

MANAGEMENT OF NATURE 2000 SITES AND THE INVOLVEMENT OF LOCAL COMMUNITY: VLĂDENI WETLAND (IAȘI COUNTY)

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ABSTRACT. The wetland Vlădeni presents a great importance in the north-eastern Romania, especially, for the bird fauna’s diversity (205 bird species) and sheltered birds’ populations. On this territory were designated two partially overlapping sites Nature 2000: Jijia and Miletin Rivers’ ponds (ROSPA0042), respectively, Salty meadows Inferior Jijia – Prut Rivers (ROSCI0222). This perimeter represents one of the most important birds breeding area from the Romanian basin of Prut River (117 breeding bird species), stopover places during the migration time (there can be recorded 20,000 – 25,000 aquatic birds, respectively, 15,000 – 18,000 waders daily, on the whole sites’ territory), but also, wintering site for waterfowls (in the winter time, Hălțeni Lake shelters 6,000 – 15,000 aquatic birds). The sustainable exploitation of natural resources from this territory represents a priority aim not only for the sites’ caretaker, but also for local community and it is possible just through the active involvement of local community, including, the economic stakeholders, from the beginning, in the elaboration and implementation of the sites’ management plan.

Key words: Nature 2000 network, Vlădeni wetland, management, local community.

REZUMAT. Managementul siturilor Natura 2000 și implicarea comunității locale: zona umedă Vlădeni (Iași). Zona umedă Vlădeni are o importanță deosebită în nord-estul României, în special, pentru diversitatea avifaunistică (205 specii de păsări) și dimensiunea populațiilor de păsări care vizitează regiunea. În acest teritoriu, se suprapun parțial două situri Natura 2000: Eleșteiele Jijiei și ale Miletinului (ROSPA0042), respectiv, „Sărăturile Jijia inferioară – Prut” (ROSCI0222). Astfel, zona constituie unul dintre cele mai importante teritorii de cuibărit din bazinul românesc al Prutului (117 specii clocitoare), loc de popas în timpul migrației (pe cuprinsul întregului sit, în fiecare zi, pot fi recensate până la 20000 – 25000 de păsări acvatice, respectiv, 15000 – 18000 de păsări limicole), servind și drept cartier pentru iernarea păsărilor (iarna, lacul Hălțeni adăpostește 6000 – 15000 de păsări acvatice). De aceea, gestionarea durabilă a resurselor din acest perimetru constituie un imperativ prioritar atât pentru custodele siturilor Natura 2000, cât și pentru comunitatea locală, fiind posibilă numai în condițiile implicării comunității locale, inclusiv, a agenților economici, încă din etapele preliminare ale elaborării și implementării unui plan de management adecvat.

Cuvinte cheie: rețeaua Natura 2000, zona umedă Vlădeni, management, comunitate locală.

INTRODUCTION

During the last decades, half of the European vertebrates' species (excepting birds) and one third of the bird species had obviously negative trends of their populations. The European habitats were, also, modified through the anthropogenic activities – for example, about 60% of the wetland' surfaces disappeared, while in Scotland, the surfaces covered by coniferous forests were reduced with near 90%.

The Nature 2000 network was created inside the European Union's territory, in order to stop the continuously diminution of the biodiversity and the permanently decline of the wild animal populations, but also, to improve the conditions to save the vulnerable and globally threatened species. This network was organized using the Birds' Directive (Directive 2009/147/EC, former Directive 79/409/EE) and the Habitats Directive (92/43/EEC), being formed by two categories of sites: Special Protected Areas (SPA) for birds' protection and Special Areas of Conservation (SAC) designated from the national Sites of Community Importance (SCI). The key index to designate a Nature 2000 site is the favorable conservation status, evaluated through the species of community interest's distribution and trends, surface and conservation status of priority habitats that sustain the birds and other animal communities in the territory.

An adequate management plan for the Nature 2000 sites must follows the aims of a sustainable biodiversity's conservation through the implementation of specific measures in order to maintain the integrality and good function of the existent habitats, but also to avoid the disturbing risk for the birds' populations and other animal populations living on those territories. By other side, the management plan must contain measures that regulate the economic activities inside and in the nearest neighborhoods of the sites.

