ASSESSMENT AND PROTECTION OF THE AQUATIC BIRD SPECIES WITH UNFAVOURABLE PRESERVATION STATUS, WHICH ARE PRESENT IN THE NATURA 2000 SITE BISTREŢ (DOLJ COUNTY)

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Abstract. *The present study deals with the results of the monitoring of the water bird species that are preserved within the Natura 2000 Site Bistreţ; the work was supported by data from our own observations, conducted between 2004 and 2009, which permitted the formulation of certain conclusions regarding the dynamics of the bird populations and the influence of the environmental conditions on the intensity of the passage and/or of the nesting of the water species. At the same time, our research allowed for the elaboration of the protection measures, taking into account the factors that threaten each and every species. The paper may represent a reference point in the demarche for the sustainable management of the Bistreţ agro-piscicultural reservoir, which received the status of Special Protection Area (SPA) in 2007, the Museum of Oltenia being its custodian.*

Keywords: *assessment, conservation, aquatic birds, Bistreţ.*

Rezumat. Evaluarea şi protecţia speciilor de păsări acvatice cu statut de conservare nefavorabil prezente în situl Natura 2000 Bistreţ (judeţul Dolj). *Studiul de faţă prezintă rezultatele monitorizării speciilor de păsări acvatice care fac obiectul conservării în situl Natura 2000 Bistreţ; ca suport de lucru s-au folosit datele observaţiilor proprii, efectuate în anii 2004-2009, care ne-au permis formularea unor concluzii privind dinamica efectivelor de păsări şi influenţa condiţiilor de mediu asupra intensităţii pasajului şi/sau cuibăritului speciilor acvatice, pe de o parte, iar pe de altă parte elaborarea măsurilor de protecţie în raport cu factorii de ameninţare ai fiecărei specii. Lucrarea poate fi un reper pentru demersurile unui management durabil al acumulării agropiscicole Bistreţ, desemnată în anul 2007 ca Arie de Protecţie Specială Avifaunistică (SPA), pentru care Muzeul Olteniei a fost desemnat custode.*

Cuvinte cheie: *evaluare, conservare, păsări acvatice, Bistreţ.*

INTRODUCTION

Bistreţ Lake, located in the Danube Floodplain, near the settlements of Cârna, Plosca and Bistreţ, represents both an economic objective that is appreciated for fish farming and a scientific objective of ornithological interest, the Museum of Oltenia, based in Craiova, being its custodian since July 10th 2008. The ornithological importance of Bistreţ Lake is explained by the presence, in this area, of a great number of birds (more than 20,000 during the spring and autumn migration periods), while some of the bird species are endangered, rare or vulnerable in Romania, as well as at global scale (HAGEMEIJER & BLAIR, 1997; MUNTEANU 2009). Some of these species (*Pelecanus onocrotalus, P. crispus, Egretta alba, E. garzetta, Platalea leucorodia, Tadorna tadorna, Recurvirosta avosetta, Himantopus himantopus*) have the status of Nature Monuments and are included on the Red List of Vertebrates in Romania (BOTNARIUC & TATOLE, 2005).

Given the fact that many of the birds recorded within the Bistreţ wetlands are included in the Annex I of the EU Birds Directive, in 2007 Bistreţ Lake was integrated in the Natura 2000 ecological network, with the status of Special Protection Area (SPA) (code ROSPA0010 Bistreţ), according to the Governmental Decision no. 1284/ 24. X. 2007.

The avifaunistic importance of Bistreţ Lake was intensely mediatised and underlined in various national and international publications and by many specialists (HEATH & EVANS, 2000; MUNTEANU, 2004; RIDICHE, RIDICHE et al. 2004-2009; TĂLPEANU, 1963 and others).

MATERIAL AND METHODS

The present study includes the results of our own observations, conducted within the Bistreţ site mainly during the last five years, respectively between 2004 and 2009, the time period being marked by certain hydro-climatic extreme phenomena (abundant rainfalls, floods, prolonged drought) and, implicitly, by changes of the aquatic ecosystems under study.

The main materials used to identify and document the bird species were the binocular (Zeiss Jena 10x50 and Bushnell 12x40), the catalogues for determining birds (BRUUN, 1999, PETERSON et. al., 1988) and the photo camera (Sony 15 x).

The quantitative and qualitative observations regarding the bird species and populations were done in all ecological aspects of the year, in two ways:

- The observation from a fixed point: it was mainly conducted from the high points (observatory, protection dams) and near the feeding, roosting or station places of the birds. This method allowed for the achievement of certain conclusions regarding the qualitative and quantitative aspects of populations, their dynamics, the intensity of the passage, the influence of the biotope conditions on the passage and/or on the nesting etc.

