

## ASPECTS CONCERNING BIRD FAUNA IN THE SUCEAVA RIVER`S MIDDLE BASIN

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**Abstract.** The Suceava Rivers`s Middle Basin is situated in the northern part of Romania, in the Suceava County. Starting in 2006 we studied birds in the mentioned area. So far, we`ve recorded a number of 126 species of birds, out of which 89 are nesting. In the last three years of our study, we recorded slight changes regarding some species nesting. Referring to Rădăuți Swale, we identified a number of 13 new nesting species. Regarding habitat type, 58% of the bird species are nesting in meadows, while only 6% in the fields and agricultural areas. *Crex crex* is a species that breeds in the area and prefers agricultural habitats, showing that fragmented agricultural patches in the area are important for some species. The overall diversity of the habitats in the study area is a factor that influences the diversity of breeding birds.

**Keywords:** Suceava River, birds, breeding, habitats.

**Rezumat. Aspecte legate de avifauna Bazinului Mijlociu al Râului Suceava.** Bazinul Mijlociu al râului Suceava este poziționat în partea de nord a României, în județul Suceava. Începând cu anul 2006 am realizat un studiu în ceea ce privește avifauna din zonă. Până în prezent am identificat un număr de 129 de specii de păsări, dintre care 89 sunt cuibăritoare. În ultimii 3 ani de studiu am observat anumite modificări în ceea ce privește cuibăritul unor specii. Pentru Depresiunea Rădăuți am identificat un număr de 13 specii noi clocitoare. Referitor la tipul de habitat preferat, 58% dintre speciile de păsări clocitoare recensate în zonă cuibăresc în zăvoaie și lunci, în timp ce doar 6% în terenuri agricole. *Crex crex* este o specie care cuibărește în zona studiată și preferă habitatele agricole. Acest lucru arată importanța agriculturii fragmentate practică în zonă pentru anumite specii. Diversitatea habitatelor din zona studiată este principalul factor care influențează diversitatea păsărilor cuibăritoare.

**Cuvinte cheie:** râul Suceava, păsări, cuibărit, habitate.

### Introduction

The Suceava River has its springs in paleogene flysch of the north of the Oriental Carpathians, in the Obcinile Bucovinei area, near Izvoarele Sucevei village, at 1250 m asl. The Suceava River is the northernmost tributary water of Siret River, situated on Romanian territory. It has a total length of 172 km, and a water network of 2616 km<sup>2</sup>.

The Suceava River`s Middle Basin has its northern border near Vicovu de Jos village, and the southern one near Milișăuți village. The main tributaries are Pozen, Sucevița, Voitinel, Bilca and Horodnic.

The climate of the area is temperate – continental, being influenced by the circulation of the masses of air that are channelled along the Suceava river`s axis. These have an Siberian – Asiatic and North – Atlantic origins, considering the fact that the Suceava river`s basin is located at the east of Carpathian Range. The winters are cold and dry in general, while the summers are warm.

The vegetation is diverse in the area. So, along the flow of Suceava and Sucevița rivers, there are patches of river meadows, with species like *Salix* sp., *Populus* sp., *Betula* sp., along with plantations of *Pinus sylvestris* and *Pinus nigra* (Lucescu, 1990). These patches are alternated with gravel areas. Most of the area, the agricultural areas are predominant. There are some mixed forests, with species like *Fraxinus excelsior*, *Fagus sylvatica*, *Ligustrum vulgare*, *Malus sylvestris*, *Populus alba*, *Quercus robur*, *Pinus sylvestris*, *Pinus nigra*, *Picea abies*, *Larix decidua*, *Abies alba*. These forests are

developing especially in the western part of the area, on the eastern side of Obcina Bucovinei's hill. The conifers in this area can be found at altitudes of 400 m asl.