Starting from December 2011, the Romanian Ornithological Society (SOR/Birdlife Romania) is the caretaker for the one of the most important wetland in the north-eastern Romania: Vlădeni wetland. Situated around the confluence of Jijia River with two tributaries, Miletin and Jijioara, on this wetland's territory were designated two partially overlapping sites Nature 2000 (H.G. 1284/2007): Jijia and Miletin Rivers' Ponds (ROSPA0042), respectively, Salty Meadows Inferior Jijia - Prut Rivers (ROSCI0222).

This wetland was resulted through the hydro-technical arrangements started in the area from '70 in the last century, following to control the flooding risk in the Jijia River basin, but also to provide important water resources for the surrounding villages, irrigation of agricultural lands and to develop some fisheries in this region. Nowadays, after about 40 years of existence, the dam lakes and fishery ponds present a deltaic general aspect. The continuous fishery activity developed in the area was the starting point for the ponds and surrounding marshes areas' evolution, transforming all these territories in suitable sheltering sites and breeding places for a great diversity of birds.

CASE STUDY: VLĂDENI WETLAND

The “Jijia and Miletin Rivers’ Ponds” (ROSPA0042) cover a surface about 19,425.02 hectares (ha) and include some river’ sectors (Jijia, Miletin and Jijioara), four chains of fishery ponds (Vlădeni Ponds, Larga Jijia Ponds, Movileni - Mălăiești - Forăști - Gropnița Ponds, respectively, Focuri - Coarnele Caprei Ponds), two dam lakes (Hălceni and Bulbucani) and some marshes areas (Miletin Marsh, swampy area between Andrieșeni and Vlădeni villages, Jijia and Jijioara Rivers’ confluence area, the Bulbucani Lake tail area and the former Borșa Marsh). Two woodlands, Borșa and Cațâchi, are situated in the immediately neighborhoods of Borșa Marsh, respectively, Vlădeni ponds.

Sheltering a high level of bird fauna’s diversity and large aquatic, but also, semi-aquatic birds’ populations, this wetland (excepting the ponds from Jijioara River) was included in the list of Important Birds Areas from Romania published by SOR/Birdlife Romania in 1994. In the same time, the Jijia and Miletin Ponds were designated like local protected area (HCJ Iași no. 8/1994).

This area is partially overlapping with the site “Salty Meadows Inferior Jijia - Prut Rivers” (ROSCI0222), that cover a surface about 10,976 ha. In this site, the priority habitat is the inland salt meadows (1,340), present on large surfaces in the common valley of Jijia and Prut Rivers, between Probota and Cotu Morii villages (standard form of the site). In the area, this habitat is represented through vegetal associations with plant species like *Limonium gmelinii*, *Lotus glaber*, *Spergularia maritima*, *Artemisia santonica*, *Taraxacum bessarabicum*, *Aster tripolium*, *Puccinellia distans*, *Puccinellia limosa*, *Juncus gerardii*, *Festuca pseudovina*, *Crypsis schoenoides*, *Iris halophila* and *Scorzonera cana*.

In the ROSCI0222 were included, also, two protected wetland areas, Teiva - Vișina Marsh and Prutețul Bălătău Marsh (Law no. 5/2000). Starting from the standard form for Important Birds Area designation (Papp & Fântână, 2008) used in the Nature 2000 site’s form, too, this perimeter represents one of the most important birds breeding area from the Romanian basin of Prut River (117 breeding bird species), stopover places during the migration time (there can be recorded 20,000 – 25,000 aquatic birds, respectively, 15,000 - 18,000 waders daily, on the whole sites’ territory), but also, wintering site for waterfowls (in the winter time, Hălceni Lake shelters 6,000 - 15,000 aquatic birds). The most important species for this site are presented in the table 1 (Papp & Fântână, 2008).

Table 1 - The bird species criteria for Jijia and Miletin Ponds (ROSPA0042).