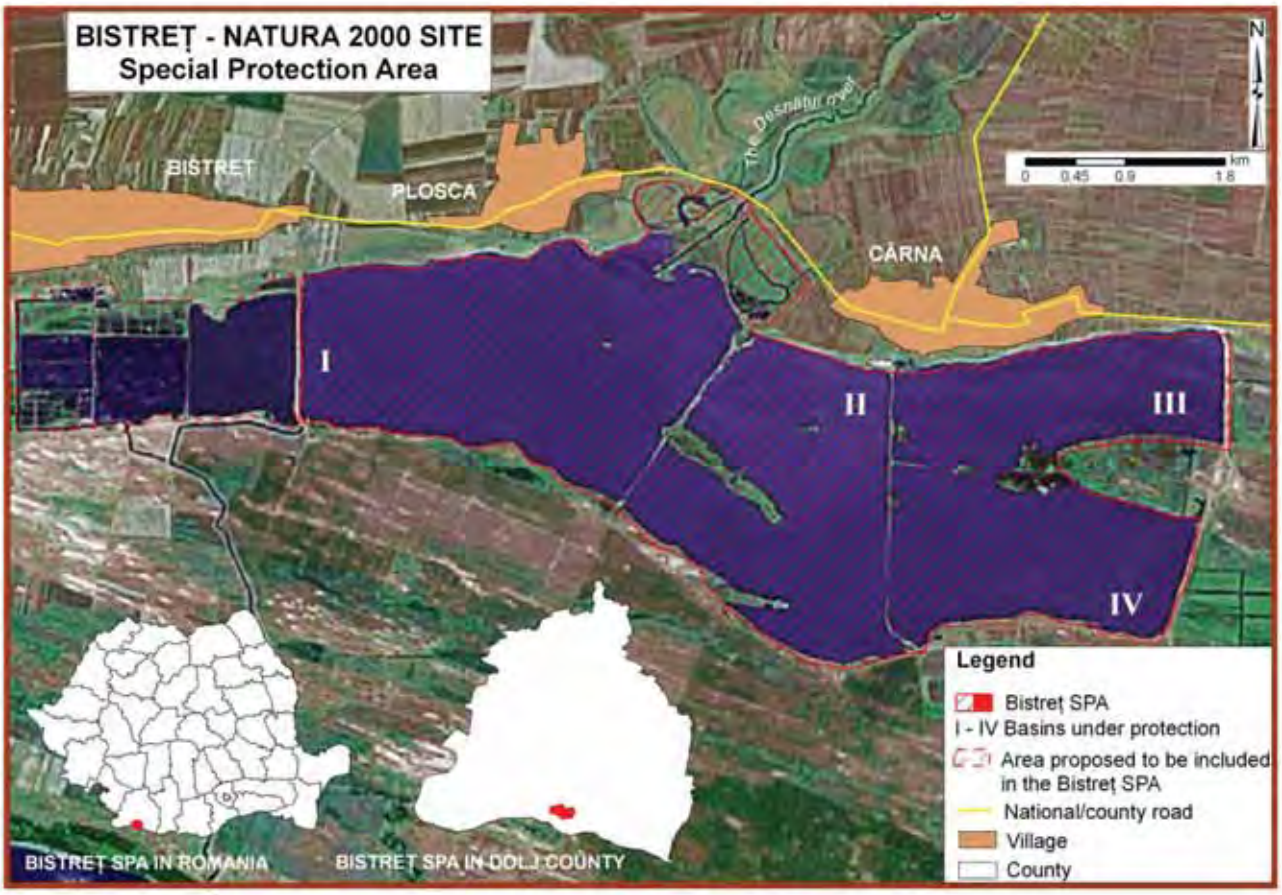
- The observation in movement, on routes beforehand established: the itinerary was respected during each observation route; all species observed along the route were recorded, this allowing for the achievement of a situation regarding the frequency of their observation.

Some of the results of our research were obtained during the implementation of the scientific project *Managing a NATURA 2000 site – Elaboration of the conservation measures for the Special Protection Area (SPA) Bistreț*, to which we participated as partners, under the coordination of L. Gheorghe – main counsellor at the Romanian Ministry of Environment and Sustainable Development (2008). The project was conducted between March and September 2008 and it was financed by the Alfred Toepfer Foundation and the German Environment Foundation Deutsche Bundesstiftung Umwelt (DBU), in the framework of the NatuRegio Programme – *Nature conservation and regional development in South East Europe*.

RESULTS AND DISCUSSIONS

The present study discusses only the aquatic bird species that are the object of conservation in the Natura 2000 sites, in accordance with the Birds Directive of EEC 79/409.

Following the field investigation, it is necessary to mention the fact that, although only the basins 1-4 (surface 1,915 ha) are included in the Bistreț site, the western parts of the lake, which functioned a long time, until 2006, as special ponds for fingerling (surface of about 315 ha) within the agro-piscicultural farm Bistreț-Cârna, represent highly attractive points for the aquatic avifauna (Map 1).



Map. 1. Bistreț Special Protection Area (Background Image-Landsat7).
Harta 1. Bistreț, Arie de protecție specială avifaunistică.

