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VASCULAR PLANTS IN THE BOLIMÓW LANDSCAPE PARK

ROŚLINY NACZYNIOWE BOLIMOWSKIEGO PARKU KRAJOBRAZOWEGO

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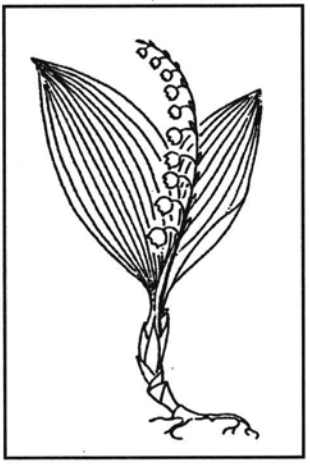

Łódź

ABSTRACT

Janina JAKUBOWSKA-GABARA, Leszek KUCHARSKI and Aurelia U. WARCHOLIŃSKA. *Vascular plants in the Bolimów Landscape Park*. Monogr. Bot., Vol. 92, 5-195, 2003.

In 1996-2001 the vascular plants of the Bolimów Landscape Park and its protection zone were cartographically studied. A cartogram method using a regular net of squares 1 km in knot to knot length was applied. Field data, data from published and unpublished studies and data from the Herbarium Universitatis Lodziensis (LOD) materials constituted the bases for developing maps displaying the distribution of 1049 vascular plant taxa recorded in the study area. A high diversity of habitats resulted in the richness and diversity of the flora in the investigated area. The highest floristic diversity and presence of interesting, rare and threatened species was displayed by the phytocoenoses of deciduous forests and humid meadows and bogs. In the investigated flora 51 legally protected species and 126 endangered and vulnerable ones in the scale of the region and of Poland were determined. The most interesting taxa are: *Carex vaginata*, *Festuca amethystina* subsp. *ritschlii*, *Ostericum palustre*, *Succisella inflexa*.

Key words: vascular plants; flora; atlas of distribution; the Bolimów Landscape Park; Central Poland.

1. INTRODUCTION

Until the early 80s of the 20th century the Bolimów Old-Growth Forest, together with its surrounding agricultural areas, was an area little known from the floristic point of view. There are only two studies from the 19th and the first half of the 20th century in which data on the flora and vegetation of this part of the country are included (VOCKE 1857; GOLONKA 1927). It was as late as in the 60s and 70s of this century when more precise articles about the vegetation cover of the terrain (MOWSZOWICZ 1960, 1978; OLACZEK 1963, 1971, 1972, 1974; WIŚNIEWSKI 1965, 1974, 1976a, b; DZIADEK 1969; WOJCIECHOWSKA 1969; SOWA 1971; JAROSZ 1976; JAKUBOWSKA-GABARA 1978) were published. However, the greatest interest in the vegetation cover of the Bolimów Old-Growth Forest was noted after 1979. In the last quarter of the 20th century numerous studies devoted to the flora and vegetation of the area were made, both published (WARCHOLIŃSKA 1982, 1988-1990, 1997a, b; JAKUBOWSKA-GABARA, KUCHARSKI 1983; JAKUBOWSKA-GABARA 1985, 1987, 1988, 1990, 1992, 1994, 1996, 1999; JAKUBOWSKA-GABARA, PISAREK 1997; OLACZEK, JAKUBOWSKA-GABARA, PISAREK 1988; PISAREK 1989; KURZAC, KUCHARSKI 1990-1991; ZIELONY 1990; CZYŻEWSKA 1992; KUCHARSKI 1997; KUCHARSKI, PISAREK 1998; PISAREK, KUCHARSKI 1999; JAKUBOWSKA-GABARA, ZIELIŃSKA 2001; JAKUBOWSKA-GABARA, ŁUCZAK 2002) and unpublished (OLACZEK, KURZAC 1979a, b; BOGULEWSKA 1980; JAKUBOWSKA-GABARA 1980; JAKUBOWSKA-GABARA, KUCHARSKI 1981; KNAPEK 1981; KULISIEWICZ 1981; PISAREK 1984; WIETESKA 1984; KURZAC et al. 1987; OLACZEK, PISAREK 1987; KURZAC, PISAREK 1994; OLACZEK, KUCHARSKI 1994-1995; TYSZKOWSKA A. 1994; TYSZKOWSKA B. 1994; KUCHARSKI 1995; IRCHA 1996; WOLAŃSKA 1996; MACIAK 1997; OWCZAREK 1997; WIŚNIEWSKA 1997; DUSZYŃSKA 1998; RUSZCZYŃSKA 1998; PAJĄK 2001; POPOW 2001; SELIGA 2002). Multiannal investigations have proved that the flora of this area is rich and interesting. The diversity and presence of numerous interesting plant species was one of important arguments for creating the Bolimów Landscape Park (BLP) in 1986. First of all, its borders encompass the extensive complex of the Bolimów Old-Growth Forest.

In the late 90s of the 20th century a collection of studies presenting the vegetation of BLP were published (CZYŻEWSKA 1999; JAKUBOWSKA-GABARA 1999; KUCHARSKI, PISAREK 1999; PISAREK, KUCHARSKI 1999; WARCHOLIŃSKA 1999). While the flora of the park was a subject of a separate investigation numerous short studies about the sites of more interesting vascular plant species noted in the area were then published. The present work reviews the current knowledge of the vascular flora of the Bolimów Landscape Park and present the distribution of plant species determined there.

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2. STUDY AREA

The Bolimów Landscape Park was created in 1986. It then covered an area of 17900 ha, which in 1995 was increased to 23130 ha. The protection zone that encircled the park was a 200 meter wide belt of adjoining terrain. In 1998 the zone was widened and it now covers an area of

20470.5 ha. The park are mostly woods (14149.2 ha) and agricultural land and orchards (5620.6 ha). The area of meadows and bogs is 1928.5 ha, while that of bogs and open waters is 97.6 ha.

The park is located at the border of the Łódzkie and Mazowieckie (Mazovian) Voivodeships. The north-eastern part of the park comprises the Puszcza Mariańska civil parish, and partially the civil parishes of Wiskitki, Mszczonów and Radziejowice. In the Łódzkie Voivodeship the park is located in the civil parishes of Nieborów, Bolimów, Skierniewice, Kowiesy and Nowy Kawęczyn.

In the geobotanical division of Poland (SZAFER 1977) the park area is located in the Rawa District, covering the south-eastern part of the Mazovian Section, which belongs to the Belt of the Great Valleys and the Baltic Division. Together with the pine and mixed forests is it located outside the occurrence ranges of the beech, sycamore, fir and spruce.

The Bolimów Landscape Park is located in three physicogeographic units. Wysoczyzna Rawska (Rawska High Plain), which covers about 25% of its area, is distinct due to wavy moraine upland. Its characteristics are well developed slope and valley forms with deeply cut valleys of the Rawka, Chojnatka and Korabiewka Rivers. The altitude of the terrain ranges from 125 m a.s.l. to 185 m a.s.l. The south-western, small part of the park and its protection zone occur in Wzniesienia Łódzkie (Łódź Elevation). The area is of upland wavy moraine character with well developed valley and slope forms. There occur there: denudation valleys, dry valleys, periglacial basins and forms developed as a result of aeolic processes. The are of the upland is constructed of stratified sands and fluvioglacial gravels. Równina Łowicko-Błońska (Łowicko-Błońska Plain) constitutes about 70% of the park area. The terrain of this unit is level, cut by numerous river valleys. In its southern part there are numerous detrital fans, mainly to the east of the Rawka River, between the villages of Kamion and Radziwiłłów (KONDRACKI 1994; KOZIEJ 2002).

The morphology of the present park area, which was finally formed in the Tertiary, was affected by several-fold invasion of the Scandinavian continental glacier. The thickness of glacial forms in the Bolimów Landscape Park occasionally exceeds 100 meters (BALIŃSKA-WUTTKE 1960; KLAJNERT 1982). The greatest impact on the sculpture and geologic structure of the surface layers was that of Middle Poland (Riss) glaciation: the Warta stage. In that period a complicated glacial land sculpture, which attained its present form due to erosive and denudation processes occurring in subsequent periods. In the Mazovian interglacial large areas of residual sediments and valley that became filled in with riverine sediments developed (RÓŻYCKI 1972). The present river network and extensive outwash plains and other forms that appeared as a result of fluvioglacial activity also originated in that period (KLATKOWA 1979). The Eemski interglacial period expressed itself in increased erosion and accumulation, mainly in riverine valleys (among others in the Rawka River valley) (STARKEL 1977). The period of the Baltic glaciation also affected the geology and morphology of the present landscape park. Glacial wedges, involutions and other sediments of various genesis belong to the best known structures of that period (DYLIK 1971; KOZIEJ 2002). In the periglacial period the valley network was increased in denudation basins, ravines and floodplain stairs. In that period intensive denudation processes took place. Sediments that resulted from them occur in outflowless depressions and within dunes and aeolian covers. The result of eolian activity are complexes of parabolic dunes in the northern part of BLP (DYLIKOWA 1973; KLATKOWA 1979; KOZIEJ 2002).

The Bolimów Landscape Park is dominated by podsol soils. They occur in complexes with brown soils and cover 85% of the BLP. The most frequent among them are podsols developed from slightly loamy sands. They are characterized by low humus content, acidity and low fer-

tility. They occur mainly to the north of the Skierniewice-Mszczonów railway. In riverine valleys there developed mud-bog soils, peat soils and boggy soils, which cover together about 10% of the park area. They developed in humid habitats, which are mostly exploited as meadows or pastures. The other soil types, including chernozem soils, cover 5% of the studied area. Chernozems originate from loam and clay/silt of various geological formations and from dust forms of water origin. They were recorded mainly in the north-eastern part of the characterized area (KOZIEJ 2002).

Surface water resources of the park are not large. They are estimated at 9.18 m^3/sek (l.c.). The Rawka is the most important river flowing across the park. Its total length is 101.5 km, including about 44 km within the park area. Its catchment is 1192 km^2 in area. The Rawka discharge at its mouth (village of Kęszyce) is 5.09 m^3/sek, and slope – 1.2‰. The Rawka is a strongly meandering river while its catchment is asymmetric. Its right side tributaries are longer. Its largest effluents flowing across the park are: the Białka, Chojnatka, Rokita, Korabiewka and Grabinka. Other rivers flowing across the park are: the Sucha, Sucha Nida, Pisia Gągolina and Okrzesza (OLACZEK, KUCHARSKI 1994-1995).

Underground waters occur in the park on four geological levels: Jurassic, Cretaceous, Tertiary and Quaternary. The main reservoirs of underground waters occur east of the line joining the towns of Łowicz and of Rawa Mazowiecka. An area poorer in underground water is that between the towns of Skierniewice and of Rawa Mazowiecka (KOZIEJ 2002).

A characteristic feature of the climate in BLP is changeability of atmospheric phenomena in time and space. Climatically, the area may be divided into two zones: lowland in the north (Łowicko-Błońska Plainland) and upland in the south (Rawska High Plain and Łódź Elevation). A border zone with a specific climate occurs between them (l.c.).

The volume of atmospheric precipitation little exceeds the evaporation, which testifies to water deficit in the soil. Evaporation ranges from 500 to 520 mm per year, while the total annual precipitation is 525 mm in the north of the park (vicinity of Skierniewice) and 550 mm in the south – in the border zone of the Rawska High Plain (MISIEWICZ-ŚNIEŻKO 1982; KOZIEJ 2002). It is an insufficiently moistened area. The lowest precipitation is noted in March and October. The highest deficiency in air humidity was observed in Skierniewice in June and July, while the lowest deficiency from December to February. The snow cover deposition period varies widely from year to year, ranging from 26 to 85 days over a year (KOZIEJ 2002).

The vicinities of Skierniewice receive one of the highest rates of solar radiation delivery, amounting to 86.3 Kcal/cm^2. The area is considered one of the warmest in Poland (SCHMUCK 1961). July is the warmest month, February is the coldest one.

In the vicinities of Skierniewice wind reaches a mean annual speed of 3.5 m/s. It is more than in the town of Warsaw (3.1 m/s) and less than in the town of Łódź (4.2 m/s). Speed and direction of winds close to earth surface are modified by: diverse terrain relief, vegetation, building constructions, communication arteries and other environmental conditions (KOZIEJOWA 1998).

3. MATERIAL AND METHODS

The object of research was the Bolimów Landscape Park, together with its protection zone. A data base for preparing floristic maps presenting the distribution of vascular plants in this area was created on the basis of materials originating from three sources: published and non-published studies (cited in the Introduction), herbarium materials deposited in the Herbarium Univer-

sitatis Lodzensis and from floristic field investigations. Unpublished data, mainly from MSc dissertations, were included to the base when they were documented with herbarial collections.

The main source of information were field square sampling (floristic relevés) data obtained in 1996-2000. They were obtained using a background of a topographic map in the scale of 1:50000 with an imposed net of squares. The applied method was that with a regular net of quadrats (FALIŃSKI 1990). The net of squares 1 km in side length is adjusted to the all-Poland ATPOL net (ZAJĄC 1978). 470 squares were sampled during the present investigations (Fig. 1). They are included in eight ATPOL squares (10x10 km) (ED 40, ED 41, ED 42, ED 50, ED 51, ED 52, ED 61, ED 62) each 100 km^2 in area (ZAJĄC A., ZAJĄC M. 2001).

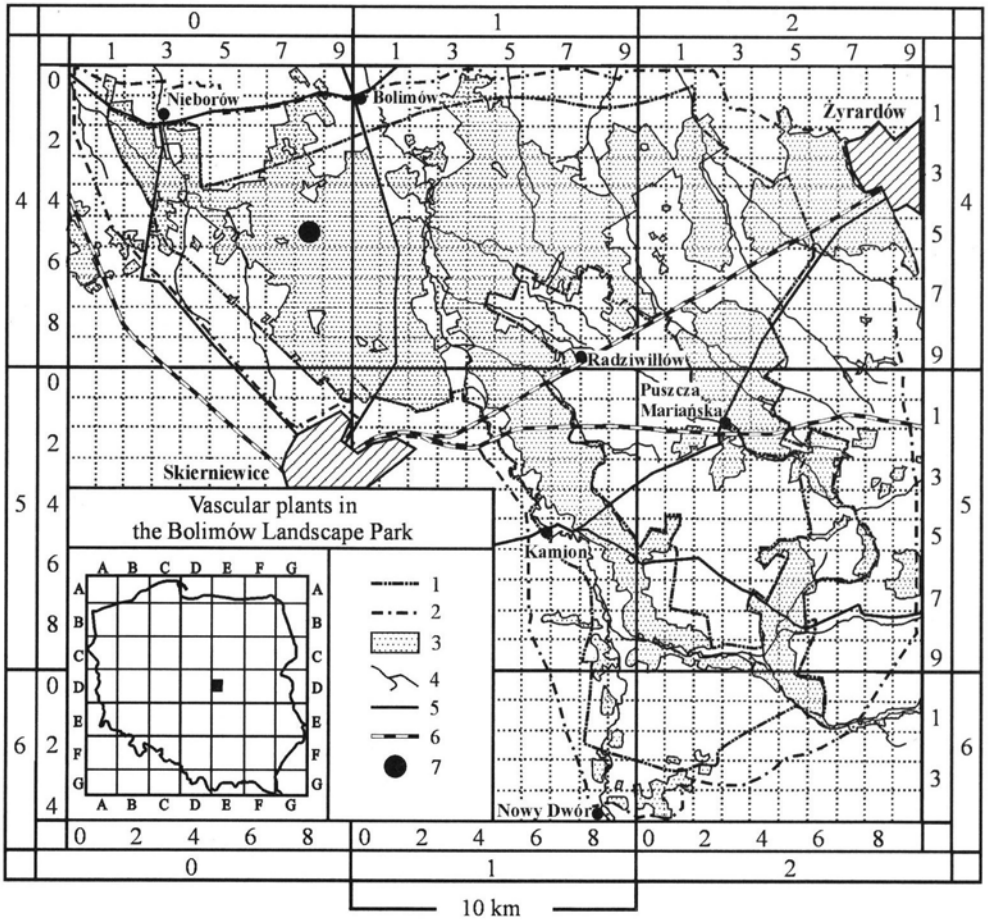

Fig. 1. Guide-map with grid by ATPOL for studies on distribution of vascular plants
1 - border of the Bolimów Landscape Park; 2 - border of protection zone; 3 - forests; 4 - rivers and streams; 5 - roads; 6 - railways; 7 - site point ED 4058

The floristic data base and cartograms were prepared on the basis of special software written for the purpose of the atlas (ROMANIUK 1998).

Lines signifying the borders of BLP are imposed on the cartograms. In the left low corner of the cartogram the following informations are located: ordinal number of species; category of threat to the plant in Central Poland (WARCHOLIŃSKA 1998; JAKUBOWSKA-GABARA, KUCHARSKI 1999);

category of threat in Poland (ZARZYCKI, SZELĄG 1992); status of legal protection; number of sites (squares). The nomenclature of vascular plant species was accepted after MIREK et al. (1995).

The existing localities are marked on the cartograms by black circles, historical localities by empty circles.

4. PLANT COMMUNITIES

Forests occupy about 65% of BLP, a much smaller are being covered by synanthropic, meadow, bog and water vegetation. Habitats with the last type of vegetation exert the greatest impact on the diversity of plant communities in the park. Stands of the most precious plant associations were detected in glades, which occupy as little as about 1% of the park area. They are places of the occurrence of over a half of communities recorded in the area of the BLP, among others associations of moor grass meadows and of raised bogs (KUCHARSKI, PISAREK 1998).

The forest vegetation is composed of 20 associations and subassociations as well as several substitution communities. The decisively largest area is occupied by pine forest and mixed forests, which dominate in the northern and north-western part of the Bolimów Landscape Park. The most widespread are phytocoenoses of the subcontinental coniferous fresh forest *Peucedano-Pinetum* and suboceanic fresh coniferous forest *Leucobryo-Pinetum* as well as mixed coniferous forest *Querco roboris-Pinetum*. The marshy coniferous forest *Vaccinio uliginosi-Pinetum*, humid coniferous forest *Molinio-Pinetum* and dry coniferous forest *Cladonio-Pinetum* are rare components of the BLP vegetation. Subcontinental oak-hornbeam forest *Tilio-Carpinetum*, despite a small area, is widespread in the whole area of the park. Small areas are also occupied by the carr phytocoenoses. The most frequently encountered is the alder-ash carr *Fraxino-Alnetum*. The elm carr *Ficario-Ulmetum* and willow-poplar carr *Salici-Populetum* are recorded much more rarely. Phytocoenoses of current alderwood *Ribeso nigri-Alnetum* were noted mostly at the near-edge zone of the Rawka River valley. Oakwoods are very rare in BLP. The xerothermic oakwood *Potentillo albae-Quercetum* was recorded in the north-eastern part of the park, while small stands of the acidiphilic oakwood *Calamagrostio-Quercetum* in various parts of BLP (JAKUBOWSKA-GABARA 2002).

Non-forest vegetation is represented by the phytocoenoses of meadow, psammophilous grassland, rush, bog, segetal and ruderal. They are created by the phytocoenoses of 90 plant associations and communities, 25 of which are meadow communities, 23 rush communities, 25 segetal and ruderal communities and 17 units representing the vegetation of bogs and waters. Of the floristically poor water vegetation *Wolffietum arrhizae* deserves particular attention. Rush and bog vegetation is created by numerous communities. They include rare and threatened associations. Particular attention should be paid to *Caricetum elatae*, *Caricetum appropinquatae*, *Caricetum rostratae*, *Caricetum lasiocarpae*, *Caricetum diandrae*, *Caricetum hartmanii*, *Calamagrostietum neglectae* and *Eriophoro vaginati-Sphagnetum recurvi* (KUCHARSKI 2002).

Meadows, which occupy less than 10% of the BLP area, are overgrown by stands of most of plant vegetation communities recorded in Central Poland (KUCHARSKI 1999). This is the place where moor grass meadows *Molinietum caeruleae* and *Junco-Molinietum* and a rare association of *Polygono bistortae-Trollietum europaei* may be recorded. *Arrhenatheretum elatioris*, *Angelico-Cirsietum* and *Lolio-Cynosuretum* were also observed in the park (KUCHARSKI 2002).

Psammophilous grasslands are composed of the phytocoenoses *Spergulo-Corynephoretum*

canescentis. Stands of three subassociations of this community: *Spergulo-Corynephoretum canescentis typicum*, *S.-C. cladinetosum mitis*, *S.-C. thymetosum serpylli* were recorded in the park. A very rare component of the vegetation are well developed stands of *Diantho-Armerietum* (CZYŻEWSKA 2002).

Synanthropic habitats of BLP are overgrown by the phytocoenoses of 25 plant associations and one community, including 10 segetal associations and one segetal community. The most precious segetal syntaxa noted in the park are: the community of *Saxifraga tridactylites*, *Galio-Ranunculetum arvensis* and *Papaveretum argemones*. Ruderal communities are represented, among others, by: *Panico-Eragrostietum*, *Corispermo-Brometum tectorum*, *Centaureo-Berteroëtum* and *Balloto-Chenopodietum* (WARCHOLIŃSKA 2002).

5. FLORA

A high diversity of the Bolimów Landscape Park habitats results in a richness and diversified flora of the area. 1049 vascular plant taxa were recorded there. They include 51 species covered by legal protection and a group of 126 species mentioned in the Polish and regional lists of threatened and endangered species (WARCHOLIŃSKA 1986-1987; ZARZYCKI, SZELĄG 1992; JAKUBOWSKA-GABARA, KUCHARSKI 1999).

The oldest publication, the data of which have been considered in the present study, is that of VOCKE (1857). From 25 species listed by that author from the vicinities of the village of

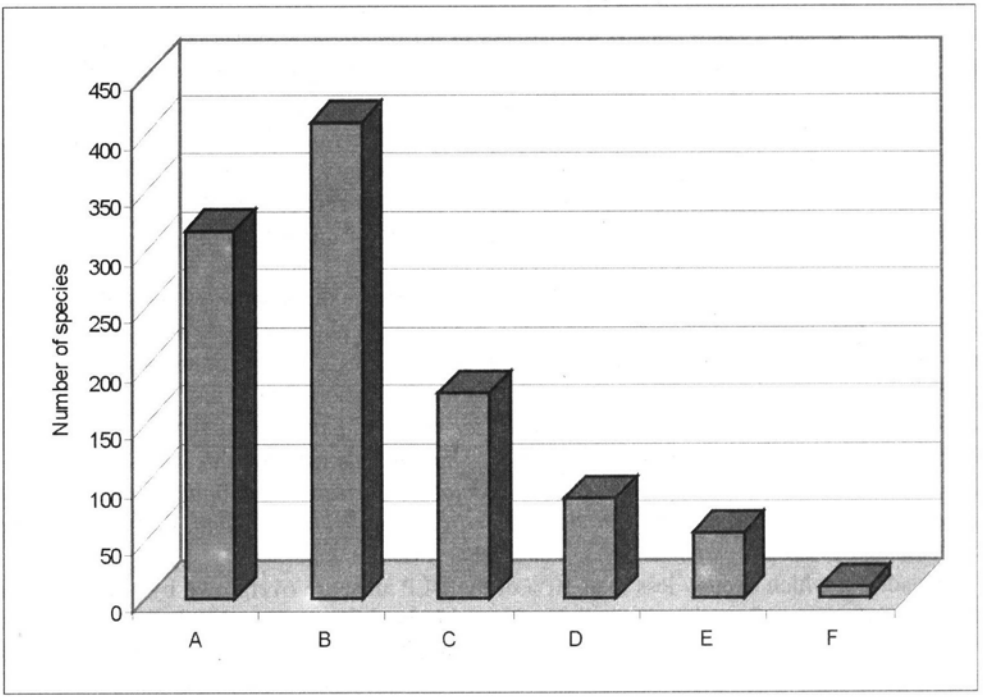

Fig. 2. Frequent occurrence of vascular plant species in the Bolimów Landscape Park
A-F - number of sites (squares); A–1-10, B–11-100, C–101-200, D–201-300, E–301-400, F–more than 400

Nieborów, 8 were not determined during the present investigations. These are *Arctostaphylos uva-ursi*, *Carex buxbaumii*, *C. tomentosa*, *Leersia oryzoides*, *Potentilla collina*, *Pulsatilla patens*, *P. vernalis*, *Senecio paludosus*.

The analysis of the vascular plants frequent occurrence shows that rare species are the most numerous, while common species are not much (Fig. 2).

The largest group, which comprises over 600 taxa, is the flora of forests. The most precious species recorded in the stands of the xerothermic oakwood. Particular attention is deserved by *Asperula tinctoria, Festuca amethystina, Melittis melisophyllum*, *Potentilla alba*, *Pulmonaria angustifolia*, *Ranunculus polyanthemos*, *Vicia cassubica.* In the forests and woods of BLP, 34 protected species were determined, among them *Chimaphila umbellata*, *Digitalis grandiflora*, *Diphasiastrum complanatum*, *Hierochloë odorata*, *Platanthera bifolia* and others (JAKUBOWSKA-GABARA, KUCHARSKI, WARCHOLIŃSKA 2002).

A high diversity is also displayed by the flora of non-forest habitats. The vegetation of meadows and bogs in the park comprises over 470 species of vascular plants. Despite the area of their habitats not exceeding 10% of the area of the park over 30% of the total number of vascular plant species of BLP occur there. Particular attention is deserved by the protected species of *Dianthus superbus*, *Gentiana pneumonanthe*, *Iris sibirica*, *Ophioglossum vulgatum*, *Pedicularis sylvatica, Polemonium coeruleum* and *Trollius europaeus*. A considerable group are also species that are rare and threatened in the scale of Poland or the region. They are, among others, *Carex cespitosa*, *C. hartmanii*, *Filipendula vulgaris*, *Teucrium scordium*, *Thalictrum flavum*, *Veronica teucrium*, *Vicia pisiformis*, *Wolffia arrhiza*. The synanthropic flora of BLP is also precious. Its richness is affected by: diversity of habitats, their spatial arrangement diversity and size diversity, extensive methods of management used in agriculture in the area of the park, development of recreation and settlement and the vicinity of towns (Skierniewice and Żyrardów). Rare and threatened species are also recorded in the group, among them *Gagea pratensis*, *Illecebrum verticillatum*, *Lappula squarrosa*, *Marrubium vulgare*, *Nigella arvensis*, *Polycnemum arvense* (JAKUBOWSKA-GABARA, KUCHARSKI, WARCHOLIŃSKA 2002).

The vascular flora of BLP is dominated by native species, which constitute 75.2% of the total taxa number. Allochthonous species – anthropophytes, which are 261, constitute the remaining 24.8%.

The location of the park in the middle part of Poland, where there are occurrence limits of various species makes the plants occurring there represent various geographical elements of the Polish flora and various occurrence range groups. Mountainous flora is represented by e.g. *Anthriscus nitida*, *Calamagrostis villosa* and *Huperzia selago.* Species of the northern, boreal limit are represented by *Carex vaginata* and *Linnaea borealis*. Western species (subatlantic element) are *Carex umbrosa*, *Corynephorus canescens, Galium saxatile*, *Hypericum humifusum*, *Spergula morisonii* and *Teesdalea nudicaulis*. To continental species of eastern occurrence limit belong, e.g., *Carduus acanthoides*, *Carex pilosa*, *Chamaecytisus ruthenicus*, *Echium vulgare* and *Ranunculus cassubicus*.

Among synanthropic plants, Irano-Turanian, *Lithospermum arvense*, *Malva neglecta*, *Veronica persica* and Mediterranean ones, *Amaranthus lividus* and *Raphanus raphanistrum,* were recorded. The sites of numerous species in the terrain of the park are important because of phytogeographic reasons, as they occur on their occurrence limits or outside them, for example the sites of certain synanthropic plants located at their north-eastern occurrence limits, *Centunculus minimus*, *Herniaria hirsuta* and *Radiola linoides*.

Particular attention should be paid to those species in the vascular flora of the park that are very rare even in the scale of Poland. These include those mentioned in the "Polish Red Plant Bo-

ok": *Carex vaginata*, *Festuca amethystina*, *Ostericum palustre*, *Succisella inflexa* (KAŹMIERCZAKOWA, ZARZYCKI 2001), and endangered and vulnerable ones of *Andromeda polifolia*, *Juncus atratus*, *Kickxia elatine*, *Lolium remotum*, *Lolium temulentum*, *Pulmonaria angustifolia*, *Scutellaria hastifolia* and *Viola stagnina* (JAKUBOWSKA-GABARA, KUCHARSKI, WARCHOLIŃSKA 2002).

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7. ROŚLINY NACZYNIOWE BOLIMOWSKIEGO PARKU KRAJOBRAZOWEGO
(streszczenie)

Bolimowski Park Krajobrazowy (BPK) powstał w 1986 roku. W jego granicach znalazł się największy w południowo-wschodniej części Mazowsza kompleks leśny zwany Puszczą Bolimowską. Charakterystyczną cechą puszczy jest obecność licznych śródleśnych polan. Duże zróżnicowanie siedlisk decyduje o bogactwie i różnorodności zbiorowisk roślinnych i flory tego obszaru.

Rozmieszczenie, stwierdzonych na terenie BPK gatunków roślin naczyniowych, opracowano głównie na podstawie wyników terenowego kartowania florystycznego, przeprowadzonego w latach 1996-2001. Badania wykonano stosując metodę pól regularnych. Przyjęto lokalną sieć kwadratów o boku 1 km, dostosowaną do ogólnopolskiej sieci ATPOL. Obszar parku i jego otuliny podzielono na 470 kwadratów o powierzchni 1 km^2, które wchodzą w skład ośmiu kwadratów ATPOL-u (ED40, ED41, ED42, ED50, ED51, ED52, ED61, ED62) o boku 10 km. Mapy rozmieszczenia taksonów wykonano na podstawie bazy danych do której wprowadzono wszystkie informacje z bezpośrednich badań terenowych, a także dane z prac opublikowanych i nieopublikowanych (zob. Wstęp) oraz materiałów zielnikowych znajdujących się w Herbarium Universitatis Lodziensis (LOD).

Na terenie Bolimowskiego Parku Krajobrazowego stwierdzono 1049 taksonów roślin naczyniowych. Stanowiska ośmiu gatunków podanych przez VOCKE (1857), a obecnie nie stwierdzonych, mają charakter historyczny. We florze BPK dominują gatunki rodzime, które stanowią 75,2% ich ogólnej liczby. Dużym bogactwem gatunkowym oraz obecnością bardzo interesujących taksonów wyróżniają się fitocenozy leśne, łąkowe i torfowiskowe.

We florze naczyniowej parku stwierdzono 51 gatunków chronionych oraz 126 ginących i zagrożonych w skali regionu i kraju. Na szczególną uwagę zasługują rośliny uwzględnione w *Czerwonej Ksiedze Roslin* (KAŹMIERCZAKOWA, ZARZYCKI 2001): *Carex vaginata*, *Festuca amethystina* i *Ostericum palustre*. W skali regionu interesujące są stanowiska takich gatunków jak: *Digitalis grandiflora*, *Diphasiastrum complanatum*, *Gymnadenia conopsea*, *Hierochloë odorata*, *Huperzia selago*, *Illecebrum verticillatum*, *Iris sibirica*, *Juncus atratus*, *Kickxia elatine*, *Lolium remotum*, *L. temulentum*, *Nigella arvensis*, *Polemonium coeruleum*, *Polycnemum arvense*, *Pulmonaria angustifolia*, *Scutellaria hastifolia*, *Trollius europaeus*, *Vicia pisiformis*, *Viola stagnina* i *Wolffia arrhiza*.

Stanowiska niektórych rzadko występujących gatunków posiadają ważną rangę ze względów fitogeograficznych. Ich stanowiska na terenie BPK znajdują się bowiem przy granicy zasięgu lub nawet daleko poza nią. Do takich gatunków należą: *Anthriscus nitida*, *Calamagrostis villosa*, *Carex pilosa*, *C. umbrosa*, *Centunculus minimus*, *Herniaria hirsuta*, *Linnaea borealis* i *Radiola linoides*.

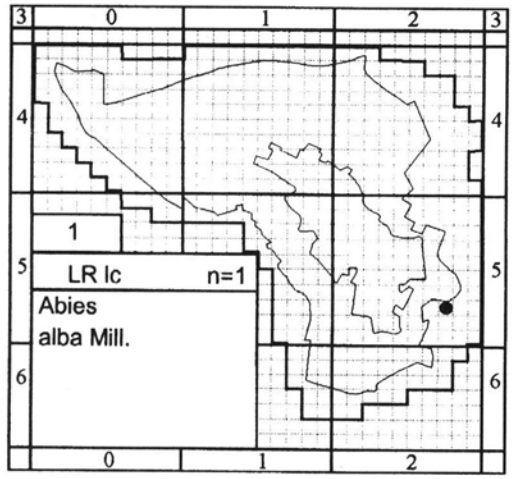
DISTRIBUTION ATLAS OF THE VASCULAR PLANTS

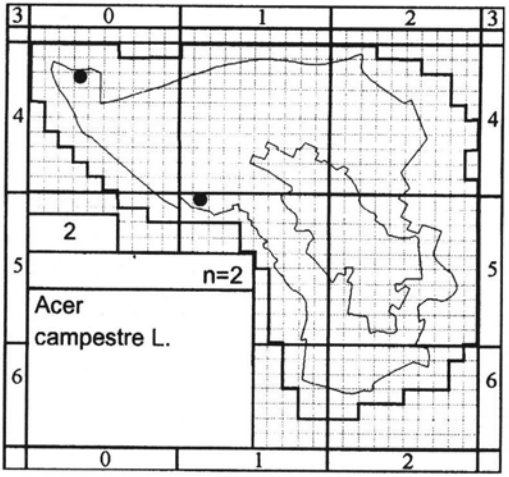
Alphabetical arrangement of species has been adopted in the atlas.

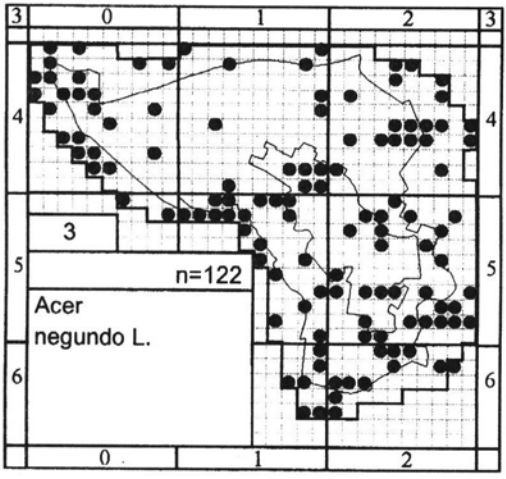
● – presently existing sites

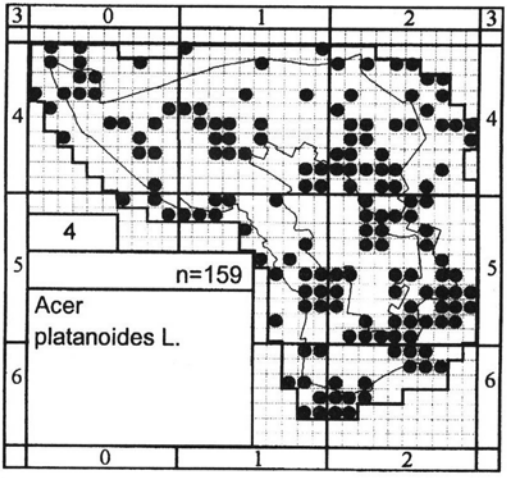
○ – historical sites

Information in the left low corner of the cartogram: ordinal number of species – 1-1049;
Category of threat to the plant in Central Poland after the IUCN Red List Categories (1994; see GŁOWACIŃSKI 1997; CZYŻEWSKA 1998): EX – Extinct; EW – Extinct in the Wild; CR – Critically Endangered; EN – Endangered; VU – Vulnerable; LR – Low Risk; cd – conservation dependent, nt – near threatened, lc – least concern; DD – Data Deficient; NE – Not Evaluated.
Category of threat in Poland after the IUCN Red Data Book Categories (ZARZYCKI, SZELĄG 1992): Ex – Extinct and probably extinct; E – Endangered; V – Vulnerable; R – Rare; I – Indeterminate.
Ch. – species covered by strict protection;
Ch. cz. – species covered by partial protection.
n=5 – number of sites


1
LR Ic
n=1
Abies
alba Mill.


2
n=2
Acer
campestre L.


3
n=122
Acer
negundo L.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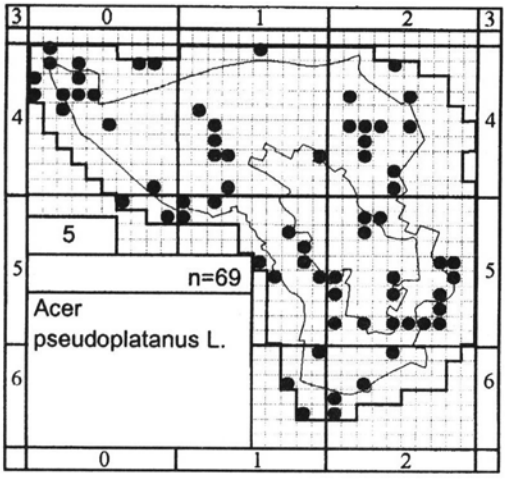
Acer
platanoides L.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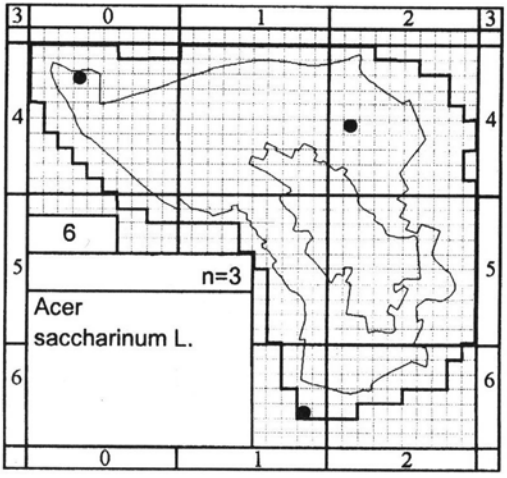
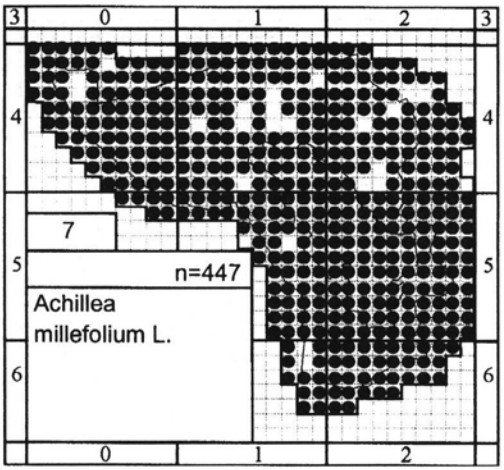
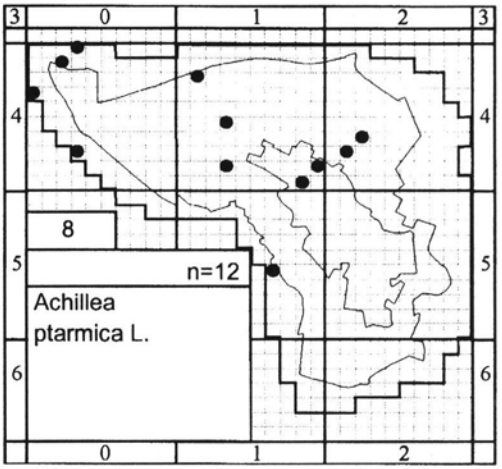
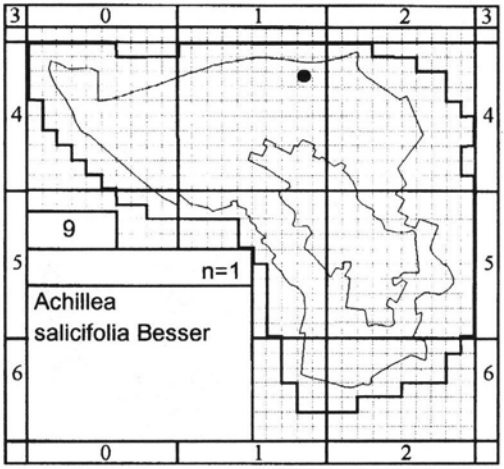
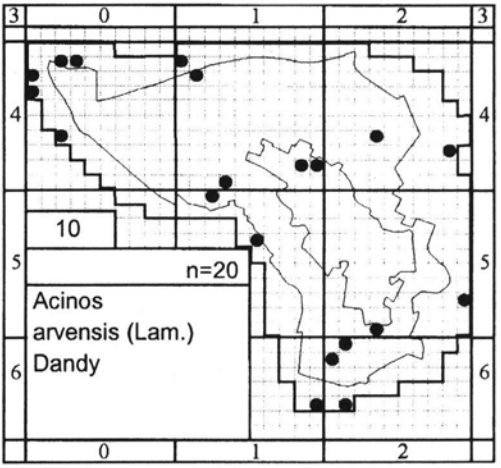
n=69
Acer
pseudoplatanus L.

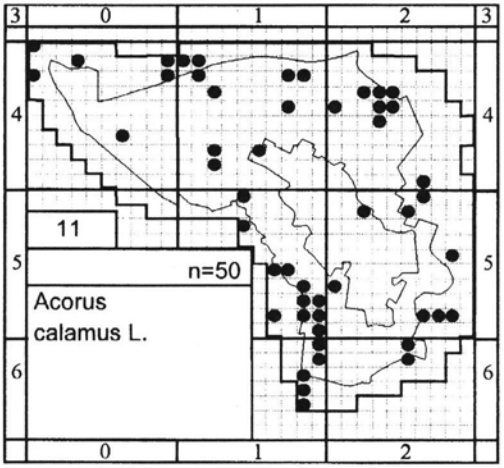

6
n=3
Acer
saccharinum L.

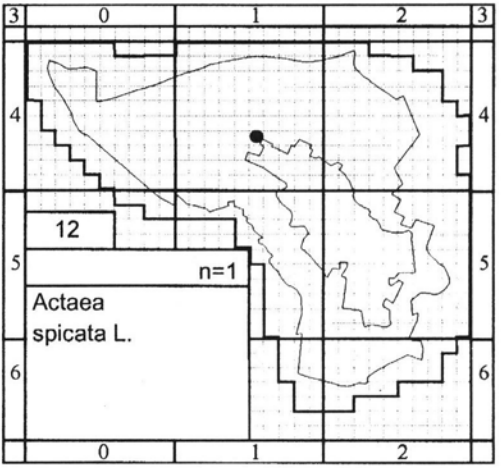

7
n=447
Achillea
millefolium L.

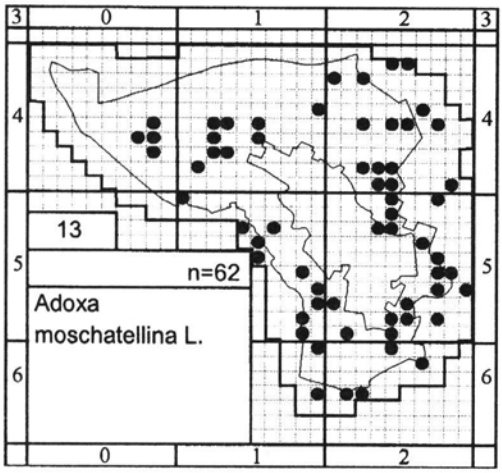

8
n=12
Achillea
ptarmica L.

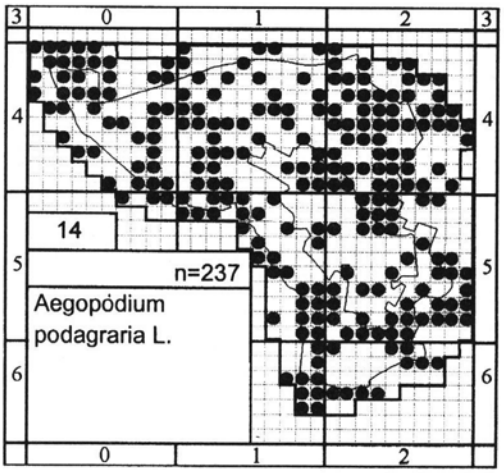

9
n=1
Achillea
salicifolia Besser

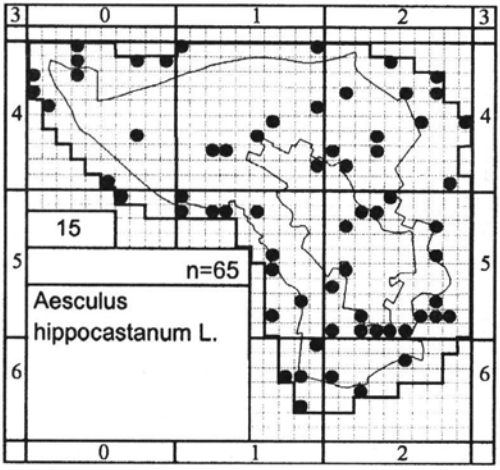

10
n=20
Acinos
arvensis (Lam.)
Dandy

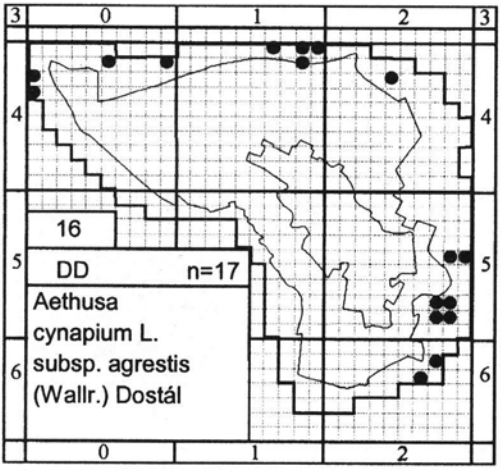

11
n=50
Acorus
calamus L.

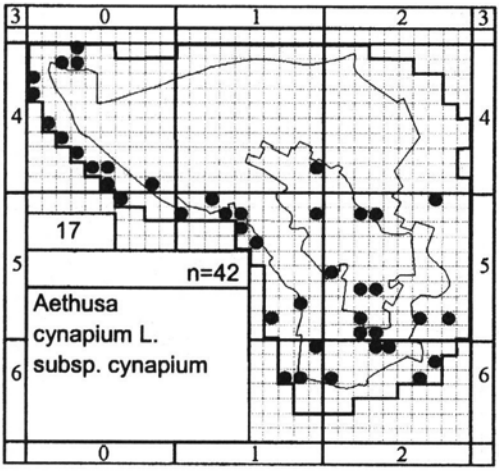

12
n=1
Actaea
spicata L.

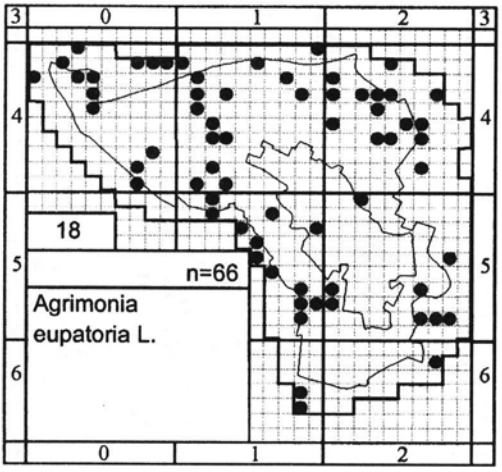

13
n=62
Adoxa
moschatellina L.

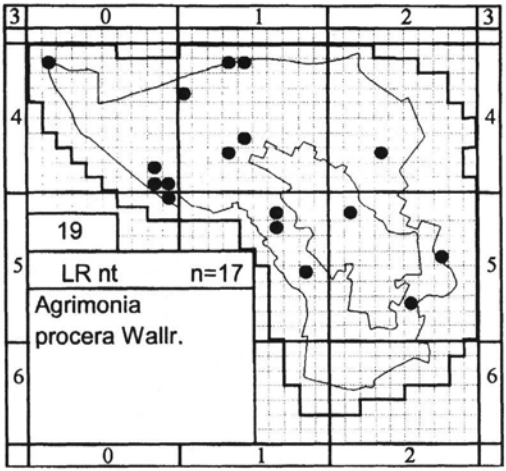

14
n=237
Aegopódium
podagraria L.

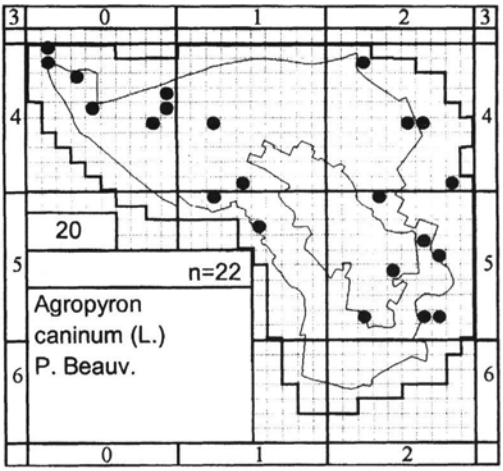

15
n=65
Aesculus
hippocastanum L.

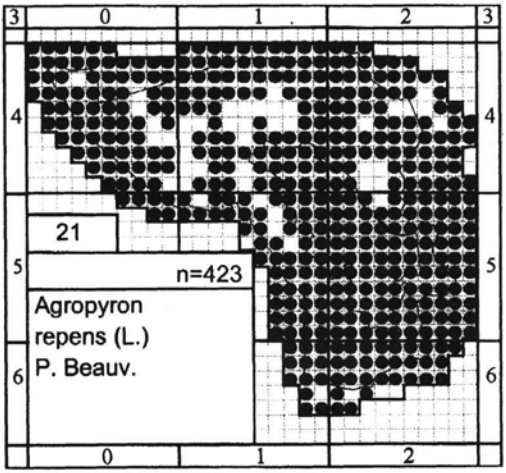

16
DD
n=17
Aethusa
cynapium L.
subsp. agrestis
(Wallr.) Dostál

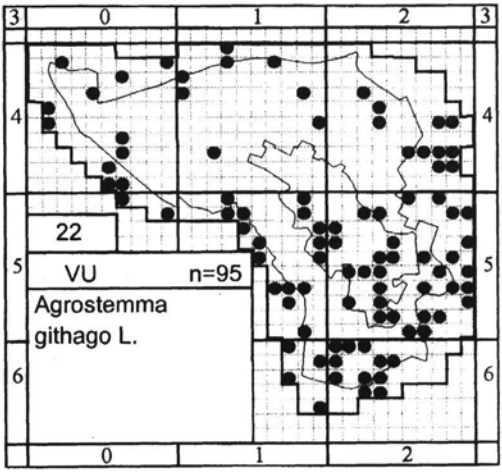

17
n=42
Aethusa
cynapium L.
subsp. cynapium

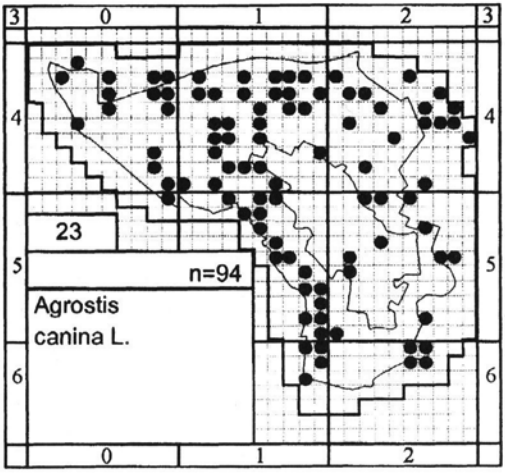

18
n=66
Agrimonia
eupatoria L.

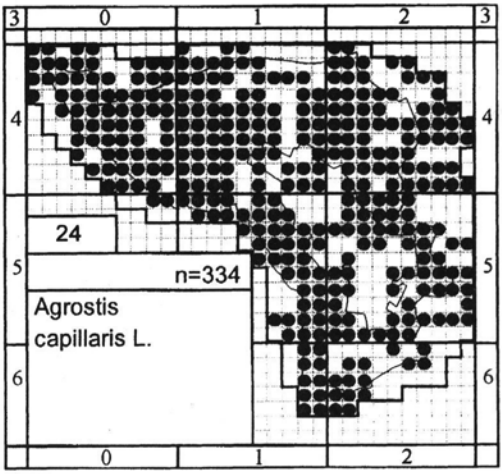

19
LR nt
n=17
Agrimonia
procera Wallr.

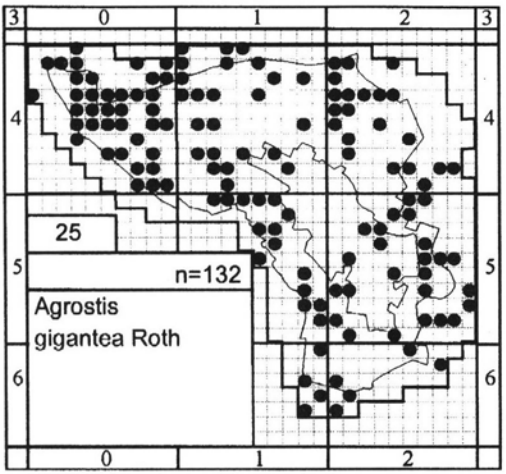

20
n=22
Agropyron
caninum (L.)
P. Beauv.


21
n=423
Agropyron
repens (L.)
P. Beauv.


22
VU
n=95
Agrostemma
githago L.


23
n=94
Agrostis
canina L.


24
n=334
Agrostis
capillaris L.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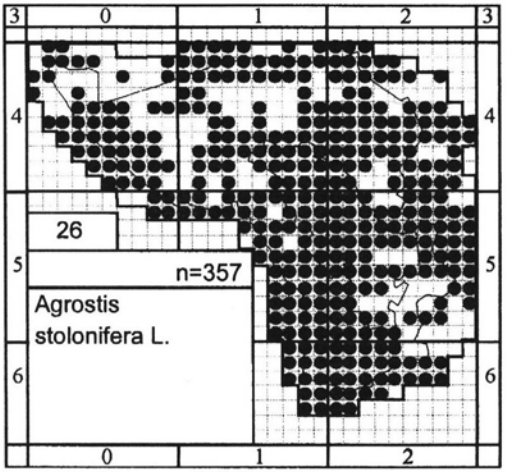
n=132
Agrostis
gigantea Roth


26
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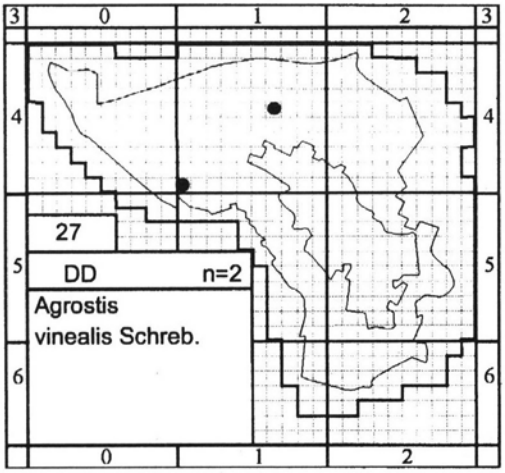
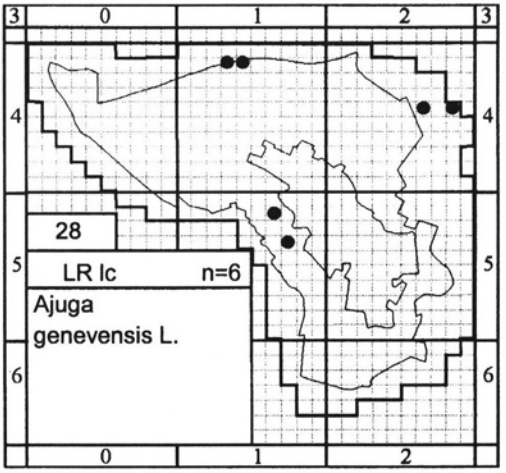
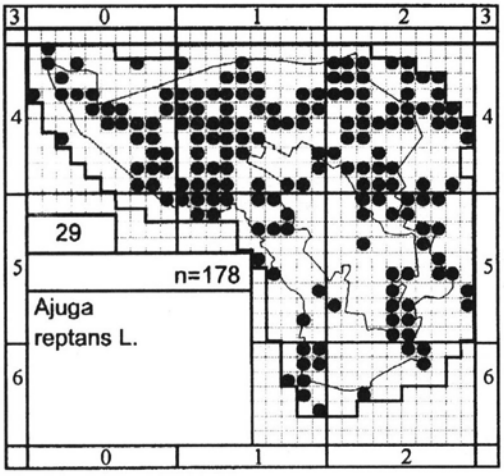
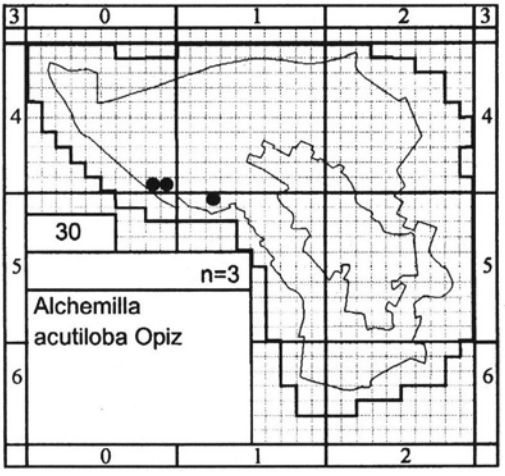
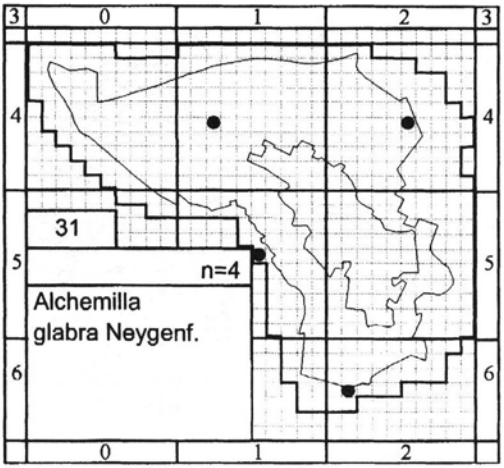
Agrostis
stolonifera L.

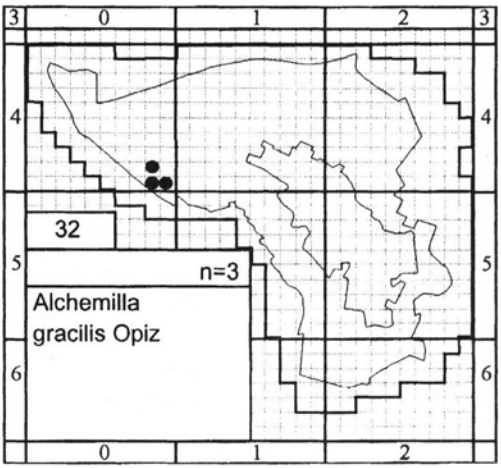

27
DD
n=2
Agrostis
vinealis Schreb.


28
LR lc
n=6
Ajuga
genevensis L.


29
n=178
Ajuga
reptans L.


30
n=3
Alchemilla
acutiloba Opiz


31
n=4
Alchemilla
glabra Neygenf.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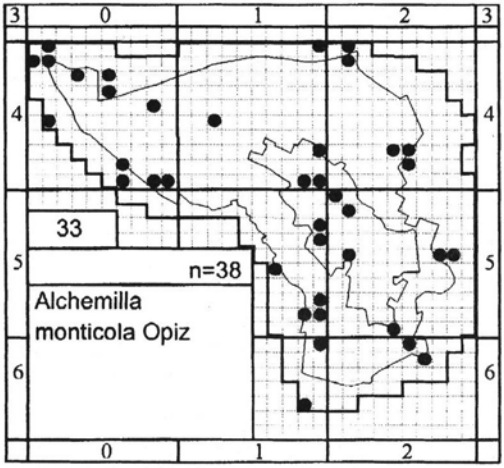
Alchemilla
gracilis Opiz


33
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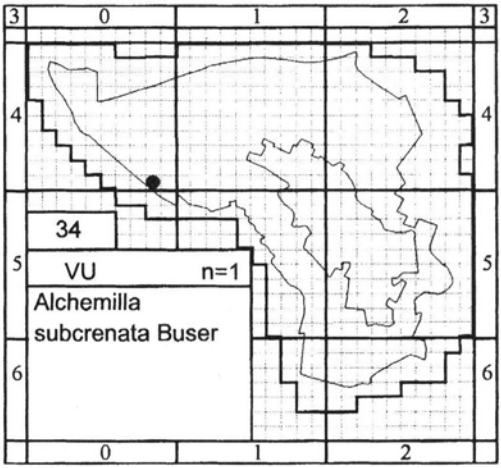
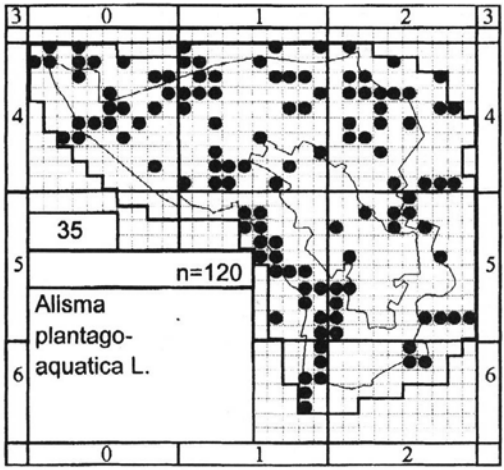
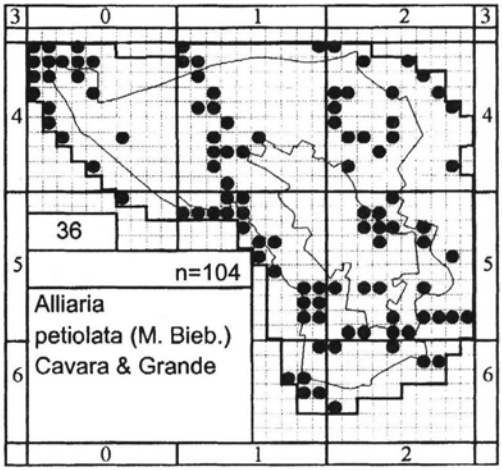
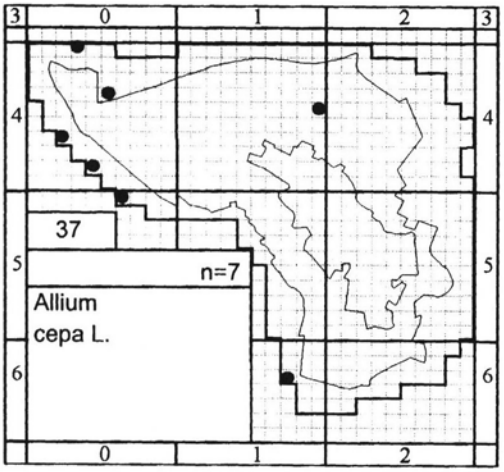
Alchemilla
monticola Opiz


34
VU
n=1
Alchemilla
subcrenata Buser


35
n=120
Allsma
plantago-
aquatica L.


36
n=104
Alliaria
petiolata (M. Bieb.)
Cavara & Grande


37
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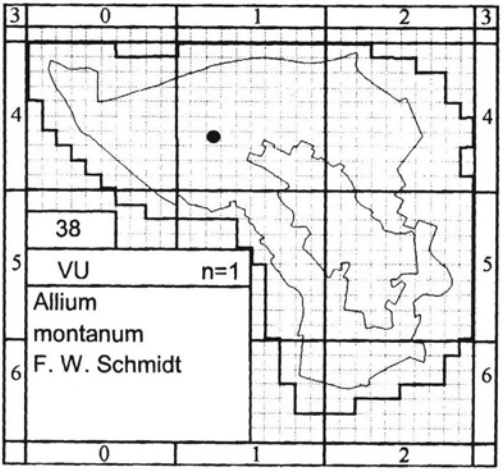
Allium
cepa L.


38
VU
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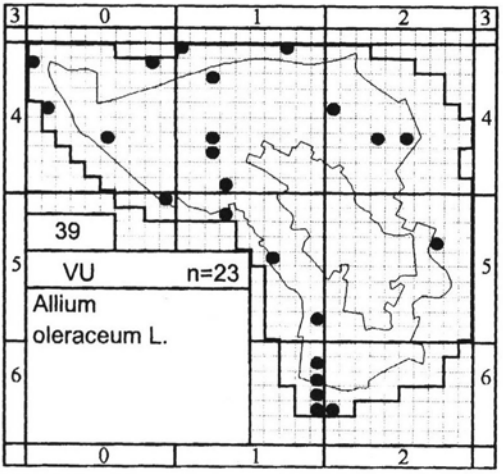
Allium
montanum
F. W. Schmidt


39
VU
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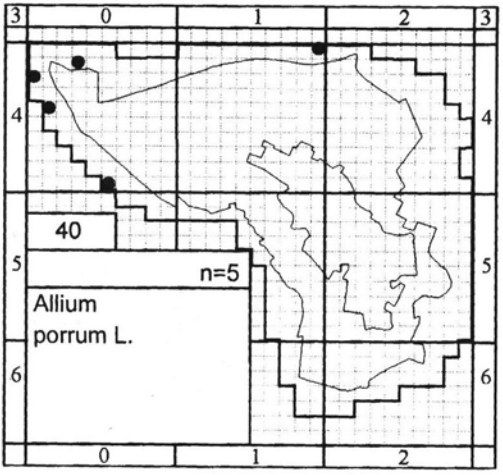
Allium
oleraceum L.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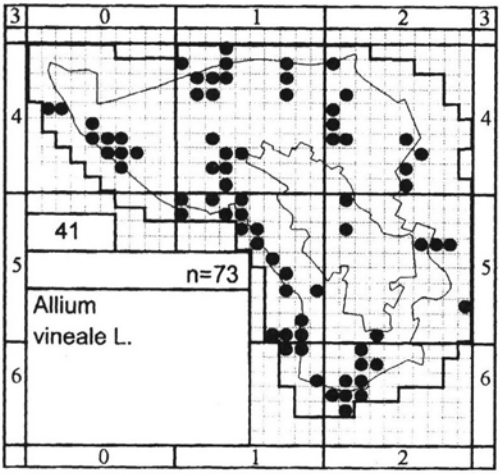
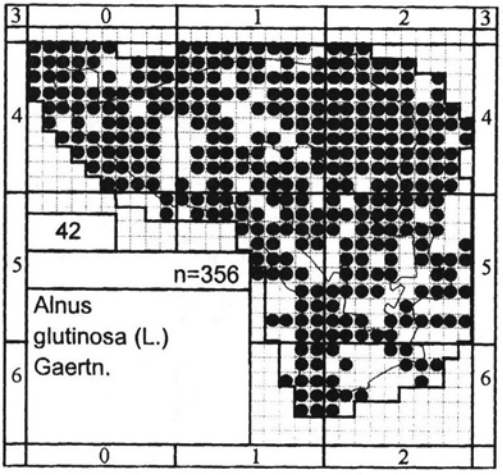
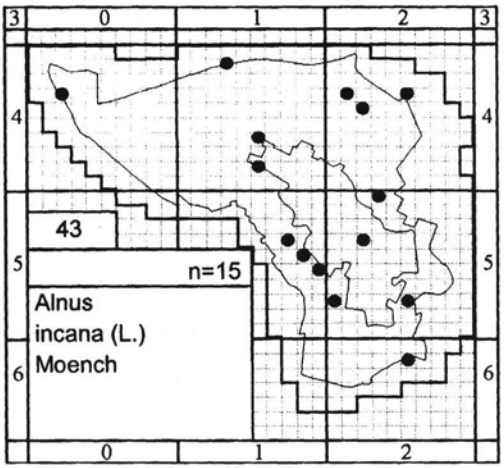
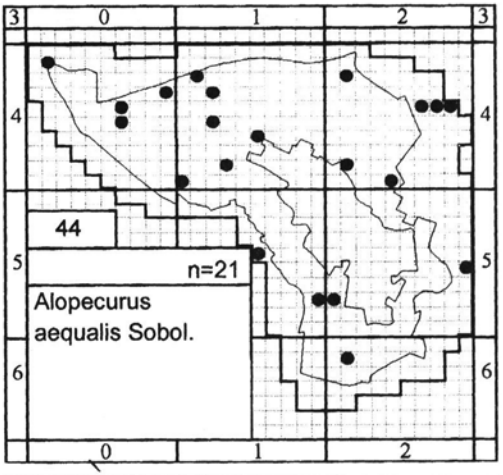
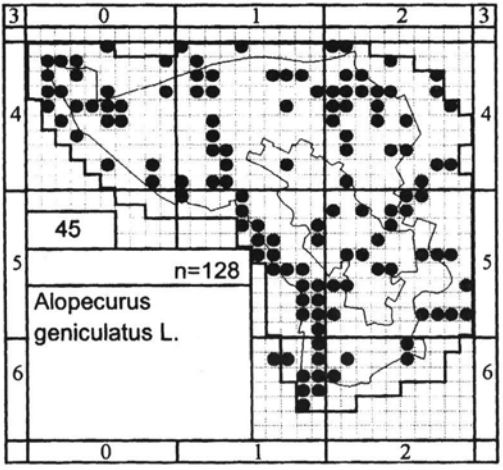
Allium
porrum L.

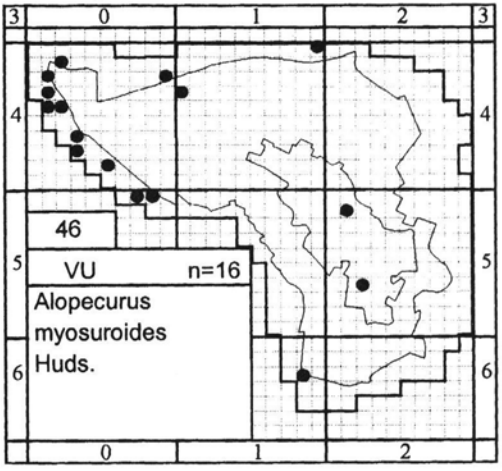

41
n=73
Allium
vineale L.

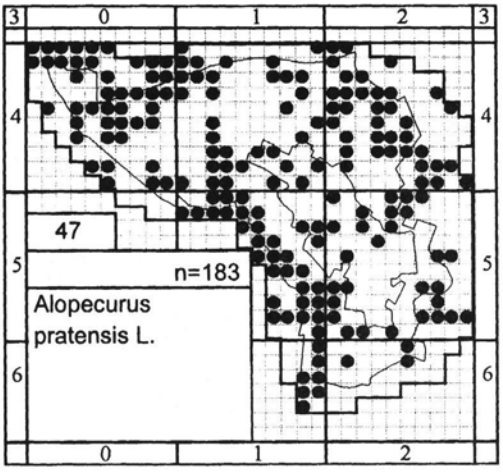

42
n=356
Alnus
glutinosa (L.)
Gaertn.

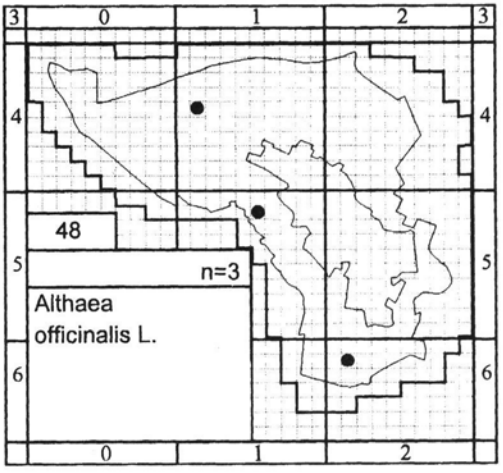

43
n=15
Alnus
incana (L.)
Moench

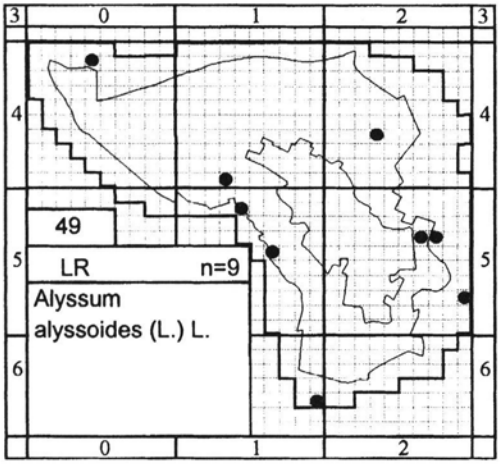

44
n=21
Alopecurus
aequalis Sobol.

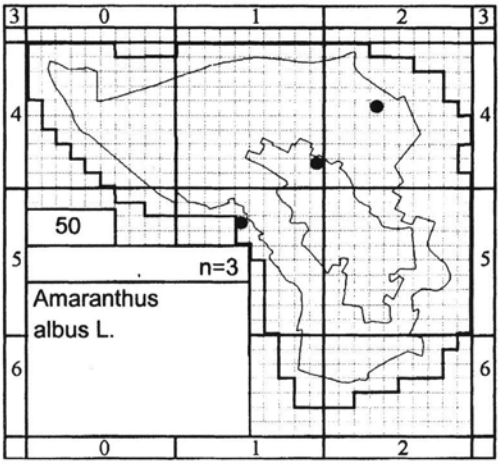

45
n=128
Alopecurus
geniculatus L.

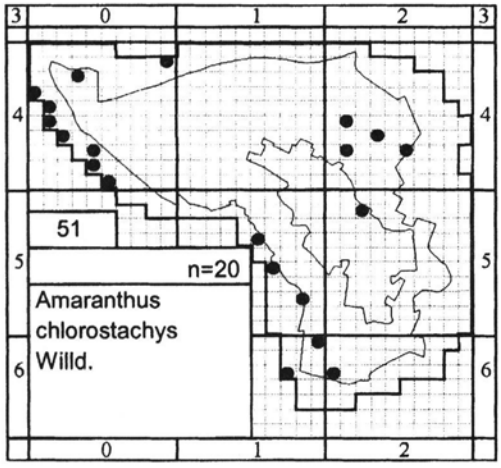

46
VU
n=16
Alopecurus
myosuroides
Huds.


47
n=183
Alopecurus
pratensis L.


48
n=3
Althaea
officinalis L.


49
LR
n=9
Alyssum
alyssoides (L.) L.


50
n=3
Amaranthus
albus L.


51
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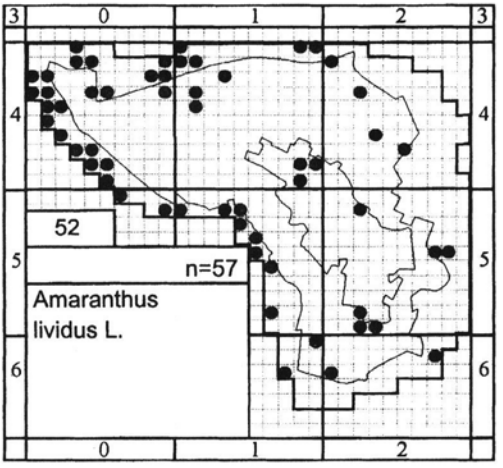
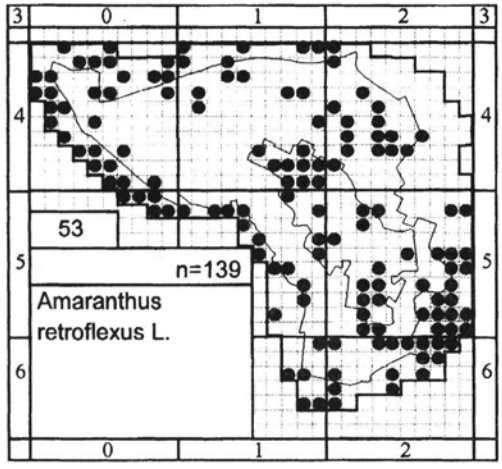
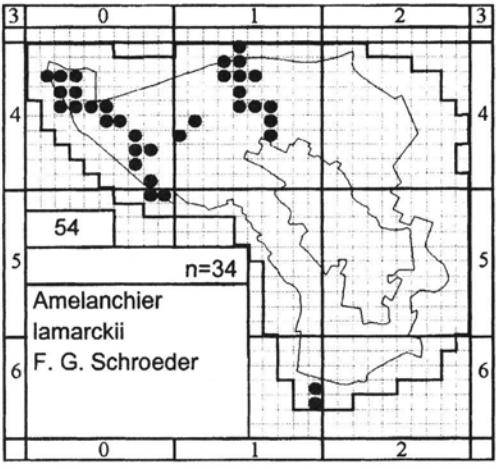
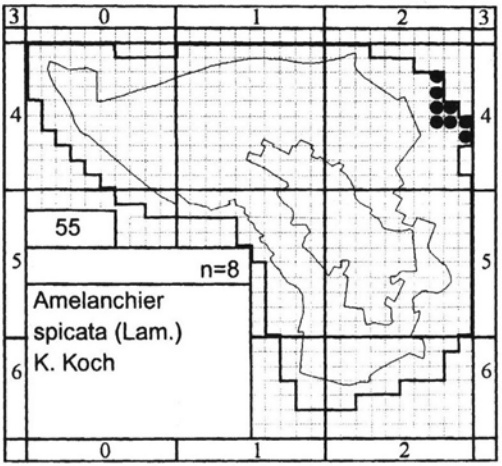
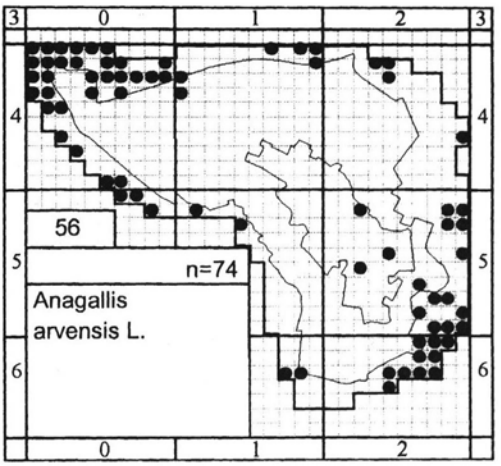
Amaranthus
chlorostachys
Willd.

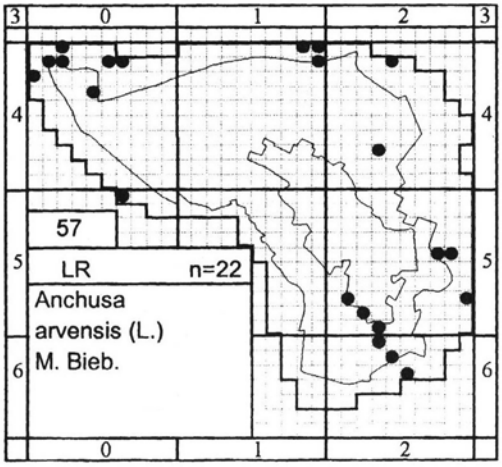

52
n=57
Amaranthus
lividus L.

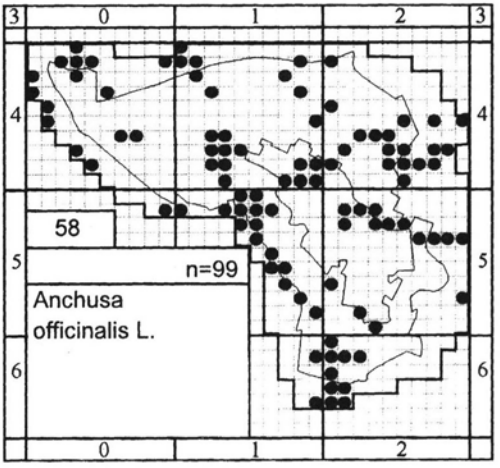

53
n=139
Amaranthus
retroflexus L.

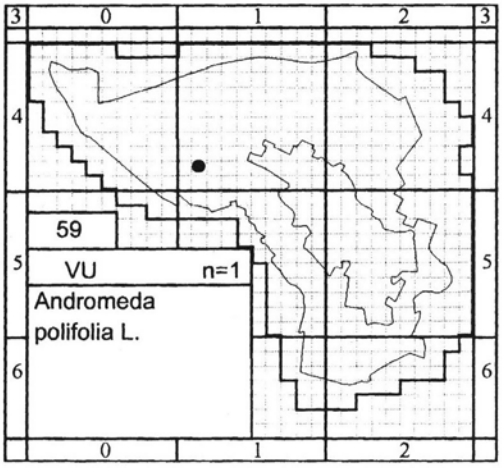

54
n=34
Amelanchier
lamarckii
F. G. Schroeder

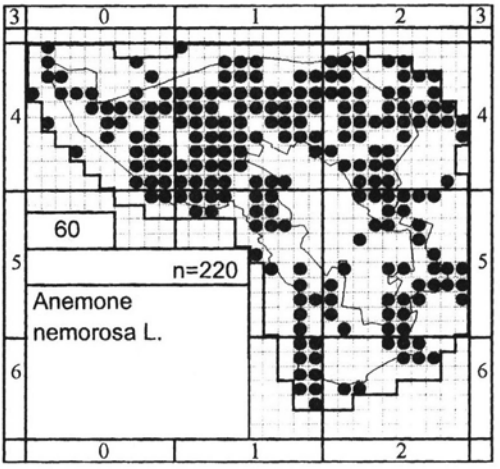

55
n=8
Amelanchier
spicata (Lam.)
K. Koch


56
n=74
Anagallis
arvensis L.


57
LR
n=22
Anchusa
arvensis (L.)
M. Bieb.


58
n=99
Anchusa
officinalis L.


59
VU
n=1
Andromeda
polifolia L.


60
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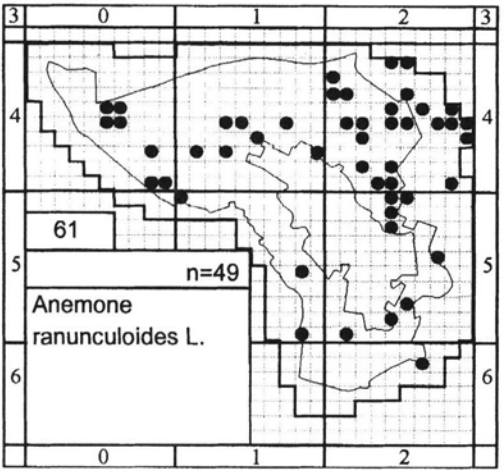
Anemone
nemorosa L.


61
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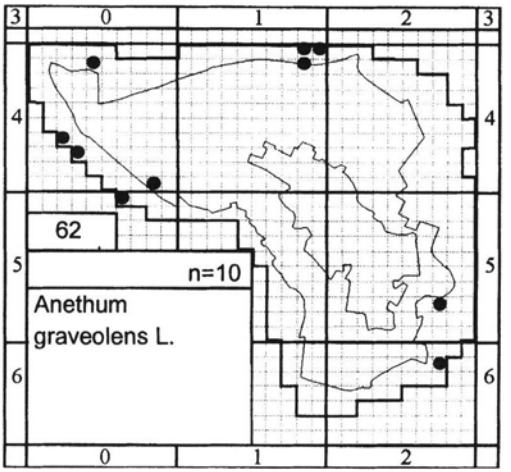
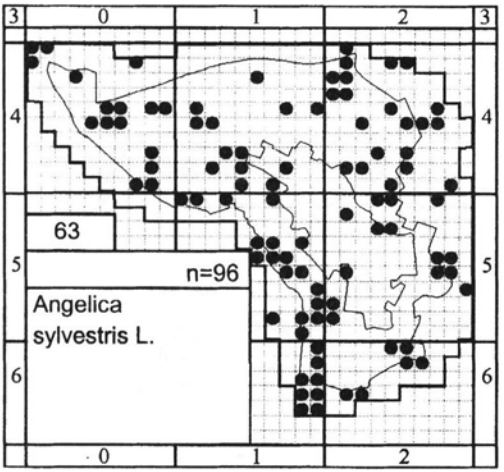
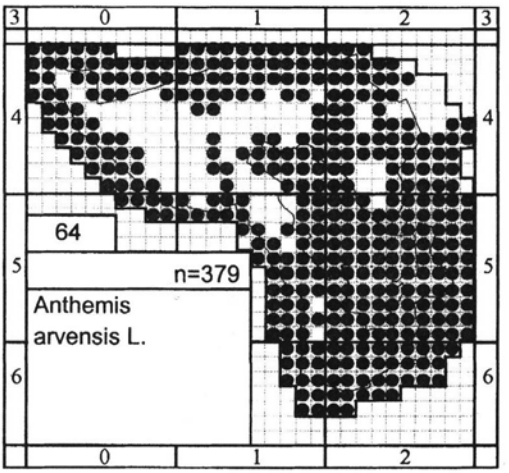
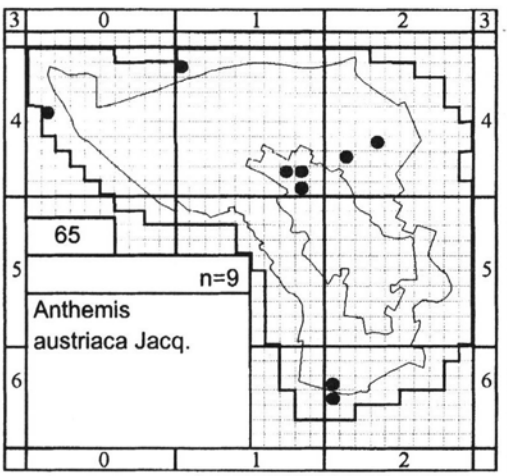
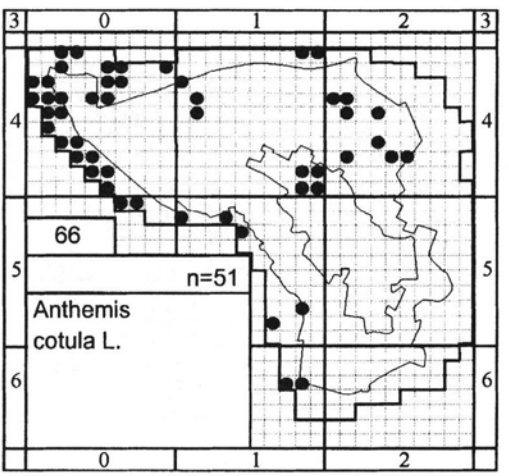
Anemone
ranunculoides L.

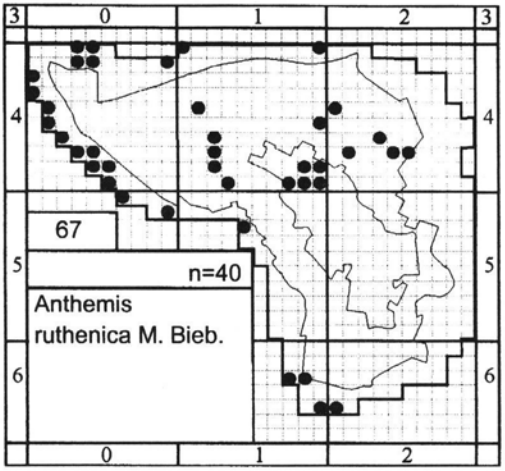

62
n=10
Anethum
graveolens L.

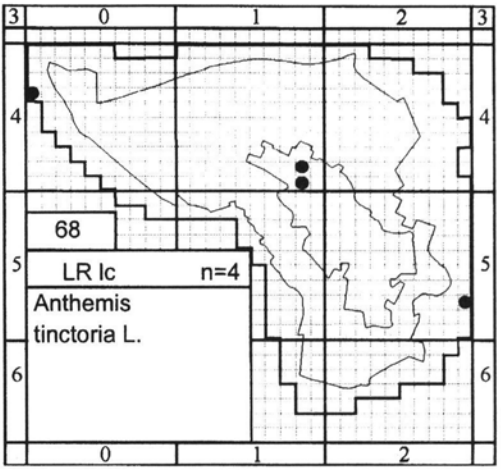

63
n=96
Angelica
sylvestris L.

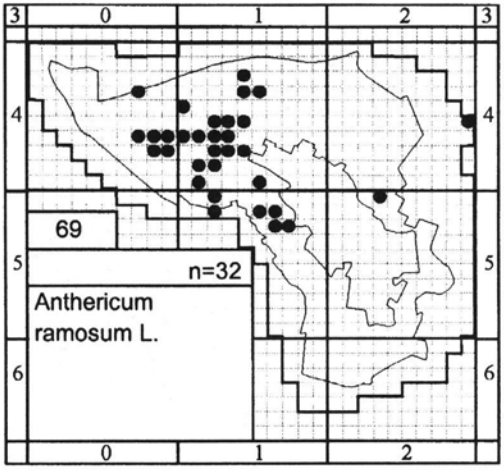

64
n=379
Anthemis
arvensis L.

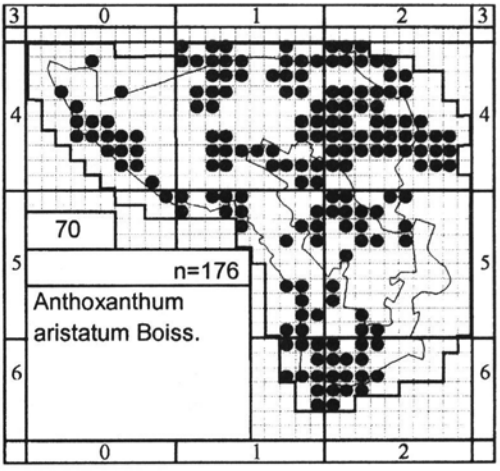

65
n=9
Anthemis
austriaca Jacq.

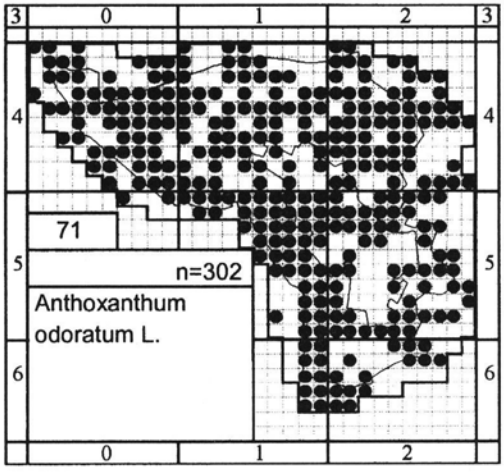

66
n=51
Anthemis
cotula L.

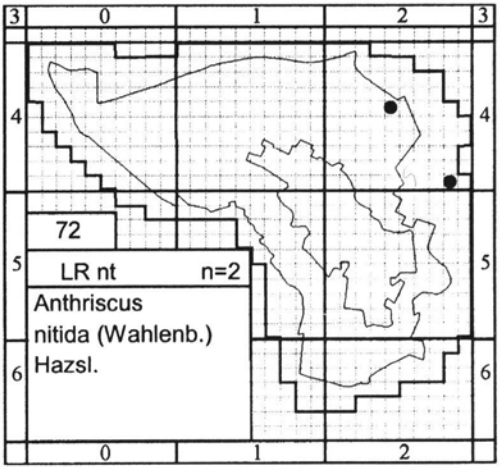

67
n=40
Anthemis
ruthenica M. Bieb.

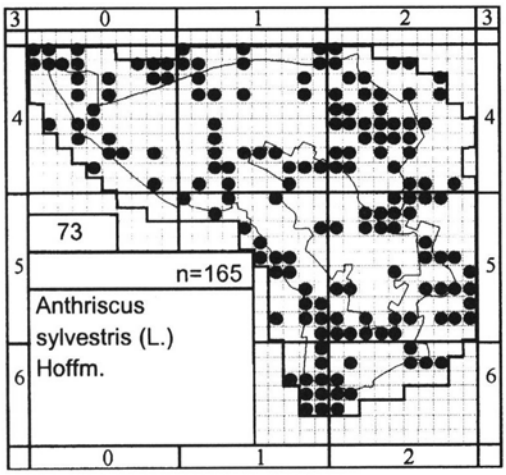

68
LR lc
n=4
Anthemis
tinctoria L.

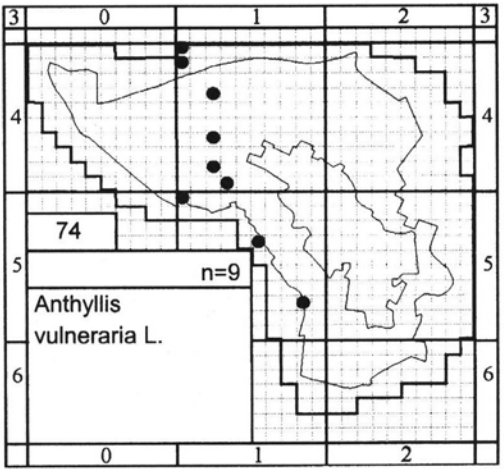

69
n=32
Anthericum
ramosum L.

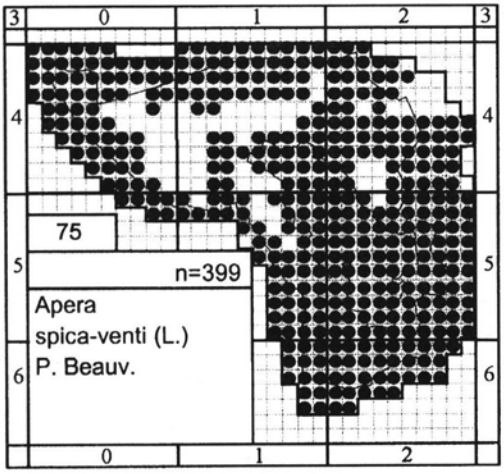

70
n=176
Anthoxanthum
aristatum Boiss.

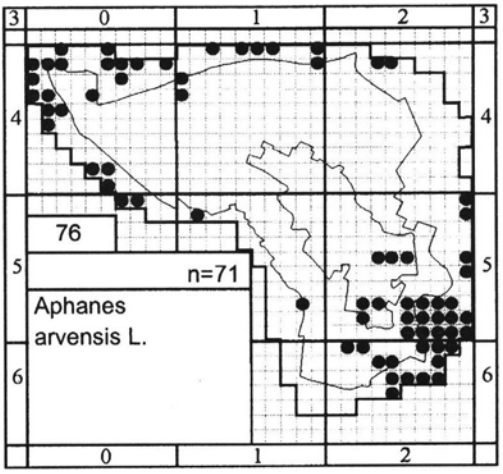

71
n=302
Anthoxanthum
odoratum L.

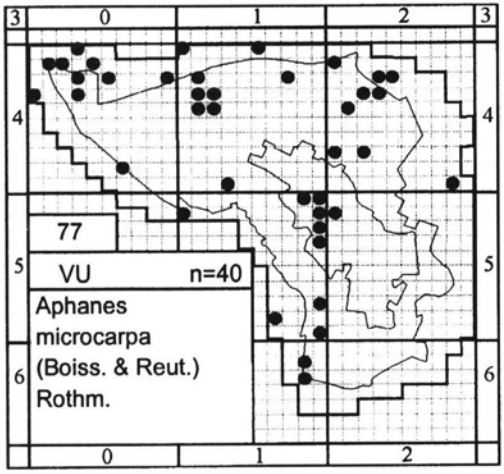

72
LR nt
n=2
Anthriscus
nitida (Wahlenb.)
Hazsl.

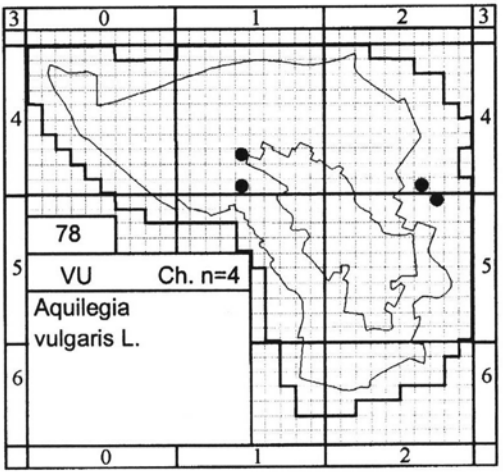

73
n=165
Anthriscus
sylvestris (L.)
Hoffm.

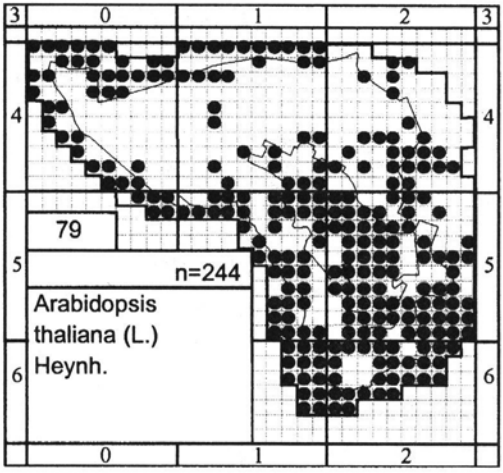

74
n=9
Anthyllis
vulneraria L.

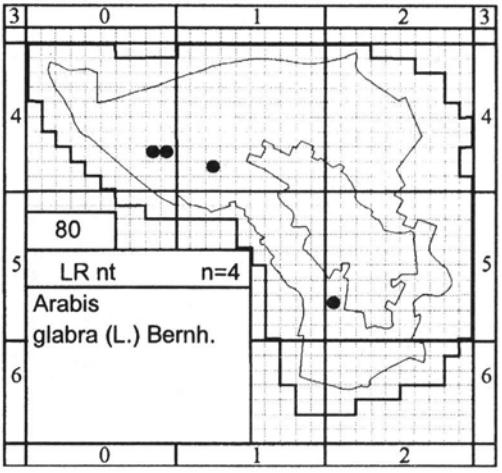

75
n=399
Apera
spica-venti (L.)
P. Beauv.

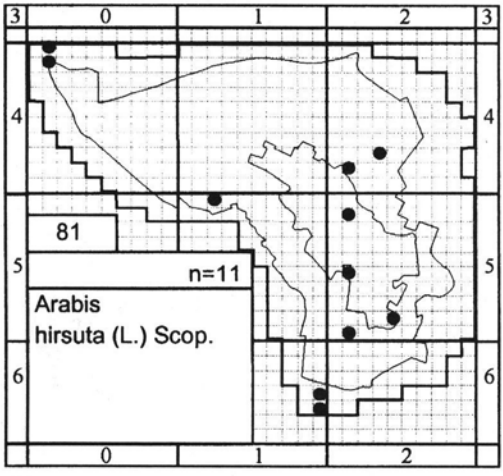

76
n=71
Aphanes
arvensis L.

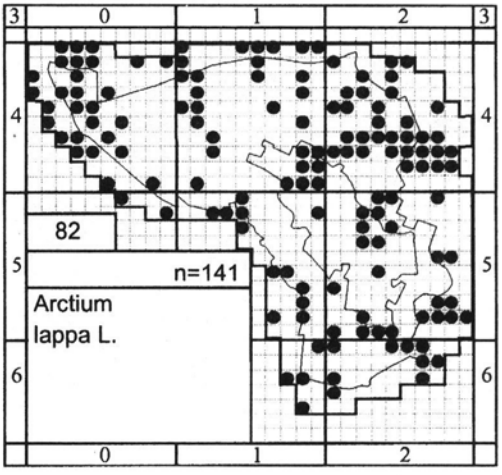

77
VU
n=40
Aphanes
microcarpa
(Boiss. & Reut.)
Rothm.

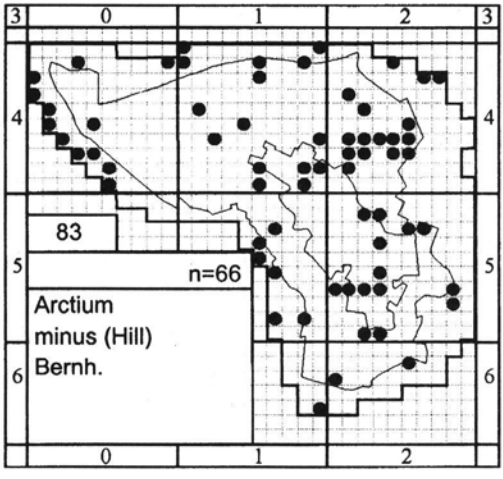

78
VU
Ch. n=4
Aquilegia
vulgaris L.

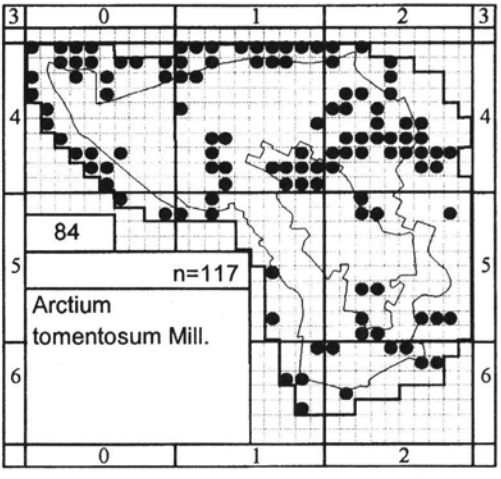

79
n=244
Arabidopsis
thaliana (L.)
Heynh.

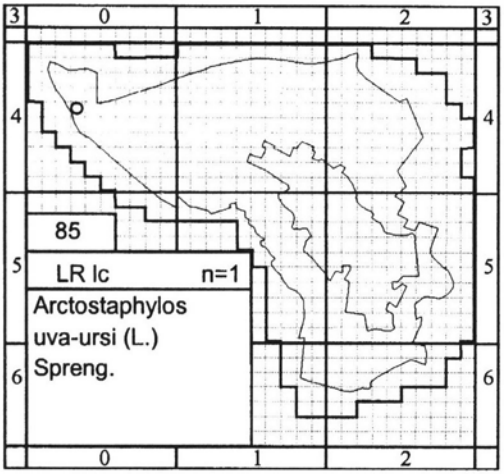

80
LR nt
n=4
Arabis
glabra (L.) Bernh.

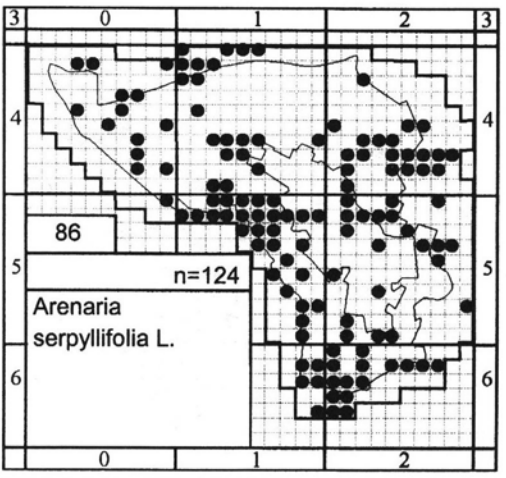

81
n=11
Arabis
hirsuta (L.) Scop.

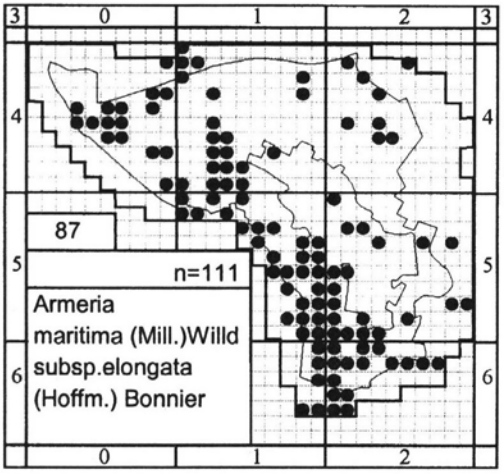

82
n=141
Arctium
lappa L.

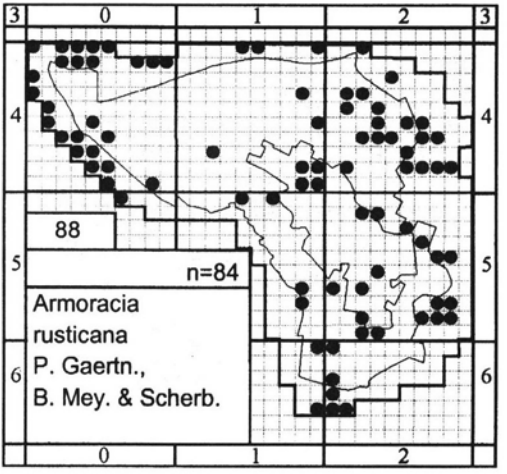

83
n=66
Arctium
minus (Hill)
Bernh.

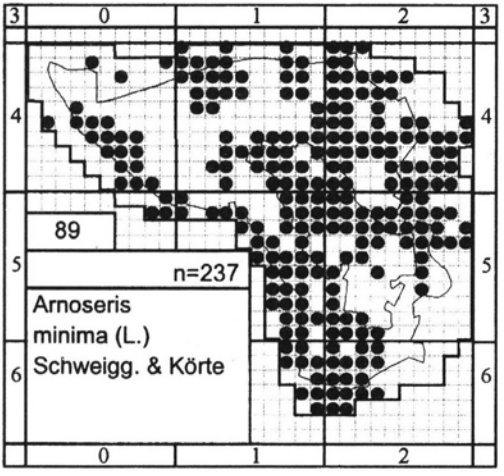

84
n=117
Arctium
tomentosum Mill.

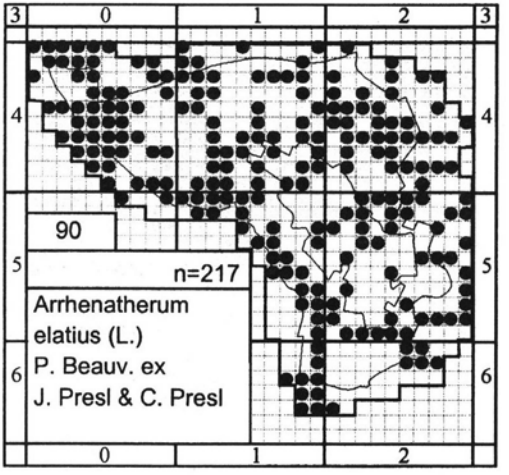

85
LR lc
n=1
Arctostaphylos
uva-ursi (L.)
Spreng.

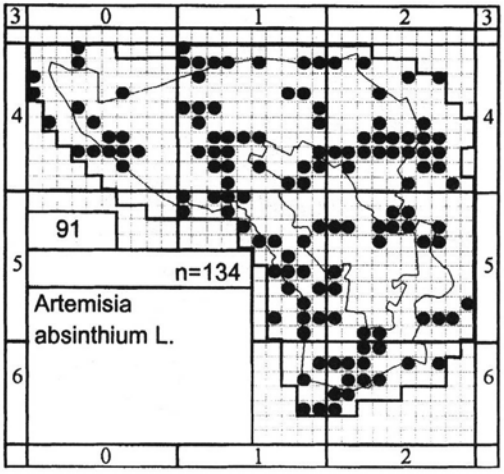

86
n=124
Arenaria
serpyllifolia L.


87
n=111
Armeria
maritima (Mill.)Willd
subsp.elongata
(Hoffm.) Bonnier


88
n=84
Armoracia
rusticana
P. Gaertn.,
B. Mey. & Scherb.


89
n=237
Arnoseris
minima (L.)
Schweigg. & Körte


90
n=217
Arrhenatherum
elatius (L.)
P. Beauv. ex
J. Presl & C. Presl


91
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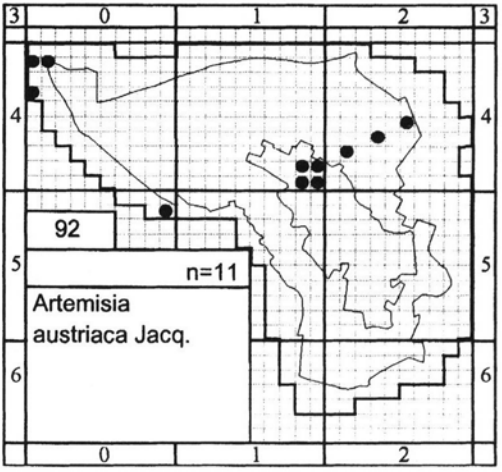
Artemisia
absinthium L.


92
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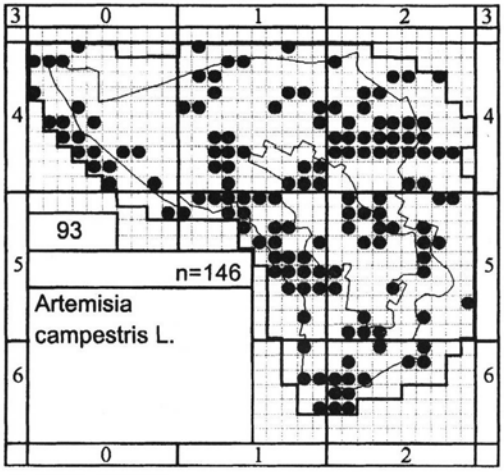
Artemisia
austriaca Jacq.


93
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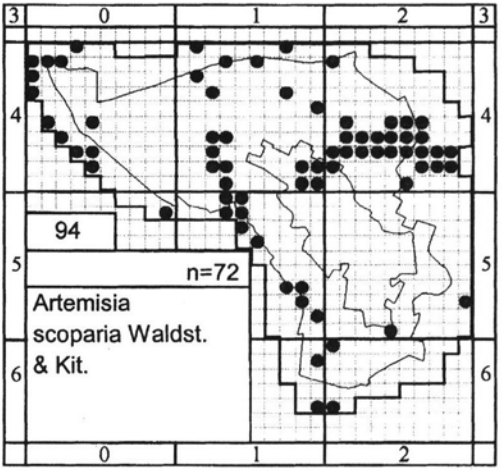
Artemisia
campestris L.


94
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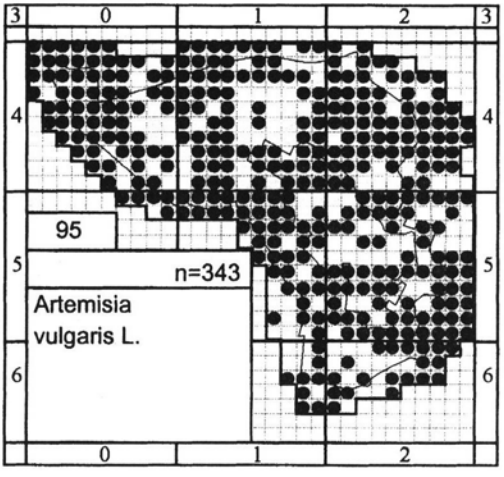
Artemisia
scoparia Waldst.
& Kit.


95
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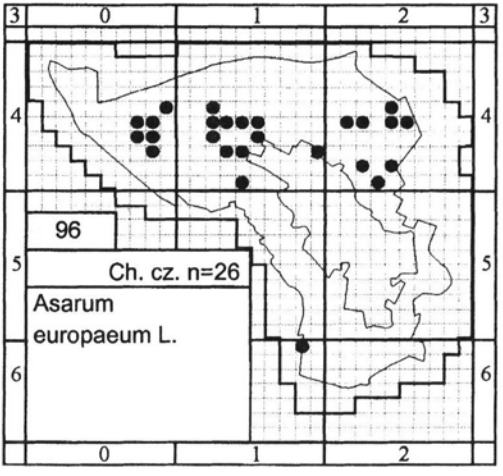
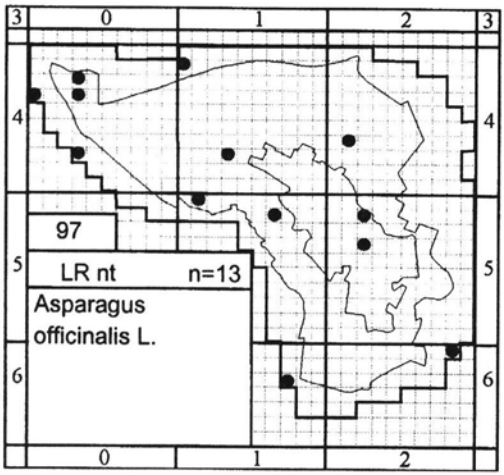
Artemisia
vulgaris L.


