

## AGENTS THAT THREAT THE STABILITY OF WATER BIRDS POPULATION IN SPECIAL PROTECTION AVIFAUNISTICAL AREA (SPA) BISTREȚ AND SOME MEASURES OF COUNTERACTING THEM

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**Abstract.** *Bistret Lake, recently designated Special Protection Avifaunistical Area, incorporated in Nature 2000 network, is an important attraction for aquatic avifauna which migrates along the Danube; many of the species that pass or remain in the perimeter and in the neighbourhood of the lake, are rare species, endangered or vulnerable in Europe and the object of priority measures of preservation, according to Bird Directive 79/409 EEC. Aquatic birds population in SPA Bistret, can be influenced both qualitative and quantitative and also direct and indirect, by the pressure of natural and anthropic agents that are found in this wet area. In order to be assured the preservation of birds communities in this area and to explore for a long time the resources of this area of scientific interest and high piscicultural potential, are mentioned few measures of counteracting the negative impact; respecting and implementing these, brings both economical and ecological benefits.*

**Keywords:** *threat, preservation, water birds fauna, Bistret.*

**Rezumat.** *Factori care amenință stabilitatea populațiilor de păsări acvatice din Aria de Protecție Specială Avifaunistică (SPA) Bistret și câteva măsuri de contracarare a acestora. Lacul Bistret, desemnat recent Aria de Protecție Specială Avifaunistică, integrată în rețeaua Natura 2000 este un important punct de atractivitate pentru păsările acvatice care migrează de-a lungul Dunării; multe din speciile care tranzitează sau staționează în perimetrul și în vecinătatea lacului sunt specii rare, periclitare sau vulnerabile pe plan european și fac obiectul măsurilor de conservare prioritară, conform Directivei Păsări 79/409 EEC.*

*Avicenozele acvatice din Aria de Protecție Specială Avifaunistică (SPA) Bistret, pot fi influențate atât calitativ cât și cantitativ și totodată direct și indirect, de presiunea factorilor naturali și antropici care se exercită în această zonă umedă. Pentru a fi asigurată conservarea comunităților de păsări din această arie și a exploata pe termen lung resursele acestei zone de interes științific, dar și cu potențial piscicol ridicat sunt menționate câteva măsuri de contracarare a impactului negativ; respectarea și implementarea acestora aduce beneficii atât din punct de vedere economic cât și ecologic.*

**Cuvinte cheie:** *amenințare, conservare, avifauna acvatică, Bistret.*

### INTRODUCTION

Bistret Lake is located in the southern part of Dolj county, about 5 kilometres away from Danube (43°51'N, 32°36'E) and it represents the largest surface of water in the flood plain of Danube, between Porțile de Fier and Olt river mouth.

The acces in this wet area is made from Calafat-Corabia highway, located along the Danube, with stops in any point of Bistret, Plosca and Cârna (Dunăreni) villages which are situated in the northern part of the lake (Map 1).

Legally, Bistret Lake is leased, being an economical unit appreciated for pisciculture. Also, it is an important scientific unit, of ornithological interest (RIDICHE MIRELA, RIDICHE MIRELA et al. 2004-2007).

Ever since 1997, the agro-piscicultural accumulation Cârna-Bistret was designated as Important Birds Areas (I.B.A), in a programme coordinated by Ornithologic Romanian Society (Newsletter AIA, 1994), the consistent studies we have unreeltd, contributed to the inclusion of area on the list of Avifaunistical Important Areas in Europe, by BirdLife International (HEATH & EVANS, 2000).

In year 2007, the lake was integrated into the ecological network Nature 2000, having the statute of Special Protection Avifaunistical Area RO SPA 0010 Bistret (H.G. Nr. 1284/ 24 X. 2007).

Bistret Lake has a 1936 hectares surface and it is the result of the systematization of old natural lakes in the flood plain of Danube, mainly of lacustrine complex Bistret-Cârna-Nasta-Nedeia, which, until 1970-1975 had a 22000 hectares surface (COTEȚ, 1957).

The present aquatic surface is set up following piscicultural exploitation criteria and it is divided, by transversal dams, into six main fish ponds communicating through channels.

In Nature 2000 site are included only fish ponds I-IV.

The condition of the dams delimitating the site, on the east and west side is very good at the moment as a result of recent rebuilding, but the dams that are delimitating the fish ponds are in an advanced condition of degradation, contributing to the progressive plugging of the pond, especially where woody vegetation is missing.

The water source of the lake is represented by Desnațui river. The drainage of water towards Danube is made through Bârzogârla channel (4-5 km), that is crossing the flood plain (smooth or slightly wavy) and in whose landscape are being noticed old sand banks, semi-mobile sand dunes, xeromezophyle or xerophyle meadows, cultivated fields (orchards, crop fields etc.).