During the last years, respectively after the big flash flood of the Danube from the spring of 2006, when an important surface of the Danube Floodplain was covered by water after the collapse of the protection dams in Rast (Dolj County) area, it is to be noticed a spectacular vegetation regeneration on the eastern and western basins of the lake, which, together with the debouching area of the Desnățui river, represent the key-points for the concentration of the aquatic bird populations. This vegetation recovery (spreading of the aquatic macrophytes: *Typha* sp., *Scirpus* sp., *Salix* sp.), which is mainly caused by the lack of interest from the part of the administration of the lake, with regard to the management of the basins, led to an increase in the population of certain bird species (Fam. Ardeidae, Fam. Threskiornithidae, Fam. Anatidae), which had been rather limited until 2006.

We present some details regarding the biology, ecology and distribution of the recorded species in the site, as well as the situation concerning their number and protection (threatening factors, conservation measures).

Phalacrocorax pygmaeus (PALLAS, 1773) **-** Pygmy Cormorant

Taxonomical classification: Order Pelecaniformes, Family Phalacrocoracidae

Biology, ecology and situation of the species

It is a Sarmatic type of species, frequent in the Bistreț site mainly between April and October in populations that oscillate, depending on the season, from a few individuals (7-20) up to a couple of hundreds (+ 500); the highest density is registered in the passage period.

Within the precincts of the Bistreț SPA, there are nesting conditions in the basin 3 (abundant swamp macrophytes in the north-eastern part of the lake), but there are no proofs concerning the reproduction of the species within the site.

Threat status: species that is vulnerable at national and European level.

Factors of potential threat: the drainage of the ponds, the cutting of the willows, the burning of the reed, the control campaigns against the fish-eating birds, the accidental catching in the fishing nets.

Proposed conservation measures: to maintain an optimal hydrological level of the lake, to preserve the refuge points of the species within the precincts of the site (willows, reed plots, osier plots), to properly manage the area in order to increase the food resources, to maintain the water quality.

Pelecanus onocrotalus LINNAEUS, 1758 **-** White Pelican

Taxonomical classification: Order Pelecaniformes, Family Pelecanidae

Biology, ecology and situation of the species

It is a Sarmatic type of species, recorded in the basins with extensive water surfaces, especially during the summer, when the water level is low; small groups can be also seen during the spring – autumn passage period. The populations vary (2 minimum, 70-80 maximum), being frequently associated with the Dalmatian Pelican. The juvenile individuals that accompany the adult birds, which travel to find food, prevail in the populations registered by us.

Threat status: species that is vulnerable in Romania and at European level; in our country, it was declared Nature Monument.

Factors of potential threat: the inappropriate hydrological regime, the diminution of the trophic resources, the control campaigns against the fish-eating birds in the fishery.

Proposed conservation measures: to preserve the lake, to maintain the piscicultural fund of the basins, to properly manage the basins that bear piscicultural exploitation in order to increase the trophic resources, to maintain the optimum level and the quality of the waters, to strictly follow the protectionist legislation.

Pelecanus crispus BRUCH, 1832 **-** Dalmatian Pelican

Taxonomical classification: Order Pelecaniformes, Family Pelecanidae

Biology, ecology and situation of the species

It is a Sarmatic type of species, which was observed in the Bistreț site between March and October; the populations annually registered oscillate (minimum 2 and maximum 300 birds), depending on the hydro-climatic and food conditions.

Part of the birds (both adult and juvenile) that travel to find food in this area, may have their nesting places in Bulgaria, in the Srebarna Reserve (44^o 06' N 27^o 04' E), the proof being represented by a blue plastic ring taken from a juvenile individual; the ring had the code 55EJ and was put up in the cub phase, at the nest, in the above mentioned reserve.

Threat status: species that is critically endangered at national level, declared Nature Monument; at European level it is a vulnerable species.

Factors of potential threat: the inappropriate hydrological regime of the basins, the diminution of the trophic resources, the control campaigns against the fish-eating birds in the fishery.

Proposed conservation measures: to preserve the lake, to maintain the piscicultural fund of the basins, to properly manage the basins that bear piscicultural exploitation in order to enrich the trophic resources, to maintain the water quality, to strictly observe the protectionist legislation.

Ixobrychus minutus (LINNAEUS, 1758) **-** Little Bittern

Taxonomical classification: Order Ciconiiformes, Family Ardeidae

Biology, ecology and situation of the species

This species is native to the Old World, being a summer visitor (between April and September/October) in the Bistreț site; it is assumed that the species nests in isolated pairs, in the reed/osier plots of the eastern basins (2 and 3) and/or at the western end of the lake; the population of the species is uncertain because of its hidden existence and it varies in dependence with the conditions offered by the habitat.

Threat status: species that is vulnerable in all Europe.

Factors of potential threat: the cutting and burning of the reed and/or the osier, the flooding of the nesting areas, the fishing around the nesting places.

Proposed conservation measures: to maintain the reed screens within the precincts of the site, to control the hydrological level of the basins, to interdict the fishing activities during summer in the places that are favourable to nesting.