No.	Species	Breeding (pairs)	Winter (exemplars)	Migration (exemplars)	Criteria
1.	<i>Anser albifrons</i> (Scopoli, 1769)	-	5000 -7500	12500-14500	C3
2.	<i>Anser anser</i> (Linnaeus, 1758)	-	-	2500-3000	C3
3.	<i>Anser erythropus</i> (Linnaeus, 1758)	-	-	20-30	C1, C6
4.	<i>Aythya nyroca</i> (Güldenstädt, 1770)	20-30	-	2000-2700	C1, C2

Continues.

Table 1 - Continuation.

No.	Species	Breeding (pairs)	Winter (exemplars)	Migration (exemplars)	Criteria
5.	<i>Chlidonias niger</i> (Linnaeus, 1758)	15-30	-	-	C6
6.	<i>Ciconia ciconia</i> (Linnaeus, 1758)	-	-	2500-5000	C2
7.	<i>Circus pygargus</i> (Linnaeus, 1758)	2-4	-	-	C6
8.	<i>Ardea (Egretta) alba</i> Linnaeus, 1758	30-40	-	150-240	C6
9.	<i>Falco vespertinus</i> Linnaeus, 1766	30-40	-	-	C1, C6
10.	<i>Gallinago media</i> (Latham, 1787)	-	-	20-50	C6
11.	<i>Limosa limosa</i> (Linnaeus, 1758)	11-13	-	4500-6000	C1, C3
	Waterfowls in passage	-	-	22000-24000	C4
12.	<i>Philomachus pugnax</i> (Linnaeus, 1758)	-	-	3600-4500	C6
13.	<i>Pluvialis apricaria</i> (Linnaeus, 1758)	-	-	350-600	C6
14.	<i>Recurvirostra avosetta</i> Linnaeus, 1758	18-25	-	50-75	C6
15.	<i>Sterna hirundo</i> Linnaeus, 1758	60-80	-	-	C6

Our activity in the area was begun in 1992, following the bird fauna's monitoring. During the last about 15 years, there were done some scientific research on the amphibians and some aquatic invertebrate groups, but the data on the habitats, especially about the priority one, inland salt meadows, are very old and it is very possible that the situation is completely changed in present.

Nowadays, for us, like caretaker, is very important to find the best way to collaborate and involve the all stakeholders from the area in order to elaborate a realistic management plan, starting from the conservation measures necessary implementation and from the existent or future proposal local economic activities in order to assure a sustainable development and the long-term biodiversity' conservation in the region. The non-involvement of all interested stakeholders in this activity can become the origin of neither complicate conflict situations, making very difficult nor only the management but also the existence of these two Nature 2000 sites covering a total surfaces about 20,000 ha where are living thousands people (there are ten local administrative authorities corps), are developed different economic activities (eight fisheries, livestock farms, small enterprises) and are planning different infrastructure projects (roads, photovoltaic parks, etc.).

RESULTS AND DISCUSSIONS

Starting from 1992, we had done a continuously monitoring of the bird fauna from the territory of ROSPA0042, recording 205 bird species, 117 being breeding species in the area (Gache, 2002). There is present the largest breeding colony of herons, egrets and spoonbills from the Romanian Prut River basin, the largest breeding population, but also, the greatest diversity for the wader species in the eastern Romania (excepting, the Danube Delta): *Vanellus vanellus*,

Charadrius dubius, *Limosa limosa*, *Recurvirostra avosetta* și *Himantopus himantopus* (Müller, 2004).

Three globally threatened bird species - *Aythya nyroca*, *Crex crex* and *Phalacrocorax pygmeus* - are breeding in the area, the last, just like irregular breeding species. Another five globally threatened bird species appear in different period of the year, especially, during the migration time, in the area: *Branta ruficollis*, *Anser erythropus*, *Haliaeetus albicilla*, *Aquila heliaca* and *Gallinago media*.

During the last decade, there were done some ecological and ethological studies regarding some groups of bird species: waders (Müller, 2004), reed beds passerines (Ion, 2007), herons, egrets and spoonbills (Ignat, 2008), but also, different monitoring programs, including visits inside the breeding birds' colonies and passerines' ringing. All this researching activities permitted to accumulate a consistent data on the bird fauna's presence and dynamic in the area for the last two decades. In the table 2, we present the present situation of the priority bird species recorded in the area.

