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Information Sheet on Ramsar Wetlands  
Łuknajno Lake

1. Country: Poland
2. Date: September 1991
3. Ref.: PL 001
4. Name and address of compiler:
5. Name of wetland: Łuknajno Lake, The Biosphere Reserve since 17 January 1977
6. Date of Ramsar designation: 1978
7. Geographical coordinates:  
53°49'N, 21°38'E
8. General location: 2.5 km east of Mikołajki Town, Province of Suwałki, the Masurian Great Lakes District, Poland
9. Area:  
710 ha

10. Wetland type:

Freshwater lake 585 ha (O)  
Bank swamp area 101 ha (U) S

11. Altitude:

Lake water level at the average height of 115.8 m a.s.l.  
Adjacent area at about 117 - 118 m a.s.l.

12. Overview:

The site includes the shallow, flat-bottom lake surrounded by swamps and meadows. The reserve is an internationally and nationally important refuge for mute swan, migrating and wintering waterfowl and for fish species. The site has been used for studies on eutrophication resulting from farming activity and research into the population dynamics of both waterfowl and small mammals living at the lake margins.

13. Physical features:

The lake is of glacial origin and constitutes a waterfilled niche of a ground moraine. Considerable and uniform shallowing of the lake is due to the accretion of rich deposits of organic debris. The lake with maximum length north-south of 3,300 m and east-west of 2,900 m is fed by numerous channels one of them providing access to the Śniardwy Lake. The shores are mostly flat and fringed by a dense belt of reed rushes. Average depth is 0.6m and maximum - about 3 m. The shallowest areas contained between 0 and 1 isobates constitute 83% of the total lake surface what testifies to the advanced process of the lake aging. The latter process had

been speeded up by drainage works in 1927 which resulted in 2.5 m drop in the lake water level. The shallowing of the lake water and subsequent encroachment of vegetation will intensify with time since, under present conditions, even the smallest drop in water level, e.g. about 20 - 30 cm will lead to rapid settlement of marsh plants and succession of rushes.

The climate is temperate, with mean annual air temperature of 6.5°C and mean annual precipitation 550 - 600 mm.

14. Ecological features:

In the open lake waters there grow such plant communities of Potamogetonetea class as *Charitum aculeolatae* occupying nearly two-thirds of the lake bottom; *C. contrariae* - 25% of the lake bottom; and *C. asperae* and *C. tomentosae* which constitute the main food source for mute swan.

The reserve comprises also 15 ha of forest (mostly communities of *Alnetea glutinosae* class - alder carr), meadow communities of *Molinio-Arrhenatheretea* class and wetlands occupied by communities of *Phragmitetea* class.

The grounds in the reserve can be divided into the following categories:

Forest and forest grounds	- 32 - 35 ha
Meadows	- 5.81 ha
Pastures	- 3.51 ha
Open water	- 639.00 ha
Ditches	- 1.83 ha
Mires of transitional character	- 100.86 ha.

15. Land tenure/ ownership of:

- a) site: owned by the State, the lake belongs to the Fishermen Cooperative in Giżycko
- b) surrounding area: Plant Breeding Station in Woźnice, private farmers.

16. Conservation measures taken:

Bird reserve established in 1947. The lake has a 300 m wide buffer zone. The supervision of the reserve protection and management is vested in the Provincial Nature Conservator in Suwałki. The reserve is guarded by a warden. Hunting is prohibited. Pro-

Professional fishing is allowed after the mute swan migration in autumn by agreement with the Provincial Nature Conservator. Boating and angling are prohibited on the lake.

The Łuknajno Lake was first designated as a reserve on July 27, 1957, earlier it had been protected on the strength of administration order by the Inspector of the Mikołajki Forestry Office.

17. Conservation measures proposed but not yet implemented:

For maintaining the unchanged water level in the lake it is highly recommendable not to renew the old drainage system. Other measures should include restraining from high building construction in Mikołajki and surrounding villages as well as planting trees in the form of high green belts for the lake protection. It is also indispensable to check the development of agricultural investments in the area considering the existing and potential threats.

18. Current land use: principal human activities in:

a) site: extensive fishing

b) surroundings/catchment: farming, rush mowing, grazing

19. Disturbances /threats, including changes in land use and major development projects:

a) at the site:

Application of chemicals in agriculture, lake shallowing. It should be recommended that present meadow husbandry is not to be intensified and that the old drainage ditches are not renewed.

b) in the surroundings/catchment:

Construction of high buildings in Mikołajki, tourist flights over the area, agricultural investments, night lighting of the town and villages that influences bird migrations, permanent increase in the sewage amounts flowing to the lake.

20. Hydrological and physical values:

The lake constitutes a link in the system of great Masurian lakes interconnected by multiple channels. The groundwater recharge of the lake was calculated to be 9 332 000 m<sup>3</sup> per annum.

