# Analiza pouzdanosti dostupnih prostornih podataka o invazivnim vrstama biljaka

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# Uncertainty analysis of available spatial data on invasive plants

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*Ponajprije želim zahvaliti svom mentoru  prof. dr. sc. Svenu Jelaski na pomoći pri izradi ovog diplomskog rada.*

*Nadalje, zahvaljujem obitelji, prijateljima i dečku na podršci tijekom mog studija.*

*Ovaj diplomski rad  posvećujem svojim bakama i dedama Branki, Josipi, Franji i Lovri – hvala im za sve!*

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# Analiza pouzdanosti dostupnih prostornih podataka o invazivnim vrstama biljaka

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Korološki podatci o invazivnim vrstama (nalazi vrste) često se koriste u razvoju modela prostorne rasprostranjenosti vrsta sa ciljem utvrđivanja rasprostranjenosti invazivne vrste i razvoja mjera upravljanja. Prostorna preciznost koroloških podataka ovisi o metodi primjenjenoj prilikom kartiranja. Utvrđeno je da podatci manje prostorne preciznosti predstavljaju izvor nesigurnosti u razvoju modela te njihovo korištenje može uzrokovati netočne modele. U ovom istraživanju korišteni su korološki podatci iz četiri klase prostorne preciznosti za šest čestih invazivnih vrsta biljaka koji su preuzeti iz baze Flora Croatica Database. Korološki podatci su preklopljeni s kartama staništa te klimatskim, topografskim i demografskim podatcima s ciljem utvrđivanja utjecaja prostorne preciznosti na vezanost za stanište i okolišni profil vrste. Prostorna preklapanja obavljena su u GIS-u. Statistička analiza utjecaja prostorne preciznosti na okolišni profil uključivala je deskriptivnu statistiku, jednosmjernu ANOVA -u i Tukeyjev post-hoc test. Statistička analiza vezanosti za stanište uključivala je Friedmanovu ANOVA -u i Wilcoxonov test. Pokazalo se da niža prostorna preciznost podataka u pravilu utječe na dobivenu vezanost za staništa i okolišni profil vrste. Ipak, utjecaj prostorne preciznosti varirao je od vrste do vrste te od varijable do varijable. Stoga je uputno prije modeliranja testirati utjecaj prostorne preciznosti i temeljem rezultata odabrati povoljne podatke za razvoj modela.

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Chorological data (species records) of invasive plant species are often used in developing species distribution models with goals of determining the distribution of species and implementing successful management measures. The spatial accuracy of records varies based on the methods used during the mapping process. It has been established that low spatial accuracy is a source of uncertainty in environmental modelling and can lead to faulty models. In this study spatial records of four different spatial precision levels were taken from Flora Croatica Database for six invasive plant species in Croatia. Habitats and environmental data were joined to species records and tested if spatial accuracy affects habitat preferences and ecological profile of species. Data were joined in QGIS and statistical analysis included descriptive statistics followed by one-way ANOVA with Tukey post-hoc test for testing the ecological profile and Friedman ANOVA followed by Wilcoxon Matched Pairs test for testing the habitat preference. The results show that lower spatial accuracy generally influences the habitat preferences and ecological profile. However, the effect of spatial precision greatly varies across species and variables and it should be tested before choosing the entry data for developing a species distribution model.

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# 1. INTRODUCTION

## 1.1.Invasive species

The term invasive species has not been clearly defined, with a lack of standardized terminology in the field (Colautti and MacIsaac, 2004; Davis, 2009, Essl et al. 2018). Nikolić et al. (2014) defined invasive species as species that humans have intentionally or non-intentionally introduced to a new area where they negatively affect biodiversity, human health or economy. Although the term is mostly used regarding introduced, non-native species, some native species can also become invasive (Brooks and Pyke, 2001, Carey et al. 2012). However, there is always an underlying human activity causing the invasiveness of the native species (Carey et al. 2012). Invasive species cause negative effects by serving as vectors for various pests, becoming weeds, reducing agricultural yields, changing the flora of an area, blocking waterways, affecting evolutionary paths etc. (Nikolić et al., 2014). Brennan and Withgott (2005) defined invasive species as one of the basic factors that threaten biodiversity.

Plants are the most extensively studied group in invasion biology, with 44% of all studied invasive species being plants (Pyšek et al., 2008). There are more than 6000 documented invasive alien plant species in the world. The most invasive plant families are *Compositae*, *Poaceae* and *Fabaceae* which account for about 30% of world's invasive plant species (Willis, 2017).

The flora of Croatia is rich in species – according to Flora Croatica Database (FCD) there are 4576 species and 5055 species and subspecies as of January 2021. In the FCD, 631 species are indicated as allochthonous out of which 77 species are invasive (Nikolić 2020a). Most invasive plant families are *Compositae* (35% of invasive species in Croatia belong to this family), *Poaceae* (11%) and *Solanaceae* (6%). As in other Mediterranean countries, the majority of invasive plant species in Croatia are of American origin (about 70%), whereas about a quarter (25%) are of Eurasian origin. The rest (about 6%) are of African and other origin (Nikolić et al. 2014).

The first records of invasive plant species in Croatia date from 19$^{th}$ century and were mostly recorded by famous Croatian botanist of that period, such as Schlosser, Visiani etc. The oldest known record to be found in FCD is that of *Sorghum halepense* on Dalmatian islands (Host 1802 in Nikolić et al. 2013). However, most of the invasive plant findings have happened from the middle of the 20$^{th}$ century onwards. The first national survey started in 2006 and marked the first systematical assessment of Croatian allochthonous and invasive flora (Nikolić et al. 2013). The survey resulted in the preliminary checklist of invasive alien plant species in Croatia consisting of 64 species (Boršić et al., 2008).

Since then, there was a lot of research on invasive plants in Croatia. Inventory of invasive species has been made for various areas, ex. Medvednica Nature Park (Vuković et al. 2010), the city of Sisak (Pruša et al. 2013), forests on Kalnik mountain (Horvat and Franjić 2016), woody species of the city of Karlovac (Ožura and Šag 2018) etc. Herbaria were checked for early invasive species records (Vilović et al. 2020). Taxa were studied individually, ex. *Reynoutria* spp. (Vuković et al. 2019), *Myriophyllum heterophyllum* (Vuković et al. 2018, Jasprica et al. 2017), *Egeria densa* (Rimac et al. 2018). Some research was focused on characteristics of invasive species that allow for invasiveness, such as allelopathic effect (Novak et al. 2018). Finally, distributional patterns of invasive species in Croatia were studied (Novak and Novak 2018, Nikolić et al. 2013).

In recent years a few projects dealing with invasive species were launched. Projects "Establishment of the National Monitoring System for Invasive Alien Species" (Croatian: "Uspostava nacionalnog sustava za praćenje invazivnih stranih vrsta") and "Development of a Management and Control System for Invasive Alien Species" (Croatian: "Razvijanje sustava upravljanja i kontrole invazivnih stranih vrsta") were launched in 2017 by Ministry of Economy and Sustainable Development.

The project "Establishment of the National Monitoring System for Invasive Alien Species" lasted from 2017 till the end of 2020. Activities on this project included collection of new data (mapping the invasive species), establishing an information system on alien and invasive species in Croatia and developing monitoring plans for some invasive alien species, in order to create a basis for the future management of these species.

The project "Development of a Management and Control System for Invasive Alien Species" started in 2017 and will finish in October 2021. As a part of this project, it is intended to develop two action plans concerning pathways of unintentional introduction of IAS, three species management plans for invasive animal species of Union concern, as well as to educate employees responsible for official controls (customs officers, policemen…) to recognize and take appropriate action during the transport of invasive species to Croatia. Both projects were co-financed by EU Cohesion Fund.

Furthermore, there was and still is a number of regional projects dealing with invasive plants in Croatia, such as "Sava TIES" (international project dealing with removal and control of invasive plant species in the Sava basin, conducted in Croatia, Slovenia, Bosnia and Herzegovina and Serbia), LIFE CONTRA *Ailanthus* (a project dealing with invasive tree *A. altissima* in Mediterranean region of Croatia) and many others.

## 1.2.Chorological data

Mapping is a process of adding spatial information to inventoried species, i.e. geocoding. Through mapping we obtain chorological data – data that contain information on distribution of the species. Chorological data are needed for numerous scientific studies in various fields (ex. biogeography, evolution, ecology etc.) and are also useful in many other economic activities such as forestry, agriculture or pharmacy. They are also vital for nature and biodiversity conservation (Nikolić, 2006).

Mapping can be done in an indirect (e.g. using various artificial grids) or a direct manner (by joining an exact coordinate to a species record).

The most commonly used cartographic grid systems in Croatia are MTB grid and UTM grid. Both MTB grid and UTM grid consist of basic grid units. Presence-absence data of a species are recorded for each basic grid unit. All basic grid units in which the species is recorded represent the distribution of that species (Nikolić et al., 1998; Nikolić, 2006).

MTB grid (German: Meßtischblätter – sheets of topographic map) was developed in Germany and is traditionally used for mapping of flora in Central Europe. It is defined by the geographic coordinate system (latitude and longitude). One degree rectangular is divided in 60 basic grid units with dimensions 10’ x 6’ (10’ of longitude and 6’ of latitude). One basic grid unit also corresponds to one sheet of topographic map with scale 1:25 000 and is named after that sheet. If needed, basic grid units of MTB grid can be divided in four smaller units (MTB 1/4), which can be further divided in four smaller units (MTB 1/16), which can, again, be divided in four smaller units (MTB 1/16) etc.. The advantage of using the MTB grid stems from it being defined by the latitude and longitude, i.e. from the fact that grid units are easily found on a map with meridians and parallels (Nikolić et al. 1998, Jelaska et al. 2003, Nikolić 2006).

UTM (Universal Transverse Mercator) is a map projection and grid system developed by the US Military in mid-20$^{th}$ century. The UTM grid spans between 84° N latitude and 80° S latitude. The Earth is divided in sixty zones in an east-west direction from 180$^{th}$ meridian east to Greenwich to the prime meridian. These zones span 6° in longitude and are numerated with numbers from 1 to 60. In north-south direction the Earth is divided in 20 bands that span 8° in latitude (except the north polar band which is 12° in latitude). These bands are lettered starting with C (the southern-most band) and ending with X (the north polar band). Additional bands covering Antarctic and Arctic regions are lettered with the remaining letters (A, B, Y, Z). The latitude bands are not a part of UTM grid but a part of the military grid reference system (MGRS) which is used in addition to UTM for the purpose of mapping. Each basic grid unit of the UTM grid is called a zone and marked with a number (1-60) and letter (C-X). Each zone can further be divided in basic grid units – squares with dimensions 100 km x 100 km which are marked by two letters. Basic grid units can be further divided in smaller units (Nikolić et al., 1998; Snyder 1987).

Joining an exact coordinate to a species record can be done using a map or a GPS device. GPS (Global Positioning System) uses microwave signals broadcast by satellites in Earth orbit. Satellites are located in Earth orbit in such fashion that a GPS device can receive signals from multiple satellites at all times. Using the time necessary for each of the signals to be received, GPS device calculates its distance from respective satellites and estimates its position on Earth through the triangulation process. Geocoding a species record using coordinates acquired by a GPS device is generally the most precise method. The location of the record can be determined with a precision of 5-50 m depending on atmospheric conditions and topography of the locality (Nikolić, 2006).

To be able to determine coordinates of a species record using a map, one must be acquainted with its features and know how to use it. Geocoding using a map is done by drawing the location on the map and subsequently reading the coordinates. The map with the drawn location must be included in the final report (Nikolić, 2006).

All the mentioned methods have their advantages as well as disadvantages. When mapping the coordinates directly (GPS, maps) the records have higher spatial precision. It is not complicated to acquire exact coordinates of a record because most of the maps feature the geographic grid and GPS devices are pretty affordable nowadays, with the majority of smartphones containing GPS receiver as well. Moreover, records of higher spatial resolution can be converted to lower spatial resolution whereas the reverse is not possible. These methods are preferred when mapping the flora of a smaller area or the distribution of a rare species (Nikolić et al. 1998). However, directly mapping each species record is very time consuming so it makes no sense to apply this method when mapping bigger areas or distributions of common and widely spread species. Additionally, field and atmospheric conditions can influence the performance of the GPS receiver and consequently the positional accuracy of obtained data (Nikolić, 2006).

The advantage of indirect mapping methods is great – field work is simple, and it is easy to add new species to already established floristic lists. Mapping using grids is also suitable for widely spread species because they are recorded just once per basic grid unit. Data acquired through mapping by grids can easily be statistically analysed. Data of required spatial resolution is obtained by choosing the size of basic grid unit used. However, data acquired by indirect mapping is always of smaller spatial precision than that obtained by direct mapping. Furthermore, using a grid with too big basic grid units can lead to data of insufficient spatial precision. Indirect mapping is also unsuitable for mapping of rare species (Nikolić, 2006).

### 1.3. Distribution of invasive plant species and species distribution models

Invasive plant species are not evenly distributed. Since they are mostly spread through human activities, they are found in bigger abundancy near human settlements and traffic corridors (such as roads, railways, rivers etc.) (Štajerová et al. 2017). Past research in Croatia has shown the same distributional pattern. Nikolić et al. (2013) found that the greatest number of invasive plant species (>30 per grid cell) was found in big urban areas of Zagreb and Split. Following with up to 20 invasive plant per grid cell are smaller urban centers such as Osijek, Rijeka, Makarska and Dubrovnik. Up to 10 invasive plant species per grid cell were found in valleys of major rivers, such as the Sava, the Drava, the Danube, the Krka and the Cetina. Furthermore, the number of invasive plant species showed positive correlation with the population of human settlements. These areas rich in invasive plant species were relatively small compared to the territory of the Republic of Croatia and confined to urban areas. In general, most of the grid cells contained a small number of invasive plant species with the average being 4.7 per grid cell which points to relatively low invasive plant species diversity in Croatia. Dimension of the grid cell used in the study was approximately 35 $km^2$.

The knowledge on distribution of invasive plants is very important in terms of management and conservation strategies.

Species distribution is fundamentally tied to their habitat. Species distribution models (SDMs) are an important tool in biogeography and ecology. By combining species occurrence data and environmental variables SDMs identify the environmental space in which a species has been recorded. Based on that SDMs can be used to predict the suitability of a site for a species, i.e. potential distribution of a species. Usually, geographic information system (GIS) is used as a tool when developing SDMs (Araújo and Guisan 2006, Moudrý and Šímová 2012).

Since GIS is just a simplified representation of the world, there are various sources of uncertainty in SDMs, arising from both the dependant and the explanatory variables and the algorithm or functions used to relate those variables (Moudrý and Šímová 2012).

Dependant variable are species occurrence data, i.e. spatial data. Sources of uncertainty with spatial data can be sample size (Wisz et al. 2008, Gábor et al. 2019a), positional accuracy (Graham et al. 2008, Gábor et al. 2019b) and availability of true-absence data (Václavík and Meentemeyer 2009, Moudrý and Šímová 2012).

Positional accuracy, i.e. positional error has been recognised as the greatest contributing factor to the reduced accuracy of the SDMs in some studies (Johnson and Gillingham 2008, Orešković 2017). When data have positional error, it appears that species are present on habitats and in environmental conditions in which they do not appear in nature. This leads to overestimation of species habitat area, especially at finer resolution (Guisan et al. 2007, Feeley and Silman 2010, Moudrý and Šímová 2012). Therefore, when developing SDMs, it is necessary to consider the influence of spatial accuracy on results of distribution modelling and to use data of sufficient spatial accuracy and an appropriate spatial resolution.

## 1.4. Aims of the study

The aim of this study was to determine to what extent does the spatial precision of chorological data and the map scale of cartographic layers influence the certainty of information on preferences of an invasive species for a habitat and on the ecological profile of the species.

# 2. MATERIALS AND METHODS

## 2.1. Flora Croatica Database (FCD) – chorological data

Flora Croatica Database (FCD) is the national database of vascular flora of the Republic of Croatia. It was first developed in the 1990-ies and has since been further upgraded through various initiatives and projects (Nikolić et al. 2001, Nikolić 2020b, Nikolić 2020c). Among other data, it contains geocoded chorological data obtained from literature, herbaria, field records and oral communication. Based on mapping methods or source reliability, FCD distinguishes 12 spatial precision levels (IDs) of chorological data ranging from 0 to 11 (Table 1.). The lowest precision level is level 0 (ID 0). The data with ID 0 are not actually geocoded – they are presence-only data showing whether a species is present in the Republic of Croatia. The highest precision level is level 11 (ID 11) corresponding to data mapped with a GPS device (Nikolić 2020b).

**Table 1.** Description of spatial precision levels of chorological data in FCD.

| PRECISION LEVEL | DESCRIPTION |
|---|---|
| **ID 0** | Presence-only data for the territory of the Republic of Croatia |
| **ID 1** | Low spatial precision, regions (ex. Dalmatia, Norther Croatia) |
| **ID 2** | MTB1 grid, UTM 10 x 10 km grid; precision of ca. 100 $km^2$ |
| **ID 3** | MTB.1/4 grid, precision of cca 25 $km^2$ |
| **ID 4** | Mostly MTB1/16 grid, precision of ca. 10 $km^2$ |
| **ID 5** | Populated places, precision mostly ca. 5 $km^2$ |
| **ID 6** | Toponyms with small area (ex. islets), precision of ca. 1 $km^2$ |
| **ID 7** | Map scale 1:100 000, precision of ca. 100 – 200 m |
| **ID 8** | Map scale 1: 50 000, precision of ca. 50 – 100 m |
| **ID 9** | Map scale 1: 25 000, precision of ca. 25 – 50 m |
| **ID 10** | Map scale 1: 5 000, precision of ca. 5 – 10 m |
| **ID 11** | GPS device, precision of ± 5 – 50 m |

For this research, I used chorological data of six invasive plant species: *Ailanthus altissima* (Hill.) Swingle, *Ambrosia artemisiifolia* L., *Echinocystis lobata* (Michx.) Torr. et A. Gray, *Erigeron anuus* (L.) Desf., *Robinia pseudoacacia* L. and *Veronica persica* Poir. with precision levels ID 5, ID 6, ID 7 and ID 11. I acquired the data from FCD. I chose the six species based on the number of available data and so to include both woody and herbaceous species.

The number of available data per species per ID is shown in the Appendix 1.

The data used per species varied between 189 and 10389. The species with the highest number of available data was *R. pseudoacacia* with 10389 data. The species with the least data was *E. lobata* with 189 available data. The largest data set among all six species was available for ID 11, ranging from 94 to 10054, whereby *R. pseudoacacia* had the most and *E. lobata* the least data. For three species (*A. artemisiifolia*, *E. lobata* and *V. persica*) the precision level with least available data was ID 6 (ranging from 22 to 139). In the case of *A. altissima*, *E. annuus* and *R. pseudoacacia* ID 5 had the least available data (ranging from 54 to 149).

### 2.2. Habitat maps

Habitat map of the Republic of Croatia, "**HM04**", (map scale 1: 100 000, minimum mapping unit: 9 ha) is a spatial representation of habitats released in 2004 by the State Institute for Nature Protection. In 2016, the map of terrestrial non-forest habitats of Republic of Croatia was released, "**HM16**", (map scale 1: 25 000, minimum mapping unit 1,56 ha). Both maps are available as GIS layers at the website of Ministry of Environmental Protection and Energy and were used in this study. Habitats are categorized according to the National Habitats Classification of Croatia (Croatian: Nacionalna klasifikacija staništa, NKS) (Official Gazzete NN 88/2014).

Corine Land Cover (CLC, Coordination of Information on the Environment) is a digital inventory of European Union which was launched in 1985 with the aim of harmonizing land cover and land use data among European countries. It consists of 44 classes of land cover and uses Minimum Mapping Unit of 25 ha (reference year 1990) and was updated four times – in 2000, 2006, 2012 and 2018. For this research, CLC 2012 of Croatia was used as it was the most recent available version at the time of conducting this analyses.

Not all chorological data could be used for the habitat analysis since there were geometric errors in some data when adding the values of habitats maps. The number of data used per analysis involving each of habitat maps could be seen in Appendix 2.

### 2.3. Environmental Data

Environmental data used for this study can be divided in three groups: topography, climate, and proxies for human disturbance (demographics and roads).

Topographical variables that were used in this study were: elevation, slope, northness, eastness (which are cosine and sine of aspect respectively) and the distance from watercourses. The spatial resolution of all the grid topographical layers was 300 m x 300 m. I calculated the distance from watercourses in three spatial resolutions: 100 m x 100 m, 1 km x 1 km and 5 km x 5km.

I selected four temperature variables (two annual and two quarterly) and three precipitation variables (one annual and two quarterly) and downloaded the corresponding GIS layers from the WorldClim (Table 2.). The spatial resolution of climatic layers was resampled to 300 m x 300 m (www.worldclim.org).

**Table 2.** Climatic variables used in this study.

| | |
|---|---|
| BIO 1 | Annual Mean Temperature |
| BIO 7 | Temperature Annual Range |
| BIO 10 | Mean Temperature of the Warmest Quarter |
| BIO 11 | Mean Temperature of the Coldest Quarter |
| BIO 12 | Annual Precipitation |
| BIO 17 | Precipitation of Driest Quarter |
| BIO 18 | Precipitation of Warmest Quarter |

I calculated the distance from roads and generated three grids with spatial resolutions 100 m x 100 m, 1 km x 1 km and 5 km x 5 km.
I generated a population density grid by interpolation of point data representing centroids of settlements in Croatia. I downloaded the population data of Croatian settlements (i.e. number of inhabitants) from the GeoSTAT$^{RH}$ web portal, developed by the Croatian Bureau of Statistics (geostat.dzs.hr).

## 2.4. Data Analysis

### 2.4.1. Spatial Analysis

I used the chorological data taken from FCD in QGIS (version 3. 10. 12 'A Coruña') as vector point layers (points representing each record of species). For each species, I separated the data in five vector layers based on their ID, for example: *Ailanthus*5 (chorological data of *A. altissima* with ID 5), *Ailanthus*6 (chorological data of *A. altissima* with ID 6), *Ailanthus*7 (chorological data of *A. altissima* with ID 7), *Ailanthus*11 (chorological data of *A. altissima* with ID 11), *Ailanthus*_all (chorological data of *A. altissima* with IDs 5, 6, 7 and 11) (Figure 1. & Figure 2.).

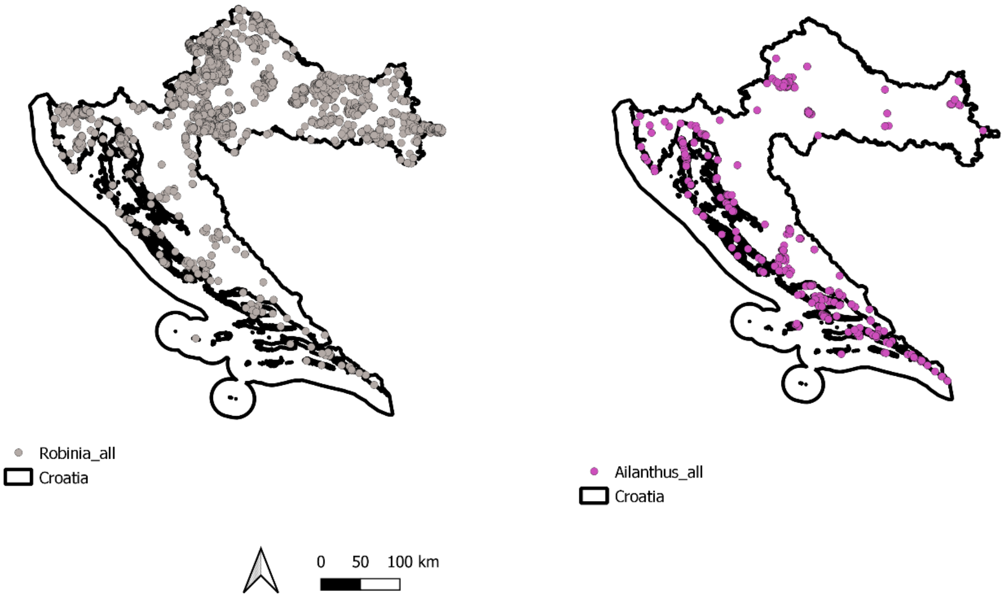


**Figure 1.** Distributional patterns of invasive woody species *R. pseudoacacia* and *A. altissima*. Points show species records with ID precisions 5, 6, 7 and 11.

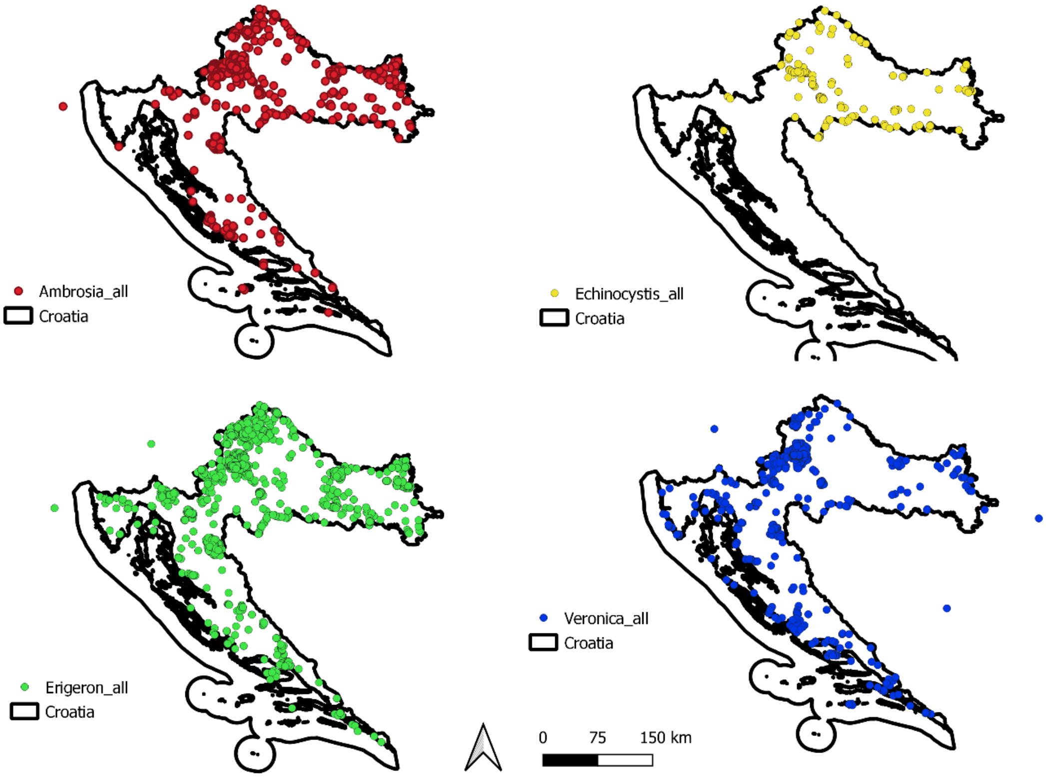


**Figure 2.** Spatial distributions of invasive herbaceous species *A. artemisiifolia*, *E. lobata*, *E. annuus* and *V. persica*. Points show records with ID precisions 5, 6, 7 and 11.

I added the environmental data and habitat types to the points (records of species) using the tools “Join attributes by location” (Figure 3.) and “Add raster values to points” (Figure 4.).
The tool “Join attributes by location” adds values of features from one vector layer to features of another vector layer. I used it to join the values of CLC, habitats map of Croatia, terrestrial non-forest habitats map of Croatia and climatic variables (which were in form of a vector layer) to chorological data.


**Figure 1.** Application of the tool “Join attributes by location” in QGIS.

The tool “Add raster values to points” adds values from a raster layer to points of a vector layer. I used it to add values of topographic variables, distance from watercourses, distance from roads and population density (which were in form of a raster layer) to chorological data.

After adding the values of all the variables to chorological data, I subjected the data to a vector analysis tool “Statistics by Categories” and categorized them by different categories of habitats (Figure 3.).

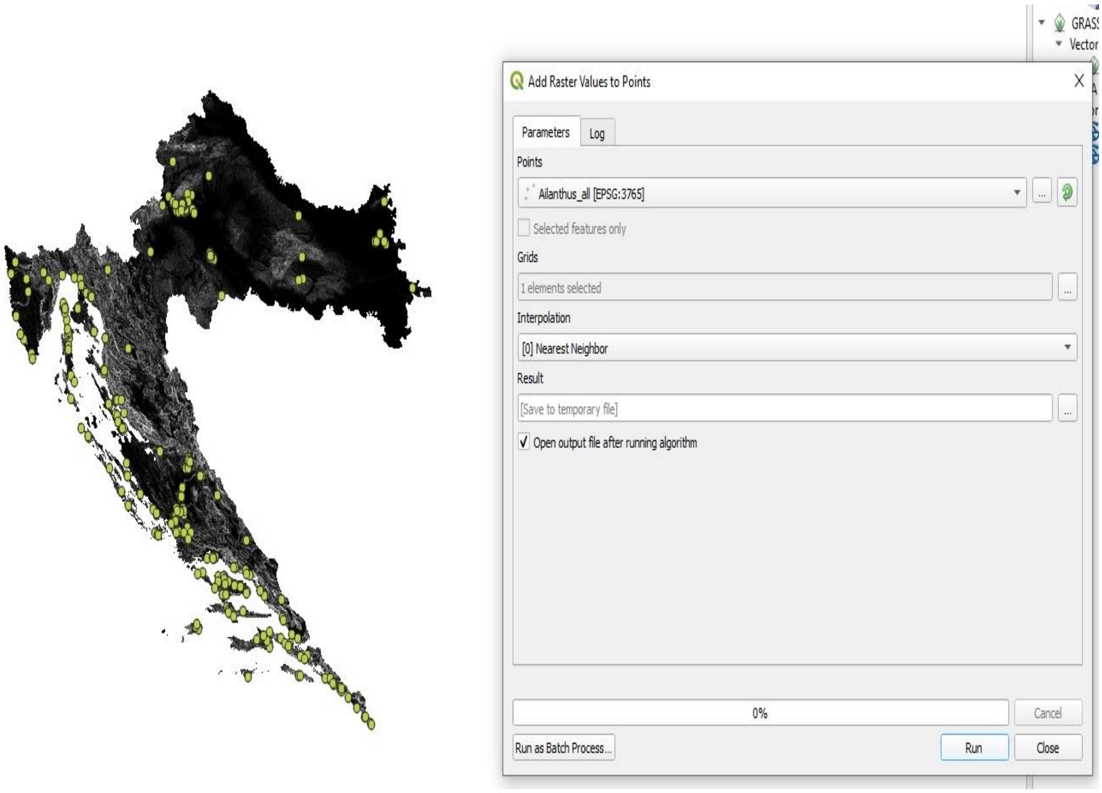


**Figure 2.** Application of the tool "Add raster values to points" in QGIS.

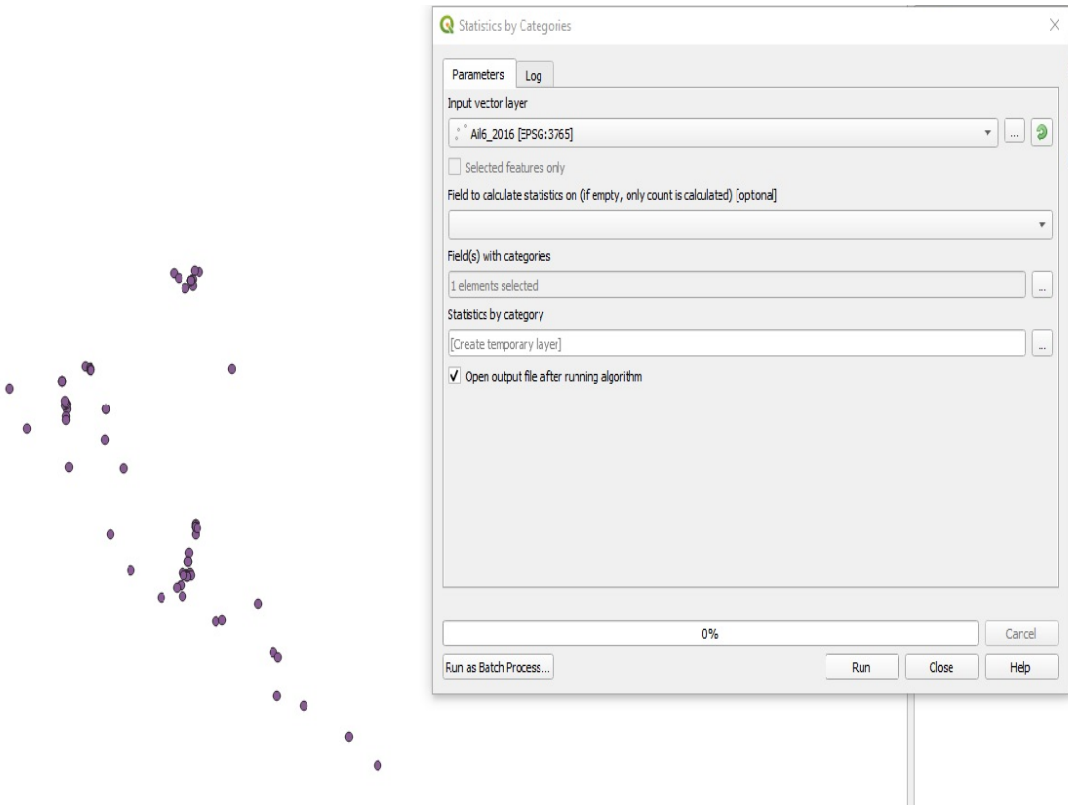


**Figure 3.** Application of the "Statistics by Categories" tool in QGIS.

### 2.4.2. Statistical Analysis

I used TIBCO Statistica® 13.3.0 software package for the statistical analysis. I calculated the descriptive statistics of environmental variables and used one-way ANOVA with Tukey's post-hoc test to test if there are any statistical differences between the datasets of the environmental variables of different spatial precision.

I have analysed the habitat categorical data in Statistica and calculated the non-parametric statistics. At first, I calculated the Friedman ANOVA of frequencies and then, if p value was $\leq 0.05$, I used the Wilcoxon Matched Pairs test.

# 3. RESULTS

## 3.1. Habitat analysis

Statistics by categories showed that species records were found on 28 different habitat types on the CLC layer (as shown in Appendix 3.). *R. pseudoacacia* was found on the biggest number of different habitats, being recorded on 26 various habitats. *E. lobata* was recorded on 15 habitats only. *A. altissima* was recorded on 22 habitats, *V. persica* on 23 habitats and *A. artemisifolia* and *E. annuus* on 25 habitats respectively.

In all six species, the dataset that was recorded on most habitats was ID 11. The dataset recorded on least habitats was ID 5 (*E. lobata*, *E. annuus*, *R. pseudoacacia*) or ID 7 (*A. altissima*, *A. artemisiifolia*, *V. persica*).

At the significance level of 0.05 Friedman ANOVA test (results in Appendix 6.) showed that there are significant differences between datasets of different spatial accuracy in *A. artemisiifolia* and *E. annuus*. In other species there was no significant differences. Wilcoxon Matched Pairs test that followed showed that there are significant differences between datasets of ID 5 with ID 11and "all" in both *A. artemisiifolia* and *E. annuus* (tables in Appendix 7.).

When analysing the HM04 and HM16, it was observed that the species were found on 71 and 55 different habitat types, respectively (tables in Appendices 4. and 5.). On HM04, *E. annuus* was recorded on the biggest number of habitats – 59 different habitats, followed by *R. pseudoacacia* which was recorded on 58 habitats. *E. lobata* was again found on the smallest number of habitats – 26. *A. altissima* was reocrded on 38 habitats, *A. artemisiifolia* on 48 habitats and *V. persica* on 49 habitats. On HM16 *E. annuus* was also recorded on the highest number of habitats (46) and *E. lobata* on the least (17). *A. altissima* was recorded on 24 habitats, A. *artemisiifolia* on 37 habitats, *R. pseudoacacia* on 35 habitats and *V. persica* on 29 habitats.

On both maps, the biggest number of habitats in each of the species was recorded for dataset ID 11. On HM04, the smallest number was recorded for dataset ID 5, except in *E. lobata* where it was the case with ID 6. On HM16, the smallest number was also generally recorded for ID 5 (ID 5 and ID 6 in *E. lobata*) with the exception of *V. persica* where it was the case with ID 7.

At the significance level of 0.05 Friedman ANOVA test showed that there are significant differences between datasets of different spatial accuracy in *A. artemisiifolia, E. annuus, R. pseudoacacia* and *V. persica* for both habitat maps (results in Appendix 6.).

Results of Wilcoxon Matches Pairs test per species and habitat maps are represented in the Appendix 7.

In *A. artemisiifolia*, significant differences were found for all three habitat maps. It was observed that the pair ID 5 and "all" was significantly different in both HM04 and HM16. It was also, as previously mentioned, significantly different in CLC. ID 5 and ID 11 were significantly different in HM16 and in CLC. In general, ID 5 differed significantly from all other ID in HM16. In HM04, ID 7 differed from ID 11 and "all".

In *E. annuus*, there were also significant differences observed in all three habitat maps and there were two pairs of datasets which differed one from another on both maps – ID 5 and ID 11 as well as between ID 5 and "all". ID 5 also differed from ID 6 in both HM04 and HM16.

In *R. pseudoacacia*, ID 5 and all & ID 11 and "all" differ significantly on both HM04 and HM16. More significantly different pairs were observed for HM16 than for HM04.

In *V. persica*, there were also more differences observed for HM16 than for HM04. There were three pairs that differed significantly on both maps – ID 5 and "all", ID 7 and ID 11 & ID 7 and "all".

### 3.2. Environmental analysis

Descriptive statistics which were calculated for environmental data can be found in Appendix 8.

At the confidence level of 0.95 one-way ANOVA (Table 3.) showed that there were statistically significant differences in environmental variables in all six species.

**Table 3.** Results of one-way ANOVA showing if there are any significant differences between datasets of different spatial precision in six studied invasive species.

| Species | Effect | Multivariate Tests of Significance Sigma-restricted parameterization Effective hypothesis decomposition | | | | | |
|---|---|---|---|---|---|---|---|
| | | Test | Value | F | Effect | Error | p |
| *Ailanthus altissima* | Intercept | Wilks | 0.000232 | 197676.3 | 18 | 824.000 | 0.00 |
| | IDPREC | Wilks | 0.749373 | 3.4 | 72 | 3242.541 | 0.00 |
| *Ambrosia artemisiifolia* | Intercept | Wilks | 0.000188 | 456478.6 | 20 | 1720.000 | 0.00 |
| | IDPREC | Wilks | 0.534543 | 14.6 | 80 | 6787.607 | 0.00 |
| *Echinocystis lobata* | Intercept | Wilks | 0.000069 | 265777.9 | 18 | 332.000 | 0.00 |
| | IDPREC | Wilks | 0.502416 | 3.5 | 72 | 1307.868 | 0.00 |
| *Erigeron annuus* | Intercept | Wilks | 0.000221 | 703308.7 | 18 | 2800.00 | 0.00 |
| | IDPREC | Wilks | 0.830603 | 7.4 | 72 | 11012.69 | 0.00 |
| *Robinia pseudoacacia* | Intercept | Wilks | 0.003856 | 280670.9 | 18 | 19556.00 | 0.00 |
| | IDPREC | Wilks | 0.855865 | 43.1 | 72 | 76901.68 | 0.00 |
| *Veronica persica* | Intercept | Wilks | 0.000191 | 445087.6 | 17 | 1449.000 | 0.00 |
| | IDPREC | Wilks | 0.783099 | 5.4 | 68 | 5688.605 | 0.00 |

The results of Tukey post-hoc test are shown in Appendix 9.