The elaboration of an adequate management plan for these Nature 2000 sites must start from the actual problems and potential risks. In order to identify and evaluate these risks, the first step is to analyse the present use of aquatic surfaces and of the terrains from the dam lakes and ponds' vicinity, but also, to evaluate the evolution of this situation during the last decade, influencing in an obviously or more discreet manner the bird fauna presence, distribution and populations' trends in the wetland area Vlădeni.

Table 2 - The present status of priority bird species in the ROSPA0042.

No.	Species	Birds' Directive	Population (exemplars/pairs)	Conservation status in Europe	Local presence period
1.	<i>Phalacrocorax pygmeus</i> Pallas, 1773	Annexe 1	100-180 ex. 5-7 p.	Unfavourable	Migration, breeding
2.	<i>Botaurus stellaris</i> (Linnaeus, 1758)	Annexe 1	5-10 p.	Vulnerable	Migration, Breeding
3.	<i>Nycticorax nycticorax</i> (Linnaeus, 1758)	Annexe 1	150-400 ex. 60-70 p.	Decline	Migration, breeding
4.	<i>Ardeola ralloides</i> (Scopoli, 1769)	Annexe 1	100-120 ex. 20- 0 p.	Vulnerable	Migration, breeding
5.	<i>Egretta garzetta</i> (Linnaeus, 1766)	Annexe 1	250-400 ex. 50-60 p.	Favourable	Migration, breeding
6.	<i>Ardea (Egretta) alba</i> Linnaeus, 1758	Annexe 1	250-400 ex. 20-25 p.	Favourable	Migration, breeding
7.	<i>Ardea purpurea</i> (Linnaeus, 1766)	Annexe 1	80-120 ex. 15-20 p.	Vulnerable	Migration, breeding
8.	<i>Platalea leucorodia</i> Linnaeus, 1758	Annexe 1	190-310 ex. 40-55 p.	Threatened	Migration, breeding

Continues.

Table 2 - Continuation.

No.	Species	Birds' Directive	Population (exemplars/pairs)	Conservation status in Europe	Local presence period
9.	<i>Ciconia ciconia</i> (Linnaeus, 1758)	Annexe 1	2500-5000 ex. 40-60 p.	Vulnerable	Migration, breeding
10.	<i>Anser erythropus</i> (Linnaeus, 1758)	Annexe 1	15-20 ex.	Vulnerable	Migration
11.	<i>Aythya nyroca</i> (Güldenstädt, 1770)	Annexe 1	700-1000 ex. 20-30 p.	Vulnerable	Migration, breeding
12.	<i>Aquila heliaca</i> Savigny, 1809	Annexe 1	3-5 ex.	Threatened	Migration
13.	<i>Circus gallicus</i> (Gmelin, 1788)	Annexe 1	10-15 ex.	Rare	Migration
14.	<i>Circus aeruginosus</i> (Gmelin, 1788)	Annexe 1	40-65 ex. 15-20 p.	Favourable	Migration, Breeding
15.	<i>Circus cyaneus</i> (Linnaeus, 1766)	Annexe 1	15-20 ex.	Vulnerable	Migration
16.	<i>Circus pygargus</i> (Linnaeus, 1758)	Annexe 1	10-15 ex.	Favourable	Migration
17.	<i>Falco vespertinus</i> Linnaeus, 1766	Annexe 1	30-50 ex. 10-15 p.	Vulnerable	Migration, breeding
18.	<i>Pluvialis apricaria</i> (Linnaeus, 1758)	Annexe 1	250-400 ex.	Favourable	Migration
19.	<i>Gallinago media</i> (Latham, 1787)	Annexe 1	20-40 ex.	Vulnerable	Migration
20.	<i>Tringa glareola</i> Linnaeus, 1758	Annexe 1	150-200 ex.	Decline	Migration
21.	<i>Philomachus pugnax</i> (Linnaeus, 1758)	Annexe 1	2000-3000 ex.	Favourable	Migration
22.	<i>Recurvirostra avosetta</i> Linnaeus, 1758	Annexe 1	150-200 ex. 18-25 p.	Decline in wintering sites	Migration, breeding
23.	<i>Larus minutus</i> Pallas, 1776	Annexe 1	20-30 ex.	Decline	Migration
24.	<i>Sterna hirundo</i> Linnaeus, 1758	Annexe 1	20-50 ex. 6-10 p.	Favourable	Migration, breeding
25.	<i>Chlidonias hybridus</i> (Pallas, 1811)	Annexe 1	300-550 ex. 100-150 p.	Decline	Migration, Breeding
26.	<i>Chlidonias niger</i> (Linnaeus, 1758)	Annexe 1	30-50 ex. 3-5 p.	Decline	Migration, breeding
27.	<i>Caprimulgus europaeus</i> Linnaeus, 1758	Annexe 1	3-5 p.	Decline	Migration, breeding
28.	<i>Alcedo atthis</i> (Linnaeus, 1758)	Annexe 1	50-70 ex. 25-35 p.	Decline	Migration, breeding
29.	<i>Coracias garrulus</i> Linnaeus, 1758	Annexe 1	15-20 ex. 1-4 p.	Decline	Migration, breeding

