

# BIODIVERSITY IN THE AREA OF BELENE ISLAND, BULGARIA

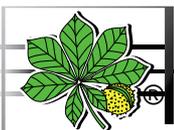
/Report on Item 6 of the Terms of Reference under Project Agreement  
between Green Balkans and WWF Greece, 2000/



© Georgi Stoyanov / Green Balkans



© Hristo Nikolov / Green Balkans



**ЗЕЛЕНИ БАЛКАНИ**  
**GREEN BALKANS**



*Produced by Green Balkans, March 2001  
With the financial support of WWF-Greece*

## CONTENTS

I.	GENERAL CHARACTERISTICS OF THE AREA	page 2
	1. Location, Climate, Soils, Hydrology	page 2
	2. Biogeographical Characteristics	page 3
II.	PRESENT STATE	page 3
	1. Vegetation	page 3
	2. Fauna	page 4
	3. Habitats	page 6
	4. Conservation Significance	page 6
	5. Existing Protected Areas	page 8
III.	HISTORICAL OVERVIEW AND ANALYSIS REGARDING THE ANTHROPOGENIC IMPACT AND THREATS	page 9
	1. Vegetation	page 9
	2. Fauna	page 13
IV.	LITERATURE	page 14
V.	LIST OF APPENDICES	page 16

## **BIODIVERSITY ON BELENE ISLAND, BULGARIA**

*(Report 6B on Item 6 of the Terms of Reference under Project Agreement between Green Balkans and WWF - Greece, 2000)*

### **I. GENERAL CHARACTERISTICS OF THE AREA**

#### **1. Location, Climate, Soils, Hydrology**

##### *Location*

Belene (Persin) Island is located between the 560<sup>th</sup> and 576<sup>th</sup> km of the River Danube, opposite the town of Belene, Pleven District, within the boundaries of Nikopol State Forestry, Lovech Regional Forestry Board, in the area covered by Pleven Regional Inspectorate of the Environment and Waters.

##### *Climate*

According to the classification of climatic regions of Bulgaria, the Belene Island lands in the temperate climatic zone. It represents a continuation of the Middle European temperate climatic zone. In that region the climate is formed by the impact of the wet oceanic aerial masses, transformed by the local relief. During the cold period the climate is strongly affected by the continental air, penetrating from the north-east. The influence both of cold arctic and warm tropical climatic zones is negligible.

The reference climatic zone is characterised by strong frosts during the winter and dry hot periods during the summer. Mean monthly temperature in January is  $-1,8^{\circ}$  and during the hottest period - in July - it is  $23,7^{\circ}\text{C}$ . The mean annual temperature is  $11,8^{\circ}\text{C}$ . In that part of the Danube plain the mean annual temperature amplitude is among the highest ones for Bulgaria  $-25,5^{\circ}\text{C}$ . Both the maximal and minimal extremes affect negatively the vegetation period of plant species. The high temperatures during the summer season cause increase of the transpiration and exhausting of the soil water, and the low temperatures during the winter season cause inversion phenomena.

##### *Soils*

Different soil type could be found in the region. The Humofluvisols and the Gleysols occupy the Danube islands and the riverine terraces, and the Fluvisols occur sporadically on the islands.

### *Hydrology*

The island is formed as a result of combining of separated little island, which is confirmed by presence of three marshes inside, surrounded by characteristic relief forms - grids.

Inside the island are situated three marshes – Murtvo, Peschina, Diulova bara - with water connections between them. In the western part through common channel they have connection with the river. From this point during high water levels came in fresh Danube water. The lakes deepness is from 1 to 2.5 m during high spring waters but in the summer they become shallow and not rarely are completely drained out.

## **2. Biogeographical Characteristics**

Bulgaria is completely within the European-Western Siberian zone of the Palearctic biogeographic kingdom. Within the country, the Northern Bulgarian biogeographic region is divided, and the Danube biogeographic sub-region is respectively part of it.

Inside the Danube sub-region, which is the flattest part of the country, the basic forest-steppe vegetation (which was well developed in the past) is very strongly reduced. Remains of former forest formations could be seen now on the terraces of the right riverbank. They consist predominantly of *Quercus conferta*, *Q. ceris*, *Q. virgiliana*, *Q. robur*. In some places occur *Quercus pedunculiflora* and communities of *Acer tataricum* and *Tilia sp.* On the banks of the Danube islands are presented dense willow shrubs. In few undeveloped areas the vegetation cover consists of widely spread Middle-European, Palearctic, steppe, ruderal, weed, and other herbs. The representatives of Mediterranean flora are very few. Some of them are *Periploca graeca*, *Pyrus amygdalyformis*, *Convolvulus althaeoides*.

Old relict and endemic plants missing.

According to its fauna, the Danube sub-region clearly differs from the rest of the country, mainly with the characteristic water animals or water-related animals.

In general, the fauna consists of European, European-Siberian and other northern forms that came here during the Quaternary.

## **II. PRESENT STATE**

### **1. Vegetation**

Conserved natural tree vegetation consists from different plant communities of *Salix alba*, *Salix purpurea*, *Salix triandra* and *Populus nigra*.

Basic forest communities are these of *Salix alba* with different dominants in shrub and grass floor – *Amorpha fruticosa*, *Rubus caesius*, *Euphorbia lucida*, *Agrostis alba*, etc., including forests without under-storey and grass coverage.

The grass communities in meadows through the island are represented by some groups which often transform from one to another and dominated by *Cynodon dactylon*, *Agrostis alba*, *Scripus mishelianus*, etc.

Banks of the marshes are inhabited with *Typha latifolia*, *Phragmites comunis*, *Sparganium ramosum*, *Butomus umbellatus*, etc.

Inside marshes occur communities dominated by *Azolla filicoides*, *Nymphoides flava*, *Potamogeton natans*, *Hydrosharis morus-ranae*, etc.

A phyto-characteristics of Belene Island is presented in Appendix No1.

## 2. Fauna

The habitat diversity in the Belene Island is a precondition for the diverse fauna.

As of today, the following representatives of the invertebrate fauna have been described:

*Lestes dryas*, *Sympecma fusca*, *Gomphus flavipes*, *Gomphus vulgatissimus*. *Hirundo medicinalis*.

Out of the 63 fish species, described for this part of the Danube, nine species have been enlisted in the Red Data Book of Bulgaria, 24 species - in the appendices of the Bern Convention, 6 species - in the CITES lists, and 24 species - in the IUCN Red List /Appendix 2.1/.

The island fish fauna is represented by 20 species coming from Danube and inhabiting marshes from which most often occur *Esox lucius*, *Cyprinus carpio*, *Tinca tinca*, *Scardinius erythrophthalmus*, etc. The shallow floods are inhabited by *Apus cancriformes* during the spring.

Only in the marshes along the Danube and in the lower courses of the Danube tributaries could be found the fish species: *Cobitis bulgarica* (sub-endemic), *Barbus barbus*, *Alburnoides bipunctatus*, *Abramis ballerus*, *Vimba vimba*, *Pelecus cultratus*, *Aspro streber*, *Aspro zingel*, *Acerina cernua*. The Danube River is also a habitat of some species that are rare for Europe: *Eudontomyzon danfordii*, *Acipenser nudiwentris*, *Acipenser ruthenus*, *Acipenser sturio*, *Acipenser stellatus*, *Acipenser guldenstaedtii*, *Huso huso*, *Lota lota* etc.

The amphibians in that region are represented by several frog species: *Rana ridibunda*, *Hyla arborea*, *Pelobates fuscus*, *Pelobates syriacus balkanicus*, *Bufo bufo* and *Bombina bombina*,. Only in this part of the country lives the rare sub-species *Triturus cristatus dobrogicus*. The Danube sub-region represents the northern limit of distribution of this subspecies.