96
Ch. cz. n=26
Asarum
europaeum L.


97
LR nt
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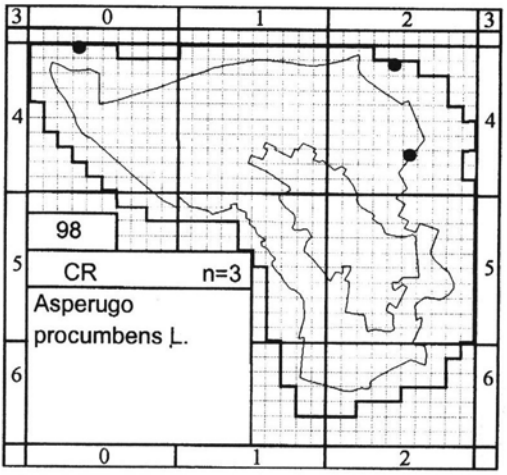
Asparagus officinalis L.


98
CR
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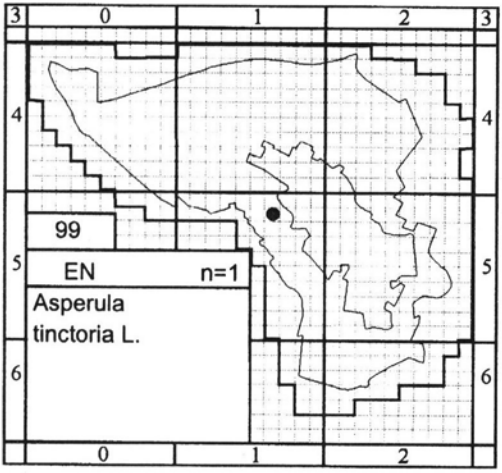
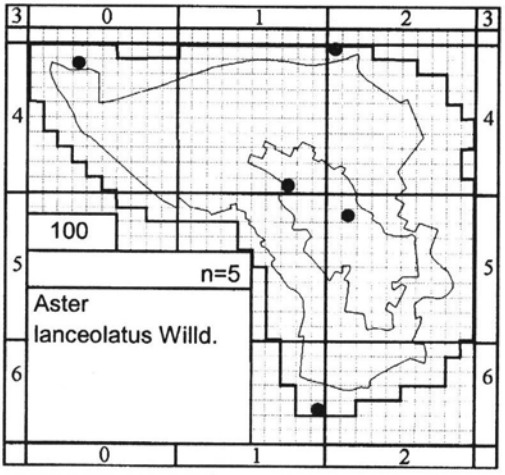
Asperugo procumbens L.


99
EN
n=1
Asperula tinctoria L.


100
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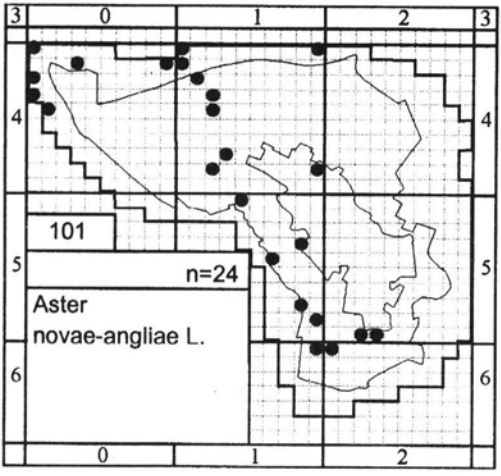
Aster lanceolatus Willd.


101
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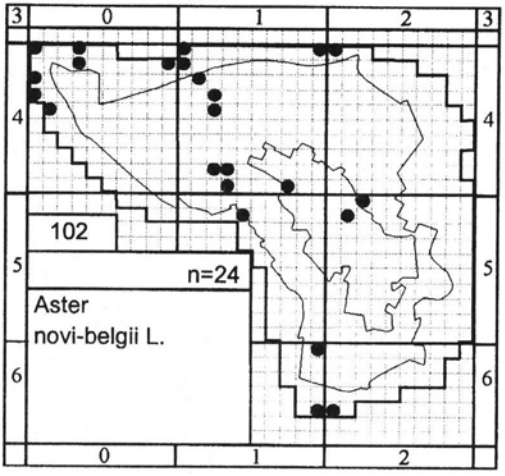
Aster novae-angliae L.


102
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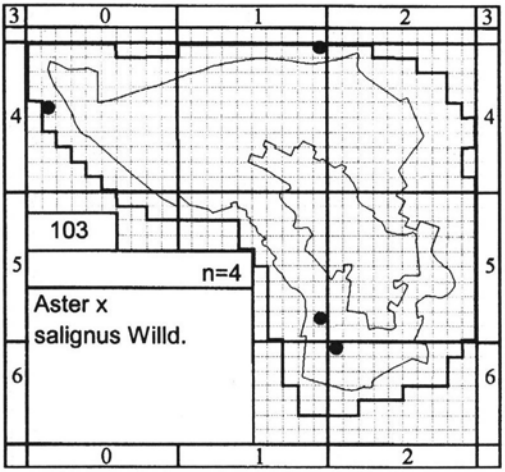
Aster novi-belgii L.


103
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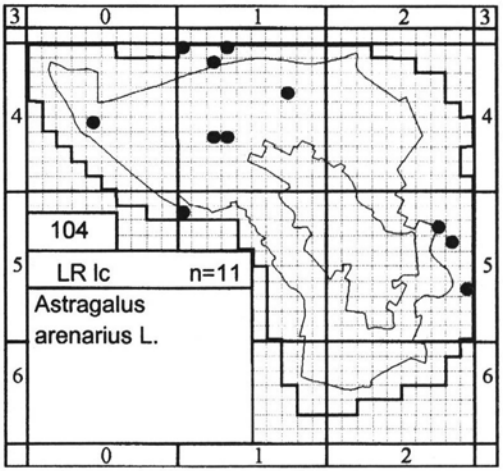
Aster x
salignus Willd.


104
LR lc
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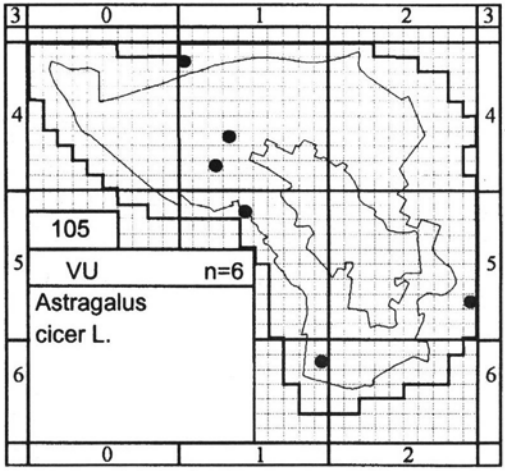
Astragalus
arenarius L.


105
VU
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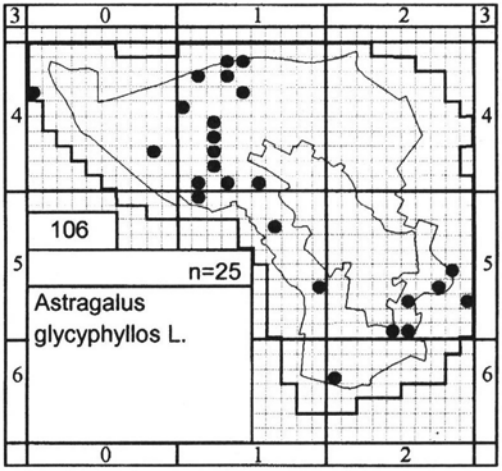
Astragalus
cicer L.


106
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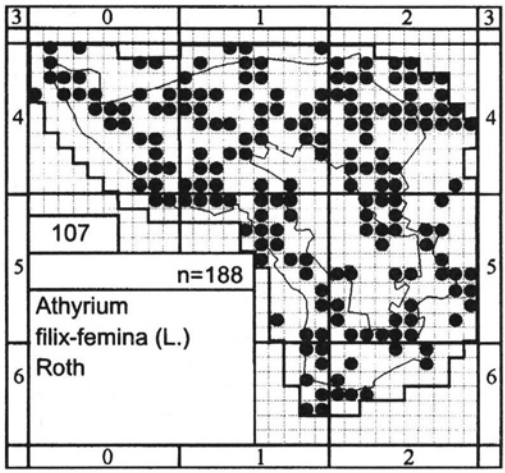
Astragalus
glycyphyllos L.


107
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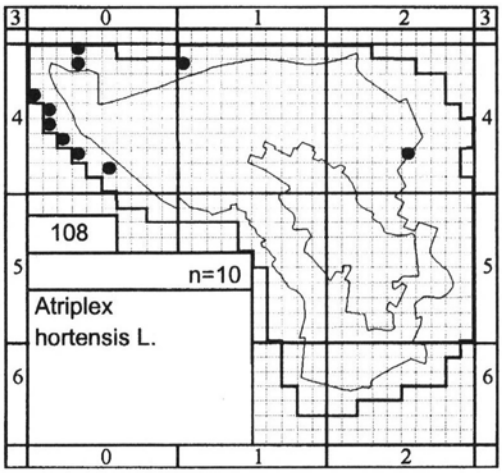
Athyrium
filix-femina (L.)
Roth


108
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Atriplex
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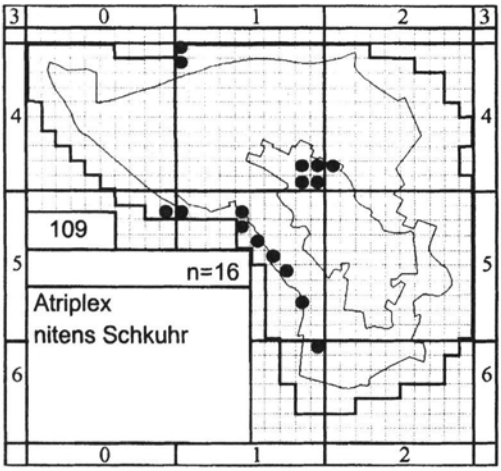
109
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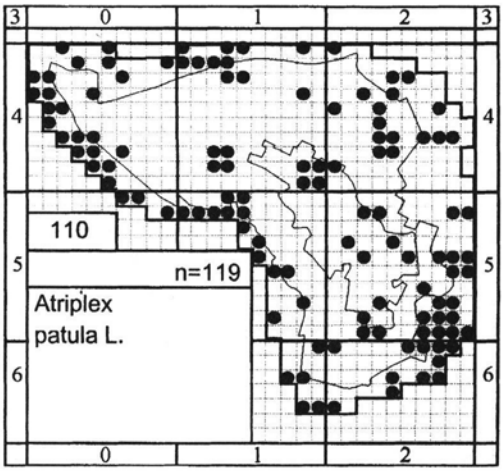
Atriplex
nitens Schkuhr


110
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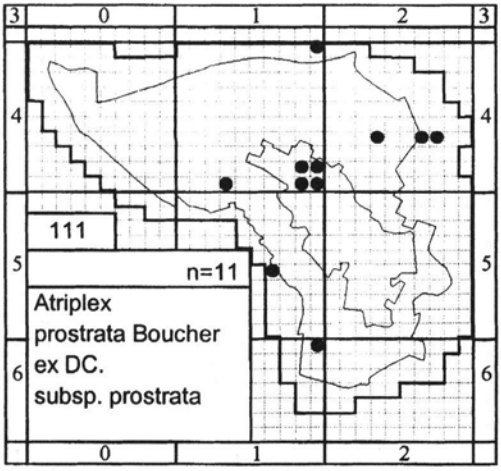
Atriplex
patula L.


111
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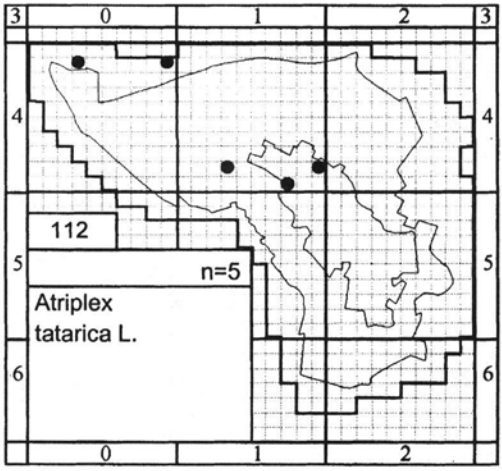
Atriplex
prostrata Boucher
ex DC.
subsp. prostrata


112
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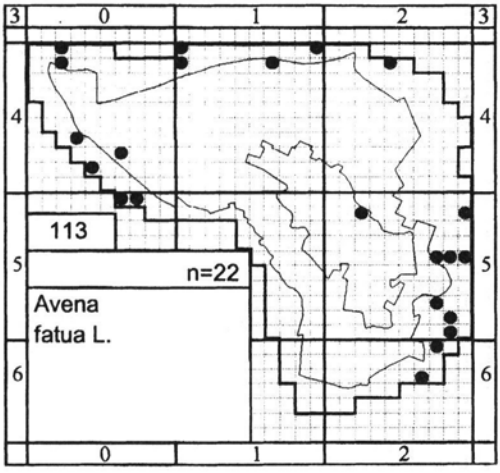
Atriplex
tatarica L.


113
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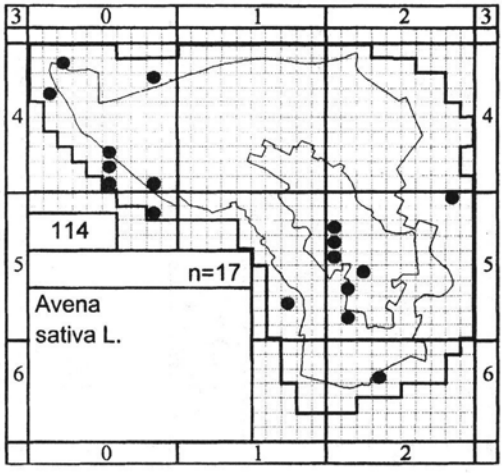
Avena
fatua L.


114
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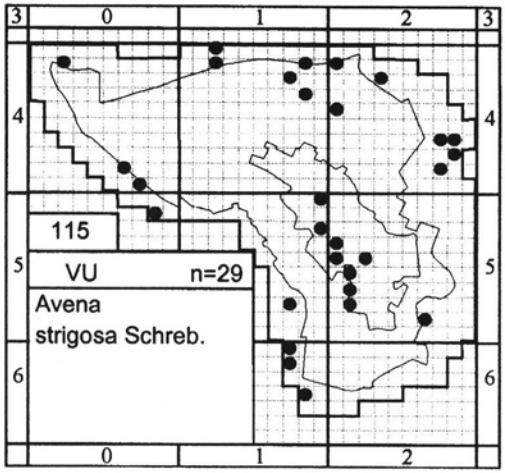
Avena
sativa L.


115
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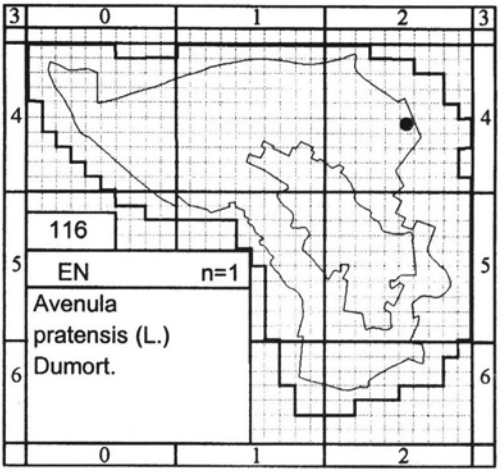
Avena
strigosa Schreb.


116
EN
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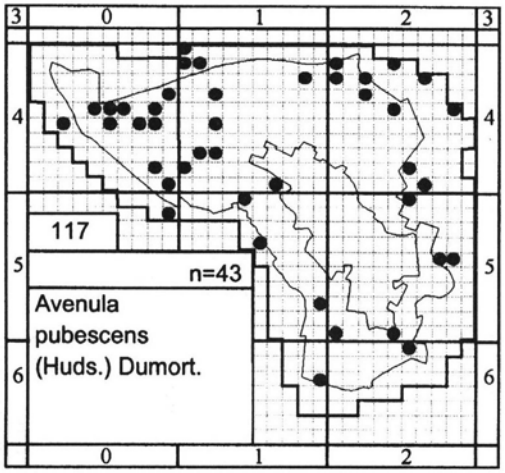
Avenula
pratensis (L.)
Dumort.


117
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Avenula
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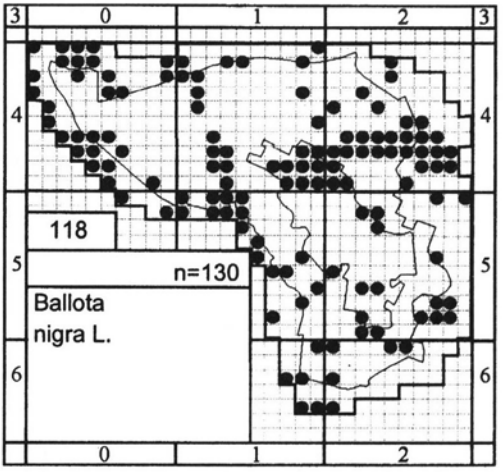
(Huds.) Dumort.


118
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Ballota
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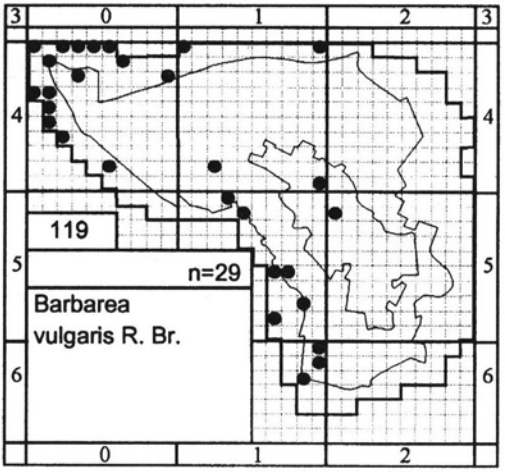
119
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Barbarea
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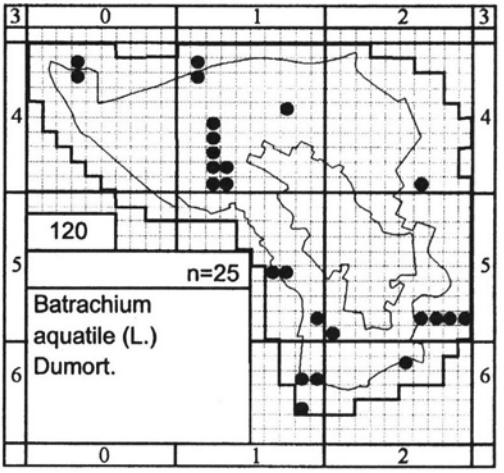
120
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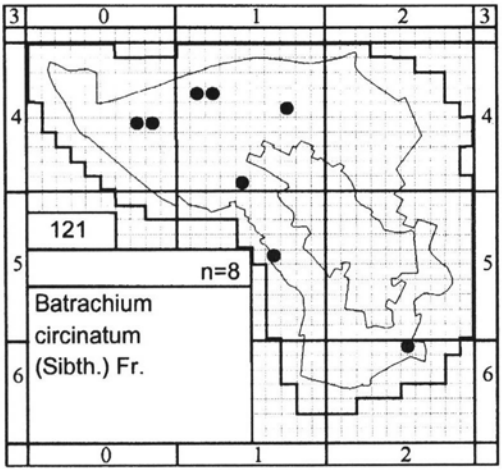
Batrachium
aquatile (L.)
Dumort.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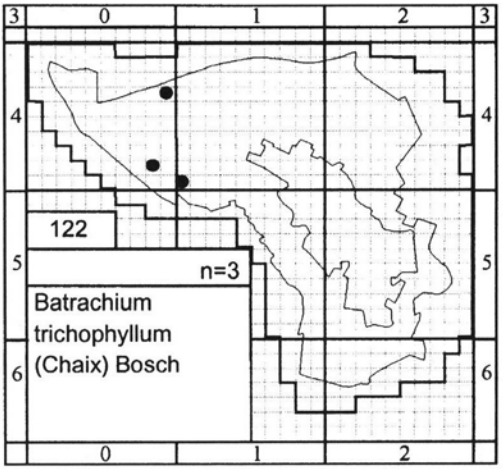
Batrachium
circinatum
(Sibth.) Fr.


122
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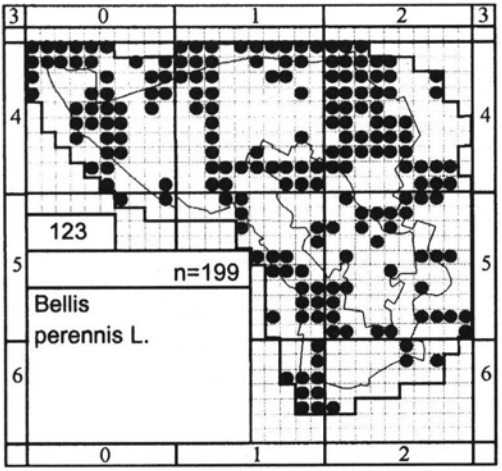
Batrachium
trichophyllum
(Chaix) Bosch


123
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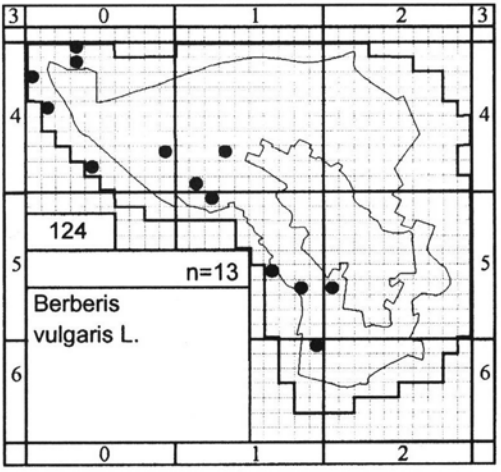
Bellis
perennis L.


124
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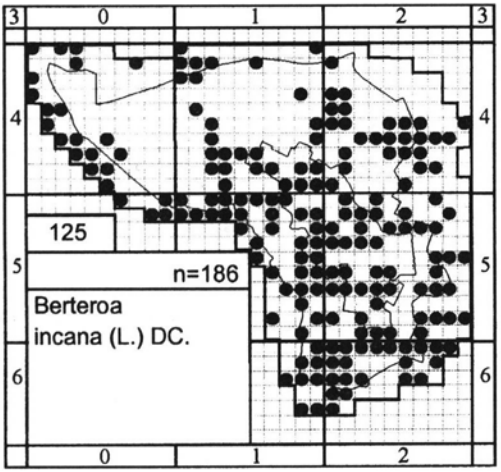
Berberis
vulgaris L.


125
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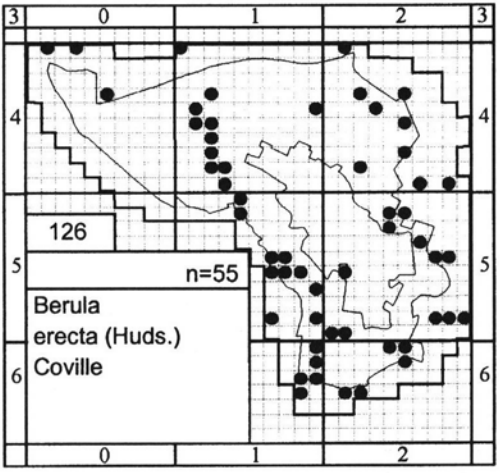
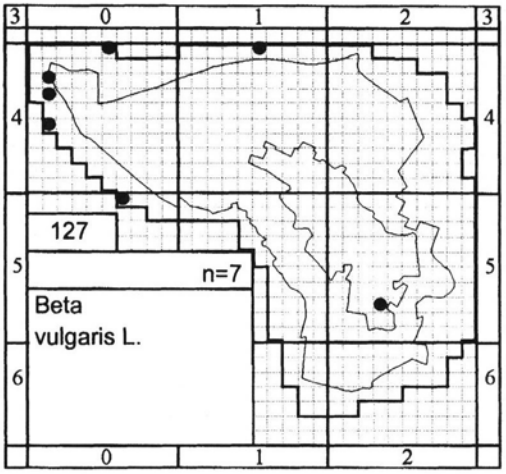
Berteroa
incana (L.) DC.


126
n=55
Berula
erecta (Huds.)
Coville


127
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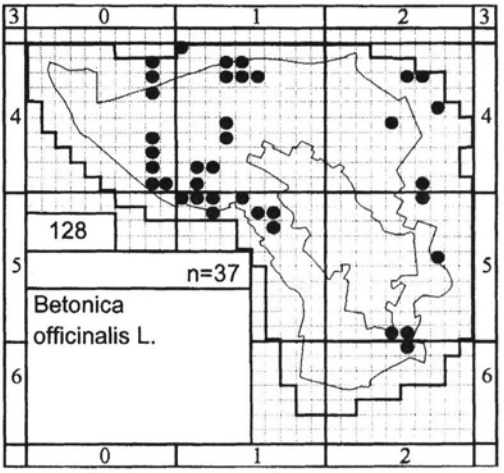
Beta
vulgaris L.


128
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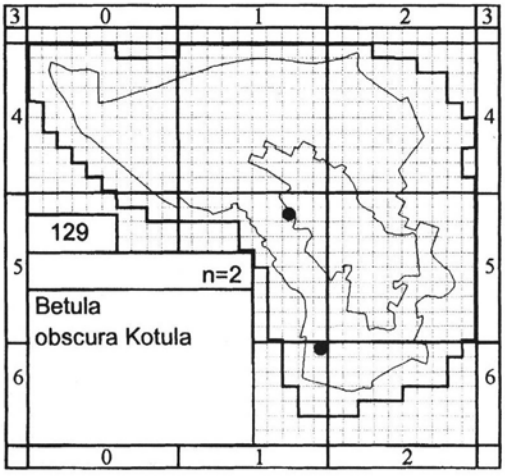
Betonica
officinalis L.


129
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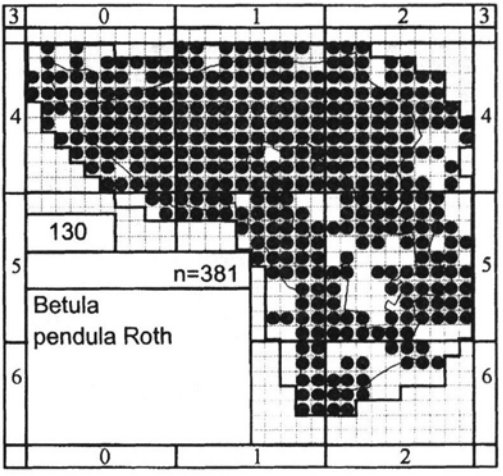
Betula
obscura Kotula


130
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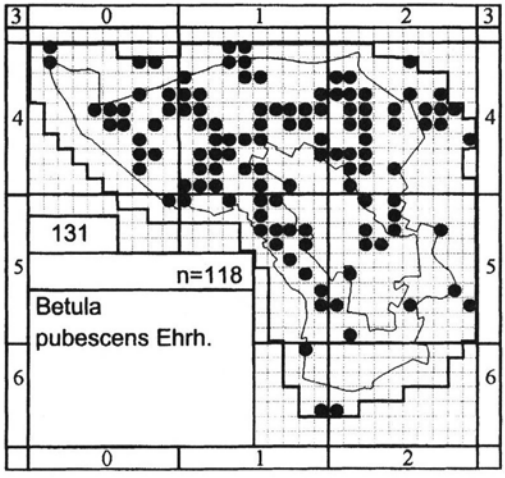
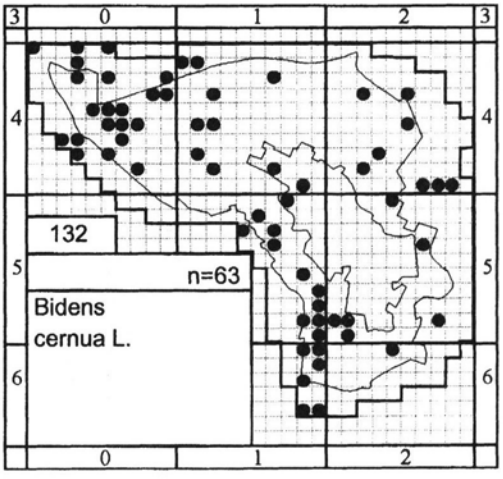
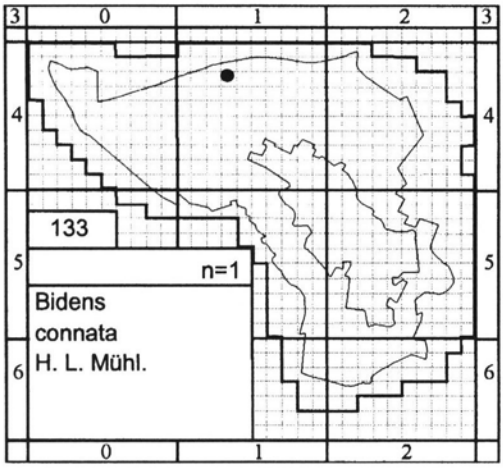
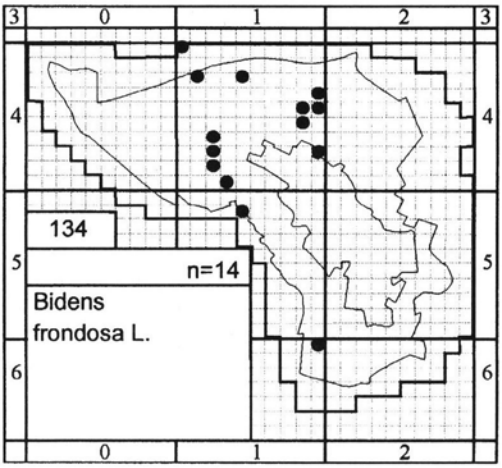
Betula
pendula Roth


131
n=118
Betula
pubescens Ehrh.


132
n=63
Bidens
cernua L.


133
n=1
Bidens
connata
H. L. Mühl.


134
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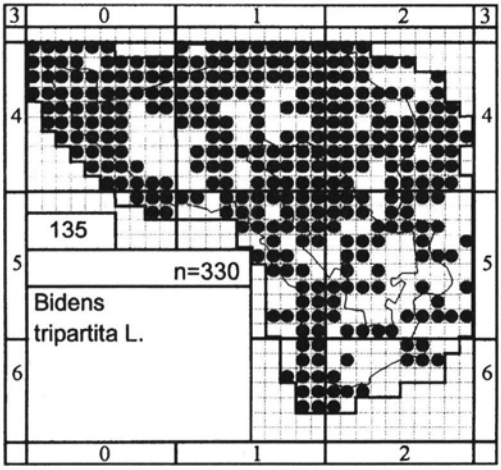
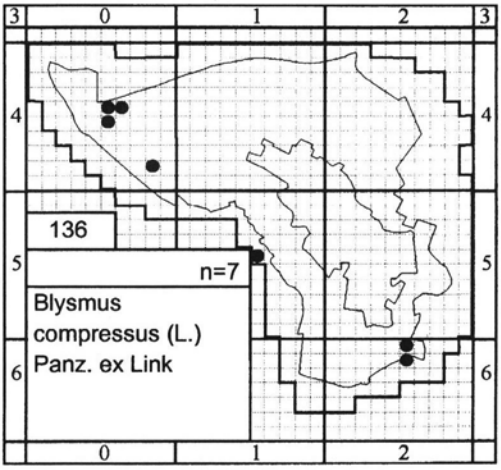
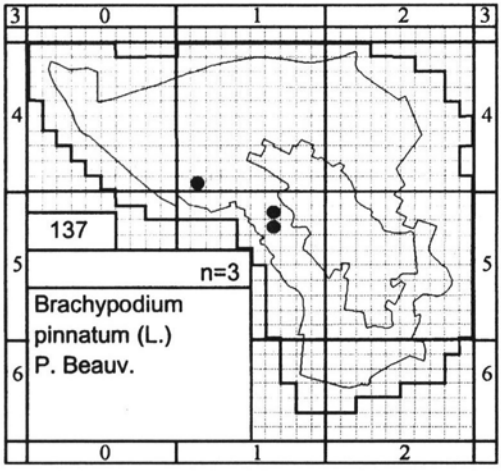
Bidens
frondosa L.


135
n=330
Bidens
tripartita L.


136
n=7
Blysmus
compressus (L.)
Panz. ex Link


137
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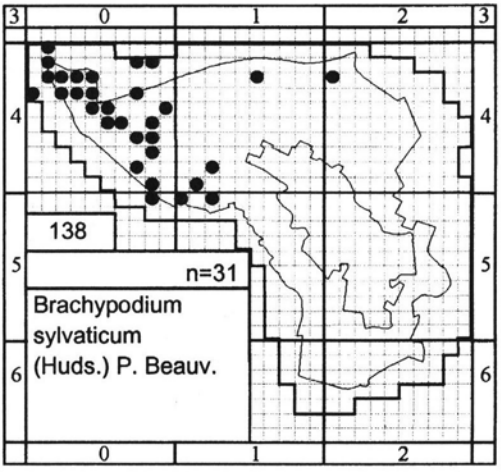
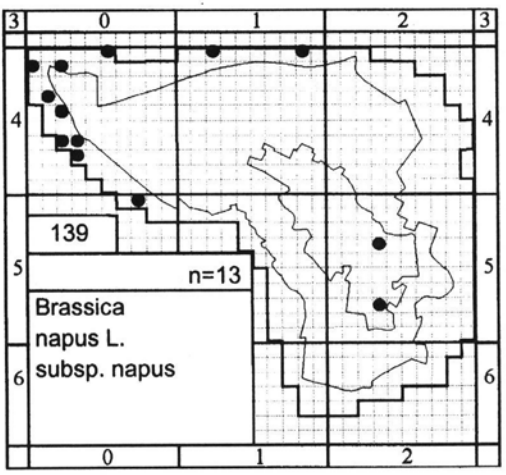
Brachypodium
pinnatum (L.)
P. Beauv.


138
n=31
Brachypodium
sylvaticum
(Huds.) P. Beauv.


139
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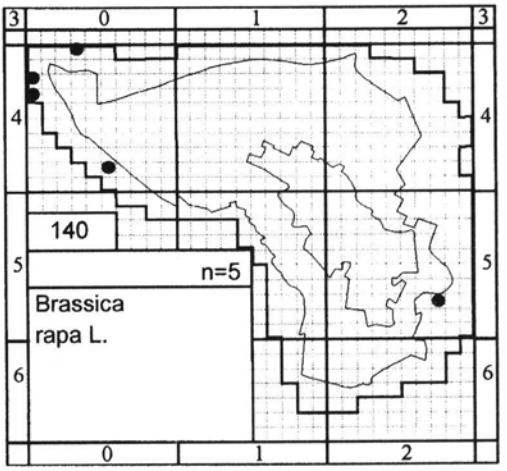
Brassica
napus L.
subsp. napus


140
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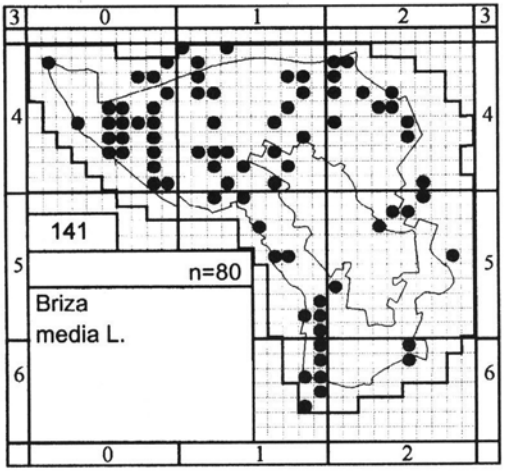
Brassica
rapa L.


141
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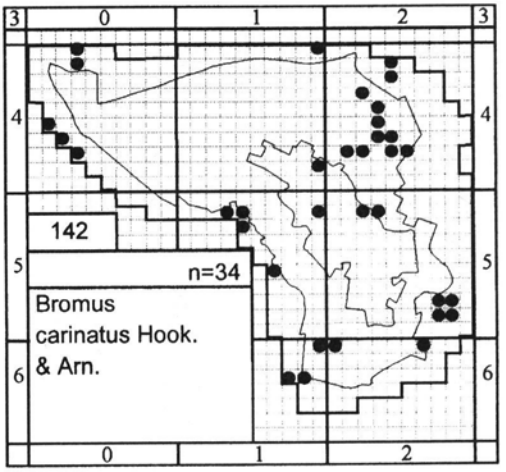
Briza
media L.


142
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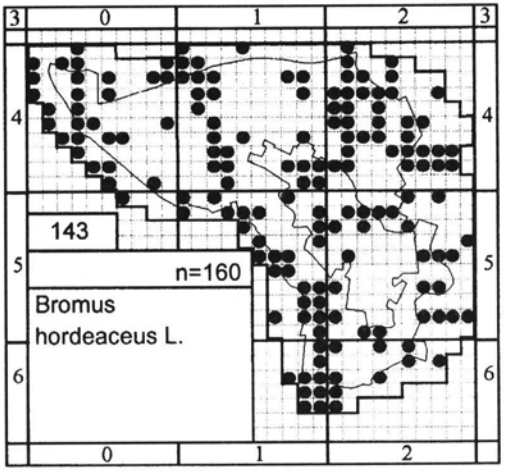
Bromus
carinatus Hook.
& Arn.


143
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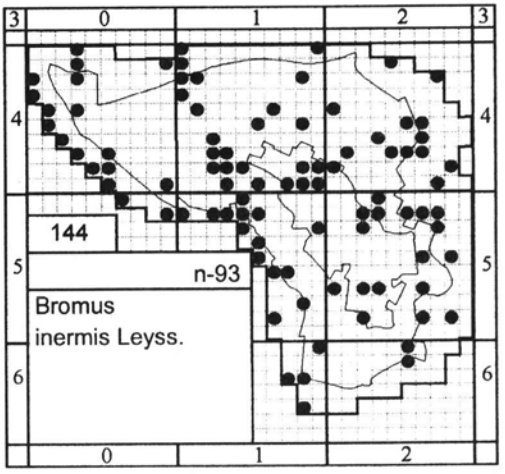
144
n-93
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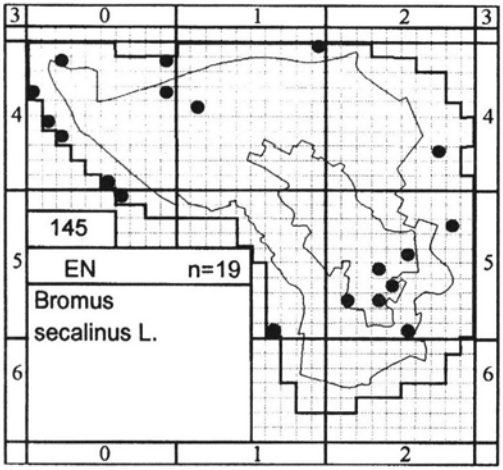
145
EN
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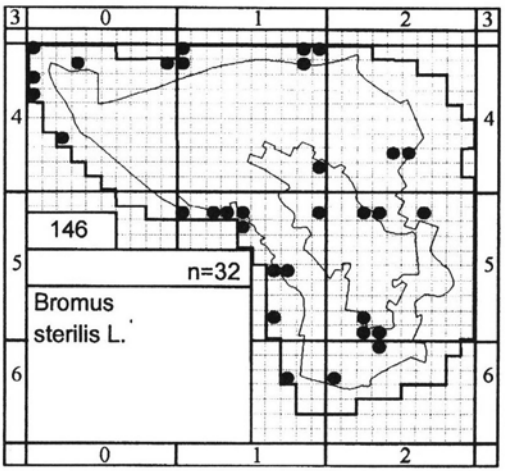
146
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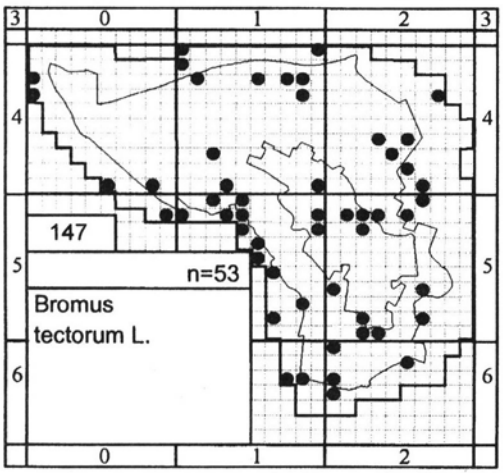
147
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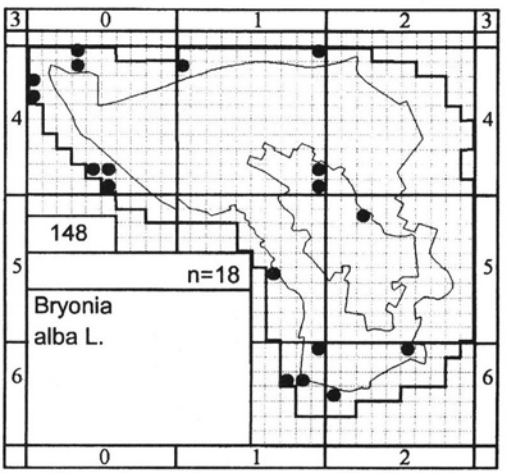
Bromus
tectorum L.


148
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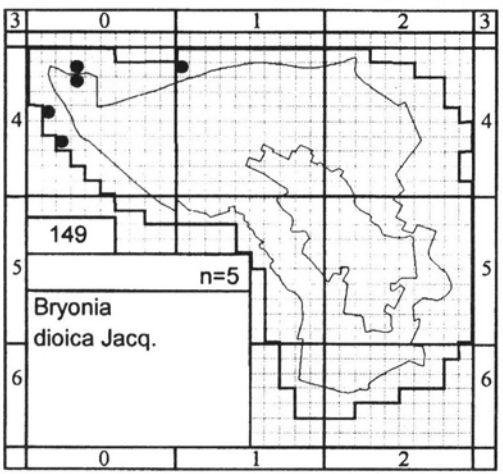
Bryonia
alba L.


149
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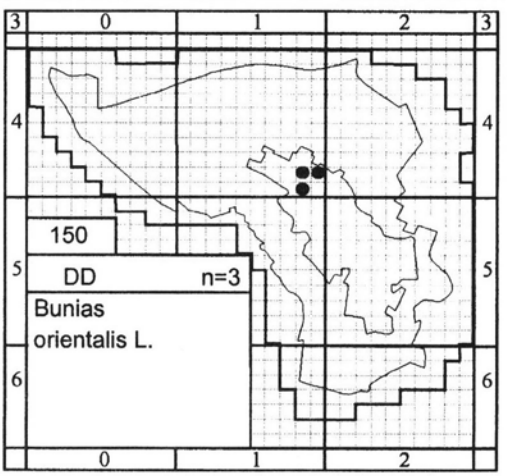
Bryonia
dioica Jacq.


150
DD
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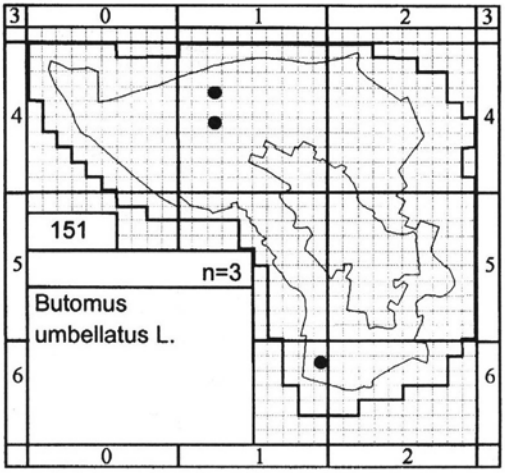
Bunias
orientalis L.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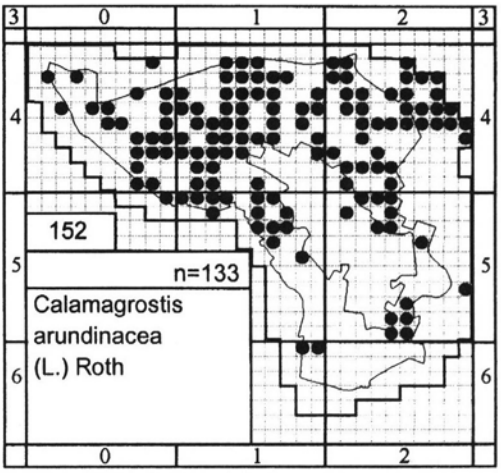
Butomus
umbellatus L.


152
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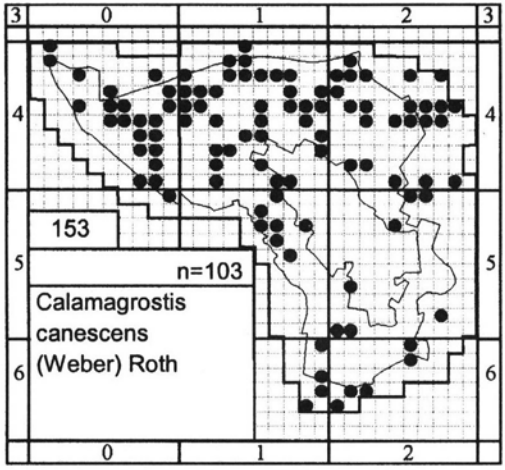
Calamagrostis
arundinacea
(L.) Roth


153
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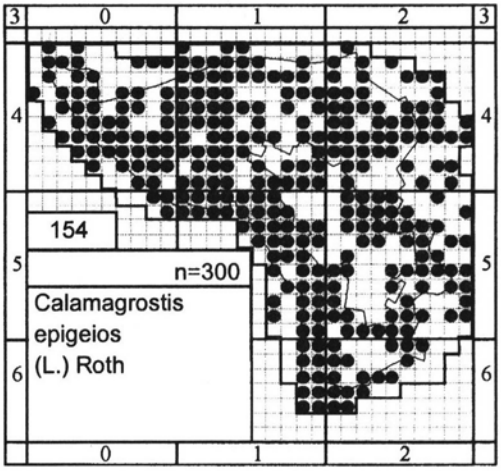
Calamagrostis
canescens
(Weber) Roth


154
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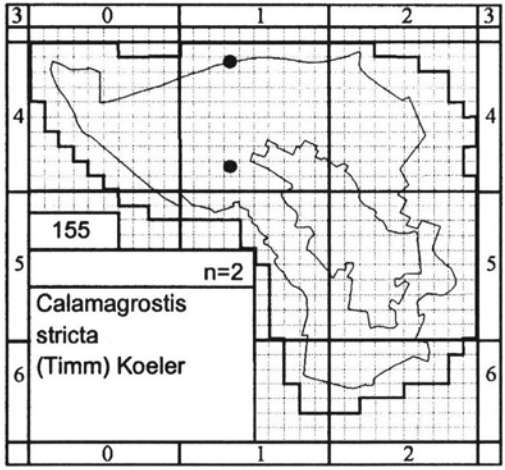
Calamagrostis
epigeios
(L.) Roth


155
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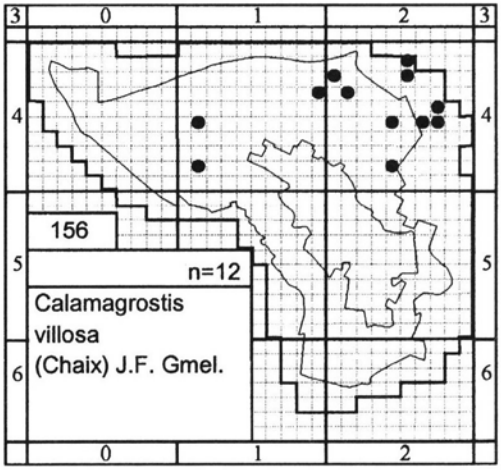
Calamagrostis
stricta
(Timm) Koeler


156
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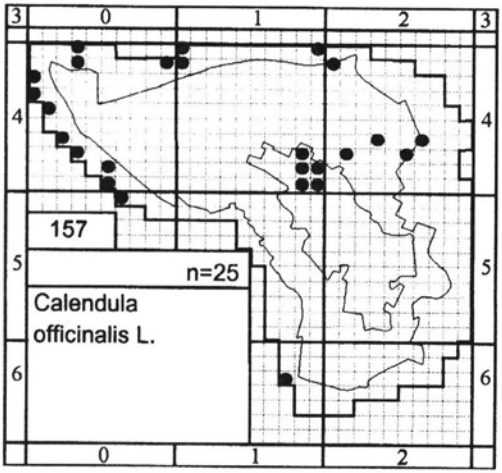
(Chaix) J.F. Gmel.


157
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Calendula
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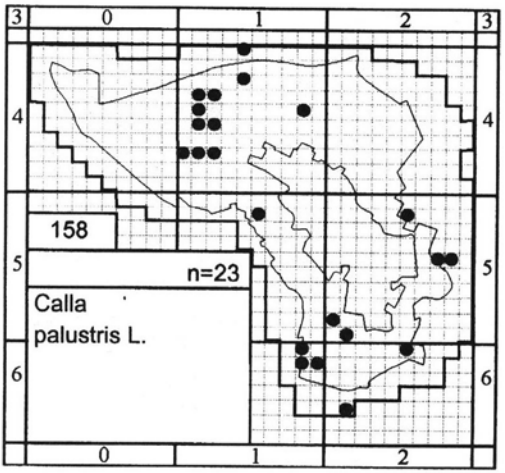
158
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Calla
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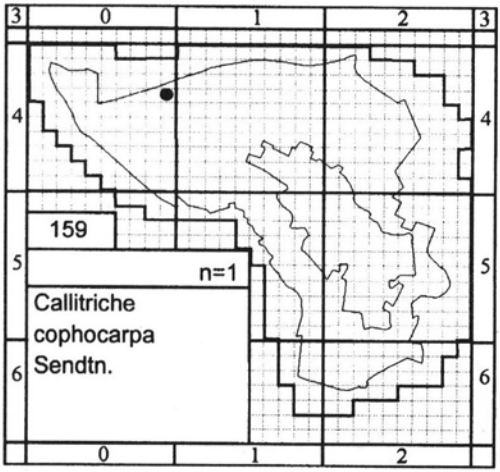
159
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Callitriche
cophocarpa
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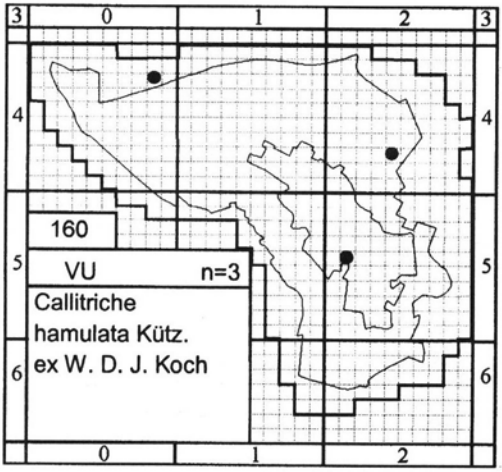
160
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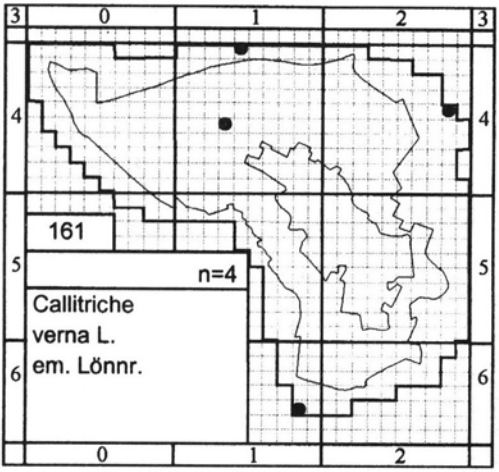
ex W. D. J. Koch


161
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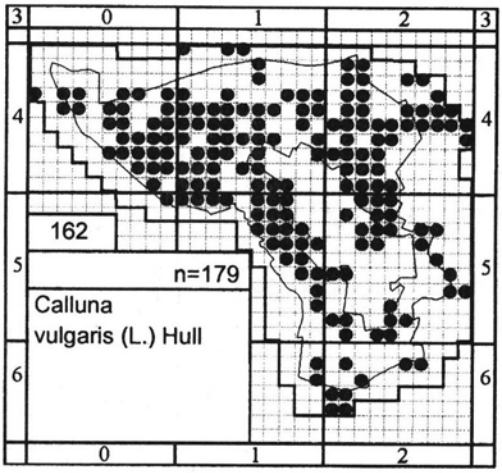
Callitriche
verna L.
em. Lönnr.


162
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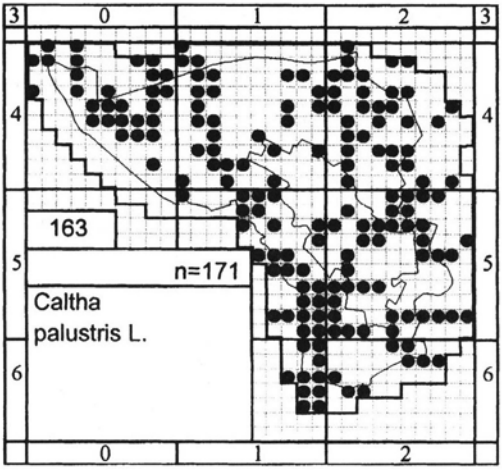
Calluna
vulgaris (L.) Hull


163
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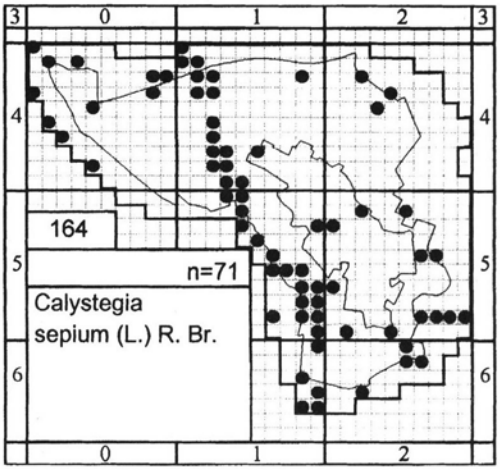
Caltha
palustris L.


164
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Calystegia
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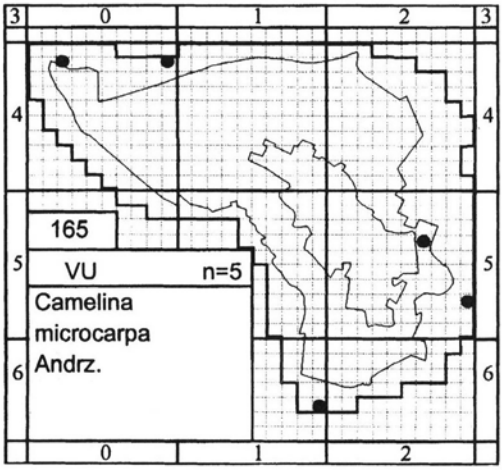
165
VU
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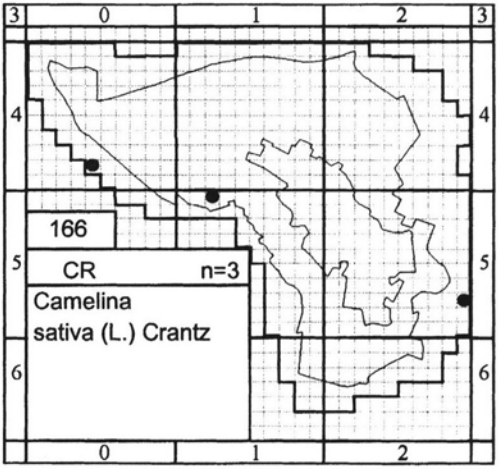
Camelina
microcarpa
Andrz.


166
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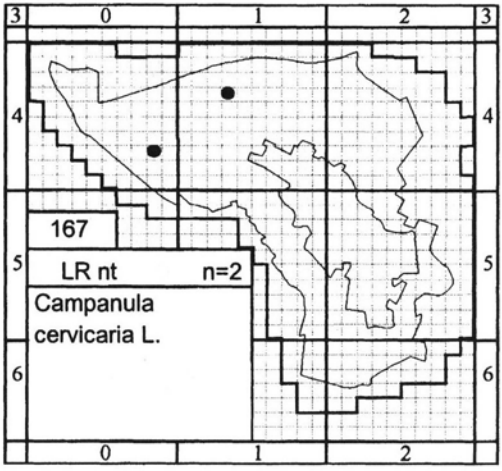
167
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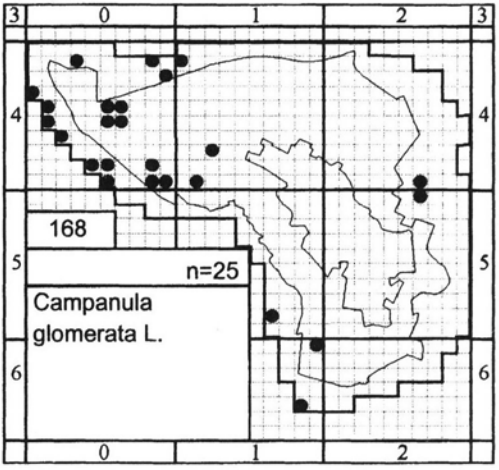
168
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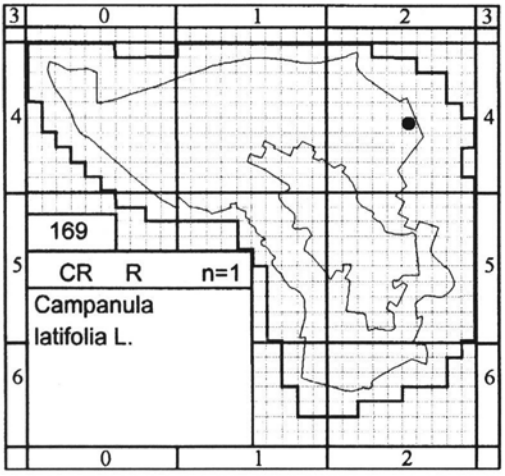
Campanula
glomerata L.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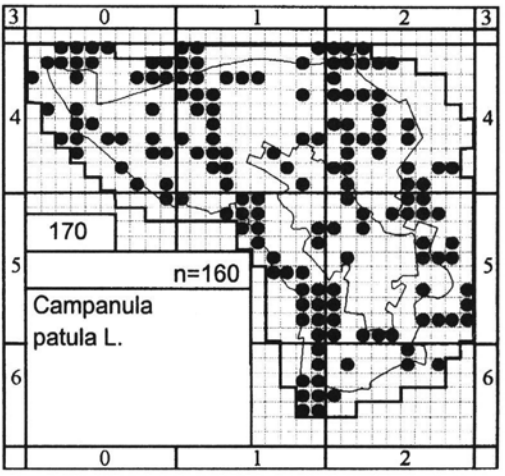
170
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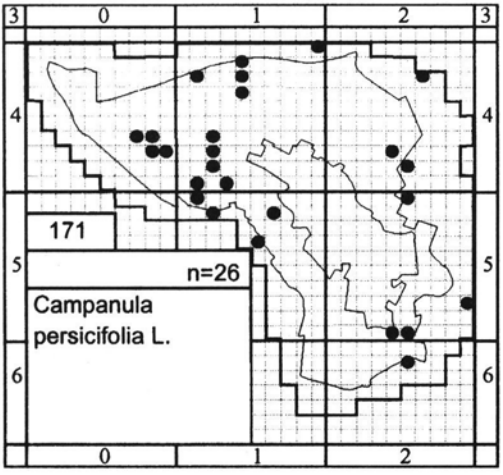
Campanula patula L.


171
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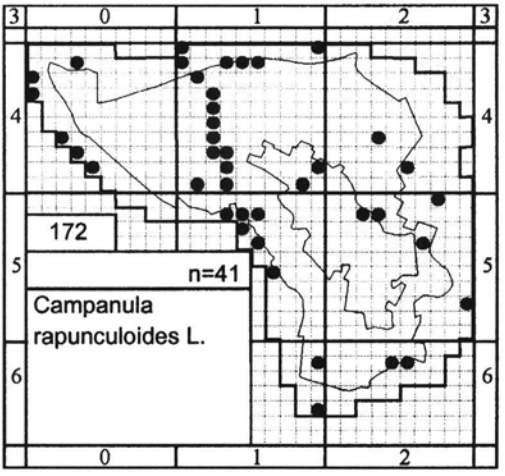
172
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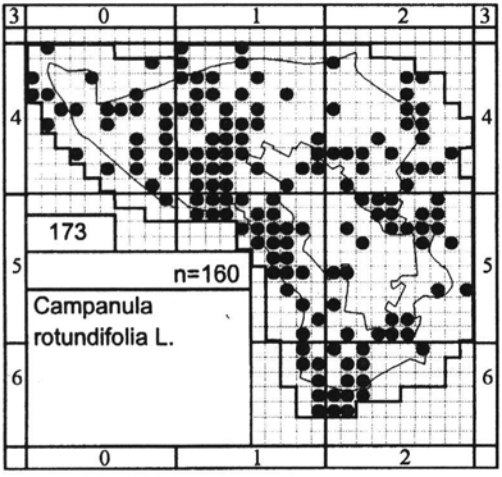
Campanula rapunculoides L.


173
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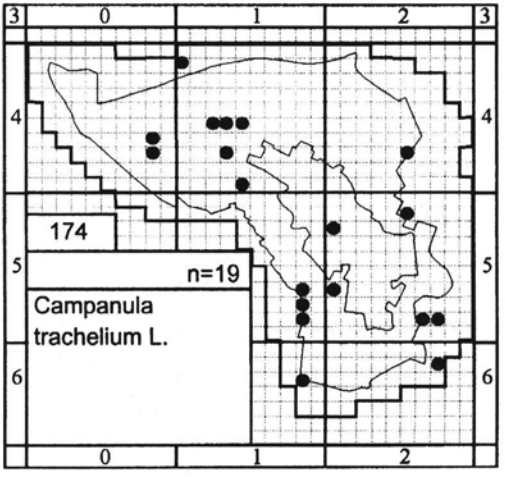
Campanula rotundifolia L.


174
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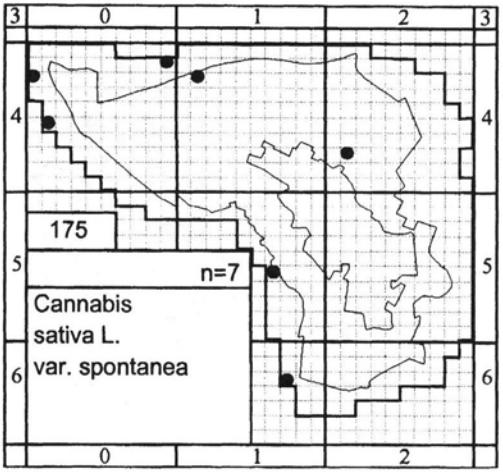
Campanula trachelium L.


175
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Cannabis
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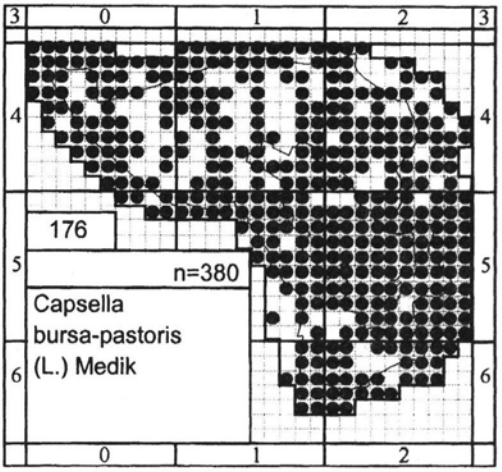
var. spontanea


176
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Capsella
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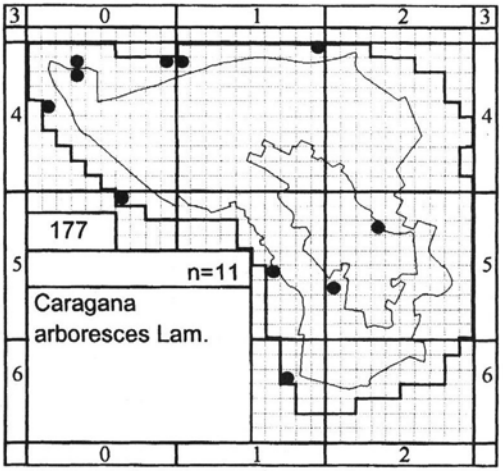
(L.) Medik


177
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Caragana
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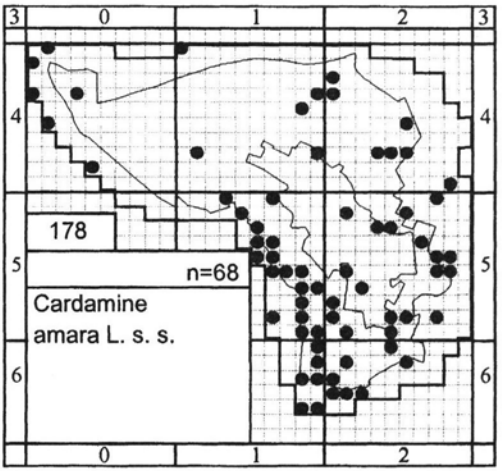
178
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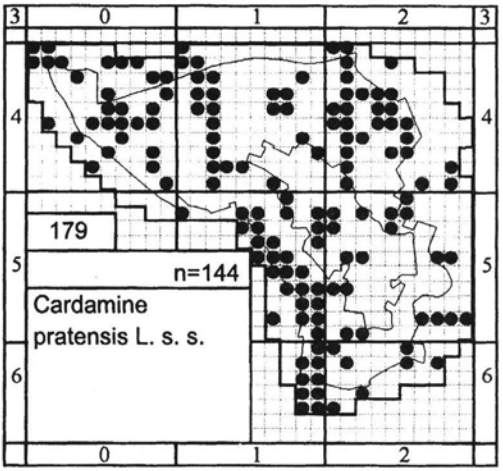
179
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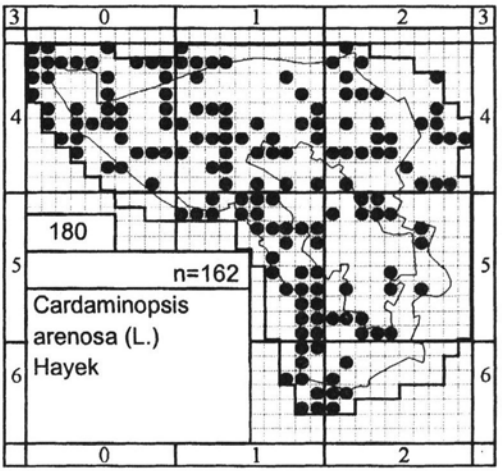
180
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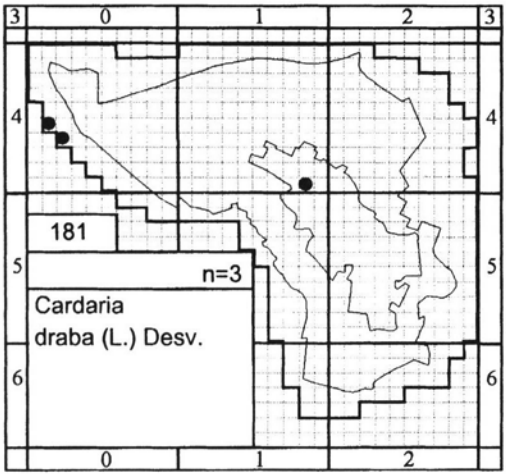
arenosa (L.)
Hayek


181
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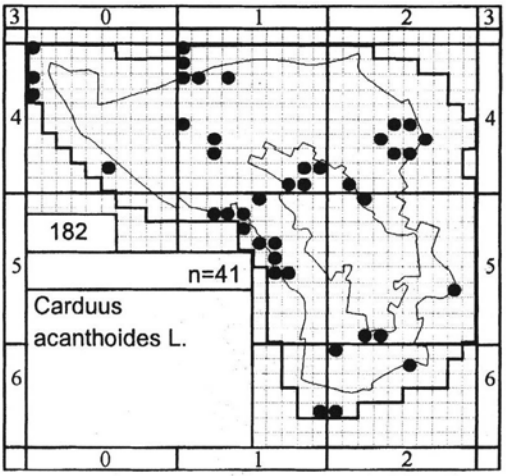
182
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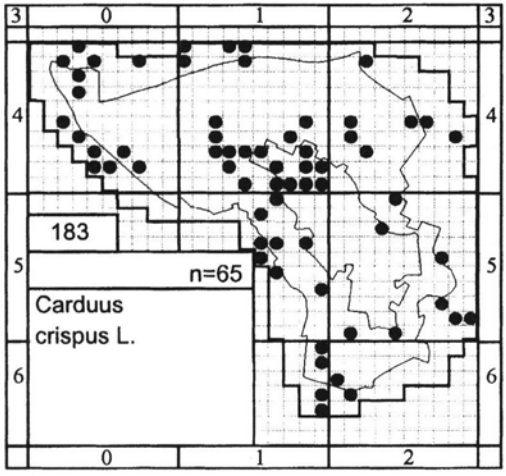
Carduus
acanthoides L.


183
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Carduus
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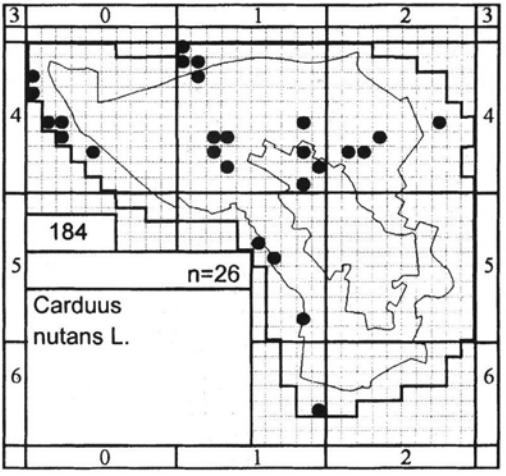
184
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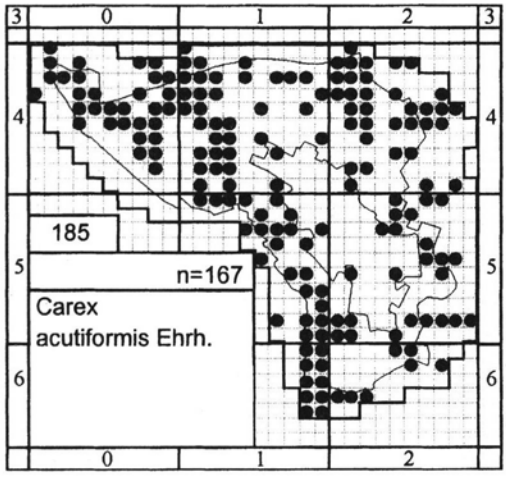
Carduus
nutans L.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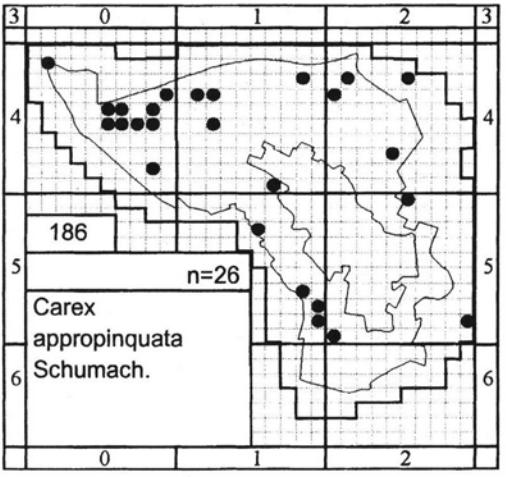
Carex
acutiformis Ehrh.


186
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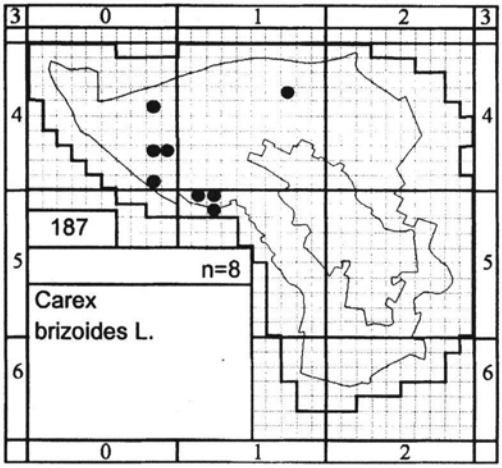
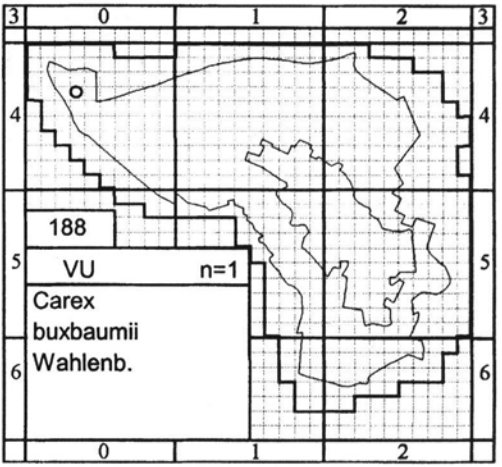
Carex
appropinquata
Schumach.


187
n=8
Carex
brizoides L.


188
VU
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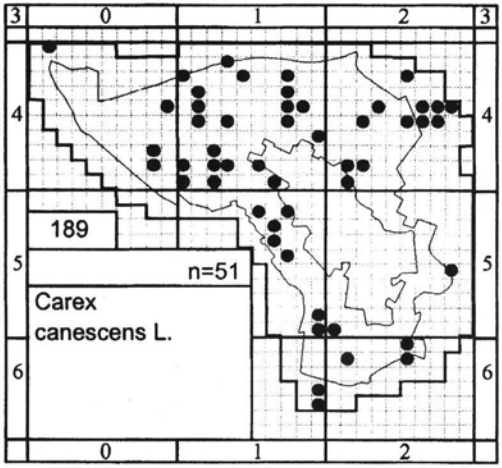
Wahlenb.


189
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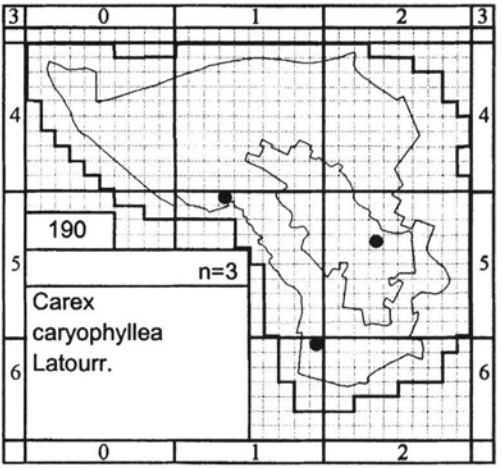
190
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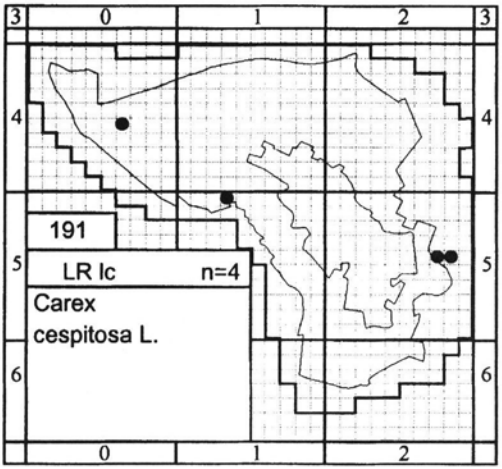
Latourr.


191
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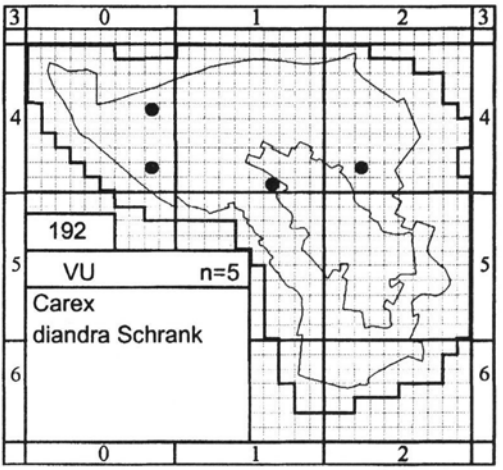
192
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Carex
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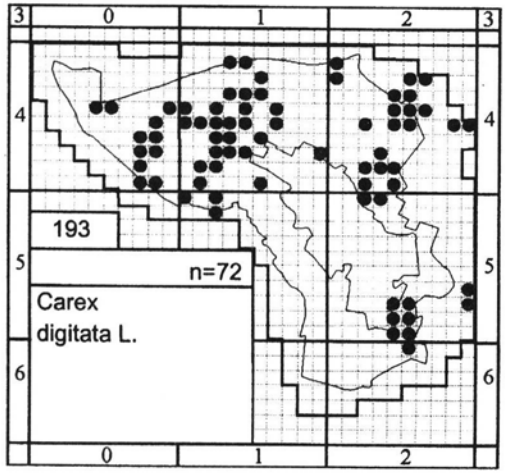
193
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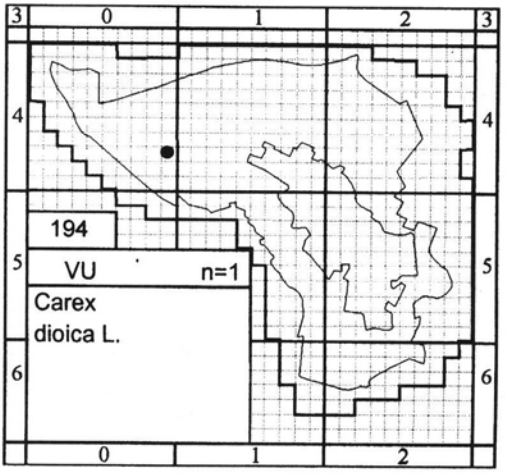
194
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Carex
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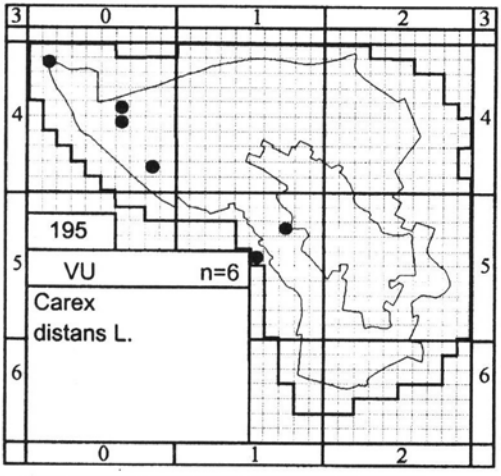
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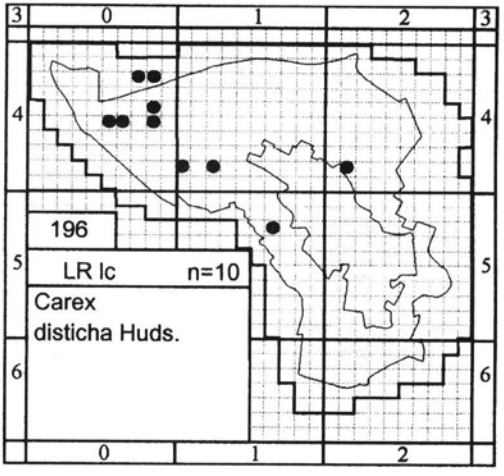
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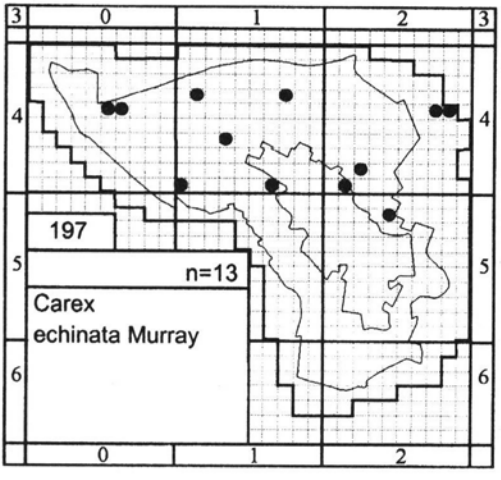
197
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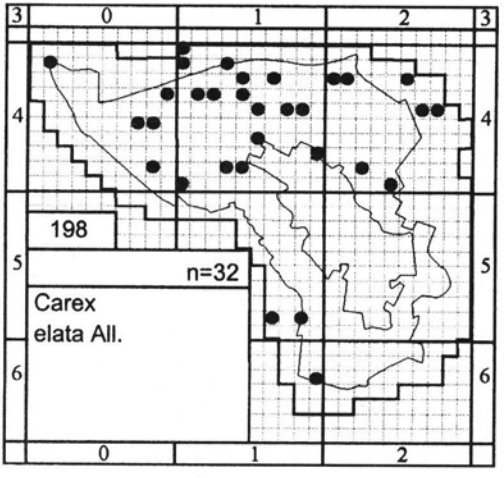
Carex
echinata Murray


198
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Carex
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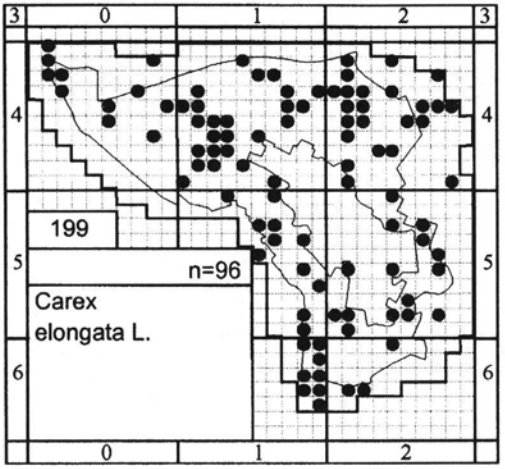
199
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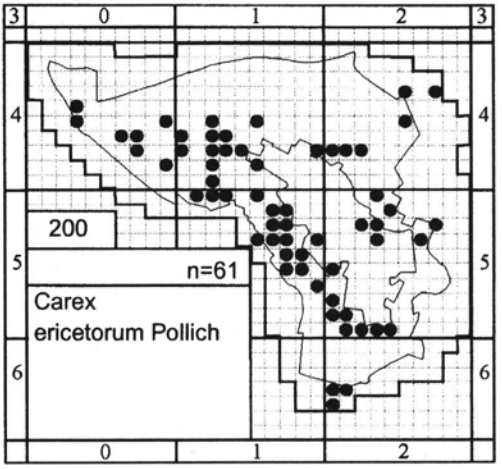
elongata L.


200
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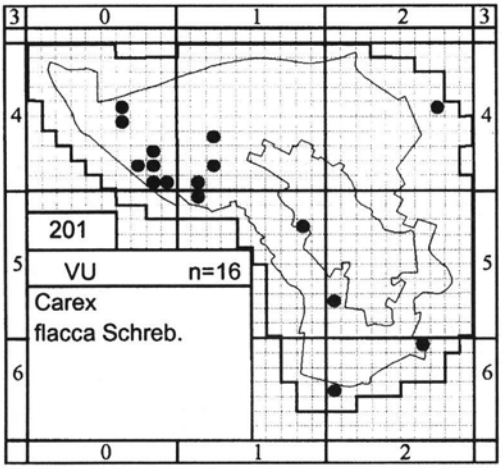
Carex
ericetorum Pollich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Carex
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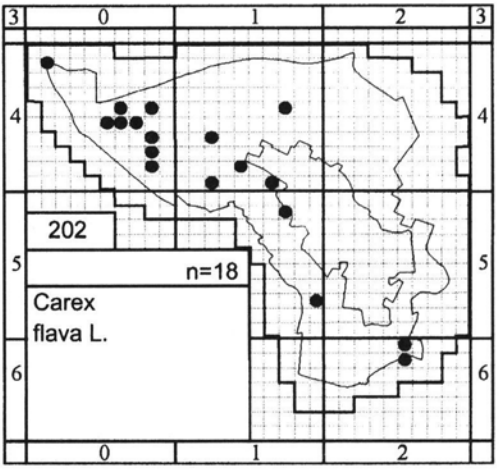
202
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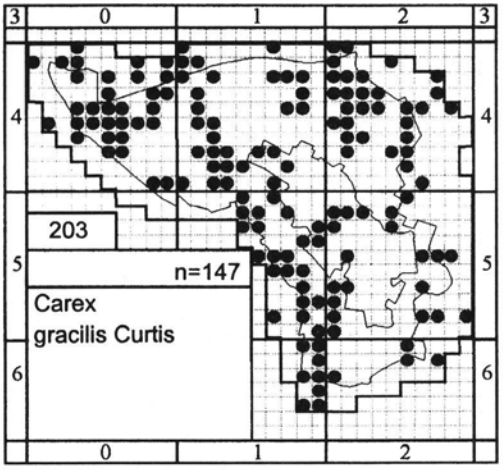
203
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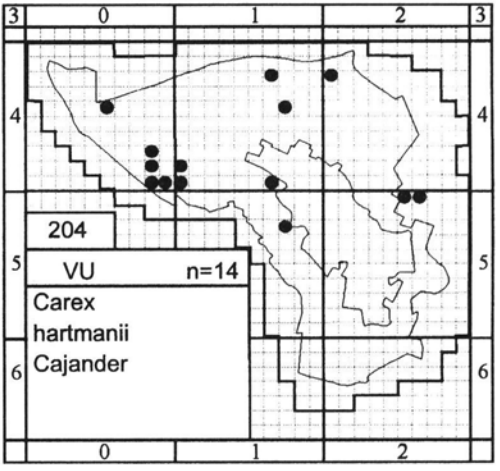
Carex
gracilis Curtis


204
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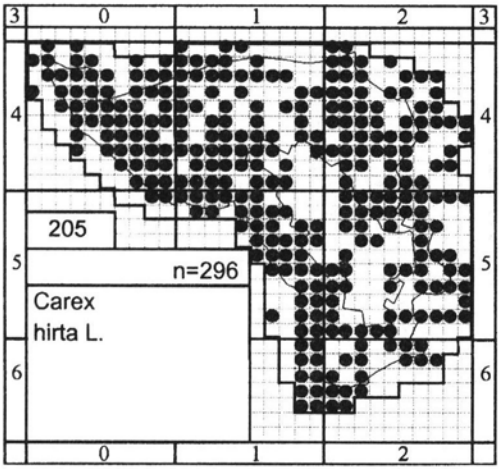
Carex
hartmanii
Cajander


205
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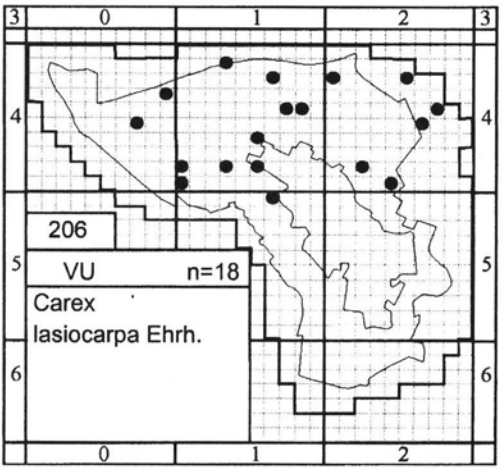
hirta L.


206
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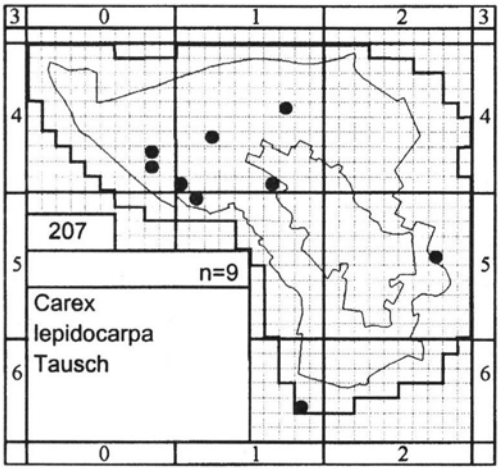
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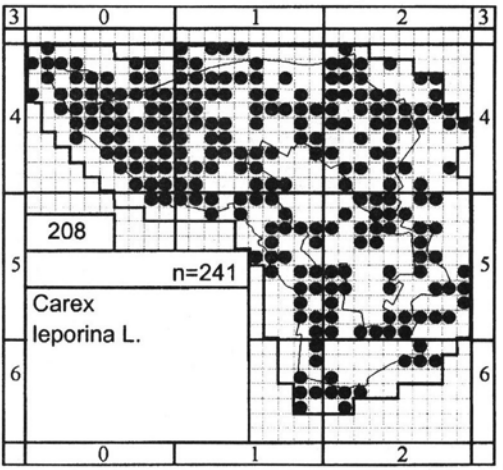
208
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Carex
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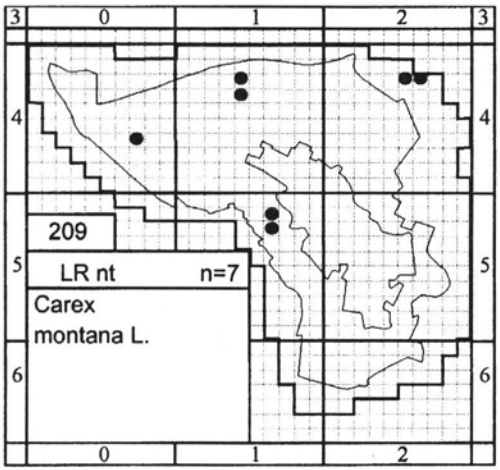
209
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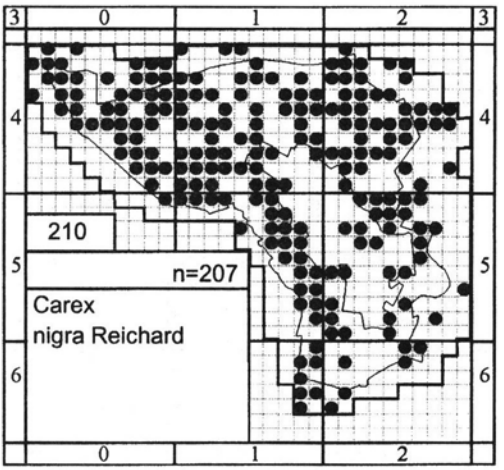
Carex
montana L.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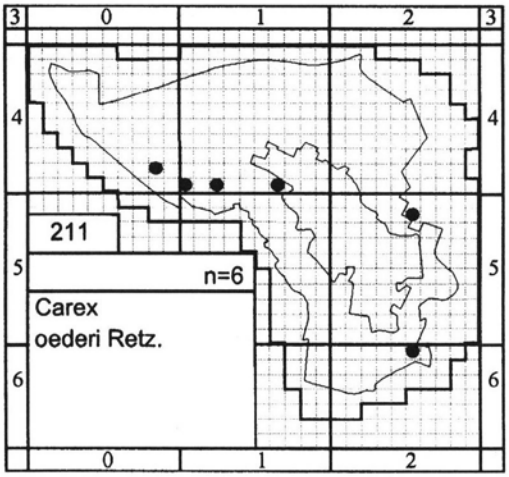
211
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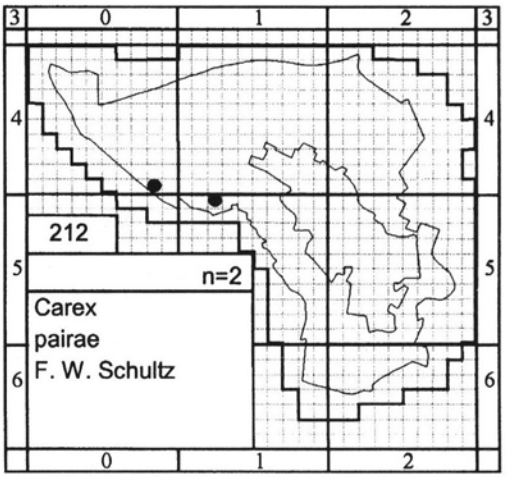
212
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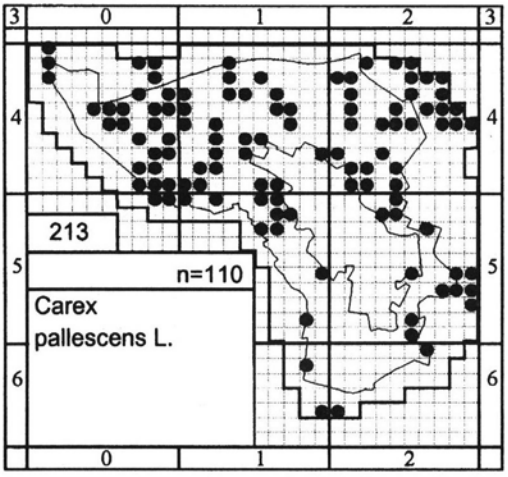
F. W. Schultz


213
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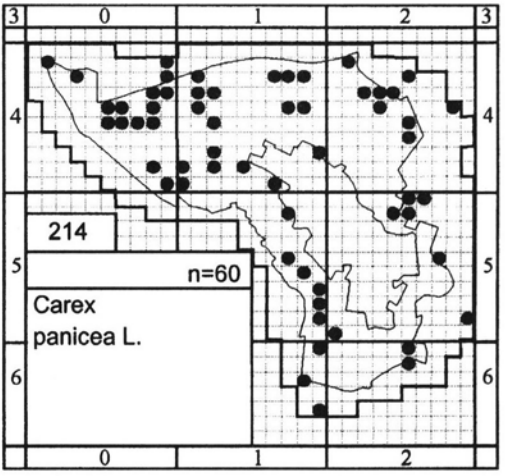
214
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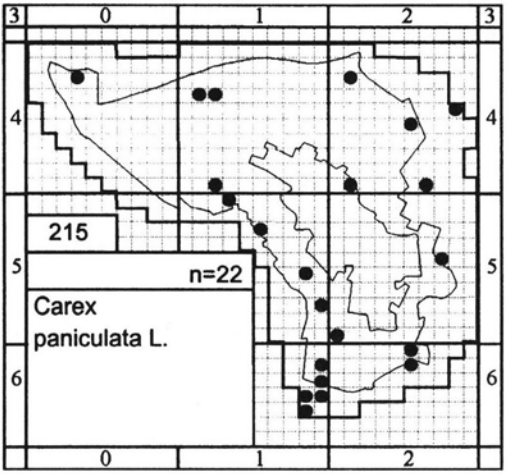
panicea L.


215
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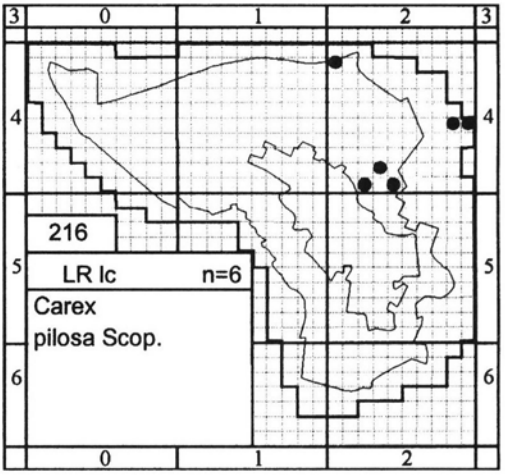
paniculata L.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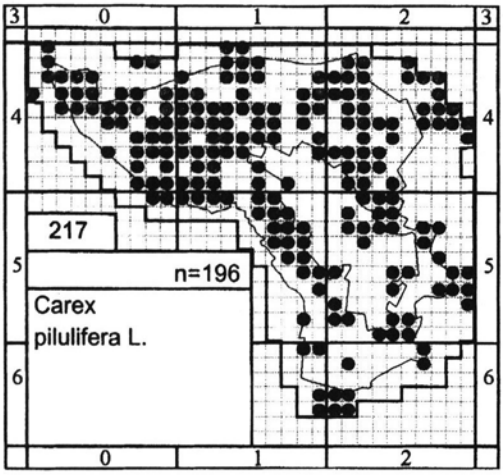
217
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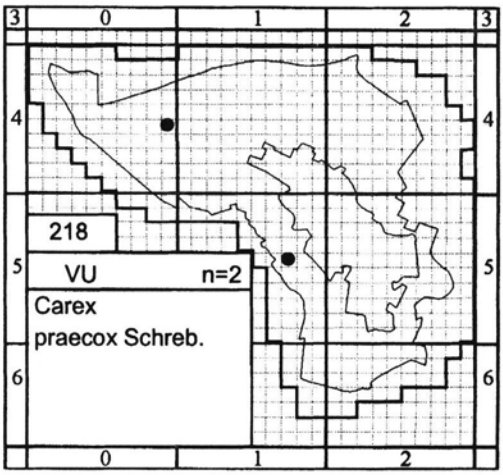
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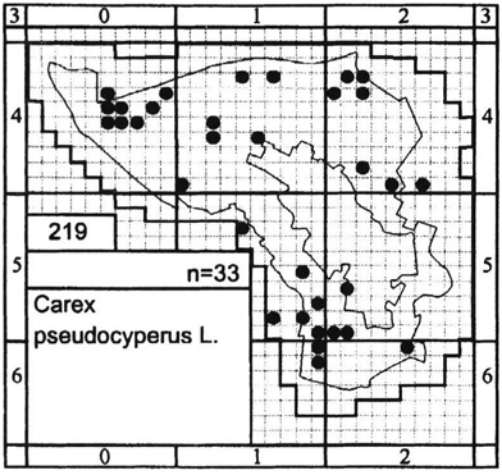
219
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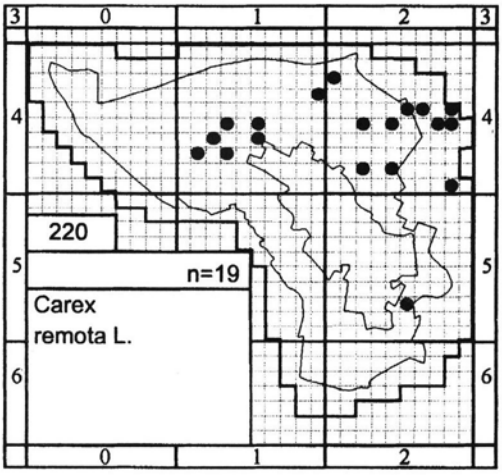
Carex
pseudocyperus L.


220
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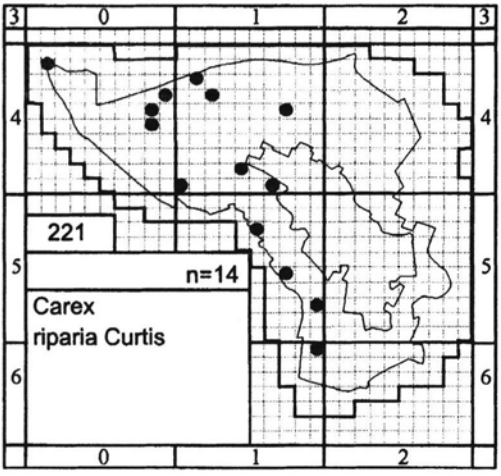
221
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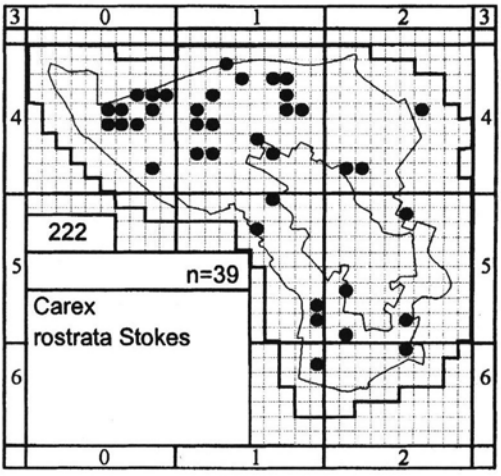
riparia Curtis


222
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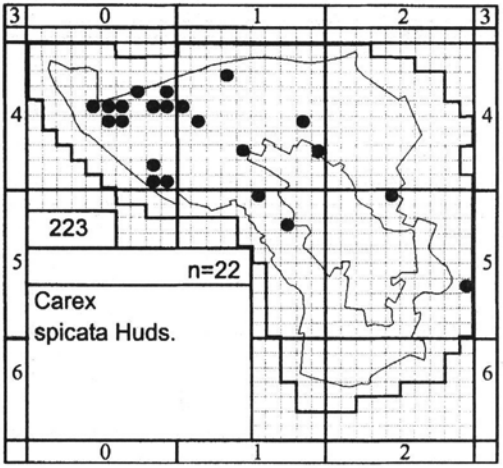
223
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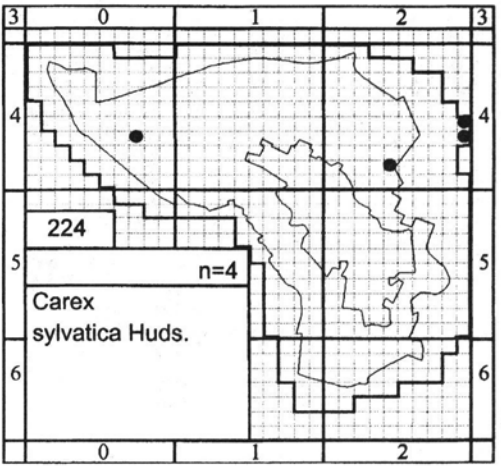
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Carex
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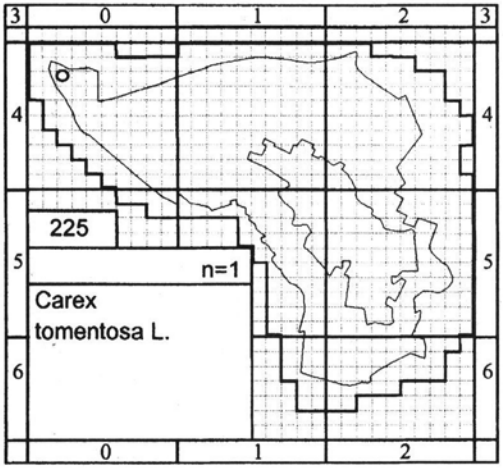
225
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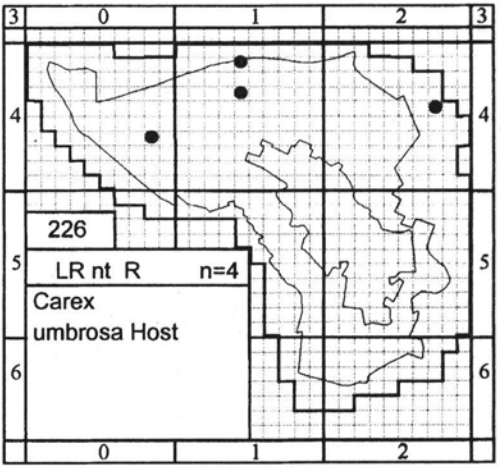
Carex
tomentosa L.


226
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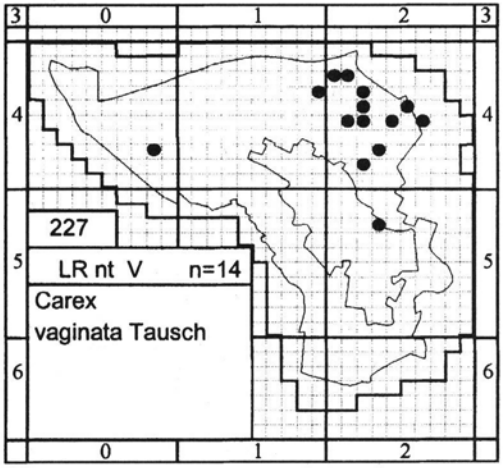
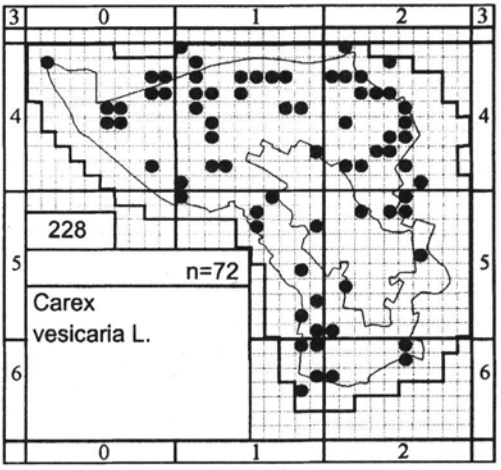

227
LR nt V
n=14
Carex
vaginata Tausch


228
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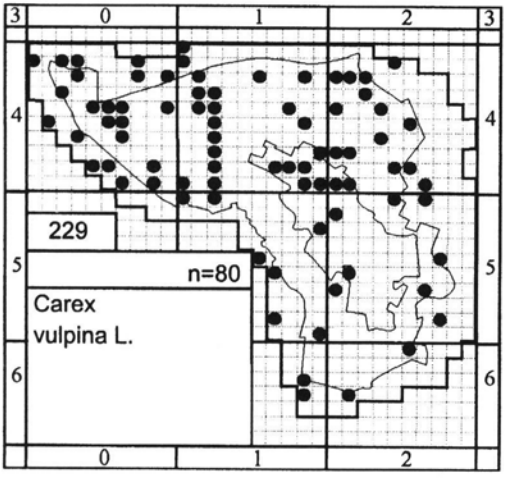
229
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Carex
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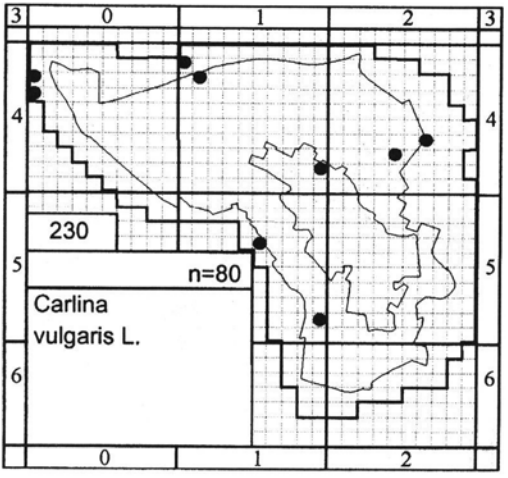
230
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Carlina
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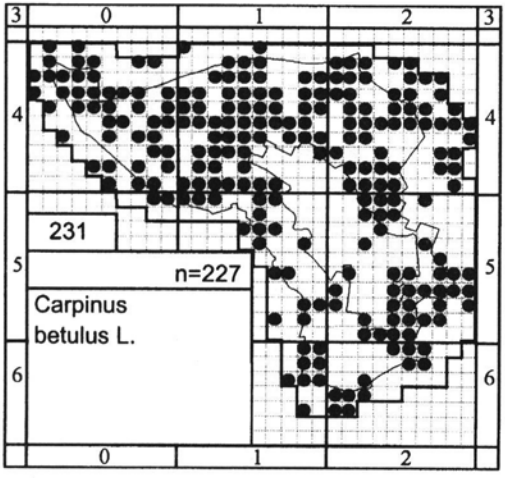
231
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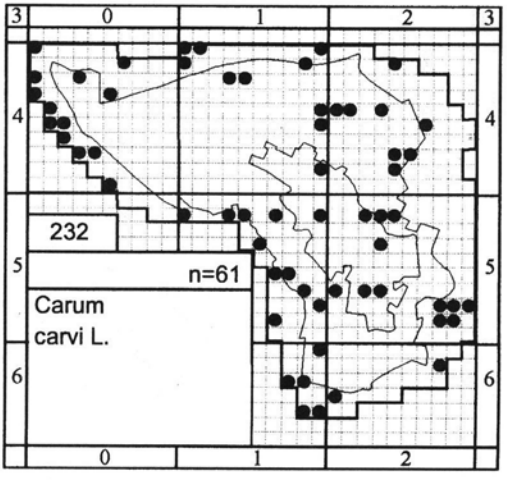
Carpinus
betulus L.


232
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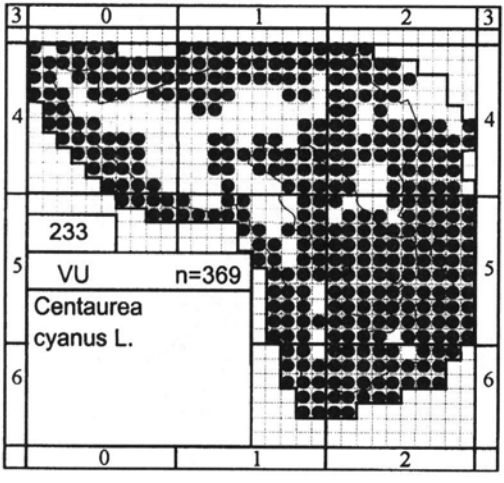
Carum
carvi L.


233
VU
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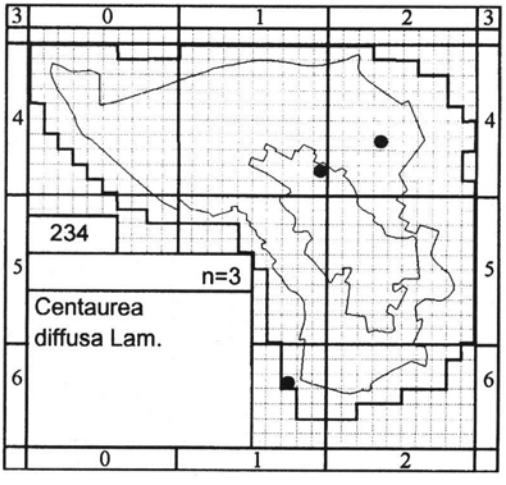
Centaurea
cyanus L.


234
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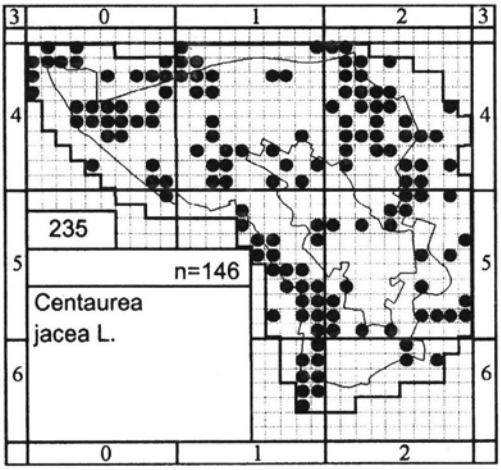
Centaurea
diffusa Lam.


235
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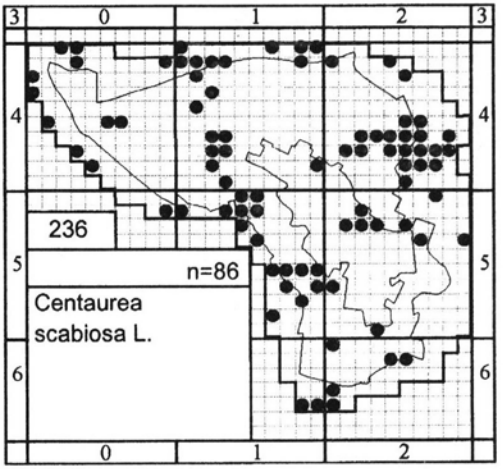
Centaurea
jacea L.


