

Information Sheet on Ramsar Wetlands (RIS) – 2006 version

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Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

January 2007

3. Country:

Hungary

4. Name of the Ramsar site:

Lake Balaton (Balaton)

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or
b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
- i) the boundary has been extended ; or
- iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced**

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

There was no essential change in the ecological character of Lake Balaton according to the designation criteria. There has been progress in improving water quality since the latest report. The status of eutrophication level of the Keszthely Basin changed from hypertrophic to oligotrophic and the other part of the lake was changed from the earlier eutrophic to mesotrophic or oligotrophic status. However, these changes did not refer to the designation criteria. The lower water level ensured the spreading of reedbed areas first of all toward the open waterbody. The quality of reed decreased but its area increased. Recently, due to rainfalls the water level is higher than earlier, therefore, the increase of the reedbed area is supposed to be halted.

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of site in the Ramsar List): ;
- ii) an electronic format (e.g. a JPEG or ArcView image) X;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables ;

b) Describe briefly the type of boundary delineation applied:

The boundary follows the legally defined shoreline of the lake.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Coordinates: 46°50'N 017°45'E

9. General location:

Lake Balaton is located in the counties of Veszprém, Zala and Somogy, in western Hungary. It is situated close to the towns of Keszthely, Balatonfüred, Siófok and Fonyód.

10. Elevation: (in metres: average and/or maximum & minimum)

103 m - 106 m

11. Area: (in hectares)

59'800 ha

12. General overview of the site:

Lake Balaton is the largest freshwater lake in Central Europe. It is characteristic of freshwater lakes in Central/Eastern Europe. The site hosts large numbers of ducks, geese and coots during migration season, including over 1% of their European wintering populations. There are different habitat types of reedbed vegetation. Outside wintering and migration seasons, the large reedbeds bordering the shoreline of the lake are important for reed-dwelling bird species.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1	•	2	•	3	•	4	•	5	•	6	•	7	8	•	9
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14. Justification for the application of each Criterion listed in 13 above:

1: The Balaton is unique within the biogeographic region by being the largest permanent freshwater lake in Central Europe, with reedbeds and marshy meadows that are still in close-to-natural state. Most of the vegetation is water-logged for most of the vegetative season. The area of different types of reedbed vegetation is 2036 ha. The other plant communities that exist in the site and make it a representative site of near-natural wetland habitats in the biogeographic region are listed in the Supplement.

2: The area of different types of threatened reedbed vegetation is 2036 ha. The reedbeds covering the bays at the northern part of the lake are mostly in natural status with zonations. Lake Balaton holds the following species with international designations:

Dactylorhiza incarnata, EU CITES B(II)

Orchis laxiflora subsp. *Palustris*, EU CITES B(II)

Epipactis palustris, EU CITES B(II)

Cirsium brachycephalum, Habitats Directive Annexes II and IV

Trapa natans, Bern Convention Appendix I

Emys orbicularis, Bern Convention Appendix II, Habitats Directive Annexes II and IV

Aythya marila, (wintering) European IUCN Red List: EN

Aythya nyroca, (breeding) European IUCN Red List: VU; Global IUCN Red List: NT

Lutra lutra, EU CITES A (I), Bern Convention Appendix II, Habitats Directive Annexes II and IV

4: The lake supports more than 70 waterbird species in their migration and wintering season. See criterion 5 and Supplement.

5: The lake is an important staging area during migration and wintering seasons for more than 25-40 thousand individuals of waterbirds. The maximum amount of individuals of waterbirds was 44000 in November and December 2005. Exceeding of designation limit sometimes depends on the amount of wintering geese. Apart from geese, the lake is the most important wintering site in Hungary for diving duck species. Waterfowls with remarkably high numbers of individuals are *Bucephala clangula* (its min. designation limit in Europe is 3100 individuals and min. 3000 individuals were detected in 2005), *Aythya*

fuligula (min. 1600 individuals), *Aythya ferina* (min. 500 individuals). *Aythya marila* represents the rare diving duck species with increasing wintering population size (max. 135 individuals in 2005). Rare but regular migrating species with lower numbers of individuals are *Netta rufina*, *Clangula hyemalis*, *Melanitta fusca*, *Mergus albellus*, *Mergus merganser*, *Mergus serrator*, *Gavia stellata* and *Gavia arctica*. The ratio of wintering diving and dabbling ducks seems to be determined by the water level of lake Balaton. At lower water level, new type of feeding sites can be formed along the lenitic area ensuring appropriate food for larger masses of dabbling ducks. In the migration season, gulls (*Larus ridibundus*, *Larus cachinnans* and *Larus minutus*) and terns (*Sterna hirundo*, *Chlidonias niger* and *Chlidonias hybridus*) form groups with some hundreds of individuals at the feeding and roosting sites.
See supplement.