### Materials and Methods

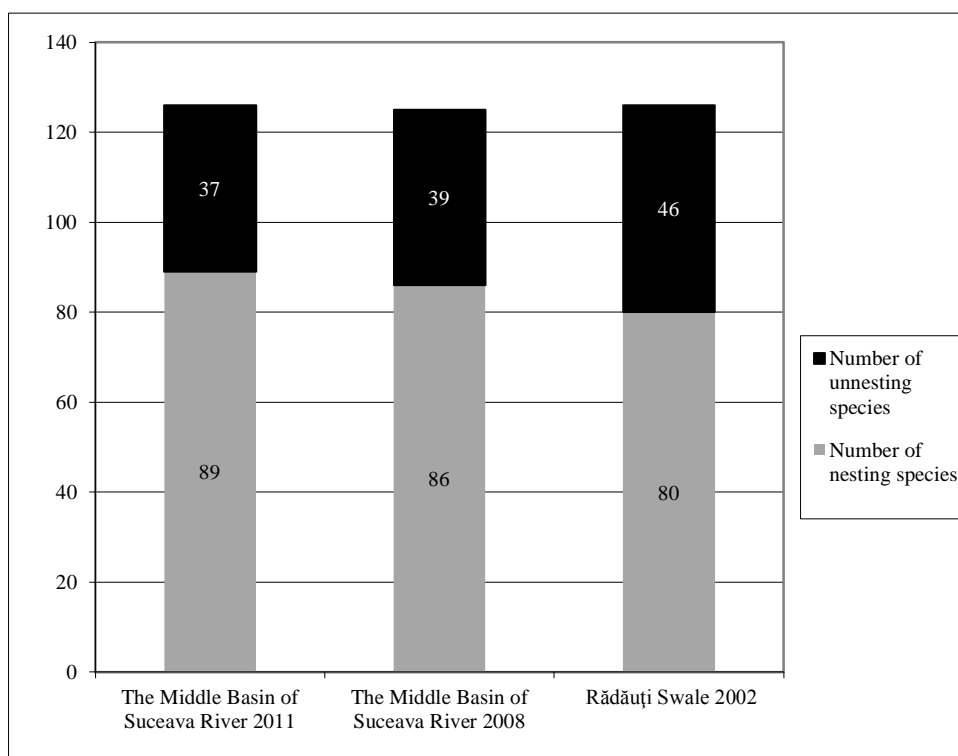
Our observation in the area started in 2006, covering all phenological seasons. The main study methods that we used were the transect method and fixed point observation method. For night birds we used playback method, in which we played different species song during the night, and wait for answer.

### Results and Discussions

During the study period, we observed 126 species of birds, classified in 15 orders and 24 families. From the total number of species observed, 43 species are considered sedentary. Here we mention the all year presence of *Lanius excubitor*, a winter visitor in southern parts of Romania (Munteanu *et al.*, 2002). There are 51 species summer visitors, meaning a percent of 41 from the total observed species. Regarding winter visitors the number of species is low – 4 species: *Tachybaptus ruficollis*, *Cinclus cinclus*, *Regulus ignicapillus* and *Carduelis spinus*. *Cinclus cinclus* and *Regulus ignicapillus* are sedentary in the vicinity of our study area, on higher altitudes, but they migrate in short distances during the winter. An interesting situation we've observed at *Tringa ochropus*, in the fact that there are constant of recordings regarding its presence during winter, especially on the Sucevița, Cracu Morii and Suceava riversides. The passage birds in the area are: *Anas crecca*, *Anas querquedula*, *Tringa nebularia*, *Tringa ochropus*, *Actitis hypoleucos*, *Sterna hirundo*. In the study area we mention as partially migrant birds the following species: *Falco tinnunculus*, *Larus ridibundus*, *Troglodytes troglodytes*, *Sturnus vulgaris*.

There is a number of 13 vagrant species in the area. This high number is explained by the lack of large lakes on which water-birds can use during the autumn and spring passages. Also, because of area's geographical condition, situated on the eastern flank of Carpathian Mountain range, some of the raptor may pass through during migration, although not in high number or regularly as in migration routes. The fact that the study area is situated in northern part of Romania, post it in the way of irregular invasions of northern birds during harsh winters, explaining again high number of vagrant species. We mention rare apparition of *Falco columbarius*, and *Aquila clanga*, and one of a juvenile of *Gyps fulvus* (Bolboacă, 2008). Irregular seasonal invasions cvan be observed at *Fringilla montifringilla*, *Bombycilla garrulus* and *Carduelis carduelis*. Most of these observations were made in the 2006-2007 (Bolboacă, 2008). The lack of them in later years may be a result of warmer winters.

