

ANETA CZARNA

**FLORA OF VASCULAR PLANTS  
IN KSIĄŻ WIELKOPOLSKI COMMUNE  
(CENTRAL WIELKOPOLSKA)**

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**ABSTRACT.** On the total area of Książ Wlkp. commune, the occurrence of 1001 species of vascular plants has been found. Among them, there are six species new for the Wielkopolska flora: *Allium rotundum*, *Eragrostis cilianensis*, *Malope trifida*, *Ranunculus friesianus*, *Sparganium neglectum* and *Veronica peregrina* and two species new for the Polish flora – *Taraxacum cristatum* and *Typha × glauca*.

**Key words:** Wielkopolska, Książ Wlkp. commune, vascular flora

### **Introduction**

Vascular flora of Książ Wlkp. commune (Śrem district, Wielkopolska province) has not yet been the object of separate research by geobotanists. Only in the work of **Spribille** (1883) and **Szulczewski** (1951), one can find single records of species, and in the work of **Kaczmarek** (1962) there are some localities of calciphilous plants from the discussed area. Our own previous floristic studies supplied information about rare and interesting plant species from the area of Książ Wlkp. (**Czarna** 1989, 2001, 2005 a, b, **Głowacki** and **Czarna** 2003, **Głowacki et al.** 2005).

During field studies carried out in the years 1986-2003, a number of interesting vascular plants were recorded whose localities deserve to be mentioned here. In the list below, there are among others: 1) rare species in the scale of Poland (Paprotniki... 2001), 2) species entered into the “red list” for Poland (**Jasiewicz** 1981, **Zarzycki** and **Szeląg** 1992) and species from the “red list” for Wielkopolska (**Żukowski** and **Jackowski** 1995), 3) species not widely spread on the terrain of Książ Wlkp. commune, 4) interesting geographic and directional elements, 5) plants bioindicating the presence of specific ecosystems not frequent in the scale of the Wielkopolska region, etc.

The objective of the present studies was an elaboration and analysis of the vascular flora of Książ Wlkp. commune so far not investigated from the floristic point of view.

Particular attention was focused on rare and perishing species or species subject to legal protection.

One of the important objectives of this inventory was the characterization of the vegetation cover on areas particularly valuable for natural science and the determination of protection methods for them. This objective will providing be reached the area of the commune receives an exact floristic list of species and plant communities (Kuświk et al. 2000).

Names of the species have been accepted after Mirek et al. (1995). Herbarium material has been deposited in the Herbarium of Plant Taxonomy Department of the Adam Mickiewicz University (POZ) in Poznań and in the Department of Botany, Agricultural University in Poznań (POZNB). Difficult and problematic species have been determined by specialists: *Taraxacum* (Z. Głowacki – Siedlce), *Oenothera* (K. Rostański – Katowice), *Orchidaceae* (L. Bernacki – Katowice), *Rubus*, *Rosa*, *Salix* and *Crataegus* (J. Zieliński – Kórnik-Poznań).

### Systematic list of the actual flora

After the author's name of species nomenclature, there follows in 'square brackets' the geographico-historical group, life form and the socio-ecological group.

**Ophioglossaceae:** *Ophioglossum vulgatum* L. [Sp, G, 8]

**Athyriaceae:** *Athyrium filix-femina* (L.) Roth [Sp, H, 1], *Matteucia struthiopteris* (L.) Tod. [D, H, 19]

**Thelypteridaceae:** *Thelypteris palustris* Schott [Sp, G, 6]

**Aspidiaceae:** *Dryopteris carthusiana* (Vill.) H.P. Fuchs [Sp, H, 2 ], *D. cristata* (L.) A. Gray [Sp, H, 6], *D. dilatata* (Hoffm.) A. Gray [Sp, H, 1], *D. filix-mas* (L.) Schott [Sp, H, 2], *Gymnocarpium dryopteris* (L.) Newman [Sp, G, 1], *G. robertianum* (Hoffm.) Newman [Sp, G, 18]

**Aspleniaceae:** *Asplenium ruta-muraria* L. [Ap, H, 18]

**Hypolepidaceae:** *Pteridium aquilinum* (L.) Kuhn [Sp, G, 2]

**Polypodiaceae:** *Polypodium vulgare* L. [Sp, H, 2]

**Equisetaceae:** *Equisetum arvense* L. [Ap, G, 16], *E. fluviatile* L. [Sp, Hel, 7], *E. hyemale* L. [Sp, G, 19], *E. palustre* L. [Sp, G, 8], *E. pratense* Ehrh. [Sp, G, 1], *E. sylvaticum* L. [Ap, G, 1]

**Pinaceae:** *Larix decidua* Mill. [D, M, 2], *Picea abies* (L.) H. Karst. [Ken, M, 2], *Pinus banksiana* Lamb. [D, M, 2], *P. nigra* J.F. Arnold [D, M, 2], *P. strobus* L. [D, M, 2], *P. sylvestris* L. [Ap, M, 5], *Pseudotsuga menziesii* (Mirb.) Franco [D, M, 2]

**Cupressaceae:** *Juniperus communis* L. [Sp, N, 5], *Thuja occidentalis* L. [D, N, 19], *T. orientalis* L. [D, N, 19]

**Betulaceae:** *Alnus glutinosa* (L.) Gaertn. [Sp, M, 6], *A. incana* (L.) Moench [Ken, M, 7], *Betula pendula* Roth [Ap, M, 2], *B. pubescens* Ehrh. [Sp, M, 6]

**Corylaceae:** *Carpinus betulus* L. [Sp, M, 1], *Corylus avellana* L. [Sp, N, 1]

**Fagaceae:** *Fagus sylvatica* L. [Sp, M, 1], *Quercus petraea* (Matt.) Liebl. [Sp, M, 2], *Q. robur* L. [Sp, M, 1], *Q. rubra* L. [Ken, M, 2]

**Juglandaceae:** *Juglans regia* L. [D, M, 19]

**Salicaceae:** *Populus alba* L. [Ap, M, 7], *P. balsamifera* L. [D, M, 19], *P. nigra* L. [Ap, M, 7], *P. italica* Moench. [D, M, 19], *P. tremula* L. [Ap, M, 2], *P. × canescens* (Aiton) Sm. [Ap, M, 7], *Salix acutifolia* Willd. [D, N, 5], *S. alba* L. [Ap, M, 7], *S. caprea* L. [Ap, N, 3], *S. cinerea* L. [Sp, N, 6], *S. fragilis* L. [Ap, M, 7], *S. pentandra* L. [Sp, N, 6], *S. purpurea* L. [Ap, N, 7], *S. triandra* L. [Sp, N, 7], *S. viminalis* L. [Ap, N, 7], *S. × rubens* Schrank [Ap, N, 7], *S. × rubra* Hudson [Ap, N, 7]

**Moraceae:** *Morus alba* L. [D, M, 19]

**Cannabaceae:** *Cannabis sativa* L. [D, T, 14], *Humulus lupulus* L. [Sp, H, 7]

**Urticaceae:** *Urtica dioica* L. [Ap, H, 3], *U. urens* L. [Arch, T, 16]

**Ulmaceae:** *Ulmus glabra* Huds. [Ap, M, 1], *U. laevis* Poll. [Ap, M, 1], *U. minor* Mill. emend. Richens [Ap, N, 1]

**Loranthaceae:** *Viscum album* L. subsp. *album* [Ap, Ch, 1], *V. album* L. subsp. *auriacum* (Wiesb.) Vollm. [Sp, Ch, 5]

**Polygonaceae:** *Fallopia convolvulus* (L.) Á. Löve [Arch, T, 16], *F. dumetorum* (L.) Holub [Sp, T, 2], *Polygonum amphibium* L. [Ap, G, 10], *P. aviculare* L. [Ap, T, 10], *P. bistorta* L. [Sp, G, 8], *P. hydropiper* L. [Ap, T, 12], *P. lapathifolium* L. subsp. *brittingeri* (Opiz) Rech. F. [Ap, T, 12], *P. lapathifolium* L. subsp. *lapathifolium* [Ap, T, 12], *P. lapathifolium* L. subsp. *pallidum* (With.) Fr. [Ap, T, 16], *P. minus* Huds. [Ap, T, 12], *P. mite* Schrank [Ap, T, 12], *P. persicaria* L. [Ap, T, 16], *Reynoutria japonica* Houtt. [D, G, 19], *Rheum rhabarbarum* L. [D, H, 19], *Rumex acetosa* L. [Ap, H, 9], *R. acetosella* L. [Ap, G, 5], *R. conglomeratus* Murray [Ap, H, 10], *R. crispus* L. [Ap, H, 10], *R. hydrolapathum* Huds. [Sp, Hel, 7], *R. maritimus* L. [Ap, T, 12], *R. obtusifolius* L. [Ap, H, 13], *R. sanguineus* L. [Ap, H, 1], *R. thyrsiflorus* Fingerh. [Ap, H, 14]

**Chenopodiaceae:** *Atriplex hortensis* L. [D, T, 19], *A. nitens* Schkuhr [Arch, T, 15], *A. patula* L. [Ap, T, 16], *A. prostrata* Boucher ex DC. [Ap, T, 11], *Chenopodium album* L. [Ap, T, 16], *Ch. bonus-henricus* L. [Arch, T, 15], *Ch. ficifolium* Sm. [Arch, T, 16], *Ch. glaucum* L. [Ap, T, 12], *Ch. hybridum* L. [Arch, T, 16], *Ch. murale* L. [Arch, T, 15], *Ch. polyspermum* L. [Ap, T, 12], *Ch. rubrum* L. [Ap, T, 12], *Ch. striatifforme* Murr. [Ap, T, 16], *Ch. strictum* Roth [Ken, T, 15], *Ch. suecicum* Murr [Ap, T, 16], *Corispermum leptopterum* (Asch.) Iljin [Ken, T, 15], *Kochia scoparia* (L.) Schrad. [Ken, T, 19]

**Amaranthaceae:** *Amaranthus albus* L. [Ken, T, 15], *A. caudatus* L. [D, T, 19], *A. chlorostachys* Willd. [Ken, T, 16], *A. cruentus* L. [D, T, 19], *A. lividus* L. [Ken, T, 16], *A. retroflexus* L. [Ken, T, 16]

**Portulacaceae:** *Portulaca oleracea* L. [D, T, 19]

**Caryophyllaceae:** *Agrostemma githago* L. [Arch, T, 17], *Arenaria serpyllifolia* L. [Ap, T, 5], *Cerastium arvense* L. [Ap, H, 9], *C. biebersteinii* DC. [D, H, 19], *C. glomeratum* Thuill. [Sp, H, 19], *C. holosteoides* Fr. em. Hyl. [Ap, H, 9], *C. macrocarpum* Schur em. Gartner [Ap, H, 1], *C. semidecandrum* L. [Ap, T, 5], *Cucubalus baccifer* L. [Sp, H, 3], *Dianthus carthusianorum* L. [Sp, H, 2], *D. deltoides* L. [Ap, H, 2], *Gypsophila fastigiata* L. [Sp, H, 5], *G. muralis* L. [Ap, T, 12], *Herniaria glabra* L. [Ap, H, 5], *Holosteum umbellatum* L. [Ap, T, 5], *Lychnis chalconica* L. [D, H, 19], *L. coronaria* Desr. in Lam. [D, T, 19], *L. flos-cuculi* L. [Sp, H, 5], *Melandrium album* (Mill.) Garcke [Ap, H, 14], *M. noctiflorum* (L.) Fr. [Arch, T, 16], *M. rubrum* (Weigel) Garcke [Sp, H, 2], *Moehringia trinervia* (L.) Clairv. [Sp, H, 2], *Myosoton aquaticum* (L.) Moench [Ap, H, 7], *Petrorhagia prolifera* (L.) P.W. Ball & Heywood [Ap, T, 4], *Sagina nodosa* (L.) Fenzl. [Sp, H, 8], *S. procumbens* L. [Ap, H, 12], *Saponaria officinalis* L. [Ap, G, 14], *Scleranthus annuus* L. [Arch, T, 17], *S. perennis* L. [Ap, H, 5], *Silene armeria* L. [D, T, 19], *S. nutans* L. subsp. *glabra* (DC.) Rothm. [Sp, H, 2], *S. nutans* L.

