

Designation date: 24/09/75 Ramsar Site no. 64

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

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 and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
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.

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

May 2013

3. Country:

Bulgaria

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

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
ii) 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:

The major ecological changes in the Ramsar site "Srebarna" are connected with eutrophication which leads to increasing of the succession, increasing the sedimentation processes and decreasing the lake depth, decrease in biodiversity and disturbance of the trophic chain. **The current** sluices do not work properly and fresh water from Danube River cannot enter into the Srebarna lake and that causes the main changes of the ecosystem sustainability.

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) ;
iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The new proposed boundary of the Ramsar site "Srebarna" is constructed by combination of the NATURA 2000 site BG0000241 "Srebarna" according to Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora and Directive 2009/147 (79/409/) EEC on the conservation of wild birds and parts of the protected area – "Pelikanite" - a former buffer zone around the managed reserve "Srebarna". In the NATURA 2000 site BG0000241 is included also the Managed Reserve "Srebarna" (902.1 ha).

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

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

E 27 ° 6 ' 41 " N 44 ° 6 ' 46 "

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

The Ramsar site Srebarna is situated in North-Eastern Bulgaria on the right bank of the Danube between the river kilometers 393 and 391. It is situated on the territory of the villages Srebarna and Vetren and Aydemir, 18 km west from the town of Silistra, the main regional administrative center.

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

Minimum – 2 m; Average – 52 m ; Maximum – 102 m

11. Area: (in hectares)

1463,75 ha

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Ramsar site "Srebarna" includes a eutrophic freshwater lake, arable lands, forests in the Danube river bank, island Devnia (Komluka), and aquatic area between the island and river bank. The site is situated on the bank of the River Danube between kilometres 393 and 391.

The dominant plant association is that of the Reed (*Phragmites australis*). The open-water surface is partly covered by *Hydrocharis*, *Nymphaea* and *Potamogeton*. Typical are the islets of reedbeds of the lake. There are groups of *Salix cinerea* in the reedbeds. Devnya Island (in the Danube), which is part of the reserve, is covered by flooded forest of *Salix* and *Populus*. Plantations of *Robinia* and *Eleagnus* and mesoxerothermic shrubby and herbaceous vegetation cover the surrounding hills. Of all 139 vascular plant species hosted by the Reserve, 11 are rare or endangered. The site is important for breeding waterbirds, especially the vulnerable (VU) *Pelecanus crispus* (80-128 pairs in the period 2001-2005, 30-80 pairs in the period 2006 - 2010) largest breeding population of the nearly threatened (NT) *Aythya nyroca* (average 47 pairs in the period 2004-2006 and average 308 specimens moulting in June-July) and *Phalacrocorax pygmaeus* (100 breeding pairs in the period 2004-2005) and for wintering geese (up to 40 000 but not every year). Species of global conservation concern that do not meet IBA criteria: *Anser erythropus* (has occurred in the past), *Haliaeetus albicilla* (1-5 in winter).

The lake is the biggest marsh on the Bulgarian part of River Danube. The diversity of many habitats, animal and plants species are important on the national level. The lake Srebarna is listed as a UNESCO natural phenomenon of international importance.

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

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 1

Srebarna Lake is the last Danube riverside lake preserved in Bulgaria and is unique example of this common in the past type of wetlands. It shelters vast diversity of plants and animal species characteristic and rare for the region. Some of the plant formations are typical for the wetland like the floating reedbeds and flooded willow woodlands.

Srebarna lake is a unique wetland within the continental biogeographic region and nationally.

Criterion 2

The following threatened species from the IUCN Red List have been recorded in the site according to IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. www.iucnredlist.org:

Fish

Alosa imaculata (synonym *Alosa pontica pontica*) - Pontic shad – Vulnerable

Cyprinus carpio - Wild Common carp – Vulnerable

Umbra krameri - European Mudminnow – Vulnerable

Anguilla anguilla - European Eel - Critically Endangered – extinct from the site species

Birds

Branta ruficollis - Red-breasted Goose – Endangered

Pelecanus crispus – Dalmatian Pelican – Vulnerable

Aquila heliaca - Eastern Imperial Eagle – Vulnerable

Anser erythropus - Lesser White-fronted Goose - Vulnerable

Mammals

Vormela peregusna - European Marbled Polecat - Vulnerable

Spermophilus citellus - European Ground Squirrel - Vulnerable

Plants from Bulgarian Red Data Book (new edition, 2010): 11 species (including *Aldrovanda vesiculosa*, *Cicuta virosa*, *Stratiotes aloides*).

Wildlife of European conservation concern: the plant *Aldrovanda vesiculosa*;

Invertebrates: 36 species of order Odonata (*Cordulia aenea*).

