | 3                                   |                                       |
| 138 |                                      |                                       |                     |                            | 2                            |                          |                           |                   |                                   | 3                            |                      |                                     |  |   |                             |                                 |                               | 3                           |                           |                                     |                                       |
| 139 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 140 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 141 |                                      |                                       |                     |                            | 3                            |                          |                           |                   |                                   | 4                            |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 142 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 143 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 144 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 145 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 146 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 147 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 148 |                                      |                                       |                     |                            | 1                            |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 149 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 | 2                             |                             |                           |                                     |                                       |
| 150 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 151 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 152 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 153 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   | 4                            |                      |                                     |  |   |                             |                                 |                               |                             | 2                         |                                     |                                       |
| 154 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               | 3                           |                           |                                     |                                       |
| 155 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 156 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 157 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   | 3                            |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 158 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   | 7                            |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 159 | 4                                    |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 160 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 161 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 162 | 3                                    | 3                                     |                     |                            |                              | 3                        | 4                         | 3                 |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             | 2                         | 4                                   |                                       |
| 163 |                                      |                                       |                     |                            |                              | 2                        |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           | 3                                   | 5                                     |
| 164 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 165 |                                      |                                       |                     |                            |                              |                          |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     |                                       |
| 166 |                                      |                                       |                     |                            |                              | 2                        |                           |                   |                                   |                              |                      |                                     |  |   |                             |                                 |                               |                             |                           |                                     | 2                                     |

| No. | <i>Nasturtium officinale</i> W. T. Aiton | <i>Oenanthe aquatica</i> (L.) Poir. | <i>Persicaria hydropper</i> (L.) Delarbrè | <i>Persicaria maculosa</i> Gray | <i>Persicaria lapathifolia</i> (L.) Delarbrè | <i>Phalaris arundinacea</i> L. | <i>Phragmites australis</i> (Cav.) Trin. ex Steud. | <i>Polygonum amphibium</i> L. | <i>Polygonum hydropper</i> | <i>Polygonum mite</i> Schrank | <i>Polygonum cf. mite</i> | <i>Polygonum sp.</i> | <i>Portulaca oleracea</i> L. | <i>Potentilla reptans</i> L. | <i>Pulicaria dysenterica</i> (L.) Bernh. | <i>Ranunculus repens</i> L. | <i>Rorippa amphibia</i> (L.) Besser | <i>Rorippa sylvestris</i> (L.) Besser | <i>Rumex hydrolapat. hum</i> Huds. |
|-----|--|-------------------------------------|---|---------------------------------|--|--------------------------------|--|-------------------------------|----------------------------|-------------------------------|---------------------------|----------------------|------------------------------|------------------------------|--|-----------------------------|-------------------------------------|---------------------------------------|------------------------------------|
| 1   |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 2   |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 3   |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 4   |  |                                     |   |                                 |  |                                | 3  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 5   |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 2                                  |
| 6   |  |                                     |   |                                 |  |                                | 7  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 7   |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 8   |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 9   |  |                                     |   |                                 |  |                                | 3  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 2                                  |
| 10  |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 11  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 2                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 12  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 13  | 2  |                                     |   |                                 |  |                                | 4  | 2                             |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 14  |  |                                     |   |                                 |  |                                | 2  | 7                             |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 15  |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 16  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 17  |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 18  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 19  |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               | 2                         |                      |                              |                              |  |                             |                                     | 2                                     | 2                                  |
| 20  | 2  |                                     |   |                                 |  |                                |  |                               |                            |                               | 2                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 21  |  |                                     |   |                                 | 2  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 22  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 23  | 2  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 24  |  |                                     |   |                                 |  |                                | 2  | 7                             |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 25  |  |                                     |   |                                 |  |                                | 2  | 2                             |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 2                                  |
| 26  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 27  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       | 3                                  |
| 28  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 29  |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               | 2                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 30  |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 31  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 32  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 33  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 34  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 35  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 36  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 37  |  |                                     |   |                                 |  |                                | 2  | 2                             |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 38  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 2                                  |
| 39  |  |                                     | 4   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 40  |  |                                     |   |                                 |  |                                | 3  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 41  |  |                                     |   |                                 | 2  |                                |  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 42  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 4                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 43  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 7                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 44  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 45  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 46  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 47  |  |                                     | 2   |                                 |  |                                |  |                               |                            |                               | 6                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 48  |  |                                     |   |                                 |  |                                |  |                               | 2                          |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 49  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 50  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 51  | 2  |                                     |   |                                 | 6  |                                |  |                               |                            |                               | 6                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 52  | 2  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 53  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 54  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 55  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 56  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 57  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              |                              | 2  |                             |                                     |                                       |                                    |