subsp. *nutans* [Sp, H, 2], *S. tatarica* (L.) Pers. [Sp, H, 5], *S. vulgaris* (Moench) Garcke [Ap, H, 14], *Spergula arvensis* L. [Arch, T, 16], *S. morisonii* Boreau [Ap, T, 5], *Spergularia rubra* (L.) J. Presl & C. Presl [Ap, T, 5], *Stellaria graminea* L. [Ap, H, 2], *S. holostea* L. [Ap, H, 1], *S. media* (L.) Vill. [Ap, T, 16], *S. neglecta* Weihe [Sp, T, 1], *S. nemorum* L. [Sp, H, 1], *S. pallida* (Dumort.) Piré [Ap, T, 16], *S. palustris* Retz. [Sp, H, 8], *S. uliginosa* Murray [Ap, H, 12], *Viscaria vulgaris* Röhl. [Ap, H, 2]

**Euphorbiaceae:** *Euphorbia cyparissias* L. [Ap, H, 4], *E. esula* L. [Ap, H, 14], *E. helioscopia* L. [Arch, T, 16], *E. lucida* Waldst. & Kit. [Sp, H, 5], *E. marginata* Pursh [D, T, 19], *E. pepus* L. [Arch, T, 16], *E. cyparissias* L. × *E. lucida* Waldst. & Kit. [Sp, H, 5], *Mercurialis perennis* L. [Sp, G, 1]

**Callitrichaceae:** *Callitriche hamulata* Kütz. ex W.D.J. Koch. [Ap, Hyd, 7], *C. verna* L. em. Lönnr. [Ap, Hyd, 7]

**Aristolochiaceae:** *Asarum europaeum* L. [Sp, H, 1]

**Berberidaceae:** *Berberis vulgaris* L. [Ap, N, 4], *Mahonia aquifolium* (Pursh) Nutt. [D, N, 19]

**Ranunculaceae:** *Actaea spicata* L. [Sp, H, 1], *Anemone nemorosa* L. [Sp, G, 1], *A. ranunculoides* L. [Sp, G, 1], *A. sylvestris* L. [Sp, H, 4], *Batrachium aquatile* (L.) Dumort. [Sp, Hyd, 7], *B. circinatum* (Sibth.) Fr. [Sp, Hyd, 7], *B. peltatum* Schrank [Sp, Hyd, 7], *B. trichophyllum* (Chaix) Bosch [Sp, Hyd, 7], *Caltha palustris* L. subsp. *cornuta* (Schott, Nyman & Kotschy) Hegi [Sp, H, 8], *C. palustris* L. subsp. *palustris* [Sp, H, 8], *Clematis vitalba* L. [D, N, 19], *Consolida ajacis* (L.) Schur [D, T, 19], *C. orientalis* (J. Gray) Schrödinger [D, T, 19], *C. regalis* Gray [Arch, T, 17], *Ficaria verna* Huds. [Sp, G, 1], *Hepatica nobilis* Schreb. [Sp, H, 1], *Myosurus minimus* L. [Sp, T, 12], *Nigella damascena* L. [D, T, 19], *Ranunculus acris* L. [Ap, H, 9], *R. arvensis* L. [Arch, T, 17], *R. auricomus* L. [Sp, H, 1], *R. bulbosus* L. [Ap, H, 4], *R. flammula* L. [Ap, H, 10], *R. friesianus* Jord. [Ken, H, 9], *R. lanuginosus* L. [Sp, H, 1], *R. lingua* L. [Sp, Hel, 7], *R. polyanthemus* L. [Ap, H, 4], *R. repens* L. [Ap, H, 10], *R. sardous* Crantz [Ap, H, 12], *R. sceleratus* L. [Ap, T, 12], *Thalictrum flavum* L. [Sp, H, 8], *T. minus* L. [Sp, H, 4]

**Nymphaeaceae:** *Nuphar lutea* (L.) Sibth. & Sm. [Sp, Hyd, 7], *Nymphaea alba* L. [Sp, Hyd, 7]

**Ceratophyllaceae:** *Ceratophyllum demesum* L. [Sp, Hyd, 7]

**Papaveraceae:** *Chelidonium majus* L. [Sp, H, 3], *Papaver argemone* L. [Arch, T, 17], *P. dubium* L. [Arch, T, 17], *P. rhoeas* L. [Arch, T, 17], *P. somniferum* L. [D, T, 19], *P. strigosum* (Boenn.) Schur [Arch, T, 17]

**Fumariaceae:** *Corydalis cava* Schweigg. & Körte [Sp, G, 1], *C. intermedia* (L.) Mérat [Sp, G, 1], *Fumaria officinalis* L. [Arch, T, 16]

**Brassicaceae:** *Alliaria petiolata* (M. Bieb.) Cavara & Grande [Ap, T, 3], *Alyssum alyssoides* (L.) L. [Ap, T, 5], *A. montanum* L. [D, T, 19], *Arabidopsis thaliana* (L.) Heynh. [Ap, T, 16], *Arabis glabra* (L.) Bernh. [Ap, T, 4], *A. hirsuta* (L.) Scop. [Sp, H, 9], *A. planisiliqua* (Pers.) Rchb. [Sp, H, 8], *Armoracia rusticana* P. Gaertn., B. Mey. & Scherb. [Arch, H, 13], *Barbarea stricta* Andrz. [Ap, H, 10], *B. vulgaris* R. Br. [Ap, H, 10], *Berteroa incana* (L.) DC. [Ap, T, 14], *Brassica napus* L. [D, T, 19], *B. nigra* (L.) W.D.J. Koch [D, T, 19], *Camelina microcarpa* Andrz. [Ap, T, 17], *C. sativa* (L.) Crantz [Arch, T, 17], *Capsella bursa-pastoris* (L.) Medik. [Arch, T, 16], *Cardamine amara* L. [Sp, H, 7], *C. hirsuta* L. [Ap, T, 16], *C. parviflora* L. [Ap, H, 10], *C. pratensis* L. [Sp, H, 8], *Cardaminopsis arenosa* (L.) Hayek [Sp, H, 9], *Cardaria draba* (L.) Desv. [Ken, H, 14], *Descurainia sophia* (L.) Webb ex Prantl [Arch, T, 16], *Diplotaxis muralis* (L.) DC. [Ken, T, 15], *Erophila verna* (L.) Chevall. [Ap, T, 15], *Erysimum cheirantho-*

*ides* L. [Ap, T, 16], *Lepidium campestre* (L.) R. Br. [Arch, T, 15], *L. densiflorum* Schrad. [Ken, T, 15], *L. ruderale* L. [Arch, T, 15], *L. sativum* L. [D, T, 16], *L. virginicum* L. [D, T, 15], *Lobularia maritima* (L.) Desv. [D, T, 16], *Lunaria annua* L. [D, T, 19], *Neslia paniculata* (L.) Desv. [Arch, T, 16], *Raphanus raphanistrum* L. [Arch, T, 16], *R. sativus* L. [D, T, 16], *Rorippa amphibia* (L.) Besser [Sp, Hel, 7], *R. palustris* (L.) Besser [Ap, T, 12], *R. sylvestris* (L.) Besser [Ap, H, 10], *R. × prostrata* (J.P. Bergeret) Schinz & Thell. [Ap, H, 15], *Sinapis alba* L. [D, T, 16], *S. arvensis* L. [Arch, T, 16], *Sisymbrium altissimum* L. [Ken, T, 15], *S. loeselii* L. [Ken, T, 15], *S. officinale* (L.) Scop. [Arch, T, 16], *Thlaspi arvense* L. [Arch, T, 16], *T. caerulescens* J. Presl & C. Presl [D, H, 19]

**Resedaceae:** *Reseda lutea* L. [Ken, H, 15]

**Droseraceae:** *Drosera rotundifolia* L. [Sp, H, 6]

**Violaceae:** *Viola arvensis* Murray [Arch, T, 17], *V. canina* Rchb. [Ap, H, 2], *V. cyanea* Čelak. [Ken, H, 3], *V. hirta* L. [Sp, H, 4], *V. odorata* L. [Arch, H, 3], *V. palustris* L. [Sp, H, 6], *V. reichenbachiana* Jord. ex Boreau [Sp, H, 1], *V. riviniana* Rchb. [Sp, H, 2], *V. rupestris* F.W. Schmidt [Sp, H, 2], *V. stagnina* Kit. [Sp, H, 8], *V. tricolor* L. [Ap, H, 5], *V. cyanea* Čelak. × *V. odorata* L. [Ap, H, 3], *V. × wittrockiana* Hort. [D, T, 16]

**Hypericaceae:** *Hypericum humifusum* L. [Ap, H, 12], *H. maculatum* Crantz [Sp, H, 2], *H. montanum* L. [Sp, H, 2], *H. perforatum* L. [Ap, H, 2], *H. tetrapterum* Fr. [Sp, H, 6]

**Crassulaceae:** *Jovibara sobolifera* (Sims) Opiz [Sp, H, 5], *Sedum acre* L. [Ap, H, 5], *S. maximum* (L.) Hoffm. [Sp, G, 2], *S. reflexum* L. [Sp, H, 5], *S. sexangulare* L. [Sp, H, 5], *S. spurium* M. Bieb. [D, H, 16]

**Saxifragaceae:** *Chrysosplenium alternifolium* L. [Sp, H, 1], *Saxifraga granulata* L. [Sp, G, 4], *S. tridactylites* L. [Ap, T, 17]

**Parnassiaceae:** *Parnassia palustris* L. [Sp, H, 8]

**Grossulariaceae:** *Ribes alpinum* L. [D, N, 19], *R. aureum* Pursh [D, N, 19], *R. nigrum* L. [Sp, N, 6], *R. rubrum* L. [Sp, N, 1], *R. spicatum* E. Robson [Sp, N, 1], *R. uva-crispa* L. [Sp, N, 2]