The site also supports species listed in Annexes of the EU Habitats Directive:

Invertebrates:

Order Lepidoptera - *Lycena dispar* (Annexes II and IV);

Fish: *Alosa imaculata* (synonym *Alosa pontica pontica*) (Annex II); *Chalcalburnus chalcoides* (Annex II); *Misgurnus fossilis* (Annex II); *Umbra krameri* (Annex II); *Aspius aspius* (Annex II);

Amphibia: *Triturus cristatus* (Annexes II and IV), *Triturus dobrogicus* (Annex II); *Bombina bombina* (Annexes II and IV); *Hyla arborea* (Annex IV); *Pelobates syriacus* (Annex IV);

Reptilia: *Elaphe longissima* (Annex IV); *Testudo graeca* (Annexes II and IV); *Ablepharus kitaibelli* (Annex IV); *Lacerta trilineata* (Annex IV); *Lacerta viridis* (Annex IV); *Coluber jagerski* (Annex IV); *Elaphe quatuorlineata* (Annexes II and IV); *Vipera ammodytes* (Annex IV);

Mammalia: *Lutra lutra* (Annexes II and IV); *Vormela peregusna* (Annexes II and IV); *Mustela eversmannii* (Annexes II and IV); *Spermophilus citellus* (Annexes II and IV); *Mesocricetus newtoni* (Annexes II and IV);

Plants: *Aldrovanda vesiculosa* (Annex II);

Species listed in Annex I of the EU Birds Directive 2009/147: *Phalacrocorax pygmaeus*; *Pelecanus crispus*; *Anser erythropus*; *Branta ruficollis*; *Aythya nyroca*; *Haliaeetus albicilla*; *Crex crex*, *Egretta alba*, *E. garzetta*, *Ardeola ralloides*, *Platalea leucorodia*, *Plegadis falcinellus*, *Nycticorax nycticorax*, *Chlidonias hybrida*.

Nesting birds

After monitoring conducted in the period 2006-2010 a number of 114 bird species nesting in the Ramsar site "Srebarna" occurred. Some of them are rare or threatened from extinction in the area:

Phalacrocorax pygmaeus – Pygmy Cormorant - 150-350 pairs

Phalacrocorax carbo – Great Cormorant - 0-550 pairs (after 2010 the species is not nesting in the Ramsar site "Srebarna")

Pelecanus crispus - Dalmatian Pelican- 30-70 pairs

Egretta garzetta - Little Egret - 75-110 pairs

Egretta alba - Great egret - 2-5 pairs

Nycticorax nycticorax - Black-crowned Night-Heron- 40-230 pairs

Ardeola ralloides - Squacco Heron- 15-70 pairs

Platalea leucorodia - Eurasian Spoonbill- 17-30 pairs

Plegadis falcinellus – Glossy Ibis- 10-38 pairs

Ardea purpurea – Purple Heron - 5-8 pairs

Ardea cinerea – Grey Heron- 25-50 pairs

Aythya nyroca – Ferruginous Duck - 10 – 45 pairs

Aythya ferina - Common Pochard - 20-40 pairs

Cygnus olor - Mute Swan 7-11 pairs

Anser anser - Greylag Goose-5-10 pairs

Podiceps griseigena – Red-necked Grebe- 2-4 pairs

Coracias garrulus – European Roller- 5-7 pairs

Rare and threatened from extinction plant species in the area:

Cicuta virosa - Northern Water Hemlock

Sonchus palustris- Marsh Sowthistle

Stratiotis aloides - Stratiotis

Nymphaea alba - European White Waterlily

Thelypteris palustris - Marsh Fern

Nuphar lutea - Yellow Water-lily

Nymphoides peltata - Fringed Water-lily

Utricularia vulgaris - Common Bladderwort Home

Leucojum aestivum - Spring Snowflake

Carex disticha - Two-ranked Sedge

Azola filiculades - Water fern

Wolffia arrhiza - Spotless watermeal

Trapa natans - water chestnut

Hydrocharis morsus-ranae - Frogbit

Criterion 3

The Ramsar site "Srebarna" supports high and valuable biodiversity. Total of 1166 genera has been recorded in the area with 2 748 infrageneric taxa; 243 bird species have been recorded in the area or 57.5%

of the Bulgarian ornithofauna, 90 of them are Species of European Conservation Concern (SPECs); 11 plant species of the Bulgarian Red Data Book; 27 amphibians and reptile species and 23 species of fish or 18.1% of Bulgarian freshwater fishes. The observed Plant species are 1430. Srebarna is a hotspot site, for Bulgarian biodiversity and for national part of the continental biogeographic region.

Criterion 4

The wetland is an important breeding, staging and wintering site for large number of birds. It is the only breeding site of *Pelecanus crispus*, the colony of *Phalacrocorax pygmeus* as well as of the largest breeding population of *Aythya nyroca* in Bulgaria. It is an important staging area for molting of *Aythya nyroca* and other rare and endangered in Bulgaria wildfowl species (*Anas strepera*, *Aythya ferina*, *Anas querquedula*). During late autumn and in winter it provides staging site for geese species – *Anser albifrons*, supports one of the largest concentrations of *Anser anser* in Bulgaria during this period. The lake provides foraging area for the large *Phalacrocorax carbo* colony situated on the nearby Danube Island, and in the recent years the Pelicans and Pygmy Cormorants feed in the lake as well. The wetland supports viable populations of number of fish species, of which some are endangered in Bulgaria – *Pungitius platygaster* – one of the densest populations in the country.

The site supports up to 52 355 waterbirds on migration and wintering (*Anser albifrons* – up to 50,550 individuals).

Criterion 6

Species	Region	1% level (according to: Waterbird Population Estimates: 4 th Edition, 2006)	Srebarna	
			Breeding	Wintering
Dalmatian Pelican (<i>Pelecanus crispus</i>)	Black Sea, Mediterranean (non-bre) SE Europe (breeding range)	45	Average 107 pairs for the period 2006 – 2011 (1); For 2012 43 pairs (2);	0-10

(1) Michev, T., N. Kambourova (ed.). 2011. National Action Plan for the Conservation of Dalmatian Pelican in Bulgaria (*Pelecanus crispus* Bruch, 1838). Sofia, IBER at the BAS, MOEW.

