



PROTECTED, RARE AND ENDANGERED PLANTS IN THE SŁUPIA AND WIEPRZA INTERFLUVE

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ABSTRACT. The study presents results of investigations conducted in the years 2005-2008 on protected, rare and endangered plants in the interfluve of the Słupia and Wieprza rivers. A total of 132 species of vascular plants, belonging to 56 families, were recorded in the investigated area. These included 95 apophytes, 15 archeophytes, eight kenophytes and 14 ergasiophytes. A total of 64 species covered by legal protection were reported, e.g.: *Baeothryon cespitosum*, *Chimaphila umbellata*, *Drosera anglica*, *D. intermedia*, *D. rotundifolia*, *Epipactis atrorubens*, *E. palustris*, *Erica tetralix*, *Goodyera repens*, *Linnaea borealis*, *Myrica gale*, *Neottia nidus-avis*, *Nymphaea candida*, *Pedicularis palustris*, *Platanthera bifolia*. The presence of *Dianthus superbus*, *Lunaria rediviva*, *Platanthera chlorantha* and *Rubus chamaemorus* was recorded, i.e. species considered critically endangered in the Pomorze Gdańskie and Pomorze Zachodnie regions.

KEY WORDS: vascular flora, Sławno Upland, Słupia river, Wieprza river, ATPOL

INTRODUCTION

Flora of vascular plants in the interfluve of the Słupia and Wieprza rivers (the eastern part of the Sławno Upland province) has not been the object of comprehensive studies yet. The oldest reports were published by Reverend Homann (1828-1835), who in a 3-volume monograph wrote on certain species found in that region Kobylnica (*Kublitz*), Nosalin (*Nitzlin*), Słupsk (*Stolp*), Sycewice (*Zitzewitz*) and river valleys Moszczeniczka (*Motz Bach*) and Zielona Struga (*Feuer Bach*). Several years later SCHMIDT (1848) published a list of species for the Pomerania region, among which he mentioned several taxa from the Starokrakowskie Forests (*Forst Alt Krakow*). Information on rare plants from the area Przysław (Pirbstow), Sławno (*Schlawe*), Słowino (*Schlawin*) and Zębowo (*Symbow*) was given by MÜLLER (1898). Floristic data from e.g. the Sławno and Słupsk counties were published in a study by LEICK (1925) and concerned peatbogs, forest and ruderal communities. In the 1920's and 1930's materials collected during botanical field trips in the area Sławno (HASSE 1924, HOLZFUß 1925, MARQUARDT 1929, 1930, ROSENOW 1930) were published. A summary of findings by naturalists from Sławno was given in a publication by MARQUARDT (1948), which presented numerous floristic data from the Sławieński Forest (*Schlauer Stadtwald*) and valleys of Rivers: Jesienica (*Esch Bach*), Moszczenica (*Motze*), Reknica (*Krebs Bach*), Tokara (*Taukaree*) i Wieprza (*Wipper*). In Słupsk (*Stolp*) investigations on vascular, particularly synanthropic flora were conducted starting from 1920's by German researchers, KARL (1925),

BANNIER (1929), OTTE (1933). For the area of the former Słupsk county (*Kreis Stolp*) localities of rare plants were reported e.g. by BANNIER (1933), KRAUSE (1934). In the period following World War II publications were printed concerning the chorology of vascular plants in the area of Słupsk and its environs, e.g. MODRZEJEWSKI (1958), MISIEWICZ (1987), MISIEWICZ et AL. (1993), SOBISZ (2002).

In the area of the study in the 1930's a botanical garden was established in Sławno at the former Progimnasium school, in the creation of which adjacent meadows (*Kuhbruch*), the Municipal Canal (Młynówka) (*Holz Graben*) and three ponds neighbouring the railway tracks of the Gdańsk (*Danzig*) – Szczecin (*Stettin*) line were used. The garden was created by Karl Friedrich Marquardt, the head of the department of botany and zoology of the Regional Museum at Darłowo (ROSENOW 1986). This garden was described by e.g. HOFFMAN (1951), FIGLAROWICZ (1960), STECKI and BIERNACKI (1961), SOBISZ et AL. (2003). At present in the former garden the remaining elements include fragments of the rock garden, a destroyed section of geophytes and plots of ornamental plants. In 2001 the School Nature Refuge was established on the site.

Valuable floristic data (based mainly on data reported by German researchers) from the Pomerania region were supplied by a study by CZUBIŃSKI (1950), which presented the wealth of the Pomeranian flora in view of climatic, orographic, soil and water relation conditions.

The interfluve of the Słupia and Wieprza after World War II was also the object of investigations for Polish specialists in floristics. Peatbog flora of that area was

studied by CZUBIŃSKI (1949); KRÓL (1968, 1969). Investigations on the flora and segetal and ruderal vegetation were conducted by BOROWIEC *et al.* (1977 a, b), MISIEWICZ (1978), MISIEWICZ and SOBISZ (1987), ROLA and KUCHARCZYK (1992), SOBISZ (1996), ROLA *et al.* (2001). The dendroflora and herbaceous flora of manor parks were described by KOWNAS and SIENICKA (1965), PACYNIAK and SURMIŃSKI (1965), SENETA (1979), MAJEWSKI (1981), MISIEWICZ and GRODZKA (1994), SOBISZ and TRUCHAN (2005), SOBISZ (2008). Detailed studies at archeological excavation sites were carried out by WITT (1934) and CELKA (2002).

Herbarium materials supply essential information on the flora of the region from which they come. The oldest preserved herbarium from the area of the study includes a collection of poisonous plants from the environs of Kobylnica and Lubuń (HOMANN 1811). Interesting herbarium collections were created for Sławno in the years 1933-1934 (CELKA *et al.* 2003). Herbarium materials of outstanding value are deposited at the Museum at Darłowo, which survived World War II. Over 1100 allegates originating from the area of Sławno and Słupsk were preserved (MISIEWICZ 1977). At present this herbarium is found at the Herbarium SLTC of the Institute of Biology and Nature Protection, the Pomeranian University in Słupsk.

Former herbarium collections containing very rare species and a lack of a current study on the vegetation cover were an inspiration for the decision to undertake investigations in that area.

THE AREA OF STUDY

According to the geo-physical regionalization the interfluvium of the Słupia and Wieprza rivers belongs to the Sławno Upland mesoregion (KONDRACKI 1994). According to the geobotanical division SZAFER (1972) the investigated area is located within the following regions: the Baltic Coastland and Pomeranian Lake District of the Wałcz-Drawsko district, while according to SZAFER (1972) it is in the Southern Baltic Coastland region of the Słupsk district and the Central Pomeranian Lake Districts regions of the Bytów district, the Drawsko Lake District.

In terms of the administrative division the area belongs to the Sławno and Słupsk counties and the communes of Dębica Kaszubska, Kobylnica, Sławno, Słupsk and Ustka.

Forest complexes are administered by three Forest Divisions:

- Leśny Dwór (NLD) – the Skarszów district (forest districts (L.) of Lubuń and Płaszewko),
- Sławno (NS) – the Stary Kraków district (forest districts (L.) of Chudaczewko, Emilianowo, Krakowiany, Pątnowo, Radosław and Wrzeźnica) – the Żukowo district (forest districts (L.) of Janiewice, Łętowo, Ostrowiec and Tychowo),
- Ustka (NU) – the Słupsk district (forest districts (L.) of Machowino, Sycevice and Zębowo) – the Ustka district (forest districts (L.) of Redwanki, Pęplino and Starkowo).

The relief of the eastern part of the Sławno Upland is rather monotonous and it reaches altitudes of 40-60 m a.s.l. The diversification of surface features increases in the southerly direction. A considerable proportion of the analysed area is covered by bottom moraine plateau forms, i.e. upland plain and undulating morainic plateau, which at the boundary with the channel of the Reknica river turns into a hilly plateau. The upland plain (with relative heights of up to 2 m) is located in the northern part of the mesoregion from the line established by Rzyszczevo – Bobrowice – Warszkowo – Wrzeźnica – Zębowo – Strzelino. The undulating morainic plateau (relative heights of 2-5 m) is situated south of the above mentioned line. Flat or undulating plateau surfaces are broken by the valleys of the Słupia and the Wieprza as well as their tributaries and subglacial channels and erosion valleys. The most important tributaries of the Słupia in the analysed area include the Sycevice watercourse and Gnilna, Głaźna, Kamienna and Kwacza in turn, in the Wieprza catchment there are Jesienica, Moszczenica, Moszczeniczka, Pijawica, Reknica, Radosławka, Ściegnica and Zielona Struga (CYBERSKI 1984, FLOREK 1991).