236
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Centaurea
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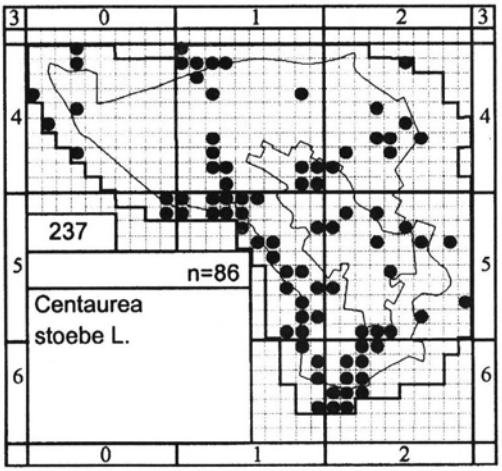
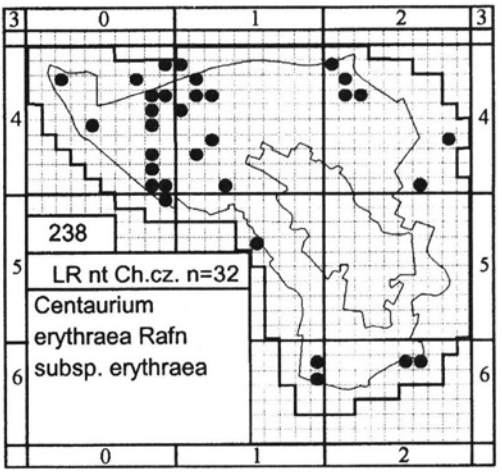
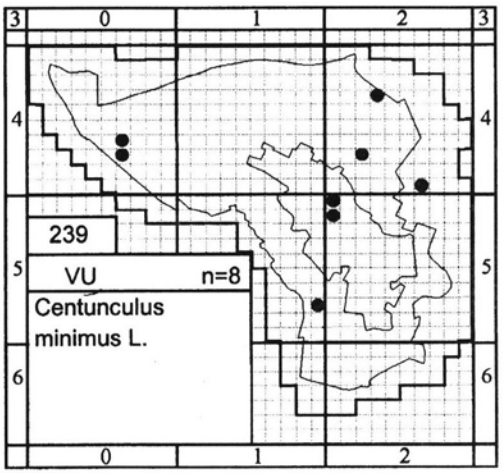
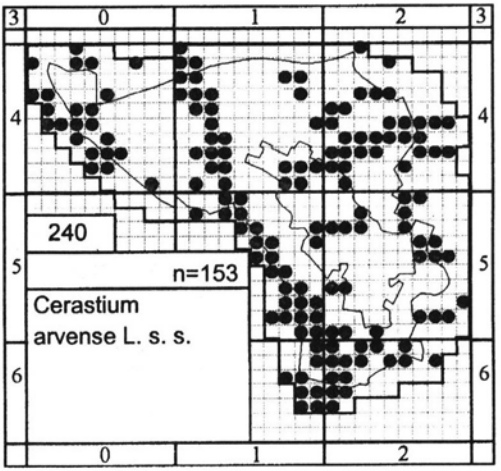
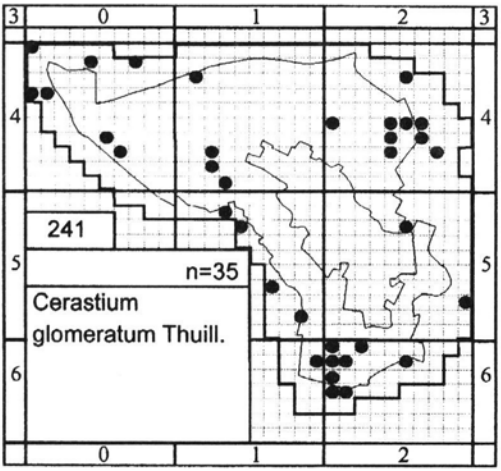
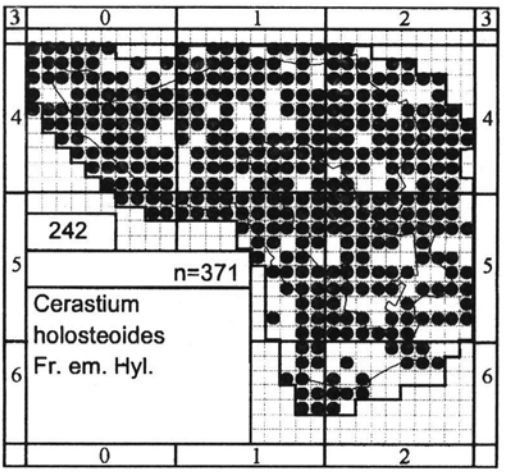

237
n=86
Centaurea
stoebe L.

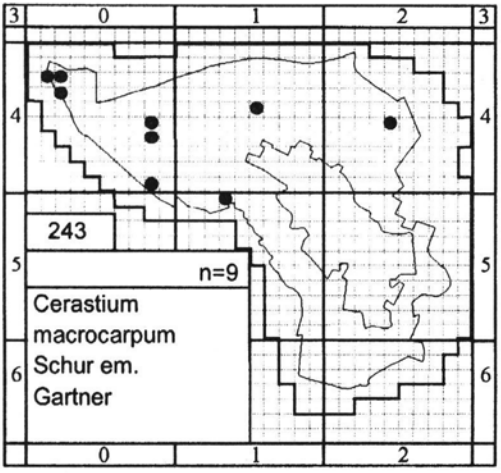

238
LR nt Ch.cz. n=32
Centaurium
erythraea Rafn
subsp. erythraea

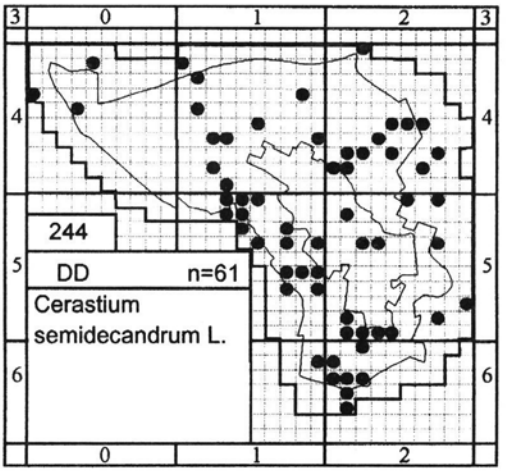

239
VU
n=8
Centunculus
minimus L.

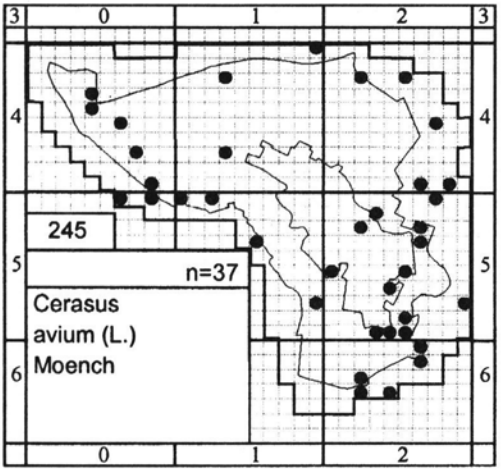

240
n=153
Cerastium
arvense L. s. s.

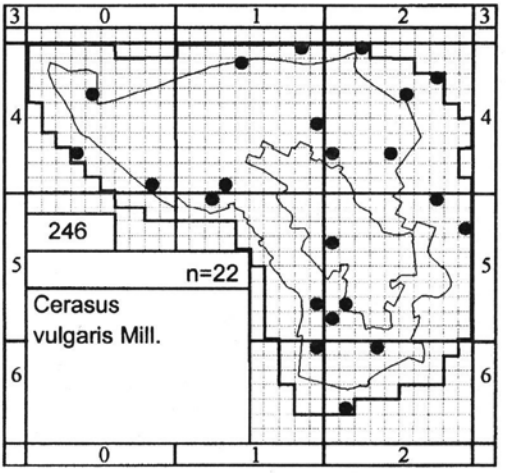

241
n=35
Cerastium
glomeratum Thuill.

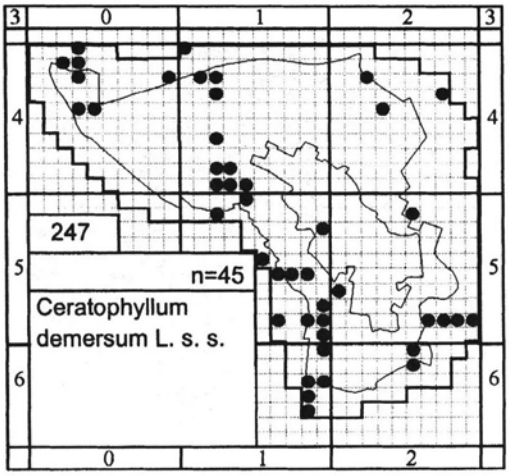

242
n=371
Cerastium
holosteoides
Fr. em. Hyl.

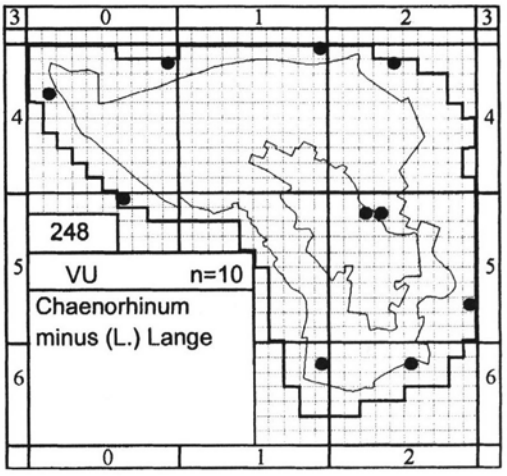

243
n=9
Cerastium
macrocarpum
Schur em.
Gartner

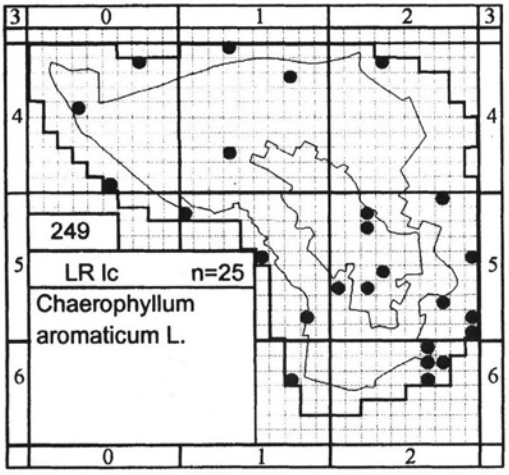

244
DD
n=61
Cerastium
semidecandrum L.

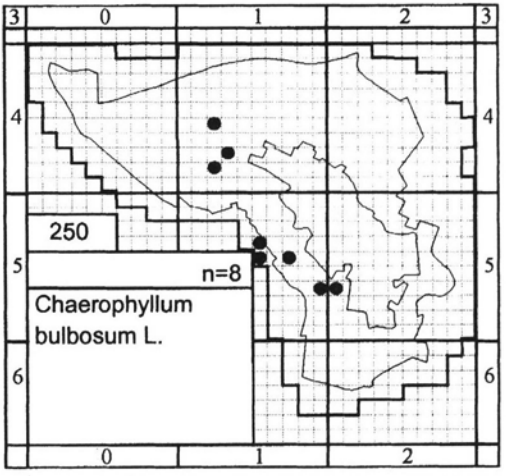

245
n=37
Cerasus
avium (L.)
Moench

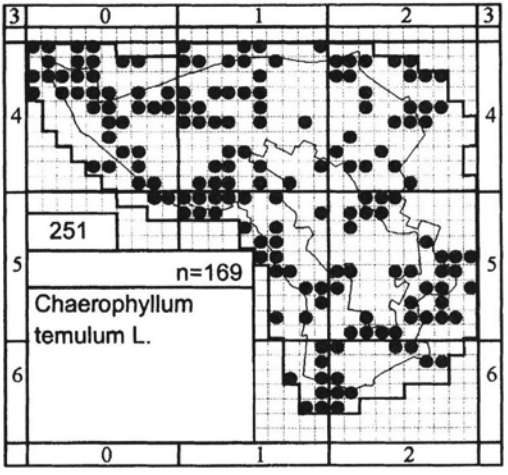

246
n=22
Cerasus
vulgaris Mill.

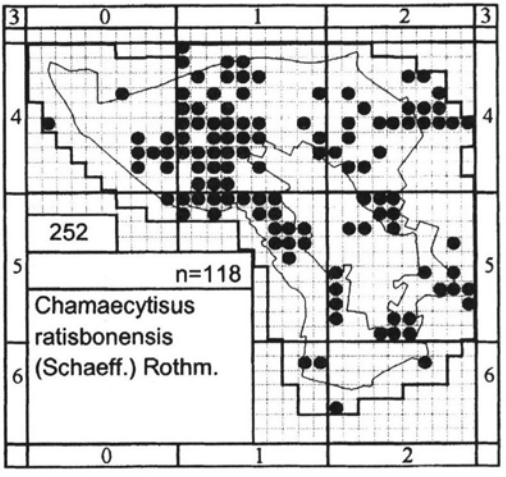

247
n=45
Ceratophyllum
demersum L. s. s.

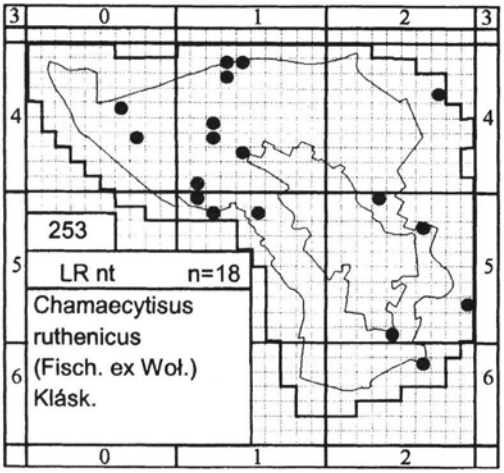

248
VU
n=10
Chaenorhinum
minus (L.) Lange

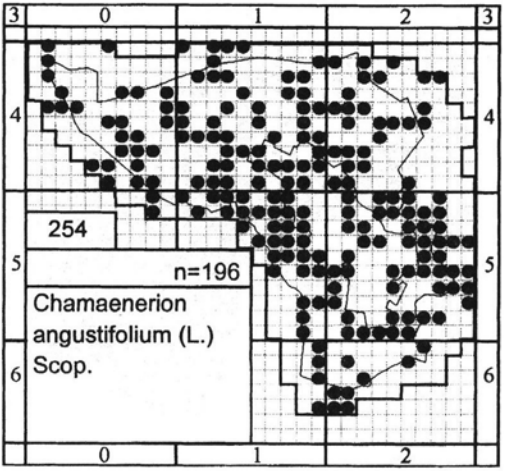

249
LR lc
n=25
Chaerophyllum
aromaticum L.

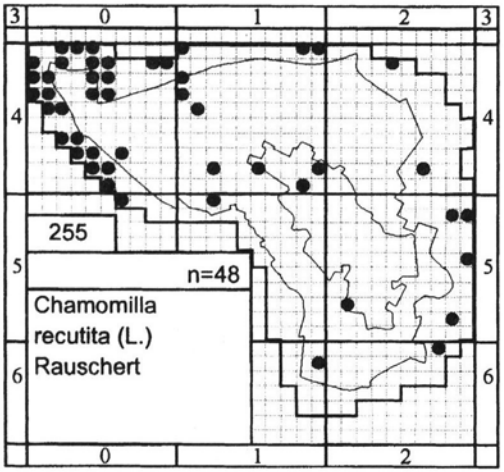

250
n=8
Chaerophyllum
bulbosum L.

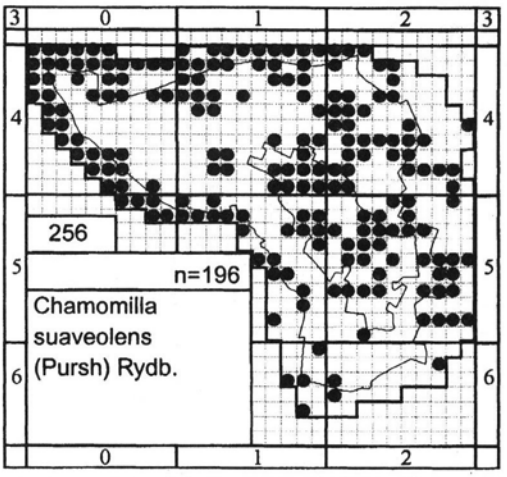

251
n=169
Chaerophyllum
temulum L.

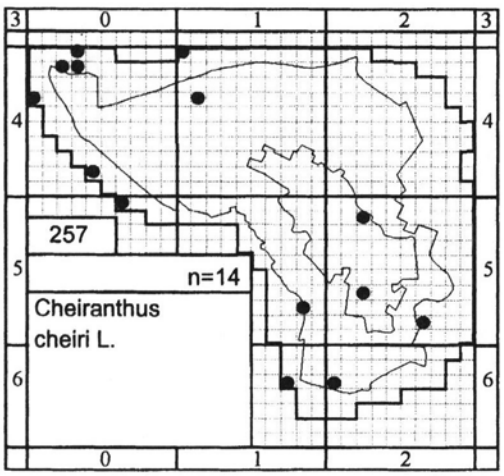

252
n=118
Chamaecytisus
ratisbonensis
(Schaeff.) Rothm.

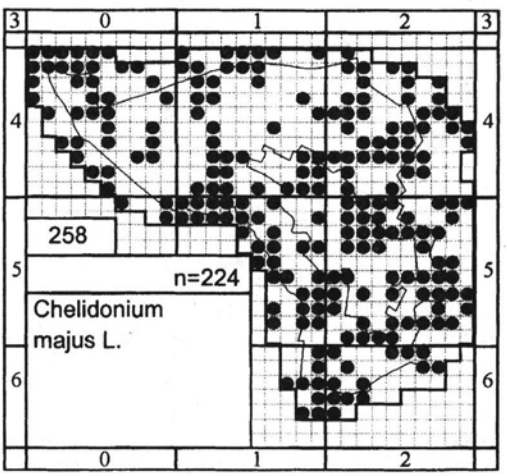

253
LR nt
n=18
Chamaecytisus ruthenicus (Fisch. ex Woł.) Klásk.

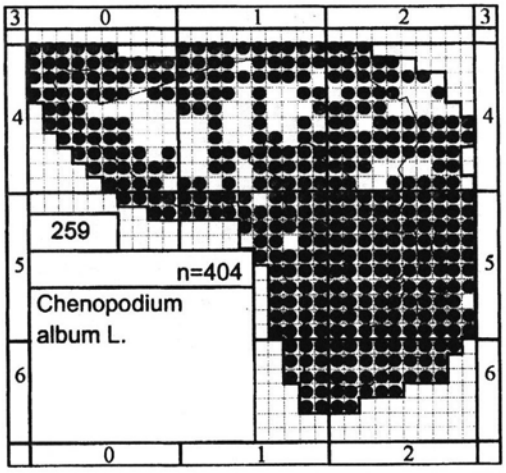

254
n=196
Chamaenerion angustifolium (L.) Scop.

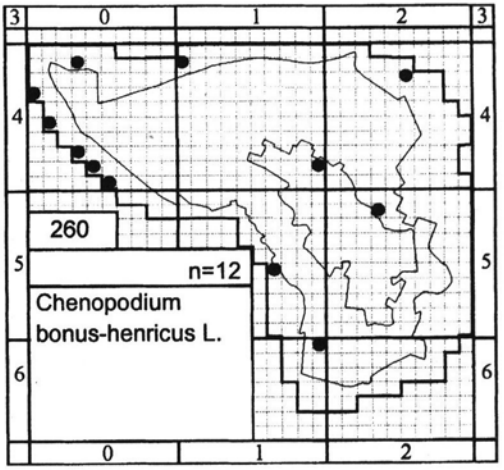

255
n=48
Chamomilla recutita (L.) Rauschert

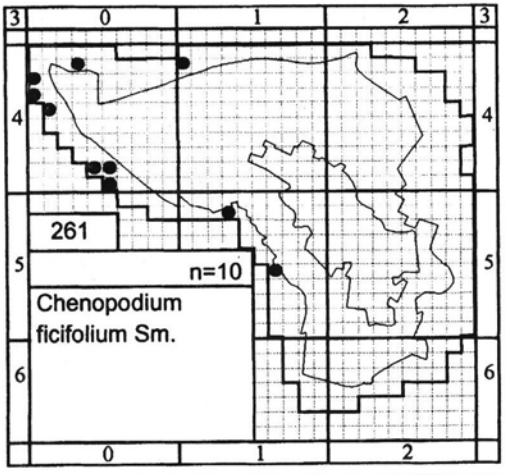

256
n=196
Chamomilla suaveolens (Pursh) Rydb.

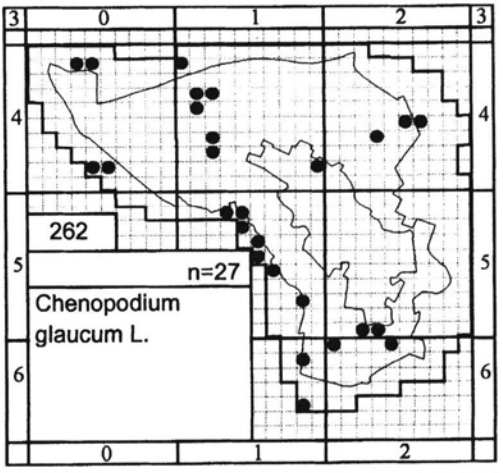

257
n=14
Cheiranthus cheiri L.

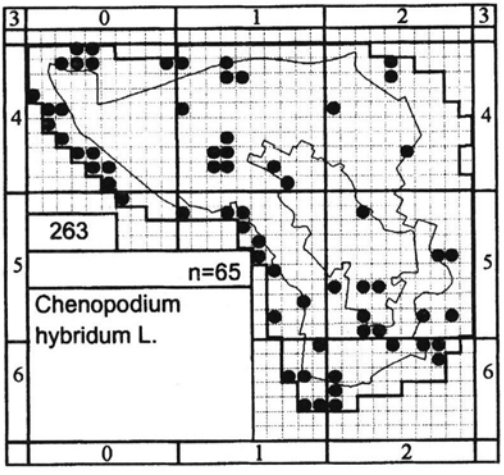

258
n=224
Chelidonium majus L.

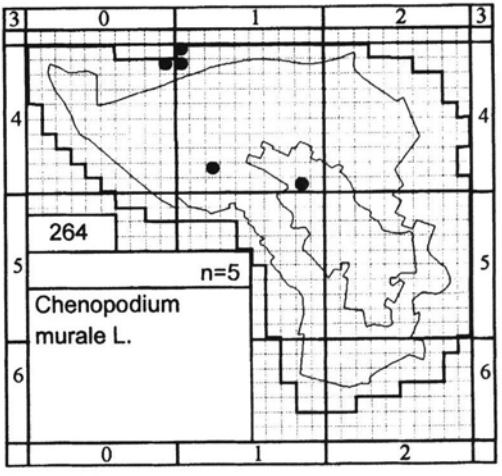

259
n=404
Chenopodium
album L.

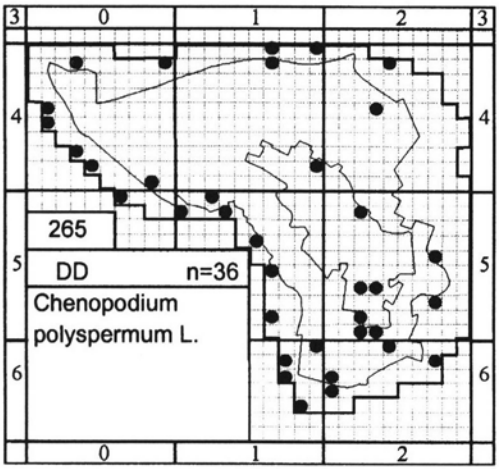

260
n=12
Chenopodium
bonus-henricus L.

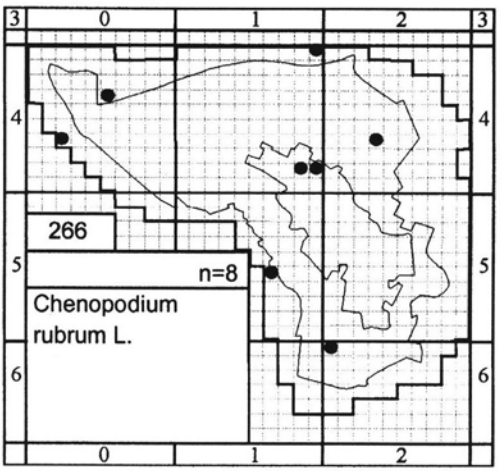

261
n=10
Chenopodium
ficifolium Sm.

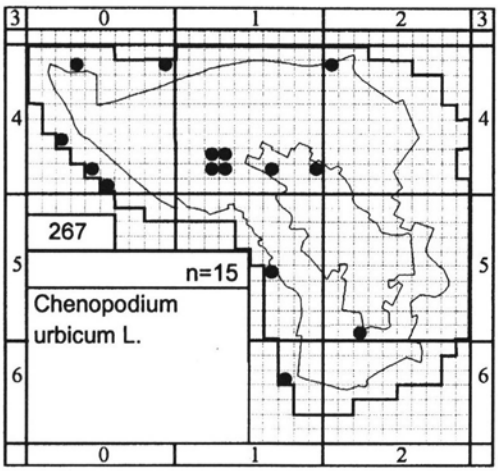

262
n=27
Chenopodium
glaucum L.

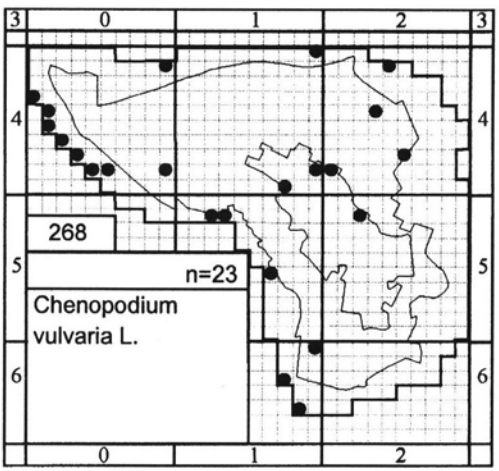

263
n=65
Chenopodium
hybridum L.

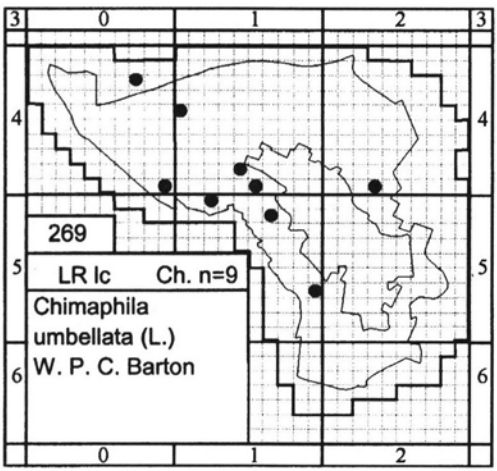

264
n=5
Chenopodium
murale L.

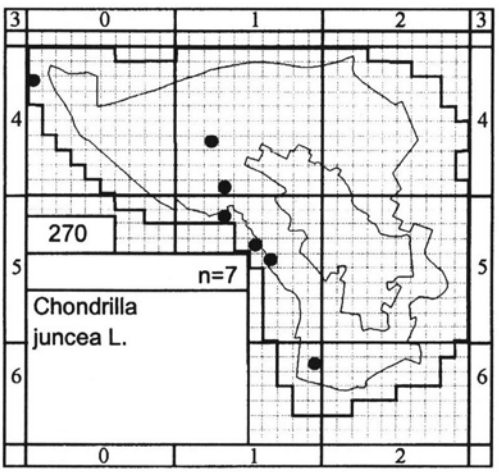

265
DD n=36
Chenopodium
polyspermum L.

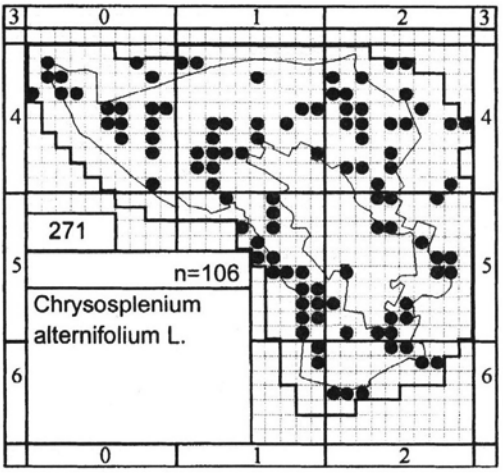

266
n=8
Chenopodium
rubrum L.

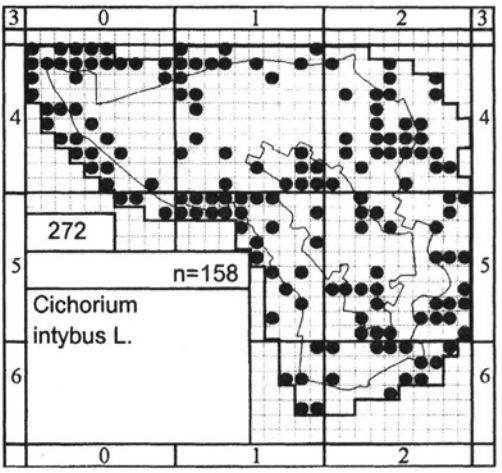

267
n=15
Chenopodium
urbicum L.

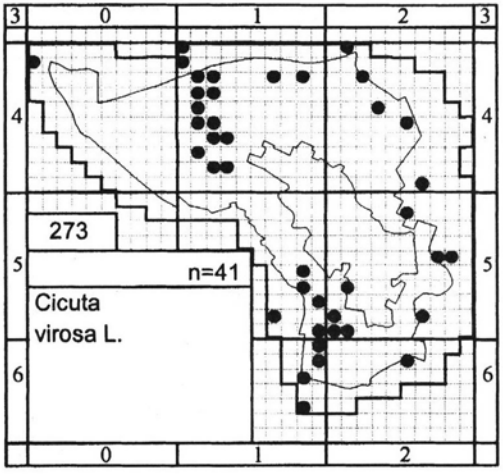

268
n=23
Chenopodium
vulvaria L.

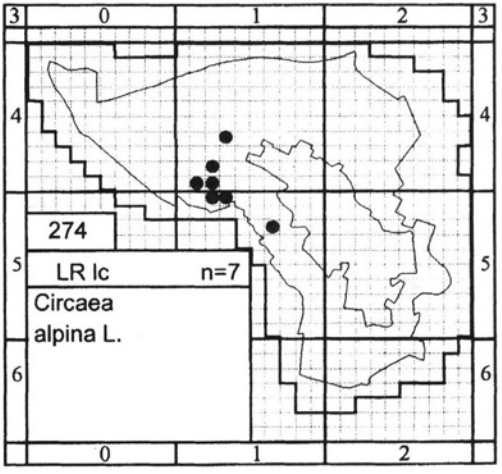

269
LR lc Ch. n=9
Chimaphila
umbellata (L.)
W. P. C. Barton

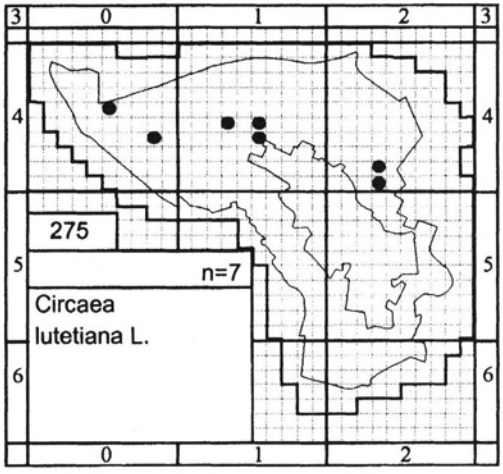

270
n=7
Chondrilla
juncea L.

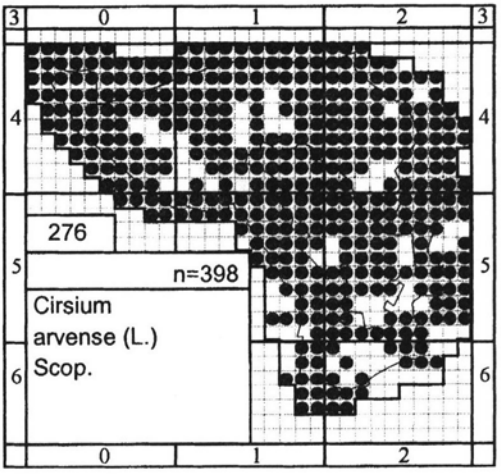

271
n=106
Chrysosplenium
alternifolium L.

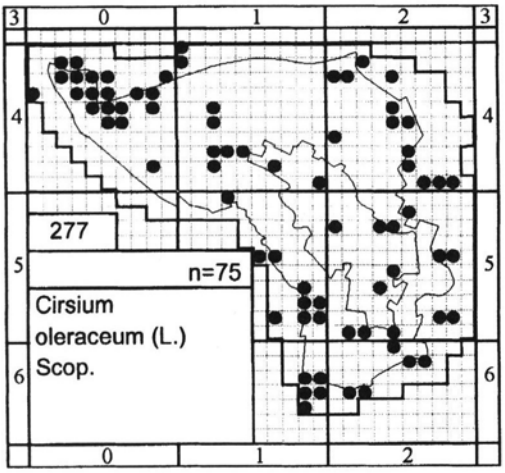

272
n=158
Cichorium
intybus L.

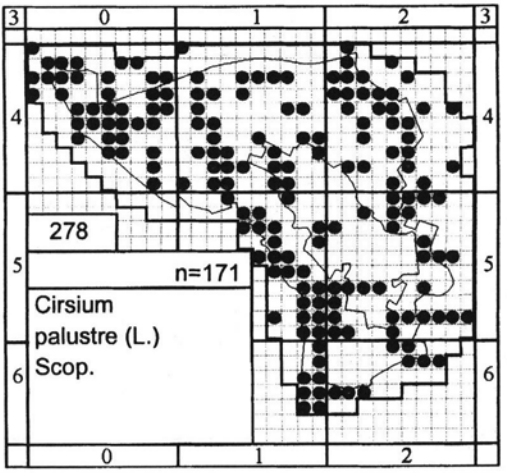

273
n=41
Cicuta
virosa L.

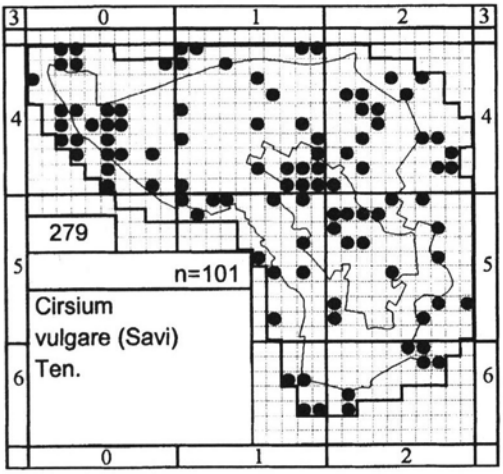

274
LR lc
n=7
Circaea
alpina L.

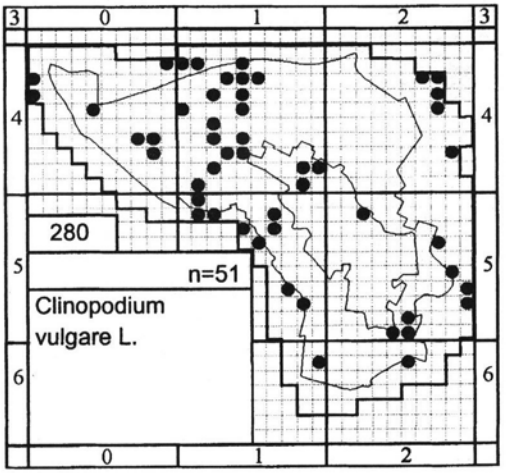

275
n=7
Circaea
lutetiana L.

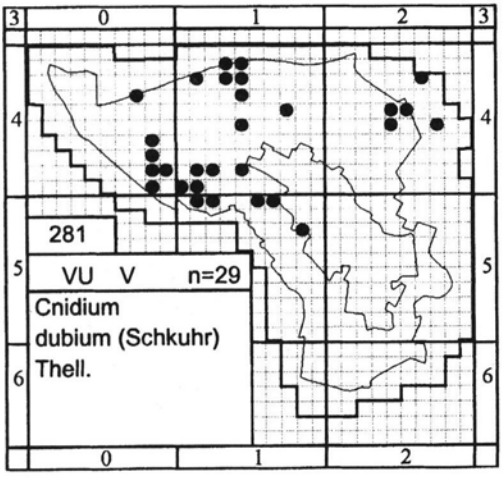

276
n=398
Cirsium
arvense (L.)
Scop.

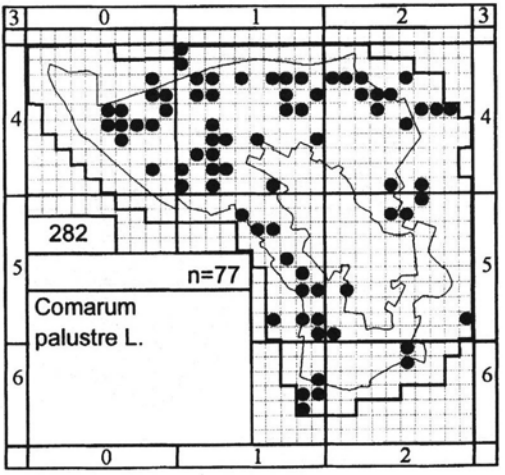

277
n=75
Cirsium
oleraceum (L.)
Scop.

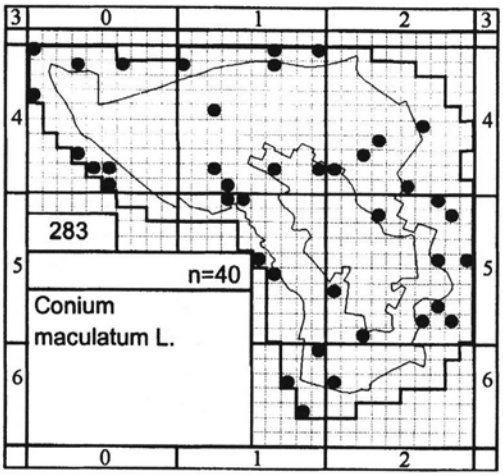

278
n=171
Cirsium
palustre (L.)
Scop.

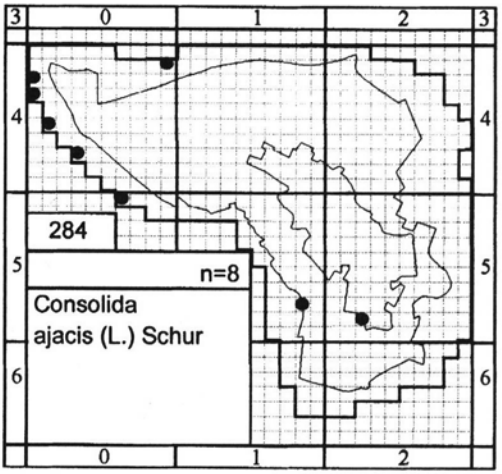

279
n=101
Cirsium
vulgare (Savi)
Ten.

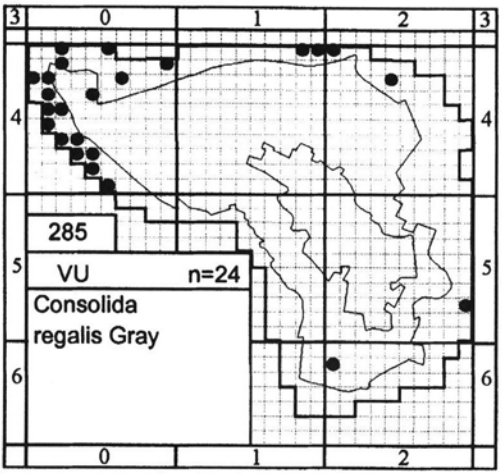

280
n=51
Clinopodium
vulgare L.

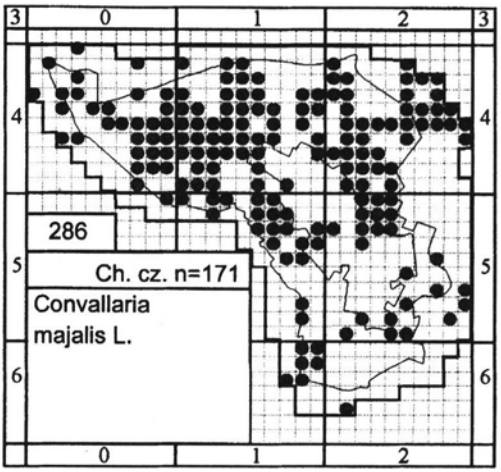

281
VU V n=29
Cnidium
dubium (Schkuhr)
Thell.

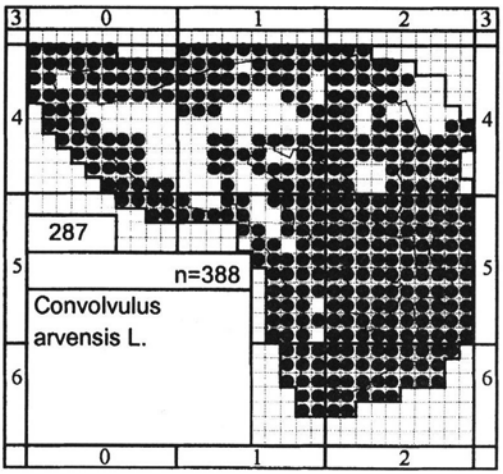

282
n=77
Comarum
palustre L.

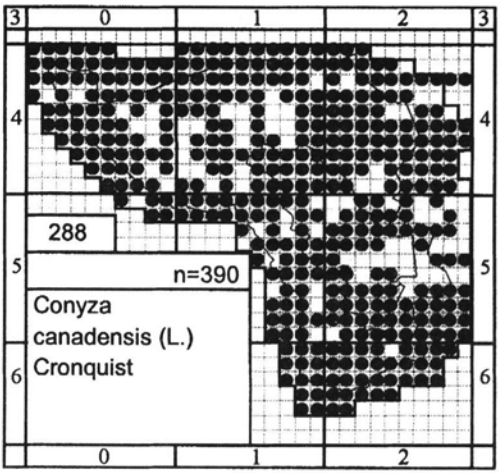

283
n=40
Conium
maculatum L.

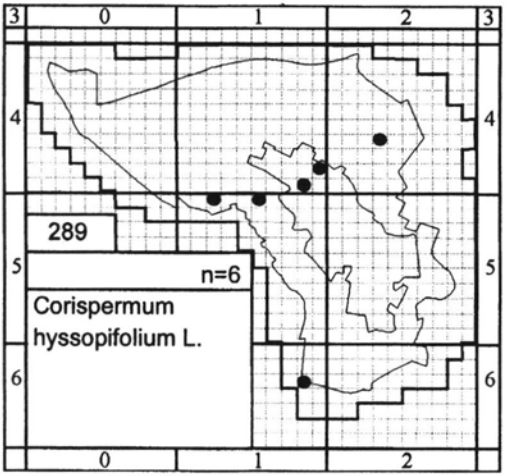

284
n=8
Consolida
ajacis (L.) Schur

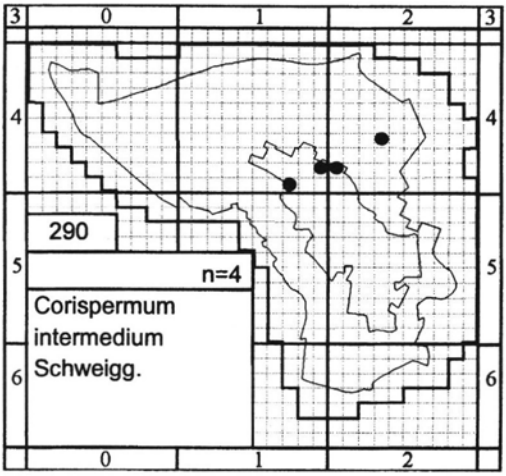

285
VU
n=24
Consolida
regalis Gray

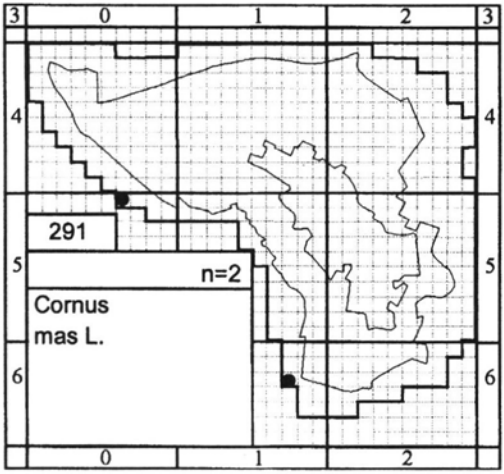

286
Ch. cz. n=171
Convallaria
majalis L.

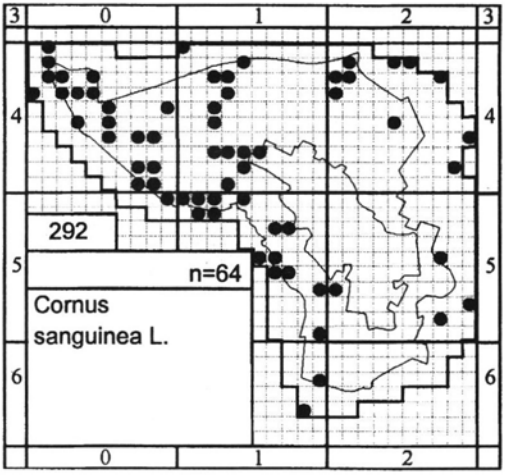

287
n=388
Convolvulus
arvensis L.

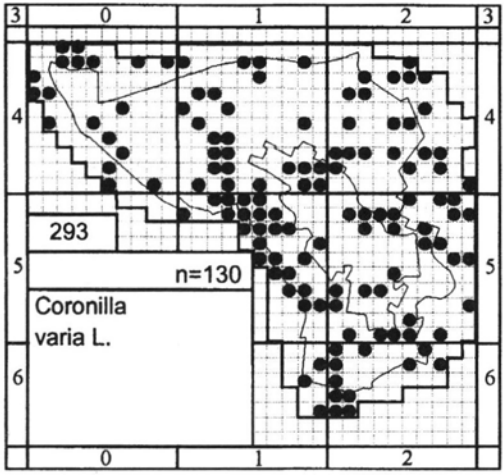

288
n=390
Conyza
canadensis (L.)
Cronquist

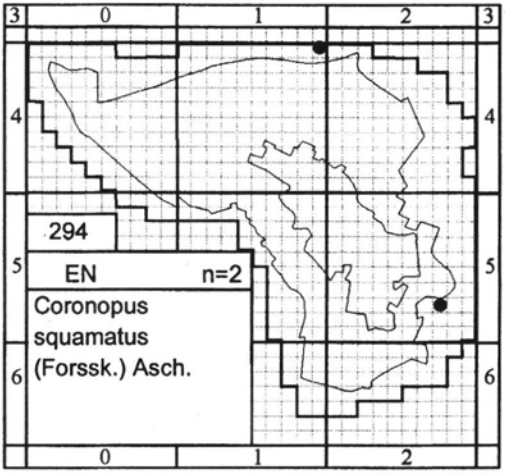

289
n=6
Corispermum
hyssopifolium L.


290
n=4
Corispermum
intermedium
Schweigg.


291
n=2
Cornus
mas L.


292
n=64
Cornus
sanguinea L.


293
n=130
Coronilla
varia L.


294
EN
n=2
Coronopus
squamatus
(Forssk.) Asch.

295
LR lc n=23
Corydalis solida (L.) Clairv.

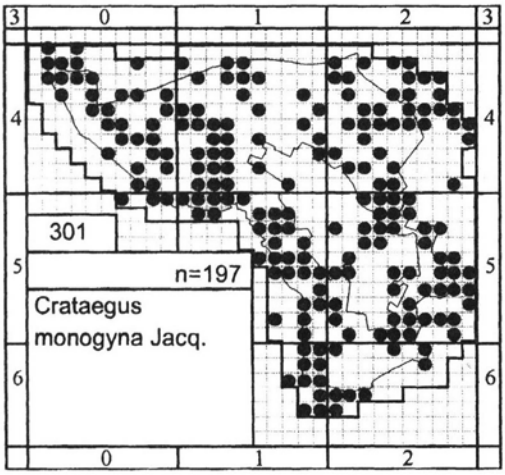
296
n=224
Corylus avellana L.

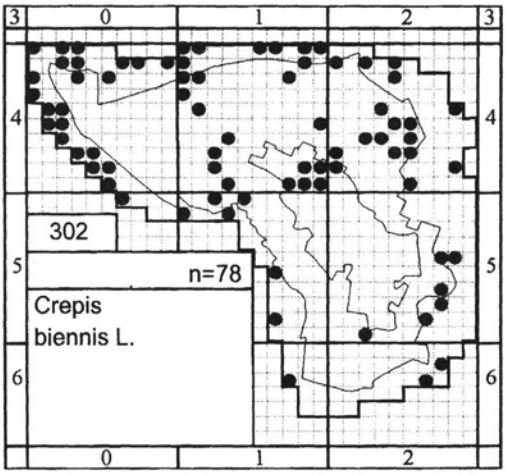
297
n=154
Corynephorus canescens (L.) P. Beauv.

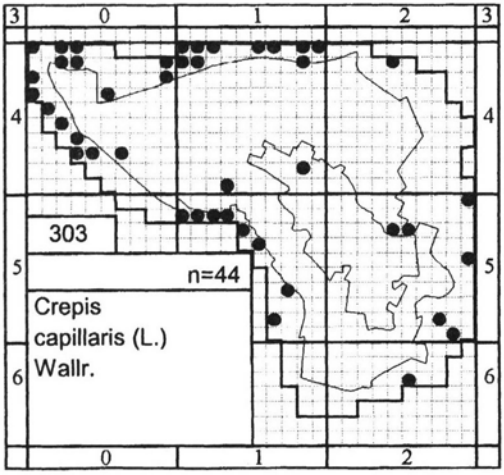
298
n=20
Cosmos bipinnatus Cav.

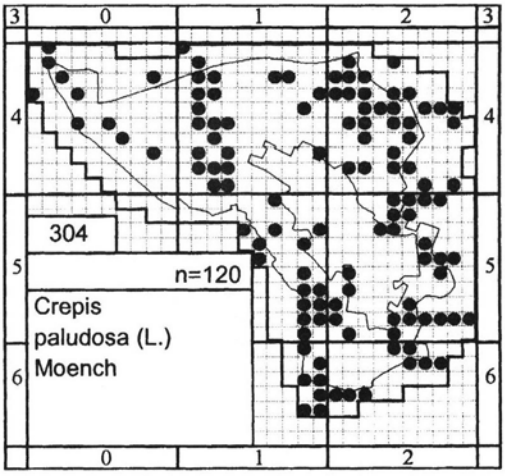
299
n=4
Crataegus laevigata (Poir.) DC.

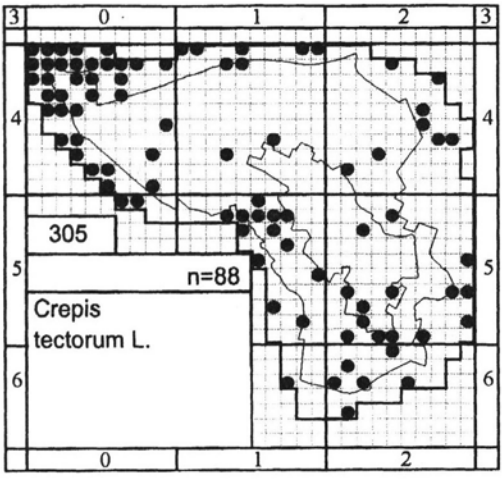
300
n=1
Crataegus x macrocarpa Hegetschw.

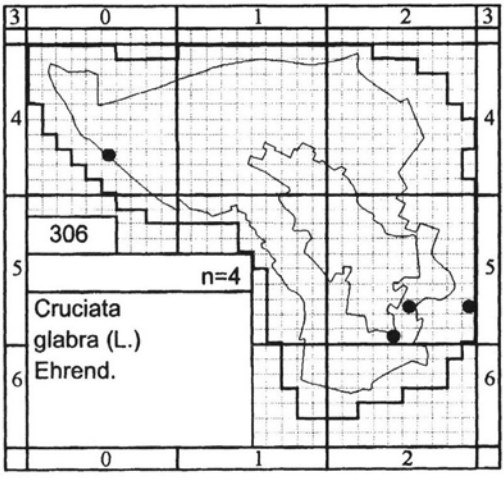

301
n=197
Crataegus
monogyna Jacq.

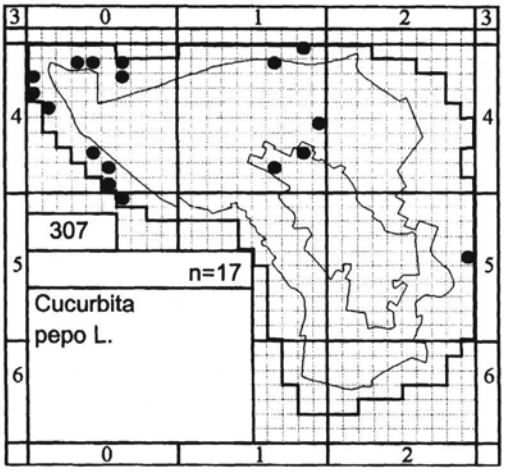

302
n=78
Crepis
biennis L.

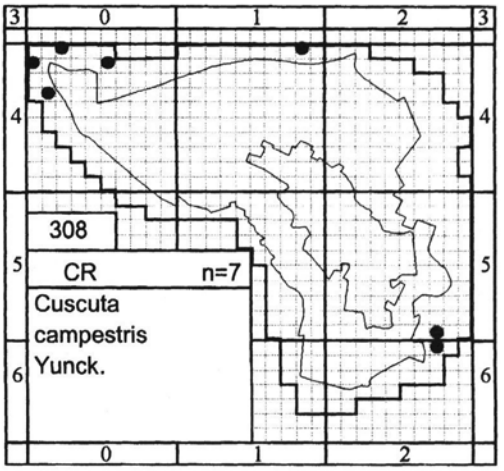

303
n=44
Crepis
capillaris (L.)
Wallr.

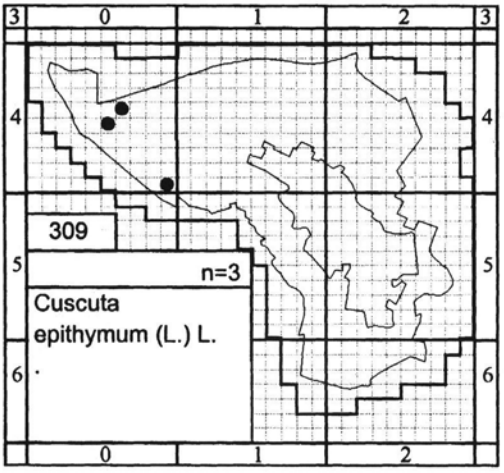

304
n=120
Crepis
paludosa (L.)
Moench

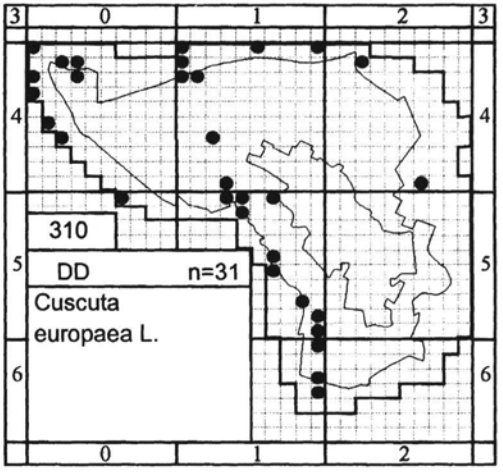

305
n=88
Crepis
tectorum L.

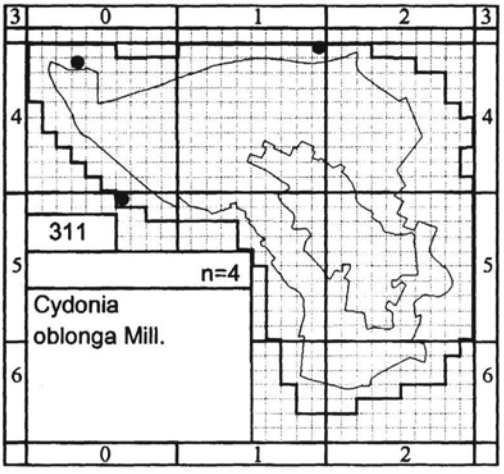

306
n=4
Cruciata
glabra (L.)
Ehrend.

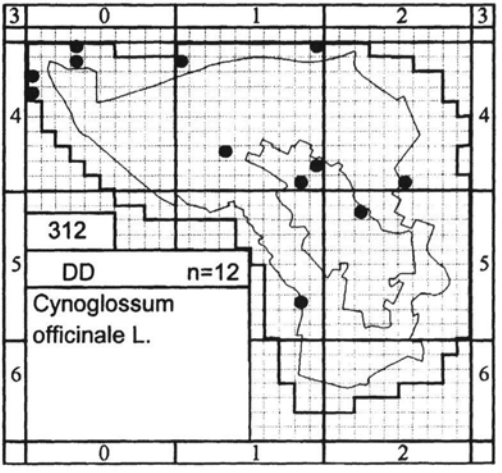

307
n=17
Cucurbita
pepo L.

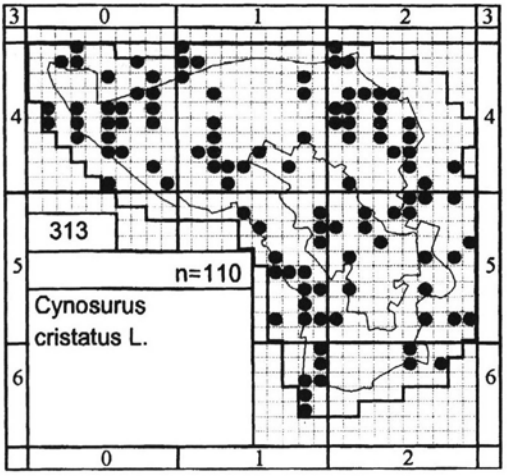

308
CR
n=7
Cuscuta
campestris
Yunck.

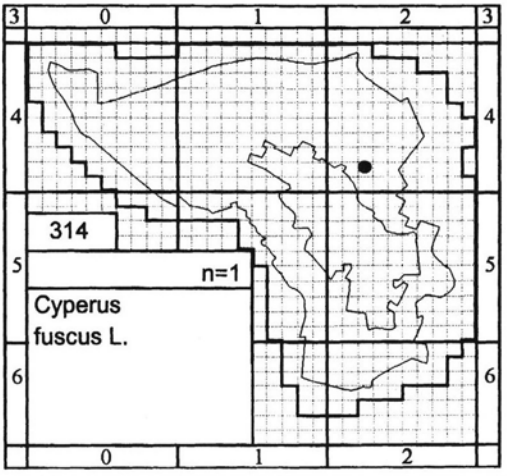

309
n=3
Cuscuta
epithymum (L.) L.

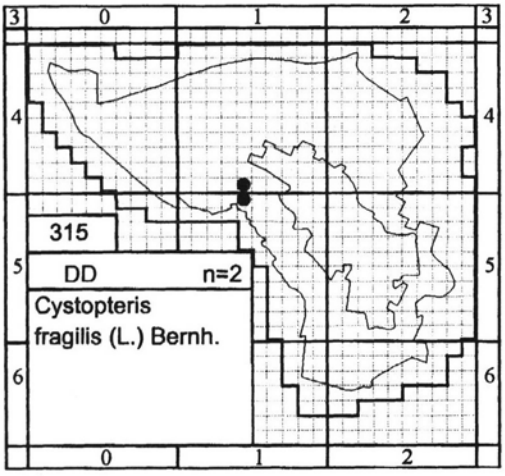

310
DD
n=31
Cuscuta
europaea L.

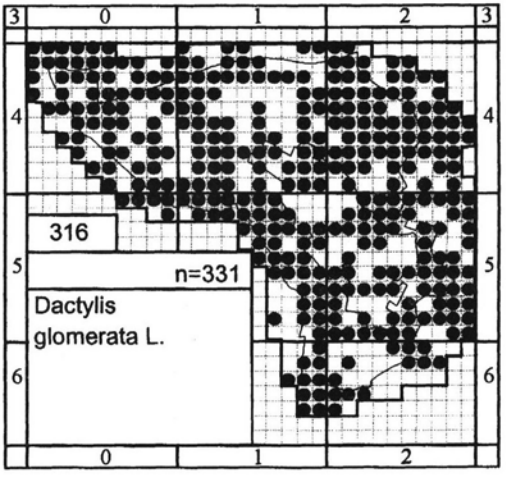

311
n=4
Cydonia
oblonga Mill.

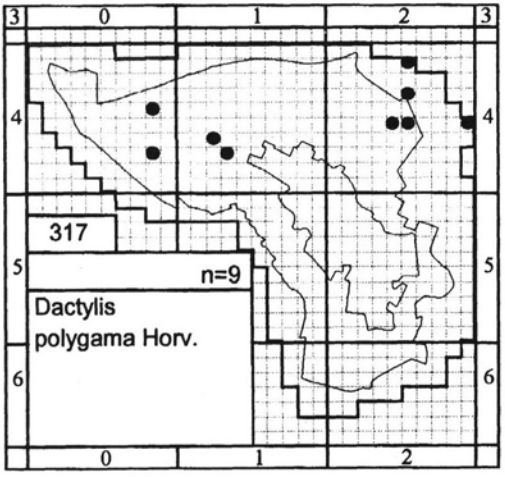

312
DD
n=12
Cynoglossum
officinale L.

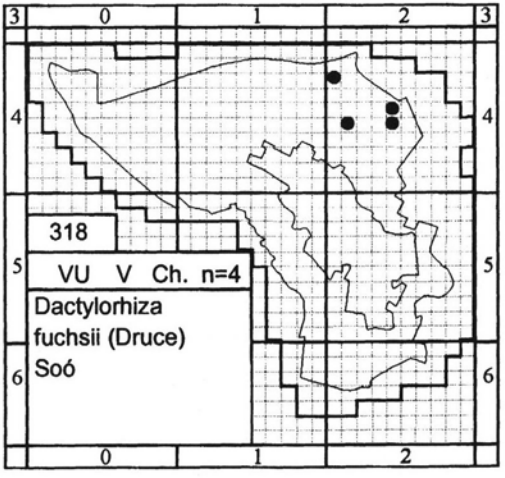

313
n=110
Cynosurus
cristatus L.

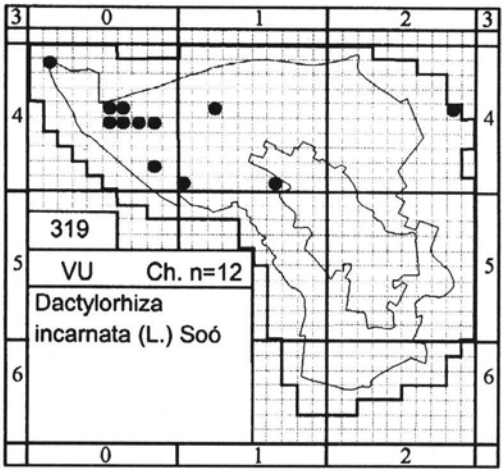

314
n=1
Cyperus
fuscus L.

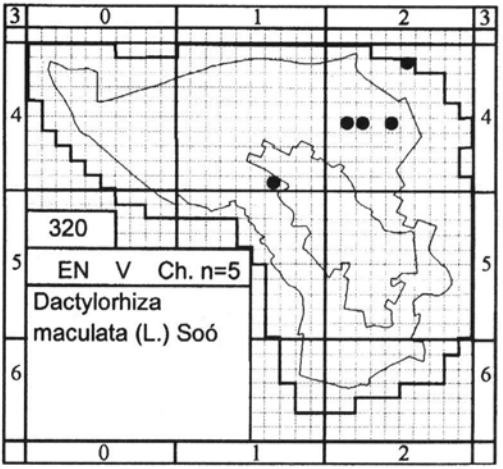

315
DD n=2
Cystopteris
fragilis (L.) Bernh.

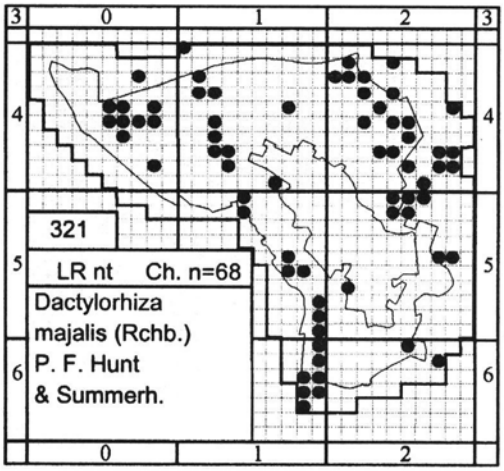

316
n=331
Dactylis
glomerata L.

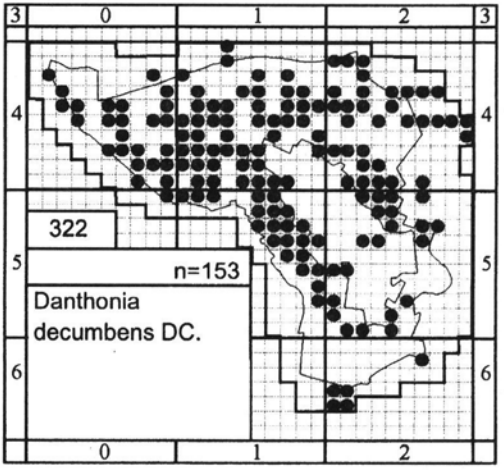

317
n=9
Dactylis
polygama Horv.

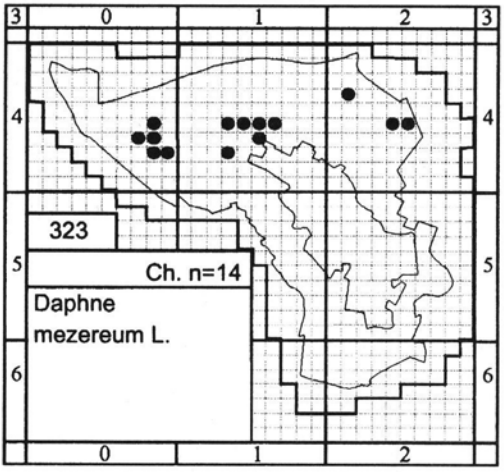

318
VU V Ch. n=4
Dactylorhiza
fuchsii (Druce)
Soó

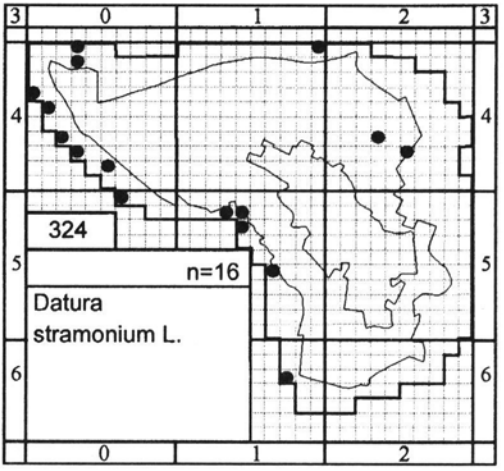

319
VU Ch. n=12
Dactylorhiza
incarnata (L.) Soó

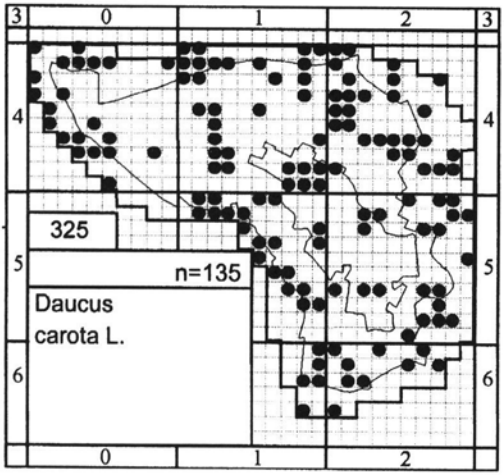

320
EN V Ch. n=5
Dactylorhiza
maculata (L.) Soó

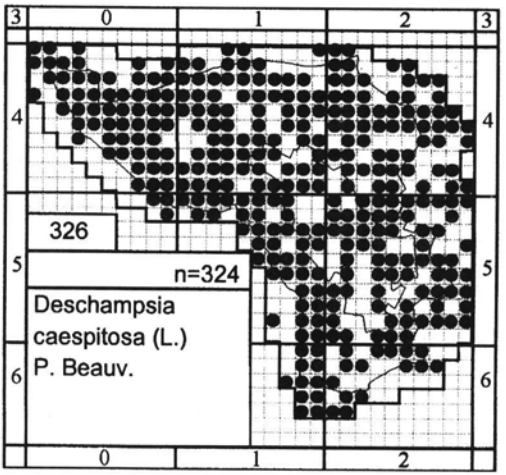

321
LR nt Ch. n=68
Dactylorhiza
majalis (Rchb.)
P. F. Hunt
& Summerh.

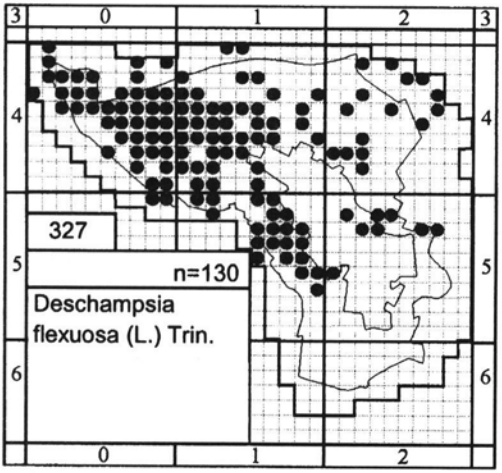

322
n=153
Danthonia
decumbens DC.

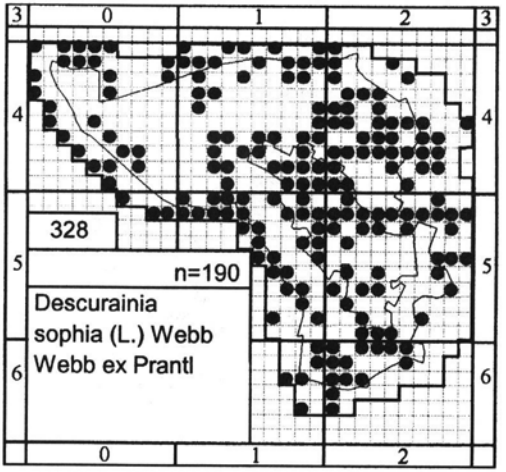

323
Ch. n=14
Daphne
mezereum L.

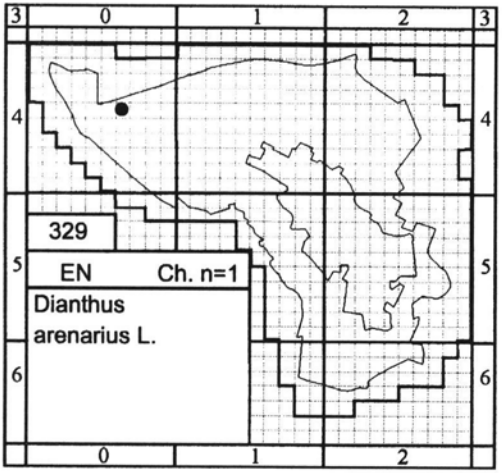

324
n=16
Datura
stramonium L.

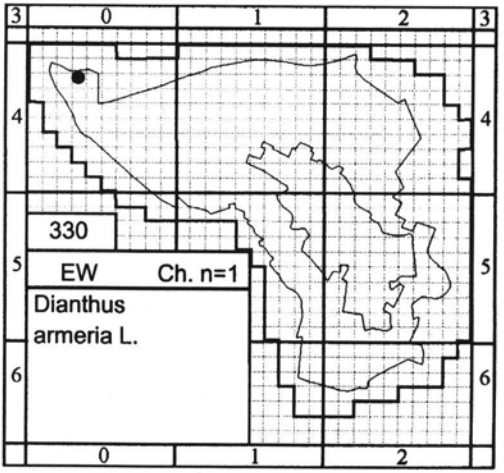

325
n=135
Daucus
carota L.

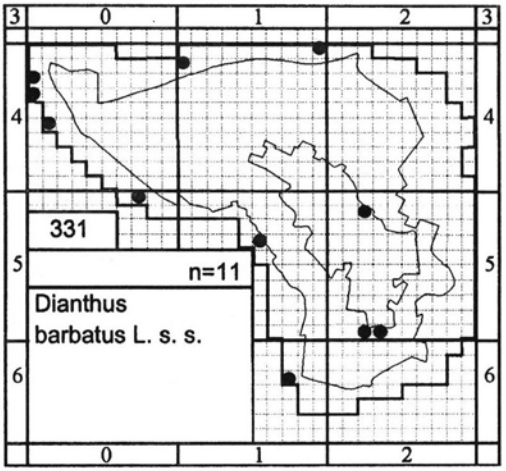

326
n=324
Deschampsia
caespitosa (L.)
P. Beauv.

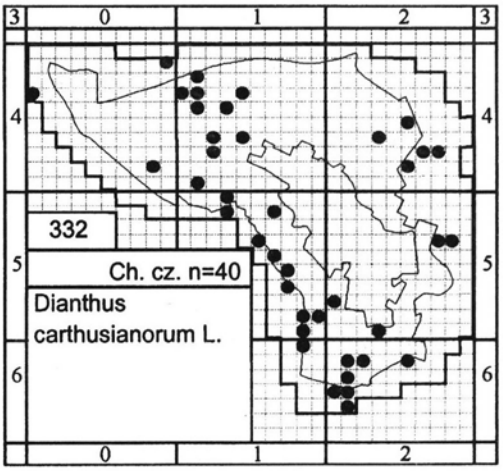

327
n=130
Deschampsia
flexuosa (L.) Trin.

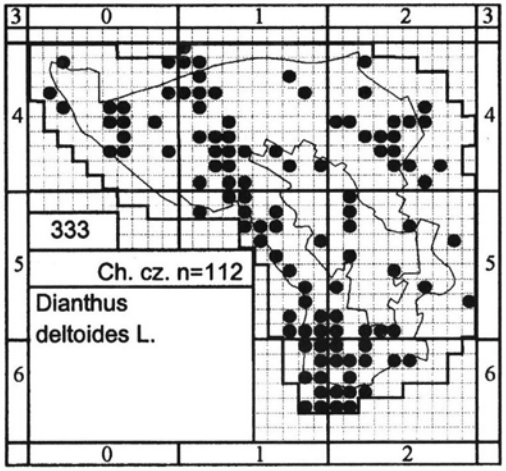

328
n=190
Descurainia
sophia (L.) Webb
Webb ex Prantl

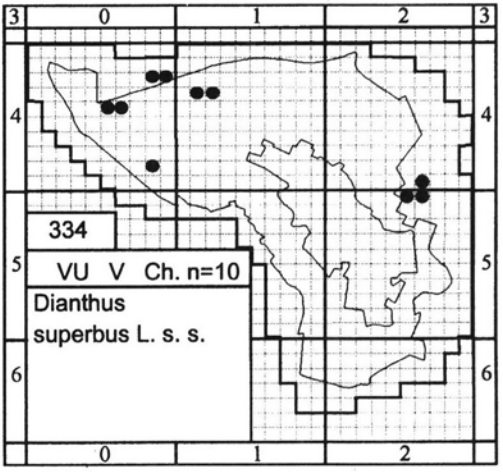

329
EN
Ch. n=1
Dianthus
arenarius L.

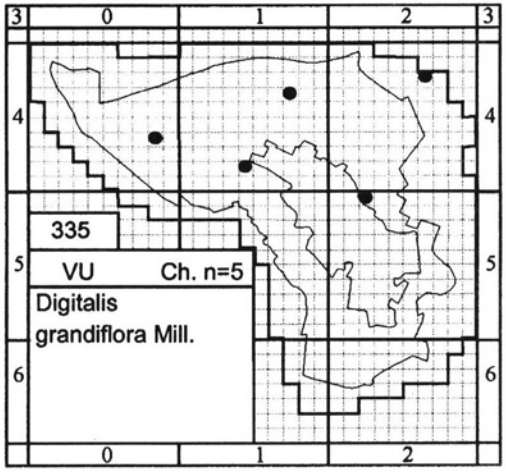

330
EW
Ch. n=1
Dianthus
armeria L.

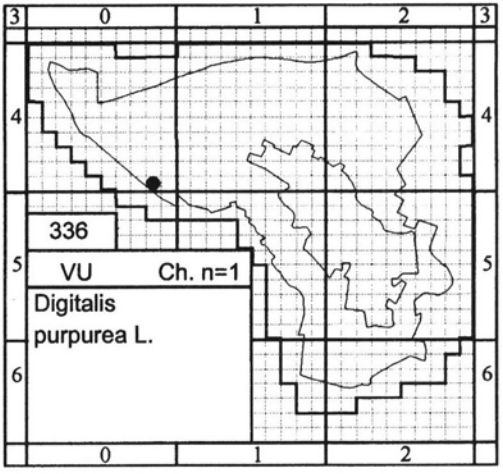

331
n=11
Dianthus
barbatus L. s. s.

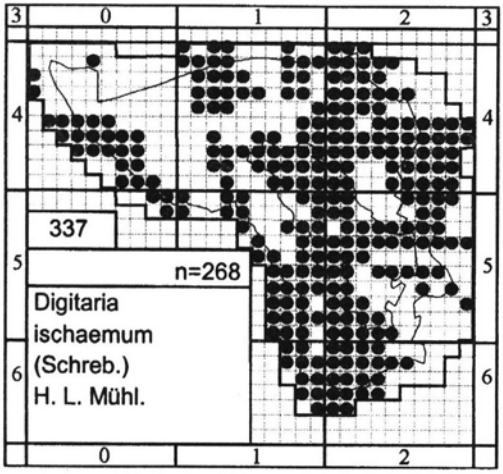

332
Ch. cz. n=40
Dianthus
carthusianorum L.

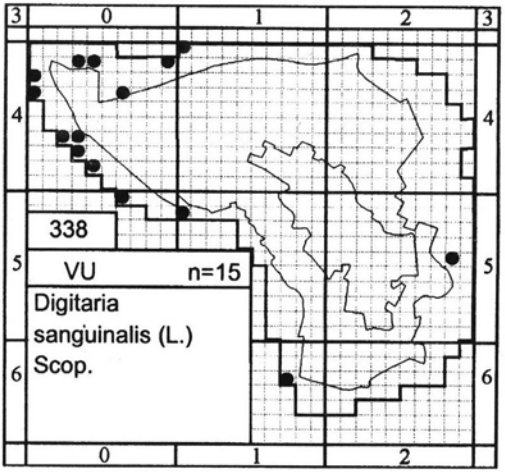

333
Ch. cz. n=112
Dianthus
deltoides L.

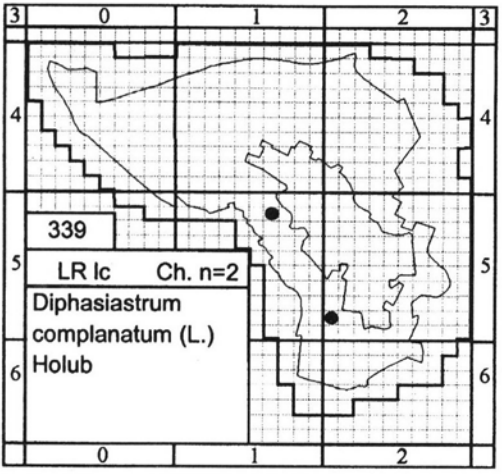

334
VU V Ch. n=10
Dianthus
superbus L. s. s.

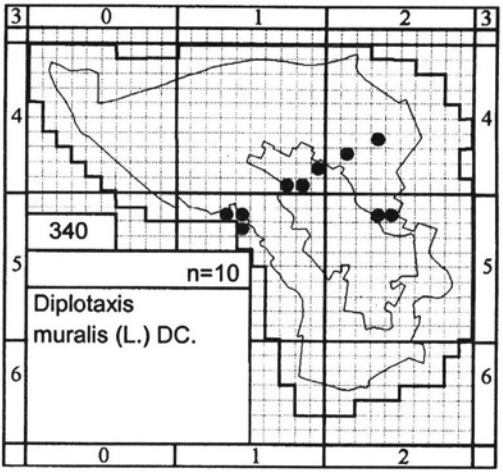

335
VU Ch. n=5
Digitalis
grandiflora Mill.

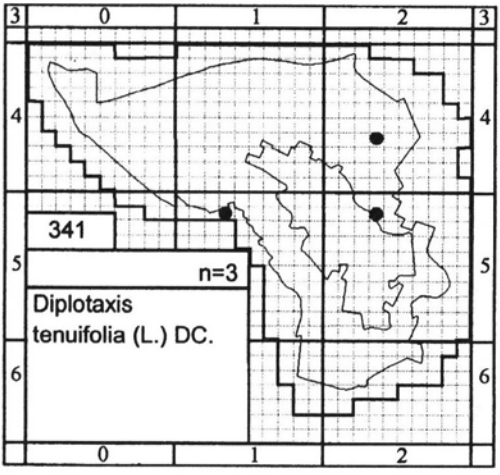

336
VU Ch. n=1
Digitalis
purpurea L.

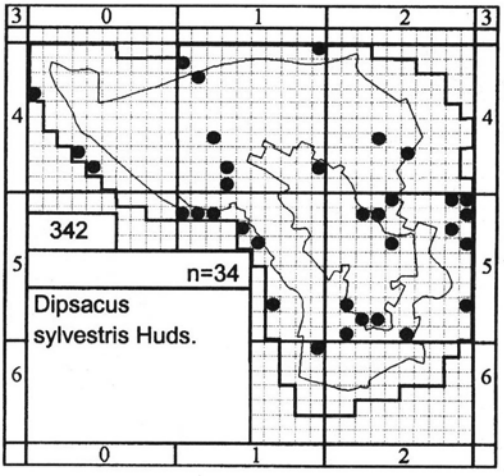

337
n=268
Digitaria
ischaemum
(Schreb.)
H. L. Mühl.

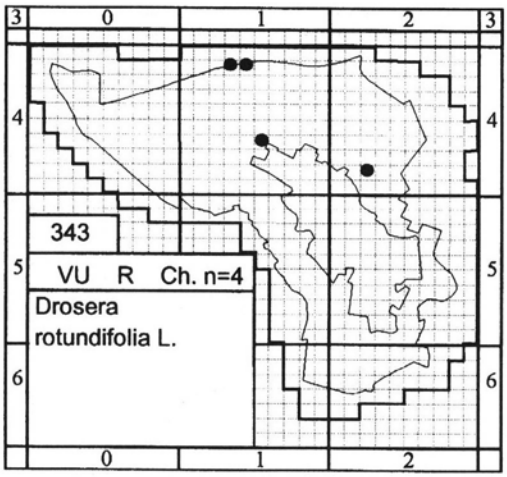

338
VU n=15
Digitaria
sanguinalis (L.)
Scop.

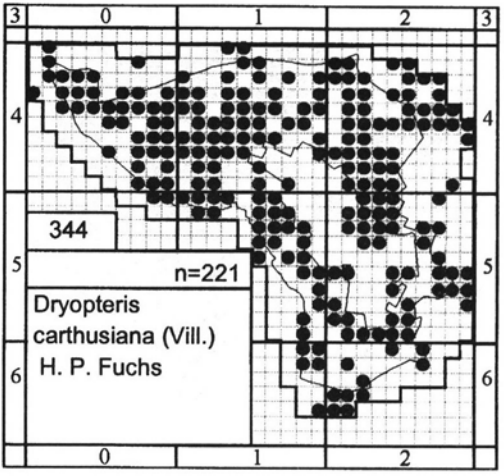

339
LR lc Ch. n=2
Diphasiastrum
complanatum (L.)
Holub

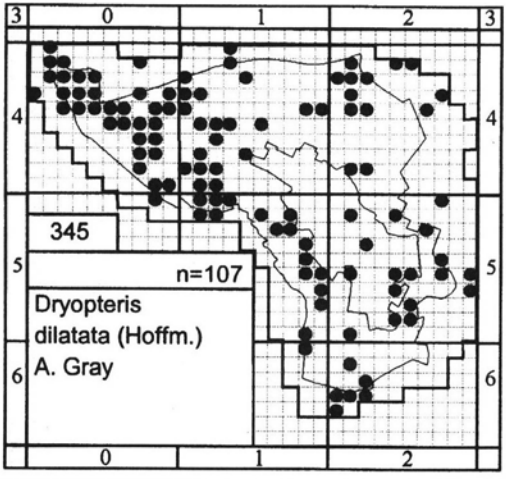

340
n=10
Diplotaxis
muralis (L.) DC.

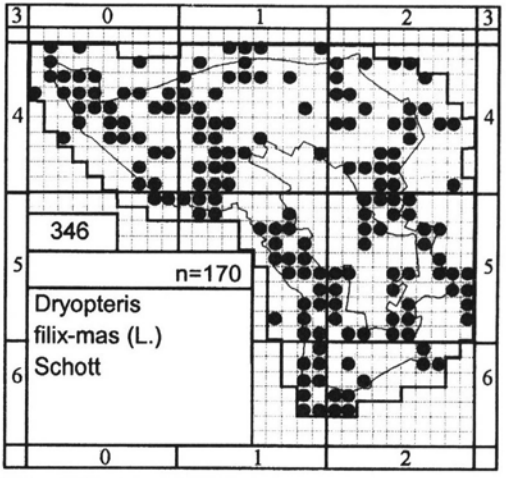

341
n=3
Diplotaxis
tenuifolia (L.) DC.

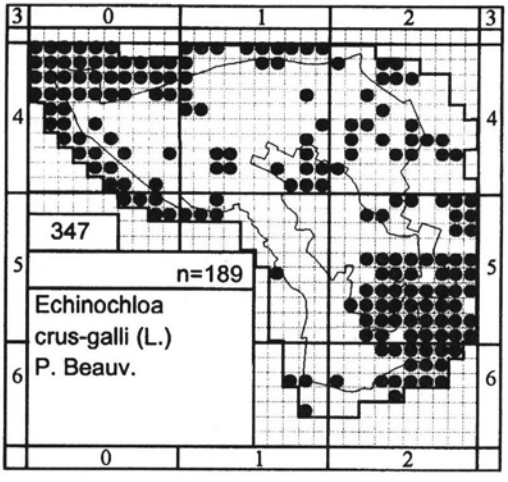

342
n=34
Dipsacus
sylvestris Huds.

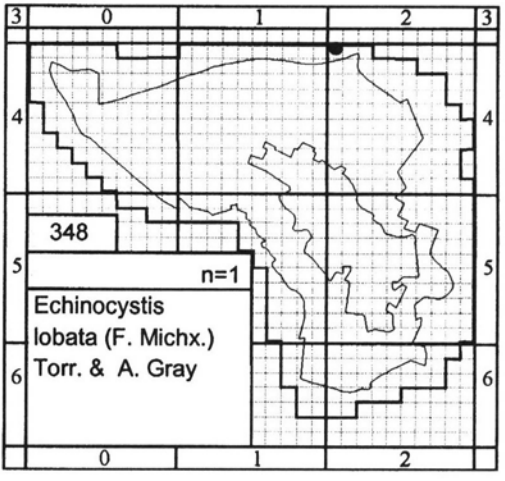

343
VU R Ch. n=4
Drosera
rotundifolia L.

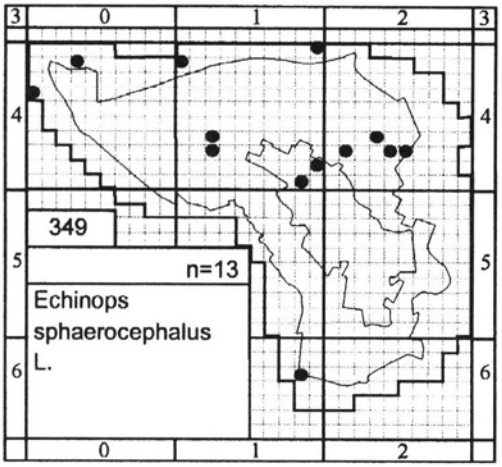

344
n=221
Dryopteris
carthusiana (Vill.)
H. P. Fuchs

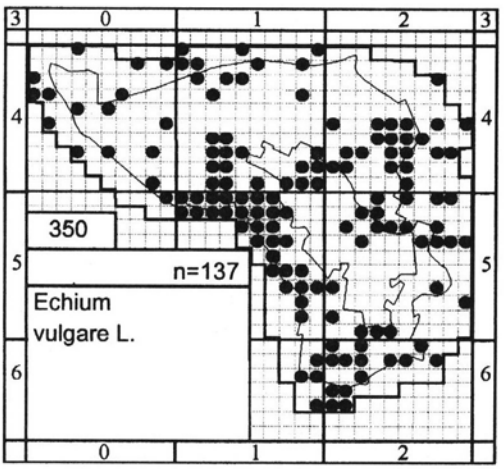

345
n=107
Dryopteris
dilatata (Hoffm.)
A. Gray


346
n=170
Dryopteris
filix-mas (L.)
Schott


347
n=189
Echinochloa
crus-galli (L.)
P. Beauv.


348
n=1
Echinocystis
lobata (F. Michx.)
Torr. & A. Gray


349
n=13
Echinops
sphaerocephalus
L.


350
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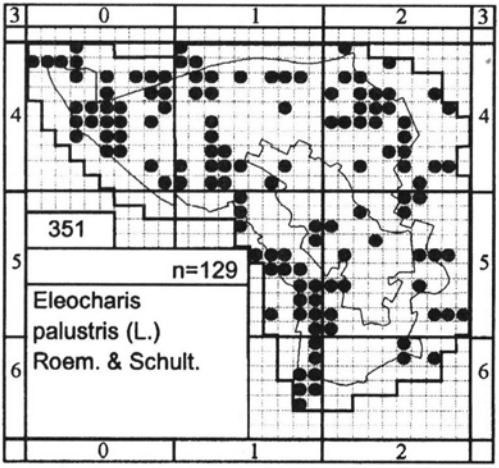
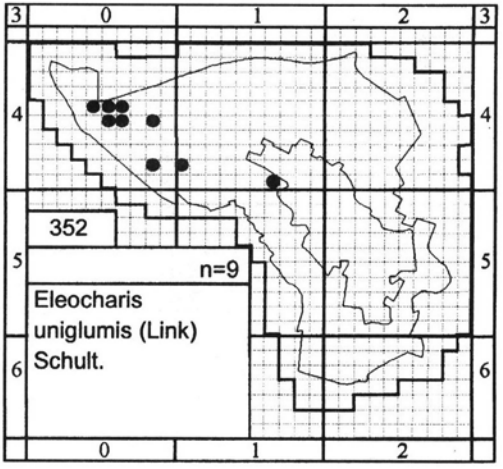
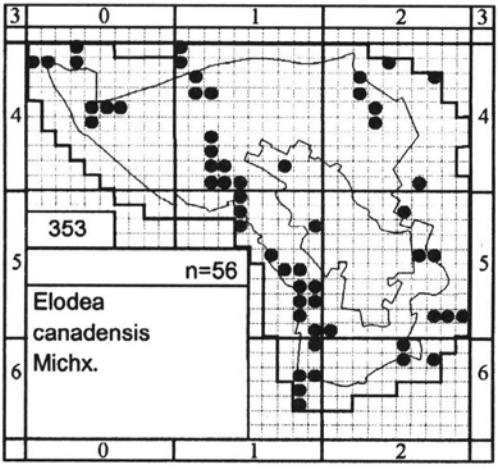
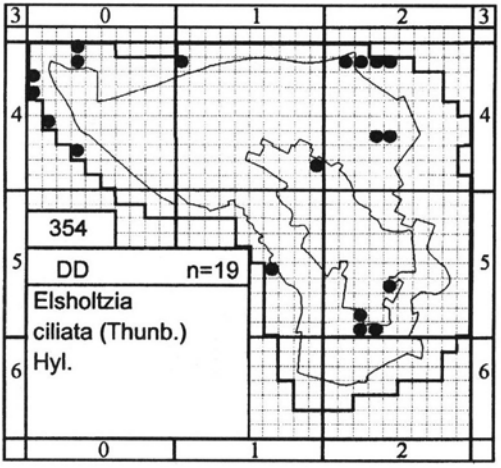
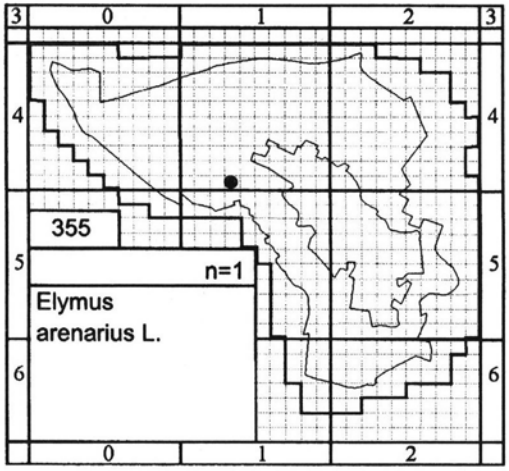
Echium
vulgare L.

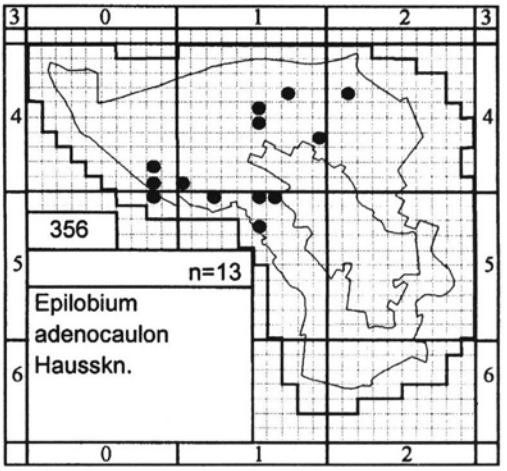

351
n=129
Eleocharis
palustris (L.)
Roem. & Schult.

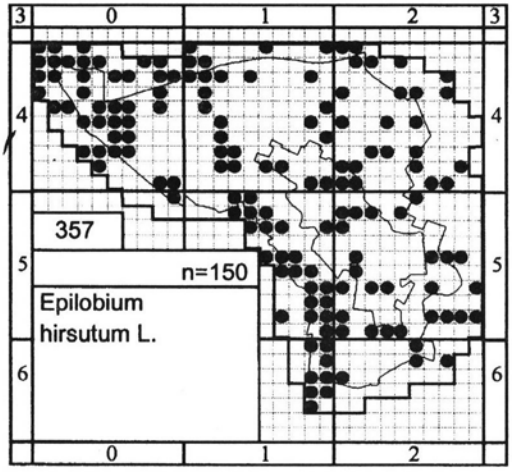

352
n=9
Eleocharis
uniglumis (Link)
Schult.

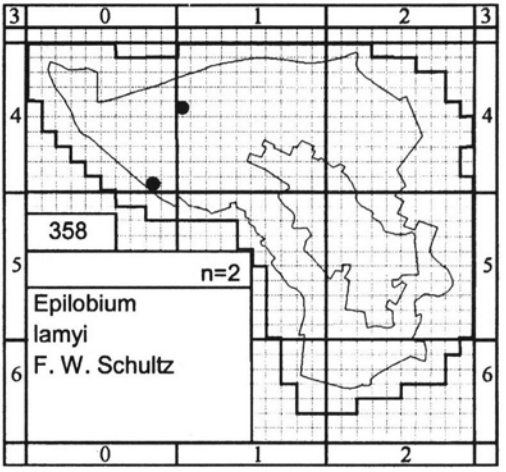

353
n=56
Elodea
canadensis
Michx.

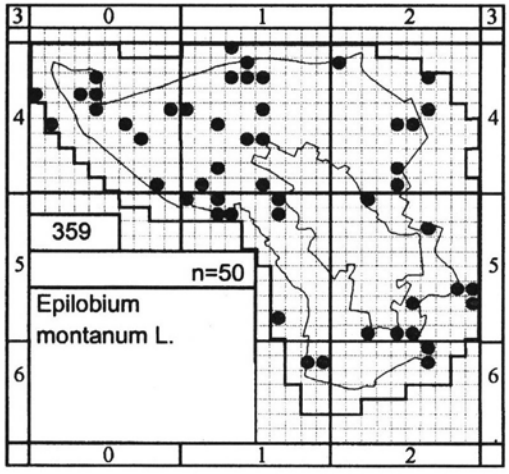

354
DD
n=19
Elsholtzia
ciliata (Thunb.)
Hyl.

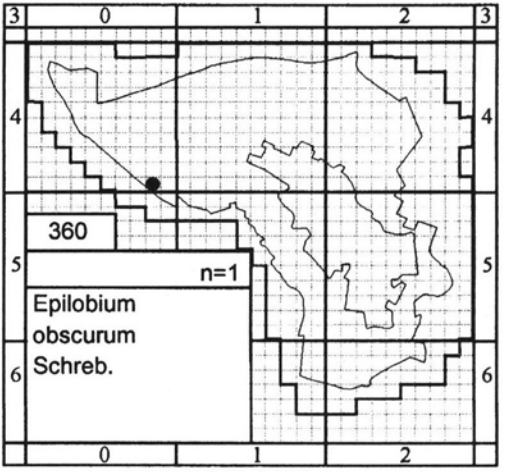

355
n=1
Elymus
arenarius L.

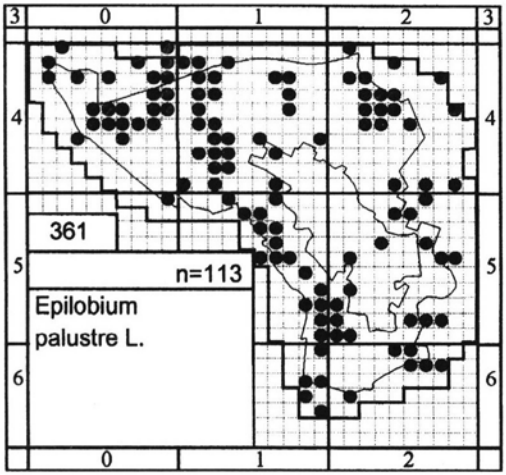

356
n=13
Epilobium
adenocaulon
Hausskn.

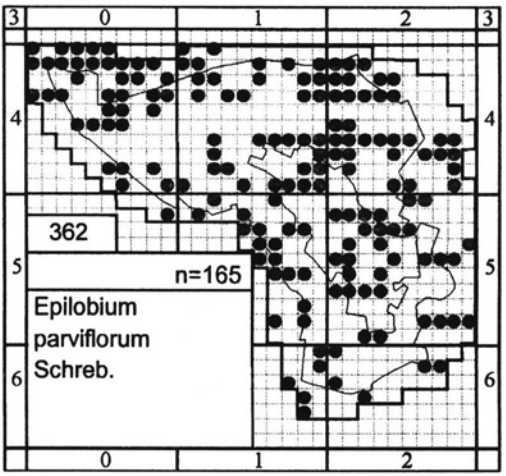

357
n=150
Epilobium
hirsutum L.

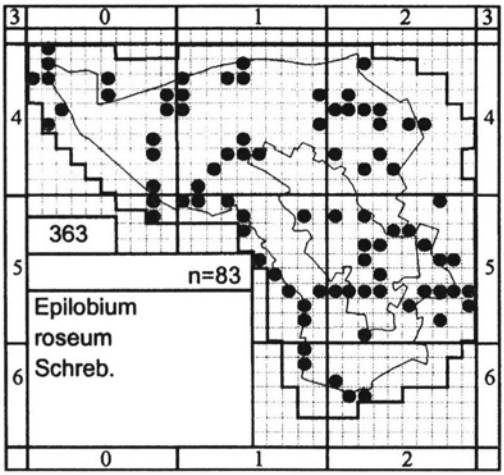

358
n=2
Epilobium
lamyi
F. W. Schultz

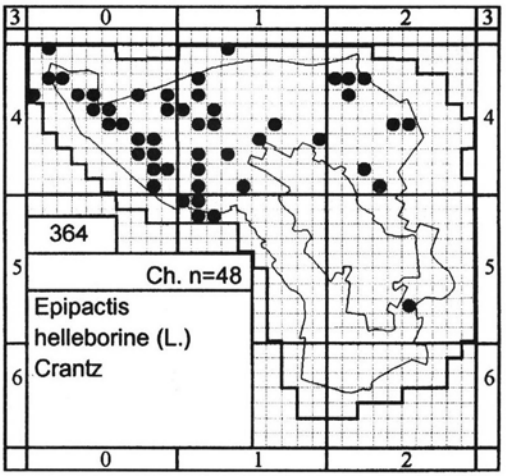

359
n=50
Epilobium
montanum L.

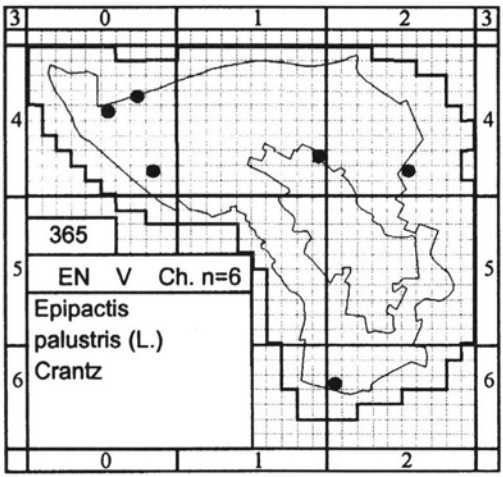

360
n=1
Epilobium
obscurum
Schreb.

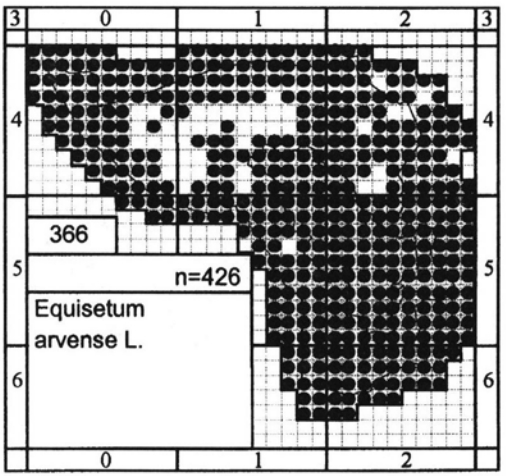

361
n=113
Epilobium
palustre L.

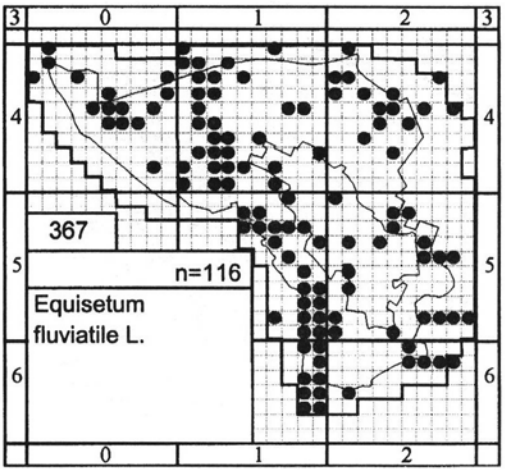

362
n=165
Epilobium
parviflorum
Schreb.

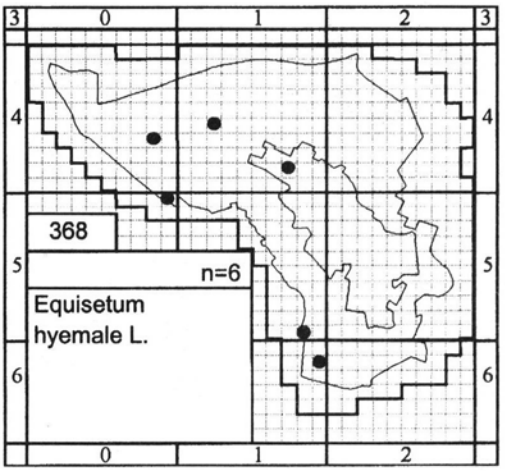

363
n=83
Epilobium
roseum
Schreb.

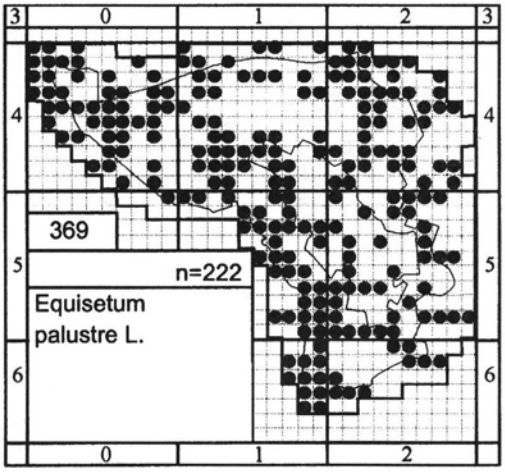

364
Ch. n=48
Epipactis
helleborine (L.)
Crantz

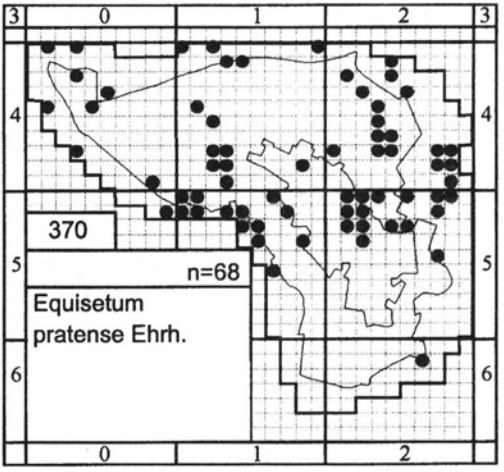

365
EN V Ch. n=6
Epipactis
palustris (L.)
Crantz

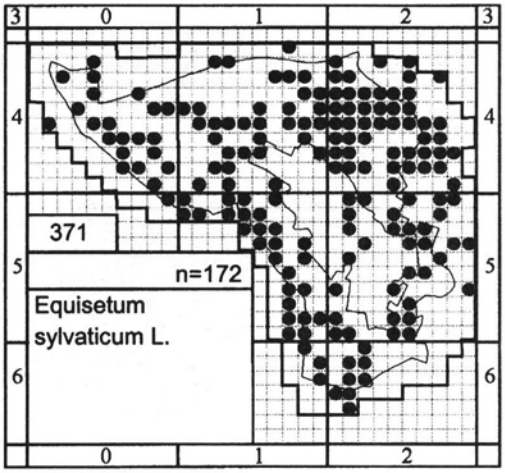

366
n=426
Equisetum
arvense L.

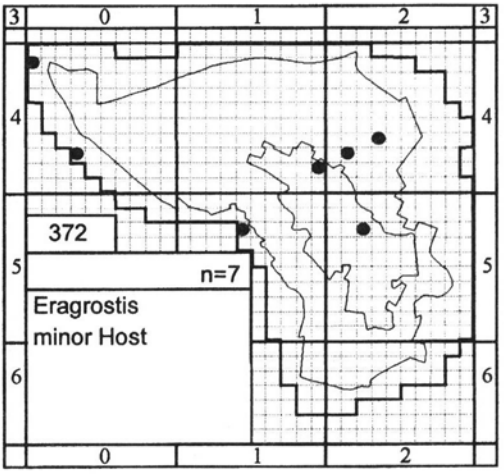

367
n=116
Equisetum
fluviatile L.

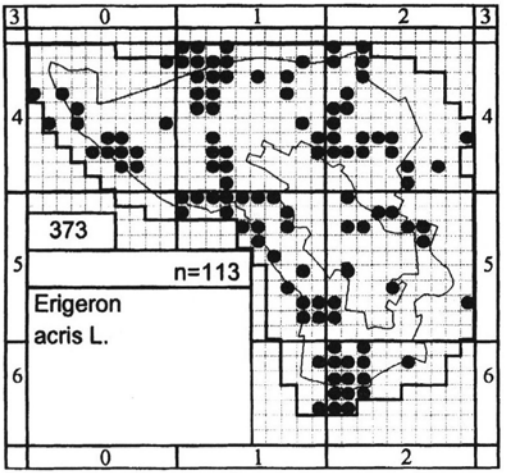

368
n=6
Equisetum
hyemale L.

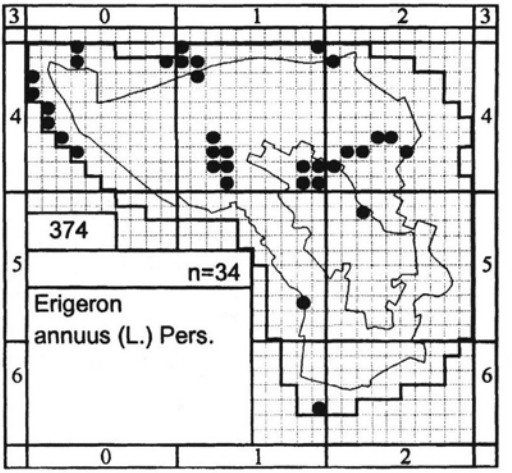

369
n=222
Equisetum
palustre L.

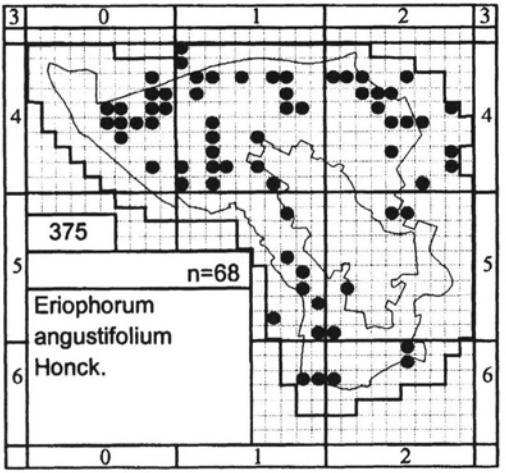

370
n=68
Equisetum
pratense Ehrh.

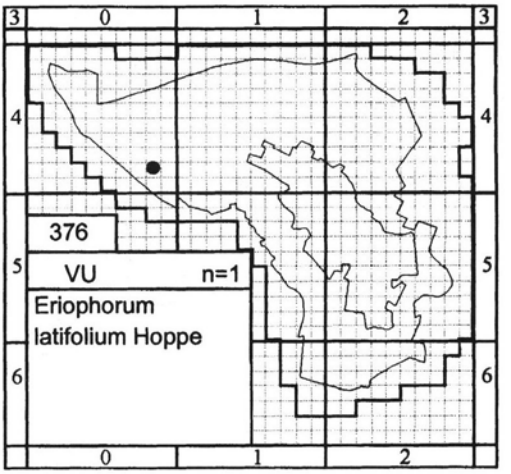

371
n=172
Equisetum
sylvaticum L.

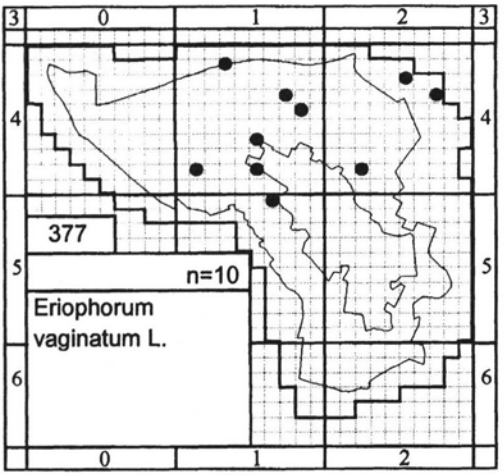

372
n=7
Eragrostis
minor Host

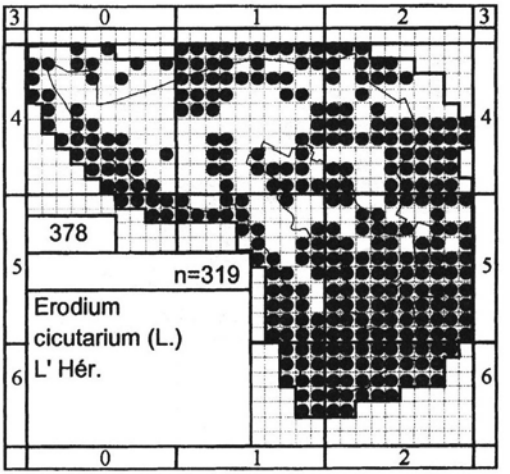

373
n=113
Erigeron
acris L.

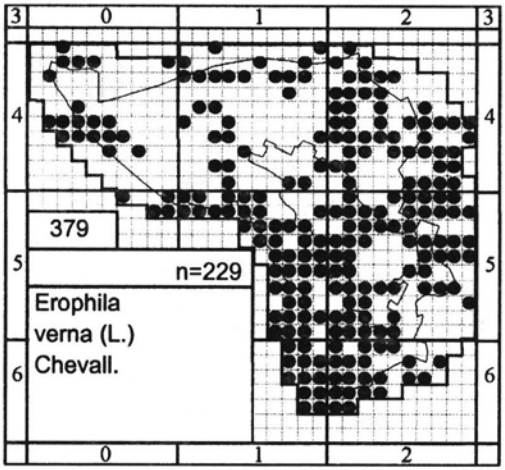

374
n=34
Erigeron
annuus (L.) Pers.