On the territories located north from the lake there are villages, meadows and agricultural fields and on the dams and on the southern shore there is vegetation with herbaceous species and less woody species (willow, poplar, accacia).

Inside the fish ponds I and II there are two islands covered with aquatic macrophytes (dominating species: *Typha angustifolia*, *Carex* sp., *Cyperus* sp., *Salix* sp.), and in the perimeter of fish ponds III (Cârna pond) there is luxurious aquatic paludous vegetation (reed, osier willow, willow) and swimmer, vegetal associations made up from: *Lemna* sp., *Salvinia natans*, *Hydrocharis* sp., *Potamogeton* sp. etc.

## MATERIAL AND WORKING METHOD

The paper was elaborated on the basis of observations made in this wet area starting with 1996.

Since March this year (2008), we have given a special attention to bird species included in addendum II of Birds Directive, for which we have elaborated a plan of preservation measures, this being the purpose of scientific project *Managementul unui sit Natura 2000. Elaborarea măsurilor de conservare pentru Aria de Protecție Specială Avifaunistică (SPA) Bistreț*, at which Museum of Oltenia is partner together with Agency for Environment Protection – Dolj branch and Faculty of Geography from Craiova University. The project in progress (march-august 2008) is coordinated by L. Gheorghe – environment counsellor in Ministry of Environment and Lasting Development and it is financed by Alfred Toepfer Foundation and German Foundation for Environment Deutsche Bundesstiftung Umwelt with NatuRegio programme.

The used working methos consisted of direct observation with 10x50 binoculars, Carl Zeiss Jena and of taking photos for documentation with Sony camera with optical zoom 15 X, but also of attentive research of ecosystems and their threat agents; in order to recognize the birds species, we have used the bird determiner BRUUN (1999).

## RESULTS AND DISCUSSIONS

Among the birds species we have signaled along the 12 years of ornithologic research in the wet area Bistreț-Cârna and which are the object of preservation measures in Bistreț site, according to Birds Directive of EEC (*Phalacrocorax pygmaeus*, *Pelecanus onocrotalus*, *P. crispus*, *Ixobrychus minutus*, *Ardea purpurea*, *Nycticorax nycticorax*, *Ardeola ralloides*, *Egretta garzetta* and *E. alba*, *Ciconia nigra*, *Platalea leucorodia*, *Cygnus cygnus*, *Anser erythropus*, *Aythya nyroca*, *Recurvirostra avosetta*, *Himantopus himantopus*, *Phylomachus pugnax*, *Chlidonias hybridus*, *Ch. niger*, *Sterna hirundo*). From the point of view of staut of preservation, the above mentioned birds species are in danger, rare or vulnerable, in the entire european/worldwide spreading areal.

The avifaunal landscape is much more complex, also including other aquatic species with a favourable preservation statute in Europe (*Podiceps cristatus*, *Anas crecca*, *A. platyrhynchos*, *A. acuta*, *A. querquedula*, *A. clypeata*, *Aythya ferina*, *Tadorna tadorna*, *Limosa limosa* etc.), many of these being the target of hiemal hunting games.

The largest diversity of birds species and numerous density is registred in migration periods in spring-autumn, the lake being an attractive area for the passing of aquatic birds species that are migrating along the river.

Some species remain inside the site perimeter during the breeding period, nestling in aquatic macrophytes inside the fish ponds (*Podiceps cristatus*, *Anas platyrhynchos*, *Aythya nyroca*, *A. ferina*, *Ixobrychus minutus*, *Ardeola ralloides*, *Ardea purpurea*, *sterna hirundo*, *Chlidonias hybridus*, *Ch. niger* etc), and others remain there during the cold weather until the lake is covered by an ice layer (*Anas crecca*, *Mergus albellus*, *M. merganser*).

The diversified and notable presence of above mentioned species is favoured by richness and variety of trophic resources of the lake (vertebrates: fish, batrachians, snakes; ivertebrates: worms, snails, scallops, insects etc.; phytoplankton), which serve both to strictly ichthyophagous species: Phalacrocoracide, Pelecanide or zoophagous: Podicipedide, Ardeide, Recurvirostride, Charadriide, Sternide etc, as well as phytophagus species (*Cygnus*) or with mixed trophic behaviour (*Anas* sp, *Aythya* sp., *Fulica atra*).

This wet area, of economical interest but very important from avifaunistical point of view is confrunted with two categories of threat fagents: natural and anthropic (table 1).

Table 1: Threat agents in the Special Protection Avifaunistical area (SPA) Bistreț and measures of counteracting/preservation that are necessary.

Tabel 1: Factori de amenințare în Aria de protecție Specială Avifaunistică Bistreț (SPA) și măsurile de contracarare/conservare a acestora.

