

ORNITOLOŠKE TAKSONOMSKE NOVOSTI

Novelties in ornithological taxonomy



Ptice so ena boljše, če ne celo najboljše preučevanih živalskih skupin, zato ni presenetljivo, da se prav v ornitologiji zoološka znanost izraža z najbolj naprednimi in modernimi idejami. To se dogaja tako na področju ekologije, etologije kot tudi taksonomije. Lahko rečemo, da so prav filogenetske oziroma taksonomske raziskave na podlagi določanja sorodnosti vrst z analizo DNK (TRONTELJ 2002) povzročile dramatične spremembe v ornitologiji, saj so predručile celotni sistem ptic (MONROE & SIBLEY 1993). Danes temu sledijo še podrobnejše taksonomske študije morfologije, bioakustike, zgodovinskih virov itd. Na razvrstitve in poimenovanje vrst pa smo vezani vsi, tako ekologi, etologi, varstveniki kot drugi, ki se ukvarjamo s pticami, saj je sistem osnova za vse druge raziskave in aktivnosti. Pri uvajanju novih taksonomskih spoznanj v prakso se je še posebej angažiralo Britansko ornitološko združenje (British Ornithologists Union – BOU). To nalogo je imela komisija za redkosti (British Ornithologists Union Records Committee), o čemer je pri nas poročal že VOGRIN (1998), vendar je kasneje to prevzela nova taksonomska komisija, ki ureja vprašanja in novosti v sistemu ptic; tudi s predlogi pravilnikov za določanje statusa vrst v ptičjem sistemu (HELBIG *et al.* 2002). Komisija je do danes izdala tri poročila s taksonomskimi priporočili za ptice, ki se pojavljajo na območju Velike Britanije (KNOX *et al.* 2002, SANGSTER *et al.* 2004 & 2005). V poročilih so na podlagi različnih raziskav (molekularnih, bioakustičnih, slovnično–zgodovinskih ipd.) izdelani predlogi za spremembe taksonomskih statusov (vrst in podvrst) ter uvrstitve v višje taksonomske kategorije, zlasti rodove. V poročilih so navedene tudi vrste, ki so zanimive za Slovenijo in so navedene v spodnjem pregledu (tabela 1). Slovenska imena so povzeta oziroma prilagojena glede na slovenski imenik ptic zahodne Palearktike (JANČAR *et al.* 1999), dodal pa sem tudi angleška imena, kot so navedena v poročilih. Pri vrstah, kjer se je spremenil taksonomski status, torej je podvrsta postala vrsta, je (pod)vrsta, ki se pojavlja pri nas, obdržala izvirno slovensko ime. Podvrste so povzete po MATVEJEV & VASIĆ (1973).

Tabela 1: Pregled vrst ptic, pri katerih je taksonomska komisija BOU sprejela spremembe imen in vrstnih statusov (KNOX *et al.* 2002, SANGSTER *et al.* 2004 & 2005)

Table 1: The list of bird species, for which the British Ornithologists Union Taxonomic Committee adopted changes of names and species rank (KNOX *et al.* 2002, SANGSTER *et al.* 2004 & 2005)

Znanstveno ime/ Scientific name	Slovensko ime/ Slovene name	Angleško ime/ English name
<i>Gavia stellata</i> ¹	rdečegrlji slapnik	Red-throated Diver
<i>Phoenicopterus roseus</i> ²	plamenec	Greater Flamingo
<i>Cygnus columbianus</i> ³	mali labod	Tundra Swan
<i>Aythya marila</i> ⁴	rjavka	Greater Scaup
<i>Aquila pennata</i>	mali orel	Booted Eagle
<i>Aquila fasciata</i>	kragulji orel	Bonelli's Eagle
<i>Lagopus muta</i>	belka	Rock Ptarmigan
<i>Chlamydotis macqueeni</i> ⁵	ovratničarska droplja	Macqueen's Bustard
<i>Stercorarius longicaudus</i> ⁶	dolgorepa govnačka	Long-tailed Skua

(nadaljevanje tabele 1 / continuation of Table 1)

Znanstveno ime/ Scientific name	Slovensko ime/ Slovene name	Angleško ime/ English name
<i>Stercorarius skua</i>	velika govnačka	Great Skua
<i>Larus michahellis</i> ⁷	rumenonogi galeb	Yellow-legged Gull
<i>Larus argentatus</i> ⁸	srebrni galeb	Herring Gull
<i>Rissa tridactyla</i> ⁹	triprsti galeb	Black-legged Kittiwake
<i>Sternula albifrons</i>	mala čigra	Little Tern
<i>Gelochelidon nilotica</i>	črnonoga čigra	Gull-billed Tern
<i>Hydroprogne caspia</i>	kaspijska čigra	Caspian Tern
<i>Chlidonias hybrida</i>	belolična čigra	Whiskered Tern
<i>Fratercula arctica</i> ¹⁰	mormon	Atlantic Puffin
<i>Bubo scandiacus</i>	snežna sova	Snowy Owl
<i>Ptyonoprogne rupestris</i>	skalna lastovka	Eurasian Crag Martin
<i>Delichon urbicum</i>	mestna lastovka	House Martin
<i>Cecropis daurica</i>	rdeča lastovka	Red-rumped Swallow
<i>Anthus richardi</i> ¹¹	ostrožna cipa	Richard's Pipit
<i>Saxicola torquatus</i>	prosnik	Stonechat
<i>Regulus ignicapilla</i>	rdečeglavi kraljiček	Firecrest
<i>Cyanistes caeruleus</i>	plavček	Blue Tit
<i>Lophophanes cristatus</i>	čopasta sinica	Crested Tit
<i>Periparus ater</i>	menišček	Coal Tit
<i>Poecile montanus</i>	gorska sinica	Willow Tit
<i>Poecile palustris</i>	močvirska sinica	Marsh Tit
<i>Corvus corone</i>	črna vrana	Carion Crow
<i>Corvus cornix</i>	siva vrana	Hooded Crow
<i>Emberiza leucocephalos</i>	beloglavi strnad	Pine Bunting
<i>Emberiza cirrus</i> ¹²	plotni strnad	Cirl Bunting

Opombe:

¹ vrsta se obravnava kot monotipska² vrsta je razpadla na tri vrste, le ena se pojavlja v Sloveniji³ domnevna vrsta *Cygnus bewickii* se obravnava kot podvrsta malega laboda⁴ vrsta je politipska; v Sloveniji in Evropi se pojavlja soimenska podvrsta *A. m. marila*⁵ vrsta je razpadla na dve vrsti, le ena se pojavlja v Sloveniji⁶ vrsta je politipska; v Sloveniji in Evropi se pojavlja nominantna podvrsta *S. l. longicaudus*⁷ vrsta je politipska; v Sloveniji se pojavlja nominantna podvrsta *L. m. michahellis*⁸ vrsta je politipska; v Sloveniji se pojavlja več podvrst, še vedno pa je nejasen položaj podvrst *L. a. smithsonianus* in *L. a. cachinnans*. Slednja podvrsta se pojavlja tudi v Sloveniji (RUBINIČ 1997A) in je v več priročnikih ter člankih že obravnavana kot samostojna vrsta. Opozorilo pri mešanju *L. a. cachinnans* in *L. michahellis*, ki je v slovenski literaturi (tudi v *Acrocephalus*) še vedno precej neurejeno, zato vlada v tem delu precejšnja zmeda (glej npr. RUBINIČ 1997B). V Sloveniji gnezdi in je nasploh najpogostejši izmed velikih galebov rumenonogi galeb *Larus michahellis*.⁹ vrsta je politipska; v Sloveniji in Evropi se pojavlja nominantna podvrsta *R. t. tridactyla*

¹⁰ vrsta se obravnava kot monotipska

¹¹ vrsta (prej kot podvrsta *Anthus novaeseelandiae*) še ni bila potrjeno opazovana v Sloveniji, vendar je njeno pojavljanje potencialno možno

¹² vrsta se obravnava kot monotipska

Pri novih imenih je vedno problem, v kolikšni meri se jih je treba držati. Ali se moramo navajati na ime, ki se bo morda čez nekaj let spet spremenilo? To je še posebej problematično pri pogostih vrstah, katerih imena so tudi pogostejše v rabi, npr. rumenonogi galeb *Larus michahellis*, mestna lastovka *Delichon urbicum*, rdečeglavi kraljiček *Regulus ignicapilla*, plavček *Cyanistes caeruleus*, menišček *Periparus ater* idr. V strokovnih in znanstvenih besedilih se je ob navedbah znanstvenih (latinskih) imen nesporno treba držati veljavnih imen in spremembam slediti, saj gre pri tem navsezadnje za korektnost strokovnega oziroma znanstvenega izražanja. Drugače pa je pri nacionalnih imenih, tako angleških kot slovenskih. Ta se navkljub taksonomskim spremembam ne smejo dosti spreminjati, razen v primerih, ko je treba zaradi bistvenih taksonomskih sprememb, denimo razpada vrste na več pri nas sobivajočih vrst, nacionalno ime prilagoditi. Tega se bolj ali manj držijo Angleži in podobno mora biti tudi pri nas. Pri tem pa predlagam načelo, ki sem ga uporabil tudi zgoraj, da v primeru razpada vrste na dve vrsti uveljavljeno domače ime ohrani tista vrsta, ki se pojavlja tudi pri nas, čeprav se je znanstveno ime spremenilo (npr. ovratničarska droplja *Chlamydotis macqueeni*). Tako bo zmeda manjša, naše delo in komunikacija pa olajšana.

AL VREZEC

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OCCURRENCE OF GRIFFON VULTURE *Gyps fulvus* IN SLOVENIA IN THE PERIOD FROM 1980 TO 2005

Pojavljjanje beloglavih jastreb^{ov} *Gyps fulvus* v Sloveniji od leta 1980 do 2005

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The authors of the article have gathered and processed data on the occurrence of Griffon Vulture *Gyps fulvus* in Slovenia. The habitat analysis was made for the sub-Mediterranean region and part of the Dinaric region, in which the Griffon Vulture occurs (Kambreško, Banjšice; Trnovski gozd, Nanos and Hrušica; Pivško podolje and Vremščica; Javorniki and Snežnik). Altogether, 242 observations of this species were made in Slovenia in the last 25 years, during which 672 birds were recorded. The bulk of the data concerns observations of single individuals (45%). Eight or more birds were recorded in less than 5% of all observations. Concurrently, 24 individuals were recorded at the most. The birds as well as thermals were registered largely in the warm part of the year. The vultures characteristically glided above the higher lying slopes exposed to the south (SW), notably over areas with altitudes between 600 and 1200 m a.s.l. There were no differences between exposure distribution of Griffon Vultures and thermals. The majority of birds were observed on the southern margins of Trnovski gozd, Nanos and Snežnik, and in Čičarija and Kraški rob (Karst Edge). In spite of the 65% forest density, only 30% of the Vultures were observed over forests. In 70%, the birds were seen gliding above unforested areas. Above these areas, the thermals characteristically occurred as well. The thermals are probably the main reason for the predictable occurrence of Griffon Vultures in Slovenia, whereas the slopes and ridges are significant for the vultures' movements also at the time when there are no thermals above them. Owing to the rising air masses along the natural barriers, they enable the Griffon Vultures the so-called slope soaring, with the aid of which they can also cover very long distances, which actually explains the occurrence of Griffon Vultures at Dinaric ridges.

Key words: Griffon Vulture, *Gyps fulvus*, Slovenia, thermals

Ključne besede: beloglavi jastreb, *Gyps fulvus*, Slovenija, vzgorniki

1. Introduction

The Griffon Vulture *Gyps fulvus* in Europe inhabits mainly countries bordering the Mediterranean. The species' stronghold is Spain, which supports around 80% of the total number in Europe. In 1999 there were 17300 – 18100 breeding pairs. The Greek and French populations, with 173 – 194 and 589 – 639 breeding pairs respectively are also significant (BIRDLIFE 2004).

The closest breeding colonies to Slovenia are on the Kvarner islands (N part of the Adriatic sea; Croatia) with 90 – 100 breeding pairs (RADOVIĆ *et al.* 2003) and a reintroduced colony of 10 – 20 breeding pairs in Italy (*own data*). The Italian colony however was established in 1992 in Forgaria nel Friuli (province of Udine) as a result of a reintroduction project. The first successful breeding was observed in 1996 (GENERO & PERCO 1997).

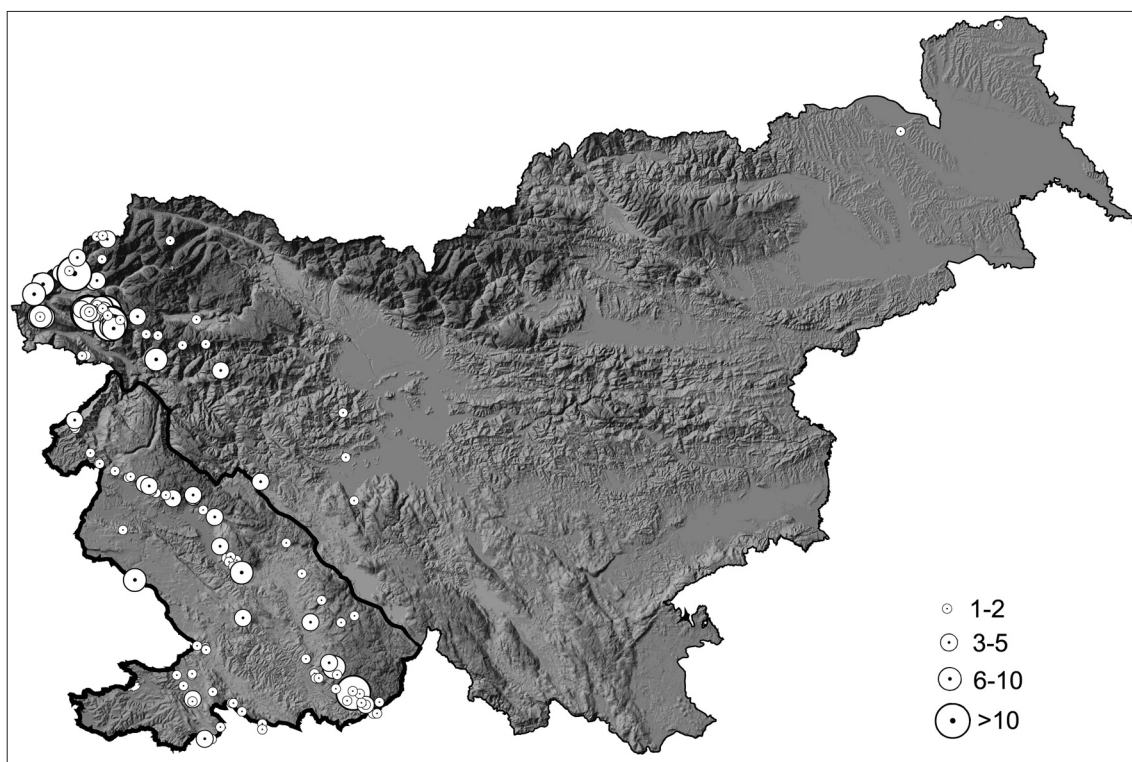


Figure 1: Records of Griffon Vulture *Gyps fulvus* in the last 25 years in Slovenia; dot size indicates the number of birds observed; black border indicates the study area

Slika 1: Opazovanja beloglavih jastrebcev *Gyps fulvus* v zadnjih 25 letih v Sloveniji; velikost pik označuje število osebkov, črni rob pa meje preučevanega območja

Griffon Vultures do not breed in Slovenia but are mainly summer visitors during the passage from Kvarner towards Alps (Sušič 1990). Some birds were observed together with the Italian population (GENERO & PERCO 1997). They are also regular visitors in the Alps (GENERO 1985, 1988 & 1995). Outside the Alpine region, only individual and random observations have been made (GJERKEŠ 1994, GROŠELJ 1991 & 1999, LIPEJ & GJERKEŠ 1995, SENEGAČNIK *et al.* 1998, SURINA 1999, SZYMANSKI 2002, ŠERE 1998, ŠINIGOJ 2002). BENUSSI (1997) published randomly collected data for the area of Trieste.

The aim of this article is to present new data concerning the occurrence of the Griffon Vulture in Slovenia and to identify the features of the landscape where they were observed.

2. Material and methods

2.1. Field recording of Griffon Vultures

The data were collected from the literature and several

unpublished sources. Appeals for data were made through the media, membership of DOPPS – BirdLife Slovenia, homepage [www.ptice.org] and via e-mail groups. Only records with location date and number of observed birds were taken into consideration.

The data were processed using programs ArcView 3.3 (ESRI 2002) and IDRISI Kilimanjaro (EASTMAN 2003).

Each record was discussed with the author in order to determine location within 100 m. In cases where the exact location was not known, the data were used only for overall presentation of Griffon Vulture's occurrence in Slovenia and excluded from the habitat analysis.

2.2. Variable measurements

The habitats where vultures were observed were analysed for the sub-Mediterranean and Dinaric regions (Kambreško, Banjšice; Trnovski gozd, Nanos and Hrušica; Pivško podolje and Vremščica; Javorniki and Snežnik; regions identified according to PERKO & OROŽEN-ADAMIČ 1998). Since the data for the Alpine

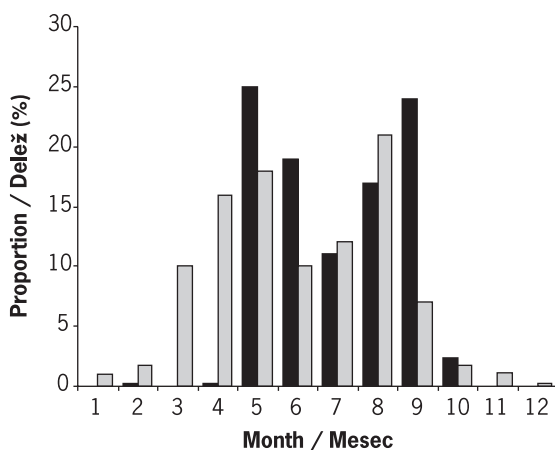


Figure 2: Seasonal distribution of Griffon Vulture *Gyps fulvus* records (black; N = 622) and thermals (grey) in Slovenia

Slika 2: Sezonska razporeditev opazovanj beloglavega jastreba *Gyps fulvus* records (črna barva; N = 622) in vzgornikov (siva barva) v Sloveniji

region were collected by systematic observation only on a few locations, the Alpine region was not included in habitat analysis.

Altitudes of the ground under the flying vultures were acquired with the digital model of relief (DMR100) using ArcView program. Exposure and slope were ascertained by Idrisi program as well as a land use map (MKGP 2002). Land use was classified as forest (code 2000) and open areas (all other codes). Data on thermals (columns of rising warm air) were acquired from the internet [www.friulano.it/t2t_euromap_thermals.php?] for the square between 12 – 16°E and 44 – 46°N. These data on thermals were processed as for observations of Griffon Vultures, and were obtained with GPS technology from paragliders in years 2002 – 2004.

2.3. Statistical procedures

In order to identify preferred land structures for flying Griffon Vultures, data were compared with 180 randomly selected points generated in the Idrisi program all over the sub-Mediterranean and Dinaric regions. Environmental descriptors were altitude and slope as continuous, and exposure and land use as discontinuous variables. We used a multiple logistic regression (method stepwise forward) in SPSS program to detect those significant variables that determine the probability of detecting a Griffon Vulture over particular environmental features.

3. Results

In 242 observations over the last 25 years, 672 birds were recorded. Most of the data are based on observation of individual birds (45%), in 15% two birds were observed, in 13% three birds and in less than 5% cases more than eight birds were observed at once. The maximum number of observed birds was 24. The data are shown on Figure 1.

3.1. Seasonal occurrence

Almost all data were recorded in warm periods of the year, 97% (N = 622) between the beginning of May and the end of September. Most thermals were also present in summer months, the differences being in spring (March, April), when thermals were relatively frequent but observations were scarce. The seasonal occurrence is shown on Figure 2.

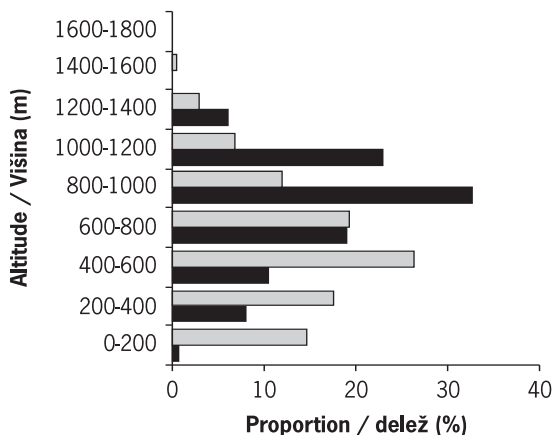


Figure 3: Altitudinal distribution of Griffon Vulture *Gyps fulvus* records in the study area (black; N = 162) and altitudinal distribution of the entire study area (grey; N = 2826)

Slika 3: Višinska porazdelitev opazovanj beloglavega jastreba *Gyps fulvus* v preučevanem območju (črna barva; N = 162) in višinska porazdelitev celotnega obravnavanega območja (siva barva; N = 2826)

3.2. Landscape analysis

In order to analyze the landscape parameters of observations, we used 90 records (see Methods) in which 162 birds were observed.