Continues.

Table 2 - Continuation.

No.	Species	Birds' Directive	Population (exemplars/pairs)	Conservation status in Europe	Local presence period
30.	<i>Anthus campestris</i> (Linnaeus, 1758)	Annexe 1	50-70 p.	Vulnerable	Migration, breeding
31.	<i>Lanius collurio</i> Linnaeus, 1758	Annexe 1	70-100 p.	Decline	Migration, breeding
32.	<i>Lanius minor</i> Gmelin, 1788	Annexe 1	40-50 p.	Decline	Migration, breeding

The most important problem identified on the territory of ROSPA0042 is the constant diminution of the aquatic and swampy surfaces due the high costs of water supply in fisheries, but also like result of one administrative measure in some fisheries in order to avoid the fishing poaching activities (especially, in Larga Jijia Ponds). In the same time, the long-term summer dryness recoding in the Jijia River basin during the last about fifteen years, with just very few exceptions, worsened the situation. During the last years, the diminution of Hălțeni Lake' surface was constantly, but in 2012' summer the small island existent in the middle part of the lake was look like a small hill on a plain, while the Miletin Marshes was completely dried and water was present just on the Miletin River's meanders from the lake's tail. This lake represents the principal water sources for nearest villages and fisheries ponds' supply.

The effects are huge for the bird fauna's diversity on the site's territory. Starting from 2003, when the Borșa Marsh was abandoned by Vlădeni fishery's administration and remained completely dried, the mixed breeding colonies of grebes and terns (*Podiceps cristatus*, *Podiceps nigricollis*, *Podiceps grisegena* and *Tachybaptus ruficollis*, respectively, *Sterna hirundo*, *Chlidonias hybridus* and *Chlidonias niger*), identified in the middle '90 there, was disappeared and two grebes species (*Podiceps nigricollis* and *Podiceps grisegena*) were not recorded more like breeding species in the area.

On the territory of Larga Jijia fishery three important ponds were left without water starting from 2003 - 2004; it was an administrative decision in order to avoid the risk of fishing poaching activities and to reduce the economic losses, especially, in the south-eastern side of the fishery, situated in the vicinity of Mihail Kogălniceanu village. In this way, there were lost nor only important feeding areas for birds during the breeding season and autumn migration time, but also, an important buffer area surrounding the most suitable breeding territories for waterfowls and herons' group in this part of ROSPA0042.

In this moment, eight fisheries have economic activity on the whole territory of the Nature 2000 sites ROSPA0042 and ROSCI0222. The existence of these fisheries is absolutely vital for the wetland's existence, the disappearance of one fishery meaning the automatic disappearance of one wetland with the whole associated biodiversity. We mentioned before the main effect of the Borșa Marsh's

abandonment. A similar situation was recorded in the Jijioara River basin, where the fishery ponds Focuri - Coarnele Caprei were abandoned during the last three years, so, the water surface and depth were slowly decreased and induced an extensive development of fragile red beds, unsuitable for the former breeding bird fauna, but also, the loss of some suitable stopover sites for birds' migration time. For all these reasons, we are looking to find the best ways to maintain the fisheries activity, including through lobby activity to improve the legislation in order to obtain more financial facilities for the fisheries present in the network Nature 2000, but also cooperating to develop some projects that can help the sustainable and friendly fisheries activity.