6: The lake supports 1% of the individuals in a population of *Anser fabalis* (its min. designation limit in Europe is 6000 individuals and about 8000 individuals were detected in 2005), *Anser anser* (its min. designation limit in Europe is 250 individuals and about 3000 individuals were detected in 2005) and *Anser albifrons* (its min. designation limit in Europe is 250 individuals and about 10,000 individuals were detected in 2005) during the wintering season. Lake Balaton and the arable lands within about 60 km represent one of the most important wintering regions for this species in Transdanubia.

8: *Pelecus cultratus* and *Aspius aspius* populations of Lake Balaton are prominently important in Central European region. The population of *Pelecus cultratus* of the lake is the largest one in this area. Both species are listed on Annexes II and V of the Habitats Directive.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

a) biogeographic region: Pannonic

b) biogeographic regionalisation scheme (include reference citation):

European Commission DG Environment webpage
Bern Convention/ EU Habitats Directive

16. Physical features of the site:

It is the largest lake in Central Europe. According to earlier estimations the age of Balaton is 18-22 thousand years. In the place of Lake Balaton several shallow, clear- and cold-water lakes emerged at the end of the Pleistocene, about 15000 years ago. They developed one after another, from the west to the east. As a result of the rising temperature and evolving wet climate, the water level rose and a unified water surface formed. After that the water level alternated (between +6 m and -1 m compared to the present one), depending on changes in the climate. Vegetation gradually increased in the originally clear water. In the surroundings until the Holocene coniferous gallery, then deciduous forests were characteristic, depending on the prevailing climate.

The average annual growth of the thickness of the lake sediment is 0.4 mm. However, it depends on the mud-moving effect of underwater streams, the depth of the lake, the extent of the lake-surface, the climate and the offshore vegetation cover. The present amount (2.5–3.0 km³) of lake-mud in the bed of Lake Balaton is approximately 1.5 times as much as the water content (2 km³). In line with the latest research results, the present form of the lake developed 5-7 thousand years ago, in the Holocene age. Thus, Lake Balaton is a fairly young formation, not only in geological terms, but also limnologically.

The lake itself is divided into four basins (Keszthely, Szigliget, Szemes and Siófok basins).

The lake surface at medium water level is 594 km², its water volume is 2 billion m³, the average depth is around 3 m and the maximum depth is 11 m. In earlier ages, natural changes in water level were more significant but recently it has been controlled artificially between +70 and +110 cm since 1997. The sluice at Siófok is designated for standard “0” point to determine water level actually. This standard is in compliance with 103.41 m level according to Baltic sea. To regulate the water level between this interval the excess is released into Sió canal flowing to Danube river.

The length of the lake, situated in a flat, rift valley-like dip that runs long from southwest to northeast is 77 km, with its greatest width between Balatonaliga and Balatonalmádi being over 12 km. Due to the narrowing shoreline the distance between Tihany and Szántód is only 1.5 km.

The high degree of the lake's instability can be explained by the fact that certain characteristics of the lake can be easily and quickly altered by hydrometeorological effects. The water rich in calcium-magnesium hydrocarbonate and oxygen gains the temperature of the air quickly due to its shallow depth. The pH value of the water of the lake is 7.8-8.8. The central part of the lake reaches drinking water standards. 75% of the reedbed vegetation is located alongside the northern shore (see point 14).

The adjacent marshes are in relatively good state, but the effects of human activities and droughts pose threats.

The soft, mildly alkaline water of the lake can be regarded as mineral water. Being a shallow lake, the fine mud floating in the water affects its clarity.

17. Physical features of the catchment area:

The catchment area of the lake (together with the lake) is 5,775 km². 51 water courses join the lake of which less than 20 have permanent water discharge. Zala is the most significant of them, possessing 45% of the catchment area.

