

DIFFERENTIATION OF HYDROGENIC HABITATS IN „LAKE DŁUGIE” – A NEWLY-CONSTITUTED NATURA 2000 SPECIAL AREA OF CONSERVATION IN NORTH-EASTERN POLAND

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Summary. The „Lake Długie” Special Conservation Area (SAC) is a protected area newly constituted under the European Nature Protection Network Natura 2000 program in north-eastern Poland. It covers an area located west of the commune Łukta and is situated in the Olsztyńskie Lakeland mesoregion in the north-eastern part of the Lasy Taborskie forest complex. This area has been found to contain the following hydrogenic habitats significant from the viewpoint of environment protection under Natura 2000 network: a lobelia lake (code 3110), two dystrophic lakes (3160), an eutrophic lake (3150), transition mires and quaking bogs (7140), a birch bog woodland (91D0-1), a pine bog woodland (91D0-2), a pine-birch bog woodland (91D0-6) and an alder-ash marshy meadow (91E0-1). The conducted inventory will enable formulating protective tasks to ensure the preservation of the only remaining postglacial relict of *Isoëtes lacustris* in north-eastern Poland.

Key words: lobelia lakes, special protection areas, Natura 2000

INTRODUCTION

On the 12th of December, 2008, the European Commission endorsed 769 new Sites of Community Importance (SCI), with a total area of 95.522 km². Most of them are located in Bulgaria, Romania and Poland. Currently in Poland there are 364 SCIs (including 7 PLC): 33 in the Alpine region and 331 in the continental region. Another updating of the list by the EC is planned by the end of 2009. The planned SAC „Lake Długie” is one of the potential areas submitted to the European Commission’s Shadow List 2008, as well as one of the areas verified by the Provincial Specialist Group of the Province of Warmia and Mazury (2008/2009) with approval pending. The commission’s decision is expected be-

tween 2010 and 2011. In the year 2009, protection of this area was strengthened by Regulation No. 36/2009, issued by the Regional Director of Environmental Protection in Olsztyn on the 23rd October, 2009, establishing the „Lake Długie” Nature Reserve. The Reserve covers the most valuable fragments of the SAC, with an area of 348.15 ha and 47.98 ha of the protection zone.

The primary task of protecting the „Lake Długie” SAC is the preservation of the population of a relict locality of *Isoëtes lacustris*. Lake Długie is one of the three lobelia lakes in the Warmia and Mazury Region and the only one which is well-preserved. The existence of lake quillwort (*Isoëtes lacustris*) in Lake Długie has been known for over 30 years [Chudyba *et al.* 1988, Koc 1990, Dynowski 2008, Grzybowski 2008, Grzybowski *et al.* 2008]. Studies carried out to date have largely been inventory in nature, they have referred mainly to Lake Długie itself and have not considered the role of the hydrological system of the area. The persistence of lobelia lakes in a possibly unaltered trophic state, determining the invariability of biocenosis, is strongly dependent on the vegetation (forests) being consistent with the habitat in the intermediate catchment of the lakes. A prerequisite for planning protective actions is a thorough identification of vegetation of the habitats of the lake catchment, especially of the hydrogenic habitats linked directly with lake waters through the hydrological system.

The objective of this study was, therefore, to identify hydrogenic habitats located in the hydrological system of Lake Długie and to evaluate the degree of their representativeness.

MATERIAL AND METHODS

The „Lake Długie” SAC, with an area of 689.51 ha, is located within the borders of the Ostródzki District, in the commune of Łukta. The major administrators of this area are the Regional Directorate of State Forestry Service in Olsztyn, the Miłomłyn Forestry Inspectorate, the Dragolice Forestry Service and the Sarni Dół Forestry Service. Lake waters are managed by the Bogaczewo Fishing Plant. The „Lake Długie” SAC covers the area located west of the commune Łukta and is situated in the Olsztyńskie Lakeland mesoregion in the north-eastern part of the Lasy Taborskie forest complex. The topography of the reserve was shaped by the last glaciation (Łyna lobe) and the area belongs to the drainage basin of the Vistula river. Lake Długie, together with Lake Harcerskie, constitutes a system of lakes coupled through a small tributary from Lake Harcerskie towards Lake Długie. Because both lakes are situated at a similar altitude, the water flow is negligible. Currently, it is a semi-closed system, but previously waters from Lake Długie were discharged to the Baltic Sea through a runoff to Lake Gil, the Taborzanka river, Lake Bałtyn, Lake Tabórz, Lake Szelaąg and the Drwęca river. Today, the runoff from Lake Długie to Lake Gil is filled in. A ground road has been built between the lakes which are joined underneath the road with