Climatic variables were observed to be most inconsistent of environmental variables. Generally, there were more significant differences in annual than in quarterly climatic variables. The most inconsistent climatic variable was BIO7 (Temperature Annual Range). In *A. altissima* and *E. annuus* ID 7 differed most significantly for BIO7 (Figure 4., Figure 7.), whereas in E. lobata it was ID 6 (Figure 6.). In the other three species, there were two datasets that differed most significantly: ID 6 & ID 7 in *A. artemisiifolia* (Figure 5.), ID 5 & ID 6 in *R. pseudoacacia* (Figure 8.) and ID 5 & ID 7 in *V. persica* (Figure 9.).

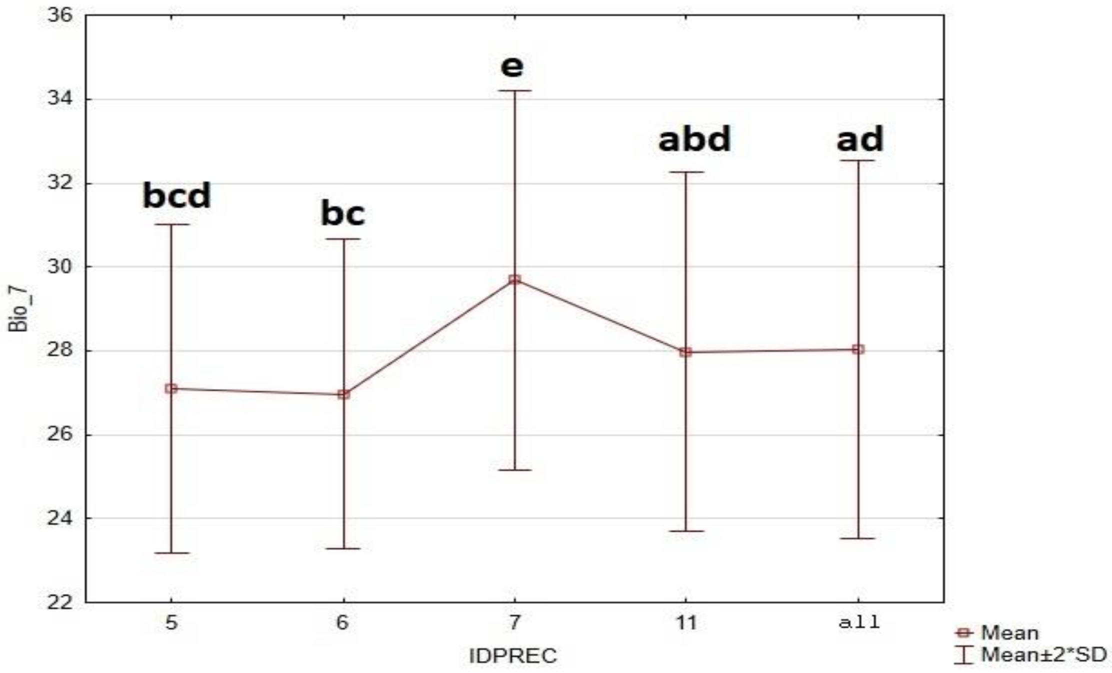


**Figure 4.** Box and whiskers plot showing mean values of Annual Temperature Range (BIO7) with double standard deviation for five *A. altissima* datasets of different spatial accuracy.

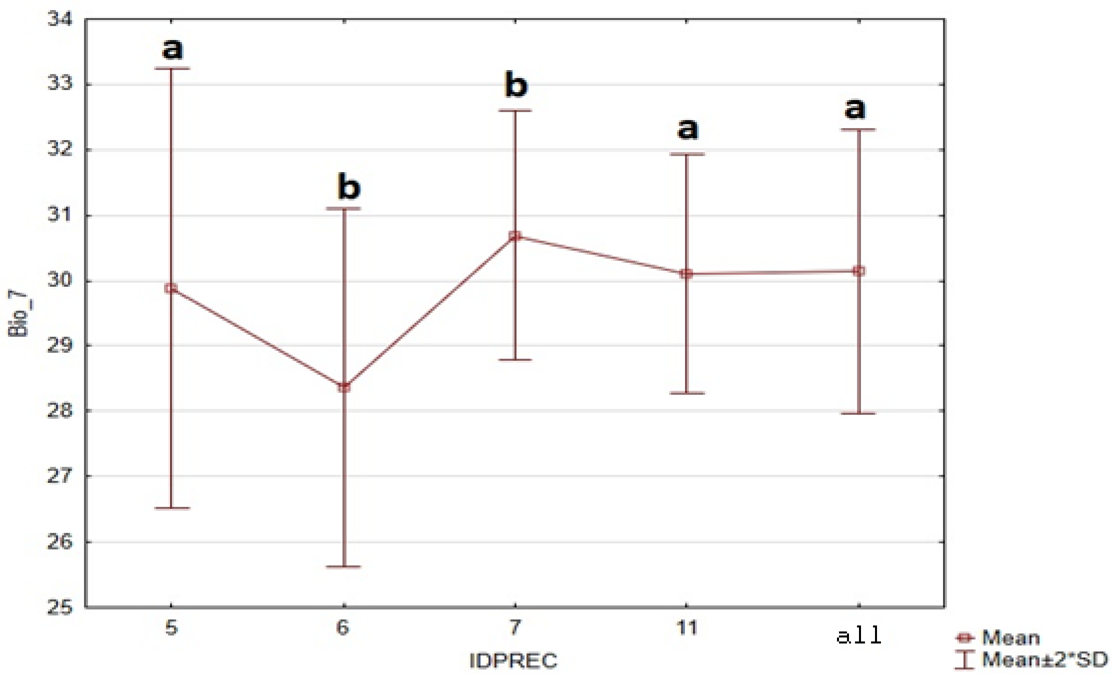


**Figure 5.** Box and whiskers plot showing mean values of Annual Temperature Range (BIO7) with double standard deviation for five *A. artemisiifolia* datasets of different spatial accuracy.

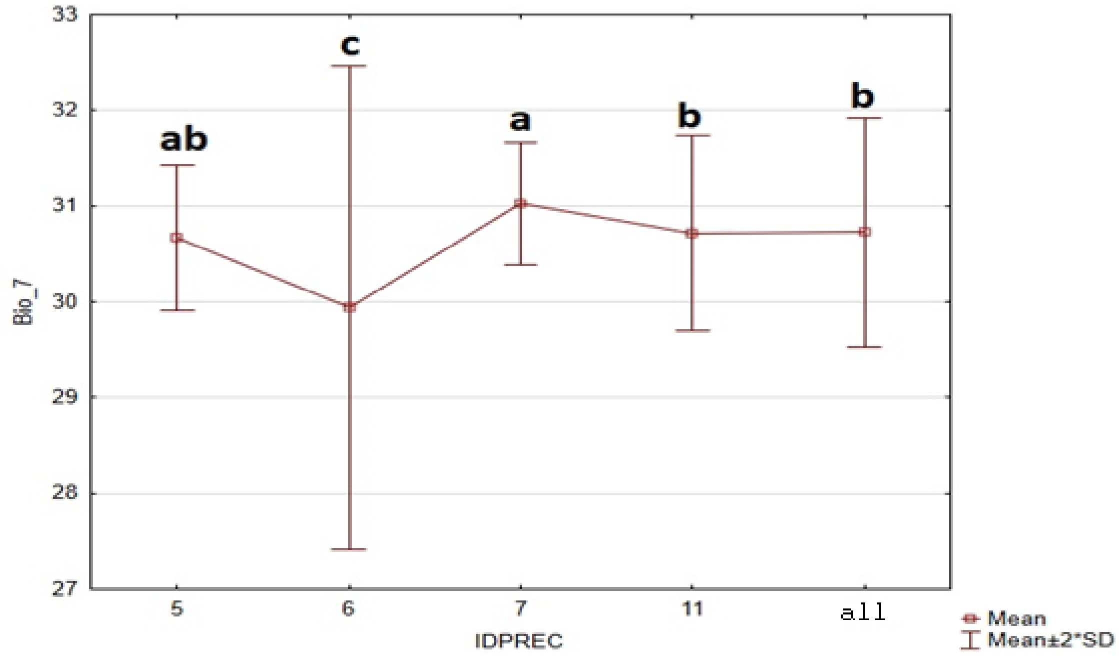


**Figure 6**. Box and whiskers plot showing mean values of Annual Temperature Range (BIO7) with double standard deviation for five *E. lobata* datasets of different spatial accuracy.

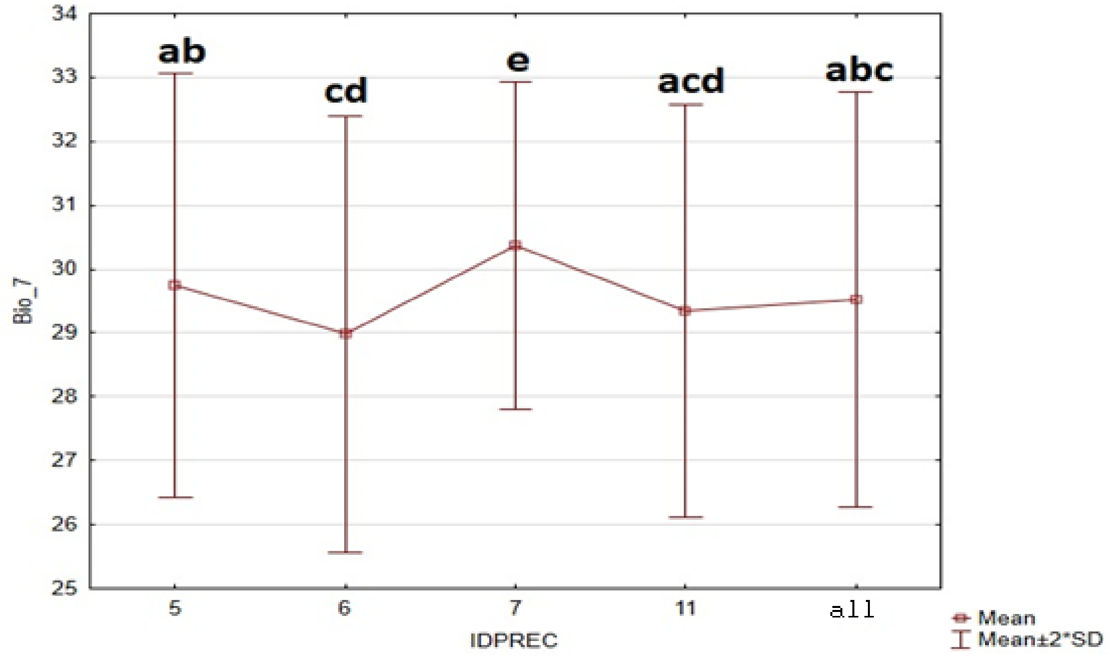


**Figure 7.** Box and whiskers plot showing mean values of Annual Temperature Range (BIO7) with double standard deviation for five *E. annuus* datasets of different spatial accuracy.

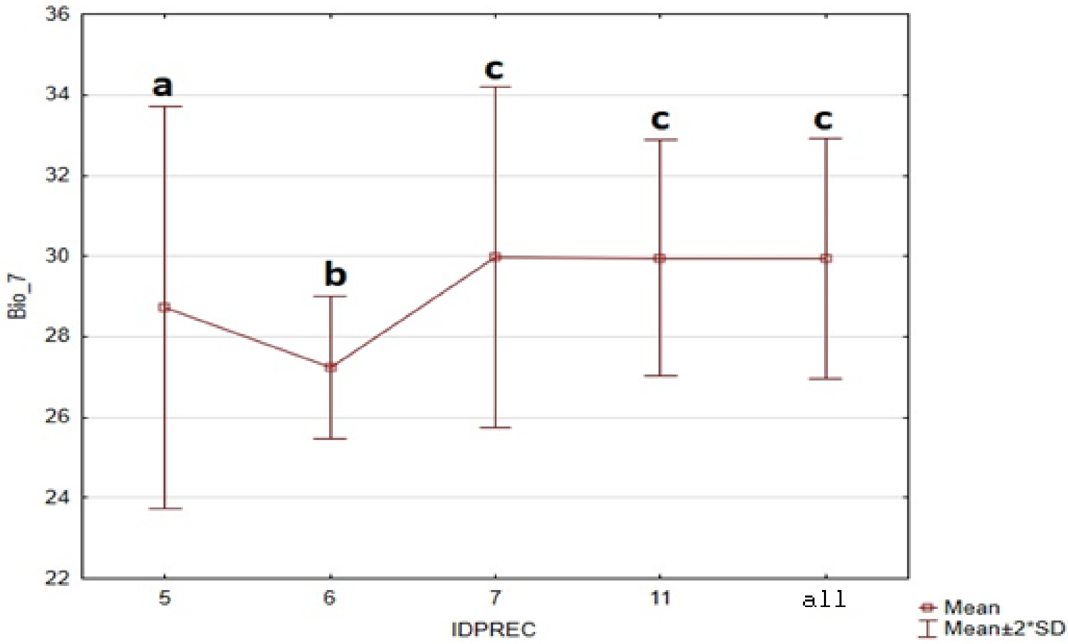


**Figure 8.** Box and whiskers plot showing mean values of Annual Temperature Range (BIO7) with double standard deviation for five *R. pseudoacacia* datasets of different spatial accuracy.

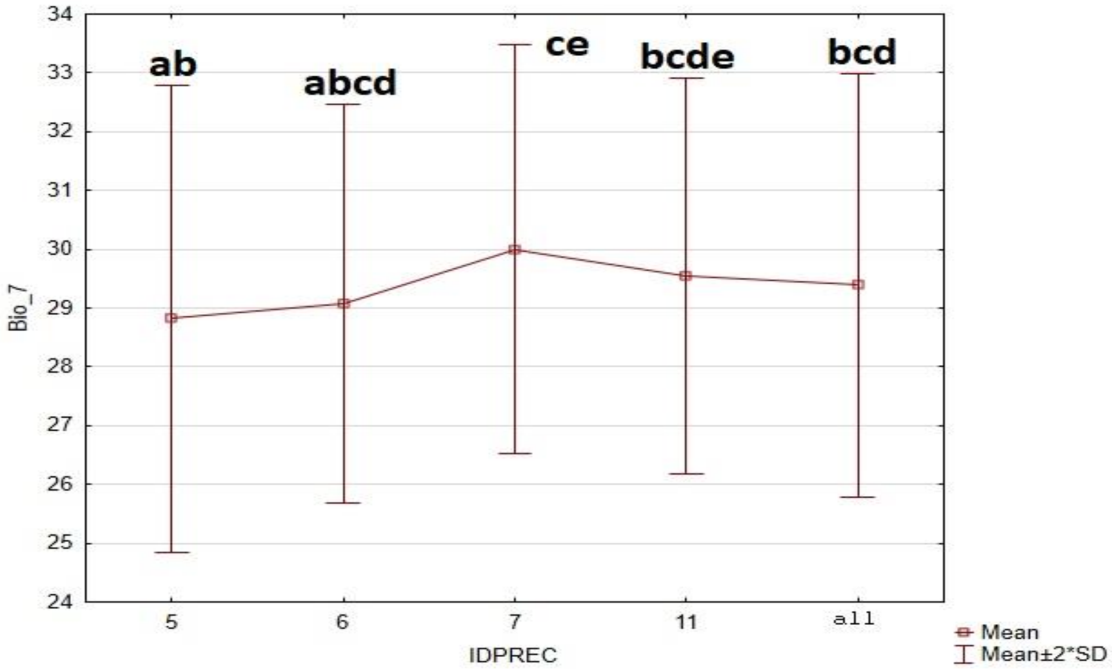


**Figure 9.** Box and whiskers plot showing mean values of Annual Temperature Range (BIO7) with double standard deviation for five *V. persica* datasets of different spatial accuracy.

In *A. altissima*, ID 7 differed most significantly from other spatial precisions for four climatic variables (BIO1, BIO7, BIO10, BIO18) and ID 6 differed most significantly for the other two.

In *E. lobata* ID 6 differed most significantly for four climatic variables (BIO7, BIO11, BIO12, BIO17) and ID 5 differed most significantly for BIO1 and BIO10. There were no significant differences in BIO 18.

In *R. pseudoacacia*, most significant differences were generally observed for ID 5, ID 6 and ID 7, except for BIO18 where there were no statistically significant differences among variables

In *E. annuus* the least consistent IDs were ID 5 for BIO1, BIO11 and BIO18 and ID 6 for BIO 12, BIO 17 and BIO 18. For BIO 7, the least consistent ID was ID 7.

In *V. persica*, the least consistent ID regarding climatic variables was ID 5 with most significant differences in BIO1, BIO7, BIO10, BIO11 and BIO18. ID 6 was least consistent in BIO10, BIO12 and BIO17 and ID 7 in BIO 7 and BIO 17.

Regarding topographic variables, northness and eastness were generally consistent among all six species. Inconsistencies were observed for slope, elevation and distance from watercourses. The most inconsistent topographic variable was elevation. In three species (*A. altissima, A. artemisiifolia, V. persica*) it was a result of a difference between one dataset and the other four (Figures 10.-12.). The most differences were observed in *E. annuus* (Figure 13.).

Regarding disturbance, a lot of significant differences were observed in *E. annuus* and *R. pseudoacacia* for both the distance from roads at all three spatial resolutions and population density. There were no differences observed for *A. altissima* for either of these variables. In *E. lobata* and *V. persica*, population density was observed to show significant differences along with some differences in the distance from roads. *A. artemisiifolia* showed no significant differences for population density. However, there were some differences in the distance from roads at the finer spatial resolution.

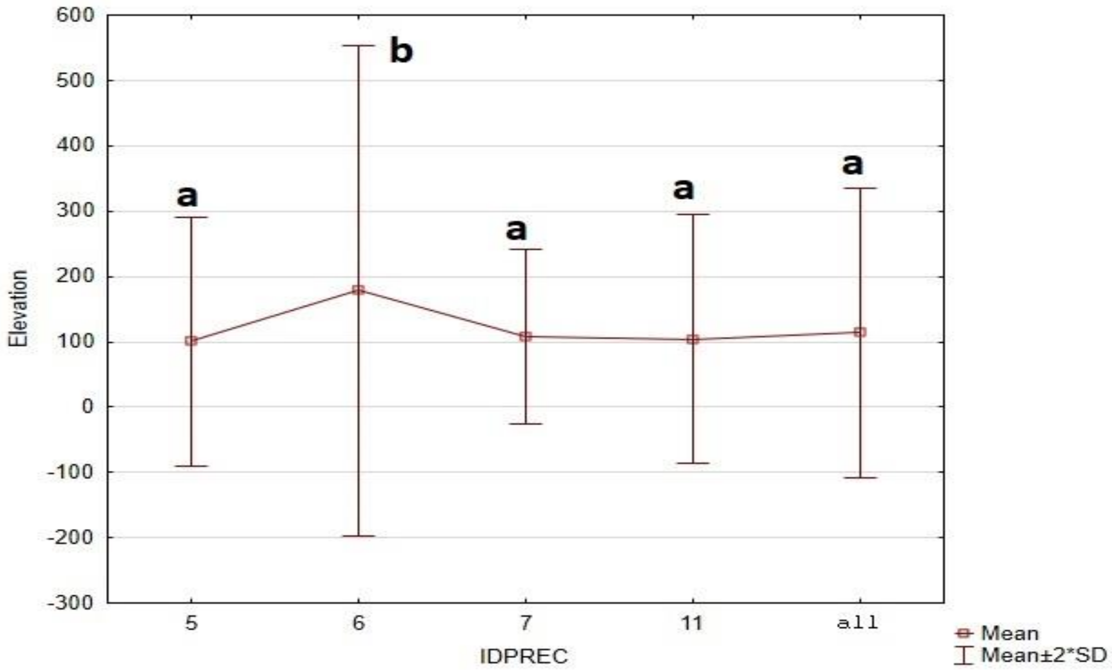


**Figure 10.** Box and whiskers plot showing mean elevation with double standard deviation for five *A. altissima* datasets of different spatial accuracy.

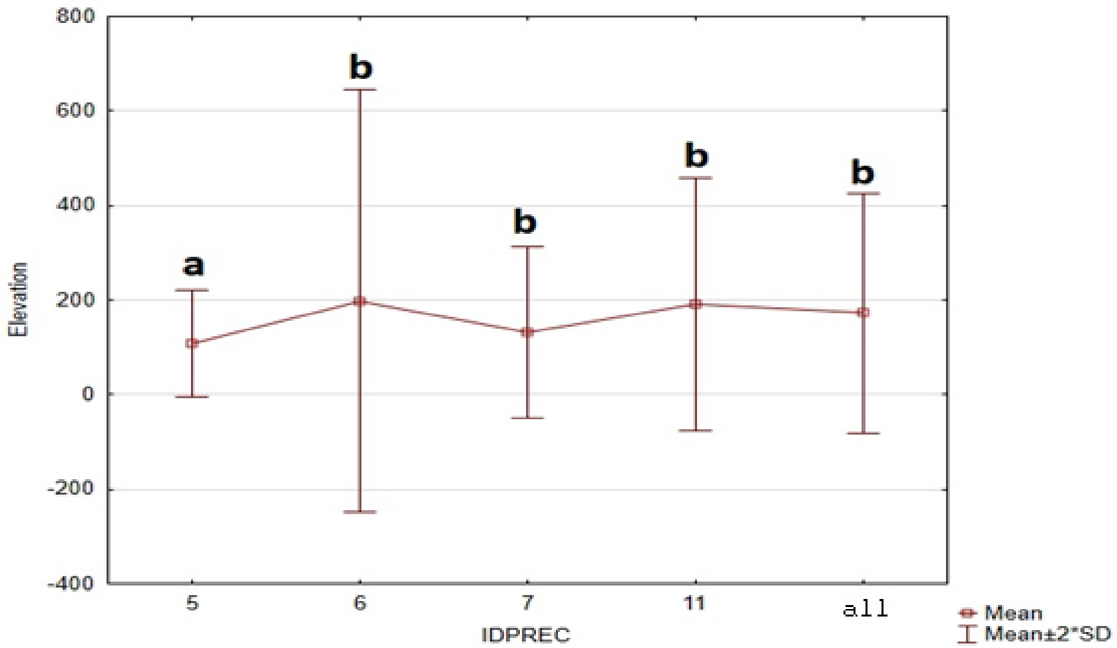


**Figure 11.** Box and whiskers plot showing mean elevation with double standard deviation for five *A. artemisiifolia* datasets of different spatial accuracy.

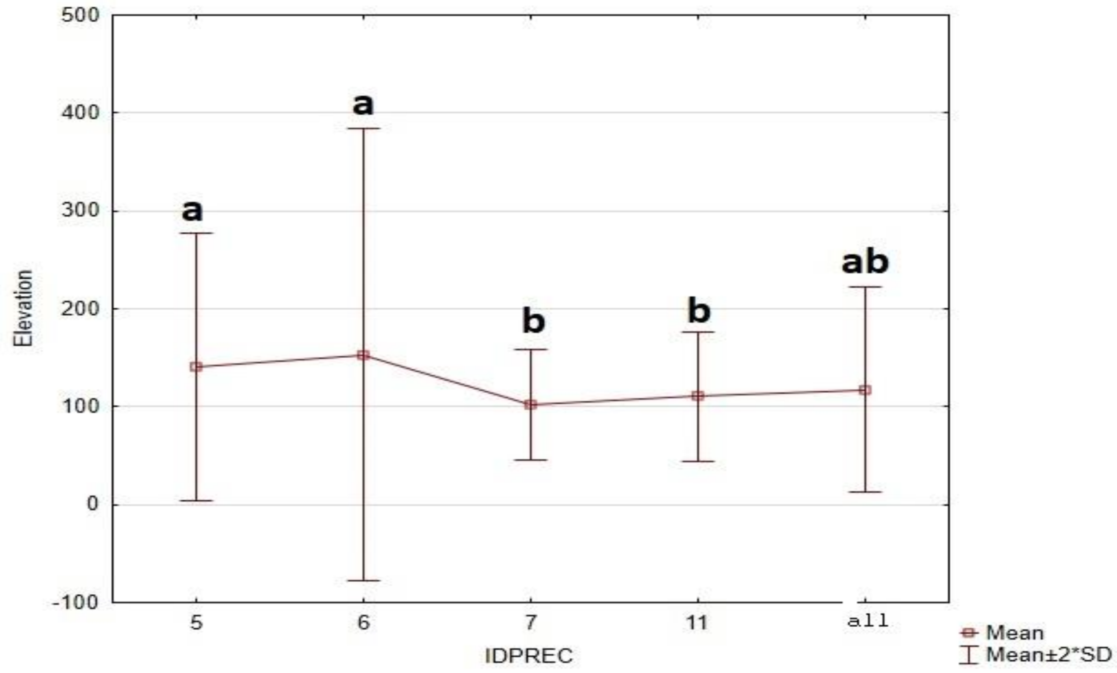


**Figure 12.** Box and whiskers plot showing mean elevation with double standard deviation for five *E. lobata* datasets of different spatial accuracy.

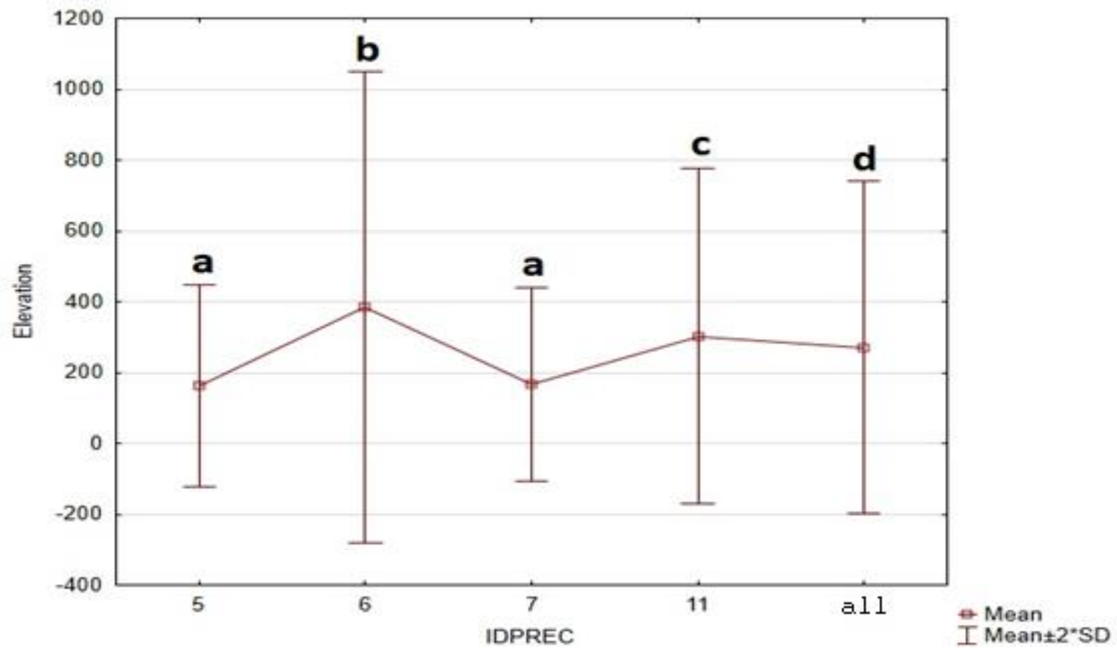


**Figure 13.** Box and whiskers plot showing mean elevation with double standard deviation for five *E. annuus* datasets of different spatial accuracy.

# 4. DISCUSSION

## 4.1. Habitat preference

When analysing the frequencies of different habitats in different species per dataset, it was observed that there is usually a lot more habitat types in datasets ID 11 than in datasets with lower spatial precision, especially ID 5. It was also observed that the roughly the same habitat types prevail in the datasets with higher spatial precision in comparison to those that are less frequent in dataset ID 5. On the other hand, habitats that are frequent in ID 5 are usually less frequent in datasets ID11 and "all". Habitat comoposition of datasets ID 6 and ID 7 varied in similarity with the other datasets from species to species.

In terms of the analysis of habitat preferences, some species showed no significant differences whatsoever, some showed significant differences only for habitat maps of Croatia and some showed significant differences for both habitat maps and CLC.

*A. altissima* and *E. lobata* showed no significant differences for any map which suggests that spatial precision does not affect the calculated preference of these species for habitats. Both of this species have a specific distribution – *A. altissima* is usually found near human settlements or alongside roads, whereas *E. lobata* is found in river valleys (Nikolić et al. 2014, Novak and Novak 2018).

In other four species, significant differences were usually found between ID 5 and the other four datasets, often ID 11 or "all" (especially if differences were found across all three maps). Since ID 5 is of the lowest spatial accuracy, it can happen that the joined value of the habitat does not correspond to the real habitat on which the species was recorded. Therefore, it is expected for the data set ID 5 to be significantly different than other IDs of higher spatial accuracy where the joined value has a much higher chance of corresponding to the real habitat (especially for ID 11 where the spatial precision is ± 5 – 50 m) (Guisan et al. 2007, Moudrý and Šímová 2012, Orešković 2017). However, there were also some other datasets that differed, ex. ID 7 and ID 11 & ID 7 and "all" in *V. persica*, although they are of both higher spatial accuracy and bigger sample size than ID 5 and ID 6.

*R. pseudoacacia* and *V. persica* showed inconsistencies between datasets of different spatial precision for habitat maps of Croatia only. This can be explained by the size of the minimum mapping unit of CLC compared to the one of habitat maps of Croatia. Namely, CLC has a bigger minimum mapping unit which means the resolution of the map is lower and so is the habitat diversity (it does not differentiate between finer categories of habitats) (Saura 2002, Manzoor et al. 2018). Therefore, it is less likely for a false value to be joined to a species record, although the joined habitat type will usually be more general than in finer scale maps.

## 4.2. Environmental profile

Although the results of the analysis of distance from watercourses and factors of human disturbance (distance from roads, population density) are in line with the expectations based on the knowledge of ecology and distribution of *A. altissima* in Croatia (Nikolić et al. 2014, Novak and Novak 2018), inconsistencies were observed for some topographic variables and climatic variables. In case of slope and elevation, the differences are a result of one dataset standing out. Among climate variables there is a lot of inconsistencies. ID 7 was the most different dataset for 5 climate variables, whereas ID 6 for the other two (BIO 12, BIO 17).

In case of *E. lobata*, which has a prevailing specific distribution in river valleys (Nikolić et al. 2014), there are significant differences in environmental variables that in most cases arise from one dataset being different from all others. It is usually the dataset ID 6. Although it is not the least accurate dataset, it is the dataset of the smallest sample size (only 13 records) which probably influenced the results of analysis (Wisz et al. 2008). In case of BIO1, BIO 10, and the distance from roads (finer spatial accuracies) the most different dataset is ID 5, probably because of its lowest spatial accuracy (Feeley and Silman 2010, Moudrý and Šímová 2012).

Inconsistencies in environmental variables in *A. artemisiifolia* were primarily observed for climate variables but also for elevation, distance from watercourses and distance from roads in finer spatial resolutions. The only significant difference in elevation is between the data set ID 5 (least spatial accuracy) and other data sets, whereas there are no significant differences in slope. It can be explained by the distribution of *A. artemisiifolia* in Croatia which is primarily spread on the anthropogenic habitats (human settlements, alongside roads, agricultural land…) in the continental part of the country which is more of a lowland area (Nikolić et al. 2014). The inconsistencies in distance from watercourses arise between ID 5 and other IDs. Again, since ID 5 is of the lowest spatial accuracy, the values joined to the species records do not correspond to the real situation in nature (Feeley and Silman 2010, Moudrý and Šímová 2012). The same seems to be the case with the distance from roads with the spatial resolution of 1 km x 1 km. However, for distance from roads at the finest spatial resolution (100 m x 100 m) the data set which stands out is the data set ID 7.
There are inconsistencies among all climate variables and there is no particular dataset that stands out as the most different. There are cases in which the most spatially precise dataset is the most different (BIO1, BIO 10, BIO 18), as well as where the dataset with lowest spatial resolution is the most different (BIO12, BIO17). In either case joined values did not correspond to the ones in nature for the datasets of

insufficient spatial accuracy (ID 5 for BIO1, BIO 10 and BIO 18 or ID 5, ID 6 and ID 7 for BIO 11, BIO 12 and BIO 17). The exception was BIO 7 where the most different were ID 6 and ID 7.

In both *E. annuus* and *R. pseudoacacia*, there was a lot of inconsistencies observed with various datasets being most inconsistent for various variables. Both species are known to be eurivalent for a broad range of factors, tolerating different temperatures and various soils (Nikolić et al. 2014, Nicolescu et al. 2020). *E. annuus* should prefer humid habitats and soil moisture whereas *R. pseudoacacia* is drought resistant (Pacanoski 2017, Nicolescu et al. 2020). There was a lot of differences observed for both species in distance from watercourses.

Since ID 5 was in the most cases the most inconsistent dataset among climatic variables of *V. persica*, often as the only dataset different from all others, the inconsistencies likely arise from the low spatial accuracy of this dataset. For topographic variables and disturbance, the most inconsistent dataset was ID 6. There were no differences observed for distance from watercourses which can be explained by the ecology of the species. *V. persica* is a very widespread species that is not affected by soil moisture (Nikolić et al. 2014).

To summarize, ID 5 was generally the most inconsistent dataset in the analysis (especially for habitat maps) which can be explained by low spatial resolution. However, there are inconsistencies in other datasets of higher spatial resolution that cannot be explained through spatial accuracy or sample size. The most inconsistent dataset varies a lot across species and variables. In species with specialised ecological requirements (e.g. *E. lobata*), there was less inconsistencies and they could usually be explained when taking in account the positional accuracy and sample size. In species with a broader ecological preferecnes and distribution (e.g. *R. pseudoacacia* and *E. annuus)* there were a lot more inconsistencies.

# 5. CONCLUSION

Following conclusions can be drawn from this master thesis:

- The effects of spatial accuracy of species records on the habitat preference and ecological profile are species dependant.

- There is generally less uncertainty dependant on the spatial accuracy in more specialised species (in terms of distribution) than in species with broader distribution.

- Before using datasets of different spatial accuracies, their consistency should be tested in order to select the data of sufficient spatial accuracy for developing a SDM.

- In general, using the records of spatial precision level ID 5 should be avoided when developing SDMs if there is sufficient amount of data of higher spatial accuracy. However, records with ID 5 are still valuable in obtaining information on the general distribution of the species.

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# APPENDICES

**Appendix 1.** Number of data used per species per ID.

**Appendix 2.** Number of data used per species per ID in habitats analyses.

**Appendix 3.** Frequencies of different habitat types according to the CLC code in six studied invasive species.

**Appendix 4.** Frequencies of different habitat types according to the Croatian National Habitat Classification (NKS) and Habitat map of Croatia (2004) in six studied invasive species.

**Appendix 5.** Frequencies of different habitat types according to the Croatian National Habitat Classification and the map of terrestrial non-forest habitats (2016) in six studied invasive species.

