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VASCULAR PLANTS OF DRAINAGE DITCHES AND ADJACENT HABITATS IN THE POLESKI NATIONAL PARK AND THEIR PROTECTION*

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A b s t r a c t. Poleski National Park has been founded in 1990. There are a lot of drainage ditches in its area. Some of these objects were dammed to stop water outflow from the Park area, some of them stopped functioning because of lack of preservation and, consequently, underwent natural succession. Vascular plants which exist in drainage ditches are particularly interesting objects of floral research, since so far no detailed botanical evaluation of them has been made. The aim of the present research was the detailed floristic evaluation of selected objects and comparison of its species abundance with the flora of adjacent habitats.

K e y w o r d s: Poleski National Park, melioration, vascular plants, drainage ditches, biodiversity

INTRODUCTION

The hipsometric differentiation of Polesie Zachodnie, called Polesie Lubelskie too, is not very significant. This situation is the reason, among others, for many flood water and swamp formations. The dynamic changes of water relations of the region were caused by human economic activity [1]. At the turn of the nineteen fifties and nineteen sixties the area of Polesie Lubelskie was cut across by a network of drainage ditches which were flowing into the Wieprz-Krzna canal that came into existence at that time. The biggest and the most significant hydrotechnical changes took place at that time. Because the one-sided melioration caused dewatering of this area, the level of ground and surface waters was lowered. That was the reason for numerous transformations of natural environments of the region.

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Poleski National Park is situated in the area of the Łęczyńsko-Włodawskie lake district which is a mesoregion of Polesie Lubelskie. The Park was founded on 1st May, 1990, so it is a relatively new national park [4]. Since the hydrotechnical rebuilding of Łęczyńsko-Włodawskie Lake District had been executed long before the Park was founded, numerous drainage ditches were placed in its area. In order to detain outflow of water from the area many ditches were dammed. The lack of preservation of drainage infrastructure stopped, in many cases, the functioning of ditches which subsequently underwent succession. Despite numerous losses caused by draining of the lake district, in the Poleski National Park anthropogenic habitation was established, which had different groups of abiotic and biocenotic factors. Drainage ditches, as part of drainage infrastructure, are a particularly interesting object of floral research, since so far no detailed botanical evaluation of it has been made.

MATERIALS AND METHODS

The floristic studies were carried out in the Poleski National Park and its protection zone in 2004. Five representative 100-meter long sections of ditches were chosen, situated in different parts of the Park and its protection zone. Permanent research area No. 1 is situated near Moszne Lake, No. 2 near Łukie Lake, No. 3 next to the village Załucze Stare, No. 4 near peatbog Bagno Bubnów, and No. 5 near Długie Lake (Fig. 1). The choice of sectors was determined by the floristic diversity of drainage ditches and adjacent habitats.

Field studies consisted in documentation of the actual condition of phytocoenoses directly in the drainage ditches (both on the ditch bottom and on slopes) and in adjacent habitats, whereas in-depth research was aimed at assigning determined plant species to individual botanical families and comparison of diversity of ditch flora and its neighborhood. Moreover, common species for ditches and their adjacent habitats were determined.

RESULTS

Floristic analyses allowed us to define if species composition of anthropogenic habitats is characterized by a greater diversity in comparison to adjacent habitats.

In the permanent research areas the number of vascular flora species in drainage ditches fluctuated between 14 in station No. 1 and 72 in station No. 5, however, the numbers of taxons in adjacent fitocenosis were quite uniform and varied from 9 in the neighborhood of position Nos 1 to 27 in the neighborhood of position No. 3 (Fig. 2).