a drainage system. Lake Czarne discharges waters to Lake Gil. In turn, Lake Bałtyn is a flow-through lake which the Tabórzanka River flows through. Lake Długie is surrounded by a hilly landscape with height differences reaching 10 m. Soils are sandy or brown loamy-sandy and degraded. Woodlands account for 75% of the area of the reserve, waters for 16%, whereas meadows and areas with dispersed development for 9%.

The study was conducted in the summer seasons of 2008 and 2009 at the height of the vegetative season. It resulted in elaboration of a map of actual vegetation and a map of Natura 2000 habitats drawn up following the principles of geobotanical cartography [Faliński 1990]. Information on naturally-valuable plant species was elaborated based on floral inventories conducted with the itinerary method [Faliński 1990].

RESULTS

The most valuable protected object of the reserve is Lake Długie, with a relict locality of lake quillwort (*Isoëtes lacustris*) which is the only well-preserved population of this species in north-eastern Poland. The conducted inventory also revealed the presence of other valuable habitats (Tab. 1, Fig. 1) in the intermediate vicinity of the main object, *i.e.*: three lakes, including two well-preserved dystrophic lakes: Lake Czarne and Lake Harcerskie. Surrounded by

Table 1. Types of habitats enlisted in Appendix 1 to Habitat Directive, occurring in the „Lake Długie” SAC

Code	Name	Area, ha	% cover	Representativity	Relative surface	Conservation status	Global
3110	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	84.215	12.21	B	C	B	B
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation	7.270	1.05	B	C	B	B
3160	Natural dystrophic lakes and ponds	14.441	2.09	B	C	A	B
7140	Transition mires and quaking bogs	3.322	0.48	A	C	A	A
91D0-1	Bog woodland	29.947	4.34	C	C	B	B
91D0-2		8.474	1.23	B	C	B	B
91D0-6		1.741	0.25	D			
91E0-3	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>)	58.830	0.35	A	C	A	A