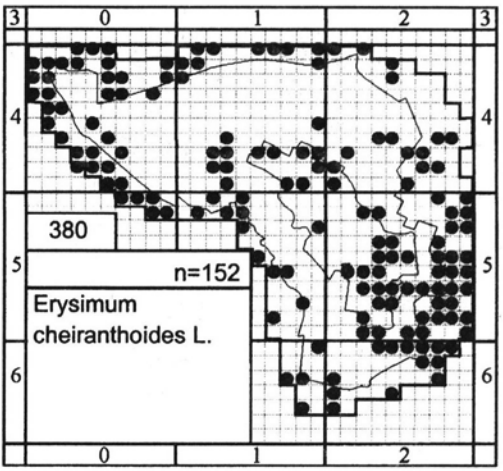

375
n=68
Eriophorum
angustifolium
Honck.

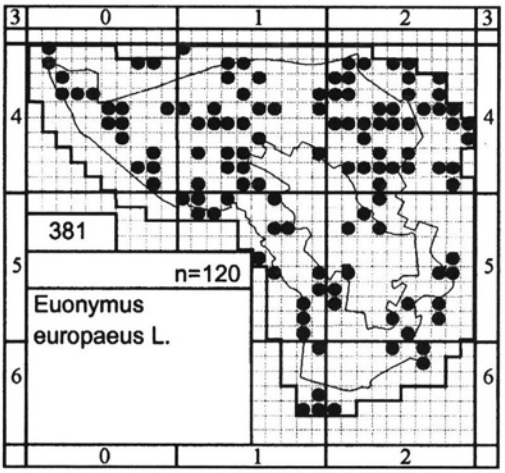

376
VU
n=1
Eriophorum
latifolium Hoppe

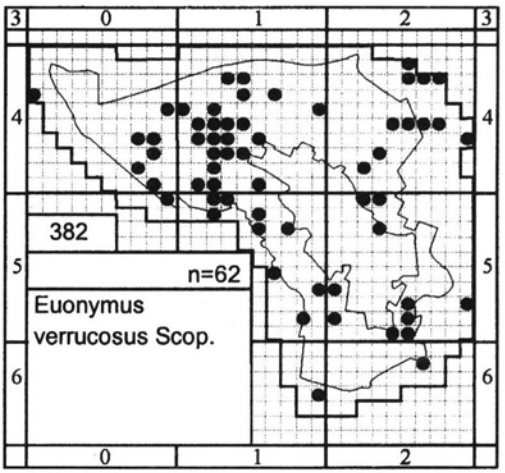

377
n=10
Eriophorum
vaginatum L.

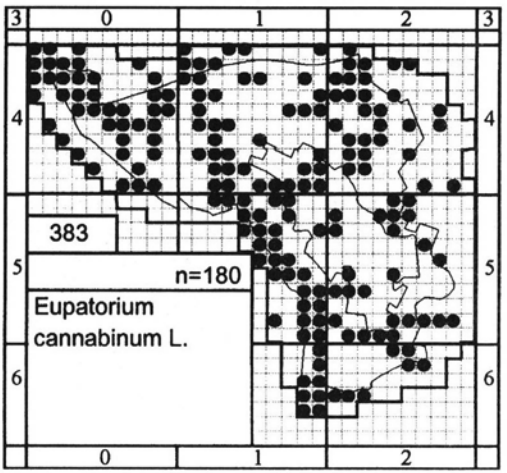

378
n=319
Erodium
cicutarium (L.)
L' Hér.

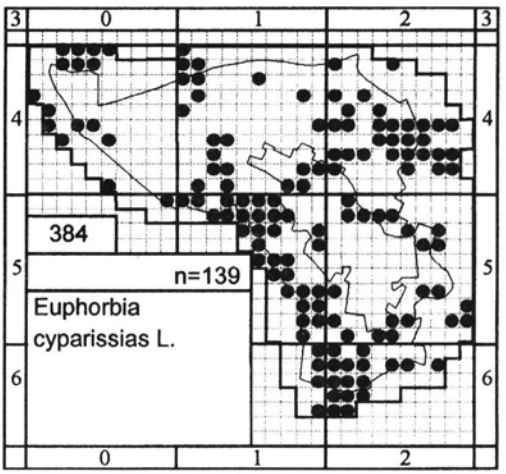

379
n=229
Erophila
verna (L.)
Chevall.

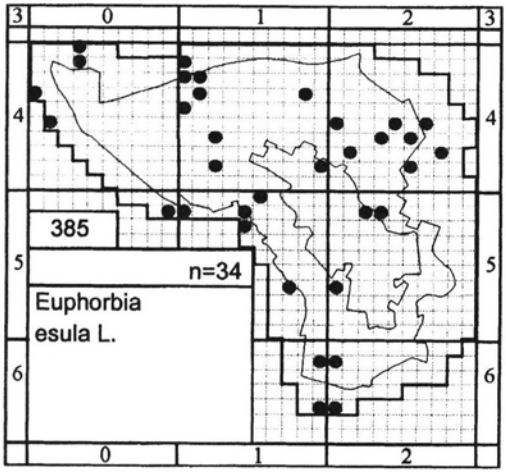

380
n=152
Erysimum
cheiranthoides L.

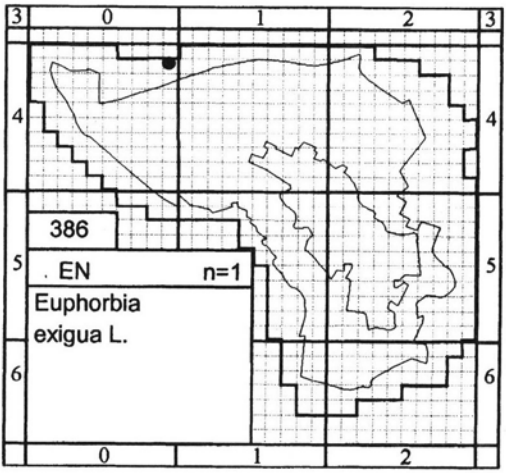

381
n=120
Euonymus
europaeus L.

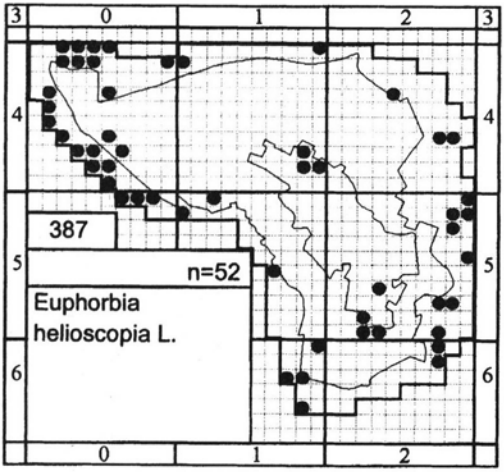

382
n=62
Euonymus
verrucosus Scop.

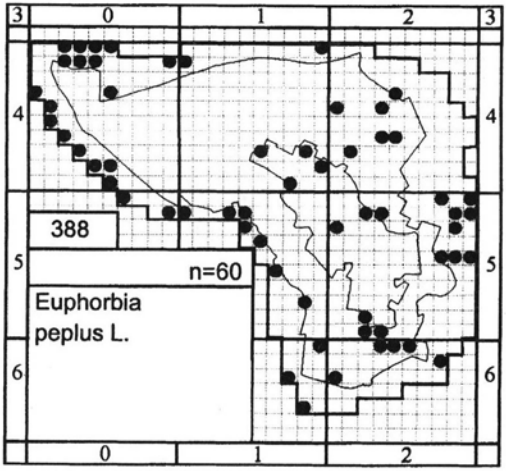

383
n=180
Eupatorium
cannabinum L.

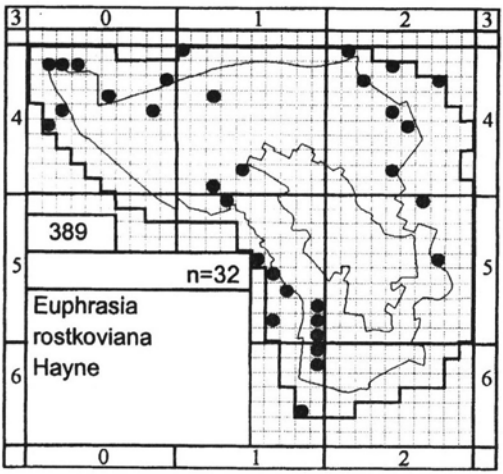

384
n=139
Euphorbia
cyparissias L.

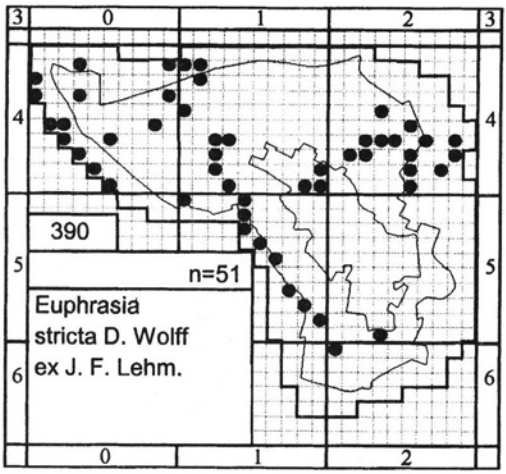

385
n=34
Euphorbia
esula L.

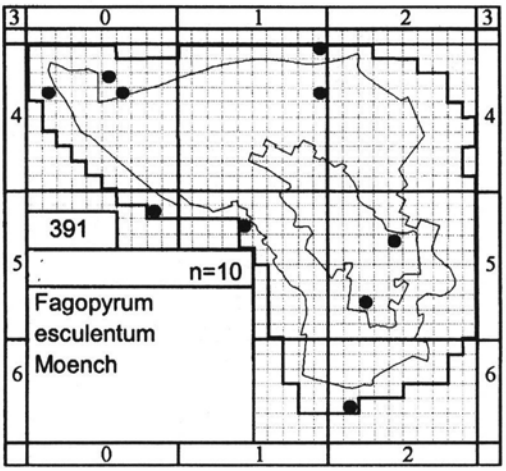

386
EN
n=1
Euphorbia
exigua L.

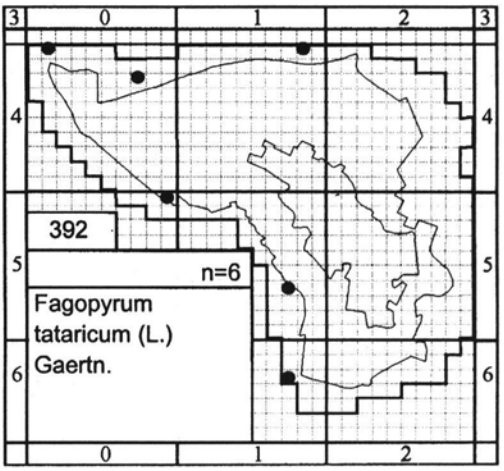

387
n=52
Euphorbia
helioscopia L.

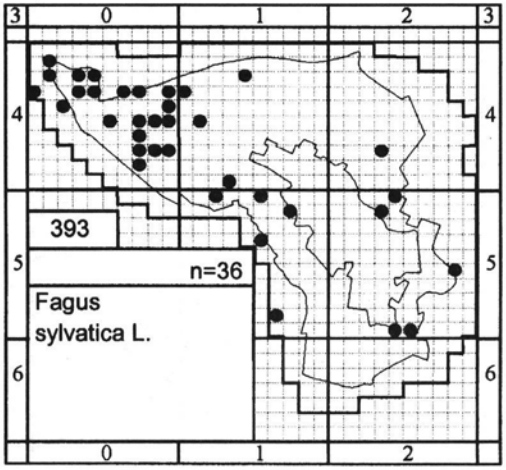

388
n=60
Euphorbia
peplus L.

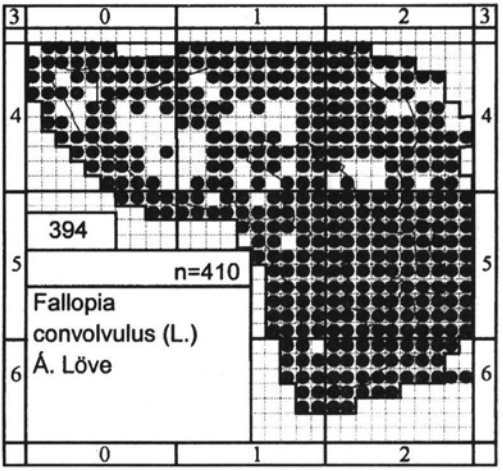

389
n=32
Euphrasia
rostkoviana
Hayne

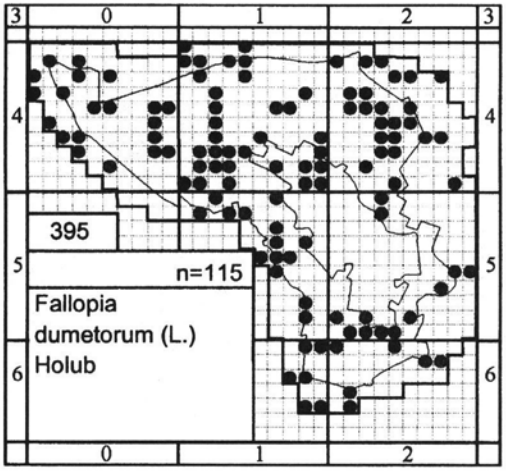

390
n=51
Euphrasia
stricta D. Wolff
ex J. F. Lehm.

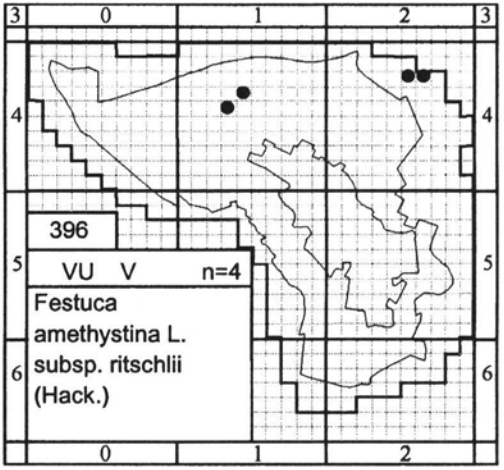

391
n=10
Fagopyrum
esculentum
Moench

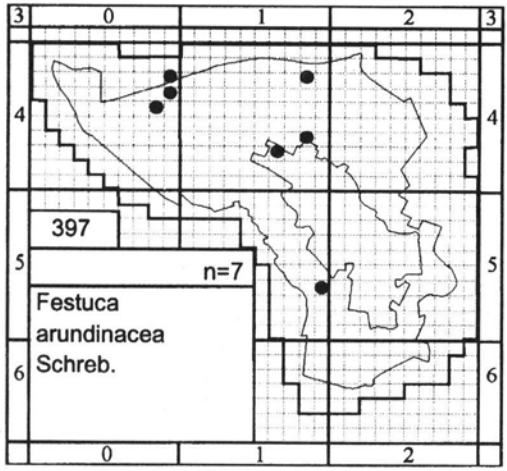

392
n=6
Fagopyrum
tataricum (L.)
Gaertn.

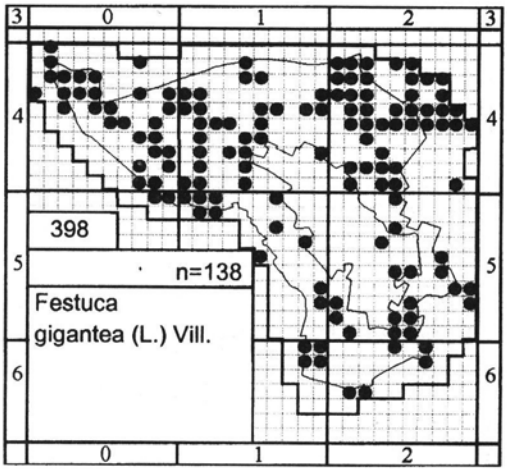

393
n=36
Fagus
sylvatica L.

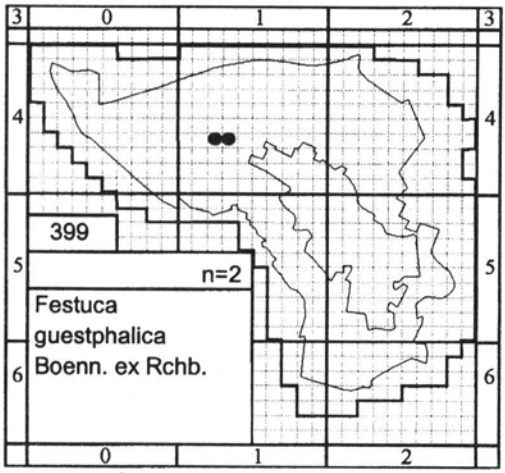

394
n=410
Fallopia
convolvulus (L.)
Á. Löve

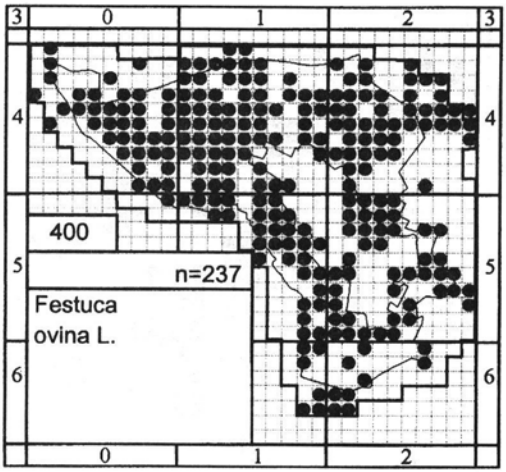

395
n=115
Fallopia
dumetorum (L.)
Holub

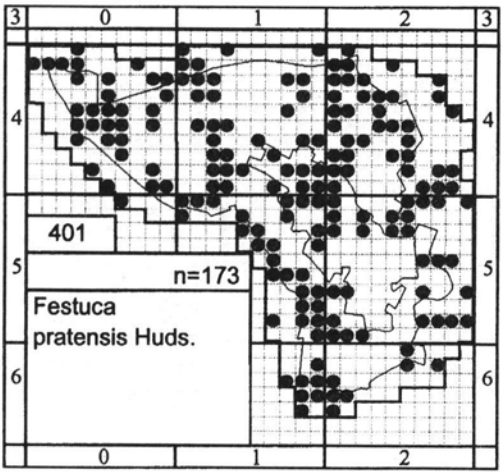

396
VU V
n=4
Festuca
amethystina L.
subsp. ritschlii
(Hack.)

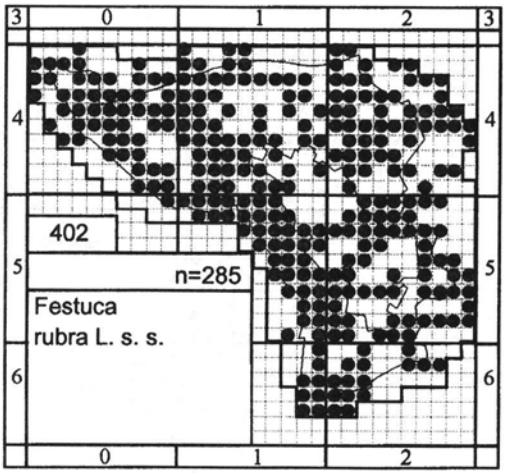

397
n=7
Festuca
arundinacea
Schreb.

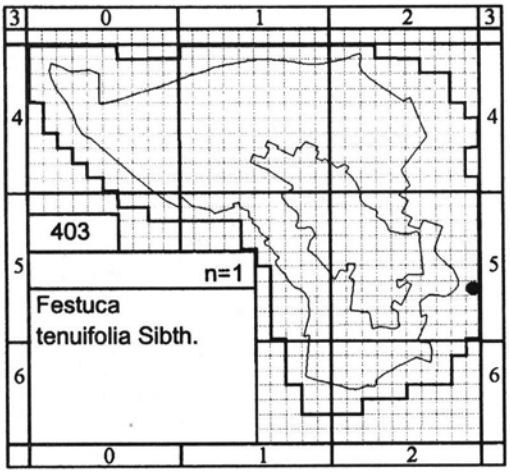

398
n=138
Festuca
gigantea (L.) Vill.

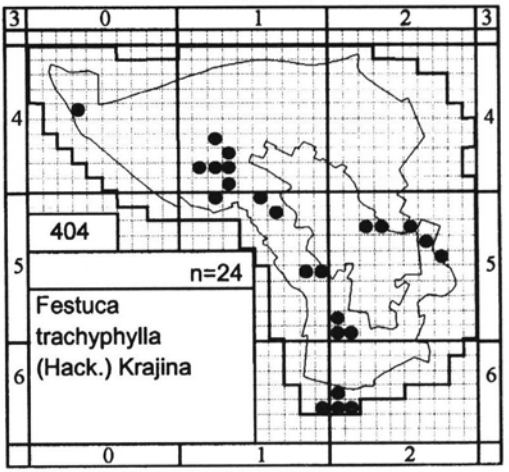

399
n=2
Festuca
guestphalica
Boenn. ex Rchb.

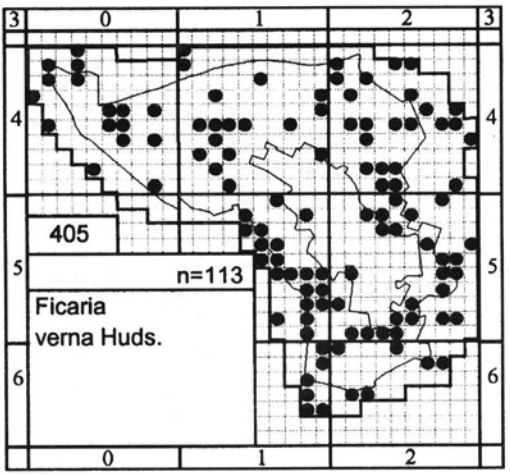

400
n=237
Festuca
ovina L.

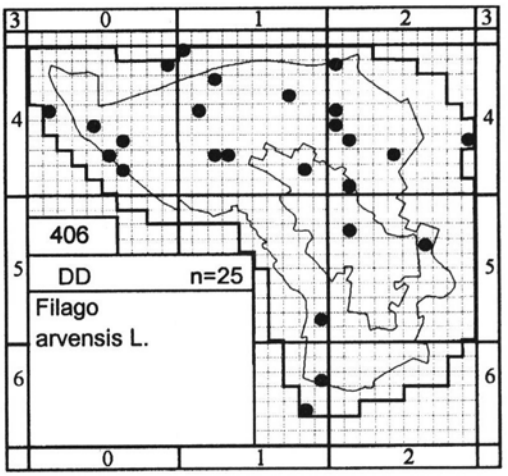

401
n=173
Festuca
pratensis Huds.

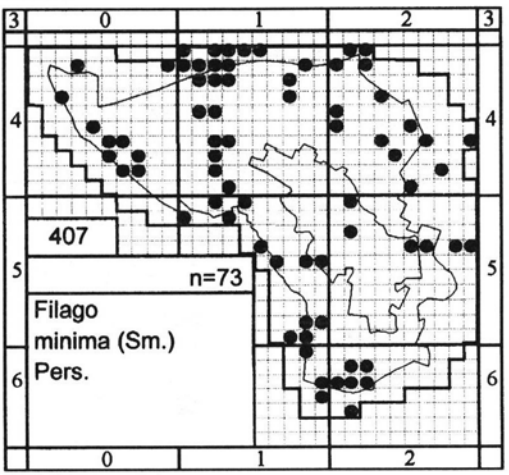

402
n=285
Festuca
rubra L. s. s.

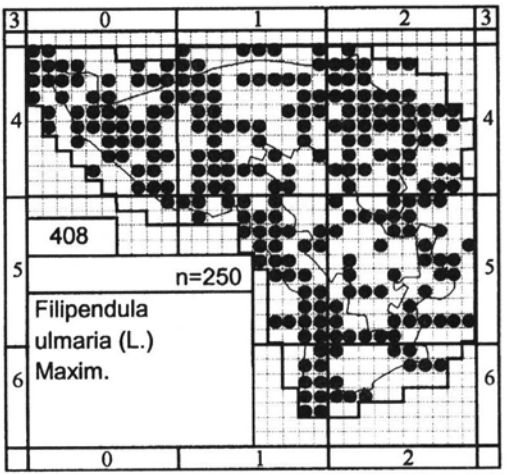

403
n=1
Festuca
tenuifolia Sibth.

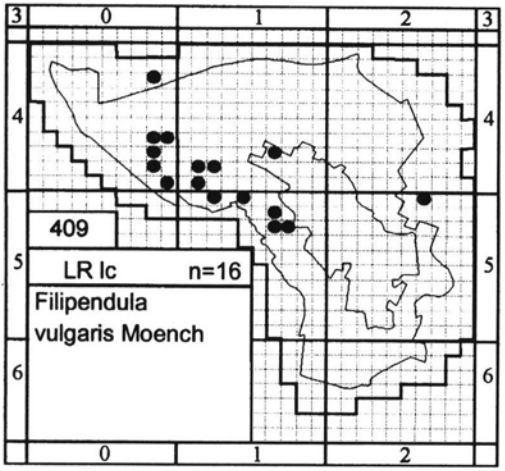

404
n=24
Festuca
trachyphylla
(Hack.) Krajina

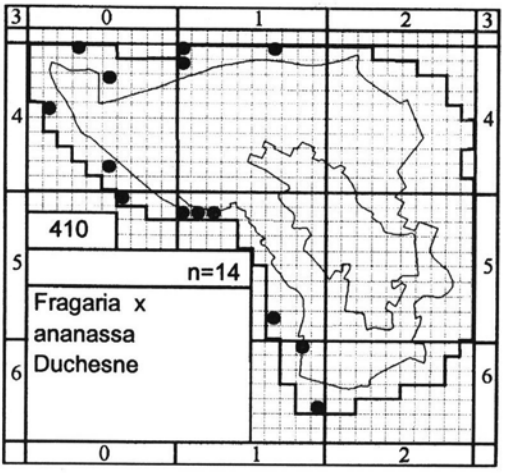

405
n=113
Ficaria
verna Huds.

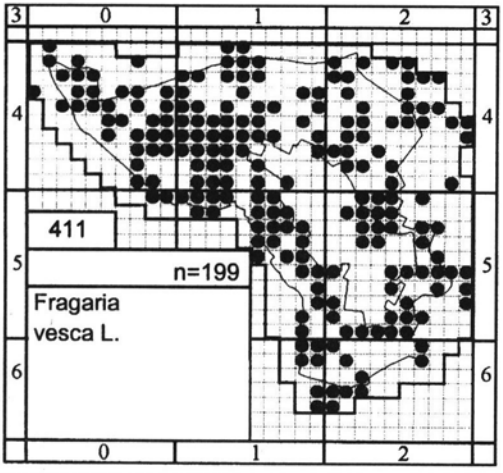

406
DD
n=25
Filago
arvensis L.

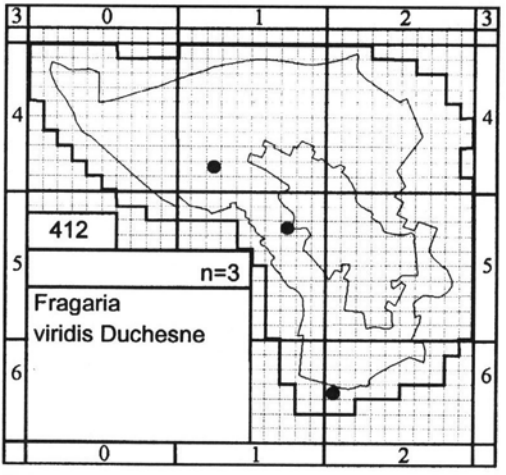

407
n=73
Filago
minima (Sm.)
Pers.

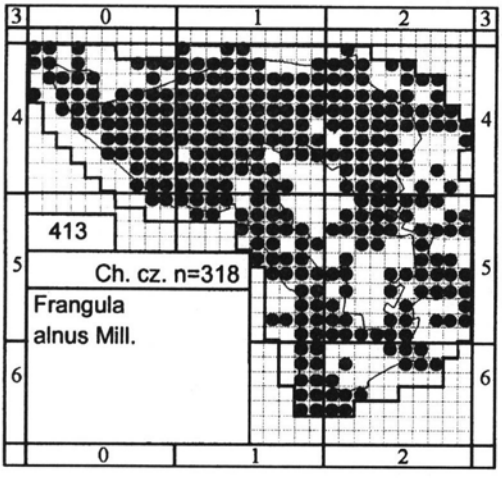

408
n=250
Filipendula
ulmaria (L.)
Maxim.

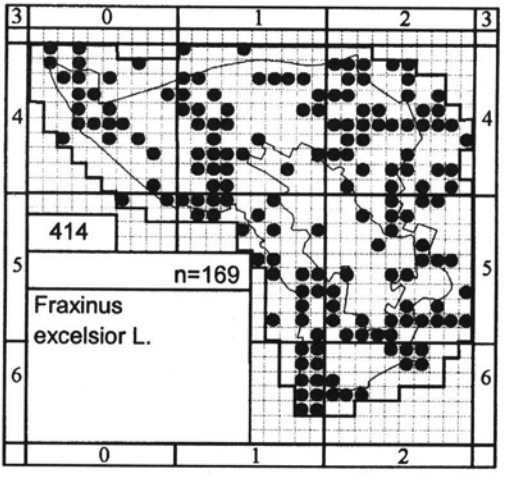

409
LR lc n=16
Filipendula
vulgaris Moench

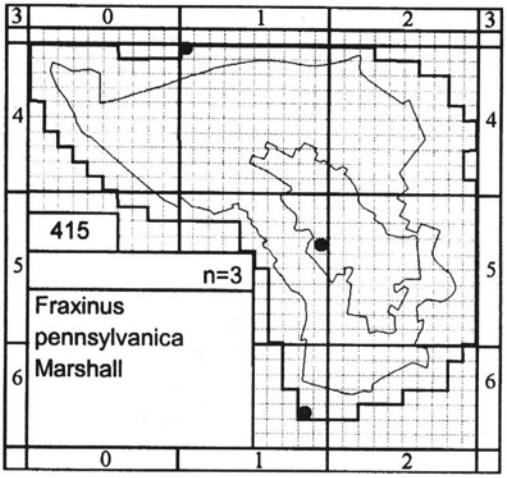

410
n=14
Fragaria x
ananassa
Duchesne

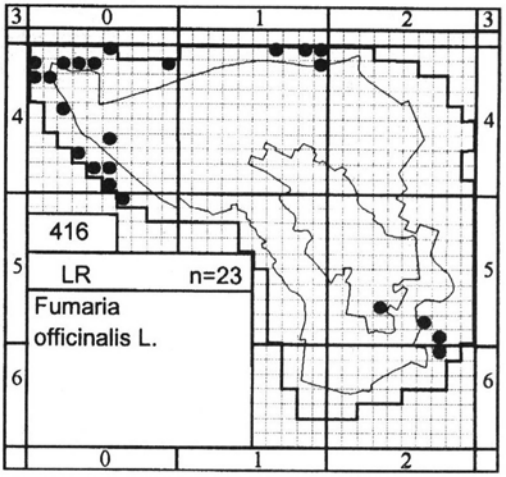

411
n=199
Fragaria
vesca L.

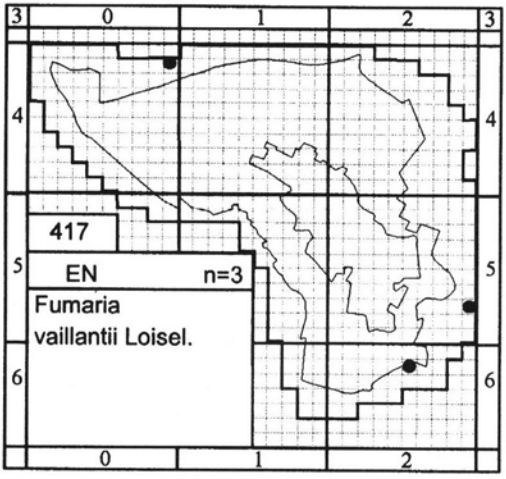

412
n=3
Fragaria
viridis Duchesne

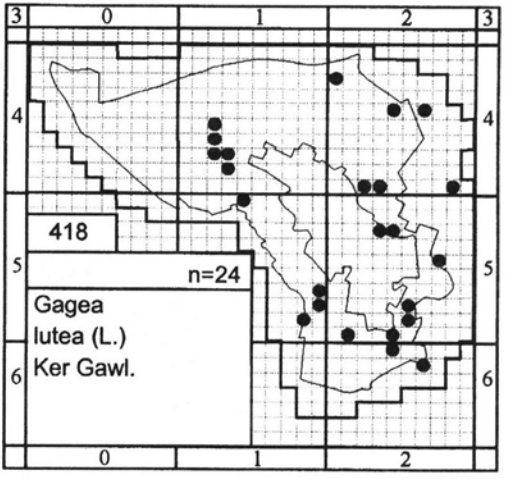

413
Ch. cz. n=318
Frangula
alnus Mill.

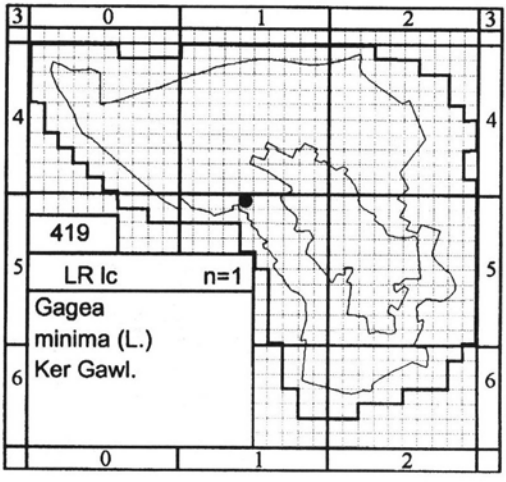

414
n=169
Fraxinus
excelsior L.

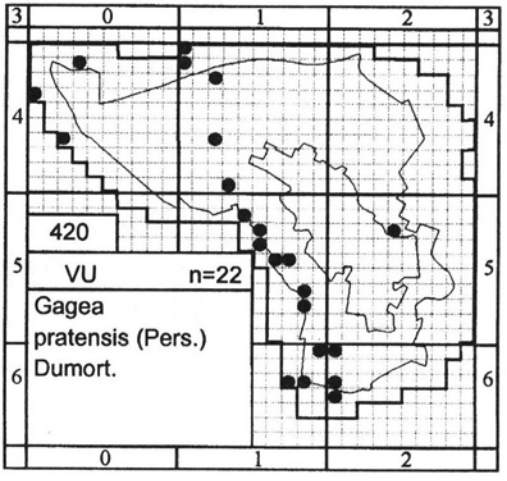

415
n=3
Fraxinus
pennsylvanica
Marshall

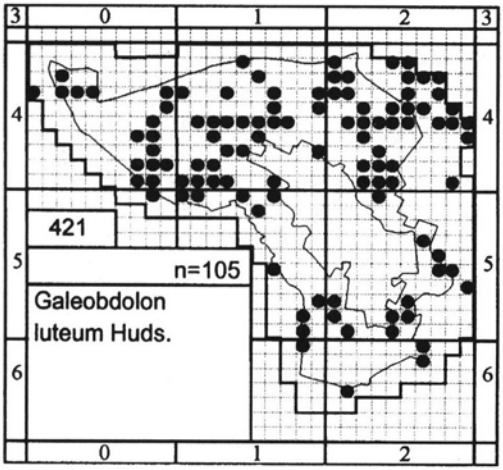

416
LR
n=23
Fumaria
officinalis L.

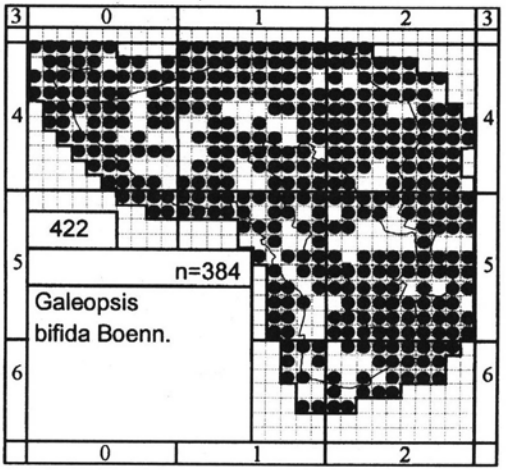

417
EN
n=3
Fumaria
vaillantii Loisel.

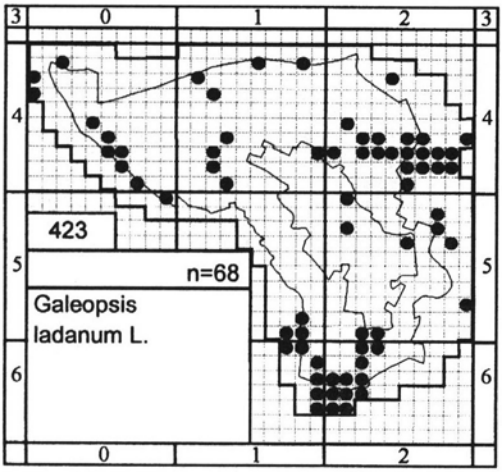

418
n=24
Gagea
lutea (L.)
Ker Gawl.

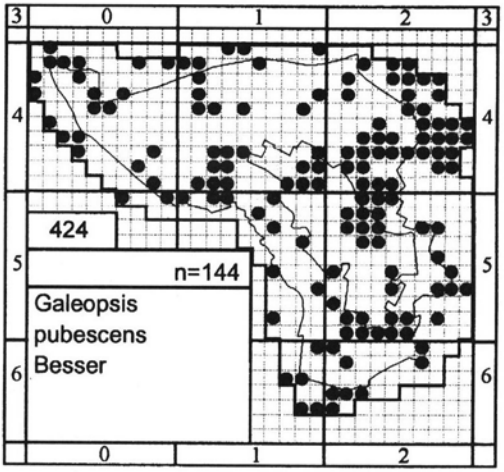

419
LR lc
n=1
Gagea
minima (L.)
Ker Gawl.

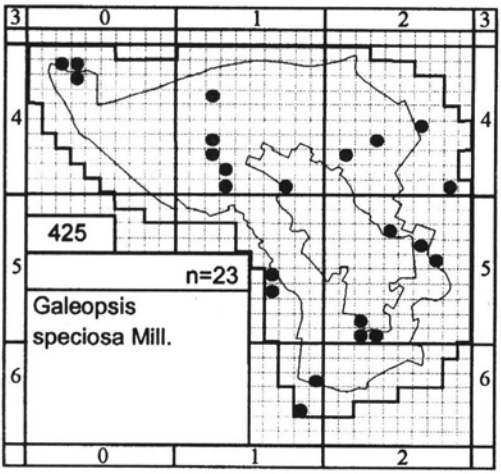

420
VU
n=22
Gagea
pratensis (Pers.)
Dumort.

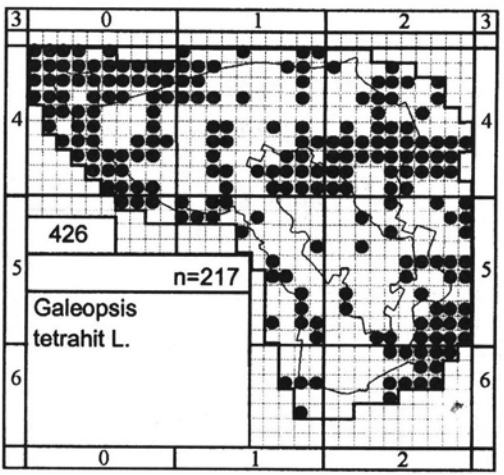

421
n=105
Galeobdolon
luteum Huds.

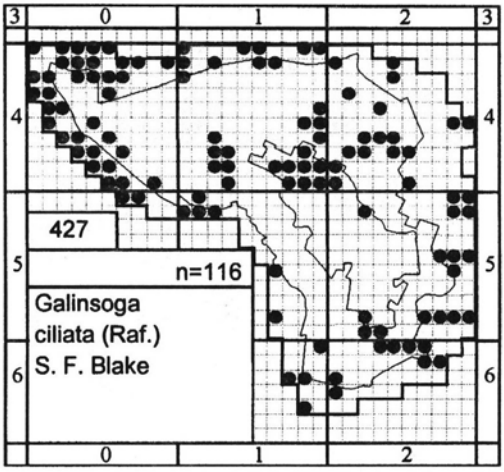

422
n=384
Galeopsis
bifida Boenn.

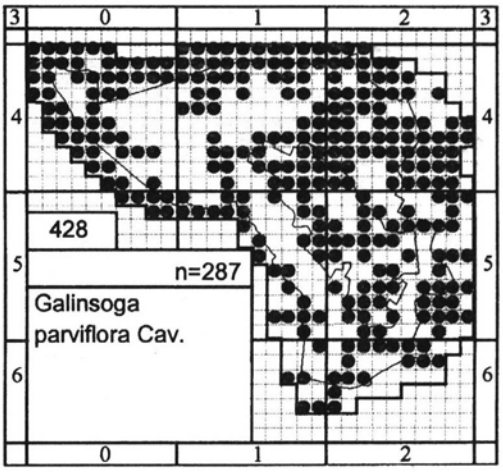

423
n=68
Galeopsis
ladanum L.

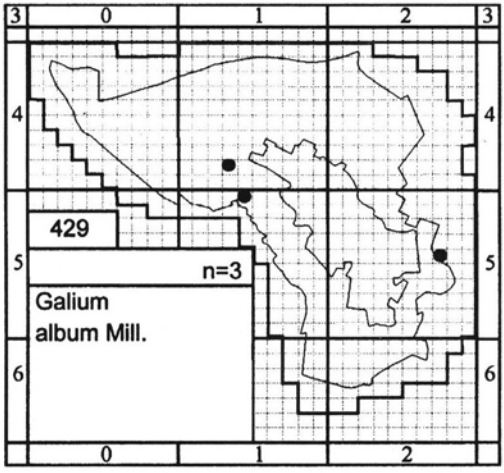

424
n=144
Galeopsis
pubescens
Besser

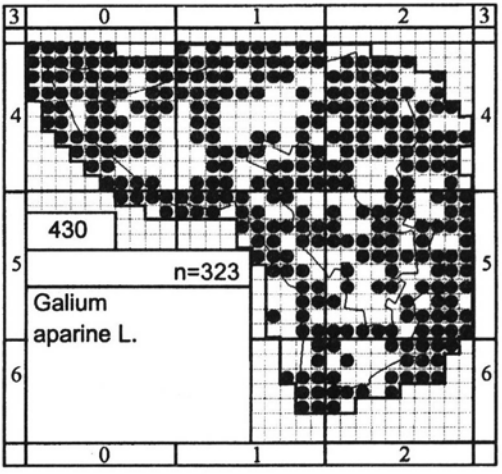

425
n=23
Galeopsis
speciosa Mill.

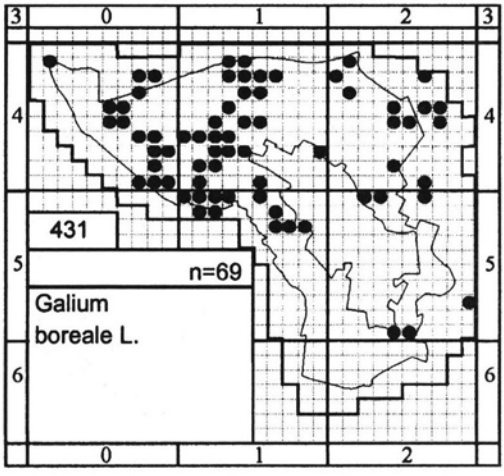

426
n=217
Galeopsis
tetrahit L.

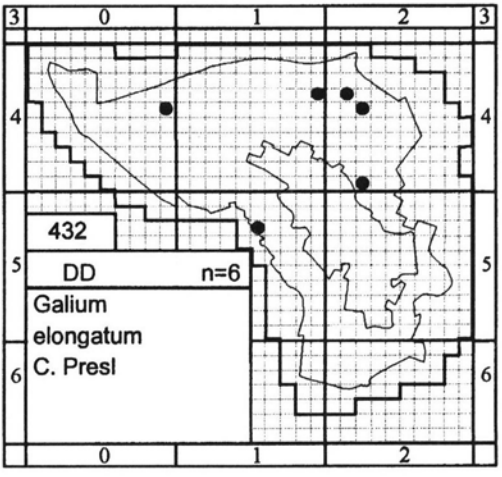

427
n=116
Galinsoga
ciliata (Raf.)
S. F. Blake

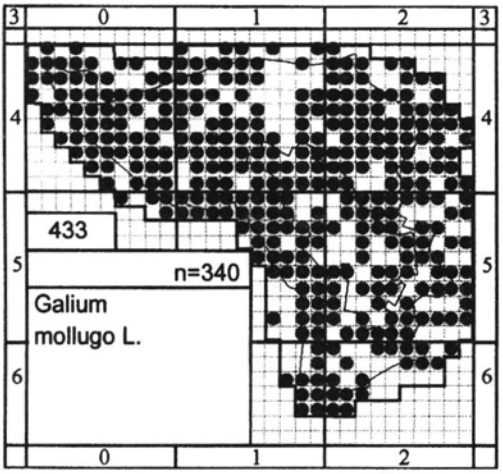

428
n=287
Galinsoga
parviflora Cav.

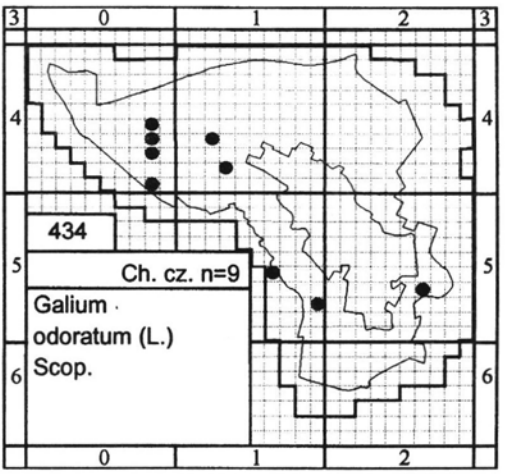

429
n=3
Galium
album Mill.

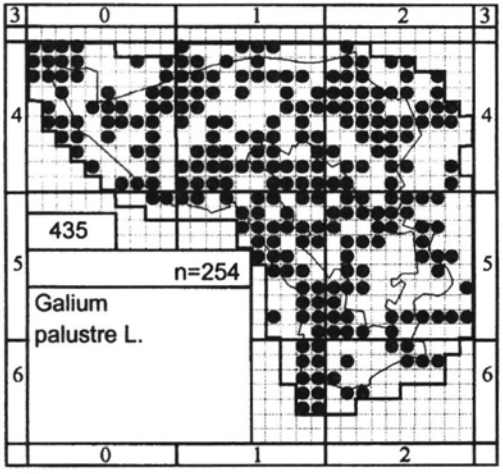

430
n=323
Galium
aparine L.

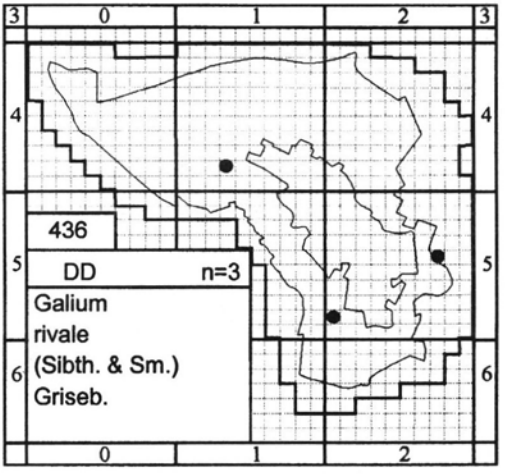

431
n=69
Galium
boreale L.

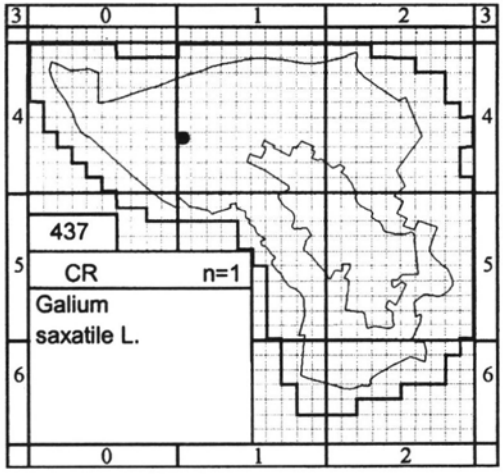

432
DD
n=6
Galium
elongatum
C. Presl

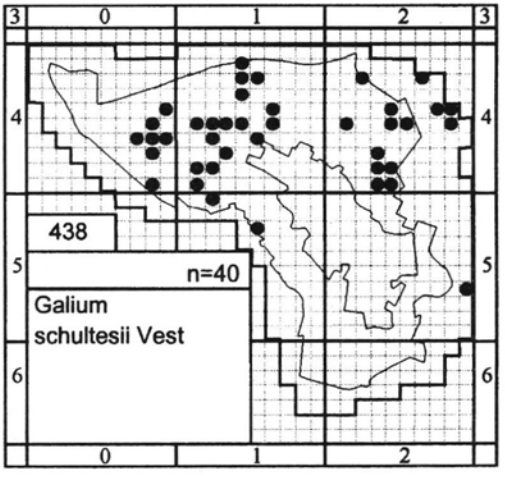

433
n=340
Galium
mollugo L.

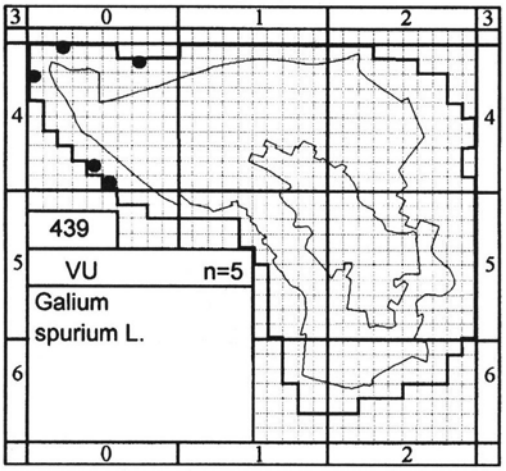

434
Ch. cz. n=9
Galium
odoratum (L.)
Scop.

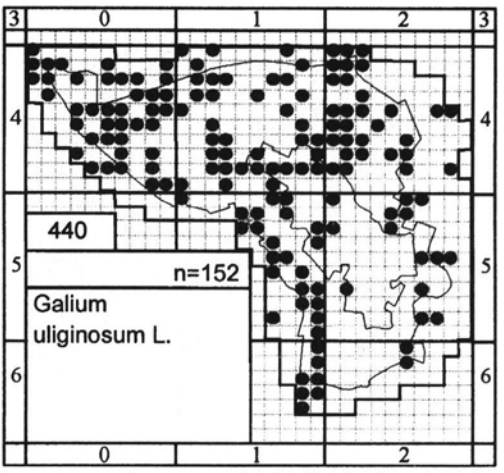

435
n=254
Galium
palustre L.

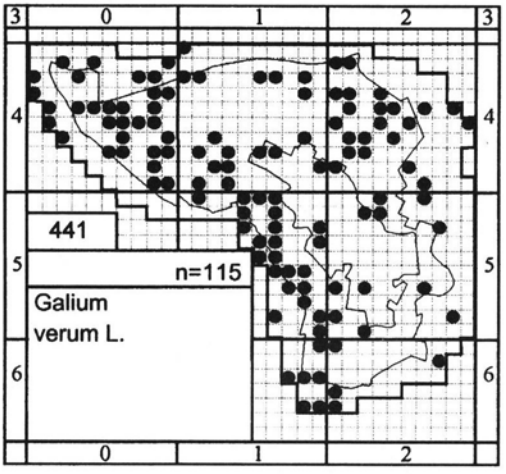

436
DD
n=3
Galium
rivale
(Sibth. & Sm.)
Griseb.

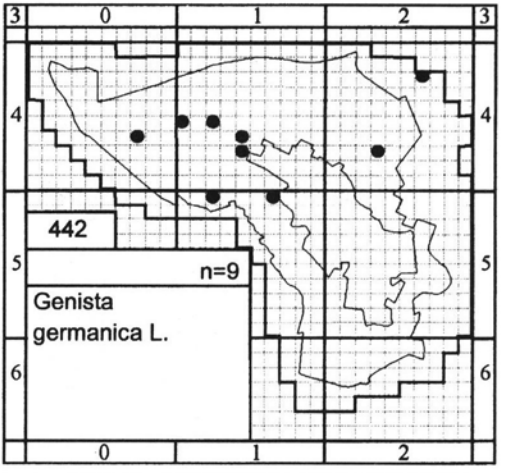

437
CR
n=1
Galium
saxatile L.

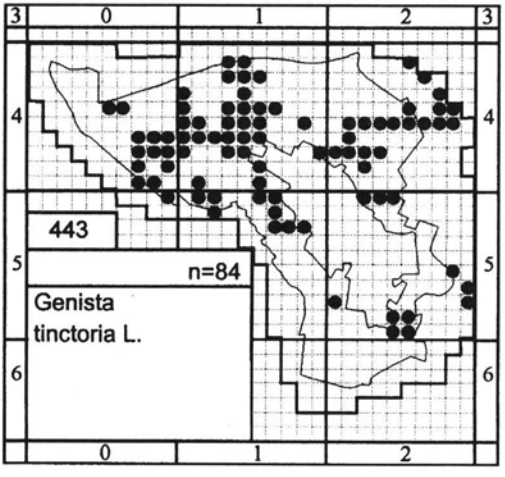

438
n=40
Galium
schultesii Vest

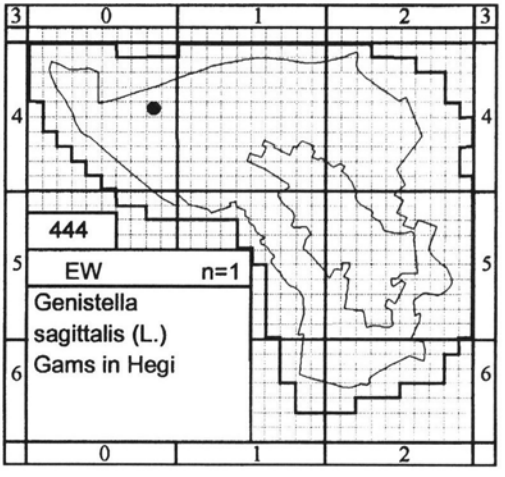

439
VU
n=5
Galium
spurium L.

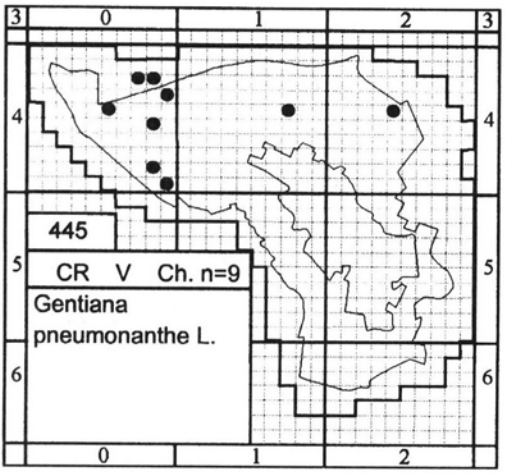

440
n=152
Galium
uliginosum L.

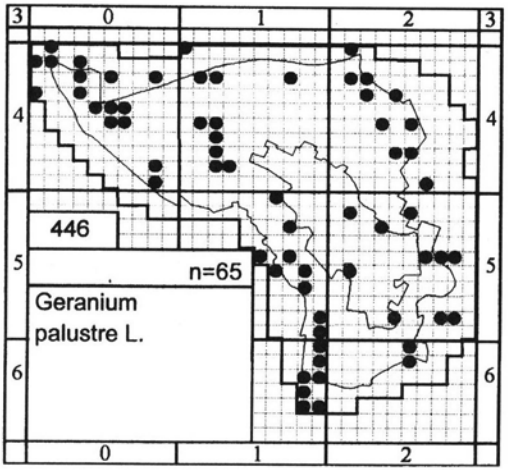

441
n=115
Galium
verum L.

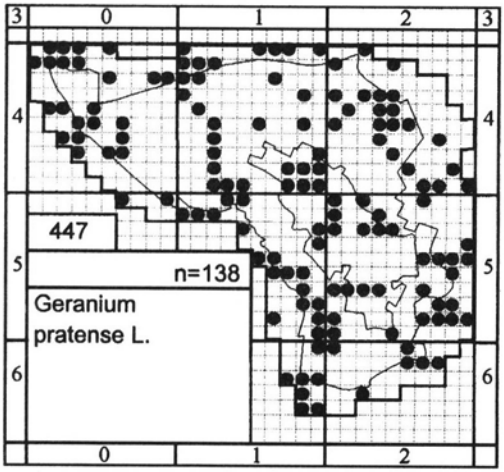

442
n=9
Genista
germanica L.

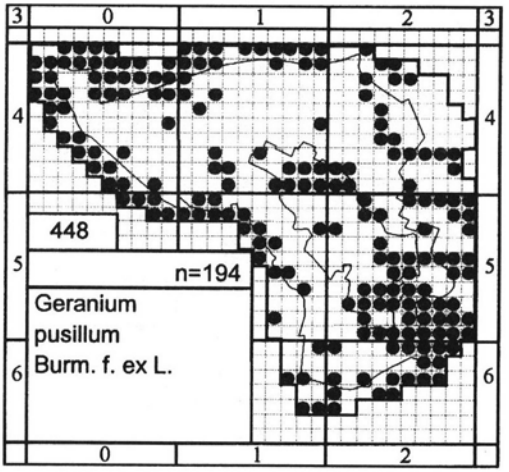

443
n=84
Genista
tinctoria L.

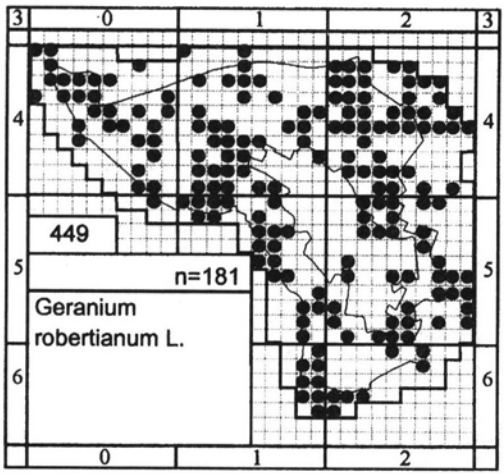

444
EW
n=1
Genistella
sagittalis (L.)
Gams in Hegi

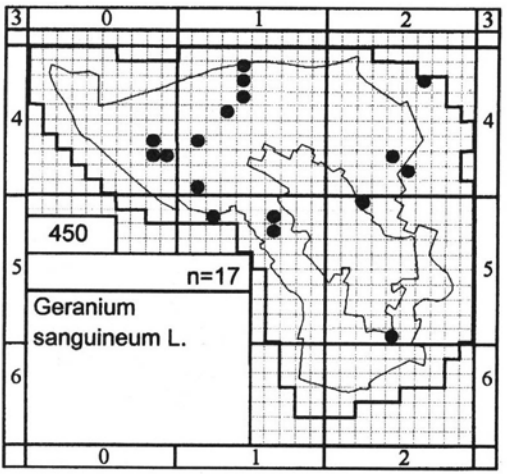

445
CR V Ch. n=9
Gentiana
pneumonanthe L.

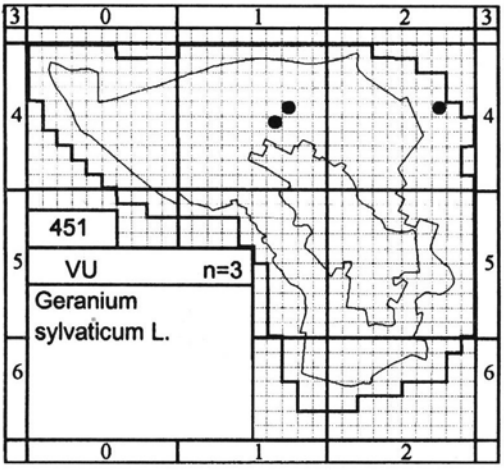

446
n=65
Geranium
palustre L.

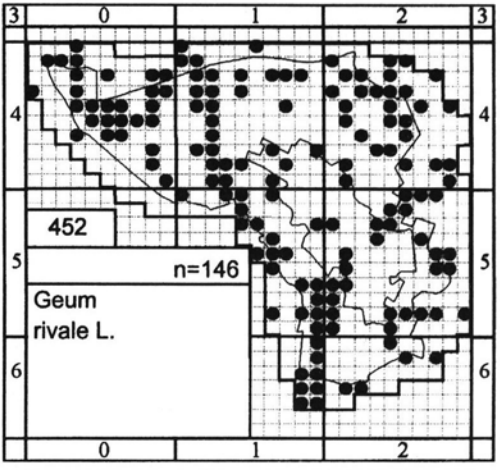

447
n=138
Geranium
pratense L.

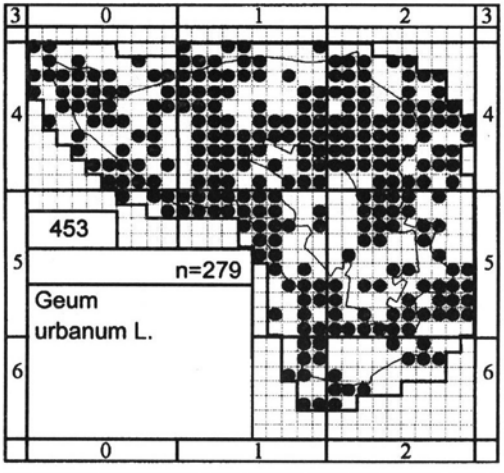

448
n=194
Geranium
pusillum
Burm. f. ex L.

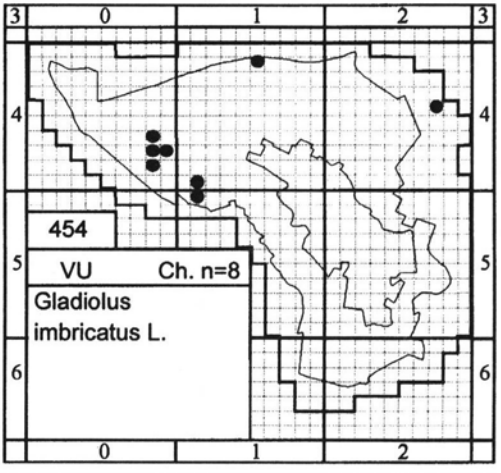

449
n=181
Geranium
robertianum L.

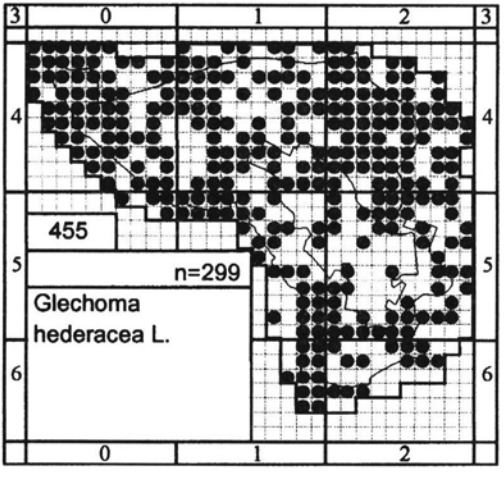

450
n=17
Geranium
sanguineum L.

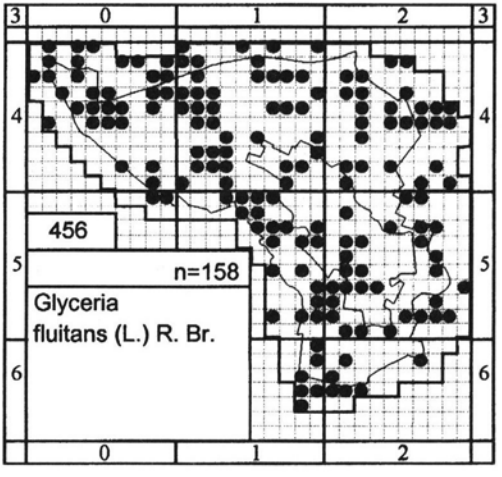

451
VU
n=3
Geranium
sylvaticum L.

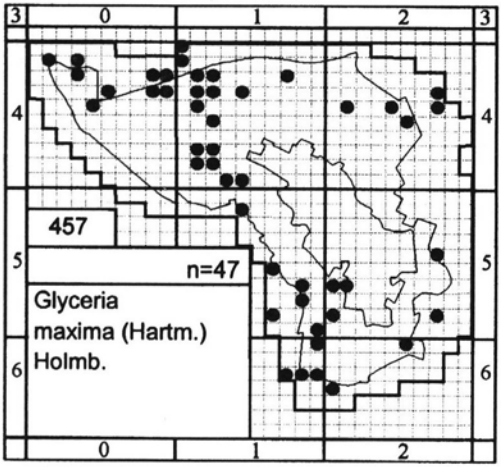

452
n=146
Geum
rivale L.

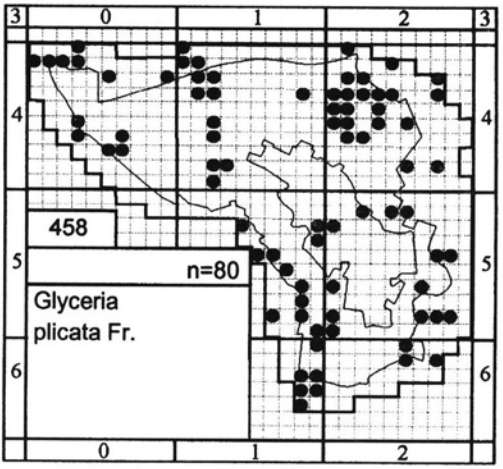

453
n=279
Geum
urbanum L.

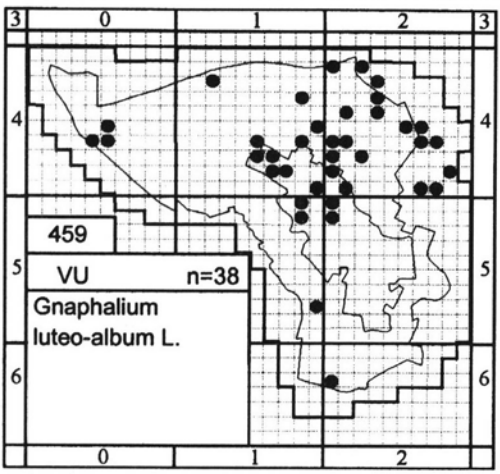

454
VU
Ch. n=8
Gladiolus
imbricatus L.

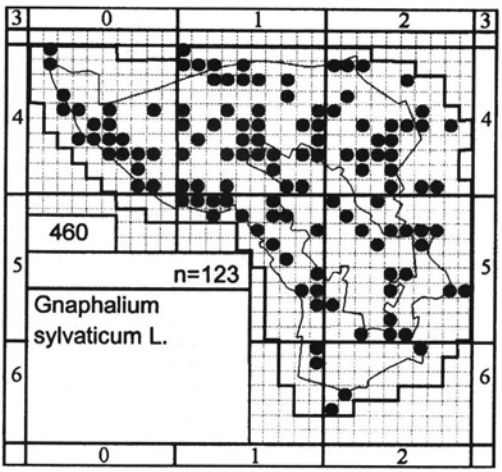

455
n=299
Glechoma
hederacea L.

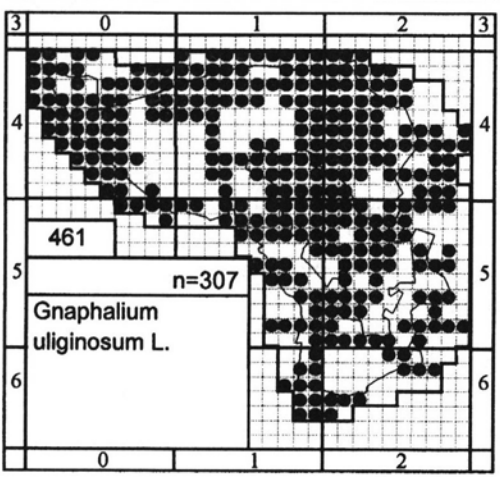

456
n=158
Glyceria
fluitans (L.) R. Br.

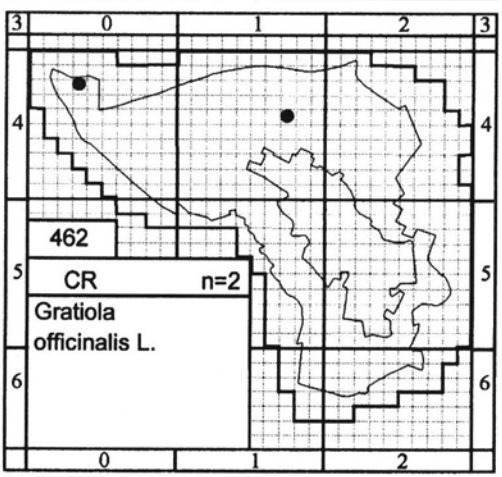

457
n=47
Glyceria
maxima (Hartm.)
Holmb.

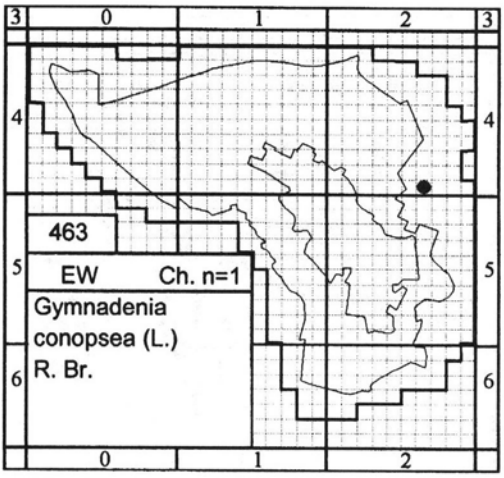

458
n=80
Glyceria
plicata Fr.

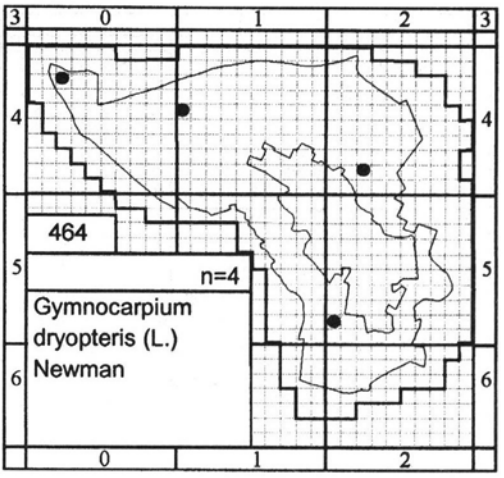

459
VU
n=38
Gnaphalium
luteo-album L.

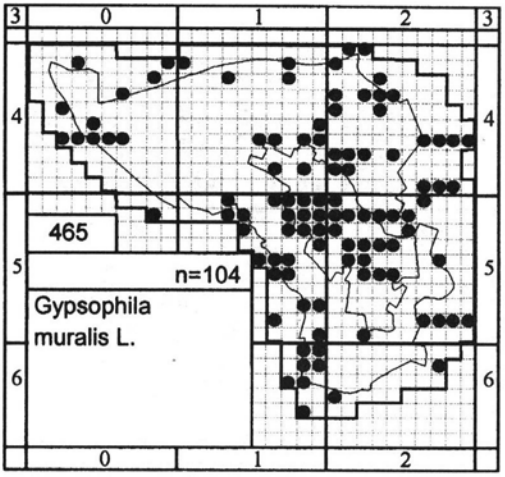

460
n=123
Gnaphalium
sylvaticum L.

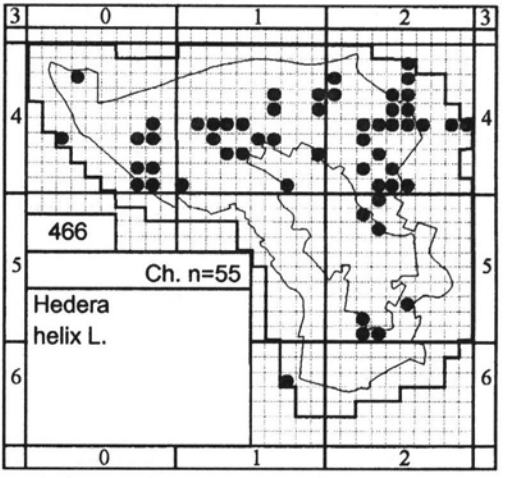

461
n=307
Gnaphalium
uliginosum L.

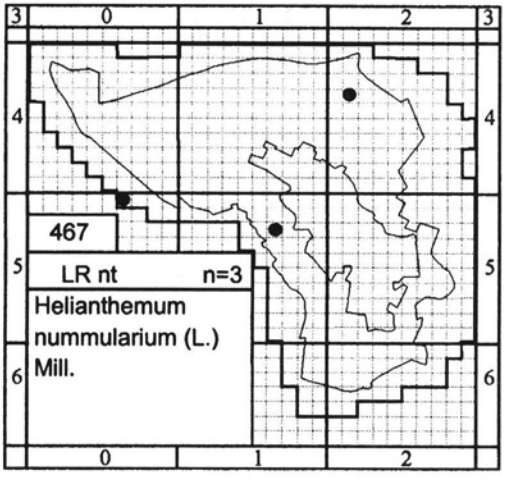

462
CR
n=2
Gratiola
officinalis L.

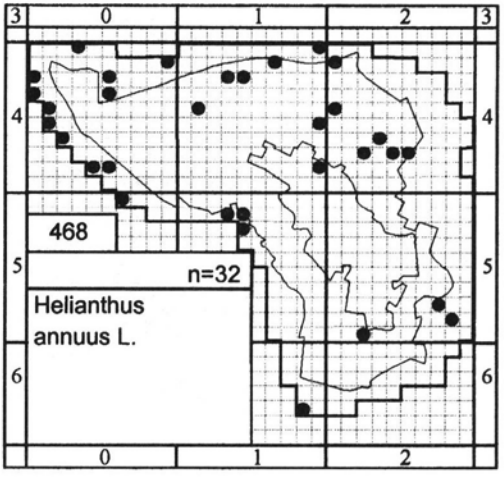

463
EW
Ch. n=1
Gymnadenia
conopsea (L.)
R. Br.

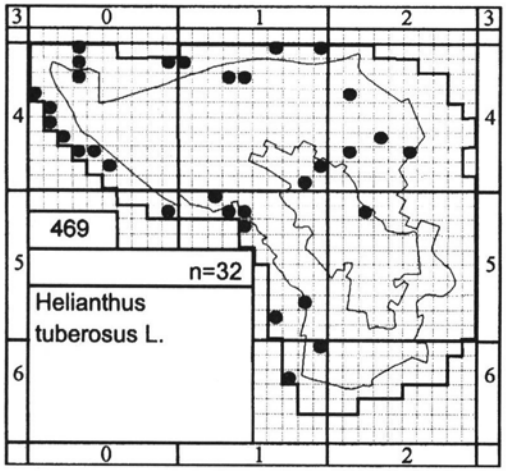

464
n=4
Gymnocarpium
dryopteris (L.)
Newman

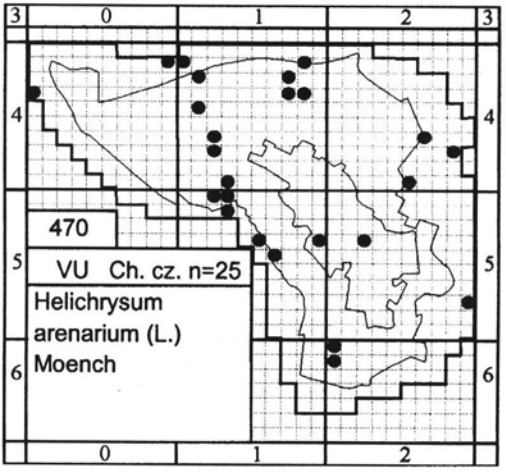

465
n=104
Gypsophila
muralis L.

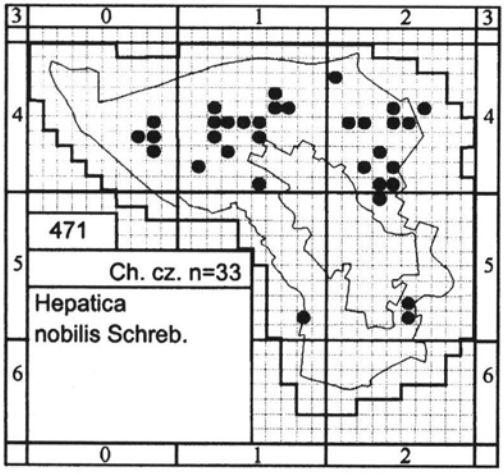

466
Ch. n=55
Hedera
helix L.

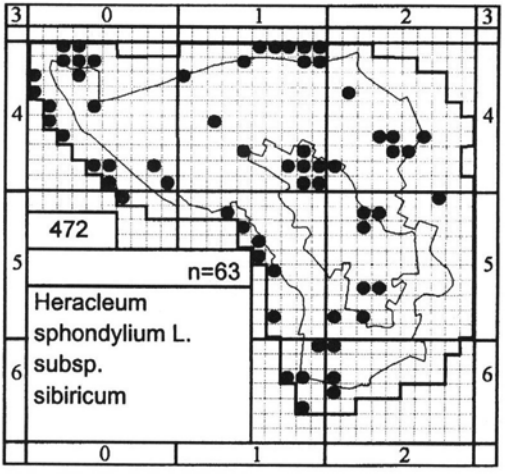

467
LR nt
n=3
Helianthemum
nummularium (L.)
Mill.

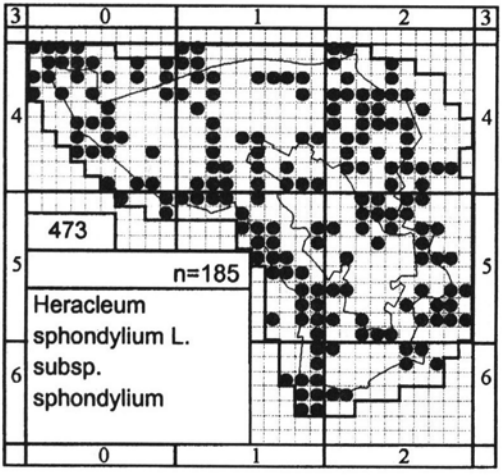

468
n=32
Helianthus
annuus L.

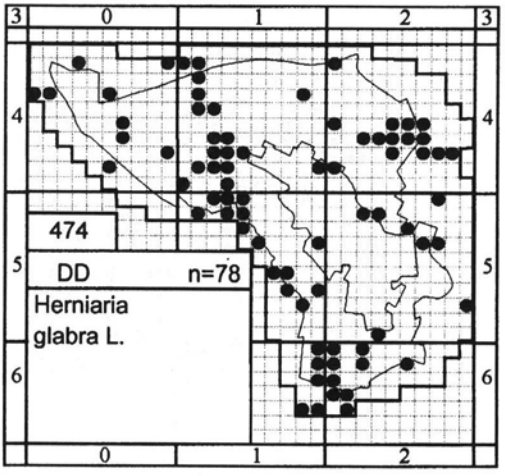

469
n=32
Helianthus
tuberosus L.

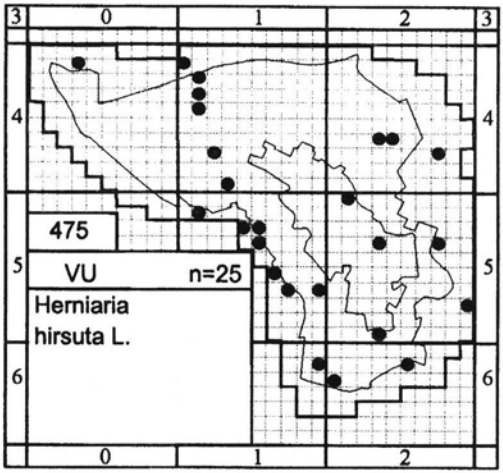

470
VU Ch. cz. n=25
Helichrysum
arenarium (L.)
Moench

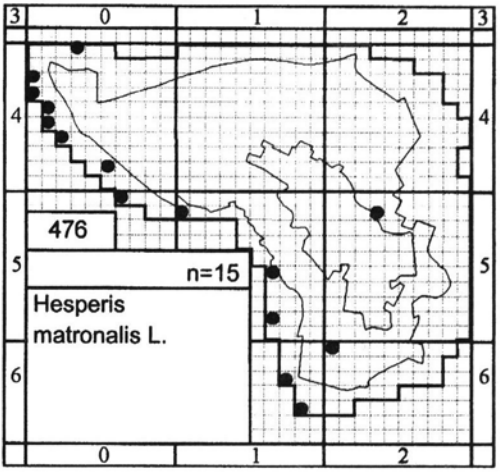

471
Ch. cz. n=33
Hepatica
nobilis Schreb.

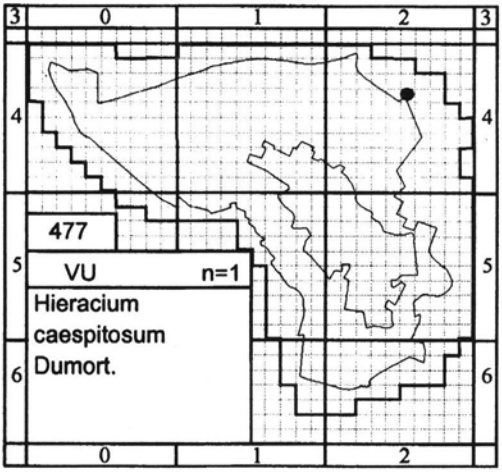

472
n=63
Heracleum
sphondylium L.
subsp.
sibiricum

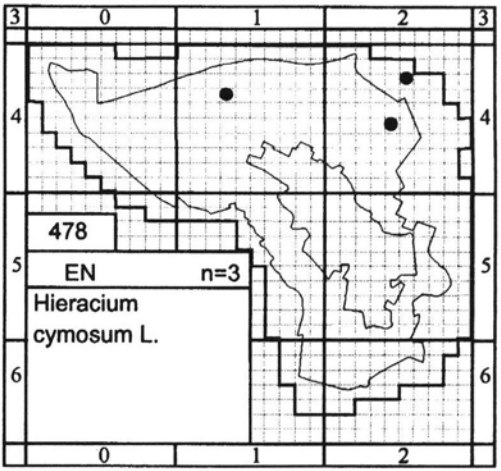

473
n=185
Heracleum
sphondylium L.
subsp.
sphondylium

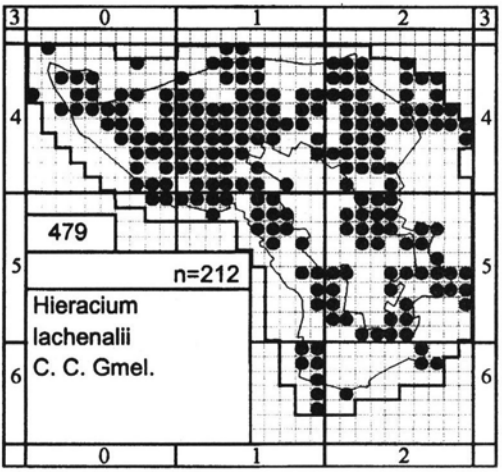

474
DD n=78
Herniaria
glabra L.

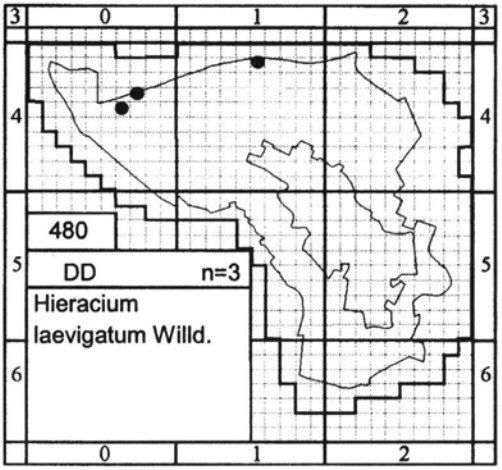

475
VU
n=25
Herniaria
hirsuta L.

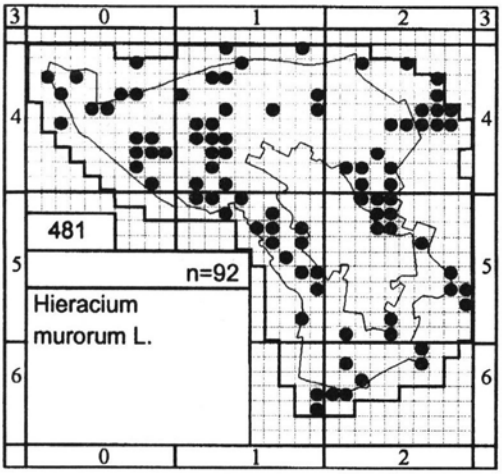

476
n=15
Hesperis
matronalis L.

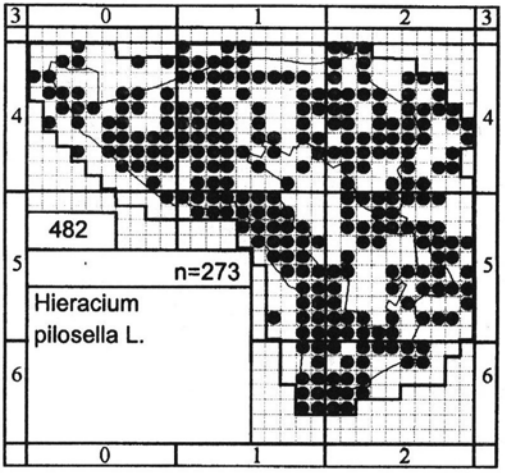

477
VU
n=1
Hieracium
caespitosum
Dumort.

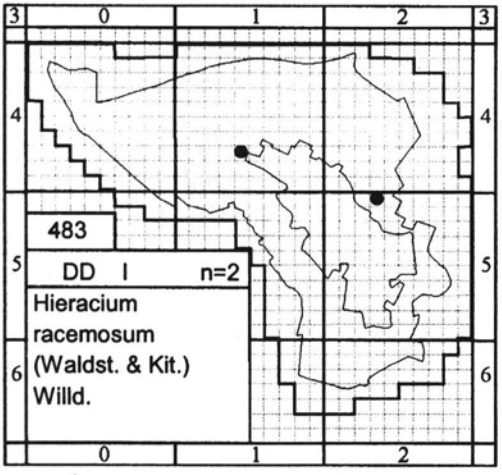

478
EN
n=3
Hieracium
cymosum L.

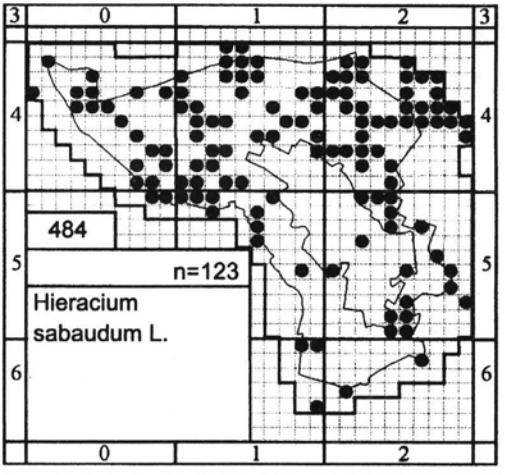

479
n=212
Hieracium
lachenalii
C. C. Gmel.

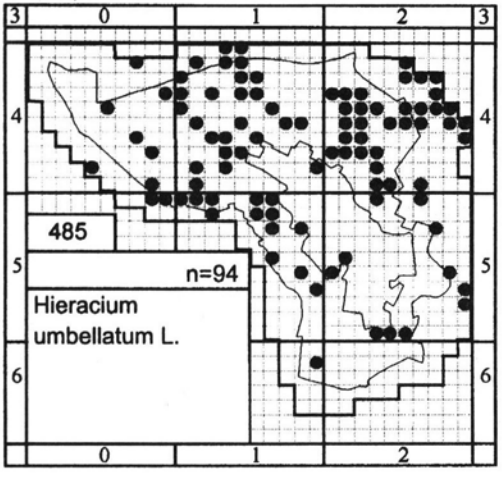

480
DD
n=3
Hieracium
laevigatum Willd.

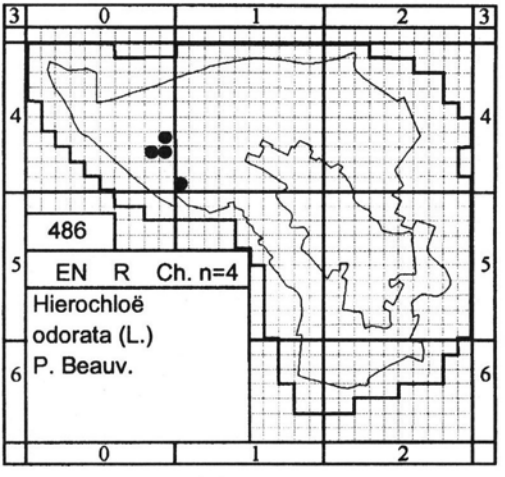

481
n=92
Hieracium
murorum L.

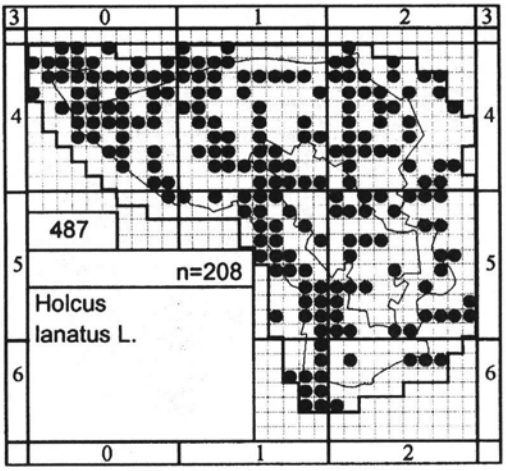

482
n=273
Hieracium
pilosella L.

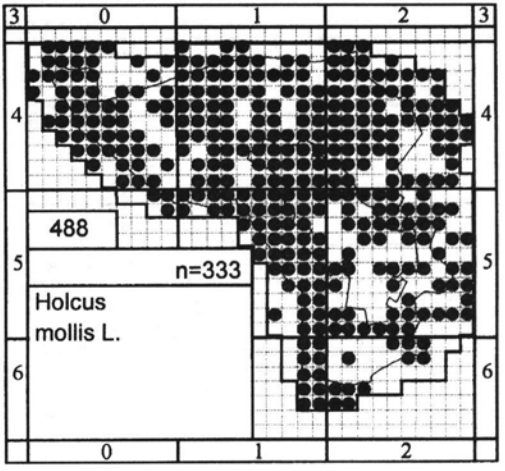

483
DD I n=2
Hieracium
racemosum
(Waldst. & Kit.)
Willd.

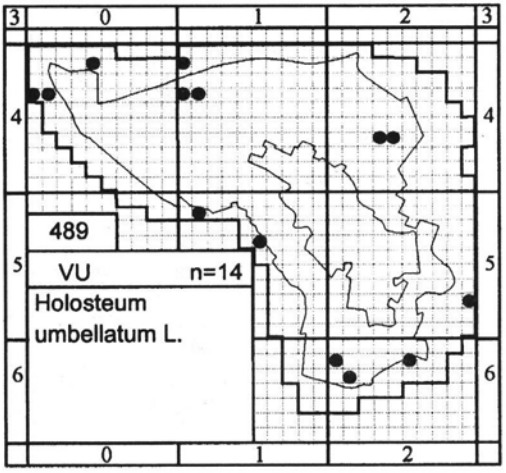

484
n=123
Hieracium
sabaudum L.

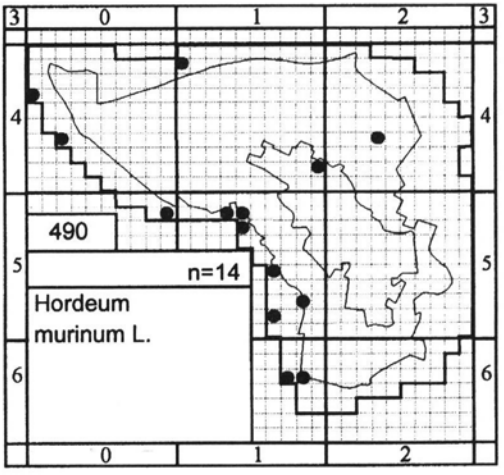

485
n=94
Hieracium
umbellatum L.

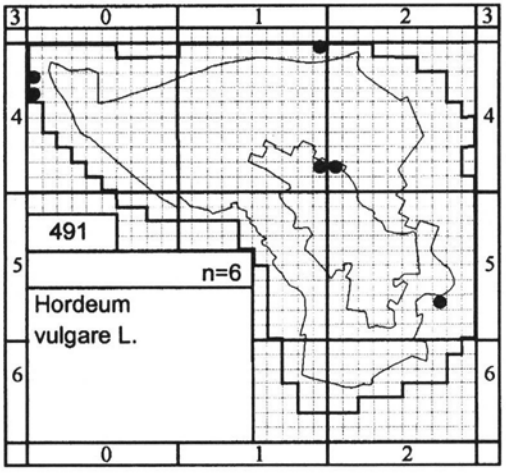

486
EN R Ch. n=4
Hierochloë
odorata (L.)
P. Beauv.

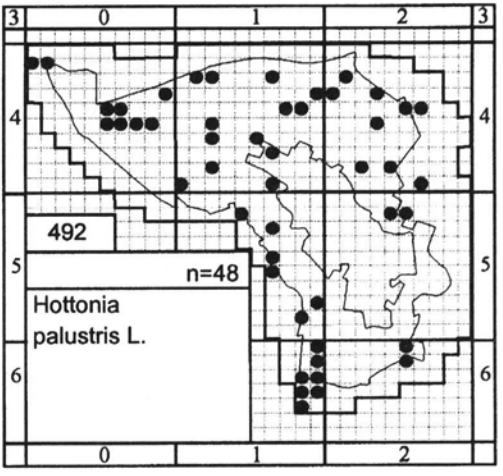

487
n=208
Holcus
lanatus L.

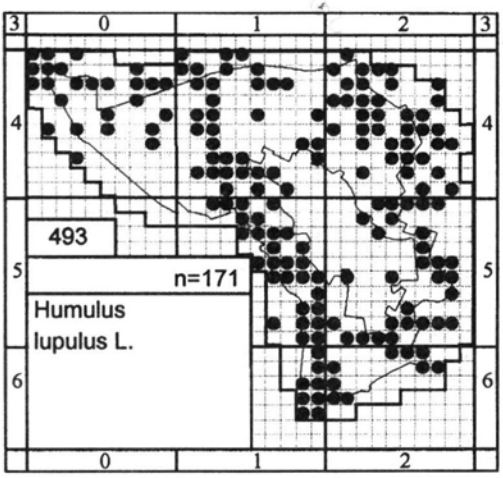

488
n=333
Holcus
mollis L.

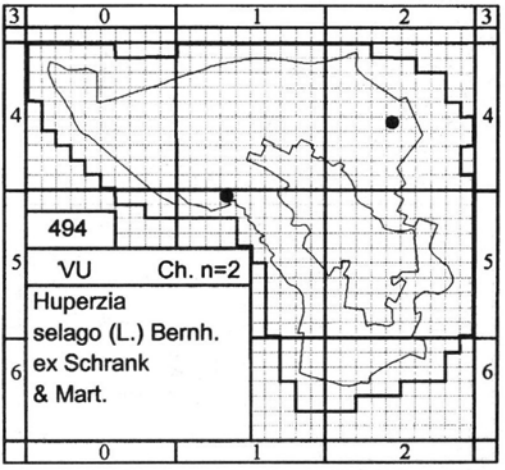

489
VU
n=14
Holosteum
umbellatum L.

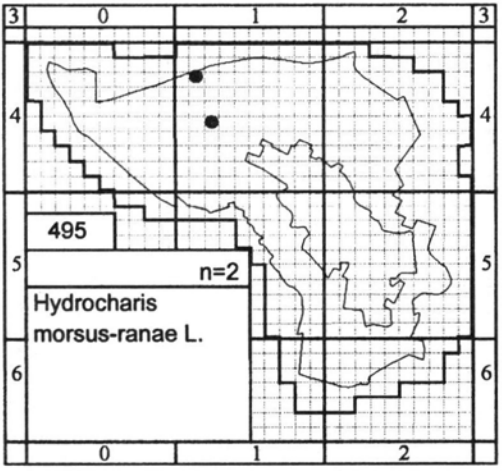

490
n=14
Hordeum
murinum L.

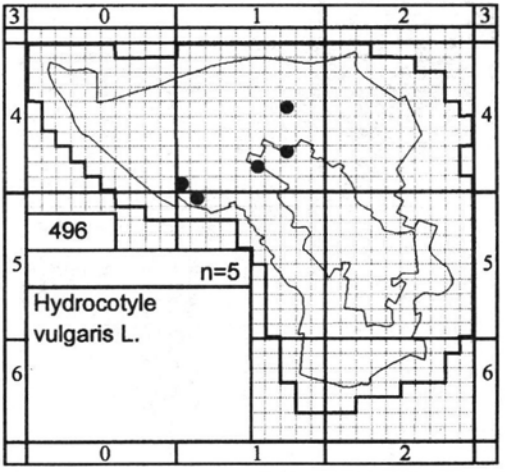

491
n=6
Hordeum
vulgare L.

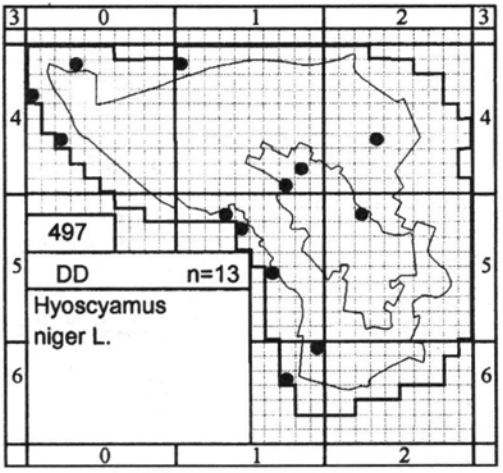

492
n=48
Hottonia
palustris L.

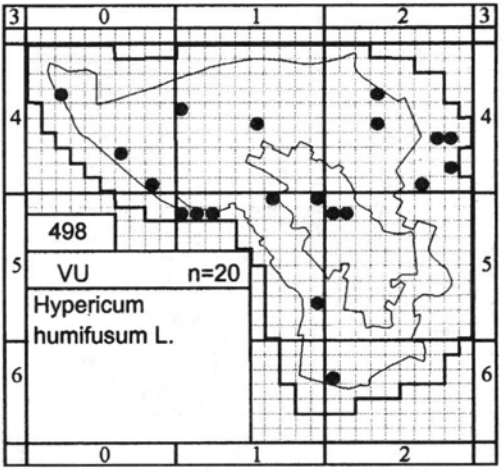

493
n=171
Humulus
lupulus L.

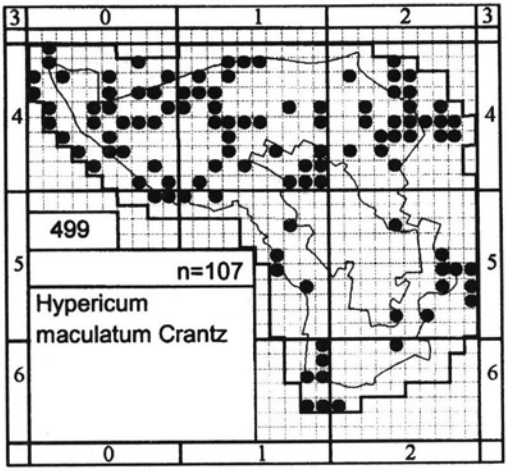

494
VU
Ch. n=2
Huperzia
selago (L.) Bernh.
ex Schrank
& Mart.

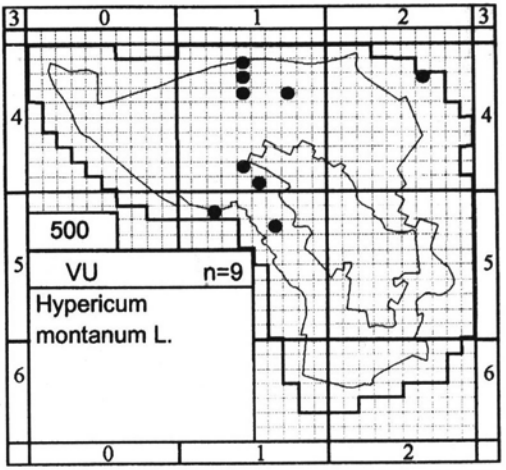

495
n=2
Hydrocharis
morsus-ranae L.

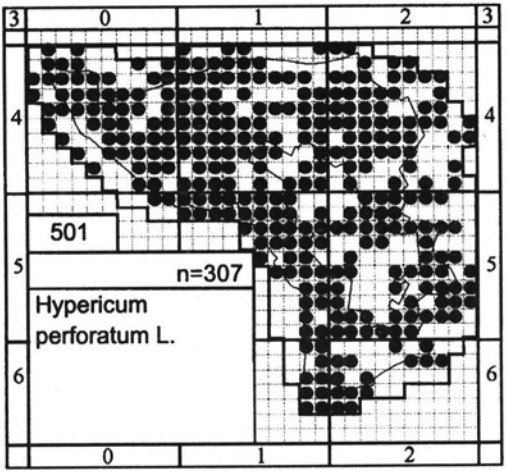

496
n=5
Hydrocotyle
vulgaris L.

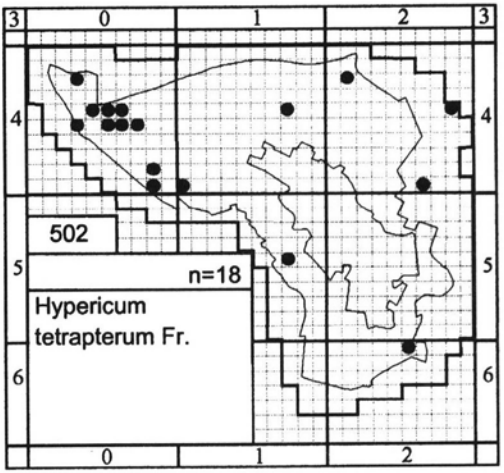

497
DD
n=13
Hyoscyamus
niger L.

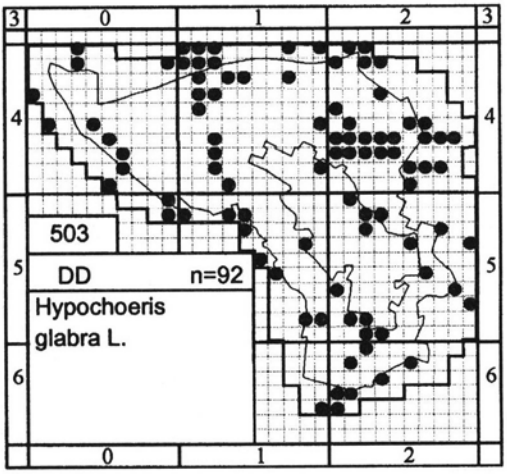

498
VU
n=20
Hypericum
humifusum L.

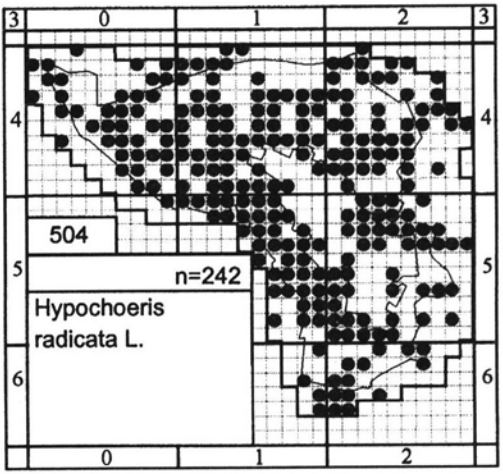

499
n=107
Hypericum
maculatum Crantz

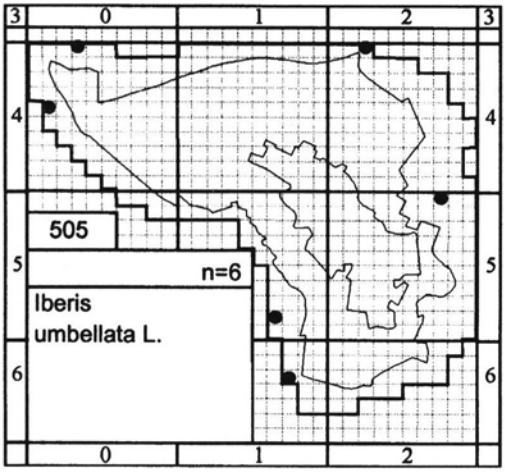

500
VU
n=9
Hypericum
montanum L.

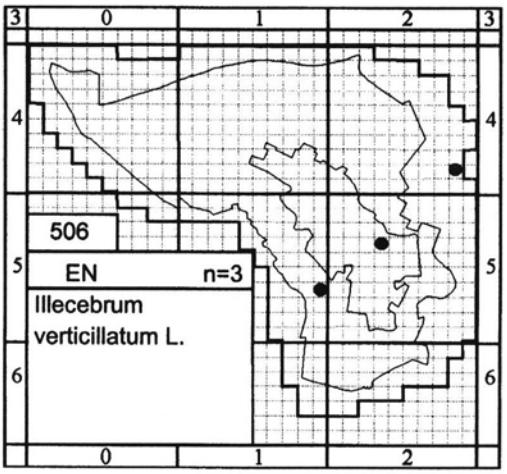

501
n=307
Hypericum
perforatum L.

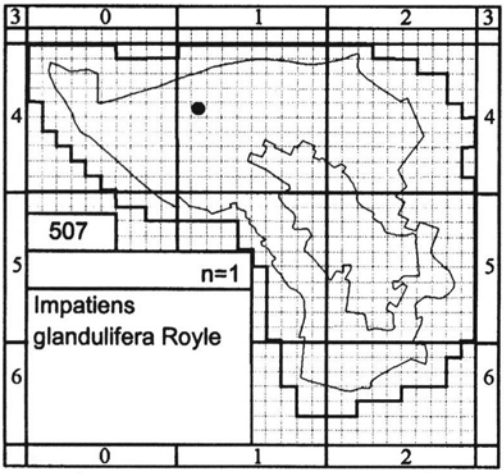

502
n=18
Hypericum
tetrapterum Fr.

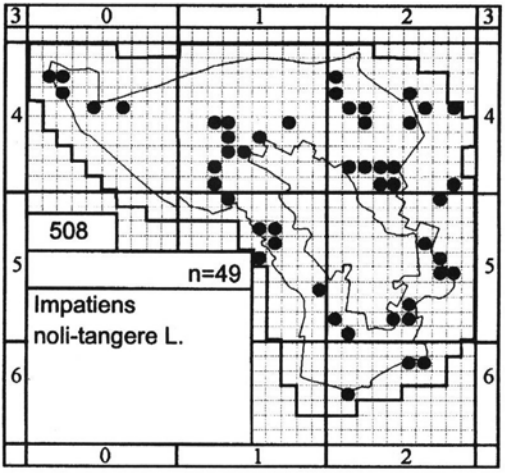

503
DD
n=92
Hypochoeris
glabra L.

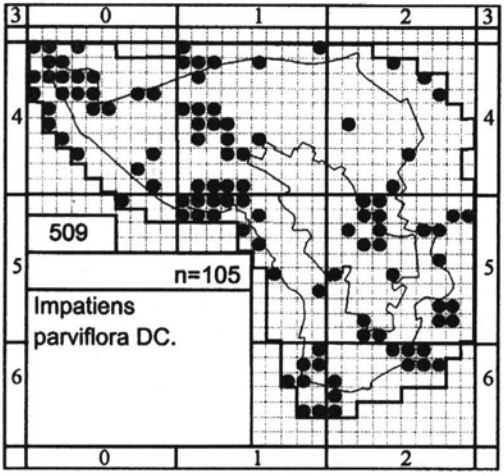

504
n=242
Hypochoeris
radicata L.

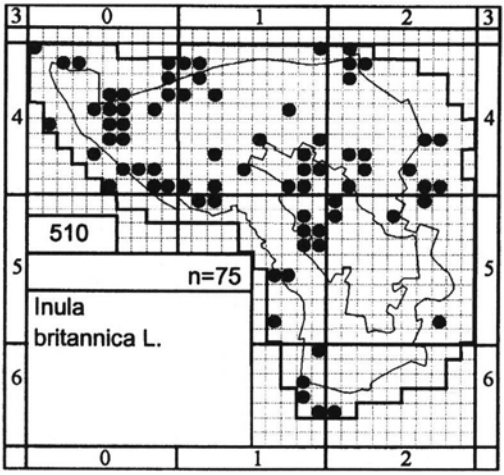

505
n=6
Iberis
umbellata L.

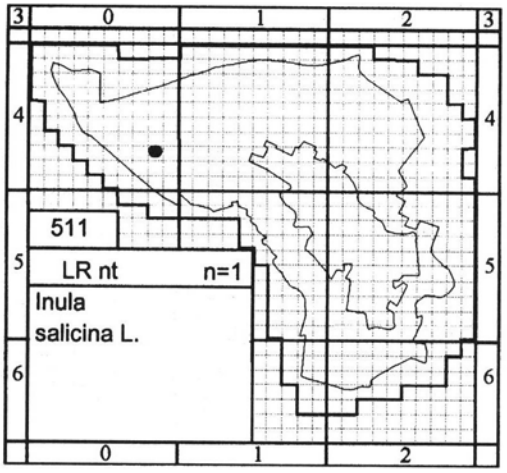

506
EN
n=3
Illecebrum
verticillatum L.

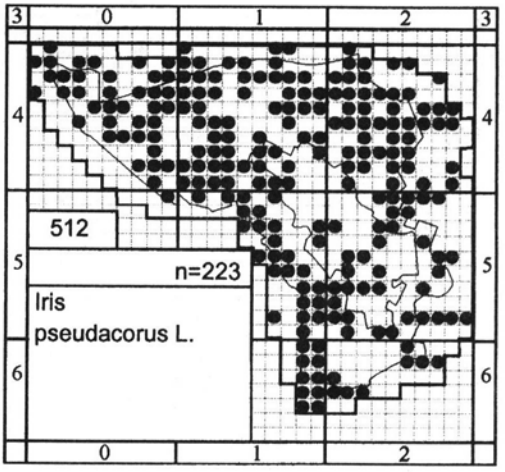

507
n=1
Impatiens
glandulifera Royle

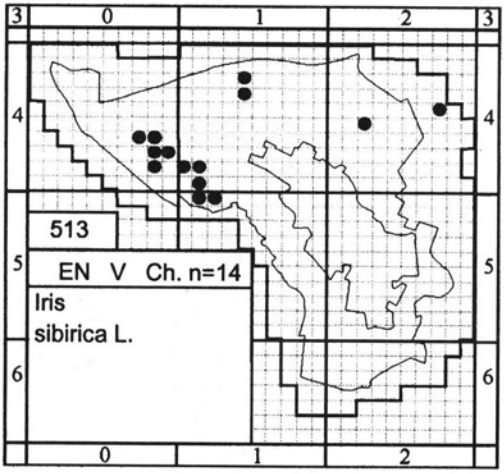

508
n=49
Impatiens
noli-tangere L.

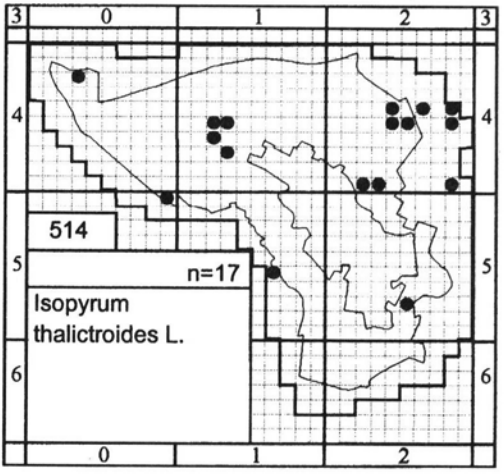

509
n=105
Impatiens
parviflora DC.