In terms of the soil and agricultural regionalization the investigated area belongs to the Koszalin-Słupsk Region (MROZOWSKI 1974). In the discussed Region leached brown soils and pseudopodsolic soils predominate (74.6%), formed from unformed light loams, on a more cohesive subsoil of loose and slightly loamy sands. Brown soils formed from light and medium loams occupy a very small area (4.6%). A very limited percentage of these soils is formed from silty soils and clays rich in calcium carbonate (1.3%) and is found in Pleistocene marginal lakes in the area of villages Pieszcz – Kłośnik – Postomino and west of Sławno (surroundings of the villages Boleszewo – Sławsko – Staniewice – Rzyszczevo). Peat soils, alluvial muck soils and muck soils were formed in river valleys (10.7%). Next to them, small areas are covered by black earths (7.3%) and alluvial soils (2.8%) (CHABROWSKI *et al.* 1980).

In terms of climatic conditions the eastern part of the Sławno Upland belongs to the East-Central Seaside region, the Jarosławiec-Łeba subregion and the North Pomeranian region (WOŚ 1970). A certain diversification may be observed here between lower and middle vs. upper courses of the Słupia and Wieprza rivers. The highest total annual precipitation (over 775 mm) is reported for the upper, while the lowest – for the lower section of the catchment (700 mm). The highest rainfall is recorded in July, while the lowest in March. The mean number of days of snow-lying ranges from 46 in the lower to 72 in the upper course of both rivers (KOŚCIŃSKI 1995).

The area of the Słupia and Wieprza interfluvium is a distinctly agricultural region and in the most part it is deforested. Preserved archeological microregions and settlement complexes with a chronological sequence from the Neolithic Age through the Lusatian-Pomeranian and Oksywie-Wielbarski periods to the early Middle Age territorial communities indicate a long-term land use in the Słupia and Wieprza interfluvium (ŁOŚIŃSKI 1982, FLOREK 1989, OLCZAK and SIUCHNIŃSKI 1989, RĄCZKOWSKI 1989). The region around Sławno and Słupsk since the early Middle Ages has been known as

a separate settlement complex. It clustered on plains and fertile areas of the bottom morain, with advantageous conditions for soil cultivation and animal breeding. In the interfluve of the Słupia and the Wieprza we may find several ruins of fortified towns dating back to the 9th-10th centuries. Lowland hollow fortified settlements predominating in the agricultural landscape include (ŚLASKI 1962). New areas used for settlements in the Sławno-Słupsk region were created as a result of forest thinning. This process was intensified starting from the 14th century and large areas of primeval forest were transformed into fields and meadows (ŚLASKI 1951). Over the time larger forest complexes were preserved mainly between Chudaczewko and Pątnów, Staniewice and Wrześnica, and between Gałżinowo and Krzemienica.

MATERIAL AND METHODS

Studies on vascular flora in the interfluve of the Słupia and Wieprza rivers were conducted in the years 2005-2008. The location of the area of analysis is presented in Figure 1. Nomenclature of vascular plants is consistent with a study by MIREK et AL. (2002). The position of taxa in terms of their geographical-historical status, taking into consideration the unique character of this region, was defined based on lists: ZAJĄC (1979), ZAJĄC and ZAJĄC (1992) and ZAJĄC et AL. (1998). Following abbreviation were used in the geographical-historical classification: Ap – apophyt, Ar – archeophyt, Erg – ergasiophyt, Ken – kenophyt, Sn – non-synanthropic spontaneophyt.

Species covered by legal protection are given after the Ordinance of the Minister of the Environment (ROZPORZĄDZENIE... 2004). Species covered by complete protection are denoted with !!, while those covered by partial protection – with !. Protected species, recorded in anthropogenic habitats, are marked in the table with *. In the evaluation of the local threat for species the following categories were applied, as defined in studies by ŻUKOWSKI and JACKOWIAK (1995): R – rare, V – vulnerable, E – endangered, as well as MARKOWSKI and BULIŃSKI (2004): LC – least concern, NT – near threatened, VU – vulnerable, EN – endangered, RE – regionally extinct. Moreover, categories of threat for species found on the Red list of vascular plants in Poland are given according to ZARZYCKI and SZELĄG (2006): E – critically endangered, [E] – endangered with extinction in isolated localities, outside the main range limits, V – vulnerable, [V] – vulnerable in isolated localities, outside the main range limits. In the flora of the analysed area rare species in the region are marked with RG.

Families and species are arranged in the alphabetical order. Information on each recorded species contains the code number of the square in the ATPOL system (ZAJĄC 1978), the name of the town/village or forest district and the type of habitat/forest site. In case of forest sites the location of forest units is also given (compartments and subcompartments).

German names of towns/villages and physiographic names used after 1945 are given in brackets in italics (KAEMMERER 1988, BIAŁECKI 2001, SŁOWNIK... 2002).

RESULTS

In the analysed area a total of 132 species of vascular plants were recorded, which are covered by legal protection, are endangered in the Pomorze Gdańskie (*Gdańsk Pomerania*) and Western Pomerania regions and in Poland, or are classified as rare in the region. A complete list of species is presented in Table 1. Recorded species are representatives of 56 families. Among species a total of 44 apophytes, 15 archeophytes, eight kenophytes, 51 non-synanthropic spontaneophytes and 14 ergasiophytes were reported. Localities of rare and endangered apophytes presents Figure 2, wherever localities of rare and endangered non-synanthropic spontaneophytes in the Słupia and Wieprza interfluve presents Figure 3. Legal protection covered 64 species.

Species covered by complete legal protection and at the same time endangered in the Gdańsk Pomerania (MARKOWSKI and BULIŃSKI 2004) and the Western Pomerania (ŻUKOWSKI and JACKOWIAK 1995) in the analysed area include: *Aquilegia vulgaris*, *Baeothryon cespitosum*, *Dactylorhiza maculata*, *Drosera anglica*, *D. intermedia*, *Epipactis atrorubens*, *E. palustris*, *Erica tetralix*, *Myrica gale*, *Pedicularis palustris*, *Platanthera bifolia*, *Polemonium coeruleum*, *Scheuchzeria palustris*, *Trollius europaeus*.

Jacobs ladder (*Polemonium coeruleum*) as a vulnerable species was entered in the Polish red book of plants (RUTKOWSKI 2001). The other species covered by complete legal protection in the analysed area include: *Arum maculatum*, *Campanula latifolia*, *Carex limosa*,

