

THE MONITORING OF THE HUMAN IMPACT ON THE AVIFAUNA'S EVOLUTION IN THE IMPORTANT BIRDS' AREAS FROM THE PRUT RIVER BASIN

BY

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The Important Birds' Areas Program (I.B.A.) follow, like principal aim, to identify those territories where the birds have good conditions to live, breeding, rest and eat during the migration or wintering. In the Romanian Prut River basin three Important Bird' Areas are situated: Stanca-Stefanesti dam lake, Jijia and Miletin's ponds (Vladeni wetland) and Carja-Mata-Radeanu ponds. The avifauna diversity and the levels of counted birds' populations are directly influenced by the general aspect of the valleys, the habitats diversity and the size of the aquatic surfaces, the utilities of the ponds and the lakes, but also by the level of the human presence and the type of the disturbing human activities. We tried to follow how the avifauna's evolution of these territories depends on the level of human influence.

Introduction

During the second part of the 20th century, on the Prut River's valley and on the courses of all tributary rivers important hydrotechnical arrangements and improvement actions were achieved for the decrease of the flood risk and also for the enlargement of the agricultural areas. In this way, it was created a large net of chains of ponds and a lot of accumulation lakes. All these aquatic surfaces are used for fisheries, irrigations and also like water sources for electric energy production (Stanca-Stefanești dam lake) and for localities.

The Romanian Ornithological Society started the Important Birds' Areas Program in Romania during the years 1993 -1994, in order to identify those territories where the birds have good conditions of living, breeding, rest and eat during the migration or wintering. Beginning from 1995, the important birds' areas identified are included in a national monitoring program – to know the birds' populations trends, the risk factors, the level of the human presence and influence in these areas. On the other hand, the Romanian Ornithological Society makes efforts to obtain a special protection status for these territories, the final aim being to include them in the national net of protected areas NATURA 2000 – we did the first important step when in the Romanian

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law of the protected areas (2000), an article about the *special protected areas* was included.

In the Romanian Prut River basin, three important birds' areas are situated: Stanca-Stefanești dam lake, Jijia and Miletin's ponds (Vlădeni wetland) and Carja-Mata-Radeanu ponds (Heath & Evans, 2000).

Methods of study

Beginning from the autumn of 1992, ornithological surveys and census were realised, covering all phenological aspects – in different points of the Romanian Prut River basin, including the three Important Bird' Areas. After 1999, our efforts were focused on these last territories and in the inferior valley of Bașeu River where a new important birds' area could be described. We used the transects method and different counting methods, according to the birds species – points of counting (especially during the breeding period), bands counting (for aquatic birds and waders during the migration time and in the wintering areas), circles counting (for passerines in landscapes) or night counting (for corncrake – *Crex crex*). Transects were established during our first visits and we kept them during the whole study.

Part of these fieldwork results will be included in the volume "*Important Birds' Areas in Romania*", edited by the Romanian Ornithological Society during 2005.

Data presented for the vegetal formations are based upon the field investigation (realised from 1995 to 2002, in several points of the Romanian Prut River basin, covering also the nominated three important birds' areas) and the available literature as well (Tofan-Burac & Chifu, 2002).

Results and discussions

The avifauna diversity and the levels of birds' populations counted in these three important birds' areas are directly influenced by the general aspect of the valleys, the habitats diversity and the size of the aquatic surfaces, the utilities of the ponds and the lakes, but also by the level of the human presence and the type of the disturbing human activities.

Cârja-Mata-Radeanu ponds (code 010) – the southern area - are situated along the point of the confluence of Elan River with the Prut River, on the border of Vaslui and Galați counties (at 40 km SE of Bârlad city and the access is possible only by car: from Iași or Galați, on the national road Iași – Albița – Galați or from Bârlad city, on the county road Bârlad – Murgeni – Fălciu). The IBA's territory has 117 hectares of aquatic surfaces and around 200 ha like dams and canals. The hydrotechnical arrangements were done from 1969 to 1987, in order to decrease the flooding risk and for fisheries. The hygro-hydrophile vegetation is rich – large reedbeds surfaces used for breeding by the aquatic birds and passerines, but also species of *Potamogeton*, *Lemna*, *Poligonum*, *Myriophyllum* and *Nymphoides peltata*, used by the *Podiceps* sp. and *Chlidonias* sp. in order to build their nests. Dry meadows and riverside forests are also present (*Salix* sp. and *Populus* sp.).