*Pelobates syriacus balkanicus* is enlisted in the Red Data Book of Bulgaria, and all representatives of the amphibians have been enlisted in Appendices I and II of the Bern Convention.

The reptiles are less represented here in comparison with the other parts of the country, except for some common species like *Natrix natrix*, *Natrix tessellata*. Here could be observed *Lacerta taurica*, *Lacerta praticola* and *Eryx jaculus turcicus*, and in the eastern part of the region - *Lacerta trilineata*. Also three turtle species could be observed here - *Testudo graeca*, *Testudo hermannii* and *Emys orbicularis*.

As a whole, the fauna consists mainly of European, Euro-Siberian and other northern species that came during the Quaternary period.

All representatives of the reptiles are enlisted in Appendices I and II of the Bern Convention.

The greatest richness of Belene Island is the birds. Out of the 154 bird species that occur here, all are of conservation interest (Appendix 2.2). Of them, 115 are breeding, 49 - wintering, 77 - migratory. The conservation status of the species is as follows:

43 are enlisted in the Red Data Book of Bulgaria,

128 are protected by the Nature Protection Act,

84 are of European nature conservation significance (SPEC),

151 are threatened birds in Europe (Tucker, Heath, 1994),

48 are enlisted in the European Birds Directive,

145 are enlisted in the Bern Convention,

78 are enlisted in the Bonn Convention,

33 are enlisted in CITES.

52 are definitive for designation of wetlands of global significance (RAMSAR).

Belene Island is an important habitat for a number of threatened bird species, such as *Haliaeetus albicilla*, *Lanius minor*, *Aytha nyroca*, *Crex crex* and others.

When there is water in the marshes, *Chlidonias hybrida* nests on the leaves of *Nuphar* and *Nymphoides*. *Podiceps nigricolis* form colonies here less commonly. During migration, *Ciconia nigra* concentrate here and *Acrocephalus paludicola* occur.

Out of the 38 mammals characteristic of the Danube Plain, four species are enlisted in the Red Data Book of Bulgaria, six species – in the Appendices of the Bern Convention, two species – in the CITES lists, and 10 species – in the IUCN Red List. For the Danube, nine species are enlisted in the Red Data Book of Bulgaria, 24 species – in the Appendices of the Bern Convention, six species – in the CITES lists, and 24 species – in the IUCN Red List (Appendix № 2.3).

Out of the mammals inhabiting Belene Island, we should point out *Lutra lutra* that is enlisted in Annex II of the Bern Convention. The numerous population of *Sus scrofa* on the island is also worth mentioning.

As a whole, the fauna consists mainly of European, Euro-Siberian and other northern species that came during the Quaternary period.

### 3. Habitats

Using The Classification of Palearctic Habitats, the following ones could be recognised in the area of interest:

- 22 Standing fresh water;
- 24 Running water;
- 31 Temperate heath and scrubs;
- 34 Steppes and dry calcareous grasslands;
- 38 Mesophile grasslands;
- 41 Broad-leaved deciduous forests;
- 44 Temperate riverine and swamp forests and brush;
- 53 Water-fringe vegetation;
- 54 Fens, transition mires and springs;
- 82 Crops;
- 83 Orchards, Groves and Tree plantations;
- 85 Urban parks and large gardens;
- 87 Waste places;
- 89 Channels;
- 91 Parklands.

The largest area is occupied by the following habitat types: 82,11 Field crops, 82.3 – Extensive cultivation, 82.4 – Flooded crops, 83.321 - Poplar plantation, 83.324 - Locust tree plantation, 44.17 - *Salix alba* and *Populus alba* galleries, 41.7A - Euro-Siberian steppe oak woods, 89.2 - Fresh water industrial lagoons and canals, 83.15 - Fruit orchards, 53.111 – Flooded *Phragmites* beds, 22.13 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation etc.

### 4. Conservation Significance

Several rare and endangered species, enlisted in the Bulgarian Red Data Book were found, including:

- Potamogeton trichoides* Cham. Et Schlecht. -- rare
- Nymphoides peltata* (S. G. Gmel.) Kuntze -- rare

*Utricularia vulgaris* L. -- rare

*Euphorbia palustris* L. (*E. iucida* W. et K.) -- endangered

*Leucojum aestivum* L. – endangered

The island, as a habitat of rare plant species, has lost the significance it had in the nearest past. But as an area with unique flood-plain forests, it still remains of significant interest.

In the disappearing Danube island marshes, the only ones of this type in Bulgaria, some plant species, protected by the Bern Convention (*Salvinia natans* (L.) All), can be still found.

The territory of interest could be characterised as being among the 10 most representative territories in the country for the following habitat types, included in Appendix 1 of the European Habitats Directive:

- 22.13 Natural eutrophic lakes with *Magnopotamion* or *Hydrosharition* – type vegetation
- 41.7A Euro-Siberian steppe oak woods
- 41.7374 Pannonian white-oak woods
- 44.17 *Salix alba* and *Populus alba* galleries

Belene Island will be of interest for the future development of the European ecological network - NATURA 2000 - in Bulgaria.

The main conservation value of the territory is due to the presence of natural marshy, riverine and flooded habitats. These rare for Bulgaria sites, in combination with the artificial water areas, drainage and irrigation channels, occupy about 15 % of the total territory. At the same time they are habitats of numerous animal and plant species that are rare for Europe.

The terrestrial plant communities of the territory conserve the populations of the Bulgarian endemic shrubs *Chamaecytisus frivaldszkyanus* and *Chamaecytisus kovacevii*, the Balkan endemics *Chamaecytisus danubialis* and *Dianthus nardiformis*, parts of the populations of the species, included in the Red Data Book of Bulgaria: *Caragana frutex* and *Dianthus kladowanus*, the rare species *Hedysarum tauricum* and *Hedysarum grandiflorum* subsp. *bulgaricum*.

The Belene island complex is listed as a site N F 00011400 in the Program CORINE – BIOTOPS. The authors define the complex as one of the five the most important habitats for the region of *Phalacrocorax pygmaeus*, *Nycticorax nycticorax*, *Ardeola ralloides*, *Egretta garzetta*, *Ardea purpurea*, *Platalea leucorodia*, *Plegadis falcinellus*, *Aythya nyroca*, *Haliaetus albicilla*, *Alcedo atthis*, *Sterna hirundo*, *Sterna albifrons*, *Phalacrocorax carbo*. Except for the birds, the place is important for conservation of the following animal and plant species: *Pelobates syriacus*, *Lester dryas* and *Corispermum marschallii*. The Belene complex is considered as being one of the 50 Important Bird Areas in Bulgaria (12 of them are along the Danube river). The large number of birds, living in or migrating through the territory, characterized it as Important Bird Area of European significance. Two globally threatened species nest on Belene island: *Aythya nyroca* and *Crex crex*. The islands near Nikopol and Belene are also important habitats of *Haliaetus albicilla* and *Lanius minor*. During the

migration period also the species *Acrocephalus palustris* and *Pelecanus crispus* could be observed. Both species are globally threatened.

## 5. Existing Protected Areas

Several protected areas are situated in the region studied. Most of them are very important for conservation of valuable and characteristic habitats with the respective animal and plant species:

1. As a result of the shared work of Green Balkans and WWF, a proposal for designation of Persina Nature Park was developed. The proposal was officially deposited in December 1999. Owing to the efforts of NGOs and the MoEW, the procedure envisaged by the law was promptly carried out on time.

The whole area of Belene Island is included in Persina Nature Park, designated by order No 684 of the MoEW from 4.12.2000. The goal is to preserve, restore, and maintain the diversity of local ecosystems and landscapes, the local species of wild plants and animals, as well as the local varieties, and to restore floodplain forests and wetlands in Svishtovsko – Belenska Lowland and neighbouring Danube islands. This is the first instance of designation of a nature park according to the new Protected Areas Act and is undoubtedly a success of Green Balkans.