(2) Shurulinkov, P., (ed.) 2013. Monitoring of the H. Pygmaeus and A. nyroca in the the Romanian-Bulgarian section of the Danube River. Database of the Green Borders project of the WWF. <http://www.green-borders.eu>

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

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Continental biogeographic region

b) biogeographic regionalisation scheme (include reference citation):

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Geology and geomorphology

The geologic conditions in the area of the site predetermine the presence of the following hydrogeological sections: Lower Cretaceous (Apt) Aquifer, Pliocene Aquifer Complex and Quaternary Aquifer. According to the type of deposits, there are two main Quaternary aquifers: Alluvial aquifer and Loess aquifer. The last is the uppermost aquifer in the geologic section which is distributed almost everywhere in the inter-fluvial beds.

The main soil forming materials are Quaternary loess sediments, as well as Pliocene clays, marls and calcareous sandstones. The elevations along the Danube originate from Miocene sediments – argillaceous marls and calcareous sandstones. The soil forming materials within the alluvial lowlands are river deposits and loess formations, and within dry valleys such are diluvia and alluvial-diluvia deposits.

Soil type and chemistry range

The following units of soil varieties characterize the area of the Srebarna Reserve:

- On the southern and western sides and adjacent territories: Haplic Chernozems (Haplic Chernozems, FAO), of medium depth, slightly eroded, of medium-arenaceous argillic texture; moderate to severe erosion develops on the steep slopes;
- In lowlands and along ravines soil types are represented by Meadows Chernozems, accumulated, of medium arenaceous argillic texture.
- In the northern part of the region – in the lowland between the lake and the Danube, soils are represented in a complex of: Calcic Meadow-Chernozem-like, alluvial and alluvial-meadow, slightly swamped soils;
- Meadow marshy soils occupy part of the coastal strip; lacustrine marsh soils are in their greater part covered by the water of the lake.

Origins - natural or artificial

Lake Srebarna is of natural origin. It represents a typical freshwater Danube lake of the river flood terrace. According to a palinological research, Lake Srebarna has been formed about 8 000 years ago following the inundation of the riverside terrace by the Danube.

According to the one theory for the formation of lakes along the Danube River, the ample sedimentary matters on the bottom has blocked the estuaries of the shorter right-hand tributaries of the main river and because of those natural lakes have been formed at the estuaries Garvansko, Srebarna (Domokos et al., 2001).

Hydrology

There are three clear periods in the development of the wetland. Up to 1948 – natural state, 1949-1978 – deteriorated condition; 1979-1994 – first restoration attempt; restoration of the hydrology after 1994. The long term drying up period from 1988 to 1994 has resulted in negative effect for the lake –

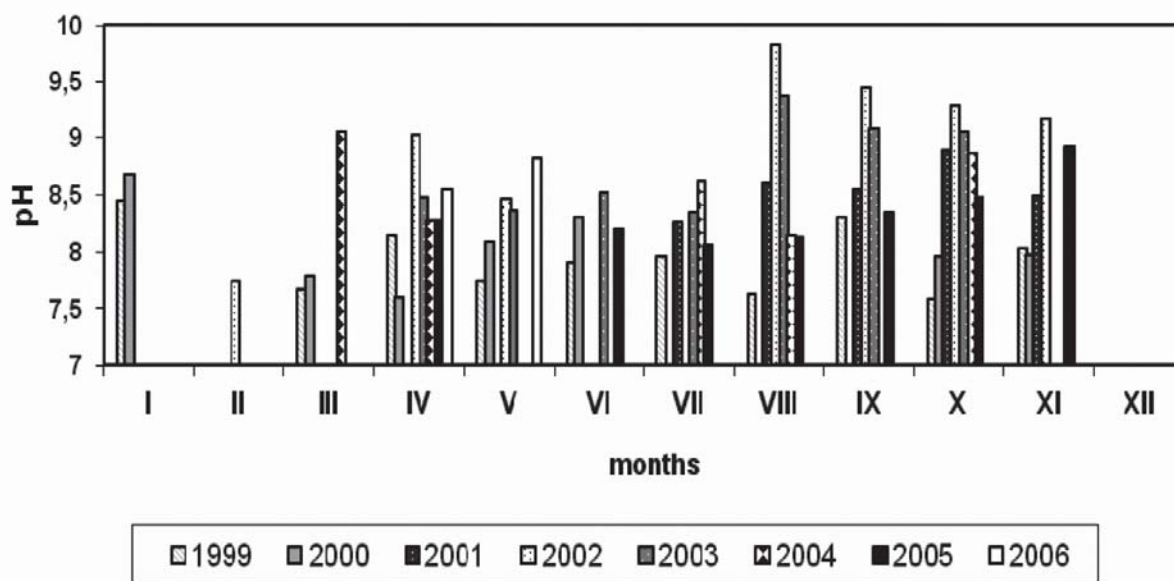
diminished the water surface area, decreased water level, transformation into eutrophic wetland. The commissioning of a hydraulic system connecting the Danube to Lake Srebarna by a canal in 1994 created conditions for control of the water level, the size of the inundated areas and the actual water volume of the lake. The catchments area of the lake (402 km²) is supplied by the rivers Srebarnenska and Kulnezha, whose hydraulic regime varies widely and they run almost dry in summer and autumn.