**Philadelphaceae:** *Philadelphus coronarius* L. [D, N, 19]

**Rosaceae:** *Agrimonia eupatoria* L. [Ap, H, 4], *A. procera* Wallr. [Ap, H, 1], *Alchemilla monticola* Opiz [Ap, H, 8], *Aphanes arvensis* L. [Arch, T, 17], *A. inexpectata* W. Lippert [Arch, T, 17], *Cerasus avium* (L.) Moench [D, M, 19], *C. vulgaris* Mill. [D, N, 19], *Chaenomeles lagenaria* (Loisel.) Koidz. [D, N, 19], *Crataegus laevigata* (Poir.) DC. [Ap, N, 2], *C. monogyna* Jacq. [Ap, N, 1], *C. rhipidophylla* Gand var. *rhipidophylla* [Ap, N, 1], *C. × macrocarpa* Hegetschw. [Ap, N, 1], *C. × subsphaericea* Grand. [Ap, N, 1], *Filipendula ulmaria* (L.) Maxim. [Sp, H, 8], *Fragaria vesca* L. [Sp, H, 2], *F. viridis* Duchesne [Ap, H, 4], *F. × ananassa* Duchesne [D, H, 16], *Geum rivale* L. [Sp, H, 8], *G. urbanum* L. [Ap, H, 3], *Malus domestica* Borkh. [D, M, 19], *M. sylvestris* Mill. [Ap, M, 1], *Padus avium* Mill. [Sp, M, 1], *P. serotina* (Ehrh.) Borkh. [Ken, M, 1], *Persica vulgaris* Mill. [D, M, 19], *Potentilla anglica* Laichard. [Ap, H, 2], *P. anserina* L. [Ap, H, 10], *P. arenaria* Borkh. [Ap, H, 5], *P. argentea* L. [Ap, H, 14], *P. collina* Wibel [Ap, H, 4], *P. erecta* (L.) Raeusch. [Sp, H, 8], *P. recta* L. [Ap, H, 14], *P. reptans* L. [Ap, H, 10], *P. supina* L. [Ap, T, 12], *Prunus domestica* L. subsp. *domestica* [D, M, 19], *P. domestica* L. subsp. *syriaca* (Borkh.) Janch. [D, M, 19], *P. spinosa* L. [Ap, N, 4], *Pyrus communis* L. [D, M, 19], *P. pyraster* (L.) Burgsd. [Ap, M, 1], *Rosa canina* L. [Ap, N, 4], *R. chinensis* Jacq. [D, N, 19], *R. dumalis* Bechst. em. Boulenger [Ap, N, 4], *R. gallica* L. [Sp, N, 16], *R. rubiginosa* L. [Ap, N, 4], *R. rugosa* Thunb. [D, N, 19],

*R. sherardii* Davies [Ap, N, 4], *R. zalana* Wiesb. [Ap, N, 4], *R. × alba* L. [D, N, 19], *Rubus armeniacus* Focke [Ken, N, 13], *R. caesius* L. [Ap, Ch, 13], *R. corylifolius* Sm. agg. [Ap, Ch, 2], *R. gothicus* Frid. & Gelert ex E.H.L. Krause [Sp, Ch, 2], *R. grabowskii* Weihe ex Günther & All. [Sp, Ch, 2], *R. gracilis* J. Presl & C. Presl [Sp, Ch, 2], *R. ida-eus* L. [Sp, Ch, 2], *R. koehleri* Weihe [Sp, Ch, 2], *R. lamprocaulos* G. Braun [Sp, Ch, 2], *R. macrophyllus* Weihe & Nees [Sp, Ch, 2], *R. nessensis* Hall [Sp, Ch, 2], *R. ostroviensis* Sprib. [Sp, Ch, 2], *R. plicatus* Weihe & Nees [Sp, Ch, 2], *R. radula* Weihe [Sp, Ch, 2], *R. seebergensis* Pfuhl ex Sprib. [Sp, Ch, 2], *R. sprengelii* Weihe [Sp, Ch, 2], *R. × pseudidaeus* (Lub) Cej. [Sp, Ch, 13], *Sanguisorba minor* Scop. s.s. [Sp, H, 4], *S. officinalis* L. [Sp, H, 8], *Sorbus aucuparia* L. em. Hedl. [Sp, M, 2], *Spiraea salicifolia* L. [D, N, 19]

**Fabaceae:** *Anthyllis vulneraria* L. [Ap, H, 5], *Astragalus arenarius* L. [Ap, G, 5], *A. glycyphyllos* L. [Ap, H, 2], *Caragana arborescens* Lam. [D, N, 19], *Coronilla varia* L. [Ap, H, 4], *Lathyrus niger* (L.) Bernh. [Sp, G, 2], *L. palustris* L. [Sp, H, 8], *L. pratensis* L. [Ap, H, 9], *L. vernus* (L.) Bernh. [Sp, G, 1], *Lotus corniculatus* L. [Ap, H, 9], *L. uliginosus* Schkuhr [Sp, H, 8], *Lupinus luteus* L. [D, T, 19], *L. polyphyllus* Lindl. [Ken, H, 19], *Medicago falcata* L. [Ap, H, 4], *M. lupulina* L. [Ap, H, 9], *M. sativa* L. [Ken, H, 19], *M. × varia* Martyn [Ken, H, 19], *Melilotus alba* Medik. [Ap, T, 15], *M. officinalis* (L.) Pall. [Ap, T, 15], *Ononis arvensis* L. [Sp, H, 9], *O. spinosa* L. [Ap, Ch, 9], *Robinia pseudoacacia* L. [Ken, M, 14], *Sarothamnus scoparius* (L.) W.D.J. Koch [Ken, N, 2], *Trifolium alpestre* L. [Ap, H, 4], *T. arvense* L. [Ap, T, 5], *T. aureum* Pollich [Ap, T, 19], *T. campestre* Schreb. [Ap, T, 9], *T. dubium* Sibth. [Ap, T, 9], *T. fragiferum* L. [Ap, H, 11], *T. hybridum* L. [Sp, H, 8], *T. pratense* L. [Ap, H, 9], *T. repens* L. [Ap, H, 10], *T. resupinatum* L. [D, T, 19], *Vicia angustifolia* L. [Ap, T, 19], *V. cassubica* L. [Sp, G, 2], *V. cracca* L. [Ap, G, 8], *V. grandiflora* Scop. [Ken, T, 17], *V. hirsuta* (L.) S.F. Gray [Arch, T, 17], *V. lathyroides* L. [Sp, T, 5], *V. sativa* L. [Arch, T, 17], *V. sepium* L. [Sp, G, 1], *V. tetrasperma* (L.) Schreb. [Arch, T, 17], *V. villosa* Roth [Arch, T, 17]

**Lythraceae:** *Lythrum salicaria* L. [Sp, H, 7], *Peplis portula* L. [Ap, T, 12]

**Onagraceae:** *Chamaenerion angustifolium* (L.) Scop. [Ap, H, 2], *Circaea alpina* L. [Sp, G, 1], *C. lutetiana* L. [Sp, G, 1], *Epilobium adnatum* Griseb. [Ap, H, 18], *E. ciliatum* Raf. [Ken, H, 12], *E. collinum* C.C. Gmel. [Ken, H, 12], *E. hirsutum* L. [Ap, H, 8], *E. palustre* L. [Sp, H, 6], *E. parviflorum* Schreb. [Sp, H, 7], *E. roseum* Schreb. [Sp, H, 7], *E. ciliatum* Raf. × *E. roseum* Schreb. [Sp, H, 7], *Oenothera biennis* L. [Ap, T, 14], *O. rubricaulis* Kleb. [Ap, T, 14], (*O. biennis* L. × *O. rubricaulis* Kleb.) = *O. casimari* Rostański (Rostański i in. 2004) [Ap, T, 14]

**Haloragaceae:** *Myriophyllum spicatum* L. [Sp, Hyd, 7], *M. verticillatum* L. [Sp, Hyd, 7]

**Hippuridaceae:** *Hippuris vulgaris* L. [Sp, Hel, 7]

**Malvaceae:** *Alcea rosea* L. [D, H, 19], *Lavatera thuringiaca* L. [Ap, H, 4], *L. trimestris* L. [D, T, 16], *Malope trifida* Cav. [D, T, 19], *Malva alcea* L. [Ap, H, 4], *M. mauritiana* L. [D, H, 19], *M. neglecta* Wallr. [Arch, T, 14], *M. pusilla* Sm. [Arch, T, 14], *M. sylvestris* L. [Arch, T, 14]

**Tiliaceae:** *Tilia cordata* Mill. [Ap, M, 1], *T. platyphyllos* Scop. [Ap, M, 1]

**Linaceae:** *Linum catharticum* L. [Sp, T, 8], *L. usitatissimum* L. [D, T, 19]

**Oxalidaceae:** *Oxalis acetosella* L. [Sp, H, 2], *O. corniculata* L. [Ken, H, 16], *O. dilenii* Jacq. [D, H, 16], *O. fontana* Bunge [Ken, T, 16]

**Geraniaceae:** *Erodium cicutarium* (L.) L'Hér. [Ap, T, 16], *Geranium molle* L. [Ken, T, 14], *G. palustre* L. [Sp, H, 8], *G. pratense* L. [Ap, H, 9], *G. pusillum* Burm. f. ex L. [Arch, T, 16], *G. pyrenaicum* Burm. f. [Ken, H, 14], *G. robertianum* L. [Sp, T, 3]

**Polygalaceae:** *Polygala comosa* Schkuhr [Sp, H, 9]

**Aceraceae:** *Acer campestre* L. [Ap, M, 1], *A. negundo* L. [Ken, M, 3], *A. platanoides* L. [Ap, M, 1], *A. pseudoplatanus* L. [Ap, M, 1]

**Hippocastanaceae:** *Aesculus hippocastanum* L. [D, M, 19], *A. pavia* L. [D, M, 19]

**Balsaminaceae:** *Impatiens glandulifera* Royle [D, T, 19], *I. noli-tangere* L. [Sp, T, 1], *I. parviflora* DC. [Ken, T, 3]

**Celastraceae:** *Euonymus europaea* L. [Ap, N, 1]

**Rhamnaceae:** *Frangula alnus* Mill. [Sp, N, 6], *Rhamnus cathartica* L. [Sp, N, 1]

**Cornaceae:** *Cornus sanguinea* L. [Sp, N, 1]

**Araliaceae:** *Hedera helix* L. [Ap, Ch, 1]

**Apiaceae:** *Aegopodium podagraria* L. [Sp, H, 1], *Aethusa cynapium* L. [Arch, T, 16], *Anethum graveolens* L. [D, T, 16], *Angelica sylvestris* L. [Sp, H, 8], *Anthriscus caucalis* M. Bieb. [Ken, T, 19], *A. cerefolium* (L.) Hoffm. [Ken, T, 16], *A. sylvestris* (L.) Hoffm. [Ap, H, 3], *Berula erecta* (Huds.) Coville [Sp, Hel, 7], *Chaerophyllum aromaticum* L. [Sp, H, 3], *Ch. bulbosum* L. [Ap, T, 14], *Ch. temulum* L. [Ap, T, 3], *Cicuta virosa* L. [Sp, Hel, 6], *Cnidium dubium* (Schkuhr) Thell. [Sp, H, 8], *Conium maculatum* L. [Arch, T, 14], *Daucus carota* L. [Ap, T, 9], *Heracleum sibiricum* L. [Ap, H, 9], *Hydrocotyle vulgaris* L. [Sp, H, 6], *Levisticum officinale* W.D.J. Koch [D, H, 19], *Oenanthe aquatica* (L.) Poir. [Ap, T, 12], *O. fistulosa* L. [Ap, H, 12], *Ostericum palustre* Besser [Sp, H, 8], *Pastinaca sativa* L. [Ap, H, 9], *Petroselinum crispum* (Mill.) A.W. Hill [D, T, 16], *Peucedanum oreoselinum* (L.) Moench [Sp, H, 4], *P. palustre* (L.) Moench [Sp, H, 6], *Pimpinella major* (L.) Huds. [Sp, H, 8], *P. nigra* Mill. [Ap, H, 9], *P. saxifraga* L. [Ap, H, 9], *Sanicula europaea* L. [Sp, H, 1], *Selinum cavifolia* (L.) L. [Sp, H, 8], *Silaum silaus* (L.) Schinz & Thell. [Sp, H, 9], *Sium latifolium* L. [Sp, Hel, 7], *Torilis japonica* (Houtt.) DC. [Ap, T, 3]