**Appendix 6.** Results of Friedman ANOVA.

**Appendix 7.** Results of the Wilcoxon Matched Pairs test.

**Appendix 8.** Results of descriptive statistics of environmental variables.

**Appendix 9.** Results of Tukey post-hoc test.

**Appendix 1.** Number of data used per species per ID.

| Species | ID | Number of data |
|---|---|---|
| *Ailanthus altissima* (Hill.) Swingle | 5 | 54 |
| *Ailanthus altissima* (Hill.) Swingle | 6 | 70 |
| *Ailanthus altissima* (Hill.) Swingle | 7 | 72 |
| *Ailanthus altissima* (Hill.) Swingle | 11 | 310 |
| *Ailanthus altissima* (Hill.) Swingle | all | 506 |
| *Ambrosia artemisiifolia* L. | 5 | 128 |
| *Ambrosia artemisiifolia* L. | 6 | 110 |
| *Ambrosia artemisiifolia* L. | 7 | 154 |
| *Ambrosia artemisiifolia* L. | 11 | 749 |
| *Ambrosia artemisiifolia* L. | all | 1141 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 5 | 33 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 6 | 22 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 7 | 40 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 11 | 94 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | all | 189 |
| *Erigeron annuus* (L.) Desf. | 5 | 149 |
| *Erigeron annuus* (L.) Desf. | 6 | 279 |
| *Erigeron annuus* (L.) Desf. | 7 | 243 |
| *Erigeron annuus* (L.) Desf. | 11 | 1122 |
| *Erigeron annuus* (L.) Desf. | all | 1793 |
| *Robinia pseudoacacia* L. | 5 | 58 |
| *Robinia pseudoacacia* L. | 6 | 164 |
| *Robinia pseudoacacia* L. | 7 | 113 |
| *Robinia pseudoacacia* L. | 11 | 10054 |
| *Robinia pseudoacacia* L. | all | 10389 |
| *Veronica persica* Poir. | 5 | 161 |
| *Veronica persica* Poir. | 6 | 139 |
| *Veronica persica* Poir. | 7 | 177 |
| *Veronica persica* Poir. | 11 | 350 |
| *Veronica persica* Poir. | all | 827 |

**Appendix 2.** Number of data used per species per ID in habitats analyses.

| Species | ID | Number of data | | |
|---|---|---|---|---|
| | | CLC | Habitats 2004 | Habitats 2016 |
| *Ailanthus altissima* (Hill.) Swingle | 5 | 54 | 52 | 53 |
| *Ailanthus altissima* (Hill.) Swingle | 6 | 69 | 67 | 68 |
| *Ailanthus altissima* (Hill.) Swingle | 7 | 72 | 71 | 71 |
| *Ailanthus altissima* (Hill.) Swingle | 11 | 310 | 300 | 303 |
| *Ailanthus altissima* (Hill.) Swingle | all | 505 | 490 | 495 |
| *Ambrosia artemisiifolia* L. | 5 | 128 | 128 | 128 |
| *Ambrosia artemisiifolia* L. | 6 | 109 | 109 | 109 |
| *Ambrosia artemisiifolia* L. | 7 | 154 | 154 | 154 |
| *Ambrosia artemisiifolia* L. | 11 | 748 | 744 | 748 |
| *Ambrosia artemisiifolia* L. | all | 1139 | 1135 | 1139 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 5 | 33 | 33 | 33 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 6 | 21 | 21 | 21 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 7 | 40 | 40 | 40 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | 11 | 93 | 91 | 92 |
| *Echinocystis lobata* (Michx.) Torr. et A. Gray | all | 187 | 185 | 186 |
| *Erigeron annuus* (L.) Desf. | 5 | 147 | 147 | 146 |
| *Erigeron annuus* (L.) Desf. | 6 | 274 | 274 | 273 |
| *Erigeron annuus* (L.) Desf. | 7 | 243 | 242 | 243 |
| *Erigeron annuus* (L.) Desf. | 11 | 1118 | 1116 | 1118 |
| *Erigeron annuus* (L.) Desf. | all | 1782 | 1179 | 1780 |
| *Robinia pseudoacacia* L. | 5 | 58 | 58 | 58 |
| *Robinia pseudoacacia* L. | 6 | 162 | 161 | 160 |
| *Robinia pseudoacacia* L. | 7 | 113 | 112 | 113 |
| *Robinia pseudoacacia* L. | 11 | 10053 | 10049 | 10049 |
| *Robinia pseudoacacia* L. | all | 10386 | 10380 | 10380 |
| *Veronica persica* Poir. | 5 | 161 | 159 | 160 |
| *Veronica persica* Poir. | 6 | 139 | 137 | 137 |
| *Veronica persica* Poir. | 7 | 177 | 176 | 176 |
| *Veronica persica* Poir. | 11 | 346 | 339 | 345 |
| *Veronica persica* Poir. | all | 823 | 811 | 818 |

**Appendix 3.** Frequencies of different habitat types according to the CLC code in six studied invasive species.

| CLC code | *A. altissima* | | | | | *A. artemisiifolia* | | | | | *E. lobata* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ID5** | **ID6** | **ID7** | **ID11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** |
| **111** | 5.56 | 7.25 | 15.28 | 1.29 | 1.19 | 2.34 | 0.92 | 3.90 | 0.27 | 1.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **112** | 50.00 | 10.14 | 40.28 | 19.35 | 11.49 | 64.84 | 14.68 | 31.82 | 19.92 | 26.08 | 42.42 | 9.52 | 12.50 | 3.23 | 12.83 |
| **121** | 1.85 | 0.00 | 9.72 | 1.61 | 8.32 | 1.56 | 0.92 | 6.49 | 4.28 | 3.95 | 0.00 | 0.00 | 5.00 | 0.00 | 1.07 |
| **122** | 0.00 | 0.00 | 0.00 | 1.29 | 5.94 | 1.56 | 0.00 | 0.00 | 0.13 | 0.26 | 0.00 | 4.76 | 0.00 | 0.00 | 0.53 |
| **123** | 1.85 | 0.00 | 0.00 | 0.00 | 3.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **131** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.27 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **132** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **141** | 0.00 | 2.90 | 0.00 | 6.77 | 9.11 | 1.56 | 0.00 | 0.00 | 2.27 | 1.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **142** | 3.70 | 1.45 | 0.00 | 0.65 | 3.37 | 0.00 | 1.83 | 0.00 | 1.34 | 1.05 | 0.00 | 0.00 | 0.00 | 3.23 | 2.14 |
| **211** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.34 | 0.92 | 7.79 | 4.41 | 4.30 | 6.06 | 0.00 | 2.50 | 1.08 | 2.14 |
| **212** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.95 | 0.13 | 0.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **221** | 0.00 | 0.00 | 1.39 | 0.65 | 0.59 | 0.00 | 0.00 | 0.00 | 0.53 | 0.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **222** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **223** | 1.85 | 4.35 | 0.00 | 0.65 | 2.77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **231** | 0.00 | 1.45 | 0.00 | 2.26 | 3.37 | 0.78 | 7.34 | 13.64 | 6.15 | 6.67 | 0.00 | 4.76 | 17.50 | 15.05 | 11.76 |
| **242** | 9.26 | 2.90 | 5.56 | 6.13 | 0.99 | 17.97 | 15.60 | 15.58 | 28.88 | 24.58 | 30.30 | 19.05 | 25.00 | 8.60 | 17.11 |
| **243** | 12.96 | 18.84 | 11.11 | 5.81 | 1.58 | 3.91 | 10.09 | 5.84 | 8.69 | 7.90 | 9.09 | 19.05 | 15.00 | 0.00 | 6.95 |
| **311** | 1.85 | 18.84 | 5.56 | 7.74 | 1.78 | 1.56 | 29.36 | 5.19 | 9.76 | 10.10 | 3.03 | 14.29 | 5.00 | 21.51 | 13.90 |
| **312** | 0.00 | 7.25 | 1.39 | 10.32 | 1.19 | 0.00 | 0.92 | 0.00 | 0.13 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **313** | 1.85 | 0.00 | 2.78 | 1.94 | 24.36 | 0.00 | 4.59 | 0.00 | 0.80 | 0.97 | 3.03 | 4.76 | 0.00 | 0.00 | 1.07 |
| **321** | 0.00 | 4.35 | 0.00 | 4.52 | 7.52 | 0.00 | 0.92 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **323** | 5.56 | 2.90 | 2.78 | 2.26 | 2.57 | 0.78 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **324** | 1.85 | 11.59 | 1.39 | 15.48 | 0.59 | 0.00 | 7.34 | 4.55 | 3.21 | 3.42 | 6.06 | 0.00 | 0.00 | 12.90 | 7.49 |
| **333** | 1.85 | 1.45 | 0.00 | 0.32 | 4.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **411** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.40 | 0.26 | 0.00 | 0.00 | 0.00 | 3.23 | 1.60 |
| **511** | 0.00 | 0.00 | 2.78 | 4.84 | 4.55 | 0.78 | 2.75 | 3.25 | 1.34 | 1.67 | 0.00 | 4.76 | 15.00 | 11.83 | 9.63 |
| **512** | 0.00 | 1.45 | 0.00 | 1.61 | 0.79 | 0.00 | 0.92 | 0.00 | 6.68 | 4.48 | 0.00 | 14.29 | 2.50 | 18.28 | 11.23 |
| **523** | 0.00 | 2.90 | 0.00 | 4.52 | 0.20 | 0.00 | 0.00 | 0.00 | 0.27 | 0.18 | 0.00 | 0.00 | 0.00 | 1.08 | 0.53 |

| **CLC code** | | | | ***E.annuus*** | | | | ***R. pseudoacacia*** | | | | ***V. persica*** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ID 5 | ID 6 | ID 7 | ID 11 | all | ID 5 | ID 6 | ID 7 | ID 11 | all | ID 5 | ID 6 | ID 7 | ID 11 | all |
| **111** | 3.40 | 1.82 | 5.76 | 1.25 | 2.13 | 8.62 | 0.00 | 1.77 | 0.01 | 0.08 | 8.70 | 4.32 | 15.25 | 0.29 | 5.83 |
| **112** | 55.10 | 10.95 | 35.39 | 6.26 | 14.98 | 58.62 | 8.64 | 33.63 | 0.86 | 1.66 | 47.20 | 17.99 | 52.54 | 22.83 | 33.17 |
| **121** | 0.68 | 0.73 | 4.53 | 0.98 | 1.40 | 1.72 | 0.00 | 7.08 | 0.07 | 0.15 | 0.62 | 1.44 | 4.52 | 0.00 | 1.34 |
| **122** | 2.72 | 0.00 | 0.00 | 0.36 | 0.45 | 0.00 | 0.00 | 0.00 | 0.06 | 0.06 | 2.48 | 0.00 | 0.00 | 0.00 | 0.49 |
| **123** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **131** | 0.00 | 0.00 | 0.00 | 0.36 | 0.22 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **132** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 0.62 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **141** | 0.68 | 1.46 | 0.41 | 4.83 | 3.37 | 0.00 | 1.23 | 0.00 | 0.41 | 0.41 | 1.24 | 0.72 | 0.00 | 4.62 | 2.31 |
| **142** | 0.00 | 1.09 | 0.00 | 1.16 | 0.90 | 1.72 | 0.62 | 1.77 | 0.05 | 0.09 | 0.62 | 1.44 | 0.00 | 4.62 | 2.31 |
| **211** | 0.68 | 0.73 | 4.12 | 3.49 | 2.92 | 3.45 | 0.62 | 1.77 | 1.55 | 1.55 | 1.86 | 0.00 | 1.69 | 2.31 | 1.70 |
| **212** | 0.00 | 0.00 | 0.41 | 0.27 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **221** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.88 | 0.09 | 0.10 | 0.62 | 0.00 | 1.13 | 0.87 | 0.73 |
| **222** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.62 | 0.00 | 0.00 | 0.00 | 0.12 |
| **223** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 1.23 | 0.88 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **231** | 2.04 | 3.28 | 10.29 | 8.77 | 7.58 | 1.72 | 3.70 | 0.00 | 1.18 | 1.21 | 0.62 | 5.76 | 2.82 | 3.47 | 3.16 |
| **242** | 18.37 | 8.76 | 13.58 | 19.77 | 17.12 | 12.07 | 8.02 | 14.16 | 6.07 | 6.22 | 15.53 | 10.79 | 9.04 | 26.88 | 18.10 |
| **243** | 8.84 | 10.95 | 7.82 | 14.40 | 12.51 | 8.62 | 16.67 | 9.73 | 13.56 | 13.54 | 11.18 | 12.95 | 4.52 | 10.40 | 9.72 |
| **311** | 6.80 | 31.02 | 10.29 | 19.32 | 18.86 | 1.72 | 41.36 | 14.16 | 57.47 | 56.43 | 2.48 | 22.30 | 3.39 | 9.25 | 8.87 |
| **312** | 0.00 | 3.28 | 0.41 | 1.43 | 1.46 | 0.00 | 0.62 | 0.00 | 0.07 | 0.08 | 0.62 | 1.44 | 0.00 | 0.87 | 0.73 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **313** | 0.00 | 15.33 | 0.82 | 3.40 | 4.60 | 0.00 | 3.70 | 1.77 | 2.00 | 2.01 | 0.00 | 3.60 | 1.13 | 1.16 | 1.34 |
| **321** | 0.00 | 1.09 | 0.00 | 0.09 | 0.22 | 0.00 | 1.85 | 0.00 | 0.10 | 0.13 | 0.00 | 0.72 | 0.00 | 0.29 | 0.24 |
| **323** | 0.00 | 0.00 | 0.41 | 0.00 | 0.06 | 1.72 | 0.00 | 0.88 | 0.00 | 0.02 | 1.86 | 2.16 | 0.56 | 0.00 | 0.85 |
| **324** | 0.68 | 6.93 | 3.29 | 6.80 | 5.84 | 0.00 | 6.79 | 7.08 | 16.11 | 15.78 | 2.48 | 11.51 | 1.13 | 4.34 | 4.50 |
| **333** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.85 | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **411** | 0.00 | 0.36 | 0.00 | 0.63 | 0.45 | 0.00 | 0.00 | 0.00 | 0.10 | 0.10 | 1.24 | 0.00 | 0.00 | 1.16 | 0.73 |
| **511** | 0.00 | 1.09 | 2.06 | 1.61 | 1.46 | 0.00 | 1.23 | 3.54 | 0.05 | 0.11 | 0.00 | 0.00 | 2.26 | 1.16 | 0.97 |
| **512** | 0.00 | 0.36 | 0.00 | 4.74 | 3.03 | 0.00 | 0.00 | 0.00 | 0.13 | 0.13 | 0.00 | 2.16 | 0.00 | 3.18 | 1.70 |
| **523** | 0.00 | 0.00 | 0.41 | 0.00 | 0.06 | 0.00 | 1.23 | 0.88 | 0.01 | 0.04 | 0.00 | 0.72 | 0.00 | 2.02 | 0.97 |

*CLC nomenclature

| **CLC code** | **Name** |
|---|---|
| **111** | Continuous urban fabric |
| **112** | Discontinuous urban fabric |
| **121** | Industrial or commercial units |
| **122** | Road and rail networks and associated land |
| **123** | Port areas |
| **131** | Mineral extraction sites |
| **132** | Dump sites |
| **141** | Green urban areas |
| **142** | Sport and leisure facilities |
| **211** | Non-irrigated arable land |
| **212** | Permanently irrigated land |
| **221** | Vineyards |
| **222** | Fruit trees and berry plantations |
| **223** | Olive groves |

| | |
|---|---|
| **231** | Pastures |
| **242** | Complex cultivation pattern |
| **243** | Land principally occupied by agriculture, with significant areas of natural vegetation |
| **311** | Broad-leaved forest |
| **312** | Coniferous Forests |
| **313** | Mixed forest |
| **321** | Natural grasslands |
| **323** | Sclerophyllous vegetation |
| **324** | Transitional woodland-shrub |
| **333** | Sparsely vegetated areas |
| **411** | Inland marshes |
| **511** | Water courses |
| **512** | Water bodies |
| **523** | Sea and ocean |

**Appendix 4.** Frequencies of different habitat types according to the Croatian National Habitat Classification (NKS) and Habitat map of Croatia (2004) in six studied invasive species.

| | A. altissima | | | | | A. artemisiifolia | | | | | E. lobata | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NKS code | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** |
| **A.1.1.** | 0.00 | 0.00 | 0.00 | 1.00 | 0.61 | 0.00 | 0.00 | 0.00 | 3.76 | 2.47 | 0.00 | 14.29 | 0.00 | 9.89 | 6.49 |
| **A.2.7./A.2.2./A.1.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.27 | 0.18 | 0.00 | 0.00 | 0.00 | 5.49 | 2.70 |
| **A.1.3./A.4.1./J.4.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.2.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.83 | 4.55 | 1.34 | 1.76 | 0.00 | 0.00 | 10.00 | 13.19 | 8.65 |
| **A.2.7.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.27 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.4.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **B.1.4./B.2.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.25 | 0.27 | 0.62 | 3.03 | 4.76 | 7.50 | 8.79 | 7.03 |
| **C.2.3./C.2.2./E.3.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 1.30 | 0.13 | 0.35 | 0.00 | 0.00 | 5.00 | 4.40 | 3.24 |
| **C.2.3.** | 0.00 | 0.00 | 1.41 | 0.33 | 0.41 | 0.78 | 0.92 | 0.00 | 0.81 | 0.62 | 0.00 | 0.00 | 0.00 | 1.10 | 0.54 |
| **C.3.3./C.2.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 9.74 | 0.13 | 1.50 | 0.00 | 4.76 | 7.50 | 0.00 | 2.16 |
| **C.3.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 0.54 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5.** | 0.00 | 7.46 | 0.00 | 7.33 | 5.51 | 0.00 | 1.83 | 0.00 | 1.08 | 0.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5./D.3.1.** | 1.92 | 7.46 | 0.00 | 10.00 | 7.35 | 0.00 | 0.92 | 1.30 | 0.27 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.3.1./C.3.5.** | 1.92 | 0.00 | 0.00 | 1.67 | 1.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.3.4./C.3.5.** | 0.00 | 2.99 | 0.00 | 0.67 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5./D.3.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5./E.3.5.** | 0.00 | 1.49 | 0.00 | 0.33 | 0.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.3.5./C.3.5.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **I.2.1./C.3.5.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.6.** | 3.85 | 2.99 | 2.82 | 0.00 | 1.22 | 0.78 | 1.83 | 0.65 | 0.40 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.6./D.3.4.** | 0.00 | 1.49 | 1.41 | 2.33 | 1.84 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.4.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.1.1./E.1.1.** | 0.00 | 0.00 | 2.82 | 0.67 | 0.82 | 0.00 | 0.00 | 2.60 | 0.40 | 0.62 | 0.00 | 14.29 | 5.00 | 2.20 | 3.78 |
| **D.1.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.83 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.3.4.** | 3.85 | 4.48 | 2.82 | 2.33 | 2.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.2.1./D.3.4.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.1.1./E.1.2.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.00 | 0.92 | 0.00 | 1.08 | 0.79 | 3.03 | 0.00 | 0.00 | 5.49 | 3.24 |
| **E.2.1.** | 0.00 | 0.00 | 0.00 | 0.67 | 0.41 | 0.00 | 2.75 | 0.00 | 0.27 | 0.44 | 0.00 | 0.00 | 0.00 | 3.30 | 1.62 |
| **E.2.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 0.67 | 0.53 | 0.00 | 0.00 | 0.00 | 1.10 | 0.54 |
| **E.3.1.** | 0.00 | 2.99 | 0.00 | 0.33 | 0.61 | 0.00 | 14.68 | 0.65 | 2.82 | 3.35 | 0.00 | 0.00 | 0.00 | 4.40 | 2.16 |
| **E.3.2.** | 0.00 | 0.00 | 1.41 | 0.33 | 0.41 | 0.00 | 0.92 | 0.65 | 1.08 | 0.88 | 0.00 | 0.00 | 2.50 | 2.20 | 1.62 |
| **E.3.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.40 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.3.5.** | 0.00 | 16.42 | 0.00 | 3.33 | 4.29 | 0.00 | 0.00 | 0.00 | 0.40 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.7.4./E.3.5.** | 0.00 | 4.48 | 0.00 | 16.00 | 10.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.4.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.4.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.4.5.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 17.43 | 2.60 | 5.11 | 5.37 | 3.03 | 19.05 | 0.00 | 6.59 | 5.95 |
| **E.4.6.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.5.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.67 | 0.00 | 0.00 | 0.35 | 3.03 | 0.00 | 0.00 | 0.00 | 0.54 |
| **E.5.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.65 | 0.94 | 0.79 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.6.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.7.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.7.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.7.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.8.1.** | 0.00 | 4.48 | 2.82 | 2.00 | 2.24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.8.2.** | 0.00 | 5.97 | 5.63 | 5.33 | 4.90 | 0.00 | 0.92 | 0.00 | 0.13 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.9.2.** | 0.00 | 1.49 | 0.00 | 0.67 | 0.61 | 0.78 | 0.00 | 0.00 | 0.27 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **E.9.3.** | 0.00 | 1.49 | 2.82 | 0.00 | 0.61 | 0.00 | 0.00 | 1.30 | 1.61 | 1.23 | 0.00 | 0.00 | 5.00 | 1.10 | 1.62 |
| **G.3.1.** | 0.00 | 1.49 | 0.00 | 2.33 | 1.63 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.2.1.** | 3.85 | 0.00 | 8.45 | 3.67 | 3.88 | 2.34 | 10.09 | 14.94 | 19.35 | 15.95 | 9.09 | 9.52 | 25.00 | 10.99 | 13.51 |
| **I.2.1./J.1.1./I.8.1.** | 15.38 | 8.96 | 1.41 | 1.67 | 4.08 | 3.91 | 2.75 | 0.65 | 1.88 | 2.03 | 9.09 | 0.00 | 0.00 | 1.10 | 2.16 |
| **I.3.1.** | 3.85 | 2.99 | 1.41 | 0.67 | 1.43 | 4.69 | 8.26 | 5.84 | 14.38 | 11.54 | 9.09 | 14.29 | 12.50 | 5.49 | 8.65 |
| **I.5.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.27 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.5.1./I.5.2.** | 1.92 | 1.49 | 0.00 | 0.33 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.5.2.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.5.3.** | 1.92 | 0.00 | 1.41 | 1.00 | 1.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.8.1.** | 1.92 | 0.00 | 5.63 | 7.00 | 5.31 | 0.00 | 7.34 | 6.49 | 7.66 | 6.61 | 0.00 | 0.00 | 0.00 | 2.20 | 1.08 |
| **J.1.1.** | 28.85 | 2.99 | 0.00 | 2.00 | 4.69 | 40.63 | 4.59 | 2.60 | 6.18 | 9.43 | 36.36 | 0.00 | 0.00 | 1.10 | 7.03 |
| **J.1.1./J.1.3.** | 11.54 | 1.49 | 0.00 | 4.67 | 4.29 | 10.94 | 0.00 | 0.00 | 0.67 | 1.67 | 6.06 | 0.00 | 2.50 | 1.10 | 2.16 |
| **J.1.3.** | 3.85 | 0.00 | 2.82 | 0.33 | 1.02 | 3.13 | 0.00 | 0.00 | 0.13 | 0.44 | 12.12 | 0.00 | 0.00 | 0.00 | 2.16 |
| **J.2.1.** | 13.46 | 13.43 | 39.44 | 14.67 | 17.96 | 12.50 | 3.67 | 25.97 | 9.01 | 11.19 | 6.06 | 0.00 | 5.00 | 5.49 | 3.78 |
| **J.2.2.** | 0.00 | 0.00 | 12.68 | 4.67 | 4.69 | 15.63 | 5.50 | 10.39 | 13.84 | 12.78 | 0.00 | 19.05 | 7.50 | 3.30 | 6.49 |
| **J.2.3.** | 0.00 | 1.49 | 0.00 | 0.33 | 0.41 | 1.56 | 0.00 | 0.65 | 0.67 | 0.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **J.4.1.** | 1.92 | 0.00 | 2.82 | 0.00 | 0.61 | 2.34 | 0.00 | 1.30 | 0.40 | 0.70 | 0.00 | 0.00 | 5.00 | 0.00 | 1.08 |
| **J.4.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **J.4.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.83 | 0.65 | 0.40 | 0.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **J.4.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **J.5.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| NKS code | *E. annuus* | | | | | *R. pseudoacacia* | | | | | *V. persica* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** |
| **A.1.1.** | 0.68 | 1.09 | 0.00 | 2.60 | 1.85 | 0.00 | 0.62 | 0.00 | 0.08 | 0.09 | 0.00 | 2.19 | 0.00 | 1.77 | 1.11 |
| **A.2.7./A.2.2./A.1.1.** | 0.00 | 0.00 | 0.00 | 0.72 | 0.45 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.1.3./A.4.1./J.4.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.2.3.** | 0.00 | 1.09 | 2.89 | 0.99 | 1.18 | 0.00 | 0.62 | 3.57 | 0.07 | 0.12 | 0.00 | 0.00 | 2.27 | 0.88 | 0.86 |
| **A.2.7.** | 0.00 | 0.00 | 0.00 | 0.27 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.59 | 0.25 |
| **A.4.1.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **B.1.4./B.2.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.** | 0.00 | 1.09 | 1.65 | 0.99 | 1.01 | 0.00 | 0.00 | 0.00 | 0.28 | 0.27 | 0.00 | 0.00 | 0.57 | 0.88 | 0.49 |
| **C.2.3./C.2.2./E.3.1.** | 0.00 | 0.36 | 0.83 | 0.27 | 0.34 | 0.00 | 0.00 | 1.79 | 0.07 | 0.09 | 0.00 | 0.00 | 1.14 | 0.29 | 0.37 |
| **C.2.3.** | 0.00 | 0.36 | 3.72 | 1.43 | 1.46 | 0.00 | 0.00 | 0.89 | 2.11 | 2.05 | 0.00 | 0.00 | 0.00 | 1.18 | 0.49 |
| **C.3.3./C.2.3.** | 0.00 | 0.00 | 0.00 | 0.36 | 0.22 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.63 | 0.00 | 0.00 | 0.00 | 0.12 |
| **C.2.4.** | 0.00 | 0.36 | 6.20 | 0.09 | 0.96 | 0.00 | 0.62 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.57 | 0.29 | 0.25 |
| **C.3.3.** | 1.36 | 0.73 | 0.41 | 1.61 | 1.29 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.00 | 0.00 | 0.57 | 0.59 | 0.37 |
| **C.3.4.** | 0.00 | 0.00 | 0.00 | 0.27 | 0.17 | 0.00 | 0.00 | 0.00 | 0.08 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5.** | 0.00 | 0.36 | 0.00 | 0.72 | 0.51 | 0.00 | 1.24 | 0.00 | 0.03 | 0.05 | 0.00 | 2.92 | 0.57 | 1.47 | 1.23 |
| **C.3.5./D.3.1.** | 0.00 | 0.73 | 0.83 | 1.25 | 1.01 | 1.72 | 2.48 | 0.00 | 0.32 | 0.36 | 2.52 | 2.92 | 0.57 | 0.88 | 1.48 |
| **D.3.1./C.3.5.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.3.4./C.3.5.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.24 | 0.89 | 0.04 | 0.07 | 0.63 | 0.73 | 0.00 | 0.00 | 0.25 |
| **C.3.5./D.3.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5./E.3.5.** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 1.24 | 0.00 | 0.24 | 0.25 | 0.00 | 2.19 | 0.00 | 1.18 | 0.86 |
| **E.3.5./C.3.5.** | 0.00 | 0.36 | 0.83 | 0.18 | 0.28 | 0.00 | 0.62 | 0.00 | 0.08 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.2.1./C.3.5.** | 0.00 | 0.00 | 0.00 | 0.18 | 0.11 | 0.00 | 0.62 | 0.00 | 0.04 | 0.05 | 0.00 | 0.73 | 0.00 | 0.00 | 0.12 |
| **C.3.6.** | 0.68 | 0.36 | 0.00 | 0.00 | 0.11 | 3.45 | 1.24 | 1.79 | 0.01 | 0.07 | 1.26 | 0.73 | 0.00 | 0.88 | 0.74 |
| **C.3.6./D.3.4.** | 0.00 | 0.00 | 0.00 | 0.27 | 0.17 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.63 | 0.73 | 0.00 | 0.88 | 0.62 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C.4.1.** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.73 | 0.00 | 0.00 | 0.12 |
| **D.1.1./E.1.1.** | 0.00 | 1.46 | 1.65 | 0.27 | 0.62 | 0.00 | 0.00 | 1.79 | 0.05 | 0.07 | 0.00 | 0.00 | 1.14 | 0.59 | 0.49 |
| **D.1.2.** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.15 | 0.14 | 0.00 | 0.73 | 0.00 | 0.00 | 0.12 |
| **D.3.4.** | 0.00 | 0.36 | 0.00 | 0.45 | 0.34 | 0.00 | 1.86 | 0.00 | 0.03 | 0.06 | 0.00 | 0.00 | 0.00 | 0.88 | 0.37 |
| **I.2.1./D.3.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.1.1./E.1.2.** | 0.00 | 1.82 | 0.00 | 0.81 | 0.79 | 0.00 | 1.24 | 0.00 | 0.30 | 0.31 | 0.00 | 1.46 | 0.00 | 0.00 | 0.25 |
| **E.2.1.** | 0.00 | 2.19 | 0.00 | 0.81 | 0.84 | 0.00 | 0.00 | 0.00 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **E.2.2.** | 0.00 | 0.00 | 0.41 | 0.72 | 0.51 | 0.00 | 0.00 | 0.00 | 0.20 | 0.19 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **E.3.1.** | 3.40 | 9.49 | 0.83 | 6.27 | 5.79 | 1.72 | 18.63 | 1.79 | 45.14 | 44.02 | 1.89 | 12.41 | 0.00 | 2.36 | 3.45 |
| **E.3.2.** | 0.00 | 1.82 | 3.72 | 2.96 | 2.64 | 0.00 | 2.48 | 3.57 | 8.24 | 8.05 | 0.00 | 0.00 | 0.00 | 2.65 | 1.11 |
| **E.3.4.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.07 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.3.5.** | 0.68 | 1.82 | 0.00 | 1.34 | 1.18 | 0.00 | 2.48 | 0.00 | 4.24 | 4.14 | 0.63 | 4.38 | 0.00 | 0.88 | 1.23 |
| **E.7.4./E.3.5.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.62 | 0.00 | 0.01 | 0.02 | 0.00 | 0.73 | 0.00 | 0.00 | 0.12 |
| **E.4.1.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 2.93 | 2.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.4.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.4.5.** | 0.68 | 17.52 | 4.13 | 10.04 | 9.61 | 1.72 | 22.98 | 5.36 | 10.17 | 10.27 | 0.63 | 10.22 | 0.57 | 2.65 | 3.08 |
| **E.4.6.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.62 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.5.1.** | 0.68 | 4.38 | 0.41 | 0.36 | 1.01 | 0.00 | 1.86 | 0.00 | 0.05 | 0.08 | 0.00 | 0.73 | 0.00 | 0.00 | 0.12 |
| **E.5.2.** | 0.00 | 14.96 | 1.24 | 6.81 | 6.75 | 0.00 | 0.62 | 0.00 | 0.03 | 0.04 | 0.63 | 4.38 | 1.14 | 2.36 | 2.10 |
| **E.6.1.** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.7.2.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.7.3.** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.7.4.** | 0.00 | 0.00 | 0.00 | 0.18 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **E.8.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.06 | 0.00 | 7.30 | 3.41 | 1.77 | 0.74 |
| **E.8.2.** | 0.00 | 0.00 | 0.83 | 0.18 | 0.22 | 0.00 | 0.62 | 4.46 | 0.05 | 0.11 | 1.26 | 2.92 | 1.70 | 1.47 | 1.73 |
| **E.9.2.** | 0.68 | 0.73 | 0.00 | 0.54 | 0.51 | 0.00 | 0.62 | 3.57 | 0.65 | 0.67 | 0.63 | 0.00 | 0.00 | 0.29 | 0.25 |
| **E.9.3.** | 0.00 | 0.00 | 0.83 | 1.25 | 0.90 | 0.00 | 0.00 | 1.79 | 0.84 | 0.83 | 0.00 | 0.00 | 1.14 | 0.88 | 0.62 |
| **G.3.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.2.1.** | 6.12 | 6.93 | 9.92 | 21.68 | 16.53 | 5.17 | 9.32 | 16.07 | 10.74 | 10.74 | 5.66 | 11.68 | 7.39 | 18.58 | 12.45 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **I.2.1./J.1.1./I.8.1.** | 12.24 | 2.19 | 1.65 | 2.42 | 3.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 11.95 | 4.38 | 1.14 | 1.18 | 3.82 |
| **I.3.1.** | 0.68 | 4.74 | 6.20 | 8.33 | 6.86 | 1.72 | 4.35 | 5.36 | 7.86 | 7.75 | 3.14 | 2.92 | 1.14 | 7.08 | 4.32 |
| **I.5.1.** | 0.00 | 0.00 | 0.00 | 0.18 | 0.11 | 1.72 | 0.00 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **I.5.1./I.5.2.** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 1.24 | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.5.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.5.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.89 | 0.05 | 0.06 | 0.63 | 0.00 | 2.27 | 0.00 | 0.62 |
| **I.8.1.** | 2.04 | 5.47 | 5.79 | 7.71 | 6.63 | 3.45 | 2.48 | 9.82 | 0.89 | 1.02 | 4.40 | 0.00 | 0.00 | 10.03 | 7.03 |
| **J.1.1.** | 34.69 | 2.55 | 3.31 | 3.67 | 6.01 | 37.93 | 2.48 | 0.89 | 0.78 | 1.01 | 32.08 | 2.19 | 0.57 | 6.49 | 9.49 |
| **J.1.1./J.1.3.** | 10.20 | 1.09 | 0.41 | 0.45 | 1.35 | 5.17 | 0.00 | 0.89 | 0.28 | 0.31 | 5.03 | 1.46 | 0.57 | 2.65 | 2.47 |
| **J.1.3.** | 4.76 | 0.00 | 0.00 | 0.54 | 0.73 | 6.90 | 0.00 | 0.00 | 0.02 | 0.06 | 4.40 | 0.00 | 0.00 | 0.88 | 1.23 |
| **J.2.1.** | 6.12 | 5.84 | 27.69 | 6.54 | 9.27 | 17.24 | 5.59 | 19.64 | 0.57 | 0.94 | 13.21 | 8.03 | 48.30 | 9.14 | 18.25 |
| **J.2.2.** | 8.84 | 4.74 | 11.57 | 2.15 | 4.38 | 3.45 | 4.35 | 11.61 | 0.18 | 0.39 | 6.29 | 8.03 | 19.89 | 14.16 | 12.82 |
| **J.2.3.** | 3.40 | 0.00 | 0.83 | 0.09 | 0.45 | 1.72 | 0.62 | 0.00 | 0.01 | 0.03 | 1.26 | 1.46 | 1.70 | 0.00 | 0.86 |
| **J.4.1.** | 2.04 | 0.00 | 0.83 | 0.18 | 0.39 | 0.00 | 0.00 | 1.79 | 0.00 | 0.02 | 0.63 | 0.00 | 1.70 | 0.00 | 0.49 |
| **J.4.2.** | 0.00 | 0.36 | 0.00 | 0.00 | 0.06 | 0.00 | 0.62 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **J.4.3.** | 0.00 | 0.36 | 0.41 | 0.27 | 0.28 | 0.00 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.73 | 0.00 | 0.00 | 0.12 |
| **J.4.4.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| J.5.2. | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

***NKS nomenclature with a comparison to Physis.**

| NKS code | Habitat description (NKS) | Physis code | Habitat description (Physis) |
|---|---|---|---|
| A.1.1. | Stalne stajaćice | 22.1 | Permanent freshwater ponds and lakes |
| A.1.3./A.4.1./J.4.4. | Neobrasle i slabo obrasle obale stajaćica / Tršćaci, rogozici, visoki šiljevi i visoki šaševi / Infrastrukturne površine | 22.26 | Lake muds, sands and shingles / Water-fringe vegetation / Active industrial constructions |
| A.2.3. | Stalni vodotoci | 24.12-24.15 | Rivers and streams |
| A.2.7. | Neobrasle i slabo obrasle obale tekućica | 24.21/24.31/24.51/24.6 | River gravels |
| A.2.7./A.2.2./A.1.1. | Neobrasle i slabo obrasle obale tekućica / Povremeni vodotoci / Stalne stajaćice | | River gravels/ Intermittent streams / Permanent freshwater ponds and lakes |
| A.4.1. | Tršćaci, rogozici, visoki šiljevi i visoki šaševi | 53 | Water-fringe vegetation |
| B.1.4./B.2.2. | Tirensko-jadranske vapnenačke stijene / Ilirsko-jadranska, primorska točila | 62.11 / 61.52 | Tyrrheno-Adriatic eumediterranean calcicolous chasmophyte communities / Illyrian sub-Mediterranean screes |
| C.2.2. | Vlažne livade Srednje Europe | 37.2 | Eutrophic humid grasslands |
| C.2.3. | Mezofilne livade Srednje Europe | 38.1-38.2 | Mesophile grasslands |
| C.2.3./C.2.2./<br>E.3.1. | Mezofilne livade Srednje Europe / Vlažne livade Srednje Europe / Mješovite hrastovo-grabove i čiste grabove šume | | Mesophile grasslands / Eutrophic humid grasslands / Western Palearctic oak-hornbeam forests |
| C.2.4. | Vlažni, nitrofilni travnjaci i pašnjaci | 37.24 | Flood swards and related communities |
| C.3.3. | Subatlantski mezofilni travnjaci i brdske livade na karbonatnim tlima | 34.32 | Sub-Atlantic semidry calcareous grasslands |
| C.3.3./C.2.3. | Subatlantski mezofilni travnjaci i brdske livade na karbonatnim tlima / Mezofilne livade Srednje Europe | | Sub-Atlantic semidry calcareous grasslands / Mesophile grasslands |
| C.3.4. | Europske suhe vrištine i travnjaci trave tvrdaèe | 31.2 /35.1 | European dry heaths |
| C.3.5. | Submediteranski i epimediteranski suhi travnjaci | 34.75 | Eastern sub-Mediterranean dry grasslands |
| C.3.5./D.3.1. | Submediteranski i epimediteranski suhi travnjaci / Dračici | | Eastern sub-Mediterranean dry grasslands / Illyrio-Adriatic deciduous thickets |
| C.3.5./D.3.4. | Submediteranski i epimediteranski suhi travnjaci / Bušici | | Eastern sub-Mediterranean dry grasslands / Illyrian garrigues |
| C.3.5./E.3.5. | Submediteranski i epimediteranski suhi travnjaci / Primorske termofilne šume i šikare medunca | | Eastern sub-Mediterranean dry grasslands / Dalmatian white oak woods |
| C.3.6. | Kamenjarski pašnjaci i suhi travnjaci eu- i stenomediterana | 34.53 | East Mediterranean xeric grasslands |
| C.3.6./D.3.4. | Kamenjarski pašnjaci i suhi travnjaci eu- i stenomediterana / Bušici | | East Mediterranean xeric grasslands / Illyrian garrigues |

| | | | |
|---|---|---|---|
| C.4.1. | Planinske rudine | 36.4 | Boreo-Alpic calciphilous alpine grasslands |
| D.1.1./E.1.1. | Vrbici na sprudovima / Poplavne šume vrba | 44.11 44.13 | Orogenous riverine brush / Middle European white willow forests |
| D.1.2. | Mezofilne živice i šikare kontinentalnih, izuzetno primorskih krajeva | 31.8 | Western Palaearctic temperate thickets |
| D.3.1./C.3.5. | Dračici / Submediteranski i epimediteranski suhi travnjaci | 31.8B2 | Illyrio-Adriatic deciduous thickets / Eastern sub-Mediterranean dry grasslands |
| D.3.4. | Bušici | 32.B | Illyrian garrigues |
| D.3.4./C.3.5. | Bušici / Submediteranski i epimediteranski suhi travnjaci | | Illyrian garrigues / Eastern sub-Mediterranean dry grasslands |
| E.1.1./E.1.2. | Poplavne šume vrba / Poplavne šume topola | 44.13 44.14 | Middle European white willow forests / Mediterranean tall willow galleries |
| E.2.1. | Poplavne šume crne johe i poljskog jasena | 44.3 | Middle European stream ash-alder woods |
| E.2.2. | Poplavne šume hrasta lužnjaka | 44.43 | Southeast European ash-oak-alder forests |
| E.3.1. | Mješovite hrastovo-grabove i čiste grabove šume | 41.21 | Western Palaearctic oak-hornbeam forests |
| E.3.2. | Srednjoeuropske acidofilne šume hrasta kitnjaka, te obične breze | 41.57 | Medio-European acidophilous oak forests |
| E.3.4. | Srednjoeuropske termofilne hrastove šume | 41.74 | Italo-Illyrian hop-hornbeam sub-thermophilous oak woods |
| E.3.5. | Primorske, termofilne šume i šikare medunca | 41.736 | Dalmatian white oak woods |
| E.3.5./C.3.5. | Primorske, termofilne šume i šikare medunca / Submediteranski i epimediteranski suhi travnjaci | | Dalmatian white oak woods / Eastern sub-Mediterranean dry grasslands |
| E.4.1. | Srednjoeuropske neutrofilne do slaboacidofilne, mezofilne bukove šume | 41.1C2 | Illyrian neutrophile beech forests |
| E.4.2. | Srednjoeuropske, acidofilne bukove šume | 41.1C1 | Illyrian woodrush-beech forests |
| E.4.5. | Mezofilne i neutrofilne čiste bukove šume | 41.1C221 | Illyrian low-montane acidocline fir-beech forests |
| E.4.6. | Jugoistočnoalpsko-ilirske, termofilne bukove šume | 41.1C3 | Illyrian thermophile beech forests |
| E.5.1. | Panonske bukovo-jelove šume | 41.1C221 | Illyrian low-montane acidocline fir-beech forests |
| E.5.2. | Dinarske bukovo-jelove šume | 41.1C222 | Illyrian low-montane neutrophile fir-beech forests |
| E.6.1. | Pretplaninske bukove šume | 41.1C223 | Illyrian high-montane fir-beech forests |
| E.7.2. | Acidofilne jelove šume | 42.13 | Acidophile medio-European fir forests |
| E.7.3. | Smrekove šume | 42.25 | Peri-Alpine spruce forests |
| E.7.4. | Šume običnog i crnog bora na dolomitima | 42.62 | Western Balkanic black pine forests |
| E.7.4./E.3.5. | Šume obiènog i crnog bora na dolomitima / Primorske, termofilne šume i šikare medunca | | Western Balkanic black pine forests / Dalmatian white oak woods |

| | | | |
|---|---|---|---|
| E.8.1. | Mješovite, rjeđe čiste vazdazelene šume i makija crnike ili oštrike | 45.3 | Holm-oak forests |
| E.8.2. | Stenomediteranske čiste vazdazelene šume i makija crnike | 45.3 | Holm-oak forests |
| E.9.2. | Nasadi četinjača | 83.31 | Conifer plantations |
| E.9.3. | Nasadi širokolisnog drveća | 83.32 | Plantations of broad-leaved trees |
| G.3.1. | Infralitoralni pjeskoviti muljevi, pijesci, šljunci i stijene u eurihalinom i euritermnom okolišu | 11.221 | Soft seabed euryhaline and eurythermal communities |
| I.2.1 | Mozaici kultiviranih površina | 84.4 | Rural mosaics |
| I.2.1./C.3.5. | Mozaici kultiviranih površina / Submediteranski i epimediteranski suhi travnjaci | | Rural mosaics / Eastern sub-Mediterranean dry grasslands |
| I.2.1./D.3.4. | Mozaici kultiviranih površina / Bušici | | Rural mosaics / Illyrian garrigues |
| I.2.1./J.1.1./ I.8.1. | Mozaici kultiviranih površina / Aktivna seoska područja / Javne neproizvodne kultivirane zelene površine | | Rural mosaics / Villages / Parks and city squares |
| I.3.1. | Intenzivno obrađivane oranice na komasiranim površinama | 82.11 | Field crops |
| I.5.1. | Voćnjaci | 83.15 | Fruit orchards |
| I.5.1./I.5.2. | Voćnjaci / Maslinici | | Fruit orchards / Olive groves |
| I.5.2. | Maslinici | 83.11 | Olive groves |
| I.5.3. | Vinogradi | 83.21 | Vineyards |
| I.8.1. | Javne neproizvodne kultivirane zelene površine | 85.1 85.2 | Parks and city squares |
| J.1.1. | Aktivna seoska područja | 86.2 | Villages |
| J.1.1./J.1.3. | Aktivna seoska područja / Urbanizirana seoska područja | | Villages / Suburban areas |
| J.1.3. | Urbanizirana seoska područja | 86.12 | Suburban areas |
| J.2.1. | Gradske jezgre | 86.11 | Urban centers |
| J.2.2. | Gradske stambene površine | 86.12 | Suburban areas |
| J.2.3. | Ostale urbane površine | 86.13-14 | Town features |
| J.4.1. | Industrijska i obrtnička područja | 86.32 | Active industrial constructions |
| J.4.2. | Odlagališta krutih tvari | 86.43 | Marginal and disused industrial sites |
| J.4.3. | Površinski kopovi | 86.31 | Active extraction sites |
| J.4.4. | Infrastrukturne površine | 86.32 | Active industrial constructions |
| J.5.2. | Umjetna slatkovodna staništa | 89.2 | Fresh water industrial lagoons and canals |