Nycticorax nycticorax (LINNAEUS, 1758) **-** Night Heron

Taxonomical classification: Order Ciconiiformes, Family Ardeidae

Biology, ecology and situation of the species

It is a cosmopolitan species and a summer visitor (between March and September/October) in the area under study; during the last years, it has been mostly registered in the basin 3 of the lake, which is rich in wooden aquatic vegetation. The populations registered around 120-150 individuals.

Threat status: species that is vulnerable in Romania and declining at European level.

Factors of potential threat: the cutting of the wood vegetation, the degradation of the aquatic environment (eutrophication and/or clogging of the basins).

Proposed conservation measures: to achieve and maintain the protection forests and the reed screens inside or on the margins of the basins, as well as along the dams, to maintain an appropriate water level in the basins.

Ardeola ralloides (SCOPOLI, 1769) **-** Squacco Heron

Taxonomical classification: Order Ciconiiformes, Family Ardeidae

Biology, ecology and situation of the species

This is a species of Ethiopian type and a summer visitor (between April and September-October) in the Bistreț wet area. During the last two years, between 5 and 20 individuals have been constantly observed in the area of the western basins; the population might be more important and it might extend towards the eastern basins (2 and 3), where there are favourable breeding conditions (rich vegetation and shallow water), but the information is uncertain because of the hidden existence of the species.

Threat status: species that is vulnerable at national and European level.

Factors of potential threat: the cutting and burning of the reed and of the cane, the flooding of the nesting areas, the fishing near the places that are favourable to nesting.

Proposed conservation measures: to maintain the reed screens within the precincts of the site, to control the hydrological level of the basins, to prohibit the fishing during summer, in the places where the nesting of this species is possible.

Egretta garzetta (LINNAEUS, 1766) **-** Little Egret

Taxonomical classification: Order Ciconiiformes, Family Ardeidae

Biology, ecology and situation of the species

The species is native to the Old World and it is a summer visitor (from April to September) in the Bistreț wet area, where there is to be noticed an increase in its population; thus, in the summer of 2008, the population was estimated at more than 150 individuals, most of them being concentrated in the eastern part of the lake (basin 3), as well as in the western basins that are not included in the site. Although the proof that the nesting occurs here does not exist yet, it is to be noticed that the basins 3 and 2, with shallow water and with dense aquatic macrophytes, present favourable conditions for the reproduction of the species.

Threat status: the species is endangered at national level and it is declared Nature Monument.

Factors of potential threat: the increase of the water level in the basins, the burning or the cutting of the swamp macrophytes.

Proposed conservation measures: to protect the species and the habitats that it prefers, to maintain an optimal water level.

Egretta alba (LINNAEUS, 1758) **-** Great White Egret

Taxonomical classification: Order Ciconiiformes, Family Ardeidae

Biology, ecology and situation of the species

It is a cosmopolitan species and it has been recorded only in passage and rarely as isolated individuals during winter. The number of birds recorded in the Bistreț site, as well as beyond its limits, varies (from minimum 3 to maximum 55 individuals), depending on the breeding conditions.

Threat status: the species is endangered at national level and it is declared Nature Monument.

Factors of potential threat: the limitation and the degradation of the aquatic habitats.

Proposed conservation measures: to follow the legislation, to maintain the natural conditions of the wetlands under research.

Ardea purpurea LINNAEUS, 1766 **-** Purple Heron

Taxonomical classification: Order Ciconiiformes, Family Ardeidae

Biology, ecology and situation of the species

It is a species of Turkestan-Mediterranean type and a summer visitor (from April to September); in 2001, on Bistreț lake there was discovered a colony made up 35 pairs that had their nest in the aquatic macrophytes (osier plots) from the island located on the basin 1; during the last years (i.e. after the 2006 spring floods), the species was relatively rarely recorded and as isolated individuals, the nesting activity being uncertain at present.

Threat status: the species is endangered in Romania and vulnerable at European level.

Factors of potential threat: the cutting and burning of the reed and osier, the flooding of the nesting areas, the fishing near the nesting places.

Proposed conservation measures: to preserve the aquatic macrophytes from the precincts of the site, to control the hydrological level of the basins, to prohibit the drainage or of the fishing during summer, in the places where nesting colonies may be installed.

Ciconia nigra (LINNAEUS, 1758) **-** Black Stork

Taxonomical classification: Order Ciconiiformes, Family Ciconiidae

Biology, ecology and situation of the species

It is a species of Palearctic type and it was recorded in passage (from July to August) in the western part of the lake, in small number of individuals (1 to 7).

In 1981, there appeared mentions of the Black Stork nesting in Branişte forest, which is located about 3 kilometres north of the Bistreț SPA, but we do not have recent proofs of the nesting activity near the site.

Threat status: the species is vulnerable in Romania and rare at European level.

Factors of potential threat: the disturbance of the nesting places, the cutting of the old trees on which nests are installed, the excessive human-induced transformations of the wet areas and of their surroundings.

Proposed conservation measures: to keep silence in the nesting area, to avoid cutting the trees on which nests are placed, to maintain the natural conditions of the wetlands.