Classification table shows correct classification of model in 79.8% of cases.

The SPSS output is shown in Table 1.

Table 1: Differences in habitat variables among Griffon Vultures *Gyps fulvus* observations and randomly selected points in the study area using logistic regression model (SPSS output)

Tabela 1: Razlike v spremenljivkah habitata med opazovanji beloglavega jastreba *Gyps fulvus* in naključno izbranimi točkami na območju raziskave; uporabljen je bil model logistične regresije (izpis programa SPSS)

Variables / Spremenljivke	Wald	df	Sig.	Odds Ratio/ Razmerje obetov
open areas / odprte površine	29.9172	1	<0.001	5.8596
exposition / smer neba				
joint / skupno	31.1813	8	<0.001	
N / S	1.8048	1	<i>ns</i>	0.1796
NE / SV	1.9735	1	<i>ns</i>	3.0123
E / V	0.4126	1	<i>ns</i>	0.5558
SE / JV	1.0503	1	<i>ns</i>	0.3683
S / J	0.1085	1	<i>ns</i>	1.2908
SW / JZ	3.6945	1	0.0546	4.3313
W / Z	0.0264	1	<i>ns</i>	0.8792
NW / SZ	0.0378	1	<i>ns</i>	1.1830
slope / naklon	10.9390	1	<0.001	1.3791
altitude / višina	20.0060	1	<0.001	1.6736

3.3. Altitude

Most of the birds were observed above high ground and 75% were flying over areas with altitudes between 600 and 1200 m a.s.l. (Figure 3). Odds for the presence of Griffon Vultures were significantly increased ($p < 0.001$) with increasing altitude. Odds ratio increase was 1.67 for an increase of 200 m. The majority of birds were observed above the hillsides of Trnovski gozd, Nanos, Snežnik, Čičarija and Carst Edge.

The difference between altitudinal distribution of Griffon Vultures and of thermals was significant ($\chi^2 = 28.93$; $p < 0.001$) due to the lower altitudes of thermals.

3.4. Exposure

The exposure of sites where birds were observed and exposure of the entire study area are shown on Figure 4. In more than half the cases (55%), birds were seen on south-west exposures. The parameter in the logistic model was significant (Wald = 31.18, $p < 0.001$); the odds ratio is the highest on SW exposures (Exp B = 4.33; $p = 0.054$).

There were no differences ($\chi^2 = 13.67$; *ns*) between exposure distribution of Griffon Vultures and thermals.

3.5. Slope

The distributions of inclinations where birds were observed and of the entire study area are shown on Figure 5. The majority of birds (77%) were seen above areas with inclinations of between 5 – 25 degrees.

The parameter in the logistic model was significant (Wald = 10.93, $p < 0.001$). Odds ratio increase was 1.34 for 5° slope increase.

The differences in inclinations of Griffon Vulture observation points and of thermals were significant ($\chi^2 = 73.48$; $p < 0.001$).

3.6. Land use

In spite of 65% forests coverage, 30% of all vultures were observed above the forests in the study area. The rest were observed above open areas with much smaller proportion of forest (30%). The parameter in the logistic model was significant (Wald = 29.92, $p < 0.001$). Odds ratio for non-forest areas was 5.86 compared with forest areas.

Thermals were, similar to Griffon Vultures, distributed significantly ($\chi^2 = 1.86$; *ns*) over open areas (Table 2).

Table 2: Proportion of land use in entire study area and on locations where Griffon Vultures *Gyps fulvus* were observed or where thermals appeared

Tabela 2: Delež rabe tal v obravnavanem območju in na lokacijah, kjer so bili opazovani beloglavi jastrebi *Gyps fulvus* oz. so se pojavljali vzgorniki

Land use / Raba tal	Study area/ Raziskovano območje	<i>Gyps fulvus</i>	Thermals / Vzgorniki
open areas / odprte površine (%)	34.5	69.8	60.6
forests / gozdovi (%)	65.5	30.2	39.4

4. Discussion

Vultures are typical gliders. They depend on cliffs as nesting places, domestic livestock carrion as food (TUCKER & HEATH 1994) and also areas where wind thermals facilitate soaring (CRAMP 1980; GENSOL 1987). The reasons for their occurrence in Slovenia and the Alpine region are feeding areas on highland pastures which are an important source of domestic livestock carrion during the summer (GENERO 1995, GLUZ *et al.* 1971). Their longer trips depend mainly on thermals over open and dry areas and rising air-currents over upland and mountain areas (CRAMP 1980, TUCKER & HEATH 1994). This can explain why they occur in Slovenia mainly in warm periods of the year, when the thermals are frequent (Figure 2).

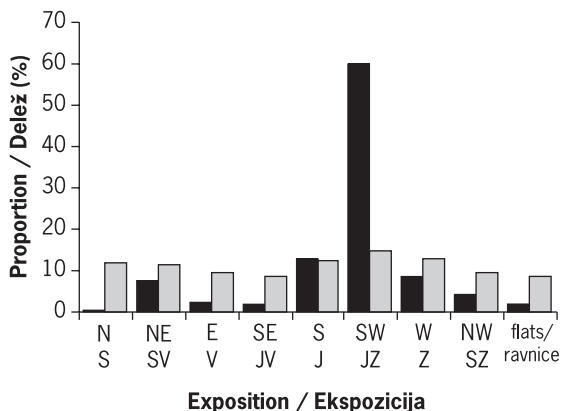


Figure 4: Expositional distribution of Griffon Vulture *Gyps fulvus* records in the study area (black; N = 162) and expositional distribution of the entire study area (grey)

Slika 4: Ekspozicijska porazdelitev opazovanj beloglavega jastreba *Gyps fulvus* v preučevanem območju (črna barva; N = 162) in ekspozicijska porazdelitev celotnega obravnavanega območja (siva barva)

Thermal winds are probably one of the main reasons for the predictable occurrence of Griffon Vultures. Comparison of the studied parameters between entire study area and locations where Griffon Vultures were observed suggests that Griffon Vultures do not appear at random locations within the area. They significantly appeared above open or less forested hillsides on higher altitudes which are SW exposed. Thermal winds were registered on areas with the same characteristics as those typical for Griffon Vultures occurrence. There were no significant differences between the distribution of Griffon Vultures and the occurrence of thermals, as compared to exposure and land use.

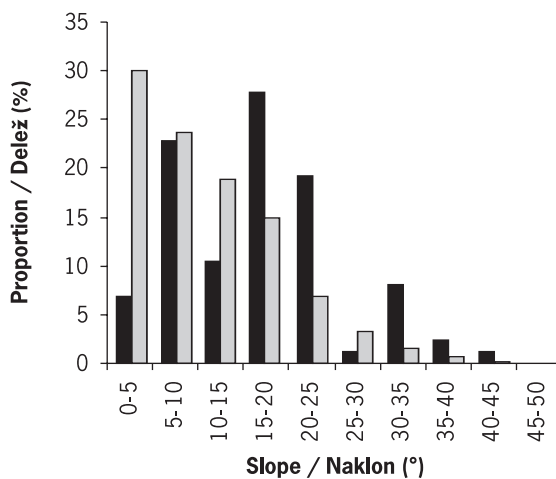


Figure 5: Slope distribution of Griffon Vulture *Gyps fulvus* records in the study area (black; N = 162) and slope distribution of the entire study area (grey)

Slika 5: Pobočna porazdelitev opazovanj beloglavega jastreba *Gyps fulvus* v preučevanem območju (črna barva; N = 162) in pobočna porazdelitev celotnega obravnavanega območja (siva barva)

Comparison with altitude and inclination distribution showed difference. The reason could be that hillsides and ridges are important for vultures, even when there are no thermals above them. Air currents, to which hillsides act as barriers, are forced to rise, enabling birds to soar (GILL 2000).

These results could explain why concentrations of Griffon Vultures were found along the Carst and Dinaric ridges. These areas are essential for the presence of the species in Slovenia as they serve as corridors for these birds. They enable the colony from Kvarner to reach the Alps as well as the Italian colony. In the opposite direction, Italian vultures can join with the colony from Kvarner. There are probably no other natural corridors in the area that would enable migrations in these directions. Registered thermals also indicate continuation of such corridors from Kvarner towards the Alps (Figure 6).

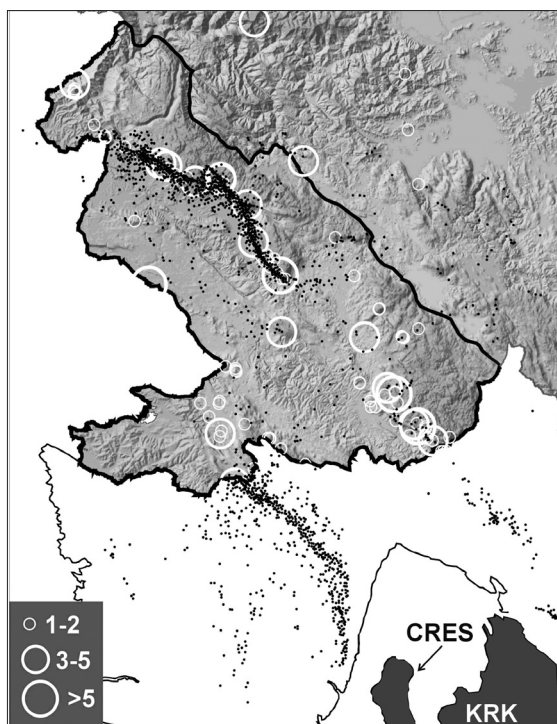


Figure 6: Occurrence of thermals (black dots) in the study area and Istria; grey colour indicates Krk and Cres islands in the Kvarner region with breeding colonies of Griffon Vulture *Gyps fulvus*; white rings indicate records of Griffon Vultures in the study area

Slika 6: Pojavljanje vzgornikov (črne pike) v preučevanem območju in Istri; siva barva ponazarja otoka Krk in Cres v Kvarnerskem zalivu z gnezdečimi kolonijami beloglavega jastreba *Gyps fulvus*; beli krožci ponazarjajo opažanja beloglavih jastrebov v preučevanem območju

The vultures fly through these corridors almost in line. This phenomenon is most obvious at Trnovska planota and Nanos, where all observations have been located very close to their edge. This can be explained by the fact that Griffon Vultures soar.

According to data from literature (CRAMP 1980, GLUZ *et al.* 1971), daily migratory distances of breeding vultures do not exceed 50 – 60 km. The Slovene border is around 50 km away from the Croatian colony and 30 km from the Italian. That is why in Slovenia we can expect predominantly non-breeding birds. In one day Croatian breeding vultures probably reach only the south-western part of Slovenia (S hillsides of Snežnik and Čičarija, together with Carst Edge) while breeding birds from Italy should visit the Slovenian Alps frequently. There are several records of small groups of vultures observed on Breginjski Stol. In the morning they fly from Italy to Krn and, after a few hours, return in the opposite direction (L. Božič *pers. comm.*).

Because data were collected unsystematically they could be biased by different observational activity in the different regions. According to the geographical distribution of sightings for Slovenia published in the journal *Acrocephalus* (TOME 2000), vulture observations are located in the areas where few observations of any birds have been made. No observations of this species have been recorded from the SW part of the study area where there has been higher observational activity. Also the field surveys for the New Breeding Bird Atlas of Slovenia where the same observation effort is used for whole study area show that registrations of vultures in Atlas surveys are on the same locations as unsystematically collected data (*own data*).

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5. Povzetek

Avtorja članka sta zbrala in obdelala podatke o pojavljanju beloglavega jastreba v Sloveniji. Analiza habitata je bila napravljena za submediteransko in del dinarske regije, v kateri se beloglavi jastreb pojavlja (Kambreško, Banjšice; Trnovski gozd, Nanos in Hrušica; Pivško podolje in Vremščica; Javorniki in Snežnik). Skupaj je bilo v zadnjih 25 letih zbranih

242 opazovanj beloglavih jastrebv v Sloveniji, med katerimi je bilo opazovanih skupaj 672 ptic. Največ podatkov zadeva opazovanje samo enega osebkov (45% opazovanj). Opazovanj z več kot osmimi osebki je bilo skupaj manj kot 5%, hkrati pa je bilo opazovanih največ 24 osebkov. Ptice kot tudi termalna dviganja so bila registrirana predvsem v topli polovici leta. Jastrebi so značilno jadrli nad više ležečimi, južno orientiranimi pobočji (JZ) območja, večinoma nad terenom med 600 in 1200 m n.v. Med porazdelitvijo ekspozicij na lokacijah termalnih dviganj in opazovanj beloglavih jastrebv ni bilo razlik. Največ ptic je bilo opaženih na južnih obronkih Trnovskega gozda, Nanosa in Snežnika ter v Čičariji in na Kraškem robu. Kljub 65% gozdnatosti območja je bilo samo 30% jastrebv opazovanih nad gozdom. V 70% primerih so ptice jadrle nad negozdnimi površinami. Prav tako so se značilno nad negozdnimi površinami pojavljali vzgorniki. Ti so verjetno tudi glavni razlog za predvidljivo pojavljanje beloglavih jastrebv v Sloveniji, pobočja oz. grebeni pa so za premike jastrebv pomembni tudi takrat, kadar ni termičnih dviganj zraka nad njimi. Jastrebom zaradi dvigajočih se zračnih mas ob barierah omogočajo t.i. pobočno jadranje, s pomočjo katerega lahko premagujejo večje razdalje. To pa tudi pojasnjuje zgoščeno pojavljanje jastrebv na kraških in dinarskih grebenih.

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THE RECENT STATUS OF BREEDING BIRD COMMUNITIES OF SREBARNA BIOSPHERE RESERVE (NE BULGARIA)

Aktualni status združb ptic gnezdilk v biosfernem rezervatu Srebarna (SV Bolgarija)

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The number, density and habitat distribution of breeding birds in the Srebarna Reserve, NE Bulgaria, were determined. The study, based on the method of transects, was carried out during the breeding seasons of 2001 – 2003. In six habitat types, 82 breeding bird species were recorded. The breeding populations in the reserve of Dalmatian Pelican *Pelecanus crispus* (max. 128 pairs) and Great Egret *Egretta alba* (max. 12 pairs) constitute the total Bulgarian population of these species. The Srebarna Reserve also contains the largest breeding population of Ferruginous Duck *Aythya nyroca* (max. 60 pairs) in Bulgaria. The Lesser Spotted Woodpecker *Dendrocopos minor* and Marsh Tit *Parus palustris* were recorded in the reserve for the first time. The largest number of breeding species (36) was observed in the bottom-growing reedbeds habitat (the dominant plant species was Common reed *Phragmites australis*) and the smallest number (1) in the White Water-lily habitat (the dominant plant species was White Water-lily *Nymphaea alba*). The diversity of species was greatest in the bottom-growing reedbeds habitat. The study reveals continual changes in the breeding bird communities in Srebarna Reserve, especially in the reedbeds habitat, and shows that short-term and long-term factors influence, not only the number of breeding pairs, but also the species composition and bird habitat distribution.

Key words: status of breeding birds, habitat, wetland, Srebarna Reserve, Bulgaria

Ključne besede: status gnezdilk, habitat, mokrišče, rezervat Srebarna, Bolgarija

1. Introduction

Wetlands are one of the habitat types that are affected considerably by human activity. In Bulgaria, this has been expressed mainly as the draining of agricultural lands at the end of the 1940's and the beginning of the 1950's. As a result, the total area of wetlands is now 20 times smaller than at the beginning of the 20th century (BONCHEV 1929, MICHEV 1993). Srebarna is one of the wetlands that have remained. It is a Ramsar site (since 1975), a UNESCO Biosphere Reserve (since 1977), a Monument of the World Cultural and Natural Heritage (since 1983) and an Important Bird Area (since 1990; HEATH & EVANS 2000), due to its very rich bird fauna and, in particular, the breeding of the globally threatened species: Dalmatian Pelican

Pelecanus crispus, Pygmy Cormorant *Phalacrocorax pygmeus* and Ferruginous Duck *Aythya nyroca*.

Since the 19th century, many European and Bulgarian ornithologists have visited and researched, not only the great bird diversity of Srebarna Lake, but mainly the permanent colony of the Dalmatian Pelican and the mixed heronry (HODEK 1882, LORENZ-LIBURNAU 1893, REISER 1894, PETROV 1947, PATEV 1950, PETROV & ZLATANOV 1955, MOUNTFORT & FERGUSON-LEES 1961, GEISSLER 1962). PASPALOVA-ANTONOVA (1961A & B) and MICHEV (1963, 1966, 1968 & 1981) carried out comprehensive studies on the avifauna of Srebarna Lake.

The aim of this study was to assess the number and habitat distribution of the breeding avifauna in the Srebarna Reserve.

2. Study Area and Methods

The research was carried out in the Srebarna Managed Reserve (806 ha). The lake is near the Danube River, 18 km west of the town of Silistra, NE Bulgaria (44°07' N, 27°04' E; UTM NJ08; MGRS NJ 0560085000). Devnia Island, in the Danube, is situated in the northern part of the reserve (Figure 1).



Figure 1: Geographical position of Srebarna Reserve

Slika 1: Geografski položaj rezervata Srebarna

The water regime of the lake was not affected until the first half of the 20th century. In 1949 the lake was detached from the Danube and supplied with water only from underground sources and surface water flow. In 1978, the connection with the river was partially restored by removing part of the dike. However, the Danube waters did not enter every year, since this depended on the quantity of rainfall and the artificial control of the Danube water level. The absence of annual entering of Danube waters in the reserve and the prohibition of reed cutting (1975) led to the accumulation of organic sediments. Between 1992 and 1994, the ecological condition of the reserve worsened (STOYNEVA & MICHEV 1998). However, in 1994, the building of a new sluice considerably improved the condition of the reserve.

Six habitat types in the study area were identified according to the classification of Devilliers & Devilliers-Terschuren (1996; Figure 2):

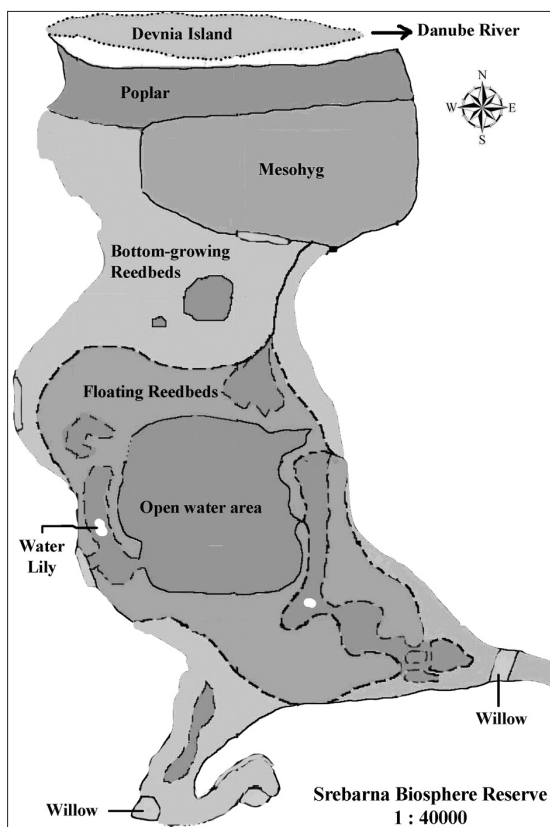


Figure 2: Habitats in Srebarna Reserve (Mesohyg – mesophytic and hygromesophytic grassland habitat; Willow – coastal forests of White Willow *Salix alba*; Poplar – Hybrid Poplar *Populus* $\square$ *canadensis* plantation; Island – White Willow *Salix alba* and White Poplar *Populus alba* habitat on Devnia Island)

Slika 2: Habitati v rezervatu Srebarna (Reedbeds – trstičje; Mesohyg – mezofilni in higromezofilni travniki; Williw (vrbovje) – obrežni gozdovi bele vrbe *Salix alba*; Poplar (topoli) – plantaža topolov *Populus* $\square$ *canadensis*; Island (otok) – bela vrba *Salix alba* in beli topol *Populus alba* na otoku Devnia)

- (1) the “Reedbeds” occupy the largest part of the reserve area and can be divided into two microhabitat types:
 - the “Bottom-growing reedbeds” (285 ha) are present in all coastal parts around Srebarna Lake; there are open water areas of variable size within the vegetation; the dominant plant species is *Phragmites australis* and there are also other plant species (*Salix cinerea*, *Typha angustifolia*, *Typha latifolia*, *Schoenoplectus lacustris*, as well as *Nymphoides peltata* and *Potamogeton crispus*);
 - the “Floating reedbeds” (170 ha) are clumps of floating reedbeds which can be moved by strong winds; this microhabitat is located in the central part of the Srebarna Lake and the reedbeds are

- surrounded by a large expanse of open water (95.5 ha);
- (2) the White Water-lily *Nymphaea alba* community has an impermanent patchy distribution throughout the reserve ("Water-lily");
 - (3) mesophytic and hygromesophytic grassland habitat (99.5 ha; "Mesohyg") is a dry area where *Phragmites australis*, *Typha angustifolia*, *Typha latifolia*, *Carex pseudocyperus*, *Tanacetum vulgare* are the most common plant species;
 - (4) Hybrid Poplar *Populus* $\square$ *canadensis* plantation (73.6 ha; "Poplar"); this habitat is located in the north part of the reserve along the banks of the Danube River; in addition to the dominant tree species there are also *Populus alba*, *Acer campestre* and *Alnus glutinosa*; the undergrowth of the plantation is comprised of *Amorpha fruticosa* (invasive species), *Paliurus spina-christi*, *Sambucus elbus* and 12 grass species;
 - (5) White Willow *Salix alba* and White Poplar *Populus alba* habitat on Devnia Island (18.6 ha; "Island"); this habitat is situated in the northernmost part of the reserve; besides the both dominant plant species, *Ulmus minor*, *Acer pseudoplatanus* and varied undergrowth consisting of shrub species (*Rubus caesius*, *Rubus idaeus*, *Cornus mas*) are also present in this habitat;
 - (6) coastal forests of White Willow (12.8 ha; "Willow"); this habitat type is comprised of small isolated patches in the shoreline of the reserve; these willow assemblages are free of undergrowth, but the herbaceous layer contains 49 species, such as *Ranunculus ficaria*, *Agrimonia eupatoria*, *Juncus articulatus* and *Trifolium campestre*.

