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Important sites for migrating raptors in the Eastern Alps

Pomembna območja za seleče se ujede v Vzhodnih Alpah

The migration of raptors is a spectacular phenomenon, attracting a huge number of observers and scientists from all over the world. As large birds of prey need thermals for their migration journey, which are absent above the sea, they congregate, in Europe, at bottleneck sites like Falsterbo, the Bosporus, the Straits of Messina and Gibraltar (Zalles & Bildstein 2000).

However, during the last decade a number of important migration sites have been discovered apart from narrow sea crossings, including regions within the Eastern Alps. Thus, in northern Italy (Infomigrans 2010, Mezzavilla *et al. in press*) and southern Austria (Probst 2009a) highly interesting observations have been made. These comprise especially high numbers of migrating Honey Buzzards *Pernis apivorus*, with thousands passing through the region in late August and early September each year.

Nevertheless, our knowledge is still limited, as intensive, daily observations like in the Western Alps (e.g. at Le Hucel, Thollon-les-Mémises, France; http://haute-savoie.lpo.fr/index.php?m_id=112&uid=177, 2 Apr 2011) are largely missing and satellite telemetry studies are rare (e.g. http://born2bwild.nhm-wien.ac.at, 2 Apr 2011). From the recent data it seems that in autumn the well known south-west migration of many raptor species takes place through the central Mediterranean, while adult Honey Buzzards in particular head west in the direction of Gibraltar. In spring, the situation is even more complicated, with some of the birds coming back via Gibraltar, but many reaching Europe via Sicily. New satellite tracking data in harriers *Circus* sp. even suggest that in spring these western birds are accompanied by raptors from a more eastern origin, as we can see in the field, for example, in the Red-footed Falcon *Falco vespertinus*, which is a regular migrant in Central Europe in spring but almost absent in autumn. The idea is that in spring strong winds from eastern sectors force eastern raptors to perform a clockwise loop migration (Trierweiler & Koks 2009). Having reached mainland Italy, raptors cross the Adriatic Sea at various places (Schneider-Jacoby 2001) or head north towards the Alps and Slovenia.

In this issue of Acrocephalus, K. Denac (2010) describes a remarkable number of raptors migrating in spring over Slovenia's first confirmed bottleneck site, Breginjski Stol. As stated in this paper, it is likely that much greater number of raptors migrate over Slovenia, especially in autumn. According to current knowledge, > 10,000 Honey Buzzards migrate in August and September via northern Italy, but only about 5,000 pass Carinthia, southern Austria. The latter has been confirmed by intensive monitoring at Stossau (Arnoldstein / Podklošter) on the Austrian-Slovenian-Italian border (http://www.birdlife.at/kaernten/raptorcamp/2010/zug/index.html, 2 Apr 2011) and further observations in other parts of Carinthia (Probst 2009b), leading to the suggestion that most of these "missing" Honey Buzzards migrate via Slovenia! Fortunately, the autumn migration peak of adult Honey Buzzards is so very narrow that even daily observations during all daylight hours in the last ten days of August alone should immediately and clearly demonstrate the importance of the alleged bottleneck site for the Honey Buzzard migration in Slovenia!

In the light of an internationally important raptor flyway in the SE Alps, missing data and the urgent need for investigations regarding conservation issues (e.g. building of windfarms in the mountains, saving of stop-over sites etc.), new attempts to find further bottleneck sites and a co-operation network between Slovenia, Austria and Italy would be highly welcome!

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Selitev ujed je spektakularen pojav, ki povsod po svetu pritegne izjemno veliko število opazovalcev in znanstvenikov. Ker velike ujede potrebujejo vzgonske vetrove za svoje selitveno potovanje, ki jih nad morjem ni, se zbirajo v ozkih grlih, kakršna so v Evropi na primer Falsterbo, Bospor, Mesinska ožina in Gibraltar (Zalles & Bildstein 2000).

Pa vendar so bila v zadnjem desetletju poleg ozkih morskih prehodov odkrita tudi druga pomembna selitvena ozka grla, vključno s tistimi na območju Vzhodnih Alp. Tako so v severni Italiji (Infomigrans 2010, Mezzavilla *et al. v tisku*) in južni Avstriji (Probst 2009a) zabeležili več izredno zanimivih opazovanj. Ta vključujejo zlasti veliko število selečih se sršenarjev *Pernis apivorus*, saj jih to območje vsako leto v poznem avgustovskem in zgodnjem septembrskem času preleti na tisoče.

Kljub temu pa je naše znanje na tem področju še vedno omejeno, saj so intenzivna dnevna opazovanja, kot na primer v Zahodnih Alpah (npr. pri kraju Le Hucel, Thollon-les-Mémises, Francija; http://haute-savoie.lpo.fr/index.php?m_id=112&uid=177, 2.4.2011), še precej redka, tako kot so precej redke tudi satelitske telemetrijske študije (npr. http://born2bwild.nhm-wien.ac.at, 2.4.2011). Glede na novejše podatke se zdi, da medtem ko v jesenskem času poteka dobro znana jugozahodna selitev mnogih vrst ujed prek osrednjega Sredozemlja, predvsem odrasli sršenarji letijo v smeri Gibraltarja. V spomladanskem času je selitev še bolj zapletena, saj se del ptic vrača prek Gibraltarja, mnoge pa dosežejo Evropo prek Sicilije. Novi podatki o satelitskem sledenju lunjev *Circus* sp. celo namigujejo, da spomladi te zahodne ptice spremljajo ujede vzhodnejšega izvora, kot to lahko opazimo na terenu, na primer v povezavi z rdečenogo postovko *Falco vespertinus*, ki je v Srednji Evropi spomladi redna selivka, a je v jesenskem času tako rekoč ni opaziti. Glede tega pojava obstaja mnenje, da spomladi močni vetrovi iz vzhodnih sektorjev silijo ujede, da opravijo krožno selitev v smeri urnega kazalca (Trierweiler & Koks 2009). Potem ko dosežejo celinsko Italijo, prečkajo Jadransko morje na različnih krajih (Schneider-Jacoby 2001) ali pa se usmerijo na sever proti Alpam in Sloveniji.

V tej številki Acrocephalusa K. Denac (2010) opisuje, kako se veliko število ujed spomladi seli čez Breginjski Stol, prvo potrjeno ozko grlo v Sloveniji. Kot je zapisano v tem članku, se prek Slovenije po vsej verjetnosti seli veliko več ujed, še posebno jeseni. Na osnovi danes znanih podatkov se več kot 10.000 sršenarjev avgusta in septembra seli prek severne Italije, a le kakih 5000 čez avstrijsko štajersko. Slednje je bilo potrjeno z intenzivnim monitoringom pri Stossauu (Podklošter / Arnoldstein) na avstrijsko-slovenski-italijanski meji (http://www.birdlife.at/kaernten/raptorcamp/2010/zug/index.html, 2.4.2011) in s še nekaj opažanji v drugih delih avstrijske štajerske (Probst 2009b), kar je pripeljalo do domneve, da se večina "spregledanih" sršenarjev seli prek Slovenije! Na srečo pa je

višek jesenske selitve odraslih sršenarjev zelo kratek in že celodnevna opazovanja samo v zadnjih desetih dneh avgusta bi morala takoj in jasno pokazati pomen domnevnega ozkega grla za selitev sršenarjev v Sloveniji.

Glede na mednarodno pomembno selitveno pot ujed v JV Alpah, manjkajoče podatke in potrebo po takojšnjih raziskavah na področju naravovarstva (npr. graditev vetrnih elektrarn v gorah, reševanje selitvenih počivališč itd.), bi bili nadaljnji poskusi, da se odkrijejo nova ozka grla in splete čvrsta mreža sodelovanja med Slovenijo, Avstrijo in Italijo, nadvse dobrodošli!

Remo Probst
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Census of migrating raptors at Breginjski Stol (NW Slovenia) – the first confirmed bottleneck site in Slovenia

Popis selečih se ujed na Breginjskem Stolu (SZ Slovenija) – prvo potrjeno ozko grlo v Sloveniji

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From 4 to 31 May 2010, raptor migration was monitored daily between 9.00 and 17.00 hrs CET at Breginjski Stol (NW Slovenia). In all, 2,385 raptor passes were counted, belonging to at least 17 species that were divided into resident and migratory birds. Residents (n = 875 passes) foraged, bred or daily migrated over the area. Among them, Griffon Vulture *Gyps fulvus* was the most frequent species (n = 575 passes) with the largest observed group of 35 individuals on 26 May. In the morning, Griffon Vultures were flying from west to east in search of food, whereas in the afternoon they were returning in the opposite direction to their colony in Forgaria nel Friuli (Italy). Their numbers increased after 15 May, when Croatian Griffons joined those from Italy. Altogether, 1,510 individuals of migratory raptors were counted, belonging to at least nine species. Among them, Honey Buzzard *Pernis apivorus* was the most common (1,368 ind., 90.6% of migratory raptors). The migration peak was reached on 14 May, with 552 individuals. Most raptors were seen migrating solitarily or in small flocks (2–4 ind.), whereas on five days (4, 7, 11, 13, 14 May) over 20% of all observed flocks were either medium-sized (5–15 ind.) or large (> 15 ind.). Raptors mostly migrated between 9.00 and 13.00 hrs. Taking into consideration several factors – short observation period and limited number of observation hours per day, overlooked raptors due to human- and topography-related causes, movements of observers between observation points, extremely bad weather and night migration of raptors – we estimate that the actual number of migratory raptors that passed Breginjski Stol in spring 2010 was 3,060–4,660 individuals. Thus, Breginjski Stol is the first confirmed bottleneck site of European importance for migratory raptors in Slovenia, as defined by BirdLife International IBA criterion B1iv, and a natural continuation of migratory pathways from northern Italy.

Key words: census, raptors, spring migration, bottleneck, Breginjski Stol, NW Slovenia
Ključne besede: popis, ujede, spomladanska selitev, ozko grlo, Breginjski Stol, SZ Slovenija

1. Introduction

Of European raptor species, at least 38 are fully or partially migratory (Zalles & Bildstein 2000). On migration, they use two main flight types – flapping (active flight) or soaring and gliding. The former is mainly used by smaller raptors such as falcons and sparrowhawks, especially when thermal convection is absent (e.g. early in the morning, late in the afternoon, and above water) (Spaar 1999). It enables them to cross large stretches of water or mountain chains on a broad front. In contrast, soaring and gliding is preferred by larger species such as eagles, vultures and buzzards (Spaar & Bruderer 1997). Most species, including

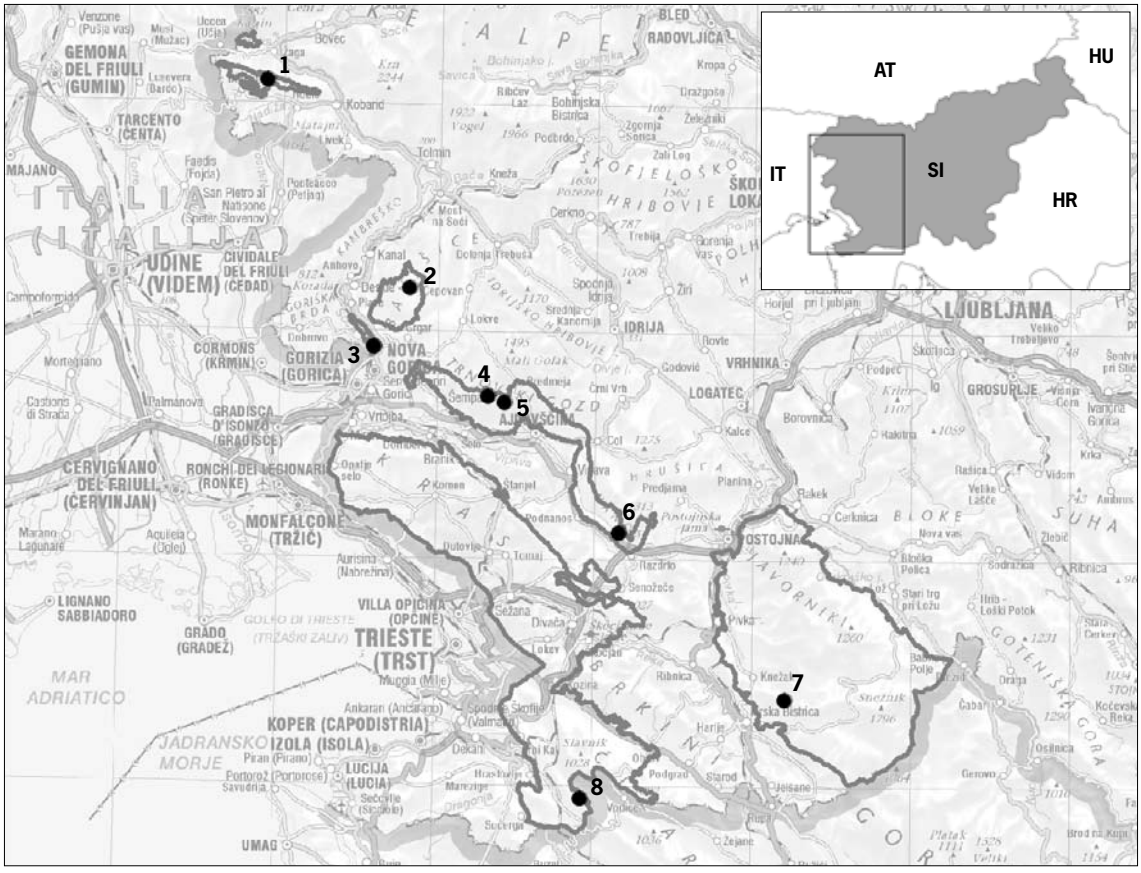

Figure 1: Observation points for raptor migration monitoring in Slovenia in the 2005–2010 period. Observation points are located on elevated localities in the following Important Bird Areas (IBAs): (1) Breginjski Stol – IBA Breginjski Stol and Planja; (2) Banjšice – IBA Banjšice plateau; (3) Sabotin, (4) Kucelj, (5) Mala gora and (6) Nanos – IBA Southern slopes of Trnovo forest and Nanos plateau; (7) Volovja reber – IBA Snežnik plateau and Pivka valley; (8) Golič – IBA Kras.

Slika 1: Opazovalne točke, uporabljene za monitoring selečih se uje d v Sloveniji v obdobju 2005–2010. Točke so bile izbrane na višjih mestih v naslednjih Mednarodno pomembnih območjih za ptice (IBA-jih): (1) Breginjski Stol – IBA Breginjski Stol in Planja; (2) Banjšice – IBA Banjška planota; (3) Sabotin, (4) Kucelj, (5) Mala gora in (6) Nanos – IBA Južna pobočja Trnovskega gozda in Nanoška planota; (7) Volovja reber – IBA Snežniška planota in Pivška dolina; (8) Golič – IBA Kras.

harriers *Circus* sp. and Honey Buzzards *Pernis apivorus*, alternate between these two flight types, which allows them to migrate under various environmental conditions and to prolong daily migration time (Bruderer *et al.* 1994, Spaar & Bruderer 1997). Thermals necessary for soaring only occur over land (Spaar & Bruderer 1997), which results in regular and predictable raptor aggregations at specific geographic features, especially along mountain ridges and passes, narrow coastal plains, isthmuses, and peninsulas (Zalles & Bildstein 2000). These are called bottlenecks. According to BirdLife IBA criterion B1iv, a site qualifies as a bottleneck for migratory raptors if 3,000 or more raptors pass through it on spring or autumn migration (Heath & Evans 2000). Most raptors are reluctant to cross large waterbodies (wider than 25 km), therefore they concentrate at places that enable them to reduce the length of water crossing, such as the Strait of Gibraltar, Bosporus and the Strait of Messina in the Mediterranean (Zalles & Bildstein 2000). Census of raptors on their spring or autumn migration at bottleneck sites is a very efficient way of monitoring the size of their population (Busse *et al.* 2002, Agostini *et al.* 2007) and a cost-effective method of assessing their conservation status (Zalles & Bildstein 2000). This is especially true for elusive species such as Honey Buzzard which are hard to monitor at breeding sites (Agostini *et al.* 2007).

Figure 2: Breginjski Stol – view west of observation point Mali vrh (1,405 m a.s.l.) along the ridge towards the summit of Stol (1,673 m a.s.l.) and Kanin Mts in the background in the middle (top) (photo: A. Jagodnik); view west of observation point Mali vrh of Breginjski kot, with lowland Friuli (Italy) in the background (bottom right) (photo: D. Bordjan) and view east of observation point Mali vrh towards the town of Kobarid and the Nadiža valley bellow, with the Upper Soča valley in the background (bottom left) (photo: A. Jagodnik)

Slika 2: Breginjski Stol – pogled zahodno od opazovalne točke Mali vrh (1405 m n.v.) vzdolž grebena proti vrhu Stola (1673 m n.v.) in Kaninskemu pogorju na sredini slike v ozadju (zgoraj) (foto: A. Jagodnik); pogled zahodno od opazovalne točke Mali vrh na Breginjski kot, z nižinsko Furlanijo (Italija) v ozadju (spodaj desno) (foto: D. Bordjan); pogled vzhodno od opazovalne točke Mali vrh proti mestu Kobaridu in dolini Nadiže spodaj, z Zgornjo Soško dolino v ozadju (spodaj levo) (foto: A. Jagodnik)

In Slovenia, DOPPS - BirdLife Slovenia has been monitoring migrating raptors since 2005. Data has been gathered at five different Important Bird Areas (IBA) (Breginjski Stol and Planja, Southern slopes of Trnovo forest and Nanos plateau, Kras, Snežnik plateau and Pivka valley, Banjšice plateau), with Breginjski Stol and Snežnik - Pivka being monitored most often (four and three times, respectively) (Figure 1).

Data gathered in 2003–2009 indicated that there is a bottleneck for migratory raptors in western Slovenia, specifically on Breginjski Stol. The aim of our study was to confirm or refute this assumption through daily observations made in part of spring migration period.

2. Study area and method

2.1. Study area

In May 2010, we monitored migrating raptors on Mt Stol above Breginjski kot (hereinafter referred to as Breginjski Stol) in NW Slovenia (Figures 1, 2 & 3).

The ridge of Breginjski Stol is located in the Upper Soča valley and constitutes the foothills of the Julian Alps. The ridge follows a west–east direction. Most of it lies in Slovenia and the rest in Italy, where it descends to lowland Friuli north of Udine. The highest summit is Stol (1,673 m a.s.l.) (Figure 2).

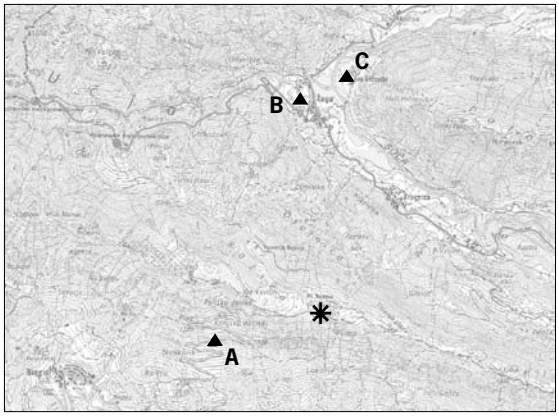

Figure 3: Observation points at Breginjski Stol (asterisk – main observation point Mali vrh, triangles – alternative observation points)

Figure 3: Opazovalne točke na Breginjskem Stolu (zvezdica – glavna opazovalna točka Mali vrh, trikotniki – alternativne opazovalne točke)

The slopes are very steep (average inclination 33°). At Breginjski Stol, migrating raptors from Italy first encounter high mountain obstacle after passing the Po plain when returning to their breeding grounds. To the north and south of Breginjski Stol, there are two river valleys, which are the lowest mountain passes in a west–east direction in the area (Učja and Nadiža valley, respectively). Tree line on the southern slope of Breginjski Stol lies at approximately 1,000 m a.s.l., which is a result of anthropogenic activities (mowing, pasture). Thus, the southern slope from 1,000 m a.s.l. upwards is covered with extensively managed grasslands. The northern slope is covered by beech forest up to 1,600 m a.s.l. The area is characterized by high annual amount of precipitation (> 3,000 mm per year) and frequent fog. The average annual temperature is around 5 °C. Hail showers are a common phenomenon in spring and especially in summer (Fridl *et al.* 1998, Peršolja 2006). Paragliders regularly use the area after 1 May.

2.2. Method

Raptors were monitored from 4 to 31 May 2010 (28 days). This period was chosen as it covers the peak of spring migration in Honey Buzzard (Cramp 1980), a species for which we had some indications that it passes Breginjski Stol in large numbers (Božič 2004, Rubinić *et al.* 2005, Rubinić 2009). Our main observation point was located at Mali vrh (1,405 m a.s.l.; 46°16'21.69"N, 13°29'0.01"E). Three alternative observation points were chosen for instances of rainy and foggy weather: point A – southern slope of Breginjski Stol (950 m a.s.l.; 46°16'5.28"N, 13°27'33.11"E), point B – slightly above the village of Žaga towards the Učja border crossing (400 m a.s.l.; 46°18'23.24"N, 13°28'40.08"E) and point C in the village of Log Čezsoški (350 m a.s.l.; 46°18'36.93"N, 13°29'18.12"E) (Figure 3).

Daily monitoring lasted from 9.00 to 17.00 hrs CET (i.e. 8 h per day). We interrupted the survey in the event of showers and storms and continued when the weather allowed us to do so, or moved to alternative points. On days of bad weather on all observation points (prolonged rain, thick fog), monitoring lasted less than 8 h/day.

Two or more observers were present at the observation point simultaneously, except for 7 May when only one observer was present. Observers constantly scanned the sky with binoculars and telescopes (20–60× magnification), covering as much sky as possible.

The following weather conditions were noted at the beginning of monitoring and thereafter at the beginning of each hour:

- wind (direction from which it was blowing, N, S, W, E, NE, SE, NW, SW; intensity 0–4),
- precipitation (type: rain, snow, hail; intensity 0–4),
- cloud cover (%),
- visibility (km).

For wind and precipitation the intensity codes were as follows: 0 – no wind or precipitation, 1 – slight, 2 – medium, 3 – strong, 4 – very strong wind or precipitation.

Greater weather changes were noted more frequently. Temperature was not recorded.

Each raptor observation was numbered in the form and on the map with the same number. Raptors were determined to the species level. Where this was not possible they were determined to the lowest possible taxonomic level, e.g. *Falco* sp. Species were sexed and aged if possible. Data on their numbers, exact time of observation, direction of flight and, less consistently, data on their flight altitudes were recorded. Course of their flight was delineated on the map.

Observations of resident Kestrels *Falco tinnunculus* and Common Buzzards *Buteo buteo* were entered into a separate form. Data for residents (incl. Griffon Vulture *Gyps fulvus*, Golden Eagle *Aquila chrysaetos*, Hobby *F. subbuteo*, Peregrine Falcon *F. peregrinus*, Goshawk *Accipiter gentilis* and Sparrowhawk *A. nisus*) were not further analysed, with the exception of Griffon Vulture that occurs in the area in high numbers and arrives from Italy.

Table 1: Observation parameters of migrating raptor census at Breginjski Stol in May 2010

Tabela 1: Opazovalni parametri štetja selečih se ujed na Breginjskem Stolu maja 2010

Date/ Datum	Cloudiness/ Oblačnost (%)	Wind / Veter (intensity, direction / jakost, smer)	Precipitation/ Padavine	Duration of observation/ Trajanje opazovanja	No. of observers/ Št. opazovalcev	Observation point/ Opazovalna točka
4.5.	100	0–2, SW	rain / dež	4 h 30 min	2	Mali vrh
5.5.	100	1–3, E, NE, S	rain / dež	8 h 5 min	2	Mali vrh
6.5.	90–100	2–4, S	rain, once inbetween hail/ dež, enkrat vmes toča	7 h 55 min	2	A
7.5.	20-100	0–1, W	no / ne	9 h 25 min	1	A
8.5.	100	1, W	rain / dež	5 h	2	A
9.5.	0–100	1–2, N, S, SEE, SW	occasional rain / občasen dež	9 h 25 min	2	A
10.5.	100	0	rain / dež	3 h 35 min	2	C
11.5.	100	0–1, SE, NW	occasional rain / občasen dež	6 h 5 min	2	A
12.5.	100	0	no / ne	2 h 25 min	2	A
13.5.	100	1, SE	occasional rain / občasen dež	9 h 45 min	2	A
14.5.	100	1–3, NW, N	occasional rain / občasen dež	7 h 10 min	2	A
15.5.	100	1–3, NE	occasional rain / občasen dež	11 h 30 min	3	A
16.5.	90–100	1	no / ne	9 h 30 min	3	A
17.5.	50–100	1–2, NE, SW	no / ne	9 h 50 min	2	Mali vrh
18.5.	50–75	1, S	no / ne	8 h 20 min	2	Mali vrh
19.5.	0–25	0–2, N	no / ne	8 h 15 min	2	Mali vrh
20.5.	40–90	1–3, N, NE	no / ne	11 h 20 min	2	Mali vrh
21.5.	50–100	0-2, N, SW	no / ne	12 h 5 min	2	Mali vrh
22.5.	20–80	0–1, W, SE, SW, S	occasional rain / občasen dež	12 h 20 min	2	A
23.5.	25–95	1, E, NE	occasional rain / občasen dež	9 h 30 min	2	Mali vrh
24.5.	5–100	1–2, S, W	rain at the end of survey/ dež na koncu popisa	9 h	2	Mali vrh
25.5.	0–100	1–3, S, W	no / ne	8 h	3	Mali vrh
26.5.	80–100	1–2, S	no / ne	9 h 20 min	2	Mali vrh
27.5.	40–60	1–2, S, SW	no / ne	9 h	2	A
28.5.	10–100	2, S, SW	rain / dež	6 h 30 min	2	Mali vrh
29.5.	70–100	1–3, S, N	rain from 12.00 hrs onwards, once inbetween hail/ dež od 12.00 h naprej, enkrat vmes toča	8 h 10 min	2	Mali vrh
30.5.	100	1–2, E, W, N	rain / dež	8 h	2	A
31.5.	5–80	2, N	snow shower at 16.00 hrs, otherwise no precipitation/ snežna nevihta ob 16.00 h, drugače brez padavin	6 h 55 min	3	Mali vrh

Codes for wind intensity: 0 – no wind, 1 – slight, 2 – medium, 3 – strong, 4 – very strong wind; cloudiness was estimated as % of sky covered in clouds. Observation point: given is the location of the point from which most observations were made (see Figure 3 for location of points) / Kode za jakost vetra: 0 – brez vetra, 1 – rahel, 2 – srednji, 3 – močan, 4 – zelo močan veter; oblačnost je bila ocenjena kot % neba pokritega z oblaki. Opazovalna točka: navedena je lokacija točke s katere je bila opravljena večina opazovanja (glej sliko 3 za lokacije točk)

Figure 4: Fog on the summit and slopes of Breginjski Stol above 1,100 m a.s.l. (top left), in the Nadiža valley (top right), and a belt of relatively good visibility (below) at observation point A on 14 May 2010 (photo: J. Figelj)

Slika 4: Megla na vrhu in pobočjih Breginjskega Stola nad 1100 m n.v. (zgoraj levo), v dolini Nadiže (zgoraj desno), in pas z razmeroma dobro vidljivostjo (spodaj) na opazovalni točki A 14.5.2010 (foto: J. Figelj)

In data analysis, flock size was determined as: solitary birds, small (2–4 ind.), medium-sized (5–15 ind.) or large flocks (> 15 ind.).

3. Results

3.1. Observation conditions

We monitored raptor migration continuously for 28 days, which amounted to 231 observation hours (average 8 h 25 min/day). Throughout the entire study period, weather was extremely foggy and rainy, which hindered our survey. Even on days that started with sunny weather and clear sky, clouds soon began to accumulate, fog developed and lifted from the Nadiža valley, and showers from above Mija and Matajur Mts (south of Nadiža valley) spread to Breginjski Stol. Wind conditions were often very heterogeneous throughout the day (Table 1). For a substantial part of May, fog was covering the summit and slopes above ca. 1,100 m a.s.l. and quite often also the Nadiža valley. Therefore, almost half the observations were done from alternative point A on the southern slope of Breginjski Stol, which enabled a better view of the migrating raptors than from the two other alternative points (Figure 4).

3.2. Number of raptors

3.2.1. Total number of raptors

In total, we counted 2,385 raptor passes belonging to at least 17 different species (Tables 2 & 3). These can

Table 2: Results of raptor monitoring on Breginjski Stol in May 2010 for residents. Numbers in table refer to the number of passes.

Tabela 2: Rezultati monitoringa ujed stalnic na Breginjskem Stolu maja 2010. Številke v tabeli ponazarjajo število preletov.

Species / Vrsta	4.5.	5.5.	6.5.	7.5.	8.5.	9.5.	10.5.	11.5.	12.5.	13.5.	14.5.	15.5.	16.5.	17.5.	18.5.	19.5.	20.5.	21.5.	22.5.	23.5.	24.5.	25.5.	26.5.	27.5.	28.5.	29.5.	30.5.	31.5.	Total
Gyps fulvus				7		2						14	11	24	34	24	4	16	60	27	76	114	75	35	23	10		19	575
Falco tinnunculus		2				2		2	2			3		17	12	20	4	3	3	4	5	3	7	2	2	1	4	4	102
Buteo buteo						2			1		1	1	5	5	2	21		11	12	5	3	2	2	3	3			6	85
Aquila chrysaetos		1	2			2						2	7	2	7	5	1	9	11	3	4	4	4	2	2	5		10	83
Falco subbuteo															2			1	1		2	3	2		2				13
Falco peregrinus				1		1					1			1	1			1	1			1							8
Accipiter gentilis			1												1				2										4
Accipiter nisus						1										1				1									3
Unident. / Nedol.														1	1														2
Total / Skupaj	0	3	3	8	0	10	0	2	3	0	2	20	23	50	60	71	9	41	90	40	90	127	90	42	32	16	4	39	875

Unident. / Nedol. – Unidentified resident raptor species, most probably the local Sparrowhawk / Neidentificirana vrsta neseleče se ujede, po vsej verjetnosti lokalni skobec

Table 3: Results of raptor monitoring on Breginjski Stol in May 2010 for migrating raptors. Numbers in table refer to the number of individuals.

Tabela 3: Rezultati monitoringa selečih se ujed na Breginjskem Stolu maja 2010. Številke v tabeli ponazarjajo število osebkov.

Species / Vrsta	4.5.	5.5.	6.5.	7.5.	8.5.	9.5.	10.5.	11.5.	12.5.	13.5.	14.5.	15.5.	16.5.	17.5.	18.5.	19.5.	20.5.	21.5.	22.5.	23.5.	24.5.	25.5.	26.5.	27.5.	28.5.	29.5.	30.5.	31.5.	Total
Pernis apivorus	15		4	127		120		92	2	132	537	21	60		3	3	6	65	72	15	36	4	2	5	10	25	3	9	1,368
Circus aeruginosus				4		5		10	4	15	9		1		1		1	13	1			1				1			66
Circus pygargus	1		1	1		1		1	4		1			14	4			1											29
Falco vespertinus				3		2				3								1	1	2		1							13
Falco sp.											4		1	1						2	4								12
Circus sp.		1						1					1								3								6
Milvus migrans																			1		1	1							3
Milvus milvus								1											1			1							3
Circaetus gallicus																						1							1
Circus cyaneus				1																									1
Aquila pennata						1																							1
Unident. / Nedol.										1	1	1								3	1								7
Total / Skupaj	16	1	5	136	0	129	0	105	10	151	552	22	63	15	8	3	7	80	76	22	45	9	2	5	10	26	3	9	1,510

Unident. / Nedol. – Unidentified migrating raptor species, most probably Honey Buzzards, that we were unable to determine to species level due to large distance / Neidentificirana vrsta seleče se ujede, po vsej verjetnosti sršenar, ki je nismo mogli določiti do vrste zaradi velike oddaljenosti

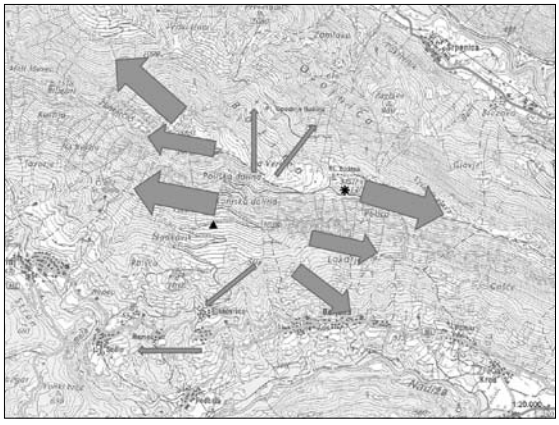

Figure 5: Flight directions of Griffon Vultures *Gyps fulvus* on Breginjski Stol in May 2010 (n = 493 passes). The thickness of arrows delineates different percentages of Griffon Vulture passes: narrow 0–4%, middle-sized 5–15% and thick > 15%. Asterisk – main observation point, triangle – point A.

Slika 5: Smeri letov beloglavih jastrebov *Gyps fulvus* na Breginjskem Stolu maja 2010 (n = 493 preletov). Debelina puščic ponazarja različne odstotke preletov beloglavih jastrebov: ozka 0–4%, srednje debeline 5–15% in debela > 15%. Zvezdica – glavna opazovalna točka, trikotnik – točka A.

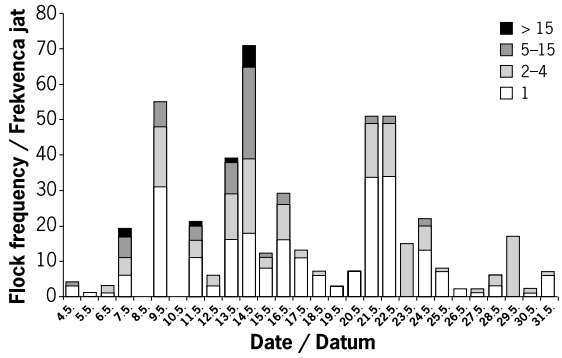

Figure 6: Flock size of migrating raptors (ind.) on Breginjski Stol during the study period given in four size classes

Slika 6: Velikost jat selečih se ujed (os.) na Breginjskem Stolu v raziskovalnem obdobju, podana v štirih velikostnih razredih

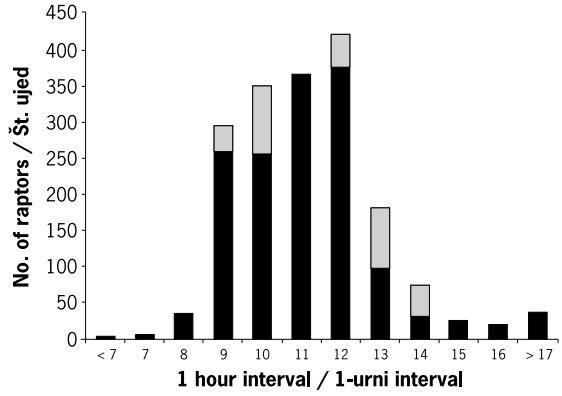

Figure 7: Time distribution of observed migrating raptors on Breginjski Stol in May 2010 during the day, pooled for the entire study period. Black bars represent the actual number of observed individuals, whereas grey bars are the average estimate of missed raptors due to movements of observers between points (see 4.3.).

Slika 8: Časovna razporeditev opazovanih selečih se ujed na Breginjskem Stolu maja 2010 v dnevnem času med celotnim raziskovalnim obdobjem. Črni stolpci ponazarjajo dejansko število opazovanih osebkov, medtem ko so sivi stolpci povprečna ocena zgrešenih ujed zaradi premikov opazovalcev med opazovalnimi točkami (glej 4.3.).

be divided into residents (n = 875 passes, Table 2) and migratory species (n = 1,510 ind., Table 3). For residents we use the expression »number of passes« instead of »number of individuals«, since the same individuals were sometimes double- or even multiple-counted (e.g. Griffon Vultures flew from west to east in the morning, whereas in the afternoon they flew in the opposite direction – we counted them both times). In migratory raptors, individuals were not double-counted, therefore the term »number of individuals« is appropriate. On average we counted 85 raptor passes per day (residents + migratory raptors) and 54 individuals of migrating raptors per day.

3.2.2. Residents

Griffon Vulture was the most common species among residents (65.7% of all resident passes). It was recorded in approximately two thirds of observation days, whereas on other days it was absent most probably due to rainy and foggy weather (e.g. on 4.–6.5., 8.5., 10.–14.5. and 30.5. fog was covering the entire Nadiža valley and / or summit and slope of Breginjski Stol above 1,100 m a.s.l.) (Table 2). The largest group of Griffon Vultures (35 ind.) was observed on 26 May; a somewhat smaller group of 31 individuals was observed a day earlier.

