

Glyceria declinata Bréb. (Gramineae) in Poland. distribution and habitats

ZBIGNIEW MIREK*, TOMASZ ZAŁUSKI**

* Institute of Botany, Polish Academy of Sciences, Lubicz 46, 31-512 Kraków, Poland

** Institute of Biology, Nicolaus Copernicus University, Gagarina 9, 87-100 Toruń, Poland

(Received: January 7, 1986. Accepted: January 27, 1986)

Abstract

Distribution, habitats and phytocenoses of *Glyceria declinata* Bréb. in Poland are presented, basing on the herbarium material, field study and literature. A key to species of *Glyceria* R. Brown section *Glyceria* is provided, along with detailed description and drawings of *G. declinata* Bréb.

Key words: *Glyceria declinata* Bréb., distribution maps, habitats, phytocenoses

INTRODUCTION

The synthetic works dealing with vascular plants of Poland (Szafer 1917, Szafer et al. 1953) give no information on *Glyceria declinata* Bréb. The latest publication devoted to polish grasses (Falkowski 1982) also does not mention the species, although it was found in the country almost 30 years ago (Walters 1959). Since then *G. declinata* has also been reported in some local floras or in phytosociological papers (Faliński 1966, Piękoś 1971, Dubiel et al. 1979, Białecka 1982, Piękoś-Mirkowa and Mirek 1978, Załuski 1978). These fragmentary mentions, however, did not give neither a complete picture of the distribution of this species in Poland nor a characteristic of its habitats and phytocenoses. The present paper is an attempt to fill this gap.

MATERIAL AND METHODS

The map of distribution of *G. declinata* in Poland is chiefly based on revised herbarium materials. In several cases reliable literature data have been included. The acronyms of herbaria were adopted after the

- latest "Index Harbariorum" (Holmgren et al. 1981). The particular letters in the abbreviations denoting private collections are separated by dots.
- A.J.K. — Profs. Anna and Jan Kornaś, Kraków;
 B.Z. — Dr Bogdan Zemanek, Kraków;
 H.Z.M. — Drs Halina and Zbigniew Mirek, Kraków;
 KRA — Institute of Botany, Jagiellonian University, Kraków;
 KRAM — Institute of Botany, Polish Academy of Sciences, Kraków;
 KTU — Department of Plant Systematics, Faculty of Biology and Environmental Protection, Silesian University, Katowice;
 LBL — Department of Systematics and Plant Geography, Botanical Institute, M. C. Skłodowska University, Lublin;
 LOD — Department of Botany, Institute of Environmental Biology, Łódź University;
 OLSM — Department of Meadow Cultivation, Agricultural and Technical Academy, Olsztyn;
 POZ — Department of Plant Taxonomy, Botanical Institute, A. Mickiewicz University, Poznań;
 R.Cz. — Living collection of Prof. Romana Czapik, Kraków;
 TRN — Institute of Biology, Nicolaus Copernicus University, Toruń;
 T.Z. — Tomasz Załuski, Toruń;
 WSRL — Museum of Natural History, Wrocław University, Wrocław.

MORPHOLOGY AND TAXONOMY

The key given below allows to distinguish *Glyceria declinata* from the remaining species of the section *Glyceria* occurring in Poland.

1. Anthers sterile, indehiscent, persisting long on the plant. Spikelets remain whole even on older plants and do not fall to pieces; they do not contain well developed grains. The plant is a not rare hybrid between *G. fluitans* and *G. plicata* propagating vegetatively, thus, sometimes occurring independently of the parental forms *G. ×pedicellata* Towns.
- 1*. Anthers viable, normally developed, dehiscent and rapidly disintegrating after overblowing of the flowers. Grains, at least in part of the flowers, well developed. Spikelets fragile, readily breaking up beneath each lemma at maturity 2
2. Lemmas, 6-7.5 mm long more or less sharp. Anthers (1.5-)2-3 mm long *G. fluitans* (L) R. Br.
- 2*. Lemmas 3.5-5.5 mm long, sharp or blunt. Anthers 0.6-1.5 mm long 3
3. Lemma sharp at apex, with 3-5 distinct teeth. Padea with two pronounced

teeth exceeding tip of lemma. Anthers usually 0.6-1.0 mm long. Plant distinctly purplish-green; leaf blades abruptly tapering into sharp tip or blunt *G. declinata* Bréb.

3*. Lemma with more or less entire border or at most wavy, blunt. Palea with two dents less not projecting beyond the lemma. Anthers 1.0-1.5 mm long. Plants vividly green, leaves usually long pointed . . . 4

4. Lemma usually 3.6-4.0 mm long with 7 strong nerves, the 5 middle ones almost of equal length; tip usually rounded or blunt triangular. Ligula rounded, with whole edges or only slightly fimbriated

. *G. plicata* Fries.

4*. Lemma 3 mm long with 3 strong and protruding nerves, between them 3-4 distinctly shorter and slimmer ones; tip distinctly truncated. Ligula markedly fimbriated at edge

. *G. nemoralis* (Uechtr.) Uechtr. et Koernicke.

