Scientific Works. Series C. Veterinary Medicine. Vol. LX (2)
ISSN 2065-1295, ISSN Online 2067-3663, ISSN CD-ROM 2343-9394, ISSN-L 2065-1295

DYNAMICS OF BIRD POPULATIONS ON THE SACALIN ISLAND - DANUBE DELTA

[1]Teodor ION, [1]Lotus MESTER, [2]Florin IORDACHE

[1]University of Bucharest, Faculty of Biology, 91-95 Splaiul Independentei, 050095, Bucharest, Romania
[2]Institute of Cellular Biology and Pathology "Nicolae Simionescu" of Romanian Academy, 8 B.P. Hasdeu, 050568, Bucharest, Romania, ion.teodor@yahoo.com, floriniordache84@yahoo.com

Corresponding author email: floriniordache84@yahoo.com

Abstract

Sacalin Island is an area of major importance because it is situated in the path of one of the most important bird's migration routes in the world, covering three continents: Asia, Europe and Africa, the route with a great abundance and biodiversity of avifauna including sedentary species, passage species, and summer and winter guest species. In order to demonstrate the necessity of preserving this area and to establish the biodiversity of ornithological fauna, this article presents the results obtained from the data collection in a period of 6 years and analyzed in terms of the status, abundance and biodiversity of birds, highlighting the need to protect this habitats. Our result showed that the birds collected form Sacalin Island belonging to a wide variety of birds including 17 orders, 46 families and 201 species; 53% of the total of 382 bird species identified in our country. The frequency of bird populations in relation with biogeographic regions during winter and vernal season showed that the dominant species are the species typical for Palearctic regions. By analysis of trophic level, our results showed that there is a definite dominance of insectivore species (72%), followed by carnivore (9%), omnivore (5%) insectivore – larvivore (4%), and larvivore (2%) species. Summarizing all the results it is clearly that Sacalin Island should maintained the strictly protected area status; here are present 85% of strictly protected bird's species.

Key words*: avifauna, biodiversity, Danube Delta, Sacalin Island.*

INTRODUCTION

Conservation and protection of wild birds and their habitats setting up networks of protected areas that include also Sacalin Island (Munteanu, 1998; Hansell, 2005). This area remains of major importance because it is situated in the path of one of the most important migration routes in the world, covering three continents: Asia, Europe and Africa, the route with a great abundance and biodiversity of avifauna including sedentary species, passage, and summer and winter guests. (Kiss, 1973, 1976, 2006, Alerstam, 2001). Sacalin Island is situated to the south of Sf. Gheorghe delta (Stanescu, 1973). The impact of human regarding the use of the same territories or consumption the same resources disturbed the bird habitats (Radu, 1957; Rudescu, 1955). In order to demonstrate the necessity of preserving this area and to establish the biodiversity of ornithological fauna, this article presents the results obtained from the data collection in a period of 6 years and analyzed in terms of the status, abundance and biodiversity of birds,

highlighting the need to protect habitats in the studied area.

MATERIALS AND METHODS

Ornithological data used in the present study were collected from 2007 to 2013 by observations, surveys, and measurements done in the Sacalin Island, Danube Delta (Figure 1). Data were obtained with the support of the Romanian Ornithological Centrala and Nos Oiseaux Institute, Switzerland. Were captured over 4,000 birds every year using ornithological nets (L=6m, H=2.5m, mesh=19x19mm) (Gibbons et. al., 1996; Sutherland, 2004). The observations were made using binoculars (Swarovski EL42) and telescope (Swarovski ATX) and photographs were captured using Nikon D300 camera with Nikkor 70-200mm f / 2.8 lens. For data collection methods were used transects in line, point counts method and bird's ringing. (Sutherland, 2006; Emlen and Dejong, 1992; Buckland et al., 2001; Newton, 2010). Birds were separate by stages and sex, and identified based on morphological characters using the specific identification keys (Svensson et al., 2010; Voous, 1986).

Figure 1. Map of Sacalin Island areas where birds were collected

RESULTS AND DISCUSSIONS

Our result showed that the birds collected form Sacalin Island belonging to 17 orders, 46 families and 201 species. This data come in support to other data who sustain that this number of species represents 53% of the total of 382 bird species identified in our country, highlighting the importance of this area (Munteanu et al., 1998; Gogu–Bogdan and Marinov, 1997) (Figure 2).