Data on the exact flight route (direction, passing over the summit, above the slope or above the valley) were not gathered and delineated on the maps for all Griffon Vultures, therefore we analysed flight routes for 493 of 575 passes. Similar percentages were seen flying westward above the southern slope (21.8%), north-westward (19.3%) and eastward above the ridge (18.2%). Of other directions, 13.8% migrated

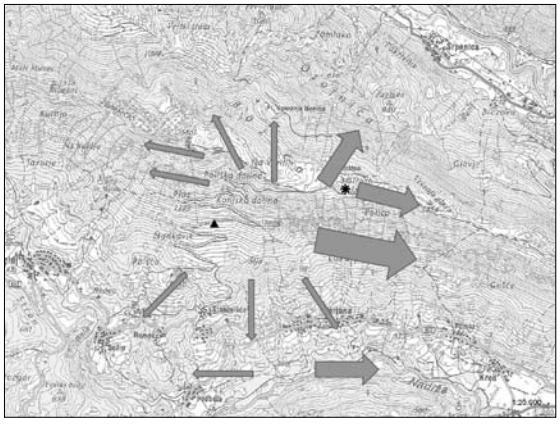

Figure 8: Flight directions of migrating raptors on Breginjski Stol in May 2010 (n = 1,168 ind.). The thickness of arrows delineates different percentages of migrating individuals: narrow 0–4%, middle-sized 5–15% and thick > 60%. Asterisk – main observation point, triangle – point A.

Slika 8: Smeri letov selečih se ujed na Breginjskem Stolu maja 2010 (n = 1168 os.). Debelina puščic ponazarja različne odstotke selečih se osebkov: ozka 0–4%, srednje debeline 5–15% in debela > 60%. Zvezdica – glavna opazovalna točka, trikotnik – točka A.

westward above the ridge, 8.9% eastward above the slope and 6.1% south-eastward. All other flight directions together amounted to 5.3% (Figure 5).

3.2.3. Migratory raptors

Altogether, 1,510 individuals of migrating raptors were counted, belonging to at least nine species. Among them, Honey Buzzard was the commonest (1,368 ind., 90.6% of migrating raptors), followed by Marsh Harrier *Circus aeruginosus* (66 ind., 4.4%) and Montagu's Harrier *C. pygargus* (29 ind., 1.9%). The highest number of migrating raptors (552 ind., of those 537 Honey Buzzards) was observed on 14 May (Table 3).

Most raptors were seen migrating solitarily or in small flocks (2–4 ind.), whereas on five days (4, 7, 11, 13, 14 May) over 20% of all observed flocks were either medium-sized (5–15 ind.) or large (> 15 ind.). It must be stressed, however, that on 4 May only four flocks were observed (one consisted of 13 Honey Buzzards and three of solitary migrating raptors) (Figure 6).

The majority of raptors migrated between 9.00 and 13.00 hrs (Figure 7). Hours before 9.00 hrs and after 17.00 hrs are underrepresented due to limited observation period (normally, observers were present at observation point from 9.00 to 17.00 hrs). Based on our data for days when monitoring started at least at 8.00 hrs (on 17 days), we conclude that migration in early hours is weak. On those days, 5.7% of all observed raptors were counted before 9.00 hrs. Monitoring after 17.00 h (at least until 18.00 h) was conducted on six days. 8.8% of all observed migrating raptors on those days were counted after 17.00 hrs.

Data on the exact migration route (flight direction, i.e. passing over the summit, above the slope or above the valley) were not gathered and delineated on the maps for all migrating raptors, therefore we analysed migration routes for 1,168 of the 1,510 individuals. The majority of them migrated eastwards (88.0%), with 63.8% passing above the southern slope, 14.6% above the valley and 6.6% above the ridge (Figure 8). Migration towards north and NE together accounted for 10% (4.4% and 5.6%, respectively). All other flight directions together amounted to 5%.

4. Discussion

4.1. Residents

Residents are present in the area throughout the breeding season. They forage and breed there or simply migrate daily over the area while travelling to their foraging sites. Some of them are migratory (e.g. Sparrowhawk, Common Buzzard, Hobby), but their migration period ended before our monitoring started. The only exception to this is Hobby, whose migration lasts until mid-May (Cramp 1980). Nevertheless, we consider it a resident as all individuals were seen in the second half of May.

Griffon Vulture was the most common species among residents, occasionally observed in quite large groups. They migrate daily across Breginjski Stol in search of food. The individuals we observed belong to the reintroduced population from Forgaria nel Friuli, NE Italy (established in 1992) (Mihelič & Genero 2005) and to the breeding population in Kvarner, NW Croatia (F. Genero *pers. comm.*). The Italian colony is 25–35 km away from Breginjski Stol. In winter, it consists of approximately 80 Griffon Vultures, while in summer this number increases to 100–130 individuals due to immigrants from Croatia and, to a much lesser extent, from France. There are 20 breeding pairs, which raised at least 11 young in 2010. In 2010, Croatian Vultures arrived in Italy sooner than in previous years, between 15 and 20 May (F. Genero *pers. comm.*). This coincides perfectly with the increased number of observations at Breginjski Stol from 15 May onwards. The number of Griffon Vulture observations in 2010 is much higher than in previous years (Table 4), which is due to several reasons: (1) higher number of

Table 4: Overview of raptor monitoring results at Breginjski Stol from 2005–2010

Tabela 4: Pregled rezultatov monitoringa ujed na Breginjskem Stolu v obdobju 2005–2010

Year/ Leto	Observation period/ Obdobje opazovanja	No. of observation days/ Št. opazovalnih dni	No. of raptor passes/ Št. preletov ujed	No. of passes/ Št. preletov *Gyps fulvus*	No. of migrating raptors/ Št. selečih se ujed (ind. / os.)	Commonest species/ Najpogostejša vrsta (No. of ind. / Št. os.)	Reference / Vir
2005	22.4.–29.5.	16	356	175	320	*Pernis apivorus* (303)	Rubinić *et al.* 2005
2006	29.8.–29.9.	7	157	52	30	*Circus aeruginosus* (14)	Rubinić & Božič 2007
2009	18.8.–31.8.	14	578	340	181	*Pernis apivorus* (108)	Rubinić 2009
2010	4.5.–31.5.	28	2,385	575	1,510	*Pernis apivorus* (1,368)	this study / ta raziskava

observation days, (2) increase of Italian population (F. Genero *pers. comm.*, http://www.riservacornino.it/progetto-grifone/, 5 Jul 2010) and (3) the early arrival of Croatian Vultures to the Italian colony (F. Genero *pers. comm.*), which coincided with our monitoring period. Otherwise the summer maximum of Vultures on feeding stations in Italy is in the first two decades of June (data for 2009; F. Genero *pers. comm.*), which is approximately 2–3 weeks later than in 2010.

We observed Griffon Vultures feeding on Mt Planja (1,663 m a.s.l., 5 km N of Breginjski Stol), most probably on a sheep cadaver (T. Mihelič & T. Trilar *pers. comm.*). The same occurred in 2009 (A. Figelj *pers. comm.*, Rubinić 2009). Mammal cadavers, fresh or decomposing, are the main food source for this species (Cramp 1980). Occasionally, some vultures spend the night at Breginjski Stol. On 23 Aug 2009, a flock of 21 individuals was observed gathering height just above the summit at 6.00 hrs in the morning. It is highly unlikely that they flew from some other location at such an early hour (Rubinić 2009). It is common for Griffon Vultures to spend the night close to their feeding places (F. Genero *pers. comm.*), which might be related to their habit of gorging on carrion to such an extent that they are incapable of taking off (Cramp 1980). Breginjski Stol is therefore not only a fly-over and height-gathering point for Griffon Vultures, but also their regular roosting and feeding place.

In the morning, Griffon Vultures fly from Italy towards Mt Krn (15 km E of Breginjski Stol), whereas in the afternoon they return in the opposite direction (Mihelič & Genero 2005). On both occasions, they fly across Breginjski Stol. This was confirmed by observations in 2010 and by telemetry results of a Croatian vulture equipped with a satellite transmitter and released in the Italian colony (F. Genero *pers. comm.*).

In the morning, from approximately 9.30–10.00 hrs onwards, the Griffon Vultures were flying from west to east, soaring above the southern slope or above the ridge of Breginjski Stol. Some of them returned to the west soon after 12.00 hrs, while the rest were returning in the afternoon (scattered between 13.00 and 17.00 hrs). In exceptional cases, Griffon Vultures were flying from the east back to the west in the morning already. Some returned to the west only half an hour after being seen flying to the east (they were recognized by characteristic pattern of missing wing feathers). Breginjski Stol is within their home range, which normally covers areas up to 50–60 km away from their breeding colony (Cramp 1980). During the monitoring period, Griffon Vultures first appeared on 7 May, which was the first day with no precipitation since the beginning of our monitoring. This might be related to the formation of thermals, which is feasible only in non-rainy weather. Griffon Vultures are excellent soarers that use thermal uplift to gain height and travel (Cramp 1980).

4.2. Migratory raptors

Among the observed 1,510 migrating raptors, over 90% were Honey Buzzards with a peak on 14 May (537 individuals). On this day, thick fog prevailed in the Nadiža valley and on the summit and slopes of Breginjski Stol above 1,100 m a.s.l.. The only belt of good visibility was from the observation point A, between 700 and 1,100 m a.s.l. (Figure 4).

The most important bottleneck for raptors in the Central Mediterranean, the Strait of Messina (southern Italy), had a peak of migrating raptors on 30 Apr 2010, when 7,026 raptors were counted, the majority of them being Honey Buzzards (Ricciardi *et al.* 2010). A considerable proportion of the raptors that cross the Mediterranean at Messina, eventually

cross the Adriatic Sea at different points along the eastern Italian coast to reach the Balkans (Schneider-Jacoby 2001, Gustin & Sorace 2004, Agostini *et al.* 2007, Premuda *et al.* 2008, F. Mezzavilla *pers. comm.*). The remaining raptors (i.e. those that do not cross the Adriatic Sea) continue their flight towards northern Italy. They fly over the North Adriatic coast and constitute only a minor part of raptors counted near Treviso and the Venice coast (NE Italy) (F. Mezzavilla *pers. comm.*). Therefore, NE Italy is a juncture of two migration pathways – the one from Gibraltar and the other from Sicily. At Treviso, 769 raptors (mainly Honey Buzzards, Marsh Harriers and Common Buzzards) were counted during 28 Feb–16 May 2006 (35 observation hours), which is a very high number considering the low number of observation hours (Mezzavilla 2006). The majority of raptors observed in northern and NE Italy come from the West (western Italy, Spain and France) and are headed East (F. Mezzavilla *pers. comm.*). Thus, they are part of the Gibraltar pathway. At the observation points near Lake Garda (northern Italy), several thousand raptors are counted in spring (location Cima Comér on the eastern coast of Lake Garda): Feb–May 2009, 19 observation days, 74 hours of observation, 1,674 raptors (Gargioni & Zanardini 2009); end of Feb–Mar 2010 several thousand Sparrowhawks and Common Buzzards (Leo 2010). There is also a strong autumn migration near Lake Garda. In autumn 2009, 1,529 raptors were counted at Prealpi Veronesi (5 km east of Lake Garda); 22,607 raptors at Parco del Mincio (30 km south of Lake Garda); 10,700 raptors at Prealpi Trevigiane (95 km NEE of Lake Garda) and in autumn 2008, 7,886 raptors were counted at Colli Asolani (105 km NEE of Lake Garda) (Sighele *et al.* 2009, Mezzavilla *et al.* 2008 & 2009a, Gargioni *et al.* 2009). From these observation points northwards and eastwards, the actual migration routes are not clear due to the lower number of observation locations and consequently lack of data (F. Mezzavilla *pers. comm.*). It is possible that the main migration route splits into several bigger and smaller ones in northern Italy. Raptor migration routes are known to be more dispersed in continental parts of Europe than at sea straits (Zalles & Bildstein 2000). However, it is now clear from this study that an important percentage of these raptors migrate across Breginjski Stol. Further north there is an observation point at Podklošter / Arnoldstein in the Zilja valley / Gailtal, southern Austria. This valley proved to be the most important raptor migration route in the eastern Alps. At Podklošter, spring migration was monitored in 2008 from February to mid-May (only 20 observation days). 261 raptors were counted, among them mostly Common Buzzards (March) and Honey Buzzards (May) (Probst 2009a). In the second half of August, 3,226 raptors were counted in 2007 (of those 3,184 ind. or 98.7% Honey Buzzards), 3,973 raptors in 2008 (3,769 ind., 94.9% Honey Buzzards), 4,576 raptors in 2009 (4,427 ind., 96.7% Honey Buzzards) (Probst 2009a & 2009b) and from 19 Aug to 1 Sep 2010 4,399 (4,295 ind., 97.6% Honey Buzzards) (http://www.birdlife.at/kaernten/raptorcamp/2010/zug/index.html; 2 Sep 2010).

On migration, Honey Buzzards exploit thermals whenever possible to reduce their energy expenditure and the same holds true for Black Kite *Milvus migrans* (Meyer *et al.* 2000, Hake *et al.* 2003). In the absence of thermal uplift, Honey Buzzards use active flight, which enables them to migrate even in relatively bad weather (Bruderer *et al.* 1994). Their exact migration route is determined by the direction of prevailing winds, topography, navigational skills of individual Honey Buzzards (related to age), time of day and season (Leshem & Yom-Tov 1998, Agostini *et al.* 2005b). Adult Honey Buzzards on autumn migration mainly fly westwards across France and Spain and cross the Mediterranean at Gibraltar, whereas juveniles cross the Mediterranean at its central part (Sicily, Sardinia, Corsica; Hake *et al.* 2003, http://born2bwild.nhm-wien.ac.at/BORN_wespenbussard.html#zug, 6 Dec 2010). They often migrate in flocks, which facilitates the finding of thermals (Kerlinger 1989, Agostini *et al.* 1994, Agostini *et al.* 2005a). The largest flock observed on the island of Marettimo (west of Sicily) numbered 147 individuals (Agostini *et al.* 2005a), on Pantelleria Island (SW of Sicily) 757 individuals and on Panarea Island (north of Sicily) 227 individuals (Agostini *et al.* 2005b). At Breginjski Stol, the largest flock (observed on 14 May) consisted of 63 individuals. On that day, 45% of all observed flocks were medium-sized or large.

Migration at our study site normally began between 8.00 and 9.00 hrs. Honey Buzzards were most often first spotted circling and gathering height over the utmost western part of our visual field (western part of Breginjski Stol ridge, summit Muzec and further to the west). Then they flew actively over southern slopes of Breginjski Stol and above the Nadiža valley with infrequent circling and soaring over the slope, which might indicate unfavourable conditions for the development of thermals. This assumption was further supported by their low flight altitude. In sunny weather, altitudes of migrating Honey Buzzards, harriers and kites increase from morning to early afternoon due to the increased thermal convection (Meyer *et al.* 2000, Spaar *et al.* 2000, Božič 2004,

R. Probst *pers. comm.*). Falcons, on the other hand, have a different migration strategy. They do not use thermals very often, but migrate actively, constantly flapping their wings. They can achieve great altitude already in the morning, crossing mountain barriers at different points (Meyer *et al.* 2000).

4.3. Bottleneck for migratory raptors

BirdLife's IBA criterion B1iv defines a bottleneck of European importance as follows: »The site is a "bottleneck site" where 5,000 or more storks (Ciconiidae), or 3,000 or more raptors (Accipitriformes and Falconiformes) or cranes (Gruidae), pass regularly on spring or autumn migration« (Heath & Evans 2000). During spring migration in May 2010, we counted almost exactly half (1,510) of the required number of raptors (3,000) at Breginjski Stol.

That the actual number of raptors passing across the area in spring is much higher can be argued by several facts:

(1) Short observation period and limited number of observation hours per day

We counted raptors only in May, whereas spring migration of some species takes place earlier (Feb–Apr). Based on results of 20 observation days from February to mid-May 2008, R. Probst estimated that as many raptors migrated across Podklošter / Arnoldstein during Feb–Apr as in May alone (R. Probst *pers. comm.*). The majority of Common Buzzards and Sparrowhawks migrate over Carinthia in March (Probst 2009a), while at Lake Garda these two species peaked in the second decade of March 2010 (Leo 2010). Marsh Harriers cross the Mediterranean between 18 Mar and 29 Apr (Strandberg *et al.* 2008), on the island of Ustica (north of Sicily) they peak in the first decade of April (Panuccio *et al.* 2004), and the greater part of their migration in Carinthia is observed in April (Probst 2009a). At Medvedce water reservoir (NE Slovenia), Marsh Harriers migrate from the end of March to the end of April (Bordjan & Božič 2009). Migration of all of these species was largely missed in 2010 at Breginjski Stol. Sparrowhawks, similarly to falcons, only rarely use thermals on migration and migrate on a very broad front across mountain chains (Bruderer *et al.* 1994). Thus, in case of our study area, they would probably not have contributed many individuals. The situation is reverse with Common Buzzard and harriers, whose migration strategy is similar to that of Honey Buzzard (extensive use of thermals, migration along mountain chains) (Bruderer *et al.* 1994). Based on Austrian experiences, we estimate that we missed 50–100% of migrating raptors (calculated from the number of observed individuals in May) due to limited observation period. This amounts to approximately 760 to 1,510 individuals that passed through the area in early spring (Feb–Apr).

Some of the raptors was missed due to the limited number of observation hours per day. Normally, our monitoring started at 9.00 and ended at 17.00 hrs. Based on test observations in late afternoon and evening hours, Petutschnig & Probst (2010) estimated that due to the limited number of observation hours per day they missed 5–15% raptors at Podklošter / Arnoldstein (those were raptors migrating after the official end of monitoring at 17.00 hrs). At Breginjski Stol, 5.7% of all observed migrating raptors were counted before 9.00 hrs and 8.8% after 17.00 hrs (this calculation is based on days when monitoring started at least at 8.00 hrs and lasted at least until 18.00 hrs, respectively). Therefore, we estimate that by limiting observation hours from 9.00–17.00 hrs, we missed 10–15% of migrating raptors (approximately 150–230 ind.) which coincides very well with data from Austria (Petutschnig & Probst 2010).

(2) Overlooked raptors due to human- and topography-related reasons

A proportion of the migrating raptors was surely overlooked, despite the fact that in most cases two observers monitored the sky simultaneously. In Canada, observers saw only 41–78% of migrating raptors with the percentage of overlooked raptors being smaller for soaring than for active-flying raptors. Efficiency of observers was increased when the density of migrating raptors was high (Sattler & Bart 1984). In Carinthia, the percentage of overlooked raptors due to human factor was 10–20% and due to high flight altitudes 10–35% (when the temperature exceeded 25 °C). Smaller, faster, solitary birds and smaller flocks were more often overlooked than larger flocks and large birds (Petutschnig & Probst 2010, R. Probst *pers. comm.*). At Breginjski Stol, we only had five days with more than 20% of all observed flocks being medium-sized or large, whereas on other occasions raptors migrated solitarily or in small flocks. Thus, the probability of overlooking them was higher. We estimate that 10–20% of raptors were missed due to human factor (approximately 150–300 ind.).

A proportion of the raptors was overlooked due

to topography reasons. The ridge of Breginjski Stol is 11 km long and undulating. Based on our experience and local topography, an observer using a spotting scope can cover distances of ca. 4 km from the main observation point Mali vrh, although for accurate determination most bird species have to be closer (Madders & Whitfield 2006). All raptors that crossed Breginjski Stol perpendicular to the ridge on locations farther from the observation point than 4 km were overlooked. These probably included falcons (e.g. Red-footed Falcon *Falco vespertinus*) that can migrate at 90° to mountain chains (Meyer *et al.* 2000, Probst 2009a), but also some Honey Buzzards and Marsh Harriers (based on own and observations of other observers). 3.4% of all observed migrating raptors crossed Breginjski Stol perpendicular to the ridge. The problem of topography could be alleviated through an additional observation point west of Mali vrh. In Carinthia, 5–20% of raptors at main observation point are overlooked because they exit the Zilja valley already at Korensko sedlo / Wurzenpass on the border between Austria and Slovenia, ca. 6 km east of the main observation point (Petutschnig & Probst 2010). Due to frequent bad weather, most monitoring was done from point A on the southern slope. This means that we were unable to cover the northern slope and the Učja valley, where at least some migration also took place (e.g. 15 Honey Buzzards on 4 May that entered the Soča valley from the Učja valley). Additionally, the visibility at this point is somewhat poorer that at Mali vrh due to terrain configuration. Taking into consideration all the above mentioned topography reasons, we estimate that we missed 5–15% of raptors (approximately 80 to 230 ind.).

(3) Movements of observers between observation points

Due to difficult weather conditions, especially fog, observers had to move between observation points. While travelling from one point to the other they missed a certain number of raptors. At least three groups of observers came across strong Honey Buzzard migration when they arrived at point A, because of fog, at Mali vrh. One observer group needed 2 h to move between the points (from 9.00–11.00 hrs), the second one 1.5 h (from 9.00–10.30 h) and the third one 2.5 h (from 12.30–15.00 h). Judging from the intensity of migration, the duration of the observers' movements and the usual time of beginning of migration we estimate that we missed 260–350 raptors (50–90 ind. on 7 May, 50–70 ind. on 9 May and 160–190 ind. on 13 May).

(4) Weather

May 2010 was extremely rainy and foggy (396 mm of precipitation compared to long term average of ca. 250 mm; Cegnar & Gorup 2010), which occasionally completely prevented observation. On 15 out of 28 days there was at least occasional rain, whereas fog was even more frequent. Some of our own but also foreign data show that Honey Buzzard migration can proceed even in such conditions (R. Probst *pers. comm.*; observations at Breginjski Stol on 11 and 13 May 2010). In Canada, only 20% of migrating raptors were seen when visibility was low due to bad weather (Sattler & Bart 1984). Some rainless days in our study area were apparently appropriate for raptor migration, but the day totals were very low (e.g. 19 and 20 May – on these two days only nine Honey Buzzards were counted). Strong northern wind was blowing on these two days, opposite of the migrating raptor direction. There is some evidence that raptors do not fly in strong opposing winds, but prefer flying in tailwinds (Meyer *et al.* 2000). Similar changing winds, frequent fog and low clouds were experienced in 2010 at Messina, which resulted in much dispersed raptor migration flow (Ricciardi *et al.* 2010). We estimate that 10–30% of raptors were missed due to frequent bad weather (especially fog) and consequently poor visibility (approximately 150 to 450 ind.).

(5) Night migration

Most raptors migrate during the day (Zalles & Bildstein 2000), but some also during the night. As much as 33–34% of falcons and 15–20% of harriers cross the Mediterranean at night (Meyer *et al.* 2003). Honey Buzzard predominantly migrates during the day (in autumn almost exclusively from 8.00 to 16.00 hrs; Hake *et al.* 2003), but there is also information on its night migration (Agostini *et al.* 2005c). For night observations, radars are used. They enable individual birds to be tracked up to 8 km. Based on flight pattern, identification to the species level is possible (Bruderer *et al.* 1994, Meyer *et al.* 2000 & 2003). As data on night migration of raptors over the continental parts of Europe is very scarce (Gatter 1984, R. Probst *pers. comm.*) and night migration is uncommon in Honey Buzzard, we estimate that 0–5% of raptors were missed due to this phenomenon (approximately 0–80 ind.).

Table 5: Estimate of the number of overlooked raptors at Breginjski Stol in May 2010 due to different reasons

Tabela 5: Ocenjeno število prezrtih ujed na Breginjskem Stolu maja 2010 zaradi različnih vzrokov

Reason / Razlog	Overlooked raptors/ Prezrte ujede (%) *	No. of overlooked raptors/ Št. prezrtih ujed **
Short observation period/ Kratko obdobje opazovanja	50–100	760–1,510
Limited no. of observation hours per day/ Omejeno št. opazovalnih ur na dan	10–15	150–230
Human factor / Človeški dejavnik	10–20	150–300
Topography / Topografija	5–15	80–230
Movements of observers between observation points/ Premiki opazovalcev med opazovalnimi točkami	17–23	260–350
Weather / Vreme	10–30	150–450
Night migration / Nočna selitev	0–5	0–80
Total / Skupaj	–	1,550–3,150

* Calculated from the total no. of migrating raptors counted (1,510 ind.) / Izračunano iz skupnega št. preštetih selečih se uje (1510 os.)
** Numbers are rounded to the nearest 10 / Števila so zaokrožena na desetice

Due to different reasons, especially short observation period, we therefore overlooked or missed 1,550–3,150 raptors (Table 5).

Taking into consideration these numbers, we estimate that 3,060–4,660 raptors flew across Breginjski Stol during spring migration 2010, which confirms the site as a bottleneck for migrating raptors. Earlier observations and randomly gathered data (117 migrating raptors, mostly Honey Buzzards on four days between 25 Apr and 16 May 2003; Božič 2004), indicated high raptor concentrations during migration, but numbers were always lower than 600 individuals. It is possible that Breginjski Stol is a bottleneck only in spring. Autumn numbers are much lower, which might reflect a more dispersed autumn migration (Agostini & Panuccio 2005), but also different migration routes in autumn as known for Honey Buzzard in Israel (Bruderer *et al.* 1994).

Based on data from Italy and Austria, there might be another important area for migrating raptors in western Slovenia, probably between Nova Gorica and Tolmin (R. Probst & F. Mezzavilla *pers. comm.*). In autumn 2009, 4,427 Honey Buzzards were counted at Podklošter / Arnoldstein (Probst 2009b), whereas at Colli Asolani (105 km NEE of Lake Garda) 11,000 Honey Buzzards were observed (F. Mezzavilla *pers. comm.*). All the »missing« Honey Buzzards – approximately 6,500 individuals – must have arrived at Colli Asolani from Slovenia (F. Mezzavilla *pers. comm.*). The potential bottleneck at Nova Gorica is further supported by an autumn observation of 333 Honey Buzzards in one day over the city of Krmin / Cormons near the Italian part of Gorica / Gorizia (Mezzavilla *et al.* 2009b; F. Mezzavilla *pers. comm.*).

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5. Povzetek

Med 4. in 31.5.2010 smo na Breginjskem Stolu (SZ Slovenija) vsak dan med 9. in 17. uro spremljali selitev uje. Zabeležili smo 2385 preletov uje, ki so pripadale vsaj 17 vrstam. Stalnice (n = 875 preletov) so se na območju prehranjevale, gnezdile ali se čezenj dnevno selile med iskanjem hrane drugod. Med njimi je bil najpogostejši belogłavi jastreb *Gyps fulvus* (n = 575 preletov), katerega največja jata (35 os.) je bila zabeležena 26.5. V dopoldanskem času so belogłavi jastrebi leteli z zahoda proti vzhodu in iskali hrano, v popoldanskem času pa so se vračali v nasprotni smeri v svojo kolonijo v Furlaniji. Njihovo število se je povečalo po 15.5., ko so se italijanskim jastrebom pridružili še hrvaški. Med selečimi se ujedami smo zabeležili 1510 osebkov, ki so pripadali vsaj devetim vrstam. Med njimi je bil najpogostejši sršenar *Pernis apivorus* (1368 os., 90,6 % selečih se uje). Višek selitve je bil dosežen 14.5. s 552 osebki. Večina uje se je selila posamič ali v majhnih jatah (2–4 os.), v petih dneh (4., 7., 11., 13. in 14.5.) pa je bilo nad 20 % vseh jat srednje velikih (5–15 os.) ali velikih (>15 os.). Glavnina selitve je potekala med 9. in 13. uro. Upoštevajoč nekaj dejavnikov – kratko opazovalno obdobje, omejeno število opazovalnih ur na dan, spregledane uje zaradi človeškega faktorja in topografije, premike opazovalcev med točkami, izredno slabo vreme in nočno selitev uje – ocenjujemo, da je Breginjski Stol na spomladanski selitvi leta 2010 preletelo 3060–4660 uje. S tem Breginjski Stol kot prvo tovrstno območje v Sloveniji izpolnjuje IBA kriterij B1iv za ozko grlo za seleče se uje in pomeni nadaljevanje selitvenih poti uje iz severne Italije.

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Nest-site characteristics and breeding density of Magpie *Pica pica* in Sombor (NW Serbia)

Značilnosti gnezdišč in gnezditvena gostota srake *Pica pica* v Somboru (SZ Srbija)

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In March 2009, active Magpie *Pica pica* nests were censused in the town of Sombor (Vojvodina, NW Serbia) to study nest-site characteristics, breeding density and spatial distribution. The area of the town can be divided into two parts according to different urban landscapes, i.e. the town centre (150 ha) and the residential area (2,224 ha). In total, 222 Magpie nests were found and their height, tree species and nest-site type determined. Nests were found in 25 tree and two shrub species, the most of them (31.1%) being placed in the commonest tree species in the town, the Common Hackberry *Celtis occidentalis*. The majority of the nests were found in tree avenues (39.6%) and groups of trees (31.5%). Nests in the town centre with a mean height (± SD) of 15.2 ± 4.05 m were significantly higher than those in the residential area with a mean height (± SD) of 11.4 ± 5.13 m. The mean distance of nests from the top of the canopy (± SD) was 1.5 ±1.33 m, demonstrating the Magpie's tendency to place its nests in the very tops of trees in the urban areas. In the residential area, nests were present in every height class, while in the town centre they were not found lower than 5 m. This difference can be explained by denser human population in the town centre and hence greater disturbance (e.g. pedestrians), as found in several other studies, but also by the negative effect of high buildings that prevail there. Thus, the height of surrounding buildings, too, might play an important role in nest-site selection in Magpies breeding in urban habitats, especially in densely built-up areas. Breeding density of Magpie in Sombor was 0.94 pairs/10 ha, with almost twice as high in the town centre as in the residential area. The findings of this study are compared to those obtained in other studies in Serbia and abroad.

Key words: Magpie, *Pica pica*, urban area, nest height, nest-site, *Celtis occidentalis*, Sombor, NW Serbia

Ključne besede: sraka, *Pica pica*, mestno območje, višina gnezda, gnezdišče, *Celtis occidentalis*, Sombor, SZ Srbija

1. Introduction

Magpie *Pica pica* is a common breeding species in whole Europe and beyond, occupying evenly urban, rural and natural landscapes, given that suitable nesting trees and food resources are available (Cramp 1994, Baeyens & Jerzak 1997). For the last 50 years, Magpie colonised many cities where it exhibits a huge population growth in urban and suburban habitats owing to its excellent adaptation skills to this environment (Jerzak 2001). In the last few decades, many studies have been carried out about the various aspects of Magpie breeding biology, habitat selection and social organisation. As a consequence of high level

of synurbanization, the majority of researches focus on Magpies in human settlements (e.g. Bährmann 1968, Baeyens 1979, Baeyens 1981a & 1981b, Tatner 1982, Møller 1983, Birkhead *et al.* 1986, Bossema *et al.* 1986, Vuorisalo *et al.* 1992, Gorska & Gorski 1997, Vogrin 2003, Tucakov & Kucsera 2008).

The aim of this study was to present the nest-site characteristics, breeding density and spatial distribution of Magpies in Sombor.

2. Study area and methods

2.1. Study area

Sombor is the town in NW Serbia with 50,590 inhabitants, total surface area of 2,950 ha (Mérő & Žuljević 2010), excluding suburban areas, and the average altitude of 89 m a.s.l. (Vojnović 2001). The town (central coordinates: 45°46'N, 19°06'E; UTM CR57) lies in the Bačka region in the NW of the northern Serbian province Vojvodina near the Great Bačka Canal (Veliki bački kanal) and the Mostonga watercourse. Sombor is a typical Pannonian town with a moderate continental climate, where the annual mean precipitation is about 596 mm. The warmest month is July with a monthly mean temperature of 20.9 °C, while January is the coldest with a monthly mean temperature of 0.9 °C (Tomić 1996).

Sombor is one of the greenest towns in Serbia, because of its large cover of urban vegetation, whereas the natural or semi-natural vegetation cover has almost disappeared. Trees are planted in form of tree avenues, parks and park-forests. Parks cover 0.4% (10 ha) of the entire surface area of the town, while the green areas along streets on house plots and other vegetation cover 7.1% (176 ha) and lawns 2.1% (51.5 ha). The tree avenues, which are altogether 121 km long, contain about 18,000 trees (Vojnović 2001). The most common tree, and the town symbol, is the Common Hackberry *Celtis occidentalis* (60% of all trees within the avenues), while Linden *Tilia* sp. (14%), Maples *Acer* sp. (8%), Black Locust *Robinia pseudacacia* (7%), Poplar *Populus* sp. (5%), Horse Chestnut *Aesculus hippocastanum* (3%) and Japanese Pagoda Tree *Sophora japonica* (1%) are less common. In the yards of the houses, many conifers, fruit-trees and Common Walnuts *Juglans regia* have been planted (Vojnović 2001, T. Skokić *pers. comm.*). The shrub habitats that have decreased in the last decade in Sombor are mostly non-planted and mainly contain species like Black Lace Elderberry *Sambucus nigra*, Blackthorn *Prunus spinosa* and Dog Rose *Rosa canina*.

The studied area of the town (2,374 ha) can be divided into two parts according to the different urban landscape: (1) In the *town centre* (150 ha), there are short wide streets with young planted trees and mostly older and higher 19th and 20th century buildings usually with very small yards. The town centre contains The Cube Avenue (strict centre of the town) surrounded by 4–5 tree rows. The part within the Cube Avenue contains only few years old trees and buildings mainly from the 19th century. One of the parks is located in the town centre. There are no meadows with herbaceous vegetation. (2) The remaining part (2,224 ha) of the town is the *residential area*, built up mainly by houses and partially by modern buildings with large yards and gardens. Some districts contain skyscrapers with small streets, where plane trees *Platanus* sp. are planted along the avenues. There are also two parks. At the periphery, orchards can be found as well, although most of them are abandoned. The periphery also contains the Mostonga watercourse, Great Bačka Canal and three park-forests. These parts of the town can be classified as suburban.

2.2. Methods

Our census was carried out in the whole town area, together with nearby semi-rural areas that are actually part of the town. In order to achieve this, we checked every street, park, large yard, orchard and ruderal shrubby habitat in the town by bicycle to search for Magpie nests. The duration of the fieldwork was 10 h per day. Nests were censused from 26 to 31 Mar 2009, in the season when tree canopies are without leaves and nests can be spotted easily. Despite the fact that egg-laying by Magpies generally starts only in April (Cramp 1994), we chose the end of March for our census, as this is the period of intensive nest building and territorial behaviour that makes these birds highly conspicuous. The information on the nest being occupied by a breeding pair was considered sufficient for the main objective of this study. Only active nests (i.e. occupied by Magpie pairs, bringing nest material, observation of adults in the nest, on the nest edge or flying off from the nest) have been taken in consideration and all were registered on a map. Nest height was measured from the ground to the lower nest edge to the nearest meter. This parameter has been checked twice, as well as the distance between the top of the canopy and the lower nest edge.

Woody vegetation with nests located was distinguished according to its height, surface area and function in the town into the following categories, representing different nest-site types: solitary tree,

Figure 1: Distribution of Magpie *Pica pica* nests over the study area of Sombor in 2009. White circle separates the town centre from the residential area.

Slika 1: Razširjenost gnezd srake *Pica pica* na raziskovanem območju mesta Sombor leta 2009. Bel krog ločuje mestno središče od stanovanjskega okoliša.

group of trees (several trees growing closely together), orchard (mainly abandoned), tree avenue, park (larger area planted with trees and smaller meadows in between), park forest (large area where trees are densely planted) and shrubs.

3. Results

We recorded a total of 222 Magpie nests in the entire studied territory of Sombor (Figure 1). Due to the high accuracy of our census, we estimate the actual size of the breeding population here at 220–230 pairs. We found nests in 25 different tree species and two shrub species, Blackthorn and Honey Locust *Gleditschia triacanthos*. Overall, only 15 (6.8%) Magpie nests were placed in conifers, while the rest were found in broadleaved trees. The most nests (31.1%) were found in the town's commonest tree species, the Common Hackberry (Table 1).