21. Social and cultural values:

The largest in Poland and one of the largest in Europe concentration of mute swan (*Cygnus olor*) outside its breeding season and of other waterfowl such as coots and ducks. Feeding grounds for golden eagle (*Aquila chrysaetos*), white-tailed eagle (*Haliaeetus albicilla*), osprey (*Pandion haliaeetus*) and marsh harrier (*Circus aeruginosus*).

22. Noteworthy fauna:

The largest, up to 2300 birds, concentrations (including moulting period) of mute swan during migrations and one of the largest wintering places when the lake remains unfrozen - up to about 1900 birds, breeding birds - 18 - 24 pairs.

In addition, 119 species of breeding birds including, among others, great crested grebe (*Podiceps cristatus*) - 150 - 190 pairs; pintail (*Anas acuta*) - 1 - 3 pairs; Eurasian bittern (*Botaurus stellaris*) - 25 - 30 pairs; red-crested pochard (*Netta rufina*) - 4 - 7 pairs; spotted crake (*Porzana porzana*) - 8 - 13 pairs; bearded tit (*Panurus biarmicus*) - 5 - 8 pairs; aquatic warbler (*Acrocephalus paludicola*) - 1 - 2 pairs; hobby (*Falco subbuteo*) - 1 - 2 pairs; marsh harrier (*Circus aeruginosus*) - 10 - 15 pairs; black-headed gull (*Larus ridibundus*) - 30 - 60 pairs. Among the frequent visitors are white-tailed eagle (*Haliaeetus albicilla*); osprey (*Pandion haliaeetus*); golden eagle (*Aquila chrysaetos*); lesser spotted eagle (*Aquila pomarina*); red kite (*Milvus migrans*); black kite (*Milvus milvus*); occasionally merlin (*Falco columbarius*) and honey buzzard (*Pernis apivorus*). Crane (*Grus grus*) - 5 - 7 pairs nest in the vicinity of the reserve.

71 species of waterfowl were observed on passages including, among others, coots - up to 18 000 birds, red crested pochard - up to 900 birds, ferruginous duck (*Aythya nyroca*) - up to 300 birds. Site of otter (*Lutra lutra*) and beaver (*Castor fiber*) in the neighbourhood. Spawning place for pike, tench, roach and bream. Site of marsh frog (*Rana ridibunda*) and fire-bellied toad (*Bombina bombina*).

23. Noteworthy flora:

Several rare plant species occur in the reserve including

starwort (*Callitriche verna*) ; small bur-reed (*Sparganium minimum*) ; marsh stitchwort (*Stellaria palustris*) ; marsh arrow-grass (*Triglochin palustre*) and willow (*Salix nigricans*) . Hygrophilous and telmatic species play a considerable role in the local flora since there dominate in the reserve aquatic and wetland habitats. From the phytogeographical viewpoint, boreal and subboreal species such as downy birch (*Betula pubescens*); laurel willow (*Salix pentandra*); *Comarum palustre* ; parnassus grass (*Parnassia palustris*); bogbean (*Menyanthes trifoliata*) and others build the local flora together with species classified as centroeuropean element, such as milkwort (*Polygala amara*); and woody night-shade (*Solanum dulcamara*) and others that prevail in the reserve. No thermophilous species occur there. As to legally protected species, three of them are found in the reserve, viz. mezerion (*Daphne mezereum*); broad-leaved orchid (*Orchis latifolia*); and black currant (*Ribes nigrum*). Altogether 166 plant species were recorded .

#### 24. Current scientific research and facilities:

Research includes investigations of the effect of agriculture on lake eutrophication, pesticide residues, possibilities of lake conservation, population dynamics of waterfowl and its impact on aquatic vegetation as well as dynamics of small mammal populations. MSc and PhD thesis have been prepared on the basis of studies conducted in the reserve, investigations are also performed by students from the Biology Circle at the University of Warsaw. Besides, in the reserve international seminars deal with problems of nature conservation and ecology. Scientific supervision of the reserve is vested in the Field Station of Ecology Laboratory at the University of Warsaw.

#### 25. Current conservation education:

Printed information: Booklet: Luknajno Lake, MAB, Maps and Brochures edited by Nature Conservation League.

In the field - two towers for tourist birdwatching, marked itinerary, two information boards.

Information is provided by the Field Station of Ecology Laboratory /Univ. of Warsaw/.

26. Current recreation and tourism:

Access for tourists in the form of individual or group tours guided by the employees of the Masurian Landscape Park Administration or of the Field Station of the University of Warsaw.

Intensity of touristic use limited.

27. Management authority:

Community Administration in Mikołajki.

There is urgent need to assign the management responsibility of the reserve to the Masurian Landscape /planned National/ Park Administration.

28. Jurisdiction:

Community in Mikołajki, Suwałki Province Administration

29. Bibliographical references:

A bibliography of 35 entries in the MAB Secretariat, UNESCO, Paris.

In addition:

Bukaciński D., Jabłoński P. 1992. Seasonal changes in waterfowl association of the Łuknajno Lake /NE Poland/ in the years 1982 - 1984. Acta Ornith. In press.

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