Regarding nesting, in Suceava River's Middle basin we could identify 89 nesting species out of the total of 126, which means a percent of 70. By comparison, during 1990-1997, in the Rădăuți Swale (Fig. 1), an area that is overlapping entirely over our study area, from the same number of species, only 80 were nesting (Trelea, 2002). Compared with the situation of nesting birds between 2006-2008 period (Bolboacă, 2008), when we recorded 86 nesting species, in the last three years of study we observed the nesting of another 3 species: *Merops apiaster*, *Phoenicurus phoenicurus* and *Luscinia megarhynchos*.



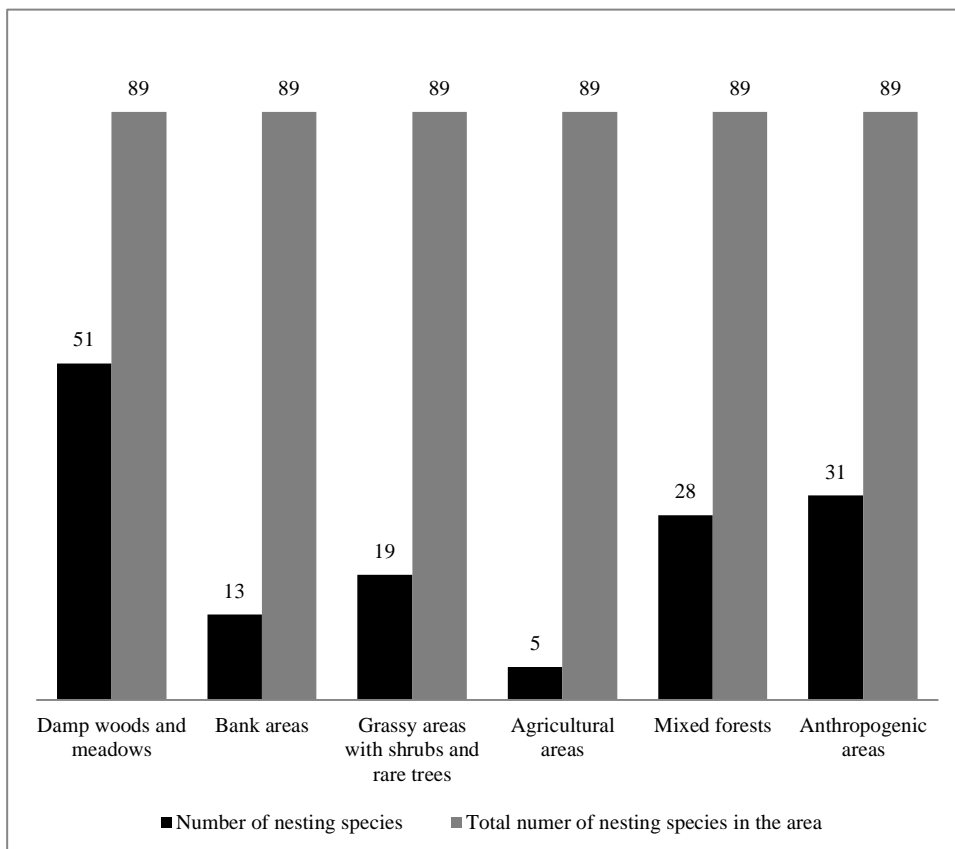
**Figure 1.** Comparison between number of nesting and unnesting species recorded in the Middle Basin of Suceava River in our study, in 2008 study and in Rădăuți Swale in 2008.

The distribution of nesting species per habitat is heterogeneous. So, we classified habitats in the area in 5 classes: damp woods and river meadows, bank areas, Grassy areas with shrubs and rare trees, agricultural areas, mixed forests and anthropogenic areas.