The avifauna list includes 123 birds species; 79 species are breeding here; 99 birds species represent IBA criteria (80.48% of the ponds' avifauna):

- 2 species globally threatened - *Phalacrocorax pygmeus* (present during the passage in small groups, but also is breeding irregularly - minimum two pairs in 1996); *Aythya nyroca* (seen during the migration, but it could be a breeding species in the southern part of the IBA's territory);
- 6 restricted range species – presented like winter visitors or in passage;
- 62 gregarious species - aquatic birds and waders, part of them like breeding species or just in passage during the migration period;
- 38 declining species with unfavourable conservation status in Europe – the majority are breeding species in reedbeds, shrubs and riverside forests; other species are present during the passage or like wintering visitors;
- 23 species concentrated in Europe and with a favourable conservation status – the majority are passerines breeding species in reedbeds, shrubs and riverside forests.

Before 1989, all this territory was used like fisheries and there were three farms. Now, only the northern part of ponds – nearest Cârja village - are administrated like fisheries. The presence of fishing birds – cormorants and pelicans – is not allowed in this territory.

But the fisheries' workers don't respect the protected status of these birds and disturb them with strong sounds produced with arms or artizanal guns with calcium carbide. We notice that the Cârja-Mata-Radeanu ponds represent the northern limit where the pelicans (*Pelecanus onocrotalus*) appear in the Prut River basin – usually in small groups of 50 – 100 exemplars, but in June 200 around 1000 pelicans were present for one week.

The number of the breeding pairs is small, especially along the Cârja village territory because the houses and the farms touch the limit of the ponds, so the human influence is very strong. During the migration period, the aquatic birds and waders populations are increasing and thousands of birds could be counted.

In the middle part of the area, from the southern limit of this village to Vadeni village territory, there are not deep waters, but the reedbeds are covering large surfaces. Here we found the most part of the breeding population; it is possible that the spoonbills (*Platalea leucorodia*) are breeding there – we saw adult birds in mating plumage and the Cârja fishery's administration said us that the spoonbills were breeding beginning with the summer of 2003. But also, this region is under the biggest level of the hunting pressure and grazing activity because it is without an administration status. Frequently, part of the hunted birds are abandoned. The local people use to hunt geese and ducks for cooking; sometimes, they are hunting very rare or protected species (*Phalacrocorax pygmeus*, *Branta ruficollis*, *Tadorna ferruginea*) due to the knowledgeless or curiosity.

The southern part - the area between the Elan River and the northern limit of the Vlădeni village – is managing from the 2001's spring in order to become a hunting territory (the human presence is strictly surveyed now). The caretaker is the Galați

County Association of Hunters. The breeding birds populations were increasing obviously during the last two years.

The **Vlădeni wetland (code 014)** – included on the Romania's IBA list with the name "**Jijia and Miletin ponds**" – is situated at 40 km north - west from Iași city, around the confluence point of the Miletin and Jijia Rivers. The access is possible by train and by car – on the county roads Iași – Movileni (for the Jijia ponds, near Larga Jijia village) and Iași – Plugari (for Borsa swamp, near Borsa village, Halceni Lake – Halceni village and Miletin ponds – Vladeni village). The total surface is including 1730 ha aquatic surfaces and other 280 ha like canals and dams. This wetland was created during the '80 years in order to decrease the flooding risks in the Jijia's plain. In over 20 years of existence of the Vladeni ponds paludous vegetation proliferated especially on the Borsa swamp (10 ha of reeds) and on the Jijia ponds (450 ha of reeds). It is much less developed on the Miletin ponds (15 ha). The paludous vegetation is lacking on the dam lake Halceni, its shores being either concreted (the northern and eastern ones), either cultivated with cereals till metres from the water. Near the Borsa swamp is the Coasta Borsei forest (58 ha) while SV from Miletin ponds is the Catachi forest (92 ha) - plantations of oaks, maples, hornbeams, beeches etc. There are present dry and flooding meadows near Vladeni village, on the western side of the Borsa swamp. The Halceni dam lake is an important water source for region, and for the Jijia and Miletin ponds included, but also for agriculture; the ponds and the Borsa swamp are used for fisheries.