**Plumbaginaceae:** *Armeria maritima* (Mill.) Willd. subsp. *elongata* (Hoffm.) Bonnier [Ap, H, 5]

**Primulaceae:** *Anagallis arvensis* L. [Arch, T, 16], *Hottonia palustris* L. [Sp, Hyd, 6], *Lysimachia nummularia* L. [Sp, H, 1], *L. thyrsoiflora* L. [Sp, Hel, 6], *L. vulgaris* L. [Sp, H, 7], *Primula veris* L. [Sp, H, 2]

**Ericaceae:** *Calluna vulgaris* (L.) Hull [Sp, Ch, 5], *Vaccinium myrtillus* L. [Sp, Ch, 5], *V. vitis-idaea* L. [Sp, Ch, 5]

**Convolvulaceae:** *Calystegia sepium* (L.) R. Br. [Sp, G, 7], *Convolvulus arvensis* L. [Ap, G, 14]

**Cuscutaceae:** *Cuscuta europaea* L. [Ap, T, 3], *C. lupuliformis* Krock. [Ap, T, 3]

**Polemoniaceae:** *Phlox paniculata* L. [D, H, 19]

**Boraginaceae:** *Anchusa arvensis* (L.) M. Bieb. [Arch, T, 16], *A. officinalis* L. [Ap, H, 14], *Asperugo procumbens* L. [Ap, T, 14], *Cynoglossum officinale* L. [Ap, H, 3], *Echium vulgare* L. [Ap, T, 14], *Lithospermum arvense* L. [Arch, T, 17], *Myosotis arvensis* (L.) Hill [Arch, T, 17], *M. caespitosa* Schultz [Ap, H, 12], *M. palustris* (L.) L. em. Rchb. [Sp, H, 7], *M. ramosissima* Rochel [Sp, T, 4], *M. sparsiflora* Pohl [Ap, T, 3], *M. stricta* Link ex Roem. & Schult. [Ap, T, 17], *M. sylvatica* Ehrh. ex Hoffm. [D, T, 16], *Omphalodes scorpioides* (Haenke) Schrank [Ap, H, 1], *Pulmonaria obscura* Dumort. [Sp, H, 1], *Symphytum officinale* L. [Sp, H, 7]

**Solanaceae:** *Datura stramonium* L. [Ken, T, 14], *Hyoscyamus niger* L. [Arch, T, 14], *Lycium barbatum* L. [Ken, N, 14], *Lycopersicon esculentum* Mill. [D, T, 19], *Petunia* × *atkinsiana* D. Don [D, T, 16], *Solanum dulcamara* L. [Sp, Ch, 7], *S. nigrum* L. em. Mill. [Arch, T, 16], *S. tuberosum* L. [D, T, 19]

**Scrophulariaceae:** *Chaenorhinum minus* (L.) Lange [Ap, T, 16], *Euphrasia stricta* D. Wolff ex J.F. Lehm. [Sp, T, 8], *Gratiola officinalis* L. [Sp, H, 10], *Kickxia elatine* (L.) Dumort. [Arch, T, 16], *Limosella aquatica* L. [Ap, T, 12], *Linaria vulgaris* Mill. [Ap, G, 2], *Melampyrum pratense* L. [Sp, T, 2], *Odontites serotina* (Lam.) Rechb. [Sp, T, 10], *O. verna* (Bellardi) Dumort. [Arch, T, 17], *Rhinanthus serotinus* (Schönh.) Oborný [Sp, T, 9], *Scrophularia nodosa* L. [Sp, H, 1], *S. umbrosa* Dumort. [Sp, Hel, 7], *Verbascum lychnitis* L. [Ap, T, 5], *V. nigrum* L. [Ap, T, 2], *V. phlomoides* L. [Ap, T, 14], *Veronica agrestis* L. [Arch, T, 16], *V. anagallis-aquatica* L. [Ap, H, 12], *V. anagalloides* Guss. [Ap, H, 12], *V. arvensis* L. [Arch, T, 16], *V. beccabuga* L. [Sp, H, 7], *V. catenata* Pennell [Ap, H, 12], *V. chamaedrys* L. [Ap, H, 9], *V. dillenii* Crantz [Ap, T, 5], *V. hederifolia* L. [Ap, T, 16], *V. longifolia* L. [Sp, H, 8], *V. officinalis* L. [Ap, H, 2], *V. opaca* Fr. [Arch, T, 16], *V. peregrina* L. [Ken, T, 10], *V. persica* Poir. [Ken, T, 16], *V. scutellata* L. [Sp, H, 6], *V. serpyllifolia* L. [Ap, H, 10], *V. spicata* L. [Ap, H, 5], *V. sublobata* M.A. Fischer [Ap, T, 3], *V. triphyllus* L. [Arch, T, 17], *V. verna* L. [Ap, T, 5]

**Lentibulariaceae:** *Utricularia vulgaris* L. [Sp, Hyd, 7]

**Verbenaceae:** *Verbena officinalis* L. [Arch, H, 14]

**Lamiaceae:** *Acinos arvensis* (Lam.) Dandy [Ap, T, 5], *Ajuga reptans* L. [Sp, H, 1], *Ballota nigra* L. [Arch, H, 14], *Betonica officinalis* L. [Sp, H, 2], *Chaiturus marrubiastrum* (L.) Rechb. [Ken, T, 12], *Clinopodium vulgare* L. [Sp, H, 2], *Galeobdolon luteum* Huds. [Sp, H, 1], *Galeopsis angustifolia* (Ehrh.) Hoffm. [Ken, T, 15], *G. bifida* Boenn./*G. tetrahit* L. [Ap, T, 2], *G. pubescens* Besser [Ap, T, 2], *G. speciosa* Mill. [Ap, T, 2], *Glechoma hederacea* L. [Ap, H, 3], *Lamium album* L. [Arch, H, 3], *L. amplexicaule* L. [Arch, T, 16], *L. incisum* Willd. [Arch, T, 16], *L. maculatum* L. [Sp, H, 1], *L. purpureum* L. [Arch, T, 16], *Leonurus cardiaca* L. [Arch, H, 14], *Lycopus europaeus* L. [Sp, Hel, 7], *Mentha aquatica* L. [Sp, Hel, 7], *M. arvensis* L. [Ap, G, 12], *M. longifolia* (L.) L. [Ap, G, 19], *M. × niliaca* (Juss.) ex Jacq. [Ap, G, 19], *M. × verticillata* L. [Ap, Hel, 10], *Prunella vulgaris* L. [Sp, H, 9], *Scutellaria galericulata* L. [Sp, Hel, 6], *S. hastifolia* L. [Sp, H, 12], *Stachys palustris* L. [Sp, G, 7], *S. sylvatica* L. [Sp, H, 1], *Teucrium scordium* L. [Sp, H, 7], *Thymus pulegioides* L. [Sp, Ch, 4], *T. serpyllum* L. em. Fr. [Ap, Ch, 5]

**Plantaginaceae:** *Plantago arenaria* Walds. & Kit. [Ap, T, 5], *P. intermedia* Gilib. [Ap, H, 12], *P. lanceolata* L. [Ap, H, 10], *P. major* L. [Ap, H, 10], *P. media* L. [Ap, H, 9]

**Gentianaceae:** *Centaurium erythraea* Rafn [Ap, T, 2], *C. pulchellum* (Sw.) Druce [Sp, T, 12]

**Menyanthaceae:** *Menyanthes trifoliata* L. [Sp, Hel, 6]

**Apocynaceae:** *Vinca minor* L. [D, Ch1, 9]

**Oleaceae:** *Fraxinus excelsior* L. [Ap, M, 1], *Ligustrum vulgare* L. [D, N, 19], *Syringa vulgaris* L. [D, N, 19]

**Rubiaceae:** *Galium aparine* L. [Ap, T, 3], *G. boreale* L. [Sp, G, 2], *G. mollugo* L. [Ap, H, 9], *G. odoratum* (L.) Scop. [Sp, H, 1], *G. palustre* L. [Sp, H, 6], *G. spurium* L. [Arch, T, 17], *G. uliginosum* L. [Sp, H, 6], *G. verum* L. [Ap, H, 9], *Sherardia arvensis* L. [Arch, T, 17]



**Caprifoliaceae:** *Lonicera xylosteum* L. [Ap, N, 1], *Sambucus nigra* L. [Ap, N, 3], *S. racemosa* L. [Ken, N, 3], *Symphoricarpos albus* (L.) S.F. Blake [D, N, 19], *Viburnum opulus* L. [Sp, N, 7]

**Adoxaceae:** *Adoxa moschatellina* L. [Sp, G, 1]

**Valerianaceae:** *Valeriana angustifolia* Tausch [Sp, H, 8], *V. dioica* L. [Sp, H, 6], *V. officinalis* L. [Sp, H, 8], *V. sambucifolia* J.C. Mikan [Sp, H, 8], *Valerianella carinata* Loisel. [D, T, 9], *V. dentata* (L.) Pollich [Arch, T, 17], *V. locusta* Laterr. em. Betacke [Ap, T, 17], *V. rimosa* Bastard [Arch, T, 17]

**Dipsacaceae:** *Dipsacus sylvestris* Huds. [D, T, 19], *Knautia arvensis* (L.) J.M. Coult. [Ap, H, 2]

**Cucurbitaceae:** *Bryonia alba* L. [Arch, G, 14], *B. dioica* Jacq. [Arch, H, 7], *Cucurbita moschata* Duchesne [D, T, 19], *C. pepo* L. [D, T, 19], *Echinocystis lobata* (F. Michx.) Torr. & A. Gray [Ken, T, 19], *Thladiantha dubia* Bunge [D, G, 19]

**Campanulaceae:** *Campanula glomerata* L. [Ap, H, 4], *C. latifolia* L. [Sp, H, 1], *C. patula* L. [Ap, H, 9], *C. persicifolia* L. [Sp, H, 2], *C. rapunculoides* L. [Ap, H, 1], *C. rotundifolia* L. [Ap, H, 2], *C. trachelium* L. [Sp, H, 1], *Jasione montana* L. [Ap, T, 5], *Phyteuma spicatum* L. [Sp, H, 1]