2. Persinski Blata Managed Reserve, designated as a reserve by Order № 1106/02.12.1981 of the Commission on Environmental Protection at the Ministerial Council, recategorized by Order № 393 of the MoEW from 15.10.1999 on the grounds of the Protected Areas Act.

All the human activities were prohibited in the reserve and according to its protection regime it was equivalent to IUCN I category.

The first order determines a buffer zone of 551,8 ha including remnants of riverine forests, poplar plantations and agricultural fields. The reserve is situated on Persin Island and includes three marshes: Peschina, The Dead Marsh, and Dyulova Bara.

The site is of international significance and is determined as an Important Bird Area. The reserve was designated to protect the habitats of waterfowl and the characteristic marsh vegetation.

After building up the dikes of the islands and the drainage system in surrounding arable lands, the status of the reserve progressively deteriorates – in summer marshes often dry, reed invades the area, organic mass is accumulated. This situation requires urgent restoration activities, which can be achieved with the help of re-categorizing.

Till the acceptance of a plan for the management of the maintained reserve, it is permitted:

- restoring the water regime
- restoring and maintaining the habitats

Unfortunately when being re-categorized, the buffer zone actually loses its protective status (as there is no such category in the Protected Areas Act). MoEW's suppositions are that it is designated for a buffer zone according to a future Act for the Biodiversity. This is projected too far away in future and is not a serious possibility to rely on. A certain compensation for the buffer zone is the fact that it is within the recently designated 'Persina' Protected Area.

3. 'Persin East' natural monuments - established 02.12. 1981, Order No 1106, area 718,9 ha. According to its protection regime it is equivalent to IUCN IV category. The site includes some residuals of riverine forests as well as poplar plantations, which are designed to be converted into natural forests by changing their species composition. According to the classifications in the newly issued Protected Areas Act, the site should be categorized as "Protected site" but due to its close location to "Persinski blata", both territories could be united under a status of maintained reserve.

### **III. HISTORICAL OVERVIEW AND ANALYSIS REGARDING THE ANTHROPOGENIC IMPACT AND THREATS**

#### **1. Vegetation**

The existing investigations of the vegetation of the Belene Island Complex are fragmentary, incomplete and comparatively old. The tree vegetation is described by N. Stoianov, academician /1948/ in the : "The Vegetation of Our Danube Islands and its economic usage". The marsh vegetation is explored by Hr. Kotchev and D. Iordanov /1981/: "The Vegetation of Bulgarian Water Reservoirs".

Acad. Stoianov describes 25 plant associations, using the Braun - Blanquet system, and according to these descriptions the basic plant association consists of White Willow and Blackberry/*Salicetum albae rubosum*. Simultaneously, he describes similar associations of White Poplar and Blackberry and Black Poplar and Blackberry: *Populetum albae rubosum* and *Populetum nigrae rubosum*. The associations, described as typical for coastal areas are these of *Salicetum triandre* and *S. mixtum nudeum*. Acad. Stoianov describes the associations of *Agropyron repens* and *Cynodon dactylon* as associations typical for the uncultivated and not build up areas of Belene Island pasture, and *Agrostis alba* and *Euphorbia lucida* associations as typical for the wet areas surrounding the willow-poplar forests. Also, societies of *Rorippa amphibia*, *Dichostilis mishelianus* are describes as typical for the areas around the water basins, and societies of *Nymphoides flava* and *Potamogeton sp.div* as typical aquatic plant societies.

Based on our short-term investigations it is quite difficult to draw out any general summarizing conclusion, but basic regularities could be outlined:

1. The association of *Salicetum albae rubosum* has been preserved, even though it has been changed by entering of many high-stem herbaceous species. This type of association is typical for the Bulgarian Danube Islands. Quite typical for the islands is also the presence of *Amorpha fruticosa* L., although it is described by Acad. Stoianov as a progressive species. The *Salicetum albae rubosum* associations were found at some places around the north dyke of Belene Island.
2. The poplar forests practically have disappeared. Nowadays *Populus nigra* L.<sup>3</sup> and *Populus alba* L.<sup>2</sup> are admixed among the willow formations.
3. Of great interest is the fact, that Acad. Stoianov does not register any massive participation of *Ulmus* and *Fraxinus* trees in the forests. Today, at some places they form almost clear formations. This assigns these forests a specific characteristic of "longoss-type" (i.e. dense flood-plain forests, consisting out of winding and climbing species) and increases their conservation value: throughout the whole Europe *Ulmus laevis* Pall. suffer from the so-called Dutch Disease and is threatened with extinction, but at some places on the islands it forms quite lively populations. In the future a special attention should be paid to the Elm and Ash plantations on the islands, and the *Salicetum albae rubosum* association should be conserved as a primary association on the Danube Islands.
4. The vast herbaceous associations described by Acad. Stoianov practically does not exist any more, or as a result of land cultivation and building up are preserved only at some places on the Belene Island. Also, the secondary althohebos association of *Euphorbia lucida* was not established, although *Euphorbia lucida* still forms some small spotty groups in the rare willow forests.
5. Along the sandy and sediment stripes there still exists a *Salicetum triandrea* association, but the "pioneer" group of *Corispermum marshalii* was not established – maybe this species has already disappeared from the Belene Island Complex.
6. The *Dichostilis mishelianus* association typical for the small inner marshes on the islands also was not established.

Conclusion: The observed tree vegetation in the northeast part of Belene Island has preserved its characteristic features of primary willow-poplar alluvial plant societies and "longoss-type" Elm and Ash forests. These types of forests are of unique European importance and even more serious measures for their conservation should be undertaken.

### Marsh Vegetation

Koichev, Iordanov /1981/ have described about 12 associations, mainly in the region of the Dead Marsh (Murtvoto Blato). Some of them consist of, or include some rare and threatened with extinction species. Such are the associations of *Nymphaea alba* L., *Nuphar lutea* (L.), *Trapa natans* L - *Nymphoides flava*.

In addition to the above described species, Kotchev has mention also *Marsilea quadrifolia* L. and *Valisneria spiralis*. The following plant species are very typical for the island marshes: Water-Lily; *Nymphoides flava*; *Trapa natans* – forming vast floating formations in the Dead Marsh /about 400 - 500 decares/; *Azolla caroliniana* and *Salvinie natans*.

In great number can be met also the different representatives of the *Potamogeton* genus - *P.crispus*, *P.fluitans*, *P.pectinatus* and others.

The present state of the marshes arouse a serious anxiety. Almost the whole complex of marsh species has been destroyed or has disappeared. Obviously there are two main reasons: (1) changes of water regime, resulting from the dykes and sluice-gate construction; and (2) the dry period between 1985 and 1993, during which the marshes remained dry for a long period of time. The species, which have survived to date are few in number and can resist to the total drying of water basins thanks to their root tubers. These are mainly species from the *Potamogeton* genus. The following negative changes have been established:

1. The association of *Trapa natans* L. has disappeared.
2. The biggest habitat of *Nymphaea alba* L. in Bulgaria, the Duliova Bara Marsh does not exist any more.
3. Species like *Nuphar lutea*, *Nymphaea alba*, and *Trapa natans* have already disappeared; as well as probably *Marsilea quadrifolia* and *Valisneria spiralis*, although probably there still exist some suitable refugia for the latter mentioned species.

In general, the dead Marsh is not a marsh any more, but a periodically flooded and dried territory. The time duration of these periods is variable. If the marsh bird species -- like ducks, divers and grebes -- can resist to these changes, the marsh species cannot survive in these variable conditions.