Ciconia ciconia (LINNAEUS, 1758) **-** White Stork

Taxonomical classification: Order Ciconiiformes, Family Ciconiidae

Biology, ecology and situation of the species

It is a species of Palearctic type and a summer visitor (from March/April to October). The White Stork nests on the concrete pillars of the low tension power networks, in the settlements located near the Bistreț site; although some of the nests were destroyed, their number is still important, so that the species registers an increase of its population.

Threat status: the species is vulnerable both at national and European level.

Factors of potential threat: the deliberate destruction of the nests by the inhabitants, the ingestion of pesticides or other toxic substances with the food.

Proposed conservation measures: to protect the nests, to avoid the use and the abandonment of toxic substances on the agricultural fields or in the aquatic basins.

Plegadis falcinellus (LINNAEUS, 1766) **-** Glossy Ibis

Taxonomical classification: Order Ciconiiformes, Family Threskiornithidae

Biology, ecology and situation of the species

It is an Old World type of species and it was observed in the Bistreț wetlands only towards the end of the summer season (from July to August), probably travelling to find food; the number of individuals that were recorded varies between 7 and 11.

Threat status: the species is vulnerable in Romania and rare at European level.

Factors of potential threat: the human activities (disturbing activities, water pollution, cutting the aquatic macrophites), which lead to the degradation and limitation of the habitats preferred by the species.

Proposed conservation measures: to maintain conditions that are close to the natural ones in the aquatic habitats.

Platalea leucorodia LINNAEUS, 1758 **-** Spoonbill

Taxonomical classification: Order Ciconiiformes, Family Threskiornithidae

Biology, ecology and situation of the species

It is a Sarmatic type of species and it was recorded as a passage species in the Bistreț SPA. The most important populations were registered in July-August 2007, September 2008, July 2009 (80-150 individuals), being concentrated on the basin 1, 3 and on the western basins of the lake (outside the site). During the spring passage, when the hydrological level of the lake was higher, the Common Spoonbill was recorded in small number of individuals (4 to 8). The high number of birds recorded at the end of the summer is explained by the food resources availability in the basins with oozy muddy bottom and low water level.

Threat status: the species is endangered at national level and it was declared Nature Monument; at European level is also endangered.

Factors of potential threat: the reduction of food accessibility, as a consequence of water level increase.

Proposed conservation measures: to preserve the aquatic ecosystems, to maintain an optimum hydrological level in the basins, to protect the species.

Cygnus cygnus (LINNAEUS, 1758) **-** Whooper Swan

Taxonomical classification: Order Anseriformes, Family Anatidae

Biology, ecology and situation of the species

It is a Palearctic type of species, being a winter guest or a passage species (from December to March) that frequently passes through the researched area or it even stops in relatively low number of individuals (from minimum 2 to maximum 15-18 individuals, both adults and juvenile) on Bistreț lake and at the mouth of the Desnățui river.

Threat status: the species is safe at European level (least concern category of risk).

Factors of potential threat: the limitation and change of the aquatic habitats, the poaching.

Proposed conservation measures: to maintain the natural conditions of the wetlands, to respect the protectionist laws.

Anser erythropus (LINNAEUS, 1758) **-** Lesser White-fronted Goose

Taxonomical classification: Order Anseriformes, Family Anatidae

Biology, ecology and situation of the species

It is a Palearctic type of species and a winter visitor (from December to March). The number of individuals that are in transit in the area under research or stop on the grassland near the Desnățui river and in the surroundings of the aquatic basins is uncertain (minimum 12-25 individuals), the difficulty being even greater as the species is frequently present together with the White-fronted Goose.

Threat status: the species is critically endangered in Romania and in Europe.

Factors of potential threat: the deliberate or accidental shutting, the diminution of the trophic resources in the passage or wintering areas.

Proposed conservation measures: to avoid shutting them while hunting Geese/White-fronted Geese, to inform the population living in the areas transited by the species or where the species is stationary.

Branta ruficollis (PALLAS, 1769) **-** Red-breasted Goose

Taxonomical classification: Order Anseriformes, Family Anatidae

Biology, ecology and situation of the species

It is an Arctic type of species, winter visitor (from November to March). We did not collect data on this species, but the birds captured by the hunters in the Bistreț wet area and naturalized at the Museum of Oltenia prove the presence of the species on this area. The field survey showed that some individuals had been observed on the fields near the lake, in mixed populations, together with other species of Geese or White-fronted Geese.

Threat status: the species is endangered in Romania and in Europe.

Factors of potential threat: the poaching, the food resources lack or are insufficient.

Proposed conservation measures: to penalize the poaching, to inform the population with regard to the statute and the protection of this species.

Tadorna tadorna (LINNAEUS, 1758) **–** Common Shelduck

Taxonomical classification: Order Anseriformes, Family Anatidae

Biology, ecology and situation of the species

It is a Sarmatic type of species and it was observed during winter, as well as in passage (from January to March), on Bistreț lakeside and at the mouth of the Desnățui river, in small groups: 3 birds on January 24th, 2004, 2 birds on January 17th, 2005, 12 birds on January 16th, 2006 and 25 birds on March 20th, 2008.