| 58  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 59  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 60  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 61  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 62  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 5                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 63  |  |                                     |   |                                 | 2  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 64  |  |                                     |   |                                 |  |                                |  | 4                             | 2                          |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 65  |  |                                     |   |                                 |  |                                |  | 4                             |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 66  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 67  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 68  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 69  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 70  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 71  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 72  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 73  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 74  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 75  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 76  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 77  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 78  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 79  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 80  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 81  |  |                                     |   |                                 |  |                                | 4  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 82  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 83  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 84  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 4                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 85  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 86  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 87  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 88  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 89  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 90  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 2                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 91  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 2                                  |
| 92  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 93  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 94  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 95  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              | 2                            |  |                             |                                     |                                       | 4                                  |
| 96  |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 3                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 97  | 3  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 98  | 4  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              | 2  |                             | 2                                   |                                       | 4                                  |
| 99  |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 100 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 101 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 102 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 103 |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 2                                  |
| 104 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 105 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 106 |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 2                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 107 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 108 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 109 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 4                                  |
| 110 |  |                                     |   |                                 |  |                                | 2  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 111 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 112 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 113 |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 5                         |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 114 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 115 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       | 2                                  |
| 116 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 117 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 118 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 119 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 120 |  |                                     |   |                                 |  |                                |  |                               |                            |                               |                           |                      |                              |                              |  |                             |                                     |                                       |                                    |
| 121 |  |                                     |   |                                 |  |                                |  |                               |                            |                               | 4                         |                      |                              |                              |  |                             |                                     |                                       |                                    |



| No. | <i>Nasturtium officinale</i><br>W. T. Aiton | <i>Oenanthe aquatica</i><br>(L.) Poir. | <i>Persicaria hydropiper</i><br>(L.) Delarbr. | <i>Persicaria maculosa</i><br>Gray | <i>Persicaria lapathifolia</i><br>(L.) Delarbr. | <i>Phalaris arundinacea</i><br>L. | <i>Phragmites australis</i><br>(Cav.) Trin. ex Steud. | <i>Polygonum amphibium</i> L. | <i>Polygonum hydropiper</i> | <i>Polygonum mite</i><br>Schrank | <i>Polygonum cf. mite</i> | <i>Polygonum sp.</i> | <i>Portulaca oleracea</i> L. | <i>Potentilla reptans</i> L. | <i>Pulicaria dysenterica</i><br>(L.) Bernh. | <i>Ranunculus repens</i> L. | <i>Rorippa amphibia</i><br>(L.) Besser | <i>Rorippa sylvestris</i><br>(L.) Besser | <i>Rumex hydroapat.</i><br>Huds. |
|-----|---|--|---|------------------------------------|---|-----------------------------------|---|-------------------------------|-----------------------------|----------------------------------|---------------------------|----------------------|------------------------------|------------------------------|---|-----------------------------|--|--|----------------------------------|
| 122 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 123 |   |  |   |                                    |   |                                   | 7   |                               |                             |                                  |                           |                      | 4                            |                              |   |                             |  |  |                                  |
| 124 |   |  |   |                                    |   |                                   |   |                               |                             | 3                                |                           |                      |                              |                              |   |                             |  |  | 2                                |
| 125 |   |  |   |                                    |   | 4                                 |   |                               |                             | 5                                |                           |                      |                              |                              |   |                             |  |  |                                  |
| 126 |   |  |   |                                    |   | 6                                 |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 127 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 128 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 129 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 130 |   |  |   |                                    |   |                                   |   |                               |                             | 2                                |                           |                      |                              |                              |   |                             |  |  |                                  |
| 131 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 132 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 133 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 134 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  | 3  |                                  |
| 135 |   |  |   |                                    |   |                                   |   |                               | 2                           |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 136 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 137 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 138 |   |  |   |                                    |   |                                   | 3   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 139 |   |  |   |                                    |   |                                   |   |                               |                             | 4                                |                           |                      |                              |                              |   |                             |  |  |                                  |
| 140 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 141 | 5   |  |   |                                    |   | 4                                 |   |                               |                             | 4                                |                           |                      |                              |                              |   |                             |  |  |                                  |
| 142 | 2   |  |   |                                    |   |                                   | 3   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 143 |   |  |   |                                    |   |                                   | 2   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 144 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 145 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 146 |   |  |   |                                    |   |                                   |   |                               |                             | 2                                |                           |                      |                              |                              |   |                             |  |  |                                  |
| 147 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 148 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 149 |   |  |   |                                    |   |                                   |   |                               |                             | 2                                |                           |                      |                              |                              |   |                             |  |  |                                  |