Nowadays, the Peschina Marsh is covered with *Typha angustifolia*, *Phragmites australis* and *Shoenoplectus lacustris*. Plants of *Nymphoides flava* form a small cyenoses in the small open water area.

The outlying parts of the Dead Marsh are also covered by reeds and rushes. Among them there was formed a mixed society of *Salvinia natans*, *Azolla caroliniana* and *Lemna minor*. Representatives of *Lemna trisulca* were found in the Duliava Bara Marsh, in small pulls among the reeds.

*Nymphoides flava* and *Persicaria amphibia* form small formations on the surface of the Dead Marsh. The under-water vegetation forms a mixed societies of the following species: *Potamogeton fluitans*, *Ceratophyllum demersum*, and *Potamogeton trichoides*.

Of great interest is the fact that big areas of the Dead Marsh are covered with *Potamogeton trichoides*, a rear species enlisted in the Bulgarian Red Data Book, which makes it necessary to preserve its nature-protecting status. In addition, in the areas surrounding the Marsh representatives of *Salvinia natans*, protected by the Bern Convention, can be met.

In conclusion, we could state, that the following species, enlisted in the Bulgarian Red Data Book probably have disappeared from Belene Islands: *Nuphar lutea*, *Nymphaea alba*, *Trapa natans*, *Isolepis supina*, *Corispermum marshalli*, *Heleocharis carniolio*.

He беше установена *Marsilea quadrifolia*.

The following species, enlisted in the Bulgarian Red Data Book, were found:

1. *Potamogeton trichoides* - rare / the Dead Marsh/
2. *Leucoium aestivum* - threatened /on the islands/
3. *Euphorbia lucida* - threatened /everywhere in the islands' forests/
4. *Nymphoides flava* - rare / the Dead Marsh, Peschina Marsh/
5. *Utricularia vulgaris* L. - rare / the Dead Marsh/
6. *Salvinia natans* - Duluova Bara, the Dead Marsh /the Bern Convention/

In conclusion, we could state that if the water regime of the marshes is even partly restored many of the species mentioned as disappearing, naturally will return back to the island.

Note:

Of great interest is the establishment of *Dryopteris filix-mas* on the Kitka Island. This fact, as well as the information for existence of *Populus tremula* on Milka Island and the statements of Stoianov /1948/ for existence of *Fraxinus* and *Q. robur* associations in the German Danube region witness the natural connection between the Bulgarian Danube Flood-plain forests and those from the Danube upper and middle flow.

## 2. Fauna

In the past \1968-1971\ one of the largest in number heron colonies was located on the island (6000 – 9000 birds) represented by *Ardeola ralloides*, *Egretta garzetta* and *Nycticorax nycticorax*. Of lesser number have nested the following: *Ardea purpurea* (70 couples), *A. cinerea* (2-4 couples), *Platalea leucorodia* (20-60 couples), *Plegadis falcinellus* (700 couples) *Phalacrocorax pygmeus* (40 couples), *Ph. carbo* (140 couples).

The reasons for the appearing and disappearing of the large heron colony are connected to the endikement. The colony develops in great number after the endikement of the neighbouring Danube banks on Romanian land. On the Belene island the colony changes its location several times – on the north and on the south of the Peschina marsh. The colony disappears after the disturbance of and contravention on the food base after the building of the dike on the island. In 1970 it is separated from the river by a belt dike. On the canal connecting the marshes with the Danube River a lock is being set to regulate the water level in them. The separate marshes are isolated from each one by small dikes. A pumping station is built up for the drainage of the arable island land. The regime used for managing the lock has caused the silting up of the canal. Often it has been regulated in order to produce fish from the marshes during the process of draining the high-level waters. The catch of pike is indicative for the quantity of produced fish, which in a certain year has amounted to 40 tons. The high-level Danube waters have not washed the decaying vegetation away, which has caused the silting of the marshes, too. The water level has been kept low – 0.5 m, due to which the marshes got entirely dry in summer. In addition the pumping station has drained the marshes by drilling the underground waters in the vicinity. All this has led to a fast process of eutrophication of the marshes and an accelerated natural succession – at present almost the entire surface of the Peschina marsh is covered by *Phragmites*. This brings a negative impact on the food base of the fish-eating birds and the distribution of euhydrophilic vegetation.

In 1989 the authors of CORINE Site ‘Belene Islands’ give as nesting the following:

*Haliaetus albicilla* - 1 couple, *Aythya nyroca* -5 couples, *Sterna hirundo* - 300 couples, *Sterna albifrons* - 10 couples, *Phalacrocorax pygmeus* – 50 couples, *Nycticorax nycticorax* – 100, *Ardeola ralloides* – 100 couples, *Egretta garzetta* – 150 couples, *Ardea purpurea* – 15 couples, *Plegadis falcinellus* – 100 couples., *Platalea leucorodia* – 150 couples.

Wintering: *Phalacrocorax pygmeus* - 300 specimen, *Haliaetus albicilla* - 5-10 specimen, *Phalacrocorax carbo* –500 specimen.

Migrating: *Phalacrocorax pygmeus* – 500 specimen, *Phalacrocorax carbo* – 1000 specimen, *Ciconia nigra* – 100 specimen.

From the given ‘Ornithological Important Places’ ‘Belene Islands Complex’ an impression give the large (for this condition of the wetlands) numbers of *Aythya nyroca* – 10 couples. The authors present rather modest (compared to previous ones) data about the nesting:

*Nycticorax nycticorax* – 10 couples, *Ardeola ralloides* – 58 couples, *Plegadis falcinellus* – 60 couples, *Platalea leucorodia* – 22 couples, *Phalacrocorax pigmeus* – 40 couples.

The two previous sources do not give the clear location of the nesting colonies. During our visits in the Belene Island Groups such a colony was not recorded.

On a Green Balkans expedition (1998) a mixed colony was recorded located on a Romanian Island (at km. 573, opposite the cape of Golyama Burzina Island) with a composition of *Phalacrocorax pigmeus* – 10 couples, *Phalacrocorax carbo* – 140 couples, *Nycticorax nycticorax* – 25 couples, *Ardeola ralloides* – 15 couples, *Egretta garzetta* – 30 couples, *Ardea cinerea* – 15 couples, *Platalea leucorodia* – 15 couples. Observations are implemented from a single observation post without the possibility of viewing from the Romanian side. Corrections on the numbers of nesting birds could be made on a better possibility for observations. We think that this colony is ‘a heir apparent’ of the colony, described on Belene Island in the 70’s, and has all chances to return after the restoration of the wetlands.

Larger parts of the birds used to feed in the canal between Golyama Burzina Island and Belene Island. The two canal openings are almost closed (even at high-level waters). It is 10 km long with its west part strongly shallow. We think a process of forming ‘inner lakes’ is going on at connecting Belene Islands with its neighbouring islands on the north. Hydrophilous vegetation is already advanced on parts (*Potamogeton sp.*) – a substratum appropriate for spawning.

On the Belene Island the following interesting species were recorded:

*Hirudo medicinalis* – of large numbers in the Murtvo Marsh (at a 0.5 m depth in the moment of research). Here we observed 30 *A. nyrocca* along with feeding herons and Spoonbills. Murtvo Marsh attracted our interest with 30-50 nesting couples *A. anser*.

There are great numbers of *Sus Scrofa* – 2000 specimen, according to prison officers.