**Appendix 5.** Frequencies of different habitat types according to the Croatian National Habitat Classification and the map of terrestrial non-forest habitats (2016) in six studied invasive species.

| NKS code | *A. altissima* | | | | | *A. artemisiifolia* | | | | | *E. lobata* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** |
| **A.1.1.** | 0.00 | 0.00 | 0.00 | 0.99 | 0.61 | 1.56 | 0.92 | 2.60 | 2.01 | 1.93 | 0.00 | 14.29 | 0.00 | 6.52 | 4.84 |
| **A.1.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.1.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.2.3.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.78 | 1.83 | 0.65 | 0.57 | 0.79 | 0.00 | 4.76 | 7.50 | 10.87 | 7.53 |
| **A.2.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.60 | 0.40 | 0.61 | 3.03 | 0.00 | 5.00 | 2.17 | 2.69 |
| **A.2.7.** | 0.00 | 0.00 | 2.82 | 0.00 | 0.40 | 0.00 | 0.00 | 1.30 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 1.09 | 0.54 |
| **A.3.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.3.6.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.4.1.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.00 | 0.00 | 1.30 | 1.34 | 0.97 | 0.00 | 0.00 | 0.00 | 5.43 | 2.69 |
| **B.1.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **B.1.4.** | 1.89 | 1.47 | 0.00 | 0.99 | 1.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **B.2.2.1.** | 0.00 | 2.94 | 0.00 | 0.33 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **B.3.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.1.1.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.2.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.2.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 3.26 | 1.61 |
| **C.2.3.2.** | 0.00 | 2.94 | 2.82 | 1.32 | 1.62 | 0.00 | 11.93 | 11.04 | 11.90 | 10.45 | 3.03 | 0.00 | 15.00 | 5.43 | 6.45 |
| **C.2.3.2.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.65 | 4.28 | 2.99 | 0.00 | 14.29 | 2.50 | 1.09 | 2.69 |
| **C.2.3.2.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.3.2.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.13 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C.2.3.2.5.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.3.2.7.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.4.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.79 | 0.13 | 1.14 | 0.00 | 0.00 | 12.50 | 1.09 | 3.23 |
| **C.2.5.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.30 | 0.13 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.5.1.6.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.2.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.3.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.65 | 2.14 | 1.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.4.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.4.3.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5.1.** | 1.89 | 8.82 | 1.41 | 13.20 | 9.70 | 0.78 | 0.00 | 0.65 | 0.13 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5.2.** | 0.00 | 2.94 | 0.00 | 0.33 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5.3.** | 0.00 | 1.47 | 0.00 | 0.33 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.6.1.** | 5.66 | 2.94 | 1.41 | 2.64 | 2.83 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.4.1.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.5.4.1.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.27 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.1.1.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.1.1.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.1.2.1.** | 0.00 | 1.47 | 4.23 | 0.99 | 1.41 | 0.78 | 5.50 | 3.25 | 2.14 | 2.46 | 0.00 | 4.76 | 5.00 | 2.17 | 2.69 |
| **D.3.1.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.3.4.2.** | 0.00 | 0.00 | 0.00 | 4.62 | 2.83 | 0.00 | 0.00 | 0.00 | 0.13 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.3.4.2.3.** | 0.00 | 1.47 | 2.82 | 0.00 | 0.61 | 0.00 | 0.92 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.4.1.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.90 | 0.00 | 0.53 | 3.03 | 0.00 | 7.50 | 1.09 | 2.69 |
| **E.** | 16.98 | 42.65 | 18.31 | 44.55 | 37.58 | 3.91 | 42.20 | 12.99 | 21.26 | 20.19 | 12.12 | 23.81 | 17.50 | 47.83 | 32.26 |
| **F.3.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **F.4.1.** | 0.00 | 0.00 | 0.00 | 2.31 | 1.41 | 0.00 | 0.00 | 0.00 | 0.27 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.1.4.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.00 | 0.00 | 0.65 | 0.53 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.1.7.** | 0.00 | 0.00 | 0.00 | 0.33 | 0.20 | 0.00 | 2.75 | 0.00 | 0.53 | 0.61 | 0.00 | 0.00 | 0.00 | 1.09 | 0.54 |
| **I.1.8.** | 1.89 | 1.47 | 2.82 | 0.66 | 1.21 | 0.78 | 0.92 | 0.00 | 4.81 | 3.34 | 3.03 | 4.76 | 2.50 | 3.23 | 3.23 |
| **I.2.1.** | 7.55 | 4.41 | 1.41 | 1.32 | 2.42 | 7.81 | 11.93 | 11.69 | 17.38 | 15.01 | 12.12 | 14.29 | 10.00 | 4.35 | 8.06 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **I.5.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 1.07 | 0.79 | 9.09 | 0.00 | 0.00 | 0.00 | 1.61 |
| **I.5.2.** | 3.77 | 7.35 | 2.82 | 1.65 | 2.83 | 0.00 | 0.00 | 0.00 | 0.27 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.5.3.** | 1.89 | 0.00 | 0.00 | 0.66 | 0.61 | 0.78 | 0.00 | 0.00 | 0.40 | 0.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **J.** | 58.49 | 17.65 | 59.15 | 21.45 | 30.30 | 82.81 | 16.51 | 35.71 | 26.74 | 33.27 | 54.55 | 19.05 | 15.00 | 3.26 | 16.67 |

| NKS code | *E. annuus* | | | | | *R. pseudoacacia* | | | | | *V. persica* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** | **ID 5** | **ID 6** | **ID 7** | **ID 11** | **all** |
| **A.1.1.** | 0.00 | 0.37 | 1.23 | 1.70 | 1.29 | 0.00 | 0.63 | 0.88 | 0.05 | 0.07 | 0.00 | 1.46 | 0.57 | 1.74 | 1.10 |
| **A.1.2.** | 0.00 | 0.00 | 0.00 | 0.18 | 0.11 | 0.00 | 0.00 | 0.00 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.1.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.2.3.** | 0.00 | 0.00 | 1.65 | 1.25 | 1.01 | 0.00 | 0.63 | 1.77 | 0.15 | 0.17 | 0.63 | 0.73 | 1.14 | 0.58 | 0.73 |
| **A.2.4.** | 0.00 | 0.00 | 1.23 | 0.27 | 0.39 | 0.00 | 0.00 | 0.00 | 0.08 | 0.08 | 0.63 | 0.00 | 0.57 | 0.00 | 0.24 |
| **A.2.7.** | 0.00 | 0.00 | 0.82 | 0.00 | 0.11 | 0.00 | 0.00 | 1.77 | 0.00 | 0.02 | 0.00 | 0.00 | 1.14 | 0.00 | 0.24 |
| **A.3.3.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 | 0.00 | 0.12 |
| **A.3.6.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **A.4.1.** | 0.00 | 1.10 | 0.41 | 1.43 | 1.12 | 0.00 | 0.00 | 0.00 | 0.06 | 0.06 | 0.63 | 0.73 | 0.00 | 0.29 | 0.37 |
| **B.1.3.** | 0.00 | 0.37 | 0.00 | 0.09 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **B.1.4.** | 0.00 | 0.37 | 0.00 | 0.00 | 0.06 | 0.00 | 0.63 | 0.00 | 0.00 | 0.01 | 0.63 | 0.00 | 0.00 | 0.00 | 0.12 |
| **B.2.2.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 | 0.01 | 0.63 | 0.00 | 0.00 | 0.00 | 0.12 |
| **B.3.1.** | 0.00 | 0.37 | 0.00 | 0.00 | 0.06 | 0.00 | 0.63 | 0.00 | 0.00 | 0.01 | 0.00 | 0.73 | 0.00 | 0.00 | 0.12 |
| **C.1.1.1.** | 0.00 | 0.00 | 0.41 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.2.** | 0.00 | 0.00 | 0.00 | 0.18 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.2.3.** | 0.00 | 0.00 | 0.41 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.2.4.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.2.4.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.3.2.** | 7.53 | 8.06 | 9.47 | 13.77 | 11.80 | 5.17 | 8.75 | 8.85 | 0.63 | 0.87 | 5.63 | 8.76 | 3.98 | 15.65 | 10.02 |
| **C.2.3.2.1.** | 0.00 | 1.83 | 0.41 | 3.40 | 2.47 | 1.72 | 1.88 | 0.88 | 0.07 | 0.12 | 0.00 | 3.65 | 0.00 | 3.77 | 2.20 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C.2.3.2.3.** | 0.00 | 0.00 | 0.41 | 0.09 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.3.2.4.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.3.2.5.** | 0.00 | 0.00 | 0.00 | 0.18 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.3.2.7.** | 0.00 | 0.00 | 0.00 | 0.18 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.4.1.** | 0.68 | 0.37 | 4.94 | 0.00 | 0.79 | 0.00 | 0.00 | 0.00 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.5.1.** | 0.00 | 0.00 | 0.41 | 0.36 | 0.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.2.5.1.6.** | 0.00 | 0.00 | 0.00 | 0.36 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **C.3.2.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.88 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.3.1.** | 0.68 | 0.37 | 0.82 | 5.81 | 3.88 | 0.00 | 0.00 | 0.00 | 0.25 | 0.24 | 2.50 | 3.65 | 1.14 | 0.87 | 1.71 |
| **C.3.4.3.** | 0.00 | 0.00 | 0.00 | 0.54 | 0.34 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.4.3.4.** | 0.00 | 0.37 | 0.00 | 0.36 | 0.28 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.3.5.1.** | 0.68 | 1.47 | 0.00 | 0.72 | 0.73 | 1.72 | 3.13 | 0.88 | 0.07 | 0.14 | 0.63 | 1.46 | 0.00 | 2.03 | 1.22 |
| **C.3.5.2.** | 0.00 | 0.37 | 0.00 | 0.27 | 0.22 | 0.00 | 0.63 | 0.88 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **C.3.5.3.** | 0.00 | 0.37 | 0.41 | 0.18 | 0.22 | 0.00 | 0.63 | 0.00 | 0.08 | 0.09 | 0.00 | 0.73 | 1.14 | 0.29 | 0.49 |
| **C.3.6.1.** | 0.00 | 0.37 | 0.41 | 0.09 | 0.17 | 0.00 | 3.13 | 0.00 | 0.03 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.4.1.2.** | 0.00 | 0.37 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **C.5.4.1.1.** | 0.00 | 0.37 | 0.41 | 0.18 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.1.1.1.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.1.1.2.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.1.2.1.** | 0.00 | 2.20 | 3.29 | 3.67 | 3.09 | 0.00 | 2.50 | 3.54 | 1.21 | 1.26 | 0.63 | 2.92 | 1.70 | 1.74 | 1.71 |
| **D.3.1.1.** | 0.00 | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.3.4.2.** | 0.00 | 0.00 | 0.00 | 0.27 | 0.17 | 0.00 | 0.63 | 0.00 | 0.03 | 0.04 | 0.00 | 0.00 | 0.00 | 2.32 | 0.98 |
| **D.3.4.2.3.** | 0.00 | 0.37 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **D.4.1.1.** | 0.00 | 0.00 | 3.70 | 0.00 | 0.51 | 0.00 | 0.00 | 2.65 | 0.02 | 0.05 | 0.00 | 0.00 | 1.14 | 0.00 | 0.24 |
| **E.** | 8.22 | 56.04 | 19.34 | 33.27 | 32.81 | 8.62 | 54.38 | 28.32 | 94.34 | 93.06 | 11.25 | 35.77 | 11.36 | 17.10 | 17.85 |
| **F.3.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.29 | 0.12 |
| **F.4.1.** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.88 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.87 | 0.37 |
| **I.1.4.** | 0.00 | 0.00 | 0.41 | 0.36 | 0.28 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **I.1.7.** | 2.05 | 2.56 | 0.00 | 0.18 | 0.67 | 0.00 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 1.46 | 0.00 | 0.58 | 0.49 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **I.1.8.** | 0.68 | 1.47 | 0.41 | 3.67 | 2.64 | 0.00 | 0.63 | 1.77 | 0.45 | 0.46 | 1.25 | 1.46 | 1.14 | 5.22 | 2.93 |
| **I.2.1.** | 8.90 | 7.69 | 6.58 | 13.15 | 11.07 | 8.62 | 6.88 | 13.27 | 1.20 | 1.47 | 10.00 | 8.03 | 7.95 | 15.07 | 11.37 |
| **I.5.1.** | 1.37 | 0.73 | 0.82 | 0.98 | 0.96 | 0.00 | 0.63 | 0.00 | 0.09 | 0.10 | 0.00 | 1.46 | 0.00 | 2.03 | 1.10 |
| **I.5.2.** | 0.00 | 0.37 | 0.41 | 0.09 | 0.17 | 3.45 | 1.25 | 2.65 | 0.04 | 0.11 | 0.63 | 1.46 | 0.00 | 1.16 | 0.86 |
| **I.5.3.** | 1.37 | 0.00 | 0.00 | 1.25 | 0.90 | 0.00 | 0.00 | 0.00 | 0.06 | 0.06 | 0.00 | 0.00 | 1.14 | 0.87 | 0.61 |
| **J.** | 67.81 | 11.36 | 41.15 | 11.18 | 19.94 | 70.69 | 11.88 | 30.09 | 0.89 | 1.77 | 63.75 | 25.55 | 65.91 | 26.96 | 42.30 |

***NKS nomenclature with a comparison to Physis.**

| NKS code | Habitat description (NKS) | Physis code | Habitat description (Physis) |
|---|---|---|---|
| A.1.1. | Stalne stajaćice | 22.1 | Permanent freshwater ponds and lakes |
| A.1.2. | Povremene stajaćice | 22.2 | Temporary freshwater bodies |
| A.1.3. | Neobrasle i slabo obrasle obale stajaćica | 22.26 | Lake muds, sands and shingles |
| A.2.3. | Stalni vodotoci | 24.12-15 | Rivers and streams |
| A.2.4. | Kanali | | Channels |
| A.2.7. | Neobrasle i slabo obrasle obale tekućica | 24.21/31/51/6 | River gravels |
| A.3.3. | Zakorijenjena vodenjarska vegetacija | 22.42-43 | Euhydrophytic river vegetation |
| A.3.6. | Sedrotvorna vegetacija na slapovima | | Tuffa barriers on waterfalls |
| A.4.1. | Tršćaci, rogozici, visoki šiljevi i visoki šaševi | 53 | Water-fringe vegetation |
| B.1.3. | Alpsko-karpatsko-balkanske vapnenačke stijene | 62.1A | Illyrio-Helleno-Balkanic cinquefoil cliffs |
| B.1.4. | Tirensko-jadranske vapnenačke stijene | 62.11 | Tyrrheno-Adriatic eumediterranean calcicolous chasmophyte communities |

| | | | |
|---|---|---|---|
| B.2.2.1. | Ilirsko-jadranska, primorska točila | 61.52 | Illyrian sub-Mediterranean screes |
| B.3.1. | Požarišta | | Burnt areas |
| C.1.1.1. | Bazofilni cretovi (niski cretovi) | 54.2 | Rich fens |
| C.2.2.2. | Trajno vlažne livade Srednje Europe | 37.31 | Purple moorgrass meadows and related communities |
| C.2.2.2.3. | Livade plućne sirištare i primorske beskoljenke | 37.313 | Giant moorgrass swards |
| C.2.2.2.4. | Livade-košanice obične beskoljenke i panonskog grašara | | Purple moorgrass meadows and related communities |
| C.2.2.4. | Periodički vlažne livade | 37.26 | Continental humid meadows |
| C.2.3.2. | Mezofilne livade košanice Srednje Europe | 38.22,25 | Lowland and collinar hay meadows |
| C.2.3.2.1. | Srednjoeuropske livade rane pahovke | 38.222 | Hygromesophile medio-European lowland hay meadows |
| C.2.3.2.3. | Livade brdske zečine i rane pahovke | | Lowland and collinar hay meadows |
| C.2.3.2.4. | Livade gomoljaste končare i rane pahovke | 38.251 | Ponto-Pannonic mesophile hay meadows |
| C.2.3.2.5. | Livade šuškavca i končare | | Lowland and collinar hay meadows |
| C.2.3.2.7. | Nizinske košanice s ljekovitom krvarom | | Lowland and collinar hay meadows |
| C.2.4.1. | Nitrofilni pašnjaci i livade-košanice nizinskog vegetacijskog pojasa | 37.24 | Flood swards and related communities |
| C.2.5.1. | Ilirsko-submediteranske livade riječnih dolina | 37.63 | Dalmatian riverine and humid meadows |
| C.2.5.1.6. | Livada sitne busike s livadnim procjepkom | | Dalmatian riverine and humid meadows |
| C.3.2.1. | Panonski otvoreni travnjaci na pijescima | 64.71 | Pannonic inland dunes |
| C.3.3.1. | Brdske livade uspravnog ovsika na karbonatnoj podlozi | 34.329 | Illyrian *Mesobromion* grasslands |
| C.3.4.3. | Vrištine vlasaste vlasulje | | Festuca capillata dominated grasslands |
| C.3.4.3.4. | Bujadnice | | Pteridium aquilinum fern stands |
| C.3.5.1. | Istočnojadranski kamenjarski pašnjaci submediteranske zone | 34.751 | Lowland savory-chrysopogon dry grasslands |

| | | | |
|---|---|---|---|
| C.3.5.2. | Istočnojadranski kamenjarski pašnjaci epimediteranske zone | 34.752 | Mountain savory-chrysopogon dry grasslands |
| C.3.5.3. | Travnjaci vlasastog zmijka | 34.753 | Viper's grass dry grasslands |
| C.3.6.1. | Eu- i stenomediteranski kamenjarski pašnjaci raščice | 34.53 | East Mediterranean xeric grasslands |
| C.4.1.2. | Pretplaninske rudine oštre vlasulje | 36.417 | Dinaro-Moesian oligophile closed calcicolous grasslands |
| C.5.4.1.1. | Visoke zeleni s pravom končarom | 37.11 | Western nemoral tall herb communities |
| D.1.1.1. | Vrbici šljunkovitih i pjeskovitih riječnih sprudova | 44.11 | Orogenous riverine brush |
| D.1.1.2. | Vrbici pepeljaste i uškaste vrbe | | Orogenous riverine brush |
| D.1.2.1. | Mezofilne živice i šikare kontinentalnih, izuzetno primorskih krajeva | 31.8 | Western Palaearctic temperate thickets |
| D.3.1.1. | Dračici | 31.8B2 | Illyrio-Adriatic deciduous thickets |
| D.3.4.2. | Istočnojadranski bušici | 32.B3 | Illyrian *Cistus* garrigues |
| D.3.4.2.3. | Sastojine oštroigličaste borovice | | Garrigues dominated by Juniperus oxycedrus |
| D.4.1.1. | Sastojine čivitnjače | | Amorpha fruticosa L. stands |
| E. | Šume | | Forests |
| F.3.1. | Površine šljunčanih žalova pod halofitima | 17.2 | Shingle beach drift lines and pioneer swards |
| F.4.1. | Površine stjenovitih obala pod halofitima | 18.2 | Sea-cliff and rocky shore aerohaline communities |
| I.1.4. | Ruderalne zajednice kontinentalnih krajeva | 87.2 | Ruderal communities |
| I.1.7. | Zajednice nitrofilnih, higrofilnih i skiofilnih staništa | 22.33 | Bur marigold communities |
| I.1.8. | Zapuštene poljoprivredne površine | | Abandoned agricultural areas |
| I.2.1. | Mozaici kultiviranih površina | 84.4 | Rural mosaics |
| I.5.1 | Voćnjaci | 83.15 | Fruit orchards |
| I.5.3. | Vinogradi | 83.21 | Vineyards |

| | | | |
|---|---|---|---|
| J. | Izgrađena i industrijska staništa | 86, 89 | Towns, villages, industrial sites |

**Appendix 6.** Results of Friedman ANOVA

| Friedman ANOVA and Kendall Coeff. of Concordance (*Ailanthus* in CLC) ANOVA Chi Sqr. (N = 21, df = 4) = 3.471883 p = 0.48217 Coeff. of Concordance = 0.04133 Aver. rank r = -0.0066 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.738095 | 57.50000 | 4.673721 | 10.93407 |
| ID 6 | 3.047619 | 64.00000 | 4.761905 | 5.72680 |
| ID 7 | 2.642857 | 55.50000 | 4.761905 | 9.18739 |
| ID 11 | 3.428571 | 72.00000 | 4.761905 | 5.04909 |
| All | 3.142857 | 66.00000 | 4.611033 | 5.53186 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Ambrosia* in CLC) ANOVA Chi Sqr. (N = 25, df = 4) = 13.99566 p =0 .00731 Coeff. of Concordance = 0.13996 Aver. rank r = 0.10412 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.220000 | 55.50000 | 4.000000 | 13.17420 |
| ID 6 | 2.980000 | 74.50000 | 4.000000 | 6.97630 |
| ID 7 | 2.720000 | 68.00000 | 4.000000 | 7.23251 |
| ID 11 | 3.440000 | 86.00000 | 4.000000 | 6.89842 |
| all | 3.640000 | 91.00000 | 4.000000 | 6.97696 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Echinocystis* in CLC) ANOVA Chi Sqr. (N = 14, df = 4) = 1.267925 p = 0.86679 Coeff. of Concordance = 0.02264 Aver. rank r = -0.0525 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.607143 | 36.50000 | 7.142857 | 12.94449 |
| ID 6 | 3.107143 | 43.50000 | 7.142857 | 6.92589 |
| ID 7 | 3.035714 | 42.50000 | 7.142857 | 8.25420 |
| ID 11 | 3.035714 | 42.50000 | 7.066052 | 7.52941 |
| all | 3.214286 | 45.00000 | 7.104660 | 5.68429 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Erigeron* in CLC) ANOVA Chi Sqr. (N = 25, df = 4) = 18.44255 p = 0.00101 Coeff. of Concordance = 0.18443 Aver. rank r = 0.15044 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 1.980000 | 49.50000 | 4.000000 | 11.40736 |
| ID 6 | 3.000000 | 75.00000 | 4.000000 | 7.05372 |
| ID 7 | 2.860000 | 71.50000 | 4.000000 | 7.62939 |
| ID 11 | 3.560000 | 89.00000 | 4.000000 | 5.81822 |
| all | 3.600000 | 90.00000 | 4.000000 | 5.71318 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Robinia* in CLC) ANOVA Chi Sqr. (N = 26, df = 4) = 6.163265 p = 0.18729 Coeff. of Concordance = 0.05926 Aver. rank r = 0.02163 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.403846 | 62.50000 | 3.846154 | 11.61519 |
| ID 6 | 3.230769 | 84.00000 | 3.846154 | 8.55745 |
| ID 7 | 2.961538 | 77.00000 | 3.846154 | 7.40383 |
| ID 11 | 3.019231 | 78.50000 | 3.846154 | 11.67348 |
| all | 3.384615 | 88.00000 | 3.846154 | 11.45751 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Veronica* in CLC) ANOVA Chi Sqr. (N = 23, df = 4) = 9.426637 p = 0.05128 Coeff. of Concordance = 0.10246 Aver. rank r = 0.06167 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.695652 | 62.00000 | 4.347826 | 10.14915 |
| ID 6 | 3.130435 | 72.00000 | 4.347826 | 6.34073 |
| ID 7 | 2.304348 | 53.00000 | 4.347826 | 11.10442 |
| ID 11 | 3.521739 | 81.00000 | 4.347826 | 7.07649 |
| all | 3.347826 | 77.00000 | 4.347826 | 7.55360 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Ailanthus* in Habitats04) ANOVA Chi Sqr. (N = 38, df = 4) = 9.963839 p = 0.04104 Coeff. of Concordance = 0.06555 Aver. rank r = 0.04030 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.578947 | 98.0000 | 2.631579 | 5.733100 |
| ID 6 | 3.000000 | 114.0000 | 2.631579 | 3.808152 |
| ID 7 | 2.657895 | 101.0000 | 2.631579 | 6.688256 |
| ID 11 | 3.250000 | 123.5000 | 2.631579 | 3.829543 |
| all | 3.513158 | 133.5000 | 2.634980 | 3.475855 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Ambrosia* in Habitats04) ANOVA Chi Sqr. (N = 48, df = 4) = 28.76731 p = 0.00001 Coeff. of Concordance = 0.14983 Aver. rank r = 0.13174 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.260417 | 108.5000 | 2.083333 | 6.562843 |
| ID 6 | 3.031250 | 145.5000 | 2.083333 | 3.731375 |
| ID 7 | 2.572917 | 123.5000 | 2.083333 | 4.682454 |
| ID 11 | 3.572917 | 171.5000 | 2.083333 | 4.144328 |
| all | 3.562500 | 171.0000 | 2.083333 | 3.768395 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Echinocystis* in Habitats04) ANOVA Chi Sqr. (N = 26, df = 4) = 11.94947 p = 0.01773 Coeff. of Concordance = 0.11490 Aver. rank r = 0.07949 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.500000 | 65.00000 | 3.846154 | 7.596708 |
| ID 6 | 2.442308 | 63.50000 | 3.846154 | 6.600932 |
| ID 7 | 3.076923 | 80.00000 | 3.846154 | 5.667044 |
| ID 11 | 3.519231 | 91.50000 | 3.846154 | 3.641328 |
| all | 3.461538 | 90.00000 | 3.846154 | 3.208196 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Erigeron* in Habitats04) ANOVA Chi Sqr. (N = 59, df = 4) = 41.53278 p = 0.00000 Coeff. of Concordance = 0.17599 Aver. rank r = 0.16178 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.161017 | 127.5000 | 1.694915 | 5.086571 |
| ID 6 | 3.000000 | 177.0000 | 1.694915 | 3.384371 |
| ID 7 | 2.610169 | 154.0000 | 1.694915 | 4.192841 |
| ID 11 | 3.567797 | 210.5000 | 1.694915 | 3.510050 |
| all | 3.661017 | 216.0000 | 1.694915 | 3.065129 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Robinia* in Habitats04) ANOVA Chi Sqr. (N = 57, df = 4) = 41.07308 p = 0.00000 Coeff. of Concordance = 0.18015 Aver. rank r = 0.16550 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.122807 | 121.0000 | 1.633394 | 5.571823 |
| ID 6 | 3.078947 | 175.5000 | 1.689005 | 4.053877 |
| ID 7 | 2.622807 | 149.5000 | 1.723058 | 3.884037 |
| ID 11 | 3.456140 | 197.0000 | 1.724183 | 6.339858 |
| all | 3.719298 | 212.0000 | 1.723118 | 6.193698 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Veronica* in Habitats04) ANOVA Chi Sqr. (N = 49, df = 4) = 20.76360 p =0.00035 Coeff. of Concordance = 0.10594 Aver. rank r = 0.08731 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.479592 | 121.5000 | 2.040816 | 5.215657 |
| ID 6 | 3.102041 | 152.0000 | 2.040816 | 3.195531 |
| ID 7 | 2.489796 | 122.0000 | 2.040816 | 7.387200 |
| ID 11 | 3.438776 | 168.5000 | 2.040816 | 3.747221 |
| all | 3.489796 | 171.0000 | 2.040816 | 3.740780 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Ailanthus* in Habitats16) ANOVA Chi Sqr. (N = 24, df = 4) = 8.701595 p = 0.06901 Coeff. of Concordance = 0.09064 Aver. rank r = 0.05110 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.541667 | 61.00000 | 4.167083 | 12.17658 |
| ID 6 | 3.145833 | 75.50000 | 4.166250 | 9.11426 |
| ID 7 | 2.500000 | 60.00000 | 4.167500 | 12.30193 |
| ID 11 | 3.312500 | 79.50000 | 4.166250 | 9.88411 |
| all | 3.500000 | 84.00000 | 4.166667 | 9.43840 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Ambrosia* in Habitats16) ANOVA Chi Sqr. (N = 37, df = 4) = 38.13213 p = 0.00000 Coeff. of Concordance = 0.25765 Aver. rank r = 0.23703 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 1.986486 | 73.5000 | 2.702466 | 13.61069 |
| ID 6 | 2.662162 | 98.5000 | 2.702973 | 7.66608 |
| ID 7 | 2.837838 | 105.0000 | 2.703243 | 6.54070 |
| ID 11 | 3.810811 | 141.0000 | 2.702703 | 6.23534 |
| all | 3.702703 | 137.0000 | 2.702703 | 6.70163 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Echinocystis* in Habitats16) ANOVA Chi Sqr. (N = 17, df = 4) = 5.496855 p = 0.24001 Coeff. of Concordance = 0.08084 Aver. rank r = 0.02339 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.411765 | 41.00000 | 5.882353 | 13.23019 |
| ID 6 | 2.794118 | 47.50000 | 5.882941 | 7.99238 |
| ID 7 | 2.970588 | 50.50000 | 5.882353 | 6.11997 |
| ID 11 | 3.294118 | 56.00000 | 5.880588 | 11.13955 |
| all | 3.529412 | 60.00000 | 5.882353 | 7.82454 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Erigeron* in Habitats16) ANOVA Chi Sqr. (N = 46, df = 4) = 39.47305 p =0.00000 Coeff. of Concordance = 0.21453 Aver. rank r = 0.19707 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 1.978261 | 91.0000 | 2.173261 | 10.10415 |
| ID 6 | 2.782609 | 128.0000 | 2.167174 | 8.43315 |
| ID 7 | 2.934783 | 135.0000 | 2.173043 | 6.73600 |
| ID 11 | 3.630435 | 167.0000 | 2.174348 | 5.69611 |
| all | 3.673913 | 169.0000 | 2.173913 | 5.89647 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Robinia* in Habitats16) ANOVA Chi Sqr. (N = 35, df = 4) = 17.30351 p = 0.00169 Coeff. of Concordance = 0.12360 Aver. rank r = 0.09782 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.114286 | 74.0000 | 2.856857 | 12.01051 |
| ID 6 | 3.200000 | 112.0000 | 2.859429 | 9.34778 |
| ID 7 | 3.057143 | 107.0000 | 2.856000 | 7.10630 |
| ID 11 | 3.114286 | 109.0000 | 2.857429 | 15.92140 |
| all | 3.514286 | 123.0000 | 2.873749 | 15.69931 |

| Friedman ANOVA and Kendall Coeff. of Concordance (*Veronica* in Habitats16) ANOVA Chi Sqr. (N = 29, df = 4) = 14.69680 p = 0.00537 Coeff. of Concordance = 0.12670 Aver. rank r = 0.09551 | | | | |
|---|---|---|---|---|
| | Average Rank | Sum of ranks | Mean | St. dev. |
| ID 5 | 2.448276 | 71.0000 | 3.450000 | 11.93514 |
| ID 6 | 3.103448 | 90.0000 | 3.448621 | 7.97028 |
| ID 7 | 2.431034 | 70.5000 | 3.448966 | 12.27642 |
| ID 11 | 3.465517 | 100.5000 | 3.448621 | 6.57982 |
| all | 3.551724 | 103.0000 | 3.448276 | 8.49262 |

**Appendix 7.** Results of the Wilcoxon Matched Pairs test

| Pair of Variables | Wilcoxon Matched Pairs Test (*Ambrosia* in CLC) Marked tests are significant at p <0.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID 5 & ID 6 | 19 | 69.0000 | 1.046297 | 0.295425 |
| ID 5 & ID 7 | 14 | 29.0000 | 1.475247 | 0.140147 |
| ID 5 & ID 11 | 23 | 61.0000 | 2.341951 | 0.019184 |
| ID 5 & all | 25 | 67.0000 | 2.569610 | 0.010182 |
| ID 6 & ID 7 | 17 | 75.0000 | 0.071007 | 0.943392 |
| ID 6 & ID 11 | 24 | 146.0000 | 0.114286 | 0.909011 |
| ID 6 & all | 25 | 160.0000 | 0.067267 | 0.946369 |
| ID 7 & ID 11 | 22 | 119.5000 | 0.227260 | 0.820222 |
| ID 7 & all | 25 | 146.0000 | 0.443964 | 0.657069 |
| ID 11 & all | 25 | 160.0000 | 0.067267 | 0.946369 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Erigeron* in CLC) Marked tests are significant at p <0.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID 5 & ID 6 | 20 | 63.0000 | 1.567972 | 0.116889 |
| ID 5 & ID 7 | 17 | 51.0000 | 1.207122 | 0.227386 |
| ID 5 & ID 11 | 21 | 44.0000 | 2.485172 | 0.012949 |
| ID 5 & all | 25 | 67.0000 | 2.569610 | 0.010182 |
| ID 6 & ID 7 | 22 | 121.0000 | 0.178561 | 0.858282 |
| ID 6 & ID 11 | 23 | 125.0000 | 0.395394 | 0.692552 |
| ID 6 & all | 25 | 119.0000 | 1.170451 | 0.241821 |
| ID 7 & ID 11 | 23 | 104.0000 | 1.034108 | 0.301086 |
| ID 7 & all | 25 | 125.0000 | 1.009009 | 0.312971 |
| ID 11 & all | 25 | 117.0000 | 1.224264 | 0.220853 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Ambrosia* in HM04) Marked tests are significant at p <0.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID5 & ID6 | 32 | 189.0000 | 1.402420 | 0.160791 |
| ID5 & ID7 | 28 | 152.0000 | 1.161343 | 0.245503 |
| ID5 & ID11 | 43 | 312.0000 | 1.944067 | 0.051888 |
| ID5 & all | 48 | 355.0000 | 2.389775 | 0.016859 |
| ID6 & ID7 | 34 | 260.0000 | 0.641119 | 0.521446 |
| ID6 & ID11 | 47 | 559.0000 | 0.052911 | 0.957803 |
| ID6 & all | 48 | 569.0000 | 0.194874 | 0.845491 |
| ID7 & ID11 | 43 | 295.0000 | 2.149342 | 0.031608 |
| ID7 & all | 48 | 365.0000 | 2.287210 | 0.022184 |
| ID11 & all | 48 | 527.0000 | 0.625649 | 0.531545 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Erigeron* in HM04) Marked tests are significant at p <0.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID5 & ID6 | 41 | 267.0000 | 2.118692 | 0.034117 |
| ID5 & ID7 | 33 | 208.0000 | 1.295418 | 0.195177 |
| ID5 & ID11 | 52 | 377.0000 | 2.841358 | 0.004492 |
| ID5 & all | 59 | 436.0000 | 3.389041 | 0.000701 |
| ID6 & ID7 | 43 | 457.0000 | 0.193199 | 0.846803 |
| ID6 & ID11 | 59 | 857.0000 | 0.211343 | 0.832620 |
| ID6 & all | 59 | 734.0000 | 1.139744 | 0.254394 |
| ID7 & ID11 | 51 | 482.0000 | 1.696598 | 0.089774 |
| ID7 & all | 59 | 578.0000 | 2.317229 | 0.020492 |
| ID11 & all | 59 | 824.0000 | 0.460427 | 0.645210 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Robinia* in HM04) Marked tests are significant at p <.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID5 & ID6 | 35 | 230.0000 | 1.392227 | 0.163855 |
| ID5 & ID7 | 26 | 115.0000 | 1.536578 | 0.124398 |
| ID5 & ID11 | 54 | 442.0000 | 2.587371 | 0.009672 |
| ID5 & all | 58 | 525.0000 | 2.558846 | 0.010502 |
| ID6 & ID7 | 39 | 376.0000 | 0.195370 | 0.845103 |
| ID6 & ID11 | 56 | 657.0000 | 1.150149 | 0.250083 |
| ID6 & all | 58 | 694.0000 | 1.250389 | 0.211158 |
| ID7 & ID11 | 55 | 679.0000 | 0.762448 | 0.445793 |
| ID7 & all | 58 | 699.0000 | 1.211677 | 0.225637 |
| ID11 & all | 57 | 469.0000 | 2.840412 | 0.004506 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Veronica* in HM04) Marked tests are significant at p <.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID5 & ID6 | 34 | 213.0000 | 1.444656 | 0.148556 |
| ID5 & ID7 | 32 | 247.0000 | 0.317882 | 0.750575 |
| ID5 & ID11 | 42 | 332.0000 | 1.494188 | 0.135128 |
| ID5 & all | 49 | 351.0000 | 2.601218 | 0.009290 |
| ID6 & ID7 | 37 | 202.0000 | 2.255400 | 0.024109 |
| ID6 & ID11 | 46 | 525.0000 | 0.169343 | 0.865527 |
| ID6 & all | 49 | 591.0000 | 0.213867 | 0.830651 |
| ID7 & ID11 | 40 | 253.0000 | 2.110284 | 0.034835 |
| ID7 & all | 49 | 382.0000 | 2.292851 | 0.021857 |
| ID11 & all | 49 | 548.0000 | 0.641601 | 0.521133 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Ambrosia* in HM16) Marked tests are significant at p <.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID5 & ID6 | 17 | 26.0000 | 2.390574 | 0.016823 |
| ID5 & ID7 | 21 | 41.0000 | 2.589445 | 0.009614 |
| ID5 & ID11 | 32 | 84.0000 | 3.365809 | 0.000763 |
| ID5 & all | 37 | 81.0000 | 4.080840 | 0.000045 |
| ID6 & ID7 | 25 | 148.0000 | 0.390150 | 0.696426 |
| ID6 & ID11 | 34 | 200.0000 | 1.666910 | 0.095533 |
| ID6 & all | 37 | 252.0000 | 1.501085 | 0.133334 |
| ID7 & ID11 | 35 | 268.0000 | 0.769820 | 0.441407 |
| ID7 & all | 37 | 343.0000 | 0.128233 | 0.897964 |
| ID11 & all | 37 | 312.0000 | 0.595908 | 0.551237 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Erigeron* in HM16) Marked tests are significant at p <.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID5 & ID6 | 26 | 89.0000 | 2.196925 | 0.028027 |
| ID5 & ID7 | 28 | 123.0000 | 1.821714 | 0.068499 |
| ID5 & ID11 | 38 | 128.0000 | 3.516802 | 0.000437 |
| ID5 & all | 46 | 149.0000 | 4.277284 | 0.000019 |
| ID6 & ID7 | 34 | 247.0000 | 0.863374 | 0.387933 |
| ID6 & ID11 | 42 | 346.0000 | 1.319137 | 0.187124 |
| ID6 & all | 46 | 350.0000 | 2.081284 | 0.037409 |
| ID7 & ID11 | 42 | 341.0000 | 1.381655 | 0.167079 |
| ID7 & all | 46 | 457.0000 | 0.912269 | 0.361628 |
| ID11 & all | 46 | 375.0000 | 1.808149 | 0.070584 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Robinia* in HM16) Marked tests are significant at p <.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| | N | | | |
| ID5 & ID6 | 19 | 46.0000 | 1.971867 | 0.048626 |
| ID5 & ID7 | 16 | 22.0000 | 2.378603 | 0.017379 |
| ID5 & ID11 | 30 | 159.0000 | 1.511773 | 0.130593 |
| ID5 & all | 35 | 189.0000 | 2.063772 | 0.039040 |
| ID6 & ID7 | 23 | 112.0000 | 0.790789 | 0.429068 |
| ID6 & ID11 | 33 | 139.0000 | 2.528298 | 0.011462 |
| ID6 & all | 35 | 172.0000 | 2.342217 | 0.019170 |
| ID7 & ID11 | 32 | 168.0000 | 1.795098 | 0.072639 |
| ID7 & all | 35 | 225.0000 | 1.474123 | 0.140449 |
| ID11 & all | 35 | 115.0000 | 3.275829 | 0.001054 |

| Pair of Variables | Wilcoxon Matched Pairs Test (*Veronica* in HM16) Marked tests are significant at p <.05000 | | | |
|---|---|---|---|---|
| | ValID | T | Z | p-value |
| ID5 & ID6 | 21 | 59.0000 | 1.963807 | 0.049553 |
| ID5 & ID7 | 20 | 101.0000 | 0.149331 | 0.881293 |
| ID5 & ID11 | 26 | 92.0000 | 2.120731 | 0.033945 |
| ID5 & all | 29 | 113.0000 | 2.259625 | 0.023845 |
| ID6 & ID7 | 21 | 63.0000 | 1.824777 | 0.068036 |
| ID6 & ID11 | 23 | 111.0000 | 0.821204 | 0.411531 |
| ID6 & all | 29 | 215.0000 | 0.054058 | 0.956889 |
| ID7 & ID11 | 25 | 85.0000 | 2.085286 | 0.037044 |
| ID7 & all | 29 | 120.0000 | 2.108262 | 0.035009 |
| ID11 & all | 29 | 157.0000 | 1.308204 | 0.190805 |