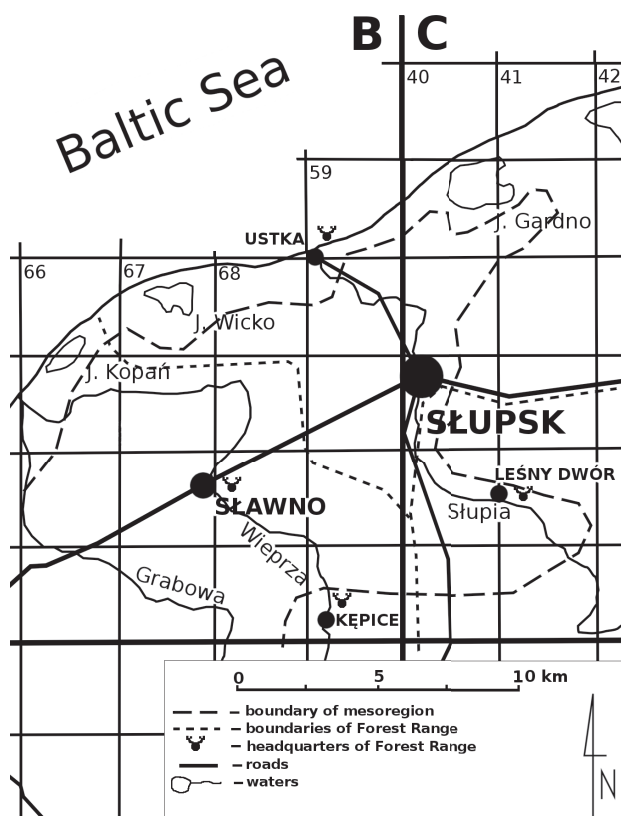


FIG. 1. Location of the study area

TABLE 1. A List of species in the Słupia and Wieprza interfluvium

Family/Species	Geographical-historical status in Poland	Protected species, rare in region (RG)	Categories of threats				Localization
			MARKOWSKI and BULIŃSKI 2004	ŻUKOWSKI and JACKOWIAK 1995	ZARZYCKI and SZELĄG 2006		
I	2	3	4	5	6	7	
Amaryllidaceae							
<i>*Galanthus nivalis</i> L.	Erg	!!	DD	I		BA 77 – Radosław, Protestant cemetery BA 78 – Wrześnica, Protestant cemetery BA 79 – NU, L. Sycewice – sect. 608f, 608g, area of an abandoned forest settlement in fertile lowland beech forest; sect. 620a, along the fence at the forest nursery; Gać, manor park BA 87 – Rzyszczewo, church cemetery BA 87 – Sławno, former Botanical Garden BA 88 – Sławsko, Tychowo, church cemeteries; Noskowo, manor park CA 70 – Słupsk, Protestant cemetery in Lasek Północny Ca 80 – Kwakowo, manor park	
<i>*Leucoium vernum</i> L.	Erg	!!			V	BA 78 – Wrześnica, church cemetery BA 79 – NU, L. Sycewice – sect. 608f, 608g BA 87 – Bobrowice, Protestant cemetery; Sławno, former Botanical Garden BA 88 – Sławsko, church cemetery; Wyszkowo, manor park CA 70 – Słupsk, Protestant cemetery in Lasek Północny	
Alliaceae							
<i>Allium ursinum</i> L.	Ap	!	VU	V	[V]	BA 77 – Stary Kraków, bank of a stream being a tributary of the Wieprza; *church cemetery BA 78 – *Pieszczy, Protestant cemetery BA 87 – NS, L. Pątnowo – sect. 316b, 317b; sub-Atlantic oak-hornbeam forest *Boleszewo – church cemetery, manor park C; *Sławno, former Botanical Garden	
Apiaceae							
<i>Aethusa cynapium</i> L.	Ar	RG				BA 77 – Kowalewice, rye field BA 87 – Bobrowice, barley field	
<i>Astrantia major</i> L.	Sn		DD	R		BA 69 – NU, L. Peplino – sect. 290b	
<i>Conium maculatum</i> L.	Ap	RG	LC	R		BA 79 – NU, L. Sycewice – sect. 620a, clearing at forest nursery BA 88 – Tychowo, manor park BA 89 – Ściegnica, at former manor farm buildings (abundant!) CA 70 – Słupsk, hump railway, Grunwaldzka street CA 80 – Żelki, roadside in manor park; Kwakowo, at manor farm building	

TABLE I – cont.

I	2	3	4	5	6	7
<i>Sanicula europaea</i> L.	Sn	RG				BA 69 – NU, L. Peplino – sect. 309f
Apocynaceae						
* <i>Vinca minor</i> L.	Erg	!				BA 77 – Stary Kraków, municipal cemetery BA 78 – Tokary, Wrześnica, Protestant cemeteries BA 79 – NU, L. Sycewice – sect. 608f, 608g, area of an abandoned forest settlement BA 87 – Boleszewo, manor park C, Kwasowo, manor park; Sławno, former Botanical Garden BA 88 – Sławsko, church cemetery, Tychowo, manor park; Wyszczkowo, manor park BA 97 – Smardzewo, manor park CA 70 – Słupsk, Protestant cemetery in Lasek Północny CA 80 – Lulemimo, Protestant cemetery
Araceae						
* <i>Arum maculatum</i> L.	Erg	!!			E	BA 87 – Sławno, former Botanical Garden
Araliaceae						
* <i>Hedera helix</i> L.	Erg	!				BA 69 – NU, L. Peplino – sect. 290b, 290d, 306a, 309f, 325a, 326b – in forest floor cover of acid low-land beech forests; Zimowiska, church cemetery BA 77 – NS, L. Krakowiany – sect. 229g; Stary Kraków, municipal cemetery, forest park and church park BA 78 – Tokary, Wrześnica, Protestant cemeteries BA 79 – NU, L. Sycewice – sect. 608f, 609g – forest parks; Gać, manor park BA 87 – NS, L. Pątnowo – sect. 310b; Rzyszczewo, manor park; Bobrowice, Protestant cemetery; Karwice, Kwasowo, manor parks; Sławno, former Botanical Garden BA 88 – Noskowo, manor park; Sławsko, Tychowo, Protestant cemeteries; Wyszczkowo, manor park BA 89 – Kuleszewo, manor park; Zabno, Protestant cemetery BA 98 – Smardzewo, Protestant cemetery CA 70 – Słupsk, Protestant cemetery in Lasek Północny, wall at the St. Jack Church, Dominikańska street CA 80 – Kwakowo, Zajączkowo, manor parks
Aristolochiaceae						
* <i>Asarum europaeum</i> L.	Erg	!	NT	V		BA 87 – Sławno, former Botanical Garden BA 97 – Kosierzewo, manor park

TABLE I – cont.

1	2	3	4	5	6	7
Asteraceae						
<i>Achillea ptarmica</i> L.	Ap	RG				BA 68 – NU, L. Starkowo – sect. 352f; forest moist meadow BA 69 – NU, L. Peplino – sect. 291g, 292c, meadows on lowmoor peats; sect. 295g, 307b, 320f; forest meadows; L. Zębowo – sect. 543f; moist meadow BA 79 – NU, L. Zębowo – sect. 528Bb; shore of forest pond BA 89 – Słonowice, carrot field CA 70 – Słupsk, meadow in Lasek Południowy CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Anthemis tinctoria</i> L.	Ap	RG				BA 69 – Strzelino, roadside BA 79 – Wierzbiczin, roadside CA 70 – Słupsk, closed gravel pit at Grunwaldzka street CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Carlina vulgaris</i> L.	Ap	RG				BA 76 – Sulimice, dry slope of a hill
<i>Centaurea stoebe</i> L.	Ap	RG				BA 89 – Komorzyn, wasteland at field road to Dobrzęcin CA 80 – Kwakowo, psammophilous grassland at the bank of the Kwacza river
<i>Echinops sphaerocephalus</i> L.	Ken	RG				BA 79 – the Nature and Landscape Complex of the Moszczeniczka River Valley BA 89 – Wrząca, manor park CA 70 – Słupsk, roadside at Hołd Pruski street
<i>Filago arvensis</i> L.	Ap	RG				BA 89 – Bzowo, fallow land CA 80 – Kwakowo, Lubuń, rye field
<i>Helichrysum arenarium</i> (L.) Moench	Ap	!				BA 68 – Starkowo, idle town BA 69 – Niestkowo, ward of fortified town BA 79 – Sycevice, fallow land (abundant!) BA 88 – Tychowo, manor park BA 89 – Kczewo, Zagórki, sand exploitation pits CA 70 – Słupsk, Lasek Północny; militar training ground; Krepa Słupska, pine sapling stand CA 80 – Kwakowo, idle land (abundant!)
<i>Hypochoeris glabra</i> L.	Ap	RG	VU			BA 79 – Chlebowo, roadside
<i>Scorzonera humilis</i> L.	Sn	RG				BA 69 – NU, L. Peplino – sect. 298a, fertile beech forest
Betulaceae						
<i>Alnus incana</i> (L.) Moench	Ken	RG				BA 79 – NU, L. Sycevice – sect. 624c, bank of a stream CA 70 – Słupsk, shore of a pond in Lasek Północny

TABLE I – CONT.

I	2	3	4	5	6	7
Brassicaceae						
<i>Arabis glabra</i> (L.) Bernh.	Ap	RG				BA 79 – Runowo Sławińskie, roadside
<i>Barbarea vulgaris</i> R. Br.	Ap	RG				BA 78 – Palowo, manor park
<i>Bunias orientalis</i> L.	Ken	RG				BA 77 – Stary Jarosław, wasteland CA 70 – Stupsk, timber depot at Słoneczna street
<i>Diploptaxis muralis</i> (L.) DC.	Ken	RG				BB 95 – Wiekowo, roadside
* <i>Lunaria rediviva</i> L.	Erg	RG	EN	E		BA 89 – Żabno, Protestant cemetery
<i>Thlaspi perfoliatum</i> L.	Ap	RG				BA 78 – Wykroty, fallow land
Campanulaceae						
<i>Campanula latifolia</i> L.	Ap	!; RG	NT	V	V	BA 69 – Wodnica, wall of fortified town
Caprifoliaceae						
<i>Linnaea borealis</i> L.	Sn	!; RG	NT	V		CA 70 – Stupsk, Lasek Południowy
<i>Lonicera periclymenum</i> L.	Sn	!!	VU			BA 68 – NU, L. Starkowo – sect. 315a, fertile beech forest BA 69 – NU, L. Pęplino – sect. 287a, sub-Atlantic oak-hornbeam forest BA 77 – NS, L. Emilianowo – sect. 21lg, 266a; L. Krakowiany – sect. 229f, fertile beech forest BA 87 – Sławno, former Botanical Garden BA 79 – NU, L. Sycewice – sect. 611g, 611i; mixed coniferous forests BA 87 – NS, L. Pątnowo – sect. 310b; *Kwasowo, manor park CA 70 – Stupsk, Lasek Południowy CA 80 – *Kwakowo, Zajączkowo, manor parks
<i>Viburnum opulus</i> L.	Ap	!				BA 68 – along draining ditch at a road between Starkowo-Swołowo BA 69 – NU, L. Pęplino – sect. 291b, 346g, shore of forest ponds BA 77 – Mazów, valley of the Wieprza BA 78 – Wilkowie, valley of the Jesienica BA 79 – roadside between Redęcin and Gać BA 87 – NS, L. Pątnowo – sect. 310b, ash-alder riparian forest CA 70 – Stupsk, old river bed bank in Lasek Południowy CA 80 – the Nature and Landscape Complex of the Kwacza River Valley

TABLE I – cont.