The habitat abbreviations are used throughout the text.

Observations were made during the breeding season (April – June) in 2001, 2002 and 2003. The open water areas were examined by boat. Observations were made between 8.00 and 12.00 h. The census of the species belonging to the family Podicipedidae and order Anseriformes, as well as Coot *Fulica atra* and Moorhen *Gallinula chloropus* was taken by counting the number of nests found and the number of individuals recorded at the beginning of the breeding season (April) in the open water areas. The censuses of the colonies of the breeding species belonging to the families Pelecanidae, Phalacrocoracidae, Ardeidae, Threskiornithidae and Sternidae were taken by counting the number of nests from places with the best viewpoint towards the colonies. In the case of Water Rail *Rallus aquaticus*, Spotted Crake *Porzana porzana*, Baillon's Crake

Porzana pusilla and Corncrake *Crex crex* we counted the calls of males between 23.00 and 2.00 h from 25 May to 30 May. Tape recordings were used to provoke answers from males (DELOV 2002). The census of species belonging to order Falconiformes was done by counting breeding pairs.

The censuses of species belonging to the orders Passeriformes, Columbiformes, Coraciiformes, Piciformes and Galliformes were carried out using the transect method, and species were assessed by detecting the singing males. For species that do not defend their territory, each individual was considered as a member of a pair. The width of the transects was 50 m in wooded habitats and 100 m in shrubby-herbaceous habitats. Although JÄRVINEN *et al.* (1978) reported lower census efficiencies with the line transect method, this method should be generally capable of counting more species, because it encompasses all species (BIBBY *et al.* 1992). The transect method was chosen because it was more important to detect all bird species in order to make a comparison with Paspaleva-Antonova's work (PASPALEVA-ANTONOVA 1961A & B). We used 16 transects: 11 in *Reedbeds*, 2 in *Mesohyg*, 1 in *Poplar*, 1 in *Island* and 1 in *Willow* habitat. The length of the transects was between 870 and 2500 m in *Reedbeds*, between 1460 and 1600 m in *Mesohyg*, 1640 m in *Poplar*, and 1600 m in *Island*. In the censuses of Great Reed Warbler *Acrocephalus arundinaceus*, Reed Warbler *Acrocephalus scirpaceus* and Savi's Warbler *Locustella luscinioides*, 11 one-side transects (50 m width) in the waterside of *Reedbeds* were used. In the area of these transects the numbers of breeding pairs of *Acrocephalus* and *Locustella* species were recorded, since they breed mostly near to the border (in the ecotone zone) of *Reedbeds* (MOSKAT *et al.* 1991, BÁLDI & KISBENEDEK 1999). The census was made between 15 May and 15 Jun, when the former species were characterized by their high acoustic activity and migration was finished. In *Poplar*, *Mesohyg* and *Island* habitats, the numbers of breeding pairs (B) were estimated according to the formula:

$$B = H \cdot b / T$$

where H is the area of habitat (ha), b the number of breeding pairs recorded in the transects, and T the area of the transect (ha). In *Willow* habitat, the area of habitat coincides with the area of the transect and the number of breeding pairs in the transect is equal to the number of breeding pairs in the habitat. The formula for the number of breeding pairs in *Reedbeds* habitat was not used because *Acrocephalus* and *Locustella* species breed mostly in the ecotone zone of *Reedbeds* –

using it would imply the assumption that these species are uniformly distributed in the habitat.

Brilloun's diversity index (HB), the Pielou evenness index (E), and the Berger-Parker index of domination (d) were used to compare bird diversity in different habitats over the three years studied. They were calculated as follows:

$$HB = \ln N! - \sum \ln n_i! / N$$

$$E = \sum (n_i / N)^2$$

$$d = N_{\max} / N$$

where N is the total number of individuals, n_i the number of individuals of the i-th species and $N_{\max}$ is the number of individuals of the most abundant species. The program BIODIV was used to calculate these indices (BAEV & PENEV 1995).

The dominance of the species was calculated as follows:

$$d_{\%} = (n_i / N) \cdot 100$$

where n_i is the number of breeding pairs of a given species, and N the overall number of breeding pairs in a habitat. The scale of SIMEONOV & PETROV (1978) was used to estimate the dominant structure of bird communities in each habitat: the dominant species was defined as the one with more than 8% dominance (percent share); the subdominant species from 4 to 8% dominance, and differential species as those occurring in only one habitat type.

3. Results

A total of 82 breeding bird species were recorded in the six habitat types in Srebarna Reserve. The composition of bird species in the habitats for the years from 2001 to 2003 is shown in the Table 2. Whiskered Tern *Chlidonias hybridus* is missing in the Table 2, because this species breeds only in the *Water-lily* habitat and is at the same time the only species breeding there. The largest number of breeding species (51) was observed in the *Reedbeds* habitat and the smallest (1) in the *Water-lily* habitat. The number of breeding pairs was the greatest in the *Bottom-growing Reedbeds* and the smallest in the *Willow* habitat (Table 1). The diversity

Table 1: The average values of diversity parameters of the avifauna in the habitats of Srebarna Reserve for the period 2001 – 2003

Tabela 1: Povprečne vrednosti parametrov diverzitete avifavne v habitatih rezervata Srebarna v obdobju 2001 – 2003

Parameters of the avifauna/ Parametri avifavne	Year / Leto	<i>Floating Reedbeds/ Plavajoče trstičje</i>	<i>Bottom-growing Reedbeds/ Z dna rastoče trstičje</i>	<i>Mesohygy</i>	<i>Poplar/ Topoli</i>	<i>Willow/ Vrbouje</i>	<i>Island/ Otok</i>
Number of breeding pairs/ Število gnezdečih parov	2001	329	1670	211	229	100	479
	2002	287	715	239	272	110	421
	2003	254	590	179	346	95	433
	average	290	992	210	282	102	444
Brilloun's diversity index (HB) / Brillounov indeks diverzitete (HB)	2001	2.22	2.61	1.95	2.26	2.22	0.739
	2002	2.27	3.00	1.92	2.36	2.03	0.733
	2003	2.36	3.01	1.99	2.51	2.11	0.848
	average	2.03	2.87	1.95	2.38	2.12	0.773
Pielou evenness index (E) / Pieloujev indeks enakosti (E)	2001	0.767	0.741	0.853	0.878	0.831	0.324
	2002	0.770	0.845	0.808	0.876	0.758	0.322
	2003	0.820	0.829	0.878	0.888	0.795	0.360
	average	0.767	0.805	0.846	0.881	0.797	0.335
Berger-Parker index for domination (d) / Berger-Parkerjev indeks dominance (d)	2001	0.368	0.198	0.242	0.192	0.230	0.835
	2002	0.320	0.160	0.243	0.180	0.345	0.831
	2003	0.290	0.134	0.229	0.142	0.274	0.808
	average	0.352	0.164	0.238	0.171	0.274	0.825

of species is largest in the *Bottom-growing Reedbeds* habitat and smallest on Devnia Island. The largest number of breeding pairs in the reserve have Great Cormorant *Phalacrocorax carbo* and Coot.

3.1. Reedbeds habitats

3.1.1. Floating Reedbeds habitat

In this habitat, 15 bird species were observed (Table 4). The order Anseriformes contained the largest number of species (6). The largest number of breeding pairs of all species (329) was observed in 2001, when 50% of these breeding pairs were comprised of only two species (Dalmatian Pelican and Ferruginous Duck). The number of breeding pairs of Dalmatian Pelican over this period ranged from 80 to 128. Here a few species of dabbling ducks nested – Mallard *Anas platyrhynchos*, Gadwall *Anas strepera*, Garganey *Anas querquedula*, together with diving ducks – Ferruginous Duck and Pochard *Aythya ferina*. The dominant species were Dalmatian Pelican (34%), Moorhen (12%) and Ferruginous Duck (10%) (Table 4). The diversity (HB), evenness (E) and domination index (d) did not vary over the three years (Table 1).

3.1.2. Bottom-growing Reedbeds habitat

During the period studied, 36 species belonging to the seven orders were recorded in this habitat – Podicipediformes, Pelecaniformes, Ciconiiformes, Anseriformes, Gruiformes, Charadriiformes and Passeriformes (Figure 3). The order Ciconiiformes contained the largest number of species (9). The largest number of all breeding pairs was recorded in 2001 and the lowest in 2003 (Table 1). This is confirmed by the fact that, in 2001, breeding pairs of the three species, Coot, Pygmy Cormorant and Squacco Heron *Ardeola ralloides*, comprised 50% of all breeding pairs in the habitat. In contrast, in 2002 and 2003 50% of breeding pairs were distributed among six species. The values of diversity (HB), evenness (E) and domination index (d) also did not differ very much over the three years (Table 1). The dominant species were Pygmy Cormorant, Squacco Heron, Little Egret *Egretta garzetta* and Coot. The number of breeding pairs of Coot was largest in this habitat in contrast with the *Floating Reedbeds* habitat. Some dabbling ducks also nested here – Mallard, Gadwall, Garganey – and diving ducks – Ferruginous Duck and Pochard. Of the four species of Podicipediformes, the Little Grebe *Tachybaptus ruficollis* provided the largest number of breeding pairs. Rare species in the habitat were Spotted

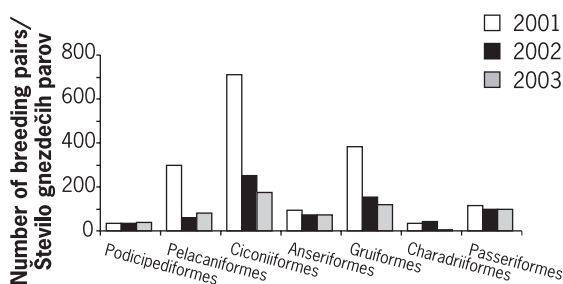


Figure 3: Number of breeding pairs in seven bird orders in *Bottom-growing Reedbeds* in Srebarna Reserve for the period 2001 – 2003

Slika 3: Število gnezdečih parov za sedem redov ptic v habitatu z dna rastočega trstičja v rezervatu Srebarna v obdobju 2001 – 2003

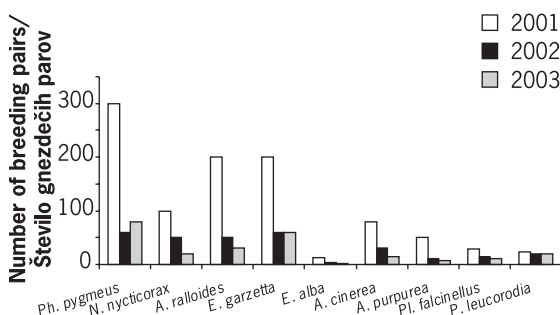


Figure 4: Number of breeding pairs in mixed heron colony in Srebarna Reserve for the period 2001 – 2003

Slika 4: Število gnezdečih parov v mešani koloniji čapelj v rezervatu Srebarna v obdobju 2001 – 2003

Crake, Baillon's Crake, Water Rail, Black-necked Grebe *Podiceps nigricollis*, and Greylag Goose *Anser anser*.

The mixed heron colony was located in this habitat (Figure 4) and was comprised of nine species. In 2001, the colony occupied an area of 35,000 m². About 90% of the nests were built on Grey Willows *Salix cinerea* and the remainder in the reeds. The nests of Spoonbill *Platalea leucorodia*, Great Egret *Egretta alba*, Grey Heron *Ardea cinerea* and Purple Heron *Ardea purpurea* were situated in the reeds and those of the other species on Grey Willow. In 2002 and 2003, the heronry was much more dispersed than in 2001. The most numerous species in the colony for the three years were Pygmy Cormorant, Little Egret and Squacco Heron. In 2001, the number of heron species comprised 59% of all species in the habitat, and, in 2002 and 2003, 41%. During this period we observed a decrease of breeding pairs in the heronry. The decrease of breeding pairs from 2001 to 2002 was the greatest for Pygmy Cormorant (80%), Purple Heron

(80%), Squacco Heron (75%), Little Egret (70%) and Grey Heron (62.5%). The declining water depth in 2002 caused the disappearance of the shallow shore part of the reserve (including the spring-flooded area in the north-eastern part), which is the major feeding site for the heron species.

3.2. Water-lily habitat

This habitat is a nesting place for only one breeding species, Whiskered Tern. For the period studied, their number varied from 25 to 40 breeding pairs. In 2001, the colony was located on the leaves of the White Water-lily in an area of approx. 40 m² in the western part of the reserve but, in 2002, in the south-eastern part in an area of approx. 25 m². In 2003 the breeding of this species in the reserve was interrupted because of unknown reasons.

3.3. Mesophylic and hygromesophylic grassland habitat (*Mesohyg*)

In this habitat, 15 bird species were recorded, from orders Charadriiformes (2 species), Galliformes (1), and Passeriformes (12; Table 5). The largest number of breeding pairs was recorded in 2002 and the lowest in 2003. In the three years of research about 50% of breeding pairs were concentrated in the two dominant species – Great Reed Warbler and Red-backed Shrike *Lanius collurio*. The avifauna of this habitat was characterized by reed nesting species (Marsh Warbler *Acrocephalus palustris*, Reed Warbler and Great Reed Warbler) as well as by species nesting in open lands and scattered trees and bushes, like Barred Warbler *Sylvia nisoria*, Lesser Whitethroat *Sylvia curruca*, Whitethroat *Sylvia communis*, Skylark *Alauda arvensis*, Yellow Wagtail *Motacilla flava* and Lapwing *Vanellus vanellus*. The presence of Little Ringed Plover *Charadrius dubius* is due to the small amount of open water with open sandy shores in the centre of the habitat. This little pond is also a feeding place for dabbling and diving ducks (Mallard, Gadwall, Garganey, and Ferruginous Duck), for Coot and for Moorhen. The values of diversity (HB), evenness (E) and domination index (d) show little variation over the three years (Table 1).

3.4. Hybrid Poplar plantation (*Poplar*)

In this habitat, 22 species from four orders were recorded – Columbiformes, Coraciiformes, Piciformes and Passeriformes (Table 6). The dominant species in the three years were Chaffinch *Fringilla coelebs*,

Blackbird *Turdus merula*, Blackcap *Sylvia atricapilla* and Great Tit *Parus major*. Rare species were Redstart *Phoenicurus phoenicurus*, Grey-headed Woodpecker *Picus canus*, Marsh Tit *Parus palustris* and Green Woodpecker *Picus viridis*. The largest number of breeding pairs was recorded in 2003. The values of diversity (HB), evenness (E) and domination index (d) show little change over the three years (Table 1).

3.5. White Willow and White Poplar habitat on Devnia Island (*Island*)

In this habitat, 13 bird species from orders Pelecaniformes, Columbiformes, Piciformes and Passeriformes were recorded (Table 7). The largest number of breeding pairs was recorded in the first year. A numerous colony of Great Cormorant nested on the Island, the number of breeding pairs varying between 350 and 400. This defines the different structure of the avian community in this habitat. The index for domination (d) is four times greater and diversity index (HB) smaller than the values for the other habitats (Table 1). Apart from Great Cormorant, the Chaffinch, Great Tit and Blackcap accounted for the largest number of breeding pairs for the three years.

3.6. Coastal forests of White Willow (*Willow*)

In this habitat, 23 species from four orders were recorded – Falconiformes, Coraciiformes, Piciformes and Passeriformes (Table 8). Five woodpecker species were recorded (Grey-headed Woodpecker, Green Woodpecker, Syrian Woodpecker *Dendrocopos syriacus*, Great Spotted Woodpecker *Dendrocopos major* and Lesser Spotted Woodpecker *Dendrocopos minor*). Seven bird species nested in this habitat only – Kestrel *Falco tinnunculus*, Lesser Spotted Woodpecker, Roller *Coracias garrulus*, Hoopoe *Upupa epops*, Penduline Tit *Remiz pendulinus*, Starling *Sturnus vulgaris* and Tree Sparrow *Passer montanus*. The largest number of breeding pairs was found in 2002. The most dominant species over the three years was Starling (29%). The other dominant species were Great Tit, Tree Sparrow and Penduline Tit.

4. Discussion

In Srebarna Reserve a significant number of bird species (82) breed on a relatively small area (806 ha). Under similar ecological conditions, Lake Prespa in Greece, with an area of 5000 ha, sustains 59 breeding species (BROUSSALIS 1975). Of the breeding species in Srebarna Reserve, 87% are protected by the Bulgarian

law for the protection of biodiversity, and 22% are included in the Bulgarian Red Data Book (1985). The breeding populations in the reserve of Dalmatian Pelican and Great Egret constitute the total Bulgarian population of these species. The Srebarna Reserve also contains the largest breeding population of Ferruginous Duck in Bulgaria.

The Lesser Spotted Woodpecker and Marsh Tit were reported for the first time in the reserve, and Chiffchaff *Phylloscopus collybita* and Robin *Erithacus rubecula* for the first time in the breeding period.

Using the data from REISER (1894), PATEV (1950), PETROV (1947) and PASPALEVA-ANTONOVA (1961A & B), we compared the number and composition of breeding birds prior to and during the changes that have taken place in the Srebarna Reserve. Only PASPALEVA-ANTONOVA (1961A & B) made a more detailed and long-term study of the reserve's avifauna. She defined three habitats: (1) lake with marsh plants; (2) woods; (3) agricultural area. She listed the proportions of different breeding species in the habitats, showing the largest bird diversity within the first habitat type and the lowest in agricultural areas. Between 1961 and 2001, the area between the dike (built in 1949) and the lake that was an agricultural area in Paspaleva-Antonova's survey is now covered with a mesophytic and hygromesophytic grassland. In our study, the coastal forests of White Willow and the Hybrid Poplar plantation are described as separate habitats. Despite the more common classification of habitats in Paspaleva-Antonova's survey, we can show some differences and similarities between the present study and the one conducted 42 years ago.

In the period 1959 – 1961, 33 bird species were recorded in *Reedbeds* (51 in the present study) of which 7 species no longer breed now on the territory of the reserve. These are Red-crested Pochard *Netta rufina*, Common Tern *Sterna hirundo*, Black Tern *Chlidonias niger*, White-winged Tern *Chlidonias leucoptera*, Redshank *Tringa totanus*, Black Kite *Milvus migrans*, Yellow-legged Gull *Larus cachinnans* and White Stork *Ciconia ciconia*. PASPALEVA-ANTONOVA (1961) observed that White Stork nested on the sheaves of the old reed, but now only one pair breeds in the village of Srebarna. In the present study we recorded 14 breeding species, which were not found in Paspaleva-Antonova's survey – Black-necked Grebe, Red-necked Grebe *Podiceps grisegena*, Pygmy Cormorant, Great Cormorant, Great Egret, Glossy Ibis *Plegadis falcinellus*, Greylag Goose, Corncrake, Water Rail, Baillon's Crake, Black-headed Gull *Larus ridibundus* and Sedge Warbler *Acrocephalus schoenobaenus*. PASPALEVA-ANTONOVA (1961B) determined the reduction of the number of all species

in the mixed colony compared with the observations of HODEK (1882) and REISER (1894). According to her, the reasons for this were:

- (1) the cutting down of coastal willow belt, which was the breeding site for Pygmy Cormorant and herons;
- (2) the lowering of water level in the lake by 1.5 m and the changes of fish fauna as a result of building the dike (BULGURKOV 1958, MICHEV 1963 & 1968);
- (3) large-scale reed masses were mowed, which deprived numerous bird species (pelicans, herons, ducks, warblers) of nest material and shelter;
- (4) the establishment of a stock-farm in the southern part of the reserve (PASPALEVA-ANTONOVA 1961B);
- (5) many Muskrats *Ondatra zibetica*, which destroyed the nests and eggs of wetland birds.