**Appendix 8.** Results of descriptive statistics of environmental variables.

| Variable | All Groups<br>Descriptive Statistics (*Ailanthus altissima*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 496 | 0.00 | 0.001 | -0.7442 | 0.6 | -0.0841 | 0.081 | -0.1752 | 0.1 | 0.1 | 0.006 |
| Northness | 496 | -0.13 | -0.190 | -0.9603 | 1.0 | -0.5607 | 0.266 | -0.8600 | 0.7 | 0.5 | 0.024 |
| Slope | 496 | 7.95 | 5.927 | 0.0000 | 29.3 | 1.4731 | 14.336 | 0.3680 | 17.6 | 7.1 | 0.319 |
| Elevation | 488 | 113.49 | 104.754 | 0.0000 | 930.1 | 36.4181 | 136.283 | 8.1615 | 242.1 | 110.3 | 4.995 |
| Bio_1 | 430 | 12.90 | 13.300 | 7.5000 | 16.5 | 10.9000 | 14.500 | 10.7000 | 15.5 | 2.0 | 0.095 |
| Bio_7 | 430 | 28.03 | 27.600 | 23.4000 | 31.9 | 26.1000 | 30.400 | 25.0000 | 30.9 | 2.3 | 0.109 |
| Bio_10 | 430 | 21.51 | 21.400 | 15.9000 | 24.4 | 20.3000 | 22.600 | 19.9000 | 23.5 | 1.5 | 0.071 |
| Bio_11 | 430 | 4.26 | 5.300 | -1.1000 | 9.5 | 1.0000 | 6.800 | 0.7500 | 8.2 | 3.0 | 0.143 |
| Bio_12 | 430 | 967.17 | 927.000 | 640.0000 | 1385.0 | 912.0000 | 1010.000 | 846.0000 | 1197.0 | 140.1 | 6.754 |
| Bio_17 | 430 | 160.54 | 157.000 | 104.0000 | 286.0 | 140.0000 | 164.000 | 131.5000 | 195.0 | 30.3 | 1.462 |
| Bio_18 | 430 | 203.90 | 189.500 | 104.0000 | 316.0 | 144.0000 | 277.000 | 132.0000 | 283.0 | 62.4 | 3.009 |
| Distance_roads | 498 | 226.32 | 100.000 | 0.0000 | 10000.0 | 0.0000 | 141.421 | 0.0000 | 500.0 | 738.7 | 33.100 |
| Distance_roads_1 | 498 | 214.10 | 0.000 | 0.0000 | 10000.0 | 0.0000 | 0.000 | 0.0000 | 1000.0 | 806.4 | 36.135 |
| Distance_roads_2 | 498 | 133.54 | 0.000 | 0.0000 | 11180.3 | 0.0000 | 0.000 | 0.0000 | 0.0 | 994.1 | 44.545 |
| Distance_watercourses | 494 | 3347.80 | 1345.362 | 0.0000 | 37009.5 | 447.2136 | 3301.515 | 141.4214 | 8043.0 | 5606.9 | 252.268 |
| Distance_watercourses_1 | 494 | 3261.33 | 1414.214 | 0.0000 | 36769.6 | 0.0000 | 3162.278 | 0.0000 | 8246.2 | 5580.8 | 251.092 |
| Distance_watercourses_2 | 494 | 2392.71 | 0.000 | 0.0000 | 33541.0 | 0.0000 | 0.000 | 0.0000 | 7071.1 | 5749.5 | 258.681 |
| Population density | 498 | 56308.27 | 598.710 | 3.0051 | 636764.2 | 214.0822 | 9513.052 | 125.4462 | 224373.7 | 135415.5 | 6068.114 |

| Variable | IDPREC=5<br>Descriptive Statistics (*Ailanthus altissima*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 54 | -0.05 | -0.011 | -0.7001 | 0.3 | -0.149 | 0.058 | -0.2072 | 0.10 | 0.2 | 0.02 |
| Northness | 54 | 0.02 | -0.053 | -0.9509 | 0.8 | -0.358 | 0.517 | -0.6291 | 0.76 | 0.5 | 0.07 |
| Slope | 54 | 6.26 | 5.281 | 0.1260 | 19.8 | 3.004 | 7.826 | 2.2659 | 13.35 | 4.5 | 0.61 |
| Elevation | 53 | 100.10 | 69.964 | 0.0000 | 353.6 | 17.596 | 148.386 | 0.8121 | 248.40 | 94.9 | 13.04 |
| Bio_1 | 46 | 13.75 | 14.150 | 10.3000 | 16.2 | 13.000 | 14.900 | 10.9000 | 15.90 | 1.7 | 0.25 |
| Bio_7 | 46 | 27.09 | 26.950 | 23.9000 | 31.0 | 25.600 | 27.500 | 24.9000 | 30.60 | 2.0 | 0.29 |
| Bio_10 | 46 | 22.13 | 22.300 | 19.5000 | 24.3 | 21.200 | 23.100 | 20.4000 | 23.70 | 1.3 | 0.19 |
| Bio_11 | 46 | 5.61 | 6.500 | 0.6000 | 8.9 | 5.200 | 7.100 | 1.0000 | 8.40 | 2.5 | 0.37 |
| Bio_12 | 46 | 1013.54 | 938.000 | 674.0000 | 1385.0 | 879.000 | 1165.000 | 844.0000 | 1273.00 | 176.6 | 26.04 |
| Bio_17 | 46 | 165.76 | 147.500 | 117.0000 | 266.0 | 137.000 | 192.000 | 131.0000 | 235.00 | 40.9 | 6.03 |
| Bio_18 | 46 | 186.78 | 151.000 | 117.0000 | 303.0 | 138.000 | 235.000 | 133.0000 | 286.00 | 59.3 | 8.74 |
| Distance_roads | 54 | 97.29 | 100.000 | 0.0000 | 1081.7 | 0.000 | 141.421 | 0.0000 | 200.00 | 162.5 | 22.11 |
| Distance_roads_1 | 54 | 111.11 | 0.000 | 0.0000 | 2000.0 | 0.000 | 0.000 | 0.0000 | 0.00 | 372.0 | 50.62 |
| Distance_roads_2 | 54 | 0.00 | 0.000 | 0.0000 | 0.0 | 0.000 | 0.000 | 0.0000 | 0.00 | 0.0 | 0.00 |
| Distance_watercourses | 54 | 3907.31 | 2692.583 | 0.0000 | 19183.8 | 400.000 | 5578.530 | 141.4214 | 8840.81 | 4338.2 | 590.36 |
| Distance_watercourses_1 | 54 | 3900.83 | 2828.427 | 0.0000 | 18973.7 | 1000.000 | 5385.165 | 0.0000 | 9219.54 | 4311.7 | 586.75 |
| Distance_watercourses_2 | 54 | 3455.94 | 0.000 | 0.0000 | 18027.8 | 0.000 | 5000.000 | 0.0000 | 10000.00 | 4768.3 | 648.88 |
| Population density | 54 | 46347.15 | 738.925 | 3.0051 | 599885.3 | 208.762 | 3643.332 | 63.1144 | 32248.12 | 150396.2 | 20466.33 |

| Variable | IDPREC=6<br>Descriptive Statistics (*Ailanthus altissima*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 63 | -0.05 | -0.030 | -0.7442 | 0.2 | -0.1185 | 0.061 | -0.2569 | 0.13 | 0.16 | 0.02 |
| Northness | 63 | -0.18 | -0.280 | -0.9417 | 0.8 | -0.5208 | 0.107 | -0.7363 | 0.49 | 0.46 | 0.06 |
| Slope | 63 | 8.85 | 7.749 | 0.0319 | 29.3 | 2.9213 | 13.599 | 1.0575 | 17.30 | 6.59 | 0.83 |
| Elevation | 61 | 178.02 | 128.006 | 0.0000 | 930.1 | 53.9295 | 242.059 | 8.3775 | 335.76 | 187.68 | 24.03 |
| Bio_1 | 54 | 12.94 | 13.200 | 7.5000 | 15.9 | 11.7000 | 14.400 | 10.9000 | 15.00 | 1.75 | 0.24 |
| Bio_7 | 54 | 26.97 | 26.950 | 24.1000 | 30.5 | 25.3000 | 27.900 | 24.8000 | 30.40 | 1.84 | 0.25 |
| Bio_10 | 54 | 21.34 | 21.300 | 15.9000 | 23.8 | 20.3000 | 22.400 | 20.0000 | 23.20 | 1.52 | 0.21 |
| Bio_11 | 54 | 4.73 | 5.400 | -1.1000 | 8.5 | 3.2000 | 6.700 | 1.0000 | 7.40 | 2.35 | 0.32 |
| Bio_12 | 54 | 1063.61 | 1019.500 | 812.0000 | 1367.0 | 924.0000 | 1218.000 | 882.0000 | 1310.00 | 163.86 | 22.30 |
| Bio_17 | 54 | 183.83 | 180.000 | 123.0000 | 272.0 | 152.0000 | 220.000 | 140.0000 | 246.00 | 41.61 | 5.66 |
| Bio_18 | 54 | 202.31 | 191.500 | 123.0000 | 282.0 | 152.0000 | 246.000 | 140.0000 | 281.00 | 52.10 | 7.09 |
| Distance_roads | 63 | 352.21 | 100.000 | 0.0000 | 10000.0 | 0.0000 | 200.000 | 0.0000 | 500.00 | 1280.28 | 161.30 |
| Distance_roads_1 | 63 | 339.91 | 0.000 | 0.0000 | 10000.0 | 0.0000 | 0.000 | 0.0000 | 1000.00 | 1311.99 | 165.29 |
| Distance_roads_2 | 63 | 336.20 | 0.000 | 0.0000 | 11180.3 | 0.0000 | 0.000 | 0.0000 | 0.00 | 1645.52 | 207.32 |
| Distance_watercourses | 63 | 3106.19 | 1360.147 | 0.0000 | 28602.8 | 412.3106 | 2662.705 | 282.8427 | 8246.21 | 5386.36 | 678.62 |
| Distance_watercourses_1 | 63 | 3032.82 | 1414.214 | 0.0000 | 29000.0 | 0.0000 | 3000.000 | 0.0000 | 8246.21 | 5454.39 | 687.19 |
| Distance_watercourses_2 | 63 | 2284.43 | 0.000 | 0.0000 | 30000.0 | 0.0000 | 0.000 | 0.0000 | 7071.07 | 5674.26 | 714.89 |
| Population density | 63 | 30972.03 | 329.887 | 9.9509 | 361416.0 | 108.4997 | 2285.608 | 22.9482 | 36740.13 | 91888.87 | 11576.91 |

| Variable | IDPREC=7<br>Descriptive Statistics (*Ailanthus altissima*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 72 | 0.02 | 0.02 | -0.2647 | 0.2 | -0.032 | 0.08 | -0.1385 | 0.1 | 0.1 | 0.01 |
| Northness | 72 | -0.26 | -0.24 | -0.9603 | 0.9 | -0.725 | 0.13 | -0.8407 | 0.4 | 0.5 | 0.06 |
| Slope | 72 | 3.46 | 1.23 | 0.0076 | 26.0 | 0.670 | 3.89 | 0.2038 | 8.6 | 5.1 | 0.60 |
| Elevation | 71 | 106.95 | 100.62 | 0.1978 | 450.4 | 92.502 | 120.46 | 26.4683 | 152.0 | 67.0 | 7.95 |
| Bio_1 | 69 | 11.72 | 10.80 | 9.8000 | 16.2 | 10.600 | 11.10 | 10.6000 | 15.2 | 1.9 | 0.23 |
| Bio_7 | 69 | 29.68 | 30.50 | 23.7000 | 31.3 | 30.300 | 31.20 | 25.6000 | 31.3 | 2.3 | 0.27 |
| Bio_10 | 69 | 20.72 | 20.10 | 18.9000 | 24.3 | 19.900 | 20.50 | 19.9000 | 23.2 | 1.4 | 0.16 |
| Bio_11 | 69 | 2.28 | 0.90 | 0.2000 | 8.9 | 0.600 | 1.30 | 0.5000 | 7.6 | 2.9 | 0.35 |
| Bio_12 | 69 | 955.42 | 924.00 | 640.0000 | 1326.0 | 922.000 | 935.00 | 859.0000 | 1163.0 | 110.7 | 13.33 |
| Bio_17 | 69 | 158.78 | 162.00 | 123.0000 | 221.0 | 157.000 | 164.00 | 133.0000 | 166.0 | 15.8 | 1.90 |
| Bio_18 | 69 | 245.96 | 270.00 | 127.0000 | 286.0 | 264.000 | 281.00 | 133.0000 | 282.0 | 54.5 | 6.57 |
| Distance_roads | 72 | 241.56 | 100.00 | 0.0000 | 4808.3 | 0.000 | 100.00 | 0.0000 | 223.6 | 789.9 | 93.09 |
| Distance_roads_1 | 72 | 216.84 | 0.00 | 0.0000 | 5099.0 | 0.000 | 0.00 | 0.0000 | 0.0 | 877.1 | 103.36 |
| Distance_roads_2 | 72 | 196.42 | 0.00 | 0.0000 | 7071.1 | 0.000 | 0.00 | 0.0000 | 0.0 | 1170.2 | 137.91 |
| Distance_watercourses | 71 | 3538.76 | 1100.00 | 0.0000 | 33295.2 | 447.214 | 2319.48 | 316.2278 | 9406.9 | 7113.3 | 844.19 |
| Distance_watercourses_1 | 71 | 3551.29 | 1000.00 | 0.0000 | 33241.5 | 1000.000 | 2828.43 | 0.0000 | 9219.5 | 7103.9 | 843.08 |
| Distance_watercourses_2 | 71 | 2687.29 | 0.00 | 0.0000 | 33541.0 | 0.000 | 0.00 | 0.0000 | 10000.0 | 7570.9 | 898.50 |
| Population density | 72 | 95755.18 | 15197.36 | 66.5691 | 545662.9 | 2087.693 | 61945.40 | 164.2144 | 396953.3 | 158523.9 | 18682.22 |

| Variable | IDPREC=11<br>Descriptive Statistics (*Ailanthus altissima*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 92 | -0.011 | -0.0084 | -0.2831 | 0.26 | -0.0884 | 0.053 | -0.1299 | 0.110 | 0.104 | 0.0108 |
| Northness | 92 | -0.184 | -0.2015 | -0.9853 | 0.86 | -0.6134 | 0.145 | -0.8326 | 0.510 | 0.482 | 0.0503 |
| Slope | 92 | 1.390 | 0.2522 | 0.0000 | 13.16 | 0.0000 | 1.172 | 0.0000 | 5.545 | 2.572 | 0.2681 |
| Elevation | 91 | 110.542 | 105.1281 | 71.1453 | 262.15 | 88.6940 | 115.734 | 82.6750 | 136.332 | 32.929 | 3.4519 |
| Bio_1 | 92 | 10.843 | 10.8000 | 9.7000 | 11.30 | 10.6000 | 11.200 | 10.5000 | 11.200 | 0.347 | 0.0362 |
| Bio_7 | 92 | 30.721 | 30.6000 | 29.8000 | 32.00 | 30.4000 | 30.800 | 30.3000 | 31.700 | 0.510 | 0.0532 |
| Bio_10 | 92 | 20.083 | 20.1000 | 19.0000 | 20.80 | 19.8000 | 20.200 | 19.7000 | 20.700 | 0.384 | 0.0400 |
| Bio_11 | 92 | 0.934 | 0.9000 | -0.1000 | 1.90 | 0.6000 | 1.150 | 0.6000 | 1.600 | 0.408 | 0.0426 |
| Bio_12 | 92 | 868.250 | 917.0000 | 647.0000 | 1032.00 | 787.0000 | 933.500 | 678.0000 | 967.000 | 106.483 | 11.1016 |
| Bio_17 | 92 | 155.011 | 158.0000 | 120.0000 | 205.00 | 135.0000 | 162.000 | 134.0000 | 180.000 | 19.313 | 2.0135 |
| Bio_18 | 92 | 259.196 | 272.0000 | 197.0000 | 319.00 | 249.0000 | 279.000 | 197.0000 | 285.000 | 31.879 | 3.3236 |
| Distance_roads | 94 | 600.367 | 316.2278 | 0.0000 | 4900.00 | 0.0000 | 860.233 | 0.0000 | 1345.362 | 806.817 | 83.2168 |
| Distance_roads_1 | 94 | 480.789 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 1000.000 | 0.0000 | 1000.000 | 824.824 | 85.0741 |
| Distance_roads_2 | 94 | 106.383 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 725.393 | 74.8186 |
| Distance_watercourses | 94 | 732.795 | 338.3914 | 0.0000 | 5060.63 | 100.0000 | 1303.840 | 0.0000 | 1749.286 | 809.308 | 83.4737 |
| Distance_watercourses_1 | 94 | 684.944 | 500.0000 | 0.0000 | 5000.00 | 0.0000 | 1000.000 | 0.0000 | 1414.214 | 841.785 | 86.8235 |
| Distance_watercourses_2 | 94 | 159.574 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 883.580 | 91.1343 |
| Population density | 94 | 1556.983 | 677.0697 | 29.6879 | 60828.14 | 258.0493 | 1300.283 | 131.1842 | 1703.085 | 6264.238 | 646.1068 |

| Variable | All Groups<br>Descriptive Statistics (*Ambrosia artemisiifolia*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 1044 | 0.00 | 0.0034 | -0.8177 | 0.3 | -0.0611 | 0.073 | -0.1205 | 0.11 | 0.11 | 0.003 |
| Northness | 1044 | -0.12 | -0.2043 | -0.9618 | 1.0 | -0.5742 | 0.297 | -0.8160 | 0.66 | 0.53 | 0.017 |
| Slope | 1044 | 2.36 | 0.8595 | 0.0000 | 22.8 | 0.0674 | 2.922 | 0.0000 | 6.88 | 3.74 | 0.116 |
| Elevation | 1040 | 173.15 | 142.3094 | 0.0000 | 843.2 | 105.1973 | 193.302 | 87.7787 | 308.95 | 126.85 | 3.933 |
| Bio_1 | 1037 | 10.76 | 10.7000 | 7.3000 | 16.4 | 10.2000 | 11.100 | 9.9000 | 11.20 | 1.14 | 0.036 |
| Bio_7 | 1037 | 30.14 | 30.4000 | 23.4000 | 32.0 | 30.2000 | 30.600 | 28.8000 | 31.10 | 1.09 | 0.034 |
| Bio_10 | 1037 | 19.91 | 20.0000 | 15.9000 | 24.3 | 19.4000 | 20.300 | 19.1000 | 20.50 | 1.03 | 0.032 |
| Bio_11 | 1019 | 1.09 | 0.8000 | -1.8000 | 9.2 | 0.4000 | 1.200 | 0.1000 | 1.60 | 1.54 | 0.048 |
| Bio_12 | 1037 | 937.46 | 922.0000 | 630.0000 | 1390.0 | 883.0000 | 1006.000 | 778.0000 | 1083.00 | 127.78 | 3.968 |
| Bio_17 | 1037 | 163.35 | 158.0000 | 107.0000 | 286.0 | 143.0000 | 177.000 | 133.0000 | 198.00 | 30.49 | 0.947 |
| Bio_18 | 1037 | 270.17 | 280.0000 | 107.0000 | 343.0 | 270.0000 | 292.000 | 219.0000 | 304.00 | 39.23 | 1.218 |
| Distance_roads | 922 | 8899.06 | 100.0000 | 0.0000 | 322539.0 | 0.0000 | 400.000 | 0.0000 | 989.95 | 50341.13 | 1657.897 |
| Distance_roads_1 | 922 | 180.18 | 0.0000 | 0.0000 | 2828.4 | 0.0000 | 0.000 | 0.0000 | 1000.00 | 421.26 | 13.873 |
| Distance_roads_2 | 922 | 36.18 | 0.0000 | 0.0000 | 5000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 402.42 | 13.253 |
| Distance_watercourses | 922 | 994.92 | 538.5165 | 0.0000 | 44148.0 | 200.0000 | 1000.000 | 100.0000 | 1664.33 | 2488.56 | 81.956 |
| Distance_watercourses_1 | 922 | 879.37 | 101.5000 | 0.0000 | 43657.8 | 0.0000 | 1000.000 | 0.0000 | 1414.21 | 2488.27 | 81.947 |
| Distance_watercourses_2 | 898 | 343.06 | 0.0000 | 0.0000 | 42720.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 2394.81 | 79.916 |
| Population density | 898 | 16242.75 | 979.3611 | 4.2729 | 599885.3 | 295.6058 | 3080.838 | 123.4144 | 15105.13 | 59467.78 | 1984.466 |

| Variable | IDPREC=5<br>Descriptive Statistics (*Ambrosia artemisiifolia*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 128 | -0.01 | 0.016 | -0.7001 | 0.3 | -0.0724 | 0.081 | -0.1802 | 0.12 | 0.13 | 0.012 |
| Northness | 128 | 0.01 | 0.075 | -0.9290 | 0.9 | -0.4579 | 0.425 | -0.7542 | 0.84 | 0.55 | 0.049 |
| Slope | 128 | 1.83 | 0.953 | 0.0000 | 19.8 | 0.1797 | 2.892 | 0.0000 | 4.62 | 2.48 | 0.219 |
| Elevation | 128 | 107.10 | 105.027 | 0.0000 | 418.4 | 86.5964 | 129.604 | 17.5960 | 171.29 | 56.27 | 4.973 |
| Bio_1 | 126 | 11.64 | 11.100 | 10.1000 | 16.4 | 10.8000 | 11.300 | 10.6000 | 14.90 | 1.59 | 0.141 |
| Bio_7 | 126 | 29.88 | 30.500 | 23.4000 | 31.8 | 30.0000 | 30.800 | 27.4000 | 31.00 | 1.68 | 0.150 |
| Bio_10 | 126 | 20.68 | 20.300 | 19.3000 | 24.3 | 20.1000 | 20.600 | 19.8000 | 23.10 | 1.19 | 0.106 |
| Bio_11 | 126 | 2.11 | 1.000 | 0.2000 | 9.2 | 0.9000 | 1.600 | 0.6000 | 7.00 | 2.45 | 0.218 |
| Bio_12 | 126 | 849.51 | 874.000 | 630.0000 | 1390.0 | 725.0000 | 934.000 | 674.0000 | 1044.00 | 140.47 | 12.514 |
| Bio_17 | 126 | 150.27 | 141.000 | 107.0000 | 272.0 | 131.0000 | 163.000 | 124.0000 | 191.00 | 26.34 | 2.346 |
| Bio_18 | 126 | 229.94 | 231.000 | 107.0000 | 295.0 | 201.0000 | 277.000 | 137.0000 | 284.00 | 52.93 | 4.716 |
| Distance_roads | 128 | 59.21 | 0.000 | 0.0000 | 400.0 | 0.0000 | 100.000 | 0.0000 | 200.00 | 87.90 | 7.769 |
| Distance_roads_1 | 128 | 70.31 | 0.000 | 0.0000 | 1000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 256.68 | 22.687 |
| Distance_roads_2 | 128 | 0.00 | 0.000 | 0.0000 | 0.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 0.00 | 0.000 |
| Distance_watercourses | 128 | 1851.47 | 400.000 | 0.0000 | 44148.0 | 211.8034 | 1111.285 | 100.0000 | 4441.85 | 4619.32 | 408.294 |
| Distance_watercourses_1 | 128 | 1724.91 | 0.000 | 0.0000 | 43657.8 | 0.0000 | 1414.214 | 0.0000 | 5000.00 | 4600.72 | 406.650 |
| Distance_watercourses_2 | 128 | 1260.37 | 0.000 | 0.0000 | 42720.0 | 0.0000 | 0.000 | 0.0000 | 5000.00 | 4543.46 | 401.589 |
| Population density | 128 | 15151.33 | 1024.315 | 73.0376 | 476323.5 | 512.7577 | 7469.310 | 236.4384 | 28332.05 | 60542.95 | 5351.291 |

| Variable | IDPREC=6<br>Descriptive Statistics (*Ambrosia artemisiifolia*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 14 | -0.133 | -0.088 | -0.6668 | 0.12 | -0.1185 | -0.073 | -0.3192 | 0.025 | 0.184 | 0.049 |
| Northness | 14 | -0.038 | -0.032 | -0.8931 | 0.62 | -0.3635 | 0.416 | -0.6166 | 0.574 | 0.470 | 0.126 |
| Slope | 14 | 3.784 | 3.436 | 0.0000 | 14.47 | 0.3693 | 6.203 | 0.0867 | 7.727 | 4.044 | 1.081 |
| Elevation | 14 | 198.160 | 105.249 | 0.0009 | 713.83 | 3.2222 | 408.319 | 1.5768 | 444.302 | 223.716 | 59.791 |
| Bio_1 | 12 | 12.175 | 11.750 | 8.3000 | 15.40 | 10.4500 | 14.850 | 9.9000 | 15.400 | 2.442 | 0.705 |
| Bio_7 | 12 | 28.367 | 27.750 | 27.2000 | 30.80 | 27.3500 | 29.350 | 27.3000 | 30.600 | 1.368 | 0.395 |
| Bio_10 | 12 | 20.742 | 20.450 | 16.9000 | 23.60 | 19.2000 | 23.100 | 18.5000 | 23.500 | 2.206 | 0.637 |
| Bio_11 | 12 | 3.508 | 2.850 | -0.8000 | 7.60 | 1.0000 | 7.000 | 0.6000 | 7.600 | 3.096 | 0.894 |
| Bio_12 | 12 | 1015.917 | 983.000 | 850.0000 | 1320.00 | 878.5000 | 1117.500 | 853.0000 | 1289.000 | 168.914 | 48.761 |
| Bio_17 | 12 | 187.083 | 183.000 | 132.0000 | 271.00 | 138.5000 | 225.000 | 132.0000 | 269.000 | 52.083 | 15.035 |
| Bio_18 | 12 | 208.083 | 218.500 | 132.0000 | 273.00 | 138.5000 | 266.500 | 132.0000 | 273.000 | 62.092 | 17.924 |
| Distance_roads | 14 | 287.653 | 182.514 | 100.0000 | 721.11 | 100.0000 | 447.214 | 100.0000 | 707.107 | 228.974 | 61.196 |
| Distance_roads_1 | 14 | 142.857 | 0.000 | 0.0000 | 1000.00 | 0.0000 | 0.000 | 0.0000 | 1000.000 | 363.137 | 97.052 |
| Distance_roads_2 | 14 | 0.000 | 0.000 | 0.0000 | 0.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 0.000 | 0.000 |
| Distance_watercourses | 14 | 3047.404 | 840.312 | 0.0000 | 14425.33 | 200.0000 | 6456.005 | 0.0000 | 8115.417 | 4454.700 | 1190.569 |
| Distance_watercourses_1 | 14 | 3094.073 | 1000.000 | 0.0000 | 14317.82 | 0.0000 | 6082.763 | 0.0000 | 8544.004 | 4480.505 | 1197.465 |
| Distance_watercourses_2 | 14 | 2644.614 | 0.000 | 0.0000 | 15811.39 | 0.0000 | 7071.068 | 0.0000 | 7071.068 | 4820.503 | 1288.334 |
| Population density | 14 | 1989.479 | 327.353 | 21.4177 | 7802.50 | 93.9941 | 2415.394 | 63.5939 | 7802.500 | 3153.569 | 842.827 |

| Variable | IDPREC=7<br>Descriptive Statistics (*Ambrosia artemisiifolia*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 154 | 0.0 | 0.0 | -0.23 | 0.2 | -0.06 | 0.1 | -0.11 | 0.1 | 0.1 | 0.01 |
| Northness | 154 | -0.2 | -0.2 | -0.96 | 0.9 | -0.65 | 0.2 | -0.78 | 0.5 | 0.5 | 0.04 |
| Slope | 154 | 1.1 | 0.4 | 0.00 | 12.6 | 0.00 | 1.0 | 0.00 | 3.2 | 1.9 | 0.16 |
| Elevation | 154 | 132.0 | 99.2 | 15.47 | 753.2 | 92.15 | 124.6 | 86.59 | 254.0 | 90.8 | 7.32 |
| Bio_1 | 154 | 10.8 | 10.7 | 7.80 | 14.6 | 10.60 | 11.0 | 10.50 | 11.1 | 0.8 | 0.06 |
| Bio_7 | 154 | 30.7 | 30.9 | 27.10 | 31.3 | 30.50 | 31.2 | 30.10 | 31.3 | 0.9 | 0.08 |
| Bio_10 | 154 | 20.0 | 19.9 | 16.40 | 22.7 | 19.90 | 20.1 | 19.70 | 20.5 | 0.7 | 0.06 |
| Bio_11 | 153 | 0.9 | 0.6 | -1.20 | 7.0 | 0.60 | 1.1 | 0.50 | 1.2 | 1.1 | 0.09 |
| Bio_12 | 154 | 903.0 | 922.0 | 745.00 | 1322.0 | 883.00 | 927.0 | 780.00 | 955.0 | 77.9 | 6.28 |
| Bio_17 | 154 | 160.2 | 162.0 | 125.00 | 273.0 | 155.00 | 165.0 | 148.00 | 166.0 | 15.7 | 1.27 |
| Bio_18 | 154 | 261.8 | 270.0 | 142.00 | 296.0 | 269.00 | 273.0 | 230.00 | 283.0 | 27.9 | 2.24 |
| Distance_roads | 32 | 249416.6 | 322539.0 | 15272.00 | 322539.0 | 96533.00 | 322539.0 | 68200.00 | 322539.0 | 115866.2 | 20482.44 |
| Distance_roads_1 | 32 | 107.5 | 109.0 | 101.00 | 109.0 | 106.50 | 109.0 | 103.00 | 109.0 | 2.6 | 0.46 |
| Distance_roads_2 | 32 | 105.1 | 106.0 | 101.00 | 106.0 | 104.50 | 106.0 | 102.00 | 106.0 | 1.6 | 0.29 |
| Distance_watercourses | 32 | 105.1 | 106.0 | 101.00 | 106.0 | 104.50 | 106.0 | 102.00 | 106.0 | 1.6 | 0.29 |
| Distance_watercourses_1 | 32 | 102.2 | 102.0 | 101.00 | 105.0 | 102.00 | 102.0 | 102.00 | 103.0 | 0.7 | 0.12 |
| Distance_watercourses_2 | 8 | 103.4 | 103.5 | 101.00 | 106.0 | 102.00 | 104.5 | 101.00 | 106.0 | 1.7 | 0.60 |
| Population density | 8 | 103.4 | 103.5 | 101.00 | 106.0 | 102.00 | 104.5 | 101.00 | 106.0 | 1.7 | 0.60 |

| Variable | IDPREC=11<br>Descriptive Statistics (*Ambrosia artemisiifolia*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 748 | 0.00 | 0.0035 | -0.8177 | 0.3 | -0.0545 | 0.073 | -0.1123 | 0.12 | 0.11 | 0.004 |
| Northness | 748 | -0.14 | -0.2368 | -0.9618 | 1.0 | -0.5742 | 0.293 | -0.8228 | 0.68 | 0.54 | 0.020 |
| Slope | 748 | 2.69 | 0.9543 | 0.0000 | 22.8 | 0.0771 | 3.418 | 0.0000 | 8.64 | 4.11 | 0.150 |
| Elevation | 744 | 192.56 | 148.6870 | 0.0000 | 843.2 | 112.1125 | 213.631 | 104.0498 | 343.15 | 133.77 | 4.904 |
| Bio_1 | 745 | 10.59 | 10.7000 | 7.3000 | 16.0 | 10.1000 | 11.100 | 9.8000 | 11.10 | 1.00 | 0.037 |
| Bio_7 | 745 | 30.10 | 30.3000 | 23.4000 | 32.0 | 30.1000 | 30.500 | 29.1000 | 30.60 | 0.91 | 0.033 |
| Bio_10 | 745 | 19.75 | 19.9000 | 15.9000 | 24.3 | 19.3000 | 20.300 | 19.0000 | 20.50 | 0.96 | 0.035 |
| Bio_11 | 728 | 0.91 | 0.8000 | -1.8000 | 8.1 | 0.3000 | 1.300 | 0.1000 | 1.50 | 1.25 | 0.046 |
| Bio_12 | 745 | 958.20 | 924.0000 | 641.0000 | 1380.0 | 913.0000 | 1007.000 | 791.0000 | 1108.00 | 125.16 | 4.585 |
| Bio_17 | 745 | 165.82 | 158.0000 | 113.0000 | 286.0 | 143.0000 | 178.000 | 135.0000 | 202.00 | 32.27 | 1.182 |
| Bio_18 | 745 | 279.69 | 284.0000 | 113.0000 | 343.0 | 277.0000 | 296.000 | 251.0000 | 305.00 | 31.85 | 1.167 |
| Distance_roads | 748 | 283.42 | 100.0000 | 0.0000 | 2720.3 | 0.0000 | 400.000 | 0.0000 | 921.95 | 414.44 | 15.153 |
| Distance_roads_1 | 748 | 202.79 | 0.0000 | 0.0000 | 2828.4 | 0.0000 | 0.000 | 0.0000 | 1000.00 | 449.96 | 16.452 |
| Distance_roads_2 | 748 | 40.11 | 0.0000 | 0.0000 | 5000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 446.31 | 16.319 |
| Distance_watercourses | 748 | 848.00 | 600.0000 | 0.0000 | 42675.5 | 223.6068 | 1000.000 | 100.0000 | 1600.00 | 1844.49 | 67.441 |
| Distance_watercourses_1 | 748 | 726.47 | 0.0000 | 0.0000 | 42047.6 | 0.0000 | 1000.000 | 0.0000 | 1414.21 | 1849.87 | 67.638 |
| Distance_watercourses_2 | 748 | 145.58 | 0.0000 | 0.0000 | 38078.9 | 0.0000 | 0.000 | 0.0000 | 0.00 | 1640.01 | 59.965 |
| Population density | 748 | 16868.91 | 999.2467 | 4.2729 | 599885.3 | 293.5121 | 2707.815 | 127.5459 | 13889.75 | 60133.18 | 2198.687 |

| Variable | All Groups<br>Descriptive Statistics (*Echinocystis lobata*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 178 | 0.003 | -0.0023 | -0.2831 | 0.30 | -0.0652 | 0.074 | -0.1299 | 0.13 | 0.10 | 0.0077 |
| Northness | 178 | -0.082 | -0.0962 | -0.9853 | 0.93 | -0.4789 | 0.292 | -0.7542 | 0.51 | 0.48 | 0.0360 |
| Slope | 178 | 1.587 | 0.4217 | 0.0000 | 26.97 | 0.0319 | 1.145 | 0.0000 | 5.65 | 3.22 | 0.2412 |
| Elevation | 177 | 117.533 | 103.0282 | 68.6091 | 462.61 | 91.3384 | 118.649 | 84.0429 | 168.96 | 52.55 | 3.9496 |
| Bio_1 | 178 | 10.791 | 10.8000 | 9.2000 | 11.30 | 10.6000 | 11.100 | 10.3000 | 11.20 | 0.37 | 0.0276 |
| Bio_7 | 178 | 30.721 | 30.7000 | 27.0000 | 32.00 | 30.4000 | 31.000 | 30.3000 | 31.30 | 0.60 | 0.0448 |
| Bio_10 | 178 | 20.015 | 20.0000 | 18.4000 | 20.80 | 19.8000 | 20.200 | 19.6000 | 20.50 | 0.42 | 0.0313 |
| Bio_11 | 178 | 0.892 | 0.9000 | -0.5000 | 2.70 | 0.6000 | 1.100 | 0.4000 | 1.50 | 0.43 | 0.0322 |
| Bio_12 | 178 | 880.348 | 920.0000 | 630.0000 | 1368.00 | 820.0000 | 932.000 | 679.0000 | 972.00 | 108.53 | 8.1344 |
| Bio_17 | 178 | 156.989 | 158.0000 | 120.0000 | 285.00 | 148.0000 | 164.000 | 131.0000 | 175.00 | 21.66 | 1.6236 |
| Bio_18 | 178 | 262.365 | 270.0000 | 192.0000 | 329.00 | 255.0000 | 279.000 | 198.0000 | 285.00 | 28.80 | 2.1590 |
| Distance_roads | 180 | 447.131 | 200.0000 | 0.0000 | 4900.00 | 0.0000 | 700.000 | 0.0000 | 1104.20 | 636.34 | 47.4303 |
| Distance_roads_1 | 180 | 328.857 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 1000.000 | 0.0000 | 1000.00 | 666.57 | 49.6835 |
| Distance_roads_2 | 180 | 111.111 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 0.000 | 0.0000 | 0.00 | 739.08 | 55.0880 |
| Distance_watercourses | 180 | 673.326 | 418.2873 | 0.0000 | 5060.63 | 100.0000 | 1166.190 | 0.0000 | 1716.09 | 695.29 | 51.8239 |
| Distance_watercourses_1 | 180 | 620.152 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 1000.000 | 0.0000 | 1414.21 | 775.94 | 57.8355 |
| Distance_watercourses_2 | 180 | 111.111 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 0.000 | 0.0000 | 0.00 | 739.08 | 55.0880 |
| Population density | 180 | 5079.934 | 915.1754 | 11.2616 | 94930.27 | 295.2904 | 2292.692 | 172.2251 | 13001.85 | 13189.02 | 983.0517 |