#### IV. LITERATURE

1. Цонев Р., Марин С. Експедиция по р. Дунав 08.10 –23.10 1998 г., Програма “Зелен Дунав”, Проект “Български Дунавски острови”. Екип от: Федерация Зелени Балкани - Симеон Марин, Константин Дичев, Илиян Стоев, Георги А. Стоянов, Джим Дей, Стефан Стайков; Зелени Балкани - София: Росен Цонев, Петър Шурулинков, Мария Богданова; СКОПС - Златанка Донева, Стоян Стоянов
2. ”Предложение за обявяване на ЗТ Природен парк Персина”. 12. 1999г. Зелени Балкани
3. “Стратегия за опазване и възстановяване на заливни гори по българските дунавски острови” 2000 г. МЗГ/НУГ/,WWF, МОСВ, Зелени Балкани.
4. Spiridonov, G., Meshinev, T., Iankov, P., Peev, D. “BELENSKI ISLANDS”, 1996, Habitats in Bulgarian CORINE sites.

5. Karapetkova, M., Zivkov, M. 1995. Fishes in Bulgaria, Gea Libris.
6. IUCN Red List, 2000
7. Коцева С., Петков Н., Янков 1977. “Комплекс Беленски острови” - в “Орнитологично важни места в България”, БДЗП, Природозащитна поредица. Книга 1. Костадинова, И. /съст./. БДЗП, София, стр.74
8. Мичев, Т., П. Янков, 1993. “Орнитофауна” - в “Национална стратегия за опазване на биологичното разнообразие - основни доклади”, том 1, стр. 585
9. Дичев, К.. 11 – 18. 09. 2000 г. Мониторинг на орнитофауната по р. Дунав между с. Орсоя и гр. Силистра. Експедиция на Зелени Балкани и WWF.
10. Бончев, Г. Блатата в България, Сведения по земеделието, С., Министерство на земеделието и държавните имоти, 1929
11. Георгиев, М. Ландшафтознание. Земиздат, С., 1982
12. Георгиев, М. Физическа география на България. Университетско издателство “Св. Климент Охридски”, С., 1991
13. Груев, Б., Б. Кузманов. Обща биогеография. Университетско издателство “Св. Климент Охридски”, С., 1994
14. Гюров, Г., Т. Тотев. Почвознание. Земиздат, С., 1990
15. Енциклопедия на България, т. 1-6 С.,1980
16. Змеев, Р. Тутракан, Издателство на ОФ, С. 1987г.
17. Иширков, А. Хидрография на България, Годишник на Софийския университет, кн.5, вр.1, стр 16-18, С.1910
18. Йорданов, Д. Върху разпространението на степната растителност в България, Сборник на БАН, кн. 32, клон Природо-математичен, 15, С, 1936г.
19. Каниц, Ф. Дунавска България и Балканът, ИК “Борина”, С. 1995 г.
20. Кожухаров, Ст., В. Найденов, Биоресурсите на България, Народна просвета, С. 1979
21. Кочев, Хр., Д. Йорданов. Макрофитна растителност придунайских водоемов Болгарии и изменением под влиянием человека и их охрана, Ботанической журнал, т.61, 9, М. 1976г.
22. Кочев, Хр., Д. Йорданов. Растителност на водоемите в България, БАН, С. 1981г.
23. Лимнология на българския сектор на река Дунав, С. БАН 1978г.
24. Марков, К. Епидемиология и борба с маларията в България, Сборник на БАН, кн. 25, клон Природо-математичен, 11, С, 1929г.

25. Национален план за приоритетни действия по опазване на най-значимите влажни зони на България, МОС, С. 1994г.
26. Орнитологично важни места в България, БДЗП, С, 1997г.
27. Петков, Ст. Българското дунавско блатно-мочурно крайбрежие, Летопис на Българското книжовно дружество, кн.11 1910г., С 1911
28. Петков, Ст. Предварителни издирвания по блатната флора на дунавското българско крайбрежие, Годишник на Софийския университет, кн.6, вр.2, стр 1-45, С.1911
29. Риболовът в бита и културата на българите, Сборник с изследвания, Етнографски институт с музей при БАН, Силистра 1985г.
30. Симеонов, С. и кол., Фауна на България, БАН, С. 1990г.
31. Цанов, Ц. Заливните гори по Дунавското поречие на България, БАН, С. 1992г.
32. Червена книга на НР България, том 1, 2, БАН, С, 1985г.
- 33, 34, 35, 36. Национална стратегия за опазване на биоразнообразието: докладите за рибите, земноводните, влечугите, бозайниците.

## **V. LIST OF APPENDICES**

- 1. Phyto-characteristics of the region of Belene Island**
- 2. Fauna**
  - 2.1 Fish**
  - 2.2 Ornithofauna**
  - 2.3 Mammalia**

## APPENDIX №1 Vegetation: Phyto-characteristics of the region of Belene Island

### The Belene Island

The vegetation of the Belene Island has been changes at many places: there were poplar plantations and arable lands. The only areas with preserved vegetation are situated to the north of the so-called Dead Marsh (Murtvoto Blato), towards the dyke's sluice gate (this area is known as "Gardata" in Bulgarian).

The forests are similar to the ones described by N. Stoianov (1948), but with many ruderal and cultivated species (like the *Amorpha fruticosa* L.), which due to the bigger lighting have penetrated into the forests.

The forests consist of *Salix alba* L., with participation of *Populus nigra* L., *Populus alba* L., *Ulmus laevis* Pall.

Bush layer: *Amorpha fruticosa* L.

Gras layer: *Rubus caesius var. aquaticus* L.

There are many lower places covered with *Typha angustifolia* L., *Bolboschoenus maritimus* Palla, *Carex pseudocyperus* L..

Other plant species met on the island:

*Urtica dioica* L.

*Cirsium creticum* (Lam.) D'Urv.

*Galium palustre* L.

*Rumex hydrolapathum* Huds.

*Lysimachia vulgaris* L.

*Bryonia alba* L.

*Oenanthe aquatica* (L.) Poir.

\* *Euphorbia palustris* L. (*E. iucida* W. et K.)

Winding plants: *Humulus lupulus* L.

### The marshes of the Belene Island

#### Peschina

The whole marsh area is covered by: *Typha angustifolia* L. & *Phragmites australis* (Cav.) Trin ex Steud.

Many bog and marsh species or species, typical for wet meadows, grow in the outlying parts of the marsh:

*Shoenoplectus lacustris* (L.) Palla -- grow highly among the rushes

*Carex divisa* Huds.

*Carex flacca* Schreb.

*Poa palustris* L.

*Phalaroides arundinaceae* (L.) Rausch.  
*Juncus inflexus* L.  
*Althaea officinalis* L.  
*Potentilla reptans* L.  
*Holoschoenus vulgaris* Link  
*Tanacetum vulgare* L.  
*Bolboschoenus maritimus* Palla  
*Agrostis stolonifera* L.(*A. alba* auct.) and others.

### **The Dead Marsh (Murtvoto Blato)**

It has very broad open water area, about 60 ha and periodically dries up. Many of its plant species have disappeared:

\* *Nymphaea alba* L.,  
\* *Nuphar lutea* (L.), S. et S.  
*Trapa natans* L.  
probably \* *Marsilea quadrifolia* L.

The species that have remained are such that can survive the drying up of the marsh. The inner parts of the marsh are occupied by the plant communities of the following three species:

*Potamogeton nodosus* Poir. (P. fluitans p. p.)  
\* *Potamogeton trichoides* Cham. Et Schlecht.  
*Ceratophyllum demersum* L.

There are single spots of : \* *Nymphoides peltata* (S. G. Gmel.) Kuntze

In the outlying parts of the marsh there is a reeds-and-rushes bed of *Typha angustifolia* L. & *Phragmites australis* (Cav.) Trin ex Steud.; and as a second layer there are formations of:

*Lemna minor* L.  
# *Salvinia natans* (L.) All.  
*Azolla caroliniana* Willd.

With single participation are: *Hydrocharis morsus-ranae* L.

*Oenanthe aquatica* (L.) Poir.  
*Ranunculus trichophyllus* Chaix  
*Persicaria amphibia* (L.) S. F. Grey  
*Alisma lanceolatum* With.  
*Sparganium erectum* L. (*S. ramosum* Huds.)