River Meadows can be found along water courses, more developed along Suceava and Sucevița River, where, in some parts is fragmented by pastures and gravel areas, *Pinus* sp. Plantations or localities. This fragmentation is also increased by deforestation for creation of agricultural fields. The bird diversity of these areas is high. As a consequence, there are 51 species that nest here: *Accipiter nisus*, *Falco tinnunculus*, *Falco subbuteo*, *Columba oenas*, *Columba palumbus*, *Streptopelia turtur*, *Cuculus canorus*, *Asio otus*, *Strix aluco*, *Caprimulgus europaeus*, *Picus viridis*, *Picus canus*, *Dendrocopos major*, *Dendrocopos syriacus*, *Dendrocopos medius*, *Dendrocopos minor*, *Troglodytes troglodytes*, *Erithacus rubecula*, *Luscinia luscinia*, *Luscinia megarhynchos*, *Phoenicurus ochruros*, *Turdus philomelos*, *Turdus pilaris*, *Turdus merula*, *Sylvia atricapilla*, *Sylvia curruca*, *Sylvia communis*, *Sylvia borin*, *Phylloscopus trochilus*, *Phylloscopus sibilatrix*, *Phylloscopus collybita*, *Muscicapa striata*, *Poecile palustris*, *Parus major*, *Cyanistes caeruleus*, *Aegithalus caudatus*, *Sitta europaea*, *Certhia familiaris*, *Oriolus oriolus*, *Lanius collurio*, *Lanius excubitor*, *Pica pica*, *Garrulus glandarius*, *Corvus frugilegus*, *Corvus corax*, *Corvus cornix*, *Sturnus vulgaris*, *Passer montanus*, *Fringilla coelebs*, *Coccothraustes coccothraustes*, *Emberiza citrinella*.

The high number of nesting bird species compared with other habitats (57% of all nesting birds in the area) (Fig. 2) is explained by the heterogeneity of vegetal taxa which offers conditions for nesting. So, the presence of wicker trees, poplars, birch and even oak trees in some areas are favourable for species that nests in hollows, or raptors, both day

and night ones. Also the structure of coppice is favourable for some species nests, like nightingale (*Luscinia* sp.). Clearings and meadow edges or areas with less brushwood attract *Caprimulgus europaeus*. The alternation between pastures and agricultural fields where sheep grazing is practiced and the habitats like meadows or damp forests favour a large number of insects, which lead to good condition for feeding and nesting of nightjar also. The high diversity of nesting species in this habitat type demonstrates the ecological importance that these habitats have.



**Figure 2.** Comparison between number of nesting specie in different habitats and total nesting species in the study area.

River banks in the Middle Basin of Suceava River are high or low. The low baks of the study area are characterized by the presence of pebble and gravel. In these areas we have identified 3 nesting bird species: *Charadrius dubius*, *Oenanthe oenanthe* and *Motacilla cinerea*. On the banks that are covered with grass, the following species were found: *Anas platyrhynchos*, *Vanellus vanellus*, *Chlidonias hybridus*. On the areas with *Fragmites australis*, especialy in “Ochiuri” Wetland are nesting *Larus ridibundus* and *Emberiza schoeniclus*. *Riparia riparia*, *Upupa epops* and *Alcedo atthis*, *Merops apiaster* and *Passer montanus* are the species that nest in galleries in the clay rich high banks. Interesting to highlight here is the annual dynamics that these habitats have. So, floods are a constant presence in the area, thus the riversides are changing every year. In the case of low-level banks, the gravel areas are lost. We`ve observed during the period 2006-2011 a decrease in the number of nesting pairs of *Charadrius dubius*, a stenobiont species that use this habitat. Another factor that is affecting in a negative way the gravel riverbanks are

gravel exploitation stations, especially on the Suceava river course. Erosion caused by floods affects also banks with grasses. An interesting effect of these floods is that they create new high-level banks due to erosion process, ideal place for nesting of some species. Thus, in 2009 we could observe the nesting of 5 pairs of *Merops apiaster* on Sucevița banks. The negative effect is that in the following year, the nesting places were eroded and the colony disappeared. The same is for *Riparia riparia*, a species with constant nesting in the area. The colonies are changing periodically because of erosion produced by seasonal floods.