Table 1: Tree species with Magpie *Pica pica* nests found

Tabela 1: Vrste dreves z najdenimi gnezdi srake *Pica pica*

Tree species / Vrsta drevesa	No. of nests/ Št. gnezd	Percentage/ Odstotek (%)
Celtis occidentalis	69	31.1
Robinia pseudacacia	25	11.3
Prunus sp.	18	8.1
Ulmus pumila	12	5.4
Acer sp.	11	5.0
Betula pendula	11	5.0
Juglans regia	11	5.0
Sophora japonica	11	5.0
Populus sp.	9	4.1
Picea abies	8	3.6
Populus nigra var. *italica*	6	2.7
Acer campestre	4	1.8
Pinus nigra	3	1.4
Platanus hybrida	3	1.4
Tilia sp.	3	1.4
Cedrus atlantica	2	0.9
Cerasus sp.	2	0.9
Fraxinus sp.	2	0.9
Gleditschia triacanthos	2	0.9
Pinus wallichiana	2	0.9
Salix sp.	2	0.9
Morus alba	1	0.5
Prunus spinosa	1	0.5
Pyrus sp.	1	0.5
Quercus robur	1	0.5
Sambucus nigra	1	0.5
Thuja sp.	1	0.5
Total / Skupaj	222	100.0

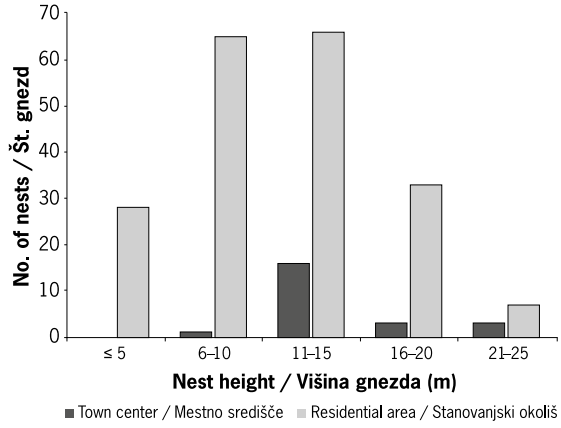

Figure 2: Number of Magpie *Pica pica* nests recorded in different height classes

Slika 2: Število gnezd srake *Pica pica*, zabeleženih v različnih višinskih razredih

Overall, nests were placed at a mean height (± SD) of 11.8 ± 5.16 m (range = 2–25 m). The lowest nests were found in cherry species *Cerasus* sp., plum species *Prunus* sp. and Black Locust, the highest in Black Poplar *Populus nigra* var. *italica*. In the residential area, nests were present in every height class. In the town centre, nests were not found lower than 5 m (Figure 2). Nests in the town centre with a mean height (± SD) of 15.2 ± 4.05 m (range = 10–25 m) were significantly higher than those in the residential area with a mean height (± SD) of 11.4 ± 5.13 m (range = 2–25 m) (*t*-test, $t = 3.43$, df = 220, $P = 0.0007$). The highest nests in the town centre were found in Linden, while the highest nests in the residential area were placed in Hybrid Plane *Platanus hybrida* and Poplar.

Mean height of the woody vegetation in which nests were recorded (± SD) was 13.1 ± 5.44 m (range = 2.5–28 m). The mean distance of nests from the top of the canopy (± SD) was 1.5 ±1.33 m (range = 0–10 m). The same parameters are given separately for both parts of the town in Table 2. We found strong correlation between nest height and height of the trees ($r_S = 0.99$, df = 220, $P = 0.017$). There was a significant difference between the height of trees containing Magpie nests in the town centre and in the residential area (*t*-test, $t = 2.81$, df = 220, $P = 0.0054$).

The majority of nests were found in tree avenues (39.6%) and groups of trees (31.5%), while the lowest number of nests was recorded in solitary trees (Table 3).

The overall breeding density of Magpies in Sombor was 0.94 pairs/10 ha. Our results showed that 10.4% of the population bred in the town centre, where the density of the breeding pairs was 1.53 pairs/10 ha. In the residential area of the town, the breeding density was only 0.89 pairs/10 ha. In the strict centre of the town (Cube Avenue), no nests were found.

4. Discussion

In our study, we found a significant difference between tree height and nest height in the town centre and in the town's residential area. However, the nest height in both parts of the town correlated with tree height. In Sombor, the Magpie generally builds its nests at the greatest possible height in the very top of the canopy, irrespective of the part of the town. However, there was an important difference between the town centre and the residential area: about 10% of the nests in the residential area were placed at heights less than 5 m, in some cases even less than 2 m, which was not

Table 2: Magpie *Pica pica* nest-site characteristics in two different parts of Sombor

Tabela 2: Značilnosti gnezdišč srake *Pica pica* na dveh različnih delih mesta Sombor

Part of the town/ Del mesta	Surface area/ Površina (ha)	No. of nests/ Št. gnezd	Mean nests height/ Povprečna višina gnezd (± SD) (m)	Mean height of trees with nests/ Povprečna višina dreves z gnezdi (± SD) (m)	Mean distance of nests from top of canopy/ Povprečna razdalja gnezd od vrha krošnje (± SD) (m)
Town Centre/ Mestno središče	150	23	15.2 ± 4.05	16.1 ± 3.76	1.1 ± 0.80
Residential area/ Stanovanjski okoliš	2,224	199	11.4 ± 5.13	12.8 ± 5.48	1.5 ± 1.38
Total / Skupaj	2,374	222	11.8 ± 5.16	13.1 ± 5.44	1.5 ± 1.33

the case in the town centre. We explained this with denser human population in the town centre and hence greater disturbance that affects nest height of the Magpie. Furthermore, we presume that high buildings prevailing in the town centre also affect nest height there, i.e. only higher trees are selected for nest placing. It is well known that Magpies place their nest higher up in urban environments due to the increases in human disturbance (e.g. the number of pedestrians) and predation risk (Jerzak 2001, Wang *et al.* 2008). In addition to that, we argue that as buildings get lower in the residential area, the lower height-limit of the selected nest-sites is reduced as well. Therefore, the height of the surrounding buildings might play an important role in nest-site selection in Magpies breeding in urban habitats, especially in densely built-up areas.

Table 3: Number of Magpie *Pica pica* nests recorded in different nest-site types

Tabela 3: Število gnezd srake *Pica pica*, zabeleženih na različnih tipih gnezdišč

Nest-site type / Tip gnezdišča	No. of nests/ Št. gnezd	Percentage/ Odstotek (%)
Tree avenue / Drevored	88	39.6
Group of trees / Skupina dreves	70	31.5
Shrubs / Grmi	19	8.6
Park / Park	14	6.3
Orchard / Sadovnjak	14	6.3
Park-forest / Parkovni gozd	11	5.0
Solitary tree / Posamezno drevo	6	2.7
Total / Skupaj	222	100.0

In Novi Sad, the second largest city of Serbia, the majority of nests were placed between 11 and 20 m, average 15.8 m (Tucakov & Kucsera 2008), which is higher than the overall average nest height in this study (11.8 m). Studies carried out in rural areas abroad reported considerably lower average nest heights than in Serbian urban areas (Tucakov & Kucsera 2008, this study) and elsewhere (Cramp & Perrins 1994, Wang *et al.* 2008) – e.g. in the Krapina river valley (Croatia), the nest height mean was 6.74 m, range 1–16 m (Dolenec 2000), whereas in Slovenia it was 5.7 m (Vogrin 1998). However, in Sofia (Bulgaria) the mean nest height was 6.9 ± 3.15 m (range 1.2–14 m) (Antonov & Atanasova 2002), which is more similar to the nest heights found in rural habitats. Mean distance of the nests from the top of the canopy in this study was similar to the average value obtained for Novi Sad (1.3 m, range 0.5–5 m) (Tucakov & Kucsera 2008), demonstrating the Magpie's tendency to place nests in very tops of trees in urban areas (Cramp & Perrins 1994). Nests were found mainly in tree avenues and groups of trees in Sombor, which is similar to the results of observations by Tucakov & Kucsera (2008), where Magpies preferred all green areas at first (32.8%), followed by groups of trees (31.2%) and tree avenues (21.1%).

The most nests in the town were found in the commonest planted tree species, the Common Hackberry. Similarly, in Novi Sad Magpies mostly used plane trees (17.2%) and European Hackberry *Celtis australis* (14.8%) for nesting (Tucakov & Kucsera 2008). In Sofia, the most preferred tree species were Black Poplar, Douglas Fir *Pseudotsuga menziesii* and Blue Spruce *Picea pungens* (Antonov & Atanasova 2002). A study in rural habitats concluded that Magpies mainly (59.7%) place their nests in

willows *Salix* sp. and Blackthorn bushes (Dolenec 2000). Tucakov & Kucsera (2008) found Magpie nests in 24 tree and bush species, while Vogrin (1998) found them, during his study at Dravsko Polje (NE Slovenia), in 14 woody plant species. These findings confirm the reported wide range of nesting tree species used by Magpies, generally according to their local abundance (Cramp & Perrins 1994). However, in the places where tree stands are young and thus not high enough, nesting was not recorded during our study (e.g. within the Cube Avenue). Likewise, we found few or no nests in some common tree species with crown physiognomy evidently less suitable for nest placement.

The overall breeding density of Magpie in Sombor was 0.94 pairs/10 ha. Furthermore, the breeding density was almost double in the town centre than in the residential area of Sombor. However, breeding densities cannot be directly compared between the town centre and the residential area due to their great difference in their respective surface areas (i.e. residential area is more than 10-times larger). It is well known that breeding density is the function of the surface area (Bezzel 1982). We presume that owing to the much smaller surface area of the town centre, the calculated density appears higher there. Also, the distribution of Magpie nests in the town is not uniform as in both parts areas with very high density as well as large areas with no nests whatsoever can be found. We presume the cause for this non-uniform distribution lies in differences in tree stands distribution over the studied area of the town – the areas with high tree stands (parks, avenues etc.) contain most of the nests, while in the areas with poor tree stands the nest density is low. In similar urban habitats of Novi Sad, the breeding density was 1.97 pairs/10 ha (Tucakov & Kucsera 2008). Slovenian research reports on different densities in urban habitats; in Maribor 0.34 pairs/10 ha, Celje 0.61 pairs/10 ha, Ptuj 0.65 pairs/10 ha, Slovenska Bistrica 0.41 pairs/10 ha and in Žalec 0.52 pairs/10 ha (Vogrin 2003). Although it was higher in Novi Sad, we conclude that the breeding density in Sombor is not low in general, considering the breeding densities found in various Slovenian towns. According to Bauer *et al.* (2005), the breeding densities in large cities of Central Europe vary between 0.6 and 1.4 territories/10 ha, while in smaller cities (up to 300,000 inhabitants) they do not exceed 2.1 pairs/10 ha. The incredibly high density recorded in Sofia (Bulgaria) in the 405 ha large study area, i.e. 5.18 pairs/10 ha in 1999 and 5.68 pairs/10 ha in 2000, is exceptional (Antonov & Atanasova 2002). In their study, Tucakov & Kucsera (2008) mention three reasons as an explanation for the high density of Magpies in Novi Sad: easy food accessibility, presence of many high and old enough trees among buildings, and low nest predation by Hooded Crows *Corvus cornix*. We presume these assertions are all true for Magpies breeding in Sombor, too. Here, the suitable tree stand between the buildings is extensive and because Hooded Crow population was estimated at only 3–5 breeding pairs (Mérő & Žuljević 2010), Magpie nest predation by this species is reputedly low, the same as competition between the two species. Tucakov & Kucsera (2008) observed that open trash containers (higher numbers in more populated plots) might increase food accessibility for Magpies in Novi Sad. According to our observations, the illegal dumps on the outskirts of the town might play a similar role in Sombor instead.

We censused Magpie nests at the end of nest-building and at the beginning of egg-laying periods. According to the study by Møller (1983), Magpie nests are built between 4 Mar and 12 Apr, while replacement nests are established from 1 to 12 Apr. However, Magpies characteristically lay their eggs in urban landscapes earlier than in rural habitats (Chamberlain *et al.* 2009). Still, there was a possibility in this study that some nests were built after the period of our census, although those were most probably replacement clutches as these are in Magpies usually laid in new nests built quickly after the loss of 1st clutch (Cramp & Perrins 1994, Bauer *et al.* 2005).

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5. Povzetek

Marca 2009 so avtorji prispevka popisovali aktivna gnezda srake *Pica pica* v Somboru (Vojvodina, SZ Srbija), da bi natančno preučili značilnosti gnezdišč teh ptic, a tudi njihovo gnezditveno gostoto in prostorsko razširjenost. Mestno območje je glede na njegovo različno urbano krajino mogoče razdeliti na dva dela, in sicer na mestno središče (150 ha) in stanovanjski okoliš (2224 ha). Skupaj so popisali 222 sračjih gnezd in pri tem ugotavljali višino posameznih gnezd, vrste dreves, na katerih so gnezdile, in tipe gnezdišč. Srake so gnezdile na drevesih in grmih 25 različnih vrst, večinoma (31,1 %) na ameriškem koprivovcu *Celtis occidentalis*, ki je najpogostejša drevesna vrsta v mestu. Večina gnezd je bila zabeležena v drevoredih (39,6 %) in skupinah dreves (31,5 %). Gnezda v mestnem središču s povprečno višino (± SD) 15,2 ± 4,05 m so bila pomembno višja kot drevesa

v stanovanjskem okolišu s povprečno višino (± SD) 11,4 ± 5,13 m. Povprečna razdalja gnezd od vrha krošnje (± SD) je bila 1,5 ±1,33 m, kar kaže na srakino tendenco, da si v urbanih območjih gnezda spleta v samih vrhovih dreves. V stanovanjskem okolišu so bila gnezda najdena na vseh drevesnih višinah, medtem ko jih v mestnem središču niže od 5 m ni bilo zaslediti. To razliko je mogoče pojasniti z gostejšo populacijo prebivalstva v mestnem središču in zatorej z večjim vznemirjanjem (na primer s strani pešcev), kot že ugotovljeno v mnogih drugih študijah, hkrati pa tudi z negativnim vplivom visokih stavb, ki prevladujejo v tem delu mestu. V izbiri gnezdišč teh ptic, ki gnezdijo v urbanih habitatih, še posebno v gosto pozidanih območjih, lahko pomembno vlogo zatorej igra tudi višina obdajajočih zgradb. Gnezditvena gostota srak v Somboru je bila 0,94 para/10 ha, le da je bila v mestnem središču skoraj dvakrat večja kot v stanovanjskem okolišu. Izsledki te študije avtorji primerjajo z izsledki drugih študij, opravljenih v Srbiji in tujini.

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Population dynamics of the White Stork *Ciconia ciconia* in Slovenia between 1999 and 2010

Populacijska dinamika bele štorklje *Ciconia ciconia* v Sloveniji med letoma 1999 in 2010

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Between 1999 and 2010, an annual census of the White Stork *Ciconia ciconia* breeding population was carried out in Slovenia using standardised methods. The Stork's population was concentrated in the NE and SE parts of Slovenia. In the 1999–2010 period, the breeding range of its population in Slovenia expanded in NW direction (the Savska ravan region), in SW direction (the Notranjsko podolje and Pivško podolje regions), but the species also colonized a part between Central and SE Slovenia (Dolenjsko podolje). Between 193 and 240 pairs were breeding during the study period, 209 pairs on average (HPa). The largest number of breeding pairs was recorded in 2004, the smallest in 2005. During the study period, breeding pairs (HPa) occupied 350 discrete nests in total. Average number of breeding pairs that raised juveniles (HPm) was 161. The highest fecundity was recorded in 2004, when 534 juveniles (JZG) fledged, the lowest in 2006, with only 219 fledged juveniles. On average, 414 juveniles fledged per year. The breeding pairs' (JZa) average breeding success in these 12 years was 2.02, the highest in 2000 (2.41), the lowest in 2006 (1.09). Average breeding success for the successful breeding pairs (JZm) was 2.57. The highest was in 2007 (2.94), the lowest in 2006 (2.07). The largest number of breeding pairs in 2004 and 2008 can be explained by the favourable fecundity in the population in 2000 and 2004, as juveniles become sexually mature at the age of 3–5 years, and at that age they generally return to the breeding grounds for the first time. The lowest number of breeding pairs and poor breeding success in 2005 and 2006 was caused by late arrival of White Storks to the breeding grounds and by unfavourable weather conditions during the breeding period. The pattern of nests placement did not change generally during the last 12 years. The largest proportion of nests was positioned on various kinds of poles (81%) and on chimneys (18%). In total, 27 area surveyors and 239 assistants helped in census realisation.

Key words: White Stork, *Ciconia ciconia*, breeding population, census, Slovenia
Ključne besede: bela štorklja, *Ciconia ciconia*, gnezditvena populacija, cenzus, Slovenija

1. Introduction

At irregular intervals, the White Stork *Ciconia ciconia* populations have been counted all over the world since 1934. There is no other bird for which statistics on its population trends exist for such a comparably long period of time. Up till now, six international censuses of the White Stork breeding population have been carried out in the years 1934, 1958, 1974, 1984, 1994/1995 and 2004/2005. The data resulting from theses censuses provide an overview of the long term population trend of the White Stork in its overall

breeding range. The dramatic decline of the population registered up until 1984, when it even became extinct in some countries, was followed by a positive population development in the following 20 years. The world population, which in 1984 was ca. 135,000 breeding pairs (HPa), was estimated to be around 166,000 (HPa) in 1994/1995 (Schulz 1999a & 1999b). The most prominent increases were noticed for the western population, like Spain, with reasons for the strong increase of the western population mostly attributed to better climatic conditions – less severe droughts – in the wintering areas within western Sahel after the mid-1980s and to development of a wintering population in southern Spain, together with the suite of other factors (Tortosa *et al.* 1995, Schulz 1999b, Zwarts *et al.* 2009). However, in some SE European countries populations were stable or continued declining (Schulz 1999b). For the 6th International census 2004/2005, only preliminary results exist, but reveal a further population increase, as the world population was estimated at 230,000 pairs (K.-M. Thomsen *pers. comm.*).

The first national White Stork census in Slovenia was carried out in 1965 (Šoštarič 1965). It was repeated in 1979 (Jež 1987) and 1984. In 1984, Slovenia participated in the International White Stork Census (Schulz 1999b) for the first time, and for the second time in the 6th census 2004/2005. Since 1999, the national breeding population has been surveyed annually (Denac 2001), using standardized census method and parameters (Schulz 1999a, Denac 2001). On a regional scale, two censuses have been carried out annually in Slovenia: the first in NE Slovenia in part of the Drava river lowland, the second in SE Slovenia in the Krka river lowland. Both started in 1989 (Štumberger 1990, Hudoklin 1991) and were integrated into the national census in 1999. In addition, two autecological studies were carried out on the White Stork population in Slovenia using census data. With the first one, we explained density dependent breeding success with intraspecific exploitation competition (Denac 2006a), whereas the second study showed that weather effect in the reproduction of the White Stork is resource-dependent (Denac 2006b). In this work we present results of the White Stork censuses carried out between 1999 and 2010.

2. Study area and methods

Census method was the same as used during the first annual census in 1999 (Denac 2001). The White Storks' breeding range was divided into regions (mesoregions) according to physiographic regionalisation of Slovenia (Perko 1998). Each region was an independent census unit. In the preparation phase of the census, all surveyors received the regions' maps with marked positions of all known White Storks' nests in their census areas and forms printed for each nest from the central White Stork database for Slovenia. Surveyors were ornithologists and volunteers of DOPPS - BirdLife Slovenia. Generally, the same surveyors carried out the censuses in their corresponding census areas in successive years.

Fieldwork effort was equal in all years. All known nests were visited each year. Besides, villages without nests but with suitable surrounding breeding habitat for the White Stork were thoroughly checked for new nests regularly. Cars were used for transport and binoculars for surveying the breeding parameters. Fieldwork was carried out between 20 Jun and 15 Jul in all years. This is the period just before juvenile White Storks fledge and can be most easily counted from the ground. At each nest, the following breeding parameters were registered: status of the nest or pair (HPa, HPx, HB2, HB1, HO; see Table 1 for explanation) (Schulz 1999a), number of fledged chicks (chicks in the nest during the census were considered as fledged), and nest placement. For new nests, address of the nearest building or location obtained by GPS was recorded. Ground and vegetation under the nests were checked for dead, thrown out chicks. Breeding parameters were obtained by direct observations. As a supporting method, surveyors used interviews with local people to obtain additional data. Data on the number of eggs, number of hatched chicks, ejected chicks and remarks were recorded. Furthermore, in 2004 and 2005 a wider public was informed about the 6th International census and asked through different media to provide us with any data on White Stork nests.

Data were entered in the central White Stork database and processed. If not obtained with GPS, nest coordinates were gained from database of house centroids using addresses of the nests' nearest buildings. Population parameters were analyzed following recommendations by Schulz (1999b). Single nest visitors (HB1) and pairs visiting nests (HB2) were joined into a single category, nest visitors (HB). The HB1 : HB2 ratio was approximately 1 : 1 in all years. In the breeding success calculation (JZa), we excluded breeding pairs with unknown breeding success: JZa = JZG / (HPa – HPx) (Schulz 1999a, Martí 1999), despite the fact that the number of pairs with unknown breeding success was relatively low. We calculated standard deviation for the breeding success (JZa and JZm) (Schulz 1999a; see Table 2

Table 1: The White Stork *Ciconia ciconia* population parameters in Slovenia between 1999 and 2010

Tabela 1: Populacijski parametri bele štorklje *Ciconia ciconia* v Sloveniji med letoma 1999 in 2010

Year / Leto	HPa	HPm	HPo	%HPo	HPx	HB	StD	StDBiol
1999	203	151	50	24.6	2	19	1.00	3.68
2000	197	168	19	9.6	10	15	0.97	3.57
2001	206	154	44	21.4	8	16	1.01	3.73
2002	199	153	38	19.1	8	21	0.98	3.61
2003	203	162	29	14.3	12	21	1.00	3.68
2004	240	206	33	13.8	1	14	1.18	4.35
2005	193	128	64	33.2	1	48	0.95	3.50
2006	201	106	95	47.3	0	51	0.99	3.64
2007	218	177	40	18.3	1	42	1.07	3.95
2008	237	194	43	18.1	0	17	1.16	4.30
2009	204	161	43	21.1	0	31	1.00	3.70
2010	201	172	29	14.4	0	37	0.99	3.64

Abbreviations after Schulz (1999a) / Okrajšave po Schulzu (1999a):

HPa – Pair that occupied a nest for at least 4 weeks during the first half of the breeding season, "breeding pair" / Par, ki je zasedal gnezdo najmanj 4 tedne v prvi polovici gnezditvene sezone, "gnezdeči par" (HPm + HPo + HPx)

HPm – Pair with fledged young / Par s poletelimi mladiči

HPo – Pair without fledged young that occupied a nest for at least 4 weeks during the first half of the breeding season / Par brez poletelih mladičev, ki je zasedal gnezdo najmanj 4 tedne v prvi polovici gnezditvene sezone

HPx – Pair with unknown breeding success that occupied a nest for at least 4 weeks during the first half of the breeding season / Par z neznanim gnezditvenim uspehom, ki je zasedal gnezdo najmanj 4 tedne v prvi polovici gnezditvene sezone

HB – Single or two birds (pair) visiting the nest, no ties to the nest / Posamezen osebek ali par obiskuje gnezdo, ni vezi z gnezdom

StD – "Stork density", population density, No. of pairs (HPa) per 100 km^2 of a defined surface area (i.e. area of the country) / "Gostota štorkelj", populacijska gostota; št. parov (HPa) na 100 km^2 določene površine (= površina države)

StDBiol – "Biological" population density, No. of pairs (HPa) per 100 km^2 of potential feeding habitat / "Biološka" populacijska gostota; št. parov (HPa) na 100 km^2 potencialnega prehranjevalnega habitata

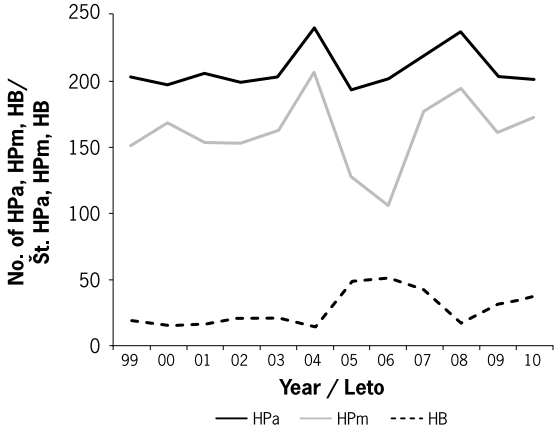

Figure 1: Population dynamics of the White Stork *Ciconia ciconia* in Slovenia between 1999 and 2010

Slika 1: Populacijska dinamika bele štorklje *Ciconia ciconia* v Sloveniji med letoma 1999 in 2010

for explanation). We used the surface area of Slovenia (20,272 km^2) for the calculation of surface-based population density (StD), whereas the surface area of potential feeding habitats (5,517 km^2) was used to calculate biological population density (StDBiol). We selected the following land use categories from land use map of Slovenia (MKGP 2005) as potential feeding habitats: fields and gardens (code 1100), temporary meadows (code 1130), permanent meadows and pastures (code 1300) and wet meadows (code 1321). Selection of potential feeding habitats was based on our own observations and current knowledge about the White Stork feeding habitat's characteristics (Sackl 1987, Alonso *et al.* 1991, Pinowski *et al.* 1986, Dziewiaty 1992, Ożgo & Bogucki 1999, Moritzi *et al.* 2001). Population densities (StD and StDBiol) were calculated as the number of breeding pairs (HPa) per 100 km^2 surface.

3. Results

3.1. Population distribution and parameters

A total of 193 to 240 breeding pairs (HPa) were counted in the 1999–2010 breeding seasons, (± SD) 209 ± 15 pairs on average. The lowest number of breeding pairs was recorded in 2005 and the highest

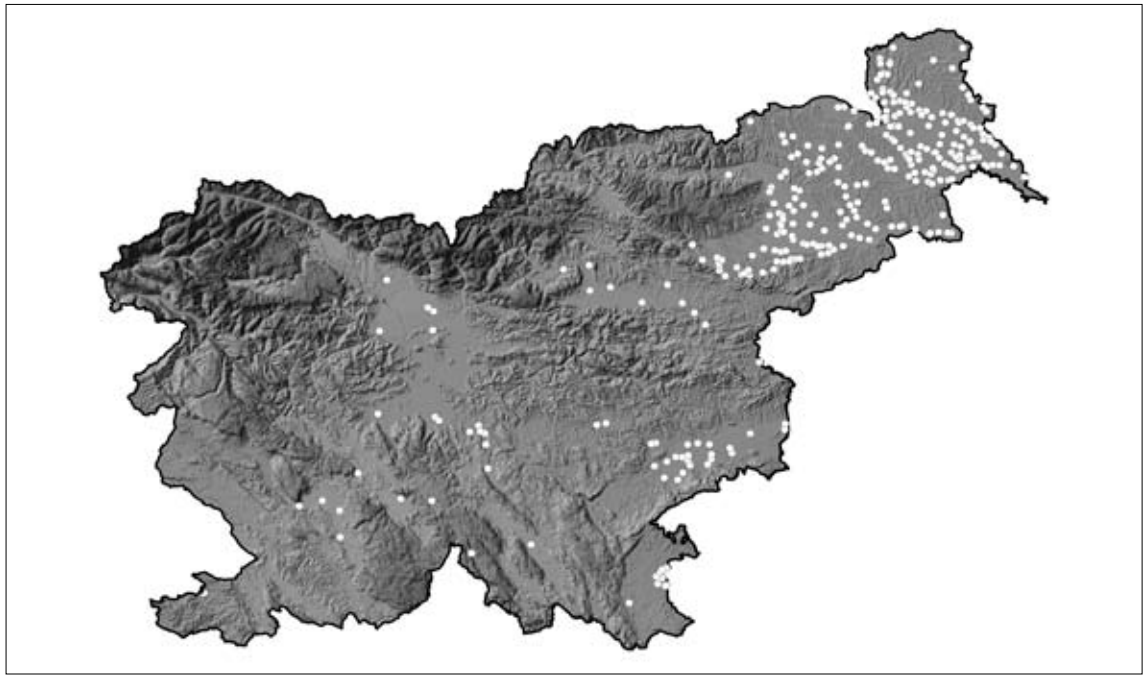

Figure 2: Distribution of all White Stork *Ciconia ciconia* breeding pairs (HPa) in Slovenia between 1999 and 2010 (N = 350)

Slika 2: Razširjenost vseh gnezdečih parov (HPa) bele štorklje *Ciconia ciconia* v Sloveniji med letoma 1999 in 2010 (N = 350)

Table 2: Breeding success of the Slovenian White Stork *Ciconia ciconia* population between 1999 and 2010 (SD = Standard Deviation)

Tabela 2: Gnezditveni uspeh populacije bele štorklje *Ciconia ciconia* v Sloveniji med letoma 1999 in 2010 (SD = standardna deviacija)

Year / Leto	JZG	JZa ± SD	JZm ± SD
1999	363	1.81 ± 1.33	2.40 ± 0.95
2000	451	2.41 ± 1.10	2.68 ± 0.78
2001	397	2.01 ± 1.34	2.58 ± 0.91
2002	417	2.18 ± 1.35	2.73 ± 0.88
2003	458	2.40 ± 1.30	2.83 ± 0.88
2004	534	2.23 ± 1.27	2.59 ± 0.97
2005	285	1.48 ± 1.30	2.23 ± 0.93
2006	219	1.09 ± 1.23	2.07 ± 0.93
2007	520	2.40 ± 1.42	2.94 ± 0.94
2008	527	2.22 ± 1.34	2.72 ± 0.91
2009	391	1.92 ± 1.35	2.43 ± 1.04
2010	401	2.00 ± 1.15	2.33 ± 0.87

Abbreviations after Schulz (1999a) / Okrajšave po Schulzu (1999a):
JZG – Total no. of fledged young / Skupno št. poletelih mladičev
JZa – Average no. of fledged young per all breeding pairs / Povprečno št. poletelih mladičev vseh gnezdečih parov (JZG / HPa)
JZm – Average no. of fledged young per all breeding pairs with fledged young/ Povprečno št. poletelih mladičev vseh gnezdečih parov s poletelimi mladiči (JZG / HPm)

in 2004 (Table 1, Figure 1, Appendix 1). During the study period, White Stork breeding pairs (HPa) occupied 350 discrete nests in total (Figure 2). On average, (± SD) 161 ± 27 pairs raised juveniles (HPm) in the last 12 years. The largest number of breeding pairs raised their juveniles in 2004, the smallest in 2006. Consequently, the largest number of breeding pairs failed to raise a single juvenile in 2006 (Table 1, Figure 1). The highest fecundity (JZG) was recorded in 2004, when 534 juveniles fledged, the lowest in 2006 with 219 fledged, on average (± SD) 414 ± 95 juveniles fledged per year (Table 2, Appendix 2). Average breeding success (± SD) for breeding pairs (JZa) in 12 years was 2.02 ± 1.35. It was highest in the year 2000 (2.41 ± 1.10), and lowest (1.09 ± 1.23) in 2006 (Table 2, Appendix 3). Average breeding success (± SD) for successful breeding pairs (JZm) in 12 years was 2.57 ± 0.94. It was highest (2.94 ± 0.94) in 2007, and lowest in 2006 (2.07 ± 0.93) (Table 2). Number of nest visitors (HB) was in the 15–59 range. The largest number of nest visitors was recorded in 2005 and 2006, the smallest in 2004 (Table 1, Figure 1).

Population was concentrated in the NE part of Slovenia (the Murska and Dravska ravan regions in the Pannonian plains, and the Slovenske gorice, Dravinjske gorice and Goričko regions in the

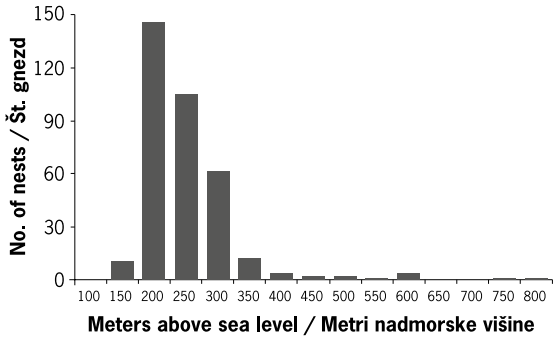

Figure 3: Altitudinal distribution of all White Stork *Ciconia ciconia* breeding pairs' (HPa) nests in Slovenia between 1999 and 2010 (N = 350) (100 = 0–100 m, 150 = 101–150 m, 200 = 151–200, etc.)

Slika 3: Višinska razporeditev gnezd vseh gnezdečih parov (HPa) bele štorklje *Ciconia ciconia* v Sloveniji med letoma 1999 in 2010 (N = 350) (100 = 0–100 m, 150 = 101–150 m, 200 = 151–200 itd.)

Pannonian hills) with considerable numbers in the Pannonian plains in the SE part of Slovenia (the Krška ravan region) and in the Bela krajina and Dolenjsko podolje regions in Dinaric plains (Figure 2, Appendix 1). Smaller disjunct populations were recorded in NW Slovenia in the Savska ravan region, in central Slovenia at Ljubljansko barje, and in SW Slovenia in the Notranjsko podolje and Pivško podolje regions. Altogether, White Storks were recorded to breed in 18 different regions of Slovenia (Appendix 4).

Nests of breeding pairs in 1999–2010 (N = 201) were placed at an average altitude (± SD) of 226 ± 77 m a.s.l. Lowest nest was at 140 m, and highest at 752 m a.s.l. (Figure 3).

3.2. Population dynamics in time and space

The size of the Slovenian White Stork breeding population has increased in the last 40 years. A population growth of 15% was recorded in 1979, compared to 1965 (Šoštarič 1965, Jež 1987). Between 1979 and 1984, the population decreased by 18%. From 1984 to 1999, the population increased again by 47%. In the 1999–2010 period, the population size was generally stable, but with the maximum in 2004, when the highest number of breeding White Storks was recorded so far.

Besides population size increase, the population's breeding range expanded, too. In 1965, it was confined to a part of the Pannonian region (Murska and Dravska ravan, Slovenske and Dravinjske Gorice) in NE only. This part can be considered the bird's traditional breeding range. From 1965 to 1999, it extended firstly in the SE direction to the almost entire Pannonian region of Slovenia (the Murska, Dravska and Krška ravan regions and the Goričko, Slovenske and Dravinjske Gorice regions) as well as to the Bela krajina region, and secondly in the NW direction to Ljubljansko barje and to the Alpine plains in NW Slovenia (the Savska and Savinjska ravan regions). After 1999, it expanded its breeding range further in the NW (the Savska ravan region) and SW directions (the Notranjsko podolje, Pivško podolje regions), and colonized a part between Central and SE Slovenia (the Dolenjsko podolje region) (Figure 4).

3.3. Nest placement

Nest placements changed during the last 40 years. Proportion of nests on chimneys and trees decreased, while the proportion of nests on different power line poles increased (Figure 5). In 2008, the last breeding in a tree was recorded.

4. Discussion

The White Stork population in Slovenia has increased considerably during the last decades. Its population growth from 1984 to 1999 is in agreement with that found for the world population during the 5th international White Stork census (Schulz 1999b). However, the growth of its Slovenian population was higher (47%) compared to the overall trend for the 1984–1994/1995 period (23%). Similarly, population growth was the highest compared to the neighbouring countries: Croatia, Hungary, Austria and Italy (Schulz 1999b), assuming that the Slovenian population in 1999 was representative for 1994/1995.

Between 1999 and 2010, the population was generally stable or slightly increasing but with considerable peaks recorded in years 2004 and 2008. Population growth is generally possible either through immigration or through the population's fecundity, which should be higher than mortality (Begon *et al.* 2006, Tome 2006). As we do not have any data on the annual mortality of White Storks in the Slovene population, we cannot reliably infer which of the two population processes in fact caused the growth. Assuming that the annual adult survival probability is 0.7, and that the survival of young birds until the adult age is 0.5 (Kanyamibwa *et al.* 1993), the fecundity of ca. 240 juveniles fledged (JZG) or ca. 1.2 fledged chicks per pair (JZa) would be sufficient to maintain 200 breeding pair population. However, this expert estimate does not account for all the parameters that

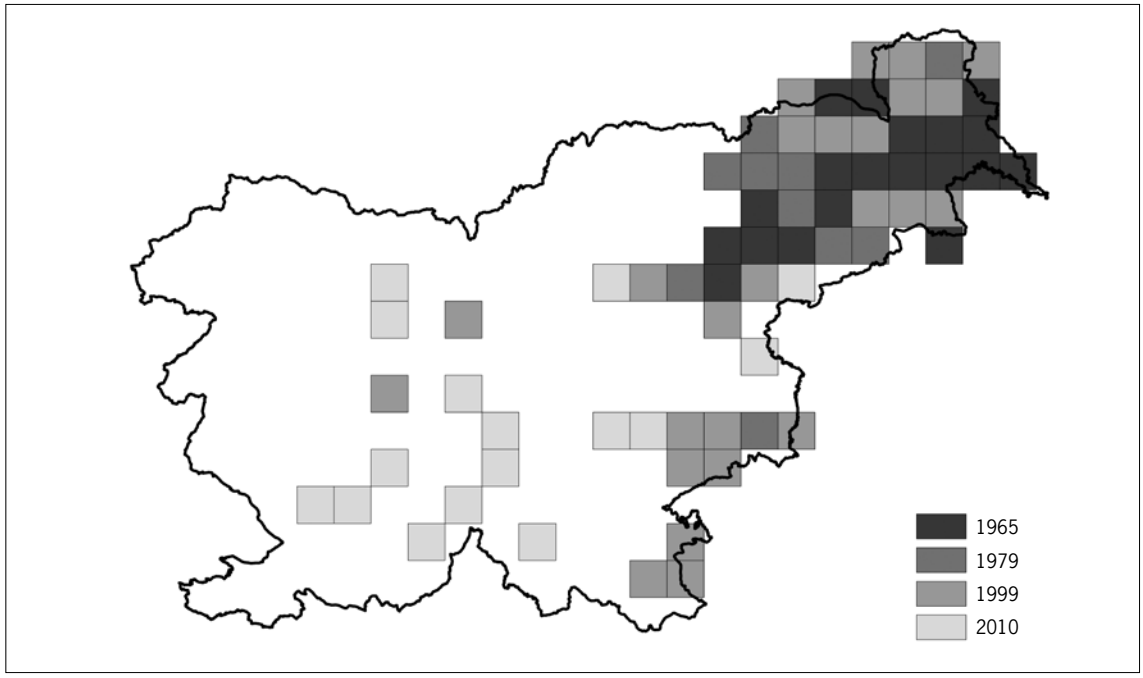

Figure 4: Expansion of the White Stork's *Ciconia ciconia* breeding range in Slovenia between 1965 and 2010. Distribution in 1965, 1979 and 1999 after Šoštarič (1965), Jež (1987) and Denac (2001), respectively. Grey cell = at least one breeding pair (HPa) within the corresponding 10 km UTM square.