I	2	3	4	5	6	7
Caryophyllaceae						
<i>Agrostemma githago</i> L.	Ar	RG				BA 67 – Wszędzień, baulk BA 69 – Wielichowo, rye field BA 79 – Żębowo, rye field BA 86 – Krzemienica, triticales field BA 88 – Iwanowo, edge if idle land BA 89 – Kuleszewo, Zagórki, field of a mixture of oat and barley CA 70 – Kobylnica, rye field CA 80 – Lubuń, oat field CA 90 – Mielno, wheat field
<i>Dianthus superbus</i> L.	Sn	!; RG	EN	E	V	BA 69 – Wodnica, wet meadow near the Stupia river
<i>Melandrium noctiflorum</i> (L.) Fr.	Ar	RG	NT			BA 87 – Granicznia, wheat field
Chenopodiaceae						
<i>Chenopodium bonus-henricus</i> L.	Ar			R		BA 79 – NU, L. Sycewice – sect. 620f, around a hut in a forest settlement BA 87 – Kwasowo, manor park CA 70 – Stupsk, roadside at military firing range in Lasek Południowy CA 80 – the Nature and Landscape Complex of the Kwacza River Valley CA 90 – Objezierze, church park
<i>Chenopodium glaucum</i> L.	Ap	RG				CA 70 – Stupsk, wasteland at Rybacka street CA 88 – Sławsko, beet field
<i>Corispermum leptopterum</i> (Asch.) Ijtin	Ken	RG				CA 70 – Stupsk, sandy wasteland at Górna street CA 90 – Mielno, Protestant cemetery
Convallariaceae						
<i>Convallaria majalis</i> L.	Sn	!				BA 68 – NU, L. Starkowo – sect. 315a, fertile beech forest BA 69 – NU, L. Peplino – sect. 290b, sub-Atlantic oak-hornbeam forest BA 77 – NS, L. Emilianowo – sect. 150a, oak sapling stand BA 78 – *Wrzeźnica, forest park; *Gać Leśna, wall of fortified town BA 79 – NU, L. Sycewice – sect. 623d, 524a, acid oak forests; Gać, manor park BA 87 – NS; L. Pątnowo – sect. 338c, roadside (abundant!); *Sławno, former Botanical Garden BA 88 – NS, L. Noskowo – sect. 42n, mixed coniferous forest; *Tychowo, manor park BA 98 – Smardzewo, Protestant cemetery CA 70 – Stupsk, Protestant cemetery in Lasek Północny

TABLE I – cont.

I	2	3	4	5	6	7
Cuscutaceae						
<i>Cuscuta europaea</i> L.	Ap	RG	NT			BA 88 – the Rakówka river valley CA 70 – Stupsk, polder II in Lasek Południowy
Cyperaceae						
<i>Baeothryon cespitosum</i> (L.) A. Dietr.	Sn	!;, RG	VU	V	V	BA 78 – the Nature and Landscape Complex of the Bruszkowskie Bagno
<i>Carex arenaria</i> L.	Ap	!				BA 69 – NU, L. Peplino – sect. 310c, sandy wasteland CA 70 – Stupsk, sandy wasteland at Bauer street
<i>Carex flacca</i> Schreb.	Sn	RG	NT			BA 69 – Gałęzinowo, the Krzywinka river valley
<i>Carex limosa</i> L.	Sn	!!	NT	V	V	BA 69 – NU, L. Zębowo – sect. 527g, peatbogs BA 77 – NS, L. Radostaw – sect. 176f, 272c, peatbogs BA 87 – NS, L. Wrzeźnica – sect. 380c, peatbogs BA 88 – NS, L. Tychowo – sect. 53f, 53h, 54d, 69o, peatbogs BA 98 – NS, L. Łętowo – sect. 127b, 189g, peatbogs
<i>Rhynchospora alba</i> (L.) Vahl.	Sn		NT	V		BA 69 – NU, L. Peplino – sect. 287h; BA 78 – the Nature and Landscape Complex of the Bruszkowskie Bagno BA 79 – NU, L. Zębowo – sect. 527c, 537j, 543b, 545b, 554b, 560b, peatbogs
Droseraceae						
<i>Drosera anglica</i> Huds.	Sn	!!	VU	V	E	BA 87 – NS, L. Wrzeźnica – sect. 380c, peatbog
<i>Drosera intermedia</i> Hayne	Sn	!!	VU	V	E	BA 87 – NS, L. Wrzeźnica – sect. 347k, peatbog
<i>Drosera rotundifolia</i> L.	Sn	!!		I	V	BA 69 – NU, L. Peplino – sect. 287h, peatbog BA 77 – NS, L. Radostaw – sect. 176f, 272c, peatbogs BA 78 – the Nature and Landscape Complex of the Bruszkowskie Bagno BA 79 – NU, L. Zębowo – sect. 527c, 542i, 543b, 545b, 554b, 560h, peatbogs BA 87 – NS, L. Wrzeźnica – sect. 380c, peatbogs BA 88 – NS, L. Tychowo – sect. 53f, 53h, 54d, 69o, peatbogs BA 98 – NS, L. Łętowo – sect. 127b, 194c, 189g, peatbogs; L. Janiewice – sect. 320c, 322i, peatbogs CA 80 – the Nature and Landscape Complex of the Kwacza River Valley, peatbog
Dryopteridaceae						
<i>Dryopteris cristata</i> (L.) A. Gray	Sn		NT	V	V	BA 69 – NU, L. Peplino – sect. 294h BA 78 – the Nature and Landscape Complex of the Bruszkowskie Bagno BA 79 – NU, L. Zębowo – sect. 538a, 542j; L. Sycewice – sect. 604d, alder forest BA 98 – NS, L. Łętowo – sect. 127c, willow thicket

TABLE I – cont.

1	2	3	4	5	6	7
Ericaceae						
<i>Andromeda polifolia</i> L.	Sn		NT	V		BA 69 – NU, L. Zębowo – sect. 527g, peatbog BA 77 – NS, L. Radosław – sect. 177c, 272c, peatbogs BA 78 – the Nature and Landscape Complex of the Bruszkowskie Bagno BA 87 – NS, L. Wrześnica – sect. 380c, peatbog BA 88 – NS, L. Tychowo – sect. 53f, 53d, 53l, 54h, 54i, 69o, peatbogs BA 98 – NS, L. Łętowo – sect. 127b, 189g, peatbogs; L. Janiewice – sect. 322i, peatbog
<i>Erica tetralix</i> L.	Sn	!!	VU	V	[V]	BA 78 – the Nature and Landscape Complex of the Bruszkowskie Bagno BA 79 – NU, L. Sycewice – sect. 633f; L. Zębowo – sect. 542i, 545b, peatbogs; the Moszczenica river valley BA 87 – L. Wrześnica – sect. 380c, peatbog BA 98 – L. Łętowo – sect. 127b, peatbog CA 70 – Słupsk-Ryczewo, dried peatbog at sewage treatment plant
<i>Ledum palustre</i> L.	Sn	!!				BA 69 – NU, L. Peplino – sect. 287h, peatbog BA 77 – NS, L. Radosław – sect. 272c, peatbog BA 78 – the Nature and Landscape Complex of the Bruszkowskie Bagno BA 79 – NU, L. Sycewice – sect. 633d; L. Zębowo – sect. 527c, peatbogs BA 87 – NS, L. Wrześnica – sect. 380c, peatbog BA 88 – NS, L. Tychowo – sect. 54h, 54i, peatbogs BA 98 – NS, L. Łętowo – sect. 127b; L. Janiewice – sect. 320c, 322i, peatbogs
Euphorbiaceae						
<i>Euphorbia esula</i> L.	Ap	RG				BA 87 – Sławno, wall at the Moszczenica river
<i>Euphorbia palustris</i> L.	Ap	RG	RE	E	V	BA 87 – Sławno, former Botanical Garden
Fabaceae						
<i>Lathyrus tuberosus</i> L.	Ar	RG				BA 69 – Wielichowo, roadside BA 79 – Widzino, triticales field BA 88 – Gwiazdówko, wheat field CA 80 – Lubuń, Protestant cemetery
<i>Medicago minima</i> (L.) L.	Ap	RG	VU			CA 70 – Krępa, sainfoin field
<i>Ononis arvensis</i> L.	Ap	!, RG				BA 77 – Karsino, roadside BA 85 – Przystawy, baulk CA 70 – Otok, meadow

TABLE I – CONT.

