

BIODIVERSITY IN THE AREA OF KALIMOK AND BRUSHLEN MARSHES, BULGARIA

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



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I. GENERAL CHARACTERISTICS OF THE AREA

1. Location, Climate, Soils, Hydrology

Location

The area is situated along the Tutrakan Lowland, including all the Bulgarian islands in that part of the Danube River: Mishka, Malak Brushlen, Goljam Brushlen, Pjasachnik, Bezimenen, Kalimok, Radecki and Tutrakan.

The area falls into the territory of two municipalities – Slivo Pole and Tutrakan, two State Forestries – Rousse and Tutrakan, two Regional Forestry Boards – Rousse and Silistra, two districts – Rousse and Silistra, and one Regional Inspectorate of the Environment and Waters (RIEW) - Rousse.

Climate

According to the classification of climatic regions of Bulgaria, the Tutrakan Lowland 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 of the protected area. The Humofluvisols and the Gleysols occupy the Danube islands and the riverine terraces, and the Fluvisols occur sporadically on the islands.

Hydrology

Considerable changes in the natural hydrological regime of the territory are due to the dike construction works of the Tutrakan Lowland near the Danube River, that resulted in coastal embankment as late as 1947. The direct link of the bogs with the Danube River is interrupted, which causes decreasing of their water level and drying. The embankments also stopped the regular flooding of the lowlands during the high spring waters of the Danube. These destructive consequences were forced also by the construction of irrigation and drainage system up to 1952. This system caused additional drying of the former flooded lands and marshes.

The riverbeds of the two rivulets – Barata and Staroselska – have been corrected, deepened, and turned into draining canals.

The system in the area under consideration consists of four draining, four irrigation pump stations, and a system of draining and irrigation canals.

To this date, there are two draining and one irrigation pump stations that have not been plundered and are still functioning. Two draining pump stations and the two pump stations supplying the fishpond have been completely plundered and irretrievably destroyed.

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

In the marshes and wetlands in the Tutrakan Plain, the spot marshes and the drainage channels, the following plant formations could be found:

- Formations of hydrophytic plants, growing below the water surface and without root contact with the ground - *Ceratophyllum demersum*;
- Plant formations consisting of water plant species, keeping their leaves on the water surface and without root contact with the ground - *Salvinia natans*, *Azolla filicoides*, *Spirodela polirrhiza*, *Lemna minor*, *Wolffia arrhiza*;
- Plant formations, consisting of plant species keeping their leaves on the water surface and fixed to the ground – *Potamogeton nodosus*, *Potamogeton trichoides*, *Hydrocharis mors-ranae*, *Nymphoides flava*, *Myriophyllum verticillatum*, *Myriophyllum spicatum*, *Trapa natans*, *Nymphaea alba*, *Nuphar lutea*;
- Grass and acidophylous plant formations - consisting of *Typha angustifolia*, *Typha latifolia*, *Diglyphis arundinacea*, *Phragmites australis*;
- Plant formations of high Cyperaceous species – *Schoenoplectus lacustris*;
- Plant formations of intermediate high and low grass species - *Glyceria aquatica*;
- Plant formations of intermediate high Cyperaceous and Juncaceous species - *Bolboschoenus maritimus*, *Pycnus longus*, *Sparganium ramosum*, *Butomus umbellatus*, *Oenanthe aquatica*.

The forest communities are represented by forests along the river streams and on the islands. Among the most interesting communities from the conservation point of view are these with *Populus alba*, *Populus nigra*, different willow (*Salix*) species, *Ulmus minor*, *Tilia atgentea*, *Tilia grandifolia* and some shrubby elements. Also the forest communities include natural stands of *Quercus cerris*, *Quercus pubescens*, *Carpinus orientalis*, *Acer campestre*, *Fraxinus ornus*, and artificial stands of *Robinia pseudoacacia* and *Populus x euroamericana*.

The natural forest communities on the islands consist of different plant associations, dominated by willows - mainly *Salix alba*. Also the following species participate in the associations: *Populus nigra*, *Populus alba*, *Ulmus laevis* and in the shrubby layer: *Amorpha*

fruticosa and *Rubus caesius* var. *aquaticus*. Rarer communities are these dominated by *Ulmus laevis*, *Fraxinus oxycarpa*, *Populus alba* with single individuals of *Populus nigra*. The zones along the river banks are characterized by different groups of *Salix alba* and *Salix triandra*.