These are some of the reasons accounting for the absence of some species from the reserve but it is difficult to determine an overall pattern because the reasons are complex. In order to reveal the exact reason, additional and more detailed research on particular factors and particular species are necessary. According to MARTIN (1981) the deficiency of a given species from its habitat may be due to the conditions in the habitat, but also to the competition with other closely related species, the abundance in the region or just chance. However, at the end of the 19th century and in the 1950s, the Pygmy Cormorant, Great Cormorant, Glossy Ibis and Great Egret bred in the reserve (REISER 1894, PETROV 1947, PATEV 1950).

In 1979, part of the dike (500 m) was destroyed and, for several years, the Danube waters entered the lake annually. The water area extended and the maximum water column increased to 3.5 m. (STOYNEVA & MICHEV 1994, MIKHOV 1994). Unfortunately, from 1988 to 1994, there was no penetration of large amounts of water. The water level lowered considerably and, in 1993, the water column was only 0.3 – 0.5 m, and at several sites only 0.15 m (MICHEV *et al.* 1993, STOYNEVA 1994). Many of the floating reed isles rooted and the nests of water birds became accessible to predators (Golden Jackals *Canis aureus*, Red Foxes *Vulpes vulpes*, Wild Boars *Sus scrofa*). The census of avifauna in this period showed a decrease of bird species and their abundances (MICHEV 2000). In 1990 – 1994, the species from the heronry bred on Devnia Island in the Danube River. Only Dalmatian Pelican and other species like Coot, Moorhen, Great Reed Warbler, Reed Warbler and Magpie *Pica pica* remained to breed (STOYNEVA & MICHEV 1994). The number of breeding pairs of Dalmatian Pelican increased after 1990, because a fence was built around the colony which protected the nests and chicks from terrestrial predators. In 1994, when a channel was

built to connect the reserve and the Danube River, the herons, Spoonbill and Glossy Ibis began to breed on the territory of the reserve again (MICHEV 2000).

There is a lot of information about the breeding of Dalmatian Pelican in the reserve. Even HODEK (1882) and REISER (1894) reported about the existence of the colony. According to PATEV (1950), in the 1940's and 1950's, 100 – 150 pairs bred in the lake. In the period 1956 – 1959 the number of breeding pairs varied from 30 to 85, while in 1959 it decreased and there were two small colonies (PASPALLEVA-ANTONOVA 1961A). GEISLER (1962) estimated that the biggest part of the colony consisted of 91 nests and the smallest 36 nests. In the period 1954 – 1980, an average of 67 pairs bred in the reserve, with a large variation in numbers from 29 to 127 (MICHEV 1981). All these data show that Srebarna Reserve is a traditional breeding site for the Dalmatian Pelican and that its population fluctuates. There have also been some spatial changes of the colony. In the past (even before 1882), the nests were situated in the far northern part of the lake. In the 1940's, the colony was dispersed and separate breeding pairs bred on floated islets (PETROV 1947). Nowadays, the colony of the species is situated in the southern part of the northern *Reedbeds*, near the central open water. According to CRIVELLI *et al.* (1998) the water level and destruction of the islets were the most important factors which influenced the spatial distribution of the breeding units of Dalmatian Pelican. In spite of the 0.75 m decrease of the water column in 2002, this made no impact on the number of pelicans. But according to BALIAN *et al.* (2002) larger fluctuations in water level (up to 19.5 m) could lead to extinction of the species from the current wetland. We also observed a reduction in the breeding pairs of Coot, Ferruginous Duck, Pochard and Mallard from 2001 to 2002. The change was associated with the facts that: (1) in 2002 the area of water bodies, which was abundant with food and nesting resources, decreased; (2) because these species were numerous in 2001, making the decline in 2002 substantial. REITAN and SANDVIK (1992) in NORWAY and KOSINSKI (1999) in Poland also confirmed that water depth is a key factor for the number of pairs of *Anas* and *Aythya* species.

A decrease was observed in the mixed heron colony. PASPALEVA-ANTONOVA (1961B) also reported a reduction of the number of all species in the mixed colony as compared with the observations of HODEK (1882) and REISER (1894). According to the author, this was a result of building a dike (in 1949) between the lake and the Danube River, which interrupted the entry of Danube water into the reserve.

A big decrease was observed in the breeding numbers of Black-headed Gull – approximately 8 times less than in the 1980's.

For the period under study, *Water-lily* habitat was a breeding place of Whiskered Tern only. The species composition and the number of breeding pairs of terns decreased due to reduced area of the *Water-lily* communities in Srebarna Lake. According to REISER (1894) the Common Tern and Whiskered Tern bred in large numbers in the reserve. In the second half of the 20th century, four tern species bred in the reserve (Common Tern, Whiskered Tern, Black Tern and White-winged Tern). In the 1970's and 1980's, its colonies were situated in the eastern and northern part of the lake. According to PASPALEVA-ANTONOVA (1961A & B) the Black Tern was "markedly numerous" in the reserve, but its population began to decrease in the beginning of the 1970's, when only 1 to 3 pairs bred (IVANOV 1985).

The agricultural area from Paspaleva-Antonova's survey provided breeding places for nine bird species compared with the mesophytic and hygromesophytic vegetation in *Mesohygg* habitat (15 species). In our study, Savi's Warbler, Reed Warbler, Great Reed Warbler, Whitethroat, Lesser Whitethroat, Red-backed Shrike, Lesser Grey Shrike *Lanius minor* bred here, but Crested Lark *Galerida cristata*, Grey Partridge *Perdix perdix*, Quail *Coturnix coturnix* did not.

The special features of *Poplar* habitat, that determine the breeding avifauna, are the height of the trees (18 – 20 m) and the thin canopy. The middle tree layer was occupied by Chaffinch and Golden Oriole *Oriolus oriolus*. Nightingale *Luscinia megarhynchos*, Blackbird, Song Thrush *Turdus philomelos* and Blackcap bred in the shrubby layer. Since the poplar trees are 10 to 40 years old, there are cavities for the breeding of different species of woodpeckers, tits and Spotted Flycatcher *Muscicapa striata*. Some of the species (Grey-headed Woodpecker, Green Woodpecker, Wood Pigeon *Columba palumbus*, Redstart, and Marsh Tit) were observed only in one of the three years, which probably means that the abundance of these species in the region as a whole was low.

Although the vegetation community in *Island* habitat is characterized by large structural diversity, only 14 species of birds were recorded here, probably due to the small area of the *Island*. The large number of breeding pairs in this habitat is due to the large colony of Great Cormorant. This defines the lowest value of diversity index (HB) and the largest value of the dominance index (d). These results confirm the assertion of JAMES & RATHBUN (1981) that the

species rich ornithocoenoses have models with lower dominants than those that have a small number of bird species.

The *Willow* habitat has a patchy character, as the separate willow groves are situated along the coastal part of the reserve and, despite its small area, more bird species were observed here than in the previously mentioned two habitats. Although the vegetation community is characterized by low structural diversity, the willow trees are old and branchy and provide breeding sites for many bird species that nest in holes (the largest number of all the habitats) and in the tree canopy.

This study reveals that the changes in bird communities in Srebarna Reserve have been considerable and frequent (especially in *Reedbeds* habitat) and that different factors, both short-term and long-term, have influenced, not only the number of breeding pairs, but also the species composition and bird habitat distribution. Additional studies are needed to understand the particular factors (transparency, the abundance of phytoplankton and zooplankton, the amount of macrophytes, the amount of total dissolved nitrogen and phosphorous) that influence a particular species or group of species (the species belonging to the families Anatidae, Ardeidae, Threskornithidae and Phalacrocoracidae).

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5. Povzetek

Avtorica podaja število, gostoto in razporeditev habitatov gnezdečih ptic v rezervatu Srebarna v SV Bolgariji. Raziskave, temelječe na metodi transektov, je opravljala v gnezdilnem obdobju med letoma 2001 in 2003. Zabeleženih je bilo 83 gnezdilk v šestih habitatnih tipih. Populacija čopastega pelikana *Pelecanus crispus* in velike bele čaplje *Egretta alba* predstavlja celotno populacijo teh dveh vrst v Bolgariji. V rezervatu Srebarna je tudi največja gnezdeča bolgarska populacija kostanjevke *Aythya nyroca*. Prvič sta bila v rezervatu ugotovljena mali detel *Dendrocopos minor* in močvirska sinica *Parus palustris*. Največ vrst (36) je gnezdilo v habitatu z dna rastočega trstičja (dominantna vrsta rastlin je bil navadni trst *Phragmites australis*), najmanj (1) pa v habitatu belega lokvanja *Nymphaea alba*. Največja pestrost vrst je bila zabeležena v habitatu z dna rastočega trstičja. Raziskave kažejo na nenehne spremembe v združbah gnezdečih ptic v rezervatu Srebarna, še posebej v habitatu z dna

rastočega trstičja, ter kako kratkoročni in dolgoročni dejavniki vplivajo ne le na število gnezdilk, marveč tudi na sestavo vrst in razporeditev pričjih habitatov.

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PRILOGA / APPENDIX

Table 2: Species composition, maximum breeding number (br. p.) and dominance (%) for the period 2001 – 2003 in the habitats of Srebarna Reserve; *Mesohyg* - mesophytic and hygromesophytic grassland habitat; *Willow* – Costal forests of White Willow *Salix alba*; *Poplar* – Hybrid Poplar *Populus nigra* x *Populus canadensis* plantation; *Island* - White Willow *Salix alba* and White Poplar *Populus alba* habitat on Devnia Island

Tabela 2: Sestava vrst, maksimalno število gnezdečih parov (br. p.) in dominanca (%) za obdobje 2001 – 2003 v habitatih rezervata Srebarna; *Mesohyg* – mezofilni in higromezofilni travniki; *vrbovje* – obrežni gozdovi bele vrbe *Salix alba*; *topoli* – plantaža topolov *Populus nigra* x *Populus canadensis*; *otok* – bela vrba *Salix alba* in beli topol *Populus alba* na otoku Devnia

Species / Vrst	<i>Floating Reedbeds/ Plavajoče trstičje</i>		<i>Bottom- growing Reedbeds/ Z dna rastoče trstičje</i>		<i>Mesohyg</i>		<i>Willow/ Vrbovje</i>		<i>Poplar/ Topol</i>		<i>Island/ Otok</i>		Total br. p./ Skupno
	br. p.	%	br. p.	%	br. p.	%	br. p.	%	br. p.	%	br. p.	%	
<i>Tachybaptus ruficollis</i>	-	-	22	1.0	-	-	-	-	-	-	-	-	22
<i>Podiceps cristatus</i>	-	-	14	1.0	-	-	-	-	-	-	-	-	14
<i>Podiceps grisegena</i>	-	-	2	0.1	-	-	-	-	-	-	-	-	2
<i>Podiceps nigricollis</i>	-	-	2	0.1	-	-	-	-	-	-	-	-	2
<i>Phalacrocorax carbo</i>	-	-	-	-	-	-	-	-	-	-	400	80.0	400
<i>Phalacrocorax pygmeus</i>	-	-	300	17.0	-	-	-	-	-	-	-	-	300
<i>Pelecanus crispus</i>	128	34.0	-	-	-	-	-	-	-	-	-	-	128
<i>Ixobrychus minutus</i>	11	3.0	17	1.0	-	-	-	-	-	-	-	-	28
<i>Nycticorax nycticorax</i>	-	-	100	6.0	-	-	-	-	-	-	-	-	100
<i>Ardeola ralloides</i>	-	-	200	12.0	-	-	-	-	-	-	-	-	200
<i>Egretta garzetta</i>	-	-	200	12.0	-	-	-	-	-	-	-	-	200
<i>Egretta alba</i>	-	-	12	1.0	-	-	-	-	-	-	-	-	12
<i>Ardea cinerea</i>	-	-	80	5.0	-	-	-	-	-	-	-	-	80
<i>Ardea purpurea</i>	-	-	50	3.0	-	-	-	-	-	-	-	-	50
<i>Plegadis falcinellus</i>	-	-	28	1.6	-	-	-	-	-	-	-	-	28
<i>Platalea leucorodia</i>	-	-	24	1.4	-	-	-	-	-	-	-	-	24
<i>Cygnus olor</i>	3	1.0	3	0.2	-	-	-	-	-	-	-	-	6
<i>Anser anser</i>	-	-	2	0.1	-	-	-	-	-	-	-	-	2
<i>Anas strepera</i>	5	1.0	15	1.0	-	-	-	-	-	-	-	-	20
<i>Anas platyrhynchos</i>	11	3.0	19	1.0	-	-	-	-	-	-	-	-	30
<i>Anas querquedula</i>	4	1.0	18	1.0	-	-	-	-	-	-	-	-	22
<i>Anas clypeata</i>	-	-	10	0.6	-	-	-	-	-	-	-	-	10
<i>Aythya ferina</i>	20	5.0	10	0.6	-	-	-	-	-	-	-	-	30
<i>Aythya nyroca</i>	38	10.0	22	1.3	-	-	-	-	-	-	-	-	60
<i>Circus aeruginosus</i>	2	0.5	-	-	-	-	-	-	-	-	-	-	2
<i>Falco tinnunculus</i>	-	-	-	-	-	-	1	0.7	-	-	-	-	1
<i>Phasianus colchicus</i>	-	-	-	-	10	4.0	-	-	-	-	-	-	10
<i>Rallus aquaticus</i>	-	-	2	0.1	-	-	-	-	-	-	-	-	2
<i>Porzana porzana</i>	-	-	1	0.1	-	-	-	-	-	-	-	-	1
<i>Porzana pusilla</i>	-	-	3	0.2	-	-	-	-	-	-	-	-	3
<i>Crex crex</i>	-	-	1	0.1	-	-	-	-	-	-	-	-	1

(continuation of Table 2 / nadaljevanje tabele 2)

Species / Vrsta	Floating Reedbeds/ Plavajoče trstičje		Bottom- growing Reedbeds/ Na dnu rastoče trstičje		Mesohyg		Willow/ Vrbovje		Poplar/ Topol		Island/ Otok		Total br. p./ Skupno
	br. p.	%	br. p.	%	br. p.	%	br. p.	%	br. p.	%	br. p.	%	
<i>Gallinula chloropus</i>	45	12.0	45	3.0	-	-	-	-	-	-	-	-	90
<i>Fulica atra</i>	21	5.0	335	20.0	-	-	-	-	-	-	-	-	356
<i>Charadrius dubius</i>	-	-	-	-	1	0.4	-	-	-	-	-	-	1
<i>Vanellus vanellus</i>	-	-	2	0.1	1	0.4	-	-	-	-	-	-	3
<i>Larus ridibundus</i>	-	-	40	2.0	-	-	-	-	-	-	-	-	40
<i>Columba palumbus</i>	-	-	-	-	-	-	2	1.5	4	1.2	-	-	6
<i>Streptopelia turtur</i>	-	-	-	-	-	-	-	-	11	3.0	2	0.4	13
<i>Alcedo atthis</i>	-	-	-	-	-	-	-	-	8	2.0	-	-	8
<i>Coracias garrulus</i>	-	-	-	-	-	-	3	2.0	-	-	-	-	3
<i>Upupa epops</i>	-	-	-	-	-	-	1	0.7	-	-	-	-	1
<i>Picus canus</i>	-	-	-	-	-	-	1	0.7	4	1.2	-	-	5
<i>Picus viridis</i>	-	-	-	-	-	-	1	0.7	4	1.2	-	-	5
<i>Dendrocopos major</i>	-	-	-	-	-	-	2	1.5	8	2.0	2	0.4	12
<i>Dendrocopos syriacus</i>	-	-	-	-	-	-	2	1.5	13	4.0	3	0.6	18
<i>Dendrocopos minor</i>	-	-	-	-	-	-	2	1.5	-	-	-	-	2
<i>Alauda arvensis</i>	-	-	-	-	10	4.0	-	-	-	-	-	-	10
<i>Motacilla flava</i>	-	-	-	-	3	1.0	-	-	-	-	-	-	3
<i>Erithacus rubecula</i>	-	-	-	-	-	-	-	-	4	1.2	-	-	4
<i>Luscinia megarhynchos</i>	-	-	-	-	-	-	-	-	17	5.0	-	-	17
<i>Phoenicurus phoenicurus</i>	-	-	-	-	-	-	-	-	4	1.2	-	-	4
<i>Turdus merula</i>	-	-	-	-	-	-	2	1.5	44	13.0	11	2.0	57
<i>Turdus philomelos</i>	-	-	-	-	-	-	-	-	22	7.0	7	1.4	29
<i>Locustella fluviatilis</i>	-	-	1	0.4	-	-	-	-	-	-	-	-	1
<i>Locustella luscinioides</i>	28	7.0	31	2.0	10	4.0	-	-	-	-	-	-	69
<i>Acrocephalus schoenobaenus</i>	-	-	1	0.1	-	-	-	-	-	-	-	-	1
<i>Acrocephalus palustris</i>	-	-	-	-	29	10.0	-	-	-	-	-	-	29
<i>Acrocephalus scirpaceus</i>	19	5.0	21	1.2	36	13.0	-	-	-	-	-	-	76
<i>Acrocephalus arundinaceus</i>	32	8.0	57	3.0	58	21.0	-	-	-	-	-	-	147
<i>Hippolais icterina</i>	-	-	-	-	-	-	-	-	8	2.0	-	-	8
<i>Sylvia nisoria</i>	-	-	-	-	6	2.0	-	-	-	-	-	-	6
<i>Sylvia curruca</i>	-	-	-	-	6	2.0	-	-	-	-	-	-	6
<i>Sylvia communis</i>	-	-	-	-	22	8.0	-	-	-	-	-	-	22
<i>Sylvia atricapilla</i>	-	-	-	-	-	-	5	4.0	30	9.0	13	3.0	48
<i>Phylloscopus collybita</i>	-	-	-	-	-	-	-	-	8	2.0	2	0.4	10
<i>Carduelis carduelis</i>	-	-	-	-	-	-	2	1.5	-	-	-	-	2
<i>Carduelis chloris</i>	-	-	-	-	-	-	2	1.5	-	-	2	0.4	4

(continuation of Table 2 / nadaljevanje tabele 2)

Species / Vrsta	Floating Reedbeds/ Plavajoče trstičje		Bottom- growing Reedbeds/ Na dnu rastoče trstičje		Mesohyg		Willow/ Vrbovje		Poplar/ Topol		Island/ Otok		Total br. p./ Skupno
	br. p.	%	br. p.	%	br. p.	%	br. p.	%	br. p.	%	br. p.	%	
<i>Muscicapa striata</i>	-	-	-	-	-	-	2	1.5	4	1.2	-	-	6
<i>Parus palustris</i>	-	-	-	-	-	-	-	-	4	1.2	-	-	4
<i>Parus caeruleus</i>	-	-	-	-	-	-	5	4.0	17	5.0	10	2.0	32
<i>Parus major</i>	-	-	-	-	-	-	17	13.0	39	12.0	16	3.0	72
<i>Remiz pendulinus</i>	-	-	-	-	-	-	14	10.0	-	-	-	-	14
<i>Lanius collurio</i>	-	-	-	-	54	20.0	-	-	-	-	-	-	54
<i>Lanius minor</i>	-	-	-	-	3	1.0	-	-	-	-	-	-	3
<i>Oriolus oriolus</i>	-	-	-	-	-	-	7	5.0	21	6.0	2	0.4	30
<i>Garrulus glandarius</i>	-	-	-	-	-	-	1	0.7	4	1.2	-	-	5
<i>Pica pica</i>	4	1.0	5	0.3	-	-	3	2.0	-	-	-	-	12
<i>Sturnus vulgaris</i>	-	-	-	-	-	-	38	29.0	-	-	-	-	38
<i>Passer montanus</i>	-	-	-	-	-	-	15	11.0	-	-	-	-	15
<i>Fringilla coelebs</i>	-	-	-	-	-	-	4	3.0	49	15.0	26	5.0	79
<i>Miliaria calandra</i>	-	-	-	-	25	9.0	-	-	-	-	-	-	25
Sum / Vsota	371		1695		274		132		327		496		