| 150 |   |  |   |                                    |   |                                   | 4   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 151 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 152 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 153 |   |  |   |                                    |   |                                   | 4   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 154 |   |  |   |                                    |   |                                   | 5   |                               |                             |                                  |                           |                      | 4                            |                              |   |                             |  |  |                                  |
| 155 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 156 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 157 |   |  | 3   |                                    |   |                                   | 3   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 158 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 159 |   |  |   |                                    |   |                                   | 3   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 160 |   |  |   |                                    |   |                                   |   | 4                             |                             |                                  |                           |                      |                              |                              |   |                             |  |  | 2                                |
| 161 |   |  |   |                                    |   |                                   |   | 3                             |                             |                                  |                           |                      |                              |                              |   |                             |  |  | 2                                |
| 162 |   |  |   |                                    |   |                                   | 3   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 163 |   |  |   |                                    |   |                                   |   |                               |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 164 |   |  |   |                                    |   |                                   |   | 2                             |                             |                                  |                           |                      |                              |                              |   |                             |  | 2  |                                  |
| 165 |   |  |   |                                    |   |                                   |   | 6                             |                             |                                  |                           |                      |                              |                              |   |                             |  |  |                                  |
| 166 |   |  |   |                                    |   |                                   |   |                               |                             |                                  | 3                         |                      |                              |                              |   |                             |  |  |                                  |

| No. | <i>Rumex palustris</i> Sm. | <i>Rumex</i> sp. | <i>Sagittaria sagitifolia</i> L. | <i>Scirpus lacustris</i> L. | <i>Scirpus maritimus</i> L. | <i>Scirpus sylvaticus</i> L. | <i>Solanum dulcamara</i> L. | <i>Sparganium erectum</i> L. | <i>Sparganium emersum</i> Rehmann | <i>Typha angustifolia</i> L. | <i>Typha latifolia</i> L. | <i>Urtica dioica</i> L. | <i>Veronica anagallis-aquatica</i> L. | <i>Veronica anagalloides</i> Guss. | <i>Veronica beccabunga</i> L. | <i>Myosotis scorpioides</i> L. | <i>Azolla filiculoides</i> Lam. | <i>Callitriche cophocarpa</i> Sendtn. | <i>Callitriche stagnalis</i> Scop. | <i>Callitriche</i> sp. | <i>Ceratophyllum demersum</i> L. |   |
|-----|----------------------------|------------------|----------------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|---------------------------|-------------------------|---------------------------------------|------------------------------------|-------------------------------|--------------------------------|---------------------------------|---------------------------------------|------------------------------------|------------------------|----------------------------------|---|
| 1   |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 2   |                            |                  |                                  | 2                           |                             |                              |                             | 7                            | 6                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 3   |                            |                  |                                  |                             |                             |                              |                             |                              | 2                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 4   |                            |                  |                                  |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 5   |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 6   |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               | 2                              |                                 |                                       | 2                                  |                        |                                  |   |
| 7   |                            |                  |                                  |                             |                             |                              |                             |                              |                                   | 2                            |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 8   |                            |                  |                                  |                             | 4                           |                              |                             | 6                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 9   |                            |                  | 1                                |                             |                             |                              |                             |                              | 2                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 4                                | 5 |
| 10  |                            |                  |                                  |                             |                             |                              |                             | 2                            | 2                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 11  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 12  |                            |                  |                                  |                             |                             |                              |                             | 8                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 13  |                            |                  |                                  |                             |                             |                              |                             | 7                            |                                   |                              |                           | 2                       |                                       | 4                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 14  |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 15  |                            |                  |                                  |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 16  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   | 3                            |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 17  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 18  |                            |                  |                                  |                             |                             |                              |                             |                              | 2                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 19  |                            |                  |                                  |                             |                             |                              |                             | 5                            | 4                                 |                              | 4                         |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 20  |                            |                  |                                  |                             |                             |                              |                             | 7                            | 1                                 |                              | 4                         |                         |                                       | 2                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 21  |                            |                  |                                  |                             |                             |                              |                             | 7                            | 4                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 22  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 23  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 24  |                            |                  | 1                                |                             |                             |                              |                             | 6                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 25  | 2                          |                  |                                  |                             |                             |                              |                             | 7                            |                                   |                              |                           |                         |                                       |                                    |                               | 2                              |                                 |                                       |                                    |                        |                                  |   |
| 26  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 2 |
| 27  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 28  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 5 |
| 29  |                            |                  |                                  | 5                           |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 30  |                            |                  |                                  |                             |                             |                              |                             | 3                            | 5                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 31  |                            |                  |                                  | 2                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 32  |                            |                  |                                  | 2                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 33  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           | 5                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 3                                |   |
| 34  |                            |                  |                                  | 3                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 35  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 36  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 3                                |   |