Threat status: the species is endangered in Romania, but safe at European level (Least Concern Category of Risk).

Factors of potential threat: the poaching, the limitation and change of the aquatic habitats.

Proposed conservation measures: to penalize the poaching, to preserve the wet area, to inform the population with regard to the statute and protection of this species.

Aythya nyroca (GULDENST, 1769) **-** Ferruginous Duck

Taxonomical classification: Order Anseriformes, Family Anatidae

Biology, ecology and situation of the species

It is a species of Turkestan-Mediterranean type and a summer visitor (from March to October). For the Bistreț site, it can be assessed a constant population of at least 3-5 brooding pairs (with the exception of 2006 and 2007 summers when the swamp vegetation was destroyed as a consequence of the Danube flood). It prefers the eutrophic basins that are rich in swamp vegetation (reed, willow).

Threat status: the species is vulnerable in Romania and in Europe.

Factors of potential threat: the limitation or depreciation of its nesting habitats.

Proposed conservation measures: to preserve the aquatic habitats with swamp vegetation, to severely penalize the poaching.

Mergus albellus LINNAEUS, 1758 **-** Smew

Taxonomical classification: Order Anseriformes, Family Anatidae

Biology, ecology and situation of the species

It is a Palearctic type of species and a winter visitor (from November to March), stationary on the lake or on the canals until the appearance of the ice bridge. There are no exact data concerning the population number within the Bistreț site, but the field inquiry shows that it is estimated as relatively small (7 to 30 individuals).

Threat status: the species is vulnerable in Romania, as well as in Europe.

Factors of potential threat: the limitation and the degradation of the wet areas, the poaching.

Proposed conservation measures: to preserve the aquatic habitats which are used in passage or for wintering, to severely penalize the poaching, to follow the present legislation.

Himantopus himantopus (LINNAEUS, 1758) **-** Black-winged Stilt

Taxonomical classification: Order Charadriiformes, Family Recurvirostridae

Biology, ecology and situation of the species

It is a species of cosmopolitan type and a summer visitor (from April to September). According to the populations recorded during the last years, there can be noticed a significant increase of the population number in the area under study; this increase went from a few individuals (3-5 pairs) until 2005, up to more than 120 birds during the 2008 passage.

In the Bistreț SPA there are favourable conditions for the species' nesting in the area of the Desnățui river mouth, as well as on the sandbanks located between the eastern basins (3 and 4), but also between the western ones (located outside the limits of the site). The mating behaviour and that connected to the defence of the territory, well expressed at the adult birds that station in the site, prove the nesting activity of the species.
Threat status: the species is endangered in Romania and it was declared Nature Monument.
Factors of potential threat: the sudden and very important increase of the water level in the nesting areas (caused by natural or artificial factors), the grazing near the water.
Proposed conservation measures: to stop the access of the herbivorous domestic animals in the areas where the species nests (using wire fencing, guard, water ditches), to maintain constant water level in the piscicultural basins near which broody pairs are installed during summer.

Recurvirostra avosetta LINNAEUS, 1758 **-** Avocet

Taxonomical classification: Order Charadriiformes, Family Recurvirostridae

Biology, ecology and situation of the species

It is a species of Turkestan-Mediterranean type and a summer visitor (between April and October). During the last years, in the Bistreț wet area, the most important populations were registered during April-May 2008 (about 220-250 individuals), but their number faces significant decrease during the summer (30-50 individuals).
The behaviour of certain individuals located in the Bistreț site (basins 1 and 2) during the entire summer season represents a proof of the species' nesting in the precincts of the basins or near them (minimum 6-8 pairs).
Threat status: the species is vulnerable at national level and with limited area at European level.
Factors of potential threat: the sudden and very important increase of the water level near the nesting areas (caused by natural or artificial factors), the grazing near the water.
Proposed conservation measures: to protect the areas where the species nests (by forbidding the grazing, avoiding the flooding of the fields that are near the piscicultural basins, as a consequence of the sudden filling with water).

Philomachus pugnax (LINNAEUS, 1758) **-** Ruff

Taxonomical classification: Order Charadriiformes, Family Scolopacidae

Biology, ecology and situation of the species

It is a Palearctic type of species and it is frequent in the Bistreț site during the spring (March-April) and autumn (August/September - October) passages. It is the most numerous species among the waders, the population registering thousands of individuals (compact flocks); during the summer season (May-July), only isolated individuals were observed.
Threat status: the species is safe at European level (Least Concern Category of Risk).
Factors of potential threat: the important raise of the water level in the stationing areas (caused by natural or artificial factors), the grazing and other disturbing activities on the lakeside or near the basins.
Proposed conservation measures: to stop the access of the herbivorous animals and of other disturbing factors in the territories where the birds feed.