DESCRIPTION

Glyceria declinata Bréb. Fl. Normand. ed. 3, 354 (1859). Inconography: Holub 1960, Hubbard 1968, Pignatti 1982, Rothmaler et al. 1984; Figs. 1 and 2.

Perennial, usually loosely tufted. 10-45 cm high. Culms often arcuately ascending, less frequently straight or decumbent, usually 1-3 noded, smooth.

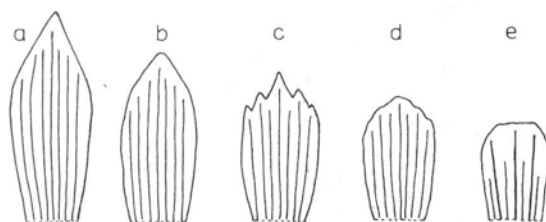


Fig. 1. Size and shape of lower lemma of *Glyceria declinata* Bréb. as compared with other species of the section *Glyceria* R. Br. found in Poland: a — *G. fluitans* (L.) R. Br., b — *G. xpedicellata* Towns., c — *G. declinata* Bréb., d — *G. plicata* Pries., e — *G. nemoralis* Uechtr. et Koern.

Leaves like culm usually distinctly bluish-green. Ligules 4-9 mm long, membranous. Panicle usually narrow with few spikelets, oblong to lanceolate, frequently one-sided 4-30 cm long; axis smooth. Spikelets narrowly oblong, slightly flattened, 1.3-2.5 cm long with 8-15 flowers, greenish or purplish, breaking up at maturity by cracking of axis below each lower lemma. Glumes persistent, ovate to oblong, blunt membranous, usually 1-nerved, smooth; lower one 1.5-2.5 mm long upper one 2.5-3.0 mm long. Lemmas

in spikelets overlapping, much exceeding glumes, broadly elliptic-ovoid, usually with a wide 3-5-toothed tip; 4.0-5.0 mm long firm (only apical part membranous); 7-nerved scabrid because of minute hyaline hairs scattered on nerves and between them. Palea narrowly-elliptic, at tip



Fig. 2. Habitus of *Glyceria declinata* Bréb. (scale — 2 cm)

deeply 2-toothed, sticking out beyond tip of lemma. Anthers 0.8-1.0 mm long, purple or yellow. Grains chestnut brown 1.5-2.3 mm long, surrounded with hardened lemmas. Chromosome number $2n = 20$ (Pogan et al. 1985) Highest flower in spikelet barren strongly tinged with purple.

DISTRIBUTION

Glyceria declinata appeared to be widespread and not rare in Poland both lowland and in the mountains (Figs. 3 and 4)—it has been found to occur on 74 localities. It is therefore astonishing, that Jasiewicz (1981) included *G. declinata* in the list of the rare and endangered aspecies of Polish flora, the more so, as it exhibits a marked tendency to spread in a verietiy of anthropogenic habitats.

The highest locality, 1112 m *G. declinata* reaches on Mt. Gubałówka in the Western Carpathians. At similar altitudes it occurs in other part of its range, for instance: 1110 m in Czechoslovakia (Piękoś-Mirkowa and Mirek 1978, cf. also Holub 1960), about 900 m in central Spain