| 37  |                            |                  |                                  |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 38  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       | 2                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 39  |                            |                  |                                  | 3                           |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 40  |                            |                  |                                  |                             |                             |                              |                             | 6                            |                                   |                              |                           |                         |                                       | 2                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 41  |                            |                  |                                  |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 6 |
| 42  |                            |                  |                                  | 7                           |                             |                              |                             | 7                            |                                   |                              |                           |                         |                                       |                                    |                               |                                | 3                               |                                       |                                    |                        |                                  | 4 |
| 43  |                            |                  |                                  | 3                           |                             |                              |                             | 4                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 44  |                            |                  |                                  | 3                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 | 5                                     |                                    |                        |                                  | 5 |
| 45  |                            |                  |                                  |                             |                             |                              | 2                           |                              | 5                                 |                              |                           |                         |                                       | 3                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 46  |                            |                  |                                  |                             |                             |                              |                             | 6                            |                                   |                              |                           |                         |                                       | 2                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 47  |                            |                  |                                  | 3                           |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 3                                |   |
| 48  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 49  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 50  |                            |                  |                                  |                             |                             |                              |                             | 1                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 51  |                            |                  |                                  |                             |                             |                              |                             | 2                            | 6                                 |                              | 2                         |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 52  |                            |                  |                                  |                             |                             |                              |                             | 7                            |                                   |                              |                           |                         |                                       |                                    |                               | 3                              |                                 |                                       |                                    |                        |                                  | 8 |
| 53  |                            |                  |                                  |                             |                             |                              | 1                           | 7                            |                                   |                              |                           |                         |                                       |                                    | 1                             |                                |                                 |                                       |                                    |                        |                                  |   |
| 54  |                            |                  |                                  |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 55  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 56  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 57  |                            |                  |                                  |                             |                             |                              | 3                           | 9                            |                                   |                              |                           |                         |                                       |                                    |                               |                                | 4                               |                                       |                                    |                        |                                  |   |
| 58  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 59  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       | 2                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 60  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 61  |                            |                  |                                  | 4                           | 3                           |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 62  |                            |                  |                                  |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 63  |                            |                  |                                  |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 5                                | 2 |
| 64  |                            |                  |                                  | 3                           | 4                           |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               | 2                              |                                 |                                       |                                    |                        |                                  | 3 |
| 65  |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           | 2                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 8 |
| 66  |                            |                  |                                  |                             | 2                           |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 67  |                            |                  |                                  | 5                           | 3                           |                              |                             | 5                            |                                   |                              |                           | 2                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 9 |
| 68  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 69  |                            |                  |                                  |                             |                             |                              |                             | 4                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 70  |                            |                  |                                  | 6                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 71  |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 9 |
| 72  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 73  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 74  |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 75  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 76  |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 77  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 78  |                            |                  |                                  |                             |                             |                              |                             | 4                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 6 |
| 79  |                            |                  |                                  | 5                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 80  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 81  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 82  |                            |                  |                                  |                             |                             | 6                            |                             | 4                            |                                   |                              |                           |                         |                                       | 2                                  |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 83  |                            |                  |                                  | 5                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 8 |
| 84  |                            |                  |                                  | 2                           |                             | 7                            |                             | 5                            |                                   | 6                            |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 85  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 9 |
| 86  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 87  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 88  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 89  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 90  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               | 2                              |                                 | 3                                     |                                    |                        |                                  |   |
| 91  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   | 3                            |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 5 |
| 92  |                            |                  |                                  |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 6 |
| 93  |                            |                  |                                  | 2                           |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 6 |
| 94  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           | 5                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 95  |                            |                  |                                  |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 96  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 97  |                            |                  |                                  |                             |                             |                              |                             | 2                            |                                   |                              |                           | 2                       |                                       | 3                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 98  |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 99  |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           | 2                       |                                       |                                    |                               | 3                              |                                 |                                       |                                    |                        |                                  |   |