### **The Duliova Bara Marsh**

This marsh is almost dried up (because of pumping of water for the prison site No. 2).

A plant community of *Typha angustifolia* L. & *Phragmites australis* (Cav.) Trin ex Steud.

In the several preserved areas with water (corridors and small puddles) the following plant species can be met:

\* *Nymphoides peltata* (S. G. Gmel.) Kuntze

\* *Utricularia vulgaris* L.

. *Potamogeton lucens* L.

. *Sparganium erectum* L. (*S. ramosum* Huds.)

# *Salvinia natans* (L.) All.

*Lemna minor* L.

*Lemna trisulca* L.

### **The Belene Island – ruderal vegetation (along the roads and the dykes)**

#### **Predominant species:**

*Verbascum blattaria*

*Verbascum phlomoides*

*Verbascum lychnitis*

#### **In large numbers:**

*Elymus repens*

*Cynodon dactylon*

*Hordeum murinum*

*Sclerchloa dura*

*Poa pratense*

*Poa compressa*

*Bromus mollis*

*Bromus sterilis*

#### **The following species also can be met:**

*Tragopogon dubium*

*Allium scordoprasum*

*Trifolium campestr*

*Veronica persica*

*Chondrilla juncea*

*Potentilla neglecta*

*Carduus nutan*

*Stellaria media*

*Rumex crispu*

*Coronilla varia*

*Glyciriza echinata*

*Tordilium maximum*

*Galium aparine*

*Lens nigricans*

*Erigeron acer*

*Medicago sativa*

*Cyoglossum hungaricum*

*Veronica arvensis*

*Cichorium intybus*

*Plantago lanceolata*

*Erodium cicutarium*

*Plantago major*

*Torilis arvense*

*Taraxacum officinale*

*Verbena officinalis*

*Agrostis alba*

*Papaver rhoeas*

*Hypericum perforatum*

<i>Sonchus oleraceus</i>	<i>Equisetum ramosissimum</i>
<i>Convolvulus arvensis</i>	<i>Solidago canadense</i>
<i>Artemisia vulgaris</i>	<i>Onopordon acantium</i>
<i>Chenopodium album</i>	<i>Vicia sativa</i>
<i>Crepis setosa</i>	<i>Poa annua</i>
<i>Conium maculatum</i>	<i>Aegilops cylindricus</i>
<i>Petrorrhagia prolifera</i>	<i>Achillea millefolium</i>
<i>Carex flacca</i>	<i>Aristolochia clematidis</i>
<i>Glechoma hederaceae</i>	<i>Rorippa sylestris</i>
<i>Sorghum halepense</i>	<i>Verbascum nigrum</i>
<i>Xanthium strumarium</i>	<i>Rumex conglomeratus</i>
<i>Cynanchum acutum</i>	

### Conclusion

Several rare and endangered species, enlisted in the Bulgarian Red Data Book were found, including:

- \* *Potamogeton trichoides* Cham. Et Schlecht. -- rare
- \* *Nymphoides peltata* (S. G. Gmel.) Kuntze -- rare
- \* *Utricularia vulgaris* L. -- rare
- \* *Euphorbia palustris* L. (E.iucida W. et K.) -- endangered
- \* *Leucojum aestivum* L. -- endangered

The island, as a habitat of rare plant species, have lost the significance, they had in the nearest past. But, as area with unique flood-plain forests they still remain of significant interest.

In the disappearing Danube island marshes, the only ones of this type in Bulgaria, still can be met plant species, protected by the Bern Convention (# *Salvinia natans* (L.) All).

\* - plants enlisted in the Bulgarian Red Data Book

#-- plants species protected by the Bern Convention

**Species Composition and Conservation Status of the Fauna Inhabiting the Belene Island**

Table 2.1 - Fish

?	Fish species occurring in the Danube river	Conservation Status			
		Red Data Book	Bern Convention	CITES	IUCN Red List
	<b>Acipenseridae</b>				
1	Huso huso		+		+
2	Acipenser nudiventris	+		+	+
3	Acipenser ruthenus		+	+	+
4	Acipenser sturio	+	+	+	+
5	Acipenser stellatus		+	+	+
6	Acipenser gueldenstaedti			+	+
	<b>Clupeidae</b>				
7	Alosa pontica pontica		+		+
8	Alosa caspia nordmani				
	<b>Salmonidae</b>				
9	Salmo trutta labrax				
10	Hocho hucho			+	
	<b>Esocidae</b>				
11	Esox lucius				
	<b>Cyprinidae</b>				
12	Rutilus rutilus mariza				
13	Leuciscus cephalus				
14	Leuciscus idus				
15	Scardinius erythrophthalmus				
16	Aspius aspius		+		
17	Tinca tinca				
18	Chalcalburnus chalcoides	+	+		+
19	Alburnus alburnus		+		
20	Blicca bjoerkna				
21	Abramis brama				
22	Abramis sapa		+		
23	Abramis ballerus		+		
24	Vimba vimba carinata				
25	Pelecus cultratus				
26	Chondrostoma nasus nasus				
27	Rhodeus sericeus amarus		+		
28	Pseudorasbora parva				
29	Gobio gobio gobio				
30	Gobio kessleri		+		+
31	Gobio albipinnatus		+		+
32	Barbus barbus				
33	Cyprinus carpio				+
34	Carassius carassius				+
35	Hypophthalmichthys molitrix				
36	Aristichthys nobilis				
37	Ctenopharingodon idella				
	<b>Cobitidae</b>				
38	Noemacheilus barbatulus				
39	Misgurnus fossilis		+		+
40	Cobitis taenia		+		
41	Cobitis elongata elongata		+		+

42	Sabanejwia bulgarica				
	<b>Siluridae</b>				
43	Silurus glanis		+		
	<b>Anguillidae</b>				
44	Anguilla anguilla	+			
	<b>Gadidae</b>				
45	Lota lota	+			
	<b>Gasterostiedae</b>				
46	Pungitius platygaster	+			
	<b>Syngnathidae</b>				
47	Sygnathus nigrolineatus				+
	<b>Centrarchidae</b>				
48	Lepomis gibbosus				
	<b>Percidae</b>				
49	Stizostedion lucioperca				
50	Stizostedion volgense	+	+		+
51	Perca fluviatilis				
52	Zingel zingel		+		+
53	Zingel streber		+		+
54	Gymnocephalus cernuus				
55	Gymnocephalus baloni		+		+
56	Gymnocephalus schraetzer		+		+
	<b>Gobiidae</b>				
57	Neogobius melanostomus				+
58	Neogobius cephalarges				
59	Neogobius kessleri	+	+		+
60	Neogobius fluviatilis		+		+
61	Mesogobius gymnotrachelus				+
62	Proterorhinus marmoratus				
63	Benthophilus stellatus	+			
	Total number:	9	24	6	24

Species Composition and Conservation Status of the Fauna Inhabiting Belene Island