Table 3: Bird species composition, the number of breeding pairs (br. p.) and dominance (%) in Bottom-growing Reedbeds habitat in Srebrna Reserve for the period 2001 – 2003**Tabela 3:** Sestava vrst, število gnezdečih parov (br. p.) in dominanca (%) za obdobje 2001 – 2003 v habitatu "z dna rastoče trstičje"

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Tachybaptus ruficollis</i>	17	1.0	18	2.4	22	4.0
<i>Podiceps cristatus</i>	12	1.0	13	2.0	14	2.0
<i>Podiceps grisegena</i>	1	0.0	2	0.3	1	0.2
<i>Podiceps nigricollis</i>	2	0.1	1	0.1	1	0.2
<i>Phalacrocorax pygmeus</i>	300	18.0	60	8.0	80	13.4
<i>Ixobrychus minutus</i>	17	1.0	14	2.0	11	2.0
<i>Nycticorax nycticorax</i>	100	6.0	50	7.0	20	3.0
<i>Ardeola ralloides</i>	200	12.0	50	7.0	30	5.0
<i>Egretta garzetta</i>	200	12.0	60	8.0	60	10.0
<i>Egretta alba</i>	12	1.0	3	0.4	2	0.3
<i>Ardea cinerea</i>	80	5.0	30	4.0	15	2.5
<i>Ardea purpurea</i>	50	3.0	10	1.3	8	1.0
<i>Plegadis falcinellus</i>	28	1.6	15	2.0	10	2.0
<i>Platalea leucorodia</i>	24	1.4	20	3.0	20	3.3
<i>Cygnus olor</i>	3	0.2	2	0.3	3	0.5

(continuation of Table 3 / nadaljevanje tabele 3)

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Anser anser</i>	2	0.1	1	0.1	2	0.3
<i>Anas platyrhynchos</i>	19	1.1	17	2.3	19	3.0
<i>Anas strepera</i>	15	1.0	12	1.6	13	2.0
<i>Anas clypeata</i>	5	0.3	10	1.3	3	0.5
<i>Anas querquedula</i>	18	1.0	8	1.0	11	2.0
<i>Aythya ferina</i>	10	0.6	10	1.3	7	1.0
<i>Aythya nyroca</i>	22	1.3	13	2.0	15	2.5
<i>Rallus aquaticus</i>	1	0.0	2	0.3	2	0.3
<i>Porzana porzana</i>	1	0.0	1	0.1	1	0.2
<i>Porzana pusilla</i>	1	0.0	1	0.1	3	0.5
<i>Crex crex</i>	1	0.0	0	0.0	1	0.2
<i>Gallinula chloropus</i>	45	2.6	29	4.0	37	6.0
<i>Fulica atra</i>	335	20.0	120	16.0	75	12.0
<i>Vanellus vanellus</i>	0	0.0	2	0.3	1	0.2
<i>Larus ridibundus</i>	35	2.0	40	5.0	5	0.8
<i>Locustella fluviatilis</i>	0	0.0	0	0.0	1	0.2
<i>Locustella luscinioides</i>	31	1.8	31	4.0	28	5.0
<i>Acrocephalus schoenobaenus</i>	0	0.0	1	0.1	1	0.2
<i>Acrocephalus scirpaceus</i>	21	1.2	21	3.0	21	3.5
<i>Acrocephalus arundinaceus</i>	57	3.4	44	6.0	41	7.0
<i>Pica pica</i>	5	0.3	4	0.5	5	0.8
Sum / Vsota	1670		715		590	

Table 4: Bird species composition, the number of breeding pairs (br. p.) and dominance (%) in Floating Reedbeds habitat in Srebarna Reserve for the period 2001 – 2003**Tabela 4:** Sestava vrst, število gnezdečih parov (br. p.) in dominanca (%) za obdobje 2001 – 2003 v habitatu "plavajoče trstičje"

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Pelecanus crispus</i>	128	39.0	102	31.0	80	31.4
<i>Ixobrychus minutus</i>	7	2.0	11	4.0	9	3.5
<i>Circus aeruginosus</i>	2	0.6	1	0.3	2	1.0
<i>Cygnus olor</i>	2	0.6	3	1.0	1	0.4
<i>Anas platyrhynchos</i>	6	2.0	3	1.0	11	4.3
<i>Anas strepera</i>	5	1.5	3	1.0	2	1.0
<i>Anas querquedula</i>	2	0.6	2	1.0	4	1.6
<i>Aythya ferina</i>	20	6.0	4	1.4	5	2.0
<i>Aythya nyroca</i>	38	11.5	22	7.6	25	10.0
<i>Gallinula chloropus</i>	25	7.5	45	15.5	13	5.0
<i>Fulica atra</i>	20	6.0	20	7.0	21	8.2

(continuation of Table 4 / nadaljevanje tabele 4)

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Locustella luscinioides</i>	28	8.5	26	9.0	27	10.5
<i>Acrocephalus scirpaceus</i>	19	5.7	14	5.0	18	7.0
<i>Acrocephalus arundinaceus</i>	24	7.3	29	10.0	32	12.5
<i>Pica pica</i>	3	1.0	2	0.7	4	1.6
Sum / Vsota	329		287		254	

Table 5: Bird species composition, the number of breeding pairs (br. p.) and dominance (%) in *Mesohyg* habitat in Srebarina Reserve for the period 2001 – 2003**Tabela 5:** Sestava vrst, število gnezdečih parov (br. p.) in dominanca (%) za obdobje 2001 – 2003 v habitatu "Mesohyg"

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Phasianus colchicus</i>	6	3.0	6	2.0	10	6.0
<i>Vanellus vanellus</i>	0	0.0	1	1.0	0	0.0
<i>Charadrius dubius</i>	0	0.0	1	1.0	0	0.0
<i>Alauda arvensis</i>	10	5.0	10	4.0	0	0.0
<i>Motacilla flava</i>	3	1.0	3	1.0	3	2.0
<i>Locustella luscinioides</i>	10	5.0	0	0.0	0	0.0
<i>Acrocephalus palustris</i>	25	12.0	29	12.0	20	11.0
<i>Acrocephalus scirpaceus</i>	32	15.0	36	15.0	16	9.0
<i>Acrocephalus arundinaceus</i>	51	24.0	58	24.0	39	22.0
<i>Sylvia nisoria</i>	0	0.0	6	2.0	6	3.0
<i>Sylvia curruca</i>	0	0.0	0	0.0	6	3.0
<i>Sylvia communis</i>	13	6.0	10	4.0	22	12.0
<i>Lanius colurio</i>	48	23.0	54	22.0	41	23.0
<i>Lanius minor</i>	3	1.0	0	0.0	3	2.0
<i>Miliaria calandra</i>	10	5.0	25	10.0	13	7.0
Sum / Vsota	211		239		179	

Table 6: Bird species composition, the number of breeding pairs (br. p.) and dominance (%) in *Poplar* habitat in Srebarina Reserve for the period 2001 – 2003**Tabela 6:** Sestava vrst, število gnezdečih parov (br. p.) in dominanca (%) za obdobje 2001 – 2003 v habitatu "topoli"

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Columba palumbus</i>	0	0.0	0	0.0	4	1.0
<i>Streptopelia turtur</i>	8	3.0	13	5.0	17	5.0
<i>Alcedo atthis</i>	13	6.0	8	3.0	8	2.0
<i>Picus canus</i>	0	0.0	0	0.0	4	1.0
<i>Picus viridis</i>	0	0.0	4	1.0	0	0.0

(continuation of Table 6 / nadaljevanje tabele 6)

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Dendrocopos major</i>	4	2.0	4	1.0	8	2.0
<i>Dendrocopos syriacus</i>	0	0.0	0	0.0	13	4.0
<i>Erithacus rubecula</i>	4	2.0	4	1.0	0	0.0
<i>Luscinia megarhynchos</i>	4	2.0	8	3.0	17	5.0
<i>Phoenicurus phoenicurus</i>	0	0.0	0	0.0	4	1.0
<i>Turdus merula</i>	36	16.0	40	15.0	44	13.0
<i>Turdus philomelos</i>	17	7.0	17	6.0	22	6.0
<i>Hippolais icterina</i>	4	2.0	8	3.0	8	2.0
<i>Sylvia atricapilla</i>	31	14.0	31	11.0	40	12.0
<i>Phylloscopus collybita</i>	4	2.0	8	3.0	8	2.0
<i>Muscicapa striata</i>	4	2.0	4	1.0	4	1.0
<i>Parus palustris</i>	0	0.0	0	0.0	4	1.0
<i>Parus caeruleus</i>	13	6.0	13	5.0	17	5.0
<i>Parus major</i>	26	11.0	40	15.0	44	13.0
<i>Oriolus oriolus</i>	17	7.0	17	6.0	31	9.0
<i>Garrulus glandarius</i>	0	0.0	4	1.0	0	0.0
<i>Fringilla coelebs</i>	44	19.0	49	18.0	49	14.0
Sum / Vsota	229		272		346	

Table 7: Bird species composition, the number of breeding pairs (br. p.) and dominance (%) in *Island* habitat in Srebarna Reserve for the period 2001 – 2003**Tabela 7:** Sestava vrst, število gnezdečih parov (br. p.) in dominanca (%) za obdobje 2001 – 2003 v habitatu "otok"

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Phalacrocorax carbo</i>	400	83.0	350	83.0	350	81.0
<i>Streptopelia turtur</i>	2	0.4	2	0.5	2	0.5
<i>Dendrocopos major</i>	2	0.4	2	0.5	0	0.0
<i>Dendrocopos syriacus</i>	0	0.0	0	0.0	3	0.7
<i>Turdus merula</i>	7	1.0	5	1.0	11	3.0
<i>Turdus philomelos</i>	5	1.0	3	0.7	7	2.0
<i>Sylvia atricapilla</i>	13	3.0	8	2.0	11	3.0
<i>Phylloscopus collybita</i>	0	0.0	0	0.0	2	0.5
<i>Carduelis chloris</i>	2	0.4	2	0.5	0	0.0
<i>Parus major</i>	16	3.0	13	3.0	13	3.0
<i>Parus caeruleus</i>	10	2.0	8	2.0	10	2.0
<i>Oriolus oriolus</i>	0	0.0	0	0.0	2	0.5
<i>Fringilla coelebs</i>	20	4.0	26	6.0	20	5.0
Sum / Vsota	479		421		433	

Table 8: Bird species composition, the number of breeding pairs (br. p.) and dominance (%) in *Willow* habitat in Srebarna Reserve for the period 2001 – 2003**Tabela 8:** Sestava vrst, število gnezdečih parov (br. p.) in dominanca (%) za obdobje 2001 – 2003 v habitatu "vrbovje"

Species / Vrsta	2001		2002		2003	
	br. p.	%	br. p.	%	br. p.	%
<i>Falco tinnunculus</i>	0	0.0	0	0.0	1	1.0
<i>Columba palumbus</i>	2	2.0	1	1.0	0	0.0
<i>Coracias garrulus</i>	1	1.0	3	3.0	3	3.0
<i>Upupa epops</i>	1	1.0	1	1.0	0	0.0
<i>Picus canus</i>	1	1.0	1	1.0	0	0.0
<i>Picus viridis</i>	1	1.0	1	1.0	1	1.0
<i>Dendrocopos syriacus</i>	2	2.0	2	2.0	2	2.0
<i>Dendrocopos major</i>	2	2.0	1	1.0	1	1.0
<i>Dendrocopos minor</i>	0	0.0	0	0.0	2	2.0
<i>Turdus merula</i>	2	2.0	2	2.0	1	1.0
<i>Sylvia atricapilla</i>	4	4.0	5	4.0	2	2.0
<i>Carduelis carduelis</i>	2	2.0	1	1.0	1	1.0
<i>Carduelis chloris</i>	0	0.0	0	0.0	2	2.0
<i>Muscicapa striata</i>	2	2.0	2	2.0	0	0.0
<i>Parus caeruleus</i>	5	5.0	3	3.0	4	4.0
<i>Parus major</i>	15	15.0	17	15.0	9	9.0
<i>Remiz pendulinus</i>	14	14.0	11	10.0	12	13.0
<i>Oriolus oriolus</i>	5	5.0	5	4.0	7	7.0
<i>Garrulus glandarius</i>	1	1.0	1	1.0	1	1.0
<i>Pica pica</i>	3	3.0	2	2.0	3	3.0
<i>Sturnus vulgaris</i>	23	23.0	38	34.0	26	26.0
<i>Passer montanus</i>	10	10.0	10	9.0	15	16.0
<i>Fringilla coelebs</i>	4	4.0	3	3.0	1	1.0
Sum / Vsota	100		110		95	

REZULTATI ŠTETJA VODNIH PTIC V JANUARJU 2003 V SLOVENIJI

Results of the Mid-Winter Waterfowl Counts in January 2003 in Slovenia

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1. Uvod

V Sloveniji se je štetje vodnih ptic – International Waterfowl Census (IWC) – med letoma 1997 in 2003 trdno usidralo v obliki organiziranega nadzora populacij vodnih ptic (ŠTUMBERGER 1997 – 2002). Januarsko štetje vodnih ptic je najpopolnejši mednarodno primerljiv inštrument za popisovanje neke skupine ptic v Sloveniji. Štetje je bilo leta 1997 zasnovano z definicijo monitoringa kot kontinuirano spremljanje številčnosti organizmov na način in z metodami, ki nam hkrati razkrivajo vzroke sprememb (FURNES & GREENWOOD 1993). Temelji na rezultatih sistematičnega zbiranja podatkov v okviru rednih popisov z namenom oceniti odklone od pričakovanih standardov in vrednosti. Še nekaj opravljenih januarskih štetij vodnih ptic in moč bo odkrivati tudi nekatere vzroke sprememb. V prispevku so predstavljeni rezultati štetja vodnih ptic v januarju 2003 v Sloveniji.

2. Metoda ter vremenske in hidrološke razmere

Januarsko štetje vodnih ptic v organizaciji DOPPS smo opravili v soboto 11. in nedeljo 12.1.2003. Metoda štetja je opisana v ŠTUMBERGER (1997). Šteli smo na vseh vodnih površinah v Sloveniji v sedmih števnih območjih. Štete so bile vse vrste vodnih ptic. Kormorani *Phalacrocorax carbo* so bili po vsej državi prešteti hkrati na skupinskih prenočiščih dne 11.1. v okviru Evropskega januarskega štetja kormoranov (Pan European Cormorant Midwinter Census, WI – Cormorant Research Group) in podnevi popisani po posameznih odsekih rek in obale in drugih vodnih lokalitetah. Opazovanja kormoranov na prenočišču smo vpisovali v poseben standardiziran formular. Na obali smo vodne ptice tradicionalno šteli v nedeljo 12.1., dan za štetjem v notranjosti države. Galebi Laridae so bili v notranjosti prešteti na skupinskih prenočiščih. Večina mokožev *Rallus aquaticus* je bila prešteta s pomočjo metode predvajanja posnetka med 8.1. in 21.1.2005 (L. BOŽIČ *pisno*).

December 2002 je bil toplejši od dolgoletnega

povprečja. Toplo vreme ob koncu decembra se je nadaljevalo v prve štiri dni januarja 2003 z najvišjimi dnevnimi temperaturami v nižinskem svetu okoli 12 – 16°C. Padavine predvsem v obliki snega so se začele 5.1. Druga tretjina januarja je bila precej mrzla. Suho zimsko vreme se je pričelo 12.1. V nižinah so zjutraj 8. januarja v Murski Soboti izmerili –20°C. Drugi dan štetja, 12.1., pa v Celju –24°C. Najvišje dnevne temperature v času štetja so bile pod lediščem. Povprečni decembrski pretoki rek so se le malo razlikovali od dolgoletnega povprečja: večji so bili le v severovzhodni Sloveniji, neobičajno veliki pa so bili pretoki Mure. Tudi januarja 2003 so se le za malenkost razlikovali od pretokov v dolgoletnem primerjalnem obdobju: večji so bili za 1,7 m³/s (v primerjalnem obdobju 67,6 m³/s). Temperature rek so bile le nekoliko višje kot običajno (0,2°C). Precej višje od temperatur v dolgoletnem primerjalnem obdobju so bile povprečne temperature obeh največjih slovenskih jezer Bleda in Bohinja (1,8°C) (ARSO 2002 & 2003, I. STROJAN *pisno*).

3. Rezultati in razprava

Štetja se je udeležilo 165 popisovalcev. Na osnovi 478 poročil s posameznih lokalitet in odsekov vodotokov in obale je bilo na sedmih števnih območjih v državi prešteti 50.802 vodnih ptic. Ugotovljenih je bilo kar 66 različnih vrst (tabela 1), največ ob IWC doslej. Številčno so bile za vodne ptice najpomembnejša števna območja Drave, Obale in zgornje Save. Najštevilčnejše vrste med štetjem so bile mlakarica *Anas platyrhynchos*, liska *Fulica atra*, kormoran, rumenonogi galeb *Larus cachinnans*, rečni galeb *Larus ridibundus*, čopasta črnica *Aythya fuligula*, krehelj *Anas crecca*, sivka *Aythya ferina*, mali ponirek *Tachybaptus ruficollis*, zvonec *Bucephala clangula*, siva čaplja *Ardea cinerea* in labod grbec *Cygnus olor* (> 1000 osebkov). Med najredkejšimi so bili rdečegri slapnik *Gavia stellata*, rumenokljuni slapnik *Gavia adamsii*, zlatouhi ponirek *Podiceps auritus*, bobnarica *Botaurus stellaris*, žličarka *Platalea leucorodia*, snežna gos *Anser caerulescens**, moškatna bleščavka *Cairina moschata**

mandarinka *Aix galericulata*, dolgorepa raca *Anas acuta*, kostanjevka *Aythya nyroca*, beloliska *Melanitta fusca*, zimsko raca *Clangula hyemalis*, mali prodnik *Calidris minuta*, puklež *Limnocyptus minimus* in črni

martinec *Tringa erythropus* (1 - 3 osebk). Opazovanja vrst, označenih z zvezdico, mora potrditi še Komisija za redkosti – KRED.