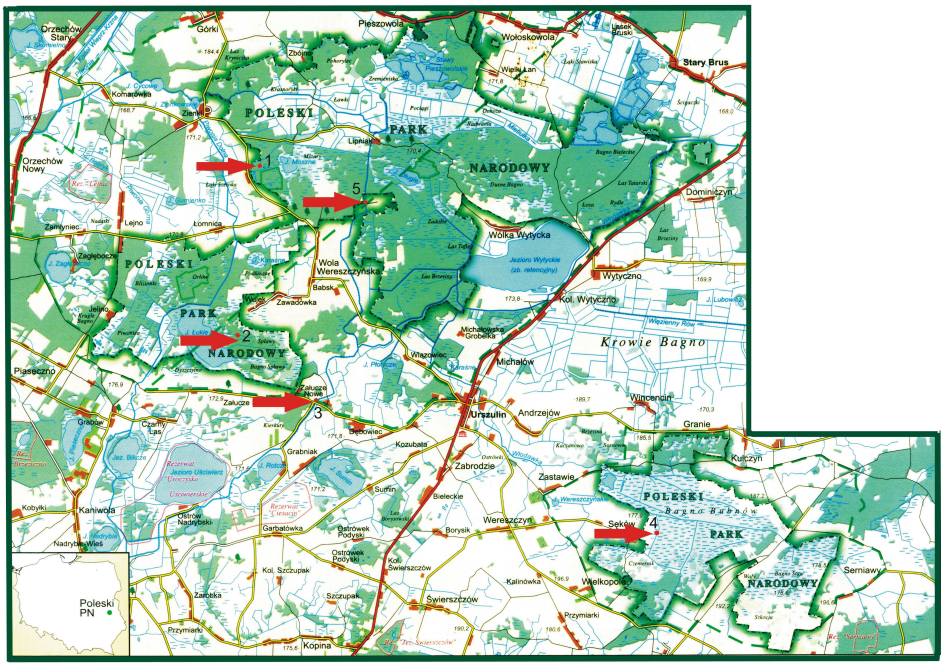

Fig. 1. Localisation of research stations in Poleski National Park and its protection zone (on the basis of the map by [1])

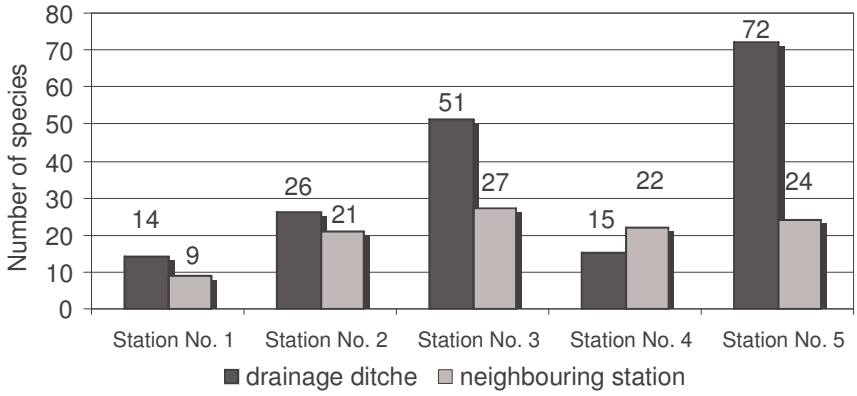

Fig. 2. Comparison of vascular plant species number in research stations and adjacent habitats

Greater species diversity was observed in drainage ditches. Most distinct differences in the number of species were observed in positions Nos 5 and 3. In stations Nos 1 and 2 the numbers of taxons in ditches were higher than the numbers of species in adjacent habitats, but this difference was not so significant as in the stations mentioned before. Only in station No. 4 there were more plant species

covering the ditch than in the adjacent habitat. The reason can be that it was the only station where water stagnated during the whole period of research and its vertical fluctuation was insignificant. The water level was so high that the ditch did not have exhibited slopes (as was the case in the remaining stations).