Sterna hirundo LINNAEUS, 1758 **-** Common Tern

Taxonomical classification: Order Charadriiformes, Family Sternidae

Biology, ecology and situation of the species

It is a species of Holarctic type, more numerous in passage, hundred of individuals being observed both in the precincts of the protected area and outside its limits, i.e. on the western basins and along the drainage canal; during the nesting period , there were registered 80-100 pairs at the most.
In the area under research, the species mainly nests in the western part of the lake, as well as in the debouching area of the Desnățui river, where there are sand islands.
Threat status: the species is safe at European level (Least Concern Category of Risk).
Factors of potential threat: the limitation and systematization of wet areas, the modernisation of water courses.
Proposed conservation measures: to preserve the natural conditions of the wetlands, to prohibit fishing and other disturbing activities in the nesting areas.

Chlidonias hybridus (PALLAS, 1776) **-** Whiskered Tern

Taxonomical classification: Order Charadriiformes, Family Sternidae

Biology, ecology and situation of the species

It is an Old World type of species and a summer visitor (April - September) in the Bistreț wet area. During the nesting period, few individuals (20-25) were seen in the site, i.e. on the basins 3 and 2, while outside the protected area, respectively on the western basins of the lake, there were observed more nests colonies, i.e. 50-60 pairs.
Threat status: the species faces decline at European level.
Factors of potential threat: the systematization and drainage of the wet areas, the modernization of the watercourses.
Proposed conservation measures: to preserve the wetlands and the natural conditions in the aquatic habitats, to forbid fishing and other disturbing activities in the territories where the birds nest.

Chlidonias niger LINNAEUS, 1758 **-** Black Tern

Taxonomical classification: Order Charadriiformes, Family Sternidae

Biology, ecology and situation of the species

It is a species of Holarctic type and a summer visitor (between April and September), with small populations but with constant presence during the summer. During the 2008 aestival season, in the precincts of Bistret lake, there were observed between 6 and 22 individuals, both within the protected area, as well as beyond its limits, i.e. on the western basins.

Threat status: the species faces decline at European level.

Factors of potential threat: the modernization of the watercourses, the drainage and the systematization of the wetlands.

Proposed conservation measures: to preserve the wetlands and the natural conditions in the aquatic habitats, to forbid the fishing and other disturbing activities in the territories where the birds nest.

Alcedo atthis (LINNAEUS, 1758) – Common Kingfisher

Taxonomical classification: Order Charadriiformes, Family Alcedinidae

Biology, ecology and situation of the species

It is an Old World type of species, sedentary. In the area under research, the species was rarely recorded, i.e. only one exemplary at a time, flying above the western part of the lake.

Nests belonging to the Common Kingfisher were observed in the holes carved in the banks of certain evacuation canals from the Bistret wet area, but some of them were damaged during the 2006 spring floods.

Threat status: the species faces decline at European level.

Factors of potential threat: the bank-sloping, the water pollution.

Proposed conservation measures: to preserve the habitats that are favourable to the nesting of the species, to maintain the proper water quality, that, in its turn, ensures the trophic resources.

The analysis of the quantitative and qualitative distribution of the bird species that are protected according to the EEC Birds Directive shows that some of them extend their specific spreading area for feeding and nesting beyond the limits of the Bistreț SPA, i.e. on the western basins of the lake; thus, we propose that the limits of the site be reconsidered, so that this area could be also put under protection (Map 1).

Moreover, we suggest that the standard record of the Bistreț site be supplemented with the species *Philomachus pugnax, Sterna hirundo, Chlidonias hybridus, C. niger*, which are well represented in the precincts of the site and near it.

CONCLUSIONS

The paper deals with data related to the biology, ecology and distribution of the aquatic bird species from the Bistreț area that are protected through the ECC Birds Directive and with bird population assessments, which depend on the seasonal dynamics and on the biotope conditions. Moreover, there are presented specific factors of threat and there are proposed certain measures for the conservation of the species and of the habitats; these measures can be included in the management plan of the site and, subsequently, they can be materialized.

The knowledge concerning the bird spectrum and the concentration areas that are important for the feeding, roosting and nesting of the aquatic species fundaments our proposal regarding the reconsideration of the limits of the Special Protection Area for birds, so that it would include the basins located towards the western neighbourhood of the site (about 315 ha); at the same time, we insist on the update on the standard record of the site, so that it would correspond with the real field situation.

REFERENCES

BRUUN B., DELIN H., SVENSSON L. 1999. *Păsările din România şi Europa. Determinator ilustrat* (Romanian version: Munteanu D.). Hamlyn Publishing House. London: 320pp.

GHEORGHE MIRELA. 1996. *Notă preliminară asupra dinamicii unor specii de păsări acvatice din bazinele piscicole Dunăreni-Bistreț (Dolj)*. Publications of the Romanian Ornithological Society. Cluj-Napoca (1): 49-53.

HAGEMEIJER W. J. & BLAIR M. J. 1997. *The EBCC Atlas of European Breeding Birds. Their Distribution and Abundance*. Edit. T& A. D. Poyser. London: 902pp.