18. Hydrological values:

Lake Balaton lies in a tectonic depression. It is about 22,000 years old. The Balaton Uplands are part of the Bakony and Keszthely Hills. They are tablelands, with hills rising to 450 m. The main inflow comes from the River Zala, and there are many brooks and rivulets running towards Lake Balaton. Two typical volcanic areas are situated on the northern shore of the lake. The length of the shore is 235 km, of which a stretch of 107 km has been artificially built. The rest of the shore has been left in original conditions.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • Q • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

O, Tp

20. General ecological features:

The rate of eutrophication of the lake is very high, mainly because of a high phosphorus load. Recently the main source of it has been the Zala River.

The plants respond to this higher nutrient supply by increasing biomass production. Approximately 2,000 species of algae have been identified in the lake. Two-thirds of them inhabit the littoral and benthic zones. Important species are *Cladophora glomerata* and *Bangia atropurpurea*.

The site supports many waterbirds, especially during migration. Ducks *Anas platyrhynchos*, *A. chryseata*, *A. penelope*, *Aythya ferina*, *A. marila*, *A. fuligula*, *Bucephala clangula*, *Melanitta fusca* and *Mergellus albellus*, geese *Anser anser*, *A. fabalis* and *Anser albifrons*, Mute Swan *Cygnus olor*, coot *Fulica atra*, and diver *Gavia arctica* use the site as a staging area. Nesting waterbird species are restricted to *Cygnus olor* and *Anas platyrhynchos*

(see point 14).

21. Noteworthy flora:

The varied flora and fauna is typical for the lake and its environs, e.g. over 1400 species or variants of algae have been identified by scientists.

Different natural types of wetland vegetation co-exist from the free water surface to the wet meadows.

Populations of *Tbelypteris palustris*, *Pedicularis palustris*, *Hydrocotyle vulgare*, *Urtica kioviensis*, *Ranunculus lingua*, *Orchis laxiflora*, *Dactylorhiza incarnata* and the endemic *Cirsium sphaerocephalon* are illustrative of the botanic values of the lake.

22. Noteworthy fauna:

The invertebrate fauna of the lake is rich in species. *Macroplea mutica balatonica* (Székessy, 1941) is an endemic Hungarian Red Listed species of *Chrysomelidae* living in the lake. The fish fauna of the lake has been highly important in the Central and Eastern European region. 41 fish species exist in its catchment area and 23 of them inhabit the lake recently. There are stable populations of *Pelecus cultratus* and *Aspius aspius* which are used for designating the site into the Natura 2000 network. A diverse amphibian and reptile fauna populates the vegetation and artificial shoreline regions.

The number of migrant and wintering waterbirds is between 20,000 and 40,000 individuals seasonally (see point 12, 14 and 20). The species composition, dominance and number of individuals seems to depend on the actual ecological status, the water level, feeding source and the size of the ice covered surface of the lake. The waterbird composition of the lake correlates to that of the Kis-Balaton and other wetlands around Lake Balaton.

During the breeding season the role of the reedbed becomes more accentuated with regard to bird species composition. The lake is an important feeding site for some hundreds of *Egretta alba*, some tens of *Egretta garzetta* and *Nycticorax nycticorax* nesting in colony next to it. Gulls and terns represent the main groups of visitor birds in summertime.

Ixobrychus minutus, 4-6 pairs of *Nycticorax nycticorax* and several thousand pairs of reed warblers (*Acrocephalus sp.*) nest in the reedbeds. *Locustella luscinioides* is an inhabitant of the widespread reedbed zones. 8-10 pairs of *Circus aeruginosus* nest in reedbeds. During the wintering seasons more than 10 individuals of *Haliaeetus albicilla* are resident in the region of Lake Balaton.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Traditions for fisheries and reed harvesting date back to centuries. It is very important to reconcile different points of view in nature conservation and economic land use inside the Ramsar area. Recently, fisheries activity concentrates first of all on the wise use of fish community. A research project is run with the aim to analyse relations between reed management and habitat use of bird species inhabiting there (see point 29). Lake Balaton is one of the most frequented recreation areas in Central Europe for tourists from late spring to late summer. The lake has made an imprint on the cultural traditions and values in the small villages and towns around the lake. Lake Balaton ensures the livelihood for most of the people living here.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No.

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

- a) within the Ramsar site:

Lake Balaton is completely state-owned.

- b) in the surrounding area:

The entire area is freely accessible. The site is one of the largest areas for tourism in Europe, and the largest one in Hungary.

25. Current land (including water) use:

- a) within the Ramsar site:

Main activities at the site are mud collection, fishing, reed harvesting and tourism.