I	2	3	4	5	6	7
<i>Ononis spinosa</i> L.	Ap	!				BA 88 – Warszkowo, roadside BA 89 – Zagórki, roadside CA 70 – Stupsk, lawn in a university campus CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Ornithopus perpusillus</i> L.	Ap	RG				BA 89 – Kozłówek, edge of pine sapling stand CA 70 – Łosino, manor park
<i>Vicia grandiflora</i> Scop.	Ken	RG				BA 87 – Rzyszcze, rye field BA 98 – Łętowo, rye field (abundant!)
<i>Vicia lathyroides</i> L.	Ap	RG				CA 70 – NLD, L. Płaszewko – sect. 582b, psammophilous grassland CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Vicia tetrasperma</i> (L.) Schreb.	Ar	RG				BA 68 – Nowe Dulinowo, rye field BA 78 – Nosalinek, fallow land BA 79 – Widzino, oat field CA 80 – Zajczkowo, triticale field
Fumariaceae						
<i>Corydalis cava</i> Schweigg. & Körte	Sn	RG	NT			BA 69 – Charnowo, steep bank of Krzywinka river
<i>Corydalis intermedia</i> (L.) Mérat	Sn			R		CA 80 – NLD, L. Lubuń – sect. 205h, fertile beech forest
<i>Corydalis solida</i> (L.) Clairv.	Ap	RG	NT	R		BA 87 – Sławno, former Botanical Garden
Gentianaceae						
<i>Centaurium pulchellum</i> (Sw.) Druce	Ap		VU			BA 68 – NU, L. Starkowo – sect. 35If; moist meadow BA 69 – NU, L. Peplino – sect. 307b, roadside BA 97 – Smardzewo, meadow at a lake
Geraniaceae						
<i>Geranium dissectum</i> L.	Ar	RG				BA 77 – Masłowice, beet field BA 86 – Sęczkowo, clover field CA 70 – Kobylnica, phacelia field

TABLE I – cont.

I	2	3	4	5	6	7
Hyacinthaceae						
<i>Ornithogallum umbellatum</i> L.	Erg	!!				BA 79 – the Nature and Landscape Complex of the Moszczeniczka River Valley BA 88 – Sławsko, church cemetery; Noskowo, manor park BA 98 – Smardzewo, Protestant cemetery CA 80 – Kwakowo, manor park
Hypericaceae						
<i>Hypericum humifusum</i> L.	Ap		NT	R		BA 69 – NU, L. Peplino – sect. 286d, 328c, sandy moist roadside BA 79 – NU, L. Zębowo – sect. 536f, moist tracks along compartment line
Lamiaceae						
<i>Galeopsis ladanum</i> L.	Ar	RG				BA 89 – Zbyszewo, stubble field CA 80 – Kruszyna, rye field
<i>Nepeta cataria</i> L.	Ap	RG	VU			BA 79 – Bolesławice Kolonia, dry roadside BA 89 – Żabno, edge of pine coppice
Lentibulaniaceae						
<i>Utricularia vulgaris</i> L.	Sn	RG	NT			BA 79 – the Nature and Landscape Complex of the Moszczeniczka River Valley
Liliaceae						
<i>*Lilium martagon</i> L.	Erg	!!	NT	V		BA 78 – Palowo, Protestant cemetery BA 79 – Runowo Sławińskie, Protestant cemetery BA 87 – Sławno, former Botanical Garden BA 89 – Wrząca, Protestant cemetery BA 97 – Smardzewo, Protestant cemetery CA 79 – Redęcin, manor park CA 88 – Tychowo, manor park
Linaceae						
<i>Radiola linoidea</i> Roth	Ap	RG	EN	V	V	BA 69 – NU, L. Peplino – sect. 295i, moist roadside BA 79 – NU, L. Zębowo – sect. 567d, tracks in a hollow BA 98 – Łętowo, proposed ecological area “Łętowskie Gytowisko”
Lycopodiaceae						
<i>Lycopodium annotinum</i> L.	Sn	!!				BA 68 – NU, L. Starkowo – sect. 315a, edge of peatbog BA 69 – NU, L. Peplino – sect. 287a, fresh coniferous forest BA 79 – NU, L. Sycewice – sect. 629a, in a mixed coniferous forest near a former peat pit BA 98 – NS, L. Janiewice – sect. 320c, at drainage ditch

TABLE I – CONT.

1	2	3	4	5	6	7
<i>Lycopodium clavatum</i> L.	Sn	!!				CA 50 – NU, L. Redwanki – sect. 263g, pine coniferous forest CA 70 – NLD, L. Plaszewko – sect. 653d, mixed coniferous forest
Menyanthaceae						
<i>Menyanthes trifoliata</i> L.	Sn	!				BA 77 – NS, L. Radosław – sect. 176f, edge of moist meadow BA 79 – NU, L. Zębowo – sect. 542i, 560h, willow thickets BA 88 – NS, L. Tychowo – sect. 53l, shore of forest pond BA 98 – NS, L. Łętowo – sect. 127g, 320c, shore of transition moor
Myricaceae						
<i>Myrica gale</i> L.	Sn	!!	VU	V	[E]	BA 68 – NU, L. Zalaski – sect. 154Bo, willow thickets (abundant!) BA 79 – the Nature and Landscape Complex of the Moszczeniczka River Valley
Nymphaeaceae						
<i>Nuphar lutea</i> (L.) Sibth. & Sm	Sn	!				BA 77 – NS, L. Radosław – sect. 176f, forest pond BA 78 – Tyrń, old river bed of the Wieprza river BA 79 – NU, L. Zębowo – sect. 542h, forest pond BA 87 – Sławno, meander of the Moszczenica river BA 98 – NS, L. Janiewice – sect. 327r, polder drainage canal in <i>Vaccinium macrocarpon</i> field; Łętowo, Łętowskie Lake CA 70 – Stupsk, Lasek Południowy, old river bed of the Stupia CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Nymphaea alba</i> L.	Sn	!	DD			BA 79 – NU, L. Sycewice – sect. 604d, 612f, forest ponds BA 87 – NS, L. Wrześnica – sect. 380c, turbary BA 89 – NLD, L. Lubuń – sect. 684m, old river bed of the Stupia BA 98 – Łętowo, Łętowskie Lake CA 70 – Stupsk, Lasek Południowy, old river bed of the Stupia CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Nymphaea candida</i> C. Presl	Sn	!; RG	DD	K		BA 79 – NU, L. Sycewice – sect. 610h, former peat excavation pits, unused since 1985 (oral communication, Ustka Forest Division)
Orchidaceae						
<i>Dactylorhiza fuchsii</i> (Drucce) Soó	Sn	!; RG	VU		V	BA 69 – NU, L. Peplino – sect. 292b, 309f, forest meadows
<i>Dactylorhiza maculata</i> (L.) Soó	Sn	!!	VU	V	V	BA 69 – NU, L. Peplino – sect. 292b, 309f, peatbogs BA 98 – Łętowo, proposed ecological area “Łętowskie Gytowisko” CA 80 – the Nature and Landscape Complex of the Kwacza River Valley, peatbog

TABLE I – cont.