Tabela 1: Rezultati štetja vodnih ptic v januarju 2003 (IWC) v Sloveniji

Table 1: Results of the mid-winter waterfowl count in January 2003 (IWC) in Slovenia

Vrsta - Števno območje/ Species - Count area	Mura	Drava	Savinja	Spodnja Sava	Zgornja Sava	Notranjska, Primorska	Obala	Skupno/ Total
rdečegrli slapnik <i>G. stellata</i>		1					1	2
polarni slapnik <i>G. arctica</i>		2	1		2		36	41
rumenokljuni slapnik <i>G. adamsii</i>							1	1
mali ponirek <i>T. ruficollis</i>	62	601	9	241	218	32	27	1.190
čopasti ponirek <i>P. cristatus</i>	2	182	43	22	28	9	191	477
rjavovrati ponirek <i>P. grisegena</i>		1					3	4
zlatouhi ponirek <i>P. auritus</i>							3	3
črnovrati ponirek <i>P. nigricollis</i>		2	1	3	1	1	42	50
kormoran <i>P. carbo</i>	364	1.574	285	1.010	186	87	380	3.886
vranjek <i>P. aristotelis</i>							8	8
bobnarica <i>B. stellaris</i>		1						1
mala bela čaplja <i>E. garzetta</i>		3				1	189	193
velika bela čaplja <i>E. alba</i>	76	226	1	15	25	9	41	393
siva čaplja <i>A. cinerea</i>	119	329	125	179	255	49	31	1.087
žličarka <i>P. leucorodia</i>							2	2
labod grbec <i>C. olor</i>	221	544	39	139	78	7		1.028
nijvska gos <i>A. fabalis</i>	50	159						209
beločela gos <i>A. albifrons</i>	8	7				2	58	75
siva gos <i>A. anser</i>		8			12		47	67
snežna gos <i>A. caerulescens</i>		2						2
duplinska kozarka <i>T. tadorna</i>		2					32	34
moškatna bleščavka <i>C. moschata</i>		1						1
nevestica <i>A. sponsa</i>		1						1
mandarinka <i>A. galericulata</i>					1			1
žvižgavka <i>A. penelope</i>	5	33		1	11		210	260
konopnica <i>A. strepera</i>		20					3	23
krehelj <i>A. crecca</i>	62	984	170	45	4	15	576	1.856
mlakarica <i>A. platyrhynchos</i>	2.683	8.549	1.413	1.142	3.000	1.788	511	19.086
dolgorepa raca <i>A. acuta</i>		2						2
raca žličarica <i>A. clypeata</i>					1		29	30
tatarska žvižgavka <i>N. rufina</i>	3	1						4
sivka <i>A. ferina</i>	17	1.587	4	151	35	16	2	1.812
čopasta črnica <i>A. fuligula</i>	8	2.293	2	22	28	15		2.368
rjavka <i>A. marila</i>				15				15
kostanjevka <i>A. nyroca</i>		1			1			2
beloliska <i>M. fusca</i>		1						1
zimsko raca <i>C. hyemalis</i>		2			1			3

(continuation of Table 1 / nadaljevanje tabele 1)

Vrsta - Števno območje/ Species - Count area		Mura	Drava	Savinja	Spodnja Sava	Zgornja Sava	Notranjska, Primorska	Obala	Skupno/ Total
zvonec	<i>B. clangula</i>	11	1.095		11	7	42	3	1.169
mali žagar	<i>M. albellus</i>	1	151	6	3	4		8	173
srednji žagar	<i>M. serrator</i>							89	89
veliki žagar	<i>M. merganser</i>	15	277	4		60	2		358
belorepec	<i>H. albicilla</i>	3	5				1		9
mokož	<i>R. aquaticus</i>		20			6	4	6	36
zelenonoga tukalica	<i>G. chloropus</i>	26	18	2	72	45	10	3	176
liska	<i>F. atra</i>	48	2.150	602	779	417	316	1.219	5.531
beločeli deževnik	<i>C. alexandrinus</i>							6	6
črna prosenka	<i>P. squatarola</i>							15	15
priba	<i>V. vanellus</i>					1		21	22
mali prodnik	<i>C. minuta</i>							2	2
spremenljivi prodnik	<i>C. alpina</i>							226	226
kozica	<i>G. gallinago</i>		11		2	9	5	4	31
puklež	<i>L. minimus</i>		1						1
veliki škurh	<i>N. arquata</i>							13	13
črni martinec	<i>T. erythropus</i>							2	2
rdečenogi martinec	<i>T. totanus</i>							100	100
zelenonogi martinec	<i>T. nebularia</i>					3		7	10
pikasti martinec	<i>T. ochropus</i>	20	18	1		9			48
mali martinec	<i>A. hypoleucos</i>	1						7	8
črnoglavi galeb	<i>L. melanocephalus</i>		1					5	6
mali galeb	<i>L. minutus</i>		3			1			4
rečni galeb	<i>L. ridibundus</i>	2	1.180	102	39	41	13	2.338	3.715
sivi galeb	<i>L. canus</i>		767	18		2		104	891
rumenonogi galeb	<i>L. cachinnans</i>	1	517	61	31	2	79	3.062	3.753
kričava čigra	<i>S. sandvicensis</i>							29	29
vodomec	<i>A. atthis</i>	8	22	15	22	17	4	5	93
povodni kos	<i>C. cinclus</i>		7	40	9	2	10		68
Skupno / Total		3.816	23.362	2.944	3.953	4.513	2.517	9.697	50.802

V mreži 376 števnih odsekov rek in Obale na dolžini 1397 kilometrov smo vodne ptice v januarju 2003 šteli na 879 kilometrih. Vzhodno od Save so bile stoječe vode pretežno povsem zaledenele, z izjemo velikih jezer pri Velenju. Na Blejskem in Bohinjskem jezeru ni bilo ledu, Rudniško je bilo zaledenelo 3/4 (manjše stoječe vode vzdolž Save pretežno do celote), Cerkniško 3/4. Na Primorskem in Obali so začele zmrzovati manjše stoječe vode (do 1/4). Sečoveljske soline so bile zaledenele 3/4. Velike pretočne akumulacije so bile v notranjosti zaledenele le ob zgornji Savi, do 3/4. Potoke in manjše reke je v notranjosti države pokrival led v povprečju do 1/2. Reke so bile zamrznjene le vzhodno

od Trojan: Savinja 1/4, Dravinja povprečno 1/2, Pesnica povprečno 3/4, Drava do 1/4, Ščavnica povprečno 1/2, Mura do 1/4 (po reki je plaval ledeni sreš) in Ledava do 1/2. Pretočne akumulacije na manjših rekah so bile v notranjosti pretežno zaledenele. Hiter padec temperatur zraka med štetjem se je na stoječih vodah kazal na značilen način: tiste s še dovolj akumulirane energije so bile nezaledenele, plitke in zlasti manjše pa so naglo zamrzovale ali so bile že zaledenele (npr. celo Sečoveljske soline!). Ob hkratnem Evropskem januarskem štetju kormoranov se je na 20 zasedenih skupinskih prenočiščih zadrževalo 3886 osebkov, 8 prenočišč je bilo nezasedenih, na enem prenočišču

pa nismo šteli (verjetno nezasedeno). Sicer pa lahko lastnosti štetja vodnih ptic v januarju 2003 opišemo takole: značilnost je bila doslej najbogatejša vrstna paleta vodnih ptic. Med njimi smo prvič ob IWC popisali tudi rumenokljunega slapnika, žličarko in pukleža. Značilna sredozemsko-kontinentalna vrstna porazdelitev vodnih ptic v Sloveniji (ŠTUMBERGER 2000) je bila zabrisana. Zlasti to velja za slapnike Gaviidae in ponirke Podicipedidae. Že drugič zapored so se male bele čaplje *Egretta garzetta* v času IWC zadrževale na dveh števnih območjih v notranjosti države. Zabeležili smo jih na števnih območjih Drave in Notranjske. Čopastih ponirkov *Podiceps cristatus* je bilo v notranjosti države več kot na Obali. Največja števila ptic v času IWC v zadnjih 7 letih so bila ugotovljena za čopastega ponirka, vranjeka *Phalacrocorax aristotelis*, malo belo čapljo, duplinsko kozarko *Tadorna tadorna*, čopasto črnico, rjavko *Aythya marila*, malega žagarja *Mergellus albellus*, belorepca *Haliaeetus albicilla*, črno prosenko *Pluvialis squatarola*, spremenljivega prodnika *Calidris alpina*, pikastega martinca *Tringa ochropus*, črnoglavega galeba *Larus melanocephalus* in rumenonogelega galeba (> 3 osebk). Gosi *Anser* sp. so bile spet maloštevilne zaradi lova. Posebnost IWC so bila drugič zapored velika števila vodnih ptic na števnem območju zgornje Save.

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Rosemarie Parz-Gollner je pripomogla k popolnemu popisu kormoranov. Igor Strojman (ARSO) je posredoval neobjavljene podatke o pretokih in temperaturah rek in jezer. Ker je pričujoče januarsko štetje vodnih ptic zadnje, ki sem ga lahko opravil kot nacionalni koordinator, velja pristrčna zahvala imenovanim lokalnim koordinatorjem. Zlasti Katarini Senegačnik (sedaj Denac) in Boži Majstorovič, dvema prvima damama IWC. Delo z njima je bilo tako čudovito, kot je bilo šteti ptice.

Povzetek

Štetja vodnih ptic med 11. in 12.1.2003 (IWC) se je v Sloveniji udeležilo 165 popisovalcev. Na osnovi 478 poročil je bilo na 7 števnih območjih v državi prešteti 50.802 vodnih ptic. Ugotovljenih je bilo 66 vrst. Štete so bile vse vrste vodnih ptic. Kvantitativno so bila za vodne ptice najpomembnejša števna območja Drave, Obale in zgornje Save. Najštevilnejša vrsta je bila mlakarica *Anas platyrhynchos*, sledijo lisca *Fulica atra*, kormoran *Phalacrocorax carbo*, rumenonogi galeb *Larus cachinnans*, rečni galeb *Larus ridibundus*, čopasta črnica *Aythya fuligula*, krehelj *Anas crecca*, sivka *Aythya ferina*, mali ponirek *Tachybaptus ruficollis*, zvonec *Bucephala clangula*, siva čaplja *Ardea cinerea* in labod grbec *Cygnus olor* (> 1000 osebkov). Na

20 zasadenih skupinskih prenočiščih kormoranov v Sloveniji se je zadrževalo 3886 osebkov, 8 prenočišč je bilo nezasadenih, na enem prenočišču pa nismo šteli (Evropsko januarsko štetje kormoranov). Stoječe vode v vzhodni polovici Slovenije so bile med štetjem pretežno zaledenele, reke okoli 1/4. V zahodni polovici, celo na Obali, pa so stojee vode pospešeno zamrzovale. V zahodni polovici države večji vodotoki vključno s Savo niso bili zamrznjeni, manjši pa do 1/2.

Summary

In the waterfowl census (IWC) carried out in Slovenia on 11 Jan and 12 Jan, 2003, 165 observers took part. On the basis of 478 reports, 50,802 aquatic birds were counted in seven count areas. 66 different species were registered. All water birds were counted. The most important in terms of the birds' numbers were the count areas of the Drava river, the Slovene Littoral, and the upper Sava. The most abundant species during the census was the Mallard *Anas platyrhynchos*, followed by the Coot *Fulica atra*, Great Cormorant *Phalacrocorax carbo*, Yellow-legged Gull *Larus cachinnans*, Black-headed Gull *Larus ridibundus*, Tufted Duck *Aythya fuligula*, Common Teal *Anas crecca*, Pochard *Aythya ferina*, Little Grebe *Tachybaptus ruficollis*, Common Goldeneye *Bucephala clangula*, Grey Heron *Ardea cinerea* and Mute Swan *Cygnus olor* (> 1000 individuals). At the 20 occupied Great Cormorant's roost sites in Slovenia, 3,886 individuals were counted, 8 roost sites remained vacant, while at one of the sites no counting was carried out (Pan European Cormorant Midwinter Census). Standing waters in the eastern part of Slovenia were mostly frozen over, and rivers to about 25%. In the western part of the country, even in the Slovene Littoral, standing waters were getting increasingly icebound. Larger watercourses in western Slovenia (including the Sava) were, on the other hand, not frozen over, while smaller rivers were covered by ice up to 50%.

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POVZETKI DIPLOMSKIH, MAGISTRSKIH IN DOKTORSKIH DEL

Thesis Summaries

VUKELIČ, E. (2005): **Vpliv načinov gospodarjenja s travišči na ptice gnezdilke Ljubljanskega barja** [Effects of meadow management practices on the breeding birds of Ljubljansko barje]. - Graduation Thesis, University of Ljubljana, Biotechnical Faculty, Department of Biology, Ljubljana.

Mentor / Supervisor: doc. dr. Davorin Tome/
Assist. Prof. Davorin Tome, PhD
UDK 591.5: 598.2/.8(497.4 Ljubljansko barje)
(043.2) = 863
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The abundance and distribution of grassland birds have been lately greatly reduced as a result of the increased intensive meadow management. There are several factors that can have a negative impact on the numbers of meadow birds, such as early mowing, faster machine mowing, increased livestock density in the pastures, which can all lead to a direct destruction of the broods. Others, such as increased input of fertilizers and draining, have a strong impact on the availability of suitable nest-sites and food indirectly through the changes in meadow vegetation and effects exerted on invertebrates. Ljubljansko barje, as a former raised bog, is still of exceptional significance for birds, considering that the extensive wet grasslands, in which they breed, have been preserved within it. As the high groundwater level no longer restrains the natural succession from grasslands to woods, the Ljubljansko barje meadows are now greatly subjected to human activities. Meadow management, however, can be diversely intensive. Here, intensively and extensively cultivated meadows can be found, as well as meadows mown for litter. Apart from it, more and more meadows have been lately turned into pastures.

The main objective of the study was to assess the impacts of diverse meadow management practices on the Barje breeders. We were particularly interested in establishing the differences in the breeders' abundance, species richness and species structure in the areas with different management intensities, and how separate management components affect the densities of birds there.

The tracts in which birds were surveyed are situated in the NW part of Ljubljansko barje. Of the

19 surveyed tracts, five were intensively cultivated meadows, five were pastures, three extensively cultivated meadows, and six were meadows mown for litter utilisation. The birds were surveyed according to a specially adapted mapping method. In comparison with the standard method, each tract was surveyed only four times. Apart from this, the tracts were once visited at night as well, in order to record the species, which at that time mark their territories more actively. The mapping took place from the edge of the surveyed tracts, considering that some pastures were not easily accessed due to the grazing livestock and fences. The tracts were mapped in the period from 21 Apr to 11 Jun, 2003. We also recorded the density of ditches, the extent to which a tract was fertilised, livestock density in the pastures, the beginning of grazing and/or mowing, the mowing progress speed, and the extent to which a tract was mown or grazed at the end of the research in the second half of June. In order to evaluate the management intensity in general and thus to compare different survey tracts with each other on this basis, we introduced indexes of intensity for separate management components, and then showed the management intensity as a combination of intensity of separate activities (mowing, fertilising, etc.).

The highest numbers of the breeding species and individuals were recorded in litter grasslands, slightly less in extensively cultivated meadows, and the least on intensively cultivated grasslands. Pastures turned are to be more intensively cultivated and poorer with birds than expected. The reasons for the smaller number of breeding birds in intensively managed tracts can be looked for primarily in the greater intensity of mowing and grazing in these tracts. Particularly great were the pressures exerted by the grazing livestock, which in the wet Barje meadows prevent grassland birds from finding suitable nest-sites. The more intensive mowing and grazing indirectly reduce the availability of food and suitable nest-sites owing to the changed vegetation structure. Apart from this, birds may avoid the areas, in which their broods have been destroyed several times in a row due to the early mowing. In general, the impact of management intensity differed a great deal on various species. For the Skylark *Alauda arvensis*, for example, the impact was not significant. This species was more common only in larger tracts,

which can be explained by the fact that the Skylark prefers to breed in larger open areas, avoiding hedges and solitary trees, which are very common in the NE part of the Barje. The Tree Pipit *Anthus trivialis* has a preference for litter grasslands and pastures and was less common in intensively mown areas. The Whinchat *Saxicola rubetra*, too, was relatively sensitive to intensive mowing, and was found to be most abundant in the extensively cultivated meadows. The species clearly likes the meadows to be cultivated to a certain extent, considering that it reached the peak in its numbers in at least partially mown tracts of land. The Marsh Warbler *Acrocephalus palustris* and Common Whitethroat *Sylvia communis* were less numerous in more or less fertilised areas. They reached high density in litter meadows, as these are the species of later succession stages, with a preference for fairly thick herb vegetation and mosaic of grasslands and scrubs. While drainage ditches had no characteristic impact on the breeders' density, it was the altitude of the surveyed tracts that was to a much greater extent associated with the birds' breeding density. The altitude is indirectly associated with flooding in the area and thus with the management intensity.

We confirmed the supposition that fewer species and individuals of different birds breed in the areas, where more intensive grassland management is practised. We have also established that grazing under the conditions as in force during our research is not a suitable way for the preservation of wet meadows as habitats of grassland birds. In view of the experience from other parts of Europe, livestock grazing can be, if livestock density is suitably lower, acceptable for the birds breeding on the ground. The question remains, however, whether this way of management, with suitably lower livestock density and later date of mowing, could be a suitable manner of utilisation of the areas very significant for grassland birds, but are less suitable for farming and would otherwise be abandoned.

IZ ORNITOLOŠKE BELEŽNICE

From the ornithological notebook

SLOVENIJA / SLOVENIA

ČRNA ŠTORKLJA *Ciconia nigra*

Black Stork – observation of an adult at Koželjski graben above Borovnica (UTM VL58, central Slovenia) on 29 Mar 2005

Dne 29.3.2005 sem se zvečer odpravil proti stenam v vzhodnem kraku Borovniške doline. Na poti sem v Koželjskem grabnu nad Peklom opazil večjo črno ptico, ki je ravno zletela iz potoka Borovniščice. Najprej sem pomislil, da gre za krokarja *Corvus corax*, vendar sem že v naslednjem trenutku zagledal rdeče noge in svetlo trebušno stran ter se zavedel, da imam opraviti z odraslo črno štorljo. Ali črna štorlja na območju tudi gnezdi, za zdaj še ne morem trditi, je pa habitat z odročnimi dobro ohranjenimi gozdovi, meandrirajočim potokom v močvirnatih dolini in bližnjimi skalnimi stenami za gnezditve verjetno primeren. Iz zadnjih let je kot najbližje gnezditveno območje znano Ljubljansko barje, še izpred druge svetovne vojne pa je znano poročilo o gnezdenju na Ljubljanskem vrhu ter v okolici Rakeka in Zale [GEISTER, I. (1995): Ornitološki atlas Slovenije. – DZS, Ljubljana].

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RIBJI OREL *Pandion haliaetus*

Osprey – one individual observed on migration at Planinsko polje (UTM VL47, central Slovenia) on 28 Mar 2005

Dne 28.3.2005 sem se odpravil oprezat za lunji na Planinsko polje. Potem ko sem prehodil večji kos vzhodnega dela polja in se začel vračati proti avtomobilu ter si mislil, da se bom moral zadovoljiti s samcem postovke *Falco tinnunculus* in šestimi (6) kanjami *Buteo buteo*, sem v zraku opazil dve ujedi. Na veliko veselje sem ugotovil, da je ena od ujed samec rjavega lunja *Circus aeruginosus*, druga pa ribji orel. Oba sta nekaj časa krožila na termičnem vzgornjiku, nato pa je ribji orel odjadral nad gozdom proti severu, medtem ko sem rjavega lunja kasneje ponovno opazil krožiti nekoliko bolj proti zahodu.

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SHORT-TOED EAGLE *Circus gallicus*

Kačar – en osebek opazovan med jadranjem nad Ležeškim Gabrkom pri Divači (UTM VL25, JZ Slovenija)

Around 10.20 h (CET) on 15 Jul 2005, on a sunny and almost windless day, we caught sight of an adult Short-toed Eagle of the dark morph at Ležeški Gabrk near Divača (UTM VL25, SW Slovenia), circling 50 – 100 metres above the open meadows and the adjoining pine forest. A few minutes later it circled up to a height of 200 – 300 metres and left the area by gliding slowly to the south-east. In the eastern and south-western parts of the country, Slovenia holds a declining and very local population of 10 – 15 breeding pairs at the northern limit of the species' core nesting areas on the Balkan Peninsula [GEISTER, I. (1995): Ornitološki atlas Slovenije. – DZS, Ljubljana; BIRDLIFE INTERNATIONAL (2004): Birds in Europe: Population Estimates, Trends and Conservation Status. – BirdLife Conservation Ser. 12, BirdLife International, Cambridge]. Despite the regular appearance of Short-toed Eagles in the Slovene Karst, only few data on its breeding and population numbers appear to be at hand. Very recently, it was estimated that the Important Bird Area (IBA) of Kras, with its almost 62,000 ha Slovenia's largest IBA, holds 5 – 7 breeding pairs [Božič, L. (2003): Mednarodno pomembna območja za ptice v Sloveniji 2. – Monografija DOPPS št. 2, DOPPS, Ljubljana].

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ČRNI ŠKARNIK *Milvus migrans*

Black Kite – new probable breeding locality; a juvenile observed in the vicinity of Trnovec near Dramlje (UTM WM32, NE Slovenia) on 2 Jul 2005

Čeprav je črni škarnik v sosednji Hrvaški dokaj številna ujeda s 400 – 500 pari predvsem v severnem delu države [RADOVIĆ, D., KRALJ, J., TUTIŠ, V. & ČIKOVIĆ, D. (2003): Crvena knjiga ugroženih ptica Hrvatske. – Ministarstvo zaštite okoliša i prostornog uređenja, Zagreb], pa v Sloveniji vrsta gnezdi zgolj posamič in občasno z dvema znanima gnezdiščema pri Lescah na Gorenjskem [KOZINC, B. (1991):

Gnezdenje črnega škarnika *Milvus migrans* pri Lescah. – *Acrocephalus* 12 (48): 57–70] in ob Savi pri Ljubljani [KOZAMERNIK, J.J. (2000): Črni škarnik *Milvus migrans*. – *Acrocephalus* 21 (102/103): 277]. Kljub temu pa so bili gnezditveno sumljivi osebk opazeni tudi drugod po Sloveniji, zlasti v SV Sloveniji; na primer v Dravinjski dolini [VREZEC, A. (1997): Črni škarnik *Milvus migrans*. – *Acrocephalus* 18 (83): 113], Murski šumi [BOŽIČ, L. (1998): Črni škarnik *Milvus migrans*. – *Acrocephalus* 19 (90/91): 167], ob Gajševskem jezeru [KLEMENČIČ, A. & KLEMENČIČ, G. (2001): Črni škarnik *Milvus migrans*. – *Acrocephalus* 22 (104/105): 56], ob Žovneškem jezeru [SEDMINEK, P. (2002): Črni škarnik *Milvus migrans*. – *Acrocephalus* 23 (110/111): 50] in pri Mariboru [LONČAR, T. (2003): Črni škarnik *Milvus migrans*. – *Acrocephalus* 24 (119): 148]. Temu naboru možnih gnezditvenih lokalitet dodajam še eno, in sicer območje Ložinskega in Hudinjskega gričevja blizu Trnovca pri Dramljah (UTM WM32). Dne 2.7.2005 sem namreč skupaj s Petro Vrh na štajerski avtocesti tik pred izvozom za Dramlje opazoval mladostni osebek črnega škarnika z izrazitimi belimi velikimi krovci.