In the same time, we had some meetings with the fisheries' administration in order to have a coordinated regulation of fisheries activity correlated with the birds' annual biological cycle. In the same time, we had planned to develop an educative campaign, but also, a system of punitive measures in order to eliminate the fishing poaching activities in the area. The indirect effects of this local problem were mentioned yet, but there are also direct effects - during the years, we found dead drowned birds as a result of incidentally capture in the fishing nets fixed (and, sometimes abandoned) in the water. We must mention also the fishing poachers' practice of reed beds' burning in order to distract the fisheries workers' attention. This has disastrous consequences for the animal species that inhabits the compact reed beds, causing a high rate of mortality, especially in the cold season, representing the resting period of these animals' annual life cycle. In the same time, this practice determines an exaggerated development of reed beds, with limiting effects on fish populations and some groups of breeding birds from the area.

The hills' slopes and dikes' erosion and the landslides phenomenon, that is very active on the valleys of Miletin and Jijioara Rivers, has big influence on the landscape' stability and the waters' quality. This has qualitative and quantitative consequences on the algal flora and invertebrates' fauna from the nearest lakes and ponds, so, indirectly, on the bird fauna that use these feeding resources, too.

There are some problems that can be solved just through the working with the local authorities. First of all, we must regulate the grazing activities through designation of specific areas, respecting some time schedules and avoiding the overgrazing risks. The grazing activities lead to disturbance of the birds that use to build their nest on the ground (waders, gulls and some passerines), including the complete destruction of the nests and eggs, the highest risk areas being identified on the territories from the dam lakes Hălceni and Bulbucani, respectively, Miletin Marsh. Another problem that needs the involvement of the local authorities is the management of wastes' storage in the area. We must mention, also, the exploitation of clay that is a common practice in the area and needs regulation measure because has impact on the birds that use to build their nests like underground galleries - *Merops apiaster*, *Coracias garrulus*, *Riparia riparia* and *Passer montanus*.

All the future development projects from the area must respect the status of Nature 2000 sites. The infrastructure projects, like photovoltaic parks or others,

will be developed just in those areas where the impact on the regional biodiversity is as lowest possible. The region need to improve the local roads network nor only for the local communities facilities, but also, for the eco-tourism activity development in the area. For the last, there is necessary to create a suitable infrastructure, including, tourist trails, birdwatch points, parking places, temporary waste selection and storage points, agro-touristic hostels. We have to elaborate a regulation of this activity, too.

For the local community's involvement, we are planning to organize summer ecological camp, different educative campaigns, some specific training sessions on topics like eco-tourism in Nature 2000 sites or biological agriculture, but also to help them in writing small and medium projects that can obtain financial support for rural areas' development.

The hunting activity present low level, being recorded just local and temporary, but is completely uncontrolled, some rare bird species for the area being identified first through shooting down exemplars – *Branta ruficollis* or *Tadorna ferruginea*.

CONCLUSIONS

The elaboration of plan management for one Nature 2000 site is not just the work of the caretaker. The caretaker can take in charge the biodiversity's monitoring activities, but including there the local community can be involved (especially, the teachers, children and students from the area).

An adequate management plan can be elaborated and implemented just through a large consulting program with the economic agents, local authorities and local community, especially for the large areas like Vlădeni wetland.

The fisheries activity is vital for the existence of wetlands developed inside and surrounding the fish ponds. For this activity, it is absolutely necessary to improve the legislation in order to provide special facilities that can avoid the risk of activity's abandonment and, consequently, wetlands' disappearance.

The all interested stakeholders must thinking the regional present and future development projects respecting the imperative of sustainable natural resources' exploitation and long-term biodiversity's conservation.

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