| Variable | IDPREC=5<br>Descriptive Statistics (*Echinocystis lobata*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 33 | -0.004 | -0.0047 | -0.1999 | 0.18 | -0.0652 | 0.069 | -0.1310 | 0.119 | 0.094 | 0.0164 |
| Northness | 33 | -0.029 | -0.0492 | -0.8935 | 0.93 | -0.4789 | 0.332 | -0.6744 | 0.463 | 0.508 | 0.0883 |
| Slope | 33 | 1.848 | 0.5510 | 0.0000 | 9.18 | 0.0875 | 3.316 | 0.0000 | 6.168 | 2.653 | 0.4618 |
| Elevation | 33 | 140.964 | 118.6494 | 86.1752 | 400.25 | 95.7574 | 172.970 | 92.8366 | 194.833 | 68.344 | 11.8971 |
| Bio_1 | 33 | 10.636 | 10.7000 | 9.2000 | 11.30 | 10.4000 | 11.000 | 10.1000 | 11.100 | 0.483 | 0.0840 |
| Bio_7 | 33 | 30.664 | 30.6000 | 29.8000 | 31.90 | 30.5000 | 30.800 | 30.2000 | 31.100 | 0.379 | 0.0660 |
| Bio_10 | 33 | 19.845 | 19.9000 | 18.4000 | 20.80 | 19.6000 | 20.200 | 19.3000 | 20.500 | 0.547 | 0.0952 |
| Bio_11 | 33 | 0.752 | 0.8000 | -0.5000 | 1.70 | 0.6000 | 1.000 | 0.2000 | 1.300 | 0.447 | 0.0779 |
| Bio_12 | 33 | 848.727 | 846.0000 | 630.0000 | 1006.00 | 794.0000 | 921.000 | 684.0000 | 957.000 | 101.911 | 17.7404 |
| Bio_17 | 33 | 148.030 | 151.0000 | 120.0000 | 184.00 | 130.0000 | 160.000 | 124.0000 | 172.000 | 17.882 | 3.1129 |
| Bio_18 | 33 | 262.545 | 275.0000 | 192.0000 | 329.00 | 254.0000 | 283.000 | 201.0000 | 291.000 | 33.026 | 5.7490 |
| Distance_roads | 33 | 122.321 | 0.0000 | 0.0000 | 921.95 | 0.0000 | 141.421 | 0.0000 | 360.555 | 224.739 | 39.1220 |
| Distance_roads_1 | 33 | 60.606 | 0.0000 | 0.0000 | 1000.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 242.306 | 42.1800 |
| Distance_roads_2 | 33 | 0.000 | 0.0000 | 0.0000 | 0.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 0.000 | 0.0000 |
| Distance_watercourses | 33 | 373.245 | 282.8427 | 0.0000 | 1486.61 | 100.0000 | 632.456 | 0.0000 | 900.000 | 369.658 | 64.3493 |
| Distance_watercourses_1 | 33 | 303.030 | 0.0000 | 0.0000 | 1000.00 | 0.0000 | 1000.000 | 0.0000 | 1000.000 | 466.694 | 81.2409 |
| Distance_watercourses_2 | 33 | 0.000 | 0.0000 | 0.0000 | 0.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 0.000 | 0.0000 |
| Population density | 33 | 2038.800 | 767.4008 | 58.1673 | 13380.14 | 263.2810 | 1959.685 | 158.2417 | 6071.115 | 3203.072 | 557.5833 |

| Variable | IDPREC=6<br>Descriptive Statistics (*Echinocystis lobata*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 13 | 0.06 | 0.038 | -0.0700 | 0.23 | 0.027 | 0.13 | 0.0205 | 0.13 | 0.07 | 0.021 |
| Northness | 13 | 0.30 | 0.352 | -0.1511 | 0.88 | -0.006 | 0.37 | -0.1511 | 0.88 | 0.38 | 0.105 |
| Slope | 13 | 3.90 | 0.941 | 0.1201 | 26.97 | 0.204 | 1.12 | 0.1201 | 14.55 | 7.95 | 2.204 |
| Elevation | 13 | 152.89 | 113.192 | 68.6091 | 462.61 | 112.512 | 115.82 | 86.1691 | 349.45 | 115.53 | 32.043 |
| Bio_1 | 13 | 11.03 | 11.100 | 10.1000 | 11.20 | 11.100 | 11.10 | 11.0000 | 11.20 | 0.29 | 0.080 |
| Bio_7 | 13 | 29.94 | 30.400 | 27.0000 | 30.60 | 30.400 | 30.50 | 27.2000 | 30.60 | 1.26 | 0.350 |
| Bio_10 | 13 | 20.25 | 20.500 | 18.7000 | 20.50 | 20.200 | 20.50 | 19.8000 | 20.50 | 0.51 | 0.141 |
| Bio_11 | 13 | 1.41 | 1.300 | 1.1000 | 2.70 | 1.200 | 1.50 | 1.1000 | 1.60 | 0.42 | 0.117 |
| Bio_12 | 13 | 1012.38 | 947.000 | 931.0000 | 1368.00 | 939.000 | 972.00 | 933.0000 | 1360.00 | 156.76 | 43.476 |
| Bio_17 | 13 | 184.69 | 169.000 | 161.0000 | 285.00 | 164.000 | 174.00 | 161.0000 | 280.00 | 43.70 | 12.121 |
| Bio_18 | 13 | 282.31 | 280.000 | 269.0000 | 304.00 | 279.000 | 284.00 | 271.0000 | 296.00 | 9.20 | 2.550 |
| Distance_roads | 13 | 356.93 | 360.555 | 141.4214 | 707.11 | 200.000 | 500.00 | 200.0000 | 700.00 | 194.47 | 53.935 |
| Distance_roads_1 | 13 | 307.69 | 0.000 | 0.0000 | 1000.00 | 0.000 | 1000.00 | 0.0000 | 1000.00 | 480.38 | 133.235 |
| Distance_roads_2 | 13 | 0.00 | 0.000 | 0.0000 | 0.00 | 0.000 | 0.00 | 0.0000 | 0.00 | 0.00 | 0.000 |
| Distance_watercourses | 13 | 1056.08 | 781.025 | 360.5551 | 1772.00 | 670.820 | 1726.27 | 412.3106 | 1726.27 | 532.38 | 147.656 |
| Distance_watercourses_1 | 13 | 1185.71 | 1000.000 | 0.0000 | 2000.00 | 1000.000 | 2000.00 | 0.0000 | 2000.00 | 802.25 | 222.504 |
| Distance_watercourses_2 | 13 | 384.62 | 0.000 | 0.0000 | 5000.00 | 0.000 | 0.00 | 0.0000 | 0.00 | 1386.75 | 384.615 |
| Population density | 13 | 25187.41 | 1984.328 | 11.2616 | 69463.17 | 360.740 | 45358.07 | 31.7409 | 69463.17 | 28412.65 | 7880.252 |

| Variable | IDPREC=7<br>Descriptive Statistics (*Echinocystis lobata*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 40 | 0.021 | 0.020 | -0.1719 | 0.30 | -0.0577 | 0.08 | -0.1223 | 0.16 | 0.11 | 0.017 |
| Northness | 40 | -0.015 | 0.119 | -0.7456 | 0.71 | -0.3201 | 0.28 | -0.7059 | 0.47 | 0.41 | 0.065 |
| Slope | 40 | 1.074 | 0.749 | 0.0000 | 12.61 | 0.2999 | 0.90 | 0.0000 | 1.99 | 2.04 | 0.323 |
| Elevation | 40 | 102.613 | 93.256 | 83.5751 | 241.04 | 90.9764 | 101.10 | 85.2836 | 128.01 | 28.19 | 4.457 |
| Bio_1 | 40 | 10.720 | 10.700 | 9.7000 | 11.20 | 10.6000 | 10.95 | 10.5500 | 11.00 | 0.26 | 0.041 |
| Bio_7 | 40 | 31.025 | 31.200 | 30.2000 | 31.30 | 30.9000 | 31.20 | 30.4500 | 31.30 | 0.32 | 0.050 |
| Bio_10 | 40 | 19.923 | 19.900 | 18.8000 | 20.40 | 19.9000 | 20.10 | 19.7000 | 20.10 | 0.25 | 0.040 |
| Bio_11 | 40 | 0.745 | 0.600 | 0.1000 | 1.60 | 0.6000 | 1.10 | 0.5000 | 1.10 | 0.31 | 0.049 |
| Bio_12 | 40 | 891.350 | 923.000 | 778.0000 | 1010.00 | 870.5000 | 925.00 | 780.0000 | 927.00 | 61.55 | 9.732 |
| Bio_17 | 40 | 159.925 | 164.000 | 135.0000 | 176.00 | 155.5000 | 164.50 | 148.0000 | 165.50 | 8.20 | 1.297 |
| Bio_18 | 40 | 263.025 | 270.000 | 230.0000 | 293.00 | 263.5000 | 270.00 | 230.0000 | 275.00 | 17.79 | 2.813 |
| Distance_roads | 40 | 384.312 | 321.699 | 0.0000 | 1204.16 | 100.0000 | 600.00 | 100.0000 | 744.07 | 317.13 | 50.142 |
| Distance_roads_1 | 40 | 200.000 | 0.000 | 0.0000 | 1000.00 | 0.0000 | 0.00 | 0.0000 | 1000.00 | 405.10 | 64.051 |
| Distance_roads_2 | 40 | 250.000 | 0.000 | 0.0000 | 5000.00 | 0.0000 | 0.00 | 0.0000 | 0.00 | 1103.61 | 174.496 |
| Distance_watercourses | 40 | 656.745 | 462.132 | 0.0000 | 2720.29 | 258.1139 | 1059.90 | 100.0000 | 1303.86 | 569.02 | 89.970 |
| Distance_watercourses_1 | 40 | 545.711 | 0.000 | 0.0000 | 3000.00 | 0.0000 | 1000.00 | 0.0000 | 1207.11 | 699.60 | 110.616 |
| Distance_watercourses_2 | 40 | 0.000 | 0.000 | 0.0000 | 0.00 | 0.0000 | 0.00 | 0.0000 | 0.00 | 0.00 | 0.000 |
| Population density | 40 | 9332.877 | 4278.765 | 273.9475 | 94930.27 | 753.3821 | 13001.85 | 482.9955 | 23186.58 | 16029.36 | 2534.465 |

| Variable | IDPREC=11<br>Descriptive Statistics (*Echinocystis lobata*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 92 | -0.011 | -0.0084 | -0.2831 | 0.26 | -0.0884 | 0.053 | -0.1299 | 0.110 | 0.104 | 0.0108 |
| Northness | 92 | -0.184 | -0.2015 | -0.9853 | 0.86 | -0.6134 | 0.145 | -0.8326 | 0.510 | 0.482 | 0.0503 |
| Slope | 92 | 1.390 | 0.2522 | 0.0000 | 13.16 | 0.0000 | 1.172 | 0.0000 | 5.545 | 2.572 | 0.2681 |
| Elevation | 91 | 110.542 | 105.1281 | 71.1453 | 262.15 | 88.6940 | 115.734 | 82.6750 | 136.332 | 32.929 | 3.4519 |
| Bio_1 | 92 | 10.843 | 10.8000 | 9.7000 | 11.30 | 10.6000 | 11.200 | 10.5000 | 11.200 | 0.347 | 0.0362 |
| Bio_7 | 92 | 30.721 | 30.6000 | 29.8000 | 32.00 | 30.4000 | 30.800 | 30.3000 | 31.700 | 0.510 | 0.0532 |
| Bio_10 | 92 | 20.083 | 20.1000 | 19.0000 | 20.80 | 19.8000 | 20.200 | 19.7000 | 20.700 | 0.384 | 0.0400 |
| Bio_11 | 92 | 0.934 | 0.9000 | -0.1000 | 1.90 | 0.6000 | 1.150 | 0.6000 | 1.600 | 0.408 | 0.0426 |
| Bio_12 | 92 | 868.250 | 917.0000 | 647.0000 | 1032.00 | 787.0000 | 933.500 | 678.0000 | 967.000 | 106.483 | 11.1016 |
| Bio_17 | 92 | 155.011 | 158.0000 | 120.0000 | 205.00 | 135.0000 | 162.000 | 134.0000 | 180.000 | 19.313 | 2.0135 |
| Bio_18 | 92 | 259.196 | 272.0000 | 197.0000 | 319.00 | 249.0000 | 279.000 | 197.0000 | 285.000 | 31.879 | 3.3236 |
| Distance_roads | 94 | 600.367 | 316.2278 | 0.0000 | 4900.00 | 0.0000 | 860.233 | 0.0000 | 1345.362 | 806.817 | 83.2168 |
| Distance_roads_1 | 94 | 480.789 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 1000.000 | 0.0000 | 1000.000 | 824.824 | 85.0741 |
| Distance_roads_2 | 94 | 106.383 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 725.393 | 74.8186 |
| Distance_watercourses | 94 | 732.795 | 338.3914 | 0.0000 | 5060.63 | 100.0000 | 1303.840 | 0.0000 | 1749.286 | 809.308 | 83.4737 |
| Distance_watercourses_1 | 94 | 684.944 | 500.0000 | 0.0000 | 5000.00 | 0.0000 | 1000.000 | 0.0000 | 1414.214 | 841.785 | 86.8235 |
| Distance_watercourses_2 | 94 | 159.574 | 0.0000 | 0.0000 | 5000.00 | 0.0000 | 0.000 | 0.0000 | 0.000 | 883.580 | 91.1343 |
| Population density | 94 | 1556.983 | 677.0697 | 29.6879 | 60828.14 | 258.0493 | 1300.283 | 131.1842 | 1703.085 | 6264.238 | 646.1068 |

| Variable | All Groups<br>Descriptive Statistics (*Erigeron annuus*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 1433 | 229.46 | 0.0000 | 0.0000 | 15811.4 | 0.0000 | 0.000 | 0.0000 | 0.00 | 1203.62 | 31.796 |
| Northness | 1432 | 0.00 | 0.0006 | -0.7001 | 0.4 | -0.0619 | 0.074 | -0.1228 | 0.13 | 0.10 | 0.003 |
| Slope | 1432 | -0.08 | -0.0857 | -0.9853 | 1.0 | -0.5035 | 0.312 | -0.7440 | 0.63 | 0.50 | 0.013 |
| Elevation | 1432 | 4.44 | 2.7999 | 0.0000 | 34.1 | 0.1938 | 7.305 | 0.0000 | 11.20 | 5.00 | 0.132 |
| Bio_1 | 1431 | 271.54 | 160.6696 | 0.0000 | 1433.3 | 105.7186 | 343.152 | 90.6489 | 692.15 | 235.33 | 6.221 |
| Bio_7 | 1428 | 10.43 | 10.6000 | 4.8000 | 16.5 | 9.7000 | 11.000 | 8.2000 | 11.70 | 1.64 | 0.043 |
| Bio_10 | 1428 | 29.52 | 30.3000 | 23.8000 | 31.9 | 28.0000 | 30.500 | 27.1000 | 30.90 | 1.63 | 0.043 |
| Bio_11 | 1428 | 19.44 | 19.8000 | 13.0000 | 24.4 | 18.8000 | 20.300 | 16.8000 | 20.70 | 1.65 | 0.044 |
| Bio_12 | 1415 | 0.94 | 0.7000 | -3.6000 | 9.3 | 0.1000 | 1.100 | -1.0000 | 3.30 | 1.92 | 0.051 |
| Bio_17 | 1428 | 988.93 | 934.0000 | 630.0000 | 1390.0 | 906.5000 | 1058.500 | 778.0000 | 1303.00 | 183.28 | 4.850 |
| Bio_18 | 1428 | 178.80 | 158.0000 | 117.0000 | 290.0 | 150.0000 | 192.000 | 134.0000 | 267.00 | 48.27 | 1.277 |
| Distance_roads | 1428 | 265.41 | 276.0000 | 117.0000 | 363.0 | 260.0000 | 285.000 | 198.0000 | 310.00 | 42.12 | 1.115 |
| Distance_roads_1 | 1435 | 331.16 | 100.0000 | 0.0000 | 4535.4 | 0.0000 | 412.311 | 0.0000 | 921.95 | 517.92 | 13.672 |
| Distance_roads_2 | 1435 | 235.40 | 0.0000 | 0.0000 | 5000.0 | 0.0000 | 0.000 | 0.0000 | 1000.00 | 529.13 | 13.968 |
| Distance_watercourses | 1435 | 38.33 | 0.0000 | 0.0000 | 5000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 436.24 | 11.516 |
| Distance_watercourses_1 | 1433 | 824.89 | 424.2641 | 0.0000 | 14230.2 | 141.4214 | 1000.000 | 100.0000 | 1972.31 | 1190.92 | 31.460 |
| Distance_watercourses_2 | 1435 | 720.96 | 0.0000 | 0.0000 | 14422.2 | 0.0000 | 1000.000 | 0.0000 | 2000.00 | 1214.19 | 32.053 |
| Population density | 1435 | 26291.01 | 366.3397 | 1.6391 | 643274.3 | 161.1453 | 1304.465 | 69.5377 | 27421.46 | 89771.71 | 2369.810 |

| Variable | IDPREC=5<br>Descriptive Statistics (*Erigeron annuus*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 149 | 625.54 | 0.0000 | 0.0000 | 15811.4 | 0.0000 | 0.000 | 0.0000 | 0.00 | 2161.86 | 177.106 |
| Northness | 147 | -0.01 | -0.0070 | -0.7001 | 0.3 | -0.0652 | 0.077 | -0.1486 | 0.13 | 0.13 | 0.011 |
| Slope | 147 | -0.07 | -0.1353 | -0.9271 | 0.9 | -0.5323 | 0.356 | -0.8062 | 0.79 | 0.56 | 0.046 |
| Elevation | 147 | 3.02 | 1.8893 | 0.0000 | 18.7 | 0.2823 | 4.617 | 0.0000 | 7.46 | 3.52 | 0.290 |
| Bio_1 | 147 | 162.33 | 120.7739 | 0.0000 | 834.0 | 99.3902 | 183.933 | 85.3095 | 279.67 | 141.79 | 11.694 |
| Bio_7 | 144 | 11.20 | 11.0000 | 8.0000 | 16.2 | 10.5000 | 11.200 | 10.1000 | 14.10 | 1.59 | 0.133 |
| Bio_10 | 144 | 29.75 | 30.4000 | 24.2000 | 31.8 | 29.7000 | 30.700 | 26.6000 | 30.90 | 1.66 | 0.138 |
| Bio_11 | 144 | 20.25 | 20.2000 | 16.6000 | 24.3 | 19.7000 | 20.500 | 19.3000 | 22.40 | 1.34 | 0.112 |
| Bio_12 | 141 | 1.70 | 0.9000 | -1.0000 | 8.9 | 0.6000 | 1.600 | 0.4000 | 6.10 | 2.23 | 0.188 |
| Bio_17 | 144 | 912.86 | 910.5000 | 630.0000 | 1390.0 | 788.0000 | 1001.000 | 675.0000 | 1117.00 | 174.73 | 14.561 |
| Bio_18 | 144 | 160.90 | 153.0000 | 117.0000 | 289.0 | 134.0000 | 168.500 | 125.0000 | 213.00 | 36.78 | 3.065 |
| Distance_roads | 144 | 247.39 | 270.5000 | 117.0000 | 334.0 | 204.0000 | 280.000 | 151.0000 | 293.00 | 51.78 | 4.315 |
| Distance_roads_1 | 149 | 119.10 | 0.0000 | 0.0000 | 4001.2 | 0.0000 | 100.000 | 0.0000 | 141.42 | 473.32 | 38.776 |
| Distance_roads_2 | 149 | 147.65 | 0.0000 | 0.0000 | 4000.0 | 0.0000 | 0.000 | 0.0000 | 1000.00 | 537.46 | 44.030 |
| Distance_watercourses | 149 | 67.11 | 0.0000 | 0.0000 | 5000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 577.32 | 47.296 |
| Distance_watercourses_1 | 149 | 1034.69 | 360.5551 | 0.0000 | 14230.2 | 141.4214 | 894.427 | 100.0000 | 2780.29 | 1957.82 | 160.391 |
| Distance_watercourses_2 | 149 | 940.81 | 0.0000 | 0.0000 | 14422.2 | 0.0000 | 1000.000 | 0.0000 | 3162.28 | 1957.52 | 160.366 |
| Population density | 149 | 13516.79 | 698.2847 | 4.3993 | 476323.5 | 236.4384 | 2903.735 | 129.6935 | 28332.05 | 58285.81 | 4774.959 |

| Variable | IDPREC=6<br>Descriptive Statistics (*Erigeron annuus*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 121 | 422.98 | 0.000 | 0.0000 | 11180.3 | 0.0000 | 0.000 | 0.0000 | 0.00 | 1589.9 | 144.54 |
| Northness | 121 | 0.01 | -0.016 | -0.1753 | 0.3 | -0.0641 | 0.079 | -0.1122 | 0.15 | 0.1 | 0.01 |
| Slope | 121 | -0.06 | -0.031 | -0.9348 | 0.9 | -0.4793 | 0.352 | -0.7747 | 0.67 | 0.5 | 0.05 |
| Elevation | 121 | 6.16 | 5.168 | 0.0000 | 32.7 | 0.7883 | 9.229 | 0.0000 | 14.23 | 6.1 | 0.55 |
| Bio_1 | 121 | 385.29 | 224.332 | 4.1219 | 1433.3 | 103.4889 | 698.331 | 85.2038 | 861.71 | 332.8 | 30.25 |
| Bio_7 | 120 | 10.04 | 10.600 | 4.8000 | 15.3 | 8.3000 | 11.100 | 7.6000 | 12.00 | 2.0 | 0.18 |
| Bio_10 | 120 | 28.98 | 28.950 | 24.7000 | 31.2 | 27.6000 | 30.450 | 27.2500 | 30.70 | 1.7 | 0.16 |
| Bio_11 | 120 | 18.94 | 19.900 | 13.0000 | 23.5 | 16.9000 | 20.400 | 16.2000 | 20.60 | 2.1 | 0.19 |
| Bio_12 | 118 | 0.77 | 0.900 | -3.2000 | 8.0 | -0.8000 | 1.300 | -1.4000 | 3.90 | 2.0 | 0.19 |
| Bio_17 | 120 | 1056.17 | 981.000 | 640.0000 | 1333.0 | 921.5000 | 1285.500 | 734.5000 | 1316.00 | 212.2 | 19.37 |
| Bio_18 | 120 | 200.52 | 176.500 | 123.0000 | 285.0 | 162.0000 | 263.000 | 132.0000 | 273.00 | 53.8 | 4.91 |
| Distance_roads | 120 | 253.85 | 271.000 | 132.0000 | 301.0 | 231.0000 | 281.000 | 188.0000 | 289.00 | 41.4 | 3.78 |
| Distance_roads_1 | 121 | 598.99 | 360.555 | 0.0000 | 4272.0 | 100.0000 | 806.226 | 0.0000 | 1253.00 | 831.4 | 75.58 |
| Distance_roads_2 | 121 | 411.14 | 0.000 | 0.0000 | 4123.1 | 0.0000 | 1000.000 | 0.0000 | 1000.00 | 803.9 | 73.08 |
| Distance_watercourses | 121 | 41.32 | 0.000 | 0.0000 | 5000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 454.5 | 41.32 |
| Distance_watercourses_1 | 121 | 1094.19 | 583.095 | 0.0000 | 9534.1 | 282.8427 | 1360.147 | 100.0000 | 2507.99 | 1439.3 | 130.85 |
| Distance_watercourses_2 | 121 | 1011.09 | 1000.000 | 0.0000 | 9848.9 | 0.0000 | 1414.214 | 0.0000 | 2236.07 | 1467.1 | 133.38 |
| Population density | 121 | 38981.73 | 202.423 | 11.3504 | 643274.3 | 90.7293 | 1449.666 | 39.7143 | 95659.98 | 117818.6 | 10710.78 |

| Variable | IDPREC=7<br>Descriptive Statistics (*Erigeron annuus*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 243 | 46.01 | 0.000 | 0.0000 | 11180.3 | 0.0000 | 0.00 | 0.0000 | 0.0 | 717.2 | 46.010 |
| Northness | 243 | 0.01 | 0.022 | -0.2336 | 0.2 | -0.0498 | 0.08 | -0.1094 | 0.1 | 0.1 | 0.006 |
| Slope | 243 | -0.17 | -0.181 | -0.9603 | 0.9 | -0.6285 | 0.21 | -0.8390 | 0.5 | 0.5 | 0.032 |
| Elevation | 243 | 2.37 | 0.882 | 0.0000 | 20.5 | 0.1551 | 3.34 | 0.0000 | 6.7 | 3.4 | 0.219 |
| Bio_1 | 243 | 166.33 | 120.207 | 27.7503 | 856.9 | 97.5291 | 171.06 | 88.0857 | 287.1 | 136.8 | 8.774 |
| Bio_7 | 242 | 10.70 | 10.700 | 6.6000 | 16.2 | 10.6000 | 11.00 | 10.1000 | 11.1 | 1.0 | 0.065 |
| Bio_10 | 242 | 30.37 | 30.500 | 24.2000 | 31.5 | 30.3000 | 31.20 | 29.5000 | 31.3 | 1.3 | 0.082 |
| Bio_11 | 242 | 19.86 | 19.900 | 15.1000 | 24.2 | 19.8000 | 20.30 | 19.0000 | 20.5 | 1.0 | 0.064 |
| Bio_12 | 240 | 0.94 | 0.700 | -2.2000 | 8.6 | 0.6000 | 1.10 | 0.4000 | 1.3 | 1.3 | 0.083 |
| Bio_17 | 242 | 927.17 | 923.000 | 724.0000 | 1363.0 | 882.0000 | 940.00 | 789.0000 | 975.0 | 109.6 | 7.045 |
| Bio_18 | 242 | 164.63 | 162.000 | 132.0000 | 280.0 | 155.0000 | 164.00 | 148.0000 | 167.0 | 25.0 | 1.607 |
| Distance_roads | 242 | 268.14 | 270.000 | 139.0000 | 345.0 | 268.0000 | 282.00 | 230.0000 | 286.0 | 26.2 | 1.682 |
| Distance_roads_1 | 243 | 259.20 | 100.000 | 0.0000 | 4535.4 | 0.0000 | 316.23 | 0.0000 | 600.0 | 455.3 | 29.210 |
| Distance_roads_2 | 243 | 115.23 | 0.000 | 0.0000 | 5000.0 | 0.0000 | 0.00 | 0.0000 | 0.0 | 458.0 | 29.384 |
| Distance_watercourses | 243 | 164.61 | 0.000 | 0.0000 | 5000.0 | 0.0000 | 0.00 | 0.0000 | 0.0 | 894.0 | 57.350 |
| Distance_watercourses_1 | 243 | 702.10 | 424.264 | 0.0000 | 10707.9 | 200.0000 | 943.40 | 100.0000 | 1565.2 | 924.1 | 59.283 |
| Distance_watercourses_2 | 243 | 590.29 | 0.000 | 0.0000 | 10049.9 | 0.0000 | 1000.00 | 0.0000 | 1414.2 | 979.8 | 62.855 |
| Population density | 243 | 58562.69 | 3140.873 | 6.3373 | 565444.5 | 450.4249 | 23575.83 | 122.8055 | 266818.2 | 122490.2 | 7857.747 |

| Variable | IDPREC=11<br>Descriptive Statistics (*Erigeron annuus*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 920 | 188.32 | 0.0000 | 0.0000 | 11180.3 | 0.0000 | 0.000 | 0.0000 | 0.000 | 999.11 | 32.940 |
| Northness | 921 | 0.00 | -0.0028 | -0.4205 | 0.4 | -0.0607 | 0.073 | -0.1275 | 0.135 | 0.10 | 0.003 |
| Slope | 921 | -0.06 | -0.0646 | -0.9853 | 1.0 | -0.4518 | 0.326 | -0.7054 | 0.626 | 0.49 | 0.016 |
| Elevation | 921 | 4.99 | 4.0070 | 0.0000 | 34.1 | 0.1736 | 8.172 | 0.0000 | 11.606 | 5.19 | 0.171 |
| Bio_1 | 920 | 301.82 | 223.2760 | 0.0039 | 1127.7 | 110.9479 | 392.389 | 102.3573 | 711.875 | 236.94 | 7.812 |
| Bio_7 | 922 | 10.28 | 10.5000 | 5.7000 | 16.5 | 9.4000 | 11.000 | 8.0000 | 12.100 | 1.69 | 0.056 |
| Bio_10 | 922 | 29.34 | 30.3000 | 23.8000 | 31.9 | 27.9000 | 30.500 | 27.1000 | 30.600 | 1.61 | 0.053 |
| Bio_11 | 922 | 19.27 | 19.6000 | 14.2000 | 24.4 | 18.5000 | 20.100 | 16.6000 | 20.700 | 1.70 | 0.056 |
| Bio_12 | 916 | 0.85 | 0.6000 | -3.6000 | 9.3 | -0.2000 | 1.100 | -1.1000 | 3.700 | 1.97 | 0.065 |
| Bio_17 | 922 | 1008.26 | 956.5000 | 672.0000 | 1383.0 | 912.0000 | 1180.000 | 778.0000 | 1310.000 | 188.34 | 6.203 |
| Bio_18 | 922 | 182.48 | 158.0000 | 117.0000 | 290.0 | 150.0000 | 231.000 | 134.0000 | 268.000 | 51.82 | 1.706 |
| Distance_roads | 922 | 269.01 | 277.0000 | 117.0000 | 363.0 | 263.0000 | 293.000 | 197.0000 | 317.000 | 43.00 | 1.416 |
| Distance_roads_1 | 922 | 349.24 | 141.4214 | 0.0000 | 2860.1 | 0.0000 | 500.000 | 0.0000 | 989.950 | 467.68 | 15.402 |
| Distance_roads_2 | 922 | 258.19 | 0.0000 | 0.0000 | 2236.1 | 0.0000 | 0.000 | 0.0000 | 1000.000 | 490.45 | 16.152 |
| Distance_watercourses | 922 | 0.00 | 0.0000 | 0.0000 | 0.0 | 0.0000 | 0.000 | 0.0000 | 0.000 | 0.00 | 0.000 |
| Distance_watercourses_1 | 920 | 787.93 | 424.2641 | 0.0000 | 11166.5 | 141.4214 | 994.975 | 0.0000 | 1967.230 | 1036.96 | 34.187 |
| Distance_watercourses_2 | 922 | 681.80 | 0.0000 | 0.0000 | 11401.8 | 0.0000 | 1000.000 | 0.0000 | 2000.000 | 1059.27 | 34.885 |
| Population density | 922 | 18184.47 | 295.8368 | 1.6391 | 623558.9 | 146.7771 | 718.823 | 66.0753 | 1743.638 | 76568.75 | 2521.658 |

| Variable | All Groups<br>Descriptive Statistics (*Robinia pseudoacacia*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 10252 | 0.008 | 0.0087 | -0.8247 | 0.4 | -0.0569 | 0.072 | -0.1196 | 0.135 | 0.10 | 0.0010 |
| Northness | 10252 | -0.078 | -0.1012 | -0.9783 | 1.0 | -0.3791 | 0.211 | -0.6275 | 0.502 | 0.41 | 0.0041 |
| Slope | 10252 | 5.079 | 4.6515 | 0.0000 | 32.4 | 2.8497 | 6.560 | 0.8353 | 9.866 | 3.50 | 0.0345 |
| Elevation | 10247 | 206.947 | 196.5298 | 0.0000 | 892.0 | 153.3031 | 240.077 | 122.0807 | 309.401 | 82.47 | 0.8147 |
| Bio_1 | 10229 | 10.548 | 10.4000 | 7.5000 | 16.3 | 10.1000 | 10.800 | 9.8000 | 11.100 | 0.93 | 0.0092 |
| Bio_7 | 10229 | 29.940 | 30.4000 | 23.7000 | 32.0 | 30.1000 | 30.500 | 29.4000 | 30.700 | 1.49 | 0.0147 |
| Bio_10 | 10229 | 19.652 | 19.6000 | 16.1000 | 24.4 | 19.3000 | 19.900 | 19.0000 | 20.400 | 0.73 | 0.0072 |
| Bio_11 | 9804 | 0.943 | 0.6000 | -2.1000 | 9.0 | 0.3000 | 1.000 | -0.1000 | 1.600 | 1.42 | 0.0143 |
| Bio_12 | 10229 | 941.185 | 930.0000 | 630.0000 | 1390.0 | 883.0000 | 1004.000 | 786.0000 | 1087.000 | 121.02 | 1.1966 |
| Bio_17 | 10229 | 164.408 | 153.0000 | 119.0000 | 282.0 | 146.0000 | 178.000 | 136.0000 | 212.000 | 30.84 | 0.3050 |
| Bio_18 | 10229 | 278.069 | 283.0000 | 123.0000 | 343.0 | 267.0000 | 298.000 | 236.0000 | 309.000 | 29.70 | 0.2937 |
| Distance_roads | 10253 | 444.845 | 360.5551 | 0.0000 | 15094.4 | 141.4214 | 608.276 | 100.0000 | 905.539 | 479.17 | 4.7322 |
| Distance_roads_1 | 10253 | 274.676 | 0.0000 | 0.0000 | 14866.1 | 0.0000 | 1000.000 | 0.0000 | 1000.000 | 557.77 | 5.5084 |
| Distance_roads_2 | 10243 | 18.933 | 0.0000 | 0.0000 | 14142.1 | 0.0000 | 0.000 | 0.0000 | 0.000 | 397.87 | 3.9312 |
| Distance_watercourses | 10252 | 574.446 | 360.5551 | 0.0000 | 31548.2 | 141.4214 | 632.456 | 100.0000 | 1029.563 | 1314.03 | 12.9778 |
| Distance_watercourses_1 | 10253 | 419.839 | 0.0000 | 0.0000 | 31400.6 | 0.0000 | 1000.000 | 0.0000 | 1000.000 | 1359.06 | 13.4218 |
| Distance_watercourses_2 | 10252 | 151.111 | 0.0000 | 0.0000 | 32015.6 | 0.0000 | 0.000 | 0.0000 | 0.000 | 1338.51 | 13.2196 |
| Population density | 10251 | 3072.134 | 204.0379 | 0.7489 | 636764.2 | 101.7296 | 438.741 | 59.7311 | 868.000 | 31065.63 | 306.8294 |

| Variable | IDPREC=5<br>Descriptive Statistics (*Robinia pseudoacica*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 58 | -0.04 | -0.018 | -0.7001 | 0.2 | -0.0915 | 0.053 | -0.1815 | 0.11 | 0.15 | 0.02 |
| Northness | 58 | -0.13 | -0.158 | -0.8839 | 0.9 | -0.4868 | 0.130 | -0.7256 | 0.64 | 0.47 | 0.06 |
| Slope | 58 | 3.38 | 2.903 | 0.0000 | 14.6 | 0.8062 | 5.135 | 0.1260 | 7.04 | 3.17 | 0.42 |
| Elevation | 58 | 113.83 | 113.425 | 0.0000 | 281.3 | 69.9641 | 171.006 | 8.8309 | 230.82 | 75.79 | 9.95 |
| Bio_1 | 54 | 12.33 | 11.200 | 10.1000 | 16.2 | 11.0000 | 13.800 | 10.6000 | 15.40 | 1.88 | 0.26 |
| Bio_7 | 54 | 28.73 | 30.400 | 23.8000 | 31.9 | 26.5000 | 30.700 | 25.2000 | 31.00 | 2.49 | 0.34 |
| Bio_10 | 54 | 21.14 | 20.500 | 19.3000 | 24.3 | 20.2000 | 22.000 | 19.8000 | 23.40 | 1.39 | 0.19 |
| Bio_11 | 54 | 3.28 | 1.300 | 0.2000 | 8.6 | 0.9000 | 6.100 | 0.7000 | 7.70 | 2.91 | 0.40 |
| Bio_12 | 54 | 924.89 | 913.000 | 630.0000 | 1390.0 | 829.0000 | 1024.000 | 659.0000 | 1159.00 | 180.96 | 24.63 |
| Bio_17 | 54 | 160.83 | 149.500 | 120.0000 | 273.0 | 136.0000 | 163.000 | 126.0000 | 231.00 | 38.91 | 5.30 |
| Bio_18 | 54 | 222.33 | 242.500 | 126.0000 | 303.0 | 154.0000 | 279.000 | 137.0000 | 293.00 | 60.72 | 8.26 |
| Distance_roads | 58 | 77.11 | 100.000 | 0.0000 | 400.0 | 0.0000 | 100.000 | 0.0000 | 200.00 | 95.99 | 12.60 |
| Distance_roads_1 | 58 | 86.21 | 0.000 | 0.0000 | 1000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 283.12 | 37.18 |
| Distance_roads_2 | 58 | 0.00 | 0.000 | 0.0000 | 0.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 0.00 | 0.00 |
| Distance_watercourses | 58 | 2485.42 | 790.512 | 0.0000 | 28800.9 | 300.0000 | 3301.515 | 141.4214 | 6174.14 | 4287.06 | 562.92 |
| Distance_watercourses_1 | 58 | 2493.25 | 1000.000 | 0.0000 | 28653.1 | 0.0000 | 3162.278 | 0.0000 | 6708.20 | 4282.68 | 562.34 |
| Distance_watercourses_2 | 58 | 2304.35 | 0.000 | 0.0000 | 29154.8 | 0.0000 | 5000.000 | 0.0000 | 7071.07 | 4620.74 | 606.73 |
| Population density | 58 | 21814.21 | 906.546 | 52.9174 | 476323.5 | 236.8793 | 3643.332 | 181.7855 | 28332.05 | 87542.03 | 11494.83 |

| Variable | IDPREC=6<br>Descriptive Statistics (*Robinia pseudoacacia*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 29 | -0.036 | -0.008 | -0.6668 | 0.37 | -0.1185 | 0.11 | -0.2876 | 0.17 | 0.206 | 0.038 |
| Northness | 29 | -0.114 | -0.189 | -0.8740 | 0.62 | -0.4411 | 0.31 | -0.5894 | 0.53 | 0.425 | 0.079 |
| Slope | 29 | 9.454 | 6.736 | 0.0000 | 25.99 | 4.2443 | 13.60 | 2.9632 | 20.36 | 6.962 | 1.293 |
| Elevation | 28 | 176.342 | 132.545 | 0.0009 | 746.42 | 14.4410 | 335.76 | 3.1464 | 352.06 | 181.527 | 34.305 |
| Bio_1 | 26 | 13.492 | 13.700 | 10.9000 | 16.30 | 11.9000 | 14.80 | 11.5000 | 15.10 | 1.571 | 0.308 |
| Bio_7 | 26 | 27.231 | 27.400 | 24.8000 | 28.40 | 27.0000 | 27.90 | 26.1000 | 28.00 | 0.890 | 0.175 |
| Bio_10 | 26 | 21.738 | 21.900 | 19.5000 | 24.20 | 20.5000 | 22.90 | 19.8000 | 23.30 | 1.361 | 0.267 |
| Bio_11 | 26 | 5.535 | 5.900 | 2.5000 | 9.00 | 3.5000 | 7.10 | 3.2000 | 7.60 | 1.974 | 0.387 |
| Bio_12 | 26 | 1002.731 | 1002.500 | 844.0000 | 1367.00 | 886.0000 | 1043.00 | 850.0000 | 1310.00 | 147.328 | 28.893 |
| Bio_17 | 26 | 167.692 | 158.000 | 123.0000 | 272.00 | 140.0000 | 187.00 | 131.0000 | 196.00 | 37.587 | 7.371 |
| Bio_18 | 26 | 167.731 | 158.000 | 123.0000 | 272.00 | 140.0000 | 187.00 | 131.0000 | 197.00 | 37.618 | 7.377 |
| Distance_roads | 29 | 2151.863 | 100.000 | 0.0000 | 15094.37 | 0.0000 | 600.00 | 0.0000 | 11307.08 | 4471.997 | 830.429 |
| Distance_roads_1 | 29 | 2056.909 | 0.000 | 0.0000 | 14764.82 | 0.0000 | 1000.00 | 0.0000 | 11313.71 | 4441.302 | 824.729 |
| Distance_roads_2 | 29 | 2020.922 | 0.000 | 0.0000 | 14142.14 | 0.0000 | 0.00 | 0.0000 | 14142.14 | 4749.287 | 881.920 |
| Distance_watercourses | 29 | 6456.578 | 721.110 | 0.0000 | 22487.78 | 360.5551 | 16738.58 | 282.8427 | 21614.81 | 8909.757 | 1654.500 |
| Distance_watercourses_1 | 29 | 6276.526 | 1000.000 | 0.0000 | 22022.71 | 0.0000 | 17492.86 | 0.0000 | 21400.93 | 8995.140 | 1670.356 |
| Distance_watercourses_2 | 29 | 6069.828 | 0.000 | 0.0000 | 21213.20 | 0.0000 | 18027.76 | 0.0000 | 21213.20 | 8877.255 | 1648.465 |
| Population density | 29 | 831.500 | 252.678 | 19.0000 | 7499.28 | 108.4997 | 652.74 | 21.4177 | 2326.13 | 1553.388 | 288.457 |