**Asteraceae:** *Achillea collina* J. Becker ex Rchb. [Ap, G, 4], *A. millefolium* L. [Ap, G, 9], *A. pannonica* Scheele [Ap, G, 4], *A. ptarmica* L. [Sp, G, 8], *A. salicifolia* Besser [Sp, H, 12], *Anthemis arvensis* L. [Arch, T, 17], *Arctium lappa* L. [Ap, T, 13], *A. minus* (Hill) Bernh. [Ap, T, 14], *A. tomentosum* Mill. [Ap, T, 13], *Arnoseris minima* (L.) Schweigg. & Körte [Ap, T, 17], *Artemisia absinthium* L. [Ap, H, 14], *A. campestris* L. [Ap, H, 5], *A. dracunculus* L. [Ken, H, 19], *A. vulgaris* L. [Ap, H, 13], *Bellis perennis* L. [Sp, H, 9], *Bidens cernua* L. [Ap, T, 12], *B. frondosa* L. [Ken, T, 12], *B. tripartita* L. [Ap, T, 12], *Calendula officinalis* L. [D, T, 19], *Carduus acanthoides* L. [Arch, T, 14], *C. crispus* L. [Ap, T, 13], *C. nutans* L. [Arch, T, 14], *Carlina vulgaris* L. [Ap, T, 4], *Centaurea cyanus* L. [Arch, T, 17], *C. jacea* L. [Ap, H, 9], *C. scabiosa* L. [Ap, H, 4], *C. stoebe* L. [Ap, H, 5], *Chamomilla reticulata* (L.) Rauschert [Arch, T, 17], *Ch. suaveolens* (Pursh) Rydb. [Ken, T, 10], *Chondrilla juncea* L. [Ap, H, 5], *Cichorium intybus* L. [Arch, H, 14], *Cirsium arvense* (L.) Scop. [Ap, G, 13], *C. oleraceum* (L.) Scop. [Sp, H, 8], *C. palustre* (L.) Scop. [Sp, H, 8], *C. vulgare* (Savi) Ten. [Ap, T, 13], *Conyza canadensis* (L.) Cronquist [Ken, T, 15], *Crepis biennis* L. [Ap, T, 14], *C. paludosa* (L.) Moench [Sp, H, 8], *C. tectorum* L. [Ap, T, 16], *Echinops sphaerocephalus* L. [D, H, 14], *Erigeron acris* L. [Ap, H, 5], *E. annuus* (L.) Pers. [Ken, T, 13], *E. ramosus* (Walters) Britton, Sterns & Poggenb. [Ken, T, 13], *Eupatorium cannabinum* L. [Sp, H, 7], *Filago minima* (Sm.) Pers. [Ap, T, 5], *Galinsoga ciliata* (Raf.) S.F. Blake [Ken, T, 16], *G. parviflora* Cav. [Ken, T, 16], *Gnaphalium luteo-album* L. [Ap, T, 12], *G. sylvaticum* L. [Ap, H, 2], *G. uliginosum* L. [Ap, T, 12], *Helianthus annuus* L. [D, T, 19], *H. tuberosus* L. [Ken, G, 13], *Helichrysum arenarium* (L.) Moench [Ap, H, 5], *Hieracium lachenalii* C.C. Gmel. [Sp, H, 2], *H. laevigatum* Willd. [Sp, H, 2], *H. murorum* L. [Sp, H, 2], *H. pilosella* L. [Ap, H, 5], *H. sabaudum* L. [Sp, H, 2], *H. umbellatum* L. [Sp, H, 2], *Hypochoeris radicata* L. [Ap, H, 5], *Inula britannica* L. [Ap, H, 10], *Iva xanthiifolia* Nutt. [Ken, T, 10], *Lactuca serriola* L. [Arch, T, 15], *Lapsana communis* L. [Ap, T, 3], *Leontodon autumnalis* L. [Ap, H, 10], *L. hispidus* L. [Sp, H, 9], *L. taraxacoides* (Vill.) Mérat [Ap, H, 5], *Leucanthemum vulgare* Lam. [Ap, H, 9], *Matricaria maritima* L. subsp. *inodora* (L.) Dostál [Arch, T, 16], *Mycelis muralis* (L.) Dumort. [Sp, H, 1], *Onopordum acanthium* L. [Arch, T, 14], *Petasites hybridus* (L.) Gaertn., B. Mey. & Scherb. [Ap, G, 8], *Picris hieracioides* L. [Ap, H, 14], *Pulicaria vulgaris* Gaertn. [Ap, T, 12],

*Rudbeckia hirta* L. [Ken, H, 19], *R. laciniata* L. [D, G, 19], *Senecio jacobaea* L. [Ap, H, 4], *S. paludosus* L. [Sp, H, 7], *S. sylvaticus* L. [Ap, T, 2], *S. vernalis* Waldst. & Kit. [Ken, T, 15], *S. viscosus* L. [Ap, T, 15], *S. vulgaris* L. [Arch, T, 16], *Silybum marianum* (L.) Gaertn. [D, T, 19], *Solidago canadensis* L. [Ken, G, 13], *S. virgaurea* L. [Sp, H, 2], *Sonchus arvensis* L. [Ap, G, 16], *S. asper* (L.) Hill [Arch, T, 16], *S. oleraceus* L. [Arch, T, 16], *Tagetes erecta* L. [D, T, 19], *Tanacetum balsamita* L. [D, H, 19], *T. parthenium* (L.) Sch. Bip. [D, H, 19], *T. vulgare* L. [Ap, H, 13], *Taraxacum acervatum* Rail. [Ap, H, 9], *T. alatum* H. Lindb. [Ap, H, 9], *T. amplum* Markl. [Ap, H, 9], *T. baeckii*forme Sahlin [Ap, H, 9], *T. cordatum* Palmgr. [Ap, H, 9], *T. cristatum* Kirschner, Štěpánek et Vašut [Ap, H, 9], *T. disseminatum* G.E. Haglund [Ap, H, 14], *T. ekmanii* Dahlst. [Ap, H, 9], *T. expallidiforme* Dahlst. [Ap, H, 9], *T. glossodon* Sonck & H. Øllg. [Ap, H, 9], *T. haematicum* G.E. Haglund ex Øllg. & Wittzell [Ap, H, 9], *T. hemicyclum* G.E. Haglund [Ap, H, 9], *T. hepaticum* Rail. [Ap, H, 9], *T. leucopodium* G.E. Haglund [Ap, H, 9], *T. melanostigma* H. Lindb. [Ap, H, 9], *T. ohlsenii* G.E. Haglund [Ap, H, 9], *T. pannucium* Dahlst. [Ap, H, 9], *T. parnassicum* Dahlst. [Ap, H, 14], *T. paucilobum* Hudziok [Ap, H, 8], *T. proximum* (Dahlst.) Raunk. [Ap, H, 14], *T. pseudoretroflexum* M.P. Christ. [Ap, H, 9], *T. scanicum* Dahlst. [Ap, H, 14], *T. seelandii* Dahlst. [Ap, H, 9], *T. semiglobosum* H. Lindb. [Ap, H, 9], *T. stenoglossum* Brenner [Ap, H, 9], *T. subalpinum* Hudziok [Ap, H, 8], *T. sublaeticolor* Dahlst. [Ap, H, 9], *T. tenebricans* (Dahlst.) Raunk. [Ap, H, 9], *T. tenuilobum* (Dahlst.) Raunk. [Ap, H, 9], *T. tumentilobum* Markl. ex Puolanne [Ap, H, 9], *Tragopogon dubius* Scop. [Ap, T, 14], *T. pratensis* L. [Ap, T, 9], *Tussilago farfara* L. [Ap, G, 10], *Xanthium albidum* (Widder) H. Scholz [Ken, T, 12], *X. strumarium* L. [Ap, T, 14]

**Alismataceae:** *Alisma lanceolatum* With. [Sp, Hel, 7], *Sagittaria sagittifolia* L. [Sp, Hyd, 7]

**Butomaceae:** *Butomus umbellatus* L. [Ap, Hel, 7]

**Hydrocharidaceae:** *Elodea canadensis* Michx. [Ken, Hyd, 7], *Hydrocharis morsus-ranae* L. [Sp, Hyd, 7], *Stratiotes aloides* L. [Sp, Hyd, 7]

**Juncaginaceae:** *Triglochin maritimum* L. [Sp, H, 11], *T. palustre* L. [Sp, H, 6]

**Potamogetonaceae:** *Potamogeton acutifolius* Link [Ap, Hyd, 7], *P. alpinus* Balb. [Sp, Hyd, 7], *P. crispus* L. [Ap, Hyd, 7], *P. friesii* Rupr. [Sp, Hyd, 7], *P. lucens* L. [Sp, Hyd, 7], *P. natans* L. [Sp, Hyd, 7], *P. nodosus* Poir. [Sp, Hyd, 7], *P. pectinatus* L. [Sp, Hyd, 7], *P. perfoliatus* L. [Sp, Hyd, 7], *P. pusillus* L. [Sp, Hyd, 7], *P. trichoides* Cham. & Schltld. [Sp, Hyd, 7], *P. × lithuanicus* Gorski [Sp, Hyd, 7]

**Zannichelliaceae:** *Zannichellia palustris* L. subsp. *pedicellata* (Wahlenb. & Rosén) Hegi [Sp, Hyd, 7]

**Liliaceae:** *Allium oleraceum* L. [Ap, G, 4], *A. rotundum* L. [Arch, G, 19], *A. schoenoprasum* L. [D, G, 19], *A. scorodoprasum* L. [Ap, G, 3], *A. vineale* L. [Ap, G, 4], *Anthericum ramosum* L. [Sp, H, 2], *Asparagus officinalis* L. [Ken, G, 14], *Convallaria majalis* L. [Sp, G, 2], *Gagea arvensis* (Pers.) Dumort. [Arch, G, 13], *G. lutea* (L.) Ker Gawl. [Sp, G, 1], *G. minima* (L.) Ker Gawl. [Ap, G, 1], *G. pratensis* (Pers.) Dumort. [Ap, G, 3], *Hemerocallis flava* L. [D, H, 19], *Lilium martagon* L. [Sp, G, 1], *Maianthemum bifolium* (L.) F.W. Schmidt [Sp, G, 2], *Ornithogalum umbellatum* L. [Ken, G, 19], *Paris quadrifolia* L. [Sp, G, 1], *Polygonatum multiflorum* (L.) All. [Sp, G, 1], *P. odoratum* (Mill.) Druce [Sp, G, 2], *Scilla sibirica* Haw. [D, G, 19], *Tulipa kaufmanniana* Regel [D, G, 19]

**Amaryllidaceae:** *Galanthus nivalis* L. [D, G, 19], *Narcissus poëticus* L. [D, G, 19]

**Iridaceae:** *Iris germanica* L. [D, H, 19], *I. pseudacorus* L. [Sp, Hel, 6]

**Juncaceae:** *Juncus alpino-articulatus* Chaix [Sp, H, 8], *J. articulatus* L. em. K. Richt. [Sp, H, 8], *J. bufonius* L. [Ap, T, 12], *J. compressus* Jacq. [Ap, H, 10], *J. conglomeratus* L. em. Leers [Ap, H, 2], *J. effusus* L. [Ap, H, 2], *J. inflexus* L. [Sp, H, 8], *J. subnodulosus* Schrank [Sp, H, 8], *J. tenuis* Willd. [Ken, H, 10], *Luzula campestris* (L.) DC. [Sp, H, 2], *L. multiflora* (Retz.) Lej. [Sp, H, 2], *L. pallescens* Sw. [Sp, H, 2], *L. pilosa* (L.) Willd. [Sp, H, 2]

**Cyperaceae:** *Blysmus compressus* (L.) Panz. ex Link [Sp, H, 10], *Carex acutiformis* Ehrh. [Sp, H, 6], *C. appropinquata* Schumach. [Sp, H, 6], *C. canescens* L. [Sp, H, 6], *C. caryophylla* Latourr. [Sp, H, 4], *C. cespitosa* L. [Sp, H, 6], *C. demissa* Hornem. [Sp, H, 6], *C. diandra* Schrank [Sp, H, 6], *C. digitata* L. [Sp, H, 2], *C. distans* L. [Sp, H, 8], *C. disticha* Huds. [Sp, G, 6], *C. echinata* Murray [Sp, H, 6], *C. elongata* L. [Sp, H, 6], *C. flacca* Schreb. [Sp, G, 8], *C. flava* L. [Sp, H, 6], *C. gracilis* Curtis [Sp, H, 6], *C. hirta* L. [Ap, G, 10], *C. lepidocarpa* Tausch [Sp, H, 8], *C. nigra* Reichard [Sp, H, 8], *C. ovalis* Gooden. [Ap, H, 2], *C. pairae* F.W. Schultz [Sp, H, 8], *C. pallescens* L. [Sp, H, 2], *C. panicea* L. [Sp, G, 8], *C. paniculata* L. [Sp, H, 6], *C. pilulifera* L. [Sp, H, 2], *C. praecox* Schreb. [Ap, G, 5], *C. pseudocyperus* L. [Sp, H, 6], *C. remota* L. [Sp, H, 1], *C. riparia* Curtis [Sp, H, 6], *C. rostrata* Stokes [Sp, G, 6], *C. spicata* Huds. [Ap, H, 2], *C. sylvatica* Huds. [Sp, H, 1], *C. vesicaria* L. [Sp, H, 6], *C. vulpina* L. [Ap, H, 8], *C. flacca* Schreb. × *C. nigra* Reichard [Sp, H, 8], *Cladium mariscus* (L.) Pohl [Sp, Hel, 7], *Cyperus fuscus* L. [Ap, T, 12], *Eleocharis acicularis* (L.) Roem. & Schult. [Sp, T, 12], *E. palustris* (L.) Roem. & Schult. [Sp, Hel, 6], *E. uniglumis* (Link) Schult. [Sp, G, 6], *Eriophorum angustifolium* Honck. [Sp, H, 6], *E. vaginatum* L. [Sp, H, 6], *Schoenoplectus lacustris* (L.) Palla [Sp, Hel, 7], *S. tabernaemontani* (C.C. Gmel.) Palla [Sp, Hel, 7], *Scirpus sylvaticus* L. [Sp, H, 8]