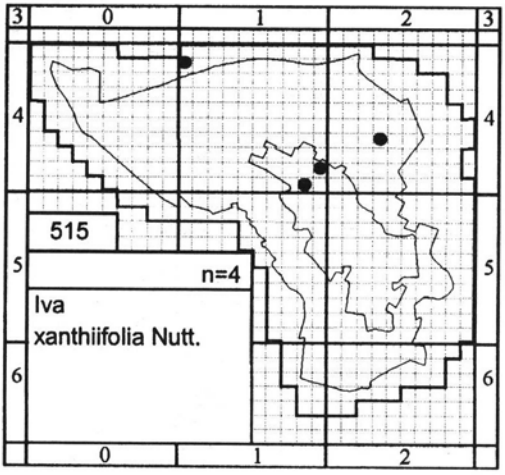

510
n=75
Inula
britannica L.

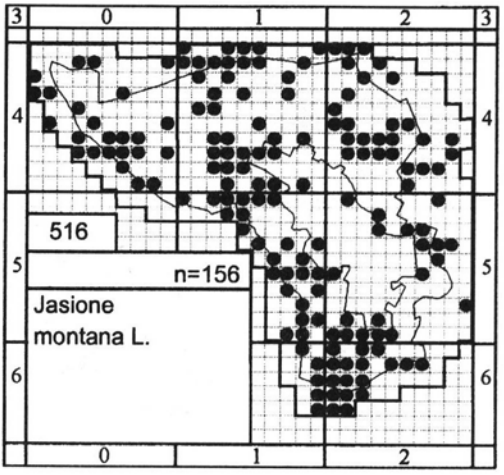

511
LR nt n=1
Inula
salicina L.

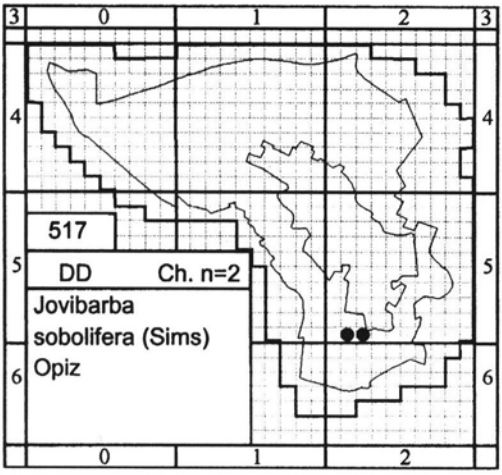

512
n=223
Iris
pseudacorus L.

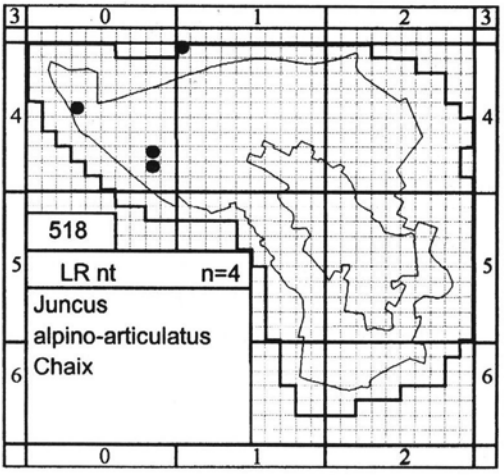

513
EN V Ch. n=14
Iris
sibirica L.

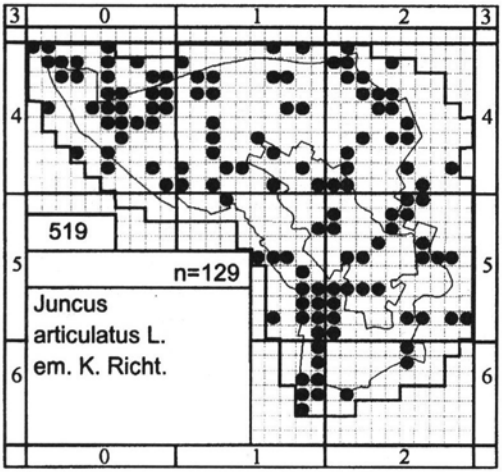

514
n=17
Isopyrum
thalictroides L.

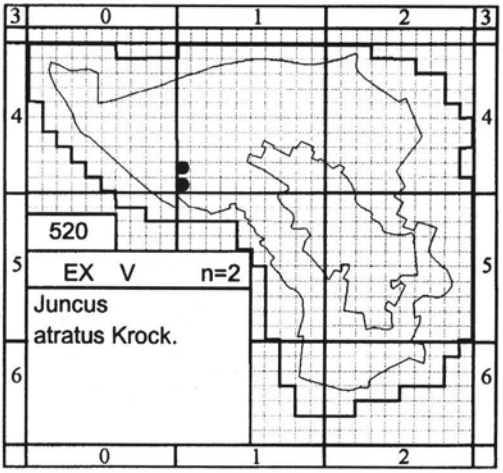

515
n=4
Iva
xanthiifolia Nutt.

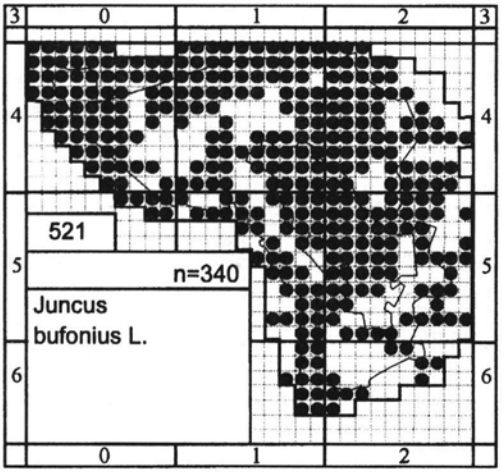

516
n=156
Jasione
montana L.

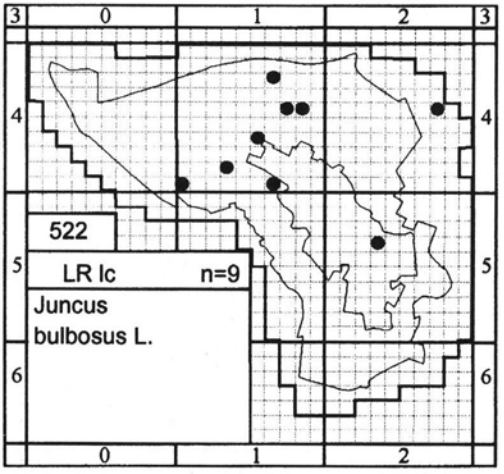

517
DD Ch. n=2
Jovibarba
sobolifera (Sims)
Opiz

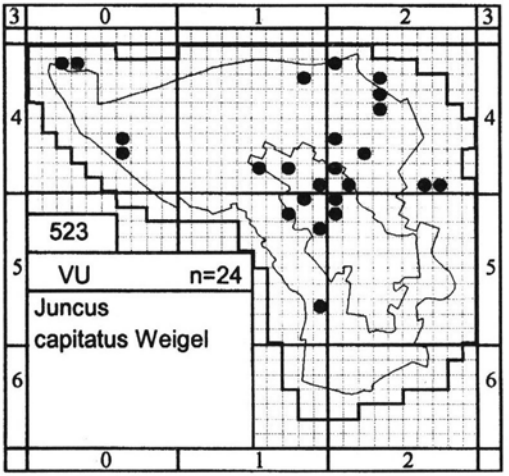

518
LR nt n=4
Juncus
alpino-articulatus
Chaix

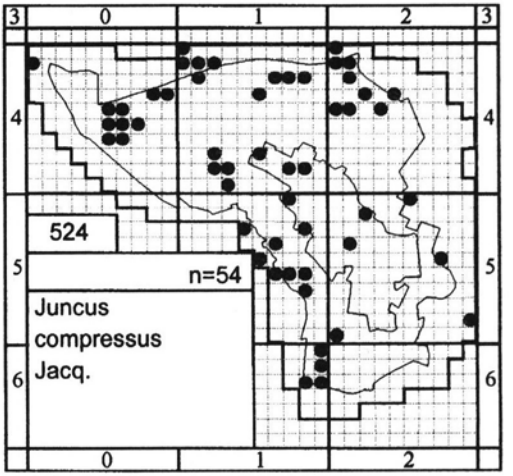

519
n=129
Juncus
articulatus L.
em. K. Richt.

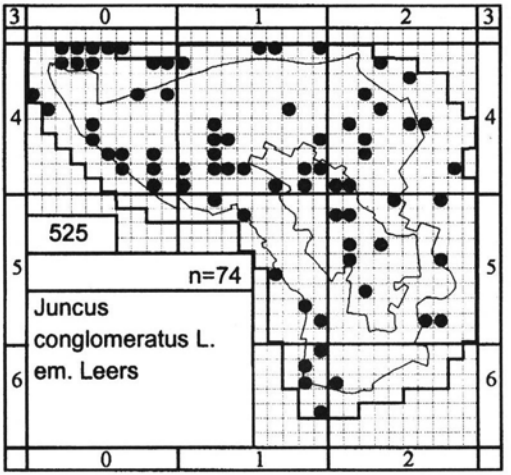

520
EX V n=2
Juncus
atratus Krock.

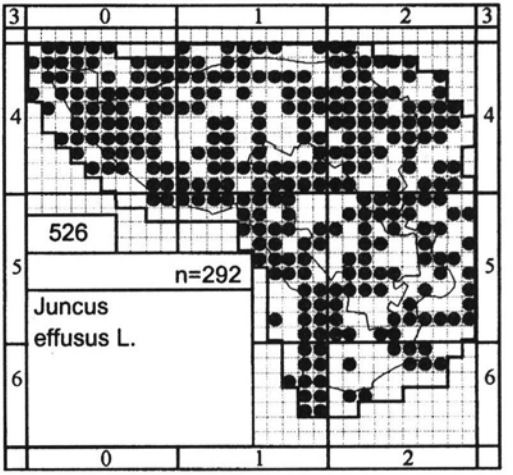

521
n=340
Juncus
bufonius L.

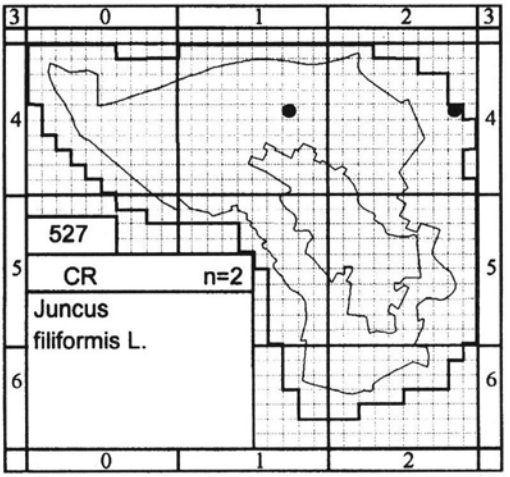

522
LR lc n=9
Juncus
bulbosus L.

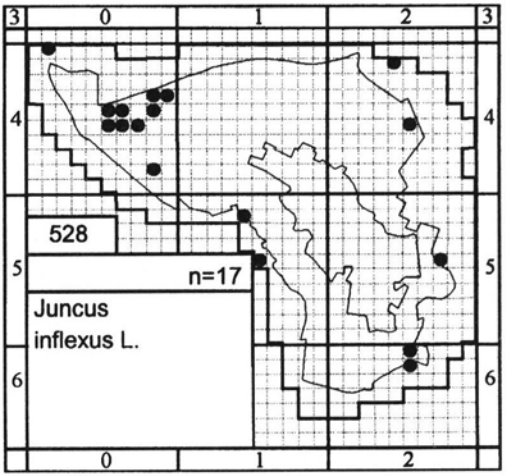

523
VU
n=24
Juncus
capitatus Weigel

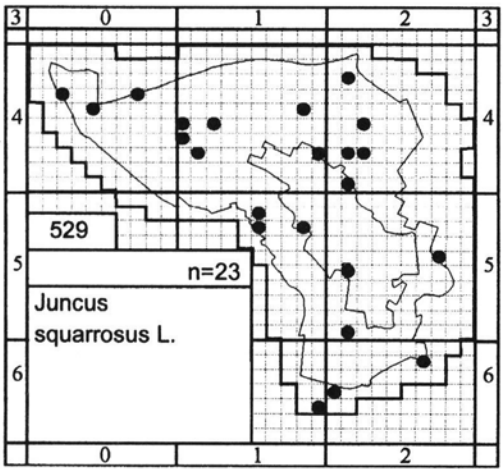

524
n=54
Juncus
compressus
Jacq.

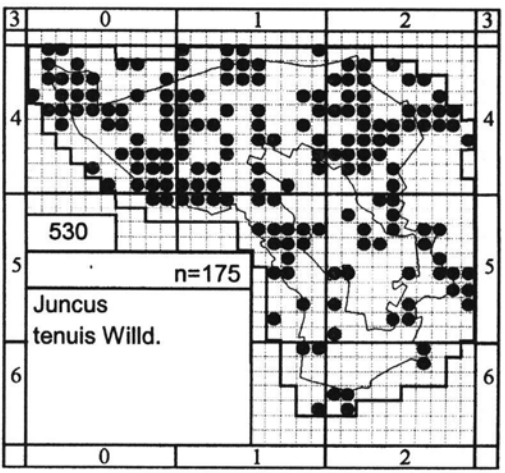

525
n=74
Juncus
conglomeratus L.
em. Leers

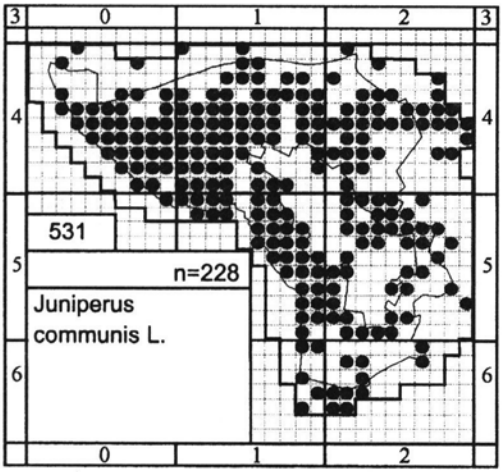

526
n=292
Juncus
effusus L.

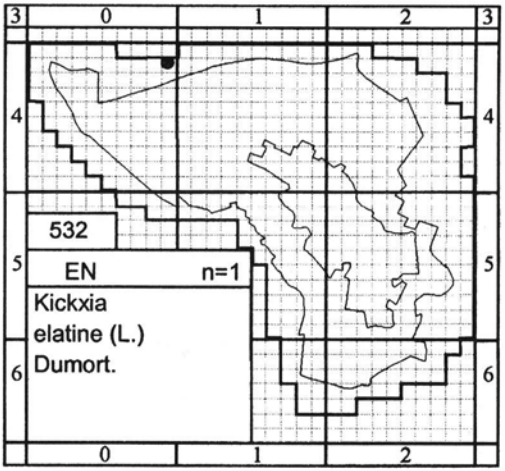

527
CR
n=2
Juncus
filiformis L.

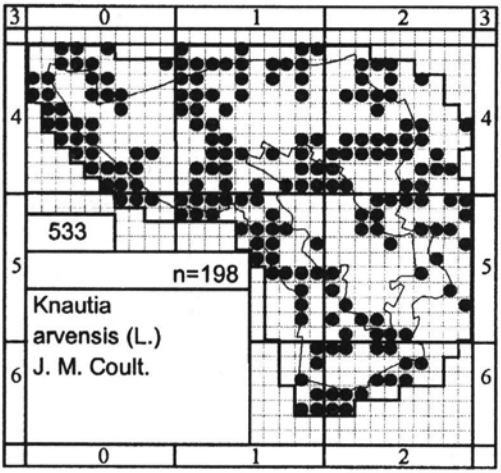

528
n=17
Juncus
inflexus L.

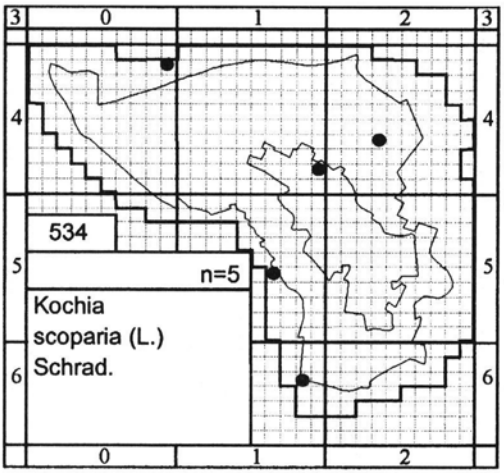

529
n=23
Juncus
squarrosus L.

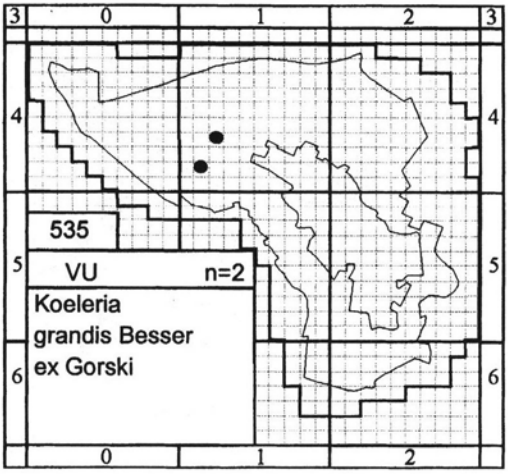

530
n=175
Juncus
tenuis Willd.


531
n=228
Juniperus
communis L.


532
EN
n=1
Kickxia
elatine (L.)
Dumort.


533
n=198
Knautia
arvensis (L.)
J. M. Coult.


534
n=5
Kochia
scoparia (L.)
Schrad.


535
VU
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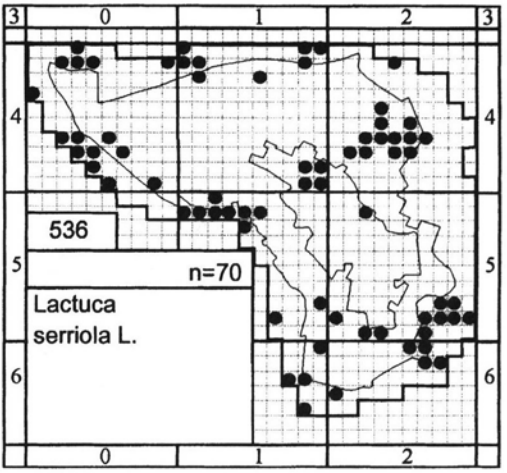
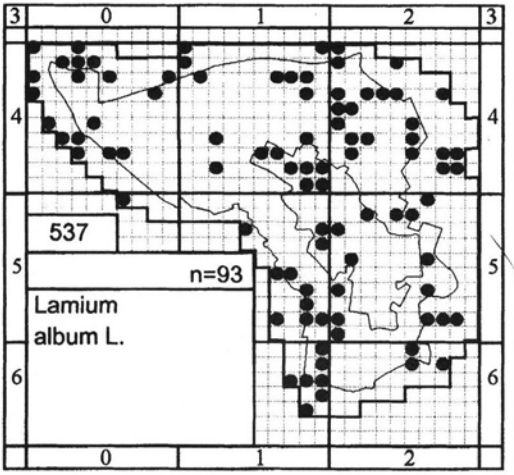
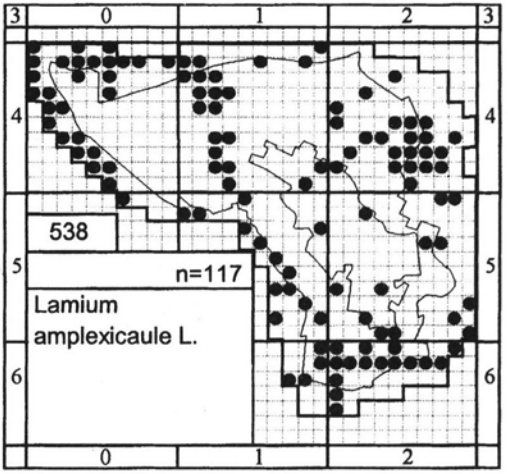
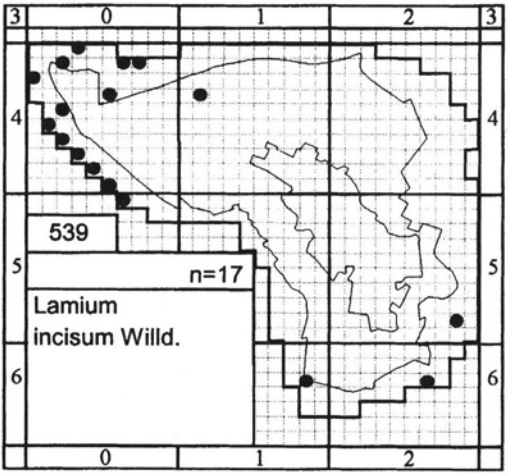
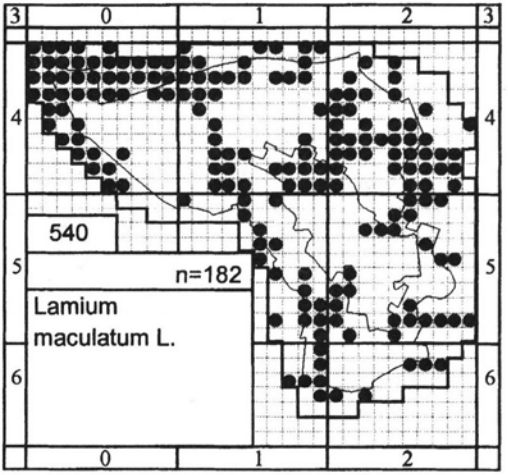
Koeleria
grandis Besser
ex Gorski

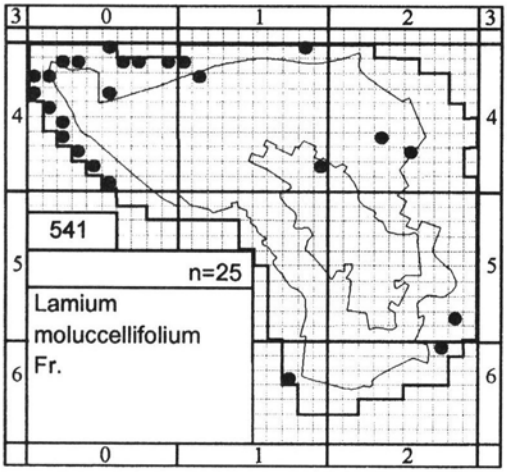

536
n=70
Lactuca
serriola L.

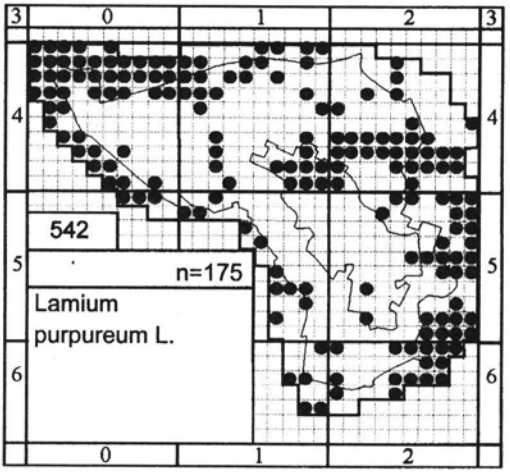

537
n=93
Lamium
album L.


538
n=117
Lamium
amplexicaule L.


539
n=17
Lamium
incisum Willd.


540
n=182
Lamium
maculatum L.


541
n=25
Lamium
moluccellifolium
Fr.


542
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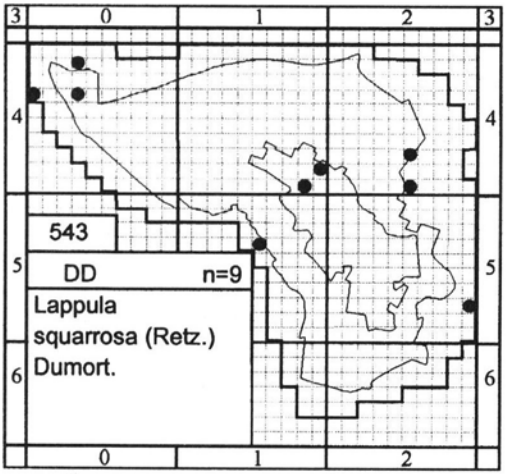
Lamium
purpureum L.


543
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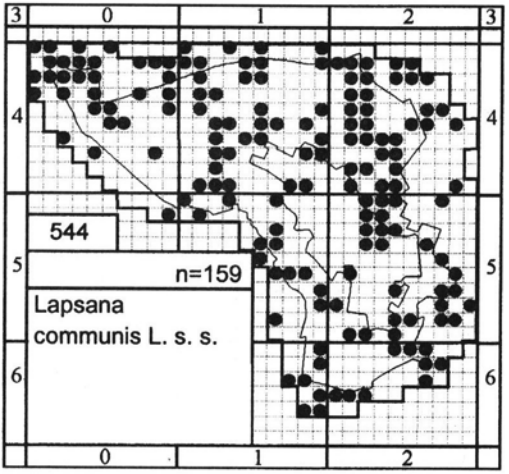
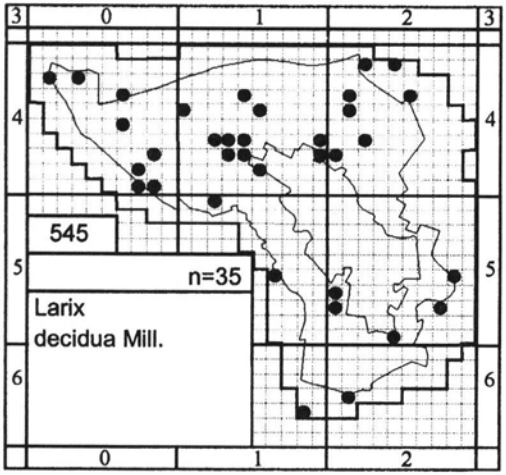
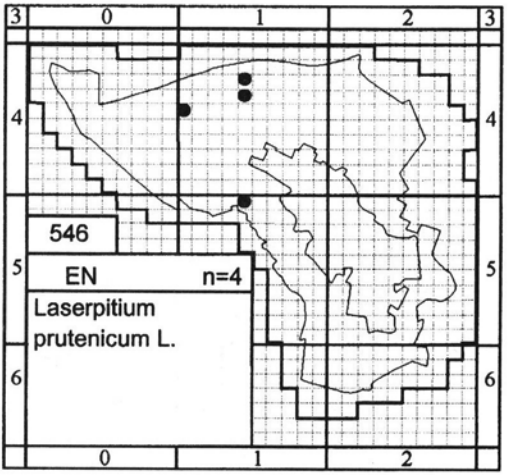
n=9
Lappula
squarrosa (Retz.)
Dumort.


544
n=159
Lapsana
communis L. s. s.


545
n=35
Larix
decidua Mill.


546
EN
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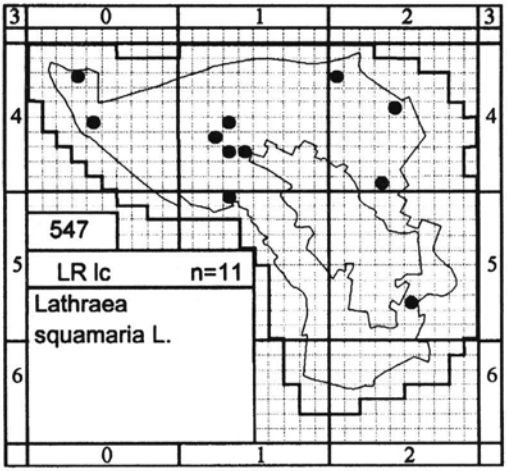
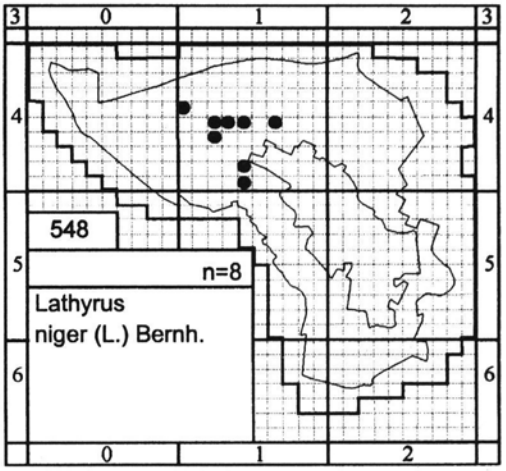
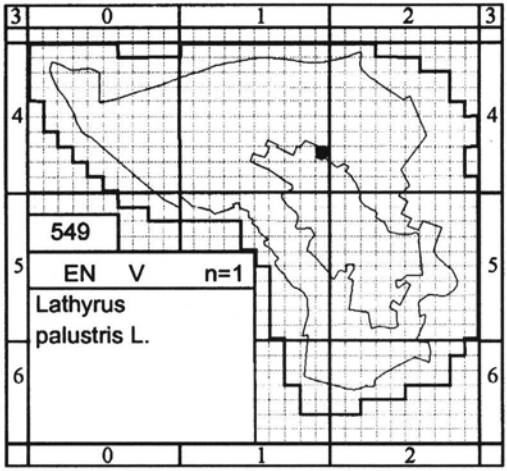
Laserpitium
prutenicum L.


547
LR lc n=11
Lathraea
squamaria L.


548
n=8
Lathyrus
niger (L.) Bernh.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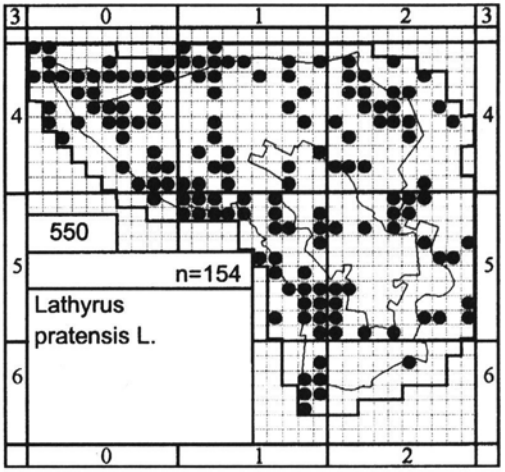
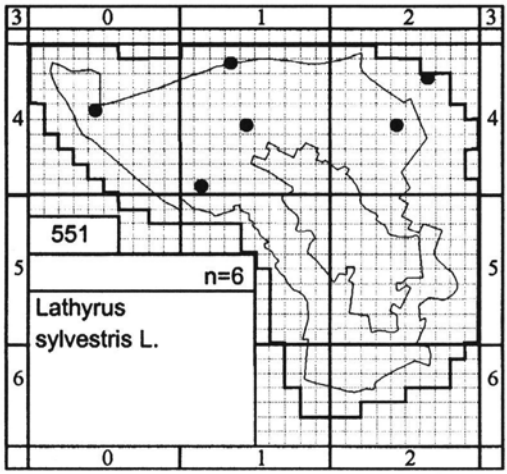
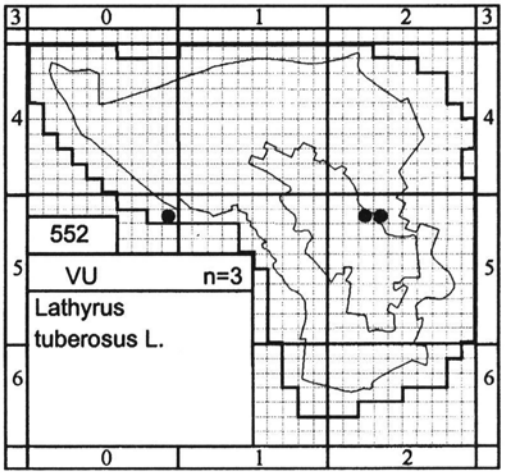
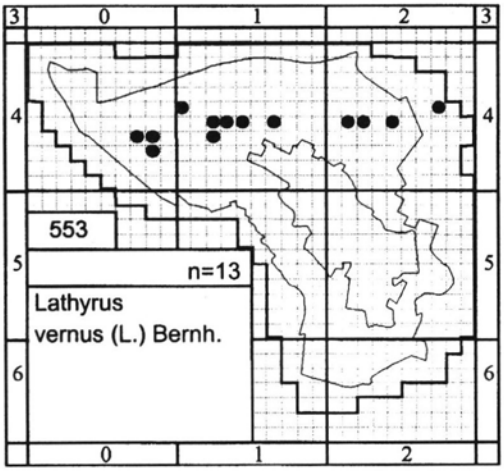
Lathyrus
palustris L.


550
n=154
Lathyrus
pratensis L.


551
n=6
Lathyrus
sylvestris L.


552
VU n=3
Lathyrus
tuberosus L.


553
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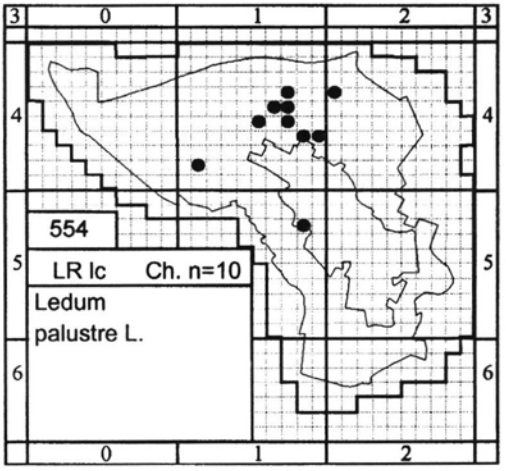
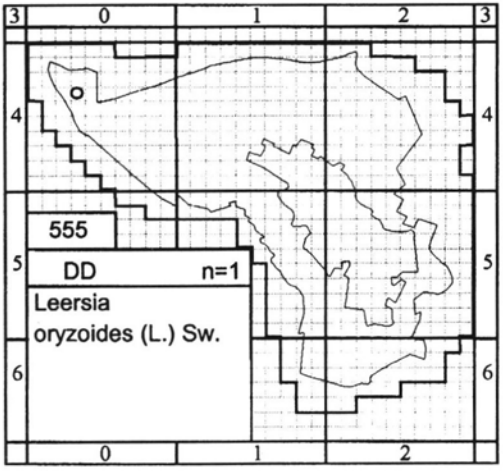
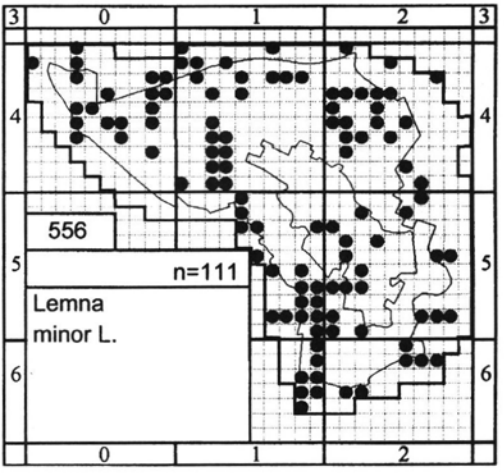
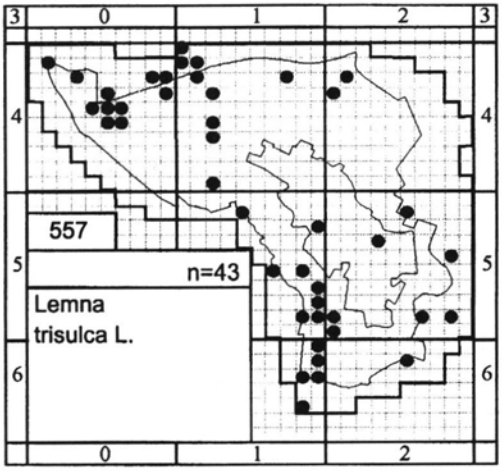
Lathyrus
vernus (L.) Bernh.


554
LR lc Ch. n=10
Ledum
palustre L.


555
DD n=1
Leersia
oryzoides (L.) Sw.


556
n=111
Lemna
minor L.


557
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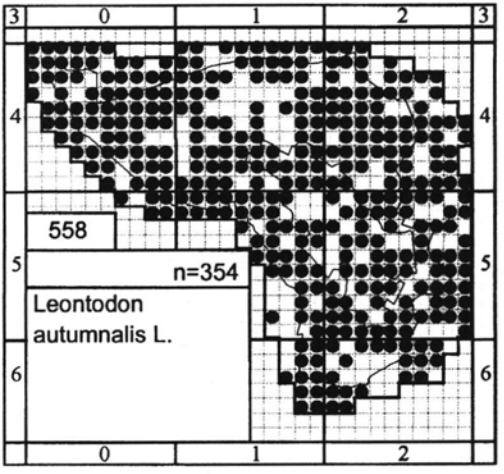
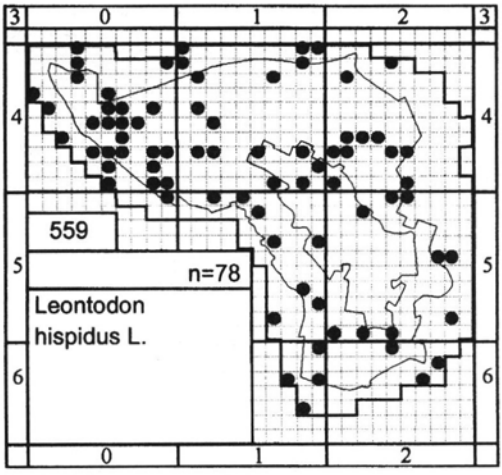
Lemna
trisulca L.


558
n=354
Leontodon
autumnalis L.


559
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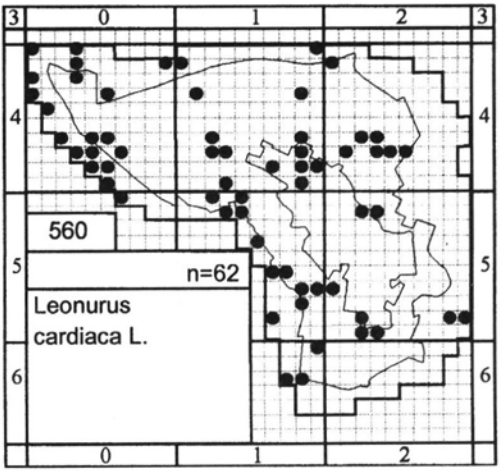
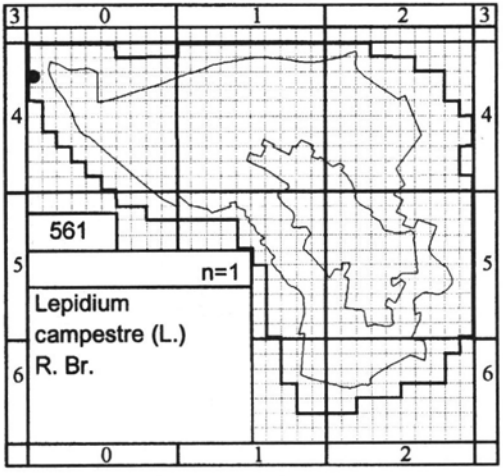
Leontodon
hispidus L.


560
n=62
Leonurus
cardiaca L.


561
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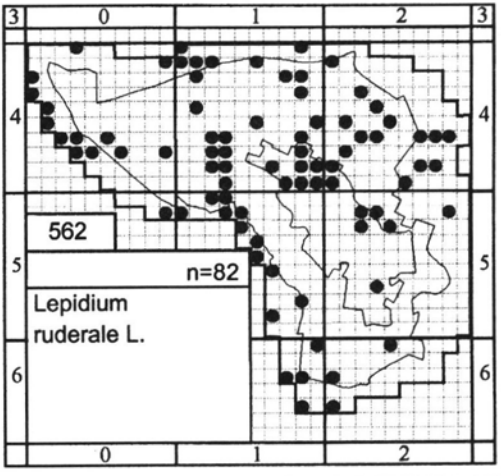
Lepidium
campestre (L.)
R. Br.


562
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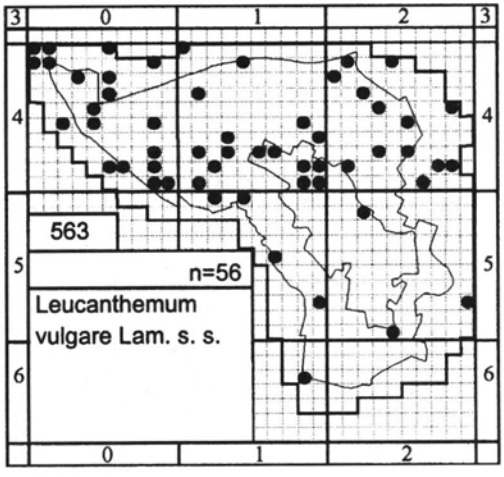
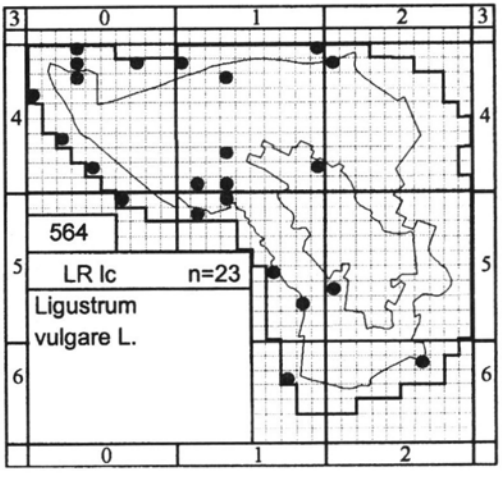
Lepidium
ruderale L.


563
n=56
Leucanthemum
vulgare Lam. s. s.


564
LR lc
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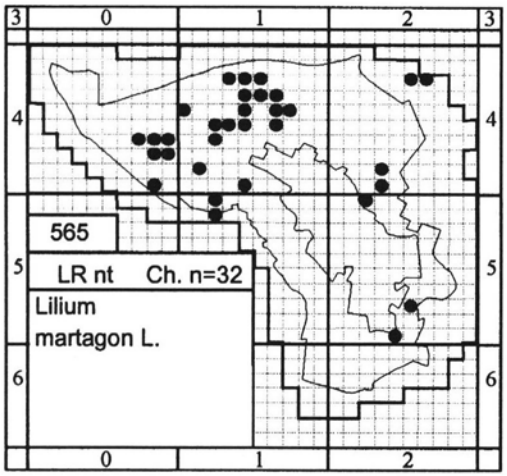
Ligustrum
vulgare L.


565
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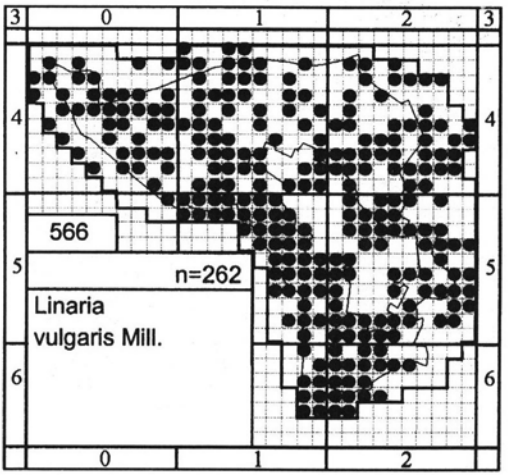
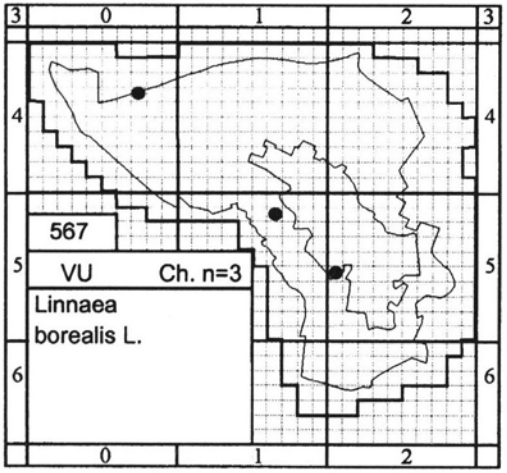
Lilium
martagon L.


566
n=262
Linaria
vulgaris Mill.


567
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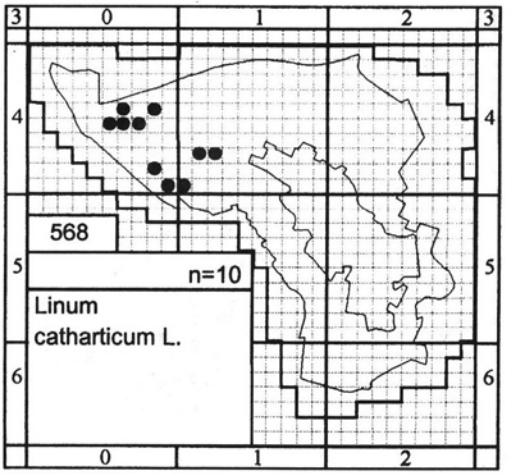
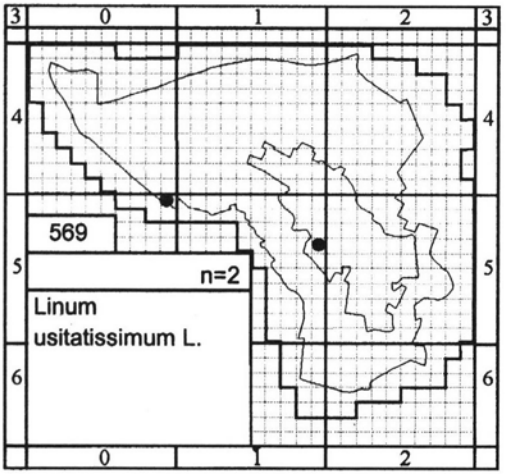
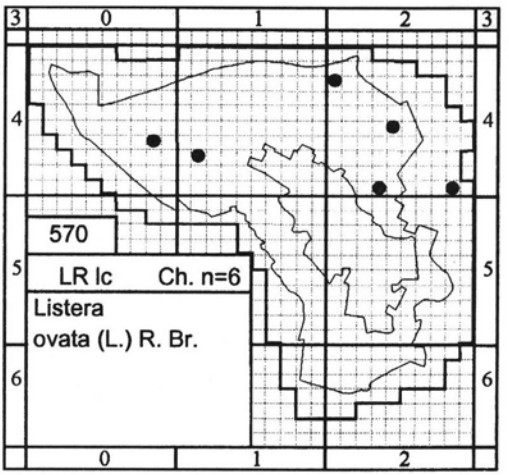
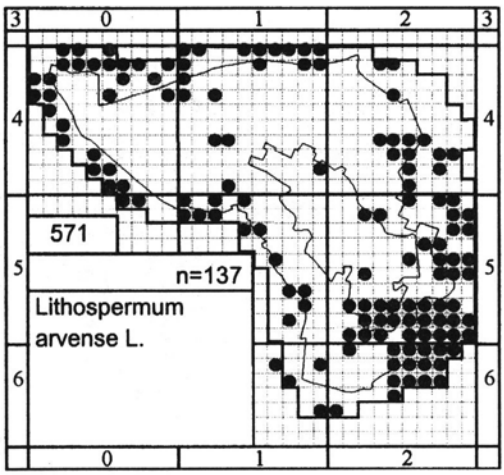
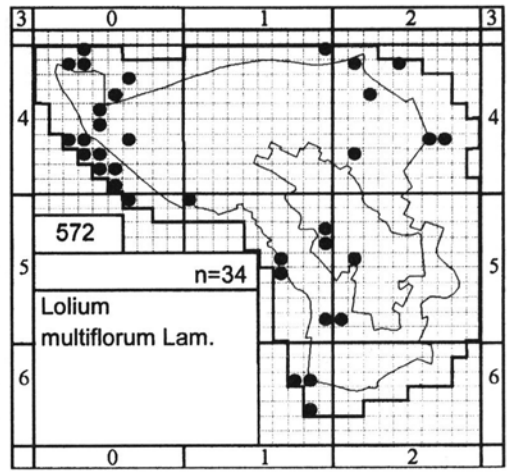
Linnaea
borealis L.


568
n=10
Linum
catharticum L.


569
n=2
Linum
usitatissimum L.


570
LR lc Ch. n=6
Listera
ovata (L.) R. Br.


571
n=137
Lithospermum
arvense L.


572
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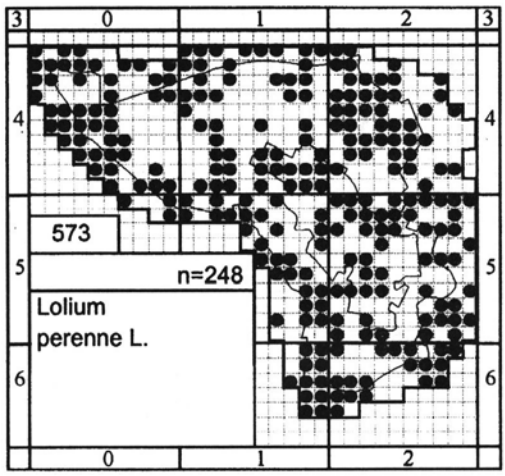
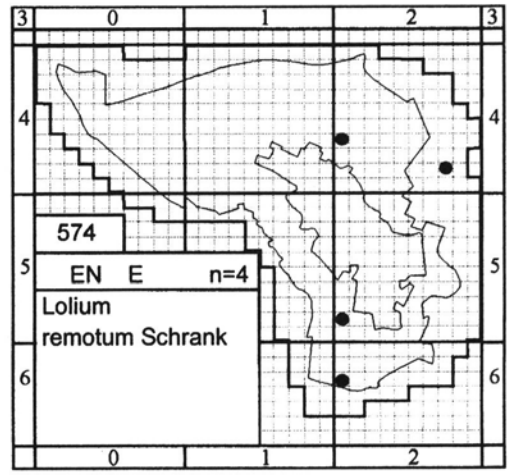
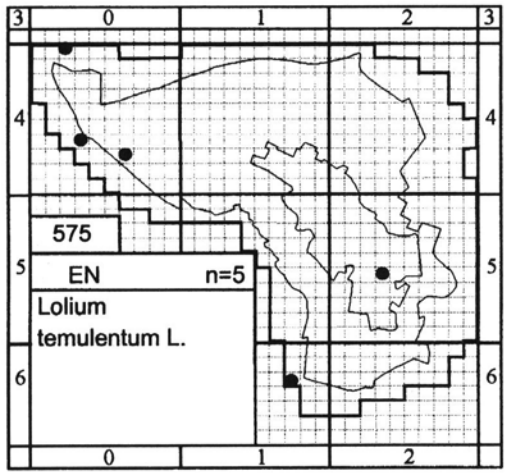
Lolium
multiflorum Lam.


573
n=248
Lolium
perenne L.


574
EN E n=4
Lolium
remotum Schrank


575
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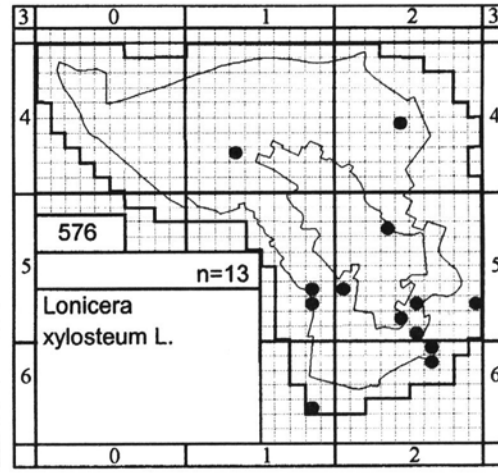
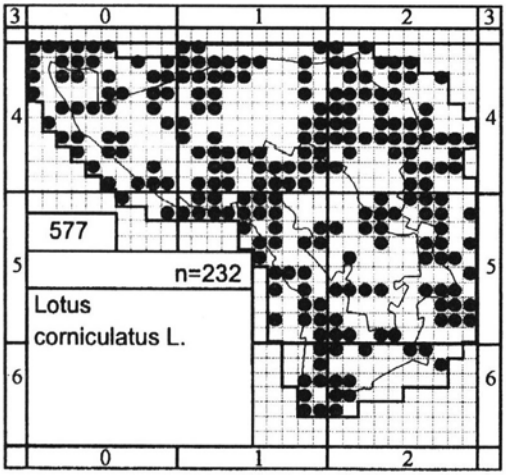
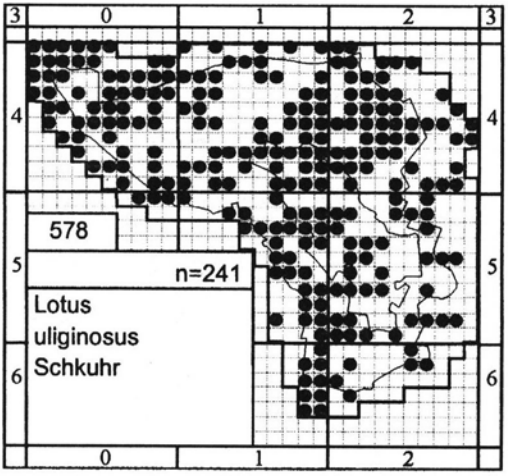
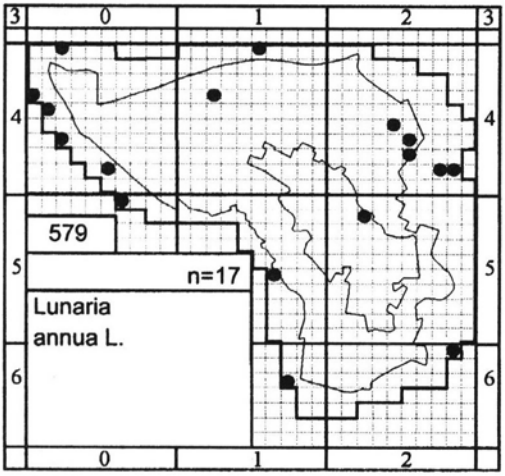
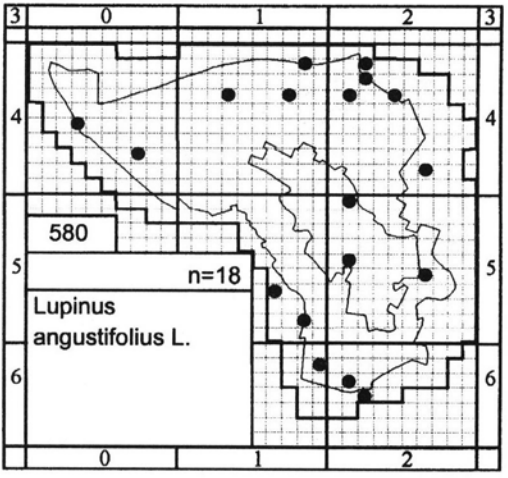
Lolium
temulentum L.

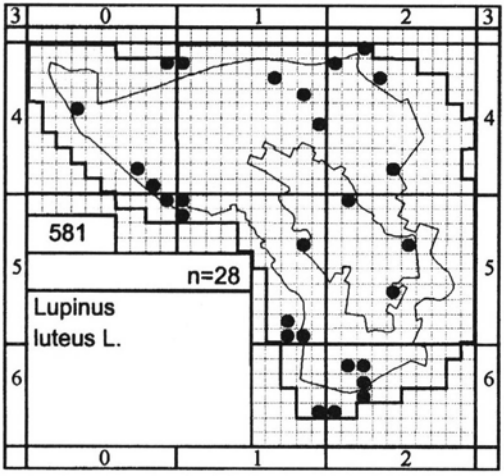

576
n=13
Lonicera
xylosteum L.

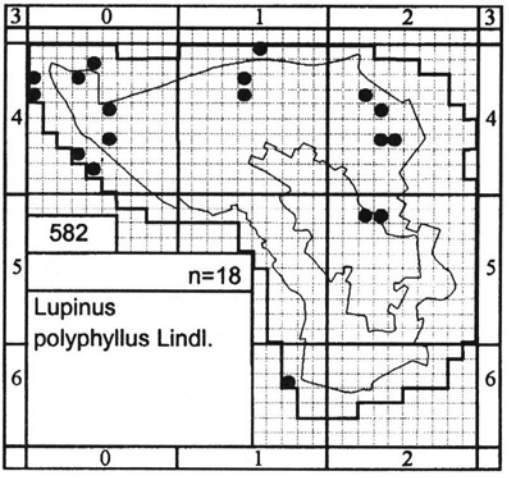

577
n=232
Lotus
corniculatus L.

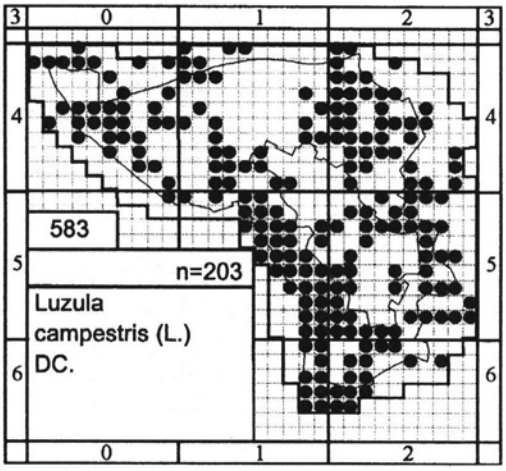

578
n=241
Lotus
uliginosus
Schkuhr

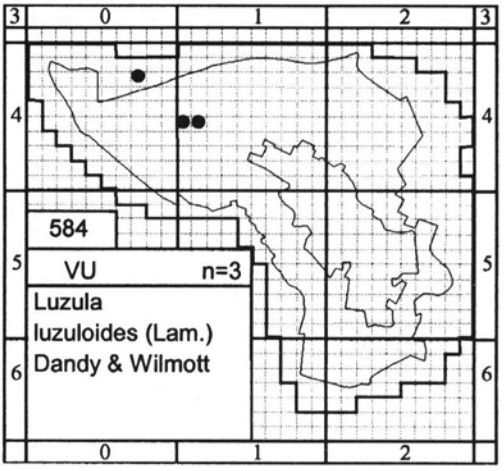

579
n=17
Lunaria
annua L.


580
n=18
Lupinus
angustifolius L.


581
n=28
Lupinus
luteus L.


582
n=18
Lupinus
polyphyllus Lindl.


583
n=203
Luzula
campestris (L.)
DC.


584
VU
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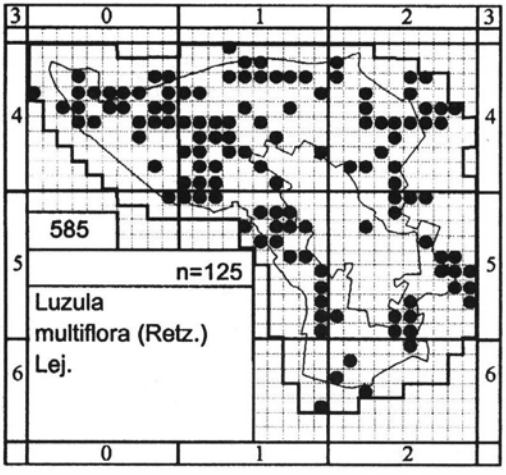
Luzula
luzuloides (Lam.)
Dandy & Wilmott


585
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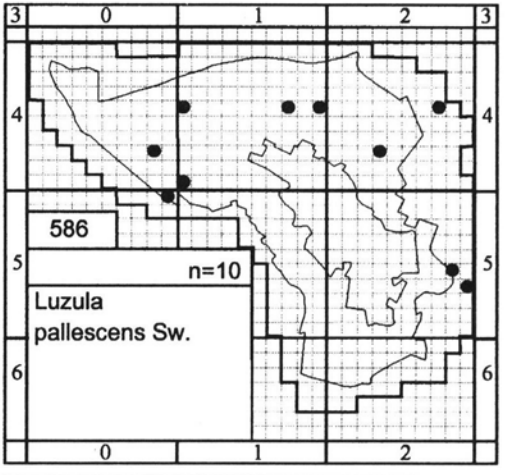
Luzula
multiflora (Retz.)
Lej.


586
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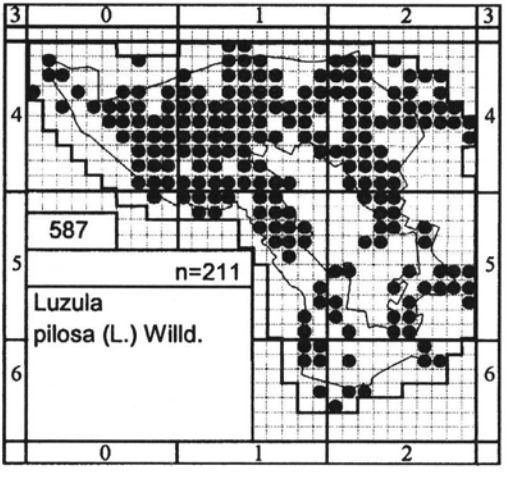
Luzula
pallescens Sw.


587
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Luzula
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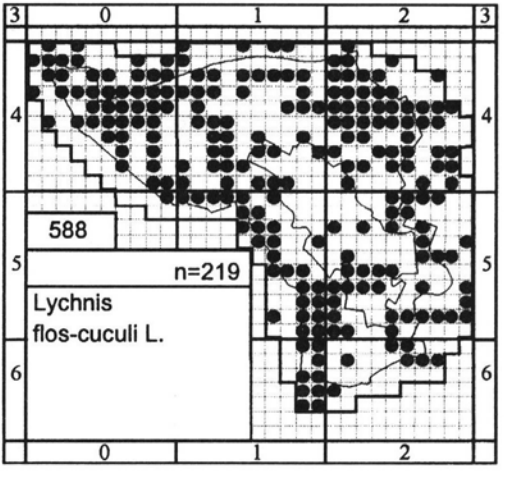
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Lychnis
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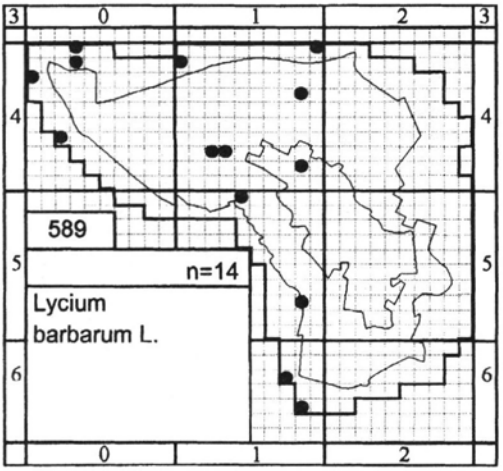
589
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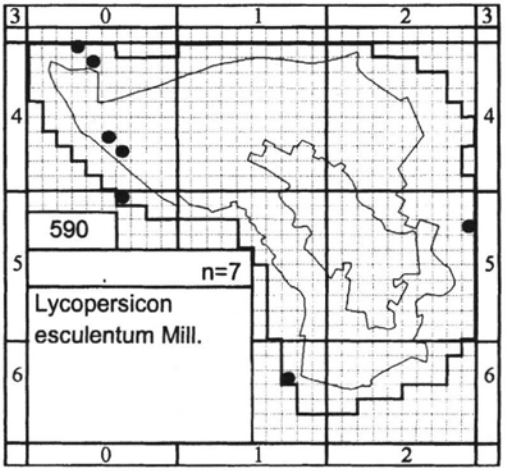
Lycium
barbarum L.


590
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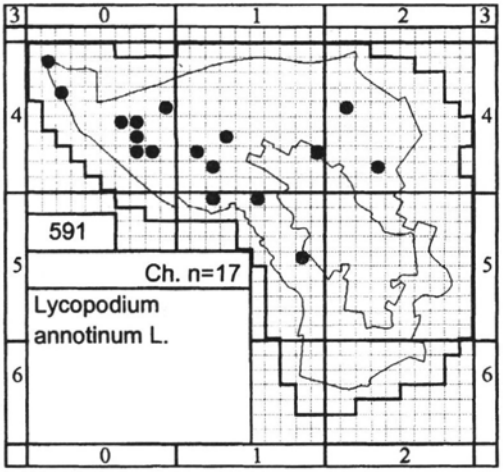
Lycopersicon
esculentum Mill.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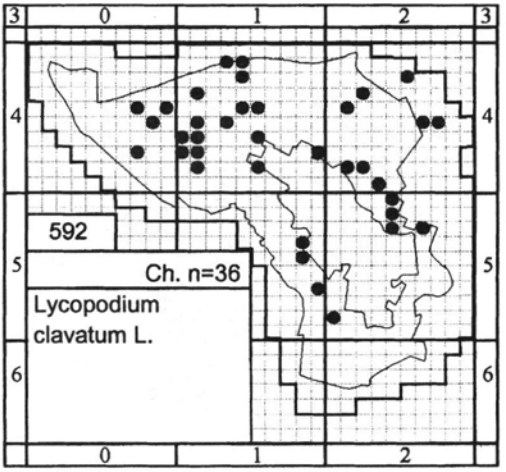
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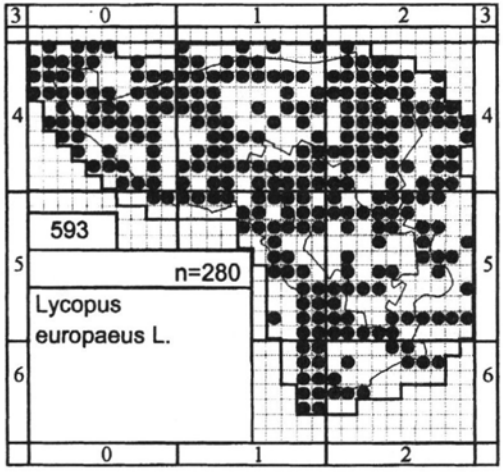
Lycopodium
clavatum L.


593
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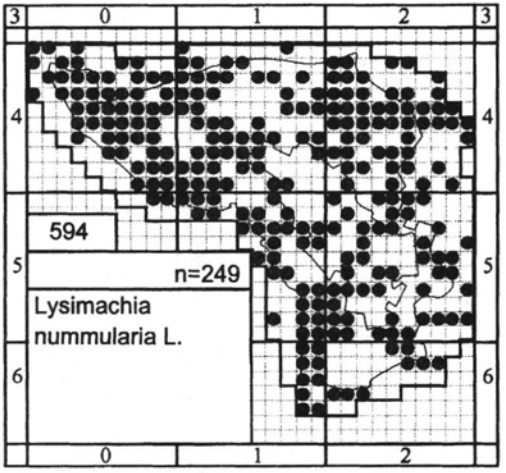
Lycopus
europaeus L.


594
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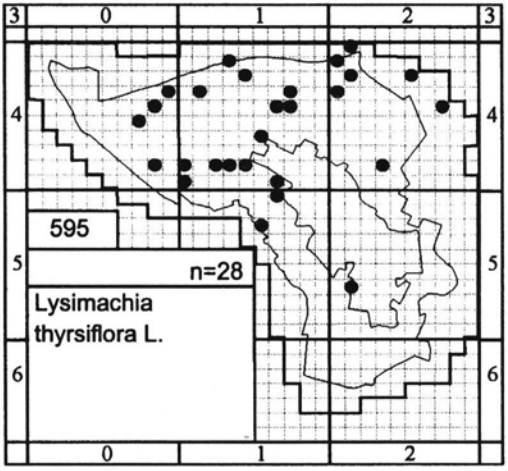
Lysimachia
nummularia L.


595
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Lysimachia
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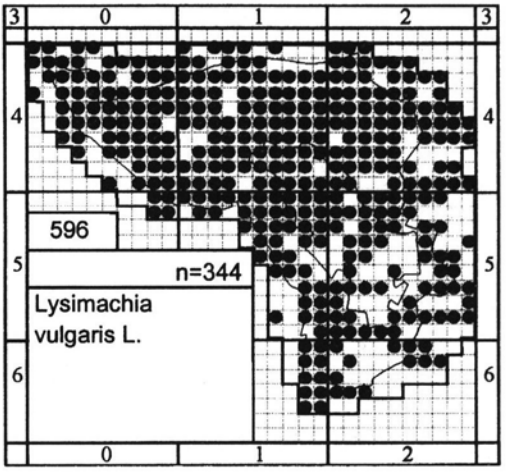
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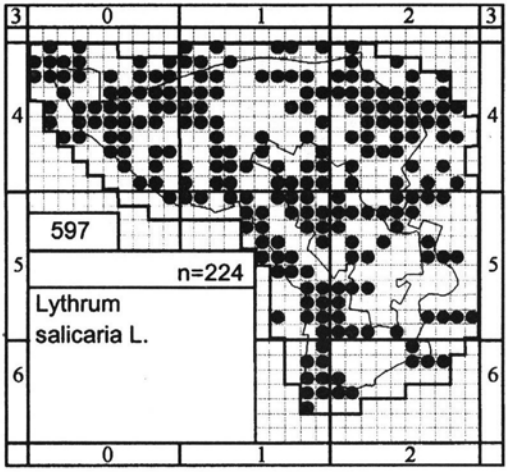
Lysimachia
vulgaris L.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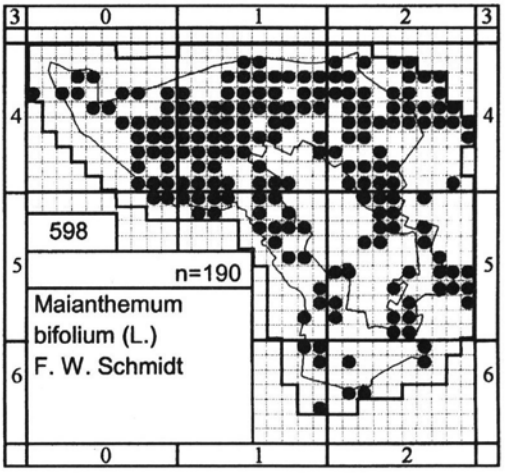
Lythrum
salicaria L.


598
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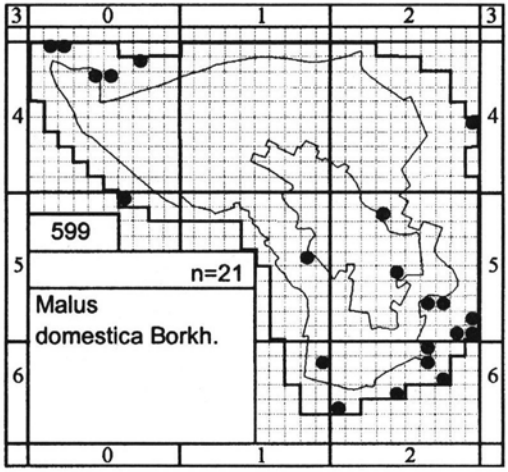
Maianthemum
bifolium (L.)
F. W. Schmidt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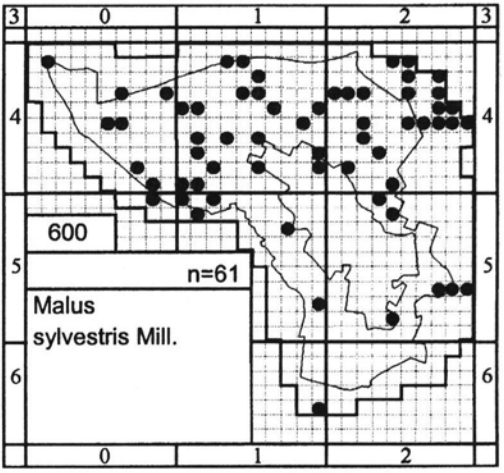
Malus
domestica Borkh.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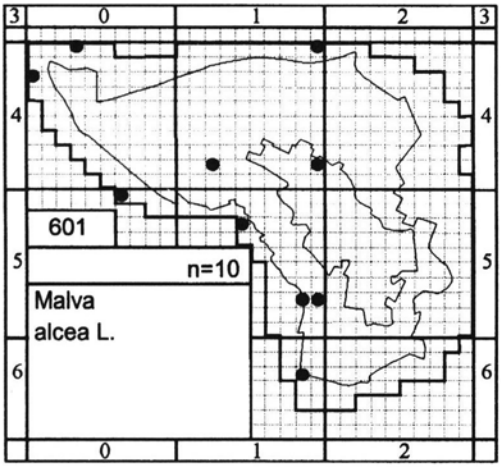
Malus
sylvestris Mill.


601
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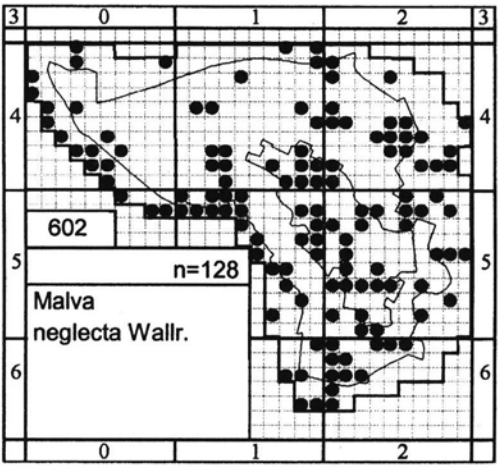
Malva
alcea L.


602
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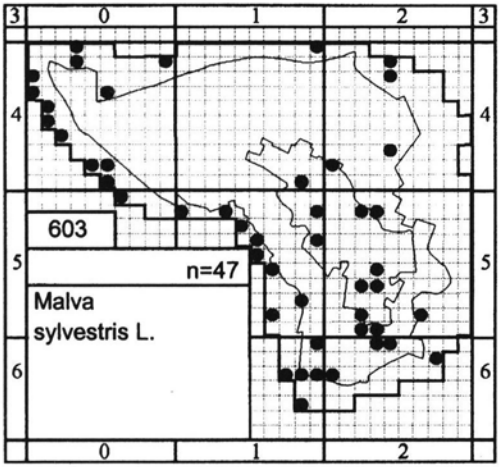
Malva
neglecta Wallr.


603
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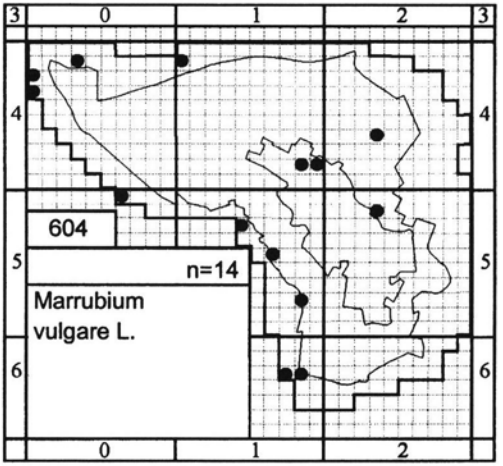
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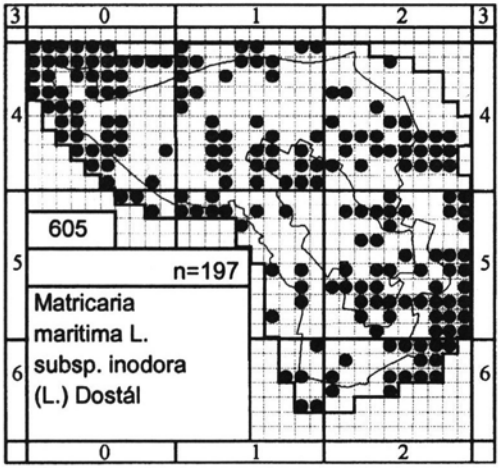
Marrubium
vulgare L.


605
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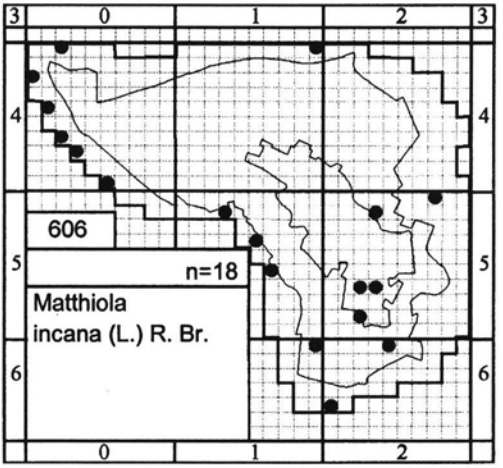
Matricaria
maritima L.
subsp. inodora
(L.) Dostál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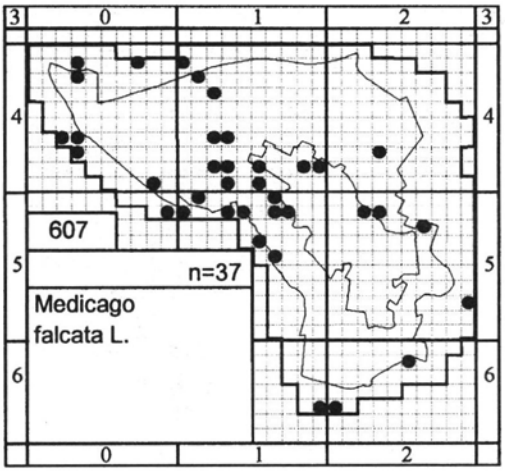
607
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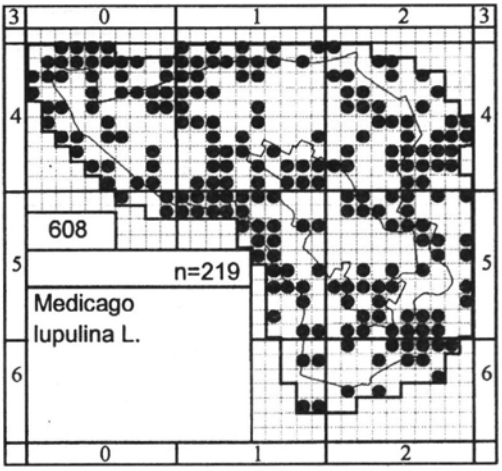
Medicago
falcata L.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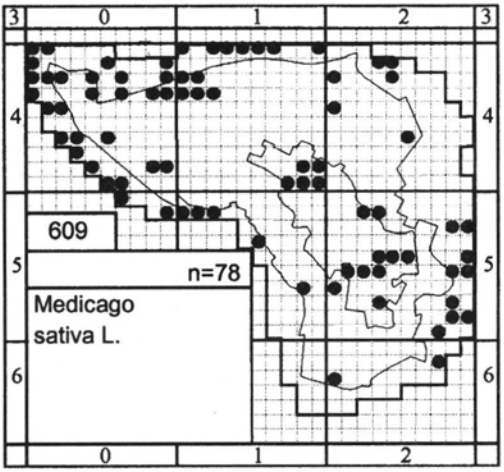
Medicago
lupulina L.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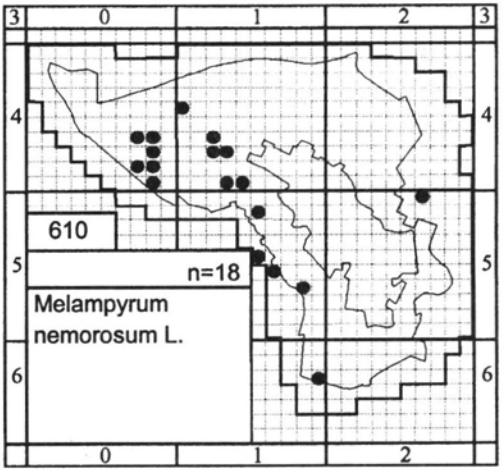
Medicago
sativa L.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Melampyrum
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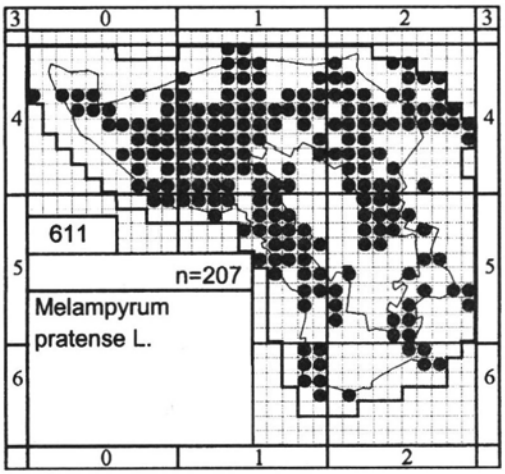
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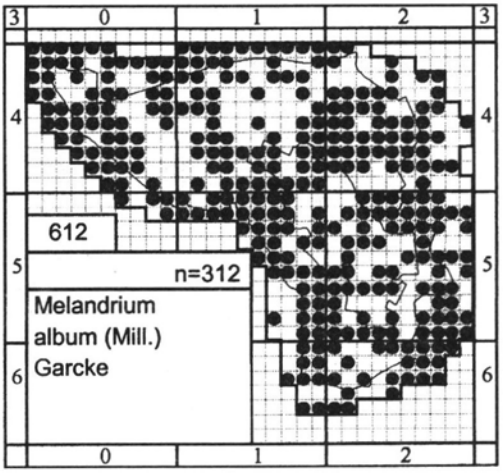
Melampyrum
pratense L.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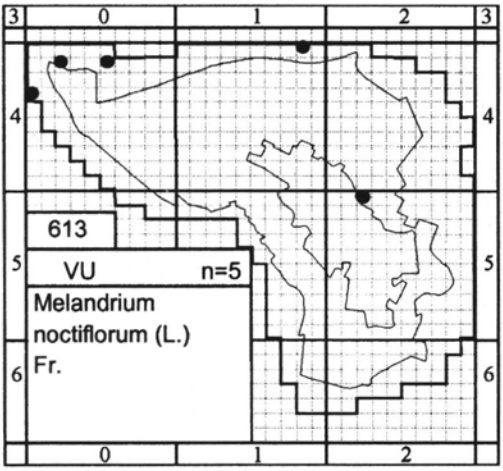
Melandrium
album (Mill.)
Garcke


613
VU
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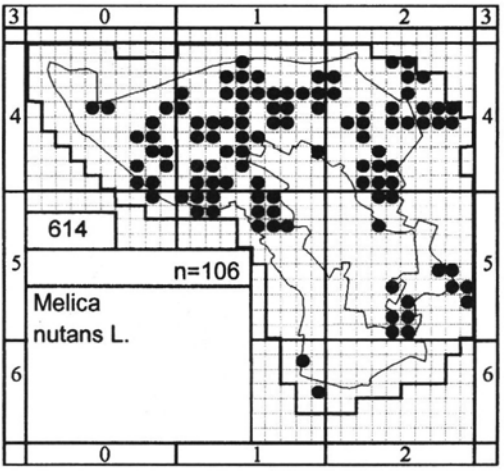
Fr.


614
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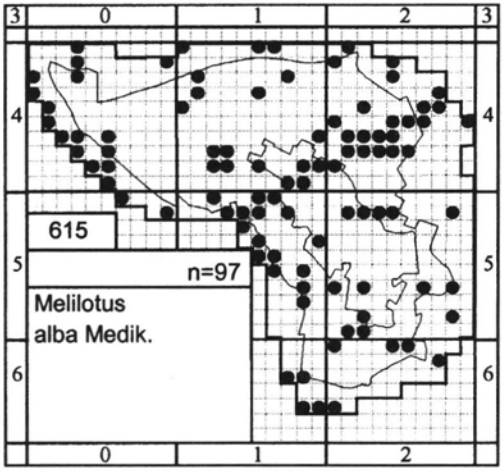
Melica
nutans L.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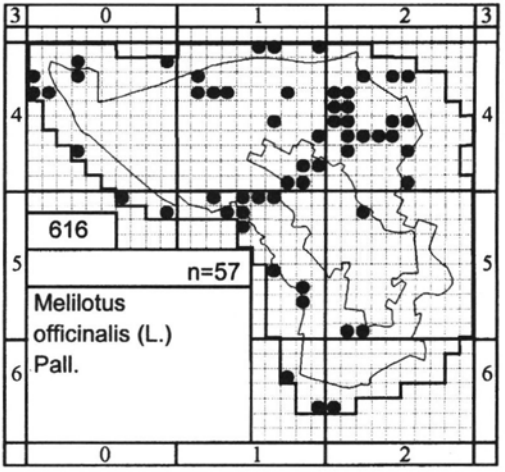
Melilotus
alba Medik.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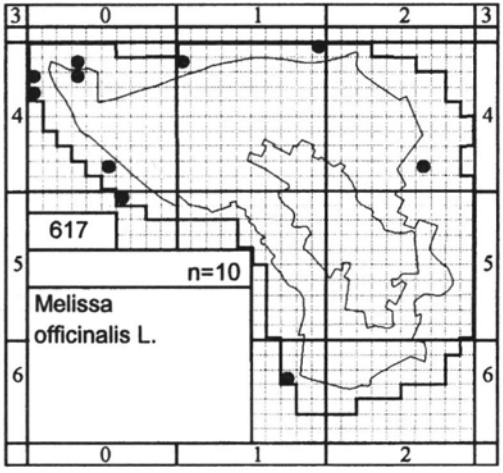
Melilotus
officinalis (L.)
Pall.


617
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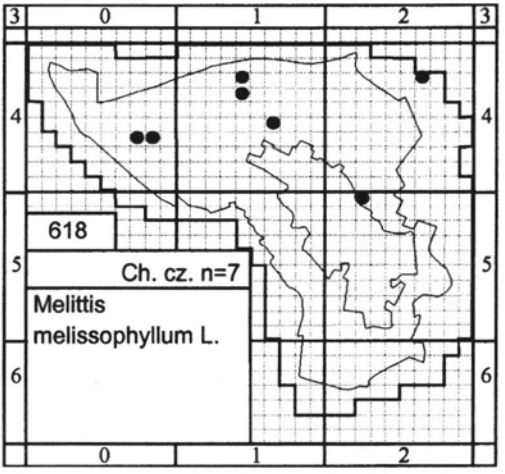
Melissa
officinalis L.


618
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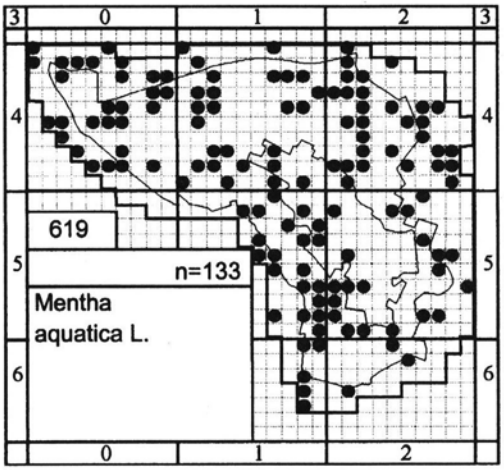
Melittis
melissophyllum L.


619
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Mentha
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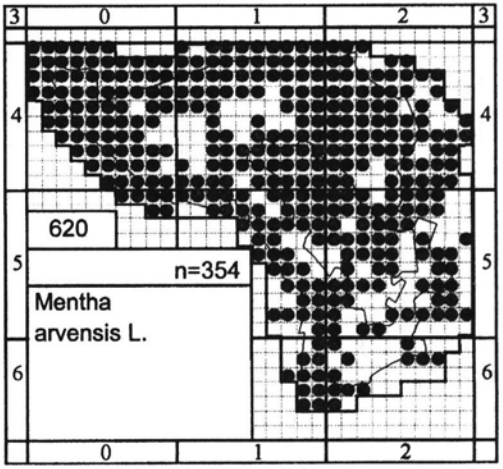
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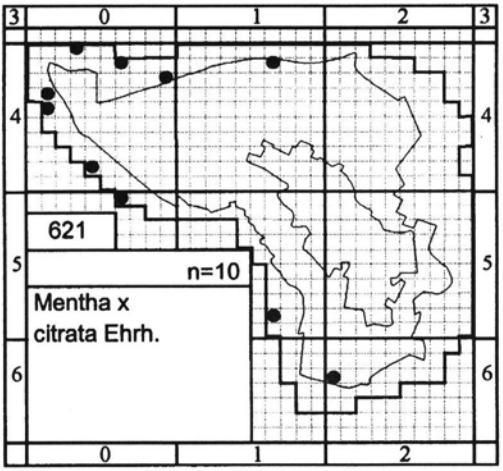
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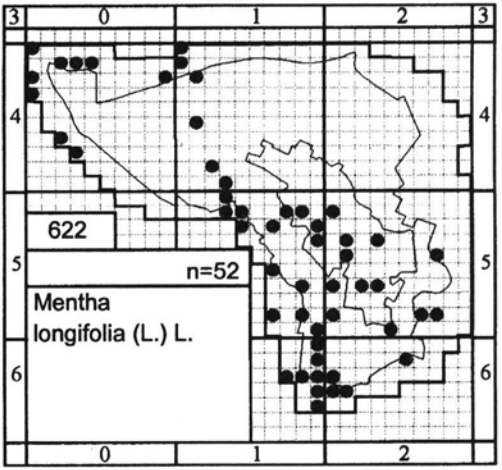
622
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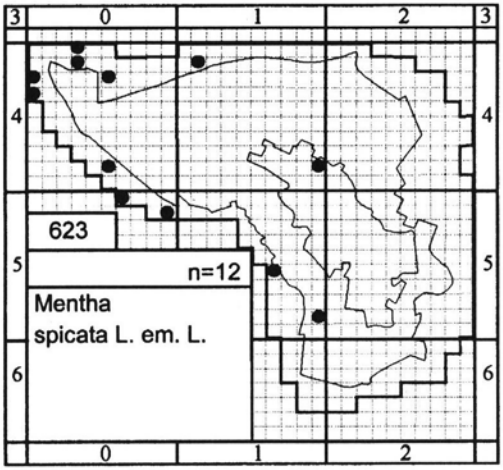
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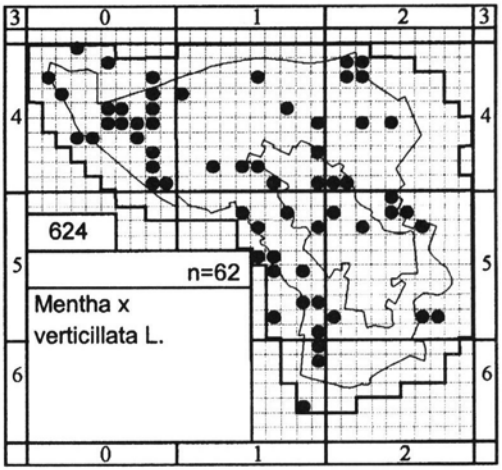
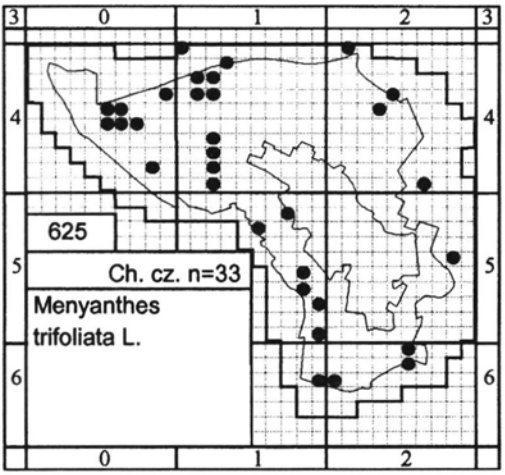
Mentha
spicata L. em. L.


624
n=62
Mentha x
verticillata L.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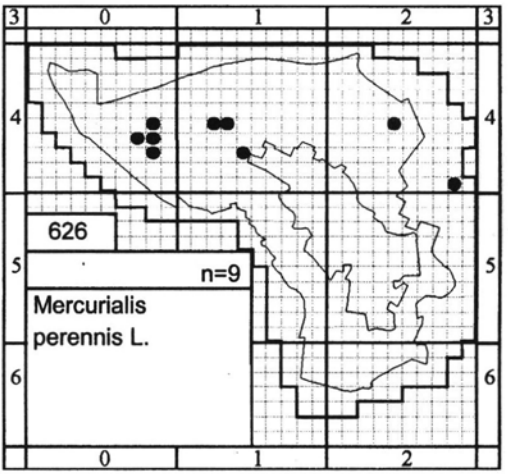
Menyanthes
trifoliata L.


626
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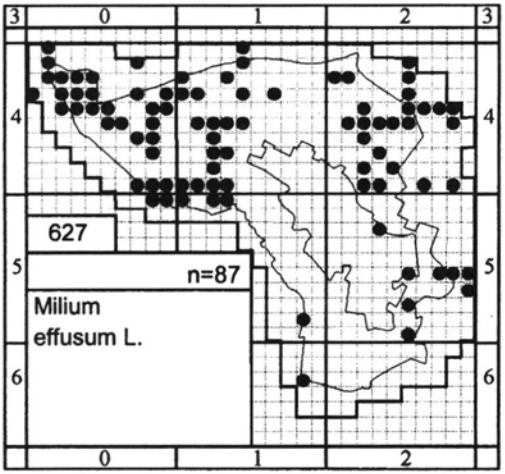
Mercurialis
perennis L.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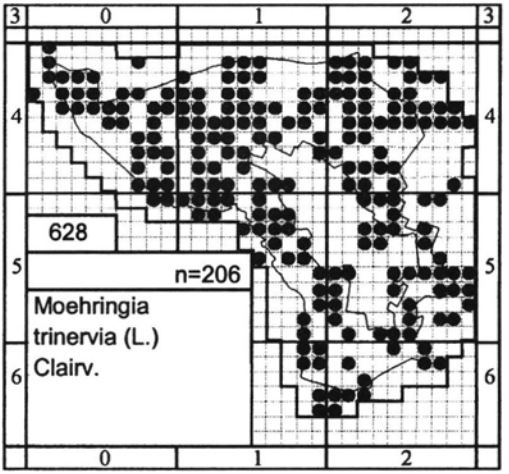
Milium
effusum L.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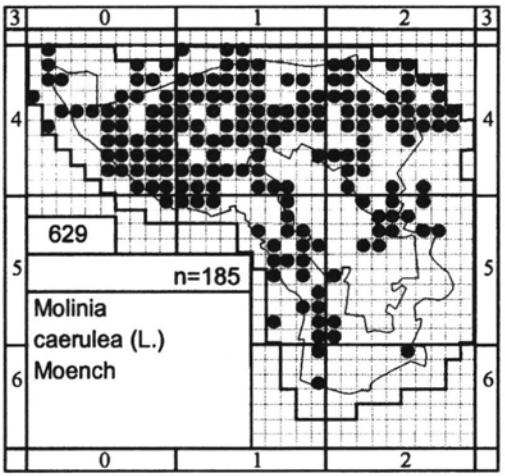
trinervia (L.)
Clairv.


629
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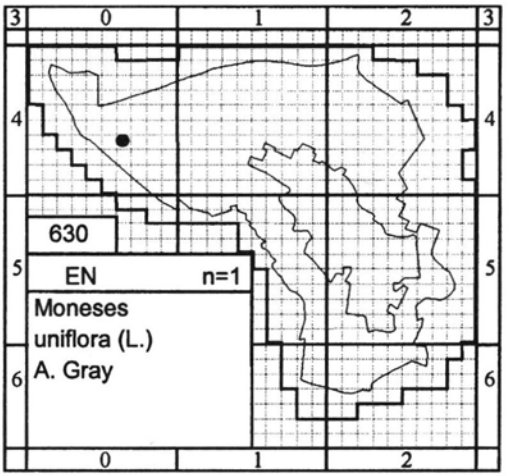
Molinia
caerulea (L.)
Moench


630
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n=1
Moneses
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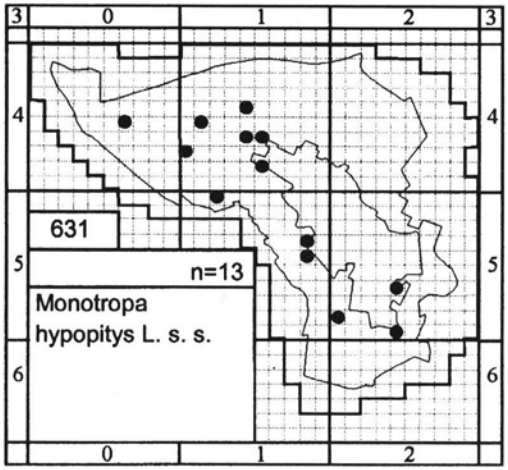
A. Gray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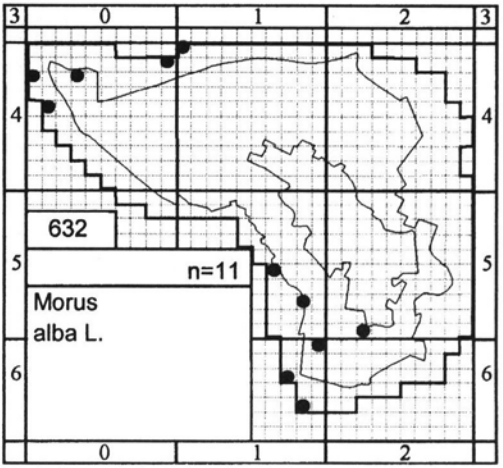
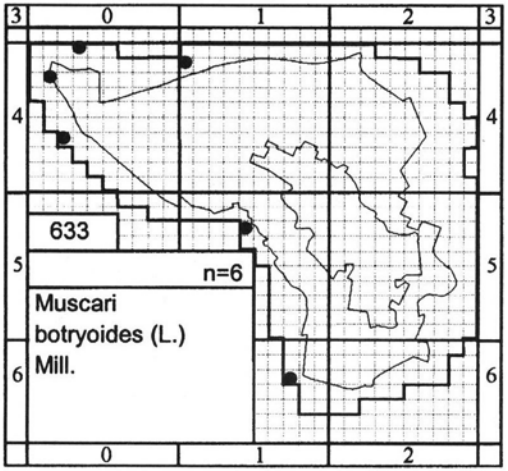
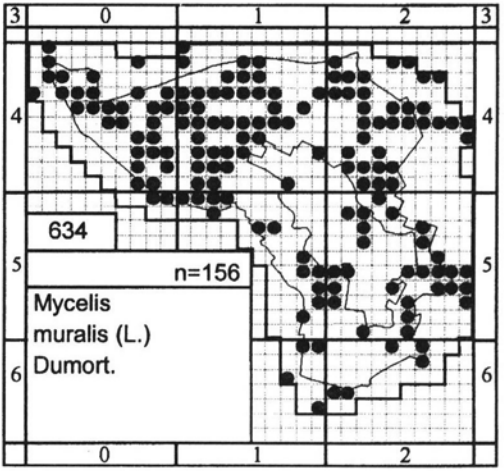
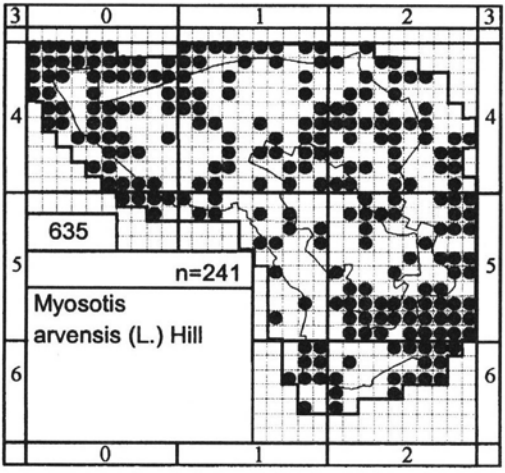
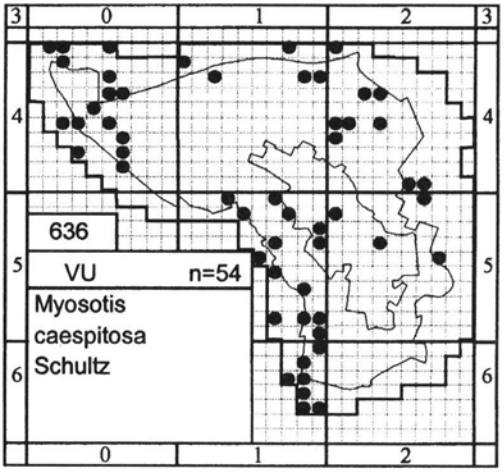
Monotropa
hypopitys L. s. s.

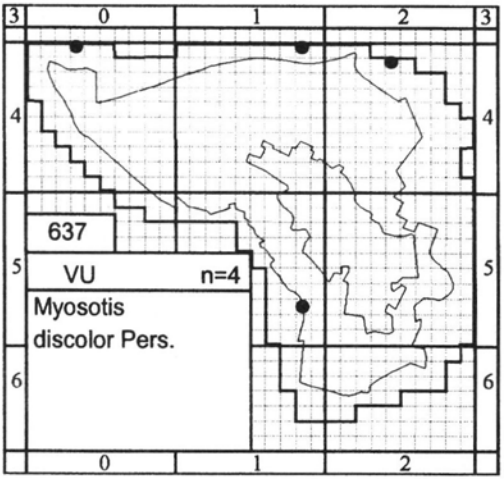

632
n=11
Morus
alba L.

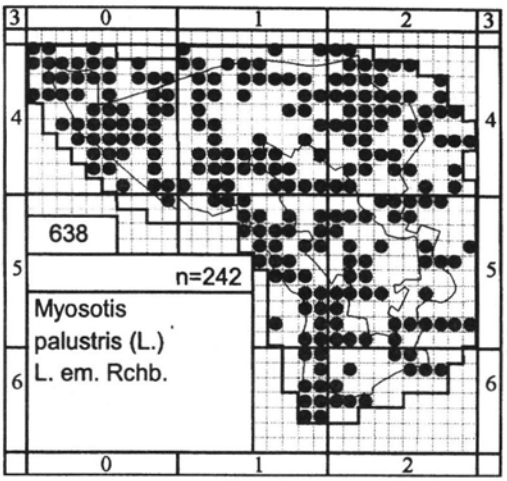

633
n=6
Muscari
botryoides (L.)
Mill.

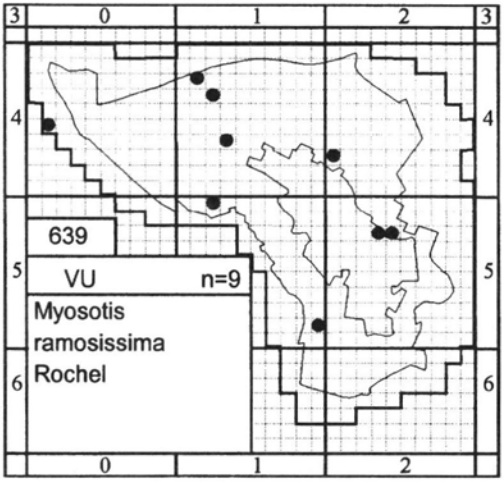

634
n=156
Mycelis
muralis (L.)
Dumort.

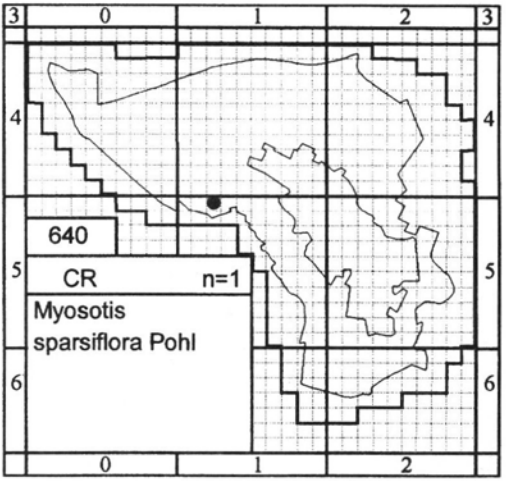

635
n=241
Myosotis
arvensis (L.) Hill

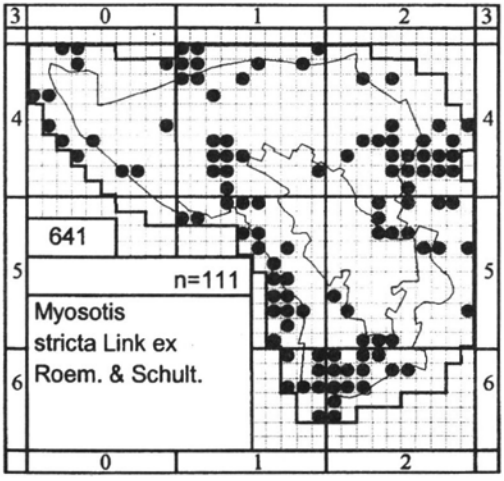

636
VU
n=54
Myosotis
caespitosa
Schultz

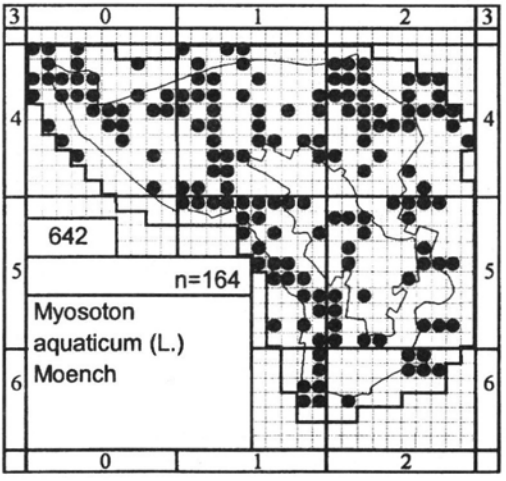

637
VU
n=4
Myosotis
discolor Pers.

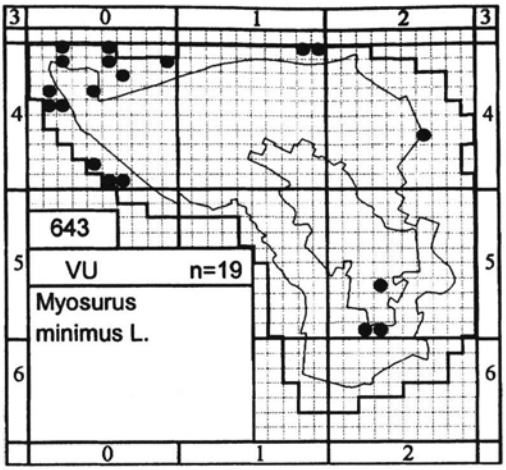

638
n=242
Myosotis
palustris (L.)
L. em. Rchb.

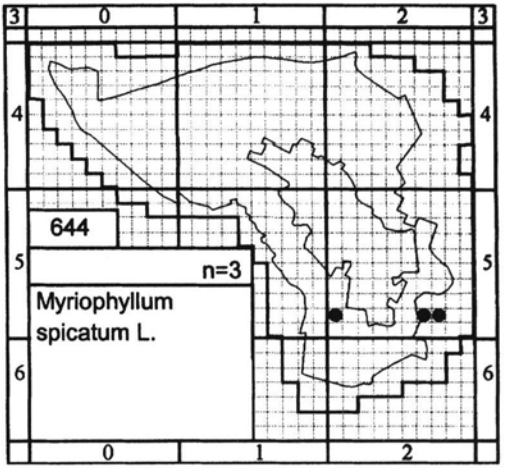

639
VU
n=9
Myosotis
ramosissima
Rochel


640
CR
n=1
Myosotis
sparsiflora Pohl


641
n=111
Myosotis
stricta Link ex
Roem. & Schult.


642
n=164
Myosoton
aquaticum (L.)
Moench


643
VU
n=19
Myosurus
minimus L.


644
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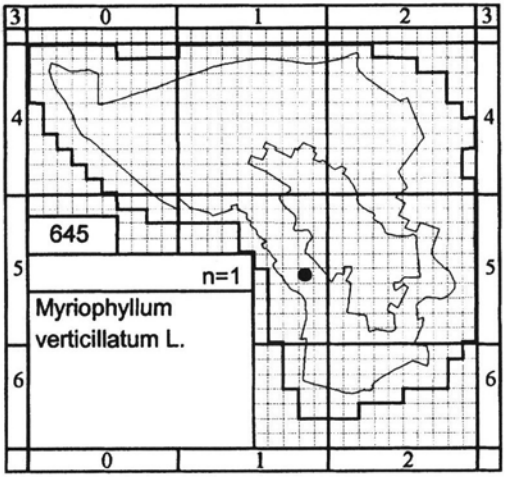
Myriophyllum
spicatum L.


645
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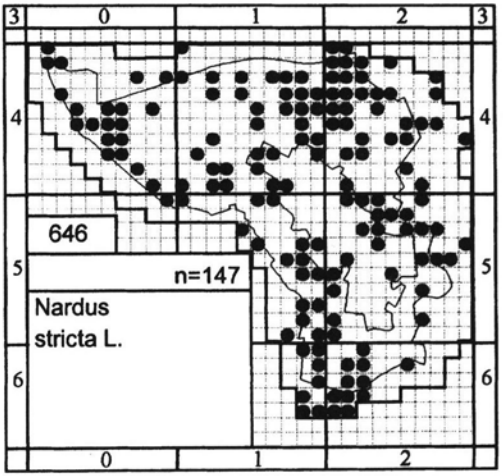
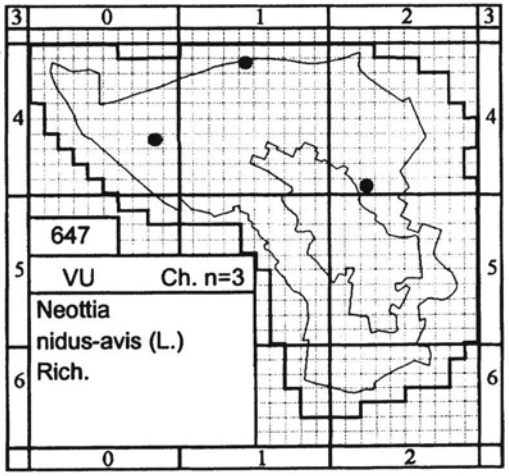
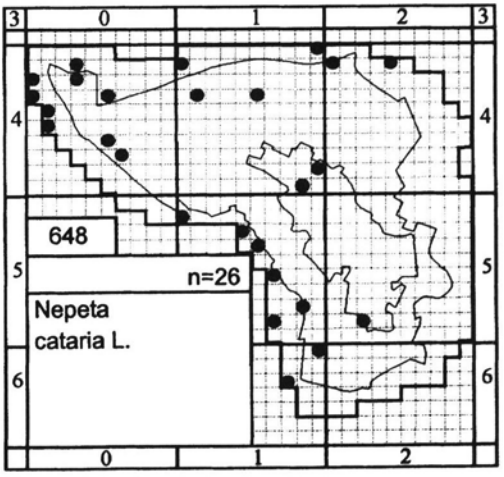
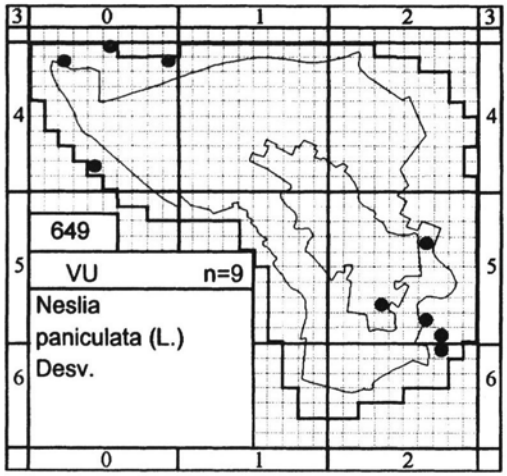
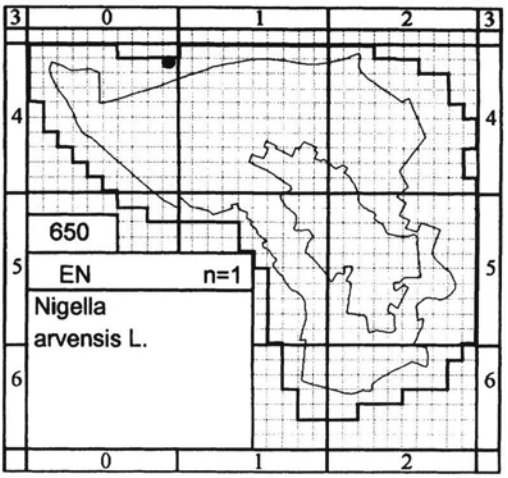
Myriophyllum
verticillatum L.

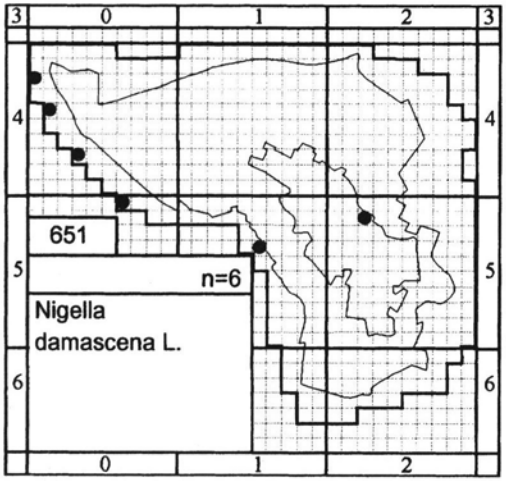

646
n=147
Nardus
stricta L.