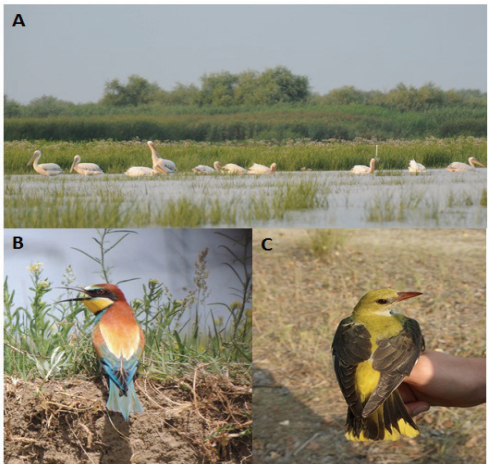

Figure 2. (A) Pelican (*Pelecanus onocrotalus*) colony. (B) European bee-eater *Merops apiaster*. (C) *Oriolus oriolus*

The frequency of bird populations in relation with biogeographic regions during winter season shows that the dominant species in terms of numbers are the species typical for northern regions, which are Palearctic regions (49%), with subregions: European (18%), Holarctic (12%), Arctic (7%), European - turchestanian (6%) Cosmopolitan (4%), and Nearctic (2%) (Figure 3).

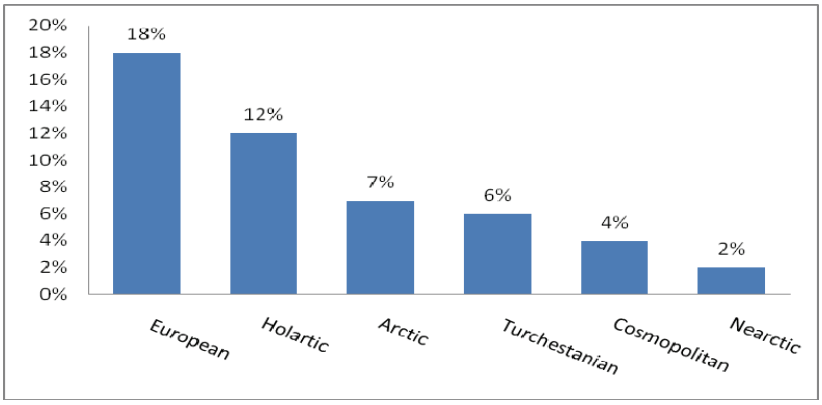

Figure 3. Incidences of bird populations in relation with biogeographic regions during winter season

Unlike winter season, during vernal season the most dominant species are from the Palearctic regions with subregions: European (16%), European - turchestanian (13%), Holarctic (8%), Cosmopolitan (3%), Mediterranean-turchestanian (3%), Mediterranean (2%), Indo-African (1%), and China (1%), which are species wintering in the southern hemisphere (Figure 4).

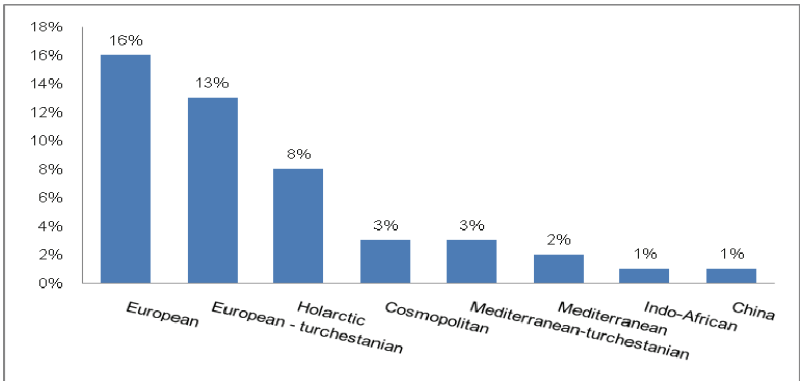

Figure 4. Incidences of bird populations in relation with biogeographic regions during vernal season

By analysis of trophic level, our results showed that there is a definite dominance of insectivore species (72%), followed by carnivore (9%), omnivore (5%) insectivore – larvivore (4%), and larvivore species (Figure 5). These data shows that Sacalin Island contains ideally biotopes for birds where they can rest and feed being characterized by the abundance and quality of food.