Slika 4: Širjenje gnezditvenega območja bele štorklje *Ciconia ciconia* v Sloveniji med letoma 1965 in 2010. Razširjenost v letih 1965, 1979 in 1999 je povzeta po Šoštarič (1965), Jež (1987) in Denac (2001). Siva polja = najmanj en gnezdeči par (HPa) znotraj ustreznega 10 km UTM-kvadrata.

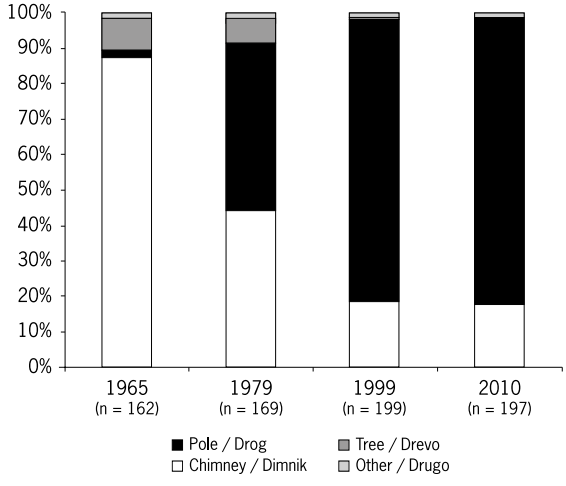

Figure 5: White Stork's *Ciconia ciconia* nest placements in Slovenia; 1965, 1979 and 1999 data after Šoštarič (1965), Jež (1987) and Denac (2001), respectively

Slika 5: Mesta gnezd bele štorklje *Ciconia ciconia* v Sloveniji; podatki za 1965, 1979 in 1999 so povzeti po Šoštarič (1965), Jež (1987) in Denac (2001)

should be included in the Population Vulnerability Analysis (PVA). But as the fecundity in 2000 and 2004 was considerably better, and most individuals start breeding 3–5 years old (Cramp 1977), it is likely that the growth in 2004 and 2008 was caused by particularly good fecundity four years earlier (i.e. in 2000 and 2004). However, in reality open population dynamics is very complex: survival depends on weather (Kanyamibwa *et al.* 1993) and on primary production at the staging areas in Sahel (Schaub *et al.* 2005), and individuals constantly immigrate and emigrate between populations. In addition, from the findings of ringed birds, evidence exists that individuals from France, Croatia, Germany and Switzerland recently bred in Slovenia (unpublished data of the Slovene Museum of Natural History), confirming immigration to the Slovenian population, although to an unknown extent.

In 2005, the number of breeding pairs considerably decreased. In 2005, storks' arrival was delayed for almost one month on average (median 21 Apr 2005 vs. 27–31 Mar 1999 period in Denac 2001). As a result

of their late arrival, a significantly higher proportion of storks did not breed and behaved like nest visitors. Because of the late start of the breeding, the fecundity in that year was dramatically low too, as there is a clear relationship between the breeding onset and breeding success. Earlier the breeding onset, the higher the breeding success, and the underlying mechanism for the phenomenon is age-dependent breeding success – older birds return in general earlier and are more successful (Vergara *et al.* 2007) – and condition-related parental quality – heavier females laying more eggs than lighter females (Sasvári & Hegyi 2001). The late arrival in 2005 was recorded through the entire breeding range in Europe and was probably caused by severe weather conditions during the spring migration followed by weakened individuals of the breeding population (K.-M. Thomsen *pers. comm.*). On the contrary, the lowest breeding success recorded during the study, i.e. in 2006, was caused by conditions at the breeding grounds. White Storks returned to the breeding grounds normally. In the second half of May, a week of heavy rains was followed by unusually low temperatures for this period (Cegnar 2006a & 2006b). Such conditions occurred in the period of greatest susceptibility of juveniles to the outer conditions as they do not develop thermoregulatory ability till the age of ca. 20 days (Tortosa & Castro 2003, Jovani & Tella 2004). After this period, we recorded dramatically larger numbers of dead juveniles thrown out of nests than in previous years (84 in 2006 vs. 24–54 in years 1999–2010 without 2006), which is otherwise a normal phenomenon in life-history of the White Stork in such conditions (Tortosa & Redondo 1992). Furthermore, in 2006 several heavy hail storms occurred in NE Slovenia, killing a great number of chicks that survived low temperatures in May. Combination of these two weather effects thus caused the lowest breeding success in the study period.

Full carrying capacity of the traditional breeding range in NE Slovenia was probably achieved, which could explain the expansion of the White Stork's breeding range. As a result of less favourable foraging habitats and higher breeding density in the traditional breeding range, the population's breeding success there is the lowest. In contrast, breeding success is the highest in recently occupied regions in SE Slovenia with more favourable foraging habitats and characteristically lower breeding densities. The representative habitat of the White Stork population in the NE part of Slovenia is composed of large, intensively used arable fields. Storks of the SE population have larger areas of food-rich meadows available. Variability of breeding success between the regions is caused by differences in available food resources. The variability of breeding success between years was explained by weather, specifically by the amount of rainfall in May and temperatures in June. The less the amount of rainfall in May and the higher the temperatures in June, the higher the breeding success. Moreover, weather effect was significant only in the population in the traditional breeding range, which is poorer in the terms of food resources. Food was generally a more important reproductive predictor than weather (Denac 2006b).

In traditional breeding range with poorer food resources, ecological density influenced the Storks' breeding success. Pairs breeding alone and pairs with one neighbour within their home range most frequently reared three chicks, pairs with two neighbours reared two, whereas pairs with three or four neighbours most frequently failed to raise even a single chick. Intraspecific exploitation competition was the cause for density-dependent breeding success (Denac 2006a).

The trends in nest site selection – reduction of the number of nests in trees and on buildings and the increase of the number of nests on poles – are similar to the trends found elsewhere in Europe (Guziak & Jakubiec 1999, Fulín 1999, Lovászi 1999, Rubacha & Jerzak 2006, Tryanowski *et al.* 2009). In Slovenia, the trends were mainly caused by changes in architecture and by destruction of traditionally built houses with huge chimneys' platforms commonly used by White Storks. In addition, poles are the only suitable place for nests in the regions where Storks expanded recently.

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5. Povzetek

Med letoma 1999 in 2010 smo na območju Slovenije opravili vsakoletni cenzus gnezditvene populacije bele štorklje *Ciconia ciconia*. Vse cenzuse smo izvedli skladno z mednarodno metodo popisovanja. Jedro populacije bele štorklje je v SV in JV Sloveniji. Od leta 1999 do leta 2010 se je gnezditveno območje bele štorklje v Sloveniji iz tradicionalnih gnezdišč razširilo v SZ (Savska ravan) in JZ smeri (Notranjsko in Pivško podolje), bela štorklja pa je kolonizirala tudi del Dolenjskega podolja med osrednjo in JV Slovenijo. V popisnem obdobju je gnezdilo med 193 in 240 parov (HPa), v povprečju 209. Največje število parov je gnezdilo leta 2004, najmanjše leta 2005. Skupno so v tem obdobju gnezdeči pari (HPa) zasedli 350 različnih gnezd. Povprečno število uspešnih parov – parov, ki so speljali mladiče (HPm) – je bilo 161. Največjo rodnost populacije (JZG) smo ugotovili v letu 2004, ko je poletelo 534 mladičev, najmanjšo pa leta 2006, takrat je poletelo 219 mladičev. V povprečju je poletelo 414 mladičev letno. Povprečni gnezditveni uspeh gnezdečih parov (JZa) je bil 2,02, največji je bil leta 2000 (2,41), najmanjši leta 2006 (1,09). Povprečni gnezditveni uspeh uspešnih parov (JZm) je bil 2,57, največji je bil leta 2007 (2,94), najmanjši pa leta 2006 (2,07). Veliko število gnezdečih parov leta 2004 in 2008 lahko razložimo z dobro rodnostjo v letih 2000 in 2004, saj mladiči spolno dozorijo med 3–5 leti in se v tej starosti praviloma prvič vrnejo s prezimovališč na območja gnezdenja. Mesta gnezd se v zadnjih 12 letih v glavnem niso spremenila. Največ gnezd (81 %) je bilo na različnih drogovih, večinoma električne napeljave,

sledila so gnezda na dimnikih (18 %). Pri izvedbi cenzusa je sodelovalo 27 območnih popisovalcev in 239 pomočnikov oziroma informatorjev.

6. References

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APPENDIX 1 / DODATEK 1

Numbers of the breeding White Storks *Ciconia ciconia* (HPa) in Slovenian mesoregions between 1999 and 2010 / Števila gnezdečih parov (HPa) bele štorklje *Ciconia ciconia* po slovenskih mezoregijah med letoma 1999 in 2010

Mesoregion / Mezoregija		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total/ Skupaj	Percentage/ Odstotek (%)
1.3	Savska ravan	1	1	1	2	2	2	3	3	4	4	4	4	31	1.2
1.8	Strojna, Kozjak in Pohorje									1				1	0.0
1.10	Savinjska ravan	3	3	3	4	6	4	1			1	1	3	29	1.2
3.5	Notranjsko podolje						1	1	3	4	4	4	4	21	0.8
3.6	Pivško podolje in Vremščica		1	1	1	1	1	1	2	2	2	1	1	14	0.6
3.7	Ljubljansko barje	1	1	1	1	1	1	1	1	2	3	3	2	18	0.7
3.10	Mala gora, Kočevski rog in Poljanska gora										1			1	0.0
3.11	Velika gora, Stojna in Goteniška gora												1	1	0.0
3.14	Dolenjsko podolje					2	4	4	4	5	8	8	8	43	1.7
3.16	Bela krajina	5	6	6	6	7	11	10	11	12	15	13	11	113	4.5
4.1	Goričko	11	12	12	12	14	17	11	13	12	12	9	11	146	5.8
4.3	Murska ravan	87	78	83	84	74	82	71	69	75	76	66	62	907	36.3
4.4	Slovenske gorice	29	29	31	29	31	37	25	28	26	30	26	25	346	13.8
4.5	Dravska ravan	36	37	37	31	35	44	36	36	43	41	31	31	438	17.5
4.6	Dravinjske gorice	18	16	18	15	15	17	18	19	17	19	17	15	204	8.2
4.9	Voglajnsko in Zgornjesotelsko gričevje	2	2	2	2	2	2		2	2	1	1	2	20	0.8
4.10	Srednjesotelsko gričevje								1	1	1	1	1	5	0.2
4.12	Krška ravan	10	11	11	12	13	17	11	9	12	19	19	20	164	6.6
Total / Skupaj		203	197	206	199	203	240	193	201	218	237	204	201	2,502	100.0

Mesoregions after Perko (1998) / Mezoregije po Perku (1998)

APPENDIX 2 / DODATEK 2

Numbers of White Stork's *Ciconia ciconia* fledged juveniles (JZG) in Slovenian mesoregions between 1999 and 2010 / Števila poletelih mladičev (JZG) bele štorklje *Ciconia ciconia* po mezoregijah Slovenije med letoma 1999 in 2010

Mesoregion / Mezoregija		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total/ Skupaj	Percentage/ Odstotek (%)
1.3	Savska ravan	3			4	3	4	1	10	13	9	8	9	64	1.3
1.8	Strojna, Kozjak in Pohorje									0				0	0.0
1.10	Savinjska ravan	3	3	4	5	5	9	2			0	0	3	34	0.7
3.5	Notranjsko podolje						2	3	7	11	9	11	10	53	1.1
3.6	Pivško podolje in Vremščica		2	2	0	0	2	2	2	6	3	4	0	23	0.5
3.7	Ljubljansko barje	2	3	5	2	3	3	2	4	7	9	8	5	53	1.1
3.10	Mala gora, Kočevski rog in Poljanska gora										2			2	0.0
3.11	Velika gora, Stojna in Goteniška gora												0	0	0.0
3.14	Dolenjsko podolje					4	9	5	10	16	15	24	15	98	2.0
3.16	Bela krajina	10	11	15	15	16	32	23	17	28	35	23	24	249	5.0
4.1	Goričko	19	25	15	26	25	27	17	7	22	24	20	20	247	5.0
4.3	Murska ravan	134	167	167	173	171	182	95	60	186	182	86	124	1,727	34.8
4.4	Slovenske gorice	70	80	56	70	76	86	40	17	63	60	44	52	714	14.4
4.5	Dravska ravan	58	93	68	69	78	91	46	31	89	90	70	51	834	16.8
4.6	Dravinjske gorice	25	28	27	28	34	34	26	23	34	31	39	36	365	7.4
4.9	Voglajnsko in Zgornjesotelsko gričevje	4	5	6	4	3	5		5	7	3	2	6	50	1.0
4.10	Srednjesotelsko gričevje								2	5	0	5	3	15	0.3
4.12	Krška ravan	35	34	32	21	40	48	23	24	33	55	47	43	435	8.8
Total / Skupaj		363	451	397	417	458	534	285	219	520	527	391	401	4,963	100.0

Mesoregions after Perko (1998) / Mezoregije po Perku (1998)

APPENDIX 3 / DODATEK 3

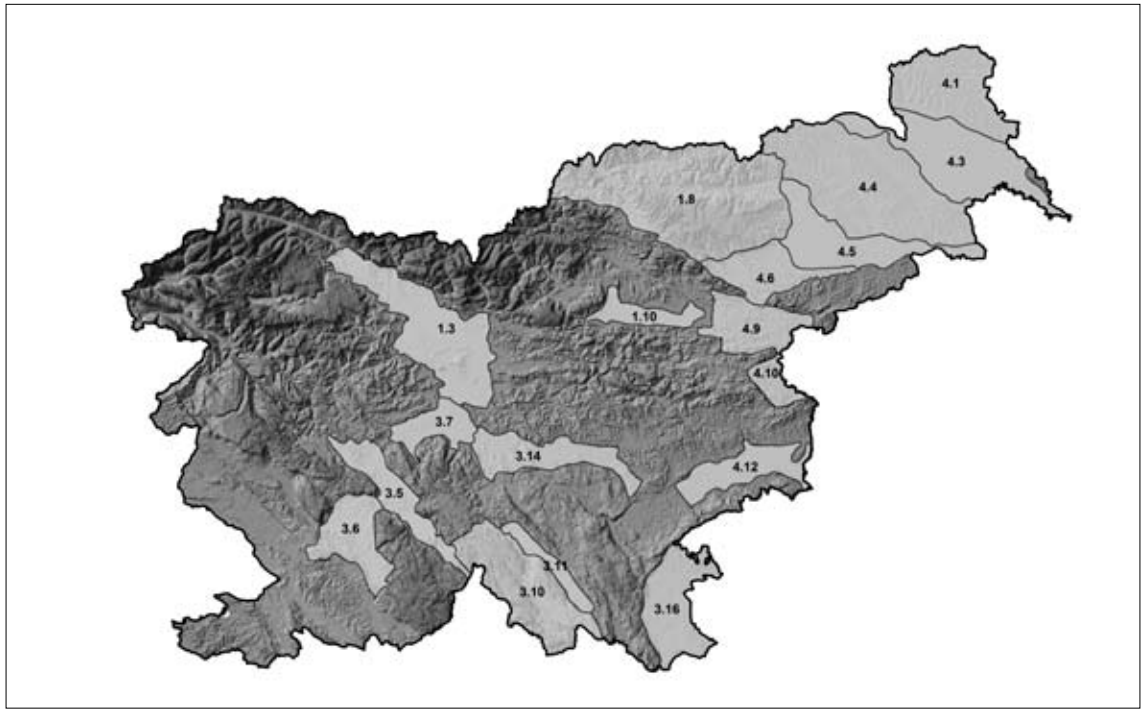
Breeding success of White Storks *Ciconia ciconia* (JZa) in Slovenian mesoregions between 1999 and 2010 / Gnezditveni uspeh (JZa) bele štorklje *Ciconia ciconia* po slovenskih mezoregijah med letoma 1999 in 2010

Mesoregion / Mezoregija		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total/ Skupaj
1.3	Savska ravan	3.00			4.00	1.50	2.00	0.33	3.33	3.25	2.25	2.00	2.25	2.29
1.8	Strojna, Kozjak in Pohorje									0.00				0.00
1.10	Savinjska ravan	1.00	3.00	4.00	1.67	1.00	2.25	2.00			0.00	0.00	1.00	1.48
3.5	Notranjsko podolje						2.00	3.00	2.33	2.75	2.25	2.75	2.50	2.52
3.6	Pivško podolje in Vremščica		2.00	2.00	0.00	0.00	2.00	2.00	1.00	3.00	1.50	4.00	0.00	1.64
3.7	Ljubljansko barje	2.00	3.00	5.00	2.00	3.00	3.00	2.00	4.00	3.50	3.00	2.67	2.50	2.94
3.10	Mala gora, Kočevski rog in Poljanska gora										2.00			2.00
3.11	Velika gora, Stojna in Goteniška gora												0.00	0.00
3.14	Dolenjsko podolje					4.00	2.25	1.25	2.50	3.20	1.88	3.00	1.88	2.33
3.16	Bela krajina	2.00	2.20	2.50	2.50	2.67	2.91	2.30	1.55	2.33	2.33	1.77	2.18	2.24
4.1	Goričko	1.90	2.78	1.67	2.36	1.92	1.69	1.70	0.54	1.83	2.00	2.22	1.82	1.83
4.3	Murska ravan	1.54	2.17	2.01	2.08	2.38	2.22	1.34	0.87	2.48	2.39	1.30	2.00	1.91
4.4	Slovenske gorice	2.41	2.76	1.81	2.59	2.45	2.32	1.60	0.61	2.42	2.00	1.69	2.08	2.08
4.5	Dravska ravan	1.61	2.51	1.84	2.23	2.36	2.07	1.28	0.86	2.12	2.20	2.26	1.65	1.92
4.6	Dravinjske gorice	1.47	2.00	1.69	2.15	2.83	2.00	1.44	1.21	2.00	1.63	2.29	2.40	1.88
4.9	Voglajnsko in Zgornjesotelsko gričevje	2.00	2.50	3.00	2.00	3.00	2.50		2.50	3.50	3.00	2.00	3.00	2.63
4.10	Srednjesotelsko gričevje								2.00	5.00	0.00	5.00	3.00	3.00
4.12	Krška ravan	3.50	3.09	2.91	1.75	3.08	2.82	2.09	2.67	2.75	2.89	2.47	2.15	2.65
Total / Skupaj		1.81	2.41	2.01	2.18	2.40	2.23	1.48	1.09	2.40	2.22	1.92	2.00	2.02

Mesoregions after Perko (1998) / Mezoregije po Perku (1998)

APPENDIX 4 / DODATEK 4

Mesoregions in Slovenia where White Stork *Ciconia ciconia* breeding pairs (HPa) were recorded between 1999 and 2010; mesoregions after Perko (1998). For mesoregions names see Appendices 1, 2 & 3. / Mezoregije Slovenije z gnezdečimi pari (HPa) bele štorklje *Ciconia ciconia* med letoma 1999 in 2010; meje mezoregij po Perku (1998). Za imena mezoregij glej dodatke 1, 2 in 3.



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The distribution of breeding birds in the Küçük Menderes Delta in western Turkey

Razširjenost gnezdilk v delti Küçük Menderes (zahodna Turčija)

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Between 3 and 18 May, 2008, the status and distribution of breeding birds in Küçük Menderes Delta on the coast of the Aegean Sea in western Turkey was investigated. The 49 km^2 large study area was divided into 49 1 × 1 km UTM squares. In all squares, 2–3 point counts, i.e. a total of 139 counts, were conducted. From a total of 54 bird species for which breeding evidence was obtained, 19 species (35%) were classified as possible breeding and 23 (43%) as probably breeding birds, while for 12 species (22%) breeding was confirmed. The current distribution of all breeding species is presented in maps. Crested Lark *Galerida cristata*, Cetti's Warbler *Cettia cetti*, House Sparrow *Passer domesticus* and Olivaceous Warbler *Hippolais pallida* were found in > 50% of all squares. More than 10 breeding species were found in squares containing different aquatic and seasonally flooded habitats along the shore-line of the Aegean Sea and in the surroundings of brackish and freshwater lakes, while in many squares, which contain large portions of agriculturally used land and salt mud-flats, less than 10 breeding species were recorded. Low numbers of breeding waterbirds in the Delta are attributed to the burning of reedbeds during the nesting season and human disturbances, like recreation activities and illegal bird shooting.

Key Words: Küçük Menderes Delta, Western Turkey, breeding bird atlas, avifauna, distribution, breeding bird diversity
Ključne besede: delta Küçük Menderes, zahodna Turčija, atlas gnezdilk, avifavna, razširjenost, pestrost gnezdilk

1. Introduction

According to its high species diversity, extensive food chains and significance for water resources, pristine wetland habitats, untouched by humans, constitute some of the planet's most precious ecosystems. By considering its extraordinary biodiversity, Mitsch & Gosselink (2007) have called them "ecological supermarkets", which are protected under international conventions, national laws and local regulations for water and habitat management. The numerous wetlands in the Turkish Mediterranean region, like marshlands, lakes, rivers, floodplains, estuaries and other natural and anthropogenic wetland habitats, harbour significant components of the country's biodiversity (Karadeniz *et al.* 2009).

Besides other coastal wetlands in Turkey, which meet BirdLife International's criteria for the designation of Important Bird Areas (IBAs), the numbers of two bird species surpass the threshold of the IBA criteria in the Küçük Menderes River: Pygmy Cormorant *Phalacrocorax pygmaeus* (wintering population 35–160 birds) and Spur-winged Plover *Vanellus spinosus* (10–13 breeding pairs) (Kiliç & Eken 2004). According to Eken *et al.* (2006), the Delta further fulfills the criteria as a Key Biodiversity Area (KBA) for both species, criterion 2 of the Ramsar Convention (BirdLife International 2001) and, additionally, harbours a

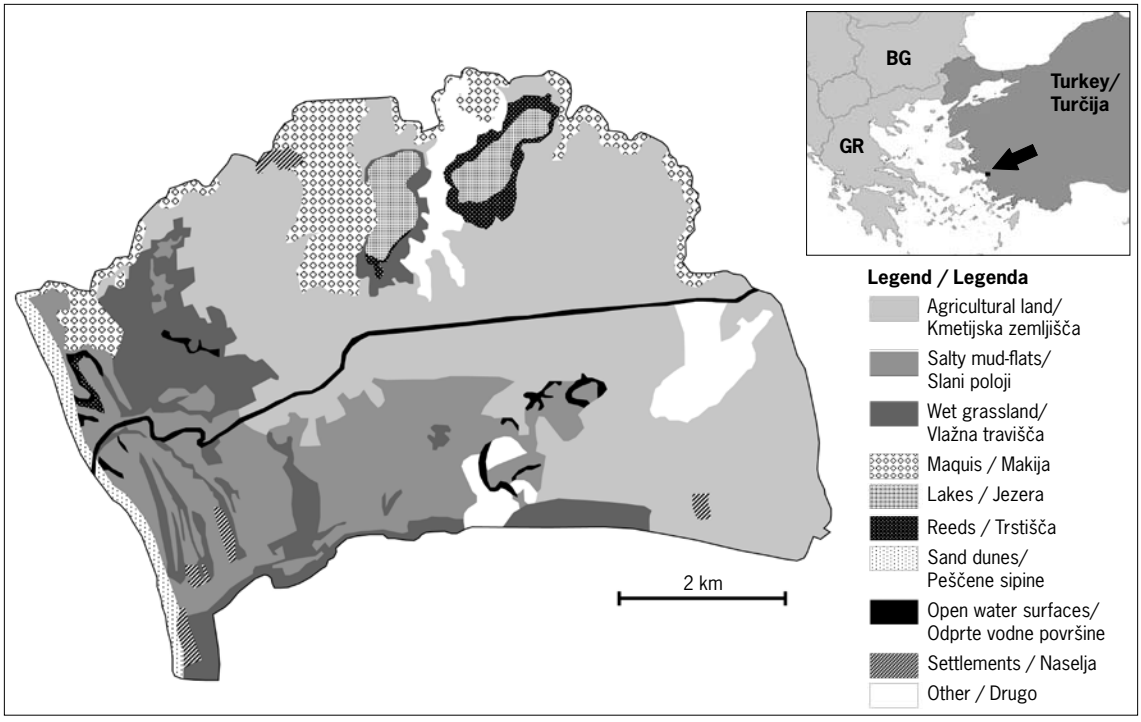

Figure 1: Map of the study area in the Küçük Menderes Delta in western Turkey showing main habitat types

Slika 1: Zemljevid raziskovanega območja v delti Küçük Menderes (zahodna Turčija) z glavnimi tipi habitatov

small wintering population of globally threatened Dalmatian Pelicans *Pelecanus crispus* (Akarsu & Balkiz 2010). Although the Government of Turkey has recently designated the Küçük Menderes Delta a Wildlife Development Area (SIT) and in spite of the fact that the area has been legally protected since 1991, the Delta's wetland habitats and its wildlife keep deteriorating (Eken *et al.* 2006).

Previous ornithological studies have been largely restricted to a few locations or to some aspects of the Delta's birdlife (Suseven *et al.* 2006, Onmuş 2007, KusBank 2010). In particular, Siki (1997) has reported qualitative information on the bird fauna of the Akgöl and Barutcu region in the Küçük Menderes Delta, but has not included the data on spatial distribution. Therefore, the main goal of the present study has been to investigate the current distribution and relative abundances of the breeding birds within the protection areas in the Küçük Menderes Delta and its surroundings. By applying currently widely used atlas techniques in different parts of the world (e.g. Eagles 1990, Gregory *et al.* 1996, Donald & Fuller 1998) and Turkey (Per *et al.* 2002, Onmuş *et al.* 2009), we wish to stimulate science based conservation planning and help with the development of adequate management strategies in the area. We further intended to provide baseline information for the comparison of current and future distribution patterns and the relative abundances of breeding birds in the Delta.

2. Study area and methods

2.1. Study area

The study area is situated in the Küçük Menderes River Delta in the district of Selçuk (province İzmir), on the Aegean coast in western Turkey (Figure 1). 4,440 ha of the Delta's alluvial lowlands have been designated as IBA TR018 Küçük Menderes Delta by BirdLife International and 1,500 and 1,000 ha of that area is covered by Permanent Wildlife Reserve and Wildlife Development Area (SIT), respectively (Heath & Evans 2000, BirdLife International 2011). With a long-term average temperature of 16.7 °C and a total annual rainfall of 570 mm, the Delta is characterized by a Mediterranean climate (Somay *et al.* 2008).

Our 4,296 ha large study area corresponds well to the designated IBA along the Küçük Menderes

Table 1: Surface areas and land coverage of main habitat types in the study area in the Küçük Menderes Delta

Tabela 1: Površine in pokritost glavnih tipov habitatov v raziskovanem območju delte Küçük Menderes

Main habitat type / Glavni tip habitata	Surface area/ Površina (km^2)	Land coverage/ Pokritost (%)
Agricultural land / Kmetijska zemljišča	19.9	46.3
Salty mud-flats / Slani poloji	8.4	19.5
Wet grassland / Vlažna travišča	4.9	11.4
Maquis / Makija	3.6	8.4
Lakes / Jezera	1.1	2.6
Reeds / Trstišča	0.8	1.9
Sand dunes / Peščene sipine	0.5	1.2
Open water surfaces / Odprte vodne površine	0.3	0.7
Settlements / Naselja	0.3	0.7
Other / Drugo	3.2	7.4
Total / Skupaj	43.0	100.0

River. The most characteristic habitat types of the area include agricultural lands, salty mud-flats, maquis, wet grasslands, sand dunes, reedbeds, open water surface of the river and its tributaries, lagoons, brackish and freshwater lakes as well as human settlements (Table 1). The prevailing plant species of the seasonally flooded salt mud-flats are tamarisk *Tamarix* sp. and Common Glasswort *Salicornia europaea*, while along the shores of inland lakes and lagoons bulrush *Typha* sp. and on sand dunes along the coast-line Sea Daffodil *Pancratium maritimum*, a Mediterranean endemic, are growing. A map, which shows the main habitat types of the study area, is given in Figure 1.

During the last 80 years, large areas of the alluvial lowlands have been transformed into agricultural lands (Bolca *et al.* 2005). Recently, mainly cotton and different fruits, like peach, apricot and cherry, have been grown in the Delta. Most of the surrounding higher ground is covered with olive groves.

2.2. Methods

For collecting and later presentation of bird data, the study area has been divided into 49 1 × 1 km wide squares (UTM grid). Field work was conducted between 3 and 18 May 2008. Up to three standardized point counts (duration 10 min) were conducted per UTM square. With a minimum distance of 250 m between survey points as far as possible within squares survey points were located along the boundaries between main habitat types (Bibby *et al.* 1998). For all point counts, UTM coordinates, time of day, habitat type(s), human disturbances and all birds that were seen or heard were noted separately. In all 139 point counts, i.e. a mean of 2.8 counts per UTM square, were performed throughout the study area. Point counting was conducted during day time hours between early morning and dusk with survey belts standardized to 100 m around points. In addition to the data of point counts, observations outside 100 m survey belts and other occasional observations of birds were recorded on separate record sheets. Standard EBCC breeding codes were used for classifying the breeding status (Hagemeijer & Blair 1997) and together with all field data stored in a computer database.

On the basis of this database, distribution maps for all bird species with breeding evidence have been prepared. The highest breeding code per species and 1 × 1 km UTM square – possible, probably or confirmed breeding categories – was assigned as the overall breeding evidence for the given square and used for the preparation of the distribution maps. For calculating the total number of species and species diversity, the Geographical Information System (GIS) was used by superposing the GIS-layers for all bird species recorded per UTM square.

3. Results and discussion

During the study period in May 2008, breeding evidence for a total of 54 bird species was gathered in the Küçük Menderes Delta (Table 2, Appendix 1). Of these, 19 species (35%) were classified as possible breeding and 23 (43%) as probably breeding birds, while for 12 species (22%) breeding was actually confirmed.

Table 2: List of bird species with breeding evidence and distribution frequencies in the study area in the Küçük Menderes Delta in 2008 (breeding categories: A – possible breeding, B – probable breeding, C – confirmed breeding; the highest breeding category established for individual species is given as a breeding status.). Distribution frequencies are indicated by the number (N) and percentage (%) of squares in which the respective species was recorded.

Tabela 2: Seznam ptičjih vrst z gnezditvenim statusom in frekvencami razširjenosti leta 2008 v raziskovanem območju delte Küçük Menderes (kategorije gnezdenja: A – možno gnezdenje, B – verjetno gnezdenje, C – potrjeno gnezdenje; najvišja kategorija gnezdenja, ugotovljena za posamezno vrsto, je podana kot gnezditveni status). Frekvence razširjenosti so označene s številom (N) in odstotkom (%) kvadratov, v katerih so bile zabeležene posamezne vrste.

Species / Vrsta	Breeding status/ Gnezditveni status	Distribution frequency / Frekvenca razširjenosti	
		N	%
Galerida cristata	C	32	65.3
Cettia cetti	B	31	63.3
Passer domesticus	C	30	61.2
Hippolais pallida	A	26	53.1
Pica pica	B	23	46.9
Remiz pendulinus	C	17	34.7
Miliaria calandra	A	16	32.7
Carduelis carduelis	B	16	32.7
Acrocephalus scirpaceus	B	14	28.6
Streptopelia decaocto	B	12	24.5
Hirundo rustica	C	12	24.5
Passer hispaniolensis	C	10	20.4
Turdus merula	B	10	20.4
Garrulus glandarius	A	8	16.3
Motacilla flava	B	8	16.3
Acrocephalus arundinaceus	A	8	16.3
Ciconia ciconia	C	7	14.3
Parus major	B	7	14.3
Tadorna ferruginea	B	6	12.2
Gallinula chloropus	A	6	12.2
Emberiza melanocephala	B	6	12.2
Himantopus himantopus	C	5	10.2
Melanocorypha calandra	B	5	10.2
Corvus monedula	B	5	10.2
Lanius collurio	A	5	10.2
Lanius senator	C	5	10.2
Anas platyrhynchos	B	4	8.2
Corvus cornix	B	4	8.2
Streptopelia turtur	B	3	6.1
Charadrius alexandrinus	B	2	4.1
Vanellus spinosus	C	2	4.1
Chlidonias leucopterus	B	2	4.1
Emberiza cirlus	B	2	4.1
Carduelis chloris	B	2	4.1
Delichon urbicum	A	2	4.1
Lanius minor	A	2	4.1
Buteo buteo	B	1	2.0
Charadrius dubius	A	1	2.0
Glareola pratincola	B	1	2.0
Actitis hypoleucos	A	1	2.0
Tringa totanus	A	1	2.0
Chlidonias niger	B	1	2.0
Ixobrychus minutus	A	1	2.0
Coracias garrulus	C	1	2.0
Upupa epops	A	1	2.0
Clamator glandarius	A	1	2.0
Cuculus canorus	A	1	2.0
Falco tinnunculus	C	1	2.0
Fulica atra	B	1	2.0
Muscicapa striata	A	1	2.0
Cisticola juncidis	A	1	2.0
Saxicola torquatus	C	1	2.0
Dendrocopos syriacus	A	1	2.0
Athene noctua	A	1	2.0

The total number of species per UTM square varied between one and 24 species (Figure 2). In general, in squares containing two or more habitat types more breeding birds were noted than in uniform squares, covered by only one of the main habitat types shown in Table 1. The square, which harbours the highest number of species, is located close to the shore-line of the Aegean Sea, includes outflow of the main river to the sea and encompasses sand flats, sand dunes, open water surfaces, salt marshes and pastures. Here a number of waterbirds, waders and different grassland birds were found. Some squares containing larger numbers of breeding birds (≥ 10 species) are located around Gebekirse and Çakal Lakes as well as around some temporary water beds (Figure 2). Although we have found very little breeding evidence for waterbirds, the high species diversity illustrates the significance of both inland lakes for conservation.

Many squares that contain large areas of salt pastures and agricultural lands harbour lower numbers of species (< 10) per square (Figure 2). In squares covered by ≥ 80% of its area with agriculturally used land and salt mud-flats, total numbers of 2–20 species (mean ± SD = 9.1 ± 4.4, n = 15) and 4–24 breeding bird species (mean ± SD = 10.3 ± 8.2, n = 6) were recorded, respectively. The rather wide range of bird species diversity in squares of both main habitat types apparently derives from the presence of landscape elements, like strips of unused land along ditches, bushes and solitary trees. In agriculturally used land, Crested Lark *Galerida cristata*, House Sparrow *Passer domesticus* and Common Magpie *Pica pica* are the most frequently noted species, while in squares that encompass large portions of salt pastures, Cetti's Warbler *Cettia cetti* and Corn Bunting *Miliaria calandra* were found most frequently (Appendix 1).

We measured the relative abundance of all breeding species in the study area by calculating the distribution frequency, i.e. the proportion of positive squares per species. According to the data shown in Table 2, with a proportion of > 50% of positive squares, Crested Lark, Cetti's Warbler, House Sparrow and Olivaceous Warbler *Hippolais pallida* are the most widely distributed species in the area. Additionally, some passerines which are associated with riverine and marshland habitats, like Penduline Tit *Remiz pendulinus* and Reed Warbler *Acrocephalus scirpaceus*, are relatively abundant in the Delta. In contrast, most non-passerine waterbirds were found in very low frequencies (< 10%). Beside the White Stork *Ciconia ciconia*, which nests with at least seven breeding pairs in the Delta, Ruddy Shelduck *Tadorna ferruginea*, Common Moorhen *Gallinula chloropus* and Black-winged Stilt *Himantopus himantopus* are the most widely distributed waterbirds (distribution frequencies 10–12%).