The grassy areas with shrubs and rare trees are some of least common areas in the Suceava River's Middle Basin. There are affected by transformation into agricultural patches. The species that nest here are: *Falco tinnunculus*, *Crex crex*, *Upupa epops*, *Anthus trivialis*, *Motacilla alba*, *Saxicola rubetra*, *Saxicola torquata*, *Sylvia communis*, *Sylvia curruca*, *Oriolus oriolus*, *Lanius collurio*, *Lanius excubitor*, *Pica pica*, *Passer montanus*, *Carduelis cannabina*, *Carduelis chloris*, *Carduelis carduelis*, *Serinus serinus*, *Miliaria calandra*.

The number of species that nest in agricultural area is low: 5 species: *Perdix perdix*, *Coturnix coturnix*, *Crex crex*, *Vanellus vanellus*, *Alauda arvensis*. These habitats occupy the largest area of Suceava River's Middle Basin. The fact that the agricultural fields are parceled makes this habitat ideal for many passerines feeding grounds. A drawback is the missing of forest belts and hedges lead to a low nesting bird species. Still, the cereal fields are in high number, which along with pastures, there are ideal nesting habitats for *Crex crex*, a species considered Vulnerable in Romanian Vertebrate Red List (Botnariuc & Tatole, 2005), in Category 1 of SPEC and Near Threatened in IUCN Red List (Hegemeijer & Blair, 1997).

The species that nests in mixed forests are: *Buteo buteo*, *Accipiter nisus*, *Accipiter gentilis*, *Asio otus*, *Strix aluco*, *Dendrocopos major*, *Dendrocopos syriacus*, *Picus viridis*, *Troglodytes troglodytes*, *Erithacus rubecula*, *Turdus philomelos*, *Turdus pilaris*, *Turdus viscivorus*, *Turdus merula*, *Sylvia atricapilla*, *Sylvia borin*, *Phylloscopus collybita*, *Phylloscopus trochilus*, *Phylloscopus sibilatrix*, *Muscicapa striata*, *Parus major*, *Periparus ater*, *Cyanistes caeruleus*, *Sitta europaea*, *Certhia familiaris*, *Garrulus glandarius*, *Corvus corax*, *Fringilla coelebs*. These forests are concentrated in the western part of study area.

The anthropogenic areas include gardens, villages and cities, and offers good nesting conditions for 31 species: *Ciconia ciconia*, *Falco tinnunculus*, *Streptopelia turtur*, *Athene noctua*, *Strix aluco*, *Asio otus*, *Apus apus*, *Dendrocopos syriacus*, *Dendrocopos major*, *Hirundo rustica*, *Delichon urbica*, *Phoenicurus ochruros*, *Turdus pilaris*, *Parus major*, *Cyanistes caeruleus*, *Oriolus oriolus*, *Garrulus glandarius*, *Pica pica*, *Corvus frugilegus*, *Corvus monedula*, *Corvus cornix*, *Sturnus vulgaris*, *Passer domesticus*, *Passer montanus*, *Carduelis cannabina*, *Carduelis carduelis*, *Carduelis chloris*, *Serinus serinus*, *Fringilla coelebs*. The high proportion of nesting birds in this habitat indicates the high adaptability of the species to the invasion of their natural habitats by localities. In the study area, river meadows and dampwoods are often interrupted by villages with houses reaching in some parts to the river course edge. As a consequence, many birds that use meadows as natural nesting habitats are nesting inside the localities limits.

### Conclusions

During the study period, we observed 126 species of birds, out of which 89 are nesting, meaning 70% of the total number, compared with 125 recorded species in 2008 out of which 86 nesting ones (Bolboacă, 2008).

The following study confirms the fact that river meadows and damp areas represent an important role in species conservation by offering good feeding and nesting conditions, as well as a refuge for passage birds. This study also completes the information regarding the distribution, abundance and dynamics of birds in the eastern part of Romania.

#### **Acknowledgements**

This work was supported by CNCIS–UEFISCSU, Project PN II–IDEI 1985/2008 and partially supported by the European Social Fund in Romania, under the responsibility of the Managing Authority for the Sectoral Operational Programme for Human Resources Development 2007-2013 [grant POSDRU/107/1.5/S/78342].

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