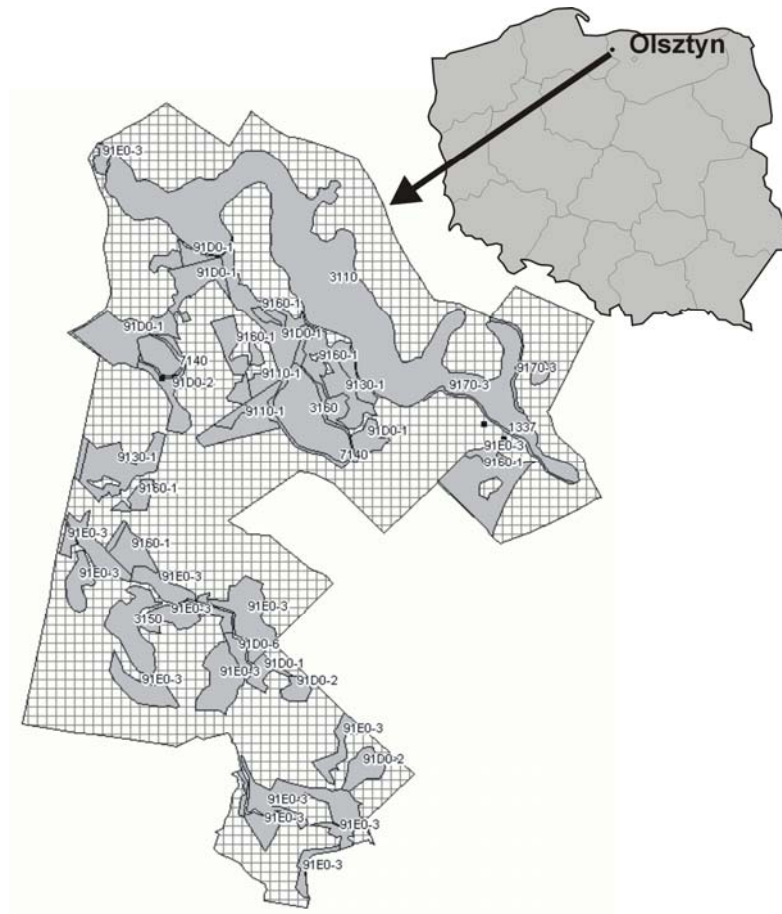


Fig. 1. Distribution of Natura 2000 habitats in the „Lake Długie” SAC: 3110 lobelia lakes; 3150 old river-beds and natural eutrophic aquifers; 3160 natural dystrophic aquifers; 7140 transition mires and quaking bogs; 91D0-1 birch bog woodland; 91D0-2 pine bog woodland; 91D0-6 pine-birch bog woodland; 91E0-3 alder-ash marshy meadow

belts of high moors and transit moors, as well as one overgrowing eutrophic lake – Lake Bałtyn. Around Lake Bałtyn and along the Tabórzanka river (flowing through Lake Bałtyn), there are belts of well-preserved riverine forests with orchids (*Listera ovata*, *Dactylorhiza maculata*, *Dactylorhiza majalis*) and other valuable plant species. In addition, amongst the forest hydrogenic communities, noteworthy is the boggy birch forest *Vaccinio uliginosi-Betuletum pubescentis* located on the north-eastern border of its range, and in the area of „Lake Długie” SAC – occurring outside the belt of peat moors around Lake Harcerskie and Lake Czarne.

Also noteworthy is the observation that in the area of the „Lake Długie” SAC there are 4 species of animals listed in the Habitat Directive, *i.e.*: *Castor fiber* (code 1337), *Lutra lutra* (code 1355), *Bombina bombina* (code 1188), *Leu-*

corrhinia pectoralis (code 1042), as well as 31 species of protected plants or other locally sparse, including – apart from the above – *Alisma gramineum*, *Asarum europaeum*, *Calamagrostis stricta*, *Carex limosa*, *Convallaria majalis*, *Drosera rotundifolia*, *Daphne mezereum*, *Dryopteris cristata*, *Frangula alnus*, *Galium odoratum*, *Hepatica nobilis*, *Hierochloë odorata*, *H. australis*, *Eriophorum gracile*, *Hedera helix*, *Helichrysum arenarium*, *Lycopodium annotinum*, *L. clavatum*, *Ledum palustre*, *Leucobryum glaucum*, *Menyanthes trifoliata*, *Nuphar lutea*, *Nymphaea alba*, *Polypodium vulgare*, *Pyrola rotundifolia*, *Ribes nigrum*, *Sphagnum* sp. (*S. magellanicum*, *S. fuscum*, *S. rubellum*, *S. recurvum*, *S. squarrosum*, *S. cuspidatum*), and *Utricularia vulgaris*.

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ZRÓŻNICOWANIE SIEDLISK HYDROGENICZNYCH W NOWO UTWORZONEJ OSTOI NATURA 2000 „JEZIORO DŁUGIE” W PÓŁNOCNO-WSCHODNIEJ POLSCE

Streszczenie. Specjalny obszar ochrony siedlisk „Jezioro Długie” jest nowo utworzonym obszarem ochronnym w ramach Europejskiej Sieci Ochrony Przyrody Natura 2000 w północno-wschodniej Polsce. Obejmuje obszar znajdujący się na zachód od Łukty, leży w mezoregionie Pojezierze Olsztyńskie w północno-wschodniej części Lasów Taborskich. W obrębie omawianego obszaru stwierdzono obecność następujących siedlisk hydrogeniczych, ważnych z punktu widzenia ochrony w ramach sieci Natura 2000: jezioro lobeliowe (kod 3110), dwa jeziora dystroficzne (3160), jezioro eutroficzne (3150), torfowiska przejściowe (7140), brzezina bagienna (91D0-1), bagienny bór sosnowy (91D0-2), sosnowo-brzozowy las bagienny (91D0-6), łęg olszowo-jesionowy (91E0-1). Przeprowadzona inwentaryzacja będzie podstawą do wyznaczenia zadań ochronnych gwarantujących utrzymanie jedynej populacji w północno-wschodniej Polsce postglacjalnego reliktu *Isoëtes lacustris*.

Słowa kluczowe: jezioro lobeliowe, specjalny obszar ochrony siedlisk, Natura 2000