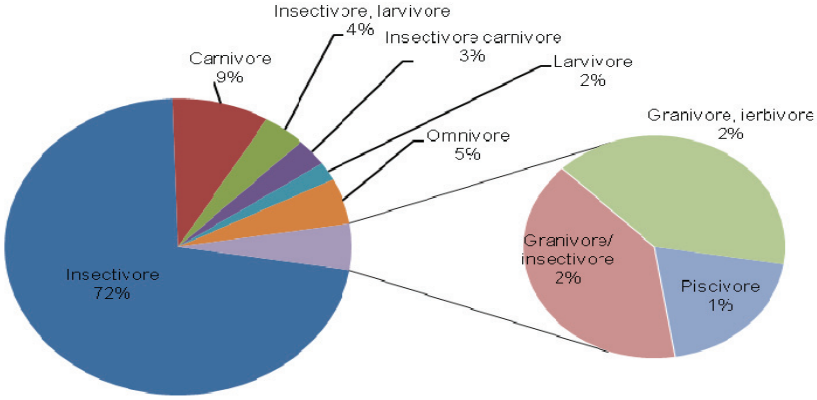

Figure 5. Trophyic levels distribution of avifauna from Sacalin Island

The great value of Sacalin Island is given essentially by the number of birds that are in passage, spring and autumn (43% of the species observed), representing a very important feeding and resting place. Also, the study area is important for wintering species (12% of the species observed), Sacalin Island is a body of brackish water, and at the same time is in direct contact with seawater from Black Sea (Ciochia, 1984; Catuneanu, 1954). Therefore freezing brackish water and seawater is much higher in absolute terms than the freezing point of freshwater and allowed many birds such as *Anseriformes* species to find a source of food and rest for a long periods of time (Ionac and Ciulache, 2004; Newton, 2007). Summarizing all the results it is now clearly that Sacalin Island should maintaine the strictly protected area status, since here are presented 85% of strictly protected birds species. The unic chareacteristics of Sacalin Island are particularly important to maintaining biodiversity and genetic variety of the bird's species (Paspaleva et al., 1985; Speek et al., 2003).

CONCLUSIONS

Our data highlight the importance of Sacalin Island for birds biodiversity. The unic characteristic of this area create for birds a shalter and a place for food during the migration seasons. Also, Sacalin Island represents the habitat for a variety of marine species with stictly protected status.

REFERENCES

Alerstam T., 2001. Detours in bird migration. J. Theor. Biol., 209, 319-331.

Buckland S.T., Anderson D.R., Burnham K.P., Laake J.L., 2001. Introduction to Distance Sampling: Estimating Abundance of Biological Populations. Oxford University Press., Unite Kingdom.

Catuneanu I., 1958. Coloniile de cuibarit din Delta Dunarii si necesitatea crearii unor rezervatii ornitologice. Ocrot. Nat. 3, 79-115.

Ciochia V., 1984. Dinamica si migratia pasarilor. Ed. Ştiinţifică şi Enciclopedică, Bucharest.

Emlen J.T., Dejong M.J., 1992. Counting birds. The problem of variable hearing abilities. J. Field Ornithol., 63, 26-31.

Hansell M., 2005. Bird Nests and Construction Behaviour. Cambridge University Press., Unite Kingdom.

Gibbons D.W., Hill D., Sutherland W.J., 1996. Birds. In Ecological Census Techniques: A handbook. ed. W.J. Sutherland Press.

Gogu–Bogdan M., Marinov M., 1997. Breeding and wintering of the Cormorant *Phalacrocorax carbo sinensis* in the Romanian Part of the Danube Delta. Ekologia Polska, 45, 57 – 61.

Ionac N., Ciulache S., 2004. Principalele caracteristici bioclimatice ale Deltei Dunarii, Geographica Timisiensis, 13, 5-14.

Kiss J.B., 1973. Date preliminare asupra ornitofaunei insulei Sacalin şi rolul ei în migraţie II. Peuce, 3, 539 - 567.

Kiss J.B., 1976. Insula Sacalin - loc important în cercetarea cuibăritului şi migraţiei păsărilor. Peuce, 5, 489 - 507.

Kiss J.B., 2006. Data Regarding Antagonistic Relationships of the Common Tern (*Sterna hirundo* L.) at the Mouths of the Danube. Delta Dunarii, 3, 160 – 185.

Munteanu D., 1998. The status of birds in Romania. Ed. S.O.R., Bucharest.

Newton I., 2007. The Migration Ecology of Birds. Academic Press., London.

Newton I., 2010. Bird Migration. Collins New Naturalist Library, London.

Paspaleva M., Kiss J.B., Tălpeanu M., 1985. Oiseaux coloniaux dans le Delta du Danube. Trav. Du Mus. d'Hist. Nat. Gr. Antipa, 26, 289-304.

Radu D., 1957. Pelicanul o specie care se pierde. Van. Pesc. Sp. An. X., 4, 12-13.

Rudescu L., 1955. Pelicanii din Delta Dunării. Ocrot. Natura, 1, 107 -120.

Speek G., Clark J.A., Rohde Z., Wassenaar R.D., 2003. The EURING exchange – code 2000. Journal of Ornithology, 144, 479-483.

Stanescu D., 1973. Avifauna varsării bratului Sf. Gheorghe. Muzeul Brukenthal. Studii su comunicari, 18, 199 - 228.

Sutherland W., 2006. Ecological Census Techniques. Second Edition. Cambridge University Press., Unite Kingdom.

Sutherland W., Newton I., Green E., 2004. Bird Ecology and Conservation: A Handbook of Techniques (Techniques in Ecology & Conservation). Oxford University Press.

Svensson L., Zetterstrom D., Mullarney K., 2010. Birds of Europe (second edition). Princeton University Press.

Voous K.H., 1986. Die vogelwelt Europas und ihre verbreitung. Verlag Paul Parey, Hamburg und Berlin.