In the area of Kalimok, there have been recorded eight species of rare and threatened plants, enlisted in the Red Data Book of Bulgaria, among which *Nuphar lutea*, *Utricularia vulgaris*, and *Marsilea quadrifolia* – enlisted in the Bern Convention.

2. Fauna

The habitat diversity in the area of Kalimok and Brushlen Marshes is a precondition for the diverse fauna.

As of today, the following representatives of the invertebrate fauna have been described: *Sympecma fusca*, *Gomphus flavipes*, *Viviparus acerosus*, *Fagotia esperi*, *Helix pomatia*, *Pseudonanodonta complanata*, *Unio crassus*, *Calosoma sycophanta*, *Carabus intricatus*, *Osmoderma eremita*, *Lucanus cervus*, *Formica pratensis*, *Palingenia longicauda*, *Astacus astacus*, *Argironeta aquatica*, *Proseprinus proseprina*, *Hirundo medicinalis*. The area is of essential importance for the conservation of the population of four of these species. Three of them have been included in the appendices of the Bern Convention.

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. Despite the disrupted hydrological regime and the broken link with the Danube, 12 of the above-mentioned species have been recorded in the Kalimok and Brushlen Marshes. Of these, two species have been enlisted in the Red Data Book of Bulgaria, five species – in the appendices of the Bern Convention, and three species – in the IUCN Red List. (Appendix № 1.1).

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 Kalimok – Brushlen Protected Area is the birds. Out of the 200 bird species that occur here, 164 species are of conservation interest (Appendix 1.2). Of them, 127 are breeding, 57 - wintering, 111 - migratory. The conservation status of the species is as follows:

- 43 are enlisted in the Red Data Book of Bulgaria,
- 130 are protected by the Nature Protection Act,
- 86 are of European nature conservation significance (SPEC),
- 153 are threatened birds in Europe (Tucker, Heath, 1994),
- 52 are enlisted in the European Birds Directive,
- 147 are enlisted in the Bern Convention,
- 81 are enlisted in the Bonn Convention,
- 31 are enlisted in CITES.

Kalimok is of global importance as a nesting site of the Ferruginous Duck *Aythya nyroca* - 50 pairs, and as a resting site of the Dalmatian Pelican *Pelecanus crispus* - 20 to 40. Here nest large colonies of Whiskered and other Terns *Chlidonias hybrida* - 400-500 pairs, Red-necked Grebe *Podiceps grisegena* - over 30 pairs, Black-necked Grebe *Podiceps nigricollis* - over 50 pairs, and others.

The fishponds are a nutritional basis for a pair of White-tailed Eagle *Haliaeetus albicilla* and a large colony of herons and cormorants, nesting on the neighboring Bezimenen Island. During migration and wintering, Kalimok is of global importance for the Pygmy Cormorant *Haliaeetus pygmaeus* and for the Greylag *Anser anser*. During wintering, there are large numbers of Whitefront *Anser albifrons* and the globally threatened species Red-breasted Goose *Branta ruficollis*.

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. In the area of Kalimok-Brushlen Protected Area, 17 species have been recorded (Appendix № 1.3). Of them, two species are enlisted in the Red Data Book of Bulgaria, two species – in the appendices of the Bern Convention, two species – in the CITES lists, and four species – in the IUCN Red List.

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;
- 89 Channels;

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

International conservation status

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 Directory:

- 22.13 Natural eutrophic lakes with Magnopotamion or Hydrocharition–type vegetation
- 44.17 *Salix alba* and *Populus alba* galleries

The proposed protected area will be a part 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 over 40 % of the total area. At the same time they are habitats of numerous animal and plant species that are rare for Europe. These habitats conserve the populations of some plant species, included in Appendix 1 of the Bern Convention, like *Salvinia natans*, *Trapa natans* and *Marsilea quadrifolia*, or enlisted in the Red Data Book of Bulgaria, like *Potamogeton trichoides*, *Nymphoides flava*, *Utricularia vulgaris*, *Nymphaea alba*, *Nuphar lutea* etc.

Among the mammals inhabiting the region, the species *Lutra lutra* could be mentioned. It is included in the Appendix II of the Bern Convention.