The Wetland Vladeni's avifauna consists of 201 birds species and among 117 species are nesting in the area; the breeding population is not big, but it is increasing every year after 1996, when the fisheries managers prohibited the grazing in the Jijia ponds perimeter and created a guarding service here. The birds use the favourable conditions for nesting either in the perimeter of the Vladeni and Larga Jijia ponds or on Borsa swamp, as well as in the Catachi and Borsa forests. In this IBA, 155 birds species used like IBA criteria (77% of the wetland's avifauna) are present:

- 9 species globally threatened – 5.84% - *Phalacrocorax pygmeus* (present during the passage in small groups, but also two pairs were breeding irregularly in the Catachi forest - in 1992); *Branta rufficollis* (in passage or at the beginning of winter), *Anser erythropus* (only one observation – 46 exemplars, 11.04.1996, Borsa) *Aythya nyroca* (seen during the migration, but also a breeding species on the Jijia ponds); *Haliaeetus albicilla* (during the summer we saw several times, adults that came here to eat, maybe it is breeding or it is trying to breed somewhere in a forest from north because it is impossible to be exemplars from the Danube Delta); *Aquila heliaca* (is a normal appearance during the autumn); *Crex crex* (is breeding in the Jijia ponds perimeter and on the flooding plain from the western side of the Halceni Lake); *Gallinago media* (present only during the autumn passage) and *Acrocephalus paludicola* (only one observation – one adult, 08.06.1999, Jijia ponds);
- 12 restricted range species - winter visitors or in passage;
- 92 gregarious species – aquatic birds, herons, storks and waders;

- 61 declining species with unfavorable conservation status in Europe – the majority are breeding species in reedbeds or in Catachi and Borsa forests; other species are present during the passage or like wintering visitors;
- 40 species concentrated in Europe and with a favorable conservation status – some of them are winter visitors or are coming in passage, but the majorities are passerines breeding species in reedbeds, shrubs or Catachi and Borsa forests.

This wetland territory is the most important breeding area in the whole Romanian Prut River basin. The compact reedbed, submersed and floating aquatic vegetation, and the rich aquatic fauna are the elements that transform the territory of ponds into an ideal place for the aquatic birds. The breeding populations have increased obviously after 1995, when the administration of Jijia ponds eliminated the grazing activities and introduced a strict control of the visitors on the farm territory. There exists one of the most important breeding colonies of herons, egrets and spoonbills on the reeds – around 250 pairs. There are present some rare breeding species in Romania. For example, the spoonbill - *Platalea leucorodia*, has there the only one colony out of the Danube Delta known till now in Romania and the breeding population is increasing every year, from 9 pairs in 1997 to 47 pairs in 2002. The red-footed falcon - *Falco vespertinus* - is breeding with one pair from 1995 and two pairs in 2001; *Coracias garrulus* (the last has here the northern breeding limit in Romania and is breeding with one pair from 1997 and two pairs from 2000); the bluethroat (*Luscinia svecica cyanicula*) is breeding with one pair and this is the only one breeding place in Romania out of the Danube Delta territory. In Vladeni wetland, there was founded the first breeding site for waders in the eastern part of Romania. The breeding species are: *Vanellus vanellus*, *Charadrius dubius*, *Limosa limosa*, *Recurvirostra avosetta* and *Himantopus himantopus*; the number of pairs is increasing slowly. During the 2003' breeding season, 35 pairs of lapwings were counted, 5 pairs of little ringed plovers, 11 pairs of black-tailed godwits, 15 pairs of avocets and 4 pairs of black-winged stilts (Muller & Gache, 2004). During the migration periods – in spring and autumn – we can count in Vladeni wetland territory hundreds of herons, egrets, spoonbills and storks, but also thousands of geese, ducks, waders and gulls. The area is situated on the migration ways of *Anser albifrons* (7500 exemplars, Jijia ponds, 16.03.2000, respectively, 19270 exemplars, Jijia ponds, 02.11.2000) and *Ciconia nigra* (200 exemplars, Jijia ponds, 08.10.2000). In wintertime the dam lake is not usually freezing and it is an important wintering quarter for waterfowls.

The Halceni dam lake is situated near Halceni village and has 7-8 m depth, with the eastern and northern shores concreted, unsuitable for reed installation and development. The southern shore is used like agricultural field and the Miletin swampy situated near the western shores is used for grazing. For all these reasons the lake is less visited by birds during the breeding season. But on the area of the end of the lake and on the Miletin swampy exist one of the waders breeding colonies. By our efforts, the local people use to avoid this area between the 15th April and 20th June, changing the place for grazing on the hills' slope.