Figure 2: Total numbers of breeding birds per 1 × 1 km UTM square (n = 49) in the study area of the Küçük Menderes Delta in 2008

Slika 2: Skupno število gnezdečih ptic na 1 × 1 km UTM-mrežo (n = 49) v območju delte Küçük Menderes, raziskanem leta 2008

Although Kiliç & Eken (2004) give an estimate of 10–13 breeding pairs of Spur-winged Plover present there, we observed only two solitary pairs in widely separated UTM squares. Spur-winged Plover is the only breeding species for which the Küçük Menderes Delta qualifies as IBA. Moreover, the species national and European conservation status was given as Vulnerable, based on apparently decreasing population trend (BirdLife International 2004, Kirwan *et al.* 2008) and should be treated as one of the priority species of our area. In similar study conducted by Onmuş *et al.* (2009) in 7 times larger Gediz Delta, the nearest another delta to our study area, located ca. 80 km to the north along the Aegean coast, Spur-winged Plover was found breeding in as many as 23 1 × 1 UTM squares. However, the authors mention Spur-winged Plover as one of the species mostly affected by ongoing habitat loss in that area as well.

In particular, the numbers of colonial nesting waterbirds appear to be very low in the area. Although we saw territorial and breeding displays of small groups of Black *Chlidonias niger* and White-winged Black Terns *C. leucopterus* during the bird surveys, both sites were deserted till the end of our study in late May owing to various tourist activities and the drying out of the prospective nesting sites on small islets. Similarly, we found no breeding evidence for Yellow-legged Gulls *Larus michahellis*, although the species was present in good numbers throughout

the study period. We suppose that due to extensive human activities and illegal bird shooting the species is currently unable to nest in the area. According to our experiences, irregularly fluctuating water levels and extensive human disturbances through agricultural activities, tourism and hunting are the main reasons for the low number of breeding waterbirds in the Delta. In the Wildlife Development Area surrounding Lake Gebekirse as well as around Lake Akgöl, reedbeds were illegally burnt down during the study period, which is presumably the reason for the lack of any breeding evidence for waterbirds on both inland lakes. In addition, inadequately managed waste waters from residential areas and industrial facilities are main sources of pollution in the Küçük Menderes Delta. The absence and the evidence of substantial decline of waterbird species like Spur-winged Plover in particular demonstrate the urgent need to implement appropriate conservation action plans in the Küçük Menderes Delta.

Acknowledgements: We would like to thank the Scientific and Technological Research Council of Turkey (TUBITAK) for supporting our work within the 2209 Support Programme. In addition, we express our gratitude to Dr Peter Sackl (Universalmuseum Joanneum, Graz, Austria) for his valuable assistance and comments.

4. Povzetek

Med 3. in 18.5.2008 so avtorji raziskovali status in razširjenost gnezdečih ptic v delti Küçük Menderes ob obali Egejskega morja v zahodni Turčiji. 49 km^2 veliko raziskovano območje je bilo razdeljeno na 49 kilometrskih UTM-kvadratov. V vsakem kvadratu so bila opravljena 2–3 štetja po točkovni metodi, skupaj 139 štetij. Od 54 vrst z gnezditvenim statusom so avtorji 19 vrst (35 %) opredelili kot možne gnezdilke, 23 (43 %) kot verjetne gnezdilke in 12 (22 %) kot potrjene gnezdilke. Trenutna razširjenost vseh gnezdilk je prikazana na kartah. Čopasti škrjanec *Galerida cristata*, svilnica *Cettia cetti*, domači vrabec *Passer domesticus* in bledi vrtnik *Hippolais pallida* so bili zabeleženi v več kot 50 % vseh kvadratov, več kot 10 gnezdečih vrst pa v kvadratih z različnimi vodnimi in sezonsko poplavljenimi habitati vzdolž obale Egejskega morja, a tudi v okolici brakičnih in sladkovodnih jezer. V mnogih kvadratih z velikim deležem kmetijskih zemljišč in slanimi poloji je bilo zabeleženih manj kot 10 gnezdečih vrst. Majhno število gnezdečih vodnih ptic v delti avtorji pripisujejo požiganju trstišč med gnezditveno sezono in vznemirjanju s strani človeka, kot so npr. rekreacijske dejavnosti in nezakonito streljanje ptic.

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APPENDIX 1 / DODATEK 1

Distribution of breeding birds in the Küçük Menderes Delta (western Turkey) according to the atlas mapping carried out in May 2008. Breeding status is indicated with different colours: light grey, dark grey and black representing possible, probable and confirmed breeding, respectively (pages 122–130).

Razširjenost gnezdilk v delti Küçük Menderes (zahodna Turčija) na osnovi kartiranja maja leta 2008. Gnezditveni status ptic je označen z različnimi barvami: svetlo siva barva označuje možno, temno siva verjetno in črna barva potrjeno gnezdenje (strani 122–130).

Dodatek 1 / Appendix 1: naslov glej str. 121 / title see page 121

Ixobrychus minutus

Ciconia ciconia

Tadorna ferruginea

Anas platyrhynchos

Buteo buteo

Falco tinnunculus

Nadaljevanje dodatka 1 / continuation of Appendix 1

Gallinula chloropus

Fulica atra

Himantopus himantopus

Glareola pratincola

Charadrius dubius

Charadrius alexandrinus

Nadaljevanje dodatka 1 / continuation of Appendix 1

Vanellus spinosus

Tringa totanus

Actitis hypoleucos

Chlidonias niger

Chlidonias leucopterus

Streptopelia decaocto

Nadaljevanje dodatka 1 / continuation of Appendix 1

Streptopelia turtur

Clamator glandarius

Cuculus canorus

Athene noctua

Coracias garrulus

Upupa epops

Nadaljevanje dodatka 1 / continuation of Appendix 1

Dendrocopos syriacus

Melanocorypha calandra

Galerida cristata

Hirundo rustica

Delichon urbicum

Motacilla flava

Nadaljevanje dodatka 1 / continuation of Appendix 1

Saxicola torquatus

Turdus merula

Cettia cetti

Cisticola juncidis

Acrocephalus scirpaceus

Acrocephalus arundinaceus

Nadaljevanje dodatka 1 / continuation of Appendix 1

Hippolais pallida

Muscicapa striata

Parus major

Remiz pendulinus

Lanius collurio

Lanius minor

Nadaljevanje dodatka 1 / continuation of Appendix 1

Lanius senator

Garrulus glandarius

Pica pica

Corvus monedula

Corvus cornix

Passer domesticus

Nadaljevanje dodatka 1 / continuation of Appendix 1

Passer hispaniolensis

Carduelis chloris

Carduelis carduelis

Emberiza cirlus

Emberiza melanocephala

Miliaria calandra

Rezultati januarskega štetja vodnih ptic leta 2010 v Sloveniji

Results of the International Waterbird Census (IWC) in January 2010 in Slovenia

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Januarsko štetje vodnih ptic (IWC) poteka v Sloveniji od leta 1988, leta 1997 pa je bilo prvič zastavljeno kot celosten, koordiniran in standardiziran popis vodnih ptic na ozemlju celotne Slovenije (Štumberger 1997). Od takrat naprej štetje pokriva vse večje reke, celotno Obalo in večino pomembnejših stoječih vodnih teles v državi (Štumberger 1997, 1998, 1999, 2000a, 2001, 2002 & 2005, Božič 2005, 2006, 2007, 2008a & 2008b). K temu sta pripomogla predvsem dobra organizacija in veliko število sodelujočih prostovoljnih popisovalcev. V poročilu so predstavljeni rezultati januarskega štetja vodnih ptic leta 2010, ki je v podobnem obsegu potekalo že štirinajstič.

Januarsko štetje vodnih ptic je leta 2010 potekalo 16. in 17.1. Organizacija, potek, uporabljena metoda štetja in popisni obrazci so bili takšni kot leta 1997 (Štumberger 1997). Za organizacijo popisovalcev na osmih številnih območjih so bili zadolženi lokalni koordinatorji. Pri obdelavi in predstavitvi rezultatov smo upoštevali tudi nekatere podatke, zbrane zunaj organiziranega štetja, vendar največ do pet dni pred ali po koncu tedna, predvidenega za štetje. Kormorane *Phalacrocorax carbo*, z izjemo številnih območij Kolpe, Notranjske in Primorske ter Obale, smo sistematično posebej šteli na znanih in domnevnih skupinskih prenočiščih, prav tako tudi galebe *Laridae* na številnem območju Drave. Na številnih območjih Mure in Drave smo na prenočiščih enako šteli tudi pritlikave kormorane *P. pygmaeus*. Mokože *Rallus aquaticus* smo na ptujskih studenčnicah, potoku Črnec in še nekaterih manjših lokalitetah sočasno s štetjem drugih vodnih ptic popisali s pomočjo predvajanja posnetka oglašanja. Metoda je podrobneje opisana v Božič (2002). V štetje so bile tako kot vsako leto vključene vrste iz naslednjih skupin ptic: slapniki Gaviidae, ponirki Podicipedidae, kormorani Phalacrocoracidae, čaplje Ardeidae, štorklje Ciconiidae, plovci Anatidae, tukalice Rallidae, pobrežniki Charadriiformes ter belorepec *Haliaeetus albicilla*, rjavi lunj *Circus aeruginosus*, vodomec *Alcedo atthis* in povodni kos *Cinclus cinclus*.

V podnebnem pogledu so bile značilnost januarja 2010 temperature, ki so bile blizu dolgoletnemu povprečju, vendar pa so k temu najbolj prispevale razmere v drugi polovici meseca, ki je bila precej hladna, medtem ko je bila prva polovica toplejša od povprečja. December 2009 je bil nadpovprečno topel, in to kljub izrazito nizkim temperaturam v osrednji tretjini meseca. Povprečne dnevne temperature so bile v prvi polovici januarja v notranjosti Slovenije večinoma okoli 0 °C, na Primorskem in Obali pa do 5 °C. Dolgoletno povprečje padavin je bilo decembra preseženo praktično povsod po državi, januarja pa povsod razen dela severne in velikega dela SZ Slovenije. Januarja je bil največji presežek v JV Sloveniji (do 2,2-kratna količina padavin). Padavine so bile v notranjosti Slovenije v obeh mesecih večinoma v obliki snega. V času štetja ni bilo snežne odeje samo na Obali in Goriškem (Cegnar 2009 & 2010). V zadnjih dneh decembra 2009 je velik del države zajela ena največjih povodenj v zadnjih letih. Največji pretoki so bili zabeleženi med 23. in 26.12. Visokovodne konice so bile med največjimi v dolgoletnem primerjalnem obdobju, ponekod pa celo največje doslej zabeležene. Srednji mesečni pretoki rek so se januarja le malo razlikovali od povprečja. Prve dni januarja so bili pretoki kot posledica omenjene povodnji še vedno veliki, v nadaljevanju meseca pa so se večinoma zmanjševali (Strojan 2009 & 2010). Dne 16.1. je bilo na Primorskem jasno, drugod pa oblačno in ponekod megleno. Popoldne se je nizka oblačnost predvsem v vzhodni Sloveniji razkrojila. Najvišje dnevne temperature so bile od –3 do 3 °C, na Primorskem od 7 do 10 °C. 17.1. je prevladovalo zmerno do pretežno oblačno vreme, občasno je rahlo snežilo, ob morju pa je zjutraj padal dež s snegom (Markošek 2010).

V času štetja so bili praktično vsi odseki na rekah nezaledeneli. Delno zaledeneli so bili le skrajni zgornji del zgornje Save (1/4) ter rečne akumulacije Gajševsko jezero (1/4), Ledavsko jezero (1/4), Dravograjsko jezero (1/4) in Mola (1/2). Med pomembnejšimi stoječimi vodami so bili delno zaledeneli Šoštanjsko in Velenjsko jezero (obe 1/4) ter Cerkniško jezero (3/4). Škalsko in Šmartinsko jezero je led prekrival v celoti, jezera v Pesniški dolini pa skoraj v celoti (> 3/4). Ribniki in gramoznice na Dravskem in Ptujskem polju so bili večinoma zaledeneli v celoti, redki so bili zaledeneli 3/4 ali skoraj v celoti (> 3/4). Večje in globlje gramoznice v Pomurju so bile nezaledenele ali zaledenele do 3/4 oziroma več, druge pa večinoma v celoti. Drugod v notranjosti Slovenije so bila stoječa vodna telesa na celjskem območju, Ljubljanskem barju, Notranjskem

Tabela 1: Število vseh in pregledanih popisnih odsekov na rekah in obalnem morju ter njihova skupna dolžina na posameznem štev nem območju in v celotni Sloveniji v januarskem štetju vodnih ptic (IWC) leta 2010 v Sloveniji

Table 1: Number of all and surveyed sections on the rivers and on the coastal sea, as well as their total length in separate count areas and in the entire Slovenia during the January 2010 waterbird census (IWC) in Slovenia

Števno območje/ Count area	Št. vseh popisnih odsekov / Total no. of survey sections	Dolžina/ Length (km)	Št. pregledanih odsekov / No. of sections surveyed	Dolžina/ Length (km)
Mura	61	220,2	59	203,1
Drava	138	374,4	135	365,8
Savinja	30	94,5	28	69,1
Zgornja / Upper Sava	100	309,0	92	286,0
Spodnja / Lower Sava	71	272,7	47	164,1
Kolpa	14	118,0	8	66,8
Notranjska in Primorska	39	250,9	39	250,9
Obala / Coastland	12	42,6	12	42,6
Skupaj / Total	465	1682,3	420	1448,4

Tabela 2: Število vseh in pregledanih lokalitet (stoječih voda, potokov in manjših rek) na posameznem štev nem območju in v celotni Sloveniji v januarskem štetju vodnih ptic (IWC) leta 2010 v Sloveniji

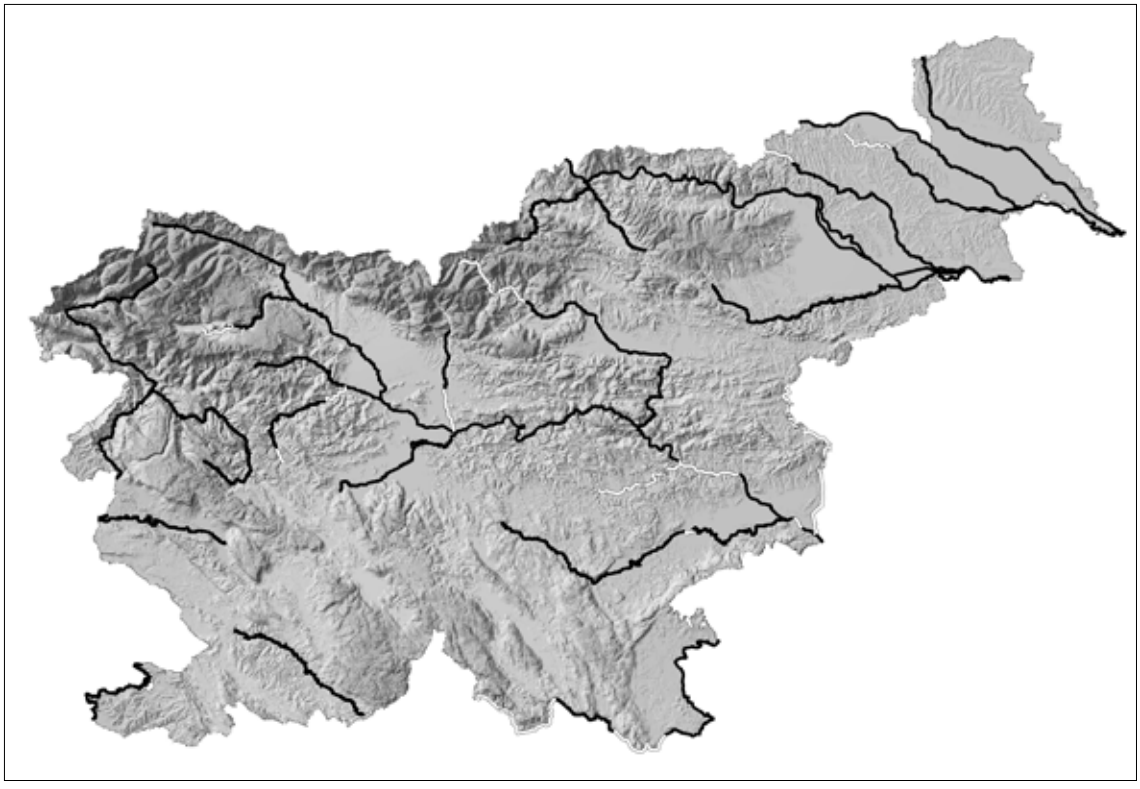
Table 2: Number of all and surveyed localities (standing waters, streams and smaller rivers) in separate count areas and in the entire Slovenia during the January 2010 waterbird census (IWC) in Slovenia

Števno območje/ Count area	Št. vseh lokalitet – stoječe vode/ Total no. of localities (standing waters)	Št. vseh lokalitet – tekoče vode/ Total no. of localities (streams)	Št. pregledanih lokalitet – stoječe vode / No. of surveyed localities (standing waters)	Št. pregledanih lokalitet – tekoče vode/ No. of surveyed localities (streams)
Mura	70	9	67	7
Drava	48	21	31	13
Savinja	16	6	9	2
Zgornja / Upper Sava	18	19	13	10
Spodnja / Lower Sava	9	8	7	2
Kolpa	1	2	1	1
Notranjska in Primorska	20	31	15	22
Obala / Coastland	13	2	12	1
Skupaj / Total	195	98	155	58

in območju Savske ravni večinoma zaledenela v celoti ali skoraj v celoti (> 3/4), v spodnjem Posavju pa večinoma nezaledenela. Na Primorskem in Obali so bila vsa vodna telesa nezaledenela.

Leta 2010 je v januarskem štetju vodnih ptic sodelovalo 249 prostovoljnih popisovalcev. Pregledali smo 420 popisnih odsekov na rekah in obalnem morju v skupni dolžini 1448,4 km (tabela 1), kar je 86,1 % celotne dolžine odsekov, vključenih v popis. Poleg tega smo pregledali tudi 213 lokalitet (155 stoječih voda in 58 potokov) od skupno 293 (tabela 2), kar je 72,7 % vseh lokalitet, evidentiranih v bazi januarskega štetja vodnih ptic. Nekatere lokalitete in Reko v celoti smo tokrat pregledali prvič. S tem je bila v letu 2010 ponovno dosežena največja pokritost vodnih teles v doslej opravljenih januarskih štetjih vodnih ptic na ozemlju Slovenije. Popisne odseke, pregledane v štetju leta 2010, prikazuje slika 1, razširjenost pregledanih lokalitet pa slika 2.

Skupaj smo prešteli 52.188 vodnih ptic, ki so pripadale 68 vrstam. Poleg tega smo zabeležili še dva druga taksona (vrstno nedoločena gos *Anser* sp. in križanec rac potapljavk *Aythya ferina* × *A. nyroca*). To je najnižje število osebkov, preštetih v januarskih

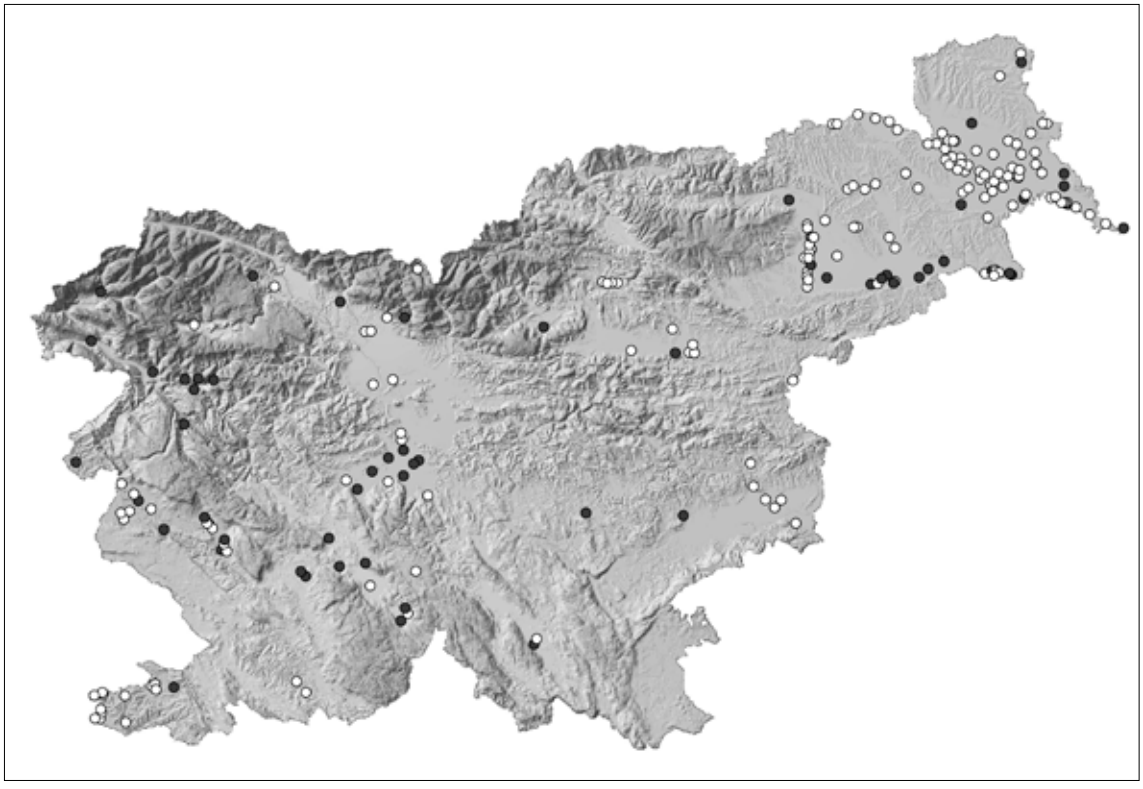


Slika 1: Popisni odseki, pregledani v januarskem štetju vodnih ptic (IWC) na rekah in obalnem morju v Sloveniji leta 2010; črne črte označujejo pregledane, bele pa nepregledane odseke

Figure 1: Survey sections inspected during the January 2010 waterbird census (IWC) on the rivers and on the coastal sea in Slovenia, with the black lines denoting surveyed and the white line unsurveyed sections

štetjih vodnih ptic v Sloveniji po letu 2005, vendar več kot v večini predhodnih let. Število zabeleženih vrst je skupaj z letom 2008 največje od leta 1997 naprej. Tako kot vsa leta prej smo tudi leta 2010 največje število vodnih ptic prešteli na številnem območju Drave, in sicer 18.478. To je najmanj po letu 1997 in pomeni 35,4 % vseh vodnih ptic, preštetih v Sloveniji. Leta 2010 je bilo število 10.000 vodnih ptic preseženo še na številnem območju Obale, kjer je bilo preštetih 11.055 osebkov (21,2 % vseh vodnih ptic). Mlakarica *Anas platyrhynchos* je bila v štetju leta 2010, tako kot v vseh prejšnjih štetjih, daleč najštevilnejša vrsta (21.709 os., 41,6 % vseh vodnih ptic). Po številu preštetih osebkov sledijo liska *Fulica atra* (5413 os., 10,4 % vseh vodnih ptic), rumenonogi galeb *Larus michahellis* (4897 os., 9,4 % vseh vodnih ptic), rečni galeb *Chroicocephalus ridibundus* (4825 os., 9,2 % vseh vodnih ptic) in kormoran (2841 os., 5,4 % vseh vodnih ptic). Te vrste so bile med petimi najštevilnejšimi v vseh štetjih v obdobju 2003–2009, vendar ne vedno v enakem vrstnem redu. Z izjemo rumenonogega galeba so bile druge vrste med najštevilnejšimi tudi v celotnem obdobju štetja od leta 1997 naprej. Število 1000 preštetih osebkov so presegli še siva čaplja *Ardea cinerea*, labod grbec *Cygnus olor* in kreheljc *A. crecca*. Rezultati januarskega štetja vodnih ptic leta 2010 po shemi razdelitve na osem številnih območij (Božič 2007, 2008a & 2008b) so predstavljeni v tabeli 3. V dodatku 1 so številna območja podrobneje razdeljena na posamezne reke in območja z večjim številom lokalitet, kot so poplavne ravnice, doline, ravnine ipd.

Leta 2010 smo prvič v januarskem štetju vodnih ptic zabeležili kanadsko gos *Branta canadensis* (Škalska jezera – Savinja) in rjavega lunja (Ormoško jezero – Drava). Kanadska gos je v seznamu ugotovljenih ptic Slovenije uvrščena v kategorijo E (ubežnice) (Božič 2001), čeprav bi bila verjetno bolj ustrezna kategorija C (v naravo vnesene vrste z naturaliziranimi prosto živečimi populacijami) (Koren 2010). Rjavi lunj je v Sloveniji redek, posamičen zimski gost (Sovinc 1994, Bordjan & Božič 2009). Od redkejših vrst smo zabeležili še zlatouhega ponirka



Slika 2: Lokalitete, pregledane v januarskem štetju vodnih ptic (IWC) v Sloveniji leta 2010; beli krogi označujejo stoječe vode, temni krogi pa potoke in manjše reke

Figure 2: Localities surveyed during the January 2010 waterbird census (IWC) in Slovenia, with white circles denoting standing waters, while dark circles designate smaller rivers and streams

Podiceps auritus (šestič v štirinajstih letih štetja IWC od 1997, vendar prvič v zadnjih petih letih), laboda pevca *C. cygnus* (tretjič v štirinajstih letih štetja IWC od 1997), žerjava *Grus grus* (tretjič zapored, kar so tudi edini podatki) in črno raco *Melanitta nigra* (šestič, vendar že tretjič zapored). Leta 2010 smo prešteli največje število pritlikavih kormoranov (skupaj z letom 2009), duplinskih kozark *Tadorna tadorna*, rac žličaric *A. clypeata*, velikih žagarjev *Mergus merganser* in povodnih kosov *Cinclus cinclus* v okviru januarskih štetij vodnih ptic doslej. Najmanjšega števila nismo leta 2010 zabeležili pri nobeni vrsti. Število sivk *A. ferina* je bilo drugo najmanjše po letu 1997 in tudi število čopastih črnic *A. fuligula* je bilo med najmanjšimi doslej. Število vodomcev *Alcedo atthis* je bilo najmanjše po letu 1999. Za zimski populaciji sivke in čopaste črnice so bila v obdobju 1997–2010 značilna izrazita nihanja številčnosti med posameznimi leti, številčnost pa je bila v večini štetij daleč pod ravnijo iz prve polovice 90-ih let, ko je samo na reki Dravi prezimovalo nekaj tisoč osebkov obeh vrst (Štumberger 1997, 1998, 1999, 2000a, 2000b, 2001, 2002 & 2005, Božič 2005, 2006, 2007, 2008a & 2008b).

Leta 2010 na nobenem številnem območju nismo prešteli najmanjšega števila vodnih ptic v dosedanjih januarskih štetjih. Največje število vodnih ptic doslej smo sicer prešteli na številnem območju Obale, vendar je to zelo podobno kot leta 2007. Število najštevilčnejše vrste, mlakarice, je bilo že drugič zapored (20.250 oziroma 21.709 os.) precej pod povprečjem iz obdobja 2001–2008 (24.151 os.). Najbolj izrazito je bilo to ponovno na območju Drave, kjer je bilo število podobno kot leta 2009 (7562 oziroma 7183 os., kar je najmanj v zadnjih 10 letih; povprečje v obdobju 2001–2008 je 10.560 os.). Nekaj je k temu gotovo prispevala zaledenelost večine stoječih vodnih teles, kjer je mlakaric v zimah z višjimi temperaturami sicer veliko, vendar manjšega števila ne moremo v celoti pojasniti s tem dejavnikom. Zmanjšanje števila prezimujočih mlakaric na območju reke Drave v zadnjih letih so potrdila tudi druga sistematična štetja na tem območju (DOPPS *neobj.*). Skladno s trendom,

Tabela 3: Števila preštetih vodnih ptic na posameznem številnem območju in v celotni Sloveniji v januarskem štetju vodnih ptic (IWC) leta 2010 (1 – Mura, 2 – Drava, 3 – Savinja, 4 – Zgornja Sava, 5 – Spodnja Sava, 6 – Kolpa, 7 – Notranjska in Primorska, 8 – Obala)

Table 3: Numbers of waterbirds counted in separate count areas and in the entire Slovenia during the January 2010 waterbird census (IWC) (1 – Mura, 2 – Drava, 3 – Savinja, 4 – Upper Sava, 5 – Lower Sava, 6 – Kolpa, 7 – Notranjska & Primorska, 8 – Coastland)

Vrsta / Species	1	2	3	4	5	6	7	8	Skupaj/ Total
Gavia stellata				1					1
Gavia arctica	1				2			50	53
Tachybaptus ruficollis	58	342	11	258	163	22	25	94	973
Podiceps cristatus	33	47	47	89	30	8	31	125	410
Podiceps auritus				1				1	2
Podiceps nigricollis		1					1	71	73
Phalacrocorax carbo	505	911	406	249	338	97	160	175	2841
Phalacrocorax aristotelis								39	39
Phalacrocorax pygmaeus	12	364			1			3	380
Botaurus stellaris		1			1				2
Egretta garzetta		1					1	110	112
Casmerodius albus	169	170	17	44	40	3	23	24	490
Ardea cinerea	141	374	88	260	91	26	157	60	1197
Ciconia ciconia		2							2
Cygnus olor	168	597	39	218	218	2	18	18	1278
Cygnus cygnus							1		1
Anser fabalis	3	127	1				6		137
Anser albifrons	25	1					10		36
Anser anser	5	1	1	1		1	5		14
Anser sp.	42								42
Branta canadensis			7						7
Tadorna tadorna		1		1				40	42
Cairina moschata		2	1			1	2		6
Aix galericulata		1		3					4
Anas penelope	6	184			1	2	3	195	391
Anas strepera	2	38		5				72	117
Anas crecca	96	841	14	31	64	19	6	441	1512
Anas platyrhynchos	3322	7562	905	4440	1494	909	2118	959	21.709
Anas acuta		2		1			1		4
Anas clypeata	2			1				92	95
Netta rufina					1		1		2
Aythya ferina		365	10	23	80		1	4	483
Aythya nyroca	1	2			1	1			5
Aythya fuligula		685	10	204	18		1	2	920
Aythya marila		5		1					6
Aythya ferina × *A. nyroca*				1					1
Melanitta nigra		1							1
Melanitta fusca		1						5	6
Bucephala clangula	1	871		25	2		35	11	945
Mergellus albellus		55			2		3		60
Mergus serrator		2						68	70
Mergus merganser	38	170	27	173		19	43		470
Haliaeetus albicilla	2	2				1			5
Circus aeruginosus		1							1

Nadaljevanje tabele 3 / Continuation of Table 3

Vrsta / Species	1	2	3	4	5	6	7	8	Skupaj/ Total
Rallus aquaticus	16	27			7		3	3	56
Gallinula chloropus	12	32	5	60	24	2	13	9	157
Fulica atra	262	1527	426	640	595	55	109	1799	5413
Grus grus					2		3		5
Pluvialis squatarola								4	4
Vanellus vanellus								41	41
Calidris minuta								6	6
Calidris alpina								8	8
Gallinago gallinago	7	17		3	7		8	40	82
Scolopax rusticola							2		2
Numenius arquata		3						16	19
Tringa erythropus								1	1
Tringa totanus								11	11
Tringa nebularia								21	21
Tringa ochropus	34	14		5				1	54
Actitis hypoleucos		1					1	8	10
Larus melanocephalus								1	1
Hydrocoloeus minutus	2	4							6
Chroicocephalus ridibundus	5	1346		79			263	3204	4897
Larus canus		650		32	1	2	4	58	747
Larus argentatus		1						1	2
Larus michahellis	14	1047	2	4	3		651	3104	4825
Larus cachinnans		1							1
Sterna sandvicensis								40	40
Alcedo atthis	11	19	1	10	11		15	20	87
Cinclus cinclus		59	9	332	8		339		747
Skupaj / Total	4995	18.478	2027	7195	3205	1170	4063	11.055	52.188

ki ga opazujemo že od začetka tega desetletja (Božič 2005), smo drugič zapored zabeležili največje število velikih žagarjev. V zadnjih letih je bilo povečevanje številčnosti predvsem zaradi porasta populacije na številnem območju Zgornje Save, medtem ko je bila populacija na drugem zelo pomembnem območju, reki Dravi, stabilna (Božič 2008c). Leta 2010 je bilo število velikih žagarjev na obeh omenjenih območjih podobno; največ jih je bilo na zgornjem in srednjem delu panonske Drave, spodnjem delu zgornje Save in zgornjem delu srednje Save. Poleg tega smo večje število velikih žagarjev zabeležili tudi na Muri, Savinji in Soči s pritoki ter prvič doslej na Kolpi. Na podlagi januarskih štetij vodnih ptic ugotavljamo, da se na več slovenskih rekah pozimi redno pojavlja vsaj 1 % evropske alpske populacije te vrste (36 os.) (Delany & Scott 2006). S tem sodi veliki žagar med varstveno najpomembnejše vrste vodnih ptic pri nas. Za štetje leta 2010 so bila vnovič značilna majhna števila pobrežnikov na Obali, kar opažamo že nekaj let zapored.

Zahvala: Vsem popisovalcem, ki so šteli vodne ptice, gre zasluga, da smo ponovno sistematično in hkrati popisali vse pomembnejše vodne površine v Sloveniji. Brez nesebičnega truda to ne bi bilo mogoče. Lokalni koordinatorji so požrtvovalno organizirali mrežo popisovalcev na številnih območjih. Vsem najlepša hvala.

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Lokalni koordinatorji leta 2010 so bili: Željko Šalamun (Mura), Luka Božič (Drava, Savinja), Katarina Denac, Vojko Havliček, Tomaž Mihelič (Zg. Sava), Andrej Hudoklin, Dušan Klenovšek, Hrvoje Teo Oršanič (Sp. Sava), Borut Rubinić (Kolpa, Obala), Jernej Figelj, Leon Kebe (Notranjska in Primorska).

Summary

In 2010, the International Waterbird Census (IWC) was carried out on 16 and 17 Jan. Waterbirds were counted on all larger rivers, on the entire Slovenian Coastland and on most of the major standing waters in the country. During the census, in which 249 volunteer observers took part, 420 sections of the rivers and coastal sea with a total length of 1448.4 km and 213 other localities (155 standing waters and 58 streams) were surveyed. Altogether, 52,188 waterbirds belonging to 68 species were counted. This is the lowest number of waterbirds recorded in the last five years, but together with the year 2008 also the highest number of species ever recorded in Slovenia during the IWC. The greatest numbers of waterbirds were counted in the Drava count area, i.e. 18,478 individuals (35.4% of all waterbirds in Slovenia). By far the most numerous species was Mallard *Anas platyrhynchos* (41.6% of all waterbirds), followed by Coot *Fulica atra* (10.4% of all waterbirds), Yellow-legged Gull *Larus michahellis* (9.4% of all waterbirds), Black-headed Gull *Chroicocephalus ridibundus* (9.2% of all waterbirds) and Cormorant *Phalacrocorax carbo* (5.4% of all waterbirds). The number 1,000 of the counted individuals was also surpassed by Grey Heron *Ardea cinerea*, Mute Swan *Cygnus olor* and Teal *Anas crecca*. In 2009, Canada Goose *Branta canadensis* (probable C category species) and Marsh Harrier *Circus aeruginosus* were recorded for the very first time during the IWC. Among the rarer recorded species, the following should be given a special mention: Slavonian Grebe *Podiceps auritus* (registered only for the sixth time in the fourteen years since 1997), Whooper Swan *Cygnus cygnus* (for the third time), Crane *Grus grus* (for the third time in a row, these constituting

all existing records), and Common Scoter *Melanitta nigra* (for the sixth time, but third in the row). Numbers of the following species were the highest so far recorded during the IWC: Pygmy Cormorant *Phalacrocorax pygmaeus*, Shelduck *Tadorna tadorna*, Shoveler *Anas clypeata*, Goosander *Mergus merganser* and Dipper *Cinclus cinclus*. Several Slovenian rivers hold significant numbers of Goosanders on a regular basis, exceeding the 1% level given for the alpine population (36 ind.).