The Nova Cherna complex is listed as a site N F 00010400 in the Program CORINE – BIOTOPS. The authors define the complex as one of the 100 the most important EU habitats for the *Chlidonias hybridus* (over 450 nesting pairs) and *Benthophilus stellatus*.

The complex has been also determined as one of the five most important for the area habitats of the following:

Invertebrates:

Sympyga fusca, *Viviparus acerosus*, *Fagotia esperi*, *Astacus astacus*

Fishes:

Acipenser ruthenus, *Chalcalburnus chalcoides*, *Gobio albipinnatus*, *Cobitis elongata*, *Gymnocephalus baloni*, *Proterorhinus marmoratus*,

Birds:

Phalacrocorax pigmeus, *Egretta garzetta*, *Ardea purpurea*, *Platalea leucorodia*, *Plegadis falcinellus*, *Aythya nyroca*, *Haliaeetus albicilla*, *Alcedo atthis*, *Egretta alba*, *Botaurus stellaris*, *Ixobrychus minutus*, *Ciconia ciconia*, *Cygnus Cygnus*, *Aythya nyroca*, *Circus aeruginosus*, *Coracias garrulous*.

The Kalimok 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, characterize it as Important Bird Area of Global significance. Two globally threatened species nest in Kalimok - *Aythya nyroca* and *Crex crex*. The islands near Kalimok are also important habitats of *Haliaeetus albicilla*. During the migration period the globally threatened *Pelecanus crispus*, *Beanta ruficollis*, and *Phalacrocorax pygmaeus* could be also observed.

The Kalimok complex is a wetland and habitat of birds of international importance in the sense of the Ramsar Convention.

National conservation status

The Kalimok Complex is included in the National Action Plan for the Conservation of the Most Important Wetlands in Bulgaria.

In the National Biological Diversity Conservation Strategy, it is enlisted among the sites that are most representative in terms of biodiversity in Bulgaria.

5. Existing Protected Areas

The protected area situated in the region is important for the conservation of valuable and characteristic habitats with the respective animal and plant species:

Bezimenen Island Protected Locality, designated by order № ПД-260/17.07.1995, (State Gazette № 69, 1995) with an area of 73,8 ha and with a protection regime corresponding to category IV under IUCN.

The protected locality was designated in order to conserve natural habitats of protected and rare bird species enlisted in the Red Data Book of Bulgaria and the list of threatened species in Europe.

On the grounds of Art. 25, (2) of the Nature Protection Act, Bezimenen Island Protected Locality has been determined as a protected natural site of international significance. The regime of the protected locality is fully described in the order for designation (Appendix №2).

As of the date of preparation of the present report, a substantial part of the former Tutrakan Floodplain (5952,28 ha) is undergoing a procedure for designation of Kalimok-Brushlen Protected Locality (see also 'Proposal for Designation of Kalimok-Brushlen Protected Area', Green Balkans, March, 2001)

III. HISTORICAL OVERVIEW IN RELATION TO THE ANTHROPOGENIC IMPACT

There is a lack of concrete data on biodiversity before the construction of dikes on the Danube. Conclusions about it can be drawn from the following indirect data:

- The area of the Tutrakan Floodplain – 11 000 ha (where part of the 970 tons of fish/year were caught by Tutrakan fishers) – was a rich nutritional basis for fish-eating birds such as pelicans, cormorants, herons, and black storks, and created perfect conditions for spoonbills, ibises, and waders.

The slope of the floodplain is not steep (the slope between the western and the eastern part is about 20 cm), which was a reason for the availability of water for a long time.

In the shallows, mainly benthic species from the *Cyprinidae* family came to breed. That is why the Carp constituted a large part – up to 60% - of the fish caught by fishers. Sturgeons also entered the floodplain to feed, and this was of greatest importance for the sterlet (*A. ruthilus*), for which there may have been suitable spawning grounds.

This diversity is a precondition for a diverse nutritional basis and habitats for the animal species inhabiting the area. The diversity and numbers of ducks, diving ducks, ibises, storks, waders, terns, grebes, bustards, etc. are supposed to have been considerable. A permanent water source - a rivulet – used to supply the marshes, which never went dry completely, as there are no data about it. This allowed the hatched larvae of the fish to grow up and return into the Danube during subsequent high waters.