The cormorants are seen like enemies on the fisheries' territories. They form large groups during the migration, but also are breeding on the reeds – normally the fisheries workers are destroying their nests at the beginning of the breeding season. The fisheries' managers respect the protected status of cormorants and use “peacefully” techniques to disturb them – strong sounds produced with arms or artizanal guns with calcium carbide, scarecrows (using the clothes took from the fishing poachers) or net of coloured flags.

In fisheries, one of the biggest problem is represented by the fishing poachers activity. The aquatic birds can die catched in nets installed under the water. On the other hand, in order to increase the control of their presence, but also for economic reason – the water's price and the low production in the ponds nearest Mihail Kogalniceanu village - the managers of the Jijia ponds decided to reduce the aquatic surfaces and let two large ponds without water from 2001, using it like agricultural fields. This is a great damage for birds because one of these ponds represented before the most important eating place for the breeding population.

The incendentally or illegally reedbeds fires produced by the local people during the autumn or early spring do not affect the birds but could produce damage and the death of other animals.

A ratio of this territory avifauna and that recorded for Romania emphasises that the wetland Vladeni shares 53.33% of the total amount of species present in the country. The image of a small delta is created due to the presence of spoonbills, cormorants, herons, egrets, ducks, gees, swans, gulls, warblers, nightingales, etc. In the last few years species that were missing a time ago appeared, such as: *Cygnus olor*, *Tadorna ferruginea*, *Egretta alba*, *Ardeola ralloides*, *Platalea leucorodia*, *Plegadis falcinellus*, *Himantopus himantopus*, *Recurvirostra avosetta*, *Coracias garrulus*, etc. Based on inhabitants' reports, it is obviously that flocks of ducks and geese that halt here are much larger than 10 - 15 years ago, and also their time to be stationed on the ponds. Even in winter, especially in December but also in February - March, the waterfowl's population on the Halcen Lake increased. The wetland Vladeni could be never dried, due to its surface and multiple uses. Thus, its ornithological value will be maintained and even increased if the eutrophication of basins and reed extent will continue. We must say here that Jijia and Miletin's ponds are considered protected territories by Resolution 8 / 1994 of the Iasi County Council.

The **Stanca-Stefănești dam lake (code 015)** is situated in Botoșani County, on the Prut River (at 576 km of the flowing point into Danube River). The access is possible only by car, on the national road Iasi – Stefanesti. The road crosses the river on the top of the dam (border cross point). It is the largest aquatic surface in the Prut River's basin (5900 ha, 60 km length and 27, 64 m maximum depth) and it is the second lake in Romania. The lake was taken in exploitation in 1978 and it was created especially to limit the flooding risks in the Prut River's valley; now it is used for electric power production, like water source for villages and irrigations, for fisheries. From the water's quality point of view, the accumulation lake is included in the group of first beta-mezosaprobe waters. The riverside forests represent the dominant vegetation. In the

northern part, near Crasnaleuca village, coniferous plantations exist. In some places, the shrubs are present on the high banks. There are also large cultivated surfaces. The reedbeds have no large surfaces.

The Stanca-Stefănești lake birds' list includes 180 species; some of them are irregular presences in this territory, another group is present during the migration periods and the majority species are winter visitors because this large and deep lake (27.64 m the maximum depth, in front of the dam) does not freeze during the winter, so it is the most important birds' wintering quarter in the eastern part of Romania. The breeding population is small because the favorable habitats are missing for the aquatic and semi-aquatic birds' species but the birds that use the forests to breed are very well represented. During our studies, there were presented 138 birds species used like IBA criteria (76.40% of the total avifauna):