1	2	3	4	5	6	7
<i>Dactylorhiza majalis</i> (Rcheb.) P.F. Hunt & Summerh.	Sn	!!	NT			BA 69 – NU, L. Peplino – sect. 307k, moist meadow BA 79 – NU, L. Zębowo – sect. 528 Bb, alder swamp forest BA 87 – NS, L. Pątnowo – sect. 316h, alder carr; Boleszewo, manor park B BA 88 – the Rakówka river valley
<i>Epipactis atrorubens</i> (Hoffm.) Besser	Ap	!;, RG	VU	V		BA 69 – NU, L. Redwanki – sect. 268g, sandy roadside
<i>Epipactis helleborine</i> (L.) Crantz	Ap	!!				BA 68 – NU, L. Starkowo – sect. 315a, 328a, acid lowland beech forests BA 69 – NU, L. Peplino – sect. 248f, 290b, 325a, 327a, sub-Atlantic oak-hornbeam forests BA 79 – NU, L. Sycewice – sect. 570b, ash-alder riparian forest
<i>Epipactis palustris</i> (L.) Crantz	Sn	!!	VU	V	V	BA 69 – NU, L. Peplino – sect. 291b, peatbog BA 87 – NS, L. Pątnowo – sect. 316h, moorgrass meadow at forester's lodge (abundant!)
<i>Goodyera repens</i> (L.) R. Br.	Sn	!!	NT	V	[E]	BA 87 – NS, L. Pątnowo – sect. 316h, pine coniferous forest BA 98 – Łętowo, proposed ecological area "Łętowskie Gytowisko"
<i>Listera ovata</i> (L.) R. Br.	Sn	!!				BA 69 – NU, L. Peplino – sect. 296a, 298b, 301c, meadows on lowmoor peats BA 79 – Swołowo, at willow thicket (abundant!) BA 88 – the Rakówka river valley
<i>Neottia nidus-avis</i> (L.) Rich.	Sn	!!	NT	V		BA 69 – NU, L. Peplino – sect. 298a, fertile lowland beech forest BA 87 – NS, L. Pątnowo – sect. 316a, acid lowland beech forest
<i>Platanthera bifolia</i> L.	Sn	!!	VU	V		BA 68 – NU, L. Starkowo – sect. 315a, forest moist meadow BA 69 – NU, L. Peplino – sect. 298g, bank of unnamed watercourse; 307k, 309f, 324a, 325b, forest open clearings; Gałżinowo, Protestant cemetery (abundant) BA 79 – the Nature and Landscape Complex of the Moszczeniczka River Valley BA 87 – NS, L. Pątnowo – sect. 316h, 337i, slopes of heights of SE exposure BA 88 – the Rakówka river valley CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Platanthera chlorantha</i> (Custer) Rchb.	Sn	!;, RG	EN	E		BA 69 – NU, L. Peplino – sect. 309f; Gajki, wet meadow SW of Addiction Treatment Centre
Parnassiaceae						
<i>Parnassia palustris</i> L.	Sn	RG				BA 79 – NU, L. Zębowo – sect. 554b, moist meadow
Poaceae						
<i>Athoxanthum aristatum</i> Boiss	Ken	RG				BA 97 – Ostrowiec, fallow land (abundant!)

TABLE I – CONT.

I	2	3	4	5	6	7
<i>Bromus secalinus</i> L.	Ar		NT	V	V	BA 68 – NU, L. Starkowo – sect. 315a, Jerusalelem artichoke field BA 69 – NU, L. Peplino – sect. 297g, 309f, 324a, 325b, roadsides BA 79 – Bolesławice, wasteland BA 87 – NS, L. Pątnowo – sect. 316h, 337i, serradella fields BA 88 – the Rakówka river valley BA 89 – Ciecchomice, Kczewo, rye fields
<i>Digitaria sanguinalis</i> (L.) Scop.	Ar	RG	NT			BA 87 – Dybowo, potato field BA 89 – Zagórki, sandy wasteland
Polemoniaceae						
<i>Polemonium coeruleum</i> L.	Ap	!;, RG	VU	V		BA 87 – *Sławno, former Botanical Garden CA 70 – Stupsk, Lasek Południowy, polder II
Polypodiaceae						
<i>Polypodium vulgare</i> L.	Sn	!!				BA 69 – NU, L. Peplino – sect. 290b, 326b, fertile lowland beech forests BA 77 – NS, L. Emilianowo – sect. 149o, as an epiphyte on stems of four common oaks BA 79 – NU, L. Zębowo – sect. 532h, a scarp of a forest pond; Gać, manor park BA 87 – *Sławno, former Botanical Garden BA 88 – *Tychowo, manor park CA 80 – *Kwakowo, manor park
Primulaceae						
<i>Primula veris</i> L.	Ap	!, RG				BA 79 – NU, L. Sycewice – sect. 609g, a sunny forest clearing BA 87 – NS, L. Pątnowo – sect. 337d, slope of a ravine of SE exposure; *Sławno, former Botanical Garden
Pyrolaceae						
<i>Chimaphila umbellata</i> (L.) W.P.C. Barton	Ap	!;, RG	NT			BA 69 – NU, L. Peplino – sect. 308c, sandy roadside (abundant!)
<i>Pyrola minor</i> L.	Sn	RG	NT			CA 80 – NLD, L. Lubuń – sect. 211b, pine coniferous forest
<i>Pyrola rotundifolia</i> L.	Ap		VU	V		CA 80 – NLD, L. Lubuń – sect. 207d, sandy slope of E exposure
Ranunculaceae						
<i>Actaea spicata</i> L.	Ap	RG	LC	V		BA 69 – NU, L. Peplino – sect. 309f, ash-alder riparian forest CA 80 – Kwakowo, on the bank of the Kwacza river in manor park
* <i>Aquilegia vulgaris</i> L.	Erg	!!	VU	V		BA 69 – Gałęzinowo, Protestant cemetery BA 87 – Sławno, former Botanical Garden CA 80 – Kwakowo, manor park

TABLE I – cont.

1	2	3	4	5	6	7
<i>Consolidia regalis</i> Gray	Ar	RG				BA 70 – the Nature and Landscape Complex of the Moszczeniczka River Valley BA 86 – Karwice, rye field BA 87 – Miłomyśl, wheat field
<i>Hepatica nobilis</i> Schleb.	Sn	!!				BA 68 – NU, L. Starkowo – sect. 328a, fertile lowland beech forest BA 69 – NU, L. Peplino – sect. 290b, sub-Atlantic oak-hornbeam forest BA 87 – NS, L. Pątnowo – sect. 310b, at ruins of a former settlement; *Sławno, former Botanical Garden *BA 88 – Wyszkowo, manor park *BA 97 – Smardzewo, manor park
<i>Myosurus minimus</i> L.	Ap	RG			V	BA 78 – Swotowo, rye field BA 79 – Sycevice, barley field
<i>Trollius europaeus</i> L.	Ap	!; RG	VU	V		BA 79 – Widzino, at the base of railway embankment at the line between Widzino and Kolonia Runowo
Rhamnaceae						
<i>Frangula alnus</i> Mill.	Sn	!				BA 77 – NS, L. Emilianowo – sect. 150a, 212j; along drainage ditches; sect. 235g, 238b, edge of peat-bogs; L. Krakowiany – sect. 229g, moist meadow BA 87 – NS, L. Pątnowo – sect. 310b, willow thickets; Karwice, manor park BA 98 – NS, L. Janiewice – sect. 320c, bank of the Rakówka river; Żukowo, manor park II CA 70 – Słupsk, Łasek Południowy, polder II CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
Rosaceae						
<i>Alchemilla monticola</i> Opiz	Ap	RG				BA 68 – NU, L. Starkowo – sect. 351f, roadside BA 69 – NU, L. Peplino – sect. 291g, 292c, 320f, 326b, thistle meadows BA 79 – NU, L. Zębowo – sect. 528Bb, 528Cc, 528g, 553h, wet meadows; L. Sycevice – sect. 608f, 620a, 641h, wet meadows
* <i>Rosa gallica</i> L.	Erg	!!			V	BA 78 – Tokary, Protestant cemetery
<i>Rubus chamaemorus</i> L.	Sn	!; RG	EN	E	V	BA 87 – NS, L. Wrześnica – sect. 380c, peatbog
* <i>Sorbus intermedia</i> (Ehrh.) Pers.	Erg	!!	DD	E		BA 88 – Tychowo, manor park CA 70 – Słupsk, plantings along Bauer, Lipowa, Spacerowa, Szczecińska streets; green areas at Kopernik, Starzyński and 9 Marca streets; around a pond on the Słupia (between Traugutt and Orzeszkowa streets); at Kiliński street; at a square Powstańców Warszawy; municipal cemetery at Kaszubska street, next to a monument of Allied Forces; the Park of Culture and Recreation; sect. IX Łasek Północny; subsect. 4 Municipal Forests

TABLE I – cont.