**Poaceae:** *Agrostis capillaris* L. [Ap, H, 5], *A. gigantea* Roth [Ap, G, 8], *A. stolonifera* L. [Ap, H, 10], *A. vinealis* Schreb. [Ap, H, 2], *Alopecurus aequalis* Sobol. [Ap, H, 12], *A. geniculatus* L. [Ap, H, 10], *A. pratensis* L. [Ap, H, 9], *Anthoxanthum aristatum* Boiss. [Ken, T, 17], *A. odoratum* L. [Ap, H, 2], *Apera spica-venti* (L.) P. Beauv. [Arch, T, 17], *Arrhenatherum elatius* (L.) P. Beauv. ex J. Presl & C. Presl [Ap, H, 9], *Avena fatua* L. [Arch, T, 17], *Avenula pubescens* (Huds.) Dumort. [Ap, H, 9], *Brachypodium sylvaticum* (Huds.) P. Beauv. [Sp, H, 1], *Briza media* L. [Sp, H, 9], *Bromus arvensis* L. [Arch, T, 17], *B. carinatus* Hook. & Arn. [Ken, H, 10], *B. erectus* Huds. [Ap, H, 4], *B. hordeaceus* L. [Ap, T, 14], *B. inermis* Leyss. [Ap, G, 14], *B. japonicus* Thunb. ex Murr [Ken, T, 19], *B. squarrosus* L. [Ken, T, 19], *B. sterilis* L. [Arch, T, 3], *B. tectorum* L. [Arch, T, 15], *B. willdenowii* Kunth [D, H, 19], *Calamagrostis arundinacea* (L.) Roth [Sp, H, 2], *C. canescens* (Weber) Roth [Sp, H, 6], *C. epigejos* (L.) Roth [Ap, G, 2], *Catabrosa aquatica* (L.) P. Beauv. [Ap, H, 12], *Corynephorus canescens* (L.) P. Beauv. [Ap, H, 5], *Dactylis glomerata* L. [Ap, H, 9], *D. polygama* Horv. [Sp, H, 1], *Danthonia decumbens* DC. [Sp, H, 2], *Deschampsia caespitosa* (L.) P. Beauv. [Sp, H, 8], *D. flexuosa* (L.) Trin. [Sp, H, 5], *Digitaria ischaemum* (Schreb.) H.L. Mühl. [Ap, T, 16], *D. sanguinalis* (L.) Scop. [Arch, T, 15], *Echinochloa crus-galli* (L.) P. Beauv. [Arch, T, 16], *Elymus repens* (L.) Gould [Ap, G, 10], *Eragrostis cilianensis* (All.) F.T. Hubb. [D, T, 15], *E. minor* Host [Ken, T, 15], *Festuca altissima* All. [Sp, H, 1], *F. arundinacea* Schreb. [Ap, H, 10], *F. gigantea* (L.) Vill. [Sp, H, 1], *F. ovina* L. [Sp, H, 2], *F. pratensis* Huds. [Ap, H, 9], *F. rubra* L. [Ap, H, 9], *F. trachyphylla* (Hack.) Krajina [Ap, H, 5], *Festulolium adscendens* (Retz.) Asch. & Graebn. [Ap, H, 10], *Glyceria fluitans* (L.) R. Br. [Ap, Hel, 7], *G. maxima* (Hartm.) Holmb. [Sp, Hel, 7], *G. notata* Chevall. [Sp, Hel, 7], *Holcus lanatus* L. [Ap, H, 8], *H. mollis* L. [Ap, G, 5], *Hordeum murinum* L. [Arch,

T, 15], *Koeleria glauca* (Spreng.) DC. [Ap, H, 5], *Leersia oryzoides* (L.) Sw. [Ap, H, 7], *Leymus arenarius* (L.) Hochst. [Ken, G, 5], *Lolium multiflorum* Lam. [Ken, H, 15], *L. perenne* L. [Ap, H, 10], *Melica nutans* L. [Sp, H, 2], *Milium effusum* L. [Sp, H, 1], *Molinia caerulea* (L.) Moench [Sp, H, 8], *Nardus stricta* L. [Sp, H, 2], *Panicum miliaceum* L. [D, T, 19], *Phalaris arundinacea* L. [Ap, H, 7], *Phleum pratense* L. [Ap, H, 9], *Phragmites australis* (Cav.) Trin. ex Steud. [Ap, H, 7], *Poa angustifolia* L. [Ap, H, 2], *P. annua* L. [Ap, T, 10], *P. bulbosa* L. var. *vivipara* [Arch, H, 5], *P. compressa* L. [Ap, H, 14], *P. nemoralis* L. [Sp, H, 2], *P. palustris* L. [Sp, H, 7], *P. pratensis* L. [Ap, H, 9], *P. subcaerulea* Sm. [Ap, H, 9], *P. trivialis* L. [Ap, H, 12], *Puccinellia distans* (Jacq.) Parl. [Ap, H, 11], *Secale cereale* L. [D, T, 19], *Setaria italica* (L.) P. Beauv. [D, T, 19], *S. pumila* (Poir.) Roem. & Schult. [Arch, T, 16], *S. verticillata* (L.) P. Beauv. [Arch, T, 16], *S. viridis* (L.) P. Beauv. [Arch, T, 16], *Sorghum halepense* (L.) Pers. [D, T, 19], *Trisetum flavescens* (L.) P. Beauv. [Sp, H, 9], *Triticum aestivum* L. [D, T, 19], *Vulpia myuros* (L.) C.C. Gmel. [Sp, T, 2], *Zea mays* L. [D, T, 19]

**Orchidaceae:** *Dactylorhiza incarnata* (L.) Soó [Sp, G, 6], *D. majalis* (Rchb.) P.F. Hunt & Summerh. [Sp, G, 8], *D. × aschersoniana* (Hauskn.) Borsos et Soó. [Sp, G, 8], *Epipactis helleborine* (L.) Crantz [Ap, G, 1], *Listera ovata* (L.) R. Br. [Sp, G, 1], *Platanthera bifolia* (L.) Rich. [Sp, G, 2]

**Lemnaceae:** *Lemna gibba* L. [Sp, Hyd, 7], *L. minor* L. [Sp, Hyd, 7], *L. trisulca* L. [Sp, Hyd, 6], *Spirodela polyrhiza* (L.) Schleid. [Ap, Hyd, 7], *Wolffia arrhiza* (L.) Horckell ex Wimm. [Sp, Hyd, 6]

**Araceae:** *Acorus calamus* L. [Ken, Hel, 7], *Calla palustris* L. [Sp, Hel, 6]

**Sparganiaceae:** *Sparganium emersum* Rehmann [Ap, Hel, 7], *S. erectum* L. em. Rchb. [Sp, Hel, 7], *S. neglectum* Beeby [Sp, Hel, 7]

**Typhaceae:** *Typha angustifolia* L. [Sp, Hel, 7], *T. latifolia* L. [Sp, Hel, 7], *T. × glauca* Godr. [Sp, Hel, 7]

## Analysis of flora

Floristic studies carried out on the total area of the Książ Wlkp. commune permitted to elaborate a list of vascular plants including 1001 taxa. This number includes nine subspecies and 21 hybrids. The identified taxa belong to 106 families and 431 genera. The number of species among 106 families is contained in the interval from 1 to 127. Families with the greatest number of species include: *Asteraceae* – 128, *Poaceae* – 88, and *Rosaceae* – 67. There are 28 families with only one representative. The greatest number of species was found in the genera: *Carex* (34 species), *Taraxacum* (30), *Veronica* (21) and *Rubus* (16).

In the analysed flora, there dominate native taxa: spontaneophytes (355 species) and apophytes (369) (Table 1). Species of a foreign origin represent totally 277 species. Among them, there dominate diaphytes and archeophytes, while kenophytes constitute the smallest group. Among archeophytes, there appear very interesting species such as: *Allium rotundum*, *Bromus arvensis*, *Chenopodium bonus-henricus*, *Conium maculatum*, *Kickxia elatine*, *Ranunculus arvensis*, *Sherardia arvensis* and *Valerianella rimosa*.

**Table 1**  
**Participation of geographical-historical groups in the flora of the Książ Wlkp. commune**  
**Udział grup geograficzno-historycznych we florze gminy Książ Wlkp.**

Geographical and historical group Grupa geograficzno-historyczna	Sp	Ap	Ar	Ken	D
Number of species Liczba gatunków	355	369	99	69	109

Sp – non-synanthropic spontaneophytes, Ap – apophytes, Ar – archaeophytes, Ken – kenophytes, d – diaphytes.

Sp – spontanofity niesynantropijne, Ap – apofity, Ar – archeofity, Ken – kenofity, d – diafity.

On the basis of Raunkiaer's life form analysis, it was found that the greatest participation in the studied flora is shown by hemikryptophytes (418 species) and therophytes (290). Geophytes (94) (Table 2) are distinguished by a comparatively high participation. The presented spectrum of Raunkiaer's life forms does not deviate from the characteristic pattern for the whole climatic zone and for the area of Poland.

**Table 2**  
**Participation of life forms in the flora of the Książ Wlkp. commune**  
**Udział form życiowych we florze gminy Książ Wlkp.**

Life form Forma życiowa	M	N	Ch	H	G	Hel	Hyd	T
Number of species Liczba gatunków	48	56	27	418	94	33	35	290

M – megafanerophytes, N – nanofanerophytes, Ch – chamephytes, H – hemikryptophytes, G – geophytes, Hel – helophytes, Hyd – hydrophytes, T – therophytes.

M – megafanerofity, N – nanofanerofity, Ch – chamefity, H – hemikryptofity, G – geofity, Hel – helofity, Hyd – hydrofity, T – terofity.

Distribution of species in socio-ecological groups on the studied area is differentiated and all units have their representatives. The most numerously represented is group 19 with a not closely defined phytosociological affiliation (106 species), as well as the species from acid oak trees, bright oak forests, mixed woods and their substitute clearing communities, meadow and turf communities – group 2 (105 species) (Table 3). A rather numerous group is represented by species growing in fertile deciduous forests and shrub communities – group 1 (91 species), and also in forests and waterside thickets, rush and water communities – group 7 (89 species) and in garden weed communities and field root crops – group 16 (80 species). On the other hand, the least number of species is shown by groups 11 and 18, i.e. species occurring on salty soils, and by halophilous meadow-and-rush communities and eplitic communities.