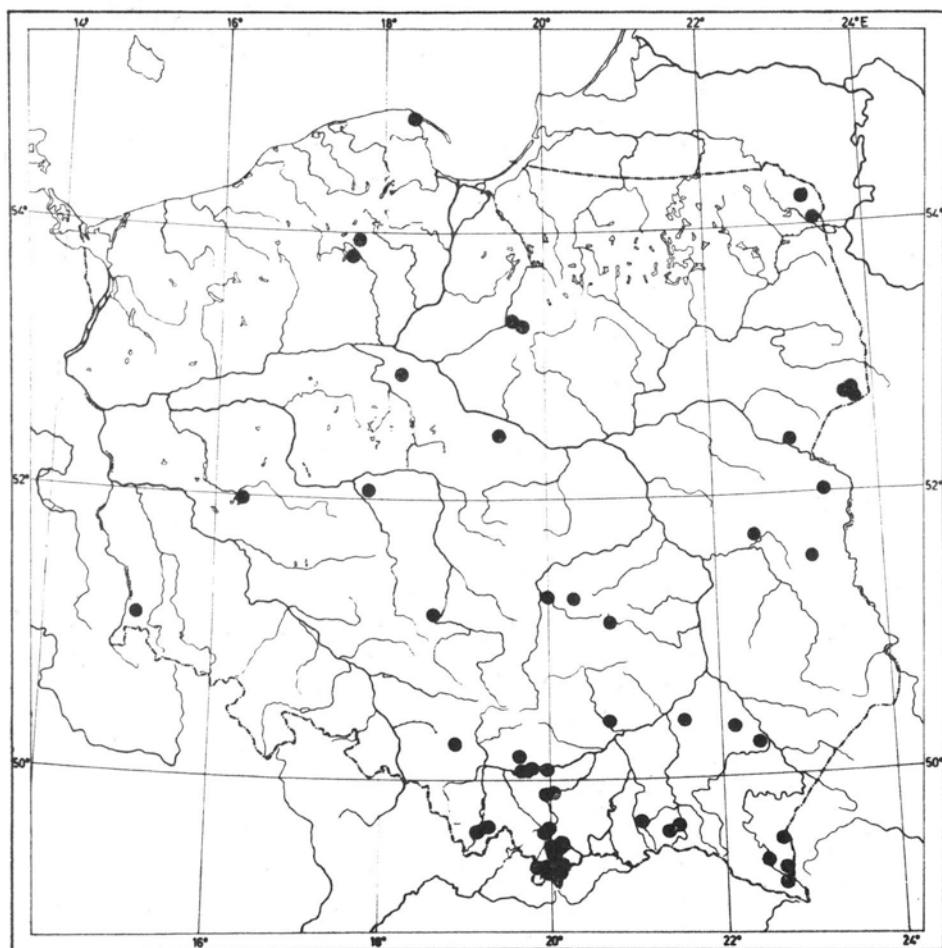


Fig. 3. Distribution of *Glyceria declinata* Bréb. in Poland

and the Massif Central in France and 1300 m in the canyon of the river Sacramento in North America (Holub 1960). The general range of *G. declinata* (Fig. 5) covers Europe and North America. In Europe it is known from Austria, Belgium, Czechoslovakia, Denmark, France, Spain, the Netherlands, Ireland, Corsica, Norway, German Democratic Republic and German Federal

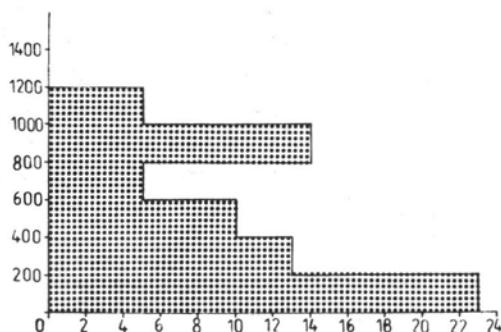


Fig. 4. Vertical distribution of sites with *Glyceria declinata* in Poland (vertical axis — meters a.s.l.; horizontal axis — number of sites)

Republic, Poland, Portugal, Roumania, Switzerland (Welten and Sutter 1982), Sweden, Hungary, Great Britain, Italy, the Azores and the western republics of the European part of the USSR (Kiziene 1985, Tzvelev 1964, 1974, 1976).

HABITATS AND PHYTOCENOSES

In Poland *Glyceria declinata* Bréb. occurs in communities of five classes: *Phragmitetea*, *Bidentetea tripartiti*, *Isoeto-nanojuncetea*, *Molinio-Arrhenatheretea* and *Plantaginetea majoris* (classes according to Matuszkiewicz 1982). The very fact of occurrence of *Glyceria declinata* in the phytocenoses of as many as five classes is not evidence of so wide an ecological amplitude of this species. The latter shows, namely, a great attachment only to the class *Plantaginetea majoris* and within it to various associations of *Agropyro-Rumicion crispis* alliance or, still wider to the order *Agrostietalia stoloniferae* Oberd. 67 (cf. Passarge 1978). Thus, this species may be considered as characteristic or distinguishing of the alliance *Agropyro-Rumicion* (or the order *Agrostietalia stoloniferae*). The occurrence of *G. declinata* in the communities of the remaining four classes is rather of accidental character, and can be treated as a result of spatial contact with those of the alliance *Agropyro-Rumicion*.

Within the *Molinio-Arrhenatheretea* class *G. declinata* may be found only in communities of the *Cynosurion* alliance and, less frequently, also in *Calthion* (= *Bromion racemosi*) developing on sodden and at the same