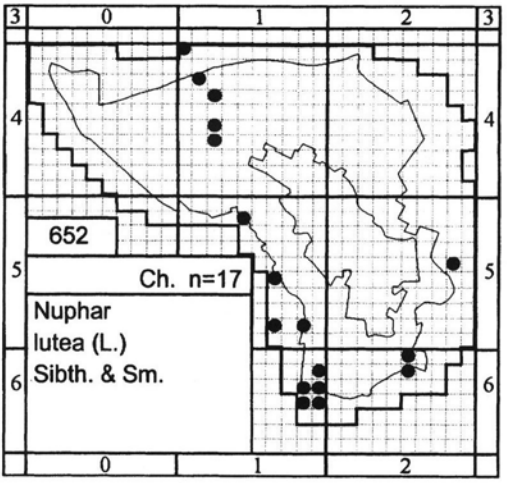

647
VU
Ch. n=3
Neottia
nidus-avis (L.)
Rich.


648
n=26
Nepeta
cataria L.


649
VU n=9
Neslia paniculata (L.) Desv.


650
EN n=1
Nigella arvensis L.


651
n=6
Nigella damascena L.


652
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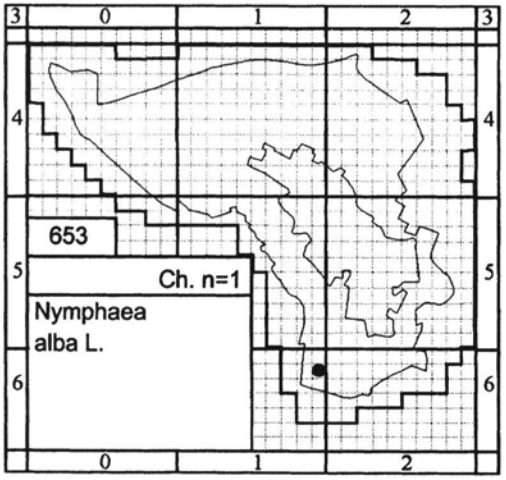
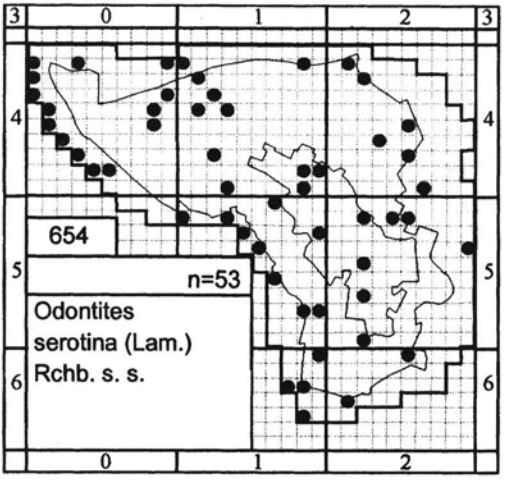
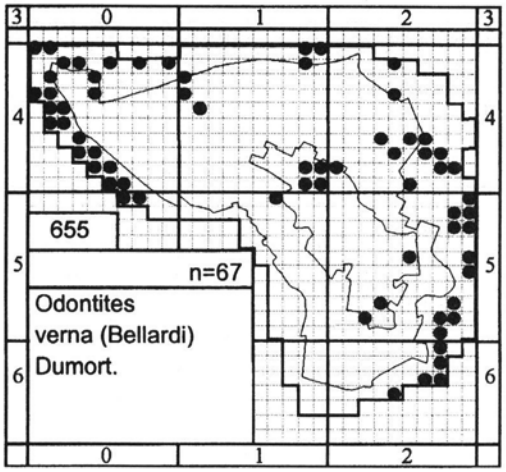
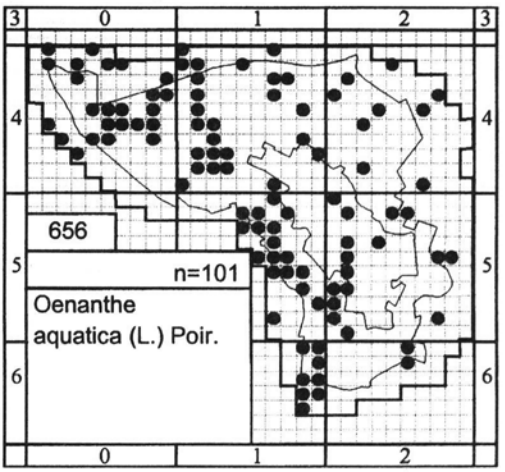
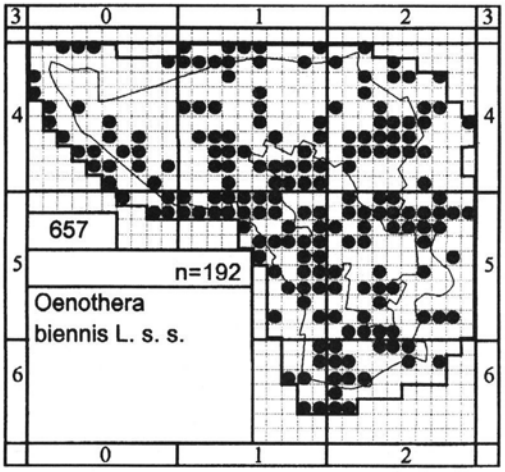
Nuphar lutea (L.) Sibth. & Sm.

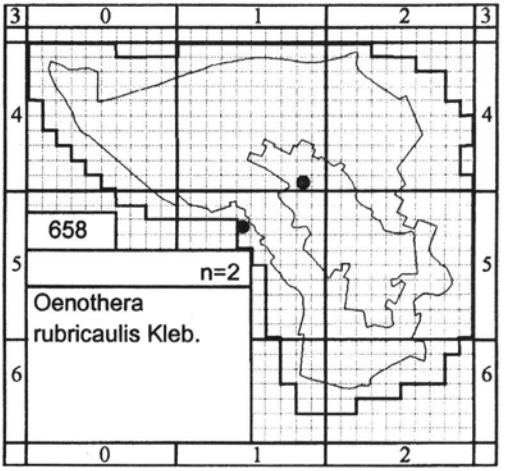

653
Ch. n=1
Nymphaea alba L.


654
n=53
Odontites serotina (Lam.) Rchb. s. s.


655
n=67
Odontites
verna (Bellardi)
Dumort.


656
n=101
Oenanthe
aquatica (L.) Poir.


657
n=192
Oenothera
biennis L. s. s.


658
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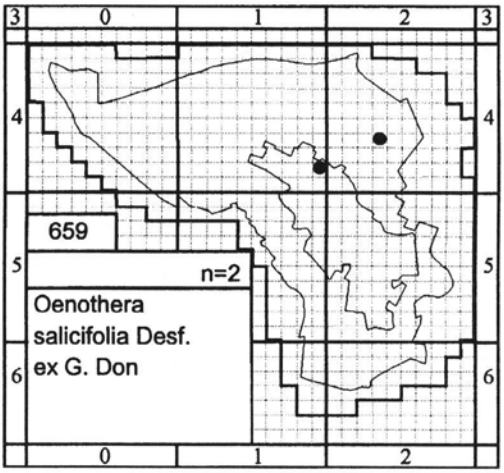
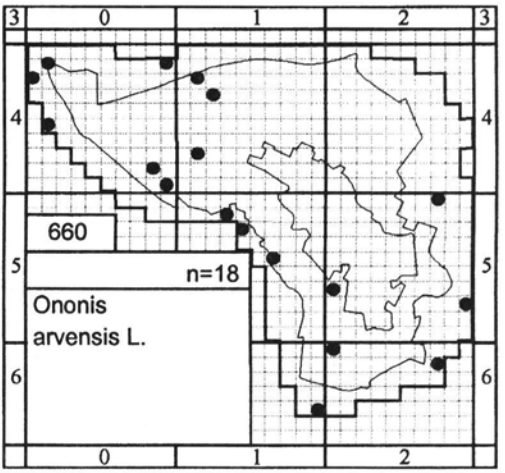
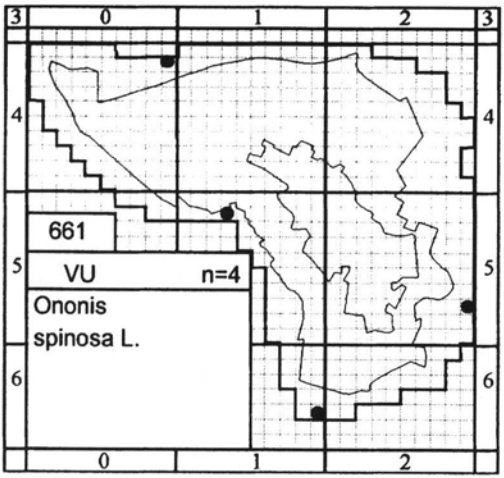
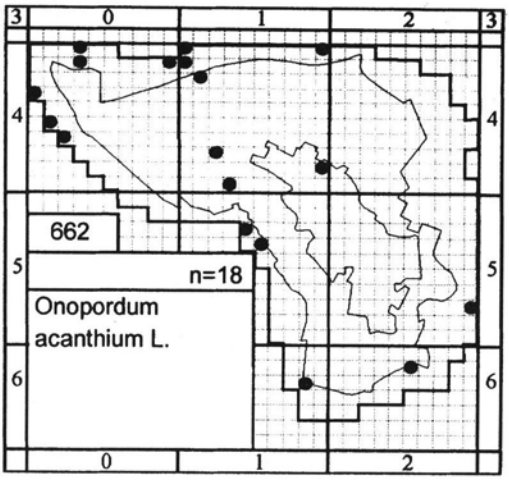
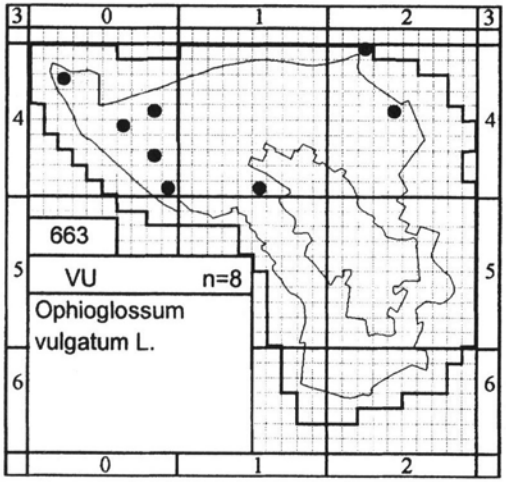
Oenothera
rubricaulis Kleb.

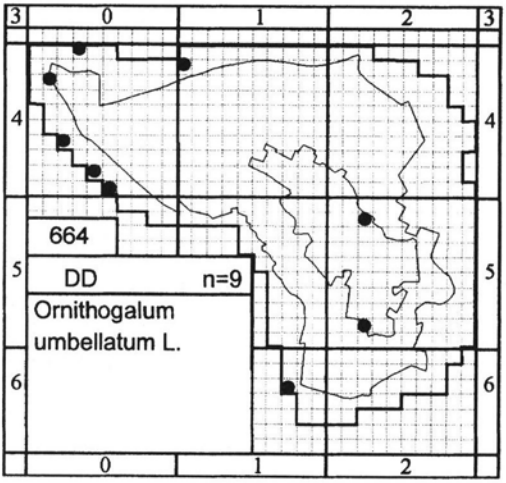

659
n=2
Oenothera
salicifolia Desf.
ex G. Don

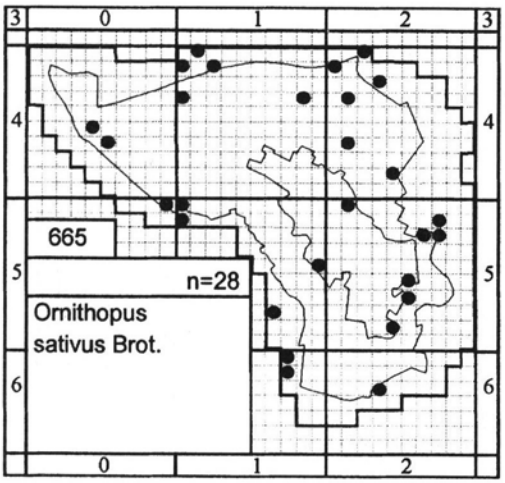

660
n=18
Ononis
arvensis L.


661
VU
n=4
Ononis
spinosa L.


662
n=18
Onopordum
acanthium L.


663
VU
n=8
Ophioglossum
vulgatum L.


664
DD
n=9
Ornithogalum
umbellatum L.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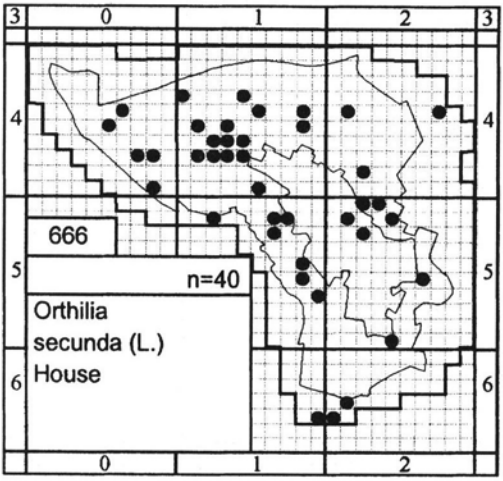
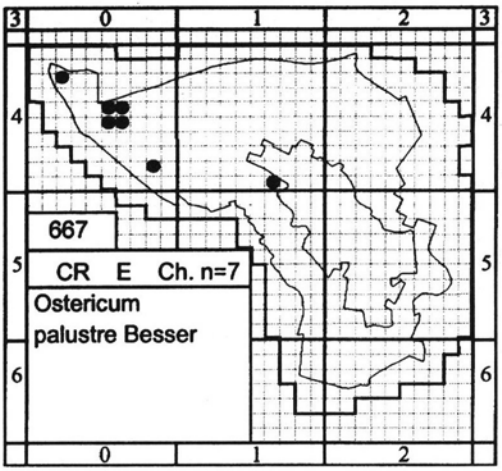
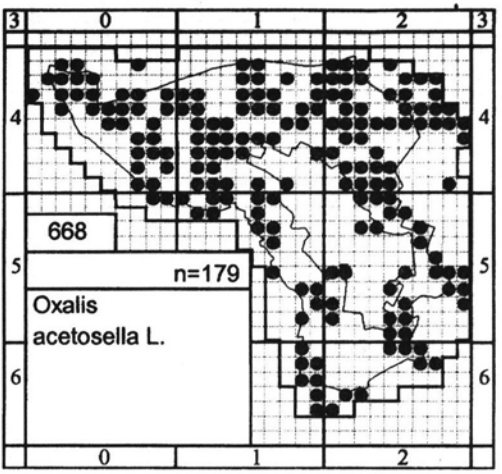
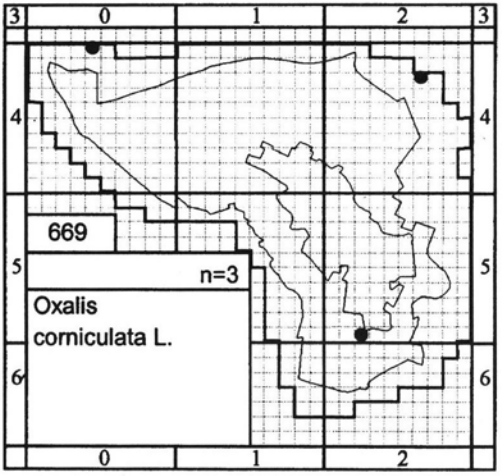
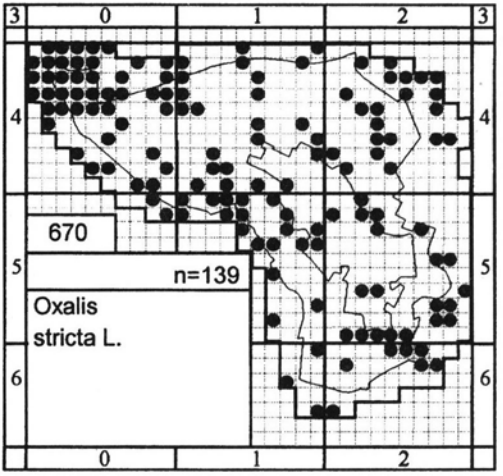
Ornithopus
sativus Brot.


666
n=40
Orthilia
secunda (L.)
House


667
CR E Ch. n=7
Ostericum
palustre Besser


668
n=179
Oxalis
acetosella L.


669
n=3
Oxalis
corniculata L.


670
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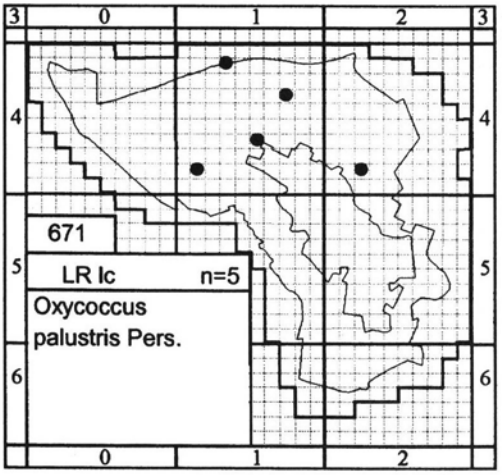
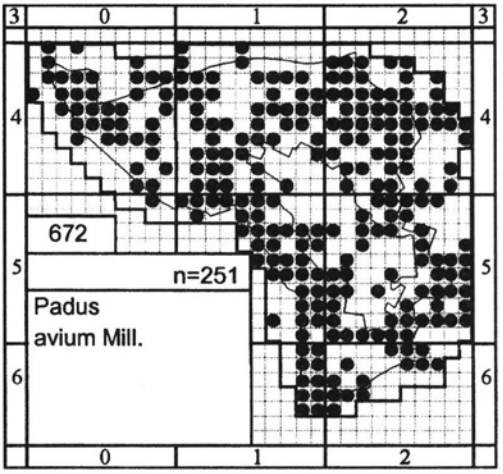
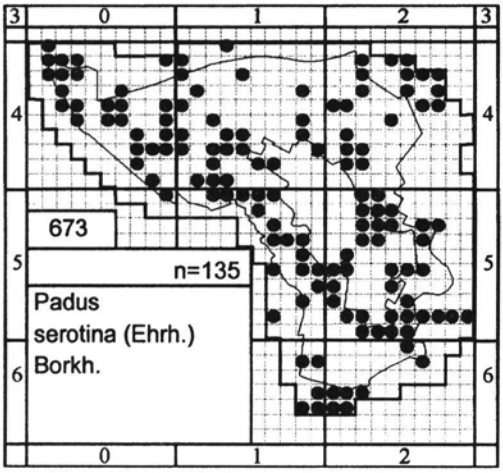
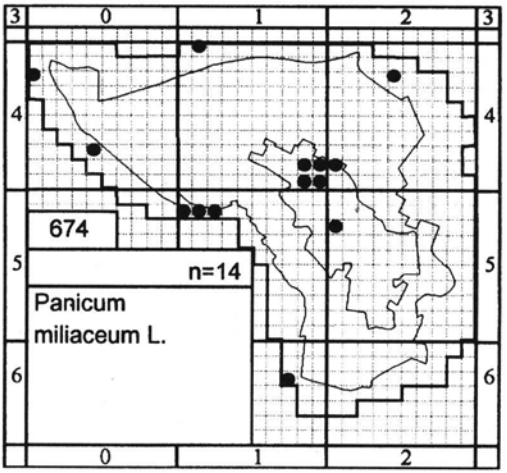
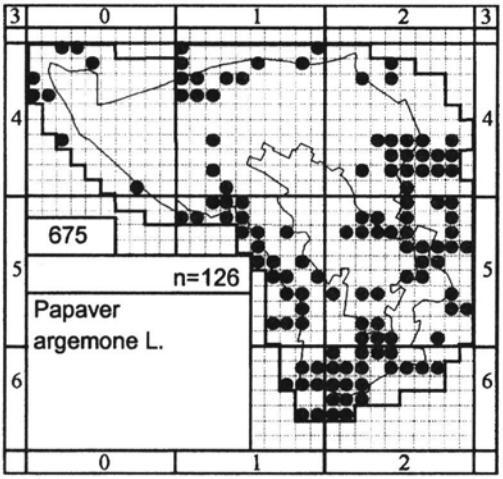
Oxalis
stricta L.

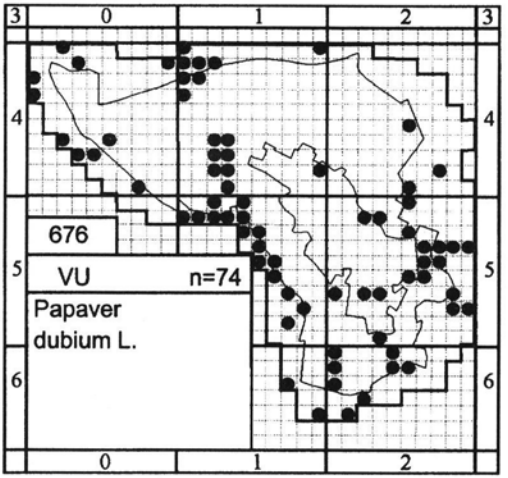

671
LR Ic n=5
Oxycoccus
palustris Pers.

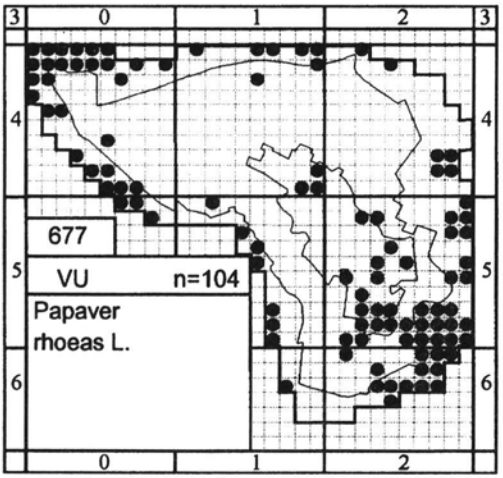

672
n=251
Padus
avium Mill.

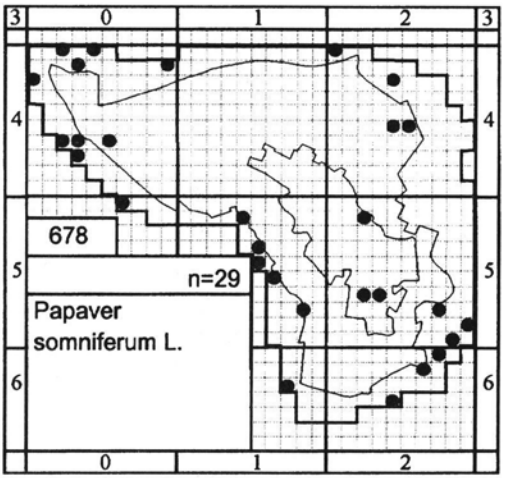

673
n=135
Padus
serotina (Ehrh.)
Borkh.

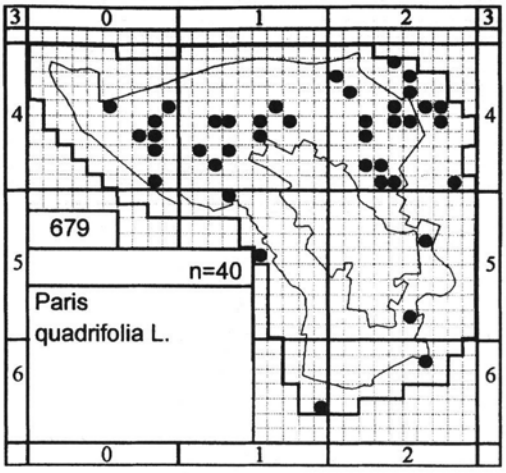

674
n=14
Panicum
miliaceum L.

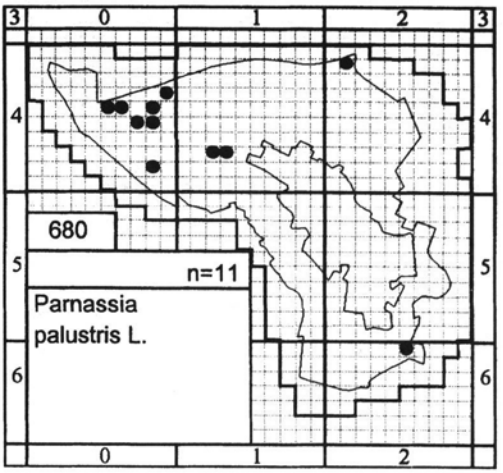

675
n=126
Papaver
argemone L.

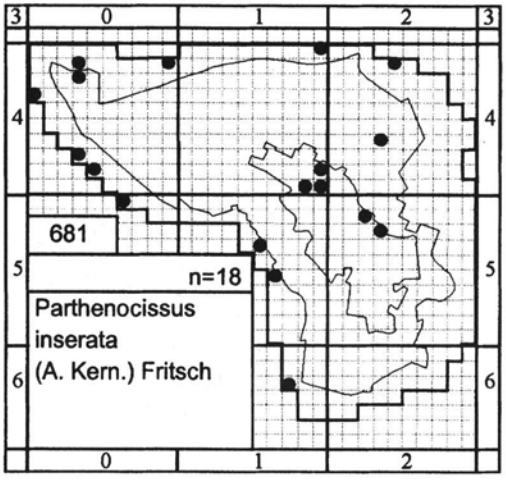

676
VU
n=74
Papaver
dubium L.

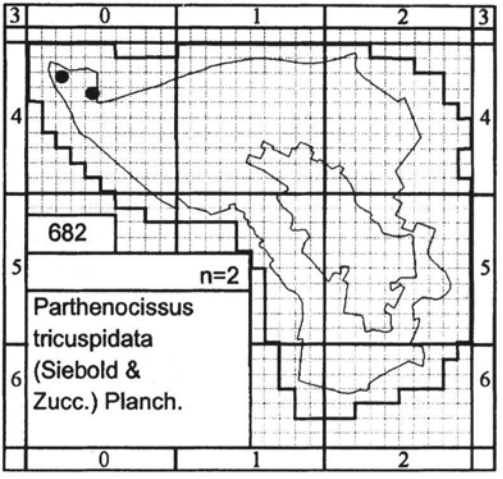

677
VU
n=104
Papaver
rhoeas L.

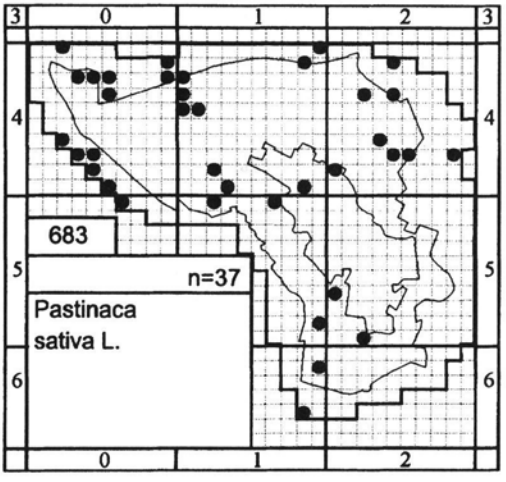

678
n=29
Papaver
somniferum L.

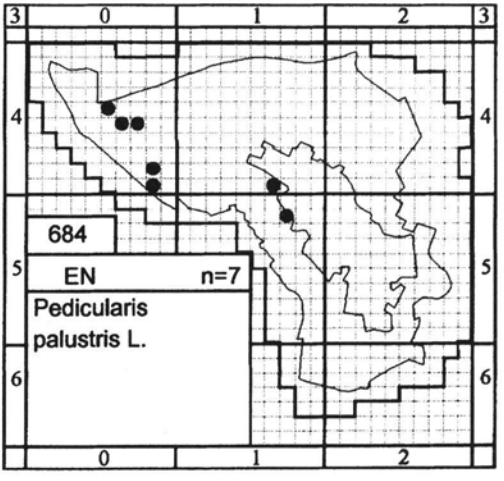

679
n=40
Paris
quadrifolia L.


680
n=11
Parnassia
palustris L.


681
n=18
Parthenocissus
inserata
(A. Kern.) Fritsch


682
n=2
Parthenocissus
tricuspidata
(Siebold &
Zucc.) Planch.


683
n=37
Pastinaca
sativa L.


684
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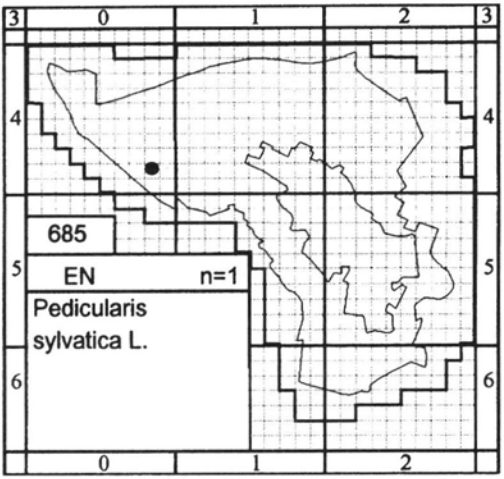
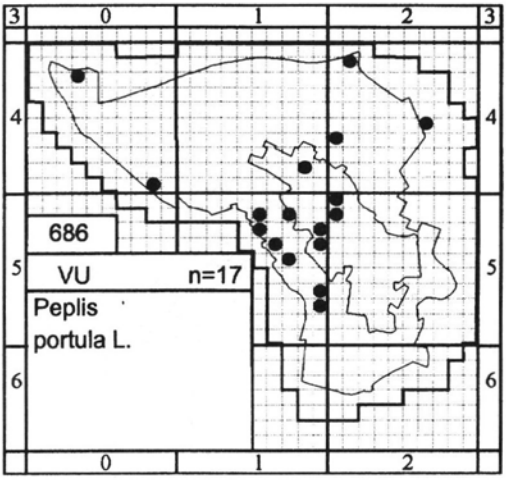
n=7
Pedicularis
palustris L.


685
EN
n=1
Pedicularis
sylvatica L.


686
VU
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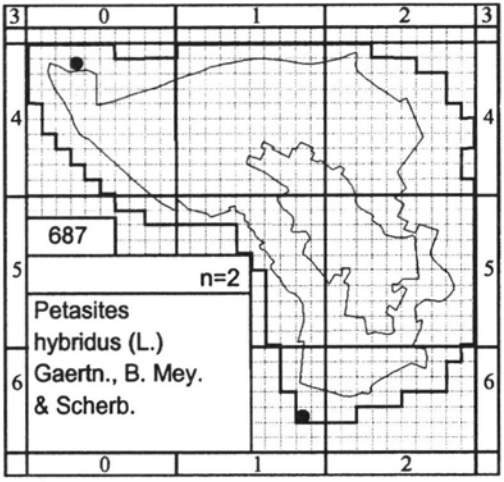
Peplis
portula L.


687
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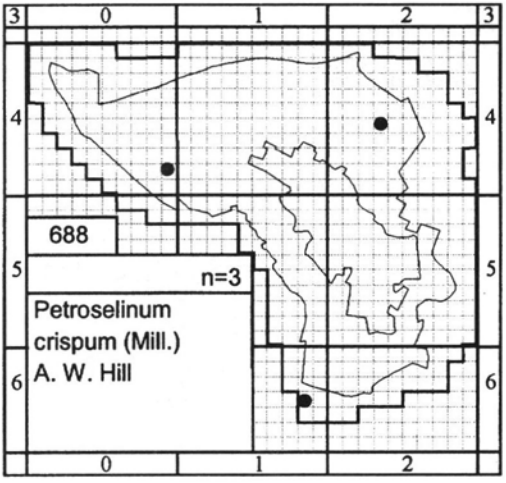
Petasites
hybridus (L.)
Gaertn., B. Mey.
& Scherb.


688
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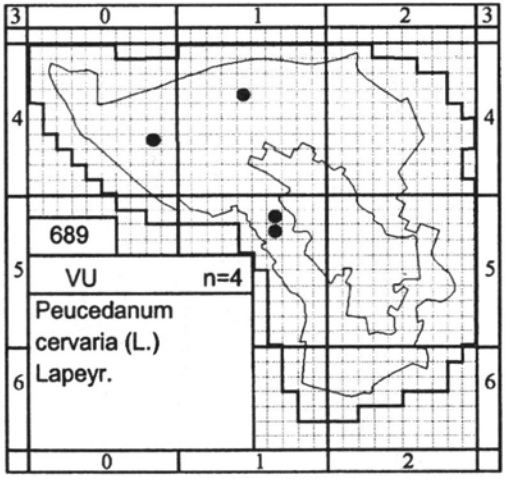
Petroselinum
crispum (Mill.)
A. W. Hill


689
VU
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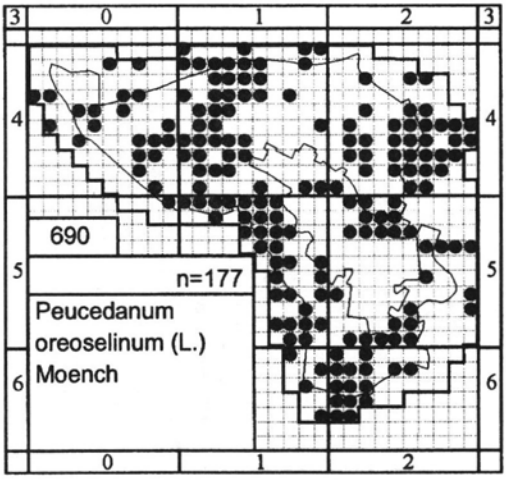
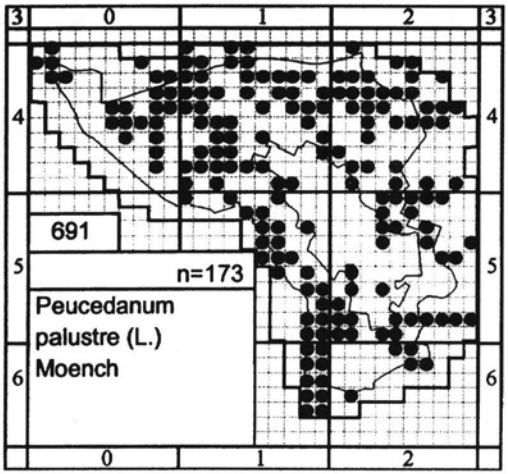
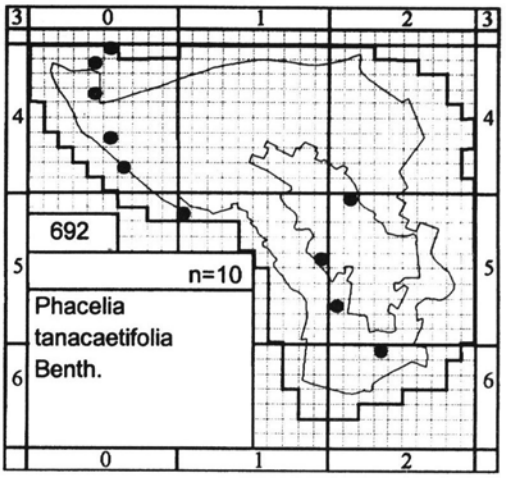
Peucedanum
cervaria (L.)
Lapeyr.


690
n=177
Peucedanum
oreoselinum (L.)
Moench


691
n=173
Peucedanum palustre (L.) Moench


692
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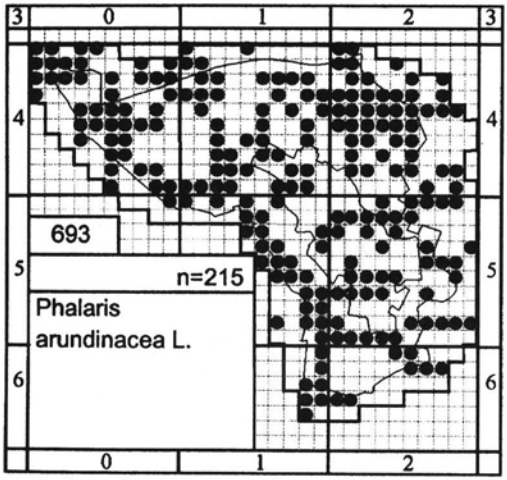
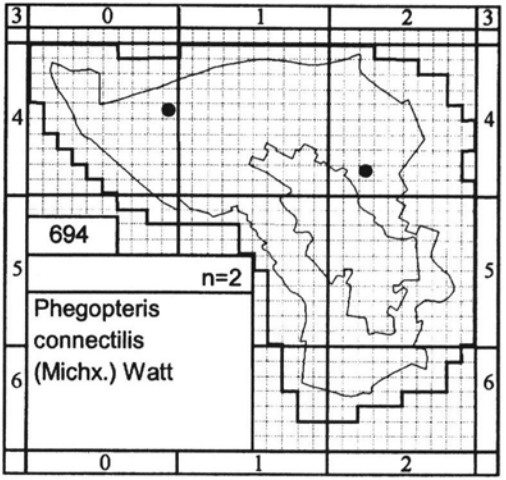
Phacelia tanacaetifolia Benth.


693
n=215
Phalaris arundinacea L.


694
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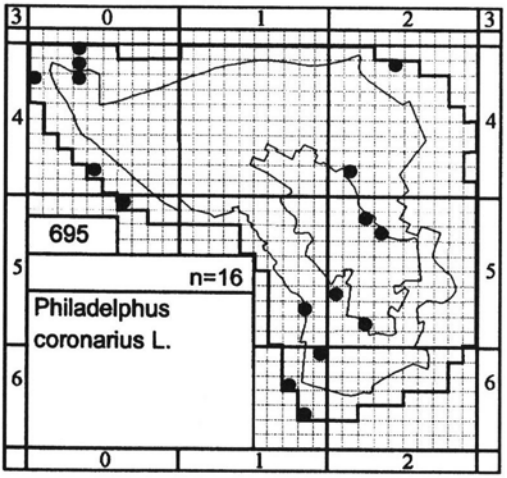
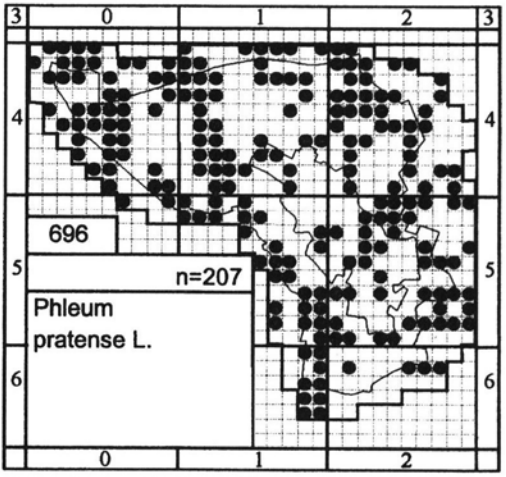
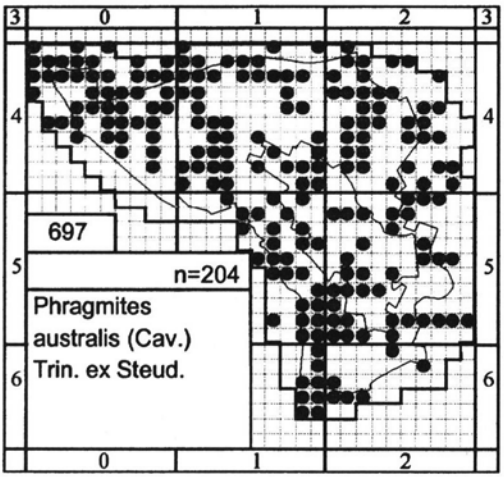
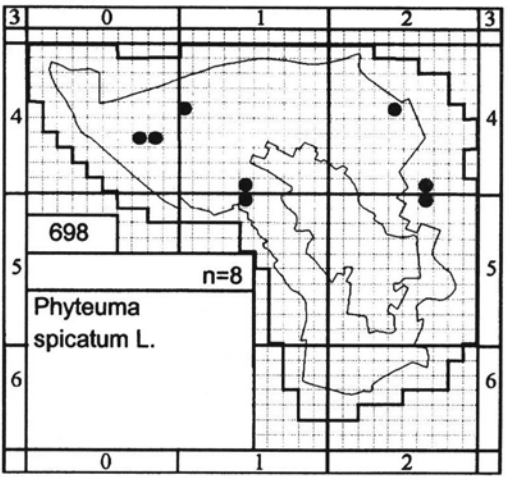
Phegopteris connectilis (Michx.) Watt


695
n=16
Philadelphus coronarius L.


696
n=207
Phleum pratense L.


697
n=204
Phragmites
australis (Cav.)
Trin. ex Steud.


698
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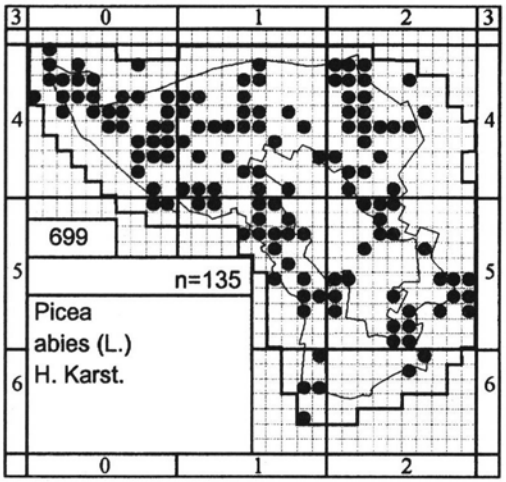
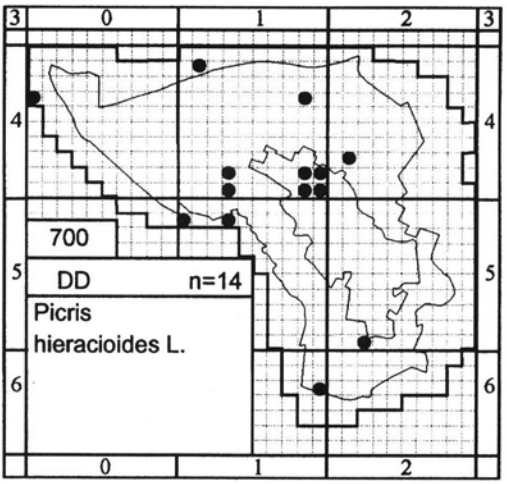
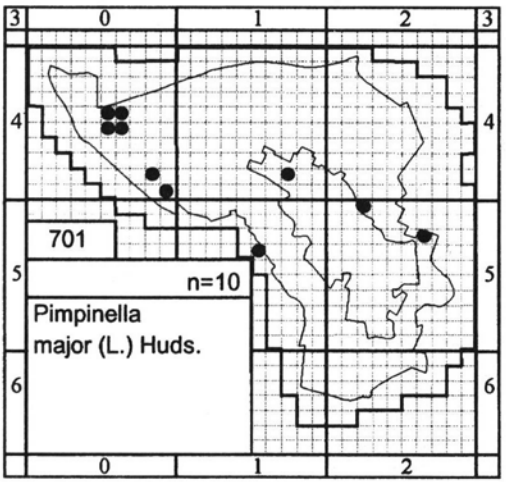
Phyteuma
spicatum L.


699
n=135
Picea
abies (L.)
H. Karst.


700
DD
n=14
Picris
hieracioides L.


701
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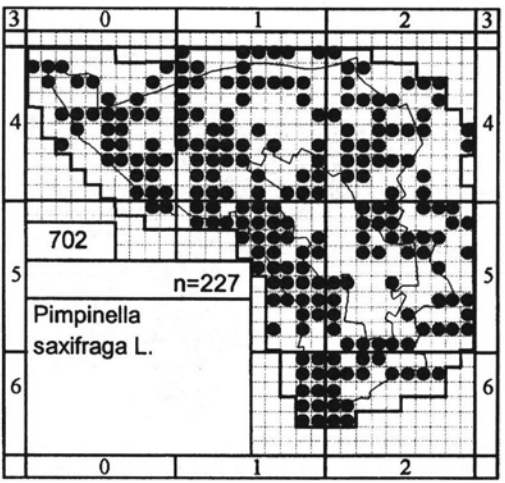
Pimpinella
major (L.) Huds.


702
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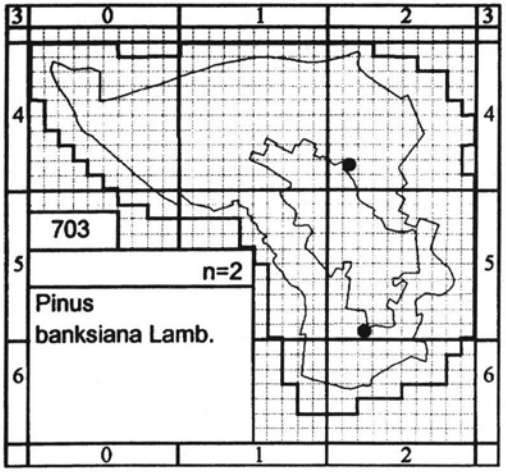
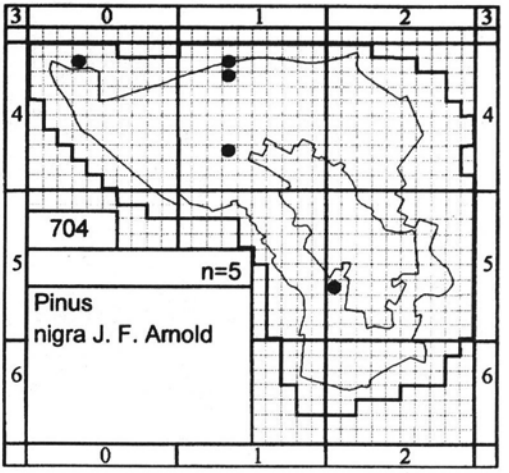
Pimpinella
saxifraga L.


703
n=2
Pinus
banksiana Lamb.


704
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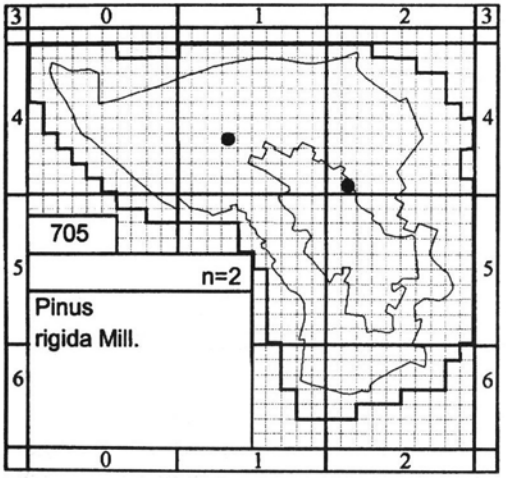
Pinus
nigra J. F. Arnold


705
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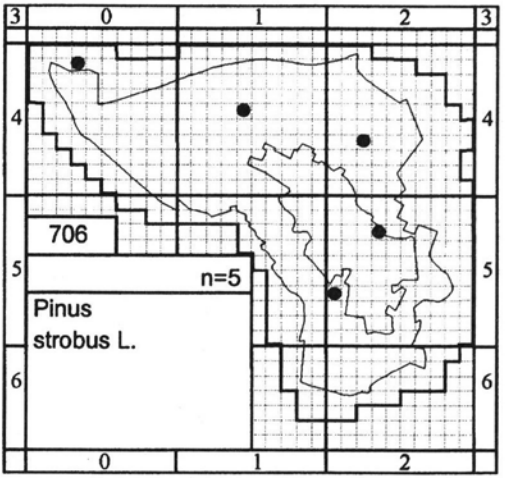
Pinus
rigida Mill.


706
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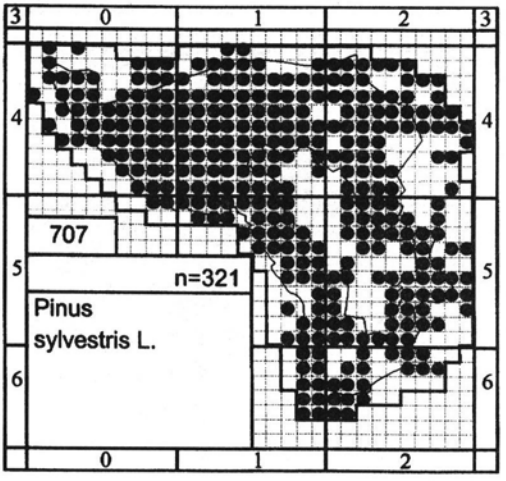
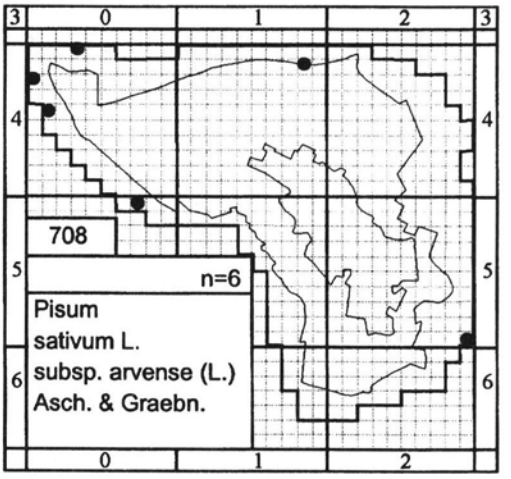
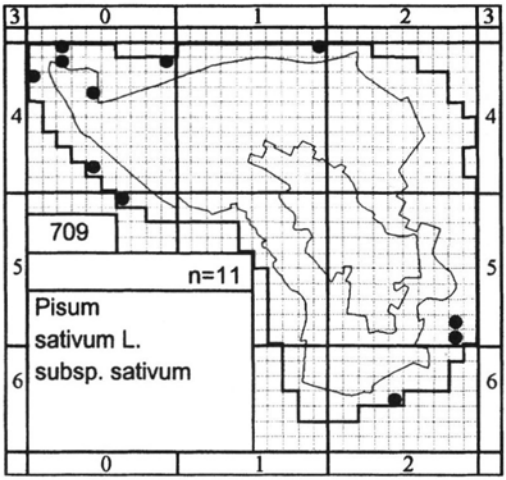
Pinus
strobus L.


707
n=321
Pinus
sylvestris L.


708
n=6
Pisum
sativum L.
subsp. arvense (L.)
Asch. & Graebn.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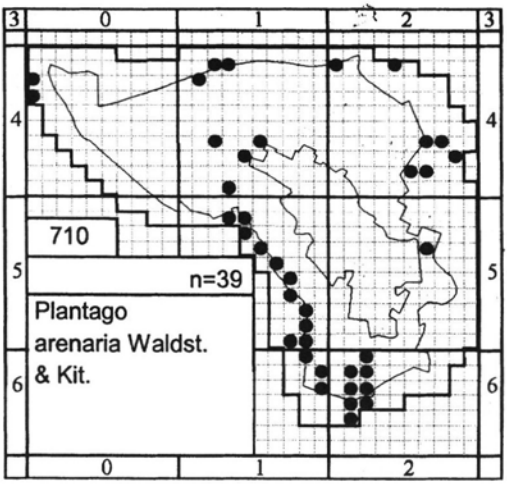
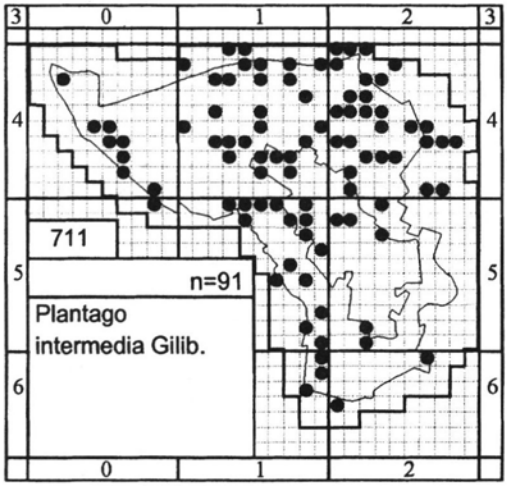
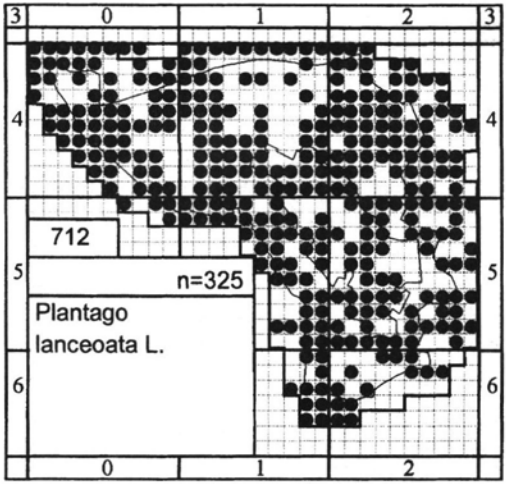
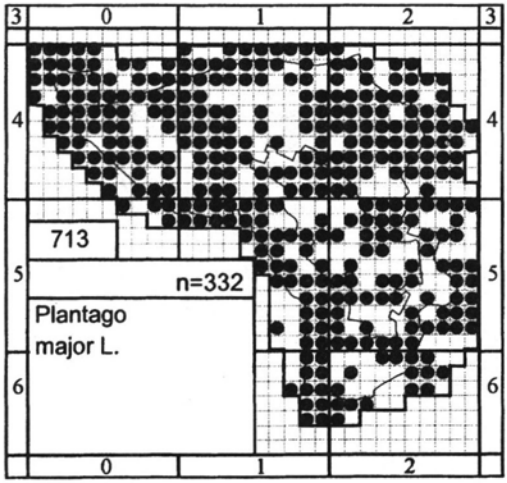
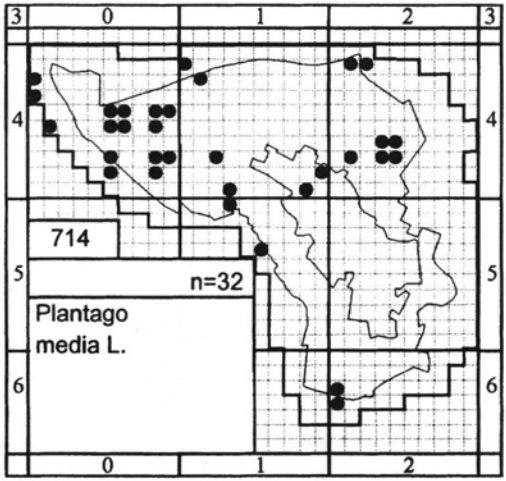
Pisum
sativum L.
subsp. sativum

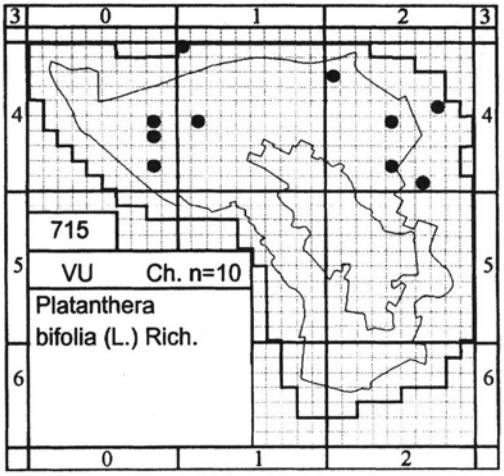

710
n=39
Plantago
arenaria Waldst.
& Kit.

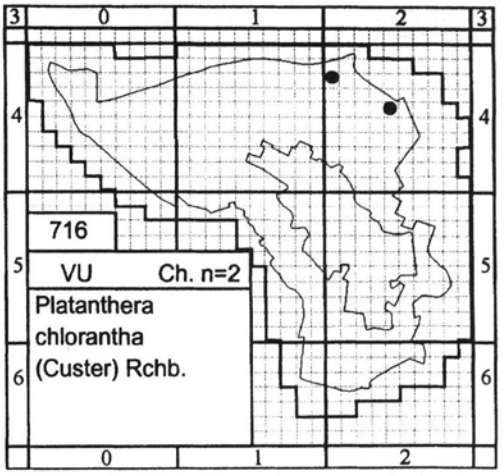

711
n=91
Plantago
intermedia Gilib.

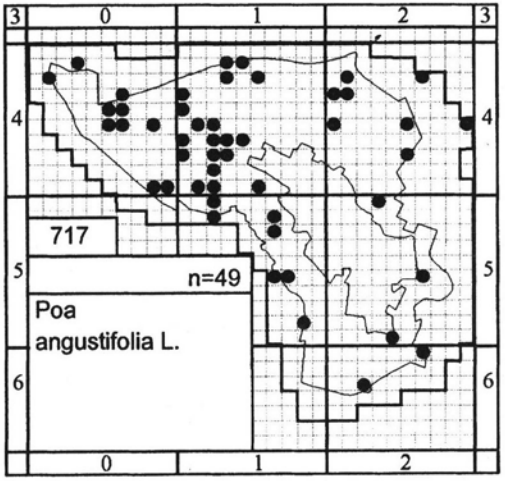

712
n=325
Plantago
lanceoata L.

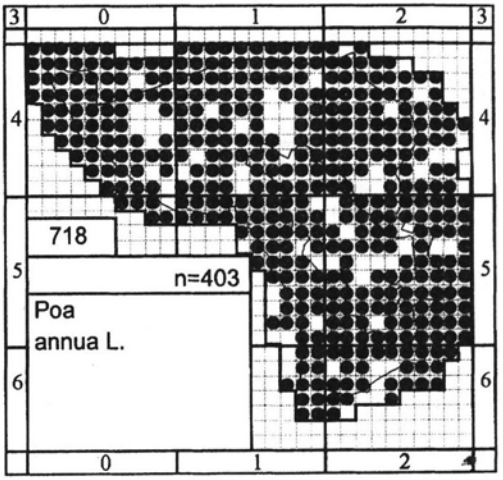

713
n=332
Plantago
major L.

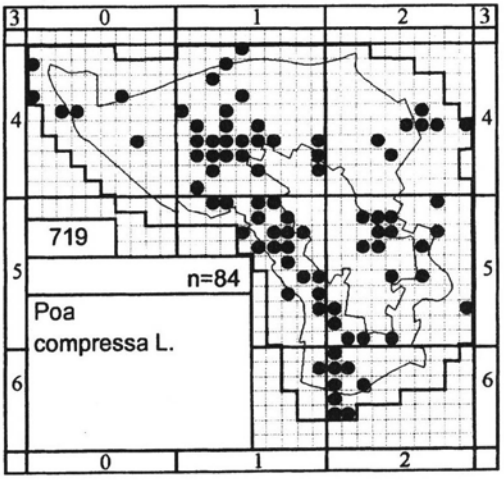

714
n=32
Plantago
media L.

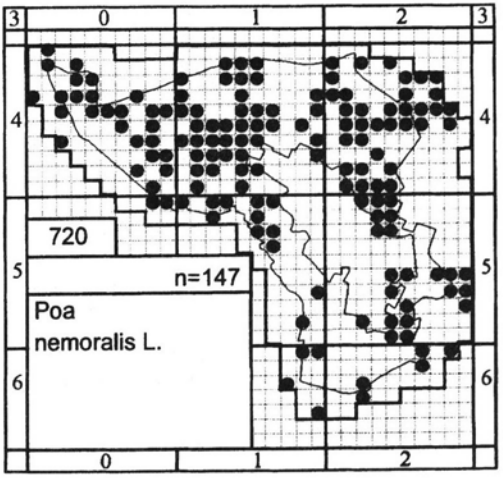

715
VU Ch. n=10
Platanthera
bifolia (L.) Rich.

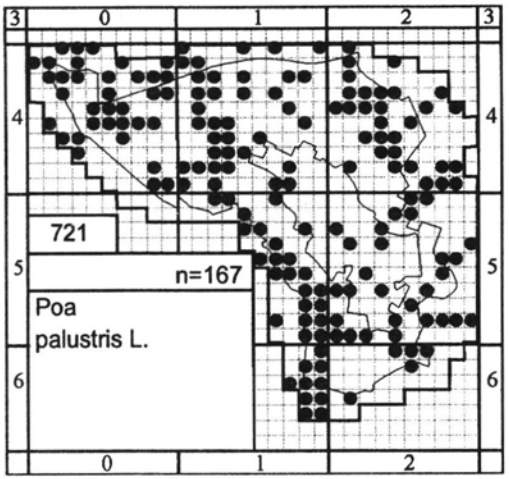

716
VU Ch. n=2
Platanthera
chlorantha
(Custer) Rchb.

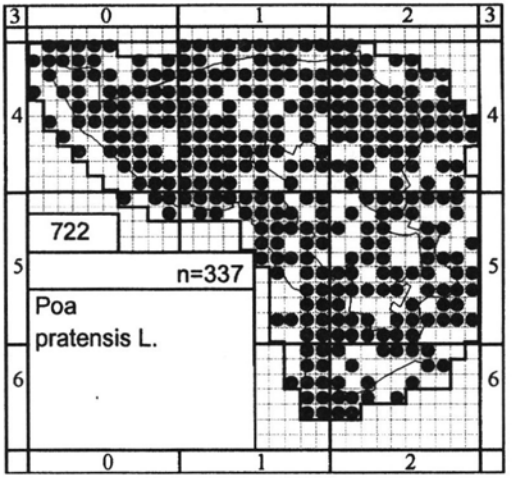

717
n=49
Poa
angustifolia L.

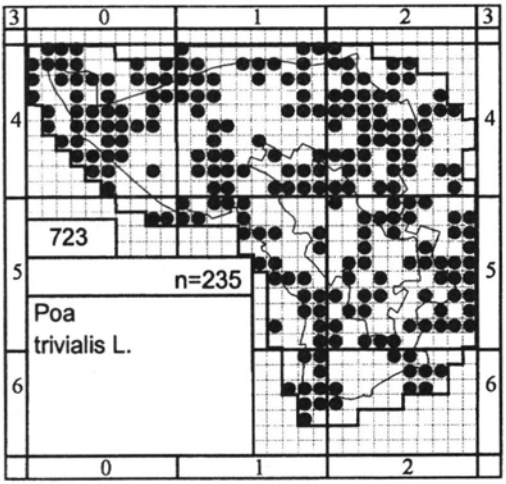

718
n=403
Poa
annua L.

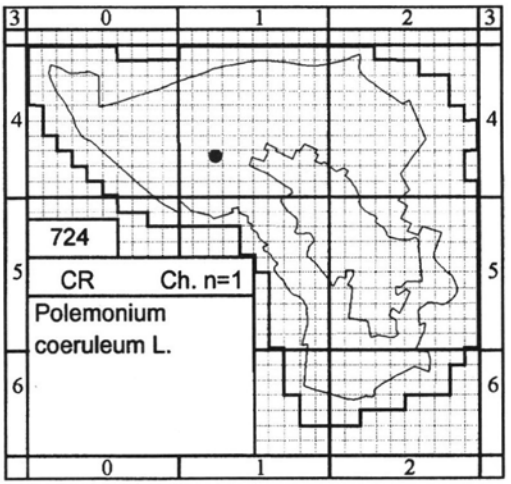

719
n=84
Poa
compressa L.

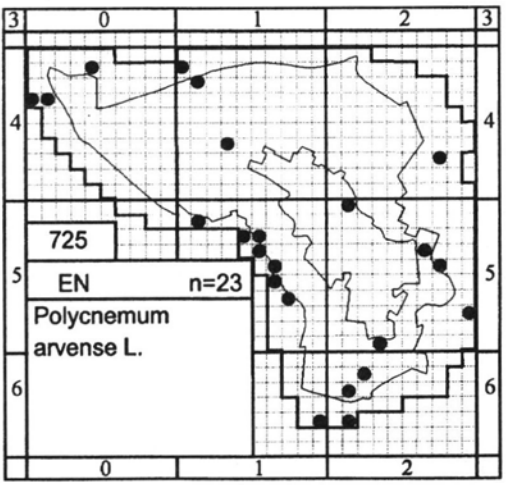

720
n=147
Poa
nemoralis L.

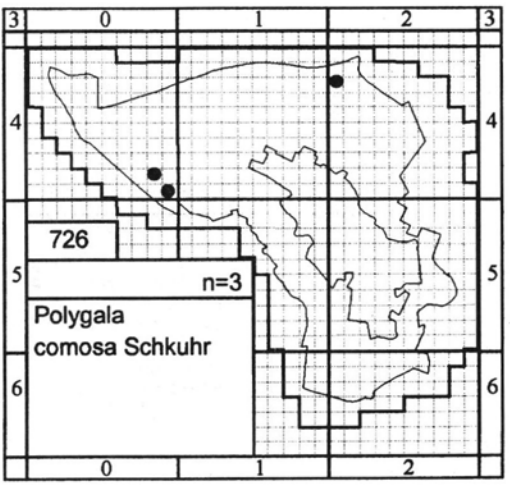

721
n=167
Poa
palustris L.

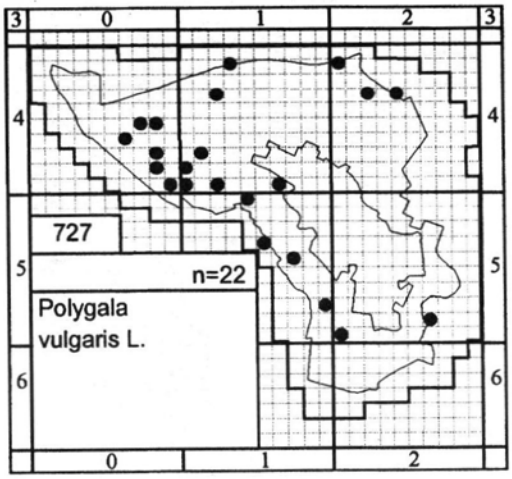

722
n=337
Poa
pratensis L.

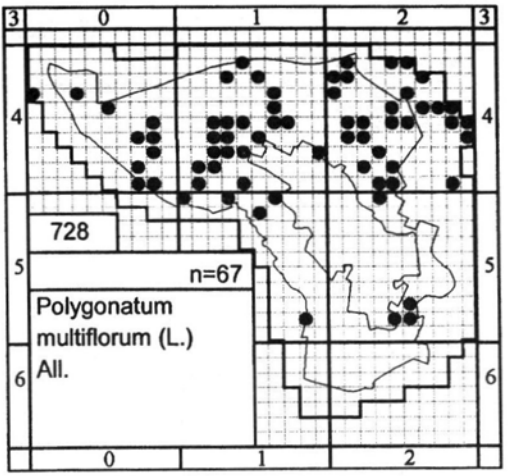

723
n=235
Poa
trivialis L.

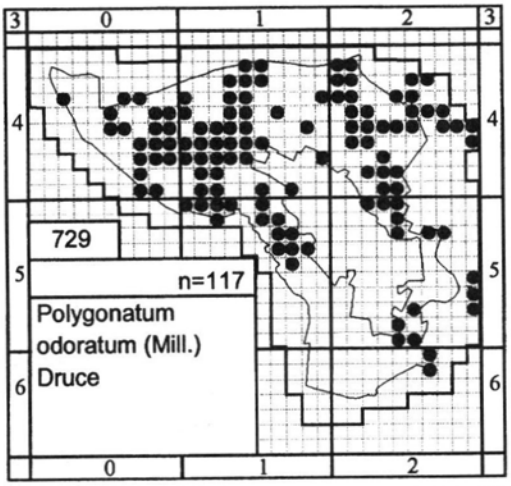

724
CR
Ch. n=1
Polemonium
coeruleum L.

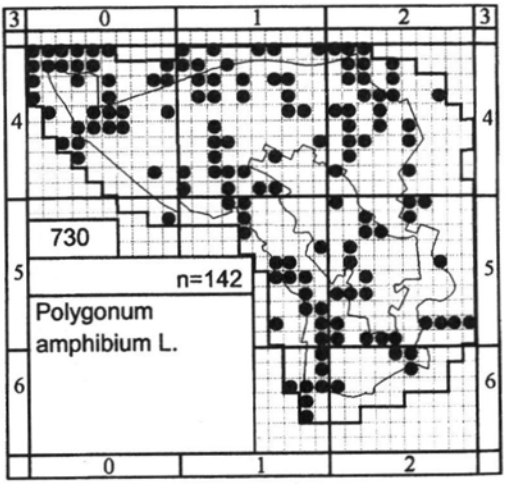

725
EN
n=23
Polycnemum
arvense L.

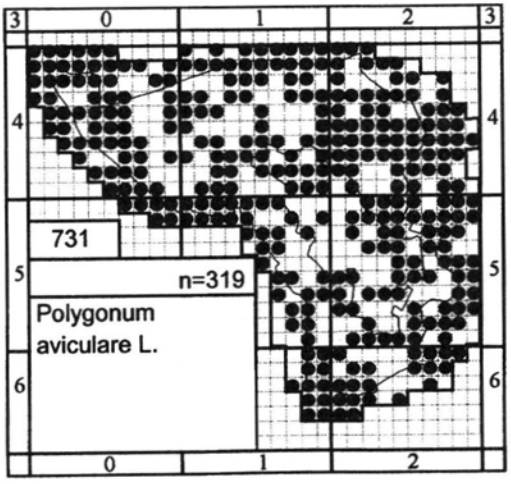

726
n=3
Polygala
comosa Schkuhr

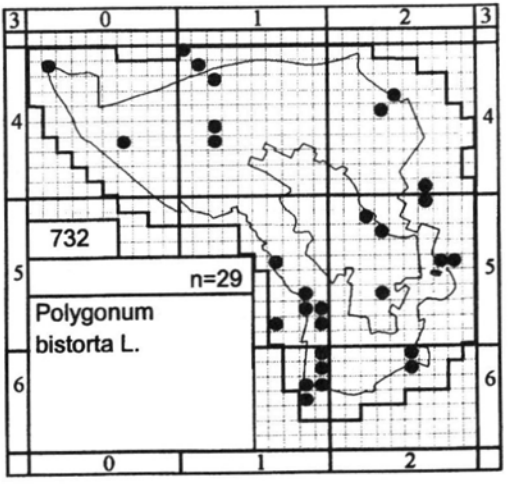

727
n=22
Polygala
vulgaris L.

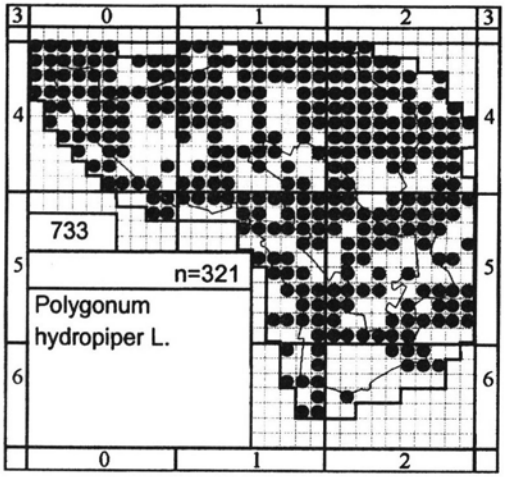

728
n=67
Polygonatum
multiflorum (L.)
All.

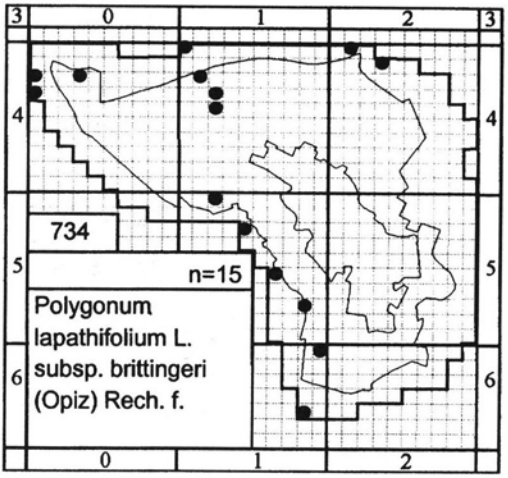

729
n=117
Polygonatum
odoratum (Mill.)
Druce

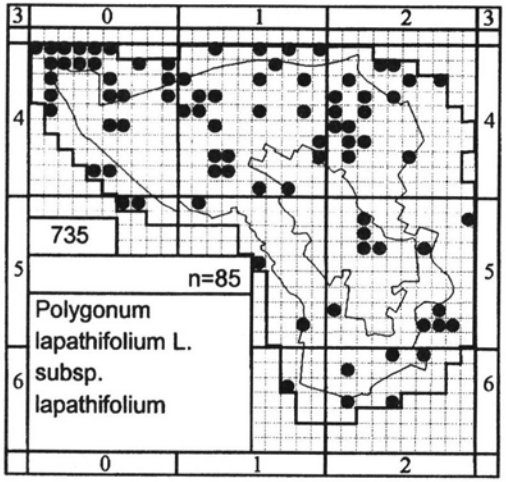

730
n=142
Polygonum
amphibium L.

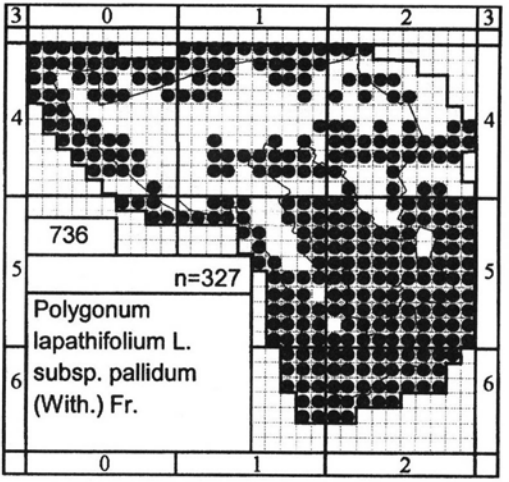

731
n=319
Polygonum
aviculare L.

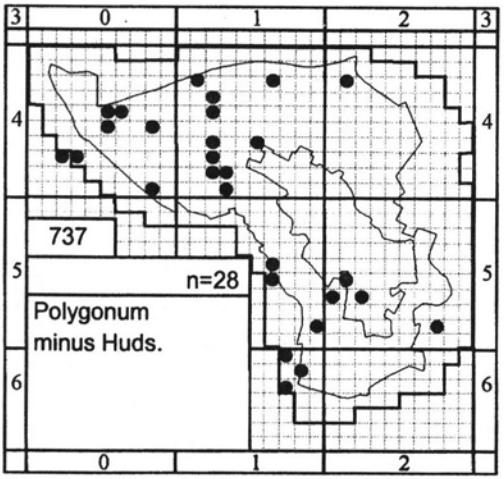

732
n=29
Polygonum
bistorta L.

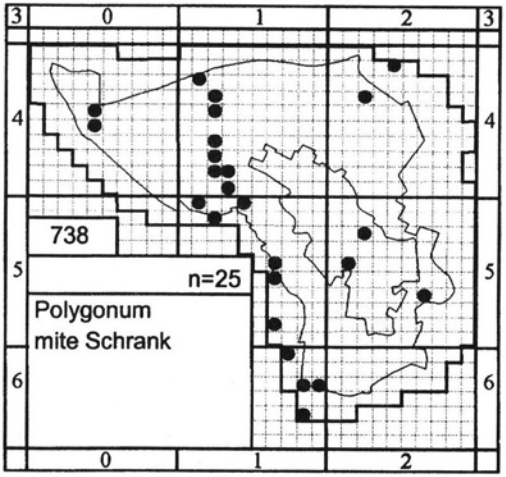

733
n=321
Polygonum
hydropiper L.

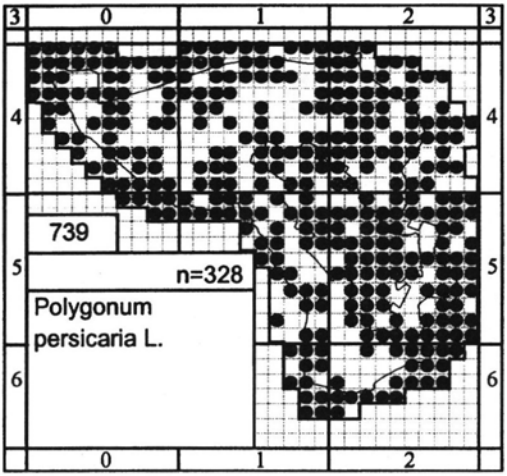

734
n=15
Polygonum
lapathifolium L.
subsp. brittingeri
(Opiz) Rech. f.

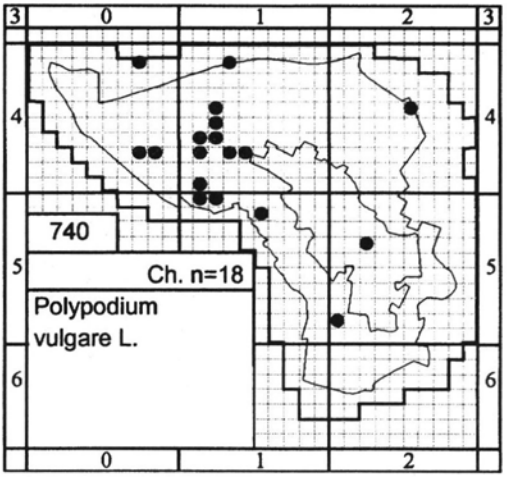

735
n=85
Polygonum
lapathifolium L.
subsp.
lapathifolium

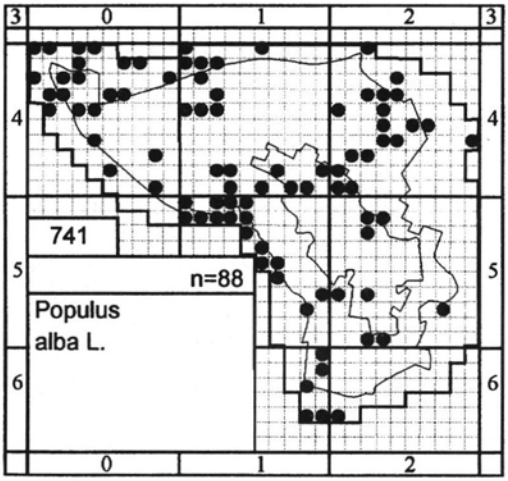

736
n=327
Polygonum
lapathifolium L.
subsp. pallidum
(With.) Fr.

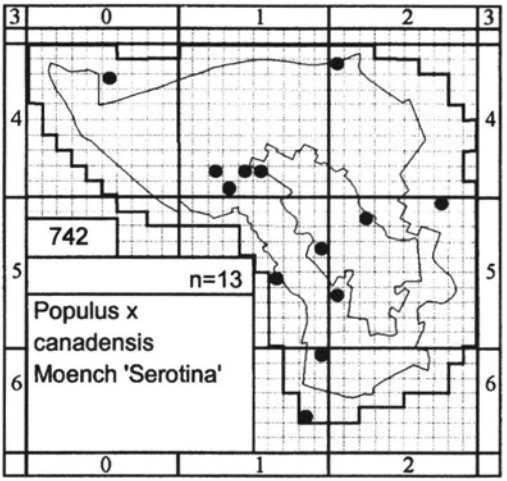

737
n=28
Polygonum
minus Huds.

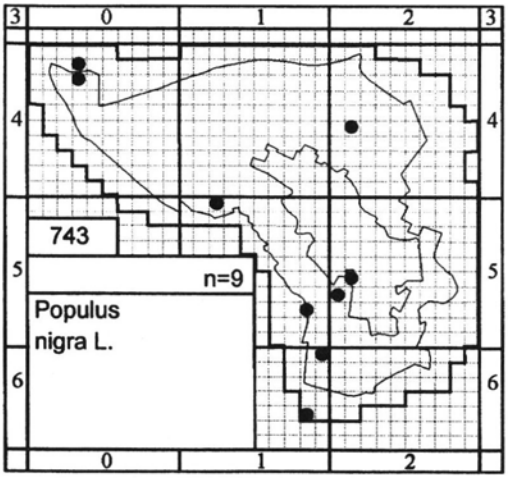

738
n=25
Polygonum
mite Schrank

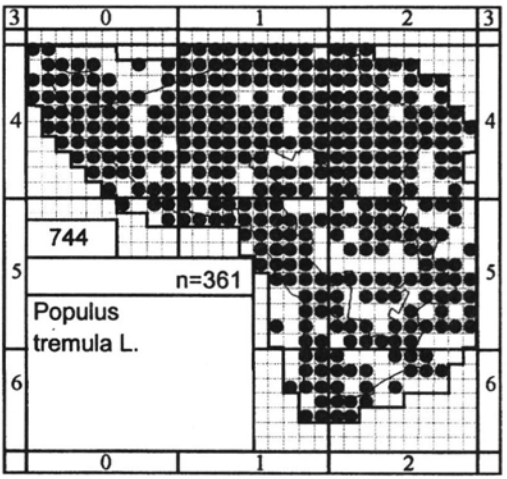

739
n=328
Polygonum
persicaria L.

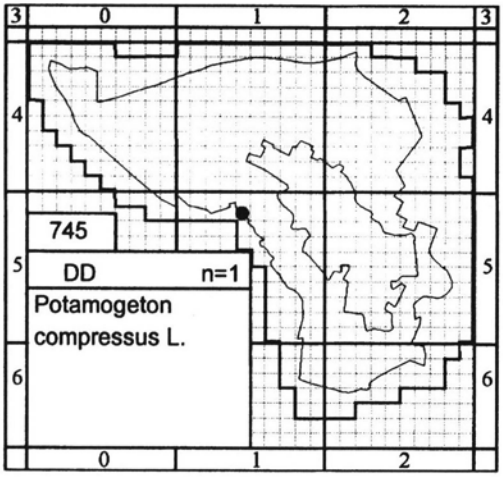

740
Ch. n=18
Polypodium
vulgare L.

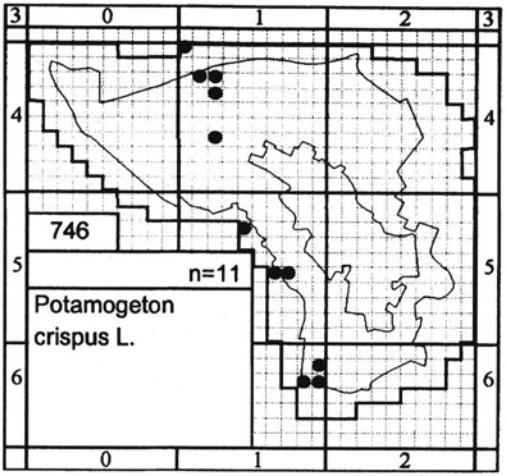

741
n=88
Populus
alba L.

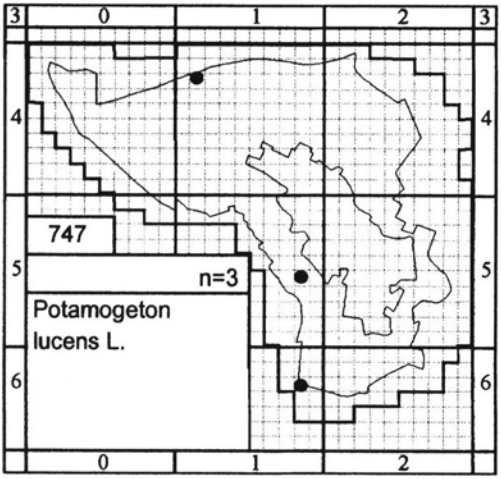

742
n=13
Populus x
canadensis
Moench 'Serotina'

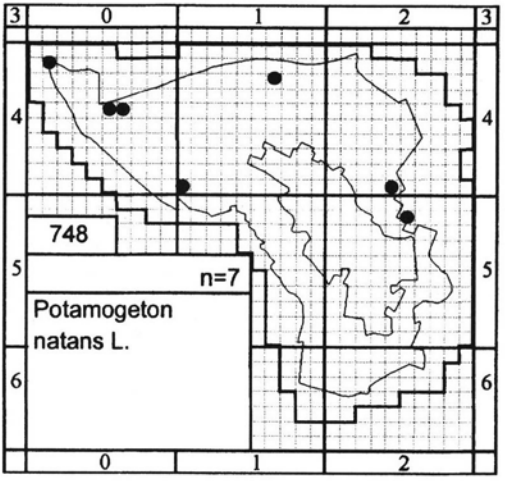

743
n=9
Populus
nigra L.

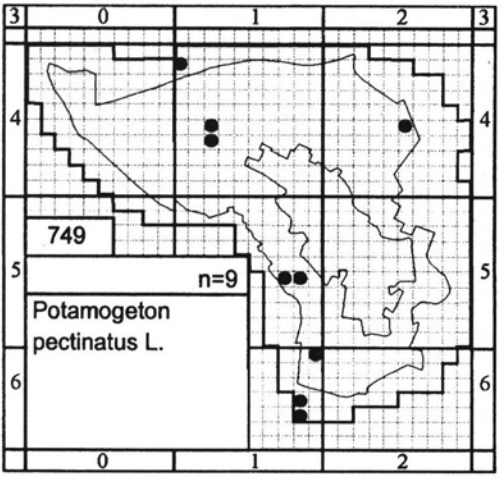

744
n=361
Populus
tremula L.

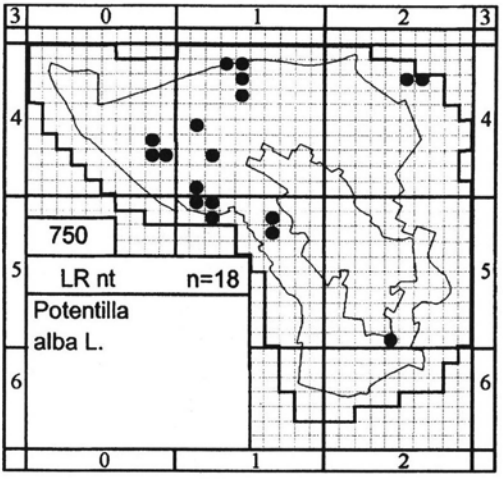

745
DD
n=1
Potamogeton
compressus L.

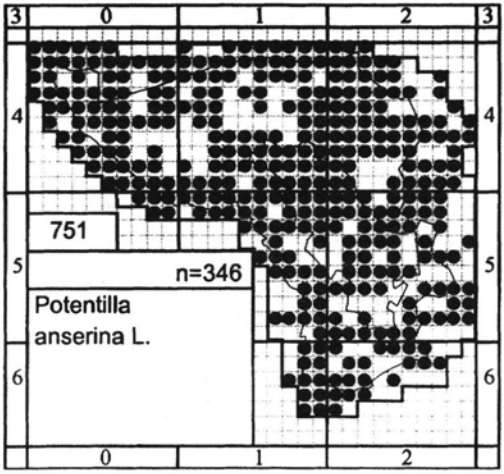

746
n=11
Potamogeton
crispus L.

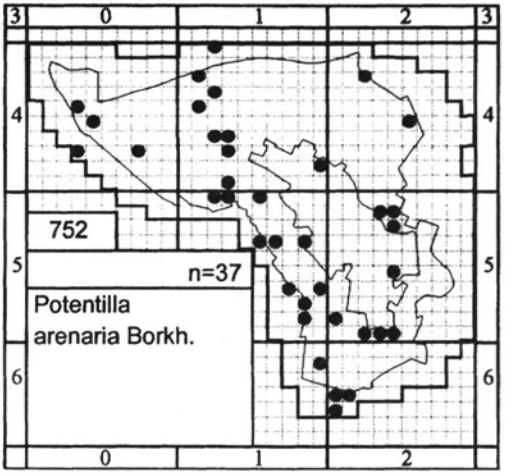

747
n=3
Potamogeton
lucens L.

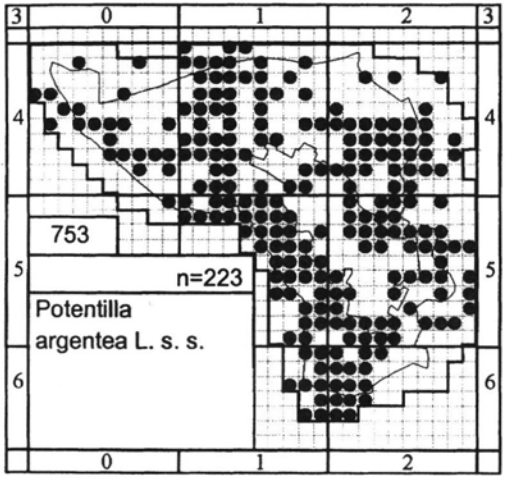

748
n=7
Potamogeton
natans L.

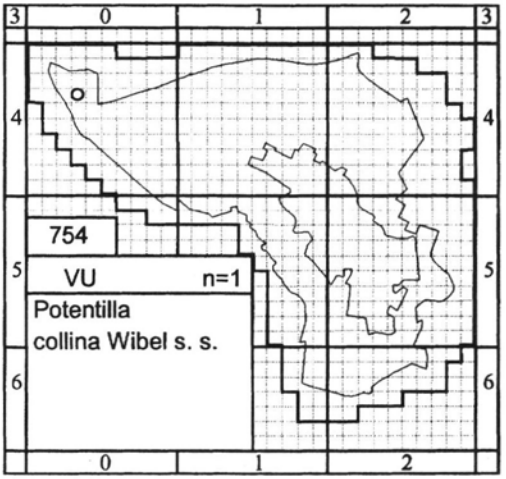

749
n=9
Potamogeton
pectinatus L.

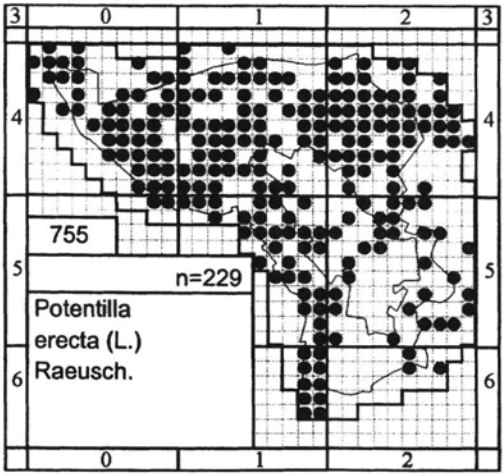

750
LR nt
n=18
Potentilla
alba L.

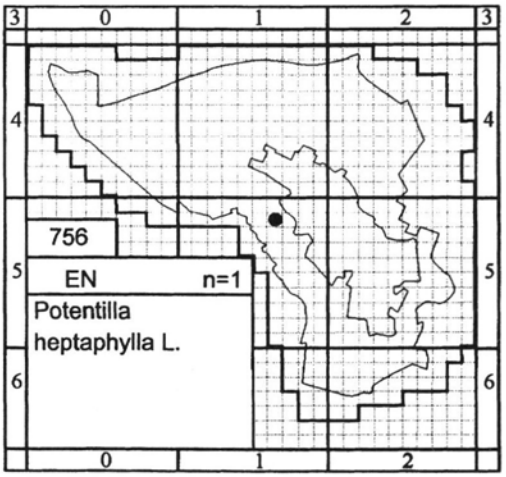

751
n=346
Potentilla
anserina L.

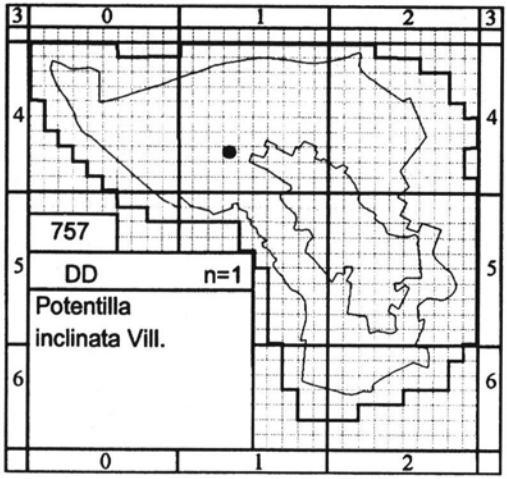

752
n=37
Potentilla
arenaria Borkh.

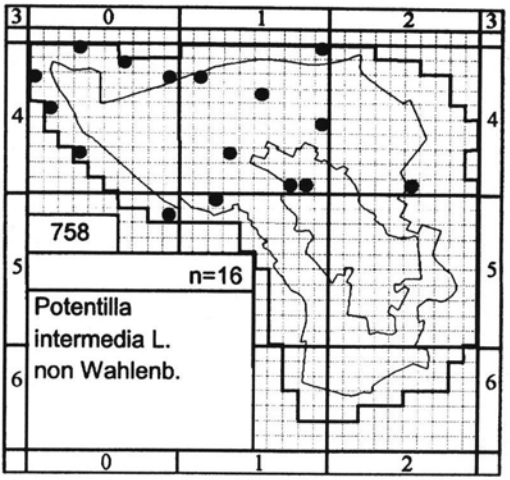

753
n=223
Potentilla
argentea L. s. s.

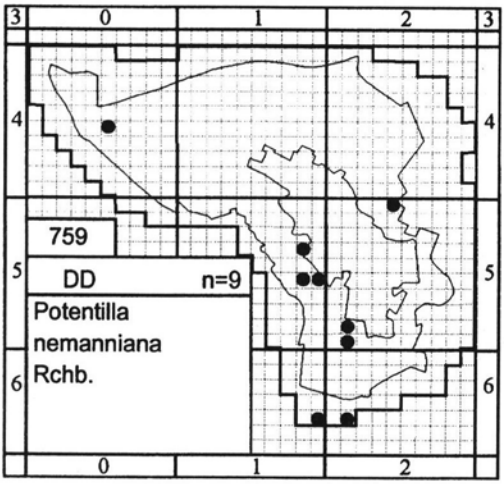

754
VU
n=1
Potentilla
collina Wibel s. s.

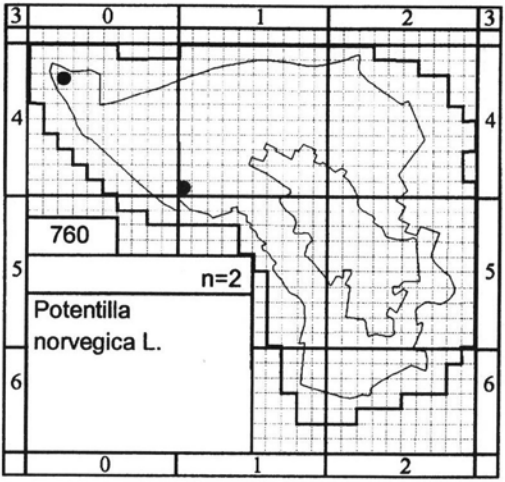

755
n=229
Potentilla
erecta (L.)
Raeusch.

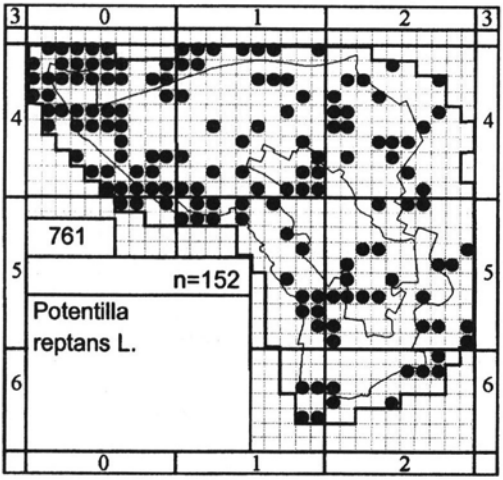

756
EN
n=1
Potentilla
heptaphylla L.

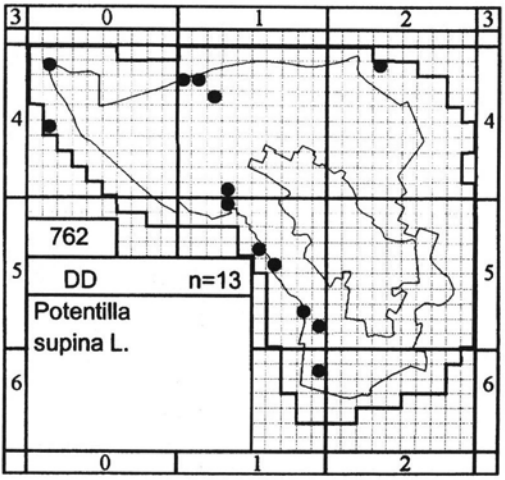

757
DD
n=1
Potentilla
inclinata Vill.

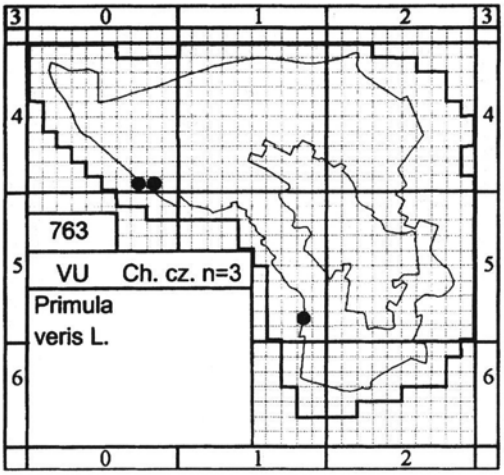

758
n=16
Potentilla
intermedia L.
non Wahlenb.

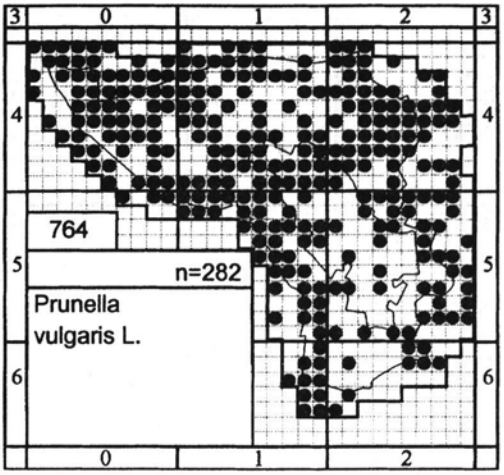

759
DD
n=9
Potentilla
nemanniana
Rchb.

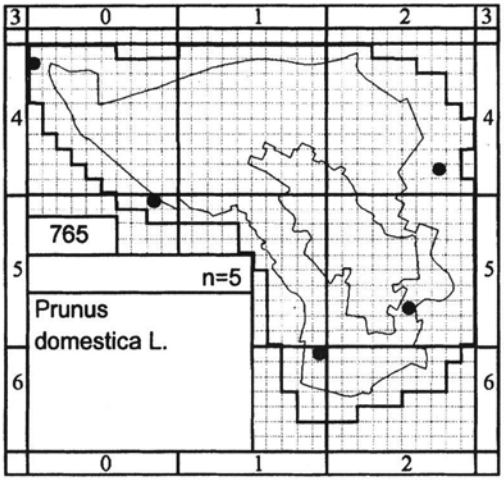

760
n=2
Potentilla
norvegica L.

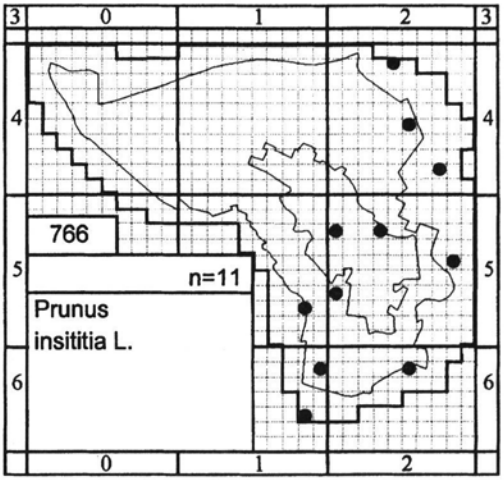

761
n=152
Potentilla
reptans L.

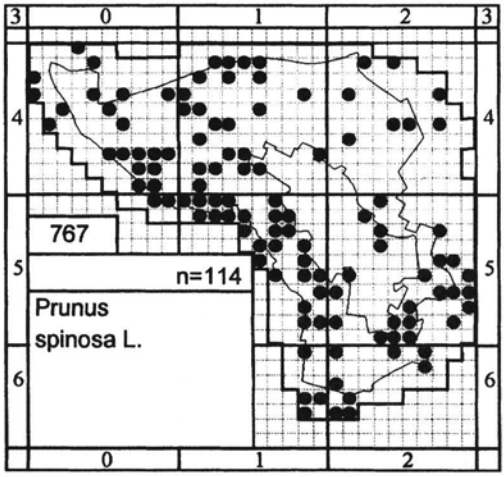

762
DD
n=13
Potentilla
supina L.

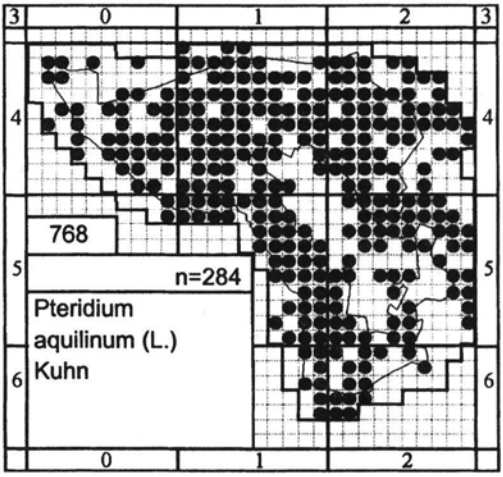

763
VU Ch. cz. n=3
Primula
veris L.

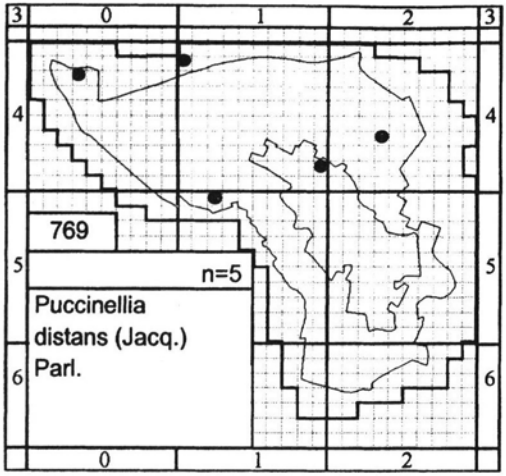

764
n=282
Prunella
vulgaris L.

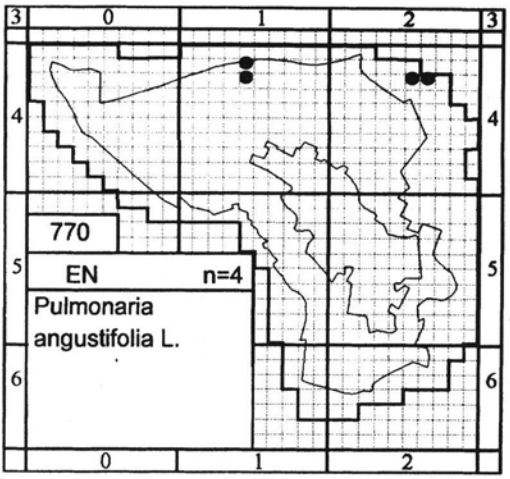

765
n=5
Prunus
domestica L.

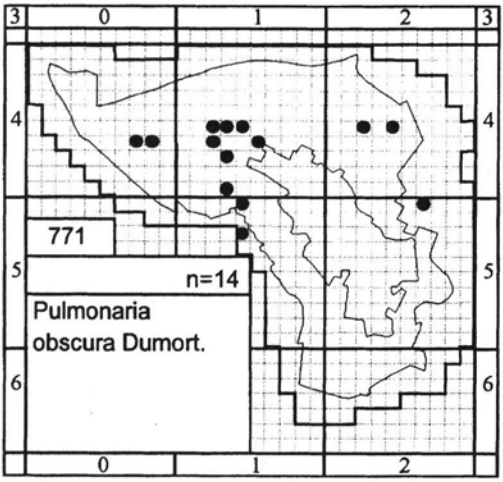

766
n=11
Prunus
insititia L.

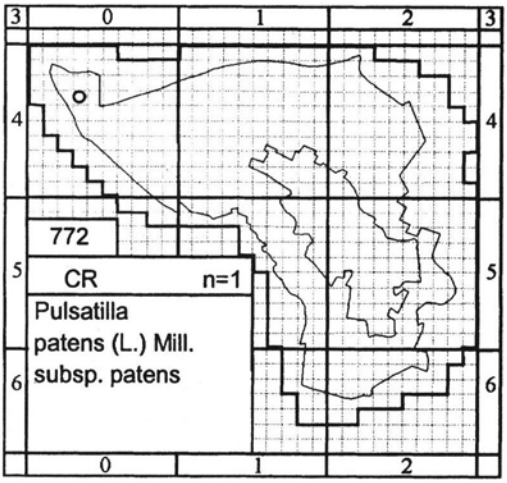

767
n=114
Prunus
spinosa L.

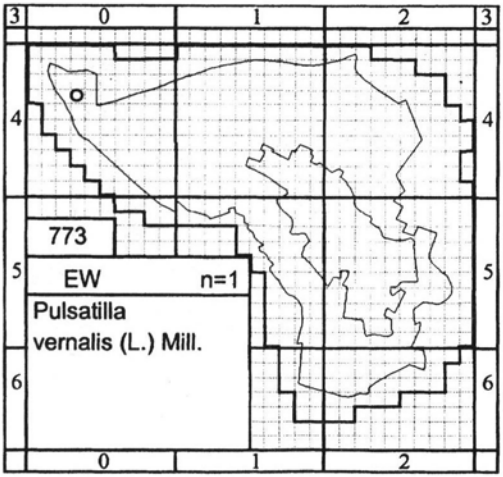

768
n=284
Pteridium
aquilinum (L.)
Kuhn

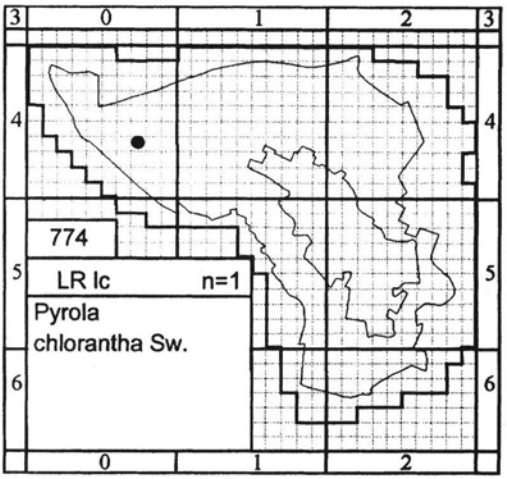

769
n=5
Puccinellia
distans (Jacq.)
Parl.

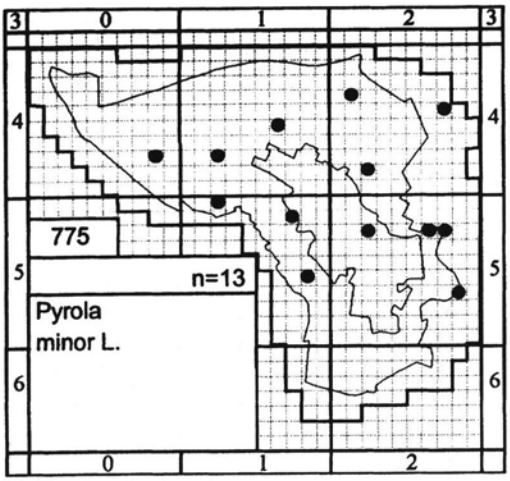

770
EN
n=4
Pulmonaria
angustifolia L.

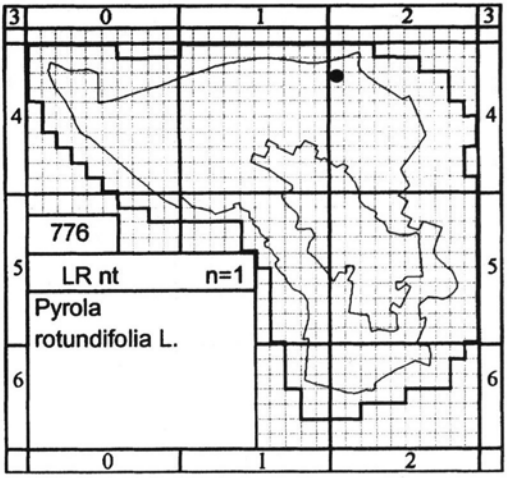

771
n=14
Pulmonaria
obscura Dumort.

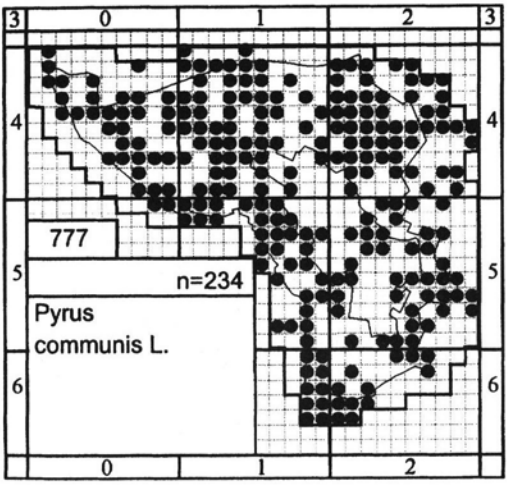

772
CR
n=1
Pulsatilla
patens (L.) Mill.
subsp. patens

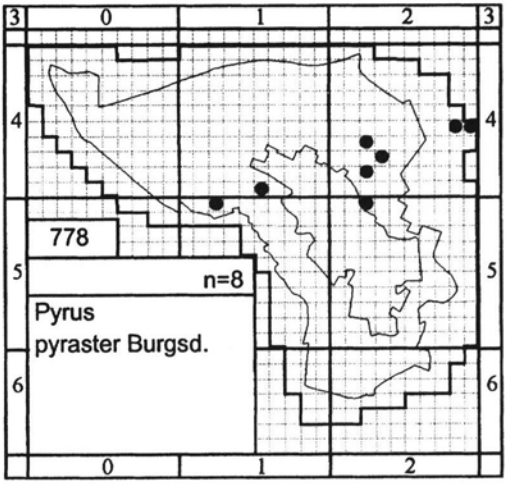

773
EW
n=1
Pulsatilla
vernalis (L.) Mill.

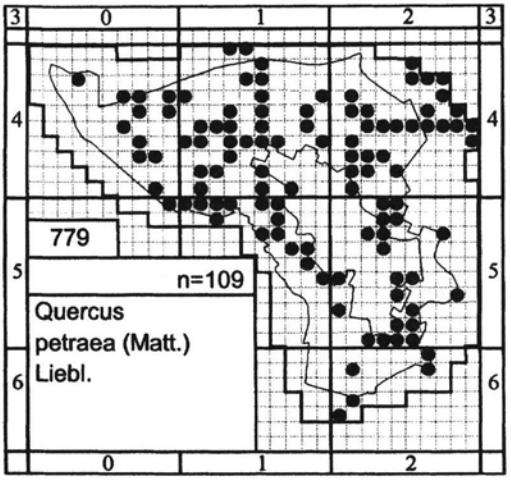

774
LR lc
n=1
Pyrola
chlorantha Sw.

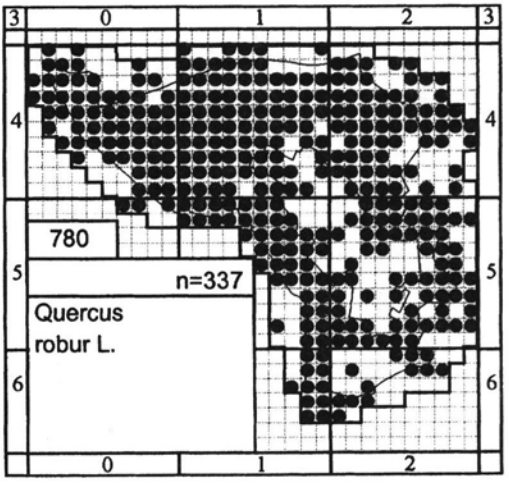

775
n=13
Pyrola
minor L.


776
LR nt
n=1
Pyrola
rotundifolia L.


777
n=234
Pyrus
communis L.


778
n=8
Pyrus
pyraster Burgsd.


779
n=109
Quercus
petraea (Matt.)
Liebl.