- b) in the surroundings/catchment:

Main activities in the surrounding area are reed harvesting, grazing, arable land cultivation, vineyard use, woodland management and tourism. The southern part of the lake is densely surrounded by towns and small villages.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

- a) within the Ramsar site:

Past: fisheries activity, reed harvesting, construction of sailing ports and stages for anglers, illegal embankments and uprooting of reed

Present and potential: unwise reed harvesting; construction of sailing ports and stages for anglers; increasing motor sports activity on water, illegal embankments and uprooting of reed

- b) in the surrounding area:

Past: intensive use of artificial fertilizers in agriculture; introducing outlet water into live streams; increasing load of phosphorous transported by inflows; increasing tourism

Present and potential: activities related to tourism, overload of water purification plants

27. Conservation measures taken:

- a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

Lake Balaton was designated according to Habitats Directive and Birds Directive in 2004 and it has an important role as a part of the European Ecological Network.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

There is no officially approved management plan for Lake Balaton.

d) Describe any other current management practices:

The maintenance of the proper management in accordance with the ecological status is ensured by decrees and acts. Some reedbeds along the shoreline are protected as a part of the National Park. Reed cutting and management is regulated by municipal regulations.

Fishing activity is under regulation of scientific results and fishing harvest. Water level is controlled by Sió canal (see point 16).

28. Conservation measures proposed but not yet implemented:

There are no such conservation measures.

29. Current scientific research and facilities:

The research of the lake has extremely great traditions. Therefore, Lake Balaton is one of the world's best researched, most thoroughly investigated lakes.

Scientific research is performed by different departments of the Academy of Sciences, Universities and the Museum of Natural Sciences. Studies include research on vegetation, limnology, zoology, avifauna and fauna in general.

A research project was started by cooperation of five institutes in 2005. The consortium aimed in this project to determine the effects of water level change on the ecological status of the lake. Comprehensive examinations have been performed according to different science fields.

Due to the shallowness of the lake it is more endangered by climatic changes than the deep, stratified ones. The project analyses the effects of different climatic scenarios on the water balance, and the effects of water level changes on the morphometry, hydrodynamics, sediment resuspension, temperature and light climate of the lake. It addresses also the chemical problems due to evaporation of the lake water or to introduction of waters with different chemical characters. The research determines the effects of the morphometrical, physical and chemical changes on the planktonic, benthic and littoral algae, on the reeds and submerged vegetation, on the invertebrate communities, fish populations and waterfowl. Studies into the ecological interactions constitute an important part of the project. The geographic information system, hydrological, chemical and biological monitoring, chemical and biological experiments and modeling are used as research tools. The results will predict the ecological state of the whole lake at different water levels, and indicate the necessary human interventions. The critical water level, at which water supply from another catchment area is needed for ecological reasons, will be determined.

Monitoring has been developed for counting waterbird species on the whole lake and linking wetlands, first of all on Kis-Balaton (Ramsar site, site no. 3HU004). Changes in use of feeding and staging sites have been analysed. Bird assemblages in reedbeds are examined according to their habitat preferences in relation to reedbed modification and management.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

There are 9 information centres managed by BNPD and more than 20 nature trails around the lake. A great number of information booklets are published and distributed not only by BNPD but also by local

information centres and other organizations. There are facilities for school visits in the villages and towns. There are two universities and one institute of the Academy next to the lake.

31. Current recreation and tourism:

Lake Balaton and its surrounding area have played an important part in history. Many places at the site are of historic and archaeological value. Several hundreds of thousand tourists visit the region annually.

32. Jurisdiction:

The Nyugat-dunántúli, Dél-dunántúli and Közép-dunántúli Environmental, Nature Conservation and Water Management Authorities are the first instant authorities of the Ministry of Environment and Water

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

33. Management authority:

Central-Transdanubian Environmental and Water Authority
H-8000 Székesfehérvár, Balatoni u. 6.

Balaton National Park Directorate
H-8229 Csopak, Kossuth L. u. 16.
nagyla@bfnp.kvvm.hu

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

34. Bibliographical references:

There are numerous scientific and monitoring reports and references at BNPD. There are also related publications of the Limnological Research Institute of the Hungarian Science Academy (Tihany) and many others.

A Balaton kutatásának ... évi eredményei / Budapest : Magyar Tudományos Akadémia. – annually from 1997

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Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
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