After the construction of the dikes and the draining system was completed around 1952, the land that had been ‘won’ began to be cultivated and used intensively. Despite this, a part of the floodplain – about 1500 ha – remained, and was permanently or temporarily flooded by subterranean waters. This brought about the initiative to turn part of these agriculturally unsuitable marshes into fishponds. Thus, the construction of the fishponds with a total area of 520 ha began around 1981. Part of the area – about 300 ha opposite Brushlen Village – was managed as an intensive poplar nursery. Nonetheless, there were some 400 ha of marshes and reedbeds remaining in the area around 1990, namely, the Brushlen marsh and part of Kalimok south of Zone East of the fishpond. About 300 ha of wet grasslands were used for grazing of farm animals from the neighbouring villages.

With respect to the ornitho-fauna in the area, there exist reliable data from the period 1989-2000, when monitoring was carried out.

Using birds as indicators, we could differentiate the following three periods, characterized by changes of the habitats and the related ornitho-fauna: prior to 1993, 1993-1997, and 1997-2000.

Period prior to 1993

This period was characterized by large, open, not quite deep (up to 1.5 m, 80 cm on average) water areas of the fishpond.

Although artificially maintained by pumps (except for the winter months), these areas provided sites for nesting of ducks, diving ducks, and bitterns, and were attractive as nutritional basis for the heron colony breeding on the nearby island (*E. garzetta* – 80 pairs, *P. leucorodia* – 5 pairs, *N. nycticorax* – 30 pairs), a pair of White-tailed Eagle, and even Dalmatian Pelicans.

During migration, here occur large numbers of Night Herons (780), *P. falcinellus* (500), *P. leucorodia* (100), and during wintering – Whooper Swans (*C. Cygnus*) (150).

Fish-eating birds were not welcome visitors to the intensive fish-breeding enterprise, and they were persecuted, chased away, and exterminated.

The mechanized mowing of higher aquatic plants with special mowing machines destroyed the nests of grebes and terns.

The shallows of the fishpond and the shallow temporary flooded areas (cultivated land and pastures - about 400 ha) were sites of concentration during the migration of *Ph. pugnax* (1500) and ducks.

The reedbeds were inhabited by cuckoos, warblers (*Acrocephalus*), warblers (*Locustella*), and a multitude of small songbirds during migration. Marsh Harriers (5 pairs) also nested in the reedbeds.

The globally threatened species Ferruginous Duck (*A. nyroca* – 15 pairs) nested mainly in the marsh south of the basins of the fishpond in Zone East and the canals.

The poplar cultures (about 500 ha) in the territories of Brushlen and Staro Selo villages were habitats of Golden Oreoles (*O. oriolus*), Chaffinches (*F. coelebs*), and others.

1993-1997 Period

Following the introduction of market mechanisms, the maintenance of water for intensive fish-breeding proved to be unprofitable and in 1993 the fishpond ceased functioning (first Zone West, then Zone East) and went bankrupt. The maintenance and protection of the facilities was discontinued, which rendered the canal-locks out of order, and led to their complete plundering towards the end of the period (including the two pump stations supplying the fishpond).

The chasing away of fish-eating birds and the mowing of higher aquatic vegetation (lilies, *Nymphoides peltata*, *Trapa Natans*) ceased which led to very high values of nesting, migrating, and wintering birds that had been previously pressed. The following species increased in numbers or appeared as nesting species: *Ch. Hybridus* (500 pairs), *A. nyroca* (50 pairs), *Tadorna ferruginea* (1 pair), *P. grisegena* (30 pairs), *P. nigricollis* (50 pairs). The Pygmy Cormorant appeared as a migrating and wintering species, and the Night Heron, the Spoonbill, and the Glossy Ibis preserved their numbers during migration.

The regulation of reed through mowing and herbicides ceased, which caused the overgrowing of the shallow parts of the basins first. On the one hand, this brought about the disappearance of the habitats of waders and common terns. On the other hand, it was a precondition for nesting of *A. purpurea* (10 pairs) and *A. anser* (1 pair) in these reedbeds.

The main threats during this period were:

- Burning the reed at the beginning of the breeding season (the end of March), which disturbed the nesting of ducks, diving ducks, moorhens, and bitterns;
- Opening of the sluices and releasing of the water from the fishponds before the end of the breeding season for the local people to catch the fish. This caused the death of the hatchlings of terns (*Ch. hybridus*) and ducks that had nested for the second time, after burning of the reed;

- Disturbance caused by the harvesting of snails and herbs, grazing on the dikes of the fishpond, mowing on the dikes and in the basins, fishing along the bank, and boats entering the basins amidst the colonies of terns and nesting grebes.