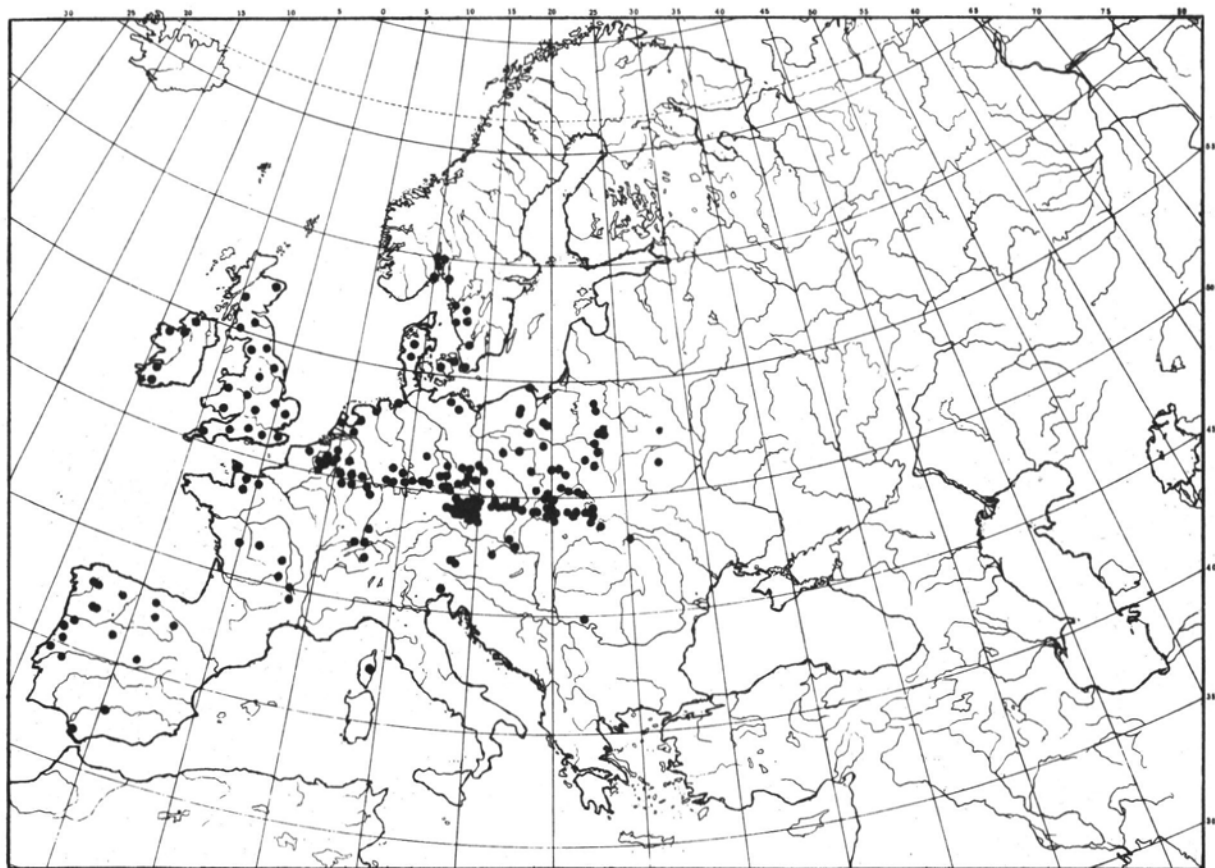


Fig. 5. Distribution of *Glyceria declinata* Bréb. in Europe (after Holub 1960, supplemented)

time trampled habitats. Within the *Phragmitetea* class it occurs only in some phytocenoses of the *Glycerio-Sparganion* alliance and in the *Bidentetea* class only in the *Bidention* alliance, whereas in the *Isoeto-Nanjuncetea* class in few communities developing on moist roadsides or disturbed squares.

All habitats of *G. declinata* are moist, sodden, periodically flooded, subjected to moderate trampling or, less frequently, grazing. As typical may be mentioned moist, trampled, ripped up or damaged squares, ruts, sides of dirt roads, of highways, trampled sites and paths over moist meadows or on the borders of ponds etc. The soil pH of such habitats

Table 2

Species accompanying *Glyceria declinata* Bréb. in plant communities on the territory of Poland

| Species | Frequency | % |
|-------------------------------|-----------|-----|
| <i>Glyceria declinata</i> | 28 | 100 |
| <i>Agrostis stolonifera</i> | 21 | 75 |
| <i>Ranunculus repens</i> | 16 | 57 |
| <i>Trifolium repens</i> | 14 | 50 |
| <i>Poa annua</i> | 13 | 46 |
| <i>Juncus bufonius</i> | 12 | 43 |
| <i>Polygonum hydropiper</i> | 12 | 43 |
| <i>Poa trivialis</i> | 12 | 43 |
| <i>Veronica anagallis</i> | 11 | 39 |
| <i>Myosotis palustris</i> sl. | 11 | 39 |
| <i>Plantago major</i> | 10 | 36 |
| <i>Carex hirta</i> | 10 | 36 |
| <i>Galium palustre</i> | 10 | 36 |
| <i>Ranunculus sceleratus</i> | 9 | 32 |
| <i>Potentilla anserina</i> | 8 | 29 |
| <i>Callitriche</i> sp. | 8 | 29 |

ranges from weakly acidic to distinctly alkaline ($\text{pH}_{(\text{H}_2\text{O})}$ 5.4-8.2). The phytocenotic character and habitat preferences of *G. declinata* in Poland are illustrated by the 28 phytosociological records listed in Table 1 and the list of the 15 species accompanying most frequently *G. declinata* (Table 2). The phytocenotic character of this species in other central European countries is similar (cf. Holub 1980).

LIST OF LOCALITIES

Biała Podlaska voivodeship: 1. Leniuszki, coll. D. Fijałkowski 1971, LBL.
Białystok voivodeship: 2. Białowieża, Faliński 1966; 3. Zastawa, Faliński

Table 1. *Glyceria declinata* Bréb. in different plant communities*Glyceria declinata* Bréb. w różnych zbiorowiskach roślinnych