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DIVJI PETELIN *Tetrao urogallus*

Capercaillie – footprints and droppings of a single individual found on the western slope of Kranjska reber near Gornji Grad (UTM VM72, N Slovenia)

Ko smo se 17.1.2005 spuščali po zahodnem pobočju Kranjske rebri v bližini Gornjega Grada, smo sredi iglastega gozda v snegu opazili stopinje divjega petelina. Nekaj časa smo jim sledili in kmalu našli več iztrebkov. Glede na velikost stopinj je verjetno šlo za samca. Istega dne smo nekoliko višje na gozdni meji opazili tudi manjšo jato krivokljunov *Loxia curvirostra* in kanjo *Buteo buteo*.

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Uroš Žibrat, Partizanska 3, SI–2230 Lenart, Slovenija, e-mail: uros@biologija.org

CORNCRAKE *Crex crex*

Kosec – pojoči samec 20.7.2005 v Poljanah pri Korenskem sedlu (1100 m n.v., UTM VM05, SZ Slovenia) in 22.7.2005 v bližini Breginja (550 m n.v., UTM UM72, SZ Slovenia)

For the prealpine areas and the Julian Alps of the Friuli-Venezia Giulia autonomous region in north-western

Italy, the breeding of Corncrakes is well documented [e.g. FARRONATO, I. (1994): Primi dati sulla distribuzione del Re di quaglie, *Crex crex*, in provincia di Vicenza. – Riv. ital. Orn. 63: 129–136]. In addition, a number of calling individuals and some nest sites confirmed by locals were recorded in the Upper Soča river basin in the Slovene part of the Julian Alps during the 1990s [Trontelj, P. (1997): Distribution and habitat of the Corncrake (*Crex crex*) at the Upper Soča basin (Julian Alps, Slovenia). – *Annales* 11: 65–72]. Around 19.15 h (CET) on 20 Jul 2005, we heard a male Corncrake calling at Poljane near Korensko sedlo, 1 – 2 km away from the Austrian border (UTM VM05, NW Slovenia). As far as we were able to locate the exact position of the caller, with a 100 – 200 m wide strip of closed coniferous forest between us and its calling site, the bird was calling close to the main road from an unmown meadow used for hay-cutting at 1100 metres a.s.l. Two days later, around 11.20 h (CET), we came across another “solitary” caller in an abandoned meadow close to Breginj (UTM UM72, NW Slovenia) at approximately 550 metres a.s.l. This locality is close to Kobariški Stol in the Snežnik Mountains, where in 1993 – 1994 TRONTELJ (1997) found 14 calling males at altitudes between 815 – 1280 metres a.s.l. According to our knowledge, however, Corncrake has not been known to breed in northern parts of the Slovene Alps along the Austrian border. To establish whether permanent or only temporary breeding sites exist in this part of the Slovene Alps, more thorough surveys would be needed. Daytime calling indicates the presence of females in both areas [SCHÄFFER, N. (1995): Rufverhalten und Funktion des Rufens beim Wachtelkönig *Crex crex*. – *Vogelwelt* 116: 141–151]. Our records close to the end of the calling season of male Corncrakes in late July may further indicate vertical movements from valleys to higher lying mountain areas during the summer as discussed by TRONTELJ (1997). Furthermore, some recent but very scattered records of the species from Carinthian and eastern Tyrol mountains in southern Austria may be related to the Italian-Slovene population [MORITZ, D. & A. BACHER (2001): Die Brutvögel Osttirols. – Eigenverlag, Lienz; STREITMAIER, D. (1997): Der Wachtelkönig (*Crex crex*). Sensationeller Nachweis dieses weltweit bedrohten Wiesenvogels im Rahmen des „Bracheprojektes Metschach“. – *Carinthia* 187/ 107: 45–52].

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LISKA *Fulica atra*

Coot – one individual found near Ržišče on Menišija plateau (UTM VL47, central Slovenia) in unusual habitat of Dinaric *Omphalodo-Fagetum* forest on 1 Sep 2005

Dne 1.9.2005 sva Micha Herdtfelder in avtor pričujočega prispevka iskala risinjo na območju Menišije. Ko se je že dodobra zmračilo, sva nedaleč od Ržišča v osrednjem delu Menišije v soju avtomobilskih luči ob robu gozdne ceste zagledala črno ptico. Ko sva se ji približala, sva začudeno ugotovila, da gre za lisko. Dinarski jelovo-bukov gozd (*Omphalodo-Fagetum*), v katerem sva jo našla, prav gotovo ni tipičen habitat za to vrsto, ki je vezana na vodne površine. Kaj je pripravilo to lisko, ki je bila najverjetneje na preletu, da se je ustavila na tej nenavadni lokaciji kar nekaj kilometrov od najbližjega vodnega telesa, nisva mogla ugotoviti.

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SLOKA *Scolopax rusticola*

Woodcock – observed on 4 Dec 2005 in Slovene Istria (UTM VL03)

Dne 4.12.2005 sem na kolovozu, ki se spušča v dolino rečice Malinske, nedaleč od ceste Gradin – Abitanti (UTM VL03), splašil sloko. Gre za enega redkih zimskih podatkov za slovensko Istro, glede na rani decembrski datum pa sem verjetno opazoval poznega preletnika. Habitat je bil takšen, kot ga je predvidel avtor Zimskega ornitološkega atlasa Slovenije: vlažen, grapast gozd z mezišči [SOVINC, A. (1994): Zimski ornitološki atlas. – Tehniška založba Slovenije, Ljubljana].

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ČUK *Athene noctua*

Little Owl – two individuals provoked with the aid of taped playback near Kamno (UTM UM92, NW Slovenia) and in village Čiginj (UTM UM91, NW Slovenia)

Dne 30.6.2005 smo v okviru Mladinskega ornitološkega tabora Most na Soči 2005 med Tolminom in Kobaridom z metodo izzivanja s posnetkom iskali čuke. In pri naselju Kamno (UTM UM92) se nam je res posrečilo izzvati en osebek. Pel

je približno 200 m od ceste zunaj naselja. Isti večer se je 1 osebek oglasil na posnetek velikega skovika *Otus scops* sredi vasi Čiginj (UTM UM91; L. Božič *ustno*). Podatka sta zanimiva, saj čuka Ornitološki atlas Slovenije [GEISTER, I. (1995): Ornitološki atlas Slovenije. – DZS, Ljubljana] za Posočje ne omenja.

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SREDNJI DETEL *Dendrocopos medius* & BELOVRATI MUHAR *Ficedula albicollis***Middle Spotted Woodpecker & Collared Flycatcher**

– four pairs of Middle Spotted Woodpecker together with 11 pairs of Collared Flycatcher and a pair of Redstarts *Phoenicurus phoenicurus* counted on 30 Apr and 28 May 2005 on a hillside between Janče and Laze, some 10 km east of Ljubljana (UTM VM70, central Slovenia). The area is situated at an altitude of about 600 m a.s.l. and covered by old Sessile Oak *Quercus petraea* and Beech *Fagus sylvatica* forest.

V pozni pomladi leta 2004 so moja skrb kot že nekaj let poprej zbujaile v drugo še nepopisane tetrade. Ene izmed tetrad v kvadratu UTM VM70 (10/47 novega Ornitološkega atlasa Slovenije) sem se lotil 28.5.2004. Po ponovnem preštevanju kosov, ščinkavcev, taščic in sinic v najbolj navadnem gospodarskem gozdu sem se želel še nekoliko razgledati po hrastovih gozdovih nad dolino Gostince v tetradi H. Že mesec dni prej, 30.4.2004, sem tu slišal svatovsko oglašanje dveh srednjih detlov ter petje dveh belovratih muharjev, ki sem ju imel za preletnika. Kar sem tistega poznomajskega jutra naposled zapisal v svojo terensko beležnico, je vendarle daleč presegle moja pričakovanja. Na grebenu, ki povezuje Janče in Lipavčev grič, na nadmorski višini okrog 600 m, sem poslušal svatovsko oglašanje treh srednjih detlov. Na severnem pobočju Lipavčevega griča, ki se vzpenja nad Savo približno v višini Dolskega, sem na dobrem kilometru poti naštel 9 pojočih belovratih muharjev in enega pogorelčka *Phoenicurus phoenicurus*. Za nameček sta me preletela še duplarja *Columba oenas*. Nedaleč od tod je tudi eno izmed redkih gnezdišč črnega škarnika *Milvus migrans* v Sloveniji [KOZAMERNIK, J.J. (2000): Črni škarnik *Milvus migrans*. – Acrocephalus 21 (102/103): 277]. Gozd, v katerem živi tako pozornost zbujujoča ptičja združba seveda ni »navaden gospodarski gozd«. Greben med Jančami in Lipavčevim gričem, predvsem njegova jugozahodna pobočja, porašča svetel gozd s prevladujočim hrastom gradnom *Quercus petraea*. Na severnih pobočjih se hrastu pridruži bukev *Fagus*

sylvatica. Mnogo dreves je zelo velikih, očitno tudi starih, vmes je nekaj odmrlega drevja in presvetljenih površin. O dejanskem številu srednjih detlov na tem območju je težko soditi, ker je glavno obdobje njihove svatovske aktivnosti v drugi polovici marca in v aprilu. Povsem možno je, da se mnogi pari tega območja tako pozno v letu kratko malo niso oglašali. Kljub temu lahko rečem, da gre za novo, regionalno pomembno gnezdišče vrst, ki imajo svoje težišče v nižinskih gozdovih vzhodne Slovenije. Brez metodologije novega Ornitološkega atlasa Slovenije, ki nas prisili v popisovanje tudi na pogled neatraktivnih predelov, bi ga verjetno spregledal.

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BREGULJKA *Riparia riparia*

Sand Martin – A large flock of approx. 500 individuals observed during a two-hour rest in bad weather in the urban part of Novo mesto (UTM WL17, SE Slovenia) on 18 Sep 2005

Novo mesto (UTM WL17), 18.9.2005. Bil je mrzel, deževen dan. Že od daleč sem skozi okno opazila veliko jato ptic, ki se je približevala naši hiši. Zaokrožila je nad njo, potem nad reko Krko in se začela vedno bolj spuščati. Na moje veliko presenečenje so ptice začele posedati po steni dveh sosednjih hiš. Zavetje so iskale tudi pod napuščem, se nagnetle na žice, antene in vrh dveh smrek. Oddaljene so bile 10 – 20 m, tako da sem jih lahko opazovala brez daljnogleda. Najbolj so bile zanimive tiste, ki so počivale na grobo ometanih stenah. Opazovala sem jih, kako si sušijo in čistijo perje. Tiste, ki so počivale na anteni in na žicah, so se gnetle skupaj, kot bi se grele. Skupine, ki so se spustile na vrh smreke, pa dež očitno ni tako motil, saj so zgrbljene čepele vsaka na svoji vejici. Ugotovila sem, da gre za breguljke, saj so se močno razlikovale od mestnih lastovk, ki jih opazujem vsako poletje na Dolenjskem. Po hrbtu so bile rjavkasto peščene barve, brez bele trtice, značilne za mestne lastovke. Imele so rjavkast »ovratnik«, po trebuhu pa so bile bele. Nenadoma so vse zletele. Vendar so takoj posedle nazaj natančno tako kot prej, ta prizor pa se je ponovil še petkrat. Ocenila sem, da je jata štela najmanj 500 breguljk. Počivale so dve uri, potem so se dvignile vse hkrati, še enkrat zaokrožile nad Krko in že jih ni bilo več. Ostalo je samo še 10 mestnih lastovk, ki so krožile naokoli tako kot že vse tisto poletje.

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PLANINSKI VRABEC *Montifringilla nivalis*

Snowfinch – a flock of 44 individuals seen on Mt. Stol (UTM VM34, NW Slovenia) on 26 Jul 2003

Na raziskovalnem taboru študentov biologije v Žirovnici smo se 26.7.2003 v okviru ornitološke skupine pod vodstvom Eve Vukelič odločili povzpeti na Stol v Karavankah (UTM VM34). Pot na vrh so nam kratkočasili krivokljuni *Loxia curvirostra*, kalini *Pyrrhula pyrrhula*, krekovt *Nucifraga caryocatactes* in komatar *Turdus torquatus*. Na vrhu smo poleg velike skupine ljudi in skoraj udomačenih planinskih kavk *Pyrrhocorax graculus* zagledali jato manjših ptic. Hvaležni, da smo na goro nosili teleskop, smo napravo hitro uporabili in tudi brž prepoznali planinske vrabce. Še bolj presenetljivo kot samo dejstvo, da smo sploh naleteli nanje, je bilo njihovo število. Našteli smo jih štiriinštirideset (44). Gre za eno največjih v Sloveniji opazovanih jat (MIHELICH *ustno*). Ornitofavno Stola so zaokrožile vriskarice *Anthus spinoleta*, šmarnice *Phoenicurus ochruros* in kupčarji *Oenanthe oenanthe*.

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BULLFINCH *Pyrrhula pyrrhula*

Kalin – avtor je poslušal osebek soimenske podvrste *pyrrhula* v bližini Brestovice pri Komnu (UTM UL97, JZ Slovenija)

In the autumn of 2004, there was a large-scale invasion of Bullfinches into central and western Europe at least as far south as Emilia Romagna in Italy. These birds were of the nominate northern subspecies (*pyrrhula*) and a substantial proportion of these birds gave a strange trumpeting call rather like a child's plastic trumpet or a single note of the 'meep-meep' call of the cartoon character 'Roadrunner'. Sonogram analysis has showed the call to be tri-tonal and very unlike the mono-tonal 'piu' of our local subspecies (*europaea*) and some *pyrrhula* individuals. 'Trumpeting' birds were found on the breeding grounds of the north-eastern Russian republic of Komi in summer 2005 by Annika Forstén and Antero Lindholm [<http://www.abc.se/home/m4046/angarn/domherre/bullfinch.htm>]. The invasion has taken place again, albeit on a smaller scale, in autumn 2005 with birds appearing in Friuli-Venezia Giulia in mid October. Up to 30 birds were present at the lake of Doberdò (Lago di Doberdò / Doberdòsko jezero) in early December 2005, though only a small proportion (approx. 15%) gave the trumpeting call. On 7 Nov 2005, during a routine

transect of Monte Ermada (Grmada) (UTM UL97, SW Slovenia) Matteo Skodler and I encountered a female ‘Trumpeting’ Bullfinch just approx. 200 m inside Slovenia on the north-east facing slope, close to the village of Brestovica pri Komnu, in mature damp woodland composed of Downy Oak *Quercus pubescens*, Flowering Ash *Fraxinus ornus* and Hop Hornbeam *Ostrya carpinifolia*.

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BOSNA IN HERCEGOVINA / BOSNIA AND HERZEGOVINA

GREAT CORMORANT *Phalacrocorax carbo*

Kormoran – februarja 2004 opaženih 5 počivališč s skupno 200 pticami vzdolž reke Bosne (UTM BQ27, BQ37, BQ56, BQ66, BQ88; osrednja Bosna in Hercegovina)

On 1 Feb 2004, we travelled along the Bosna River from Modriča (UTM BQ88) to Zavidovići (UTM BQ27). At this stretch of the river, the main road winds along the river, except for the section that extends from Kotorsko (BQ66) to Doboj (BQ56). The high vegetation along the river is limited to rather narrow rows of poplar and willow trees, which gave us an opportunity to observe the wintering birds from the car. The first daily roost was found at Botajica village (UTM BQ88), where we counted 40 Great Cormorants. At Matuzići village (UTM BQ56), a night roost was spotted, where we counted 66 birds in the day time. At Bočinja village (UTM BQ37), we came across another daily roost with 48 Great Cormorants, and finally, just before Zavidovići, we found the third daily roost with 9 birds. In total, we counted 163 resting individuals. We repeated our journey along the same route on 7 Feb 2004. This time we confirmed roosting birds at Matuzići (100 individuals) and Botajica (73 birds). We spotted no cormorants at Bočinja village, for they shifted their roost few kilometres downstream to Bakotići village (UTM BQ37), where 30 birds were present. No Great Cormorants were observed further upstream from this point. This time, the total number of cormorants reached 203 birds. Although we travel along the given route quite often (at least once a month), we never observed Great Cormorants during the late spring, in the summer or in early fall. Since there are no known colonies in the given part of central Bosnia, Great Cormorants could be considered typical winter

visitors that migrate upstream the river in search for food. Presumably later during the year, in early spring, they migrate north in order to breed in the Pannonian lowlands or in northern Europe.

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BLACK SWAN *Cygnus atratus*

Črni labod – 1 osebek opažen 22.2.2003 na reki Uni v Bihaću (UTM WK75, Z Bosna in Hercegovina)

On 22 Feb 2003, I observed an adult Black Swan on the river Una in the centre of Bihać town (UTM WK75, W Bosnia and Herzegovina). The bird swam near the flock of 7 Mute Swans *Cygnus olor*. On the next day, the Black Swan was not to be seen on the river any more, but instead I was able to observe 5 Little Grebes *Tachybaptus ruficollis*, 1 Great Crested Grebe *Podiceps cristatus*, 300 Mallards *Anas platyrhynchos*, 50 Coots *Fulica atra* and 1 Moorhen *Gallinula chloropus*. After a month, when I revisited the area, I had no luck again as far as the Black Swan was concerned, even though I was told it had been there most of the month.

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FERRUGINOUS DUCK *Aythya nyroca*

Kostanjevka – 5 osebkov opaženih dne 23.3.2003 na reki Klokot blizu Bihaća (UTM WK75, Z Bosna in Hercegovina)

On 23 Mar 2003, I visited Bihać (UTM WK75, W Bosnia and Herzegovina). On a nice sunny and windless day I took a round trip to the river Una and its tributary Klokot up to its spring. Most of the birds I saw were usual for the site, but the most interesting among them were 5 Ferruginous Ducks on the Klokot. On the Una, I observed a pair of Garganeys *Anas querquedula* and 4 Mute Swans *Cygnus olor*. To my knowledge, 2 pairs of Mute Swans nest in Bihać area, one in the town centre on Una river and the other on an island downstream (GLUHALIĆ *pers. comm.*).

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LONG-LEGGED BUZZARD *Buteo rufinus*

Rjasta kanja – odrasel osebek svetle barvne variante krožil 8.8.2005 nad vzhodnim delom Fatniškega polja v vzhodni Hercegovini, prib. 15 km SZ od Bileće (UTM BN85). Zaradi poznega datuma gre kvečjemu za pognezditveno opazovanje.

A Long-legged Buzzard was observed on 8 Aug 2005, while soaring over the eastern part of Fatniško polje, some 15 km NW of Bileća (UTM BN85, E Herzegovina). The light conditions were excellent and the distance not too great, thus several distinctive characters could be observed, particularly the uniformly light-brown coloured tail and whitish underwings with prominent dark carpal spots and black hind edge. The bird was clearly one of the pale colour morph. The surrounding landscape, situated at an altitude of approximately 600 to 900 m a.s.l., is a mixture of stony pastures, scrubs and small woodlands interrupted by large steppe-like karst polje and limestone cliffs. The beginning of August is too late for the observation to be possibly related to breeding, it nevertheless adds to the scarce summer records for the central Dinaric area.

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POVODNI KOS *Cinclus cinclus*

Dipper – adult with its young observed on 27 May 2005 on the Neretvica river near Parsovići village (UTM YJ35, Konjic municipality, Herzegovina)

Ilhan Derović, Adi Habul in avtor tega članka smo se dne 2.7.2007 odpravili iskat stare rudnike bakra na Zec planini. V enem izmed številnih kratkih kanjonskih delov, skozi katere teče reka Neretvica nad vasjo Parsovići (občina Konjic), smo opazovali odraslega in mladostnega povodnega kosa. Mladič je imel zaradi posebnih svetlobnih razmer po prsih in trebuhu zelenkasto-siv nadih, kar nas je sprva begalo. Kasneje smo ob pregledu priročnikov ter po pogovoru s Petrom Trontljem in Slavkom Polakom, ki sta nas tega leta obiskala v Sarajevu, determinacijo potrdili.