1997-2000 Period

The basins of the fishpond finally became overgrown with reed and rush. The numbers of nesting terns drastically declined to 20 pairs. The lack of nutritional basis (open water bodies) reduced the numbers of most nesting species (grebes, ducks) as well as the birds seeking food during the breeding season, migrations, or wintering (pelicans, white-tailed eagles, ospreys, cormorants, herons, swans, and others).

The flooded areas in the cultivated land (State Land Fund) also finally became overgrown with reed.

Due to the drastic decrease in grazing, the reed entered also the common of Nova Cherna village (between Zone West and Zone East).

The area of the poplar plantation (in the territory of Brushlen village) was also taken by a reedbed.

The balance in the wet grasslands is maintained only in the territory of Staro Selo village.

The area of Kalimok and Brushlen Marshes is still a habitat of Marsh Harriers (*C. aeruginosus*), Corncrake (*C. crex*), and Ferruginous Duck (*A. nyroca*).

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V. LIST OF APPENDICES

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1.1. FISHES.

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2. ORDER FOR DESIGNATION OF ISLAND BEZIMEN PROTECTED LOCALITY.

Species Composition and Conservation Status of the Fauna Inhabiting 'Kalimok - Brushlen' Protected Area

Table 1.1 - Fish

?	Fish species occurring in the Danube river / in the Kalimok-Brushlen area /	Conservation Status				
		Fish occurring in the Kalimok-Brushlen marshes	Red Data Book	Bern Convention	CITES	IUCN Red List
	Acipenseridae					
1	Huso huso			+		+
2	Acipenser nudiiventris		+		+	+
3	Acipenser ruthenus			+	+	+
4	Acipenser sturio		+	+	+	+
5	Acipenser stellatus			+	+	+
6	Acipenser gueldenstaedti				+	+
	Clupeidae					
7	Alosa pontica pontica			+		+
8	Alosa caspia nordmani					
	Salmonidae					
9	Salmo trutta labrax					
10	Hocho hucho				+	
	Esocidae					
11	Esox lucius	+				
	Cyprinidae					
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	Hypophthalmickthys molitrix					
36	Aristichthys nobilis					
37	Ctenopharingodon idella					
	Cobitidae					
38	Noemacheilus barbatulus					
39	Misgurnus fossilis	+		+		+
40	Cobitis taenia			+		
41	Cobitis elongata elongata			+		+

42	Sabanejwia bulgarica					
	Siluridae					
43	Silurus glanis	+		+		
	Anguillidae					
44	Anguilla anguilla		+			
	Gadidae					
45	Lota lota	+	+			
	Gasterostiedae					
46	Pungitius platygaster	+	+			
	Syngnathidae					
47	Sygnathus nigrolineatus					+
	Centrarchidae					
48	Lepomis gibbosus					
	Percidae					
49	Stizostedion lucioperca					
50	Stizostedion volgense		+	+		+
51	Perca fluviatilis	+				
52	Zingel zingel			+		+
53	Zingel streber			+		+
54	Gymnocephalus cernuus					
55	Gymnocephalus baloni			+		+
56	Gymnocephalus schraetzer			+		+
	Gobiidae					
57	Neogobius melanostomus					+
58	Neogobius cephalarges					
59	Neogobius kessleri		+	+		+
60	Neogobius fluviatilis			+		+
61	Mesogohius gymnotrachelus					+
62	Proterorhinus marmoratus					
63	Benthophilus stellatus		+			
	Total number:	13	9	24	6	24

Species Composition and Conservation Status of the Fauna Inhabiting 'Kalimok - Brushlen' Protected Area

