

## MEADOW PLANT COMMUNITIES OF LOW PEATLAND IN THE GIEŁCZEW RIVER VALLEY (NEAR STRÓŻA VILLAGE)<sup>1</sup>

Justyna Dresler

Institute of Soil Science and Environmental Management, University of Life Sciences in Lublin  
Leszczyńskiego str. 7, 20-069 Lublin, justyna.dresler@gmail.com

**Summary.** The studies encompassed meadow communities of the low peatland in the Giełczew river valley, near the Stróża village. Phytosociological research was conducted in the years 2008–2009, using the phytosociological method of Braun-Blanquet. In total, 41 phytosociological relevés were taken in the meadow communities. The following associations were classified among meadow communities occurring in the studied area: *Filipendulo-Geranietum*, *Scirpetum sylvatici*, *Cirsietum rivularis*, *Holcetum lanati*, *Alopecuretum pratensis*, *Arrhenatheretum elatioris* and the following plant communities also developed here, with prevailing species *Deschampsia caespitosa*, *Poa pratensis* and *Festuca rubra* as well as *Anthriscus sylvestris*. One type of habitat from Annex I of Habitats Directive 92/43/EWG were observed in the studied area – lowland hay meadows.

**Key words:** Giełczew river valley, Giełczew Heights, meadow communities, valley peatland

### INTRODUCTION

The Giełczew Heights constitute the highest, central part of the Lublin Upland. Due to their upland character it is not a typical area for the occurrence of peatlands. Most frequently, peatbog objects of the Giełczew Heights are connected with river valleys. They have a specific character. All of them represent the low type of peatlands. They have a lot of mineral parts in peat, which is caused by a high content of  $\text{CaCO}_3$  in soil parent rocks of neighbouring areas. Considerable silting of peat is also related with intensive erosion in the area of the Giełczew Heights. Many peatlands of this mesoregion are buried. They are covered by a mineral layer whose thickness can reach even 2 m. Most of the

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Gielczew Heights peatlands were drained and brought into cultivation in the second half of the twentieth century [Borowiec 1990]. The melioration of the peatlands caused transformation of plant communities occurring nowadays in investigated area. Most of them do not have peat forming character but represent various substitute plant communities such as scrubs, forests, rush, meadow and synanthropic communities.

The aim of the study was to record meadow plant communities of the peatland in the Gielczew river valley (near Stróža village).

#### MATERIALS AND METHODS

The object of the research is located in the valley of river Gielczew (Fig. 1) which is the left tributary of river Wieprz. The Gielczew river valley is the most typical and the most beautiful river valley of the Gielczew Heights area. It is deeply indented, narrow and has steep slopes. River Gielczew slightly meanders and creates picturesque meanders [Jahn 1956]. The studied peatland is located in the north-east part of the Gielczew Heights. It belongs to the low type of peatlands and it is partially buried. The thickness of mineral layer ranges from 30 to 100 cm. The resources of the peat deposit were estimated as 2.167 m<sup>3</sup>. Average bog depth amounts to 1.31 m, whereas the maximum depth reaches 2.60 m. The studied peat deposit consists of sedge, sedge-reed, sedge-moss and moss peat. Peat comprising the deposit is characterised by medium decomposition rate (28%) and average ash content of 26.8%. In the twentieth century the studied peat deposit was exploited for fuel. There are many peat pits occurring in a large number in the north part of the peatland.