HEATH M. F. & EVANS M. I. 2000. (editors). *Important Birds Areas in Europe: Priority sites for conservation. 2. Southern Europe*. Cambridge, UK: BirdLife International (BirdLife Conservation series no. 8): 481, 497, 751-765.

MUNTEANU D. 2004. *Arii de importanță avifaunistică din România* (RIDICHE MIRELA, DÂRJAN S. *Lacul Dunăreni-Bistreț, arie de importanță avifaunistică*). Alma Mater Publishing House. Cluj-Napoca: 218-220.

MUNTEANU D. 2005. *Păsările.* In: BOTNARIUC N. & TATOLE VIORICA. 2005. (editori). Cartea Roşie a Vertebratelor din România. The Publishing House of the Romanian Academy and the Gr. Antipa National Museum of Natural History. Curtea Veche Typography. Bucharest: 85-172.

MUNTEANU D. 2008. *Păsări rare, vulnerabile şi periclitate în România*. Alma Mater Publishing House. Cluj-Napoca: 260pp.

PETERSON R., MOUNTFORT G., HOOLLOM P. A. D. 1989. *Guide des Oiseaux d Europe*. Delachaux et Niestle Publishing House. Neuchatel-Paris: 460pp.

RIDICHE MIRELA. 2002. *Ardeidele din bazinele piscicole de la Bistreţ-Dunăreni (Dolj)*. Analele Banatului. Ştiinţele Naturii. Timişoara: 147-152.

RIDICHE MIRELA. 2004. *Statutul de conservare al avifaunei acvatice din bazinele piscicole Dunăreni-Bistreţ (Dolj) în raport cu legislaţia europeană.* Muzeul Olteniei Craiova. Oltenia. Studii şi comunicări. Ştiinţele Naturii. Craiova. **20**: 285-290.

RIDICHE MIRELA. 2007a. *Aspects of the anthropical impact in the Danube Meadow, the area between Rast and Bistret (Dolj County)*. In: Analele Ştiinţifice ale Universităţii "Al. I. Cuza". Section I – Animal Biology. Iaşi: 257-260.

RIDICHE MIRELA. 2007b. *Results regarding the winter monitoring of the birds species within the wetland Bistret-Carna (Dolj County).* Muzeul Olteniei Craiova. Oltenia. Studii şi comunicări. Ştiinţele Naturii. Craiova. **23**: 167-170.

RIDICHE MIRELA & BĂLESCU CARMEN. 2001. *Consideraţii ecologice asupra avifaunei acvatice din bazinele piscicole de la Dunăreni-Bistreţ* (*Dolj*). Muzeul Olteniei Craiova. Oltenia. Studii şi Comunicări. Ştiinţele Naturii. Craiova. **17**: 127-130.

RIDICHE MIRELA & ORZAŢĂ NARCISA. 2004. *Analiză de ansamblu asupra ornitofaunei din zona umedă Dunăreni-Bistreţ* (*Dolj*). Drobeta. Ştiinţele Naturii. Drobeta Tr. Severin. **14**: 213-222.

RIDICHE MIRELA, ORZAŢĂ NARCISA, ŞTEFĂNESCU D. 2006. *Cârna (Dunăreni)-Bistreţ Lake (Dolj, Romania), Important Bird Area and a potential Ramsar site*. Proceedings of the International Symposium of Ecologists of the Republic of Montenegro-Kotor. September 20th-24th, 2006 (Centre for Biodiversity of Montenegro). Montenegro: 203-212.

RIDICHE MIRELA & VIŞAN CORINA LEILA. 2008. *Agents that threat the stability of waterfowl population in Special Protection Avifaunistical Area (SPA) Bistreţ (county Dolj) and some measures of counteracting them.* Muzeul Olteniei Craiova. Oltenia. Studii şi comunicări. Ştiinţele Naturii. Craiova. **24**: 174-178.

TĂLPEANU M. 1963. *Ornitofauna bălţilor Rast-Bistreţ din sudul Olteniei.* In Com. Zool. Soc. Şt. Nat. Geogr. R.P.R. Bucharest. **2**: 229-237.

*** 1994. *Buletin A.I.A*. Buletin informativ asupra ariilor de importanţă avifaunistică din România. Romanian Ornithological Society. Cluj-Napoca (1): 1-4.

*** 1995. *Buletin A.I.A.* Romanian Ornithological Society. Cluj-Napoca (2): 1-4.

*** 1997. *Buletin A.I.A*. Romanian Ornithological Society. Cluj-Napoca. (**6**): 1.

*** 2001. *Important Bird Areas and potential Ramsar Sites in Europe*. BirdLife International, Wageningen. London: 85-86.

*** *EEC Directive* (79/409 EEC) *concerning the preservation of the wild birds*, passed on April 2nd, 1979.

*** *Governmental Decision 1284/ 24 X. 2007 concerning the declaration of the special protection areas for birds, as an integrating part of the ecological network Natura 2000 in Romania.* Published in the Official Gazette No.739/31 X.2007.

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