| 100 |                            |                  |                                  |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 101 |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 2 |
| 102 |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 103 |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 104 |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 105 |                            |                  |                                  | 4                           |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 9 |
| 106 |                            |                  |                                  | 5                           |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 107 |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       | 8                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 108 |                            |                  |                                  |                             |                             |                              |                             | 2                            |                                   |                              | 5                         |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 6 |
| 109 |                            |                  |                                  | 6                           |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 110 |                            |                  |                                  | 4                           |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 111 |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 3                                | 7 |
| 112 |                            |                  |                                  |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 113 |                            |                  |                                  |                             | 6                           |                              |                             | 6                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 2                                | 4 |
| 114 |                            |                  |                                  |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 4                                | 4 |
| 115 |                            |                  |                                  | 3                           |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 5 |
| 116 |                            |                  |                                  |                             |                             |                              |                             | 7                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |

| No. | <i>Rumex palustris</i> Sm. | <i>Rumex</i> sp. | <i>Sagittaria sagittifolia</i> L. | <i>Scirpus lacustris</i> L. | <i>Scirpus maritimus</i> L. | <i>Scirpus sylvaticus</i> L. | <i>Solanum dulcamara</i> L. | <i>Sparganium erectum</i> L. | <i>Sparganium emersum</i> Rehmann | <i>Typha angustifolia</i> L. | <i>Typha latifolia</i> L. | <i>Urtica dioica</i> L. | <i>Veronica anagallis-aquatica</i> L. | <i>Veronica anagalloides</i> Guss. | <i>Veronica beccabunga</i> L. | <i>Myosotis scorpioides</i> L. | <i>Azolla filiculoides</i> Lam. | <i>Callitriche cophocarpa</i> Sendtn. | <i>Callitriche stagnalis</i> Scop. | <i>Callitriche</i> sp. | <i>Ceratophyllum demersum</i> L. |   |
|-----|----------------------------|------------------|-----------------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|---------------------------|-------------------------|---------------------------------------|------------------------------------|-------------------------------|--------------------------------|---------------------------------|---------------------------------------|------------------------------------|------------------------|----------------------------------|---|
| 122 |                            |                  |                                   |                             |                             |                              |                             | 8                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 4                                | 4 |
| 123 |                            |                  |                                   |                             |                             |                              | 4                           | 6                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 4                                |   |
| 124 |                            |                  |                                   |                             |                             |                              | 2                           |                              |                                   |                              |                           |                         |                                       |                                    |                               | 3                              |                                 |                                       |                                    |                        | 3                                |   |
| 125 |                            |                  |                                   |                             |                             |                              |                             | 8                            | 4                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 5 |
| 126 |                            |                  |                                   |                             |                             |                              | 5                           | 5                            |                                   |                              |                           | 3                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 127 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 128 |                            |                  |                                   |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 129 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 130 |                            |                  |                                   |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 9 |
| 131 |                            |                  |                                   |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 2 |
| 132 |                            |                  |                                   |                             |                             |                              |                             | 4                            |                                   |                              |                           | 5                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 133 |                            |                  | 6                                 |                             |                             |                              |                             | 5                            |                                   |                              | 2                         |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 9 |
| 134 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 135 |                            |                  |                                   |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 2 |
| 136 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 8 |
| 137 |                            |                  |                                   |                             |                             |                              | 3                           | 4                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 5                                |   |
| 138 |                            |                  |                                   |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 5 |
| 139 |                            |                  | 2                                 |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 140 |                            |                  | 5                                 |                             |                             |                              |                             | 6                            | 4                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 7 |
| 141 |                            |                  |                                   |                             |                             |                              |                             | 5                            |                                   |                              |                           | 3                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 142 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           | 2                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 143 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 5 |
| 144 |                            |                  |                                   |                             |                             |                              |                             | 4                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 145 |                            |                  |                                   |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 146 |                            |                  |                                   |                             |                             |                              |                             | 8                            |                                   |                              |                           | 5                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 147 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           | 2                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 148 |                            |                  |                                   |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        | 2                                |   |
| 149 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 150 |                            |                  |                                   |                             |                             |                              |                             | 6                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 151 |                            |                  |                                   |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 152 |                            |                  |                                   |                             | 2                           |                              |                             |                              | 4                                 |                              |                           |                         |                                       | 5                                  |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 153 |                            |                  |                                   |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 154 |                            |                  |                                   |                             |                             |                              |                             | 5                            |                                   |                              |                           | 2                       |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 155 |                            |                  |                                   |                             |                             |                              |                             | 6                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 6 |
| 156 |                            |                  | 2                                 |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 5 |