The mineral composition of the lake undergoes seasonal fluctuations corresponding to the processes of flooding and partial drying. The hydrocarbonate, chlorine, sulphate, sodium, calcium and magnesium ions are the main components of the water minerals. The nutrient concentration depends, on the one hand, on the inflow from the Danube and the surface and ground run-off from the water catchments area and, on the other hand, on the phytoplankton production and the processes of nutrient recycling. The concentration of the ammonium (0.7-1mg/l), nitrates (0.9-7.8 mg/l) and phosphorus (0.1-0.55 mg/l) ions is within the range of an eutrophic wetland.

Water quality

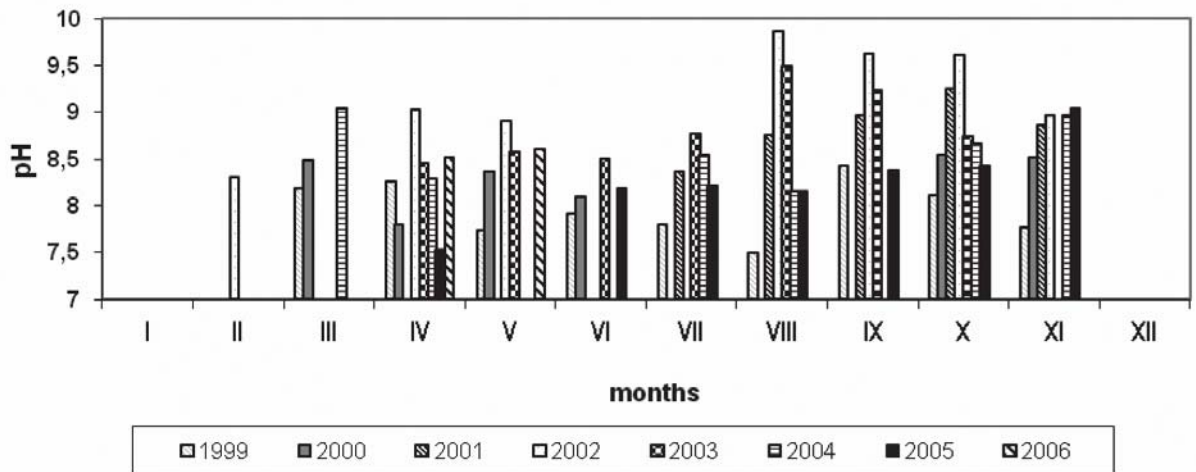
The water pH is strongly influenced by the processes of production and mineralization of organic matter in plankton and benthic communities. Carbon dioxide is absorbed or emitted in these processes, which shifts the balance in the carbonate system. Water pH values increase if the primary production processes prevail, and vice versa. These processes explain the dynamics of pH in various points of the lake (marsh) ecosystem, normally varying between 7.5 and 8.5. Values of pH beyond these limits were observed during 1999-2002, exceeding 9.0 in spring and autumn 2002 and in 2003; they normalized after April 2004.

pH at sample point 1, Srebarna lake (1999-2006)



Dynamics of water pH at the sample point in the middle of the lake.

pH at sample poin 5, Srebarna lake (1999-2006)



Dynamics of water pH at the sample point in the peripheral shallow waters adjacent to the village of Srebarna.

The dynamics of pH is in the frames of the known fluctuations in eutrophic lakes with substantial variations of the water level.

Srebarna is currently in an initial phase of a classic-type succession from lake to marsh to wet meadow. The periodic inflow of river water and the partial drying in summer is the principal factor that affects water quality in the first place. The primary production of reed and plankton is the second principal factor that depends on water quality and, at the same time, largely determines it.

Water depth

Provided that the southern lock remains closed, maximum depth of Lake Srebarna is determined by the point where its water flows in or out of the Danube (at present this is the area of the destroyed part of the dike at the south-western end of the Reserve). The altitude of this part is 13,2 m. At this water level maximum water is 3,3 m and can be observed at the mouth of the Dragaika canal which is the point where water flowed out in the past, and the average water depth is 2,1 m.