780
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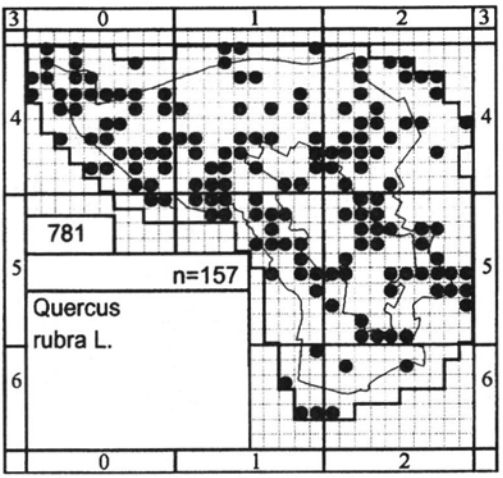
Quercus
robur L.


781
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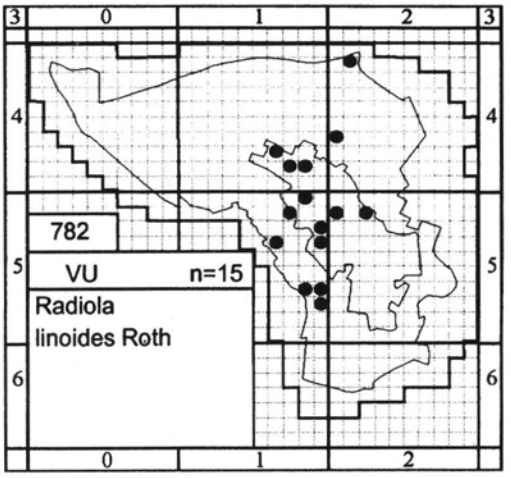
Quercus
rubra L.


782
VU
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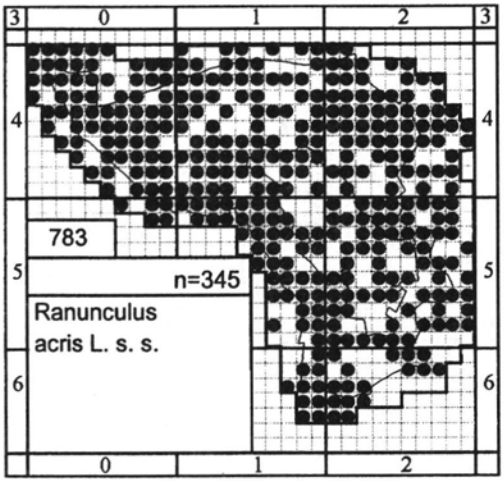
Radiola
linoides Roth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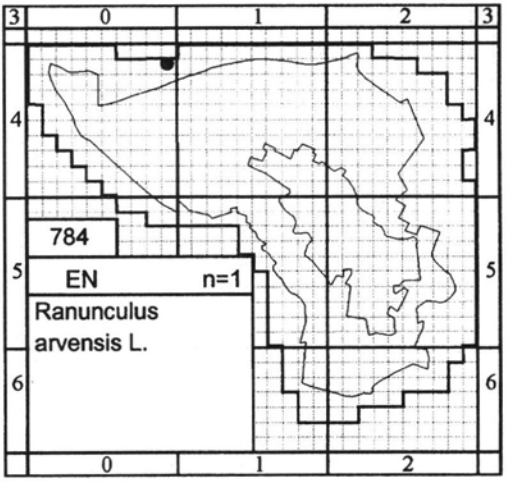
acris L. s. s.


784
EN
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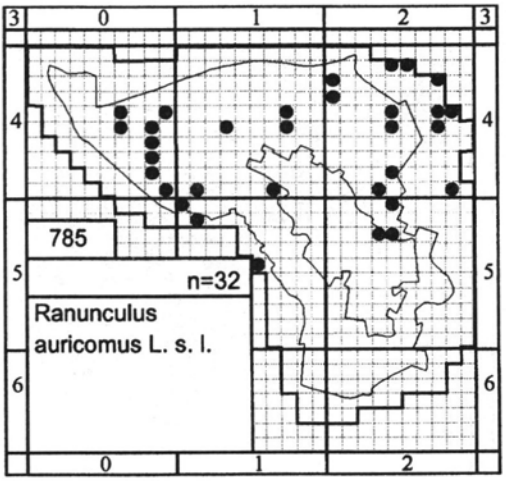
Ranunculus
arvensis L.


785
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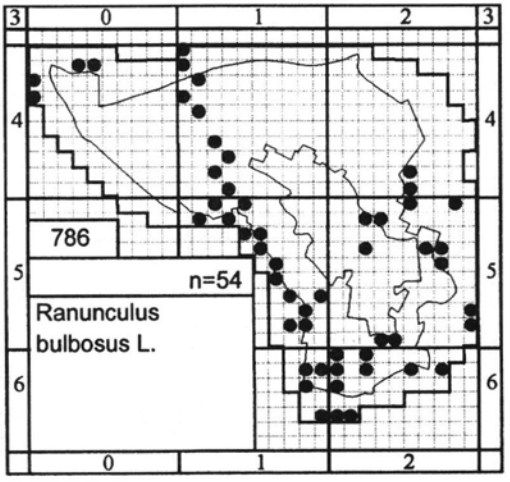
Ranunculus
auricomus L. s. l.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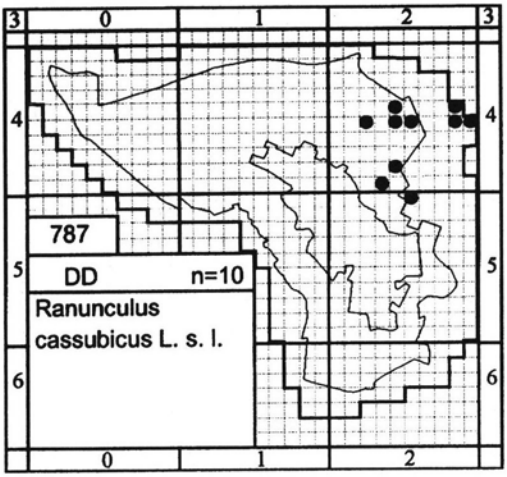
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DD
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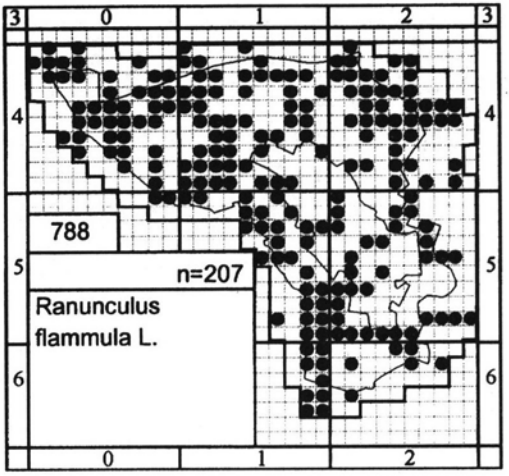
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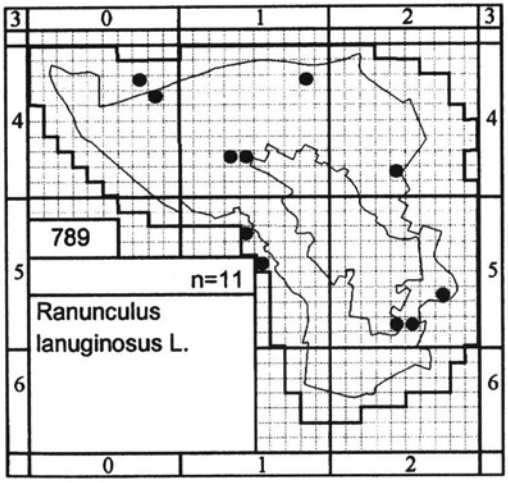
flammula L.


789
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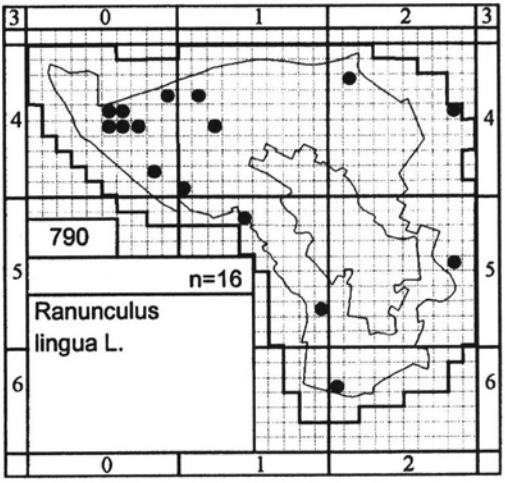
Ranunculus
lanuginosus L.


790
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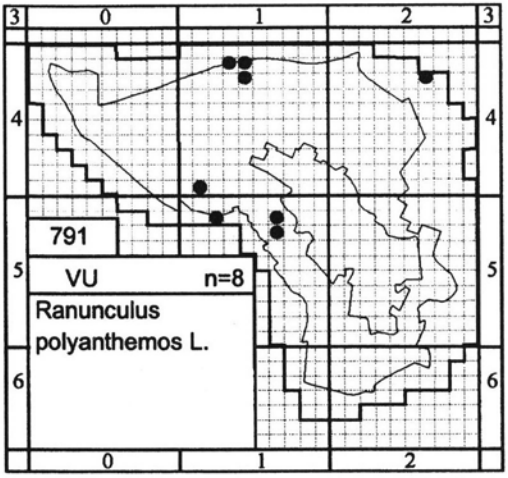
Ranunculus
lingua L.


791
VU
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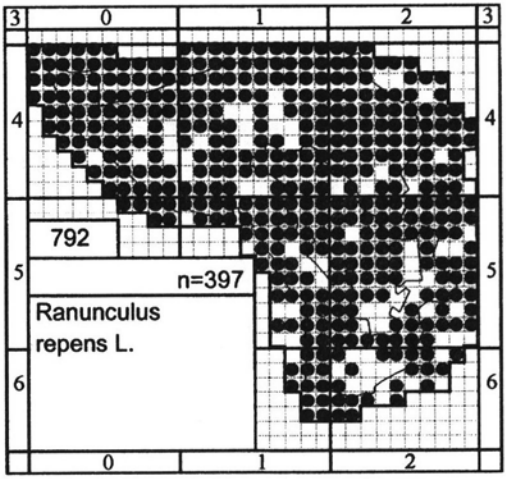
Ranunculus
polyanthemos L.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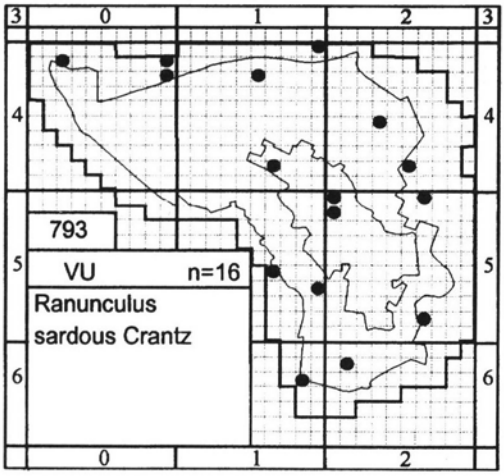
Ranunculus
repens L.


793
VU
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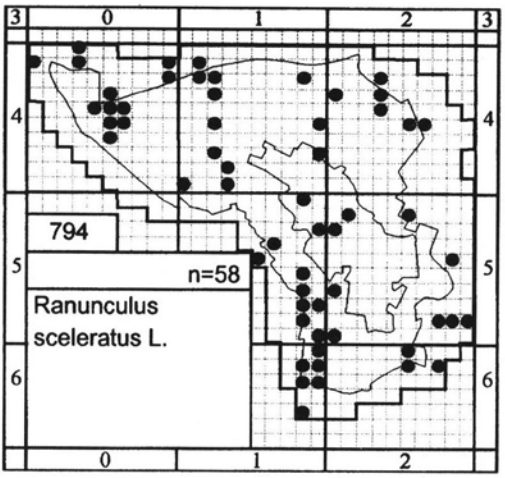
Ranunculus
sardous Crantz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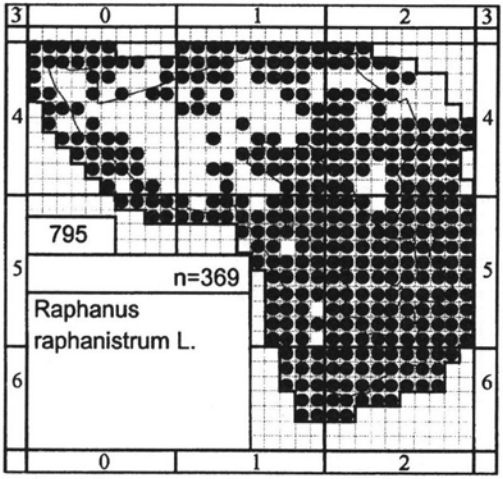
Ranunculus
sceleratus L.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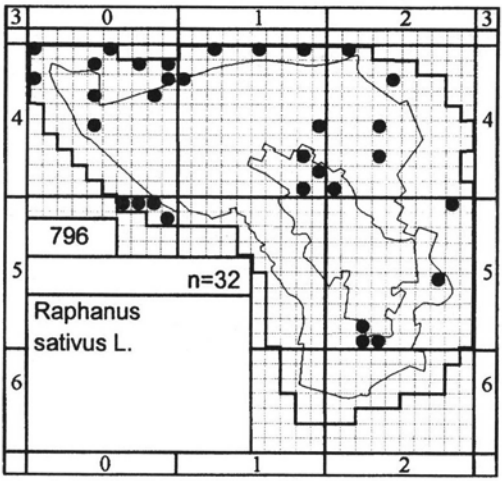
Raphanus
raphanistrum L.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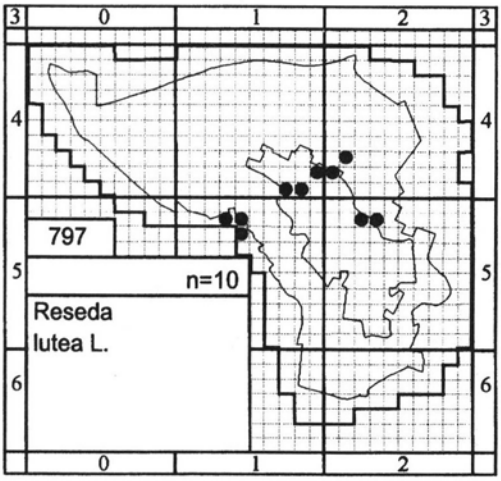
Raphanus
sativus L.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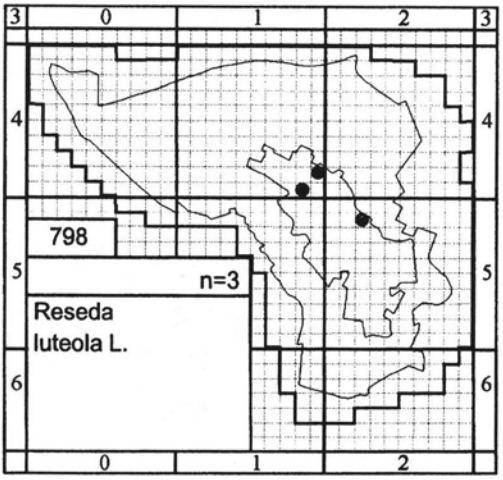
Reseda
lutea L.


798
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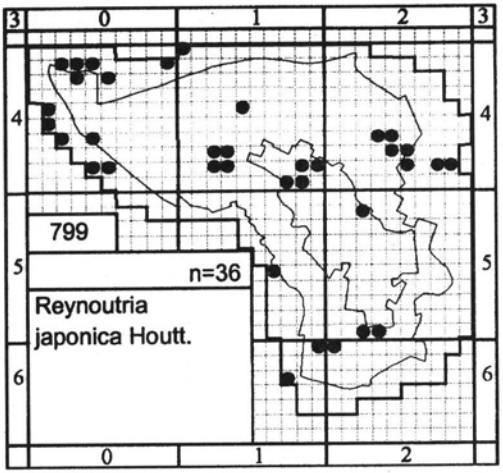
Reseda
luteola L.


799
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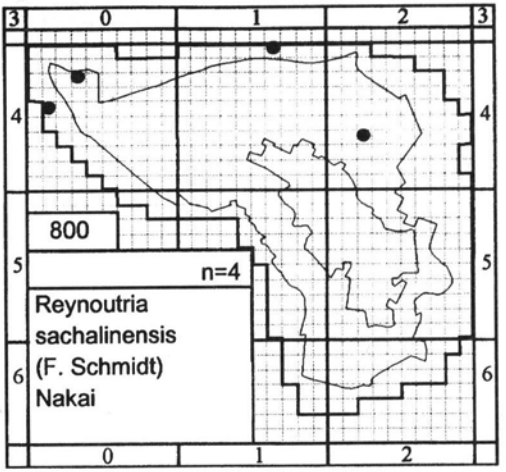
Reynoutria
japonica Houtt.


800
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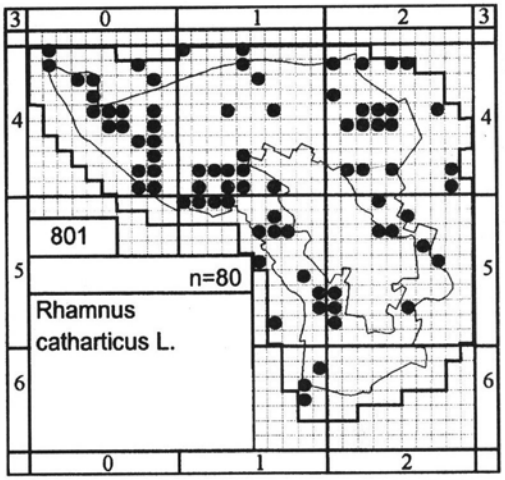
Reynoutria
sachalinensis
(F. Schmidt)
Nakai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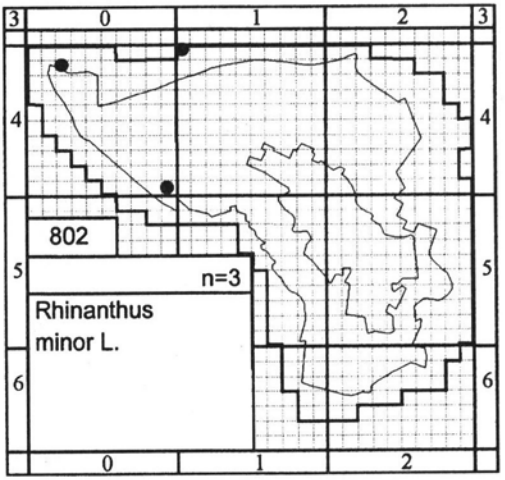
802
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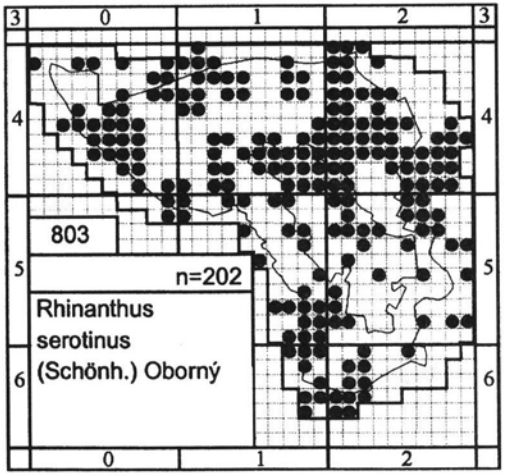
Rhinanthus
minor L.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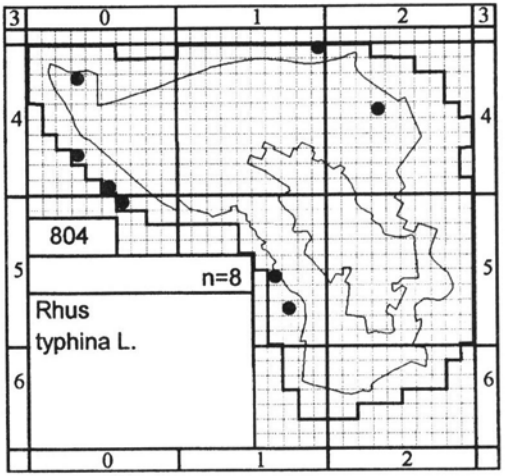
serotinus
(Schönh.) Oborný


804
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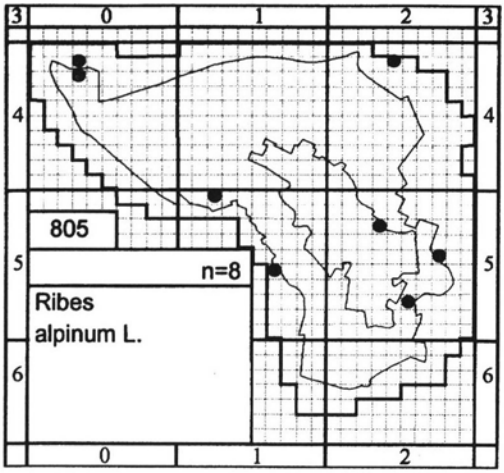
Rhus
typhina L.


805
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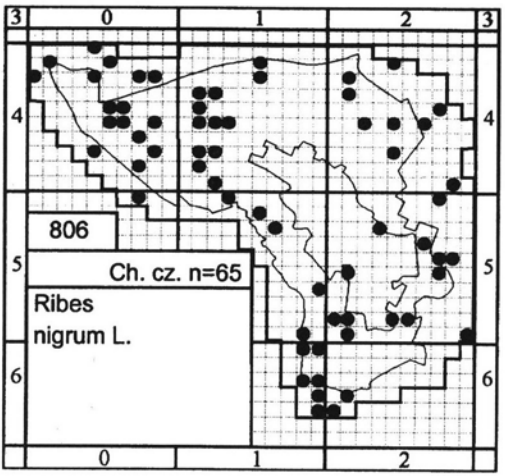
Ribes
alpinum L.


806
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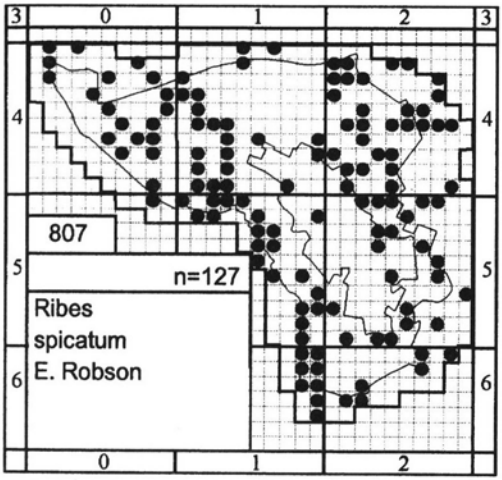
Ribes
nigrum L.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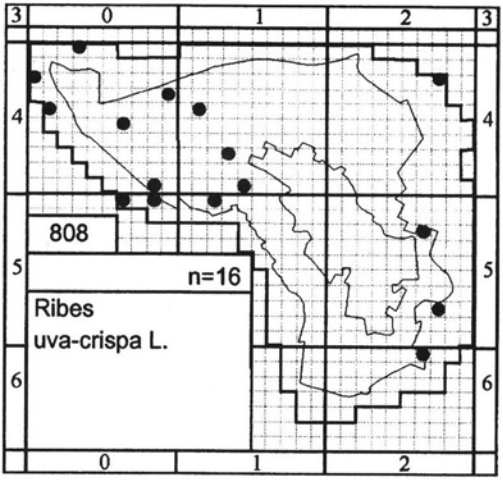
spicatum
E. Robson


808
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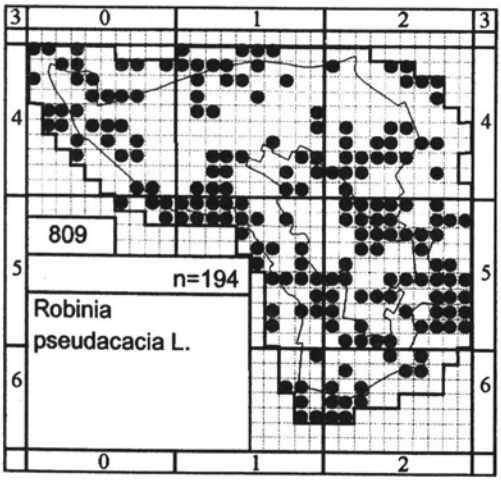
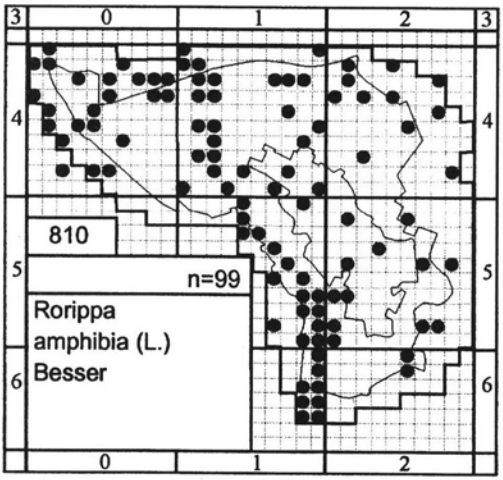

809
n=194
Robinia
pseudacacia L.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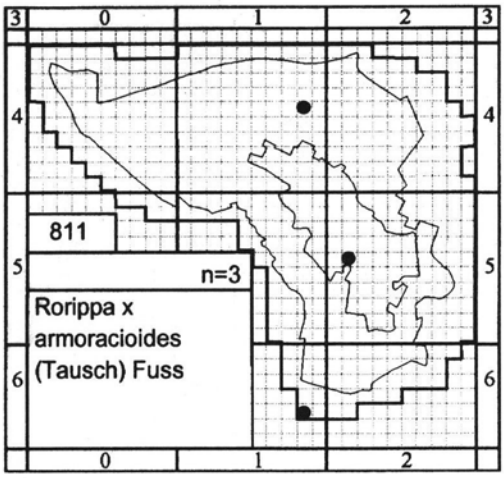
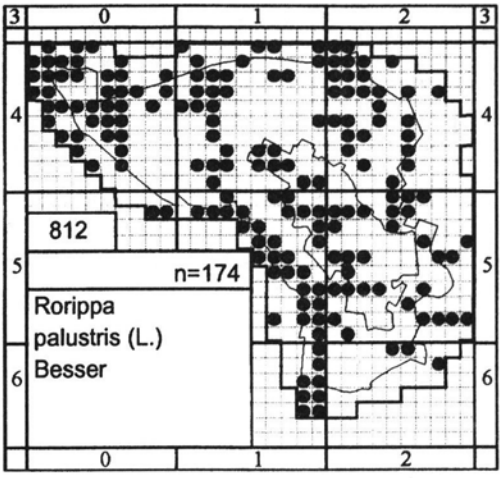
n=99
Rorippa
amphibia (L.)
Besser


811
n=3
Rorippa x
armoracioides
(Tausch) Fuss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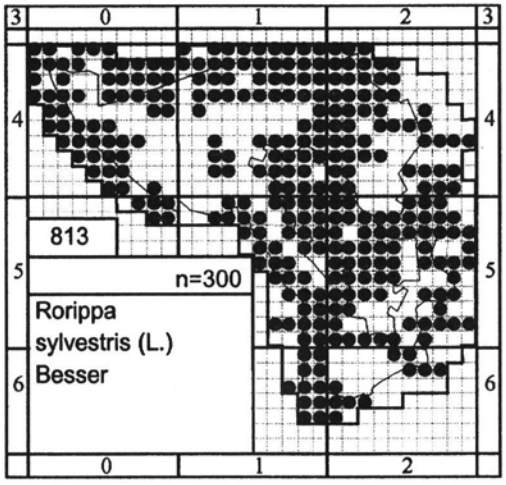
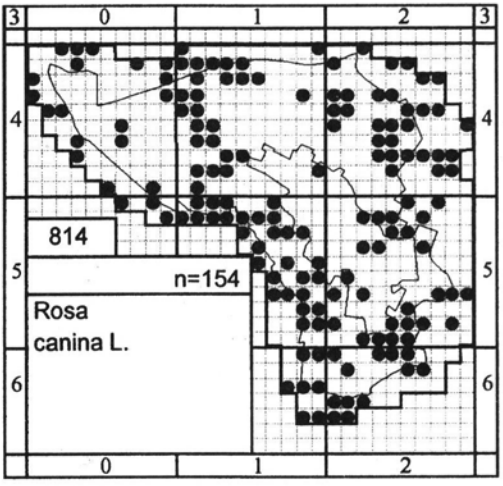
palustris (L.)
Besser


813
n=300
Rorippa
sylvestris (L.)
Besser


814
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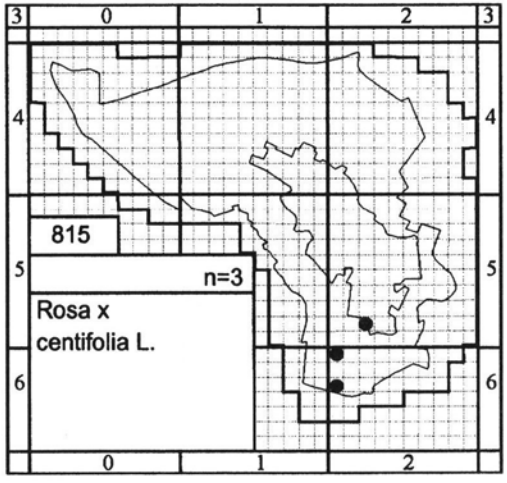
Rosa
canina L.


815
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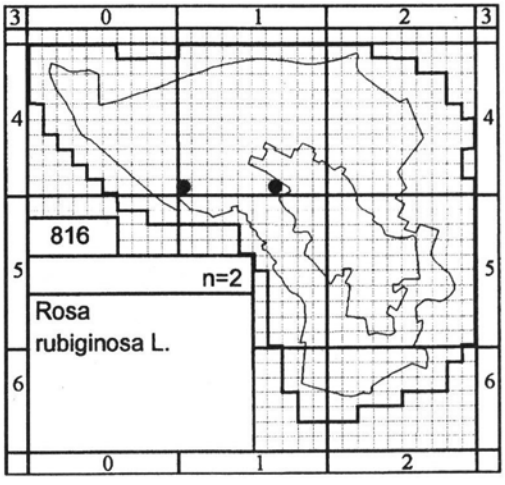
816
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Rosa
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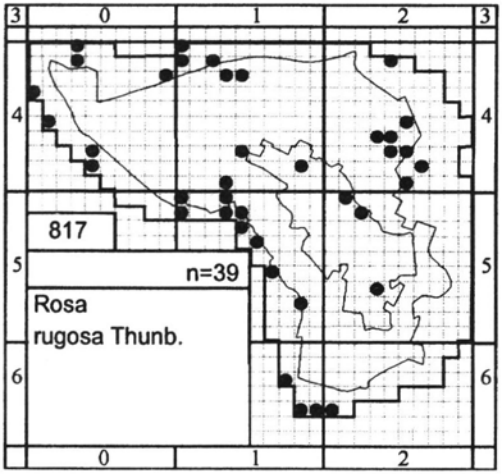
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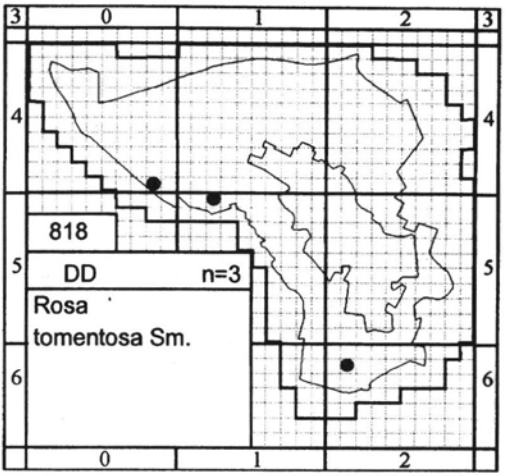
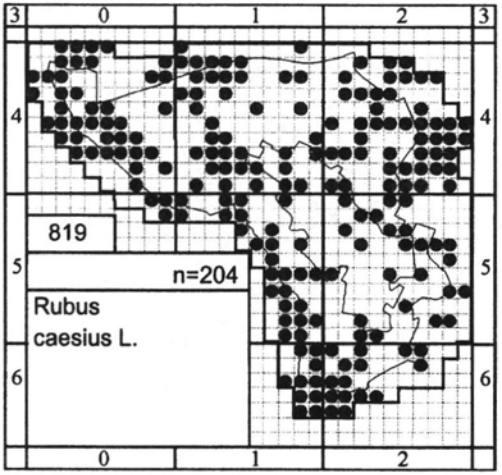

818
DD
n=3
Rosa
tomentosa Sm.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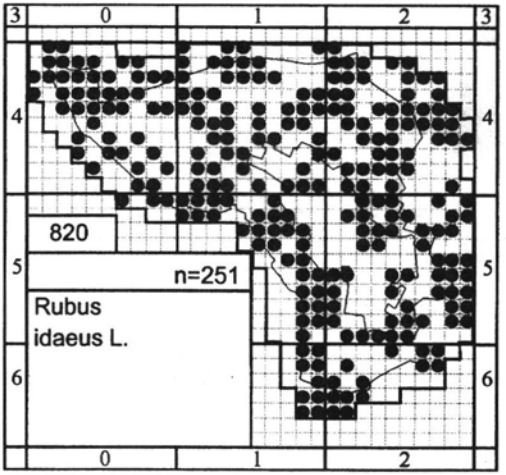
Rubus
caesius L.


820
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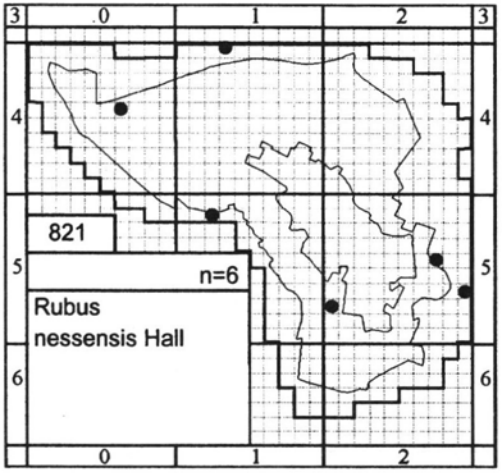
idaeus L.


821
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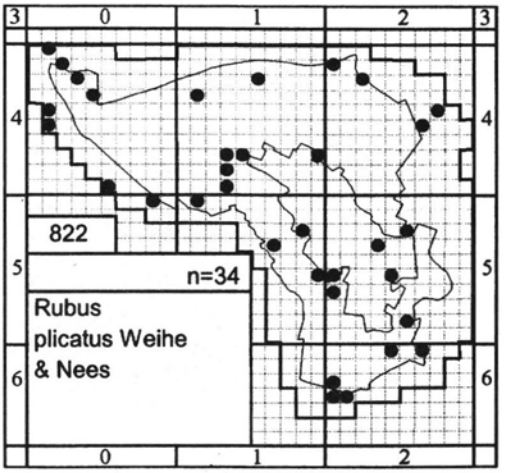
822
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Rubus
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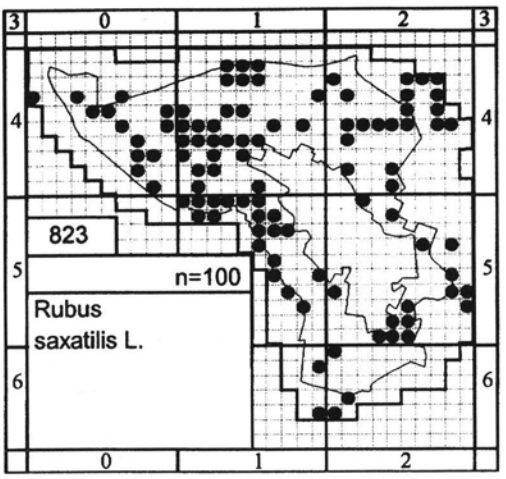
& Nees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Rubus
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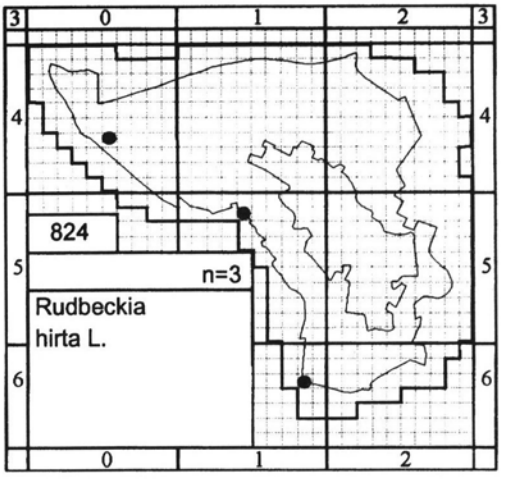
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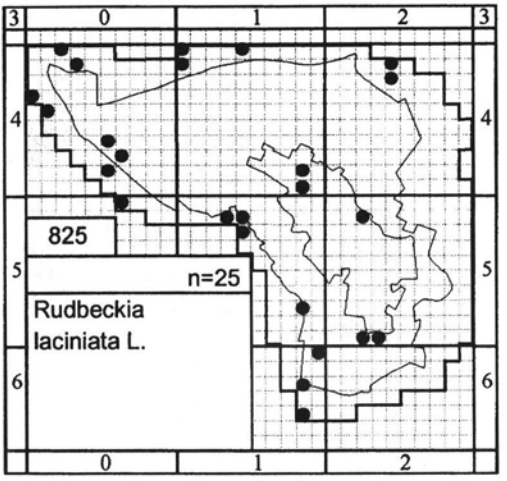
Rudbeckia
hirta L.


825
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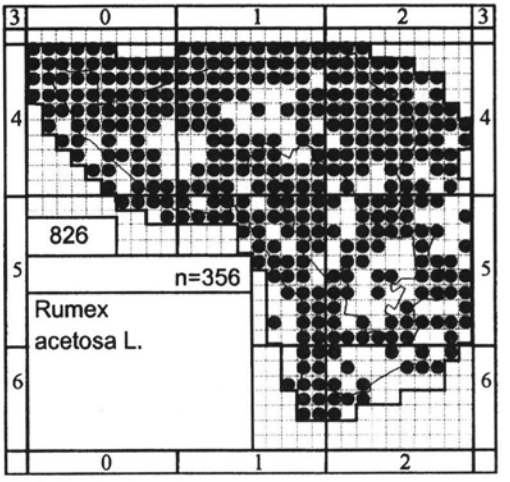
Rudbeckia
laciniata L.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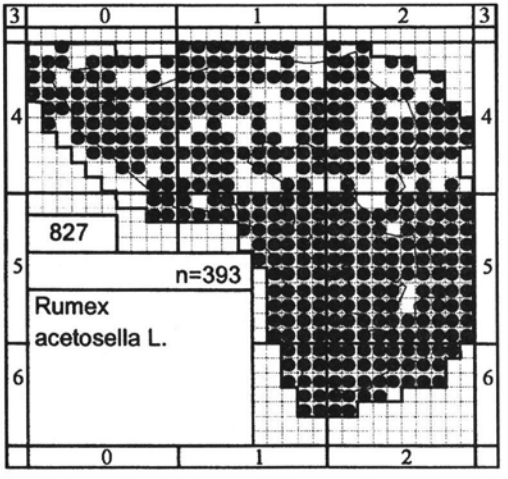
Rumex
acetosa L.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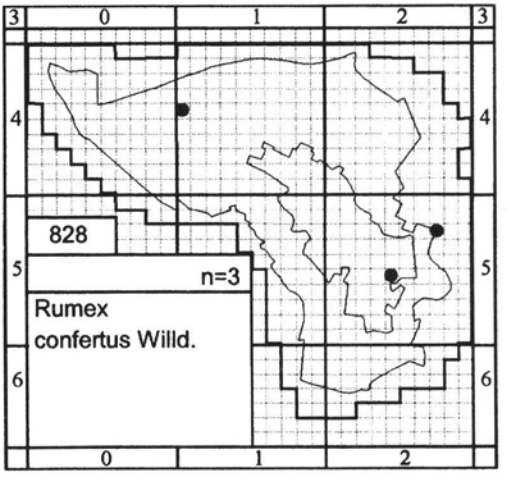
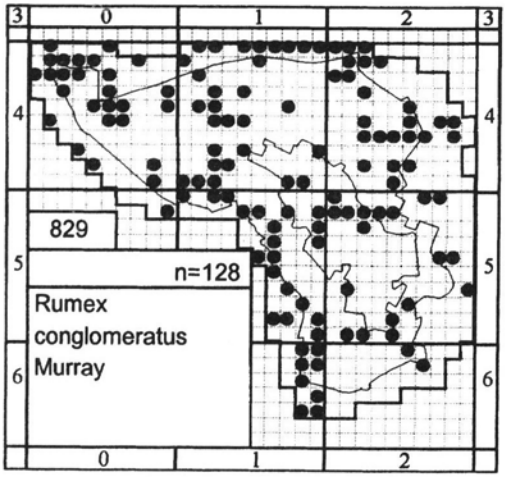
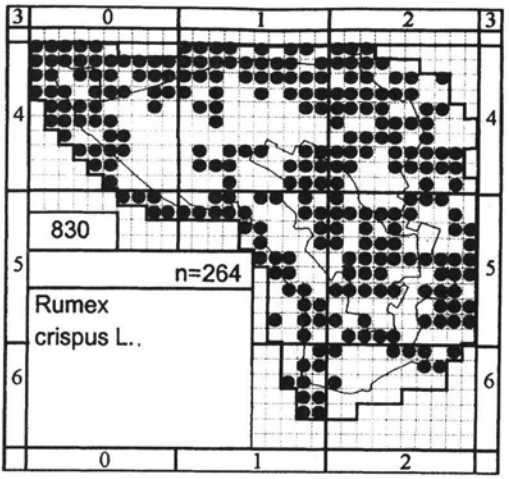
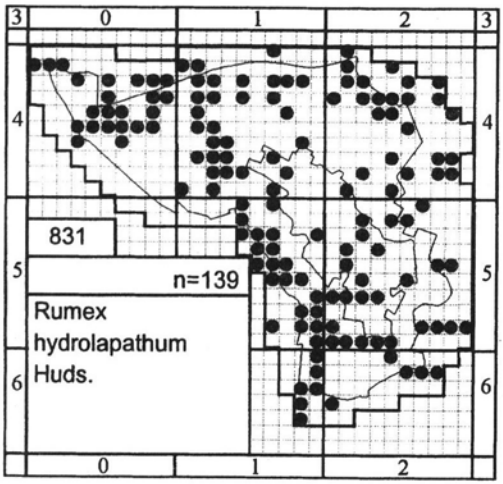
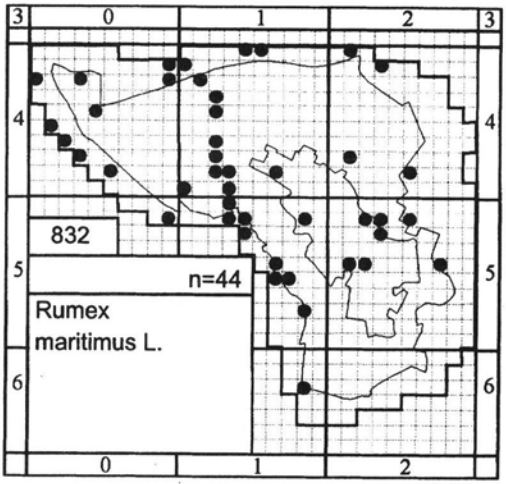

828
n=3
Rumex
confertus Willd.


829
n=128
Rumex
conglomeratus
Murray


830
n=264
Rumex
crispus L..


831
n=139
Rumex
hydrolapathum
Huds.


832
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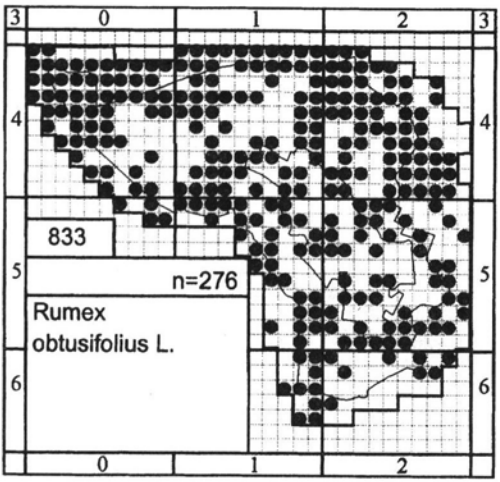
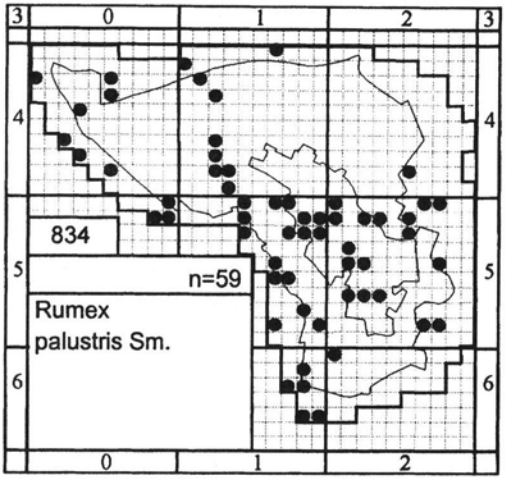
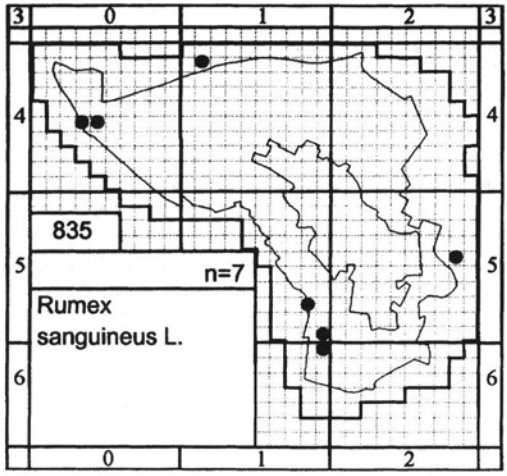
Rumex
maritimus L.


833
n=276
Rumex
obtusifolius L.


834
n=59
Rumex
palustris Sm.


835
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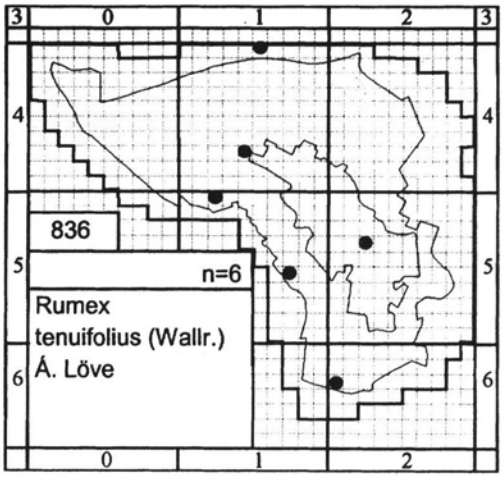
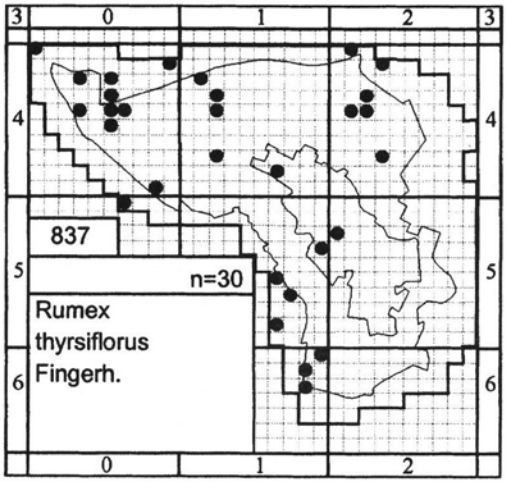
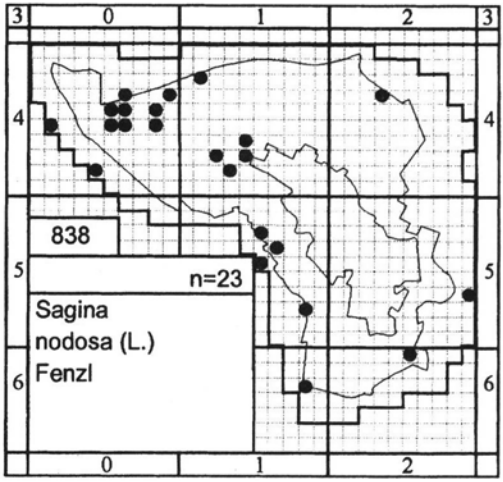
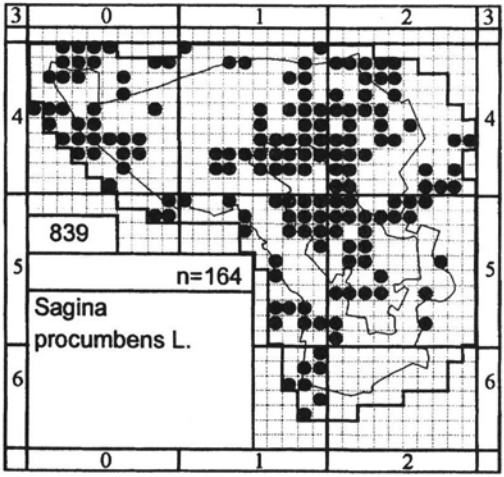
Rumex
sanguineus L.


836
n=6
Rumex
tenuifolius (Wallr.)
Å. Löve


837
n=30
Rumex
thyrsiflorus
Fingerh.


838
n=23
Sagina
nodosa (L.)
Fenzl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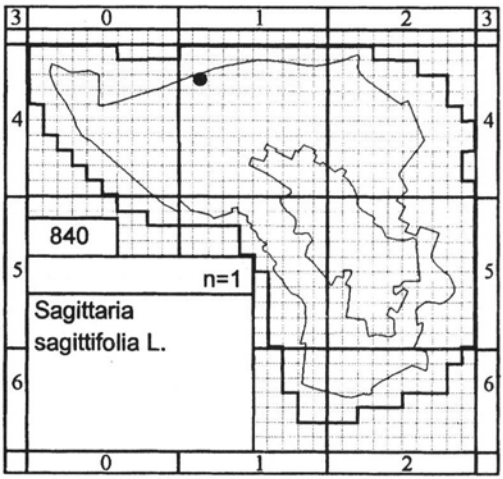
Sagina
procumbens L.


840
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Sagittaria
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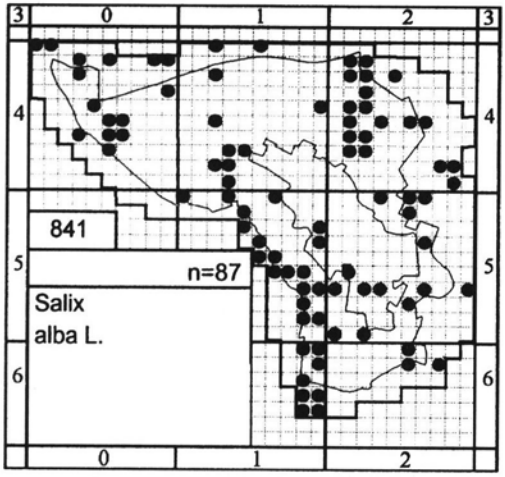
841
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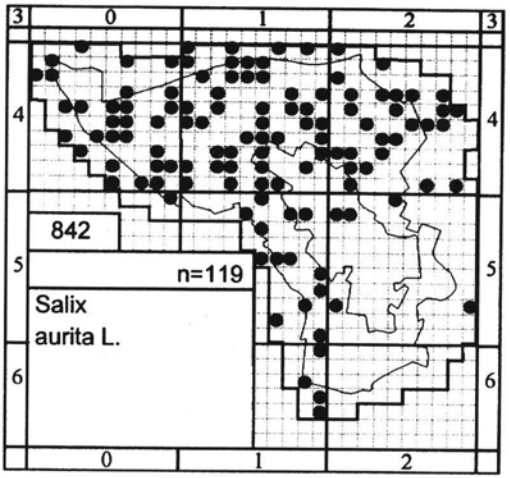
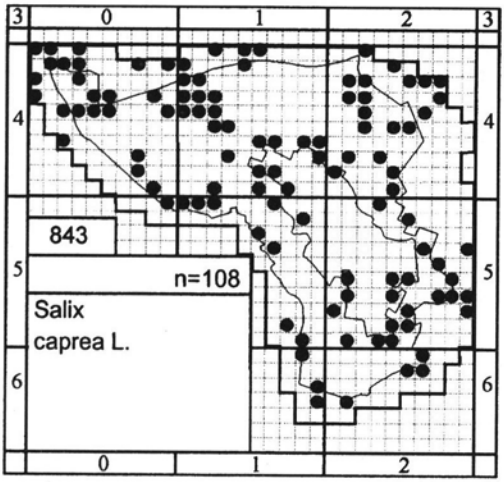
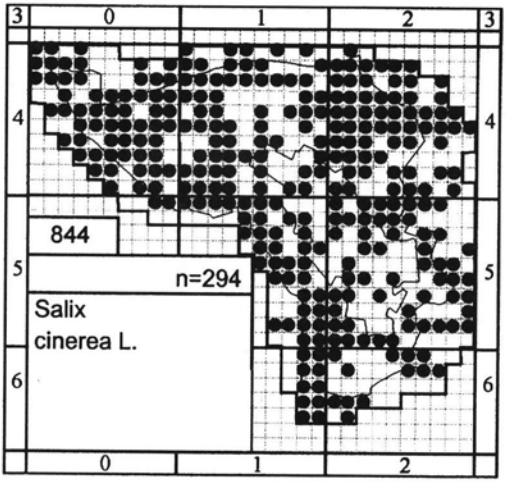
Salix
alba L.


842
n=119
Salix
aurita L.


843
n=108
Salix
caprea L.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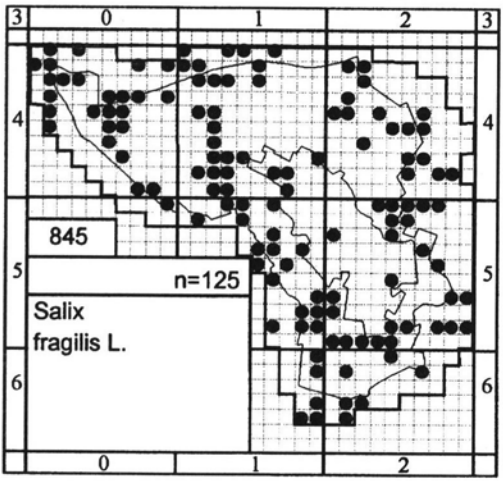
Salix
cinerea L.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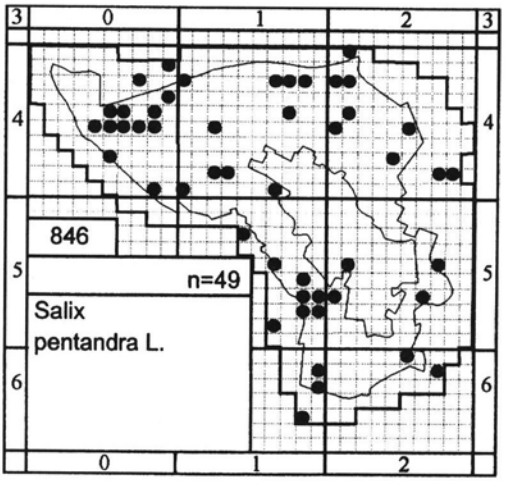
Salix
fragilis L.


846
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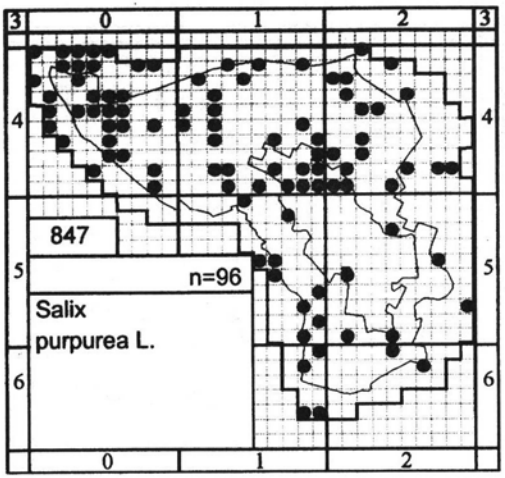
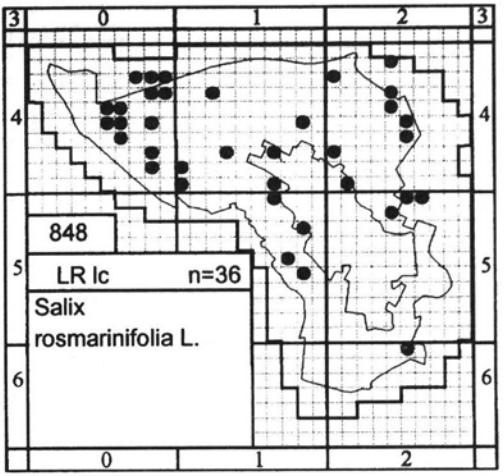
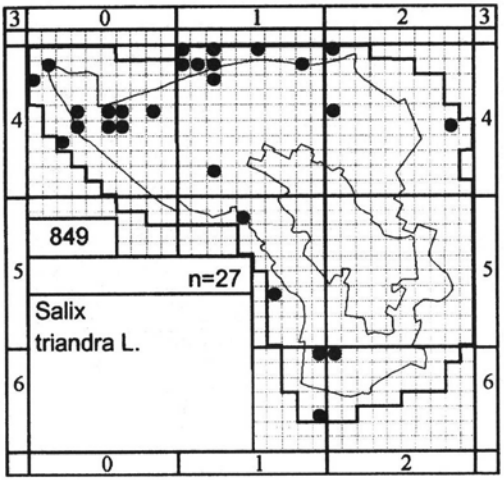
Salix
pentandra L.


847
n=96
Salix
purpurea L.


848
LR lc
n=36
Salix
rosmarinifolia L.


849
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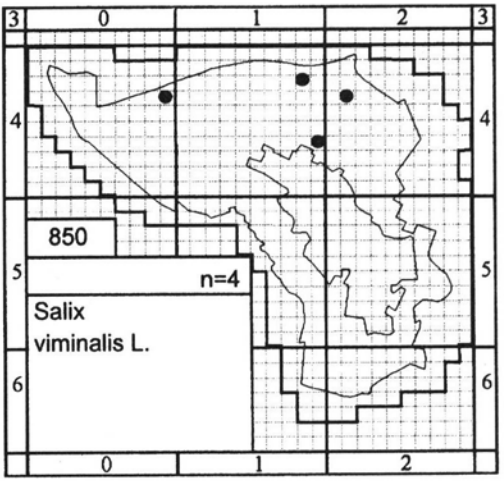
Salix
triandra L.


850
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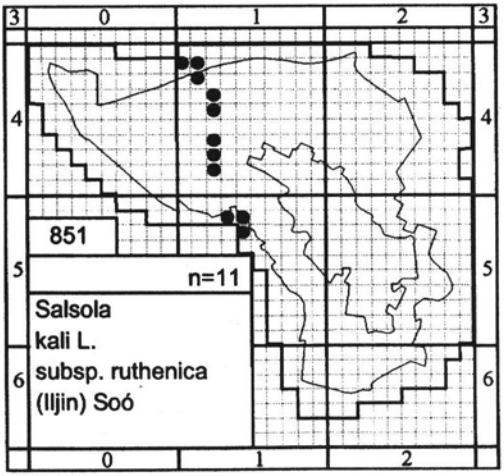
viminalis L.


851
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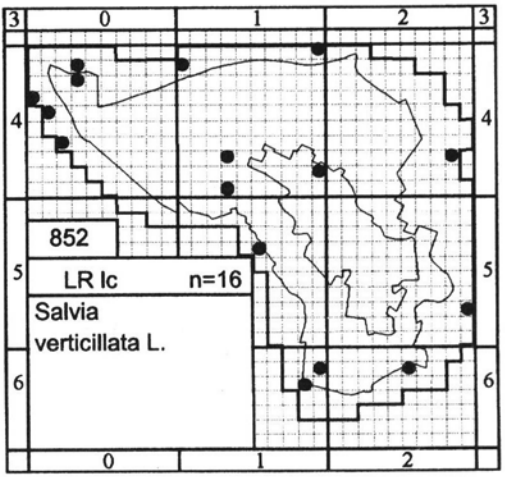
Salsola
kali L.
subsp. ruthenica
(Iljin) Soó


852
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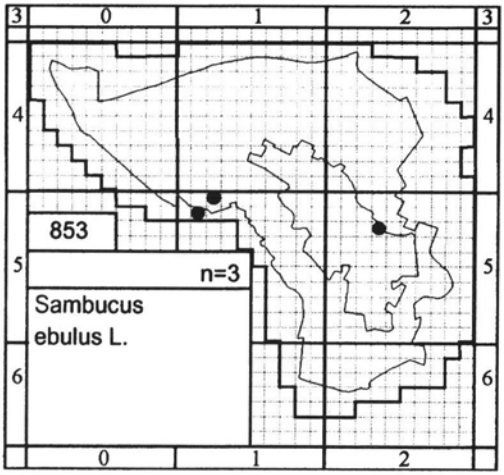
Salvia
verticillata L.


853
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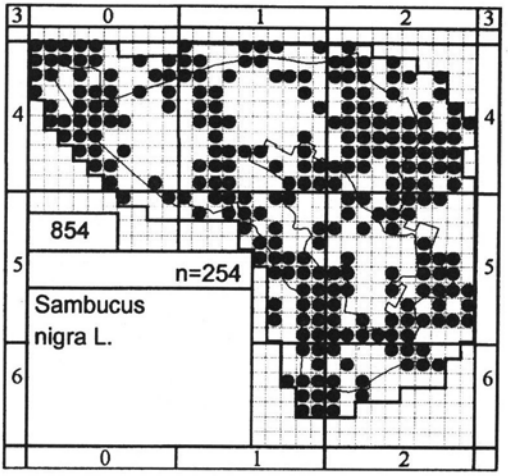
Sambucus
ebulus L.


854
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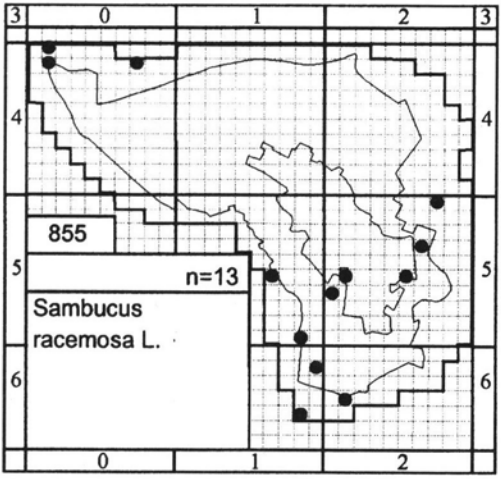
Sambucus
nigra L.


855
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Sambucus
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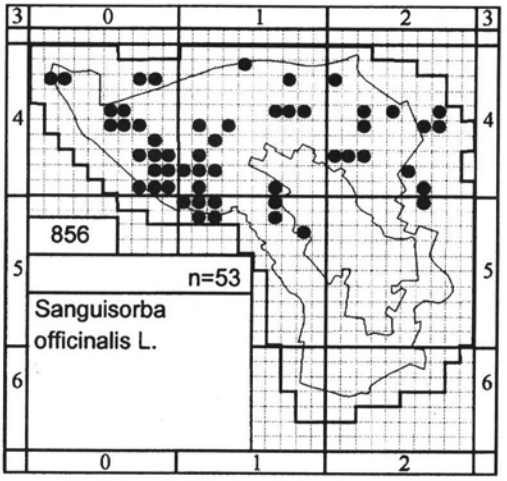
856
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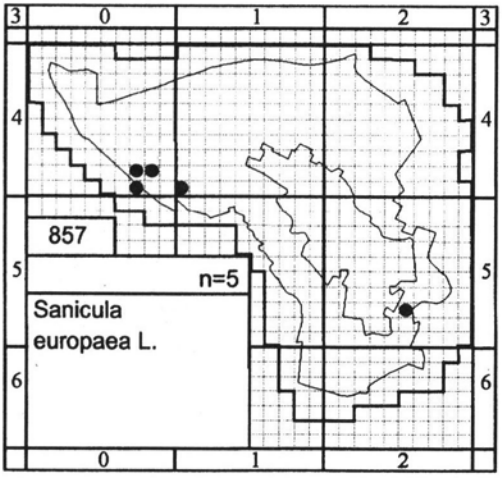
Sanguisorba
officinalis L.


857
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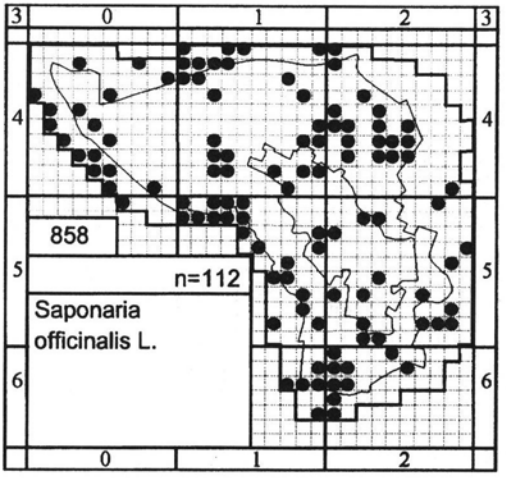
Sanicula
europaea L.


858
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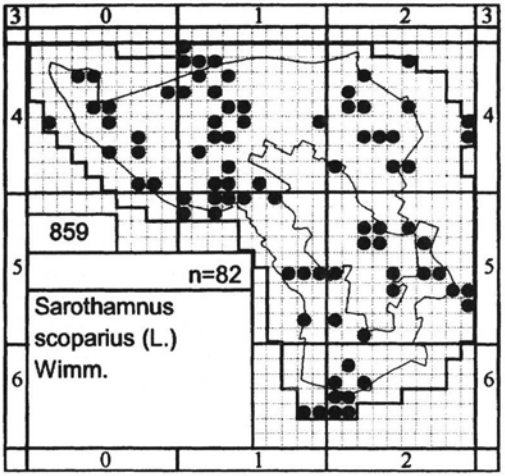
Saponaria
officinalis L.


859
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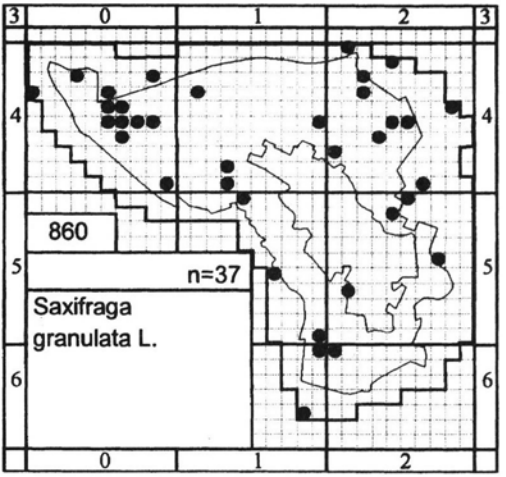
Sarothamnus scoparius (L.) Wimm.


860
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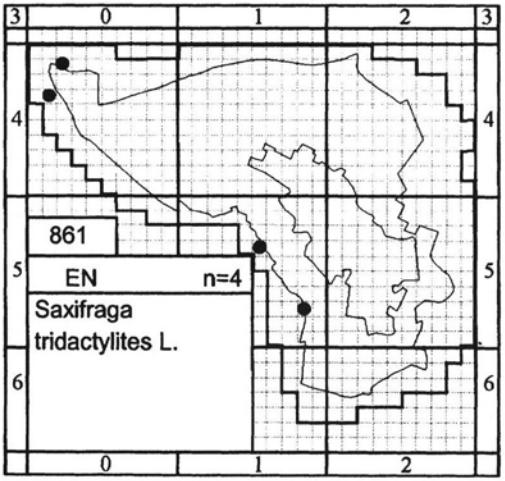
Saxifraga granulata L.


861
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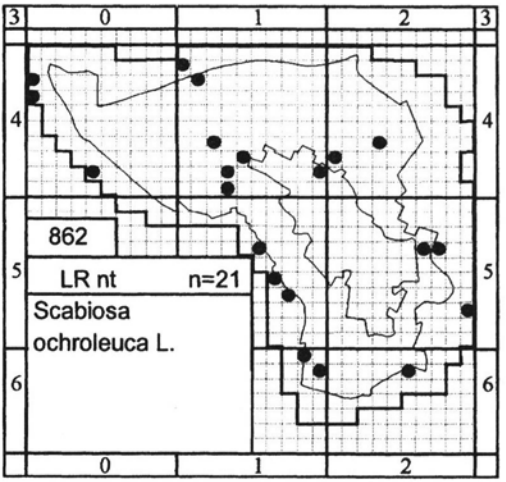
Saxifraga tridactylites L.


862
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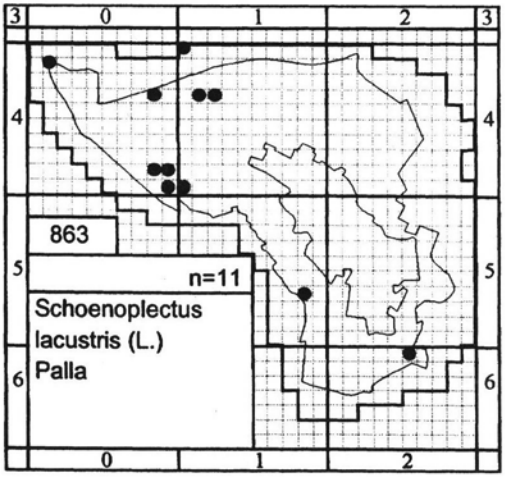
Scabiosa ochroleuca L.


863
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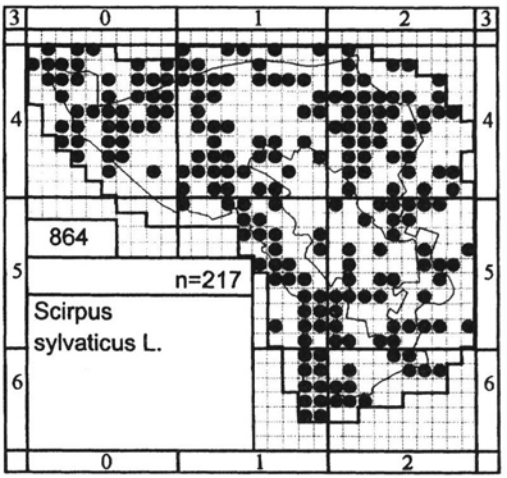
Schoenoplectus lacustris (L.) Palla


864
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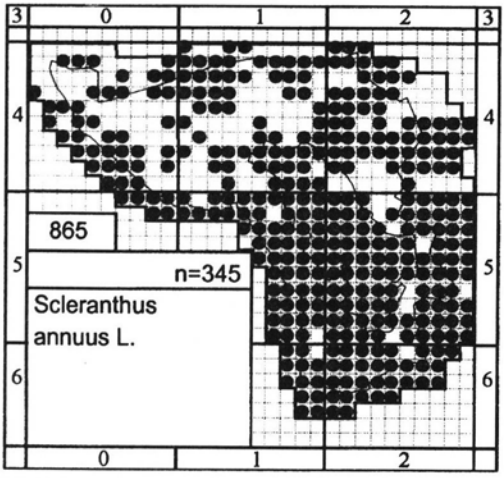
Scirpus sylvaticus L.


865
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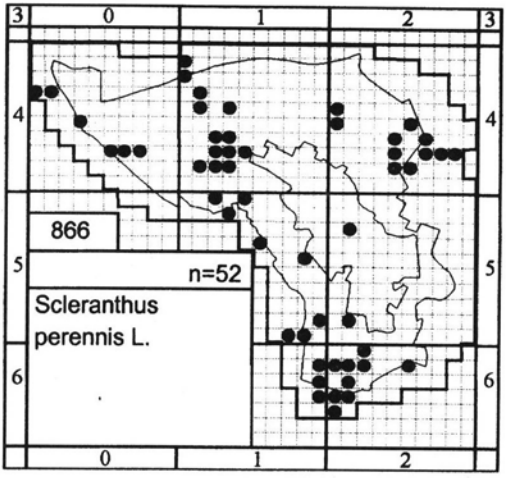
Scleranthus
annuus L.


866
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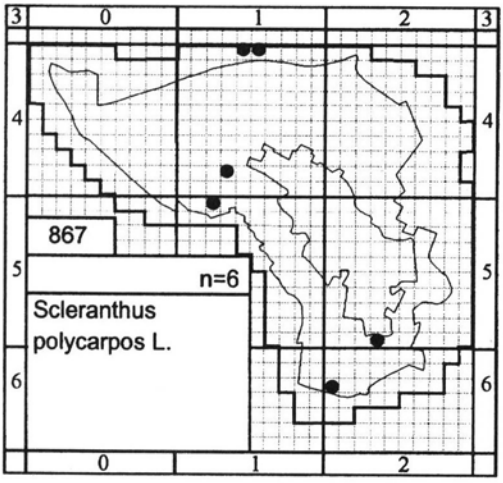
Scleranthus
perennis L.


867
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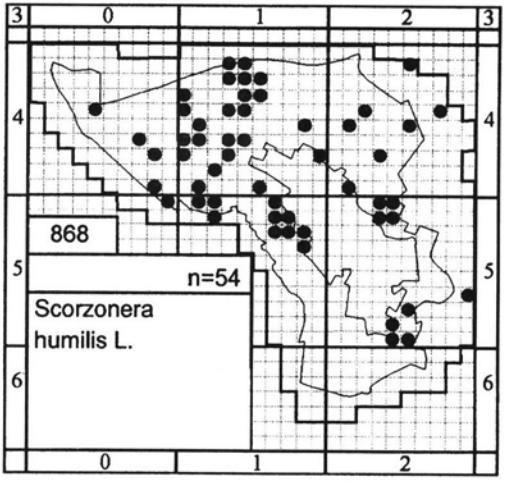
Scleranthus
polycarpos L.


868
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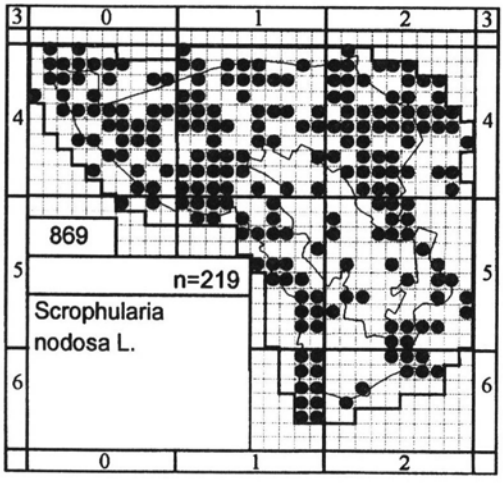
Scorzonera
humilis L.


869
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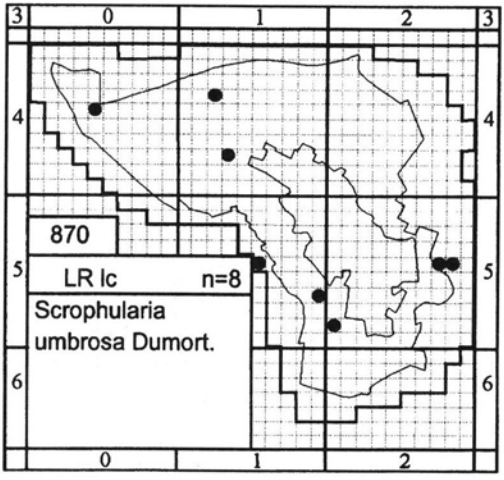
Scrophularia
nodosa L.


870
LR lc
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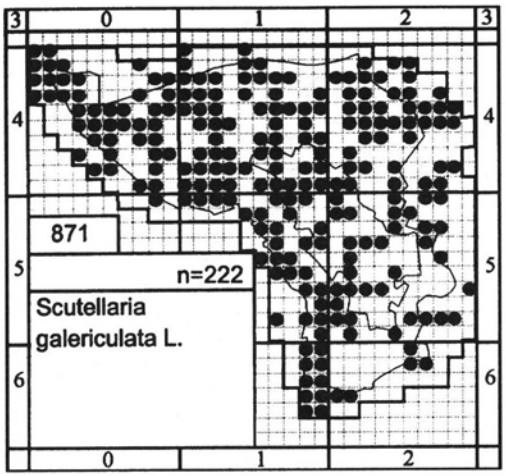
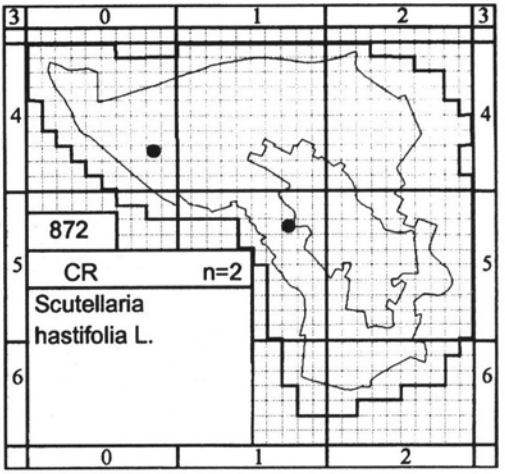
Scrophularia
umbrosa Dumort.


871
n=222
Scutellaria
galericulata L.


872
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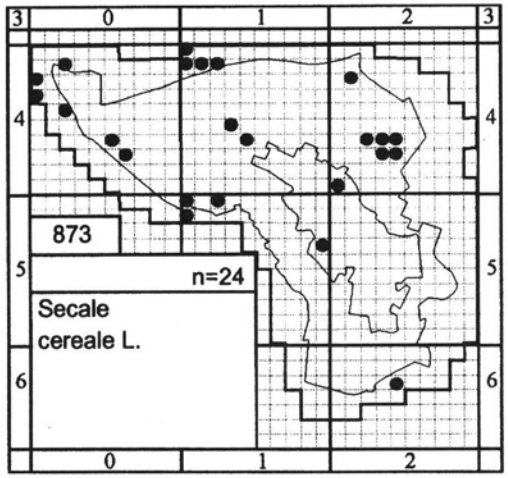
873
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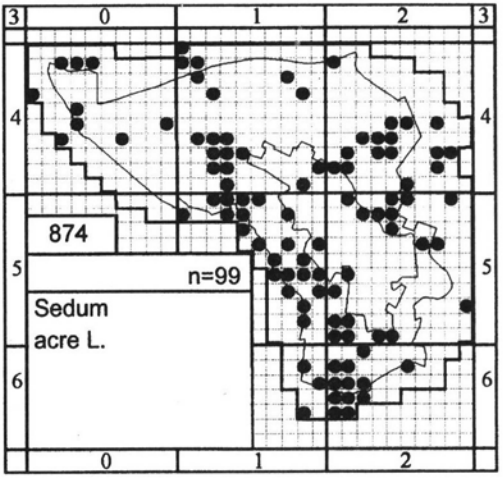
Secale
cereale L.


874
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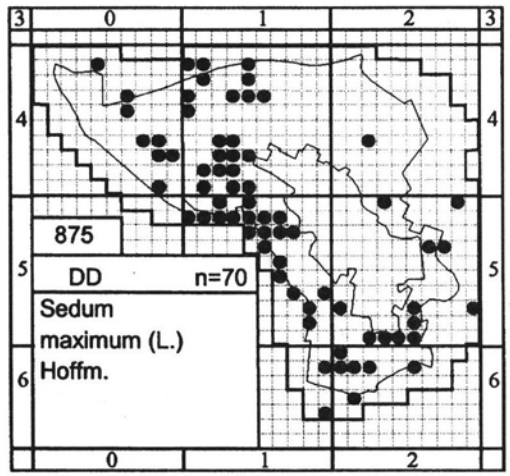
Sedum
acre L.


875
DD
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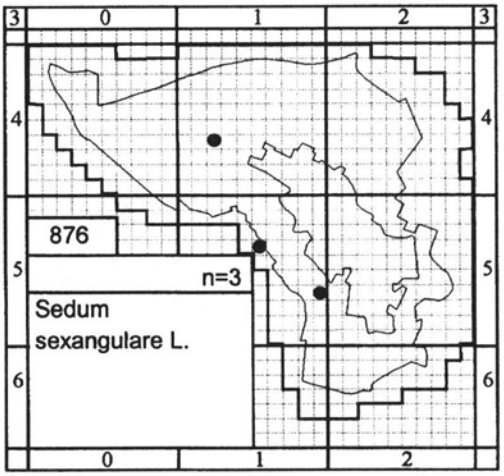
Sedum
maximum (L.)
Hoffm.


876
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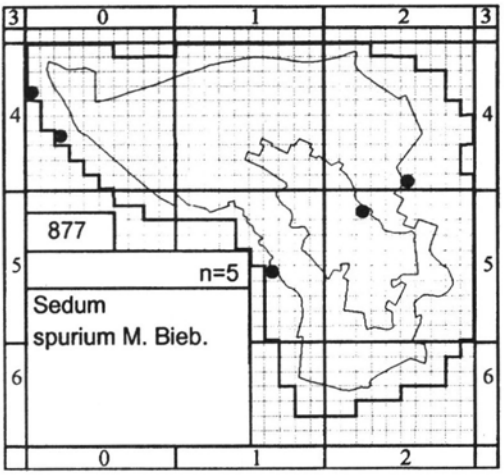
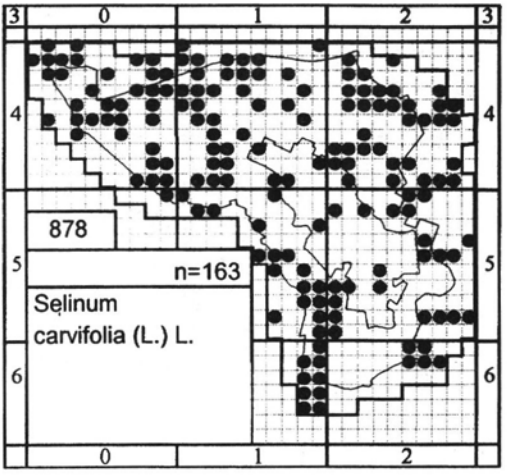
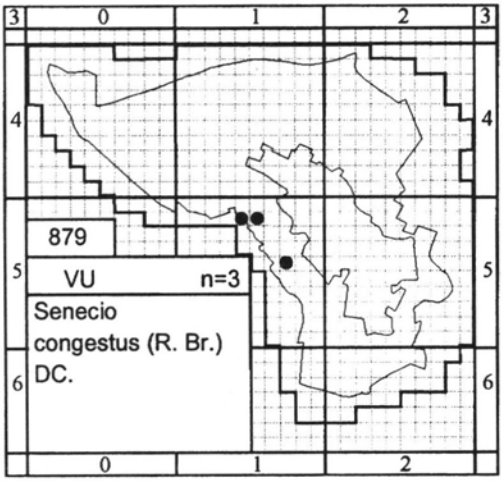
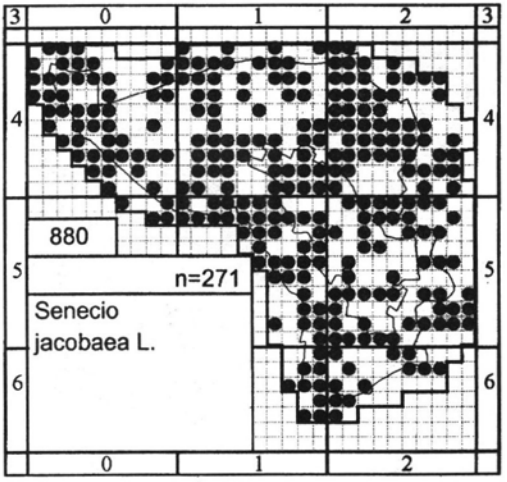
Sedum
sexangulare L.


877
n=5
Sedum
spurium M. Bieb.


878
n=163
Selinum
carvifolia (L.) L.


879
VU
n=3
Senecio
congestus (R. Br.)
DC.


880
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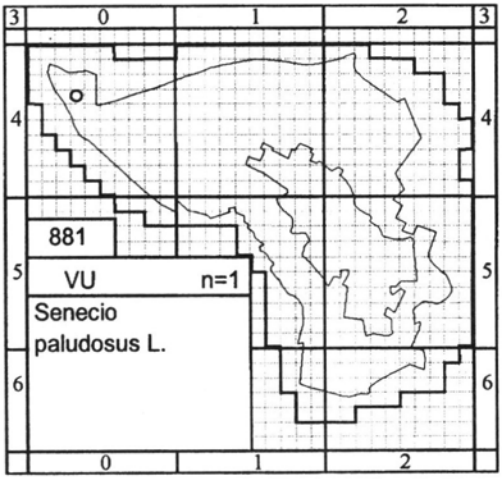
Senecio
jacobaea L.


881
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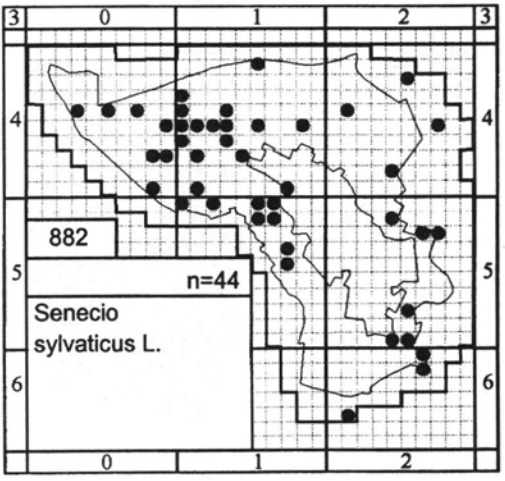
Senecio
paludosus L.


882
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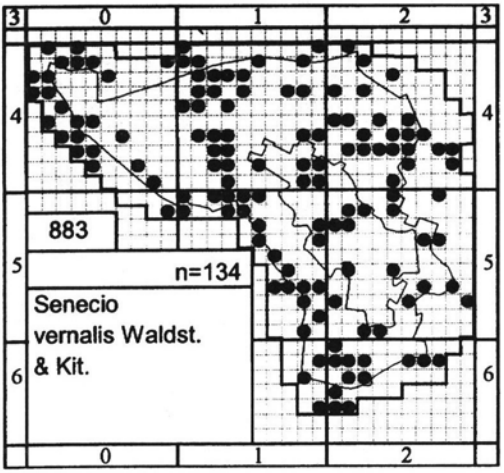
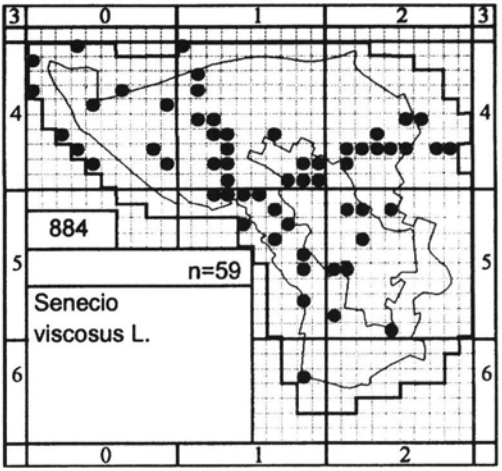
Senecio
sylvaticus L.


883
n=134
Senecio
vernalis Waldst.
& Kit.


884
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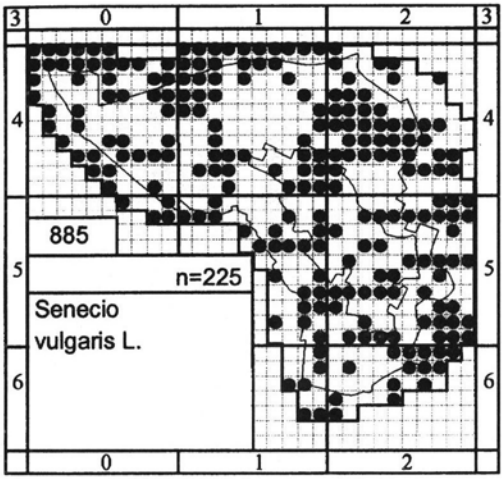
Senecio
viscosus L.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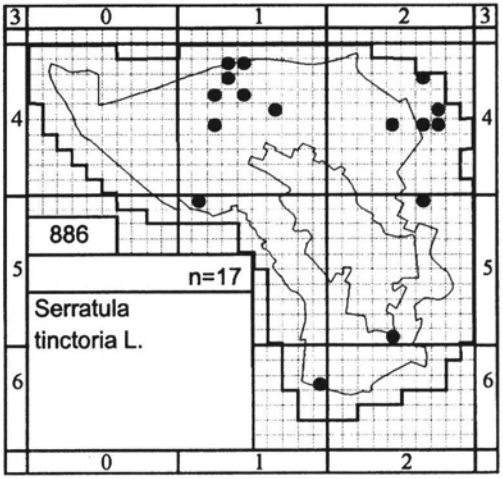
Senecio
vulgaris L.


886
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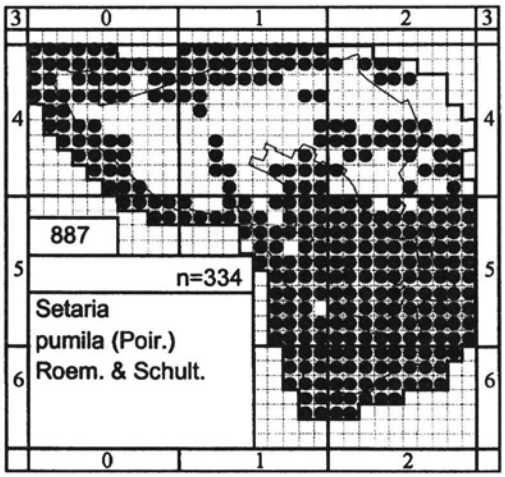
Serratula
tinctoria L.


887
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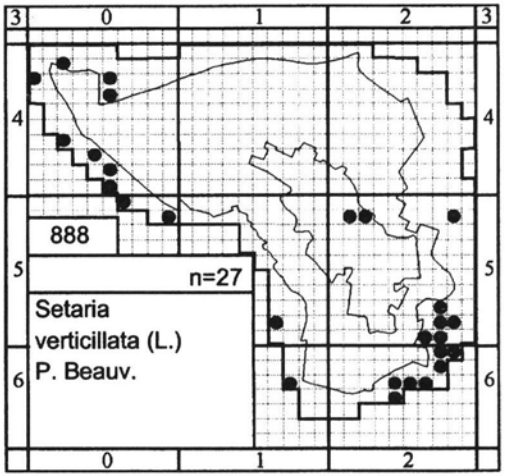
Setaria
pumila (Poir.)
Roem. & Schult.


888
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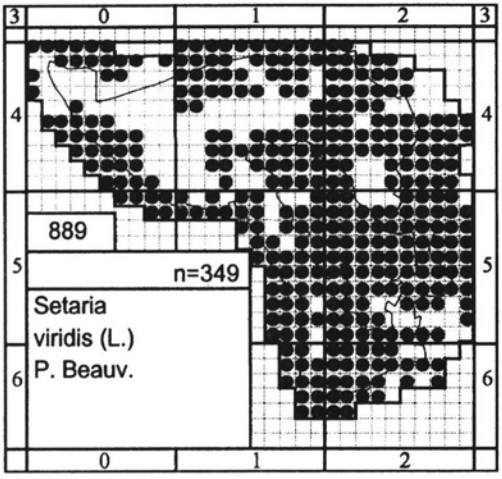
Setaria
verticillata (L.)
P. Beauv.


889
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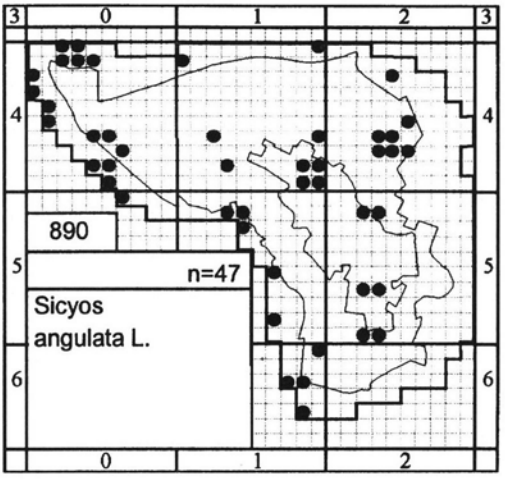
Setaria
viridis (L.)
P. Beauv.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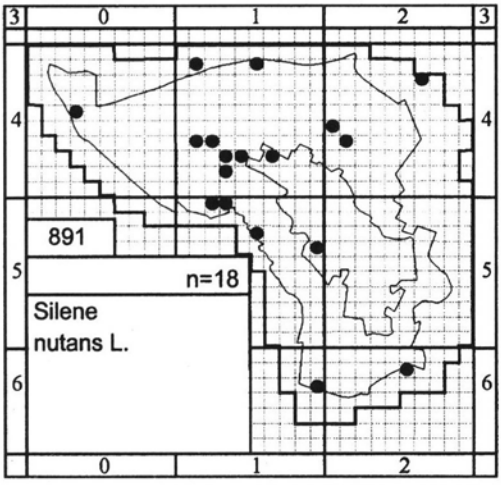
Sicyos
angulata L.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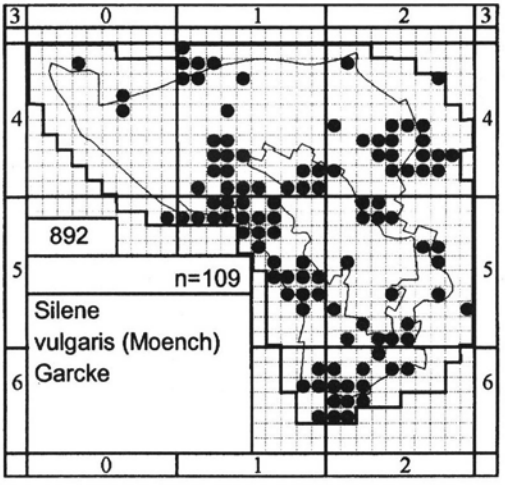
Silene
nutans L.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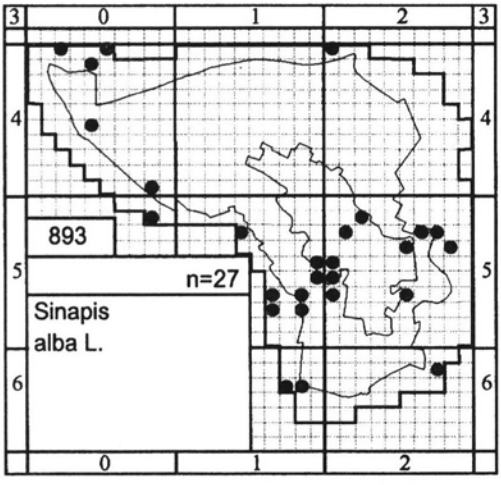
n=109
Silene
vulgaris (Moench)
Garcke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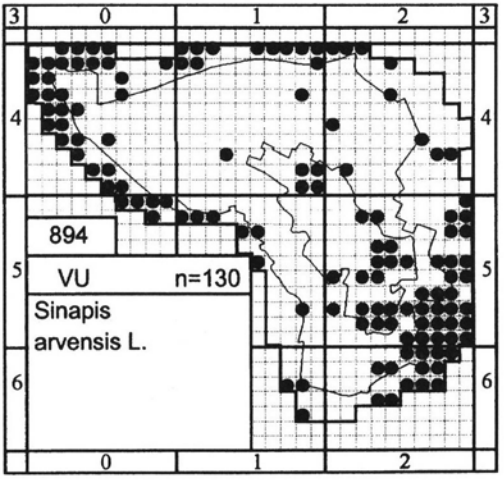
Sinapis
alba L.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VU
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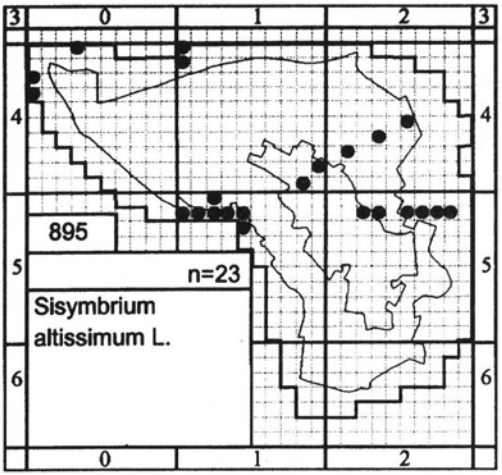
Sinapis
arvensis L.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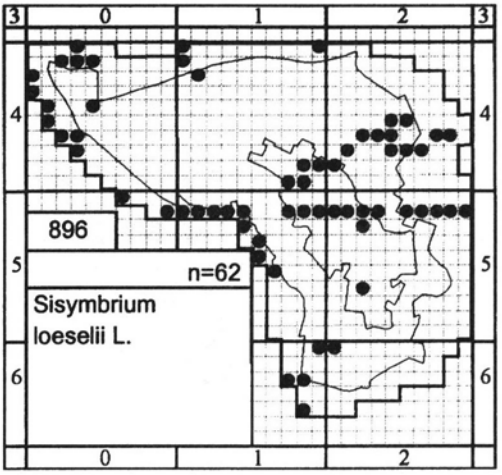
altissimum L.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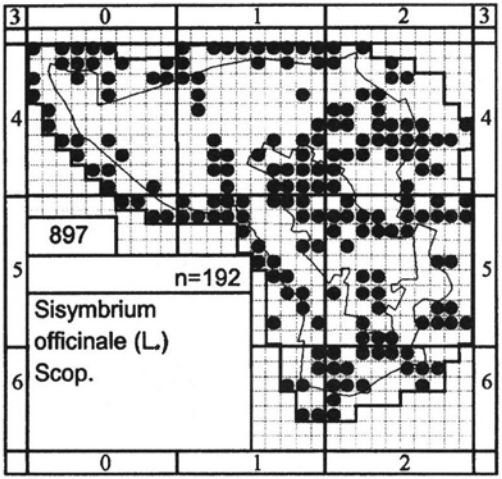
Sisymbrium
loeselii L.


897
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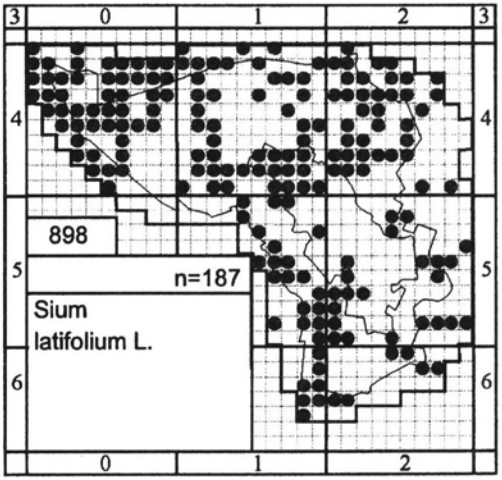
Sisymbrium
officinale (L.)
Scop.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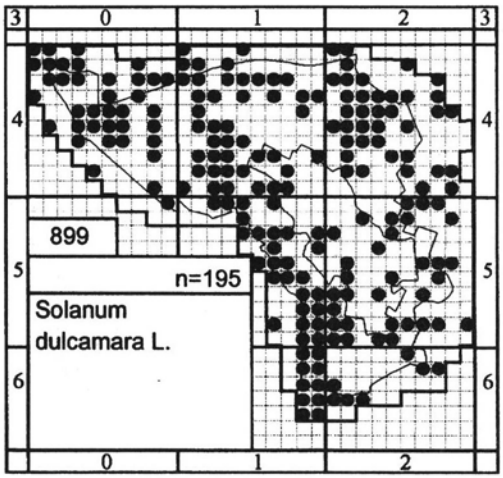
Sium
latifolium L.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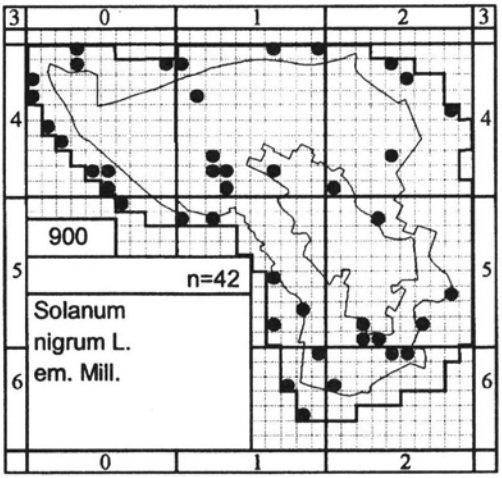
Solanum
dulcamara L.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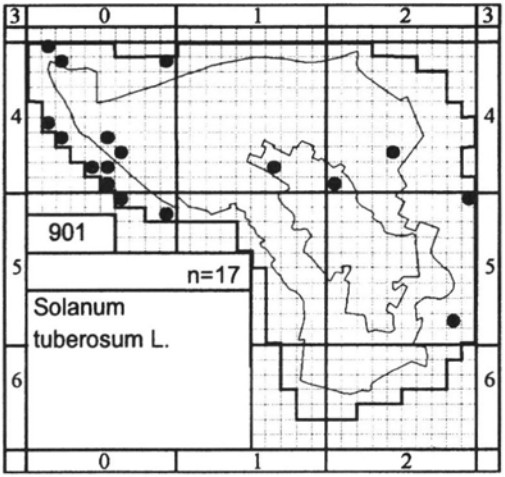
Solanum
nigrum L.
em. Mill.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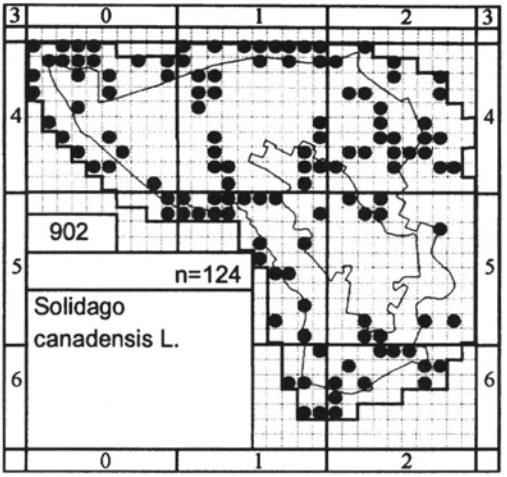
Solanum
tuberosum L.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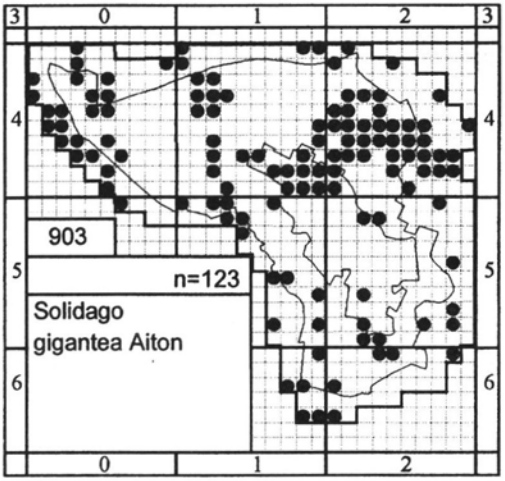
Solidago
canadensis L.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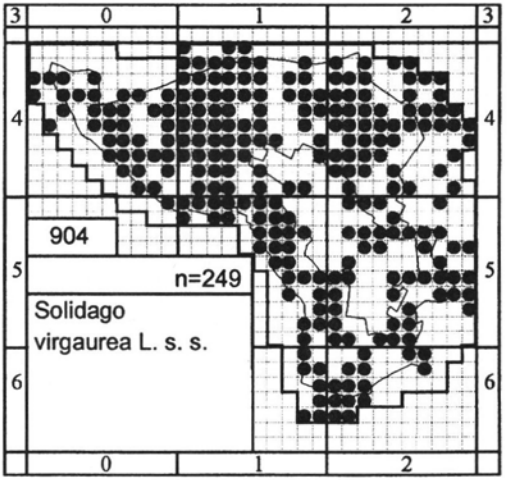
Solidago
gigantea Aiton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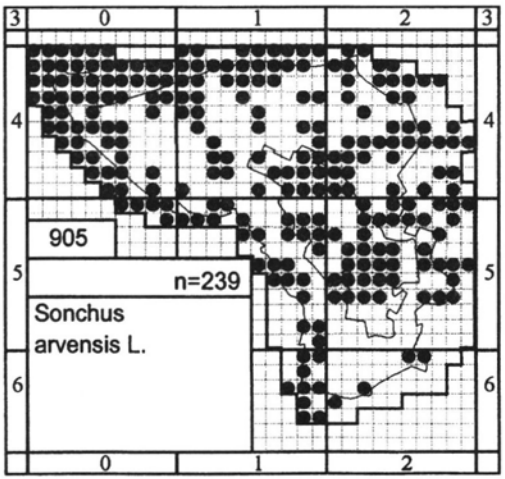
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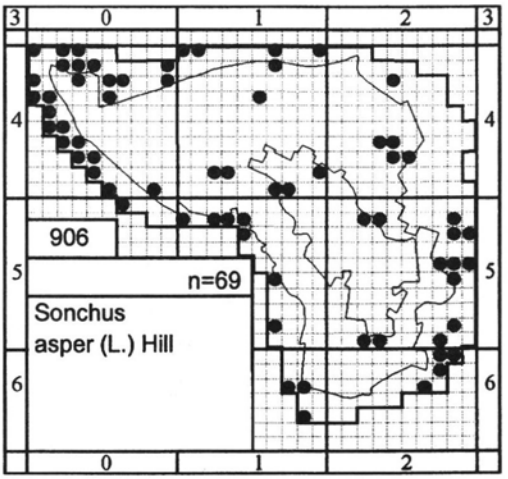
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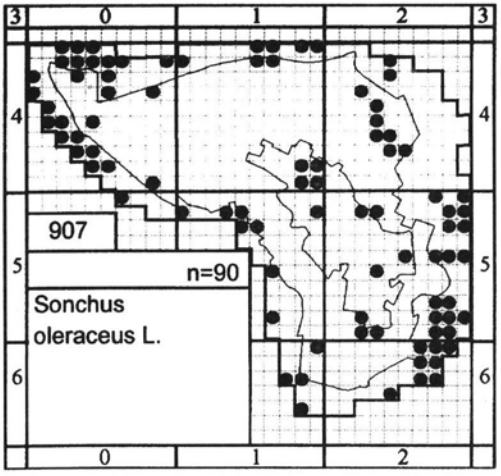
Sonchus
asper (L.) Hill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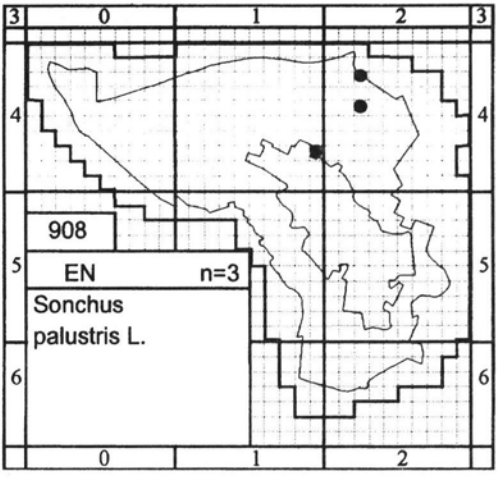
Sonchus
oleraceus L.


908
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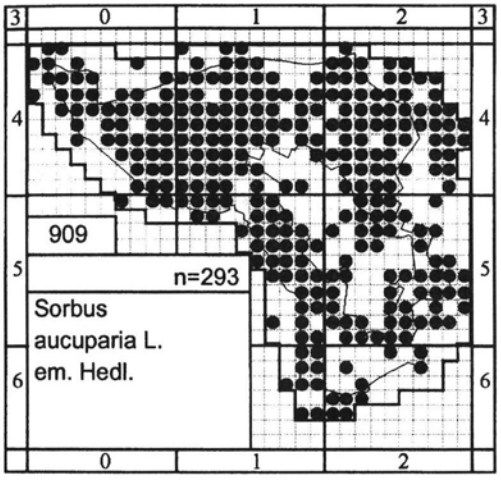
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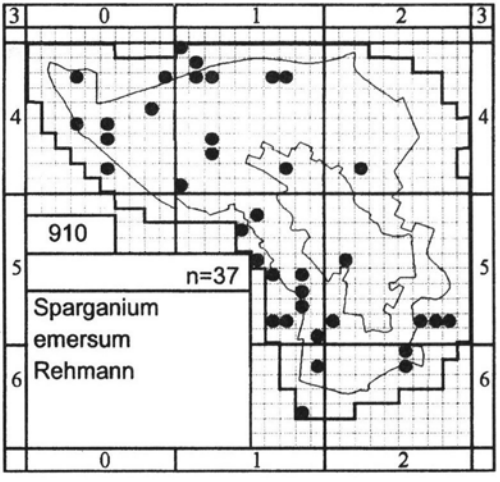
em. Hedl.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Sparganium
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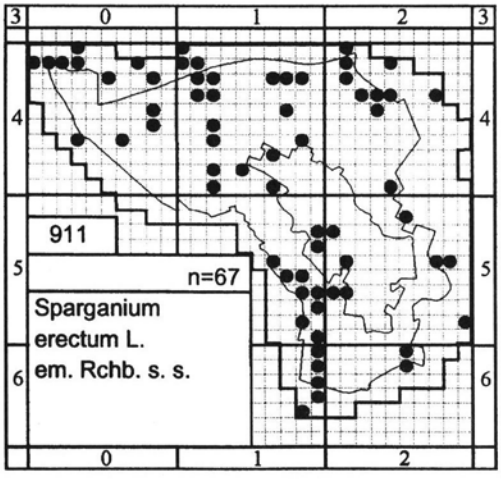
Rehmann


911
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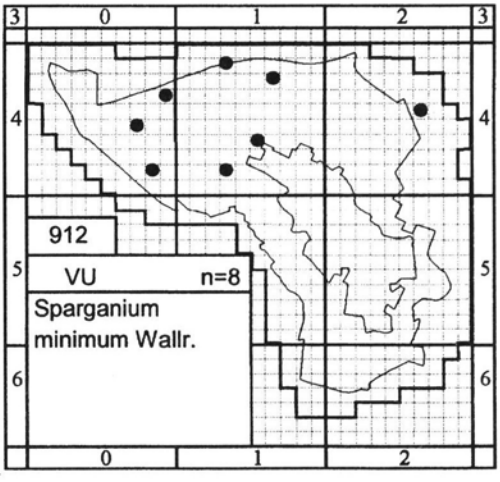
Sparganium
erectum L.
em. Rchb. s. s.