Table 1.2 - Birds

?	BIRD SPECIES OCCURING IN DANUBE RIVER /IN THE KALIMOK-BRUSHLEN AREA/	Conservation Status													
		Nesting	Wintering	Migrating	IUCN Red List	NPA	RD B	SPEC	ETS	RAMSAR		BERN	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			
5	<i>Podiceps grisegena</i>	+		+		+	R		S			II			
6	<i>Phalacrocorax carbo</i>	+	+	+		+	T		S	100	1000	III			
7	<i>Phalacrocorax pygmeus</i>		+	+	LR/nt	+	T	2	V	50	250	II		II	I
8	<i>Pelecanus onocrotalus</i>			+		+	E	3	R		800	II		I & II	I
9	<i>Pelecanus crispus</i>		+	+	LR/cd	+	T	1	V	ALL	25	II	I	I & II	I
10	<i>Botaurus stellaris</i>		+			+	T	3	(V)	25		II		II	I
11	<i>Ixobrychus minutus</i>	+				+		3	(V)			II		II	I
12	<i>Nycticorax nycticorax</i>			+		+		3	D	200	600	II			I
13	<i>Ardeola ralloides</i>			+		+		3	V	40	120	II			I
14	<i>Egretta garzetta</i>			+		+			S	130	400	II	III		
15	<i>Egretta alba</i>		+	+		+	T		S	5	120	II	III	II	
16	<i>Ardea cinerea</i>		+	+		+			S			III			
17	<i>Ardea purpurea</i>	+				+	T	3	V	65	200	II		II	I
18	<i>Ciconia nigra</i>			+		+	T	3	R		350	II	II	II	I
19	<i>Ciconia ciconia</i>	+		+		+		2	V		4000	II		II	I
20	<i>Plegadis falcinellus</i>			+		+	T	3	D	35	100	II		II	I
21	<i>Platalea leucorodia</i>			+		+	T	2	E	20	60	II	II	II	I
22	<i>Cygnus olor</i>		+	+		+	T		S		450	III		II	
23	<i>Cygnus cygnus</i>					+		4	S		170	II		II	I
24	<i>Anser fabalis</i>					+			S		1000	III		II	
25	<i>Anser albifrons</i>		+	+					S		6500	II		II	
26	<i>Anser erythropus</i>				VU A1acd+2b	+	T	1	V		40	II		II	I
27	<i>Anas penelope</i>		+	+					S		5600	III	III	II	
28	<i>Anser anser</i>	+		+		+	T		S	250		III		II	
29	<i>Branta ruficollis</i>		+		VU B1+2c	+	T	1	L		700	II	II	II	I
30	<i>Tadorna ferruginea</i>	+		+		+	T	3	V		200	II		II	I
31	<i>Anas strepera</i>	+	+	+		+	T	3	V		1000	III		II	II/1
32	<i>Anas crecca</i>		+	+					S		10500	III	III	II	
32	<i>Anas platyrhynchos</i>	+	+	+					S		20000	III		II	
33	<i>Anas acuta</i>		+	+				3	V		12000	III	III	II	III -1&III -2
34	<i>Anas querquedula</i>			+				3	V		20000	III	II		II 1
35	<i>Anas clypeata</i>			+					S		4500	III	III	II	
36	<i>Aythya ferina</i>	+	+	+		+	T	4	S		10000	III		II	III -1& III -2
37	<i>Aythya nyroca</i>	+	+	+	LR/nt	+	T	1	V		300	III	III	II	I
38	<i>Aythya fuligula</i>		+	+					S		6000	III		II	
39	<i>Pernis apivorus</i>			+		+	T	4	S			II	II	II	I
40	<i>Milvus migrans</i>	+		+		+	T	3	V			II	II	II	I
41	<i>Haliaeetus albicilla</i>	+	+	+	LR/nt	+	T	3	R			II	I	II	I
42	<i>Circus aeruginosus</i>	+		+		+	T		S			II	II	II	
43	<i>Accipiter gentilis</i>	+	+			+	T		S			II	II	II	
44	<i>Accipiter nisus</i>	+	+			+	T		S			II	II	II	
45	<i>Accipiter brevipes</i>			+		+	T	2	R			II	II	II	I