The analysis of species which occurred both in the research stations and in the adjacent habitat showed that in station No. 1 only 2 species: *Alnus glutinosa* (L.) Gaertn and *Salix cinerea* L were the same. The number of species which was common for the remaining research stations was much higher and was kept on the same, more or less, level. In station No. 2 the common species were: *Calla palustris* L., *Carex elata* All., *Carex paniculata,* L *Carex pseudocyperus* L., *Comarum palustre* L., *Equisetum fluviatile* L., *Lycopus europaeus* L., *Lysimachia vulgaris* L., *Phragmites australis* (Cav.) Trin. ex Steud., *Ranunculus lingua* L., *Thelypteris palustris* Schott. In station No. 3 the following common species were observed: *Achillea millefolium* L. s. str., *Cirsium rivulare* (Jacq.) All., *Elymus repens* (L.) Goud, *Equisetum arvense* L., *Poa trivialis* L., *Potentilla anserina* L., *Potentilla erecta* (L.) Raeusch., *Rubus caesius* L., *Trifolium campestre* Schreb., *Veronica arvensis* L.. In station No. 4 the common species were: *Carex acutiformis* Ehrh., *Comarum palustre* L., *Filipendula ulmaria* (L.) Maxim., *Galium palustre* L, *Lysimachia vulgaris* L., *Lythrum salicaria* L, *Peucedanum palustre* (L.) Moench, *Phragmites australis* (Cav.) Trin. ex Steud., *Ranunculus lingua* L., *Salix cinerea* L., *Thelypteris palustris* Schott. In station No. 5 the common species were: *Convolvulus arvensis* L., *Crataegus laevigata* (Poir.) DC., *Filipendula ulmaria* (L.) Maxim., *Galium mollugo* L., *Geum rivale* L., *Lysimachia vulgaris* L., *Melandrium album* (Mill.) Garcke, *Origanum vulgare* L., *Phleum pratense* L., *Sanguisorba officinalis* L., *Veronica chamaedrys* L.

DISCUSSION AND CONCLUSIONS

Drainage ditches slope occupancy can take place in two ways: natural and artificial [3]. In the case of the Poleski National Park drainage ditches slopes were covered with plants in a natural way. Generally, this process takes a long time. At the beginning of this process the floristic composition of drainage ditches slopes is significantly different than adjacent habitats. In the final stage, when the ditch becomes shallow and covered with plants, its floristic composition is different than its adjacent habitats only in its central part [3]. Thanks to the species composition analysis we can assume that the degree to which the ditches being the subject of our research are covered with plants is quite advanced, because in four out of five researched stations a considerable number of common plant species for ditches and their adjacent habitat were noted. The problems of floral diversity in drainage ditches require further studies whose results will allow to explain its slope occupancy.

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ROŚLINNOŚĆ NACZYNIOWA PORASTAJĄCA ROWY MELIORACYJNE I SIEDLISK Z NIMI SĄSIADUJĄCYCH W POLESKIM PARKU NARODOWYM I ICH OCHRONA

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S t r e s z c z e n i e. Poleski Park Narodowy powstał w 1990 roku. Na jego obszarze znajdują się liczne rowy melioracyjne. Część z tych obiektów została przegrodzona zastawkami w celu zatrzymania wody na terenie Parku, część z nich przestała natomiast funkcjonować z powodu braku konserwacji i uległa naturalnej sukcesji. Roślinność naczyniowa porastająca rowy melioracyjne jest interesującym obiektem badań ze względu na nieliczne badania florystyczne wykonane do tej pory w tych obiektach. Praca miała na celu szczegółową waloryzację wybranych odcinków rowów melioracyjnych i porównanie ich bogactwa florystycznego z florą siedlisk z nimi sąsiadujących. Dzięki przeprowadzonej analizie gatunków roślin naczyniowych możemy przypuszczać, że stopień zarastania badanych rowów jest dość zaawansowany, gdyż w czterech z pięciu badanych stanowiskach odnotowano znaczną liczbę gatunków wspólnych dla rowów i siedlisk sąsiadujących.

S ł o w a k l u c z o w e: Poleski Park Narodowy, melioracja, rośliny naczyniowe, rowy melioracyjne, różnorodność gatunkowa