I	2	3	4	5	6	7
Rubiaceae						
<i>Galium odoratum</i> (L.) Scop.	Sn	!				BA 68 – NU, L. Starkowo – sect. 315a fertile lowland beech forest BA 69 – NU, L. Peplino – sect. 290b, 291b, 295g, fertile lowland beech forests; sect. 303a, 306c, 309f, 325a, 327b, fertile lowland beech forests BA 77 – NS; L. Emilianowo – sect. 150a, wall of early medieval fortified town BA 79 – Sycevice, manor park; NU, L. Sycevice – sect. 570b, slope of unnamed watercourse BA 87 – Karwice, manor park BA 88 – Tychowo, manor park BA 89 – NLD, L. Lubuń – sect. 682f, ash-alder riparian forest CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
<i>Sherardia arvensis</i> L.	Ar	RG	VU	R		BA 77 – Kanin, beet field
Salicaceae						
<i>Populus nigra</i> L.	Ap		VU	V		BA 88 – Tychowo, manor park
Saxifragaceae						
<i>Ribes alpinum</i> L.	Ap	RG				BA 69 – Mokrzyca, old river bed of the Stupia
<i>Ribes nigrum</i> L.	Sn	!				BA 68 – NU, L. Starkowo – sect. 295j, currant alder forest BA 69 – NU, L. Peplino – sect. 315a, shore of a pond BA 79 – Gać, manor park CA 70 – Stupsk, shore of a pond in Lasek Północny CA 80 – the Nature and Landscape Complex of the Kwacza River Valley
Scheuchzeriaceae						
<i>Scheuchzeria palustris</i> L.	Sn		VU	V	E	BA 79 – NU, L. Zębowo – sect. 537j, 543b, 554b, peatbogs CA 80 – the Nature and Landscape Complex of the Kwacza River Valley, peatbog
Scrophulariaceae						
<i>Chaenorhinum minus</i> (L.) Lange	Ap	RG	NT			BA 69 – NU, L. Peplino, roadside along 308/323 section line BA 79 – Swotowo, gravel pit at a pond BA 89 – Stonowice, railway embankment CA 80 – Płaszewo, rye field
<i>Cymbalaria muralis</i> P.Gaertn., B.Mey. & Scherb.	Ap	RG	VU			CA 70 – Stupsk, in gaps of stairs at the St. Otton Church
<i>Digitalis grandiflora</i> L.	Sn	!; RG	NT			BA 78 – NU, L. Starkowo – sect. 354d, fertile lowland beech forest BA 79 – NU, L. Zębowo – sect. 554j, sub-Atlantic oak-hornbeam forest; *Gać, manor park BA 88 – *Tychowo, manor park

TABLE I – cont.

1	2	3	4	5	6	7
<i>Digitalis purpurea</i> L.	Ap					BA 69 – Bydlino, top of escarpment at the Stupia river BA 87 – *Sławno, former Botanical Garden
<i>Mimulus guttatus</i> DC.	Ken		NT			BA 78 – Tyń, the Pijawica river valley CA 70 – Leszczyce, the Stupia river valley
<i>Odonites verna</i> (Bellardi) Dumort	Ar	RG				BA 86 – Słowino, wheat field
<i>Pedicularis palustris</i> L.	Sn	!!	VU	V	V	BA 98 – Łętowo, proposed ecological area "Łętowskie Gytowisko"
<i>Veronica polita</i> Fr.	Ar	RG				BA 78 – Kłośnik, wheat field; Staniewice, potato field BA 89 – Dobrzęcino, vegetable field BA 98 – Żukowo, beet field
Taxaceae						
* <i>Taxus baccata</i> L.	Erg	!!	VU	R		BA 78 – Wrześnica, forest park BA 79 – Reblino, forest park BA 87 – Boleszewo, manor park A BA 88 – Noskowo, manor park BA 97 – Smardzewo, manor park CA 70 – Słupsk, Lasek Południowy; Park of Culture and Recreation; courtyard of the Provincial Office for the Preservation of Historical Monuments in Gdańsk, Regional Office in Słupsk, Jaracz street CA 80 – Kwakowo, manor park
Thymelaeaceae						
<i>Daphne mezereum</i> L.	Sn	!!	LC	R		BA 79 – the Nature and Landscape Complex of the Moszczniczka River Valley BA 87 – NS, L. Pątnowo – sect. 310b, acid lowland beech forest
Trilliaceae						
<i>Paris quadrifolia</i> L.	Sn					BA 69 – NU, L. Peplino – sect. 309f, acid lowland beech forest CA 80 – Lulemino, the Nature and Landscape Complex of the Kwacza River Valley
Valerianaceae						
<i>Valerianaella locusta</i>	Ar	RG	NT			BA 79 – the Nature and Landscape Complex of the Moszczniczka River Valley
Violaceae						
<i>Viola mirabilis</i> L.	Sn	RG	NT	R	;	BA 77 – NS, L. Emilianowo – sect. 150a, water-head riparian forest BA 98 – Łętowo, western bank of Łętowskie Lake
Woodsiaceae						
* <i>Matteucia struthiopteris</i> (L.) Tod.	Erg	!!	NT	V		BA 87 – Sławno, former Botanical Garden

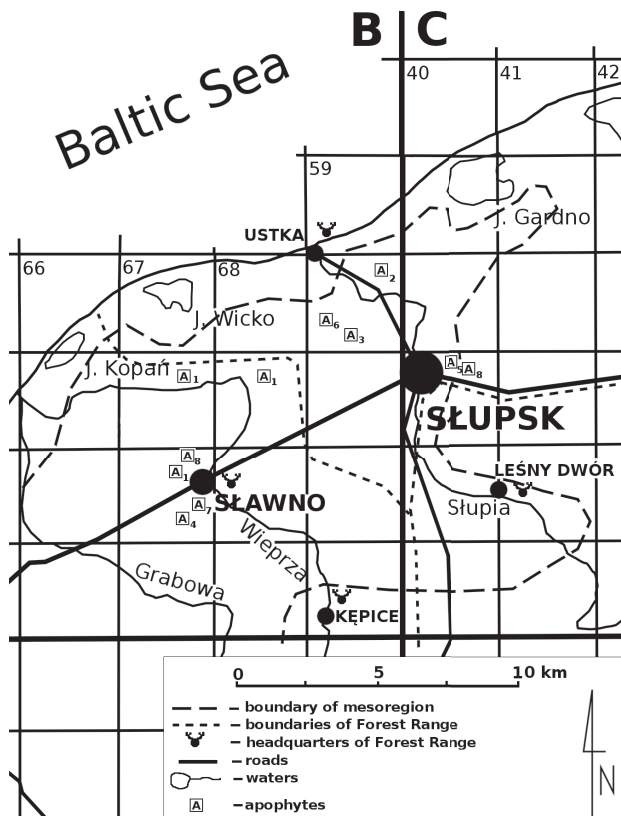


FIG. 2. Localities of rare and endangered apophytes in the Słupia and Wieprza interfluvium; A1 – *Allium ursinum*, A2 – *Campanula latifolia*, A3 – *Chimaphila umbellata*, A4 – *Corydalis solida*, A5 – *Cymbalaria muralis*, A6 – *Epipactis atrorubens*, A7 – *Euphorbia palustris*, A8 – *Polemonium coeruleum*

Chimaphila umbellata, *Dactylorhiza fuchsii*, *D. majalis*, *Daphne mezereum*, *Dianthus superbus*, *Digitalis grandiflora*, *Drosera rotundifolia*, *Epipactis helleborine*, *Galanthus nivalis*, *Goodyera repens*, *Hepatica nobilis*, *Ledum palustre*, *Leucoium vernum*, *Lilium martagon*, *Linnaea borealis*, *Lonicera periclymenum*, *Listera ovata*, *Lycopodium annotinum*, *L. clavatum*, *Matteucia struthiopteris*, *Neottia nidus-avis*, *Nymphaea candida*, *Ornithogallum umbellatum*, *Platanthera chlorantha*, *Polypodium vulgare*, *Rosa gallica*, *Rubus chamaemorus*, *Sorbus intermedia*, *Taxus baccata*, *Utricularia vulgaris*. Five of them are entered in the Polish red book of plants, i.e. *Arum maculatum* (DAJDOK and KAÇKI 2001), *Carex limosa* (KUCHARSKI 2001), *Nymphaea candida* (KŁOSOWSKI 2001), *Rosa gallica* (ZIELIŃSKI 2001), *Taxus baccata* (KRUSZELNICKI 2001).