| 157 |                            |                  | 4                                 |                             |                             |                              |                             | 7                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 8 |
| 158 |                            |                  |                                   |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 6 |
| 159 |                            |                  |                                   |                             |                             |                              |                             |                              |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 160 |                            |                  |                                   |                             |                             |                              |                             | 4                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 161 |                            |                  |                                   |                             |                             |                              |                             | 7                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 162 |                            |                  |                                   |                             |                             |                              |                             | 2                            |                                   |                              |                           |                         |                                       |                                    |                               | 2                              |                                 | 4                                     |                                    |                        |                                  | 4 |
| 163 |                            |                  |                                   |                             |                             |                              |                             | 5                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |
| 164 |                            |                  |                                   |                             |                             |                              |                             | 3                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 4 |
| 165 |                            |                  |                                   |                             |                             |                              |                             |                              | 2                                 |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  | 3 |
| 166 |                            |                  |                                   | 6                           |                             |                              | 5                           | 7                            |                                   |                              |                           |                         |                                       |                                    |                               |                                |                                 |                                       |                                    |                        |                                  |   |



| No. | <i>Elodea canadensis</i> Michx. | <i>Elodea nuttallii</i> (Planch.) H. St. John | <i>Hydrocharis morsus-ranae</i> L. | <i>Lemna gibba</i> L. | <i>Lemna minor</i> L. | <i>Lemna minuta</i> Kunth | <i>Lemna trisulca</i> L. | <i>Marsilea quadrifolia</i> L. | <i>Myriophyllum spicatum</i> L. | <i>Myriophyllum m. vericillatum</i> L. | <i>Najas marina</i> L. | <i>Najas minor</i> All. | <i>Nuphar lutea</i> (L.) Sm. | <i>Nymphoides peltata</i> (S. G. Gmel.) Kuntze | <i>Ranunculus circinatus</i> Sibth. | <i>Ranunculus s. fluitans</i> Lam. | <i>Ranunculus s. trichophyllus</i> Chaix | <i>Salvinia natans</i> (L.) All. | <i>Spirodela polyrhiza</i> (L.) Schleid. | <i>Stratiotes aloides</i> L. | <i>Trapa natans</i> L. | <i>Utricularia vulgaris</i> L. |
|-----|---------------------------------|---|------------------------------------|-----------------------|-----------------------|---------------------------|--------------------------|--------------------------------|---------------------------------|--|------------------------|-------------------------|------------------------------|--|-------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------|------------------------|--------------------------------|
| 122 |                                 |   |                                    |                       | 7                     |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 123 |                                 |   |                                    |                       | 2                     |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 124 |                                 |   |                                    |                       |                       |                           |                          |                                | 6                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 125 |                                 |   |                                    |                       | 5                     |                           |                          |                                |                                 |  |                        |                         | 6                            |  |                                     |                                    |  |                                  | 4  |                              |                        | 2                              |
| 126 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 127 |                                 |   |                                    |                       |                       |                           |                          |                                | 2                               |  | 3                      |                         | 3                            |  |                                     | 4                                  |  |                                  |  |                              |                        |                                |
| 128 | 3                               |   |                                    |                       | 2                     |                           |                          |                                | 6                               |  | 7                      | 4                       | 5                            |  |                                     |                                    |  |                                  | 2  |                              |                        |                                |
| 129 |                                 |   |                                    |                       |                       |                           |                          |                                | 7                               |  |                        | 3                       | 3                            |  |                                     | 4                                  |  |                                  |  |                              |                        |                                |
| 130 |                                 |   |                                    |                       | 2                     |                           |                          |                                | 3                               |  |                        | 4                       | 2                            |  |                                     |                                    |  |                                  | 3  |                              |                        |                                |
| 131 |                                 |   |                                    |                       |                       | 2                         |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 132 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 133 |                                 |   |                                    |                       | 6                     |                           |                          |                                |                                 |  |                        |                         | 5                            |  |                                     |                                    |  |                                  | 7  |                              |                        |                                |
| 134 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 135 |                                 |   |                                    |                       |                       |                           |                          |                                | 2                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 136 | 5                               |   |                                    |                       |                       |                           |                          |                                | 5                               |  |                        | 4                       | 6                            |  |                                     | 3                                  |  |                                  | 2  |                              |                        |                                |
| 137 |                                 |   |                                    |                       |                       |                           |                          |                                | 3                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 138 |                                 |   |                                    |                       |                       |                           |                          |                                | 5                               |  |                        |                         | 6                            |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 139 |                                 |   |                                    |                       |                       |                           |                          |                                | 5                               |  |                        |                         | 6                            |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 140 |                                 |   |                                    |                       |                       | 4                         |                          |                                |                                 |  | 6                      |                         | 7                            |  |                                     |                                    |  |                                  | 5  |                              |                        | 3                              |
| 141 |                                 |   |                                    |                       |                       |                           |                          |                                | 6                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 142 |                                 |   |                                    |                       |                       |                           |                          |                                | 6                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 143 |                                 |   |                                    |                       | 2                     |                           |                          |                                | 5                               |  |                        |                         | 5                            |  |                                     |                                    |  |                                  | 2  |                              |                        |                                |