46	Buteo buteo		+	+		+			S			II	II	II	
47	Aquila pomarina			+		+	T	3	R			II	II	II	I
48	Hieraetus pennatus					+	T	3	R			II	II	II	I
49	Pandion haliaetus			+		+	T	3	R			II	II	II	I
50	Falco tinnunculus	+	+			+		3	D			II	II	II	
51	Falco subbuteo	+		+		+	T		S			II	II	II	
52	Perdix perdix	+	+					3	V			III			II -1 & III -1
53	Coturnix coturnix	+		+				3	V			III		II	II -2
54	Phasianis colchicus	+	+				T		S			III			
55	Rallus aquaticus	+	+	+					(S)			III			
56	Porzana porzana	+	+	+											
57	Crex crex	+	+		VU A2c	+	T	1	V			II			I
58	Gallinula chloropus	+	+	+		+			S			III			
59	Fulica atra	+	+	+					S	20000		III		II	
60	Grus grus									200					
61	Haematopus ostralegus			+		+	T		S	7500		III			
62	Himantopus himantopus			+		+	T		S	50	150	II			
63	Burchinus oedicnemus					+	T	3	V			II		II	I
64	Charadrius dubius			+		+			S			II		II	
65	Vanellus vanellus	+		+		+			(S)	20000		III		II	
66	Calidris minuta			+		+			(S)	*		II		II	
67	Calidris ferruginea			+		+				*		II		II	
68	Calidris alpina			+		+		3	V	20000		II		II	
69	Philomachus pugnax			+		+		4	(S)	*		III		II	I & II/2
70	Tringa Totanus			+		+				*					
71	Tringa ochropus		+	+		+	T		(S)			II		II	
72	Tringa glareola			+		+	D	3	D			II		II	I
73	Actitis hypoleucos			+		+			S			III		II	
74	Larus melanocephalus	+		+		+	R	4	S			II		II	I
75	Larus minutus			+		+		3	D			II			
76	Larus ridibundus	+		+		+	R		S			III			
77	Larus canus					+		2	D			III			II/2
78	Larus cachinans		+	+					(S)			III			
79	Sterna hirundo			+		+			S	700		II		II	
80	Sterna albifrons					+	T	3	D	100		II		II	I
81	Chlidonias hybridus	+	+			+	T	3	D	750		II		II	
82	Chlidonias niger	+		+		+	T	3	D	200	600	II		II	I
83	Chlidonias leucopterus			+		+			S			II		II	
84	Columba oenas					+	T	4	S			III			II/2
85	Columba palumbus	+		+				4	S			III			
86	Streptopelia turtur	+		+				3	D			III	III		II-2
87	Cuculus canorus	+		+		+			S			III			
88	Tyto alba	+		+		+	R	3	D			II	II		
89	???? Otus scops	+		+		+		2	D			II	II		
90	??? Athene noctua	+	+			+		3	D			II	II		
91	Strix aluco	+				+		4	S			II	II		
92	Asio otus	+		+		+			S			II	II		
93	Alcedo atthis	+	+	+		+		3	D			II			I
94	Merops apiaster	+		+		+		3	D			II		II	
95	Coracias garrulus	+				+		2	(D)			II		II	I
96	Upupa epops	+		+		+			S			II			
97	Jynx torquilla	+				+		3	D			II			
98	Picus canus	+				+		3	D			II			I
99	Picus viridis	+				+		2	D			II			
100	Driocopus martius	+				+	R		S			II			
101	Dendrocopos major	+				+			S			II			
102	Dendrocopos syriacus	+				+		4	(S)			II			I
103	Dendrocopos medius	+				+		4	S			II			I
104	Dendrocopos minor	+				+			S			II			
105	Galerida cristata	+	+			+		3	(D)			III			
106	Alauda arvensis	+				+		3	V			III			II-2