Among the recorded plants, there are as many as 44 species covered by a legal protection (Ordinance of 2004) (Fig. 1). Plants subject to total protection include: *Anemone*

**Table 3**

**Participation of socio-ecological groups to the flora of the Książ Wlkp. commune**  
**Udział gatunków w grupach socjologiczno-ekologicznych we florze gminy Książ Wlkp.**

Socio-ecological group Grupa socjologiczno-ekologiczna	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Number of species Liczba gatunków	91	105	30	37	57	49	89	59	70	37	4	47	16	52	29	80	39	3	106

1 – *Fagetalia*, *Prunetalia*; 2 – *Quercion robori-petraeae*, *Quercion petraeae*, *Epilobion*, *Nardetalia*; 3 – *Sambuco-Salicion*, *Alliarion*; 4 – *Trifolio-Geranietaea*, *Festuco-Brometeta*; 5 – *Dicrano-Pinion*, *Sedo-Sclerantheteta*, *Corynephoreta*; 6 – *Alnion*, *Magnocaricion*, *Caricetalia fuscae*, *Sphagnion fusci*; 7 – *Salicion*, *Phragmition*, *Glycerio-Sparganion*, *Potamogetonetea*, *Lemnetea*, *Utricularietea*; 8 – *Arrhenatheretalia*; 10 – *Plantaginetea*; *Thero-Salicornietea*, *Asteretea tripolium*; 12 – *Bidentetea*, *Nanocyperion*; 13 *Arction*; 14 – *Onopordion*; 15 – *Sisymbriion*, *Eragrostion*; 16 – *Polygono-Chenopodietalia*; 17 – *Aperetalia*; 18 – *Asplenietea*; 19 – species with undefined affiliation – gatunki o nieokreślonej przynależności.

*sylvestris* (1 synantropic locality), *Batrachium aquatile* (4 loc.), *B. peltatum* (2 loc.), *B. trichophyllum* (2 loc.), *Campanula latifolia* (1 loc.), *Centaurium erythrea* (2 loc.), *C. pulchellum* (1 loc.), *Cladium mariscus* (1 loc.), *Dactylorhiza incarnata* (1 loc.), *D. majalis* (2 loc.), *D. × aschersoniana* (1 loc.), *Drosera rotundifolia* (1 loc.), *Epipactis helleborine* (3 loc.), *Galanthus nivalis* (1 synantropic loc.), *Gratiola officinalis* (1 loc.), *Gypsophila paniculata* (2 loc.), *Hepatica nobilis* (2 loc.), *Jovibarba sobolifera* (1 synantropic loc.), *Lilium martagon* (1 loc.), *Listera ovata* (2 loc.), *Matteucia struthiopteris* (1 synantropic loc.), *Ophioglossum vulgatum* (1 loc.), *Ornithogalum umbellatum* (3 loc.), *Ostericum palustre* (1 loc.), *Platanthera bifolia* (1 loc.), *Polypodium vulgare* (2 loc.), *Rosa gallica* (1 synantropic loc.), *Utricularia vulgaris* (2 loc.), *Viola stagnina* (2 loc.). On the area of the commune, there occurred also partially protected plants including: *Asarum europaeum* (1 loc.), *Convalaria majalis* (7 loc.), *Frangula alnus* (12 loc.), *Gallium odoratum* (1 loc.), *Hedera helix* (3 loc.), *Helichrysum arenarium* (10 loc.), *Manyanthes trifoliata* (2 loc.), *Nuphar luteum* (7 loc.), *Nymphaea alba* (3 loc.), *Ononis arvensis* (1 loc.), *O. spinosa* (2 loc.), *Primula veris* (2 loc.), *Ribes nigrum* (1 loc.), *Viburnum opulus* (3 loc.), *Vinca minor* (1 synantropic loc.).

Valorization of vascular flora resources in Książ Wlkp. commune is shown in Table 4:

1) Among species entered in the Polish Red Book of Plants (Paprotniki... 2001) there are: *Allium rotundum*, *Ostericum palustre* and synantropic localities of *Lathyrus latifolius* and *Rosa gallica*.

2) Among rare and threatened species from the “red list” for Poland (Jasiewicz 1981, Zarzycki and Szelaąg 1992), there are 15 species (Table 5).

3) From the “red list” for Wielkopolska (Żukowski and Jackowiak 1995) 80 species were found in 139 localities (Fig. 2).

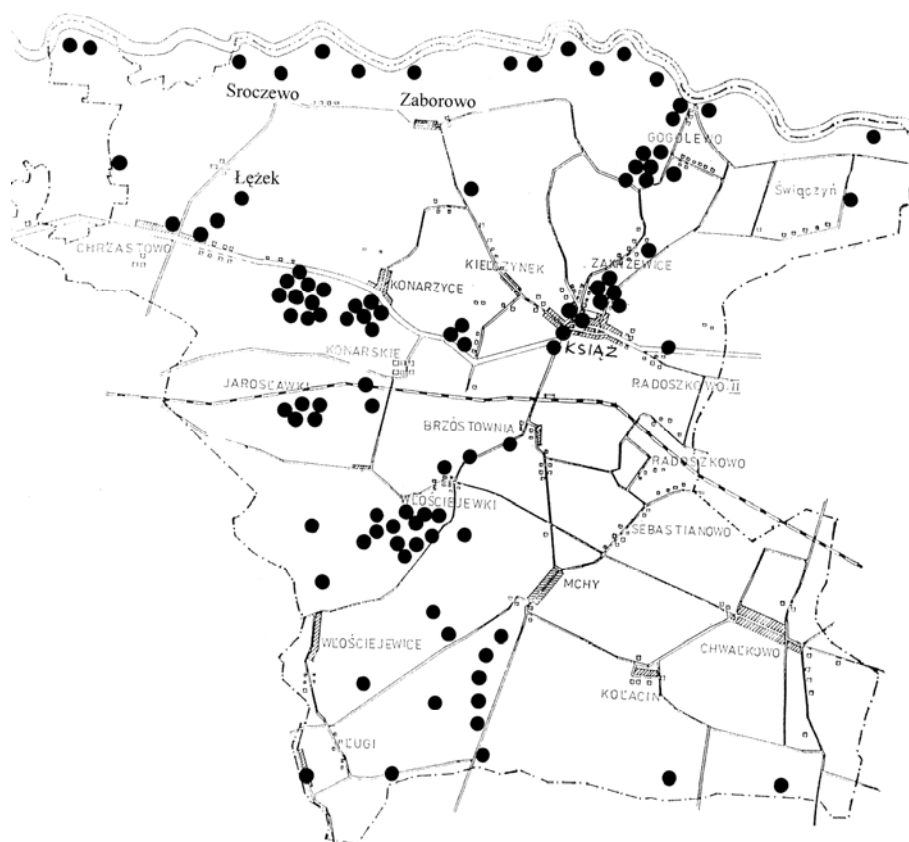


Fig. 1. Localization of protected species (Rozporządzenie... 2004) on the area of the Książ Włkp. commune

Ryc. 1. Lokalizacja gatunków chronionych (Rozporządzenie... 2004) na terenie gminy Książ Włkp.

**Table 4**  
**Perishing and threatened vascular plant species occurring on the area of the Książ Włkp. commune**  
**Ginące i zagrożone gatunki roślin naczyniowych występujące na terenie gminy Książ Włkp.**

Species Gatunek	Number of localities Liczba stanowisk	Kaźmier- czakowa and Za- rzycki 2001	Zarzycki and Szeląg 1992	Jasiewicz 1981	Żukowski and Jac- kowiak 1995
1	2	3	4	5	6
<i>Acer campestre</i>	10	.	.	.	R
<i>Actaea spicata</i>	2	.	.	.	V
<i>Alchemilla monticola</i>	1	.	.	.	V
<i>Allisma laceolatum</i>	14	.	.	.	I

Table 4 – cont.

1	2	3	4	5	6
<i>Allium rotundum</i>	2	CR	.	.	.
<i>Allium scorodoprasum</i>	1	.	R	R	.
* <i>Anemone sylvestris</i>	1	.	.	.	E
<i>Aphanes inexpectata</i>	1	.	R	.	R
<i>Arabis planisiliqua</i>	1	.	.	.	V
<i>Betonica officinalis</i>	1	.	.	.	V
<i>Bromus arvensis</i>	1	.	.	.	R
<i>Callitriche hamulata</i>	1	.	.	.	E
<i>Camelina sativa</i>	1	.	.	.	R
<i>Campanula latifolia</i>	1	.	R	.	E
<i>Cardamine hirsuta</i>	2	.	.	.	R
<i>Cardamine parviflora</i>	1	.	R	.	V
<i>Carex demissa</i>	1	.	.	R	V
<i>Carex disticha</i>	2	.	.	.	V
<i>Carex lepidocarpa</i>	2	.	.	.	V
<i>Catabrosa aquatica</i>	1	.	.	.	V
<i>Chenopodium bonus-henricus</i>	1	.	.	.	R
<i>Chenopodium murale</i>	1	.	.	.	R
<i>Cnidium dubium</i>	3	.	.	.	V
<i>Conium maculatum</i>	1	.	.	.	R
<i>Corydalis intermedia</i>	1	.	.	RL	R
<i>Crataegus</i> × <i>macrocarpa</i>	1	.	R	.	.
<i>Cucubalus baccifer</i>	2	.	.	.	V
<i>Cystopteris fragilis</i>	1	.	.	RL	.
<i>Dactylorhiza incarnata</i>	1	.	.	.	V
<i>Dactylorhiza majalis</i>	2	.	.	.	V
<i>Drosera rotundifolia</i>	1	.	R	.	V
<i>Dryopteris cristata</i>	1	.	V	V	E
<i>Eriophorum vaginatum</i>	1	.	.	.	V
<i>Euphorbia lucida</i>	2	.	.	.	V
<i>Festuca altissima</i>	1	.	.	.	E
<i>Gagea arvensis</i>	4	.	R	.	I
<i>Gagea minima</i>	1	.	.	.	I
* <i>Galanthus nivalis</i>	1	.	.	.	I
<i>Gnaphalium luteo-album</i>	1	.	.	.	R
<i>Gratiola officinalis</i>	1	.	.	.	V



Table 4 – cont.

1	2	3	4	5	6
<i>Gymnocarpium robertianum</i>	1	.	.	R	E
<i>Hypericum humifusum</i>	1	.	.	.	R
* <i>Jovibarba sobolifera</i>	1	.	.	.	V
<i>Juncus alpino-articulatus</i>	1	.	.	.	V
<i>Juncus subnodulosus</i>	1	.	V	R	V
<i>Kickxia elatine</i>	1	.	.	.	R
<i>Lamium incisum</i>	1	.	.	.	R
* <i>Lathyrus latifolius</i>	1	EN	R	R	.
<i>Lathyrus palustris</i>	2	.	.	.	V
<i>Leersia oryzoides</i>	1	.	.	.	V
<i>Leontodon taraxacoides</i>	3	.	.	R	.
<i>Lilium martagon</i>	1	.	.	.	V
<i>Listera ovata</i>	2	.	.	.	V
* <i>Matteuccia struthiopteris</i>	1	.	.	R	E
<i>Melandrium rubrum</i>	1	.	.	.	R
<i>Oenanthe fistulosa</i>	2	.	.	.	V
<i>Omphalodes scorpioides</i>	1	.	.	R	.
<i>Ophioglossum vulgatum</i>	1	.	.	.	V
<i>Ostericum palustre</i>	1	EN	E	.	E
<i>Platanthera bifolia</i>	1	.	.	.	V
<i>Populus nigra</i>	3	.	.	.	R
<i>Potamogeton acutifolius</i>	1	.	.	.	V
<i>Potamogeton alpinus</i>	1	.	.	.	E
<i>Potamogeton trichoides</i>	1	.	.	R	V
<i>Potentilla supina</i>	1	.	.	.	R
<i>Ranunculus arvensis</i>	2	.	.	.	R
* <i>Rosa gallica</i>	1	VU	V	V	R
<i>Rosa sherardii</i>	5	.	.	R	.
<i>Rosa zalana</i>	1	.	.	.	V
<i>Rubus koehleri</i>	1	.	.	.	R
<i>Rubus macrophyllus</i>	1	.	.	.	R
<i>Rubus ostroviensis</i>	1	.	.	.	R
<i>Rubus seebergensis</i>	1	.	.	.	R
<i>Rumex sanguineus</i>	1	.	.	.	V
<i>Senecio paludosus</i>	3	.	.	.	V
<i>Sherardia arvensis</i>	1	.	.	.	R

Table 4 – cont.