912
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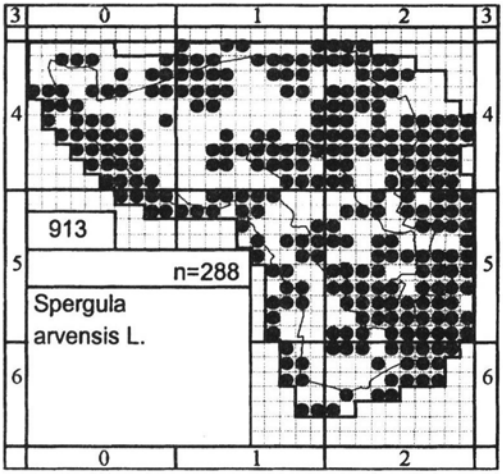
Sparganium
minimum Wallr.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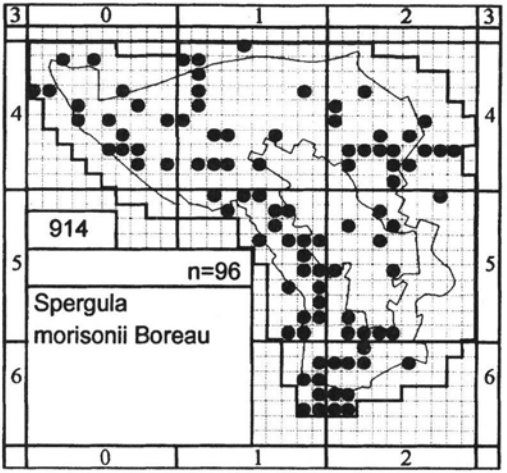
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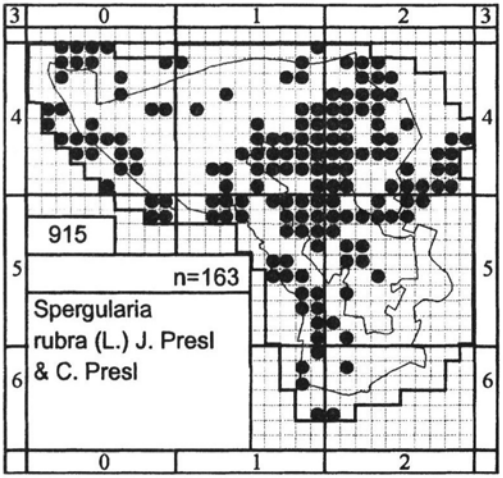
Spergula
morisonii Boreau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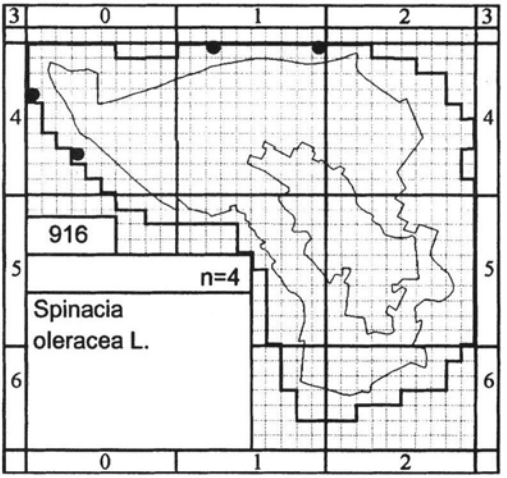
Spergularia
rubra (L.) J. Presl
& C. Presl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Spinacia
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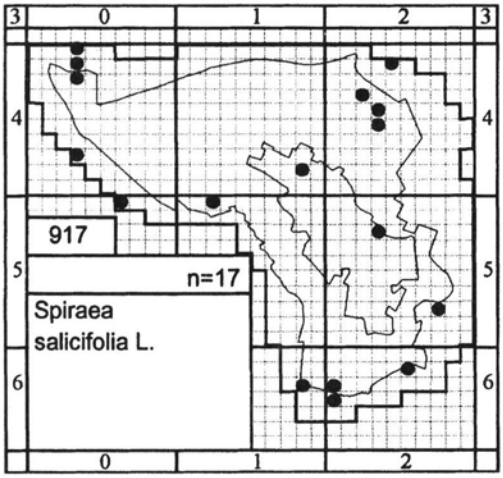
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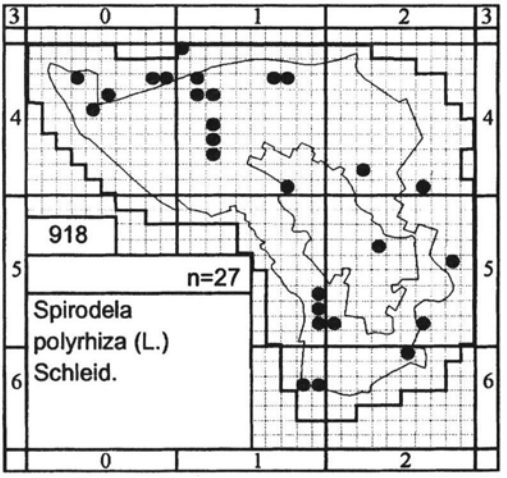
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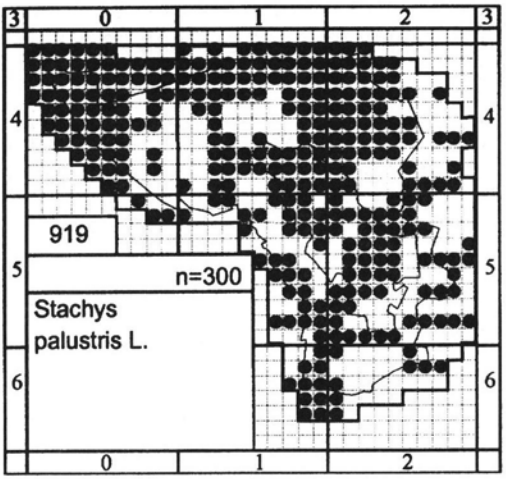
Spirodela
polyrhiza (L.)
Schleid.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Stachys
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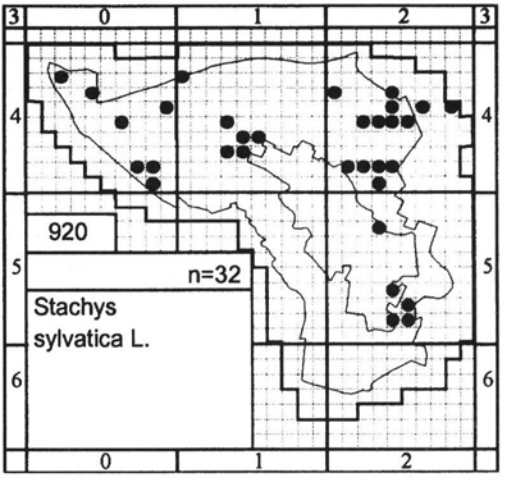
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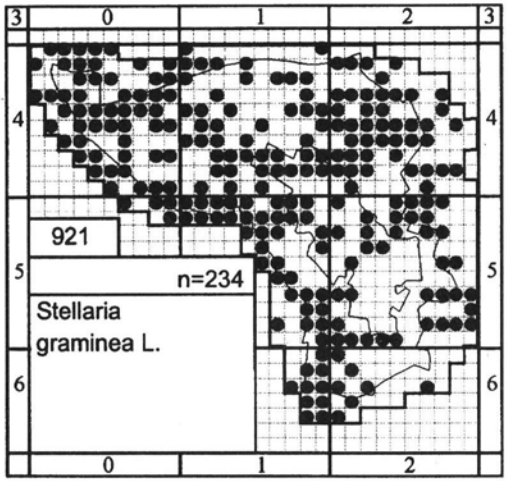
Stachys
sylvatica L.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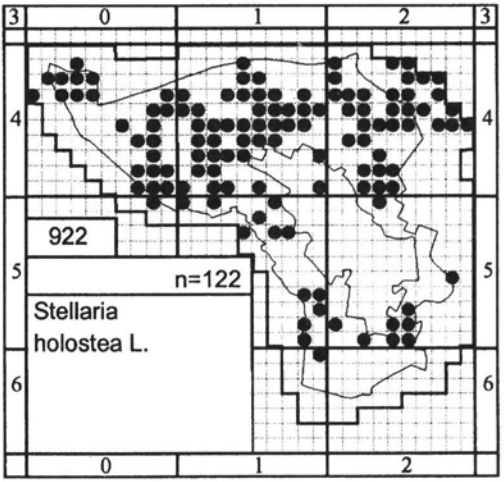
Stellaria
graminea L.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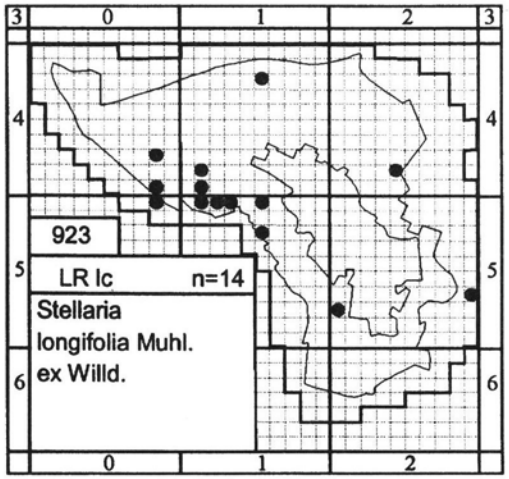
Stellaria
holostea L.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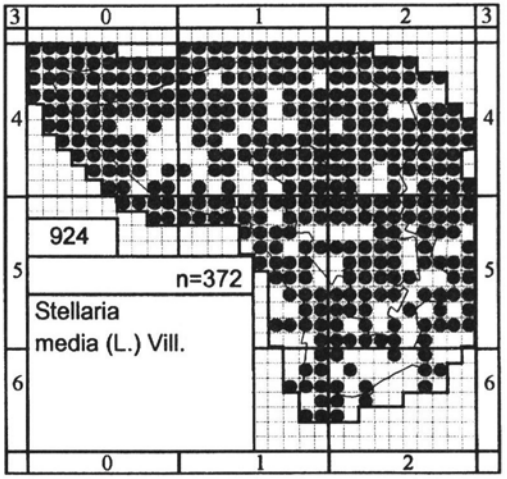
Stellaria
longifolia Muhl.
ex Willd.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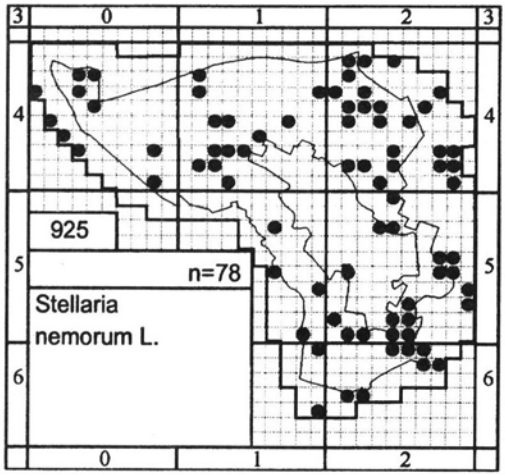
Stellaria
media (L.) Vill.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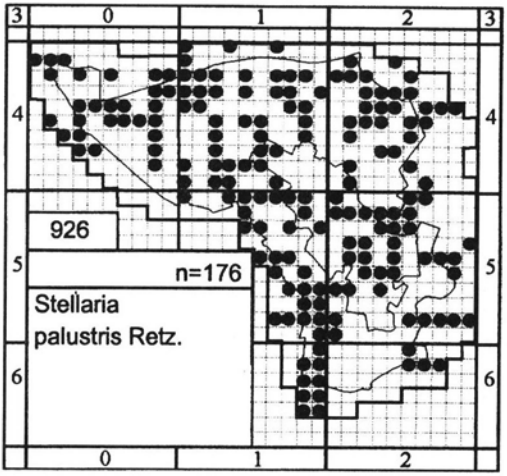
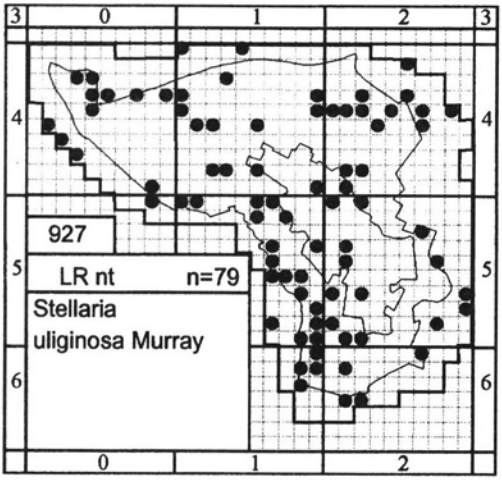
Stellaria
nemorum L.


926
n=176
Stellaria
palustris Retz.


927
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Stellaria
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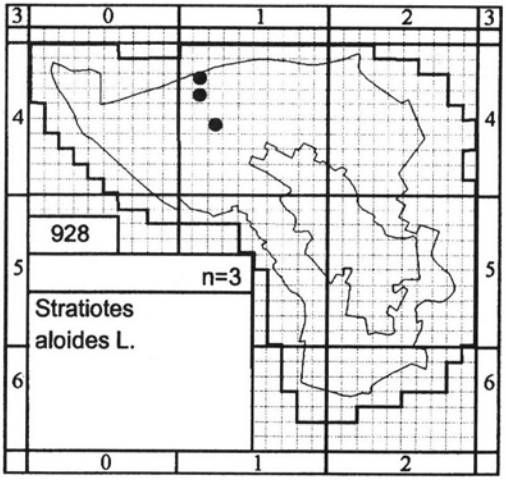
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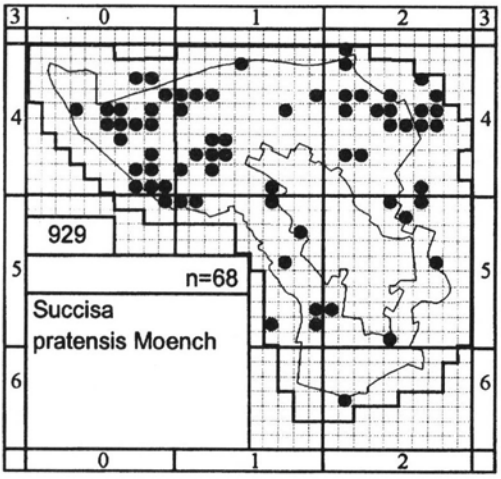
Stratiotes
aloides L.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Succisa
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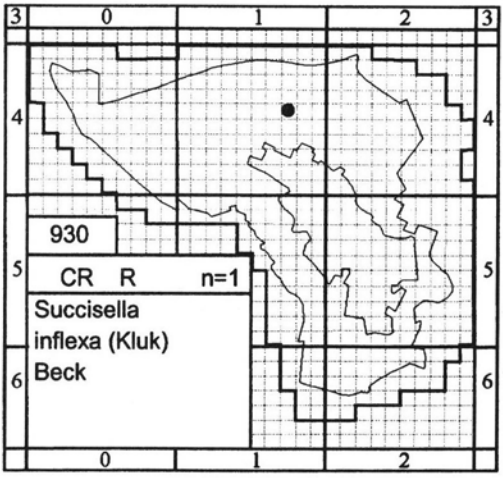
930
CR R
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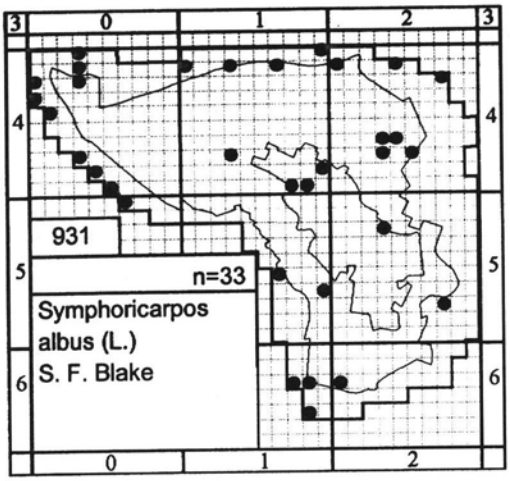
Succisella
inflexa (Kluk)
Beck


931
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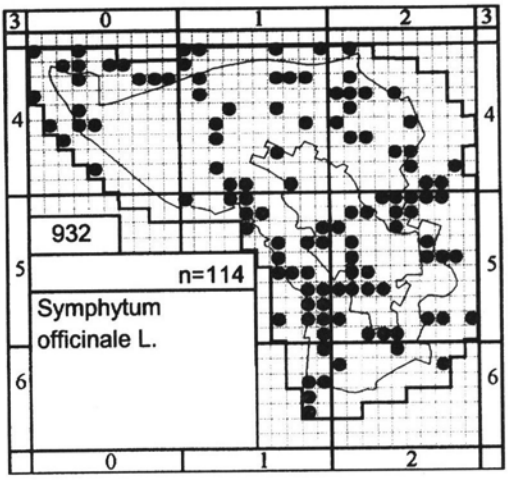
Symphoricarpos
albus (L.)
S. F. Blake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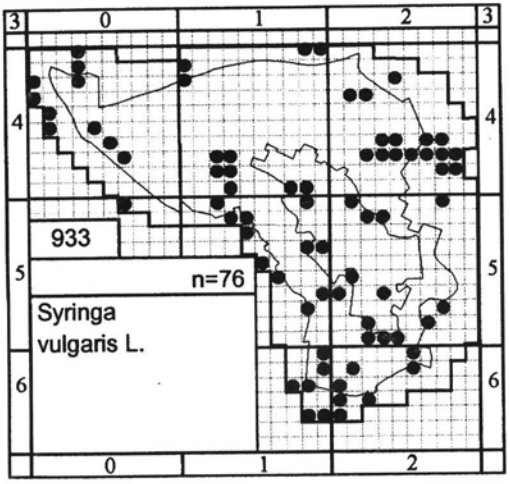
Symphytum
officinale L.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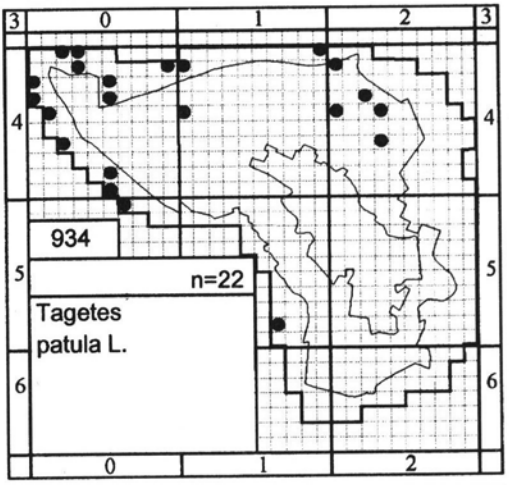
Syringa
vulgaris L.


934
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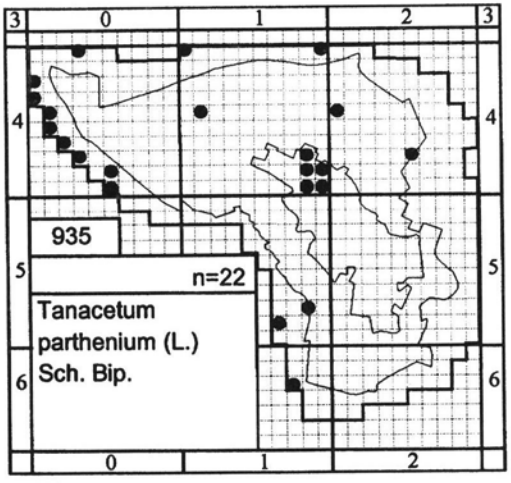
Tagetes
patula L.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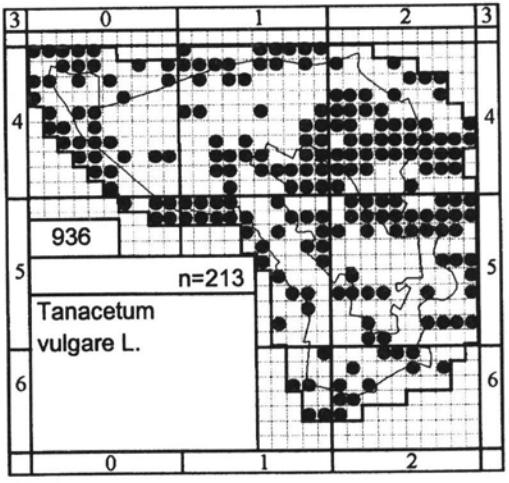
Tanacetum
parthenium (L.)
Sch. Bip.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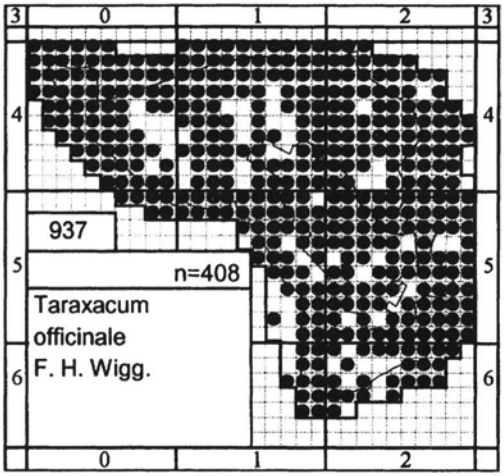
Tanacetum
vulgare L.


937
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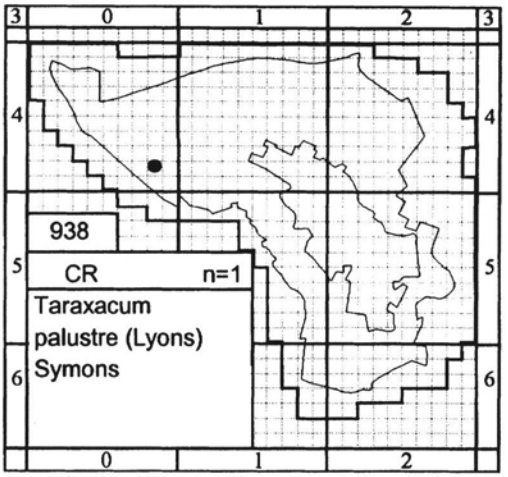
Taraxacum
officinale
F. H. Wigg.


938
CR
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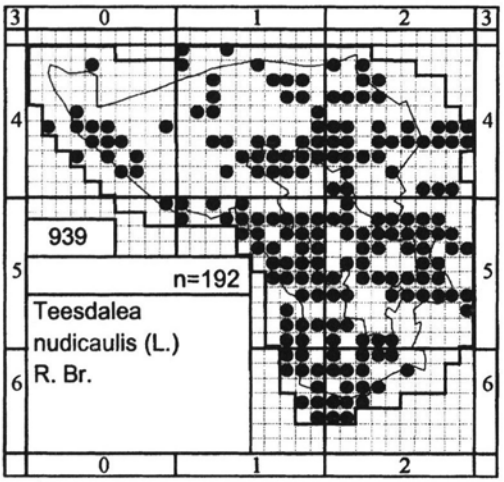
Taraxacum
palustre (Lyons)
Symons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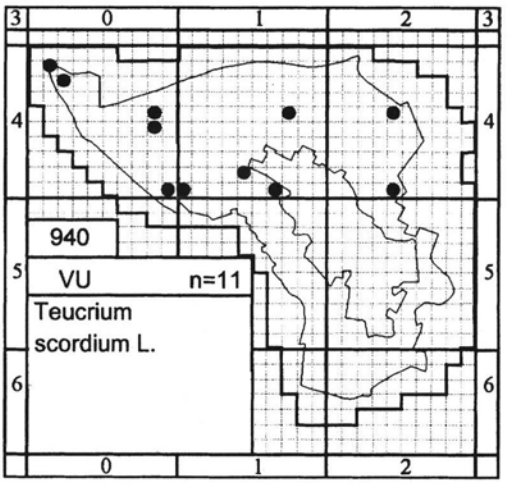
R. Br.


940
VU
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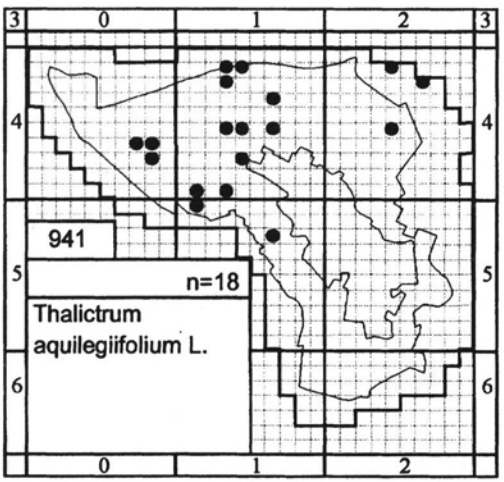
Teucrium
scordium L.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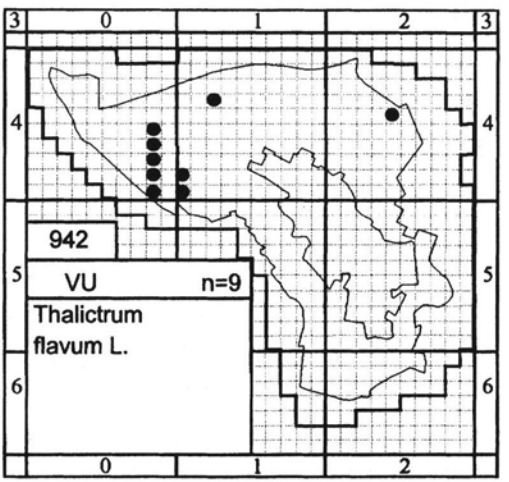
aquilegiifolium L.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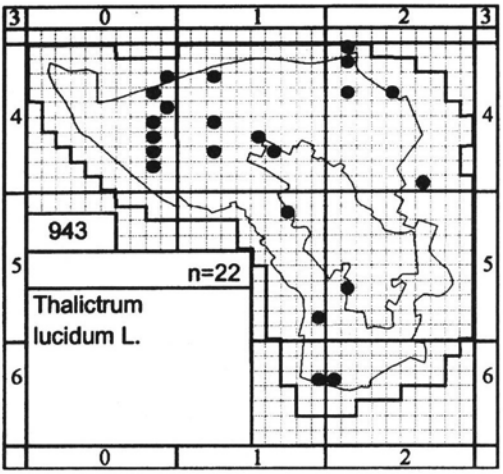
Thalictrum
flavum L.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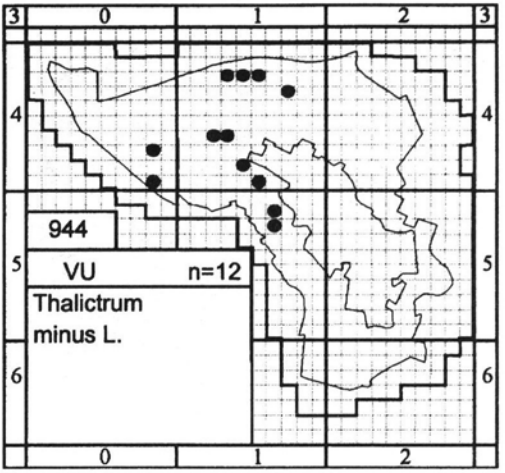
Thalictrum
lucidum L.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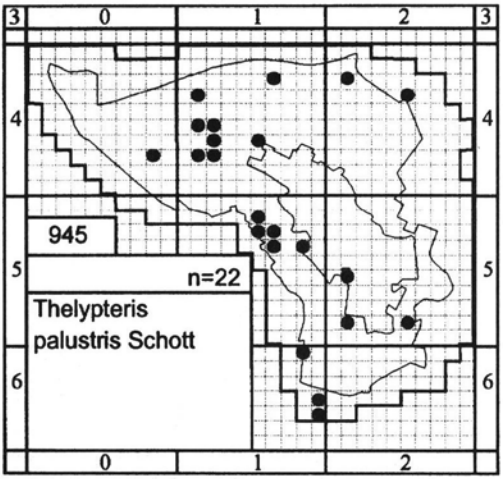
Thalictrum
minus L.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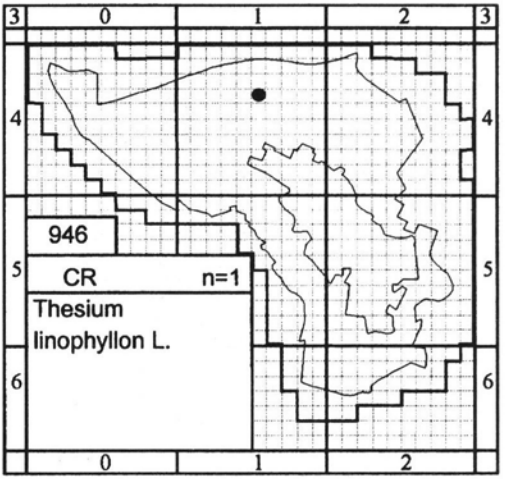
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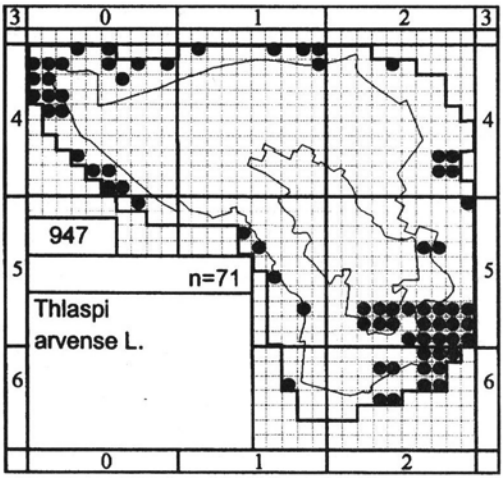
Thesium
linophyllon L.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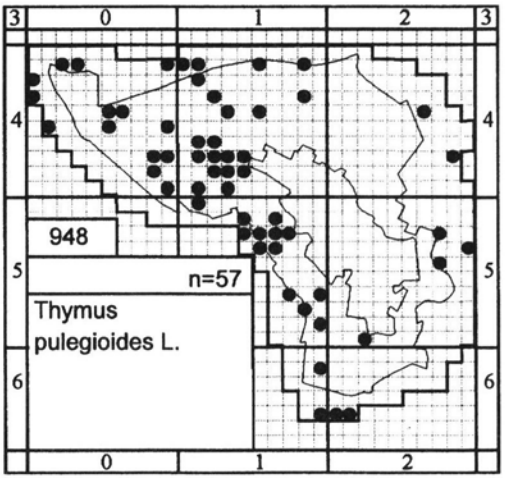
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Thymus
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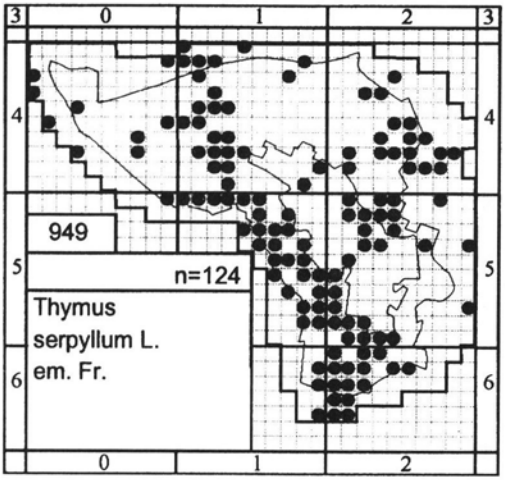
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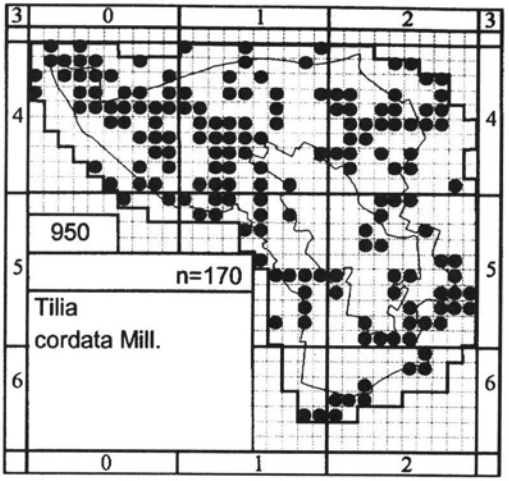
em. Fr.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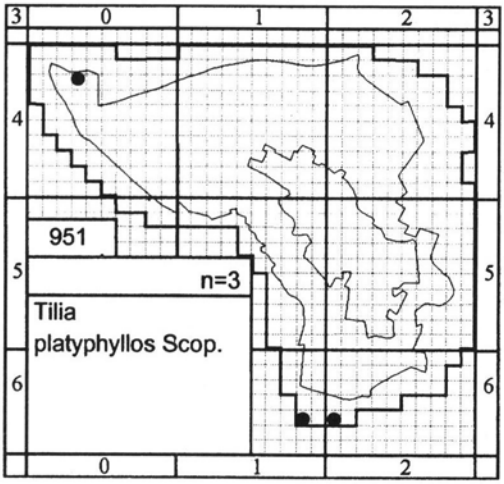
cordata Mill.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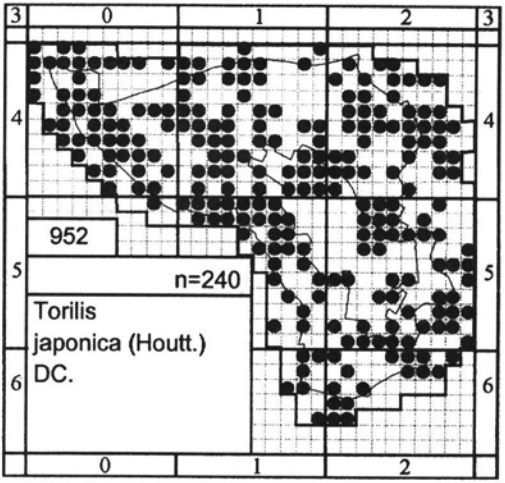
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Torilis
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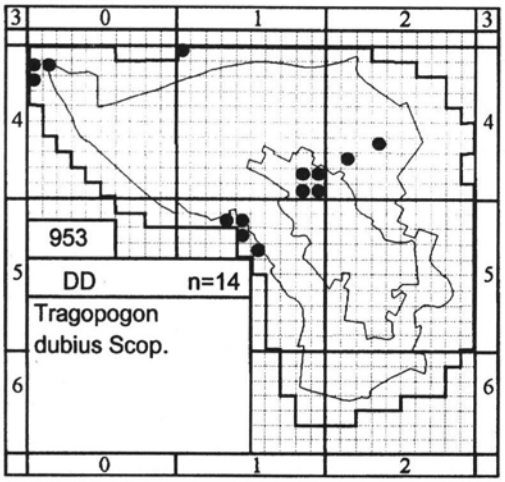
DC.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Tragopogon
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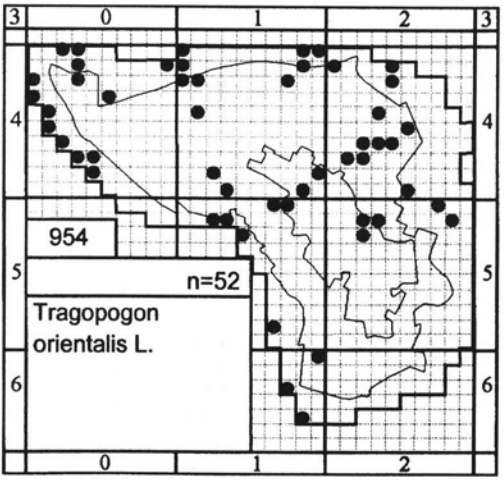
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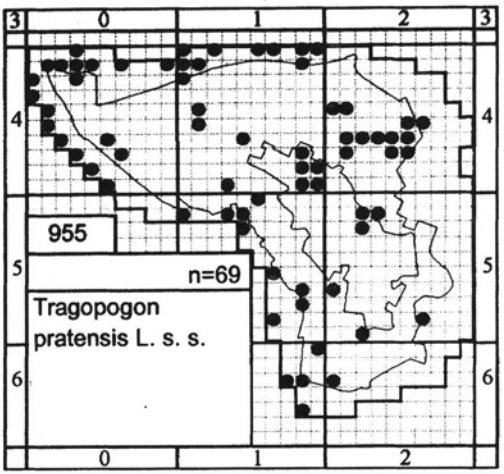
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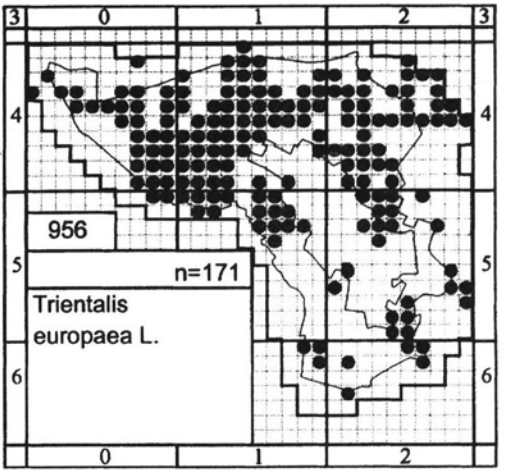
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Trientalis
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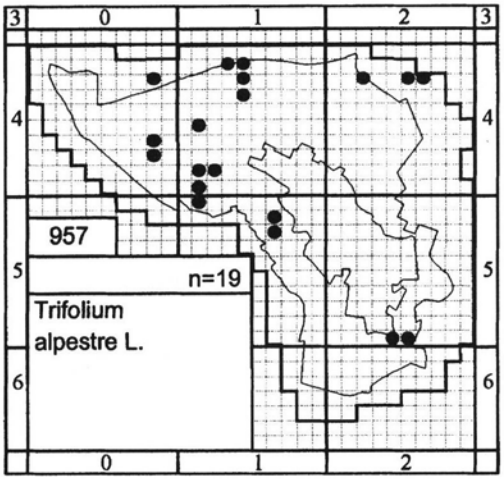
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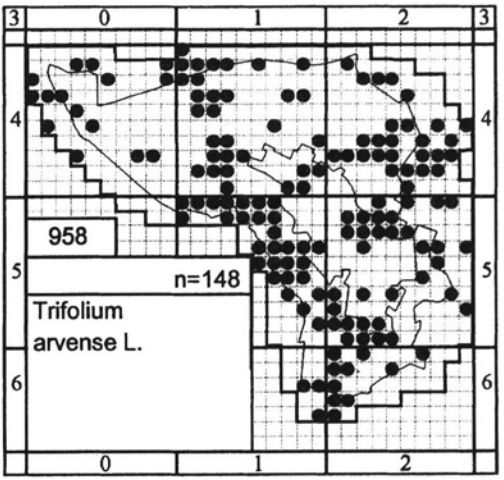
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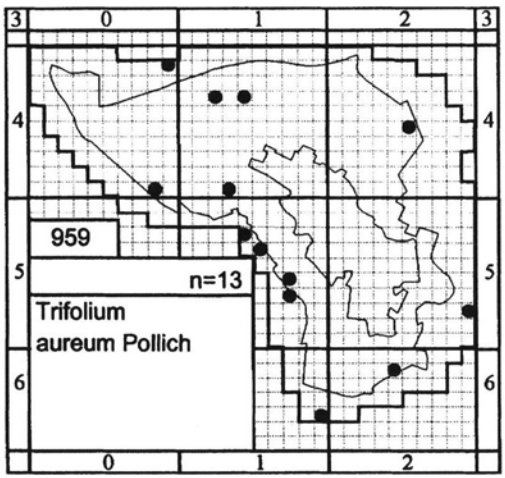
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Trifolium
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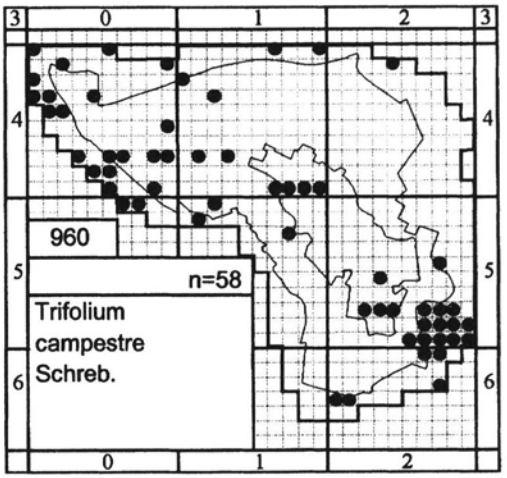
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Trifolium
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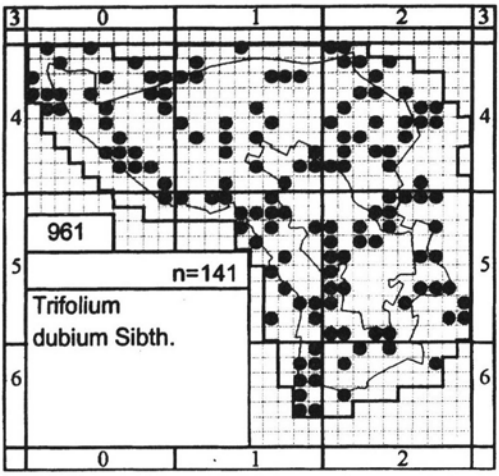
Schreb.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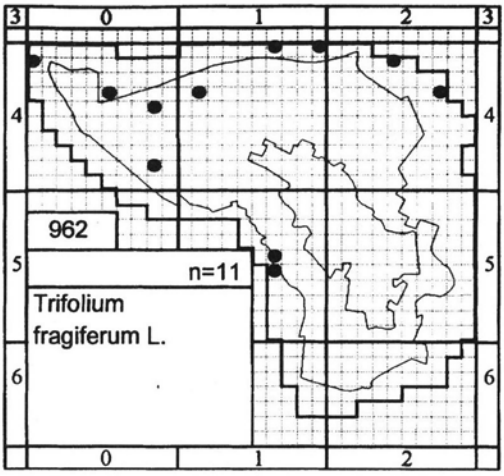
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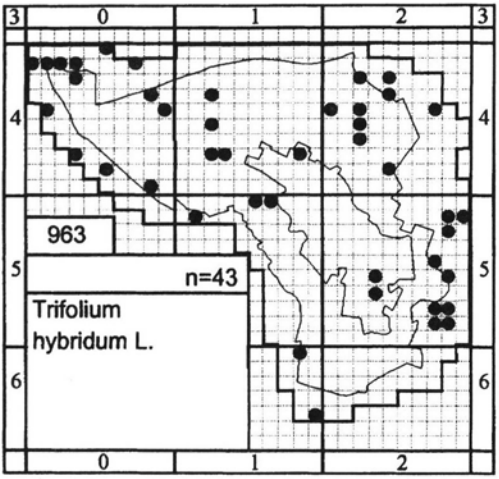
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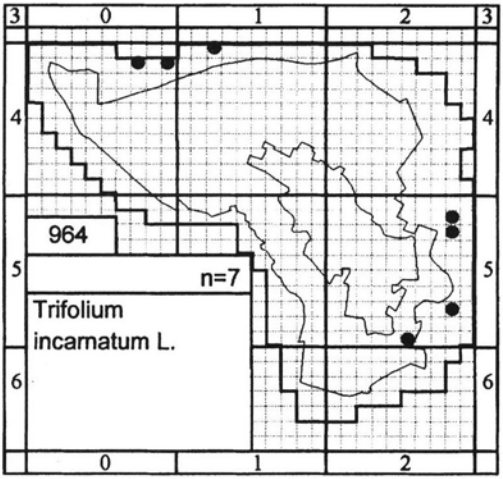
hybridum L.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Trifolium
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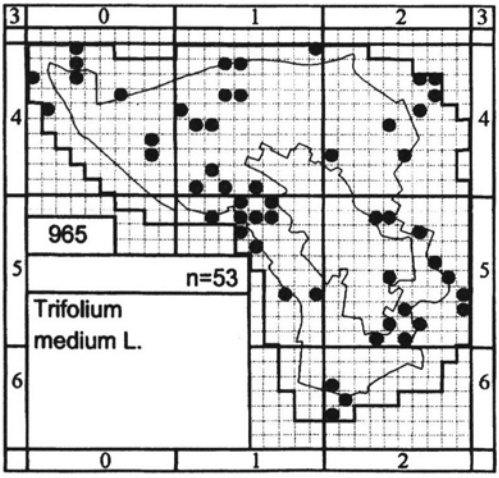
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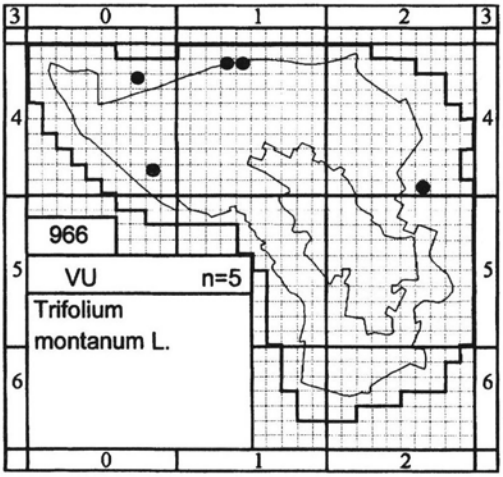
Trifolium
medium L.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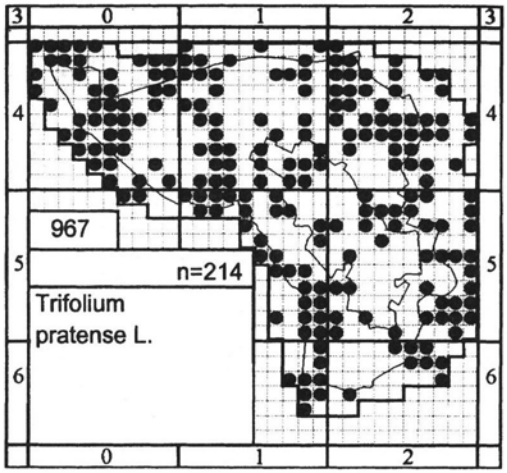
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Trifolium
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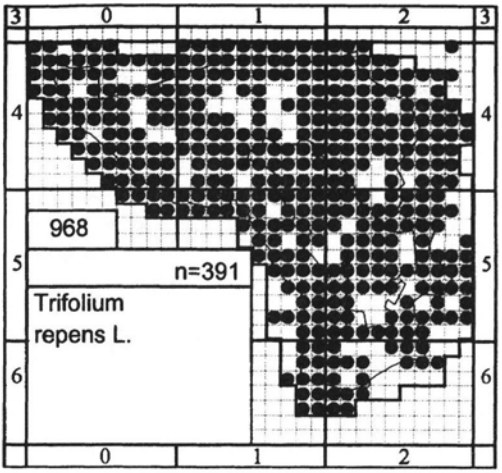
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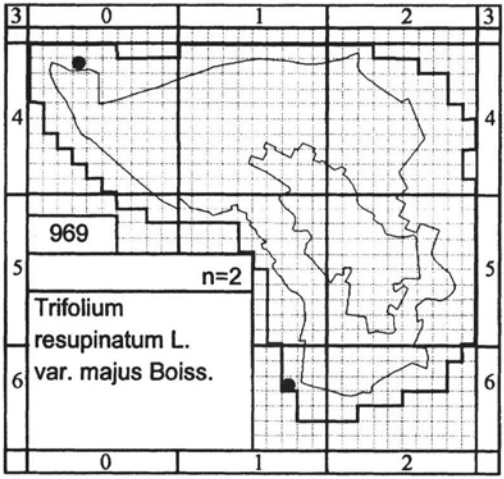
Trifolium
repens L.


969
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Trifolium
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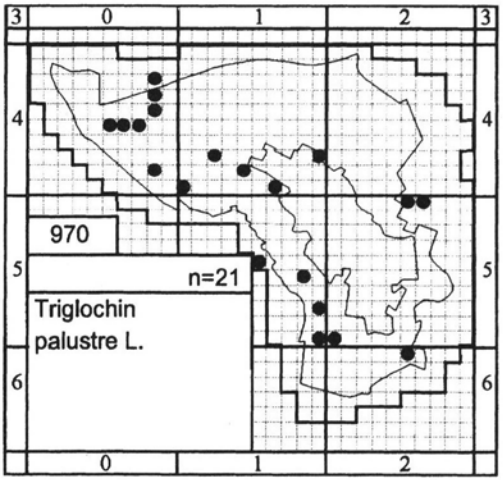
var. majus Boiss.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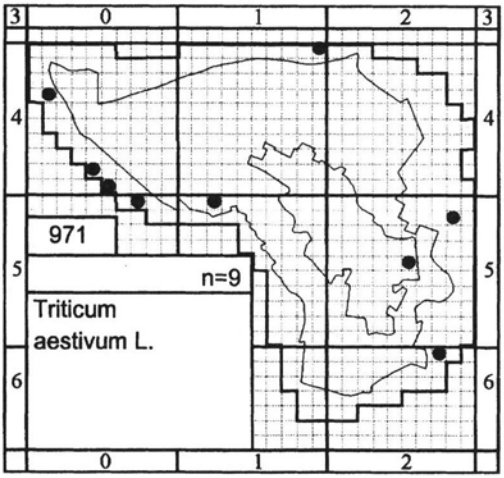
Triglochin
palustre L.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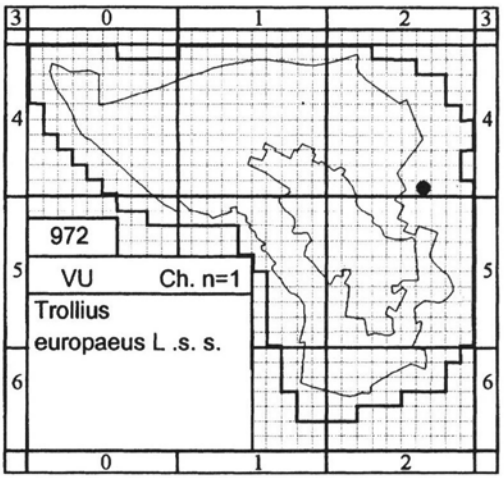
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VU
Ch. n=1
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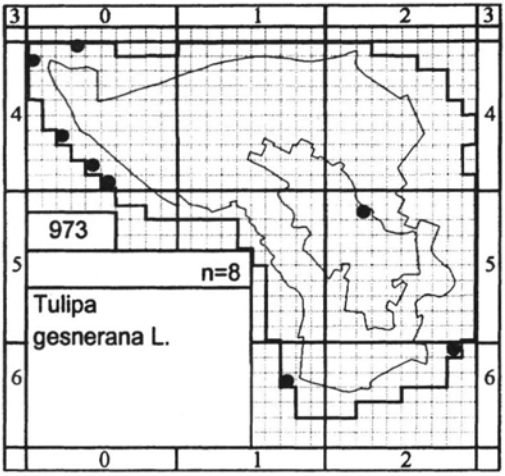
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Tulipa
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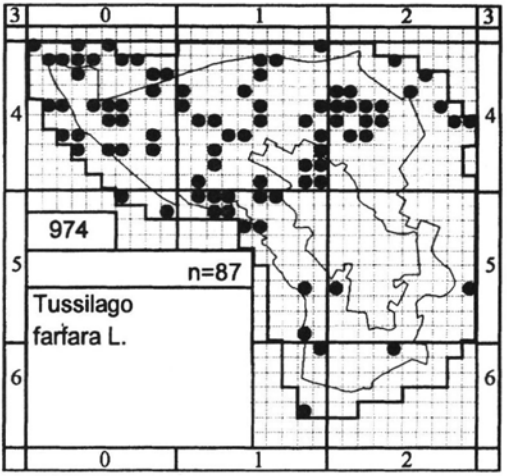
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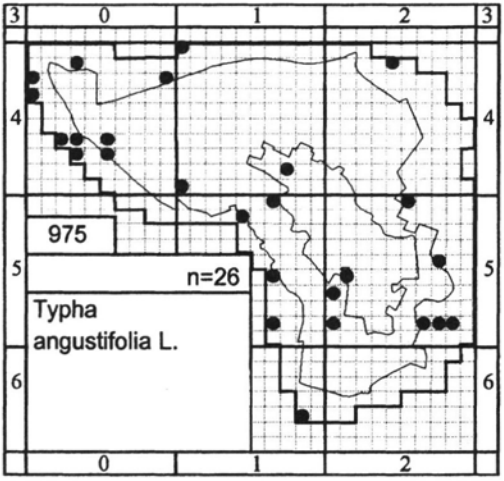
Tussilago
farfara L.


975
n=26
Typha
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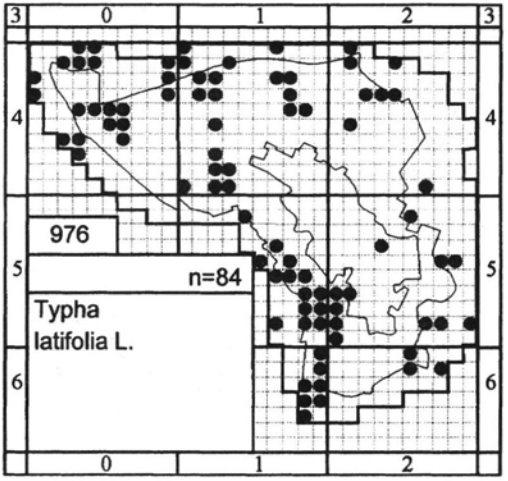
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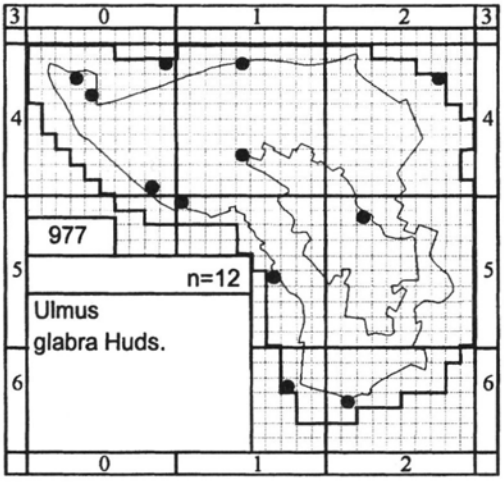
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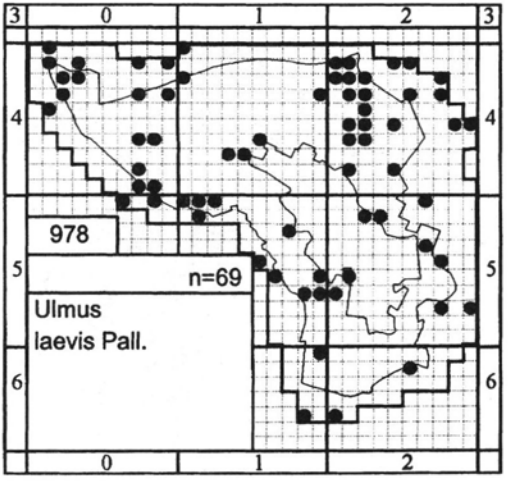
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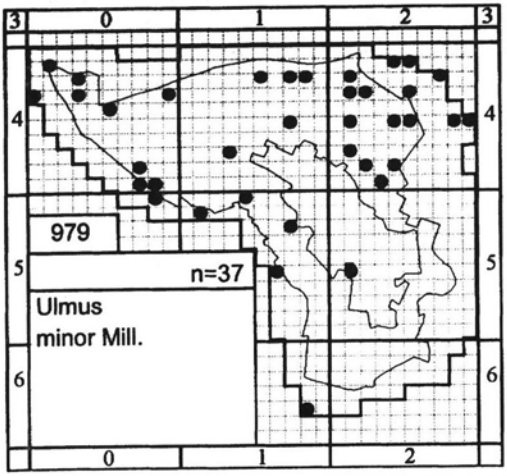
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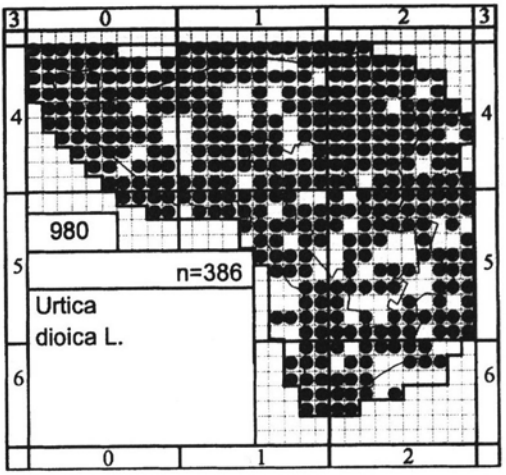
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Urtica
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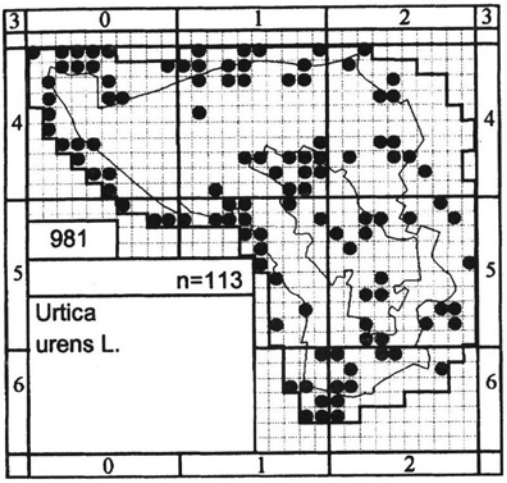
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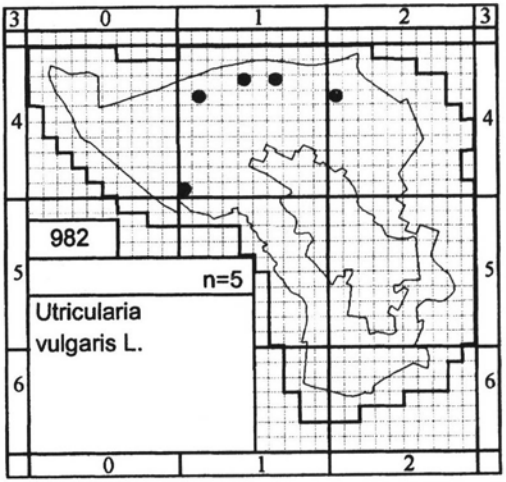
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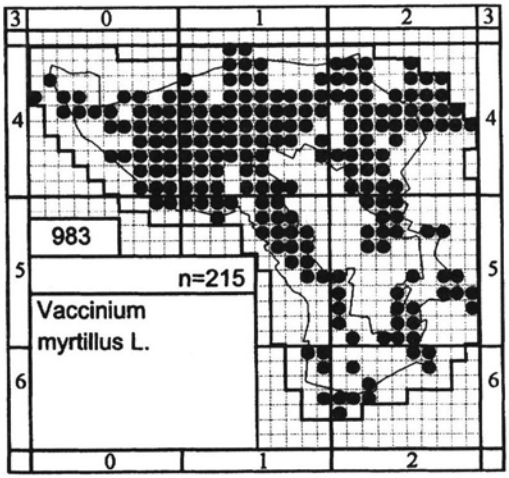
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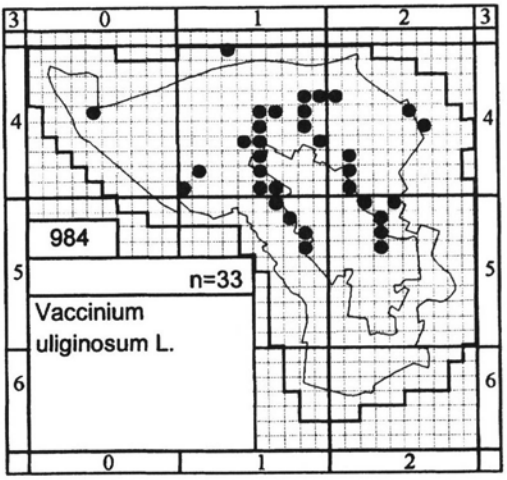
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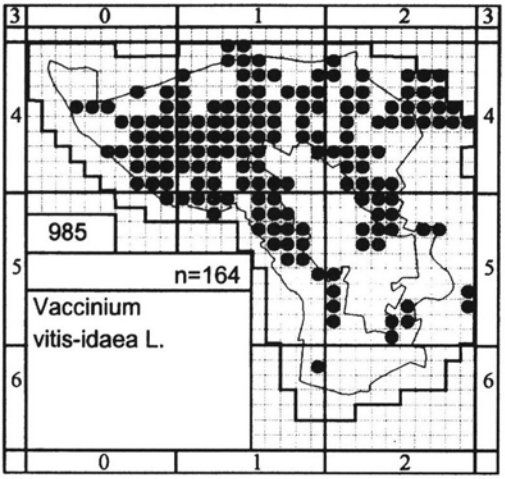
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Vaccinium
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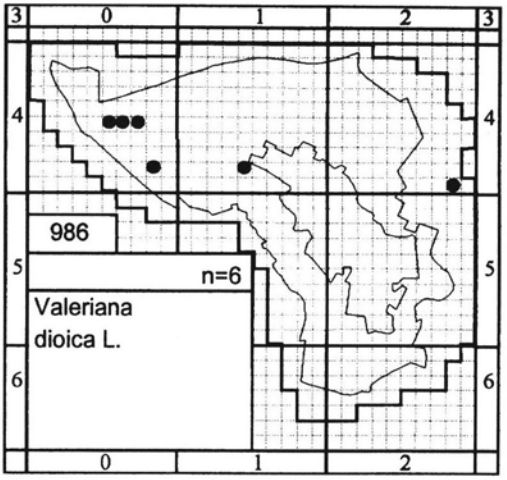
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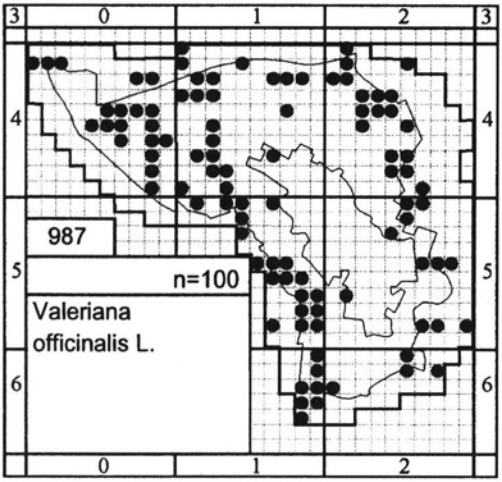
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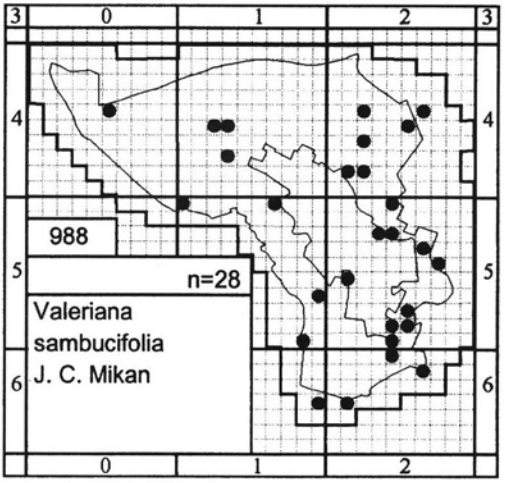
988
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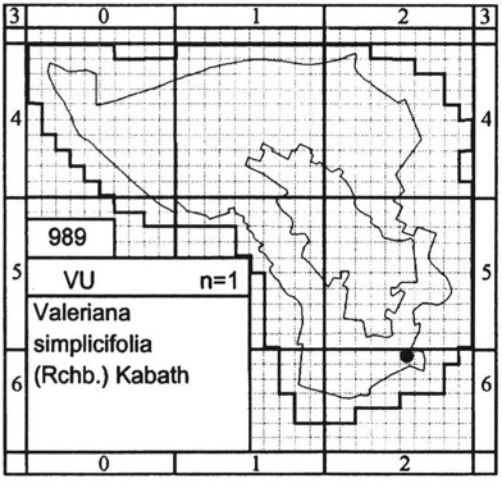
J. C. Mikan


989
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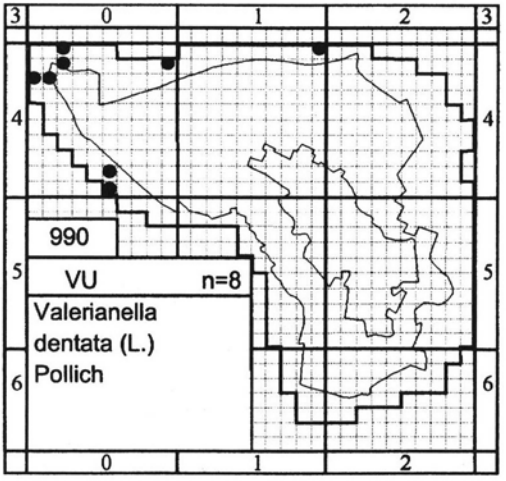
(Rchb.) Kabath


990
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Valerianella
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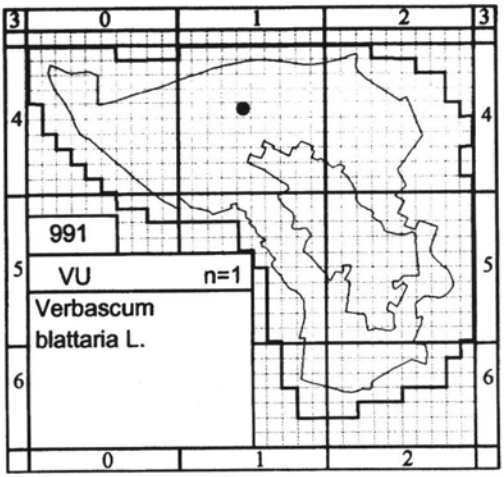
Pollich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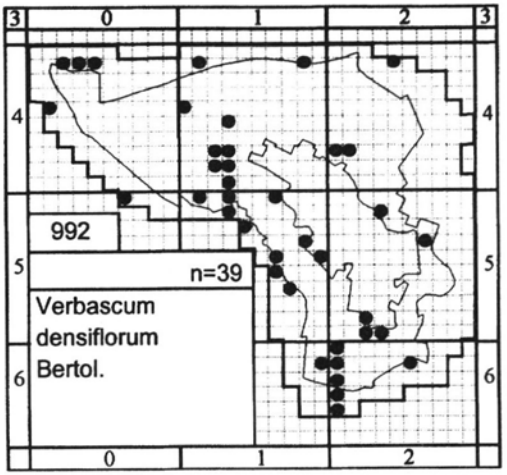
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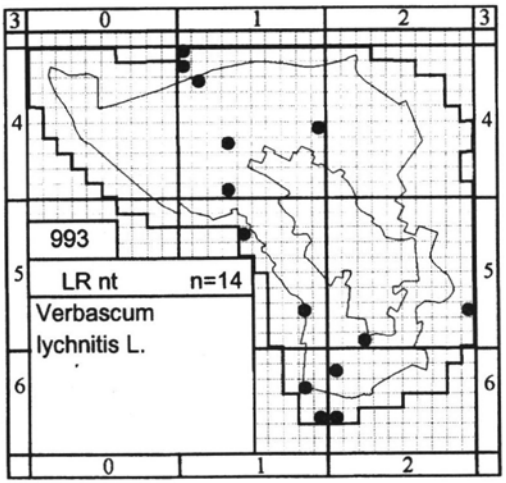
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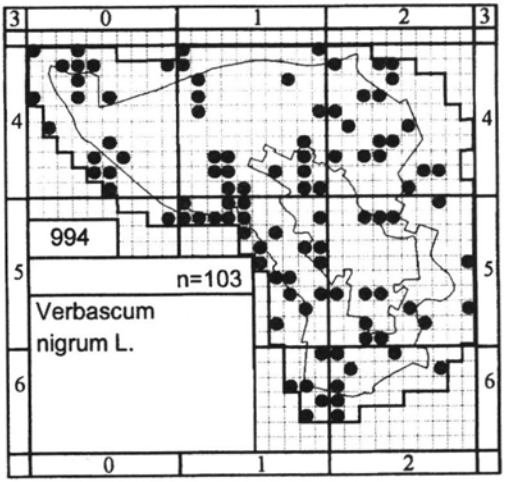
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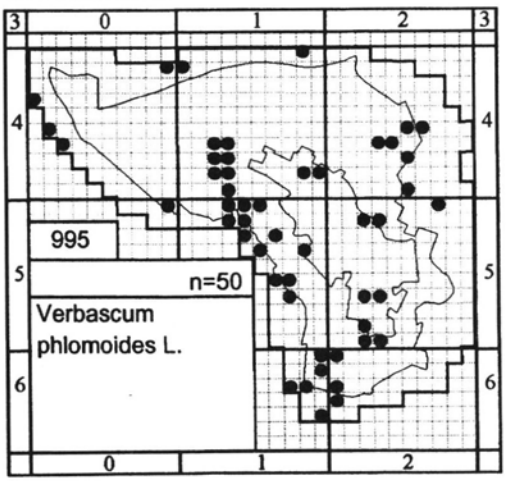
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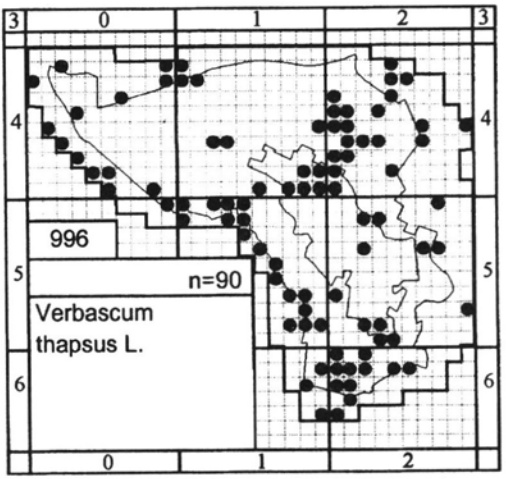
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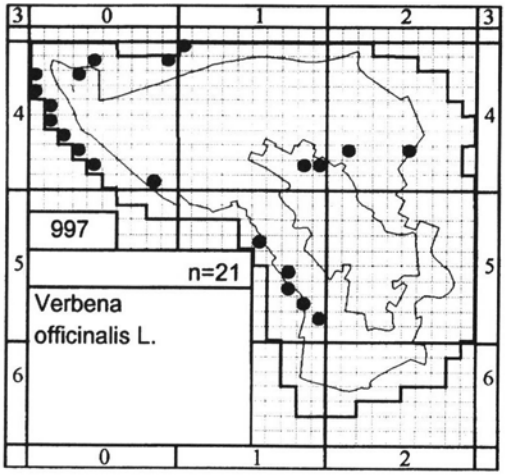
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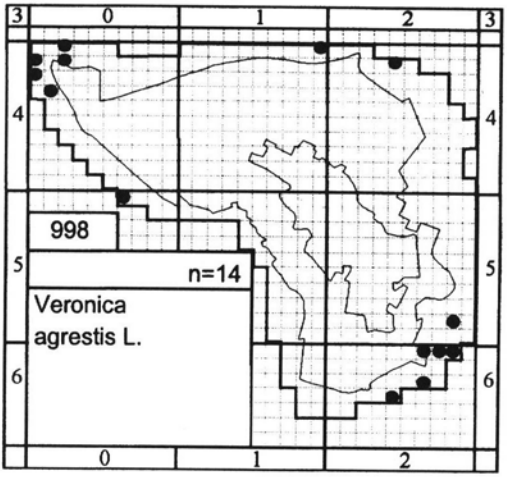
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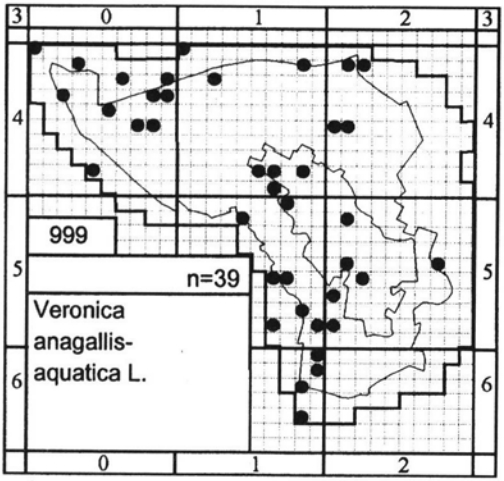
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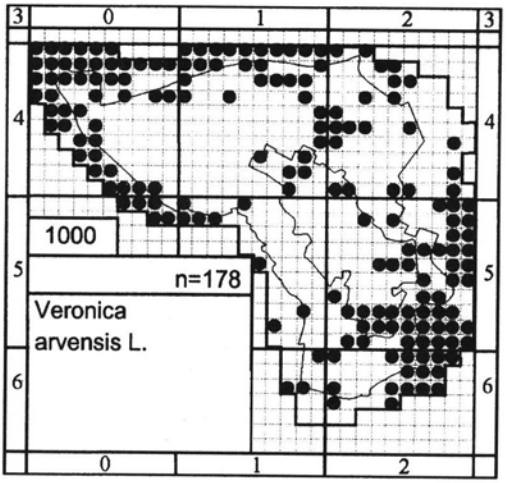
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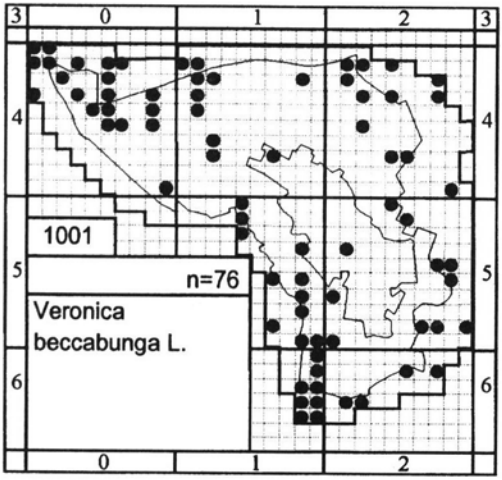
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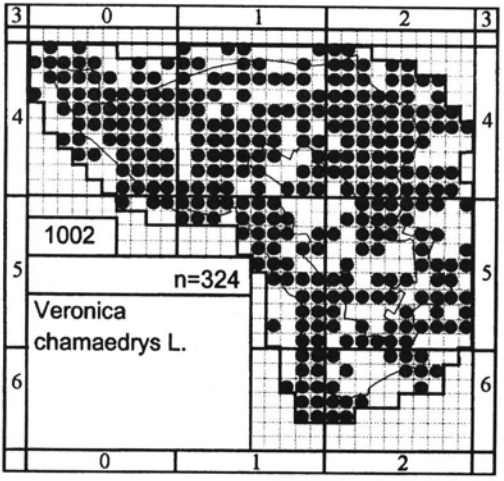
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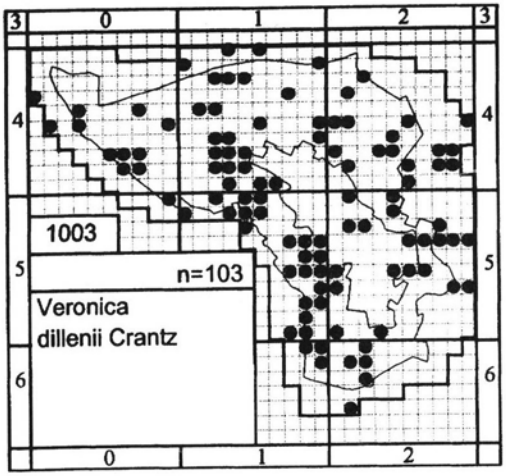
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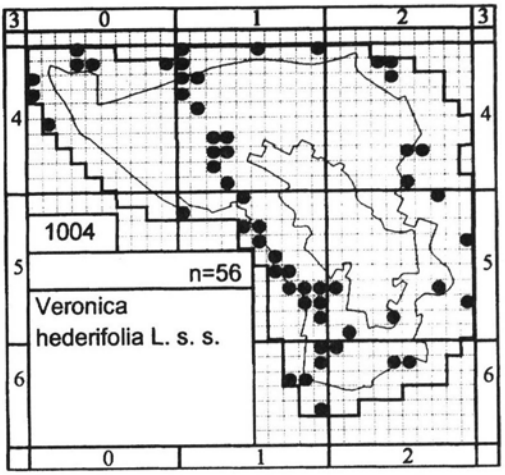
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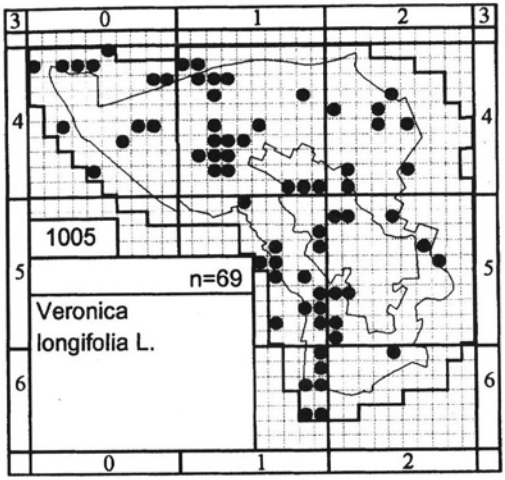
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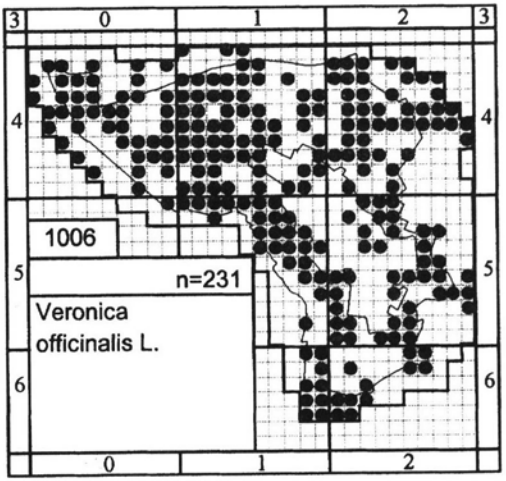
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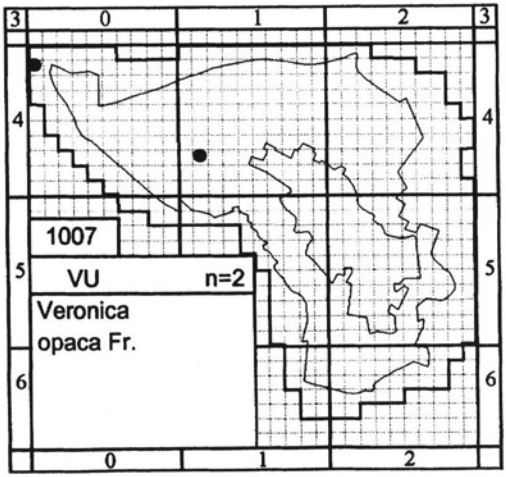
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Veronica
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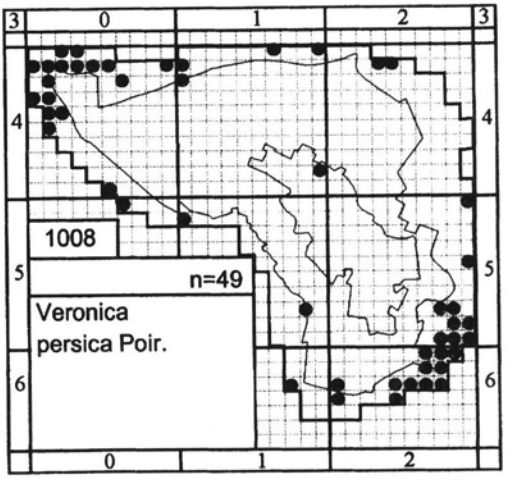
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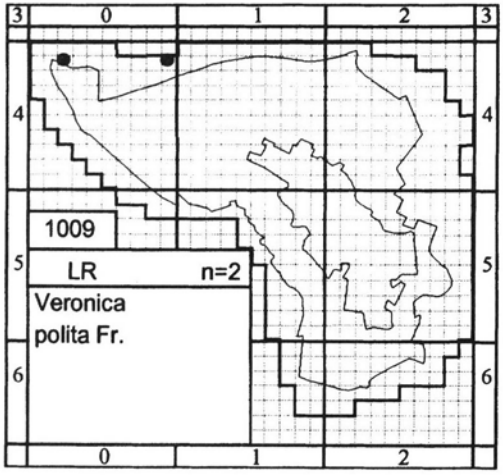
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Veronica
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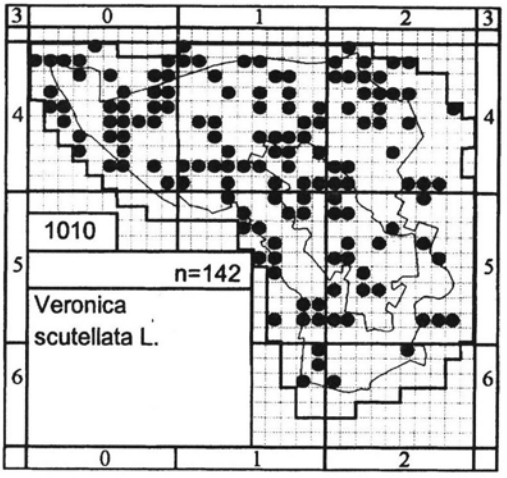
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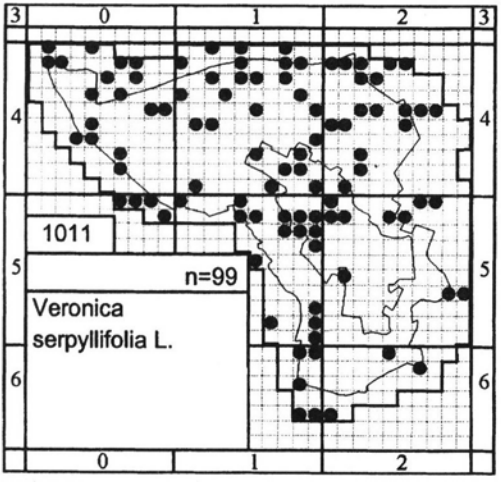
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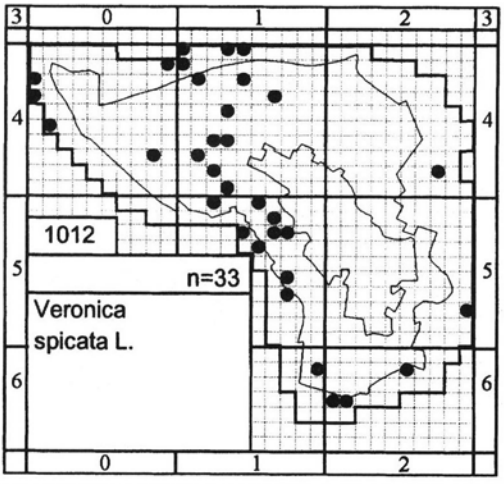
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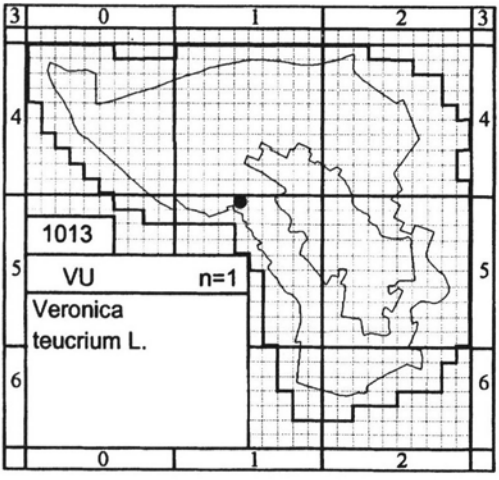
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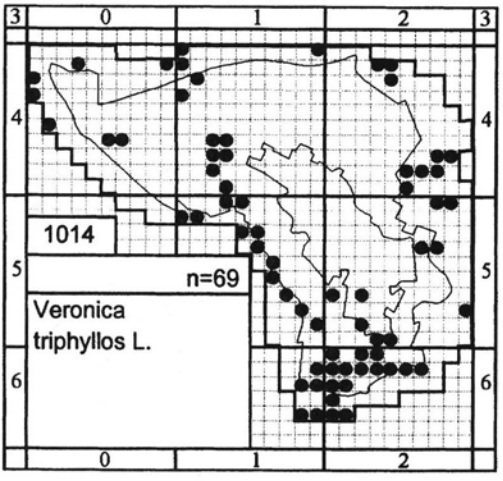
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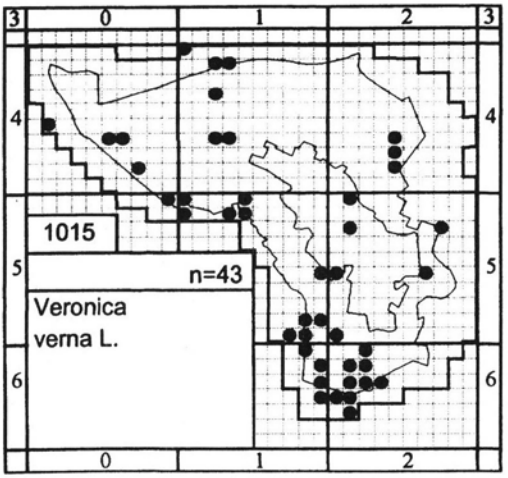
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Veronica
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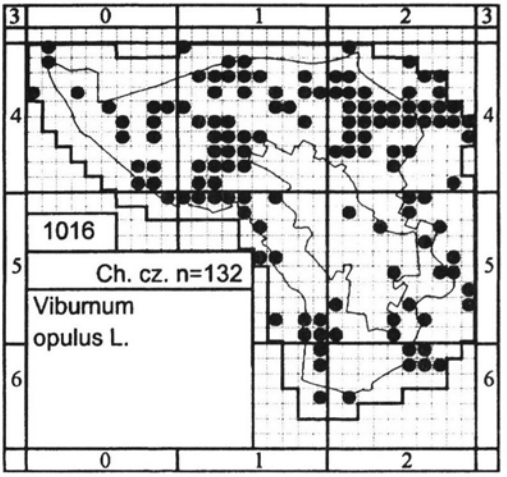
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Ch. cz. n=132
Viburnum
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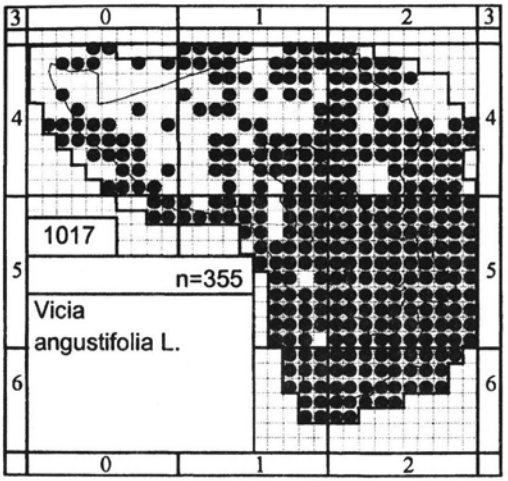
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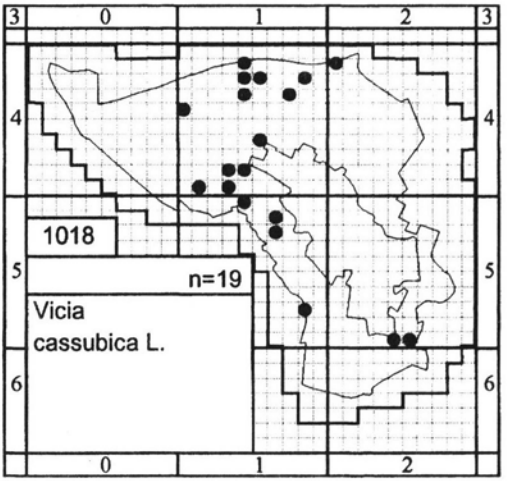
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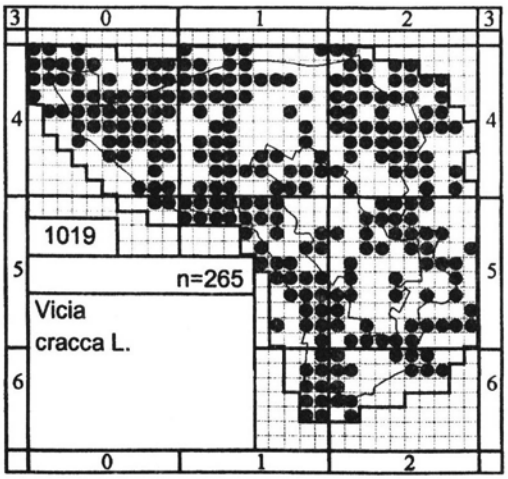
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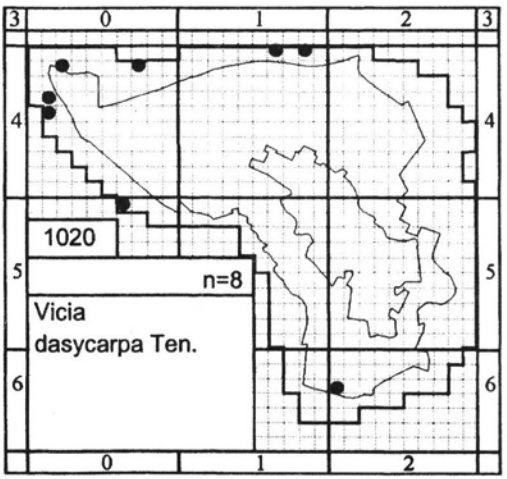
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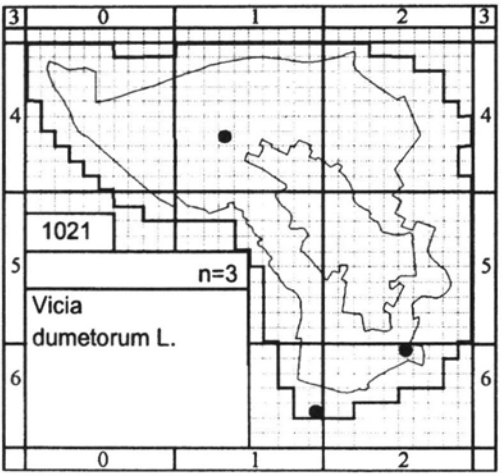
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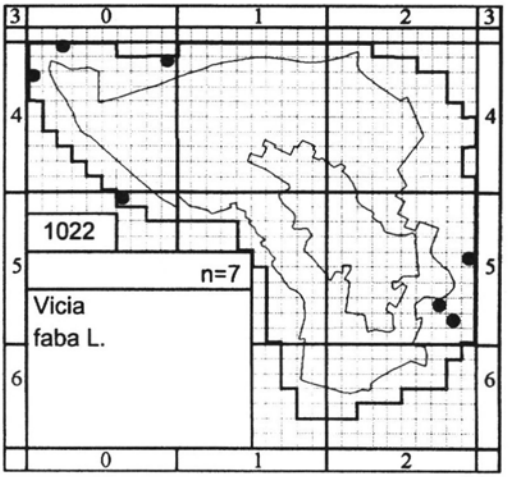
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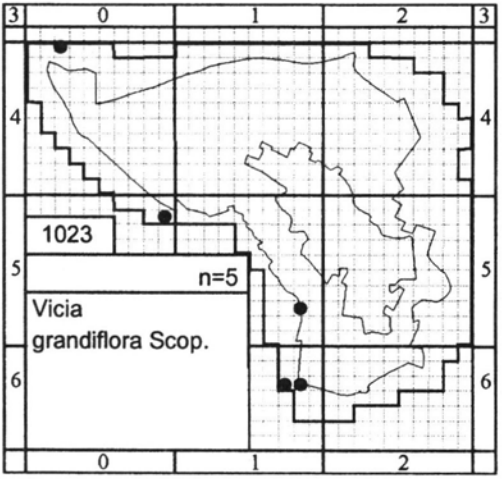
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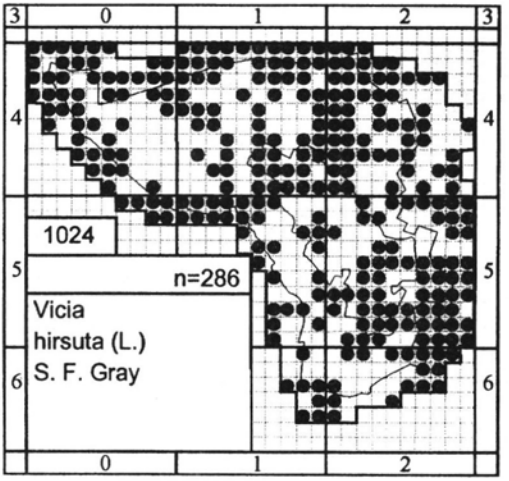
1024
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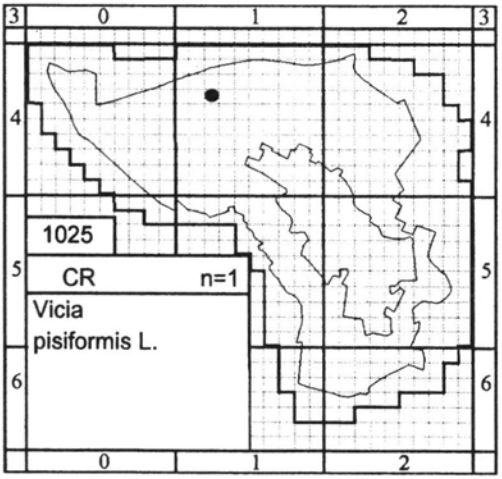
Vicia
hirsuta (L.)
S. F. Gray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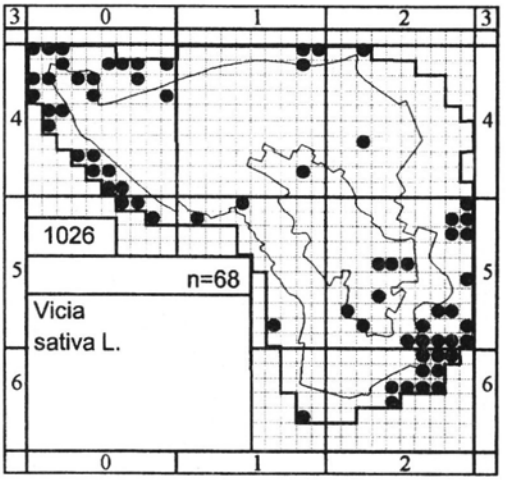
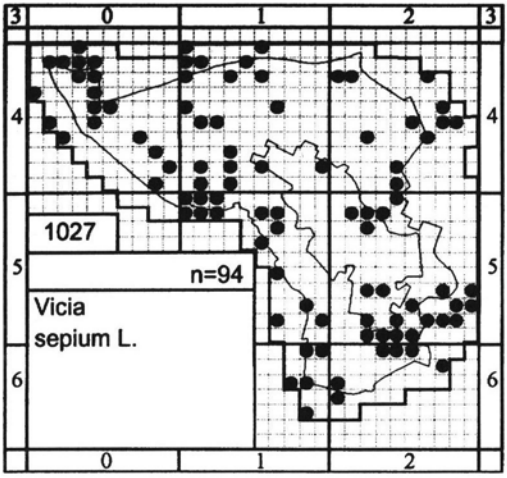
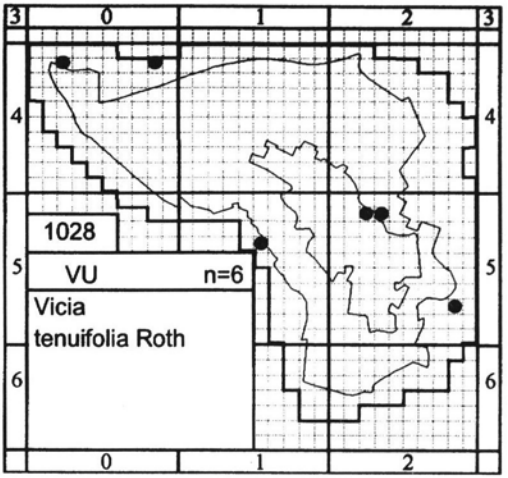
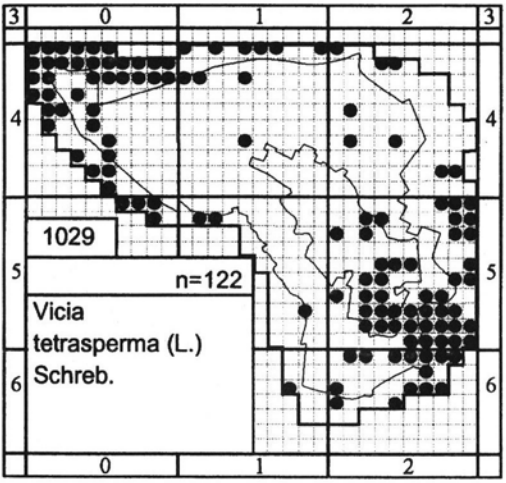
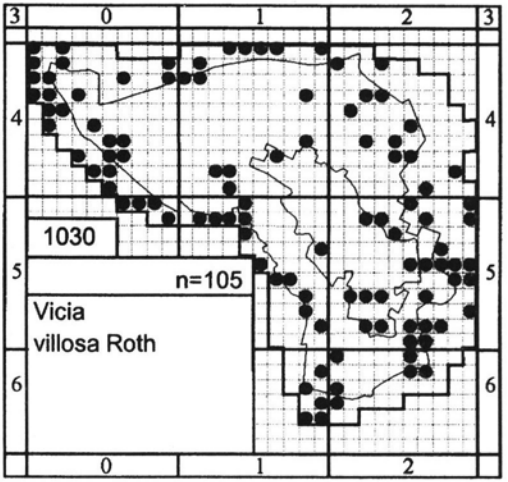
CR
n=1
Vicia
pisiformis L.

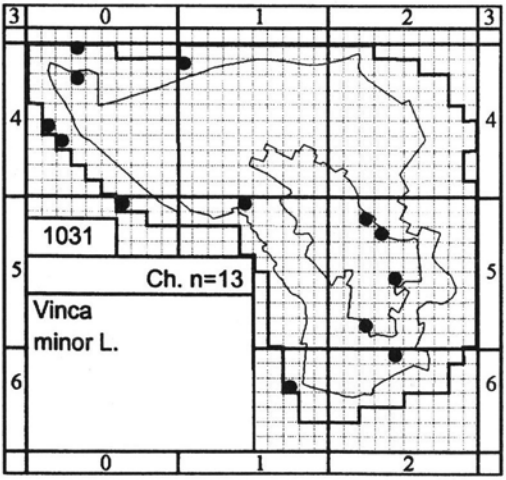

1026
n=68
Vicia
sativa L.

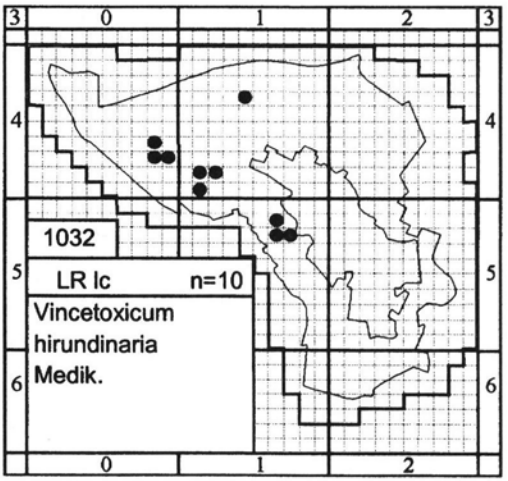

1027
n=94
Vicia
sepium L.

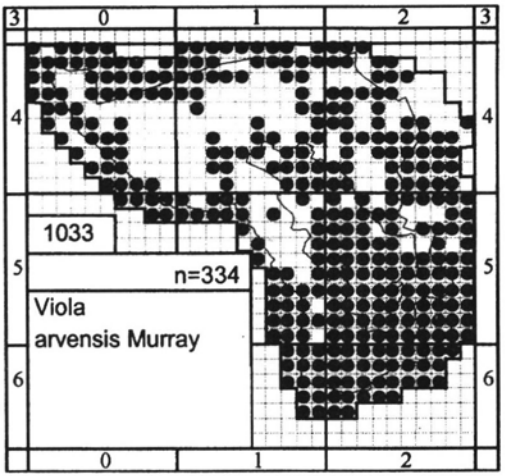

1028
VU
n=6
Vicia
tenuifolia Roth

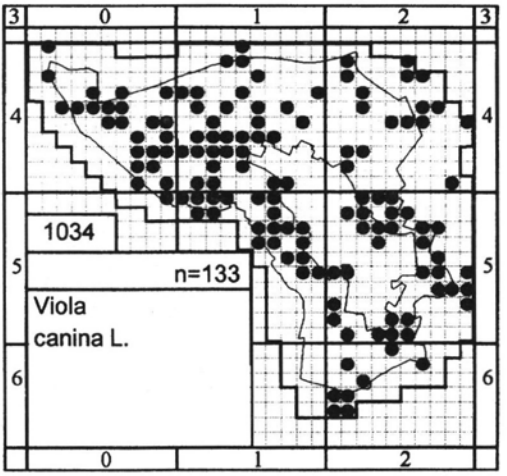

1029
n=122
Vicia
tetrasperma (L.)
Schreb.

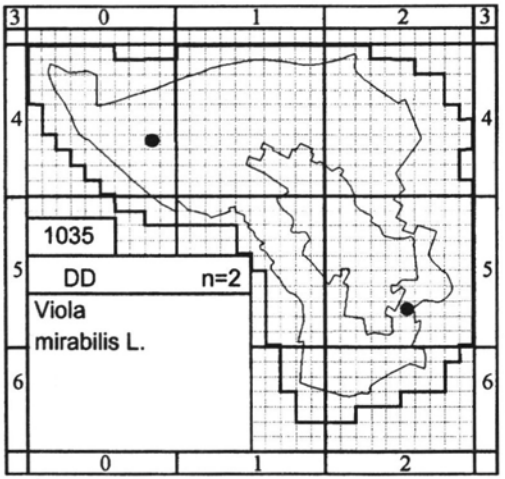

1030
n=105
Vicia
villosa Roth

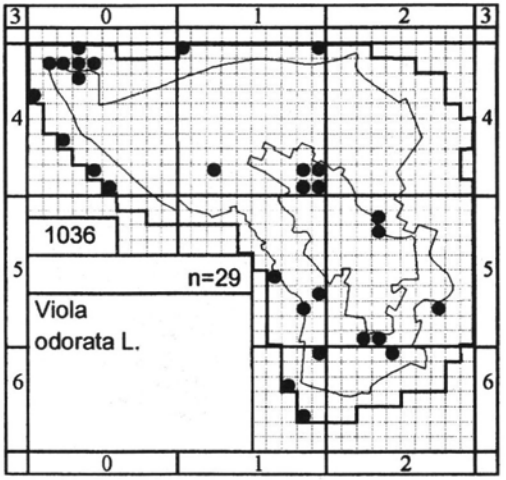

1031
Ch. n=13
Vinca
minor L.

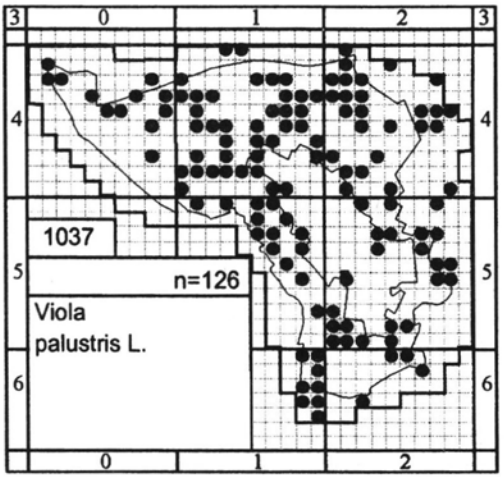

1032
LR lc
n=10
Vincetoxicum
hirundinaria
Medik.

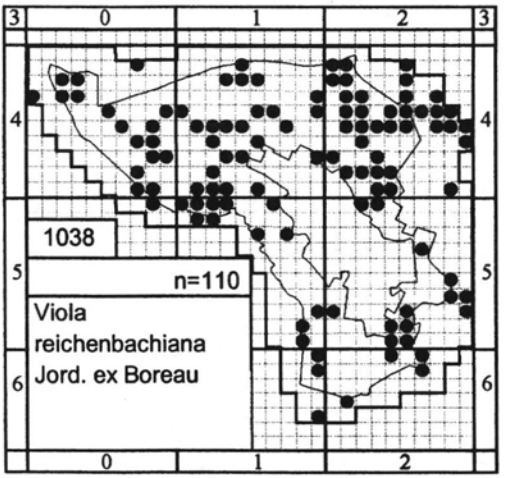

1033
n=334
Viola
arvensis Murray

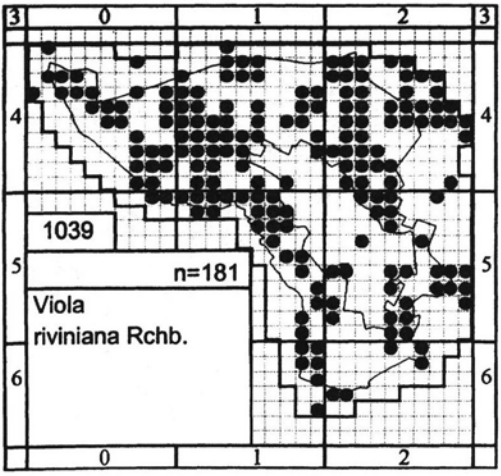

1034
n=133
Viola
canina L.

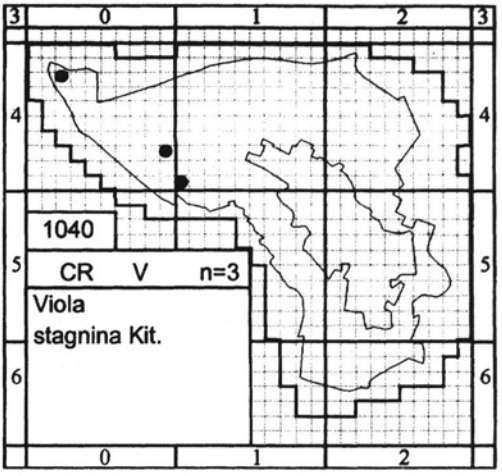

1035
DD
n=2
Viola
mirabilis L.

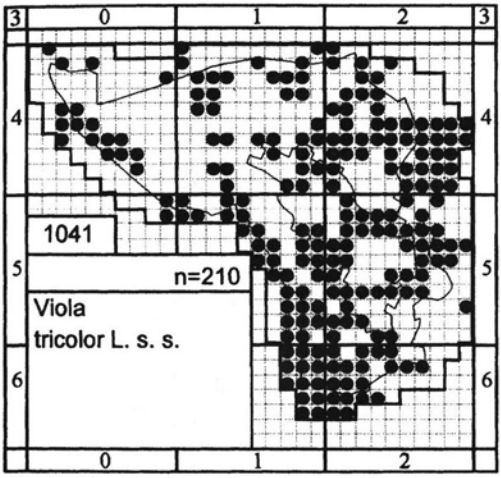

1036
n=29
Viola
odorata L.

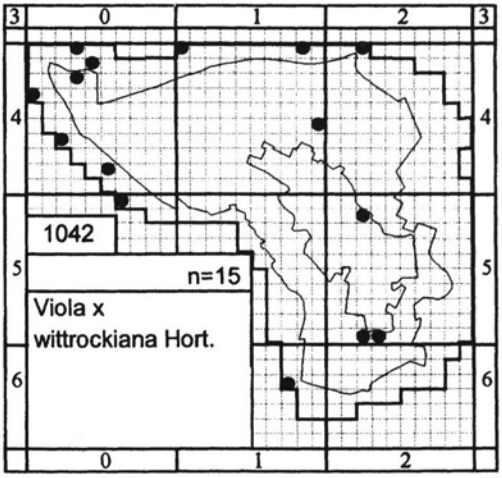

1037
n=126
Viola
palustris L.

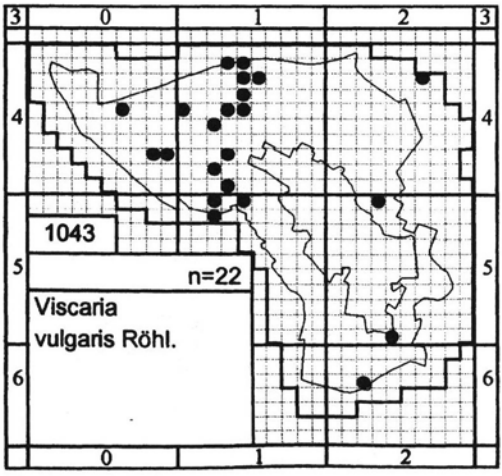

1038
n=110
Viola
reichenbachiana
Jord. ex Boreau

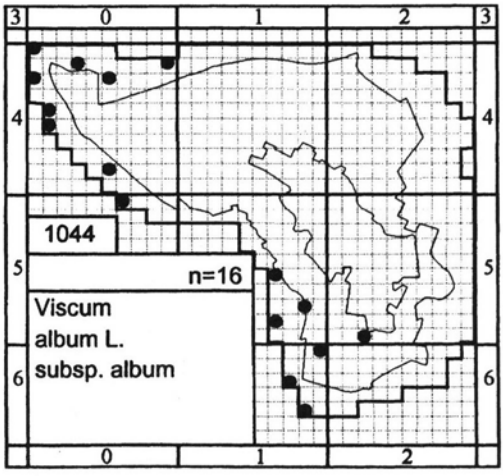

1039
n=181
Viola
riviniana Rchb.

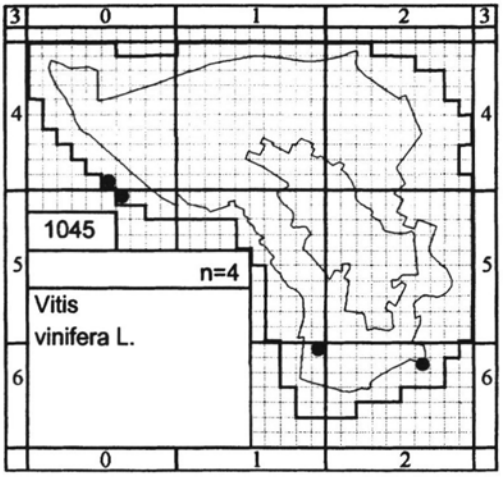

1040
CR V n=3
Viola
stagnina Kit.

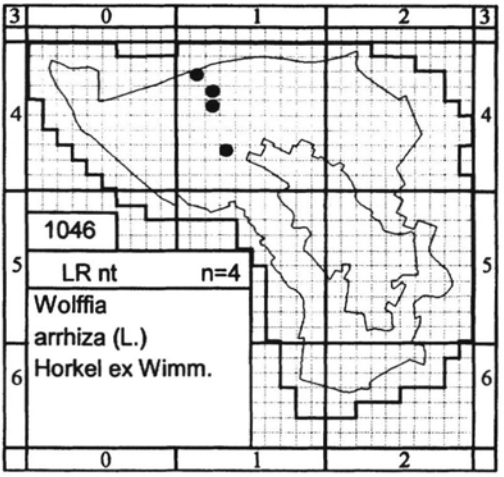

1041
n=210
Viola
tricolor L. s. s.

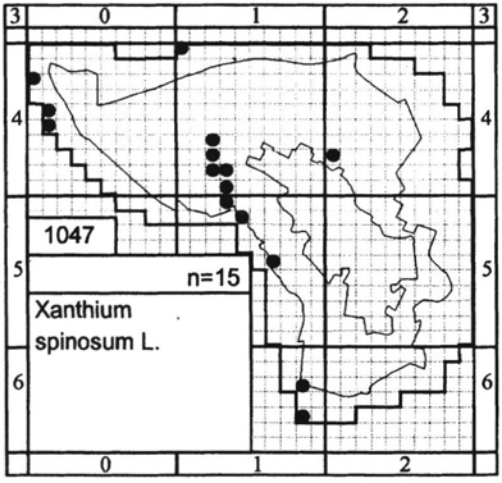

1042
n=15
Viola x
wittrockiana Hort.

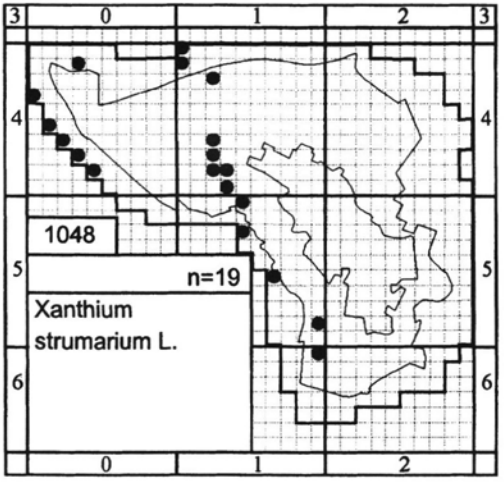

1043
n=22
Viscaria
vulgaris Röhl.

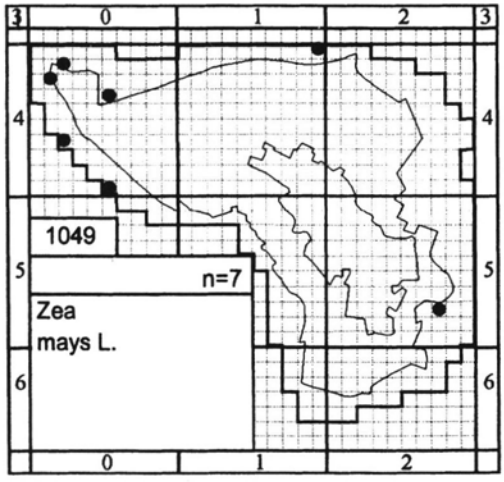

1044
n=16
Viscum
album L.
subsp. album


1045
n=4
Vitis
vinifera L.


1046
LR nt
n=4
Wolffia
arrhiza (L.)
Horkel ex Wimm.


1047
n=15
Xanthium
spinosum L.


1048
n=19
Xanthium
strumarium L.


1049
n=7
Zea
mays L.