Table 2.2 - Birds

	Species	Nesting	Wintering	Migrating	Conservation Status											
					UCN Red Lis	NPA	RDB	SPEC	ETC	BERN	RAMSAR		CITES	BONN	WBD	
												nesting	wintering			
1	<i>Gavia arctica</i>			+		+				V	II				II	I
2	<i>Tachybaptus ruficollis</i>	+	+	+		+				S	II					
3	<i>Podiceps cristatus</i>	+	+	+		+				S	III					
4	<i>Podiceps grisegena</i>	+		+		+	R			S	II					
5	<i>Phalacrocorax carbo</i>	+	+	+		+	T			S	III	100	1000			
6	<i>Phalacrocorax pygmeus</i>	+	+	+	LR/nt	+	T	2	V	II		50	250		II	I
7	<i>Pelecanus onocrotalus</i>			+		+	E	3	R	II			800		I & II	I
8	<i>Pelecanus crispus</i>			+	LR/cd	+	T	1	V	II		ALL	25		I	I & II
9	<i>Botaurus stellaris</i>		+			+	T	3	(V)	II		25			II	I
10	<i>Ixobrychus minutus</i>	+				+		3	(V)	II					II	I
11	<i>Nycticorax nycticorax</i>	+				+		3	D	II		200	600			I
12	<i>Ardeola ralloides</i>	+				+		3	V	II		40	120			I
13	<i>Egretta garzetta</i>	+				+			S	II		130	400	III		
14	<i>Egretta alba</i>		+	+		+	T		S	II		5	120	III	II	
15	<i>Ardea cinerea</i>	+	+			+			S	III						
16	<i>Ardea purpurea</i>			+		+	T	3	V	II		65	200		II	I
17	<i>Ciconia nigra</i>	+		+		+	T	3	R	II			350	II	II	I
18	<i>Ciconia ciconia</i>	+		+		+		2	V	II			4000		II	I
19	<i>Plegadis falcinellus</i>			+		+	T	3	D	II		35	100		II	I
20	<i>Platalea leucorodia</i>	+		+		+	T	2	E	II		20	60	II	II	I
21	<i>Cygnus olor</i>		+	+		+	T		S	III			450		II	
22	<i>Anser fabalis</i>					+			S	III			170		II	
23	<i>Anser albifrons</i>		+	+					S	II			1000		II	
24	<i>Anser erythropus</i>				VU A1acd+2bc	+	T	1	V	II			6500		II	I
25	<i>Anas penelope</i>	+		+					S	III			40	III	II	
26	<i>Anser anser</i>	+	+			+	T		S	III			5600		II	
27	<i>Branta ruficollis</i>		+		VU B1+2c	+	T	1	L	II		250		II	II	I
28	<i>Anas strepera</i>			+		+	T	3	V	III			700		II	II/1
29	<i>Anas crecca</i>		+						S	III			200	III	II	
30	<i>Anas platyrhynchos</i>	+	+	+					S	III			1000		II	
31	<i>Anas acuta</i>	+	+					3	V	III			10500	III	II	III -1 & III -2
32	<i>Anas querquedula</i>			+				3	V	III			20000	II		II 1
33	<i>Anas clypeata</i>	+	+	+					S	III			12000	III	II	
34	<i>Aythya ferina</i>	+	+	+		+	T	4	S	III			20000		II	III -1 & III -2
35	<i>Aythya nyroca</i>	+		+	LR/nt	+	T	1	V	III			4500	III	II	I
36	<i>Aythya fuligula</i>		+	+					S	III			10000		II	
37	<i>Pernis apivorus</i>	+		+		+	T	4	S	II			300	II	II	I
38	<i>Milvus migrans</i>	+				+	T	3	V	II			6000	II	II	I
39	<i>Haliaeetus albicilla</i>	+	+		LR/nt	+	T	3	R	II				I	II	I
40	<i>Circus aeruginosus</i>	+		+		+	T		S	II				II	II	
41	<i>Accipiter gentilis</i>	+	+			+	T		S	II				II	II	
42	<i>Accipiter nisus</i>	+	+			+	T		S	II				II	II	
43	<i>Accipiter brevipes</i>			+		+	T	2	R	II				II	II	I
44	<i>Buteo buteo</i>	+	+	+		+			S	II				II	II	
45	<i>Aquila pomarina</i>	+		+		+	T	3	R	II				II	II	I
46	<i>Hieraaetus pennatus</i>		+			+	T	3	R	II				II	II	I
47	<i>Pandion haliaetus</i>			+		+	T	3	R	II				II	II	I
48	<i>Falco tinnunculus</i>	+	+			+		3	D	II				II	II	
49	<i>Falco subbuteo</i>	+		+		+	T		S	II				II	II	
50	<i>Perdix perdix</i>	+						3	V	III						II -1 & III -1
51	<i>Coturnix coturnix</i>	+		+				3	V	III					II	II -2
52	<i>Phasianis colchicus</i>	+	+				T		S	III						
53	<i>Rallus aquaticus</i>	+	+	+					(S)	III						
54	<i>Crex crex</i>	+			VU A2c	+	T	1	V	II						I

LEGEND:

**IUCN Red List** - List of IUCN of globally threatened species (World Red Data Book)

**NPA** - Order ? 342 from 21.04.198? of the 'Committee for the Protection of the Environment' for the conservation of threatened to extinction species and rare bird species, State Gazette, issue 42, 30.05.1986?.

**RDB** -Species enlisted in the Red Data Book of Bulgaria:

**R** - rare

**T** - threatened

**E** - extinct

**SPEC** - species of European conservation value according to 'Birds in Europe: Their Conservation Status' (Tucker, Heath, 1994).

SPEC species are divided in the following 4 categories:

**SPEC1:** Species in Europe of a global conservation concern because of their status of being globally threatened, conservation-dependant or data deficient.

**SPEC2:** Species whose world populations are concentrated in Europe and which have an unfavourable nature conservation status in Europe.

**SPEC3:** Species whose populations are not concentrated in Europe but which have an unfavourable conservation status in Europe.

**SPEC4:** Species whose global populations are concentrated in Europe and have a favourable nature conservation status in Europe.

**ETS** - Status of globally threatened European birds according to 'Birds in Europe: Their Conservation Status' (Tucker, Heath, 1994).

Status of globally threatened species:

? - Endangered:

**V** - Vulnerable:

**R** - Rare:

**D** - Declining:

**L** - Localised:

**S** - Stable:

( ) - status is temporary

**RAMSAR** - Species, enlisted in the Convention for the Internationally Significant Wetlands.

**BERN** - Species, enlisted in the Convention for the Conservation of European Wildlife Flora and Fauna and nature habitats.

**CITES** - Species, enlisted in the Convention for the International Trade with Threatened and Endangered Species of the wildlife flora and fauna.