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|-------|--|---|----|----|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|-----|----|----|
| records - zdjęcia: | 1 - 5 | mosaic complex of /zbiorowiska kompleksu mozaikowego/ Hottonistum palustris R. Tx. 1937 i Caricetum vesicariae Br.-Bl. et Denis 1926 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " | " | 6 | Ranunculo-Myosuretum Diem., Siss., Westh. 1940 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " | " | 7 - 10 | Polygono-Bidentetum /Koch 1926/ Lohm. 1950 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " | " | 11 - 13 | Leersio-Bidentetum /Koch 1926/ Poli et J. Tx. 1960 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " | " | 14 - 16 | Ranunculetum scelerati R. Tx. 1950 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " | " | 17 - 25 | Rumuci-Alopecuretum R. Tx/1937/1950 i zbliżone zbiorowiska zw. Agropyro-Rumicion crispi Nardt. 1940 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " | " | 26 - 28 | Blysmo-Juncetum compressi /Libb. 1932/ R. Tx. 1950 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| No of record - Nr zdjęcia | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| Date - Data | | | | | | | | 1 | 26 | 3 | 15 | 25 | 14 | 25 | | | | | | | | | | 18 | 13 | 13 | | | |
| | | | | | | | | 7 | 6 | 10 | 6 | 7 | 8 | 9 | | | | | | | | | | 6 | 6 | 6 | | | |
| | | | | | | | | 1973 | 84 | 84 | 73 | 77 | 76 | 84 | | | | | | | | | | 84 | 80 | 80 | | | |
| Area of plot - m ² | | 100 | 16 | 10 | 6 | 15 | 3 | 10 | 25 | 20 | 10 | 20 | 24 | 18 | 10 | 10 | 3 | 3 | 3 | 5 | 10 | 16 | 12 | 16 | 40 | 40 | 6 | 3 | 3 |
| Fowlerzchnia zdjęcia - m ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage in c-layer | | 90 | 70 | 80 | 80 | 50 | 40 | 50 | 75 | 90 | 90 | 90 | 85 | 80 | 70 | 50 | 80 | 75 | 75 | 50 | 60 | 70 | 100 | 95 | 100 | 95 | 100 | 80 | 85 |
| Pokrycie warstwy zielnej /c/- % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage in d-layer | | - | 10 | 20 | - | - | 10 | zn | - | 5 | - | zn | zn | 5 | 40 | - | - | zn | zn | - | - | - | - | zn | zn | 15 | 10 | zn | zn |
| Pokrycie warstwy mszystej /d/- % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Glyceria declinata | | 2 | 3 | 2 | + | + | + | + | 3 | 2 | 1 | + | + | + | + | 3 | +/ | 3 | 3 | r | 3 | 2 | 3 | 1 | 3 | 2 | + | 2 | 1 |
| Ch. Potamogetonetea: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hottonia palustris | | 4 | 1 | 3 | 2 | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Callitriche cfr. palustris | | + | 2 | + | 1 | + | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ch. Phragmitetea: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Galium palustre | | + | + | + | . | + | . | + | . | . | 1 | + | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Veronica anagallis-aquatica | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Carex vesicaria | | . | 1 | 3 | 3 | 3 | . | . | . | . | 1 | 1 | + | . | + | 2 | 2 | . | . | . | . | . | . | . | . | . | . | . | . |
| Oenanthe aquatica | | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Veronica beccabunga | | . | . | . | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Rorippa amphibia | | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Eleocharis palustris | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Poa palustris | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Glyceria fluitans | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Glyceria plicata | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ch. Isoëto-Nanojuncetea: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Juncus bufonius | | . | . | . | . | . | 2 | 2 | 2 | + | + | 1 | 1 | . | 1 | + | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Lythrum portula | | + | . | + | . | 1 | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Plantago major ssp. intermedia | | . | . | . | . | . | . | 1 | + | . | . | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Filaginella uliginosa | | . | . | . | . | . | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ch. Bidentetea tripartiti: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Polygonum hydropiper | | + | + | . | . | . | 2 | 2 | 2 | 2 | 1 | + | + | 1 | . | +/ | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Leersia oryzoides | | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ranunculus sceleratus | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Bidens cernua | | . | . | + | . | . | . | . | . | . | . | + | + | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Polygonum nodosum | | . | . | . | . | 2 | + | . | . | . | 2 | . | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Rorippa islandica | | . | . | . | . | 1 | 1 | . | . | . | + | 1 | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Bidens tripartita | | . | . | . | . | . | . | . | . | . | + | 1 | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Alopecurus aequalis | | + | . | . | . | . | . | 1 | . | . | . | 1 | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Rumex maritimus | | . | . | . | . | . | . | + | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Polygonum minus | | + | + | . | . | . | . | . | . | . | . | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ch. Plantaginetea majoris: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Agrostis stolonifera | | . | . | + | . | . | . | 1 | 1 | 1 | 3 | 2 | 2 | 2 | + | 1 | 2 | 3 | 3 | + | 2 | 3 | 4 | 3 | 3 | 2 | 1 | . | . |
| Ranunculus repens | | . | . | . | . | . | . | . | . | 2 | 1 | 1 | 1 | 1 | . | +/ | 1 | 3 | . | . | 1 | 2 | + | 2 | + | 1 | + | . | . |
| Carex hirta | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Potentilla anserina | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Alopecurus geniculatus | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Poa annua | | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | 1 | + | 2 | + | . | . | . | . | . | . | . | . | . | . |
| Plantago major ssp. major | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Juncus compressus | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Elymus compressus | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Sagina procumbens | | . | . | . | . | 1 | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Chamaecladus suaveolens | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Polygonum aviculare | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Capsella bursa-pastoris | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Lolium perenne | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Prunella vulgaris | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Rumex crispus | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Juncus tenuis | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Ch. Molinio-Arrhenatheretea: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trifolium repens | | . | . | . | . | . | . | + | + | 1 | . | 1 | + | . | . | . | . | 2 | 2 | 1 | . | . | . | . | . | . | 2 | 3 | 3 |
| Poa trivialis | | . | . | . | . | . | . | 1 | + | . | 1 | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Myosotis scorpioides | | . | . | . | . | . | . | . | . | 1 | 2 | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| Lythrum salicaria | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | |

1966; 4. Podolany, Faliński 1966; 5. Wólka nad Bugiem, coll. L. Rutkowski 1984, TRN.

Bielsko Biala voivodeship: 6. Juszczynka 840 m, coll. K. Białecka (no date), KRA; 7. Cisiec 425 m, in Soła Valley, coll. K. Białecka (no date), KRA.

Bydgoszcz voivodeship: 8. Bronimierz Mały, coll. T. Załuski 1980, TRN; 9. Surroundings of Lubnia, coll. S. Lisowski, F. Szafrński, K. Tobolski 1968, POZ; 10. Turowiec, coll. T. Załuski 1984, TRN.

Chełm voivodeship: 11. Sosnowica, coll. T. Załuski 1984, TRN.

Jelenia Góra voivodeship: 12. Żarska Wieś, coll. J. Anioł 1972, WRSL.

Gdańsk voivodeship: 13. Władysławowo, coll. H. and T. Tacik 1962, KRAM.

Kalisz voivodeship: 14. Białobłoty, coll. K. Latowski, W. Żukowski 1975, POZ.

Katowice voivodeship: 15. Katowice-Muchowiec, coll. K. Rostański 1973, KTU.

Kielce voivodeship: 16. Odrowążek near Bliżyn, Piękoś 1971; 17. Sielec, coll. Z. Mirek 1982, H.Z.M.

Kraków voivodeship: 18. Between Rundo and Krzywaczka (near Myślenice), coll. T. Tacik 1968, KRAM; 19. Skrzynka near Dobczyce, coll. A. Rogalski 1879, KRAM; 20. Wola Duchacka (= Kraków-Wola Duchacka), coll. W. Kulczyński 1874, KRA; 21. Przeginia Narodowa 230 m, W of Kraków, coll. Z. Mirek 1977, H.Z.M.; 22. Kryspinów near Kraków, coll. R. Czapik 1976, R.Cz.; 23. Czerna near Krzeszowice, coll. R. Czapik 1976, R.Cz.

Krosno voivodeship: 24. Above Stebnik near Krościenko, coll. B. Kotula 1880, KRAM; 25. At the tourist path from Folsz to Kornuty and Magura Wątkowska 450 m, coll. Z. Mirek 1977, H.Z.M.; 26. Pszczeliny 590 m, coll. H. Piękoś, Z. Mirek 1975, H.Z.M.; 27. Samokłęski 300 m, about 14 km S of Jasło, coll. Z. Mirek 1977, H.Z.M.; 28. Posada Dolna near Lutowiska 660 m, coll. B. Zemanek 1984, B.Z.; 29. Mountain Wysoki Horb near Zawóz and Sakowczyk 600 m, coll. B. Zemanek 1984, B.Z.;

Leszno voivodeship: 30. Boszkowo, coll. L. Olesiński 1969, OLSM;

Lublin voivodeship: 31. Talczyn, coll. D. Fijałkowski 1965, LBL;

Nowy Sącz voivodeship: 32. Nowy Targ, Walters 1959; 33. Skibowski (= Zakopane-Skibówki), coll. B. Kotula 1885, KRAM; 34. Ponice near Rabka coll. R. Czapik 1977, R.Cz.; 35. Łopuszna near Nowy Targ, coll. R. Czapik 1976, R.Cz.; 36. Zarąbek Niżni near Łopuszna, coll. R. Czapik 1976, R.Cz. 37. "Bór na Czerwonym" near Nowy Targ, coll. R. Czapik 1979, R.Cz; 38. Bieśnik, 7 km W of Gorlice, coll. R. Czapik 1982, R.Cz; 39. Zaryte on the Raba River, by the bridge to Skalisne, coll. R. Czapik 1976, R.Cz; 40. Zakopane, between "Droga do Walczaków" and "Droga pod Regłami", coll. R. Czapik 1977, R.Cz; 41. Beyond Sichle near Zakopane,