107	Riparia riparia	+		+		+		3	D			II			
108	Hirundo rustica	+		+		+		3	D			II			
109	Delichon urbica			+		+			S			II			
110	Anthus pratensis			+		+		4	S			III			
111	Motacilla flava	+		+		+			S			II			
112	Motacilla alba			+		+			S			II			
113	Troglodytes troglodytes	+	+	+		+			S			II			
114	Erithacus rubecula	+	+			+		4	S			II		II	
115	Luscinia megarhynchos	+		+		+		4	(S)			II		II	
116	Phoenicurus ochruros					+			S			II		II	
117	Turdus merula	+				+		4	S			III		II	II/2
118	Turdus pilaris		+	+											
119	Turdus philomelos					+		4	S			III		II	II/2
120	Cettia cetti	+				+			S			III		II	
121	Locustella fluviatilis	+		+		+		4	S			II		II	
122	Locustella luscinioides	+		+		+		4	(S)			II		II	
123	Acrocephalus shoenoaenus	+		+		+		4	(S)			II		II	
124	Acrocephalus palustris	+		+		+		4	S			II	.? 4	II	
125	Acrocephalus scirpaceus	+		+		+		4	S			II		II	
126	Acrocephalus arundinaceus	+		+		+			(S)			II		II	
127	Hippolais pallida	+		+		+		3	-5			II		II	
128	Hippolais icterina	+		+		+		4	S			II		II	
129	Sylvia nisoria	+		+											
130	Sylvia curruca	+		+		+			S			II		II	
131	Sylvia communis	+		+		+		4	S			II		II	
132	Sylvia atricapilla	+		+		+		4	S			II		II	
133	Phylloscopus collybitus	+		+		+			(S)			II		II	
134	Phylloscopus trochilus			+		+			S			II		II	
135	Muscicapa striata	+		+		+		3	D			II		II	
136	s Panurus biarmicus		+	+		+		P	(S)			II			
137	Aegithalos caudatus			+		+			S			III			
138	Parus palustris								S			II			
139	Parus caeruleus	+	+	+		+		4	S			II			
140	Parus major	+	+			+			S			II			
141	Sitta europea					+			S			II			
142	Remiz pendulinus	+		+		+			(S)			III			
143	Oriolus oriolus	+		+		+			S			II			
144	Lanius collurio	+				+		3	(D)			II			I
145	Lanius minor	+				+		2	(D)			II			I
146	Lanius excubitor		+			+		2	V			II			
147	Garrulus glandarius		+	+					(S)						
148	Pica pica	+	+						S						
149	Corvus monedula							4	(S)						II-2
150	Corvus frugilegus	+	+						S						
151	Corvus corone cornix	+	+						S						
152	Sturnus vulgaris	+	+	+					S						
153	Passer domesticus	+	+						S						
154	Passer hispaniolensis	+		+		+			(S)			III			
155	Passer montanus	+							S			III			
156	Fringilla coelebs	+	+			+		4	S			III			
157	Carduelis chloris		+			+		4	S			III			
158	Carduelis carduelis	+	+			+			(S)			III			
159	Carduelis spinus		+	+		+		4	S			III			
160	Carduelis cannabina	+	+			+		4	S			II			
161	Coccothraustes coccothraustes	+	+			+			S			III			
162	Emberiza citrinella		+			+		4	(S)			III			
163	Emberiza schoeniclus		+	+		+			S			II			
164	Emberiza melanocephala			+		+		2	-5			II			
165	Emberisa calandra	+		+		+		4	(S)			III			
	Total number:	95	55	107											

<p>LEGEND:</p> <p>IUCN Red List - List of IUCN of globally threatened species (World Red Data Book)</p> <p>NPA - Order ? 342 from 21.04.1987 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?</p> <p>RDB -Species enlisted in the Red Data Book of Bulgaria: R - rare T - threatened E — extinct</p> <p>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.</p> <p>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</p> <p>RAMSAR - Species, enlisted in the Convention for the Internationally Significant Wetlands.</p> <p>BERN - Species, enlisted in the Convention for the Conservation of European Wildlife Flora and Fauna and nature habitats.</p> <p>CITES - Species, enlisted in the Convention for the International Trade with Threatened and Endangered Species of the wildlife flora and fauna.</p> <p>BONN - Species, enlisted in the Convention for the Protection of Migrating Wild Animals.</p> <p>WBD - Species included in the EC Directive for Wildlife Protection</p>
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Species Composition and Conservation Status of the Fauna Inhabiting 'Kalimok - Brushlen' Protected Area

Table 1.3 - Mammalia

?	Representatives of Mammalia class occurring in the Danube plain	Conservation Status				
		Representatives occurring in the Kalimok - Brushlen	Red Data Book	Bern Convention	CITES	IUCN Red List
	INSECTIVORA					
1	Erinaceus concolor	+				
2	Talpa europaea	+				
3	Sorex araneus			+		
4	Neomys anomalus					
5	Crocidura leucodon					
6	Crocidura suaveolens			+		
	RODENTIA					
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	+				+
	CARNIVORA					
27	Canis aureus	+				
28	Lutra lutra	+	+		+	+
29	Nyctereutes procyonoides	+				
30	Mustela nivalis	+				
31	Mustela putorius	+				
32	Meles meles	+				
33	Vulpes vulpes	+				
34	Felis silvestris	+			+	
	ARTIODACTILA					
35	Sus scrofa	+				
36	Cervus elaphus	+				
37	Vormela peregusna	+	+	+		+
38	Capreolus capreolus	+				
	Total number:	17	4	6	2	10
* Data concerning the presence of the species require confirmation						