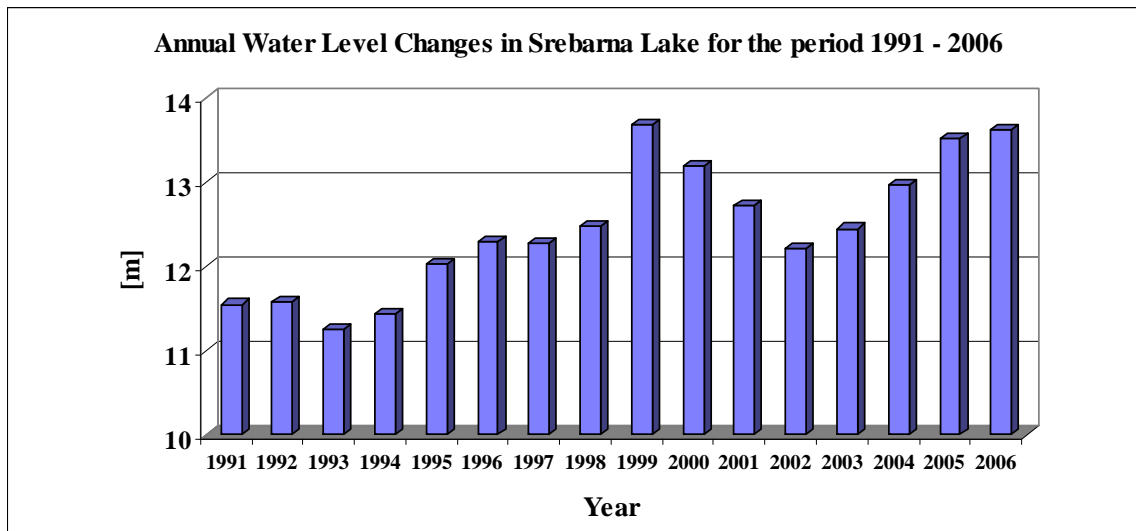
Fluctuations in water level

The water level fluctuations resulting from a complex of factors, like the morphometric properties of the lake itself, the inflow and the outflow, and the internal dynamics of the water masses, provide an integrated indicator of the changes in the volume of the lake. In the period 1991-1994 the water level was 11-11,5 m - under critical elevation of 11,8 – 12,0 m. After the canal providing a hydraulic connection of the lake with the Danube went into operation in May 1994, a trend emerged towards water level increase for the 1994-1996 periods. The highest month value of water level was read in April 1999 (14,10 m), but after that until 2004 follow the period with some decrease with 0,5 m. annual (the average annual water level for the period 2000 – 2003 is between 12,21 m and 13,20 m). From 2004, the negative trend breaks and water level began increase and in April 2005 the water level reached the peak of 14,17 m.

The unusual high water level in April 2005 cause detach of Pelican`s reedbeds islet. The Pelican`s islet moved to the south part of central open-water area and after that in different part of same area, in the result of wind with different direction. This necessitates taking steps about islet fixing in the previous place.

Climate

The climate in the region is continental with a temperature between -15°C (in January) and 39°C (in July). The average annual number of days with temperature >25 °C is 25 and for the days with temperature <0 °C it is 20. Annual precipitation average is 159 mm. The relative air humidity is highest in January (84%) and lowest in July and in August (66%). The predominant winds are with northern and north-eastern direction with average monthly speed ranging between 1,7 and 5,8 m/s. The numbers of days with snow and ice cover vary between 40 and 60.



17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The catchment area of the lake (402 km²) is drained by the rivers Srebarnenska and Kulnezha, whose hydraulic regime varies widely and they run almost dry in summer and autumn. The main physical features of the catchment area are mostly the same as described in the previous (16th) point.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Groundwater recharge:

The analysis of geological and hydrogeological characteristics allows for the assumption that besides surface water and Danube water, water of Lake Srebarna is also replenished by karst water from the Low Cretaceous (Apt) aquifer passing through hydrogeological fenestrate and draining into the alluvial aquifer. Therefore, subterranean water has a significant role in lake water exchange.

Flood control:

Protection of the Reserve adjacent territories is based on a system of dikes along the Danube riverside in the northern part of the Reserve and to the east of it. When the Danube water level is very high, the river enters the Reserve from the northwest part, which is outside the system of dikes. In this case, the watershed region is not protected against flooding. If that happens after the level of the Danube water has dropped, the water would run off through the same spot where it entered the Reserve and along the canal connecting the lake with the Danube when sluices are opened.

Sediment trapping:

The lake is a sediment trap for material eroded from the watershed. In fact, eroded soil may enter the lake from the elevated western bank of the lake.

Shoreline stabilization:

There are no pre-conditions of significance to advance soil erosion or cause changes to the shoreline of the Reserve.

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 • O • 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:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

Tp - O - P - M - Xf - Ts - 9 - 7

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The main habitats (according the Habitat Directive 92/43):

3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation covers more than 48 % of the area

6250 Pannonic loess steppic grasslands - covers more than 3 % of the area

6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels – covers more than 2 % of the area

91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) – covers more than 1 % of the area

91Z0 Moesian silver lime woods – covers more than 1 % of the area

There are also habitats less than 1 % of the area as:

3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea* ;

3270 Rivers with muddy banks with *Chenopodium rubri* pp and *Bidention* pp vegetation;

91F0 Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*);

91H0 Pannonian woods with *Quercus pubescens*;

91I0 Euro-Siberian steppic woods with *Quercus* spp ;

91M0 Pannonian-Balkan turkey oak –sessile oak forests

The Srebarna vegetation, presented mainly by rooted hydrophytic, hygrophilic, hygromesophilic, mesophilic and mesoxerophilic communities (cenoses) plays a significant role in maintaining an optimum ecological balance of the aquatic and land ecosystems in the lake area.

The main habitats are:

Standing freshwater; Temporary fresh water; Duckweed covers (*Lemma*, *Spirodela Wolfia*, *Azola*); Frogbit rafts (*Hydrocharis morsus-ranae*); Water-soldier rafts (*Stratiotes aloides*); Salvinia covers (*Salvinia natans*); Rooted submersed vegetation (*Potamogeton*); Small pondweed communities (*Ceratophyllum*); Northern Nymphaea beds (*Nymphaea alba*); Freshwater reedbeds (*Phragmites australis*); Cattail stands (*Typha latifolia*); Reedmace beds (*T. angustifolia*); Ponto-Panonian mesophyll hay meadows (*Leucoium aestivum*); Poplar plantations (*Populatum*).