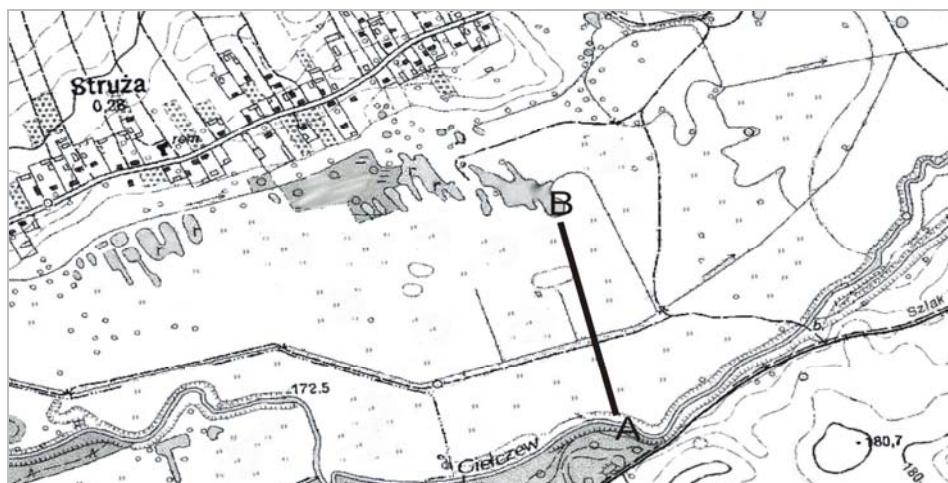


Fig. 1. Location of studied peatland (A-B – transect)

The studies were carried out in 2008–2009. The boundaries of the studied object were appointed on the basis of natural and artificial water-courses as well as roads and other characteristic terrain details. Phytosociological studies of plant communities were done according to the Braun-Blanquet method [1951]. The method was modified because ground cover was estimated by means of a 10-degree scale. 41 phytosociological relevés were done, each for an area of 100 m<sup>2</sup>. The phytosociological classification and nomenclature of plant communities were based on the work of Matuszkiewicz [2008]. The names of vascular plants were given according to Mirek *et al.* [2001] and the names of the mosses according to Ochrya *et al.* [2003].

## RESULTS AND DISCUSSION

The previous results of plant researches indicate that occurrence of water, rush, forests, scrubs and meadow communities was observed in the area of studied object. Hydrous and rush communities are connected with peat pits and drainage ditches. Forests and scrubs communities representing the class *Alnetea glutinosae* formed small patches (in old peat pits) [Urban and Jendrzejska 2009]. The largest area of the object examined is occupied by meadow communities representing the class *Molinio-Arrhenatheretea*. The occurrence of the following 6 plant associations was observed: *Filipendulo-Geranium*, *Cirsietum rivularis*, *Scirpetum sylvatici*, *Holcetum lanati*, *Alopecuretum pratensis*, *Arrhenatheretum elatioris*. Three plant communities also developed there, with prevailing species such as *Deschampsia caespitosa*, *Poa pratensis* and *Festuca rubra*, as well as *Anthriscus sylvestris*. The floristic composition of the meadow plant communities is presented in Table 1. Plant associations occurring in the discussed object represent the following alliances: *Filipendulion ulmariae*, *Calthion palustris*, *Alopecurion pratensis*, *Arrhenatherion elatioris*. It follows from the conducted studies that the largest area on the studied peatland was occupied by plant communities of wet meadows of *Calthion*. Among these communities *Cirsietum rivularis* was predominant. The floristic list of this association included 46 species, but particular patches of *Cirsietum rivularis* were characterised by specific poverty (on average 4.2 species in a relevé). Phytocenoses of *Cirsietum rivularis* are very attractive as regards the landscape, particularly over the flowering period. The association of *Cirsietum rivularis* is widespread also in another river valley of the Lublin region [Trąba 1999, Wylupek and Trąba 2004, Mosek and Miazga 2006, Trąba and Wolański 2008]. The rarely cut meadows were occupied by community of *Deschampsia caespitosa*. The occurrence of this community in the Gielczew river valley near Stróża village was described by Baryła [1970]. Locally, phytocenoses of *Scirpetum sylvatici* were developed in humid hollows. The presence of 22 species was noted in this association.

The *Filipendulion ulmariae* alliance was represented only by association *Filipendulo-Geranium*. It occurred on the wet meadows which are not used in

agriculture or on the meadows which are rarely cut, also in humid hollows and along riversides. The floristic list of this association is poor (13 species). This was caused by high coverage of *Filipendula ulmariae* which formed dense patches. The contribution of *Geranium pratense* and other species from the class *Molinio-Arrhenatheretea* was slight.

A smaller area of the studied object was occupied by meadow communities of the *Alopecurion pratensis* alliance. The association *Alopecuretum pratensis* was observed here. It was characterised by considerable floristic differentiation – 33 species. The occurrence of *Holcetum lanati* was noted on the meadows which were rarely cut.