| Variable | IDPREC=7<br>Descriptive Statistics (*Robinia pseudoacacia*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 113 | 0.00 | 0.028 | -0.7505 | 0.2 | -0.0679 | 0.08 | -0.1477 | 0.12 | 0.13 | 0.013 |
| Northness | 113 | -0.10 | -0.113 | -0.9367 | 0.8 | -0.5021 | 0.27 | -0.6970 | 0.55 | 0.45 | 0.042 |
| Slope | 113 | 2.99 | 0.956 | 0.0000 | 18.5 | 0.4875 | 3.76 | 0.0445 | 7.96 | 3.96 | 0.372 |
| Elevation | 113 | 125.75 | 100.256 | 0.0000 | 660.8 | 93.2563 | 133.25 | 21.7619 | 241.04 | 93.78 | 8.822 |
| Bio_1 | 112 | 11.31 | 10.700 | 8.4000 | 16.2 | 10.6000 | 10.90 | 10.1000 | 14.80 | 1.78 | 0.168 |
| Bio_7 | 112 | 29.97 | 31.100 | 23.7000 | 31.3 | 30.3000 | 31.20 | 25.9000 | 31.30 | 2.11 | 0.199 |
| Bio_10 | 112 | 20.32 | 19.900 | 17.3000 | 24.2 | 19.8000 | 20.25 | 19.1000 | 22.90 | 1.37 | 0.130 |
| Bio_11 | 109 | 1.82 | 0.600 | -1.2000 | 8.8 | 0.6000 | 1.00 | 0.4000 | 7.30 | 2.65 | 0.254 |
| Bio_12 | 112 | 945.76 | 924.000 | 640.0000 | 1274.0 | 919.0000 | 933.00 | 852.0000 | 1146.00 | 108.21 | 10.225 |
| Bio_17 | 112 | 161.07 | 164.000 | 123.0000 | 274.0 | 155.5000 | 165.00 | 135.0000 | 167.00 | 19.92 | 1.882 |
| Bio_18 | 112 | 253.62 | 270.000 | 130.0000 | 312.0 | 262.5000 | 271.50 | 144.0000 | 286.00 | 46.03 | 4.349 |
| Distance_roads | 113 | 242.86 | 100.000 | 0.0000 | 2332.4 | 100.0000 | 360.56 | 0.0000 | 600.00 | 331.59 | 31.194 |
| Distance_roads_1 | 113 | 157.77 | 0.000 | 0.0000 | 2828.4 | 0.0000 | 0.00 | 0.0000 | 1000.00 | 445.08 | 41.870 |
| Distance_roads_2 | 113 | 44.25 | 0.000 | 0.0000 | 5000.0 | 0.0000 | 0.00 | 0.0000 | 0.00 | 470.36 | 44.248 |
| Distance_watercourses | 112 | 2178.47 | 670.820 | 0.0000 | 29130.2 | 400.0000 | 1208.30 | 200.0000 | 1923.54 | 5287.53 | 499.624 |
| Distance_watercourses_1 | 113 | 2108.30 | 1000.000 | 0.0000 | 29410.9 | 0.0000 | 1000.00 | 0.0000 | 2236.07 | 5329.94 | 501.399 |
| Distance_watercourses_2 | 112 | 1512.08 | 0.000 | 0.0000 | 29154.8 | 0.0000 | 0.00 | 0.0000 | 0.00 | 5236.67 | 494.819 |
| Population density | 113 | 27094.62 | 4449.175 | 51.5036 | 565444.5 | 564.5335 | 15197.36 | 149.8576 | 32091.05 | 85286.44 | 8023.074 |

| Variable | IDPREC=11 Descriptive Statistics (*Robinia pseudoacacia*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 10052 | 0.008 | 0.0086 | -0.8247 | 0.4 | -0.0566 | 0.072 | -0.1186 | 0.135 | 0.10 | 0.0010 |
| Northness | 10052 | -0.078 | -0.1011 | -0.9783 | 1.0 | -0.3775 | 0.210 | -0.6258 | 0.502 | 0.41 | 0.0041 |
| Slope | 10052 | 5.100 | 4.6791 | 0.0000 | 32.4 | 2.8990 | 6.574 | 0.9014 | 9.863 | 3.46 | 0.0345 |
| Elevation | 10048 | 208.483 | 197.2096 | 0.0000 | 892.0 | 155.1017 | 240.869 | 126.4678 | 310.191 | 81.17 | 0.8097 |
| Bio_1 | 10037 | 10.523 | 10.4000 | 7.5000 | 16.3 | 10.1000 | 10.800 | 9.8000 | 11.100 | 0.89 | 0.0088 |
| Bio_7 | 10037 | 29.953 | 30.4000 | 23.8000 | 32.0 | 30.1000 | 30.500 | 29.5000 | 30.700 | 1.47 | 0.0146 |
| Bio_10 | 10037 | 19.631 | 19.6000 | 16.1000 | 24.4 | 19.3000 | 19.800 | 19.0000 | 20.300 | 0.69 | 0.0069 |
| Bio_11 | 9615 | 0.907 | 0.6000 | -2.1000 | 8.9 | 0.3000 | 1.000 | -0.1000 | 1.600 | 1.35 | 0.0137 |
| Bio_12 | 10037 | 941.062 | 930.0000 | 636.0000 | 1358.0 | 883.0000 | 1005.000 | 786.0000 | 1086.000 | 120.66 | 1.2043 |
| Bio_17 | 10037 | 164.456 | 153.0000 | 119.0000 | 282.0 | 146.0000 | 179.000 | 136.0000 | 212.000 | 30.88 | 0.3082 |
| Bio_18 | 10037 | 278.927 | 284.0000 | 123.0000 | 343.0 | 267.0000 | 298.000 | 238.0000 | 309.000 | 28.23 | 0.2818 |
| Distance_roads | 10053 | 444.313 | 360.5551 | 0.0000 | 14805.4 | 141.4214 | 632.456 | 100.0000 | 905.539 | 409.32 | 4.0824 |
| Distance_roads_1 | 10053 | 271.937 | 0.0000 | 0.0000 | 14866.1 | 0.0000 | 1000.000 | 0.0000 | 1000.000 | 500.16 | 4.9884 |
| Distance_roads_2 | 10043 | 12.976 | 0.0000 | 0.0000 | 14142.1 | 0.0000 | 0.000 | 0.0000 | 0.000 | 290.65 | 2.9002 |
| Distance_watercourses | 10053 | 528.582 | 360.5551 | 0.0000 | 31548.2 | 141.4214 | 608.276 | 100.0000 | 1000.000 | 987.48 | 9.8487 |
| Distance_watercourses_1 | 10053 | 372.002 | 0.0000 | 0.0000 | 31400.6 | 0.0000 | 1000.000 | 0.0000 | 1000.000 | 1039.12 | 10.3638 |
| Distance_watercourses_2 | 10053 | 106.452 | 0.0000 | 0.0000 | 32015.6 | 0.0000 | 0.000 | 0.0000 | 0.000 | 1016.48 | 10.1380 |
| Population density | 10051 | 2700.369 | 199.2020 | 0.7489 | 636764.2 | 100.1506 | 424.106 | 59.3973 | 791.809 | 29173.23 | 290.9912 |

| Variable | All Groups<br>Descriptive Statistics (*Veronica persica*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 772 | -0.01 | -0.004 | -0.8414 | 0.6 | -0.0647 | 0.072 | -0.1462 | 0.1 | 0.1 | 0.005 |
| Northness | 772 | -0.14 | -0.185 | -0.9603 | 1.0 | -0.5986 | 0.295 | -0.8096 | 0.6 | 0.5 | 0.019 |
| Slope | 772 | 3.78 | 2.019 | 0.0000 | 28.7 | 0.3490 | 6.132 | 0.0003 | 10.3 | 4.5 | 0.162 |
| Elevation | 767 | 184.00 | 126.468 | 0.0000 | 1096.3 | 105.9909 | 202.150 | 45.2978 | 377.7 | 170.6 | 6.159 |
| Bio_1 | 747 | 11.21 | 11.000 | 6.2000 | 16.5 | 10.6000 | 11.100 | 9.5000 | 14.2 | 1.7 | 0.063 |
| Bio_7 | 747 | 29.39 | 30.300 | 23.5000 | 32.1 | 28.2000 | 30.400 | 26.4000 | 30.6 | 1.8 | 0.066 |
| Bio_10 | 747 | 20.24 | 20.300 | 14.7000 | 24.4 | 19.8000 | 20.500 | 18.6000 | 22.4 | 1.5 | 0.055 |
| Bio_11 | 739 | 1.84 | 1.100 | -2.5000 | 9.4 | 0.7000 | 1.600 | 0.1000 | 6.4 | 2.4 | 0.087 |
| Bio_12 | 747 | 994.41 | 953.000 | 630.0000 | 1397.0 | 922.0000 | 1028.000 | 874.0000 | 1272.0 | 146.8 | 5.370 |
| Bio_17 | 747 | 175.14 | 164.000 | 108.0000 | 294.0 | 156.0000 | 182.000 | 137.0000 | 242.0 | 37.3 | 1.366 |
| Bio_18 | 747 | 261.12 | 280.000 | 108.0000 | 350.0 | 261.0000 | 286.000 | 170.0000 | 299.0 | 49.3 | 1.805 |
| Distance_roads | 778 | 425.50 | 100.000 | 0.0000 | 109652.4 | 0.0000 | 223.607 | 0.0000 | 608.3 | 4365.3 | 156.502 |
| Distance_roads_1 | 778 | 372.25 | 0.000 | 0.0000 | 109178.8 | 0.0000 | 0.000 | 0.0000 | 1000.0 | 4369.8 | 156.666 |
| Distance_roads_2 | 778 | 221.83 | 0.000 | 0.0000 | 107354.6 | 0.0000 | 0.000 | 0.0000 | 0.0 | 4332.8 | 155.338 |
| Distance_watercourses | 778 | 1805.45 | 620.366 | 0.0000 | 108709.0 | 223.6068 | 1403.567 | 100.0000 | 3048.0 | 5632.2 | 201.924 |
| Distance_watercourses_1 | 778 | 1694.72 | 1000.000 | 0.0000 | 107935.2 | 0.0000 | 1000.000 | 0.0000 | 2828.4 | 5618.3 | 201.427 |
| Distance_watercourses_2 | 778 | 1205.19 | 0.000 | 0.0000 | 107935.2 | 0.0000 | 0.000 | 0.0000 | 5000.0 | 5711.3 | 204.760 |
| Population density | 776 | 49685.48 | 1247.721 | 2.0235 | 545662.9 | 298.3129 | 9304.933 | 117.9213 | 219718.8 | 114797.2 | 4120.978 |

| Variable | IDPREC=5<br>Descriptive Statistics (*Veronica persica*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 161 | -0.02 | -0.0259 | -0.7001 | 0.2 | -0.0831 | 0.054 | -0.1529 | 0.10 | 0.1 | 0.009 |
| Northness | 161 | -0.11 | -0.2312 | -0.9271 | 0.9 | -0.6101 | 0.330 | -0.8074 | 0.76 | 0.6 | 0.044 |
| Slope | 161 | 4.21 | 2.9853 | 0.0000 | 19.1 | 0.8156 | 6.402 | 0.0003 | 9.99 | 4.0 | 0.314 |
| Elevation | 159 | 168.93 | 125.6832 | 0.0000 | 930.9 | 86.8640 | 186.273 | 17.5960 | 326.34 | 170.7 | 13.541 |
| Bio_1 | 156 | 11.83 | 11.1000 | 7.5000 | 16.2 | 10.8000 | 13.300 | 9.9000 | 14.90 | 1.9 | 0.155 |
| Bio_7 | 156 | 28.82 | 29.7000 | 24.4000 | 32.1 | 27.0000 | 30.400 | 25.7000 | 30.70 | 2.0 | 0.159 |
| Bio_10 | 156 | 20.69 | 20.5000 | 15.9000 | 24.4 | 20.0000 | 21.650 | 19.1000 | 23.20 | 1.6 | 0.129 |
| Bio_11 | 151 | 2.84 | 1.4000 | -1.2000 | 8.6 | 0.9000 | 5.500 | 0.6000 | 7.10 | 2.7 | 0.220 |
| Bio_12 | 156 | 1014.22 | 980.0000 | 630.0000 | 1397.0 | 915.0000 | 1133.000 | 694.0000 | 1309.00 | 193.0 | 15.453 |
| Bio_17 | 156 | 181.28 | 166.0000 | 120.0000 | 294.0 | 144.0000 | 215.000 | 133.0000 | 255.00 | 44.0 | 3.521 |
| Bio_18 | 156 | 241.28 | 269.0000 | 125.0000 | 335.0 | 201.5000 | 281.000 | 138.0000 | 292.00 | 55.9 | 4.478 |
| Distance_roads | 161 | 101.43 | 100.0000 | 0.0000 | 1100.0 | 0.0000 | 100.000 | 0.0000 | 223.61 | 174.7 | 13.769 |
| Distance_roads_1 | 161 | 86.96 | 0.0000 | 0.0000 | 1000.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 282.7 | 22.276 |
| Distance_roads_2 | 161 | 0.00 | 0.0000 | 0.0000 | 0.0 | 0.0000 | 0.000 | 0.0000 | 0.00 | 0.0 | 0.000 |
| Distance_watercourses | 161 | 1439.98 | 565.6854 | 0.0000 | 13379.5 | 223.6068 | 1581.139 | 100.0000 | 3889.73 | 2280.6 | 179.733 |
| Distance_watercourses_1 | 161 | 1315.82 | 0.0000 | 0.0000 | 13453.6 | 0.0000 | 1414.214 | 0.0000 | 3605.55 | 2307.9 | 181.890 |
| Distance_watercourses_2 | 161 | 936.09 | 0.0000 | 0.0000 | 14142.1 | 0.0000 | 0.000 | 0.0000 | 5000.00 | 2572.6 | 202.749 |
| Population density | 161 | 36775.36 | 902.2424 | 15.1047 | 476323.5 | 318.8504 | 3866.909 | 105.5427 | 43797.61 | 113417.2 | 8938.529 |

| Variable | IDPREC=6<br>Descriptive Statistics (*Veronica persica*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 138 | -0.03 | -0.0193 | -0.8414 | 0.3 | -0.0661 | 0.073 | -0.1933 | 0.1 | 0.18 | 0.015 |
| Northness | 138 | -0.04 | -0.0661 | -0.9422 | 1.0 | -0.4895 | 0.424 | -0.6883 | 0.6 | 0.51 | 0.044 |
| Slope | 138 | 6.69 | 6.1075 | 0.0000 | 28.7 | 1.4549 | 10.624 | 0.3086 | 13.9 | 5.50 | 0.468 |
| Elevation | 139 | 253.63 | 190.6160 | 0.0000 | 1096.3 | 111.3706 | 305.537 | 31.9206 | 671.3 | 223.59 | 18.965 |
| Bio_1 | 132 | 10.81 | 10.6000 | 6.2000 | 16.2 | 9.8000 | 11.350 | 8.9000 | 13.6 | 1.84 | 0.160 |
| Bio_7 | 132 | 29.07 | 30.0000 | 24.1000 | 31.2 | 27.5500 | 30.400 | 26.4000 | 30.4 | 1.70 | 0.148 |
| Bio_10 | 132 | 19.78 | 19.9000 | 14.7000 | 23.9 | 19.0500 | 20.500 | 17.5000 | 21.7 | 1.67 | 0.146 |
| Bio_11 | 130 | 1.55 | 1.0000 | -2.5000 | 8.9 | 0.2000 | 2.200 | -0.6500 | 5.7 | 2.36 | 0.207 |
| Bio_12 | 132 | 1047.79 | 978.0000 | 683.0000 | 1393.0 | 950.5000 | 1106.500 | 923.0000 | 1321.0 | 151.30 | 13.169 |
| Bio_17 | 132 | 186.94 | 165.0000 | 126.0000 | 290.0 | 159.0000 | 216.000 | 155.0000 | 265.0 | 42.63 | 3.710 |
| Bio_18 | 132 | 267.80 | 280.0000 | 128.0000 | 346.0 | 267.5000 | 297.000 | 184.0000 | 307.0 | 48.77 | 4.245 |
| Distance_roads | 139 | 249.39 | 200.0000 | 0.0000 | 1431.8 | 100.0000 | 360.555 | 0.0000 | 600.0 | 267.10 | 22.655 |
| Distance_roads_1 | 139 | 151.08 | 0.0000 | 0.0000 | 1000.0 | 0.0000 | 0.000 | 0.0000 | 1000.0 | 359.42 | 30.486 |
| Distance_roads_2 | 139 | 0.00 | 0.0000 | 0.0000 | 0.0 | 0.0000 | 0.000 | 0.0000 | 0.0 | 0.00 | 0.000 |
| Distance_watercourses | 139 | 1236.70 | 500.0000 | 0.0000 | 28410.2 | 200.0000 | 1392.839 | 100.0000 | 2707.4 | 2777.27 | 235.565 |
| Distance_watercourses_1 | 139 | 1081.03 | 0.0000 | 0.0000 | 28071.3 | 0.0000 | 1414.214 | 0.0000 | 2828.4 | 2781.36 | 235.912 |
| Distance_watercourses_2 | 139 | 754.87 | 0.0000 | 0.0000 | 25495.1 | 0.0000 | 0.000 | 0.0000 | 5000.0 | 2849.86 | 241.722 |
| Population density | 139 | 29385.17 | 738.1871 | 2.4476 | 467772.3 | 292.3803 | 4390.977 | 112.6202 | 123030.3 | 79305.76 | 6726.627 |

| Variable | IDPREC=7<br>Descriptive Statistics (*Veronica persica*) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 129 | 0.0 | 0.02 | -0.2336 | 0.2 | -0.046 | 0.1 | -0.0810 | 0.1 | 0.1 | 0.01 |
| Northness | 129 | -0.4 | -0.49 | -0.9603 | 0.6 | -0.701 | 0.0 | -0.9074 | 0.4 | 0.5 | 0.04 |
| Slope | 129 | 1.9 | 0.76 | 0.0000 | 25.1 | 0.111 | 1.6 | 0.0321 | 6.0 | 3.5 | 0.31 |
| Elevation | 129 | 149.8 | 122.09 | 20.8588 | 969.0 | 115.563 | 127.5 | 91.1853 | 145.2 | 151.6 | 13.35 |
| Bio_1 | 129 | 11.1 | 11.00 | 6.7000 | 16.5 | 10.700 | 11.1 | 10.6000 | 11.1 | 1.5 | 0.13 |
| Bio_7 | 129 | 30.0 | 30.50 | 23.5000 | 31.3 | 30.400 | 30.5 | 27.5000 | 31.2 | 1.7 | 0.15 |
| Bio_10 | 129 | 20.3 | 20.40 | 15.3000 | 24.2 | 19.900 | 20.5 | 19.9000 | 20.5 | 1.3 | 0.11 |
| Bio_11 | 128 | 1.4 | 1.10 | -2.3000 | 9.4 | 0.700 | 1.2 | 0.6000 | 1.3 | 2.0 | 0.18 |
| Bio_12 | 129 | 962.0 | 935.00 | 778.0000 | 1349.0 | 924.000 | 955.0 | 916.0000 | 972.0 | 99.6 | 8.77 |
| Bio_17 | 129 | 164.6 | 161.00 | 108.0000 | 290.0 | 158.000 | 165.0 | 155.0000 | 166.0 | 26.9 | 2.37 |
| Bio_18 | 129 | 269.5 | 282.00 | 108.0000 | 350.0 | 270.000 | 283.0 | 268.0000 | 286.0 | 41.0 | 3.61 |
| Distance_roads | 129 | 137.3 | 100.00 | 0.0000 | 922.0 | 0.000 | 100.0 | 0.0000 | 500.0 | 209.3 | 18.43 |
| Distance_roads_1 | 129 | 62.0 | 0.00 | 0.0000 | 1000.0 | 0.000 | 0.0 | 0.0000 | 0.0 | 242.1 | 21.32 |
| Distance_roads_2 | 129 | 0.0 | 0.00 | 0.0000 | 0.0 | 0.000 | 0.0 | 0.0000 | 0.0 | 0.0 | 0.00 |
| Distance_watercourses | 129 | 2063.1 | 943.40 | 0.0000 | 31715.8 | 200.000 | 2200.0 | 100.0000 | 2701.9 | 5251.9 | 462.40 |
| Distance_watercourses_1 | 129 | 2013.0 | 1000.00 | 0.0000 | 31384.7 | 0.000 | 2236.1 | 0.0000 | 2828.4 | 5235.3 | 460.94 |
| Distance_watercourses_2 | 129 | 1115.2 | 0.00 | 0.0000 | 33541.0 | 0.000 | 0.0 | 0.0000 | 0.0 | 5441.1 | 479.06 |
| Population density | 129 | 150163.7 | 58728.15 | 2.0235 | 545662.9 | 1899.352 | 324222.8 | 253.7741 | 400539.8 | 173915.9 | 15312.44 |

| Variable | IDPREC=11<br>Descriptive Statistics (*Veronica persica*) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valid N | Mean | Median | Minimum | Maximum | Lower Quartile | Upper Quartile | Percentile 10 | Percentile 90 | Std.Dev. | Standard Error |
| Eastness | 344 | -0.01 | 0.002 | -0.7661 | 0.6 | -0.0715 | 0.075 | -0.1362 | 0.1 | 0.14 | 0.007 |
| Northness | 344 | -0.11 | -0.153 | -0.9530 | 1.0 | -0.5742 | 0.345 | -0.7995 | 0.6 | 0.53 | 0.029 |
| Slope | 344 | 3.12 | 1.192 | 0.0000 | 22.8 | 0.1137 | 4.923 | 0.0000 | 9.0 | 4.02 | 0.217 |
| Elevation | 340 | 175.58 | 139.667 | 0.0000 | 805.4 | 105.9117 | 179.419 | 45.5624 | 354.0 | 143.18 | 7.765 |
| Bio_1 | 330 | 11.11 | 10.900 | 7.5000 | 16.3 | 10.5000 | 11.100 | 9.5500 | 14.3 | 1.60 | 0.088 |
| Bio_7 | 330 | 29.54 | 30.300 | 23.8000 | 32.0 | 29.8000 | 30.400 | 26.9500 | 30.5 | 1.68 | 0.093 |
| Bio_10 | 330 | 20.17 | 20.100 | 16.1000 | 24.4 | 19.8000 | 20.500 | 18.7500 | 22.3 | 1.37 | 0.076 |
| Bio_11 | 330 | 1.65 | 1.100 | -1.8000 | 8.9 | 0.7000 | 1.400 | -0.1000 | 6.6 | 2.21 | 0.122 |
| Bio_12 | 330 | 976.38 | 950.000 | 681.0000 | 1351.0 | 914.0000 | 1010.000 | 847.0000 | 1171.0 | 127.47 | 7.017 |
| Bio_17 | 330 | 171.65 | 163.000 | 122.0000 | 279.0 | 155.0000 | 178.000 | 137.0000 | 205.5 | 33.37 | 1.837 |
| Bio_18 | 330 | 264.55 | 280.000 | 123.0000 | 343.0 | 268.0000 | 288.000 | 184.0000 | 296.0 | 46.87 | 2.580 |
| Distance_roads | 349 | 751.66 | 100.000 | 0.0000 | 109652.4 | 0.0000 | 360.555 | 0.0000 | 894.4 | 6503.04 | 348.100 |
| Distance_roads_1 | 349 | 706.62 | 0.000 | 0.0000 | 109178.8 | 0.0000 | 0.000 | 0.0000 | 1000.0 | 6505.47 | 348.230 |
| Distance_roads_2 | 349 | 494.50 | 0.000 | 0.0000 | 107354.6 | 0.0000 | 0.000 | 0.0000 | 0.0 | 6463.79 | 345.999 |
| Distance_watercourses | 349 | 2105.34 | 632.456 | 0.0000 | 108709.0 | 223.6068 | 1063.015 | 100.0000 | 3361.5 | 7411.21 | 396.713 |
| Distance_watercourses_1 | 349 | 1996.28 | 1000.000 | 0.0000 | 107935.2 | 0.0000 | 1000.000 | 0.0000 | 3000.0 | 7384.78 | 395.298 |
| Distance_watercourses_2 | 349 | 1541.94 | 0.000 | 0.0000 | 107935.2 | 0.0000 | 0.000 | 0.0000 | 5000.0 | 7446.21 | 398.586 |
| Population density | 347 | 26453.72 | 950.354 | 4.0335 | 545662.9 | 266.7894 | 3590.650 | 112.7058 | 134378.5 | 72959.94 | 3916.695 |

**Appendix 9.** Results of Tukey post-hoc test.

| Tukey HSD test; variable Eastness (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.01629, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.977309 | 0.409751 | 0.220342 | 0.525805 |
| 6 | 0.977309 | | 0.094760 | 0.019139 | 0.089278 |
| 7 | 0.409751 | 0.094760 | | 1.000000 | 0.958593 |
| 11 | 0.220342 | 0.019139 | 1.000000 | | 0.749335 |
| all | 0.525805 | 0.089278 | 0.958593 | 0.749335 | |
| | **ab** | **a** | **ab** | **b** | **ab** |

| Tukey HSD test; variable Northness (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.28753, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.613943 | 0.296069 | 0.817253 | 0.697939 |
| 6 | 0.613943 | | 0.989894 | 0.944459 | 0.977170 |
| 7 | 0.296069 | 0.989894 | | 0.592706 | 0.687349 |
| 11 | 0.817253 | 0.944459 | 0.592706 | | 0.996811 |
| all | 0.697939 | 0.977170 | 0.687349 | 0.996811 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable slopehtrsj (*Ailanthus altissima)*<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 48.205, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.521822 | 0.110446 | 0.309030 | 0.866446 |
| 6 | 0.521822 | | 0.000195 | 1.000000 | 0.794023 |
| 7 | 0.110446 | 0.000195 | | 0.000017 | 0.000038 |
| 11 | 0.309030 | 1.000000 | 0.000017 | | 0.276454 |
| all | 0.866446 | 0.794023 | 0.000038 | 0.276454 | |
| | **ab** | **a** | **b** | **a** | **a** |

| Tukey HSD test; variable Elevation (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 12383., df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.004815 | 0.999750 | 0.999974 | 0.975399 |
| 6 | 0.004815 | | 0.000543 | 0.000065 | 0.000279 |
| 7 | 0.999750 | 0.000543 | | 0.995565 | 0.861329 |
| 11 | 0.999974 | 0.000065 | 0.995565 | | 0.867432 |
| all | 0.975399 | 0.000279 | 0.861329 | 0.867432 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Bio_1 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 3.6641, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.260502 | 0.000017 | 0.137748 | 0.032354 |
| 6 | 0.260502 | | 0.002282 | 0.999615 | 0.997808 |
| 7 | 0.000017 | 0.002282 | | 0.000020 | 0.000034 |
| 11 | 0.137748 | 0.999615 | 0.000020 | | 0.870900 |
| all | 0.032354 | 0.997808 | 0.000034 | 0.870900 | |
| | **a** | **ab** | **c** | **ab** | **b** |

| Tukey HSD test; variable Bio_7 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 4.7292, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.998574 | 0.000017 | 0.056883 | 0.033340 |
| 6 | 0.998574 | | 0.000017 | 0.009301 | 0.004076 |
| 7 | 0.000017 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.056883 | 0.009301 | 0.000017 | | 0.999538 |
| all | 0.033340 | 0.004076 | 0.000017 | 0.999538 | |
| | **bcd** | **bc** | **e** | **abd** | **ad** |

| Tukey HSD test; variable Bio_10 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.0770, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.066489 | 0.000020 | 0.237821 | 0.050707 |
| 6 | 0.066489 | | 0.093949 | 0.684808 | 0.954896 |
| 7 | 0.000020 | 0.093949 | | 0.000035 | 0.000221 |
| 11 | 0.237821 | 0.684808 | 0.000035 | | 0.758907 |
| all | 0.050707 | 0.954896 | 0.000221 | 0.758907 | |
| | **a** | **ab** | **b** | **a** | **a** |

| Tukey HSD test; variable Bio_11 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 8.2204, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.599602 | 0.000017 | 0.073151 | 0.019041 |
| 6 | 0.599602 | | 0.000028 | 0.916556 | 0.690947 |
| 7 | 0.000017 | 0.000028 | | 0.000017 | 0.000018 |
| 11 | 0.073151 | 0.916556 | 0.000017 | | 0.937712 |
| all | 0.019041 | 0.690947 | 0.000018 | 0.937712 | |
| | **a** | **ab** | **c** | **ab** | **b** |

| Tukey HSD test; variable Bio_12 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 17798., df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.421868 | 0.065594 | 0.002423 | 0.087383 |
| 6 | 0.421868 | | 0.000045 | 0.000017 | 0.000020 |
| 7 | 0.065594 | 0.000045 | | 0.970410 | 0.916261 |
| 11 | 0.002423 | 0.000017 | 0.970410 | | 0.095289 |
| all | 0.087383 | 0.000020 | 0.916261 | 0.095289 | |
| | **abc** | **ab** | **acd** | **cd** | **acd** |

| Tukey HSD test; variable Bio_17 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 878.04, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.031656 | 0.693789 | 0.149824 | 0.748012 |
| 6 | 0.031656 | | 0.000064 | 0.000017 | 0.000018 |
| 7 | 0.693789 | 0.000064 | | 0.903854 | 0.990895 |
| 11 | 0.149824 | 0.000017 | 0.903854 | | 0.152786 |
| all | 0.748012 | 0.000018 | 0.990895 | 0.152786 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Bio_18 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 3706.5, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.773475 | 0.000020 | 0.883650 | 0.386956 |
| 6 | 0.773475 | | 0.000437 | 0.981125 | 0.998092 |
| 7 | 0.000020 | 0.000437 | | 0.000017 | 0.000018 |
| 11 | 0.883650 | 0.981125 | 0.000017 | | 0.489612 |
| all | 0.386956 | 0.998092 | 0.000018 | 0.489612 | |
| | **a** | **a** | **b** | **a** | **a** |

| Tukey HSD test; variable Distance_roads (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 3879E2, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 1 | all |
| 5 | | 0.157041 | 0.768667 | 0.959347 | 0.841081 |
| 6 | 0.157041 | | 0.708141 | 0.142040 | 0.245857 |
| 7 | 0.768667 | 0.708141 | | 0.920188 | 0.988907 |
| 11 | 0.959347 | 0.142040 | 0.920188 | | 0.968682 |
| all | 0.841081 | 0.245857 | 0.988907 | 0.968682 | |
| | **a** | **a** | **a** | **a** | **a** |

Tukey HSD test; variable Distance_roads_1 (*Ailanthus altissima*)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 4680E2, df = 841.00

| IDPREC | 5 | 6 | 7 | 11 | all |
|---|---|---|---|---|---|
| 5 | | 0.559853 | 0.978871 | 0.999999 | 0.997284 |
| 6 | 0.559853 | | 0.826864 | 0.232976 | 0.411166 |
| 7 | 0.978871 | 0.826864 | | 0.912798 | 0.992108 |
| 11 | 0.999999 | 0.232976 | 0.912798 | | 0.945697 |
| all | 0.997284 | 0.411166 | 0.992108 | 0.945697 | |
| | **a** | **a** | **a** | **a** | **a** |

Tukey HSD test; variable Distance_roads_2 (*Ailanthus altissima*)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 5856E2, df = 841.00

| IDPREC | 5 | 6 | 7 | 1 | all |
|---|---|---|---|---|---|
| 5 | | 0.665825 | 0.618416 | 0.999861 | 0.975516 |
| 6 | 0.665825 | | 1.000000 | 0.474006 | 0.737346 |
| 7 | 0.618416 | 1.000000 | | 0.370551 | 0.651364 |
| 11 | 0.999861 | 0.474006 | 0.370551 | | 0.911187 |
| all | 0.975516 | 0.737346 | 0.651364 | 0.911187 | |
| | **a** | **a** | **a** | **a** | **a** |

Tukey HSD test; variable Distance_watercourses (*Ailanthus altissim*a)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 2303E4, df = 841.00

| IDPREC | 5 | 6 | 7 | 11 | all |
|---|---|---|---|---|---|
| 5 | | 0.731304 | 0.772543 | 0.262984 | 0.444194 |
| 6 | 0.731304 | | 0.999912 | 0.987223 | 0.999975 |
| 7 | 0.772543 | 0.999912 | | 0.947446 | 0.998002 |
| 11 | 0.262984 | 0.987223 | 0.947446 | | 0.941589 |
| all | 0.444194 | 0.999975 | 0.998002 | 0.941589 | |
| | **a** | **a** | **a** | **a** | **a** |

Tukey HSD test; variable Distance_watersourses_1 (*Ailanthus altissima*)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 2289E4, df = 841.00

| IDPREC | 5 | 6 | 7 | 11 | all |
|---|---|---|---|---|---|
| 5 | | 0.681818 | 0.788718 | 0.215439 | 0.399487 |
| 6 | 0.681818 | | 0.998980 | 0.986848 | 0.999995 |
| 7 | 0.788718 | 0.998980 | | 0.895542 | 0.992217 |
| 11 | 0.215439 | 0.986848 | 0.895542 | | 0.921175 |
| all | 0.399487 | 0.999995 | 0.992217 | 0.921175 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Distance_watercourses_2 (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2414E4, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.518809 | 0.479301 | 0.041536 | 0.137948 |
| 6 | 0.518809 | | 1.000000 | 0.895302 | 0.997427 |
| 7 | 0.479301 | 1.000000 | | 0.847327 | 0.995033 |
| 11 | 0.041536 | 0.895302 | 0.847327 | | 0.802914 |
| all | 0.137948 | 0.997427 | 0.995033 | 0.802914 | |
| | **a** | **ab** | **ab** | **b** | **ab** |

| Tukey HSD test; variable Population density (*Ailanthus altissima*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2090E7, df = 841.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.963028 | 0.464246 | 0.991944 | 0.988073 |
| 6 | 0.963028 | | 0.094629 | 0.639619 | 0.582652 |
| 7 | 0.464246 | 0.094629 | | 0.373452 | 0.351533 |
| 11 | 0.991944 | 0.639619 | 0.373452 | | 0.999995 |
| all | 0.988073 | 0.582652 | 0.351533 | 0.999995 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Eastness (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.01267, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.002695 | 0.826529 | 0.848564 | 0.948391 |
| 6 | 0.002695 | | 0.010270 | 0.000410 | 0.000594 |
| 7 | 0.826529 | 0.010270 | | 0.926886 | 0.900011 |
| 11 | 0.848564 | 0.000410 | 0.926886 | | 0.981251 |
| all | 0.948391 | 0.000594 | 0.900011 | 0.981251 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Northness (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.29746, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 1.000000 | 0.999435 | 0.070459 | 0.186371 |
| 6 | 1.000000 | | 0.999853 | 0.899769 | 0.945525 |
| 7 | 0.999435 | 0.999853 | | 0.882838 | 0.925705 |
| 11 | 0.070459 | 0.899769 | 0.882838 | | 0.913680 |
| all | 0.186371 | 0.945525 | 0.925705 | 0.913680 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Slope (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 15.245, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.505244 | 0.999974 | 0.167865 | 0.288528 |
| 6 | 0.505244 | | 0.869580 | 0.893970 | 0.851191 |
| 7 | 0.999974 | 0.869580 | | 0.987433 | 0.993623 |
| 11 | 0.167865 | 0.893970 | 0.987433 | | 0.978108 |
| all | 0.288528 | 0.851191 | 0.993623 | 0.978108 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Elevation (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 16667., df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.015234 | 0.003696 | 0.000017 | 0.000017 |
| 6 | 0.015234 | | 0.942517 | 0.829164 | 0.666912 |
| 7 | 0.003696 | 0.942517 | | 0.351981 | 0.233386 |
| 11 | 0.000017 | 0.829164 | 0.351981 | | 0.478296 |
| all | 0.000017 | 0.666912 | 0.233386 | 0.478296 | |
| | **a** | **b** | **b** | **b** | **b** |

| Tukey HSD test; variable Bio_1 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1.3735, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 1 | all |
| 5 | | 0.547305 | 0.028050 | 0.000017 | 0.000017 |
| 6 | 0.547305 | | 0.671192 | 0.000053 | 0.000480 |
| 7 | 0.028050 | 0.671192 | | 0.000018 | 0.000021 |
| 11 | 0.000017 | 0.000053 | 0.000018 | | 0.009554 |
| all | 0.000017 | 0.000480 | 0.000021 | 0.009554 | |
| | **a** | **ab** | **b** | **c** | **d** |

| Tukey HSD test; variable Bio_7 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1.1871, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000058 | 0.000017 | 0.241277 | 0.674157 |
| 6 | 0.000058 | | 0.518876 | 0.000018 | 0.000019 |
| 7 | 0.000017 | 0.518876 | | 0.000017 | 0.000017 |
| 11 | 0.241277 | 0.000018 | 0.000017 | | 0.612075 |
| all | 0.674157 | 0.000019 | 0.000017 | 0.612075 | |
| | **a** | **b** | **b** | **a** | **a** |

| Tukey HSD test; variable Bio_10 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1.1144, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.999692 | 0.235382 | 0.000017 | 0.000017 |
| 6 | 0.999692 | | 0.548115 | 0.012539 | 0.059463 |
| 7 | 0.235382 | 0.548115 | | 0.000064 | 0.000353 |
| 11 | 0.000017 | 0.012539 | 0.000064 | | 0.019406 |
| all | 0.000017 | 0.059463 | 0.000353 | 0.019406 | |
| | **ac** | **abc** | **ac** | **d** | **bc** |

| Tukey HSD test; variable Bio_11 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.4580, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.025603 | 0.000374 | 0.000017 | 0.000017 |
| 6 | 0.025603 | | 0.670315 | 0.000017 | 0.000019 |
| 7 | 0.000374 | 0.670315 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.017605 |
| all | 0.000017 | 0.000019 | 0.000017 | 0.017605 | |
| | **a** | **b** | **b** | **c** | **d** |

| Tukey HSD test; variable Bio_12 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 17442., df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000305 | 0.016761 | 0.000017 | 0.000017 |
| 6 | 0.000305 | | 0.998524 | 0.571427 | 0.333809 |
| 7 | 0.016761 | 0.998524 | | 0.915314 | 0.773408 |
| 11 | 0.000017 | 0.571427 | 0.915314 | | 0.177318 |
| all | 0.000017 | 0.333809 | 0.773408 | 0.177318 | |
| | **a** | **b** | **b** | **b** | **b** |