The main ecosystem services are:

Grazing, recreational fishing on the river bank, in ancient time the reed is used for industrial purposes and production of furniture and ornaments. The area is also used for tourism and scientific research activities.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Typical for the site are the floating reedbeds formed by Reed *Phragmites australis* with participation of *Tiliptheris palustris* and *Salix* sp.; Considerable formations of *Utricularia vulgaris*, *Myriophyllum spicatum*, *Potamogeton pectinatus*, *Persicaria amphibia*, *Nymphaea alba*, *Nuphar lutea*, *Salvinia natans*, *Lemma trisulca*, important associations of *Typha angustifolia*, *T. latifolia* and *Schoenoplectus lacustris*; rare plant association of *Stratiotes aloides*.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Fish – *Pungitius platygaster*, *Cyprinus carpio* (wild form), *Carassius carassius*, *Misgurnus fossilis*, *Umbra krameri*, *Aspius aspius*

Amphibians – Viable populations exist of *Hyla arborea*, *Bombina bombina*, *Pelobates syriacus balcanicus*, *Triturus cristatus*, *Tr. dobrogicus*.

Reptiles – *Testudo graeca iberica*, *Elaphe longissima*, *Ablepharus kitaibelli fitzingeri*, *Lacerta trilineata dobrogica*, *Lacerta viridis meridionalis*, *Coluber jagularis caspius*, *Elaphe quatuorlineata sauromates*, *Vipera ammodytes montandoni*.

Birds Total of 230 species have been registered in the reserve and the vicinity area, of them 130 are breeding, 57 are from the Red Data Book of Bulgaria, 90 SPECs occur in the area. The breeding *Pelecanus crispus*, *Phalacrocorax pygmeus*, *Aythya nyroca*, *Crex crex* are globally threatened species. The *Pelecanus crispus* and *Egretta alba* breed only in Srebarna Reserve in Bulgaria. The *Aythya nyroca* and *Ph. pygmeus* have the most numerous populations in the reserve compare with the other places in Bulgaria.

Mammals Total of 41 mammal species have been registered. The following IUCN Red List mammal species are found in the area: *Lutra lutra*, *Vormela peregusna*, *Spermophilus citellus*.

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:

Reed cutting and commercial fishing used to be practiced in the past but now is forbidden according to the reserve status. Many local residents angle as a pastime. The Danube riverbank, part of which is within the boundaries of the Reserve, is a favorite's location for anglers.

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?

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:

State-public – 66 %

State-private – 19 %

Municipality – public – 0.5 %

Municipality – private – 9 %

Private – 6 %

b) in the surrounding area:

Private, State and Municipality

25. Current land (including water) use:

a) within the Ramsar site:

The Managed Reserve (902.1 ha) being an exclusive state property, is under the jurisdiction of the government – Ministry of Environment and Water. Any activities shall be prohibited in managed nature reserve with the exception of: 1. physical security of the said reserves; 2. visits for the purpose of scientific research; 3. pedestrian traffic movement on marked hiking trails, including such traffic for educational purposes; 4. collection of seeds, wild plants and animals for the purpose of scientific research or for repopulating other sites; 5. conduct of maintaining, steering, controlling or restorative measures. Natural resources are not exploited within the boundaries of the Reserve.

The territory, surrounding Srebarna Managed Reserve, which covers an area of 542.8 ha and is also included in the Ramsar site, represents another category of protected area according to the specific Bulgarian legislation – Protected areas Act, particularly “Pelikanite” Protected site.

The purpose of “Pelikanite” Protected site is to restrict and prevent the negative influence of the human activities on the managed reserve.

Not long time ago, the same protected area was a buffer zone of the managed reserve. After the changes in the specific legislation in 2005 the buffer zone was precatagorised in the “protected site” category.

According to the Protected areas act, unlikely to the strict and managed reserves, there are no restrictions in terms of the ownership in the protected areas from other categories. For example, in “Pelikanite” Protected site, there are different kind of ownership, such as state, municipal and private.

According to the same Act, the owners and the users of the territories in protected areas are obliged to take into consideration the regimes determined with the orders for their designation and also the management plans if such exist. The activities provided in the protected areas are also controlled by the Regional departments of the Ministry of Environment and Water and in this particular case - the Regional Inspectorate of Environment and Water for the town of Russe.

As far as this part of the Ramsar site which is not included in the managed reserve and the “Pelikanite” protected site, the same is part of Natura 2000 sites, determined in compliance with the EU Directives. In this relation, it should be mentioned that there are different tools, ensuring the conservation of the Natura 2000 sites. For example the same are being designated with orders of the Minister of environment and water which determine specific regimes for their use according to the conservation value. Along with the requirement of Article 6 of the Habitats Directive of the EU, the investment proposals, plans and programs envisaged for these sites are subject of specific assessment which to register and prevent any possible negative influence on the particular species and natural habitats.

b) in the surroundings/catchment:

The surrounding areas are mainly arable fields with wheat, some vineyards exist on the hilltops, forest plantations of Black Pine (*Pinus nigra*), Black Locust (*Robinia pseudoacacia*) and Hybrid Poplar (*Populus sp. X Populus sp.*).