- 5 species globally threatened - *Phalacrocorax pygmeus* (present only during the passage in small groups); *Aythya nyroca* (seen during the migration, also in small groups); *Aquila clanga* (very rare presence - in April 1994 and October 1995); *Aquila heliaca* (probably breeding species in the Crasnaleuca forest and in the riverside forest near the barrage, because in this two points were seen everytime adults and juvenils); *Crex crex* (identified by the male's calls in May and June, so possible breeding species);
- 6 restricted range species – winter visitors or in passage;
- 80 gregarious species - aquatic birds, herons and waders, presented here in large groups especially during migration, respectively, during the winter if we discuss about the waterfowls; normally, we can count hundreds exemplars for the big cormorants, herons, egrets, swans and terns, respectively, thousands exemplars for geese, ducks and gulls;
- 55 declining species with unfavorable conservation status in Europe – some are breeding species; the majority are passage species but some of them are rare species in this territory – *Hieraaetus pennatus*, *Pandion haliaetus*, *Milvus migrans*, *Larus minutus* or *Coracias garrulus*;
- 38 species concentrated in Europe and with a favourable conservation status – most of them are passerines breeding species in the riversides forests and in the plantations; other species are present during the passage or in winter.

The position of the Stanca-Stefănești Lake on the border between Romania (Stanca village) and the Republic of Moldavia (Costești village) represent a great advantage for the birds from this territory because the human access is strictly controlled and the human activities are reduced to agriculture and fisheries. The biggest groups of birds use to stay on the water in front of dam or on the western shore, close to the dam or on the compensation lake. This represents the strictly protected area by the border police. The nearest autumn wheat fields are used by geese like eating-places during the winter. The grazing and the hunting activities do not disturb the birds – they are prohibited in the dam area.

The fishing activity took great and non-controlled level in the Prut River water upstream of the dam. On the Romanian shore, the people have created a true labyrinth of

nets. In these nets there were also founded died birds, near the fish. The electrical fishing done especially by the Moldavian people produced the biggest damage. After months of discussions, it was signed an agreement between the Romanian and Moldavian authorities which prohibits the fishing in the Prut River for three years, beginning on the 1st January 2003. It is permitted only the sportive fishing.

Conclusions and recommendations

The evolution of these territories depends on the level of human influence. We can expect that the biodiversity will be conserved and increased – step by step – because:

- the border policy keeps a good survey of the human presence in the Stanca-Stefanesti and Carja-Mata-Radeanu areas;
- the fisheries guarding system assure indirectly the avifauna protection in Vladeni wetland area; only the fish-eating birds species are not agreed by the fisheries managers in all the areas;
- it is normally to believe that the hunting managing in the southern part of Carja-Mata-Radeanu ponds will conserve a good level of the birds population in order to obtain profit for a long time.

As we saw, it is a reality that the Prut River valley and some territories from this basin hide a high biodiversity and it can be considered like the Danube Delta prolongation. In order to preserve this natural treasure, we recommend:

- to establish an integrated protection system for some wetlands from the Prut River Basin, after the including of these reserves within the Romanian “Nature 2000 Network”, according to the Directive no. 92/43/CEE from May 21st, 1992 – the scientific documentation in order to include these three important birds’ areas from the Prut River basin was done by the Conservation Department of ROS in December 2004. This will permit to accord a special protection status for the three nominated important birds’ areas like a first step to a real biodiversity and habitats’ protection;
- to assess the human impact for the plants and animals’ diversity;
- an ecological management of these wetlands on the principles of the sustainable development principles, with a periodical monitoring of the biodiversity and the level of the human pressure in these territories.

Bibliography

1. Gache, Carmen, 2002 - *The bird fauna's dynamics in the Prut River basin*, Publ. R.O.S., 15, Cluj-Napoca
2. Heath, Melanie, Evans, M.I., 2000 - *Important Birds' Areas in Europe – Priority sites for conservation*, vol. 1, 2, BirdLife Conservation Series, 8, Cambridge: 866p/ 791p.
3. Müller, Johanna Walie, Gache, Carmen, 2004 - Proceedings of the 2nd Congress

- of Ecologists from Republic of Macedonia with international participation - Ohrid, 25 – 29.10.2003, Macedonian Ecological Society (editor), VI: 492 – 496, Skopje, Macedonia
4. Tofan-Burac, Tatiana, Chifu, T., 2002 - *Flora și vegetația din valea Prutului*, Ed. Corson, Iasi: 437 p.
 5. Tucker, G., Heath, Melanie & colab., 1994 - *Birds in Europe: their conservation status*, BirdLife Conservation Series, 3, Cambridge: 600p.
 6. ***, 1997 - *Lucrările Simpozionului Arie de Importanță Avifaunistică din Romania (Important Birds Areas in Romania Symposium)*, Publ. R.O.S., 3, Cluj-Napoca: 68p