**BONN** - Species, enlisted in the Convention for the Protection of Migrating Wild Animals.

**WBD** - Species included in the EC Directive for Wildlife Protection

55	<i>Gallinula chloropus</i>	+	+			+			S	III							
56	<i>Fulica atra</i>	+	+						S	III		20000			II		
57	<i>Haematopus ostralegus</i>	+		+		+	T		S	III		7500					
58	<i>Burchinus oedicephalus</i>	+				+	T	3	V	II				II		I	
59	<i>Charadrius dubius</i>	+		+		+			S	II				II			
60	<i>Vanellus vanellus</i>	+		+		+			(S)	III		20000		II			
61	<i>Calidris minuta</i>					+			(S)	II		*		II			
62	<i>Calidris ferruginea</i>			+		+				II		*		II			
63	<i>Calidris alpina</i>			+		+		3	V	II		20000		II			
64	<i>Philomachus pugnax</i>			+		+		4	(S)	III		*		II		I & II/2	
65	<i>Tringa Totanus</i>			+		+						*					
66	<i>Tringa ochropus</i>	+		+		+	T		(S)	II				II			
67	<i>Actitis hypoleucos</i>			+		+			S	III				II			
68	<i>Larus melanocephalus</i>			+		+	R	4	S	II				II		I	
69	<i>Larus minutus</i>			+		+		3	D	II							
70	<i>Larus ridibundus</i>			+		+	R		S	III							
71	<i>Larus cachinans</i>		+	+					(S)	III							
72	<i>Sterna hirundo</i>	+		+		+			S	II	700			II			
73	<i>Sterna albifrons</i>	+		+		+	T	3	D	II	100			II		I	
74	<i>Chlidonias hybridus</i>	+		+		+	T	3	D	II	750			II			
75	<i>Chlidonias niger</i>			+		+	T	3	D	II	200	600		II		I	
76	<i>Chlidonias leucopterus</i>			+		+			S	II				II			
77	<i>Columba oenas</i>	+	+			+	T	4	S	III						II/2	
78	<i>Columba palumbus</i>	+						4	S	III							
79	<i>Streptopelia turtur</i>	+						3	D	III				III		II-2	
80	<i>Cuculus canorus</i>	+		+		+			S	III							
81	<i>Tyto alba</i>	+		+		+	R	3	D	II				II			
82	<i>Otus scops</i>	+	+			+		2	D	II				II			
83	<i>Bubo bubo</i>	+				+	T	3	V	??				??			
84	<i>Athene noctua</i>	+				+		3	D	II				II			
85	<i>Strix aluco</i>	+	+			+		4	S	II				II			
86	<i>Asio otus</i>	+		+		+			S	II				II			
87	<i>Alcedo atthis</i>	+	+			+		3	D	II						I	
88	<i>Merops apiaster</i>	+		+		+		3	D	II				II			
89	<i>Coracias garrulus</i>	+		+		+		2	(D)	II				II		I	
90	<i>Upupa epops</i>	+		+		+			S	II							
91	<i>Jynx torquilla</i>	+		+		+		3	D	II							
92	<i>Picus canus</i>	+				+		3	D	II						I	
93	<i>Picus viridis</i>	+	+			+		2	D	II							
94	<i>Driocopus martius</i>	+				+	R		S	II							
95	<i>Dendrocopos major</i>	+	+			+			S	II							
96	<i>Dendrocopos syriacus</i>	+				+		4	(S)	II						I	
97	<i>Dendrocopos medius</i>	+				+		4	S	II						I	
98	<i>Dendrocopos minor</i>	+				+			S	II							
99	<i>Galerida cristata</i>	+				+		3	(D)	III							
100	<i>Alauda arvensis</i>	+				+		3	V	III						II-2	
101	<i>Riparia riparia</i>	+		+		+		3	D	II							
102	<i>Hirundo rustica</i>	+		+		+		3	D	II							
103	<i>Delichon urbica</i>	+		+		+			S	II							
104	<i>Motacilla flava</i>	+				+			S	II							
105	<i>Troglodytes troglodytes</i>	+				+			S	II							
106	<i>Erithacus rubecula</i>	+	+			+		4	S	II				II			
107	<i>Luscinia megarhynchos</i>	+		+		+		4	(S)	II				II			
108	<i>Turdus merula</i>	+	+			+		4	S	III				II		II/2	
109	<i>Turdus philomelos</i>	+				+		4	S	III				II		II/2	
110	<i>Cettia cetti</i>	+				+			S	III				II			
111	<i>Locustella fluviatilis</i>	+				+		4	S	II				II			
112	<i>Locustella luscinioides</i>	+				+		4	(S)	II				II			
113	<i>Acrocephalus palustris</i>	+				+		4	S	II			.? 4	II			
114	<i>Acrocephalus scirpaceus</i>	+				+		4	S	II				II			
115	<i>Acrocephalus arundinaceus</i>	+				+			(S)	II				II			

116	<i>Hippolais pallida</i>	+				+		3	-5	II				II	
117	<i>Hippolais icterina</i>	+				+		4	S	II				II	
118	<i>Sylvia nisoria</i>	+													
119	<i>Sylvia curruca</i>	+				+			S	II				II	
120	<i>Sylvia communis</i>	+				+		4	S	II				II	
121	<i>Sylvia atricapilla</i>	+				+		4	S	II				II	
122	<i>Phylloscopus collybitus</i>	+		+		+			(S)	II				II	
123	<i>Phylloscopus trochilus</i>			+		+			S	II				II	
124	<i>Muscicapa striata</i>	+		+		+		3	D	II				II	
125	<i>Panurus biarmicus</i>			+		+		P	(S)	II					
126	<i>Aegithalos caudatus</i>			+		+			S	III					
127	<i>Parus palustris</i>	+							S	II					
128	<i>Parus caeruleus</i>	+				+		4	S	II					
129	<i>Parus major</i>	+				+			S	II					
130	<i>Sitta europea</i>	+				+			S	II					
131	<i>Remiz pendulinus</i>	+		+		+			(S)	III					
132	<i>Oriolus oriolus</i>	+		+		+			S	II					
133	<i>Lanius collurio</i>	+		+		+		3	(D)	II					I
134	<i>Lanius minor</i>	+		+		+		2	(D)	II					I
135	<i>Lanius excubitor</i>			+		+		2	V	II					
136	<i>Garrulus glandarius</i>			+	+				(S)						
137	<i>Pica pica</i>	+		+					S						
138	<i>Corvus monedula</i>	+		+				4	(S)						II-2
139	<i>Corvus frugilegus</i>	+		+					S						
140	<i>Corvus corone cornix</i>	+		+					S						
141	<i>Sturnus vulgaris</i>	+		+	+				S						
142	<i>Passer domesticus</i>	+		+					S						
143	<i>Passer hispaniolensis</i>	+				+			(S)	III					
144	<i>Passer montanus</i>	+							S	III					
145	<i>Fringilla coelebs</i>	+		+		+		4	S	III					
146	<i>Carduelis chloris</i>	+		+		+		4	S	III					
147	<i>Carduelis carduelis</i>	+		+		+			(S)	III					
148	<i>Carduelis spinus</i>			+		+		4	S	III					
149	<i>Carduelis cannabina</i>	+				+		4	S	II					
150	<i>Coccothraustes coccothra</i>	+				+			S	III					
151	<i>Emberiza citrinella</i>	+		+		+		4	(S)	III					
152	<i>Emberiza schoeniclus</i>			+	+	+			S	II					
153	<i>Emberiza melanocephala</i>			+		+		2	-5	II					
154	<i>Emberisa calandra</i>	+				+		4	(S)	III					
	<b>154</b>	115	50	77											

## Species Composition and Conservation Status of the Fauna Inhabiting Belene Island

Table 2.3 - Mammalia

?	Representatives of the Mammalia class occurring in the Danube plain	Conservation Status			
		Red Data Book	Bern Convention	CITES	IUCN Red List
	<b>INSECTIVORA</b>				
1	Erinaceus concolor				
2	Talpa europaea				
3	Sorex araneus		+		
4	Neomys anomalus				
5	Crocidura leucodon				
6	Crocidura suaveolens		+		
	<b>RODENTIA</b>				
7	Lepus europaeus				
8	Sciurus vulgaris				+
9	Spermophilus citellus		+		+
10	Dryomys nitedula				+
11	Glis glis		+		+
12	Muscardinus avellanarius				+
13	Apodemus flavicollis				
14	Apodemus sylvaticus				
15	Apodemus agrarius				
16	Rattus rattus				
17	Rattus norvegicus				
18	Mus spicilegus				+
19	Cricetus cricetus	+	+		
20	Mesocricetus newtoni				
21	Cricetulus migratorius	+			+
22	Clethrionomys glareolus *				
23	Arvicola terrestris				
24	Microtus arvalis				
25	Microtus subterraneus				
26	Nannospalax leucodon				+
	<b>CARNIVORA</b>				
27	Canis aureus				
28	Lutra lutra	+		+	+
29	Nyctereutes procyonoides				
30	Mustela nivalis				
31	Mustela putorius				
32	Meles meles				
33	Vulpes vulpes				
34	Felis silvestris			+	
	<b>ARTIODACTILA</b>				
35	Sus scrofa				
36	Cervus elaphus				
37	Vormela peregusna	+	+		+
38	Capreolus capreolus				
	<b>Total number:</b>	4	6	2	10
* Data concerning the presence of the species require confirmation					