1	2	3	4	5	6
<i>Silaum silaus</i>	1	.	.	.	V
<i>Silene nutans</i> subsp. <i>glabra</i>	1	.	.	R	V
<i>Stellaria neglecta</i>	5	.	.	.	R
<i>Stellaria pallida</i>	9	.	.	.	R
<i>Stellaria uliginosa</i>	3	.	.	.	V
<i>Thlaspi caerulescens</i>	1	.	R	.	.
<i>Triglochin maritimum</i>	1	.	.	.	V
<i>Trisetum flavescens</i>	1	.	.	.	V
<i>Valeriana dioica</i>	1	.	.	.	V
<i>Valerianella rimosa</i>	1	.	.	.	V
<i>Veronica anagaloides</i>	1	.	I	R	.
<i>Veronica catenata</i>	4	.	.	R	V
<i>Viola stagnina</i>	2	.	V	R	E
<i>Wolffia arrhiza</i>	7	.	.	.	V
<i>Zannichellia pedicellata</i>	1	.	.	R	.
Total – Razem	154	4	15	19	80

\*Synanthropic locality of native species.

\*Stanowisko synantropijne rodzimego gatunku.

Table 5

**Participation of perishing and threatened species in the scale of Poland and Wielkopolska to the flora of the Książ Wlkp. commune**

**Udział gatunków ginących i zagrożonych w skali Polski i Wielkopolski we florze gminy Książ Wlkp.**

	Ex	E	V	R	K	I	Sum of species Suma gatunków	Percentage of total flora Procent całej flory
Polska (Zarzycki and Szeląg 1992)	0	1	4	9	0	1	15	1.5
Wielkopolska (Żukowski and Jackowiak 1995)	0	10	41	25	0	4	80	8.0

It is worth noting that there appeared six new species for the flora of Wielkopolska:

1. *Allium rotundum* – two localities:

- a) Konarskie – on a high railway embankment with southern exposure, about 100 m to the west from the railway station, 30 specimens (2003),

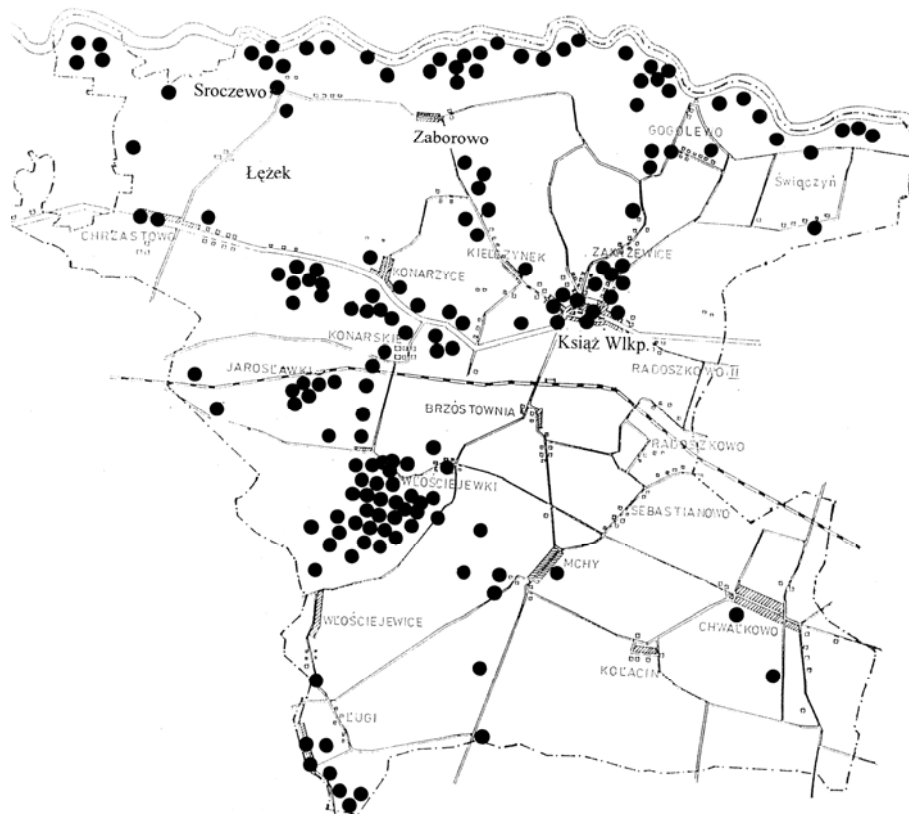


Fig. 2. Localization of perishing species entered in "red lists" for Poland (Jasiewicz 1981, Zarzycki and Szeląg 1992) and Wielkopolska (Żukowski and Jackowiak 1995) within the borders of Książ Wlkp. commune

Ryc. 2. Lokalizacja gatunków ginących uwzględnionych na „czerwonych listach” dla Polski (Jasiewicz 1981, Zarzycki i Szeląg 1992) i Wielkopolski (Żukowski i Jackowiak 1995) w granicach gminy Książ Wlkp.

b) Jarosławki – a grassy clearing adjoining from one side to the railway embankment, and from the other side adjacent to an arable field, about 80 specimens (2003). The populations require a constant observation.

2. *Eragrostis cilianensis* – one locality. An ephemeral appearance at the railway station in Książ Wlkp.

3. *Malope trifida* – one locality. Several specimens were growing in 1999 on a dumping ground in Książ Wlkp.

4. *Ranunculus friesianus* – one locality. Konarskie – several specimens on a meadow at a highroad from Książ Wlkp. It occurs together with *Trisetum flavescens*.

5. *Sparganium neglectum* – one locality. The Jarosławki Lake – in a ditch at the southern bank of the lake.

6. *Veronica peregrina* – one locality. The locality is on a wet road passing across a meadow at the Warta river in Sroczewo. The species occurs numerously together with *Cardamine parviflora* (2002).

New for Polish flora was *Taraxacum cristatum* which was found in Książ Wlkp. – in a robinia forest at “Torfica”, and *Typha × glauca* found in Konarzyce – it is not numerous in a pond on the area of a big gravel-pit lying in the southern direction from the village.

Floristically the most valuable places on the area of Książ Wlkp. commune include: 1) the Jarosławki Lake localized north from the Jarosławki village, 2) a complex of deciduous forests with glacier ponds to the south-west from Włosćiejewki, 3) a small bog with peat moss floating mire in the Włosćiejewki Forest to the north from Włosćiejewki, 4) a meadows and a lake in Konarskie, 5) a post-manor park in Włosćiejewki, 6) the Warta river valley along the total section (Fig. 3).

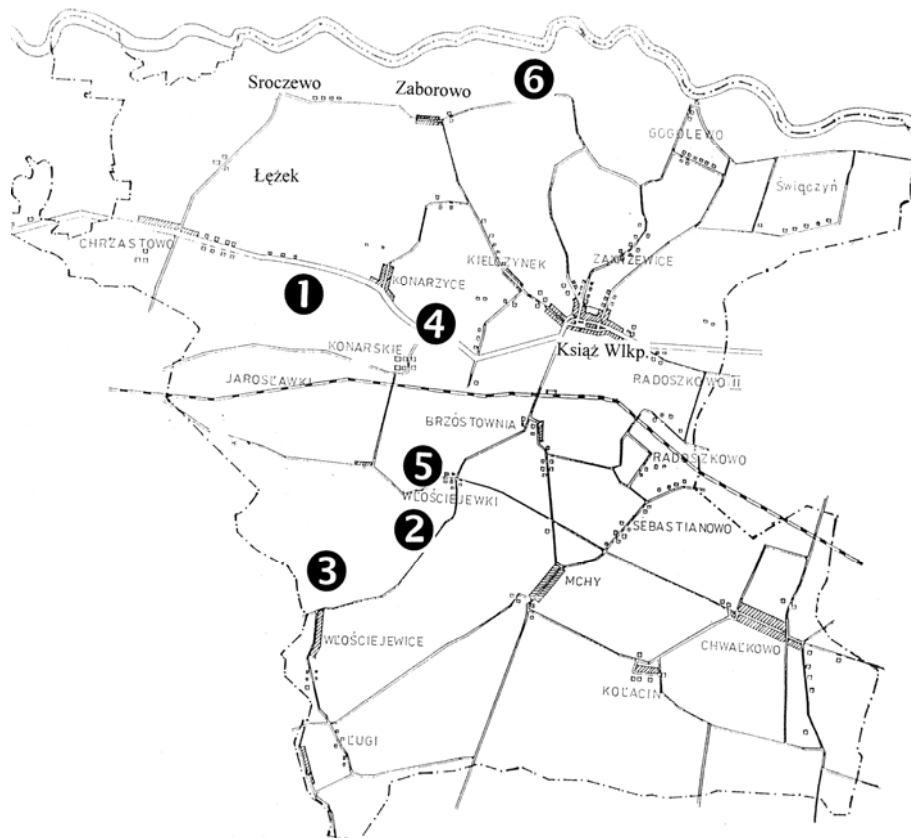


Fig. 3. Localization of the floristically most interesting terrains on the area of Książ Wlkp. commune: 1 – Jarosławki Lake, 2 – deciduous forest with glacier ponds to the south-east from Włosćiejewki village, 3 – small bog with peatmoss floating mire to the north from Włosćiejewki village, 4 – meadows and a small lake in Konarskie, 5 – post-manor park in Włosćiejewki, 6 – Warta river valley

Ryc. 3. Lokalizacja najciekawszych florystycznie terenów na obszarze gminy Książ Wlkp.: 1 – jezioro Jarosławki, 2 – lasy liściaste z oczkami wodnymi na południowy zachód od wsi Włosćiejewki, 3 – bagienko z płem torfowcowym na północ od wsi Włosćiejewki, 4 – łąki i jezioro w Konarskim, 5 – park podworski we Włosćiejewkach, 6 – dolina rzeki Warty

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FLORA ROŚLIN NACZYNIOWYCH GMINY KSIĄŻ WIELKOPOLSKI  
(ŚRODKOWA WIELKOPOLSKA)

## Streszczenie

Na terenie gminy Książ Wlkp. stwierdzono występowanie 1001 taksonów, wśród których jest dziewięć podgatunków i 21 mieszańców. Stwierdzono także występowanie sześciu gatunków nowych dla flory Wielkopolski: *Allium rotundum*, *Eragrostis cilianensis*, *Malope trifida*, *Ranun-*

*culus friesianus*, *Sparganium neglectum* i *Veronica peregrina* oraz dwóch nowych dla flory Polski – *Taraxacum cristatum* i *Typha* × *glauca*.

Najcenniejszymi florystycznie miejscami na terenie gminy Książ Wlkp. są: 1) jezioro Jarosławki położone na północ od wsi Jarosławki, 2) kompleks lasów liściastych z oczkami wodnymi na południowy zachód od Włoszkiej, 3) bagienko z płem torfowcowym w Lesie Włoszkiej na północ od Włoszkiej, 4) łąki i jeziorko w Konarskim, 5) park podworski we Włoszkiej, 6) dolina rzeki Warty na całym odcinku.

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