- coll. R. Czapik 1976, R.Cz; 42. Wyskówki near Cyrhla, coll. R. Czapik 1976, R.Cz; 43. Poronin 805 m, by the road to Majerczykówka, coll. Z. Mirek 1983, H.Z.M; 44. Murzasichle 830 m, coll. Z. Mirek 1983, H.Z.M; 45. Niżnie Hrubie near Toporowa Cyrhla and Zoniówka 890 m, coll. Z. Mirek 1983, H.Z.M; 46. Between Głodówka and Bukowina Tatrzańska 1090 m, by the road to Morskie Oko, coll. Z. Mirek 1983, H.Z.M; 47. Surroundings of Bukowina Tatrzańska, Tarasówka 990 m, coll. Z. Mirek 1983, H.Z.M; 48. Kościelisko, by the road from Staszewka to Prędówka 1060-1110 m, coll. Z. Mirek 1983, H.Z.M; 49. Gubałówka Elevation, Butorów 1100 m, coll. Z. Mirek 1983, H.Z.M; 50. Zakopane, on the S. slopes of Gubałówka between 860 up to 1120 m, coll. Z. Mirek 1983, H.Z.M; 51. Zakopane, Orawcowa Polana 790 m, coll. Z. Mirek 1985, H.Z.M; 52. Zakopane-Spadowiec 885 m, coll. Z. Mirek 1985, H.Z.M; 53. Zakopane-Pardołówka 880 m, coll. Z. Mirek 1985, H.Z.M; 54. Zakopane-Bory Jaszczurowskie 860 m, coll. Z. Mirek 1983, H.Z.M; 55. Zakopane-Olczański Wierch 890-910 m, coll. Z. Mirek 1983, H.Z.M; 56. Magura Witkowska, between clearings Zdychałówka and Cicha 860 m, coll. Z. Mirek 1983, H.Z.M; 57. Bukowina Brzegi 750 m, coll. Z. Mirek 1983, H.Z.M; 58. Kościelisko Basin, Roztoki 780 m, coll. Z. Mirek 1983, H.Z.M; 59. At the northern border of the Tatra National Park, between Brzeziny and Zazadnia 880 m, coll. Z. Mirek 1983, H.Z.M; 60. At the northern border of the Tatra National Park, by the road from Wierch Poroniec to Zgorzelisko Clearing 1050 m, coll. Z. Mirek 1983, H.Z.M; 61. Kościelisko-Czajki 930 m, coll. Z. Mirek 1985, H.Z.M; 62. Kościelisko-Sywarne 885 m, coll. Z. Mirek 1985, H.Z.M; 63. Kościelisko-Stawiańce 935 m, coll. Z. Mirek 1985, H.Z.M;
- Piotrków Trybunalski voivodeship: 64. Dąbrowa nad Czarną, T. Załuski 1978, T.Z; 65. Ossa, T. Załuski 1978, T.Z;
- Płock voivodeship: 66. Misiadła (= Myszadła), coll. H. Kaczorowska 1962, LOD;
- Rzeszów voivodeship: 67. Chodaczów, Dubiel et al. 1979; 68. By the road to the reserve "Jaźwiana Góra" 180 m, about 19 km NE of Mielec, coll. R. Ochrya 1975, H.Z.M; 69. Near Kamień, between Sokołów Małopolski and Nisko 210 m, coll. Z. Mirek 1975, H.Z.M;
- Sieradz voivodeship: 70. Jesiona, coll. L. Kołacińska 1976, LOD.
- Suwałki voivodeship: 71. Klejwy, coll. R. Czapik 1976, R.Cz; 72. Giby, coll. R. Czapik 1976, R.Cz;
- Toruń voivodeship: 73. Bartniczka, coll. T. Załuski 1977, TRN; 74. Długi Most, coll. Załuski 1981, T.Z.

REFERENCES

- Białecka K., 1982. Rośliny naczyniowe grupy Pilska w Beskidzie Żywieckim. Zesz. Nauk. UJ DCXVIII, Pr. Bot. 10: 1-148.
- Dubiel E., Loster S., Zajac E. U., Zajac A., 1979. Flora Płaskowyżu Kolbuszowskiego.

Zesz. Nauk. UJ DXXI, Pr. Bot. 7: 1-217.