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DODATEK 1 / APPENDIX 1

Število preštetih vodnih ptic v januarskem štetju leta 2010 v Sloveniji (M – Mura, ŠČ – Ščavnica, LD – Ledava, MR – Mura razno: jezera, ribniki, gramoznice, mrtvice in potoki v Pomurju ter bližnji okolici, DA – Drava Alpe: meja z Avstrijo pri Libeličah – Selnica ob Dravi, MM – Meža in Mislinja, D – Drava: Selnica ob Dravi – meja s Hrvaško pri Središču ob Dravi, DV – Dravinja, P – Pesnica, DPP – Dravsko in Ptujsko polje: ribniki, gramoznice, kanali, potoki in polja na Dravskem in Ptujskem polju ter bližnji okolici, S – Savinja, ŠAL – Šaleška jezera: Škalsko, Velenjsko in Šoštanjsko jezero, SR – Savinja razno: jezera, ribniki, manjše reke in potoki na Savinjski ravni ter bližnji okolici, ZGS – zgornja Sava: Sava Bohinjka, Sava Dolinka, Sava do Gornje Save (Kranj), SOR – Selška Sora, Poljanska Sora in Sora, SRS – srednja Sava: Gornja Sava (Kranj) – Breg pri Litiji, KBI – Kamniška Bistrica, LB – Ljubljanica, SAR – Savska ravan: jezera, gramoznice, manjše reke in potoki na Savski ravni, LBA – Ljubljansko barje: jezera, ribniki, kanali in potoki na Ljubljanskem barju, SSO – Sava soteska: Breg pri Litiji – Zidani Most, SS – spodnja Sava: Zidani Most – meja s Hrvaško, K – Krka, SSR – spodnja Sava razno: jezera, ribniki, gramoznice in potoki na Krški ravni ter bližnji okolici, KO – Kolpa, KOR – Kolpa razno: jezera, manjše reke in potoki na Kočevskem in v Beli krajini, SO – Soča, I – Idrijca, VI – Vipava, VID – Vipavska dolina: jezera, glinokopi in potoki v Vipavski dolini, NOT – Notranjska: notranjska kraška polja in ponikalnice, Cerkniško jezero, RE – Reka, O – Obala: slovensko obalno morje, OS – Obala soline: Sečoveljske in Strunjanske soline, OZ – Obala zatok: Škocjanski zatok, OR – Obala razno: reke in stoječe vode v Koprskih brdih). Število vodnih ptic, ki so bile v celoti preštete na prenočiščih, je označeno s krepkim tiskom.

The number of waterbirds counted during the 2010 International Waterbird Census (IWC) in Slovenia (M – Mura, ŠČ – Ščavnica, LD – Ledava, MR – Mura other: lakes, fishponds, gravel pits, oxbows and streams in Pomurje and its immediate vicinity, DA – Drava Alps: from border with Austria at Libeliče to Selnica ob Dravi, MM – Meža and Mislinja, D – Drava: from Selnica ob Dravi to the border with Croatia at Središče ob Dravi, DV – Dravinja, P – Pesnica, DPP – Dravsko polje and Ptujsko polje: fishponds, gravel pits, channels, streams and fields on Dravsko and Ptujsko poljes and their immediate vicinity, S – Savinja, ŠAL – Šaleška jezera: Škalsko, Velenjsko and Šoštanjsko Lake, SR – Savinja other: lakes, fishponds, small rivers and streams on Savinja plain and along it , ZGS – Upper Sava: Sava Bohinjka, Sava Dolinka, Sava to Kranj, SOR – Selška Sora, Poljanska Sora and Sora, SRS – Middle Sava: from Kranj to Breg pri Litiji, KBI – Kamniška Bistrica, LB – Ljubljanica, SAR – lakes, gravel pits, small rivers and streams on Sava plain, LBA – lakes, fishponds, channels and streams on Ljubljansko barje, SSO – Sava gorge: from Breg pri Litiji to Zidani Most, SS – Lower Sava: from Zidani Most to the border with Croatia, K – Krka, SSR – Lower Sava other: lakes, fishponds, gravel pits and streams on Krško plain and nearby, KO – Kolpa, KOR – Kolpa other: lakes, small rivers and streams in Kočevsko region and Bela krajina, SO – Soča, I – Idrijca, VI – Vipava, VID – lakes, gravel pits and streams in Vipava valley, NOT – Notranjska: karst fields and disappearing streams, Cerkniško Lake, RE – Reka, O – Slovene coastal sea, OS – Coastal saltpans: Sečovlje and Strunjan saltpans, OZ –Škocjanski zatok, OR – other localities on the coastland: rivers and standing waters in Koprska brda). The number of waterbirds counted entirely in their roosting places is denoted in bold.

Dodatek 1 / Appendix 1: naslov glej str. 139 / title see page 139

Vrsta / Species	Slovenija	Mura					Drava								Savinja				Spodnja Sava / Lower Sava					
	Skupaj vse/ Total overall	M	ŠČ	LD	MR	Skupaj/ Total	DA	MM	D	DV	P	DPP	Skupaj/ Total		S	ŠAL	SR	Skupaj/ Total		SSO	SS	K	SSR	Skupaj/ Total
Gavia stellata	1																							
Gavia arctica	53				1	1															2			2
Tachybaptus ruficollis	973	23		13	22	58	15		302	22		3	342		4	7		11			12	131	20	163
Podiceps cristatus	410	3		3	27	33	5		39		2	1	47		2	45		47			11	11	8	30
Podiceps auritus	2																							
Podiceps nigricollis	73								1				1											
Phalacrocorax carbo	2841	**470**		**35**		505	**85**		**783**	**43**			911		370	**36**		406		**11**	**195**	**132**		338
Phalacrocorax aristotelis	39																							
Phalacrocorax pygmaeus	380	1			**11**	12			**364**				364										1	1
Botaurus stellaris	2											1	1										1	1
Egretta garzetta	112											1	1											
Casmerodius albus	490	39	12	53	65	169			85	19	28	38	170		2		15	17			2	31	7	40
Ardea cinerea	1197	47	11	43	40	141	7	28	193	40	69	37	374		48	17	23	88		3	22	51	15	91
Ciconia ciconia	2											2	2											
Cygnus olor	1278	98	18	12	40	168	66		450	10	61	10	597		1	29	9	39			5	211	2	218
Cygnus cygnus	1																							
Anser fabalis	137	1			2	3						127	127		1			1						
Anser albifrons	36	25				25						1	1											
Anser anser	14	5				5			1				1			1		1						
Anser sp.	42			42		42																		
Branta canadensis	7															7		7						
Tadorna tadorna	42								1				1											
Cairina moschata	6								2				2		1			1						
Aix galericulata	4								1				1											
Anas penelope	391	6				6			184				184								1			1
Anas strepera	117	2				2			38				38											
Anas crecca	1512	57		9	30	96	9	32	776		24		841		14			14			22	26	16	64
Anas platyrhynchos	21.709	962	709	632	1019	3322	315	432	4443	465	732	1175	7562		734	115	56	905		47	238	1141	68	1494
Anas acuta	4											2	2											
Anas clypeata	95				2	2																		
Netta rufina	2																						1	1
Aythya ferina	483						7		354			4	365			10		10			13	2	65	80
Aythya nyroca	5				1	1			2				2										1	1
Aythya fuligula	920								684	1			685		6	4		10			7	2	9	18
Aythya marila	6								5				5											
Aythya ferina × *nyroca*	1																							
Melanitta nigra	1								1				1											
Melanitta fusca	6						1						1											
Bucephala clangula	945	1				1	14		856			1	871								2			2
Mergellus albellus	60								55				55										2	2
Mergus serrator	70										2		2											
Mergus merganser	470	38				38	27		120	1	22		170		25		2	27						
Haliaeetus albicilla	5	2				2			2				2											
Circus aeruginosus	1								1				1											
Rallus aquaticus	56				16	16	1		26				27										7	7
Gallinula chloropus	157			11	1	12	2		15			15	32		1	4		5			1	21	2	24
Fulica atra	5413	16	14	21	211	262	124		1201	28	102	72	1527		6	420		426			23	262	310	595
Grus grus	5																						2	2
Pluvialis squatarola	4																							
Vanellus vanellus	41																							
Calidris minuta	6																							
Calidris alpina	8																							
Gallinago gallinago	82		7			7			17				17									2	5	7
Scolopax rusticola	2																							
Numenius arquata	19								1			2	3											
Tringa erythropus	1																							
Tringa totanus	11																							
Tringa nebularia	21																							
Tringa ochropus	54	34				34			14				14											
Actitis hypoleucos	10								1				1											
Larus melanocephalus	1																							
Hydrocoloeus minutus	6	2				2			4				4											
Chroicoc. ridibundus	4897				5	5	3		**1343**				1346											
Larus canus	747								**650**				650								1			1
Larus argentatus	2								1				1											
Larus michahellis	4825	1			13	14	15		**1032**				1047		1	1		2			3			3
Larus cachinnans	1								1				1											
Sterna sandvicensis	40																							
Alcedo atthis	87	6	1	1	3	11	2		10	1	3	3	19				1	1			4	5	2	11
Cinclus cinclus	747						13	40		5	1		59		9			9				8		8
Skupaj / Total	52.188	1839	772	875	1509	4995	711	532	14.059	635	1046	1495	18.478		1225	696	106	2027		61	564	2036	544	3205

Nadaljevanje dodatka 1 (desna stran) / continuation of Appendix 1 (right side)

	Zgornja Sava / Upper Sava								Kolpa			Notranjska in Primorska								Obala / Coast				
	ZGS	SOR	SRS	KBI	LB	SAR	LBA	Skupaj/ Total	KO	KOR	Skupaj/ Total	SO	I	VI	VID	NOT	RE	Skupaj/ Total	O	OS	OZ	OR	Skupaj/ Total
G. ste.	1							1																
G. arc.																			50				50
T. ruf.	36	1	174		41		6	258	22		22	5		2	3	15		25	9	7	78		94
P. cri.	35		46		8			89	2	6	8	4			25		2	31	111	4	8	2	125
P. aur.	1							1											1				1
P. nig.																1		1	71				71
P. car.	**55**		**146**		**48**			249	97		97	45	19	33	38	22	3	160	135	32	4	4	175
P. ari.																			39				39
P. pyg.																					3		3
B. ste.																							
E. gar.																	1	1	26	79	5		110
C. alb.	2	1	6		19		16	44	3		3	10		5	3	3	2	23	16	7	1		24
A. cin.	78	31	63	13	30	19	26	260	26		26	77	30	25	14	10	1	157	12	21	21	6	60
C. cic.																							
C. olo.	15		191		10	2		218	2		2	2				15	1	18	8	1	9		18
C. cyg.																	1	1					
A. fab.															6			6					
A. alb.															10			10					
A. ans.			1					1	1		1				5			5					
A. sp.																							
B. can.																							
T. tad.			1					1												40			40
C. mos.									1		1	1		1				2					
A. gal.					3			3															
A. pen.									2		2		3					3		172	23		195
A. str.			4		1			5												70	2		72
A. cre.			30		1			31	19		19					6		6		276	165		441
A. pla.	654	175	1167	69	2023	183	169	4440	804	105	909	295	167	146	343	1134	33	2118	163	537	239	20	959
A. acu.					1			1								1		1					
A. cly.	1							1												24	68		92
N. ruf.												1						1					
A. fer.	1		22					23								1		1			4		4
A. nyr.										1	1												
A. ful.	17	2	183		2			204								1		1			2		2
A. mar.					1			1															
A. f. × n.			1					1															
M. nig.																							
M. fus.																			5				5
B. cla.	4		21					25								35		35		9	2		11
M. alb.																3		3					
M. ser.																			68				68
M. mer.	49	15	98		3	8		173	19		19	27	16					43					
H. alb.									1		1												
C. aer.																							
R. aqu.															1	2		3		1	2		3
G. chl.			2		37	4	17	60		2	2			1	12			13		1	5	3	9
F. atr.	125		441		58	16		640	39	16	55	26		3	15	60	5	109	180	1312	301	6	1799
G. gru.																3		3					
P. squ.																			4				4
V. van.																				41			41
C. min.																				6			6
C. alp.																				8			8
G. gal.		1	1		1			3				3		2	2	1		8			40		40
S. rus.												2						2					
N. arq.																					16		16
T. ery.																				1			1
T. tot.																				11			11
T. neb.																			5	9	7		21
T. och.	1		1				3	5													1		1
A. hyp.														1				1	4	4			8
L. mel.																			1				1
H. min.																							
C. rid.	3		5		71							7			251	5		263	1846	558	154	646	3204
L. can.	11		20		1			1		2	2					4		4	32	1	5	20	58
L. arg.																						1	1
L. mic.	1		1		2			3				19		6	611	15		651	1465	1171	18	450	3104
L. cac.																							
S. san.																			37	3			40
A. att.	4	2	2		1	1		11				7	2	3	2	1		15	2	11	4	3	20
C. cin.	223	64	5	4		36		8				171	159	5	4			339					
	1317	292	2632	86	2362	269	237	3205	1038	132	1170	702	396	233	1345	1338	49	4063	4290	4417	1187	1161	11.055

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The Diet of a Lesser Spotted Eagle *Aquila pomarina* family in SE Bulgaria

Prehrana družine malega klinkača *Aquila pomarina* v JV Bolgariji

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The diet of the Lesser Spotted Eagle *Aquila pomarina* during the breeding season predominantly includes small mammals, mainly voles Arvicolidae, followed by amphibians, small birds, and occasionally reptiles and large insects (Glutz von Blotzheim *et al.* 1971, Cramp 1980, del Hoyo *et al.* 1994). However, under the Mediterranean climate conditions, the diet can consist mainly of reptiles, followed by birds, insects and small mammals as demonstrated by a study carried out in Greece (Vlachos & Papageorgiou 1996). The diet of this species in Bulgaria is generally unknown, with some available data only on the stomach contents of six specimens that included Common Vole *Microtus arvalis*, European Souslik *Spermophilus citellus*, unidentified lizard, Slow-worm *Anguis fragilis* and Marsh Frog *Pelophylax ridibundus* (Simeonov *et al.* 1991). Here we present data on the diet composition of a Lesser Spotted Eagle pair, breeding in SE Bulgaria that successfully raised its offspring twice, in 2000 and 2001.

The breeding territory of the studied Lesser Spotted Eagle pair is located close to the town of Burgas, SE Bulgaria (UTM NG39). It comprises Mandra Lake and the adjacent marshy area, the Izvorska river valley with arable lands, surrounded by low hills predominantly covered with dry pastures, wastelands and patches of oak forest. This region is situated in the Transitory Mediterranean Climate Zone (Galabov 1982). The birds were not marked and occupied the same nest in the consecutive years. The distance from the nest to the forest edge was 100 m, measured by the GPS navigation device (Garmin eTrex Legend) and the computer software MapSource 6.11.6 (Garmin Ltd.). The percentage of major habitat types within the radius of 3 km around the nest, which corresponds to the mean activity range of the Lesser Spotted Eagle (Zub *et al.* 2010), were 77.4% open non-forest lands, 10.6% forest, 8.9% wetlands and 3.1% urban lands (villages and main road networks).

Pellets and food remains (single bones, skin, fur, feathers etc.) were collected from the nest and nearby resting places of adult birds during two visits per year, carried out in July and August 2000 and 2001. This corresponded to the second half of the breeding season (nestling period) and thus we minimized the possible negative impacts of the study on the breeding. The remains were identified by reference to our comparative collections kept in the National Museum of Natural History. Estimates of the minimum number of individuals (prey items, MNI) of vertebrates were based mainly on the remains of crania and cranial fragments, mandibles and pelvic bones, while the MNI of invertebrates was based on head fragments and mandibles. Difference in the number of prey items at the main animal group level in the two study years was tested using the χ^2 statistics.

The Lesser Spotted Eagle diet composition was assessed on the basis of 110 prey items classified into 27 different taxonomic categories (Table 1). The diet consisted of six main animal groups, among which small mammals (34.5%, range 25.4–46.8%) and insects (42.7%, range 27.7–54.0%) were most frequently identified in both years of the study. Far smaller was the share of reptiles, birds, amphibians and fish. Grasshopper *Decticus albifrons* (25.5%, range 17.0–31.7%) and vole *Microtus arvalis* / *rossiaemeridionalis* (21.8%, range 17.5–27.7%) were the most abundant species according to the number of prey items in our sample and the only ones that constituted over 10% of the total diet.

In spite of prevalence of voles in the diet of Lesser Spotted Eagle throughout Europe, the latter did not predominate in the diet here as strongly as in the northern and more humid parts of the species' range (Cramp 1980, del Hoyo *et al.* 1994). This was probably due to the fact that their numbers in SE Bulgaria are rather low (Straka & Gerasimov 1977), reflecting the opportunistic feeding habits of Lesser Spotted Eagle (Zub *et al.* 2010). Similarly, voles formed only 28% prey items in the diet of Barn Owl *Tyto alba*, another species that largely preys upon voles, studied in the same area (Miltschev *et al.* 2004). The most numerous prey species, the adult grasshopper *Decticus albifrons*, is about 5 cm long and was also represented in considerable numbers in the diet of Black Storks

Table 1: Diet of a Lesser Spotted Eagle *Aquila pomarina* family, based on pellets and food remains, collected from the nest (nestling period) and nearby resting places of adult birds near Burgas (SE Bulgaria) in July and August, 2000 and 2001 (N – No. of prey items, % – percentage of prey items)

Tabela 1: Prehrana družine malega klinkača *Aquila pomarina*, ugotovljena na podlagi izbljuvkov in ostankov hrane, zbranih na gnezdu (obdobje mladičev) in bližnjih počivališčih odraslih ptic pri Burgasu (JV Bolgarija) v juliju in avgustu 2000 in 2001 (N – št. enot plena, % – odstotek enot plena)

Prey item (Taxon)/ Enota plena (Sistematska enota)	2000		2001		Total / Skupaj	
	N	%	N	%	N	%
Erinaceus concolor	3	6.4	1	1.6	4	3.6
Talpa levantis	1	2.1			1	0.9
Neomys anomalus			1	1.6	1	0.9
Glis glis	1	2.1			1	0.9
Mus musculus / macedonicus	1	2.1			1	0.9
Sylvaemus flavicollis / sylvaticus			1	1.6	1	0.9
Microtus arvalis / rossiaemeridionalis	13	27.7	11	17.5	24	21.8
Rodentia spp.	3	6.4	2	3.2	5	4.5
Mammalia total / skupaj	22	46.8	16	25.4	38	34.5
Fringilla coelebs			1	1.6	1	0.9
Oscines spp.	4	8.5	1	1.6	5	4.5
Aves total / skupaj	4	8.5	2	3.2	6	5.5
Coluber caspius	2	4.3	2	3.2	4	3.6
Natrix tessellata			1	1.6	1	0.9
Natrix sp.	1	2.1	5	7.9	6	5.5
Lacerta viridis / trilineata	1	2.1	1	1.6	2	1.8
Reptilia total / skupaj	4	8.5	9	14.3	13	11.8
Pelophylax ridibunda	2	4.3	2	3.2	4	3.6
Amphibia subtotal	2	4.3	2	3.2	4	3.6
Carassius auratus	2	4.3			2	1.8
Pisces total / skupaj	2	4.3			2	1.8
Orthoptera						
Decticus albifrons	8	17.0	20	31.7	28	25.5
Platycleis escalerai			1	1.6	1	0.9
Platycleis incerta / nigrosignata	3	6.4	1	1.6	4	3.6
Metrioptera roeselii / fedtschenkoi			2	3.2	2	1.8
Gryllotalpa sp.			1	1.6	1	0.9
Calliptamus italicus / barbarus			1	1.6	1	0.9
Coleoptera						
Carabus coriaceus			2	3.2	2	1.8
Harpalus sp.	1	2.1	3	4.8	4	3.6
Aphodius sp.			2	3.2	2	1.8
Cetonia sp.	1	2.1			1	0.9
Cerambycidae			1	1.6	1	0.9
Insecta total / skupaj	13	27.7	34	54.0	47	42.7
Total / Skupaj	47	100.0	63	100.0	110	100.0

Ciconia nigra (Miltschev *et al.* 2000) and Rose-coloured Starlings *Sturnus roseus* (Miltschev & Tschobanov 2002) foraging in the same area. Given the fact that the studied eagle nest was situated close to the forest edge, our findings are in accordance with those of Zub *et al.* (2010) that Lesser Spotted Eagles nesting close to the forest edge and thus flying short distances between the nest and the hunting areas fed on smaller prey than birds nesting far from open non-forest areas suitable for hunting.

The relatively high proportion of snakes of the genus *Natrix* probably reflects their high numbers in and around the wet zones in the hunting territory. They usually predominate in reptilian portion of the diet in both the northern and southern parts of the Lesser Spotted Eagle range (Cramp 1980, Vlachos & Papageorgiou 1996). Other main animal groups in the diet were merely supplementary. The remains of Goldfish *Carassius auratus* showed only heads with small fragments of the spinal column. These were rather taken accidentally – probably as carrion, reported as exceptional by Glutz von Blotzheim *et al.* (1971) and Cramp (1980). In spite of the presence of wetlands in the pair's hunting territory, amphibians constituted only a small part of the diet. They are usually the second most important animal group in the diet of Lesser Spotted Eagle in Central and Eastern Europe, after small mammals (Glutz von Blotzheim *et al.* 1971). However, the amount of amphibians taken depends strongly on availability of voles. When vole populations are low, amphibians form up to 64% of the diet (Cramp 1980).

The difference in the proportion of the main six animal groups in the diet during the two consecutive years was statistically significant (χ^2_5 = 12.9, P = 0.025). The increased taking of insects in 2001 was related to a significant reduction in the number of mammals in the diet composition. The feeding habits of Lesser Spotted Eagles are considered opportunistic (Zub *et al.* 2010). Changes in prey species numbers and its accessibility between years should be the reason for the considerable annual differences in the diet. However, there were no data available on the population dynamics of the potential prey species of Lesser Spotted Eagle in the study area to confirm this hypothesis.

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Povzetek

Avtorji so v dveh gnezditvenih sezonah, v letih 2000 in 2001, preučevali prehrano družine malega klinkača *Aquila pomarina* pri Burgasu (JV Bolgarija). Izbljuvke in ostanke hrane so v juliju in avgustu obeh let zbrali na gnezdu ter bližnjih počivališčih odraslih ptic, kar se je časovno ujemalo z drugo polovico gnezdenja (mladiči v gnezdu). Sestavo prehrane so določili na podlagi 110 enot plena, ki so pripadale 27 različnim sistematskim enotam. Od glavnih živalskih skupin so v prehrani v obeh letih prevladovali mali sesalci (skupaj 34,5 % enot plena) in žuželke (skupaj 42,7 % enot plena). Najštevilčnejši vrsti sta bili kobilica primorska plenilka *Decticus albifrons* (25,5 %) in voluharica *Microtus arvalis* / *rossiaemeridionalis* (21,8 %). Razlika v številčnosti šestih glavnih živalskih skupin med letoma raziskave je statistično značilna. Ker je mali klinkač prehranski oportunist, so razlike v sestavi prehrane med letoma verjetno posledica sprememb v številčnosti posameznih vrst plena in njihove dostopnosti.

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Opažanja velikih jat krokarjev *Corvus corax* na Pokojiški planoti (osrednja Slovenija)

Observations of large Raven *Corvus corax* flocks on Pokojišče Plateau (Central Slovenia)

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Krokar *Corvus corax* je v Sloveniji dokaj pogost gnezdilec. Velikost njegove populacije je bila konzervativno ocenjena na 3400 do 6400 osebkov, od tega 1000 do 1500 gnezdečih parov in vsaj 1369 do 3361 neteritorialnih osebkov, ocenjenih na podlagi sistematičnega štetja na deponijah odpadkov (Geister 1995, Tome *et al.* 2008). Krokar je bil do nedavnega v Sloveniji razmeroma slabo preučena vrsta, obsežnejše sistematične raziskave so se začele šele v zadnjih letih, predvsem kot posledica povečanja števila odškodninskih zahtevkov zaradi škode, ki jo je krokar prizadejal živini, še posebno drobnici (Tome *et al.* 2009a). Osnovne raziskave vedenja in ekologije vrst, ki prihajajo v konflikte z ljudmi, so prvi korak k uspešnemu upravljanju in zmanjševanju konfliktov (Treves *et al.* 2006). S pričujočim kratkim člankom želim prispevati k znanju o tej za človeka potencialno konfliktni vrsti.

Krokarje na Pokojiški planoti (UTM VL48 in VL58) na SV delu visoko-kraške dinarske planote Menišije (severni Dinaridi, osrednja Slovenija) spremljam od začetka leta 2004. Priložnostna opažanja beležim med svojim rednim obiskovanjem tega območja – običajno vsaj nekaj dni vsak teden. Preučevano območje leži na približno 700–800 m n.v. Na Pokojiški planoti so tri manjše vasi z več pašniki in travniki, ki jih obdajajo obsežnejši dinarski bukovo-jelovi gozdovi *Omphalodo-Fagetum* s.lat. Na pašnikih se živina pase vso leto, prevladujeta pa govedoreja in konjereja. Na tem območju se krokarji redno pojavljajo, njihova številčnost pa se v različnih letnih časih in tudi med leti precej spreminja. Srednja vrednost velikosti opaženih jat po do sedaj zbranih podatkih znaša 3,5 krokarja (n = 50; M. Krofel *v pripravi*). V zadnjem letu (2010), ko beležim vsa opažanja, krokarje opažam v povprečju enkrat na 8,5 dni. Ocenjujem, da je bila frekvenca pojavljanja podobna tudi v letih 2004–2009, ko sem natančneje beležil samo velike jate. V tem prispevku poročam o opažanjih velikih (> 30 os.) jat krokarjev v obdobju sedmih let – od začetka leta 2004 do konca 2010.

Med opazovanji na Pokojiški planoti so krokarji krožili v zraku, se igrali in preganjali med seboj ali pa posedali po drevesih in na travnikih oziroma pašnikih. Zaradi delno zaraščenega in razgibanega terena ter gibanja ptic verjetno nisem vedno preštel vseh krokarjev v jati. Zato je treba navedena števila jemati kot minimalne velikosti jat. Največja jata je štela 124 osebkov (slika 1). Večino velikih jat sem zabeležil leta 2009, v letih 2005, 2007, 2008 in 2010 pa jat, večjih od 30 osebkov, nisem opazil. Velike jate so se pojavljale predvsem v zimskem obdobju, enkrat pa sem takšno jato opazoval tudi spomladi (tabela 1).

Tabela 1: Opažanja velikih jat (> 30 os.) krokarjev *Corvus corax* na Pokojiški planoti (severni Dinaridi, osrednja Slovenija) v obdobju od 2004 do 2010

Table 1: Observations of large flocks (> 30 ind.) of Ravens *Corvus corax* on the Pokojišče Plateau (Northern Dinaric Mountains, central Slovenia) between 2004 and 2010

Datum/ Date	Lokacija/ Location	Št. krokarjev/ No. of Ravens
29.2.2004	Sebonji laz	36
8.4.2006	Kuni vrh–Sebonji laz	83
28.1.2009	Šijavec	124
18.2.2009	Šijavec	115
13.11.2009	Sebonji laz	69
21.12.2009	Šijavec	39

Glede na biološke značilnosti vrste (Ratcliffe 1997) sklepam, da so opažene velike jate krokarjev sestavljali neteritorialni osebki. Takšne jate večinoma oblikujejo spolno nezreli osebki, v manjši meri pa tudi neteritorialni oziroma nesparjeni odrasli osebki (Cramp & Perrins 1994). Velikosti jat so bile podobne kot pri največjih zabeleženih jatah neteritorialnih krokarjev na deponijah odpadkov v Sloveniji z največjo jato 150 osebkov, opaženo v Podmežakli pri Jesenicah (Tome *et al.* 2008). Med zabeleženimi velikimi jatami na Pokojiški planoti je najbolj zanimivo opažanje 83 osebkov v aprilu, saj je po literaturnih podatkih za spomladanski čas značilno predvsem pojavljanje krokarjev v manjših skupinah (Ratcliffe 1997).

Kaj je bil glavni razlog, da so se krokarji zadrževali na Pokojiški planoti v velikih jatah, ni povsem jasno. Neteritorialni krokarji se v večjem številu pogosto zbirajo ob obilnih virih hrane (Ratcliffe 1997,

Slika 1: Del jate 124 krokarjev *Corvus corax*, opažene 28.1.2009 na Pokojiški planoti (severni Dinaridi, osrednja Slovenija) (foto: M. Krofel)

Figure 1: Part of the flock of 124 Ravens *Corvus corax* observed on 28 Jan 2009 on the Pokojišče Plateau (Northern Dinaric Mountains, central Slovenia) (photo: M. Krofel)

Tome *et al.* 2008). Tako je ena izmed možnosti, da so krokarje privlačila krmišča za prostoživeče parkljarje in rjavega medveda *Ursus arctos*, ki jih je na in v okolici Pokojiške planote, kar nekaj. Analiza prehrane je namreč pokazala, da se v Sloveniji krokarji redno hranijo z živalsko krmo in ostanki živali (Tome *et al.* 2009b). Na pomen krmišč za krokarja kažejo tudi lastna opažanja, saj sem velike jate pogosto srečeval na krmiščih za divje živali po Menišiji in drugod v dinarskih gozdovih po Sloveniji in Hrvaškem, npr. na Snežniški planoti, v Kočevskem Rogu in Gorskem kotarju.

Glede na neredna pojavljanja velikih jat krokarjev na Pokojiški planoti sklepam, da se ti krokarji klatijo po širšem območju in niso vezani le na to planoto. Tome *et al.* (2008) so večje jate neteritorialnih krokarjev v Sloveniji povezovali predvsem z deponijami organskih odpadkov, ki so za krokarja predvidljiv in stalen vir hrane. Pokojiški planoti najbližje deponije organskih odpadkov najdemo pri Vrhniki, Logatcu ter Rakeku in so oddaljene 8–10 km, vendar za zdaj ni na voljo podatkov, ki bi pokazali, da so krokarji s teh deponij zahajali tudi na Pokojiško planoto. Glede na podatke iz tujine (Ratcliffe 1997) dnevni premiki neteritorialnih krokarjev po 10 km v zimskem času sicer niso redkost.

Kljub pojavljanju velikih jat krokarjev in razširjeni živinoreji na Pokojiški planoti za zdaj tu še ni bilo škodnih primerov zaradi krokarjev (KOS 2009; *lastni podatki*). Sklepam, da je to najverjetneje posledica tega, da na območju prevladuje reja manj konfliktnih vrst živine, tj. goveda in konjev. Po podatkih Agencije RS za okolje za leta 2005–2007 v Sloveniji samo 0,2 % vseh škodnih primerov zaradi krokarja zadeva govedo in konje, medtem ko 99,5 % vseh živali, za katere je bila izplačana odškodnina, ki jo je povzročil krokar, zadeva drobnico, v glavnem ovce (izračunano po podatkih v Tome *et al.* 2009a). Glede na to in tudi ob izkušnjah s Pokojiške planote bi bilo morda primerno spodbujanje govedoreje in konjereje na območjih, kjer redno nastajajo konflikti med krokarjem in živino. Podobna priporočila so bila na podlagi analize

škodnih primerov podana tudi za zmanjševanje škode, ki jo povzroča volk *Canis lupus* (Černe *et al.* 2010), in v Strategiji upravljanja z rjavim medvedom v Sloveniji (MKGP 2002).

Summary

Data on observations of large flocks (> 30 ind.) of Ravens *Corvus corax* on the Pokojišče Plateau in the Northern Dinaric Mountains (UTM VL48 & VL58, central Slovenia) in the 2004–2010 period are presented. Flocks consisted of presumably non-territorial, mainly immature individuals. The largest flock included 124 birds. Most of the observations took place during the winter, however a flock of 83 birds was observed also in spring. The presented numbers are comparable to the size of the largest flocks of Ravens recorded in a dedicated study on rubbish dumps in Slovenia. Feeding sites for wild ungulates and brown bears *Ursus arctos* on and in the vicinity of the Pokojišče Plateau might have attracted non-territorial Ravens in such numbers. In contrast to some other regions in Slovenia, no conflicts between Ravens and livestock breeders have been reported, in spite of the large number of Ravens and prevalent stockbreeding on the Pokojišče Plateau. This is probably due to the use of less conflicting breeds (cattle and horses) in this area instead of sheep, which constitute the great majority of damage ascribed to Ravens in Slovenia.

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Iz ornitološke beležnice

From the ornithological notebook

Slovenija / Slovenia

Čopasti ponirek *Podiceps cristatus*

Great Crested Grebe – one adult observed while hunting fingerlings for its two young on 18 May 2009 in former clay pits at Pragersko (UTM WM53, NE Slovenia). In 27 min 36 s, it dived 60 times, making on average one dive every 27.6 s (which included the phases of diving and delivering prey to its young). It was successful in 81.7% of the dives; failed only in 11 attempts and ate prey by itself on two occasions.

Dne 18.5.2009 sem se peljal mimo nekdanjih glinokopov, danes ribnikov, pri Pragerskem. V tekmovalnem ribniku nasproti smetišča vsaj od leta 2004 redno gnezdi par čopastih ponirkov. Omenjenega dne je na tem ribniku par že vodil dva mladiča, ki sta počivala na hrbtu enega od staršev. Drugi odrasli osebek se je potapljal in plen predajal mladičema. Ker sem se namenil ponirke fotografirati, sem se odločil, da z zaporednim fotografiranjem ob vsakokratnem potopu določim uspešnost lova in frekvenco potapljanja omenjenega osebka. Skupaj sem tako fotografiral 27 min in 36 s, ko se je ponirek nehal potapljati in si začel urejati perje. V tem času se je potopil 60-krat, kar je povprečno en potop na vsakih 27,6 s (vključuje fazo potopa in predaje plena mladičema). Najdaljši presledek med dvema potopoma je trajal 49 s, najkrajši pa 14 s. Opazovanje je nekako v skladu z ugotovitvami drugod po Evropi (Cramp 1998). Plen so sestavljale do pet cm dolge mladice rib. Lovna uspešnost opazovanega osebka čopastega ponirka je bila 81,7 %; neuspešen je bil le v 11 primerih, samo v dveh primerih je plen pojedel sam.

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Čopasta čaplja *Ardeola ralloides*

Squacco Heron – three individuals observed on 22 Jul 2009 and one (presumably the same) individual on 27 Jul 2009 at Šoštanjsko jezero (UTM WM03, E of šoštanj, NE Slovenia); a rare record for the site

Šoštanjsko jezero je po nastanku najmlajše ugrezninsko jezero v Šaleški dolini. Posledica pogrezanja območja je nenehno nastajanje in izginjanje plitvin, zalivov, otočkov in drugih obrežnih habitatov, ki so pomembni za vodne ptice. Dne 22.7.2009 sem ob pregledu novo nastalega plitvega zaliva na vzhodni obali jezera iz obrežne vegetacije nehote splašil tri čopaste čaplje. Pristale so nekaj metrov dalje, kjer so, očitno prepričane o svoji varovalni barvi, nadaljevale s prehranjevanjem v plitvi vodi zaliva. Ena izmed ptic se mi je celo približala na razdaljo približno 3 m. Po njihovi obarvanosti sodeč je šlo za mladostne osebke. Na isti lokaciji se je 29.7.2009 ponovno zadrževal en mladostni osebek, kar je najverjetneje pomenilo, da se je vsaj ena ptica na območju zadrževala dalj časa. Čopasta čaplja je v Sloveniji redek preletnik in poletni gost. Glede na objavljene podatke gre za peto in šesto opazovanje te vrste na Šaleških jezerih (Gregori & Šere 2005).

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Kravja čaplja *Bubulcus ibis*

Cattle Egret – regular observations of adult birds at the freshwater part of Škocjanski zatok Nature Reserve (Koper, SW Slovenia, UTM VL04) since 2008; single individuals on 4 Apr 2008, 24 Apr 2009, between 24 Jul and 6 Aug 2009 and between 30 Mar and 2 Apr 2010; two individuals between 7 and 12 Aug 2009 and between 4 and 17 Aug 2010. In all cases, egrets were observed in company with domestic animals, i.e. Camargue horses and Podolje cattle. The first record was only the 5th for Slovenia, all previous being from Sečovlje salina and its vicinity. All records were confirmed by the National Rarities Committee – KRED as the 5th–10th for Slovenia after 1 Jan 1950.

V letu 2008 smo območje sladkovodnega dela naravnega rezervata Škocjanski zatok na Bertoški bonifiki ogradili s pašno ograjo in električnim pastirjem ter postavili oboro za pašne živali. Dne 4.4.2008, ko sva z I. Brajnikom opravljala še zadnja dela pri napenjanju žice, naju je presenetil odrasel osebek kravje čaplje, ki je pristal na kolu pašne ograje. To je bilo prvo opazovanje kravje čaplje v naravnem rezervatu Škocjanski zatok ter peto v Sloveniji. Pred tem so bili posamezni osebki kravje čaplje (vedno je šlo za odrasle osebke) v letih 2005 in 2006 opazovani samo v Sečoveljskih solinah ter bližnji okolici, in sicer: 3.1.2005, 3. in 13.7.2006 ter 20.10.2006 (Škornik *v pripravi*). Drugič je kravja čaplja

Škocjanski zatok obiskala že naslednjo pomlad, natančneje 24.4.2009, ter nato še 24.7.2009, ko se je odrasel osebek kravje čaplje na območju rezervata zadrževal še naslednja dva tedna (slika 1). Dne 7.8.2009 smo prvič opazovali dva odrasla osebka kravjih čapelj hkrati, ki sta tukaj ostala do 12.8.2009. Čaplje so se večinoma zadrževale na travnikih pred opazovalnicama 3a in 4 ter se pred gobci kamarških kobil Rose in Rižane prehranjevale z žuželkami ali pa posedale na njihovih hrbtih in z njih obirale zajedavce. Podobno je bilo tudi v letu 2010; spomladi smo prvo opazovanje kravje čaplje zabeležili že 30.3.2010 – ta čaplja je v rezervatu ostala do 2.4.2010. V času pognezditvene disperzije oziroma jesenske selitve smo 4.8.2010 ponovno opazovali dva osebka hkrati, ki sta v družbi kobil in podolskega goveda v rezervatu ostala do 17.8.2010 (slika 2). Tudi v letu 2010 so bili vedno opazovani le odrasli osebki. Vsa opazovanja je potrdila Nacionalna komisija za redkosti – KRED kot 5.–10. opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Slika 1 / Figure 1: Kravja čaplja / Cattle Egret *Bubulcus ibis*, Škocjanski zatok, 28.7.2009 (foto: M. Kastelic)

Slika 2 / Figure 2: Kravja čaplja / Cattle *Egret Bubulcus ibis*, Škocjanski zatok, 4.8.2010 (foto: M. Kastelic)

Mala gos *Anser erythropus* in rdečevrata gos *Branta ruficollis*

Lesser White-fronted Goose & Red-breasted Goose – one individual of the former observed initially on 26 Nov 2010 at the freshwater part of Škocjanski zatok Nature Reserve (Koper, SW Slovenia, UTM VL04); on 23 Dec 2010 joined by one individual of the latter and four White-fronted Geese *A. albifrons*. The goose flock stayed at the site until 2 Jan 2011, when presumably frightened away by numerous New Year's fireworks. Both records were confirmed by the National Rarities Committee – KRED as the 1st and the 2nd for Slovenia, respectively.