The communities of fresh meadows of *Arrhenatherion elatioris* alliance were represented by the association *Arrhenatheretum elatioris* and phytocenoses of community *Poa pratensis-Festuca rubra*. According to Baryła [1970], Fijałkowski [1991] and Warda and Stamirowska-Krzaczek [2010], *Arrhenatheretum elatioris* is a typical association in the river valleys of Lublin Upland. In the investigated area the association *Arrhenatheretum elatioris* was characterised by the most specific differentiation. The occurrence of 47 species was observed here. Species of *Molinio-Arrhenatheretea* had the greatest contribution in this association. The community *Poa pratensis-Festuca rubra* was separated by Fijałkowski [1991] as an association *Poo-Festucetum rubrae*. According to Baryła [1970], the community *Poa pratensis-Festuca rubra* occurred the most frequently and occupied the largest area in the Gielczew river valley. In the investigated area this community occurred locally and occupied small patches. Mainly, such species of grasses as *Poa pratensis*, *Festuca rubra*, *Arrhenatherum elatius*, *Holcus lanatus*, *Dactylis glomerata* predominated. The contribution of other species was slight. The fresh meadows of *Arrhenatherion elatioris* were characterised by the greatest floristic diversity. They could be classified as a habitat from Annex I of Habitats Directive 92/43/EWG – lowland hay meadows. The discussed meadows should be under active protection by means of Package 4 of agri-environmental programme in order to prevent decrease of floristic differentiation. Other meadow communities of *Molinio-Arrhenatheretea* class were characterised by smaller floristic differentiation, the occurrence of 70 plant species was noted for them. Rare plant species and species protected by law were not observed in the area of the studied object. Specific impoverishment as well as slight differentiation of plant communities are a consequence of drainage procedures which were carried out in the Gielczew river valley in the second half of the twentieth century. Similar observations in other river valleys of Lublin region were presented by Urban [1997], Urban and Grzywna [2003], Wylupek and Trąba [2004] as well as Mosek and Miazga [2006]. Currently, a notable threat to the biodiversity of the studied object is cessation of grasslands utilisation, which causes the spreading of such species as *Anthriscus sylvestris* or *Urtica dioica*.

## CONCLUSIONS

1. The occurrence of six associations and 3 plant communities from *Molinio-Arrhenatheretea* class was observed in the area of the investigated peatland. The following communities were noted: *Filipendulo-Geranietum*, *Cirsietum rivularis*, *Scirpetum sylvatici*, *Holcetum lanati*, *Alopecuretum pratensis*, *Arrhenatheretum elatioris* as well as three plant communities with prevailing species such as *Deschampsia caespitosa*, *Poa pratensis* and *Festuca rubra* as well as *Anthriscus sylvestris*.

2. The largest area was occupied by damp meadows of the communities of *Calthion*, a smaller area was occupied by intensively cultivated meadows of *Alopecurion pratensis* as well as fresh meadows of *Arrhenatherion elatioris*.

3. The most valuable natural meadows belong to the *Arrhenatherion elatioris* alliance, indicating the presence of a habitat from Annex I to the Habitats Directive of the Ecological Network Natura 2000 – lowland hay meadows.

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ZBIOROWISKA ŁĄKOWE TORFOWISKA NISKIEGO W DOLINIE GIEŁCZWI  
(OKOLICE STRÓŻY)

**Streszczenie.** Badaniami objęto zbiorowiska łąkowe na torfowisku leżącym w dolinie rzeki Giełczwi w pobliżu miejscowości Stróża. Podstawowe badania geobotaniczne prowadzono w latach 2008–2009. Wykonano tu metodą Braun-Blanqueta 41 zdjęć fitosocjologicznych. Zbiorowiska łąkowe z klasy *Molinio-Arrhenatheretea* występujące na badanym obiekcie zaliczono do zespołów: *Filipendulo-Geranium*, *Scirpetum sylvatici*, *Cirsietum rivularis*, *Deschampsietum caespitosae*, *Holcetum lanati*, *Alopecuretum pratensis*, *Arrhenatheretum elatioris* oraz *Poo-Festucetum rubrae*. Na obszarze badanego obiektu odnotowano obecność siedliska z załącznika I Dyrektywy siedliskowej Natura 2000 – niżowe i górskie świeże łąki użytkowane ekstensywnie.

**Słowa kluczowe:** dolina Giełczwi, Wyniosłość Giełczewska, zbiorowiska łąkowe, torfowisko dolinowe