| 144 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 145 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 146 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 147 |                                 |   |                                    |                       |                       |                           |                          |                                | 2                               |  |                        |                         | 5                            |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 148 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 149 |                                 |   |                                    |                       |                       |                           |                          |                                | 4                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 150 |                                 |   |                                    |                       |                       |                           |                          |                                | 4                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 151 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 152 |                                 |   |                                    |                       |                       |                           |                          |                                | 5                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 153 |                                 |   |                                    |                       | 2                     |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 154 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 155 |                                 |   |                                    |                       |                       | 4                         |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 156 |                                 |   |                                    | 5                     | 7                     |                           |                          |                                |                                 |  |                        |                         | 3                            |  | 3                                   |                                    |  | 8                                | 5  |                              |                        |                                |
| 157 |                                 |   |                                    |                       | 5                     |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  | 5  |                              |                        |                                |
| 158 |                                 |   |                                    |                       | 4                     |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  | 5  |                              |                        |                                |
| 159 |                                 |   |                                    |                       | 5                     |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 160 |                                 |   |                                    |                       | 4                     |                           |                          |                                |                                 |  |                        |                         | 2                            |  |                                     |                                    |  |                                  |  |                              | 4                      |                                |
| 161 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 162 | 7                               |   |                                    |                       | 4                     |                           |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 163 |                                 |   |                                    |                       |                       |                           |                          |                                |                                 |  |                        |                         | 3                            |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 164 |                                 | 5   |                                    |                       |                       | 7                         |                          |                                |                                 |  |                        |                         |                              |  |                                     |                                    |  |                                  | 6  |                              |                        |                                |
| 165 |                                 |   |                                    |                       |                       |                           |                          |                                | 2                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |
| 166 |                                 |   |                                    |                       |                       |                           |                          |                                | 5                               |  |                        |                         |                              |  |                                     |                                    |  |                                  |  |                              |                        |                                |

| No. | <i>Vallisneria spiralis</i> L. | <i>Zannichellia palustris</i> L. | <i>Chara contraria</i> A.Braun ex Kützting | <i>Chara sp.</i> | <i>Nitella gracilis</i> (J.E.Smith) C.Agardh | <i>Nitella opaca</i> (C.Agardh ex Brucellus) C.Agardh | <i>Nitellopsis obtusa</i> (N.A.Devaux) J.Groves | <i>Batrachospermum</i> sp. | <i>Cladophora glomerata</i> (Linnaeus) Kützting | <i>Hydrodictyon reticulatum</i> (Linnaeus) Bory | <i>Microcystis aeruginosa</i> (Kützting) Kützting | <i>Mougeotia</i> sp. | <i>Tribonema viridae</i> | <i>Tribonema utriculosum</i> | <i>Oscillatoria</i> | <i>Rhizoclonium hieroglyphicum</i> (C.Agardh) Kützting | <i>Rhizoclonium</i> sp. | <i>Spirogyra</i> sp. | <i>Vaucheria</i> sp. | <i>Vucheria dichotoma</i> |
|-----|--------------------------------|----------------------------------|--|------------------|--|---|---|----------------------------|---|---|---|----------------------|--------------------------|------------------------------|---------------------|--|-------------------------|----------------------|----------------------|---------------------------|
| 1   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 2   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 3   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 4   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      | 4                    |                           |
| 5   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 6   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 7   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 8   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 9   |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 10  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 11  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 12  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 13  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 14  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 15  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 16  |                                | 3                                |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 17  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 18  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  | 7                       |                      |                      |                           |
| 19  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 20  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 21  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 22  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 23  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 24  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 25  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 26  |                                | 4                                |  |                  |  |   | 2   |                            |   | 2   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 27  |                                | 3                                |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 28  |                                | 4                                |  |                  |  |   |   | 4                          |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 29  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         | 3                    |                      | 3                         |
| 30  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 31  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 32  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 33  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 34  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 35  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 36  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 37  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 38  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 39  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 40  |                                |                                  |  |                  |  |   |   |                            |   | 8   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 41  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 42  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 43  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 44  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 45  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 46  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 47  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 48  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 49  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 50  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 51  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 52  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 53  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 54  |                                | 2                                |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 55  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 56  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 57  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 58  |                                |                                  |  |                  |  | 4   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 59  |                                |                                  |  |                  |  |   |   |                            |   | 7   |   |                      | 5                        |                              |                     |  |                         |                      |                      |                           |
| 60  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 61  |                                |                                  |  |                  | 4  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 62  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 63  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 64  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 65  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 66  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 67  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 68  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 69  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 70  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 71  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 72  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 73  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 74  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 75  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 76  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 77  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 78  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 79  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 80  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 81  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 82  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 83  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 84  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 85  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 86  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 87  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 88  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 89  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 90  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      | 3                    | 5                         |