Na deževni in megleni dan 26.11.2010 se je C. Trani posvečal rednemu tedenskemu spremljanju avifavne naravnega rezervata Škocjanski zatok. Njegovo pozornost je pritegnila gos, ki se je v družbi treh prib *Vanellus vanellus* pasla na travniku severnega dela Bertoške bonifike. Sledil je telefonski klic, v katerem je Cristian povedal, da opazuje neznano vrsto gosi, ki bi lahko bila tudi beločela gos *A. albifrons*, po vsej verjetnosti pa gre za mladosten osebek male gosi. Zaradi izredno slabe vidljivosti in precejšnje oddaljenosti od opazovalnice gosi tistega dne nismo mogli določiti s stoodstotno gotovostjo, čeprav smo vsi potihoma že vedeli, da smo priča prvemu pojavljanju male gosi v Sloveniji. Naslednjega dne sva se z naravovarstvenim nadzornikom I. Brajnikom, oborožena s fotoaparatom, spektivi in priročnikom za določanje ptic, že navsezgodaj odpravila na »lov« za gosjo. Mala gos se je že preselila na močvirni travnik, neposredno pred opazovalnico 1, tako da sva jo lahko opazovala z razdalje 30–70 m. Po lepo vidnem rumenem očesnem kolobarju ter čez rep segajočih letalnih peresih sva jo zlahka zanesljivo določila za malo gos in s tem potrdila novo vrsto za Slovenijo (Božič 2001) (slika 3). December pa je prinesel še eno presenečenje. Mali gosi so se 23.12.2010 pridružile še tri beločele in rdečevrata gos (slika 4), kar je drugo opazovanje te vrste v Sloveniji (Bordjan 2010). Rdečevrata gos je imela po zgornji strani peruti več belih prog, kar je značilno za mladostne osebke. Gosi so se večinoma zadrževale na območju južnega dela sladkovodnega močvirja Bertoške bonifike, kjer so se prehranjevale s travo in drugim rastlinjem močvirnih travnikov, občasno pa počivale ali za kratek čas zaplavale, se napojile in pri tem odščipnile še kakšen poganjek vodnih rastlin. Redki vrsti gosi sta v naslednjih dneh privabili veliko opazovalcev ptic in narave, tako da je bila včasih pred opazovalnicama 1 in 2 že kar prava gneča ljudi s fotografsko in optično opremo. Gosi so se na območju naravnega rezervata zadrževale do 2.1.2011; po tem datumu jih nismo več opazili, domnevno zaradi ognjemetov, ki so zaznamovali začetek leta in otvoritev prenovljene semedelske promenade v Kopru. Obe

opazovanji je potrdila Nacionalna komisija za redkosti – KRED kot prvo oziroma drugo opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Slika 3 / Figure 3: Mala gos / Lesser White-fronted Goose *Anser erythropus*, Škocjanski zatok, 28.12.2010 (foto: B. Mozetič)

Slika 4 / Figure 4: Rdečevrata gos / Red-breasted Goose *Branta ruficollis*, Škocjanski zatok, 28.12.2010 (foto: B. Mozetič)

Rjavi lunj *Circus aeruginosus*

Marsh Harrier – intensive migration in eastern direction observed at Ljubečna (UTM WM22, NE of Celje, E Slovenia); 29 individuals during 2 hrs of observation (incl. 2 migrating Montagu's Harriers *C. pygargus* and 1 Osprey *Pandion haliaetus*) on 3 Apr 2009 and 32 individuals during 20 min of observation on 27 Mar 2010 (incl. 1 migrating Osprey, 1 Peregrine Falcon *Falco peregrinus*, 1 White Stork *Ciconia ciconia*, 1 Yellow-legged Gull *Larus michahellis* and 700 Wood Pigeons *Columba palumbus*)

Rjavi lunj je v času selitve poleg sršenarja *Pernis apivorus* najpogostejša negnezdeča ujeda na območju Ljubečne na SV robu Savinjske ravni. Večina mojih opazovanj temelji na posameznih osebkih ali skupinah do pet osebkov. Dne 3.4.2009 pa sem z balkona v dveh urah opazovanja skupaj zabeležil 29 rjavih lunjev, od katerih sta bili dve tretjini samcev. Večina osebkov se je selila v ohlapnih jatah do 13 osebkov. V tem času so mimo leteli še dva močvirska lunja *C. pygargus* in en ribji orel *Pandion haliaetus*. Vse opazovane ujede so letele proti vzhodu. Domneven vzrok za tako veliko število opazovanih ujed je bila nizka oblačnost, zaradi katere so ptice letele precej niže kot navadno. Skoraj natanko leto dni kasneje sem bil pri Ljubečni ponovno priča intenzivni selitvi ujed. Dne 27.3.2010 sem v približno 20 min opazovanja zabeležil 32 rjavih lunjev, enega ribjega orla, enega sokola selca *Falco peregrinus*, eno belo štorkljo *Ciconia ciconia*, enega rumenonogega galeba *Larus michahellis* in okoli 700 grivarjev *Columba palumbus*. Tokrat so se lunji v smeri vzhoda selili posamič ali v manjših skupinah in se umikali pred nevihto, ki je hrumela proti vzhodu; v isti smeri so letele tudi druge opazovane vrste.

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Stepski lunj *Circus macrourus*

Pallid Harrier – one 3y male observed on 1 Apr 2009 at Iški morost Nature Reserve between Brest and Črna vas (UTM VL69, Ljubljansko barje, central Slovenia), one hour later than an adult male was seen in the Vipava Valley, ca. 45 km to the SW. The record was confirmed by the National Rarities Committee – KRED as the 4th for Slovenia after 1 Jan 1950.

Dne 1.4.2009 sem se pozno popoldne peljal mimo naravnega rezervata Iški morost, ki leži med Brestom in Črno vasjo na Ljubljanskem barju. Čeprav sem bil pred tem na rezervatu vse do 15. ure, sem se kot ponavadi spet ustavil in na hitro z daljnogledom pregledal travnike. Na predelu Vrbovke je v oddaljenosti kakšnih 300 m nizko nad travniki lovil svetel lunj, za katerega sem sprva domneval, da je samec pepelastega lunja *C. cyaneus*. Ker se mi je počasi približeval, sem vzel fotoaparat iz avta ter med 17.21 in 17.26 h naredil nekaj posnetkov (slika 5). Ko sem kasneje vnovič pogledal skozi daljnogled, sem opazil, da črnina na koncu peruti ni enako velika kot pri pepelastem lunju in da ne sega do sprednjega roba. Tudi črne obrobe na koncih letalnih peres spodaj ni bilo videti. Takoj sem pomislil, da morda opazujem stepskega lunja, ker pa je bilo na spodnji in zgornji strani peruti videti tudi temnejše odtenke, o določitvi nisem bil prepričan. Vedel sem samo, da ptica ni popolnoma odrasla. Tudi doma po pregledu literature nisem bil povsem

prepričan, katero vrsto izmed dveh sem opazoval. Da gre za tretjeletnega (3y) samca stepskega lunja, so mi naslednji dan po ogledu fotografij potrdili B. Rubinić, D. Bordjan in L. Božič. Zanimivo je, da je bil istega dne, morda kakšno uro pred opazovanjem na Ljubljanskem barju, zanesljivo različen odrasel samec stepskega lunja opazovan v Vipavski dolini (Krečič 2010). Opazovanje je potrdila Nacionalna komisija za redkosti – KRED kot četrto opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Slika 5 / Figure 5: Stepski lunj / Pallid Harrier *Circus macrourus*, Iški morost, Ljubljansko barje, 1.4.2009 (foto: Ž. Šalamun)

Stepski lunj *Circus macrourus*

Pallid Harrier – one individual in 1st-summer plumage observed on 22 May 2010, migrating in eastern direction at Zadobrova (UTM WM22, NE of Celje, E Slovenia). The record was confirmed by the National Rarities Committee – KRED as the 5th for Slovenia after 1 Jan 1950.

V zadnjih metrih transektnega popisa v okviru monitoringa pogostih vrst ptic kmetijske krajine pri kraju Zadobrova med Celjem in Vojnikom me je 22.5.2010 nizko preletel sršenar *Pernis apivorus*. Ker se je termika, ki jo ujede uporabljajo pri letenju, šele pričela razvijati, sem se odločil, da bom nekaj minut posvetil opazovanju selečih se ujed. Kmalu zatem sta priletela mimo dva mlada rjava lunja *C. aeruginosus*. V naslednji uri sem skupaj naštel osem mladih rjavih lunjev ter enega, ki ga na terenu nisem znal določiti. Ker je v času mojega opazovanja že letel v smeri proti soncu, sem se raje odločil, da ga fotografiram in nato določim doma za računalnikom (slika 6). Doma sem po ogledu fotografij izbiral med pogostejšim močvirskim *C. pygargus* in redkejšim stepskim lunjem. Ker nisem prišel do trdnih zaključkov, z izjemo tega, da je na sliki samec v prvem poletnem perju, sem fotografijo poslal nekaj kolegom. Po zaslugi D. Bordjana, ki jo je natančno analiziral, smo prišli do ugotovitve, da je na sliki stepski lunj. Vseh 10 ujed, opazovanih tega dne, je letelo proti vzhodu. Opazovanje je potrdila Nacionalna komisija za redkosti – KRED kot peto opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Slika 6 / Figure 6: Stepski lunj / Pallid Harrier *Circus macrourus*, Zadobrova, 22.5.2010 (foto: M. Gamser)

Kanja *Buteo buteo*

Common Buzzard – two observations of single individuals with less typical prey captured; one with Moorhen *Gallinula chloropus* on 3 Jan 2009 at Fontanigge, Sečovlje salina (UTM UL93, SW Slovenia), another flying with Slow-worm *Anguis fragilis* in its claws on 1 May 2009 between Harije and Ilirska Bistrica (UTM VL34, SW Slovenia)

Čeprav se kanja večinoma prehranjuje z malimi sesalci, njena prehrana vključuje tudi ptice, kuščarje, kače, dvoživke, večje žuželke, deževnike in mrhovino (Cramp 1998). Kljub temu je v Sloveniji objavljenih malo podatkov o prehranjevanju kanje z mrhovino ali drugim plenom, razen malih sesalcev (npr. Bordjan 2003). V letu 2009 sem kanjo dvakrat opazoval z manj pogosto zabeleženim plenom. Prvi takšen primer je bil dne 3.1.2009 na Fontaniggah v Sečoveljskih solinah, v družbi A. Škoberneta ter Ane in Lana Bordjana. Med sprehajanjem po cesti ob Dragonji sem se povzpel na nasip ob reki in s tal splašil kanjo. Takoj sem opazil, da nekaj nese v krempljih. Skozi daljnogled sem prepoznal zelenonogo tukalico *Gallinula chloropus*. Čeprav je v prehrani kanje pester nabor ptic, gre večinoma za pevce Passeriformes, golobe Columbidae, žolne Picidae ali poljske kure Phasianidae. Vodne ptice se v prehrani redko pojavljajo (Cramp 1998). Drug primer sem zabeležil 1.5.2009, ko

sem se peljal od Harij proti Ilirski Bistrici. Takrat sem nad travnikom levo od ceste opazil kanjo s kačastim plenom. Uspelo mi je narediti nekaj posnetkov kanje v letu, na katerih sem s pomočjo M. Krofla razbral, da gre za slepca *Anguis fragilis* (slika 7).

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Slika 7 / Figure 7: Kanja z uplenjenim slepcem / Common Buzzard with captured Slow-worm *Anguis fragilis*, med Harijami in Ilirsko Bistrico, 1.5.2009 (foto: D. Bordjan)

Rjasta kanja *Buteo rufinus*

Long-legged Buzzard – one imm. individual observed on 24 Aug 2010 at Iški morost Nature Reserve between Brest and Črna vas (UTM VL69, Ljubljansko barje, central Slovenia); most probably the same individual observed there again on 29 Aug 2010. The record was confirmed by the National Rarities Committee – KRED as the 1st for Slovenia after 1 Jan 1950, although two doubtful records were published in the 80s.

Dne 24.8.2010 sem se popoldne namenil na obhod v naravni rezervat Iški morost. Poklicala me je B. Vidmar, ki je bila istočasno v rezervatu, in mi povedala, da je videla svetlo rjavo ujedo, a da verjetno ni bil rjavi lunj *Circus aeruginosus*. Ko sem ob 16.40 h prišel do nje, sem tudi sam na okroglih balah sena zagledal ujedo, podobno kanji *B. buteo*, vendar s svetlo glavo in svetlo rjavim hrbtom. Ujeda se je spreletela na drugo balo, pri tem pa sem lepo videl svetlo rjav spodnji del trupa, svetle peruti s črnino na koncih in zelo svetel rep. Takoj sem pomislil na rjasto in stepsko kanjo *B. buteo* ssp. *vulpinus*. Ujeda je nato lovila na tleh in se presedala po balah. Po nekaj minutah opazovanja so jo tri kanje pregnale v zrak in jo tam občasno napadale. Takrat se je lepo videla razlika v velikosti, saj je bila neznana ujeda precej večja. Z Barbaro sva jo opazovala kakšnih 15 min, nato je ujeda odletela v smeri Tomišlja. Naredil sem tudi nekaj fotografij (sliki 8 in 9) in po njih doma zanesljivo ugotovil, da je bila opazovana ujeda rjasta kanja *B. rufinus* ssp. *rufinus*. Po obarvanosti perja je bil osebek podoben odraslemu, manjkal je le temen rob na koncu spodnje strani peruti. S kolegi smo jo zato določili za spolno nezrel osebek. Najverjetneje isti osebek sem v rezervatu opazoval še 29.8.2010. Sedel je na okrogli bali, žal pa mi je nato hitro izginil iz vidnega polja. Opazovanje je potrdila Nacionalna komisija za redkosti – KRED kot prvo opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Pripis komisije za redkosti: Na podlagi opisa opazovanih ptic v dveh doslej objavljenih prispevkih o rjasti kanji pri nas (Geister 1982, Škornik 1984) se je komisija leta 2001 odločila, da oba podatka črta s seznama ugotovljenih ptic Slovenije.

Sliki 8 in 9 / Figures 8 & 9: Rjasta kanja / Long-legged Buzzard *Buteo rufinus*, Iški morost, Ljubljansko barje, 24.8.2010 (foto: Ž. Šalamun)

Planinski orel *Aquila chrysaetos*

Golden Eagle – one 2y individual observed on 27 Apr 2010 near Stari Log at Medvedce reservoir (UTM WM53, NE Slovenia); the second record for the site and the Pannonian part of Slovenia as well

Dne 27.4.2010 sem nad polji pri Starem Logu, SZ od zadrževalnika Medvedce, opazoval planinskega orla. Nad gozdom, kjer gnezdijo sive čaplje *Ardea cinerea*, se je v termiki dvigal skupaj s kanjo *Buteo buteo*. Glede na bele lise na perutih in repu ter na enotno rjavo obarvani hrbet menim, da sem opazoval drugoletni (2y) osebek. To je drugo opazovanje vrste na območju zadrževalnika in tudi v panonskem delu Slovenije (Janžekovič 1995a, Bordjan & Božič 2009a). Zanimivo je časovno ujemanje obeh doslej zabeleženih opazovanj planinskega orla na tem območju (4.5.1995 in 27.4.2010).

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Rdečenoga postovka *Falco vespertinus*

Red-footed Falcon – 980 individuals observed on 10 May 2008, flying over Lake Cerknica (UTM VL46 & VL56, S Slovenia) between 9.30 and 12.13 hrs, coming over Mt Kozjek summit (1,052 m a.s.l., part of Javorniki Mts) from SW direction, descended towards the lake floodplain and rose high in the air again above Viševke area at the N part of the site. This is by far the largest congregation observed in Slovenia to date, the previous (320 ind.) also being reported from the same site. On the basis of several further observations from the same year, it is estimated that up to 1,500 individuals could have migrated over the site in 2008, constituting between 1.5 and 2.3% of the entire European breeding population (not taking into consideration a small proportion of imm. individuals).

Dne 10.5.2008 je bil na Goričicah pri Dolenjem jezeru organiziran tradicionalni piknik ob popisu rumenih pastiric Cerkniškega jezera. Dan je bil popolnoma jasen, z zelo dobro vidljivostjo. Že ob prihodu v vas ob 9.30 h sem opazil jato 44 rdečenogih postovk, ki se je dvigala nad krajem piknika. Menim, da so te postovke nekje v bližini prenočevale. Približno čez pol ure sem v zraku opazil več jat rdečenogih postovk, ki so priletavale iznad vrha Kozjek (1052 m n.v.) na Javornikih in se spuščale proti Cerkniškemu jezeru. Skupaj sem naštel 156 osebkov, skoraj vse JZ od mesta štetja. Dobre pol ure kasneje sem se ponovno lotil štetja, saj sem opazil, da postovke še kar priletavajo čez Javornike. Tokrat sem naštel 230 osebkov, od tega jih je bilo JZ od mesta štetja 208. Štetje sem nato ponovil še dvakrat ter preštel 393 in nazadnje 157 osebkov ob 12.13 h. Pri prvem štetju je bilo v zraku JZ od mesta štetja 246, v liniji z mestom štetja pri Goričicah pa 25 osebkov, pri drugem štetju pa sta bila JZ od tod samo še dva osebka, drugi pa nad Viševkami med Dolenjim jezerom in zaselkom Marof. Na podlagi omenjenih opazovanj sem pričakoval, da bo na Viševkah ogromno rdečenogih postovk, zato sem se po zadnjem štetju namenil tja. Na moje presenečenje sem tam opazoval samo še nekaj deset osebkov, ki so odleteli in se med kroženjem dvigali tako dolgo, da jih nisem več videl. Glede na potek dogodkov tega dne in dejstvo, da so čez Javornike od juga stalno priletavali novi osebki in leteli v smeri Viševk (proti severu), kjer jim zaradi oddaljenosti tudi s teleskopom nisem več mogel slediti, sem prepričan, da sem tega dne opazoval 980 različnih osebkov. Glede na to, da sem začel šteti šele ob 9.30 h in da s pogledom nisem zajel celotnega polja, domnevam, da je tega dne Cerkniško jezero preletelo več kot 1000 rdečenogih postovk. Opazovanje je primerljivo z enodnevnim opazovanjem rdečenogih postovk v času jesenske selitve prek rta Kaliakra v Bolgariji (Iankov *et al.* 2007). To je doslej največje število opazovanih rdečenogih postovk v Sloveniji v enem dnevu. Največje število do opisanega opazovanja (320 os.) je bilo prav tako zabeleženo na Cerkniškem jezeru, in sicer na isti datum (Šere 1990c, Kmecl & Rižner 1993). Rdečenoge postovke sem v letu 2008 opazoval še 24.4. (6 os.), 28.4. (22 os.), 7.5. (255 os.), 13.5. (101 os.), 16.5. (74 os.) in nazadnje 21.5. (36 os.). Skupaj sem tako v tem letu v različnih dnevih na selitvi preštel skoraj 1500 osebkov. Rdečenoga postovka je v Evropi ranljiva vrsta; populacija je ocenjena na 26.000–39.000 gnezdečih parov in upada (BirdLife International 2004 & 2011a). Opazovanja v letu 2008, skupaj z nekaterimi starejšimi podatki, opredeljujejo Cerkniško jezero oziroma Cerkniško polje kot evropsko pomembno območje za selitev te vrste. Leta 2008 je to območje po oceni, ki ne upošteva majhnega števila spolno nezrelih osebkov, preletelo 1,5–2,3 % evropske gnezdeče populacije vrste.

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Mala tukalica *Porzana parva*

Little Crake – one individual calling in a drainage channel (250 m long, 6–9 m wide) with Reed *Phragmites australis*, each night between 11 and 15 May 2007 at the village of Gajevci (UTM WM73, NE Slovenia); Water Rail *Rallus aquaticus* was heard at the same spot on 29 Dec 2006

Dne 11.5.2007 sem se domov v naselje Gajevci vrnil ob 23.20 h. Ko sem stopil iz avtomobila, sem zaslišal iz melioracijskega jarka vzdolž naše parcele, zaraščenega z navadnim trstom

Phragmites australis (skupna dolžina 250 m, širina 6–9 m), nenavadno oglašanje, ki je spominjalo na nežno kvakanje žabe. Kaj hitro sem ugotovil, da se oglaša mala tukalica, ki sem jo zaporedoma poslušal še naslednje štiri noči. Podatek je zanimiv zaradi dalj časa trajajočega zadrževanja vrste na tem mestu in dokaj poznega časa opazovanja, ki dopuščata domnevo o gnezdenju. Kljub temu je treba upoštevati, da se lahko mala tukalica čez Srednjo Evropo seli vse do začetka julija (Bauer *et al.* 2005). Mala tukalica je sicer v Sloveniji izjemno redka gnezdilka; v gnezditveni sezoni je bila v zadnjih letih odkrita le na nekaj lokalitetah (Božič & Bordjan 2009). Naslednje leto je nisem več slišal, predvidevam pa, da je bil razlog v tem, da je lastnik parcele na levi strani jarka v dolžini 90 m pokosil trst in začel brežino vzdrževati z redno košnjo. V letih 2004–2007 je tukaj redno gnezdila tudi močvirska trstnica *Acrocephalus palustris,* saj sem junija 2006 in 2007 v trstičju opazoval speljane mladiče. Dne 29.12.2006 sem ob 20.35 h v omenjenem jarku poslušal tudi oglašanje mokoža *Rallus aquaticus*.

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Mala droplja *Tetrax tetrax*

Little Bustard – one female observed on 7 Nov 2006 on a building site during the restoration works at the freshwater part of Škocjanski zatok Nature Reserve (Koper, SW Slovenia, UTM VL04). The record was confirmed by the National Rarities Committee – KRED as the 1st for Slovenia after 1 Jan 1950; four previous records are from the period prior to 1895

V začetku leta 2006 se je v okviru projekta »Renaturacija in ohranjanje habitatov in ptic v naravnem rezervatu Škocjanski zatok«, ki ga je poleg Ministrstva za okolje in prostor sofinancirala tudi Evropska unija s pomočjo finančnega instrumenta za okolje – LIFE, začela dolgo pričakovana sanacija in renaturacija Škocjanskega zatoka. V skladu s projektno dokumentacijo so izvajalci del začeli poglabljati severni del bonifike in oblikovati kotanje, namenjene zadrževanju vode. Istočasno s poglabljanjem so tovornjaki, po predhodno pripravljenih začasnih dovoznih poteh, zemeljski material odlagali ob predvideni trasi poteka učne poti. V novembru tega leta je bilo urejanje habitatov sladkovodnega dela naravnega rezervata še v polnem zamahu. Med opravljanjem naravovarstvenega nadzora čiščenja jarkov, urejanja površin, predvidenih za razrast trstičja, in oblikovanja gnezditvenih otočkov sva z I. Brajnikom dne 7.11.2006 na nasipu gradbišča opazila večjo svetlorjavo ptico. Pogled skozi daljnogled je potrdil, da sva se srečala z malo dropljo. Ptica se je med opazovanjem dobesedno sprehajala med tovornjaki, ki so dovažali material za graditev nove ceste, ki danes poteka tik ob zahodni meji naravnega rezervata. Hitro sem pograbil fotografski aparat in naredil nekaj posnetkov, potem pa se je droplja z nizko spuščeno glavo počasi umaknila v visoko rastlinje skrajnega severnega dela naravnega rezervata, ki ga imenujemo tudi »močvirje v trikotniku«. Tukaj sva jo opazovala še dobrih 10 min, nato pa se je droplja počasi dvignila, dvakrat zakrožila nad Bertoško bonifiko in odletela v smeri Srminskega hriba. Po lepo vidnem svetlem trebuhu in grahastih prsih sva jo določila za samico, kar so kasneje potrdile tudi fotografije (slika 10). To je prvi podatek za Slovenijo po letu 1895. Prirodoslovni muzej Slovenije v svoji zbirki hrani štiri primerke malih dropelj, ustreljene v času do omenjenega leta. Opazovanje je potrdila Nacionalna komisija za redkosti – KRED kot prvo opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Slika 10 / Figure 10: Mala droplja / Little Bustard *Tetrax tetrax*, Škocjanski zatok, 7.11.2006 (foto: B. Mozetič)

Puklež *Lymnocryptes minimus*

Jack Snipe – two individuals caught and ringed at nightfall on 26 Mar 2008 near Suhadole at Moste near Komenda (UTM VM61, central Slovenia), where ca. 50 Snipes *Gallinago gallinago* were seen during the day

Dne 26.3.2008 se je na delno poplavljenem travniku v bližini Suhadol pri Mostah pri Komendi zadrževalo okoli 50 kozic *Gallinago gallinago*. Z našim zunanjim sodelavcem, obročkovalcem D. Groharjem, sva popoldne na tem travniku postavila mreže. Ko se je že začelo mračiti, sva med kozicami, ki so zletele s tal, zagledala tudi »majhno kozico«, in takrat sem pomislil, da bi to lahko bil puklež. Ko sva prvič prišla do mrež, sva v mreži zagledala štiri kozice, jih takoj obročkala in izpustila. Naredila sva še en krog okoli travnika in ob ponovnem ogledu mrež presenečena ugotovila, da sta v mreži ujeta dva pukleža. Po zbranih biometričnih podatkih, obročkanju in fotografiranju v

roki sem presenečen ugotovil, da se oba osebka držita »puklasto oziroma grbasto« (slika 11). Ob tem dogodku sem se spomnil na razprave o slovenskem poimenovanju in izvoru imena vrste (Jančar 1999, Geister 2008). Zato dopuščam možnost, da je vrsta *Lymnocryptes minimus* dobila ime po svoji drži, ki je lahko včasih grbasta ali puklasta.

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Slika 11 / Figure 11: Puklež / Jack Snipe *Lymnocryptes minimus*, Suhadole, 26.3.2008 (foto: D. Šere)

Mali škurh *Numenius phaeopus*

Whimbrel – one individual observed on 6 Apr 2010 migrating in eastern direction at Ljubečna (UTM WM22, NE of Celje, E Slovenia); this is a rare species in NE Slovenia

Dne 6.4.2010 sem se po pouku odločil, da bom ta dan v okolici svojega doma opazoval seleče se ptice, predvsem ujede. Vendar ujed tokrat ni bilo, me je pa po 10 min čakanja presenetilo oglašanje, ki je nekoliko spominjalo na malega ponirka *Tachybaptus ruficollis*. Ker malega ponirka v okolici Ljubečne še nikoli nisem videl, sem bil še bolj odločen, da to skrivnostno ptico najdem. Oglasila se je še nekajkrat in naposled sem jo le zagledal. Opazovanje malega škurha me je zelo presenetilo, saj je ta vrsta v SV Sloveniji redka (Bordjan & Božič 2009a). Letel je, tako kot velika večina selečih se ptic na tem območju, v smeri proti vzhodu.

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Duplar *Columba oenas*

Stock Dove – observations in three consecutive winters at various places of Ptujsko polje, NE Slovenia; 31 individuals on 24 Dec 2008 at Otok (UTM WM83), 23 individuals feeding in unharvested sunflower field on 22 Dec 2009 at Žamenci (UTM WM74) and 87 individuals feeding in tilled field on 14 Dec 2010 at Trgovišče (UTM WM83); previous winter records and supposed wintering registered only in the easternmost part of Slovenia

Od leta 2000 poteka vsako leto v decembru zimski popis velikega srakoperja *Lanius excubitor* na Dravskem in Ptujskem polju. Med popisovanjem na Ptujskem polju sem v zadnjih letih poleg tega zabeležil tudi nekaj zanimivih podatkov o zimskem pojavljanju drugih vrst. Tako sem dne 24.12.2008 med popisom pri zaselku Otok, južno od Cvetkovcev, prvič opazil jato duplarjev (31 os.). Duplarje sem splašil iz pasu drevja vzdolž leve strani odvodnega kanala HE Formin. Jata je odletela proti jugu, preletela kanal, nad njim zakrožila in se spustila na drevesa na desni strani kanala. Naslednjič sem duplarje (23 os.) opazoval 22.12.2009 v Žamencih, pri hranjenju na nepožeti njivi sončnic. Istega dne me je pri Borovcih (UTM WM74)v nizkem letu v JZ smeri preletel veliki škurh *Numenius arquata*. Dne 14.12.2010 sem v bližini Trgovišča opazoval jato 87 osebkov pri hranjenju na preoranem polju. Duplarji so bili zelo nezaupljivi, splašili so se že na razdalji ca. 200 m. Znano je, da duplarji, gnezdeči v Srednji Evropi, prezimujejo v Sredozemlju (Möckel 1997). Na podlagi opisanih opazovanj v treh zaporednih zimah sklepam na redno prezimovanje duplarjev v SV delu Slovenije, kjer so bili zimski podatki v preteklosti že zabeleženi na skrajnem vzhodu države (Božič 2004).

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Mala uharica *Asio otus*

Long-eared Owl – single feather found on 19 Jun 2009 at Oslova škrbina near Mt Lanževica (UTM VM02, Julian Alps, NW Slovenia) at 1,841 m a.s.l.; this is the highest altitude at which the species has been recorded in Slovenia to date

Tretji vikend v juniju leta 2009 sem se pod vodstvom T. Miheliča, skupaj z majhno skupino ljudi, odpravil na popise za Novi ornitološki atlas gnezdilk Slovenije v primorski del Julijskih Alp. Dne 19.6.2009 sem se sam napotil na transektni popis, ki je potekal čez Lanževico (2003 m n.v.). Med vračanjem sem na območju Oslove škrbine na nadmorski višini 1841 m med rušjem *Pinus mugo* našel sveže sovje pero. S Tomaževo pomočjo sem ga določil za pero male uharice. Mala uharica je ptica nižin, ki se v Sloveniji večinoma pojavlja v višinskem pasu med 250 in 370 m (Tome 1996). Ponekod je bila zabeležena tudi na više ležečih območjih – na Menišiji (730 m n.v., Krofel 2005), Gorjancih (920 m n.v., L. Božič *osebno*), Trnovskem gozdu

(okoli 1100 m n.v., Berce 2008), nad Koritnicami (1000 m n.v.) in na Snežniški planoti (1240 m n.v.) (Krofel 2009), v Julijskih Alpah (1400 m n.v., Mihelič 2000) ter na Pohorju (do 1450 m n.v.; Božič & Vrezec 2000, Denac 2005). Glede na te podatke je Oslova škrbina doslej najviše ležeča lokaliteta s podatkom o pojavljanju male uharice v Sloveniji. To ni presenetljivo, saj je v Švici redko opazovana vse do nadmorske višine 2400 m, pogosteje pa do 2000 m (Schmid *et al.* 1998). Opazovanje iz sredine junija nakazuje možnost gnezdenja, vendar je treba pri tej domnevi upoštevati dejstvo, da lahko pri mali uharici v letih s slabimi razmerami za gnezdenje pogosto naletimo na negnezdeče osebke (D. Tome *osebno*).

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Močvirska uharica *Asio flammeus*

Short-eared Owl – single individuals observed five times, i.e. on 7 Mar, 14 Mar, 16 Apr, 29 Apr and 8 May 2010, at Medvedce reservoir (UTM WM53, NE Slovenia); these records, together with similar observations from 2007 and 2009, indicate possible breeding at the site, although the possibility of migrating birds or occurrence of individuals without mates cannot be ruled out

Slika 12 / Figure 12: Močvirska uharica / Short-eared Owl *Asio flammeus*, zadrževalnik Medvedce, 14.3.2010 (foto: D. Bordjan)

Potem ko je bila v letu 2009 močvirska uharica prvič opazovana na zadrževalniku Medvedce, in to celo trikrat (Bordjan & Božič 2009b), smo jo leta 2010 s kolegi zabeležili kar petkrat. Opazovanje so se zvrstila 7.3., 14.3., 16.4., 29.4. (opazoval A. Koren) in 8.5.2010. Vsakokrat smo opazovali en osebek, ki je lovil nad okoliškimi njivami in travniki na zahodnem delu zadrževalnika (slika 12). Trikrat smo jo opazovali v dnevnem času, dvakrat pa zvečer. Po letih 2007 in 2009 je to že tretje leto, ko je bila na JZ delu Dravskega polja močvirska uharica opazovana v gnezditvenem obdobju (Vogrin 2009, Bordjan & Božič 2009b). Ker lahko močvirska uharica gnezdi že v drugem koledarskem letu, gnezditveno obdobje pa se v Srednji Evropi z oblikovanjem teritorijev začne že februarja oziroma najkasneje v marcu (Bauer *et al.* 2005), je možno, da je na tem območju gnezdila. Ob tem je treba poudariti, da obstaja tudi možnost selitve osebkov iz severnih populacij ali pojavljanja nesparjenega osebka, ki se je zadrževal na območju z večjo količino plena.

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Planinski hudournik *Apus melba*

Alpine Swift – single individuals observed on 22 and 24 Apr 2010 and again on 1 Jul 2010 at Ljubečna (UTM WM22, NE of Celje, E Slovenia), as well as on 5 May 2010 above Ptujsko jezero reservoir near Turnišče (UTM WM63, NE Slovenia); these are first records for the lowland Eastern Slovenia

Na oblačen aprilski dan 22.4.2010 sem nad domačo hišo zagledal hudournika. Sprva sem bil prepričan, da gre za črnega hudournika *Apus apus*, saj sem bil pozoren le na značilno silhueto. Potem ko je hudournik v zraku naredil krog, se mi je ponovno približal. Takrat sem opazil, da ima trebuh v celoti bel, in prepoznal planinskega hudournika. En osebek te vrste, morda celo istega, sem ponovno opazoval dva dni kasneje, 24.4.2010. Tokrat so mu družbo delali številnejši črni hudourniki. Kasneje sem izvedel, da je bil planinski hudournik dne 5.5.2010 zabeležen tudi na Ptujskem jezeru, kjer ga je opazoval M. Tiefenbach (AT) (sporočil B. Štumberger). Sam sem planinskega hudournika, ki se je spreletaval nad našo hišo, ponovno videl 1.7.2010. Tokrat se mi ga je posrečilo tudi fotografirati. Po dostopnih podatkih so to prva opazovanja planinskega hudournika v vzhodni Sloveniji in nasploh redka za območja daleč stran od znanih gnezdišč (Geister 1995). Edini objavljeni podatek iz nižinskega sveta celinske Slovenije (zunaj Obale in Kraškega roba) je iz Črnič na severnem robu Vipavske doline (Šere 1990a).

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Hribski škrjanec *Lullula arborea*

Woodlark – three individuals observed on 22 Dec 2009 at Rogoznica near Ptuj (UTM WM64, NE Slovenia) in a mixed flock of ca. 400 Crested Larks *Galerida cristata* and Skylarks *Alauda arvensis*, associated with ca. 200 finches Fringillidae of different species; rare winter record from continental part of Slovenia

V bližini kraja Rogoznica pri Ptuju sem dne 22.12.2009 opazil veliko jato škrjancev, ki so se hranili na njivi, zaraščeni s plevelom. Šele ko sem jato podrobno pregledal s teleskopom, sem ugotovil, da jo sestavlja več vrst ptic. Naštel sem ca. 400 čopastih *Galerida cristata* in poljskih škrjancev *Alauda arvensis* (natančnega števila posamezne vrste nisem ugotovil), tri hribske škrjance in še ca. 200 različnih ščinkavcev Fringillidae, med katerimi so bili repniki *Carduelis cannabina*, ščinkavci *Fringilla coelebs*, pinože *F. montifringilla* in čižki *C. spinus*. Hribski škrjanci se v notranjosti Slovenije v zimskem času redko pojavljajo in domnevno gre v večini primerov za zapoznele jesenske selivce. Opisano opazovanje dopolnjuje starejše podatke o pojavljanju vrste pozno v decembru na Dravskem in Ptujskem polju, na podlagi katerih lahko domnevamo, da se hribski škrjanci pozimi tukaj občasno zadržujejo tudi dalj časa (Sovinc 1994, Božič & Bombek 2003).