- Faliński J. B., 1966. Antropogeniczna roślinność Puszczy Białowieskiej jako wynik synantropizacji naturalnego kompleksu leśnego. Rozpr. UW 13: 1-256.
- Falkowski M. (ed.), 1982. Trawy polskie. PWRiL, Warszawa.
- Głócko T., 1981. Zbiorowiska łąkowe w okolicy Dąbrowy Wielkiej, Broniewa i Bronimierza Małego. Toruń (msc.).
- Holmgren P. K., Keuken W., Schoefield E. K., 1981. Index Herbariorum. Part I. The Herbaria of the World. Regnum Vegetabile 106.
- Holub J., 1960. *Glyceria declinata* Bréb. — nový druh československé květeny. Preslia 32: 341-359.
- Holub J., 1980. Genus *Glyceria* R.Br. In: Flora Europaea 5. Tutin T.G. et al. (eds.). Cambridge Univ. Press, Cambridge. pp. 179-181.
- Hubbard C. E., 1968. Grasses. 2nd ed. Penguin Books, Bungay, Suffolk.
- Jasiewicz A., 1981. Wykaz gatunków rzadkich i zagrożonych flory polskiej. Fragm. Flor. Geobot. 27: 401-414.
- Kiziene B. P., 1985. Rare grasses (*Poaceae*) in the lakeside Drukšiai (Lithuanian SSR). Bot. Zhurn. 70: 539-541.
- Matuszkiewicz W., 1982. Przewodnik do oznaczania zbiorowisk roślinnych Polski. PWN, Warszawa.
- Passarge H., 1978. Übersicht über mitteleuropäische Gefäßpflanzengesellschaften. Fedd. Rept. 89: 133-195.
- Piękoś H., 1971. Rośliny naczyniowe Nadleśnictwa Bliżyn w Górach Świętokrzyskich. Fragm. Flor. Geobot. 17: 59-121.
- Piękoś-Mirkowa H., Mirek Z., 1978. Materiały do flory synantropijnej Tatr. Fragm. Flor. Geobot. 24: 167-195.
- Pignatti S., 1982. Flora d'Italia, Vol. 3. Edagricol. Bologna.
- Pogan E., Czapik R., Jankun A. et al. 1985. Further studies in chromosome numbers of Polish Angiosperms. Part XVIII. Acta Biol. Cracov. 27: 57-74.
- Rothmaler W. et al., 1984. Exkursionsflora der Gebiete der DDR und der BRD. Gefäßpflanzen. Bd.2. VVW Verl., Berlin.
- Szafer W., 1917. Family *Gramineae*. In: Raciborski M., Szafer W. (eds.). Flora Polska. 1. Nakł. AU, Kraków. pp. 320-365.
- Szafer W., Kulczyński S., Pawłowska B., 1953. Rośliny polskie. PWN, Warszawa.
- Tzvelev N. N., 1964. O nekotorykh kriticheskikh i novykh dla evropejskoj chasti SSSR vidakh zlakov. Nov. Sist. Vyssh. Rast. 1964: 20-30.
- Tzvelev N. N., 1974. *Poaceae* Barnh. In: Flora evropejskoj chasti SSSR. 1. Fedorov A. (ed.). Izd. Nauka, Leningrad. pp. 117-368.
- Tzvelev N. N., 1976. Zlaki SSSR. Izd. Nauka, Leningrad.
- Walters S. M., 1959. *Heleocharis austriaca* Hayek and *Glyceria declinata* Bréb., two plants new for the flora of Poland. Fragm. Flor. Geobot. 5: 239-244.
- Welten M., Sutter R., 1982. Verbreitungsatlas der Farn- und Blütenpflanzen der Schweiz. Vol. 2. Birkhäuser Verl., Basel.
- Załuski T., 1978. Rzadkie rośliny w dorzeczu Pilicy. Acta Univ. N. Copern., Biologia 22: 133-136.
- Załuski T., 1981. (msc.) Zróżnicowanie fitocenoz doliny Brynnicy i jej dopływów na tle warunków siedliskowych. UMK, Toruń.

Glyceria declinata Bréb. (Gramineae) w Polsce — rozmieszczenie
i siedliska

Streszczenie

Glyceria declinata Bréb. została podana z terenu Polski po raz pierwszy ponad 25 lat temu (Walters 1959). Późniejsze jednostkowe doniesienia (Faliński 1966, Piękoś 1971, Dubiel et al. 1979, Białecka 1982) nie dały pełniejszego obrazu jego występowania w Polsce. Nie uwzględniono go również zupełnie w najnowszym opracowaniu poświęconym polskim trawom (Falkowski 1982). Gatunek, mimo wybitnej odrębności nie jest na ogół odróżniany przez większość florystów. Nie zwraca się na niego uwagi w terenie, a zebrane przypadkowo jego okazy oznaczane są najczęściej jako *G. plicata* bądź *G. fluitans*. Zamieszczone ryciny (1 i 2) oraz klucz do oznaczania ukazują łatwe do obserwacji różnice między *G. declinata* a pozostałymi gatunkami sekcji *Glyceria*. Rewizja krajowych materiałów zielnikowych oraz przeprowadzone przez autorów niniejszego opracowania badania terenowe wykazały obecność *G. declinata* na 74 stanowiskach rozmieszczonych w całej Polsce (rys. 3) od pobrzeży Bałtyku po regiel górny (rys. 4). Najwyższe stanowisko notowano w Karpatach na Wzniesieniu Gubałowskim (1120 m npm). Ogólne rozmieszczenie *G. declinata* obejmuje Europę i Amerykę Północną. W Europie gatunek znany jest z Austrii, Belgii, Czechosłowacji, Danii, Francji, Hiszpanii, Holandii, Irlandii, Korsyki, Norwegii, Niemieckiej Republiki Demokratycznej, Niemieckiej Republiki Federalnej, Polski, Portugalii, Rumunii, Szwajcarii, Szwecji, Węgier, Wielkiej Brytanii, Włoch, Wysp Azorskich i zachodnich republik europejskiej części ZSRR (rys. 5).

Pod względem fitocenotycznym *Glyceria declinata* związana jest najczęściej z zespołami związku *Agropyro-Rumicion crispi* czy szerzej rzędu *Agrostietalia stoloniferae* Oberd. 67 (por. Passarge 1978). Charakter fitocenotyczny oraz preferencje siedliskowe *G. declinata* na terenie naszego kraju dobrze oddaje zestawienie 28 zdjęć fitosocjologicznych (tabela 1) oraz najczęstszych gatunków współwystępujących (tabela 2).