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PLANINSKA KAVKA *Pyrhocorax graculus*

Alpine Chough – new nests found in the Jama u Jasenu caves (observed on 19 Jun 2005) and Sudareva pećina (observed on 22 Jun 2005) on Mt. Bjelašnica (UTM BP74, S Bosnia)

Kot dopolnilo k dosedanjemu poznavanju gnezdenja planinske kavke v jamah Bosne in Hercegovine [MULAOMEROVIĆ, J. & KOTROŠAN, D. (2004): New data on breeding of Alpine Chough in Caves in Bosnia and Herzegovina. – *Acrocephalus* 25 (121): 85–88] lahko zdaj dodamo še dve novi lokaliteti na planini Bjelašnici, in sicer Jamo u Jasenu in Sudarevo pećino. Dne 16.6.2005 sva Ilhan Derović in avtor nad Jamo u Jasenu opazovala jato 30 planinskih kavk. Tako sva pravzaprav tudi našla vhod v jamo. Iz nje je bilo moč slišati prhutanje peruti in oglašanje mladičev. V času našega kratkega zadrževanja v bližini jame sta dva para planinskih kavk nekajkrat izletela in priletela nazaj v jamo. Dne 22.6.2005 je Ilhan nad Jamo u Jasenu opazoval prek 20 planinskih kavk. Istega dne je v Sudarevi pećini, ki je od Jame u Jasenu oddaljena približno 2 km zračne linije v smeri SZ, prav tako slišal oglašanje mladičev, na tleh pa našel mrtvega mladiča planinske kavke. Nad to jamo je takrat opazoval 6 ptic. Obe jami sta na nadmorski višini približno 1350 m.

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SRBIJA (SRBIJA IN ČRNA GORA) / SERBIA (SERBIA AND MONTENEGRO)

BITTERN *Botaurus stellaris*

Bobnarica – najdena nova gnezditvena lokaliteta na jezeru Okanj (UTM DR43, W Banat, Vojvodina): 30.4.2005 bobna 1 os., 24.5.2005 bobnata 2 os., 10.9.2005 splašen 1 os.

On 30 Apr 2005, I visited Lake Okanj (UTM DR43, W Banat, Vojvodina) together with Dimitrije Radišić, Robert MacCurrach and Vladimir Rakić. At around 20 h, one Bittern began to boom from a wide and thick belt of reeds in the western part of the lake and continued to do so until we left the area at around 20.30 h. During our birding trip with English guests (Roy Beddard, Nick Langley, Sandra Amiss, Biljana Marčeta) to this lake on 24 May 2005, two males were heard booming between 19.10 and 19.45, one from the western corner of the lake, the other from the same place as heard on 30 Apr. After the breeding season, on 10 Sep 2005, one Bittern flew from tall herbaceous

vegetation about 200 m west from the lake towards its reedbeds. This is a new and so far the fifth Bittern's confirmed breeding locality in the central part of the Tisa valley in Voivodina holding at least two territorial males [TERNOVAC, T. & LUKAČ, Š. (1989): Beleške o ornitofauni Slanog Kopova iz 1986. godine. – *Ciconia* 1: 26–30; TERNOVAC, T. (1991): Podaci o ornitofauni Jegričke iz 1989. i 1990. godine. – *Ciconia* 3: 14–24; LUKAČ, Š. & LUKAČ, A. (1992): Ornitofauna ribnjaka "Bečej". – *Ciconia* 4: 4–27; ŠĆIBAN, M. (2004): Bittern *Botaurus stellaris*. – *Acrocephalus* 25 (123): 231].

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BLACK STORK *Ciconia nigra*

Črna štoklja – verjetna gnezditelj v okolici zadrževalnika Barje na reki Veternici, 25 km od Leskovca (UTM EM64, JV Srbija); redno opazovana 1 – 2 osebkoma med 3.7.2005 in 19.8.2005

On 3 Jul 2005, while watching and studying birds on and around Barje reservoir on the river Veternica some 25 km away from Leskovac (UTM EM64, SE Serbia), a Black Stork was observed flying over the reservoir about 3 km from the dam. On that day, it was observed two more times there – for the last time around 15 h when landing in a small inlet, probably on trees, considering that the area is covered with dense oak woodland. On 17 Jul 2005, a Black Stork was observed again landing in the same woodland. It happened yet again on 30 Jul 2005, but since we spotted it twice, it is possible that these were in fact two different birds. During our next trip, on 13 Aug 2005, one individual was observed, while on the following day, 14 Aug 2005, 3 Black Storks circled above the reservoir. On 19 Aug 2005, we saw one bird for the last time this year. These observations strongly suggest that a pair of Black Storks probably bred in 2005 in the woodland close to the reservoir, which is a new breeding site of this species in SE Serbia.

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GLOSSY IBIS *Plegadis falcinellus*

Plevica – 1 osebek opažen na jezeru Okanj (UTM DR43, Z Banat, Vojvodina); redok podatek za jesensko selitev v dolini reke Tise

Lake Okanj (UTM DR43, W Banat, Voivodina) is a semi-circular alkaline depression partially filled with water and surrounded by treeless agricultural landscape. It is 4.5 km long and up to 500 m wide. Its northern part is completely covered with reed, while its southern part consists of open water and islets overgrown with vegetation. We visited the site on 10 Sep 2005 in order to catch a glimpse of the autumn bird migration. Between 8.30 and 12.00 h, we explored the lake's southern part. The most interesting birds there were: 12 Great Egrets *Egretta alba*, 3 adult Spoonbills *Platalea leucorodia*, 200 Pochards *Aythya ferina*, 20–30 Marsh Harriers *Circus aeruginosus*, 1 Sparrowhawk *Accipiter nisus*, 3 calling Water Rails *Rallus aquaticus*, 1 Dunlin *Calidris alpina*, 1 Little Stint *Calidris minuta*, 12 Spotted Redshanks *Tringa erythropus*, 1 Snipe *Gallinago gallinago*, and 2 juvenile Penduline Tits *Remiz pendulinus*. After a long walk, we returned to the car. Suddenly, a black bird appeared gliding from the NW direction towards us. It was an adult Glossy Ibis, which continued to glide towards the open water, circled for a while and finally landed. This was our first observation of the species on Lake Okanj and one of the few on autumn migration in the Tisa valley in Voivodina [LUKAČ, Š. & LUKAČ, A. (1992): Ornitofauna ribnjaka "Bečej". – *Ciconia* 4: 4–27; GERGELJ, J., TOT, L. & FRANK, Z. (2000): Ptice Potisja od Kanjiže do Novog Bečeja. – *Ciconia* 9: 121–158; AGOŠTON, A. (2004): Bird inventarisatija at Novi Kneževac fishpond with population estimates for breeders. – *Ciconia* 13: 88–93].

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OSPREY *Pandion haliaetus*

Ribji orel – 1 osebek opažen dne 5.9.2003 na Brestovačkem jezeru na Pusti reki (UTM EM55, JV Srbija)

Lake Brestovačko jezero, the artificial reservoir on the Pusta reka river, is situated very close to Radan mountain and 7 km to the west from the village of Bojnik (UTM EM55, SE Serbia). In the early morning of 5 Sep 2003, my son Mihajlo and me noticed an Osprey and kept observing it from the dam when flying from an old dry tree situated near the lake. The same bird was seen in flight a few more times during that day from different distances. Considering its dimensions, it could be a female. Regardless the fact that there are no data on Ospreys migrating from this part of the country, the species had already been observed on the lake according to Goran Kitanović, who gave me the first information on the Osprey's occurrence, and according to the later reports by the keepers of the lake and fishermen.

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PEREGRINE FALCON *Falco peregrinus*

Sokol selec – 1 osebek opažen dne 15.7.2004 nasproti Ade Ciganlije v Beogradu (UTM DQ56), ko ga je napadel odrasel samec postovke *Falco tinnunculus* in je nad njima krožila jata domačih golobov *Columba domestica*

On 15 Jul 2004, while driving through Belgrade, we passed the old "Dimitrije Tucović" Sugar Factory in Radnička Street (UTM DQ56) opposite the Ada Ciganlija Island. Above one of the old buildings within the factory complex, we spotted 2 middle size raptors, circling. The lower one was obviously a Kestrel *Falco tinnunculus*, but as the one above it immediately drew all our attention, we decided to stop for a while and have a good look at the birds. An adult male Kestrel was fiercely attacking a Peregrine Falcon at approx. 100 m above the ground. Comparing their sizes, we concluded that Peregrine Falcon was most probably a male, with its plumage suggesting a 2nd year bird. Soon we spotted a flock of about 50 Feral Pigeons («Serbian highflyer race»), circling directly above the two raptors. The pigeons were flying fast in a thick flock – a characteristic behaviour by this most abundant sports pigeon race in Serbia when they see a potential avian predator. According to the information on the hunting behaviour and prey selection of Peregrine Falcons in

urban and suburban areas in Central Serbia, collected by the first author, this pigeon race constitutes the bulk of their diet in the breeding period owing to its numbers and flying characteristics. This also holds true for Bulgaria [STOYANOV, G. P. (2003): Peregrine Falcon *Falco peregrinus*. – *Acrocephalus* 24 (116): 41–42] and New Belgrade [S. MARINKOVIĆ, *pers. comm.*]. Therefore, we assume that this Peregrine Falcon was observed during its attempted hunt.

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SPOTTED CRAKE *Porzana porzana*

Grahasta tukalica – 2 osebk sta se teritorialno oglašala dne 24.6.2005 na vlažnih travnikih SV od mesta Žabalj (UTM DR32, V Bačka); druga gnezditvena lokaliteta za osrednji del doline reke Tise v Vojvodini

On 24 Jun 2005, while visiting a large wetland, which is situated to the north-east from Žabalj (UTM DR32, E Bačka) and used by the local sugar factory as a waste water disposal site, we heard territorial calls of two male Spotted Crakes from flooded pasture and reedbeds. This area is not in direct contact with the disposal site, from which it is separated by a small embankment. Territorial calls were recorded at about 21.00 h, coming from the thickest reedbeds surrounded by tall grass and sedges. Birds produced their calls several times until we left the area. This is a new probable breeding locality for the species within the central part of the Tisa valley in Voivodina. The only breeding locality known so far is the Bečej fishpond where nests have been found [LUKAČ, Š. & LUKAČ, A. (1992): Ornitofauna ribnjaka "Bečej". – *Ciconia* 4: 4–27].

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BLACK-WINGED STILT *Himantopus himantopus*
Polojnik – gnezditve dvoh parov polojnikov in dvoh parov prib *Vanellus vanellus* v manjši umetno ustvarjeni depresiji v bližini Feketića (UTM CR95, Bačka, Vojvodina)

Along the highly frequented crossroads of the E-75 international motorway and local Novi Sad – Subotica road near Feketić (UTM CR95, Bačka, Voivodina),

two pairs of Black-winged Stilt bred in 2005 together with two pairs of Northern Lapwing *Vanellus vanellus*. During construction works on the motorway and bridge for the local road, a small depression was created with the surface area of about 200 m². This depression was flooded by shallow water (up to 20 cm) throughout the spring and major part of the summer of that year. In some places it was covered by sparse aquatic vegetation. Both pairs of Black-winged Stilts incubating eggs were observed on it for the first time on 1 Jun 2005. On that day, two pairs of Northern Lapwing led a total of 6 chicks. On 21 Jun 2005, this ephemeral pond was visited again: four adults and 6 chicks of Black-winged Stilts were observed on it.

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MEDITERRANEAN GULL *Larus melanocephalus*
Črnoglavi galeb – na jezeru Palić (UTM DS00, N Bačka, Vojvodina) je leta 2005 v edini koloniji v Srbiji in Črni gori gnezdzilo 40 – 45 parov, kar je po letu 2003 najvišje število gnezdečih parov; v nekdanji gnezditveni koloniji v bližini Crvenke (UTM CR75, osrednja Bačka, Vojvodina) se je pojavil odrasel osebek črnoglavega galeba; v industrijskem bazenu je nivo vode po dogovoru s tovarno zdaj višji, v koloniji pa ponovno gnezdiijo rečni galebi *Larus ridibundus* in navadne čigre *Sterna hirundo*; dne 24.4.2004 sta bila opažena dva odrasla osebk črnoglavega galeba v bazenih za odpadne vode tovarne sladkorja v Kovačici (UTM DQ79, osrednji Banat, Vojvodina), kjer je svojčas tudi obstajala kolonija; ker v sedanjem stanju ni gnezditvenih otokov, ki jih vrsta za gnezditve potrebuje, gnezditve ni verjetna

The breeding colony of Mediterranean Gull on Palić Lake (UTM DS00, N Bačka, Voivodina) is currently the only one in Serbia and Montenegro [GERGELJ, J., ŽULJEVIĆ, A. & SEKEREŠ, O. (2004): Population dynamics and migration of Mediterranean Gull *Larus melanocephalus* from the Palić lake colony. – Ciconia 13: 122–127]. Regular surveys continued in 2005, when 40–45 pairs bred on islands together with the Black-headed Gulls *Larus ridibundus*. This was the highest concentration of breeding pairs from 1986, when this colony was formed [GERGELJ, J. (1995): The nesting of the Mediterranean Gull (*Larus melanocephalus*) in the Voivodina from 1986 to 1995. – Ciconia 5: 18–22], excluding the year 2003 [GERGELJ *et al.*, 2004]. In 2005, the colour-ringing project continued: 57 chicks and 6 adults were marked with red rings,

whose codes start with letter Y (national code for the Mediterranean Gull colour-ringing program in Serbia and Montenegro). Two chicks ringed on Palić Lake were found in the Strunjan salt pans in Slovenia. One, ringed on 27 May 2004, was observed on 1 Aug 2005, while the other one, ringed on 29 May 2005, was registered on 3 Aug 2005 (477 km, direction 265°W). These are the first ringed Serbian Mediterranean Gulls found in Slovenia (GERGELJ *et al.* 2004). The breeding colony of this species at the industrial waste water basins near Crvenka (UTM CR75, central Bačka, Vojvodina) ceased to exist in 1997 [TUCAKOV, M. & ŽULJEVIĆ, A. (2002): Origin and breeding fauna of birds in two collecting facilities of industrial waste waters in Bačka: importance of artificial wetlands. Ciconia 11: 52–69]. Large local colony of Black-headed Gulls disappeared from this site in the ensuing year as well. However, after the proposal suggested to the “Panon” Alcohol Industry, the water level in the basin where breeding colony was situated rose. In 2005, a colony of Black-headed Gulls, with 25–30 breeding pairs and 10–12 pairs of Common Tern *Sterna hirundo*, appeared again after six years of absence. Even more, one adult Mediterranean Gull was recorded in it on 21 May 2005. This gave us a hope that, after more numerous breeding of the Black-headed Gull, the Mediterranean Gull would start breeding again in the years to come. The third locality in Voivodina with breeding data on the species (GERGELJ 1995) is the waste water basins complex of the Kovačica sugar factory (UTM DQ79, central Banat, Voivodina). Two adult individuals (possibly a pair) of this species were observed at that site on 24 Apr 2004. However, it is doubtful whether Mediterranean Gulls can breed in a local colony of Black-headed Gulls, having in mind that at present there are no breeding islands surrounded by water. Black-headed Gulls breed on floating nests or amongst sparse ruderal vegetation. Mediterranean Gulls at Palić Lake and Crvenka were found breeding exclusively on solid ground on breeding islets [GERGELJ *et al.*, 2004].

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BEE-EATER *Merops apiaster*

Čebelar – najdena nova kolonija v bližini vasi Turekovac (UTM EM65, JV Srbija) s približno 15 pari

On 21 Jun 2005, a new colony of approximately 15 pairs of European Bee-Eaters was found 2 km from the village of Turekovac towards the village of Gornje Stopanje downstream of the Jablanica river (UTM EM65, SE Serbia). Nest holes were made in steep 2 meter high river bank. This colony was observed a few more times during the summer. It is not known whether the species had bred at this locality in previous years. This is the third colony of this bird in the wider area known to the author. The first, which is no longer active, was situated not far from the Vlasina river mouth, close to the village of Donje Krajince. The colony of 15 – 20 pairs was located on the right river bank. It was active for a few years, but eventually abandoned most likely owing to the works carried out on the new motorway, located only 50 m from the colony. The second, known to the author since 1999, which was still active in 2005, is located on the right bank of the South Morava, between the villages of Lipovica and Zaplanjska Toponica. This colony is the largest, consisting of around 30 pairs.

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REDPOLL *Carduelis flammea*

Brezovček – 1 odrasel samček v jati 7 čížkov *Carduelis spinus* dne 22.11.2004 pri vasi Gornja Lokošnica, 12 km od Leskovca (UTM EM65, JV Srbija); tretji podatek za območje Leskovca

In the early morning of 22 Nov 2004, I observed an adult male Common Redpoll in a flock of seven Eurasian Siskins *Carduelis spinus* near the village of Gornja Lokošnica, situated 12 km from Leskovac (UTM EM65, SE Serbia). This is the third and so far the earliest record of this species around Leskovac in the last 20 years [KULIĆ, S (2002): Severna jurčica *Acanthis flammea* u Leskovcu. Ciconia 11: 172]. The occurrence of this northern species is very rare in southeast Serbia, and has until now been seen only during very cold and long winters with a lot of snow. Taking the above into account, this record was exceptional, since the temperature was +8°C and there was no snow.

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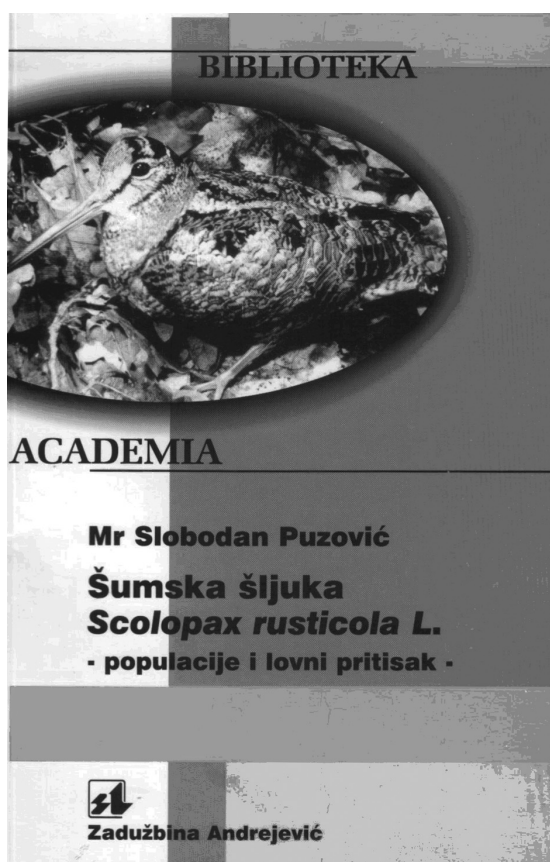
PUZOVIĆ, S. (2000): Šumska šljuka *Scolopax rusticola* L. – populacije i lovni pritisak. – Zadužbina Andrejević, Belgrade. 84 pages. ISBN 86-7244-160-5.

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This book is the only compilation of the results of research in game biology and ornithology in Serbia and an important attempt of interpretation of ornithological knowledge of what hunting biology and management practice consider as game species. From one hand, according to the author's explanation of hunting statistics, after Mallard *Anas platyrhynchos* and Wood Pigeon *Columba palumbus*, Eurasian Woodcock is the third migrant bird on a scale of the most exploited species by hunters in Europe. Yet, this fact seemed to make the research published in this book easier. Similar to many ornithologists – specialists, author of this book, motivated by a relative lack of knowledge of its ecology, especially in the Balkans, has devoted an important part of his career to a quite difficult research of this mountain species in Serbia. Bearing in mind that in the south-eastern edge of its global range Eurasian Woodcock more often lies in the hunter's bags than being thoroughly researched, his efforts directed by Balkan section for study and protection of Eurasian Woodcock, definitely should be respected.

Within 15 chapters Puzović tells us about importance of this species as game, methods of defining the population size and density, methods of defining the hunting pressure, presents correlation between breeding population size and hunting pressure (separately for all countries of south-eastern Europe and the most important countries within the breeding range) and factors influencing hunting pressure. Finally, authors analyze the effects of hunting pressure on Eurasian Woodcock populations, again with strong focus on the countries of former Yugoslavia.

Avian ecologists should always be very cautious regarding the use of hunting statistics in research of bird mortality and population changes. The highest hunting pressure on Eurasian Woodcock is in France and Italy. Although absolute hunting pressure in the Balkans is very low on European scale, it was and still is exceptionally high along Mediterranean coast



in Croatia, Montenegro and Greece, where wintering densities of this species are high and usually also the tradition of winter hunting exists. Puzović, on the basis of influence of such practice on the global population, suggests a series of management measures which should result in the lowering of European "hunting mortality" from current 20% to 15%. One of the clear guidelines is to ban the spring hunting of mating birds (still common practice in northern Europe!) and restriction of duration of winter hunting season which to his opinion should last not longer than from 1 November to 15 March.

Probably readers of this book can be divided into two groups. One will loudly ask (maybe even just after the reading of the title): Why does it have to be hunted at all? For the other group, which will always try to seek solutions in nature (and especially bird) conservation together with the game biologists, this book will be a useful guide. We should not forget that the opinions of ornithologists are and will often be asked for in the case of protection of game birds which are in our research rather neglected.

Marko Tucakov

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