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:

- In 1948 was built a dike that disconnected the lake from the Danube and initiated its severe eutrophication process. In 1979 part of the dike has been removed but had little positive effect. The disconnection lead to the hypereutrophication of the wetland, because of the accumulation of nutrients, that was most severe in 1993-1994 when the water column also diminished to few centimeters. The problem is the decaying reedbeds material. In 1994 was constructed a canal that restored the river-lake connection and improved its condition. During the low water level in the late 1980s and early 1990s important threats included nest-predation by foxes *Vulpes vulpes*, jackals *Canis aureus* and boars *Sus scrofa*, which affect the Pelican colony;
- The change of the Danube water conditions with the dam Zhelezni Vrata (Iron Gates) getting under construction and the natural process of lowering the river erosion basis have diminished the opportunities of the river water to enter the Reserve at high water levels in the Danube;
- Polluting the Reserve with nutrients and pesticides from diffuse sources within its water catchments area;
- There is considerably decreasing of relative quantity participation of Carp (*Cyprinus carpio*) and Zander (*Sander lucioperca*) compared with 2004. This result confirm the conclusion that the fishery (also illegal) is a significant factor which restrict the population growth of economic valued fish species nevertheless that in autumn and winter the intensity of poaching pressure is decreasing;
- Illegal fishing in the lake with nets, which causes disturbance and entrapment of diving birds in the fishnets; This problem causes entrapment of Pygmy Cormorants, diving ducks – Pochards (*Aythya ferina*) and Ferruginous Ducks (*Aythya nyroca*), Grebes (*Podiceps sp.*), Otters, terrapins etc.
- Potential threat for the area is burning of the floating reedbeds during drier period in spring or summer that may cause destruction of the Pelican colony, or the mixed heron colony.
- The deposition of organic and urban garbage on the bank of the lake from people of Srebarna village is causing additional organic and aesthetic pollution of the site.
- The high water level in April 2005 cause detach of some reed islets and this change the placement of Pelican`s colony. These maybe necessitate a new determination of the reserve`s zones;

- The mixed heron colony is smaller compared with 2001. The number of *Ardeola ralloides*, *Nycticorax nycticorax* and *Egretta garzetta* are small numbered. There are fluctuations in breeding populations of many water bird species – *Phalacrocorax pygmeus*, *Larus ridibundus*, *Fulica atra*, *Aythya ferina*, *Chlidonias hybrida*, *Anas strepera*, *Aythya nyroca*, *Podiceps nigricollis*.

b) in the surrounding area:

- The use of fertilizers and pesticides in the surrounding arable lands and the pig farm near the river Kalnezha contribute to the pollution of the lake with bioorganic elements and organic compounds.
- Another cause for changes in the ecological characteristics of the Reserve surroundings was the afforestation of extensive areas using tree species that were either not native for the region like the Austrian (European Black) Pine (*Pinus nigra*), or were altogether alien species like the Hybrid Poplar (*Populus sp. x Populus sp.*), Black Locust (*Robinia pseudacacia*), Common Gloxinia (*Gleditschia triacanthos*), Oleaster (*Eleagnus angustifolia*).
- In 2003 began construction of purification station for the Srebarna Village in the west district near the reserve. The pipeline for purify water passing is near the border of the reserve (~ 50 m) and in case of high water level some parts of it remain under the water (especially in the northwest part of the reserve). In this way, there is the risk of additional nutrient loading of lake water. Now the purification station is not working.

27. Conservation measures taken:

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

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

Ramsar site “Srebarna” is included in the List of wetlands of international importance since 24.09.1975 with area of 1357 ha.

In 1983 the site was included in the UNESCO world natural and cultural heritage list as “Srebarna Nature Reserve” with 638 ha property area and 673 ha buffer zone.

According to the Bulgarian national legislation – Protected areas act, Ramsar site “Srebarna” includes two different categories protected areas: Srebarna Managed Reserve with area of 902. 1 ha and Protected site “Pelikanite” – buffer zone surrounding managed reserve with area of 542.8 ha.

Natura 2000 site BG0000241 both under the Birds Directive and Habitats Directive.

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

Managed Reserve “Srebarna”

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

Protected site Pelicanite

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

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

Srebarna Managed Reserve Management plan for the period 2001 – 2010 has already expired. At the moment there is a procedure to revise and develop new updated Management plan.

d) Describe any other current management practices:

Some actions of the management plan were implemented:

- Remodeling and repair of the two sluices (in 2003) built on the connecting canal in 1994 to retain for as long as possible the aquatic areas (enclosed by dykes in the northern section of the Reserve), which a number of rare and threatened bird species use for feeding and nesting but now the sluices do not work properly and if there is high water level in the lake part of the lake water backs in the Danube River.
- Conservation activities for the protection of the Dalmatian Pelican to improve nesting conditions, to protect the colony against terrestrial predators, to prevent flooding and fires in the colony;
- Allocation of sites for licensed angling according to a procedure established by the Ruse Regional Inspectorate of Environment and Water to control the size of the fish flock. To revive a traditional occupation of the local people. To create conditions for efficient control;
- Building a sand- and gravel-surfaced panorama path along the western edge of the Reserve to create convenient conditions for visitors to tour the Reserve on foot, by cart or on horseback. But the path have not ditch and some part of the gravel already come down in the lake.
- Erosion control measures on the steep slopes of the western and southern lake shores;
- Cleaning of “Dragaika channel” (the channel which goes to the Danube) from trees and plants.
- Production of promotional and information print publications: brochures, folders, stickers, posters, etc. to disseminate knowledge and promote a positive attitude towards nature conservation;
- Making films and multimedia products about the Reserve to disseminate knowledge and promote a positive attitude towards nature conservation.
- The Hybrid Poplar plantation in the south part of the reserve was cut off, but not uproot.
- Periodic removal of part of the reed growth along the rim of the open-water surface of the lake (Project 2.2.2 from the Management Plan) – under implementation with financing of a project upon priority 3 “Biologically Diversity” of the Operative Programme “Environment”. The project has to be realized in the period from 2009 up to 2013.
- Replacement of the plantations of Hybrid Poplar (*Populus sp. x Populus sp.*), Oleaster (*Elaeagnus angustifolia*), Common Gloxinia (*Gleditschia triacanthos*) and Black Locust (*Robinia pseudoacacia*) within the zone by autochthonous tree and shrub vegetation (Project 4.2.6. from the Management Plan) - under implementation with financing of a project upon priority 3 “Biologically Diversity” of the Operative Programme “Environment”.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