Species not covered by legal protection and critically endangered both in the Pomorze Gdańskie and the Western Pomerania regions include *Populus nigra* and *Pyrola rotundifolia*.

Species covered by partial protection and recorded in the analysed area include *Allium ursinum*, *Asarum europaeum*, *Carex arenaria*, *Convallaria majalis*, *Frangula alnus*, *Galium odoratum*, *Hedera helix*, *Helichrysum arenarium*, *Menyanthes trifoliata*, *Nuphar lutea*, *Nymphaea alba*, *Ononis arvensis*, *O. spinosa*, *Primula veris*, *Ribes nigrum*, *Viburnum opulus*, *Vinca minor*. Bear's garlic (*Allium ursinum*) is at the same time an endangered species in the Gdańsk Pomerania and Western Pomerania regions.

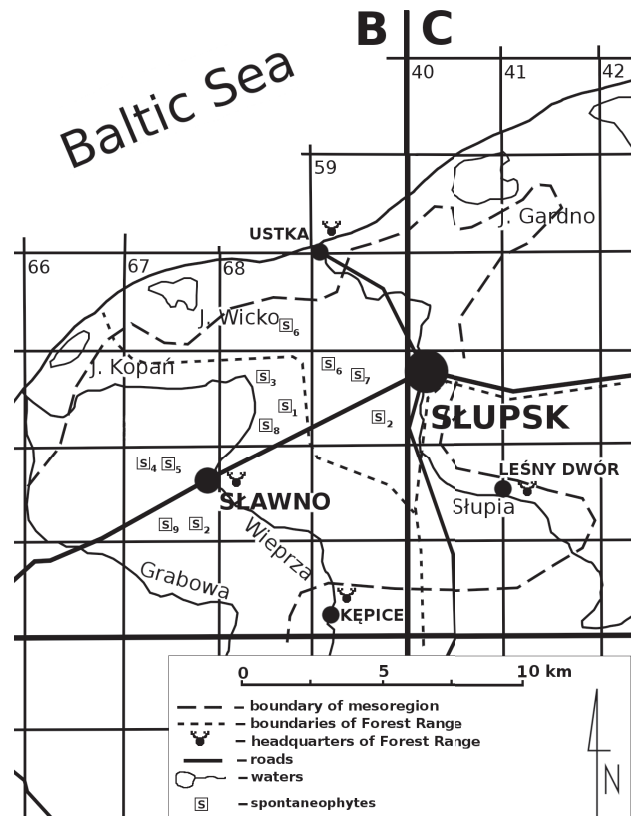


FIG. 3. Localities of rare and endangered non-synanthropic spontaneophytes in the Słupia and Wieprza interfluvium; S1 – *Corydalis cava*, S2 – *Daphne mezereum*, S3 – *Dianthus superbus*, S4 – *Drosera anglica*, S5 – *Drosera intermedia*, S6 – *Myrica gale*, S7 – *Nymphaea candida*, S8 – *Platanthera chlorantha*, S9 – *Rubus chamaemorus*

Among 132 species included in this study, 25 are found in the Polish red list of plants (ZARZYCKI and SZELĄG 2006): *Allium ursinum*, *Arum maculatum*, *Baethryon cespitosum*, *Bromus secalinus*, *Campanula latifolia*, *Carex limosa*, *Dactylorhiza fuchsii*, *D. maculata*, *Dianthus superbus*, *Drosera anglica*, *D. intermedia*, *D. rotundifolia*, *Dryopteris cristata*, *Epipactis palustris*, *Erica tetralix*, *Euphorbia palustris*, *Goodyera repens*, *Leucoium vernum*, *Myosurus minimus*, *Myrica gale*, *Pedicularis palustris*, *Radiola linoides*, *Rosa gallica*, *Rubus chamaemorus*, *Scheuchzeria palustris*.

Species legally protected and rare in the interfluvium of the Słupia and Wieprza rivers include: *Baethryon cespitosum*, *Campanula latifolia*, *Chimaphila umbellata*, *Dactylorhiza fuchsii*, *Dianthus superbus*, *Digitalis grandiflora*, *Drosera anglica*, *D. intermedia*, *Epipactis atrorubens*, *Linnaea borealis*, *Nymphaea candida*, *Ononis arvensis*, *Platanthera chlorantha*, *Polemonium coeruleum*, *Primula veris*, *Rubus chamaemorus*, *Trollius europaeus*.

Species not covered by legal protection and rare in the investigated region include: *Achillea ptarmica*, *Actaea spicata*, *Aethusa cynapium*, *Agrostemma githago*, *Alchemilla monticola*, *Alnus incana*, *Anthemis tinctoria*, *Anthoxanthum aristatum*, *Arabis glabra*, *Barbarea vulgaris*, *Bunias orientalis*, *Carex flacca*, *Carlina vulgaris*, *Chaenorhinum minus*, *Chenopodium glaucum*, *Centaurea stoebe*, *Conium maculatum*, *Consolida regalis*, *Corispermum leptopterum*, *Corydalis cava*, *C. solida*, *Cuscuta europaea*, *Cymbalaria muralis*, *Digitaria sanguinalis*,

Diploaxis muralis, *Echinops sphaerocephalus*, *Euphorbia esula*, *E. palustris*, *Filago arvensis*, *Galeopsis ladanum*, *Geranium dissectum*, *Hypochoeris gabra*, *Lathyrus tuberosus*, *Lunaria rediviva*, *Medicago minima*, *Melandrium noctiflorum*, *Myosurus minimus*, *Nepeta cataria*, *Odonites verna*, *Ornithopus perpusillus*, *Parnassia palustris*, *Pyrola minor*, *Radiola linoides*, *Ribes alpinum*, *Sanicula europaea*, *Scorzonera humilis*, *Sherardia arvensis*, *Thlaspi perfoliatum*, *Utricularia vulgaris*, *Valerianella locusta*, *Veronica polita*, *Vicia grandiflora*, *V. lathyroides*, *V. tetrasperma*, *Viola mirabilis*.

Among species not covered by legal protection and rare in the interfluvium of the Słupia and Wieprza rivers the following are endangered in the Pomorze Gdańskie region: *Chaenorhinum minus*, *Cuscuta europaea*, *Hypochoeris gabra*, *Medicago minima*, *Nepeta cataria*. In turn, species such as *Actaea spicata*, *Conium maculatum*, *Radiola linoides* are endangered both in the Gdańsk Pomerania and Western Pomerania regions.

In the area of analysis four species, considered critically endangered both in the Gdańsk Pomerania and Western Pomerania, were reported, i.e. *Dianthus superbus*, *Lunaria rediviva*, *Platanthera chlorantha* and *Rubus chamaemorus*. Cloudberry is at the same time a species entered in the Polish red book of plants (KRUSZELNICKI and FABISZEWSKI 2001). It is also a species entered in the Polish red list of plants as a critically endangered species. The locality of *Rubus chamaemorus* reported in this study is new for Poland.

Euphorbia palustris recorded in the course of this study, is an extinct species in the Gdańsk Pomerania region (MARKOWSKI and BULIŃSKI 2004) and it is critically endangered in the Western Pomerania (ŻUKOWSKI and JACKOWIAK 1995).

Despite an intensive search, we did not find numerous species previously found in the investigated area, reported in German literature on the subject and collected in old herbaria. They are *Campanula cervicaria*, *Crepis praemorsa*, *Laserpitium prutenicum*, *Luzula sylvatica*, *Peplis portula*, *Thesium linophyllum* (MÜLLER 1898); *Carex pulicaris*, *Saxifraga hirculus* (MÜLLER 1898, DARŁOWO DEPOSIT 1897-1943); *Epipogium aphyllum* (BANNIER 1933); *Blechnum spicant*, *Huperzia selago* (BANNIER 1933, DARŁOWO DEPOSIT 1897-1943); *Camelina sativa*, *Euphorbia virgata*, *Oreopteris limbosperma*, *Setaria verticillata*, *Triglochin maritimum*, *Valerianella dentata*, *Veronica catenata* (DARŁOWO DEPOSIT 1897-1943).

Localities of protected, rare and endangered plants, reported in the years 2005-2008, most probably will disappear in the future. This will undoubtedly be caused by the observed, systematically intensified degradation of habitats. Particularly vulnerable species will be those plants, which are sensitive to fluctuations in groundwater levels, i.e. plants of moist biotopes, peatbogs, meadow moors, and aquatic plants. Thus, it is recommended to protect habitats of endangered species and provide their permanent or frequent monitoring.

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