No. crt.	Possible threats	Threatened species	Threat agents way of acting	Possible measures of counteracting
<b>Natural threat agents</b>				
1.	Floods	Majority	Inaccessibility of trophic resources; partial/entire cover of nesting places (paludous vegetation, swimmer, meadows)	Supervising condition of dams

2.	Sustained drought	Diving species ( <i>Podiceps</i> , <i>Phalacrocorax</i> , <i>Anas</i> , <i>Aythya</i> )	Eutrophisation of fish ponds Reduction of trophic resources for zoophite species	Continuous monitoring of quality of water in fish ponds: interdiction of abandoning any type of waste in the fish ponds of protected area as well as near by the area
3.	Heavy precipitation associated with strong winds	Laying of eggs of the hatching species and young specimens (babies and juveniles) at most of the species	Flooding of nest eggs; unrigging/destruction of nests; mortality at babies/juveniles because of incapacity of adaptation	Creating and maintaining of protection curtains at dams and stews
4.	Erosion of shores and dams	Indirect threat for species (especially diving species)	Plugging of stews	Creating and maintaining woody vegetation curtains (reed, willow, osier, accacia, poplar).
5.	Plundering	<i>Podiceps</i> , <i>Anas</i> , <i>Aythya</i> , <i>Chlidonias</i> , <i>Sterna</i> , <i>Himantopus</i> , <i>Recurvirostra</i> etc.	Young specimens (babies, juveniles); ill specimens	It is a natural form of selection and self-adjustment in ecosystem
<b>Anthropic threat agents</b>				
1.	Actions of keeping up the fish ponds: infrastructure, cutting or burning down the reed	Majority species	Nestling disrupting (if fishing activities coincide with nestling periods); reduction of nestling surfaces; limitation of feeding possibilities.	Maintaining paludous vegetation; keeping an optimal level of water in fish ponds; prohibiting fishing in nestling periods, in the areas where nests exist.
2.	Clearing woody vegetation	Nesting species in trees ( <i>Ardeide</i> )	Limitation of nestling possibilities; erosion of dams and shores	Prohibiting the clearing of woody vegetation existing along the shores; planting woody species
3.	Abandoning any type of waste in the area or near by	Majority species	Water pollution; bird traps (nets, hooks, fishing wires, pets, manure, domestic waste)	Improvement of special places for collecting and storing waste, prohibiting the abandon of waste, supervising water quality
4.	Pasturage	Nesting species on the meadow near by the water ( <i>lapwing</i> , <i>plover</i> , <i>wagtail</i> , <i>Himantopus</i> , <i>Recurvirostra</i> , <i>Tringa</i> , <i>Motacilla</i> )	Limitation of nesting, destruction of the ponds or of young	Prohibiting pasturage nearby the protected area
5.	Agriculture	Indirectly, most of the species	Soil and water pollution by using pesticides	Practicing of ecologic agriculture on the fields limitrophe to the area; informing the owners over the polluting role of pesticides
6.	Recreational activities : individual fishing, poaching	Nesting species in areas with paludous vegetation ( <i>Podicipedide</i> , <i>Anatide</i> , <i>Ardeide</i> ).	Affecting the birds along the shores, these being temporarily avoided as feeding or nesting areas even if the ecologic conditions are optimal.	Prohibiting and drastically punishing poaching, delimitation of areas where recreational fishing should be allowed.
7.	Hunting	Species of hunting interest (ducks, geese)	Shooting by accident or because of not being able to distinguish the protected species	Correct identification of species of hunting interest, a correct information regarding the hunting calendar and the places with hunting restrictions
8.	Insufficient knowledge of present legislation	All species	Poaching; nests destruction; water and soil pollution by abandoning waste	Actions of informing the local population, hanging up informational that emphasize the boundaries, the statute and the scientific importance of the site

The pressure of some agents can be counteracted with a serie of measures that are also provided in Tab. 1. Respecting these measures can lead to a lasting development of natural resources in the site we have reserched. From this point of view, it is needed a cooperation and active involvement both of the administrators of the protected area and of the curators and local communities that should promote Bistreț site for organized and scientific agroturism and ecoturism.

Development of agro/ecoturism and of other recreational activities inside the perimeter of fish ponds could be an alternative for growing incomes, especially because for lasting management of fishing spots, Operational Programme for Fishing assures financial support.

The progress of organized turistic activities demands a minimal infrastructure (aces ways, observation towers, boards and/or information points mainly infotachs) together with suitable advertising (mass-media promoting, brochures, flyers).

## CONCLUSIONS

Birds communities from Special Protection Avifaunistic Area (SPA) Bistreț, can be influenced both qualitative and quantitative and at the same time direct and indirect, by the pressure of natural and anthropic agents that are found in this wet area.

In order to assure the preservation of aquatic birds in this area and to exploit for a long time the resources of this area of scientific interest and with high piscicultural potential, there are mentioned few measures of counteracting the negative impact, of respecting and implementing these bringing both economic and environmental benefits.

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Map. Bistret Lake localization in Romania.  
Harta. Localizarea lacului Bistreț în România.