| Tukey HSD test; variable Bio_17 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1043.6, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.001530 | 0.224736 | 0.000020 | 0.000067 |
| 6 | 0.001530 | | 0.922059 | 0.172813 | 0.107891 |
| 7 | 0.224736 | 0.922059 | | 0.943756 | 0.888197 |
| 11 | 0.000020 | 0.172813 | 0.943756 | | 0.754436 |
| all | 0.000067 | 0.107891 | 0.888197 | 0.754436 | |
| | **a** | **b** | **ab** | **b** | **b** |

| Tukey HSD test; variable Bio_18 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1509.9, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.338330 | 0.035927 | 0.000017 | 0.000017 |
| 6 | 0.338330 | | 0.836430 | 0.000017 | 0.000017 |
| 7 | 0.035927 | 0.836430 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.000061 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.000061 | |
| | **a** | **ab** | **b** | **c** | **d** |

| Tukey HSD test; variable Distance_roads (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 8337E4, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.999982 | 0.000017 | 0.999238 | 0.766589 |
| 6 | 0.999982 | | 0.000017 | 1.000000 | 0.998521 |
| 7 | 0.000017 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.999238 | 1.000000 | 0.000017 | | 0.396986 |
| all | 0.766589 | 0.998521 | 0.000017 | 0.396986 | |
| | **a** | **a** | **b** | **a** | **a** |

| Tukey HSD test; variable Distance_roads_1 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1660E2, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.938220 | 0.999496 | 0.010915 | 0.045306 |
| 6 | 0.938220 | | 0.997208 | 0.998879 | 0.999976 |
| 7 | 0.999496 | 0.997208 | | 0.966227 | 0.985662 |
| 11 | 0.010915 | 0.998879 | 0.966227 | | 0.873065 |
| all | 0.045306 | 0.999976 | 0.985662 | 0.873065 | |
| | **a** | **ab** | **ab** | **b** | **b** |

| Tukey HSD test; variable Distance_roads_2 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1145E2, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 1.000000 | 0.920114 | 0.916921 | 0.946963 |
| 6 | 1.000000 | | 0.963599 | 0.998662 | 0.999234 |
| 7 | 0.920114 | 0.963599 | | 0.970895 | 0.965300 |
| 11 | 0.916921 | 0.998662 | 0.970895 | | 0.999519 |
| all | 0.946963 | 0.999234 | 0.965300 | 0.999519 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Distance_watercourses (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 5977E3, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.962684 | 0.281420 | 0.000105 | 0.001494 |
| 6 | 0.962684 | | 0.257889 | 0.192454 | 0.298094 |
| 7 | 0.281420 | 0.257889 | | 0.926028 | 0.852231 |
| 11 | 0.000105 | 0.192454 | 0.926028 | | 0.659423 |
| all | 0.001494 | 0.298094 | 0.852231 | 0.659423 | |
| | **a** | **ab** | **ab** | **b** | **b** |

| Tukey HSD test; variable Distance_watercourses_1 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 5983E3, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.884170 | 0.360774 | 0.000119 | 0.001773 |
| 6 | 0.884170 | | 0.231871 | 0.107907 | 0.181842 |
| 7 | 0.360774 | 0.231871 | | 0.962100 | 0.908515 |
| 11 | 0.000119 | 0.107907 | 0.962100 | | 0.646053 |
| all | 0.001773 | 0.181842 | 0.908515 | 0.646053 | |
| | **a** | **ab** | **ab** | **b** | **b** |

| Tukey HSD test; variable Distance_watercourses_2 (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 5363E3, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.943690 | 0.661681 | 0.000022 | 0.000236 |
| 6 | 0.943690 | | 0.513745 | 0.104535 | 0.190727 |
| 7 | 0.661681 | 0.513745 | | 1.000000 | 0.999181 |
| 11 | 0.000022 | 0.104535 | 1.000000 | | 0.509040 |
| all | 0.000236 | 0.190727 | 0.999181 | 0.509040 | |
| | **a** | **ab** | **ab** | **b** | **b** |

| Tukey HSD test; variable Population density (*Ambrosia artemisiifolia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 3638E6, df = 1739.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.952746 | 0.960114 | 0.995379 | 0.998855 |
| 6 | 0.952746 | | 0.999994 | 0.907420 | 0.920391 |
| 7 | 0.960114 | 0.999994 | | 0.929098 | 0.938227 |
| 11 | 0.995379 | 0.907420 | 0.929098 | | 0.999398 |
| all | 0.998855 | 0.920391 | 0.938227 | 0.999398 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Eastness (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.01047, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.238664 | 0.822786 | 0.996741 | 0.996145 |
| 6 | 0.238664 | | 0.676454 | 0.087618 | 0.218719 |
| 7 | 0.822786 | 0.676454 | | 0.433373 | 0.837812 |
| 11 | 0.996741 | 0.087618 | 0.433373 | | 0.810366 |
| all | 0.996145 | 0.218719 | 0.837812 | 0.810366 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Northness (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.22538, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.220301 | 0.999941 | 0.495505 | 0.977870 |
| 6 | 0.220301 | | 0.237874 | 0.005734 | 0.043788 |
| 7 | 0.999941 | 0.237874 | | 0.331223 | 0.930626 |
| 11 | 0.495505 | 0.005734 | 0.331223 | | 0.452297 |
| all | 0.977870 | 0.043788 | 0.930626 | 0.452297 | |
| | **ab** | **a** | **ab** | **b** | **b** |

| Tukey HSD test; variable Slope (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 9.6795, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.260482 | 0.828108 | 0.897235 | 0.983522 |
| 6 | 0.260482 | | 0.036269 | 0.036738 | 0.062328 |
| 7 | 0.828108 | 0.036269 | | 0.996865 | 0.918374 |
| 11 | 0.897235 | 0.036738 | 0.996865 | | 0.970682 |
| all | 0.983522 | 0.062328 | 0.918374 | 0.970682 | |
| | **ab** | **a** | **b** | **b** | **ab** |

| Tukey HSD test; variable Elevation (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2648.1, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.954778 | 0.013283 | 0.029794 | 0.114869 |
| 6 | 0.954778 | | 0.018794 | 0.043793 | 0.117624 |
| 7 | 0.013283 | 0.018794 | | 0.926991 | 0.461471 |
| 11 | 0.029794 | 0.043793 | 0.926991 | | 0.830397 |
| all | 0.114869 | 0.117624 | 0.461471 | 0.830397 | |
| | **a** | **a** | **b** | **b** | **ab** |

| Tukey HSD test; variable Bio_1 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.13136, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.007935 | 0.863828 | 0.035588 | 0.155993 |
| 6 | 0.007935 | | 0.056056 | 0.422762 | 0.147448 |
| 7 | 0.863828 | 0.056056 | | 0.353390 | 0.787339 |
| 11 | 0.035588 | 0.422762 | 0.353390 | | 0.776182 |
| sve | 0.155993 | 0.147448 | 0.787339 | 0.776182 | |
| | **a** | **b** | **ab** | **b** | **ab** |

| Tukey HSD test; variable Bio_7 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.32772, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.001046 | 0.056297 | 0.986313 | 0.982789 |
| 6 | 0.001046 | | 0.000017 | 0.000053 | 0.000034 |
| 7 | 0.056297 | 0.000017 | | 0.043248 | 0.021491 |
| 11 | 0.986313 | 0.000053 | 0.043248 | | 1.000000 |
| all | 0.982789 | 0.000034 | 0.021491 | 1.000000 | |
| | **ab** | **c** | **a** | **b** | **b** |

| Tukey HSD test; variable Bio_10 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.16937, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.024583 | 0.931840 | 0.030687 | 0.180472 |
| 6 | 0.024583 | | 0.099080 | 0.693210 | 0.297037 |
| 7 | 0.931840 | 0.099080 | | 0.211993 | 0.684442 |
| 11 | 0.030687 | 0.693210 | 0.211993 | | 0.668166 |
| all | 0.180472 | 0.297037 | 0.684442 | 0.668166 | |
| | **a** | **b** | **ab** | **b** | **ab** |

| Tukey HSD test; variable Bio_11 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.17193, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000030 | 0.999995 | 0.192471 | 0.380541 |
| 6 | 0.000030 | | 0.000022 | 0.001115 | 0.000160 |
| 7 | 0.999995 | 0.000022 | | 0.114286 | 0.253299 |
| 11 | 0.192471 | 0.001115 | 0.114286 | | 0.935109 |
| all | 0.380541 | 0.000160 | 0.253299 | 0.935109 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Bio_12 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 11084., df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | All |
| 5 | | 0.000036 | 0.420593 | 0.913264 | 0.526196 |
| 6 | 0.000036 | | 0.002949 | 0.000047 | 0.000128 |
| 7 | 0.420593 | 0.002949 | | 0.740566 | 0.970655 |
| 11 | 0.913264 | 0.000047 | 0.740566 | | 0.881225 |
| all | 0.526196 | 0.000128 | 0.970655 | 0.881225 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Bio_17 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 431.82, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000018 | 0.106323 | 0.518534 | 0.168897 |
| 6 | 0.000018 | | 0.001778 | 0.000027 | 0.000045 |
| 7 | 0.106323 | 0.001778 | | 0.667063 | 0.913049 |
| 11 | 0.518534 | 0.000027 | 0.667063 | | 0.928348 |
| all | 0.168897 | 0.000045 | 0.913049 | 0.928348 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Bio_18 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 823.73, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.218763 | 0.999994 | 0.976477 | 0.999999 |
| 6 | 0.218763 | | 0.218044 | 0.050074 | 0.109431 |
| 7 | 0.999994 | 0.218044 | | 0.951726 | 0.999919 |
| 11 | 0.976477 | 0.050074 | 0.951726 | | 0.906637 |
| all | 0.999999 | 0.109431 | 0.999919 | 0.906637 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Distance_roads (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2049E2, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.508352 | 0.099545 | 0.000165 | 0.009476 |
| 6 | 0.508352 | | 0.999713 | 0.744070 | 0.996624 |
| 7 | 0.099545 | 0.999713 | | 0.512631 | 0.999311 |
| 11 | 0.000165 | 0.744070 | 0.512631 | | 0.267101 |
| all | 0.009476 | 0.996624 | 0.999311 | 0.267101 | |
| | **a** | **ab** | **ab** | **b** | **b** |

| Tukey HSD test; variable Distance_roads_1 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2366E2, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.529023 | 0.740617 | 0.006150 | 0.112589 |
| 6 | 0.529023 | | 0.957981 | 0.972781 | 0.999779 |
| 7 | 0.740617 | 0.957981 | | 0.208066 | 0.867322 |
| 11 | 0.006150 | 0.972781 | 0.208066 | | 0.368363 |
| all | 0.112589 | 0.999779 | 0.867322 | 0.368363 | |
| | **a** | **ab** | **ab** | **b** | **ab** |

| Tukey HSD test; variable Distance_roads_2 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2778E2, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 1.000000 | 0.257625 | 1.000000 | 0.980027 |
| 6 | 1.000000 | | 0.571717 | 1.000000 | 0.995887 |
| 7 | 0.257625 | 0.571717 | | 0.090472 | 0.221154 |
| 11 | 1.000000 | 1.000000 | 0.090472 | | 0.921063 |
| all | 0.980027 | 0.995887 | 0.221154 | 0.921063 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Distance_watercourses (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 3549E2, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.004258 | 0.254549 | 0.122067 | 0.138493 |
| 6 | 0.004258 | | 0.220111 | 0.165777 | 0.100372 |
| 7 | 0.254549 | 0.220111 | | 1.000000 | 0.999603 |
| 11 | 0.122067 | 0.165777 | 1.000000 | | 0.997394 |
| all | 0.138493 | 0.100372 | 0.999603 | 0.997394 | |
| | **a** | **b** | **ab** | **ab** | **ab** |

| Tukey HSD test; variable Distance_watercourses_1 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 4531E2, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000605 | 0.540866 | 0.174186 | 0.195956 |
| 6 | 0.000605 | | 0.024238 | 0.030195 | 0.014623 |
| 7 | 0.540866 | 0.024238 | | 0.989877 | 0.998699 |
| 11 | 0.174186 | 0.030195 | 0.989877 | | 0.997821 |
| sve | 0.195956 | 0.014623 | 0.998699 | 0.997821 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Distance_watercourses_2 (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2786E2, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.170309 | 1.000000 | 0.986183 | 0.980142 |
| 6 | 0.170309 | | 0.150531 | 0.217183 | 0.193781 |
| 7 | 1.000000 | 0.150531 | | 0.982129 | 0.973352 |
| 11 | 0.986183 | 0.217183 | 0.982129 | | 1.000000 |
| all | 0.980142 | 0.193781 | 0.973352 | 1.000000 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Population density (*Echinocystis lobata*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1569E5, df = 349.00 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.095997 | 0.999794 | 0.682531 |
| 6 | 0.000017 | | 0.000711 | 0.000017 | 0.000017 |
| 7 | 0.095997 | 0.000711 | | 0.009953 | 0.315453 |
| 11 | 0.999794 | 0.000017 | 0.009953 | | 0.177367 |
| all | 0.682531 | 0.000017 | 0.315453 | 0.177367 | |
| | **ac** | **b** | **a** | **c** | **ac** |

| Tukey HSD test; variable Eastness (*Erigeron annuus)*<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.01013, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.952156 | 0.773322 | 0.999860 | 0.993080 |
| 6 | 0.952156 | | 0.998285 | 0.938953 | 0.982825 |
| 7 | 0.773322 | 0.998285 | | 0.561332 | 0.736772 |
| 11 | 0.999860 | 0.938953 | 0.561332 | | 0.981852 |
| all | 0.993080 | 0.982825 | 0.736772 | 0.981852 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Northness (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.24956, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.993473 | 0.495859 | 0.946277 | 0.999531 |
| 6 | 0.993473 | | 0.276329 | 0.999883 | 0.996795 |
| 7 | 0.495859 | 0.276329 | | 0.009487 | 0.053040 |
| 11 | 0.946277 | 0.999883 | 0.009487 | | 0.786757 |
| all | 0.999531 | 0.996795 | 0.053040 | 0.786757 | |
| | **ab** | **ab** | **a** | **b** | **ab** |

| Tukey HSD test; variable Slope (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 24.138, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000021 | 0.847525 | 0.000040 | 0.004079 |
| 6 | 0.000021 | | 0.000017 | 0.220556 | 0.007068 |
| 7 | 0.847525 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000040 | 0.220556 | 0.000017 | | 0.048475 |
| all | 0.004079 | 0.007068 | 0.000017 | 0.048475 | |
| | **a** | **b** | **a** | **b** | **c** |

| Tukey HSD test; variable Elevation (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 53217., df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.999929 | 0.000017 | 0.000018 |
| 6 | 0.000017 | | 0.000017 | 0.001018 | 0.000018 |
| 7 | 0.999929 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.001018 | 0.000017 | | 0.022636 |
| all | 0.000018 | 0.000018 | 0.000017 | 0.022636 | |
| | **a** | **b** | **a** | **c** | **d** |

| Tukey HSD test; variable Bio_1 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.6488, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.017851 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.003220 | 0.551468 | 0.096420 |
| 7 | 0.017851 | 0.003220 | | 0.004290 | 0.125358 |
| 11 | 0.000017 | 0.551468 | 0.004290 | | 0.224869 |
| all | 0.000017 | 0.096420 | 0.125358 | 0.224869 | |
| | **a** | **bc** | **bd** | **bc** | **bcd** |

| Tukey HSD test; variable Bio_7 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.5732, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000936 | 0.002205 | 0.042371 | 0.526912 |
| 6 | 0.000936 | | 0.000017 | 0.117693 | 0.002547 |
| 7 | 0.002205 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.042371 | 0.117693 | 0.000017 | | 0.053166 |
| all | 0.526912 | 0.002547 | 0.000017 | 0.053166 | |
| | **ab** | **cd** | **e** | **acd** | **abc** |

| Tukey HSD test; variable Bio_10 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.6470, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.119146 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000021 | 0.210135 | 0.009674 |
| 7 | 0.119146 | 0.000021 | | 0.000023 | 0.002446 |
| 11 | 0.000017 | 0.210135 | 0.000023 | | 0.096283 |
| all | 0.000017 | 0.009674 | 0.002446 | 0.096283 | |
| | **a** | **b** | **a** | **bc** | **c** |

| Tukey HSD test; variable Bio_11 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 3.6689, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000841 | 0.001671 | 0.000027 | 0.000096 |
| 6 | 0.000841 | | 0.926046 | 0.987807 | 0.855431 |
| 7 | 0.001671 | 0.926046 | | 0.975840 | 0.999997 |
| 11 | 0.000027 | 0.987807 | 0.975840 | | 0.798894 |
| all | 0.000096 | 0.855431 | 0.999997 | 0.798894 | |
| | **a** | **b** | **b** | **b** | **b** |

| Tukey HSD test; variable Bio_12 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 32644., df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.890914 | 0.000017 | 0.000026 |
| 6 | 0.000017 | | 0.000017 | 0.036875 | 0.000621 |
| 7 | 0.890914 | 0.000017 | | 0.000017 | 0.000031 |
| 11 | 0.000017 | 0.036875 | 0.000017 | | 0.093482 |
| all | 0.000026 | 0.000621 | 0.000031 | 0.093482 | |
| | **a** | **b** | **a** | **c** | **c** |

| Tukey HSD test; variable Bio_17 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2258.6, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.919671 | 0.000021 | 0.000172 |
| 6 | 0.000017 | | 0.000017 | 0.000590 | 0.000027 |
| 7 | 0.919671 | 0.000017 | | 0.000021 | 0.000292 |
| 11 | 0.000021 | 0.000590 | 0.000021 | | 0.391387 |
| all | 0.000172 | 0.000027 | 0.000292 | 0.391387 | |
| | **a** | **b** | **a** | **c** | **c** |

| Tukey HSD test; variable Bio_18 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1753.1, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.610099 | 0.000023 | 0.000017 | 0.000019 |
| 6 | 0.610099 | | 0.015903 | 0.001745 | 0.030417 |
| 7 | 0.000023 | 0.015903 | | 0.999517 | 0.841608 |
| 11 | 0.000017 | 0.001745 | 0.999517 | | 0.236997 |
| all | 0.000019 | 0.030417 | 0.841608 | 0.236997 | |
| | **a** | **a** | **b** | **b** | **b** |

| Tukey HSD test; variable Distance_roads (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2314E2, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.006070 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000017 | 0.000019 | 0.000017 |
| 7 | 0.006070 | 0.000017 | | 0.011371 | 0.083131 |
| 11 | 0.000017 | 0.000019 | 0.011371 | | 0.674415 |
| all | 0.000017 | 0.000017 | 0.083131 | 0.674415 | |
| | **a** | **b** | **cd** | **de** | **cde** |

| Tukey HSD test; variable Distance_roads (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2426E2, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000020 | 0.999898 | 0.002918 | 0.025598 |
| 6 | 0.000020 | | 0.000017 | 0.012852 | 0.000850 |
| 7 | 0.999898 | 0.000017 | | 0.000040 | 0.000708 |
| 11 | 0.002918 | 0.012852 | 0.000040 | | 0.547841 |
| all | 0.025598 | 0.000850 | 0.000708 | 0.547841 | |
| | **a** | **b** | **a** | **c** | **c** |

| Tukey HSD test; variable Distance_roads_2 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1397E2, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.893723 | 0.002221 | 1.000000 | 0.911861 |
| 6 | 0.893723 | | 0.099427 | 0.774873 | 0.995042 |
| 7 | 0.002221 | 0.099427 | | 0.000018 | 0.000081 |
| 11 | 1.000000 | 0.774873 | 0.000018 | | 0.382248 |
| all | 0.911861 | 0.995042 | 0.000081 | 0.382248 | |
| | **a** | **ab** | **b** | **a** | **a** |

| Tukey HSD test; variable Distance_watercourses (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1337E3, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.868330 | 0.079448 | 0.365444 | 0.492161 |
| 6 | 0.868330 | | 0.004479 | 0.029204 | 0.047535 |
| 7 | 0.079448 | 0.004479 | | 0.581606 | 0.347737 |
| 11 | 0.365444 | 0.029204 | 0.581606 | | 0.985340 |
| all | 0.492161 | 0.047535 | 0.347737 | 0.985340 | |
| | **ab** | **a** | **b** | **b** | **b** |

| Tukey HSD test; variable Distance_watercourses_1 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1398E3, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.860644 | 0.058185 | 0.252666 | 0.390065 |
| 6 | 0.860644 | | 0.002763 | 0.014779 | 0.028849 |
| 7 | 0.058185 | 0.002763 | | 0.641284 | 0.362428 |
| 11 | 0.252666 | 0.014779 | 0.641284 | | 0.969407 |
| sve | 0.390065 | 0.028849 | 0.362428 | 0.969407 | |
| | **ab** | **a** | **b** | **b** | **b** |

| Tukey HSD test; variable Distance_watercourses_2 (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1295E3, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.974844 | 0.000179 | 0.010163 | 0.016481 |
| 6 | 0.974844 | | 0.006302 | 0.165459 | 0.230714 |
| 7 | 0.000179 | 0.006302 | | 0.166935 | 0.068508 |
| 11 | 0.010163 | 0.165459 | 0.166935 | | 0.989708 |
| all | 0.016481 | 0.230714 | 0.068508 | 0.989708 | |
| | **ab** | **abc** | **cd** | **bcd** | **bcd** |

| Tukey HSD test; variable Population density (*Erigeron annuus*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 8065E6, df = 2817.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.140172 | 0.000036 | 0.983714 | 0.498372 |
| 6 | 0.140172 | | 0.309815 | 0.100687 | 0.536130 |
| 7 | 0.000036 | 0.309815 | | 0.000017 | 0.000019 |
| 11 | 0.983714 | 0.100687 | 0.000017 | | 0.186158 |
| all | 0.498372 | 0.536130 | 0.000019 | 0.186158 | |
| | **a** | **ab** | **b** | **a** | **a** |

| Tukey HSD test; variable Eastness (*Robinia pseudoacacia*) Approximate Probabilities for Post Hoc Tests Error: Between MS = 0.00964, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.996372 | 0.673959 | 0.218192 | 0.228580 |
| 6 | 0.996372 | | 0.633726 | 0.333558 | 0.342624 |
| 7 | 0.673959 | 0.633726 | | 0.960670 | 0.967243 |
| 11 | 0.218192 | 0.333558 | 0.960670 | | 0.999408 |
| all | 0.228580 | 0.342624 | 0.967243 | 0.999408 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Northness (*Robinia pseudoacacia*) Approximate Probabilities for Post Hoc Tests Error: Between MS = 0.17064, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.959567 | 0.997260 | 0.803966 | 0.810960 |
| 6 | 0.959567 | | 0.987822 | 0.999993 | 0.999988 |
| 7 | 0.997260 | 0.987822 | | 0.864512 | 0.872657 |
| 11 | 0.803966 | 0.999993 | 0.864512 | | 0.999940 |
| all | 0.810960 | 0.999988 | 0.872657 | 0.999940 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Slope (*Robinia pseudoacacia*) Approximate Probabilities for Post Hoc Tests Error: Between MS = 12.230, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.854046 | 0.005786 | 0.006801 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.854046 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.005786 | 0.000017 | 0.000017 | | 0.992178 |
| all | 0.006801 | 0.000017 | 0.000017 | 0.992178 | |
| | **a** | **b** | **a** | **c** | **c** |

| Tukey HSD test; variable Elevation (*Robinia pseudoacacia*) Approximate Probabilities for Post Hoc Tests Error: Between MS = 6787.0, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.005776 | 0.999996 | 0.000017 | 0.000017 |
| 6 | 0.005776 | | 0.001543 | 0.827114 | 0.868439 |
| 7 | 0.999996 | 0.001543 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.827114 | 0.000017 | | 0.726537 |
| all | 0.000017 | 0.868439 | 0.000017 | 0.726537 | |
| | **a** | **b** | **a** | **b** | **b** |

| Tukey HSD test; variable Bio_1 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.86246, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000022 | 0.000017 | 0.000017 | 0.000017 |
| 6 | 0.000022 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.000017 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.282792 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.282792 | |
| | **a** | **b** | **c** | **d** | **d** |

| Tukey HSD test; variable Bio_7 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.2861, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000456 | 0.000026 | 0.000017 | 0.000017 |
| 6 | 0.000456 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.000026 | 0.000017 | | 0.999778 | 0.998866 |
| 11 | 0.000017 | 0.000017 | 0.999778 | | 0.973408 |
| all | 0.000017 | 0.000017 | 0.998866 | 0.973408 | |
| | **a** | **b** | **c** | **c** | **c** |

| Tukey HSD test; variable Bio_10 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.52500, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.009572 | 0.000017 | 0.000017 | 0.000017 |
| 6 | 0.009572 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.000017 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.239283 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.239283 | |
| | **a** | **b** | **c** | **d** | **d** |

| Tukey HSD test; variable Bio_11 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1.9529, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.000017 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.000017 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.406282 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.406282 | |
| | **a** | **b** | **c** | **d** | **d** |

| Tukey HSD test; variable Bio_12 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 15078., df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.043532 | 0.830538 | 0.839722 | 0.836329 |
| 6 | 0.043532 | | 0.166087 | 0.061540 | 0.062313 |
| 7 | 0.830538 | 0.166087 | | 0.996594 | 0.996947 |
| 11 | 0.839722 | 0.061540 | 0.996594 | | 0.999996 |
| all | 0.836329 | 0.062313 | 0.996947 | 0.999996 | |
| | **a** | **b** | **ab** | **ab** | **ab** |

| Tukey HSD test; variable Bio_17 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 974.44, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.837205 | 0.999999 | 0.848859 | 0.855289 |
| 6 | 0.837205 | | 0.807073 | 0.980217 | 0.978939 |
| 7 | 0.999999 | 0.807073 | | 0.657211 | 0.669724 |
| 11 | 0.848859 | 0.980217 | 0.657211 | | 0.999928 |
| all | 0.855289 | 0.978939 | 0.669724 | 0.999928 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Bio_18 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 863.95, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.000017 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.000017 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.235012 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.235012 | |
| | **a** | **b** | **c** | **d** | **d** |

| Tukey HSD test; variable Distance_roads (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1834E2, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.336752 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.336752 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.999915 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.999915 | |
| | **a** | **b** | **a** | **c** | **c** |

Tukey HSD test; variable Distance_roads_1 (*Robinia pseudoacacia*)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 2630E2, df = 19573.

| IDPREC | 5 | 6 | 7 | 11 | all |
|---|---|---|---|---|---|
| 5 | | 0.000017 | 0.997594 | 0.037077 | 0.035612 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.997594 | 0.000017 | | 0.005332 | 0.004968 |
| 11 | 0.037077 | 0.000017 | 0.005332 | | 0.999933 |
| all | 0.035612 | 0.000017 | 0.004968 | 0.999933 | |
| | **a** | **b** | **a** | **c** | **c** |

Tukey HSD test; variable Distance_roads_2 (*Robinia pseudoacacia*)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 1031E2, df = 19573.

| IDPREC | 5 | 6 | 7 | 11 | all |
|---|---|---|---|---|---|
| 5 | | 0.000017 | 1.000000 | 0.999296 | 0.997234 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 1.000000 | 0.000017 | | 0.997286 | 0.989607 |
| 11 | 0.999296 | 0.000017 | 0.997286 | | 0.880567 |
| sve | 0.997234 | 0.000017 | 0.989607 | 0.880567 | |
| | **a** | **b** | **a** | **a** | **a** |

Tukey HSD test; variable Distance_watercourses (*Robinia pseudoacacia*)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 1333E3, df = 19573.

| IDPREC | 5 | 6 | 7 | 11 | all |
|---|---|---|---|---|---|
| 5 | | 0.000017 | 0.713218 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.713218 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.062847 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.062847 | |
| | **a** | **b** | **a** | **c** | **c** |

Tukey HSD test; variable Distance_watercourses_1 (*Robinia pseudoacacia*)
Approximate Probabilities for Post Hoc Tests
Error: Between MS = 1447E3, df = 19573.

| IDPREC | 5 | 6 | 7 | 11 | all |
|---|---|---|---|---|---|
| 5 | | 0.000017 | 0.688613 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.688613 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.065137 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.065137 | |
| | **a** | **b** | **a** | **c** | **c** |

| Tukey HSD test; variable Distance_watercourses_2 (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1371E3, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000017 | 0.002047 | 0.000017 | 0.000017 |
| 6 | 0.000017 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.002047 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.000017 | 0.000017 | 0.000017 | | 0.085447 |
| all | 0.000017 | 0.000017 | 0.000017 | 0.085447 | |
| | **a** | **b** | **c** | **d** | **d** |

| Tukey HSD test; variable Population density (*Robinia pseudoacacia*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1002E6, df = 19573. | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.034009 | 0.824403 | 0.000055 | 0.000075 |
| 6 | 0.034009 | | 0.000846 | 0.997803 | 0.995650 |
| 7 | 0.824403 | 0.000846 | | 0.000017 | 0.000017 |
| 11 | 0.000055 | 0.997803 | 0.000017 | | 0.914786 |
| all | 0.000075 | 0.995650 | 0.000017 | 0.914786 | |
| | **a** | **b** | **a** | **b** | **b** |

| Tukey HSD test; variable Eastness (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.01231, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.998997 | 0.086492 | 0.493250 | 0.681769 |
| 6 | 0.998997 | | 0.055686 | 0.354807 | 0.516857 |
| 7 | 0.086492 | 0.055686 | | 0.634270 | 0.298421 |
| 11 | 0.493250 | 0.354807 | 0.634270 | | 0.973501 |
| all | 0.681769 | 0.516857 | 0.298421 | 0.973501 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Northness (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 0.26779, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.742985 | 0.005780 | 0.990298 | 0.998624 |
| 6 | 0.742985 | | 0.000089 | 0.872300 | 0.374664 |
| 7 | 0.005780 | 0.000089 | | 0.000124 | 0.000540 |
| 11 | 0.990298 | 0.872300 | 0.000124 | | 0.819306 |
| all | 0.998624 | 0.374664 | 0.000540 | 0.819306 | |
| | **a** | **a** | **b** | **a** | **a** |

| Tukey HSD test; variable Slope (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 18.929, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000018 | 0.000409 | 0.207429 | 0.947364 |
| 6 | 0.000018 | | 0.000017 | 0.000017 | 0.000017 |
| 7 | 0.000409 | 0.000017 | | 0.050731 | 0.000092 |
| 11 | 0.207429 | 0.000017 | 0.050731 | | 0.191706 |
| all | 0.947364 | 0.000017 | 0.000092 | 0.191706 | |
| | **ab** | **d** | **ac** | **abc** | **ab** |

| Tukey HSD test; variable Elevation (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 28125., df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000025 | 0.914566 | 0.899453 | 0.624670 |
| 6 | 0.000025 | | 0.000017 | 0.000028 | 0.000026 |
| 7 | 0.914566 | 0.000017 | | 0.355699 | 0.118469 |
| 11 | 0.899453 | 0.000028 | 0.355699 | | 0.979247 |
| all | 0.624670 | 0.000026 | 0.118469 | 0.979247 | |
| | **a** | **b** | **a** | **a** | **a** |

| Tukey HSD test; variable Bio_1 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.9012, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000020 | 0.002601 | 0.000070 | 0.000195 |
| 6 | 0.000020 | | 0.636101 | 0.519947 | 0.121261 |
| 7 | 0.002601 | 0.636101 | | 0.999977 | 0.980804 |
| 11 | 0.000070 | 0.519947 | 0.999977 | | 0.870956 |
| all | 0.000195 | 0.121261 | 0.980804 | 0.870956 | |
| | **a** | **b** | **b** | **b** | **b** |

| Tukey HSD test; variable Bio_7 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 3.1650, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.817750 | 0.000018 | 0.000341 | 0.003303 |
| 6 | 0.817750 | | 0.000202 | 0.053697 | 0.260604 |
| 7 | 0.000018 | 0.000202 | | 0.110904 | 0.003491 |
| 11 | 0.000341 | 0.053697 | 0.110904 | | 0.669063 |
| all | 0.003303 | 0.260604 | 0.003491 | 0.669063 | |
| | **ab** | **abcd** | **ce** | **bcde** | **bcd** |

| Tukey HSD test; variable Bio_10 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2.1612, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000019 | 0.191710 | 0.001117 | 0.002578 |
| 6 | 0.000019 | | 0.025496 | 0.113201 | 0.012499 |
| 7 | 0.191710 | 0.025496 | | 0.783078 | 0.960136 |
| 11 | 0.001117 | 0.113201 | 0.783078 | | 0.927715 |
| all | 0.002578 | 0.012499 | 0.960136 | 0.927715 | |
| | **ac** | **bd** | **acde** | **bcde** | **cde** |

| Tukey HSD test; variable Bio_11 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 5.4164, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000138 | 0.000039 | 0.000024 | 0.000065 |
| 6 | 0.000138 | | 0.996374 | 0.997113 | 0.751974 |
| 7 | 0.000039 | 0.996374 | | 0.939209 | 0.458540 |
| 11 | 0.000024 | 0.997113 | 0.939209 | | 0.759170 |
| all | 0.000065 | 0.751974 | 0.458540 | 0.759170 | |
| | **a** | **b** | **b** | **b** | **b** |

| Tukey HSD test; variable Bio_12 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 21170., df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.275417 | 0.027535 | 0.073074 | 0.571351 |
| 6 | 0.275417 | | 0.000036 | 0.000035 | 0.000916 |
| 7 | 0.027535 | 0.000036 | | 0.879601 | 0.144883 |
| 11 | 0.073074 | 0.000035 | 0.879601 | | 0.353228 |
| all | 0.571351 | 0.000916 | 0.144883 | 0.353228 | |
| | **acd** | **ac** | **bd** | **abd** | **abd** |

| Tukey HSD test; variable Bio_17 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1365.4, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.723187 | 0.001387 | 0.047943 | 0.296987 |
| 6 | 0.723187 | | 0.000027 | 0.000482 | 0.005995 |
| 7 | 0.001387 | 0.000027 | | 0.379082 | 0.025630 |
| 11 | 0.047943 | 0.000482 | 0.379082 | | 0.589480 |
| all | 0.296987 | 0.005995 | 0.025630 | 0.589480 | |
| | **abc** | **ab** | **de** | **cde** | **acd** |

| Tukey HSD test; variable Bio_18 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 2333.1, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000046 | 0.000022 | 0.000019 | 0.000032 |
| 6 | 0.000046 | | 0.997272 | 0.988746 | 0.658106 |
| 7 | 0.000022 | 0.997272 | | 0.903108 | 0.385216 |
| 11 | 0.000019 | 0.988746 | 0.903108 | | 0.762400 |
| LL | 0.000032 | 0.658106 | 0.385216 | 0.762400 | |
| | **a** | **b** | **b** | **b** | **b** |

| Tukey HSD test; variable Distance_roads (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 83222., df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.000282 | 0.810842 | 0.000018 | 0.001179 |
| 6 | 0.000282 | | 0.023989 | 0.999732 | 0.458793 |
| 7 | 0.810842 | 0.023989 | | 0.001683 | 0.169742 |
| 11 | 0.000018 | 0.999732 | 0.001683 | | 0.058528 |
| all | 0.001179 | 0.458793 | 0.169742 | 0.058528 | |
| | **ac** | **bd** | **acd** | **bd** | **bcd** |

| Tukey HSD test; variable Distance_roads_1 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1200E2, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.732589 | 0.976188 | 0.019522 | 0.466305 |
| 6 | 0.732589 | | 0.396371 | 0.576195 | 1.000000 |
| 7 | 0.976188 | 0.396371 | | 0.003242 | 0.147241 |
| 11 | 0.019522 | 0.576195 | 0.003242 | | 0.143222 |
| sve | 0.466305 | 1.000000 | 0.147241 | 0.143222 | |
| | **a** | **ab** | **a** | **b** | **ab** |

| Tukey HSD test; variable Distance_roads_2 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 64372., df = 1547.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 1.000000 | 1.000000 | 0.756534 | 0.977125 |
| 6 | 1.000000 | | 1.000000 | 0.789838 | 0.981792 |
| 7 | 1.000000 | 1.000000 | | 0.805853 | 0.983832 |
| 11 | 0.756534 | 0.789838 | 0.805853 | | 0.867721 |
| all | 0.977125 | 0.981792 | 0.983832 | 0.867721 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Distance_watercourses_1 *(Veronica persica)*<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1098E4, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.899247 | 0.390319 | 0.975761 | 0.999985 |
| 6 | 0.899247 | | 0.074779 | 0.990237 | 0.835376 |
| 7 | 0.390319 | 0.074779 | | 0.067938 | 0.140565 |
| 11 | 0.975761 | 0.990237 | 0.067938 | | 0.940613 |
| all | 0.999985 | 0.835376 | 0.140565 | 0.940613 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Distance_watercourses_2 (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1167E4, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.922738 | 0.992494 | 0.924084 | 0.987728 |
| 6 | 0.922738 | | 0.740855 | 0.999799 | 0.979015 |
| 7 | 0.992494 | 0.740855 | | 0.701640 | 0.848850 |
| 11 | 0.924084 | 0.999799 | 0.701640 | | 0.981885 |
| all | 0.987728 | 0.979015 | 0.848850 | 0.981885 | |
| | **a** | **a** | **a** | **a** | **a** |

| Tukey HSD test; variable Population density (*Veronica persica*)<br>Approximate Probabilities for Post Hoc Tests<br>Error: Between MS = 1277E7, df = 1465.0 | | | | | |
|---|---|---|---|---|---|
| IDPREC | 5 | 6 | 7 | 11 | all |
| 5 | | 0.972264 | 0.000017 | 0.833611 | 0.716094 |
| 6 | 0.972264 | | 0.000017 | 0.998623 | 0.281242 |
| 7 | 0.000017 | 0.000017 | | 0.000017 | 0.000017 |
| 11 | 0.833611 | 0.998623 | 0.000017 | | 0.009794 |
| all | 0.716094 | 0.281242 | 0.000017 | 0.009794 | |
| | **abc** | **abc** | **d** | **ab** | **ac** |

## CURRICULUM VITAE

Lucija Rajčić was born on August 25, 1996 in Zagreb. She was educated at the Izidor Kršnjavi Elementary School and II Gymnasium in Zagreb. She enrolled in the bachelor's degree programme in Biology at the Faculty of Science, University of Zagreb in 2015 and graduated in 2018 with a Bachelor thesis on "The role of anthocyanins in plant stress response" under the supervision of dr. sc. Mirta Tkalec, Assoc. Prof. In September 2018 she enrolled in the master's degree programme in Ecology and Nature Preservation at the Faculty of Science, University of Zagreb.

**Conferences**

- *13th Croatian Biological Congress (poster section):*
  Tomašić A., **Rajčić L.**, Marčić Z., Horvatić S., Mustafić P., Zanella D., Ćaleta M., Mrakovčić M., Karlović R. (2018): The growth of white bream (*Blicca bjoerkna L.*) in river Drava reservoirs. Zbornik sažetaka (Hrvatski biološki kongres s međunarodnim sudjelovanjem) (ed. Kružić P.). Hrvatsko biološko društvo, Zagreb.
- *6th Croatian Botanical Symposium (poster section):*
  Bučar M., Justić M., **Rajčić L.**, Rešetnik I. (2019): Analysis and digitalisation of the herbarium of count Franjo Vojković-Vojkffy Klokočki. Book of abstracts – Sixth Croatian Botanical Symposium with international participation (ed. Jasprica N., Car A.). Croatian Botanical Society, Zagreb.
- *NEOBIOTA 2020 - 11th International Conference on Biological Invasions (poster section):*
  **Rajčić L**., Jelaska S. D. (2020): To what extent spatial precision of chorological data affects our perception of the preferred environmental conditions of invasive species – a case study of *Ailanthus altissima* in Croatia. Book of Abstracts with Programme- 11th International Conference on Biological Invasions (ed. Jelaska S. D.). Croatian Ecological Society, Zagreb.