Other project proposed in Management Plan, but yet not implemented:

- Restoration of the stable bottom and natural depth through removal of sediments accumulated in the open-water area of the lake outside the breeding period (*Project 2.2.1. from the Management Plan*).
- Control of the Gray Willow (*Salix cinerea*).
- Inform the local hunters and anglers on the Reserve's conservation status (*Project 6.2.4 from the Management Plan*) and etc.
- Periodic removal of part of the reed growth along the rim of the open-water surface of the lake (*Project 2.2.2 from the Management Plan*).

In 1994 was proposed to create second canal for lake water circulation but at present this is in doubt and halted.

- Establishment and maintenance of water regime, as close to the previous, natural regime in the reserve "Srebarna";
- Restoration of the 37 ha floodplain forests in the Managed reserve “Srebarna”
- For species which are subject for conservation in Natura 2000 Protected zone as Fire-bellied Toad (*Bombina orientalis*); European pond terrapin (*Emys orbicularis*); Danube Crested Newt (*Triturus cristatus*); Asp (*Aspius aspius*); Balkan Loach (*Cobitis elongata*); Spined loach (*Cobitis taenia*);

Ukrainian brook lamprey (*Eudontomyzon mariae*); White-finned gudgeon (*Romanogobio albipinnatus*); Danube ruffe (*Gymnocephalus baloni*); Schraetzer (*Gymnocephalus schraetzer*); Weatherfish (*Misgurnus fossilis*); Sichel (*Pelecus cultratus*); Bitterling (*Rhodeus sericeus amarus*); Mudminnow (*Umbra krameri*); Danube streber (*Zingel streber*); Zingel (*Zingel zingel*); Ramshorn snail (*Anisus vorticulus*); Ornate Bluet (*Coenagrion ornatum*) – to prevent activities which have negative impact on the hydrological regime of water bodies and which could affect their Conservation state;

- Mitigation measures to reduce impacts on the natural habitats, which are subject to the conservation of areas that are associated with specific water bodies are regulated by the designation order and the management plan of the Srebarna Reserve (occupies almost 50% of the area of zone). According the plan it should be made activities to improve the Favorable conservation state (FCS) for all habitats (especially 3130, 3150, 3270, 6430, 91E0, 91F0), subjects to the protection zone “Srebarna”, and include measures for reduction of existing impacts from water, drainage and any other negative changes in the hydrological regime of water body.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The following research projects are being implemented in the Reserve:

- The CLGE (in the village there is Field Ecological Station of the Central Laboratory of General Ecology) executes project for monitoring of the wetland ecosystem as per contract with the MOEW and also as part of its individual scientific research programme. The water level of the lake, its hydrochemical parameters, the phytoplankton, zooplankton, zoobenthos, the production and destruction of organic matter, and the trophic and functional structure of the aquatic ecosystem have been monitored since 1998.
- Average winter numbers of water birds. The project is part of the annual average winter monitoring of Bulgaria's aquatic bird population. Counts have been regularly taken since 1977.
- Two young researcher defend their doctoral thesis on the ecology of breeding ornithofauna of Srebarna Reserve;
- The communities of small mammals and their habitat distribution in the region of Srebarna Biosphere Reserve.
- Biological diversity of aquatic ecosystems in wetlands of flood plane of the Lower Danube regarding optimisation of ecosystem functions under global climate change. Funded by NSF (DO 02-352/2009). Leader: Dr L. Pehlivanov
- WETLANET Enhancing research potential by strengthening a local network of laboratories for studying wetland ecosystems functioning, restoration and management (FP7 CSA – SUPPORT ACTION, contract No. 229802);
- Environmental quality and pressures assessment across Europe: the LTER network as an integrated and shared system for ecosystem monitoring (ENVEurope) - LIFE08 ENV/IT 000399

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

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The Ramsar site Srebarna, have a big potential to be used for natural education, study and scientific activities, and place for development of the alternative tourism close to the wild nature.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity. T

Tourism in the municipality is underdeveloped in view of the potential and natural resources such as the Danube Biosphere Reserve "Srebarna"

32. Jurisdiction:

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

The site is under the jurisdiction of Silistra Regional municipality.

From functional point of view:

The conservation is in the prerogatives of the Regional Inspectorate of Environment and Water – Ruse and the Reserve Management Authority; both are subjected to the National Nature Protection Service Directorate at the Ministry of Environment and Water that is in charge of the protected areas in Bulgaria.

33. Management authority:

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.

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Srebarna Nature History Museum

Srebarna Village, Silistra Municipality,

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34. Bibliographical references:

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

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