| 91  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 92  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 93  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 94  |                                |                                  |  |                  |  |   |   |                            |   | 8   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 95  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 96  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 97  |                                |                                  |  |                  |  |   |   |                            |   | 3   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 98  |                                |                                  |  |                  |  |   |   |                            |   |   | 5   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 99  |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 100 |                                |                                  |  |                  |  |   |   | 4                          |   | 7   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 101 |                                |                                  |  |                  |  |   |   |                            |   | 3   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 102 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 103 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 104 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 105 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 106 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 107 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  | 5                       |                      | 7                    | 5                         |
| 108 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 109 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 110 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 111 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 112 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 113 |                                |                                  |  |                  |  |   | 3   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 114 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 115 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 116 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 117 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 118 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 119 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 120 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 121 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |

| No. | <i>Vallisneria spiralis</i> L. | <i>Zannichellia palustris</i> L. | <i>Chara contraria</i> A.Braun ex Kützting | <i>Chara sp.</i> | <i>Nitella gracilis</i> (J.E.Smith) C.Agardh | <i>Nitella opaca</i> (C.Agardh ex Brucellus) C.Agardh | <i>Nitellopsis obtusa</i> (N.A.Devaux) J.Groves | <i>Batrachospermum</i> sp. | <i>Cladophora glomerata</i> (Linnaeus) Kützting | <i>Hydrodictyon reticulatum</i> (Linnaeus) Bory | <i>Microcystis aeruginosa</i> (Kützting) Kützting | <i>Mougeotia</i> sp. | <i>Tribonema viridae</i> | <i>Tribonema utriculosum</i> | <i>Oscillatoria</i> | <i>Rhizoclonium hieroglyphicum</i> (C.Agardh) Kützting | <i>Rhizoclonium</i> sp. | <i>Spirogyra</i> sp. | <i>Vaucheria</i> sp. | <i>Vucheria dichotoma</i> |
|-----|--------------------------------|----------------------------------|--|------------------|--|---|---|----------------------------|---|---|---|----------------------|--------------------------|------------------------------|---------------------|--|-------------------------|----------------------|----------------------|---------------------------|
| 122 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     | 4  |                         |                      |                      | 4                         |
| 123 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      | 4                         |
| 124 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      | 4                         |
| 125 |                                |                                  |  |                  |  |   |   |                            | 4   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 126 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 127 | 4                              |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      | 5                    |                           |
| 128 |                                |                                  |  | 6                |  |   | 4   |                            |   |   |   |                      |                          |                              |                     | 4  |                         |                      |                      |                           |
| 129 | 6                              |                                  |  |                  |  |   | 4   |                            |   |   |   |                      |                          |                              |                     | 6  |                         | 2                    |                      |                           |
| 130 | 2                              |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     | 3  |                         |                      | 3                    |                           |
| 131 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         | 3                    |                      |                           |
| 132 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 133 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 134 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 135 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          | 5                            | 2                   | 2  |                         |                      |                      | 5                         |
| 136 | 5                              |                                  |  |                  |  |   | 3   | 5                          |   | 5   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 137 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          | 5                            |                     |  |                         |                      |                      |                           |
| 138 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 139 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 140 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 141 |                                |                                  |  |                  |  |   |   |                            |   | 3   |   |                      |                          |                              |                     |  |                         |                      |                      | 6                         |
| 142 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 143 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 144 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 145 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 146 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 147 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 148 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 149 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      | 5                        |                              |                     |  |                         |                      |                      |                           |
| 150 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 151 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      | 6                         |
| 152 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 153 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 154 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 155 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 156 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 157 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 158 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 159 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  | 6                       |                      |                      |                           |
| 160 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 161 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 162 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      | 7                    |                           |
| 163 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 164 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 165 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |
| 166 |                                |                                  |  |                  |  |   |   |                            |   |   |   |                      |                          |                              |                     |  |                         |                      |                      |                           |

**Appendix 2 - Results of CCA and DCA**

| <b>Analysis 'Constrained-2'</b>  |            |                |          |        |
|--|------------|----------------|----------|--------|
| Method: CCA  |            |                |          |        |
| Total variation is 4.37932, explanatory variables account for 8.7%<br>(adjusted explained variation is 3.9%) |            |                |          |        |
| Summary Table:   |            |                |          |        |
| Statistic  | Axis 1     | Axis 2         | Axis 3   | Axis 4 |
| Eigenvalues  | 0.1561     | 0.0994         | 0.0601   | 0.029  |
| Explained variation<br>(cumulative)  | 3.56       | 5.83           | 7.21     | 7.87   |
| Pseudo-canonical<br>correlation  | 0.5142     | 0.4246         | 0.3139   | 0.2176 |
| Explained fitted variation<br>(cumulative)   | 41.15      | 67.36          | 83.21    | 90.84  |
| Forward Selection Results:   |            |                |          |        |
| Name   | Explains % | Contribution % | pseudo-F | P      |
| NO2  | 2.6        | 21.6           | 4.3      | 0.006  |
| el_vod   | 1.3        | 10.7           | 2.1      | 0.056  |
| tvrd   | 1          | 8.1            | 1.6      | 0.134  |
| O2_zas   | 0.9        | 7.3            | 1.5      | 0.19   |
| pH   | 1          | 8.4            | 1.7      | 0.068  |
| PO4  | 0.7        | 5.8            | 1.2      | 0.294  |
| BPK5   | 0.6        | 5.3            | 1.1      | 0.312  |
| NO3  | 0.5        | 4              | 0.8      | 0.464  |

| <b>Analysis 'Unconstrained-suppl-vars-2'</b>  |        |        |        |        |
|---|--------|--------|--------|--------|
| Method: DCA with supplementary variables  |        |        |        |        |
| Total variation is 4.37932, supplementary variables account for 12.2%<br>(adjusted explained variation is 2.4%) |        |        |        |        |
| Summary Table:  |        |        |        |        |
| Statistic   | Axis 1 | Axis 2 | Axis 3 | Axis 4 |
| Eigenvalues   | 0.7117 | 0.5014 | 0.2896 | 0.2271 |
| Explained variation<br>(cumulative)   | 16.25  | 27.7   | 34.32  | 39.5   |
| Gradient length   | 5.04   | 3.51   | 3.86   | 3.65   |
| Pseudo-canonical<br>correlation (suppl.)  | 0.3681 | 0.2718 | 0.4265 | 0.2864 |
| Results of Detrended correspondence analysis  |        |        |        |        |
| Summary Table:  |        |        |        |        |
| Statistic   | DCA1   | DCA2   | DCA3   | DCA4   |
| Eigenvalues   | 0.3809 | 0.3135 | 0.251  | 0.2001 |
| Decorana values   | 0.3815 | 0.3221 | 0.2219 | 0.1797 |
| Axis length   | 3.286  | 3.4822 | 4.0382 | 3.0683 |