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Rjava cipa *Anthus campestris*

Tawny Pipit – one individual observed on 13 Apr 2007 at Viševke, Lake Cerknica (UTM VL56, S Slovenia); this is 4th record for the area and the earliest published record during spring migration in Slovenia so far

Dne 13.4.2007 sem skupaj s Hano Rot v okviru rednega monitoringa vodnih ptic in ujed popisoval ptice na Cerkniškem jezeru. Po zelo uspešnem štetju nama je na koncu ostal samo še predel Viševk in Retja na severnem delu jezera. Ko sva na vzhodnem delu območja zapeljala z makadamske ceste na kolovoz, sva na poti zagledala cipo, ki pa pred avtomobilom ni odletela. Tako sva si jo lahko dobro ogledala in v njej prepoznala rjavo cipo. Po doslej objavljenih podatkih je to tretje opazovanje rjave cipe na Cerkniškem jezeru. Prvo je bilo 29.4.1989 pod Martinjakom (Šere 1990b), drugo 7.5.1994 (Senegačnik *et al.* 1998), tretje pa na travniku pod Levišči pri vasi Otok dne 29.4.1996 (Božič 1997). Vrsta gnezdi samo v JZ Sloveniji (Geister 1995), drugod pa je redek preletni gost. Tam je bila največkrat opazovana na odprtih, golih površinah, kot so zorane njive ali gramoznice (Čelik 1993, Bračko 1995 & 1996, Gregori & Šere 2005, Kerček 2006). Vsa štiri opazovanja s Cerkniškega jezera so iz obdobja spomladanske selitve, ko je tudi drugod v Sloveniji največ opazovanj zunaj območja gnezdenja (Šere 1982, Čelik 1993, Bračko 1995 & 1996, Senegačnik *et al.* 1998, Gregori & šere 2005, Tome *et al.* 2005, Kerček 2006). Izjema je eno opazovanje z Ljubljanskega barja (Tome *et al.* 2005) in tri opazovanja z nekdanje obročkovalske postaje pri Stožicah (Šere 1982). Pri opazovanjih v notranjosti Slovenije gre praviloma za posamezne osebke, izjema je opazovanje 18 osebkov v gramoznici pri Zg. Dupleku leta 1989 (Bračko 1995). Glede na objavljene podatke je opazovanje na Cerkniškem jezeru doslej najzgodnejše zabeleženo opazovanje rjave cipe v Sloveniji.

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Rdečegrla cipa *Anthus cervinus*

Red-throated Pipit – one and four individuals observed on 18 and 25 Apr 2010 respectively at Medvedce reservoir (UTM WM53, NE Slovenia); these are 4th and 5th records for the site. During the second observation, birds were flying towards the roosting site together with 97 Yellow Wagtails *Motacilla flava*.

V aprilu 2010 sem imel na zadrževalniku Medvedce v SV Sloveniji dvakrat priložnost opazovati rdečegrlo cipo. Dne 18.4.2010 sem opazoval en osebek, ki se je spreletaval po poljih severno od zadrževalnika, nato pa odletel proti trstišču znotraj visokovodnega nasipa. Dne 25.4.2010 sem opazoval štiri osebke, ki so skupaj z vsaj 97 rumenimi pastiricami *Motacilla flava* odleteli na prenočišče v trstišču in sestoju rogoza znotraj zadrževalnika. To sta četrto in peto opazovanje vrste na zadrževalniku. Verjetno se vrsta pojavlja pogosteje, kot kažejo dosedanji podatki. Prvič je bila rdečegrla cipa opazovana 4.5.1995 (Janžekovič 1995b), drugič 16.5.2003 (Kerček 2004a), tretjič pa med jesensko selitvijo 27.10.2009 (Šere 2009).

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Citronasta pastirica *Motacilla citreola*

Citrine Wagtail – one adult male observed on 19 Apr 2009 in former wastewater basins of the Ormož sugar factory (UTM WM93, NE Slovenia). The record was confirmed by the National Rarities Committee – KRED as the 2nd for Slovenia after 1 Jan 1950.

Dne 19.4.2009 sva s Tanjo Šumrada opazovala ptice v nekdanjih bazenih Tovarne sladkorja Ormož. Ob 10.51 h sem na stebliki v drugem zemeljskem bazenu opazil odraslega samca citronaste pastirice. Po pol minute opazovanja je ptica izginila v gosto vegetacijo in kljub intenzivnemu dvournemu iskanju je nisva več našla. To je prvo opazovanje v SV Sloveniji in drugo za celotno državo (Božič 2001). Edini starejši podatek je iz Sečoveljskih solin (Polak 1987). Zanimivo je, da je bil le tri dni kasneje ob Ptujskem jezeru

opazovan še en samec citronaste pastirice (Bordjan 2010). Opazovanje je potrdila Nacionalna komisija za redkosti – KRED kot drugo opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Citronasta pastirirca *Motacilla citreola*

Citrine Wagtail – one adult male observed on 22 Apr 2009 in arable field just south of the levee of Lake Ptuj at Zg. Šturmovci (UTM WM63, NE Slovenia). The record was confirmed by the National Rarities Committee – KRED as the 3rd for Slovenia after 1 Jan 1950.

Dne 22.4.2009 sem štel vodne ptice na dravskih akumulacijah in po popisu Ormoškega jezera sem se napotil še na Ptujsko jezero. Po pregledu vodne površine jezera s prve točke sem z Markovškega jezu zapeljal na makadamsko cesto, ki vodi vzdolž desnega nasipa jezera. Ko sem se tako peljal ob južni strani jezera nasproti vasi Zgornji Šturmovci, sem z luže na cesti splašil manjšo ptico. Čeprav sem jo opazil le za hip, mi je takoj postalo jasno, da je ta ptica nekaj posebnega. Hitro sem ustavil avtomobil in s pogledom sledil smeri leta splašene ptice. K sreči ni bila plašna in se je usedla na preorano zemljo kakšnih 30 m za mano. Skozi daljnogled sem videl, da opazujem odraslega samca citronaste pastirice. Vrsta je bila do leta 2001 v Sloveniji opazovana samo enkrat (Božič 2001), in to je bil do leta 2009 tudi edini znani podatek. Neplašnost pastirice sem izkoristil tako, da sem se ji z avtomobilom približal na razdaljo manj kot 10 m in jo fotografiral (slika 13). Na moje presenečenje se mi je pastirica, namesto da bi zbežala, še bolj približala in si začela urejati rahlo razmočeno perje. Po nekaj minutah opazovanja sem se odpeljal naprej. Opazovanje je potrdila Nacionalna komisija za redkosti – KRED kot tretje opazovanje vrste v Sloveniji po 1.1.1950 (kategorija A).

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Slika 13 / Figure 13: Citronasta pastirica / Citrine Wagtail *Motacilla citreola*, Zg. Šturmovci, 22.4.2009 (foto: D. Bordjan)

Pegam *Bombycilla garrulus*

Waxwing – small irruption in winter 2008/2009 in Maribor (UTM WM45 & WM55, NE Slovenia) and Carinthia (UTM WM05 & WM16, N Slovenia); flocks observed while feeding on Rowan *Sorbus aucuparia*, Common Mistletoe *Viscum album* and apples. The last previous irruption in this region was recorded in winter 2005/2006, while in winter 2009/2010 no Waxwings were seen

Tabela 1 / Table 1: Podatki o opazovanih pegamih *Bombycilla garrulus* v SV Sloveniji ter na Koroškem v zimi 2008/2009 / Records of Waxwings *Bombycilla garrulus* in NE Slovenia and Carinthia in winter 2008/2009

Datum / Date	Lokaliteta / Locality	Št. / No.	Hrana / Food	UTM
30.12.2008	Tezno, Maribor	14	*Sorbus aucuparia*	WM55
10.1.2009	Maribor center	54	*Viscum album*	WM45
11.1.2009	Tezno, Maribor	61	*Sorbus aucuparia*	WM55
15.1.2009	Studenci, Maribor	50	*Sorbus aucuparia*	WM45
18.1.2009	Radlje ob Dravi	7	jablana / apple tree	WM16
8.2.2009	Tezno, Maribor	60	*Viscum album*	WM55
10.2.2009	Črneče	2	*Viscum album*	WM05
13.2.2009	Slivnica pri Mariboru	33	*Viscum album*	WM54
14.2.2009	Selnica ob Dravi	20	jablana / apple tree	WM35
4.3.2009	Tezno, Maribor	53	*Viscum album*	WM55
20.3.2009	Tabor, Maribor	24	*Viscum album*	WM45
25.3.2009	Maribor center	17	*Viscum album*	WM45

V Mariboru vsako zimo pozorno spremljam morebitni prihod pegamov, ki obiščejo naše kraje v nekaterih zimah. Iz izkušenj preteklih let pri tem vso pozornost posvetim lokacijam, kjer se pegami navadno pojavljajo ali pa so bili redno opazovani. Taki zimski prehranjevalni habitati v mestu so predvsem okrasni nasadi jerebik *Sorbus aucuparia* in drevesa z belo omelo *Viscum album*. V dveh zaporednih zimah 2006/2007 in 2007/2008 pegamov v Mariboru ni bilo opaziti. Pred tem obdobjem so se tukaj pojavljali kar nekaj zim zapored (Bračko 2009). Po številu pegamov nekoliko šibkejša invazija je bila znova v zimi 2008/2009 (tabela 1). Prileteli so konec decembra, po koncu marca pa jih ni bilo več opaziti. Pegame sem tokrat opazoval tudi na Koroškem. Kot ponavadi so se tudi tokrat prehranjevali s plodovi jerebike in bele omele, v dveh zabeleženih primerih pa tudi z zaostalimi jabolki v sadovnjaku. V tej zimi snega v Mariboru ni bilo veliko, debela snežna odeja pa je pokrivala više ležeče predele. Povprečna dnevna temperatura je bila v zadnjih dneh decembra in prvi polovici januarja ves čas pod lediščem, čeprav ekstremnega mraza ni bilo. V naslednji zimi, 2009/2010, pegamov v Mariboru in okolici ni bilo.

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Taščična penica *Sylvia cantillans*

Subalpine Warbler – one male observed on 27 Apr 2010 at Begunje near Cerknica (UTM VL57, S Slovenia) and three individuals on the same day between Vodonos and Retje, Lake Cerknica (UTM VL56, S Slovenia); on the latter locality, one male was observed on the following day, too. These are rare records from the continental part of Slovenia.

Dne 27.4.2010 mi je žena povedala, da je pred našo hišo v Begunjah pri Cerknici zasledila samca taščične penice. Opazovala ga je med premikanjem in prehranjevanjem po grmovju, ko se ji je približal na vsega nekaj metrov. Novico sem sporočil A. Škobernetu, ki je še isto popoldne obiskal območje med Vodonosom in Retjem na Cerkniškem jezeru ter med glogi *Crataegus* sp. opazoval kar tri taščične penice. Naslednjega dne, 28.4.2010, sem skupaj z Anžetom in Marjeto Cvetko med rednim štetjem vodnih ptic in ujed vnovič obiskal to območje. Opazovali smo enega samca taščične penice. Gnezdišča taščične penice so v Sloveniji omejena na JZ Slovenijo, praviloma predele pod Kraškim robom in na Krasu (Geister 1995). Na Ljubljanskem barju, kjer je bilo zabeleženih pet opazovanj taščične penice, so štiri s konca aprila in eno iz začetka maja (Tome *et al.* 2005). Dejstvu, da je večje število taščičnih penic zgrešilo svoja gnezdišča, je domnevno botrovala vremenska fronta z močnim JZ vetrom v prejšnjih dnevih.

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Severni kovaček *Phylloscopus trochilus*

Willow Warbler – 35 and 41 singing males censused in a belt of willow trees (up to 150 m wide, ca. 5.7 km long) along the outflow channel of the Zlatoličje hydroelectric power plant between Zlatoličje and Hajdoše (UTM WM64, NE Slovenia) in May 2006 and 2007, respectively. With linear density of ca. 1 singing male/150 m, this was the largest local breeding population in Slovenia. The habitat was almost completely destroyed during extensive construction works that commenced in 2008.

Med Zlatoličjem in Hajdošami (UTM WM 64) je vzdolž leve brežine odvodnega kanala HE Zlatoličje vrsto let uspeval pas mladega vrbovja, ki je na dolvodni strani kakor dolg rt segal vse do sotočja struge reke Drave in kanala nad Ptujem. Vrbovje je bilo ponekod širše od 150 m, v dolžino pa je merilo 5,7 km. Območje je nastalo po izkopu odvodnega kanala, kasneje pa so se pojavile tudi manjše gramoznice, ki so se postopno zaraščale z vrbovjem, topoli in različno pionirsko vegetacijo. Že v začetku 80-ih let so na tem območju v velikem številu gnezdili severni kovački. O prvi potrjeni gnezditvi ob Dravi pri Ptuju in nasploh v Sloveniji je pisal Šere (1980), več podatkov o razširjenosti vrste vzdolž reke Drave pa je bilo zbranih kasneje (Šere 1984, Geister 1995, Bračko 1997). V maju leta 2006 sem na celotnem območju omenjenega pasu vrbovja opravil ciljni popis vrste in zabeležil 35 pojočih samcev severnega kovačka, ob ponovitvi popisa v enakem času leta 2007 pa 41 pojočih samcev. Žal je bil med obsežnimi gradbenimi deli za širitev odvodnega kanala HE Zlatoličje, ki so se začela leta 2008, pas vrbovja praktično v celoti uničen. Z linearno gostoto ca. 1 pojoči samec/150 m vrbovja je tukaj zagotovo gnezdila največja lokalna gnezditvena populacija severnega kovačka v Sloveniji. Čeprav severni kovaček ni uvrščen v nacionalni Rdeči seznam ptičev gnezdilcev (Uradni list Republike Slovenije 2002), je v Sloveniji lokalno razširjen gnezdilec z majhno populacijo (Geister 1995, BirdLife International 2004), gnezdečo na južnem robu areala (Hustings & Foppen 1997). Ob uničenju tega pomembnega gnezditvenega habitata severnega kovačka in tudi nekaterih ogroženih vrst ptic se postavlja vprašanje, ali se upoštevajo naravovarstvena merila pri pridobivanju soglasij za izvedbo tako obsežnih posegov na območju rečnih lok.

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Dolgorepka *Aegithalos caudatos*

Long-tailed Tit – small group observed while hunting Diptera insects emerging from water in mid air by jumping alternately from small branches on 24 Jan 2008 at Obrh source at Gorenje Jezero, Lake Cerknica (UTM VL56, S Slovenia); this hunting behaviour lasted several minutes

Slika 14 / Figure 14: Dolgorepka med lovom žuželk v zraku / Long-tailed Tit hunting flying insects, Obrh, Cerkniško jezero, 24.1.2008 (foto: D. Bordjan)

Dolgorepka se prehranjuje večinoma z nevretenčarji, ki jih pobira z dreves in grmovja, le izjemoma lovi tudi leteče žuželke. Slednje počne med skakanjem v zrak z vej in ne pravim, dolgotrajnim lovom v zraku, kot je to značilno za nekatere druge vrste ptic (Cramp 1998). Sam sem takšen način prehranjevanja pri dolgorepki opazoval samo enkrat. Dne 24.1.2008 sem med štetjem vodnih ptic in ujed na Cerkniškem jezeru pri izviru Obrha pri Gorenjem Jezeru opazoval skupino dolgorepk. Čeprav je bila temperatura le nekaj stopinj nad ničlo, je nad izvirom rojilo veliko število dvokrilcev Diptera, ki so očitno izletavali iz vode. Dolgorepke so se premikale po vrbovju ob Obrhu in se izmenično z vejic odrivale v zrak, kjer so lovile izletavajoče žuželke (slika 14). Po nekaj minutah opazovanja sem nadaljeval popis ptic, medtem ko so se dolgorepke še vedno prehranjevale nad izvirom. Poleg neobičajnega načina prehranjevanja me je presenetil tudi dolgi čas zadrževanja dolgorepk na tem mestu, saj se te navadno prehranjujejo med pogostim spreletavanjem z drevesa na drevo in se le redko dlje zadržijo na posameznem drevesu.

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Rjavi srakoper *Lanius collurio*

Red-backed Shrike – a less common prey item, decapitated brown frog from the genus *Rana* impaled on dried twig, found on 25 Jul 2010 at Medvedce reservoir (UTM WM53, NE Slovenia)

Slika 15 / Figure 15: Nedoločena rjava žaba – plen rjavega srakoperja / Unidentified brown frog – the Red-backed Shrike's prey, zadrževalnik Medvedce, 25.7.2010 (foto: D. Bordjan)

Dne 25.7.2010 sem v pasu grmovja na južnem robu zadrževalnika Medvedce našel plen rjavega srakoperja – na suho vejo nabodeno rjavo žabo *Rana* sp. Žaba je bila sveža, vendar brez glave (slika 15), kar ustreza prehranskim navadam rjavega srakoperja, ki večji vretenčarski plen obglavi na samem kraju ulova oziroma pri nabodenem vedno najprej poje glavo in sprednji del telesa. V prehrani rjavega srakoperja sicer izrazito prevladujejo žuželke, med vretenčarji pa mali sesalci in občasno plazilci. Dvoživke so v prehrani redko zabeležene (Cramp 1998). Predvidevam, da so zaradi velike gostote dvoživke na območju zadrževalnika večkrat plen rjavih srakoperjev.

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Šoja *Garrulus glandarius*

Jay – 124 individuals in six flocks (19, 24, 18, 53, 1 & 9 ind.) observed on 2 Apr 2009 while migrating along NE shore and the dam of Ptuj reservoir near Markovci (UTM WM73, NE Slovenia) and onwards along the Drava river over 30 min period

Šoja je v Evropi večinoma stalnica, v smeri proti zahodu in JJZ se občasno selijo le njene vzhodne in severne populacije. Domnevajo, da je jesenska selitev teh šoj v glavnem povezana s slabim obrodom hrasta, najpomembnejšega vira hrane v hladni polovici leta. V takšnih letih se lahko v Srednji Evropi močno poveča prezimujoča populacija. Osebki iz

priseljene populacije se na gnezdišča vračajo med sredino aprila in začetkom junija, v glavnem v smeri proti severu oziroma SV. Večina selitev velikega števila šoj v invazijskih letih je bila zabeležena v državah okoli Baltiškega morja do območja severno od Alp (Cramp 1998, Bauer *et al.* 2005). Dne 2.4.2009 sem opazoval selitev šoj ob Ptujskem jezeru v bližini jezu v Markovcih. Tam sem okoli 10.30 h štel vodne ptice. Med štetjem sem opazil, da se mi po gozdičku ob nasipu približuje manjša jata šoj. Na hitro sem jih preštel in se ponovno posvetil vodnim pticam. Ker se preleti šoj s tem niso zaključili, so bili takoj vnovič deležni moje pozornosti. V nadaljnje pol ure me je tako v šestih skupinah (19, 24, 18, 53, 1 in 9 os.) preletelo skupaj 124 šoj, ki so se pomikale po gozdičku med jezerom in Zabovci vzdolž levega nasipa, preletele jez in nadaljevale pot ob Dravi navzdol. V literaturi sem našel samo eno opazovanje selitve šoj v Sloveniji, in sicer sta dve jati (47 in 8 os.) preleteli Maribor v smeri proti severu oziroma SV v jutranjih urah dne 10. in 14.4.2000 (Bračko 2001). Datum mojega opazovanja je skladen z opazovanji iz Maribora in začetkom spomladanske selitve šoj v Srednji Evropi. Zanimiva je smer selitve, ki ni bila proti severu, temveč proti vzhodu vzdolž reke Drave, podobno kot poteka selitev mnogih drugi vrst ptic na tem območju (Štumberger 1995, Bombek 2007, D. Bombek *osebno*).

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Črnoglavi strnad *Emberiza melanocephala*

Black-headed Bunting – several recent records of single individuals are given and discussed together with other published records obtained in the last 10 years; i.e. singing male on 18 May 2009 at Iški morost Nature Reserve between Brest and Črna vas, Ljubljansko barje (UTM VL69, central Slovenia), on 24 May 2009 at Viševke, Lake Cerknica (UTM VL56, S Slovenia), singing male on 7 Jun 2009 between Kranj and Šenčur (UTM VM52, NW Slovenia), singing male on 12 Jun 2009 at Griško polje near Dolenja vas pri Senožečah (UTM VL26, SW Slovenia), on 21 Jun 2009 near Mt Mali vrh on Breginjski Stol, Julian Alps (UTM UM82, NW Slovenia, 1,405 m a.s.l.) and on 20 May 2010 ca. 1 km SE of Grmez near Škofljica, Ljubljansko barje (UTM VL69, central Slovenia). Although breeding is possible at Griško polje, all other individuals were presumably migration "overshoots".

Slovenija oblikuje skrajno severno mejo gnezditvenega areala črnoglavega strnada v Evropi (Geister 1997). Zadnje potrjene gnezditve te vrste pri nas segajo v leto 1980 v dolini Rižane in Dragonje, kasneje pa je vsaj iz slednje izginil zaradi melioracij. Na Primorskem se je pričel ponovno pojavljati po letu 1987, vendar gnezditev ni bila več potrjena (Geister 1995). V Rdečem seznamu ptičev gnezdilcev Slovenije je uvrščen v kategorijo izumrlih vrst (Uradni list Republike Slovenije 2002). V Evropi, kjer leži tudi večina njegovega svetovnega gnezditvenega areala, ima črnoglavi strnad neugoden varstveni status (kategorija SPEC 2), saj si njegova populacija še ni opomogla po velikem upadu v obdobju 1970–1990 (BirdLife International 2004). Podatki, zbrani v okviru panevropskega monitoringa pogostih ptic (PECBMS), nakazujejo negotov trend številčnosti od leta 1980 dalje (http://www.ebcc.info/index.php?ID=391&result_set=Publish2010-06&one_species=18810). BirdLife domneva, da se njegova številčnost še naprej zmanjšuje, kar je najverjetneje posledica sprememb v načinu kmetovanja ter odstranitve številnih mejic in grmišč v delu njegovega gnezditvenega areala (Birdlife international 2011b). V zadnjih desetih letih je bil črnoglavi strnad v Sloveniji zabeležen nekajkrat: 18.5.2003 je bil v Krepljah pri Dutovljah na Krasu opazovan samec (Kerček 2004b), junija 2006 je bil med Podpečjo in Zazidom večkrat opazovan pojoči samec (Vrezec 2007), kasneje pa je bilo tam najdeno njegovo gnezdo z mladiči (I. Geister *osebno*); 24.5.2009 ga je opazoval A. Škoberne na Viševkah na Cerkniškem jezeru, 7.6.2009 je pojočega samca med Kranjem in Šenčurjem zabeležil B. van der Geest; 12.6.2009 je D. Bordjan na Griškem polju pri Dolenji vasi pri Senožečah poslušal pojočega samca, 21.6.2009 pa so ga T. Mihelič, A. Figelj, I. Brajnik in D. Šere opazovali blizu Malega vrha (1405 m n.v.) na Breginjskem Stolu. Tako čas pojavljanja kot tudi svatovsko vedenje v primeru osebka z Griškega polja dopuščata gnezditev te vrste, gnezditveno sumljiv pa je tudi samec iz Krepelj. Gornjim podatkom dodajam še dva z Ljubljanskega barja: T. Mihelič je intenzivno pojočega samca opazoval 18.5.2009 na Iškem morostu med Brestom in Črno vasjo, z J. Figljem pa sva samca opazovala 20.5.2010 približno 1 km JV od Grmeza blizu Škofljice. Nekaj časa je sedel na žici, potem pa odletel v smeri JV. Pred letom 2000 je bil na Ljubljanskem barju po meni dostopnih podatkih črnoglavi strnad opazovan le 2.6.1991 na osrednjem odlagališču odpadkov. V tem primeru je šlo najverjetneje za klateški osebek, saj ga v naslednjih tednih kljub nekajkratnim obiskom tam ni bilo več (Trontelj 1991). Črnoglavi strnad se seli aprila in v začetku maja, zato bi lahko šlo v primeru podatkov z Ljubljanskega barja, Cerkniškega jezera in Breginjskega Stola za zapoznele osebke na selitvi oziroma za t.i. »overshooting«, ko osebki v sicer običajni smeri selitve zaidejo predaleč in se posledično pojavljajo zunaj običajnega gnezditvenega areala, kar se pri dotični vrsti dogaja predvsem v času spomladanske selitve (Snow & Perrins 1998). To domnevo še dodatno podkrepljuje dejstvo, da samca, opazovanega 18.5.2009 na Iškem morostu, v naslednjih dneh kljub večkratnim obiskom območja ni bilo več. Obe nedavni opazovanji z

Ljubljanskega barja sta sicer s predelov, močno poraščenih z grmovjem, ki črnoglavemu strnadu ustrezajo tudi v času gnezditve.

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Hrvaška / Croatia

Ribji orel *Pandion haliaetus*

Osprey – one individual observed on 1 May 2006 at Velo blato, Pag Island (UTM WK01, N Dalmatia); a rare record for the coastal region

Slika 16 / Figure 16: Ribji orel / Osprey *Pandion haliaetus*, Velo blato, otok Pag, 1.5.2006 (foto: D. Šere)

Za prvomajske praznike sem se odpravil na otok Pag opazovat zanimive vrste ptic na selitvi. Tako sem 1.5.2006 obiskal Velo blato, kjer so me pričakale številne čopaste čaplje *Ardeola ralloides* in rdečegrle cipe *Anthus cervinus*. Še najbolj pa me je presenetil ribji orel, ki je sedel na kupu kamenja ob jezeru. Ko sem ga pogledal skozi teleskop, sem opazil, da ima v krempljih ribo. Takoj sem se odločil za digiskopiranje, vendar mi to zaradi migotajočega vročega zraka – ura je namreč takrat kazala 14.08 h – ni najbolj uspelo (slika 16). Še vsa sreča, da sem na hitro naredil nekaj posnetkov, saj se je ribji orel skupaj s plenom kmalu dvignil in odletel prek jezera. Menim, da je ta podatek zanimiv predvsem zato, ker se večina ribjih orlov vrača v svoja gnezdišča čez Južno Evropo med sredino marca in sredino aprila (Bauer *et al.* 2005). Možno je, da je šlo za enega izmed spolno nezrelih osebkov, ki se jim ne mudi tako zelo proti severu. Ribji orel je ob jadranski obali Hrvaške redka ptica (Rucner 1998).

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Rdeča lastovka *Cecropis daurica*

Red-rumped Swallow – one individual observed on 27 Apr 2010 at Velo blato, Pag Island (UTM WK01, N Dalmatia); this is only the 4th record for the island. The species is currently expanding its range in Croatia, but is seldom seen away from its breeding grounds.

Konec aprila sva nekaj dni preživela na otoku Pagu. Dne 27.4.2010 sva večkrat obiskala ornitološki rezervat Velo blato. Med drugim obiskom, ko sva bila v opazovalnici, je mimo priletela kmečka lastovka *Hirundo rustica*, ki jih je bilo tega dne še posebej veliko. Takoj za njo je priletela še ena lastovka, ki pa je imela v nasprotju s prvo svetlo trtico, črn škarjast rep in rjast ovratnik. Določila sva jo za rdečo lastovko in takoj preusmerila daljnogled in teleskop proti njej. Žal se je lastovka medtem le še oddaljevala in naposled izginila iz najinega vidnega polja. To je šele četrti podatek o pojavljanju rdeče lastovke na otoku Pagu, kjer vrsta ne gnezdi (D. Šere *osebno*). Rdeča lastovka sicer sodi med vrste, ki na ozemlju Hrvaške širijo svoj areal, vendar je redko zabeležena zunaj gnezditvenih območij (Kralj 1997).

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Rdečegrla cipa *Anthus cervinus*

Red-throated Pipit – one 1y individual caught and ringed on 4 Oct 2009 at Kolansko blato, Pag Island (UTM VK92, N Dalmatia); the species is very rare here during autumn migration, contrary to spring migration when numerous between end of April and mid May

Dne 4.10.2009 sem obročkal ptiče v Kolanskem blatu na otoku Pagu. Okoli 8. ure zjutraj sem v zraku zaslišal značilno oglašanje rdečegrle cipe, zato sem takoj začel predvajati oglašanje in petje omenjene vrste. Rdečegrla cipa se je strmo spustila k tlom in sedla na shojeno pot ob postavljeni mreži. Ko sem se počasi približal, se je dvignila in zletela naravnost v mrežo. V jesenskem času perje rdečegrle cipe bolj spominja na druge cipe brez rdečkaste obarvanosti; še najbolj je podobna travniški cipi *A. pratensis*. Tudi obrazec peruti in zadnji krempelj sta podobna tej vrsti (Svensson 1992). V roki sem jo fotografiral (slika 17) ter ob tem posnel tudi značilno sredinsko podrepno pero (slika 18), kar jo v tem času loči od drugih cip (Svensson 1992). Zbral sem še naslednje podatke: dolžina peruti 87 mm, masa 20,1 g in starost 1y (prvoletna). Z obročkom ZAGREB BA 204300 sem jo izpustil. Do tega dogodka sem obročkal samo dve rdečegrli cipi, pa še to davnega 7. in 9.10.1978 v Stožicah

pri Ljubljani (Šere 1982). Ob tem bi dodal, da je rdečegrla cipa na otoku Pagu v jesenskem času zelo redka preletnica, medtem ko je spomladi med koncem aprila in sredino maja številna na vlažnih travnikih in v solinah.

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Slika 17 / Figure 17: Rdečegrla cipa / Red-throated Pipit *Anthus cervinus*, Kolansko blato, otok Pag, 4.10.2009 (foto: D. Šere)

Slika 18 / Figure 18: Značilno centralno podrepno pero rdečegrle cipe / Distinctive central undertail covert of Red-throated Pipit, Kolansko blato, otok Pag, 4.10.2009 (foto: D. Šere)

Citronasta pastirica *Motacila citreola*

Citrine Wagtail – one 2y female observed and subsequently caught and ringed at a water hole on 28 Apr 2004 at Vidasovi stani, Pag Island (UTM VK84, N Dalmatia); one male observed among numerous Yellow Wagtails *M. flava* on 30 Apr 2009 at Velo blato, Pag Island (UTM WK01, N Dalmatia). These are the first records for Pag Island and 5th and 7th for Croatia, respectively. Both records were confirmed by Croatian Rarities Committee.

S citronasto pastirico sem se prvič v življenju srečal 28.4.2004 na otoku Pagu. Na poti proti Lunu leži vas Vidasovi stani, ob cesti pa je manjša mlaka, kjer je med selitvijo mogoče videti marsikatero zanimivo ptico. Na poplavljenem delu travnika ob mlaki sem opazil 10–15 močvirskih martincev *Tringa glareola*. Zato sem takoj postavil mrežo z namenom, da bi katerega od njih ujel in obročkal. Ko sem se umaknil, sem na drugem koncu poplavljenega dela travnika zagledal pastirico in takoj ugotovil, da gre za samico citronaste pastirice. S seboj sem imel vso opremo za digiskopiranje in naredil sem kar precej posnetkov (slika 19). Moram priznati, da sem bil z njimi tako zadovoljen, da mi misel, da bi jo mogoče lahko ujel, sploh ni prišla na misel. V tistem trenutku so se močvirski martinci dvignili in odleteli v smeri proti Velebitu. Počasi sem zakorakal proti mreži in na moje veliko presenečenje se je s tal dvignila tudi citronasta pastirica in zletela naravnost v mrežo. Določil sem jo za drugoletno (2y) samico; dolžina peruti je bila 76 mm in masa 18,7 g. Z obročkom ZAGREB BB 74872 sem jo izpustil, od navdušenja pa sem pozabil narediti dokumentarni posnetek v roki. Naslednje moje srečanje s to vrsto na otoku Pagu je bilo dne 30.4.2009, ko sem se odpravil opazovat ptiče na Velo blato na južnem delu otoka Paga. Tega dne so bile na selitvi zelo številne rumene pastirice *M. flava*, ki so se prehranjevale v travi med kamni. Ko pa se je nad mano oglasila po zvoku »nekoliko drugačna« pastirica, sem postal pozoren nanjo. Zanimalo me je, kam se bo usedla, da bi jo kasneje laže našel med številnimi drugimi pastiricami v pokrajini, posuti s kamni. Pogled skozi teleskop in takojšnja digiskopija sta pokazala, da gre tokrat za samca citronaste pastirice (slika 20). To sta prva podatka o citronasti pastirici za otok Pag in hkrati 5. in 7. za Hrvaško – pred tem je bila leta 1997 štirikrat ugotovljena na Vranskem jezeru (Stipčević *et al.* 2000), leta 2004 pa dan za opisanim opazovanjem tudi na otoku Korčuli (Bordjan & Polajnar 2006). Obe opazovanji je potrdila hrvaška Komisija za redkosti.

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Slika 19 / Figure 19: Citronasta pastirica / Citrine Wagtail *Motacilla citreola*, Vidasovi stani, otok Pag, 28.4.2004 (foto: D. Šere)

Slika 20 / Figure 20: Citronasta pastirica / Citrine Wagtail *Motacilla citreola*, Velo blato, otok Pag, 30.4.2009 (foto: D. Šere)

Črna gora / Montenegro

Flamingo *Phoenicopterus roseus*

Plamenec – predstavljeni so podatki o pojavljanju večje jate jeseni leta 2010 v Ulcinjskih solinah (UTM CM54, J Črna gora); 34 osebkov dne 5.10., 84 osebkov dne 17.11., 90 osebkov dne 26.11. in 104 osebki dne 28.11.2010 med prehranjevanjem v bazenu št. 25. Predhodna opazovanja na tej lokaciji so vključevala največ 7 osebkov. Ob zagotavljanju primernih razmer brez motenj je v bližnji prihodnosti pričakovano gnezdenje te vrste.

Flamingo has been considered a very rare visitor of the Ulcinj salina (UTM CM54, S Montenegro). It was first seen here in July 1984, when a single individual was recorded in basin »Jezero 2« (Ham 1986). After more than 15 years, up to six individuals were only recorded in July and August on four occasions between 2000 and 2002 (Saveljić 2004). Furthermore, no Flamingos were registered during intensive research by Euronatur team in the 2003–2004 study period (Schneider-Jacoby *et al.* 2006). However, later on, small groups of up to seven Flamingos were regularly encountered by the Euronatur team in various salina basins until 2008 (Štumberger *et al.* 2008). Here we present our records on occurrence of much larger numbers, collected during several visits to Ulcinj salina in the autumn of 2010. During EuroBirdwatch event on 5 Oct 2010, the first author observed 34 individuals. On 17 Nov 2010, he observed 84 individuals together with D. Saveljić. A few days later, on 26 Nov 2010, both authors observed, together with B. Rubinić (SI) and D. Saveljić, 90 individuals during a short visit to the salina, lasting approximately half an hour. Flamingos were first feeding in basin no. 25 and after a while they flew to another basin. The same group of ornithologists noted an increase in flock-size to 104 individuals on 28 Nov 2010. As it was very windy, the flock was resting in the southern part of the basin in deeper water and birds could not have been inspected for colour-rings. During the observation on 17 Nov 2010, two colour-rings on Flamingos could have been observed. The codes indicated that one was ringed in Turkey (İzmir) and another in Italy (Ravenna). The substantial increase and expansion of the Flamingo population in the Mediterranean after the 1970 has implied regular establishment of new colonies away from rather few traditional sites (Birdlife international 2004, Baccetti *et al.* 2008). Given that suitable, disturbance-free conditions are secured, breeding might be expected in the Ulcinj salina in the near future.

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Golden Eagle *Aquila chrysaetos*

Planinski orel – dva osebka dne 10.10.2010 in en mladosten osebek dne 4.11.2010 nad vasjo Rijeka Crnojevića (UTM CM39, J črna gora); vrsta je v Črni gori dokaj maloštevilna gnezdilka

During a walk down the road to Podgorica on 10 Oct 2010, I registered two Golden Eagles at about 14.00 hrs above the village of Rijeka Crnojevića (UTM CM39, S Montenegro), also part of Lake Skadar Important Bird Area (IBA). On 4 Nov 2010 at about 10 hrs, approximately at the same locality, I caught sight of interesting group of birds circling above.

I could identify one juvenile Golden Eagle, two Peregrine Falcons *Falco peregrinus*, one Kestrel *Falco tinnunculus*, two Common Buzzards *Buteo buteo* and five Ravens *Corvus corax*. In Montenegro, The Golden Eagle's breeding population size was estimated at 25–32 pairs, and its trend assessed as being stable during the 1990–2002 period (Puzović *et al.* 2003).

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Golden Eagle *Aquila chrysaetos*

Planinski orel – dva različna spolno nezrela osebka opazovana dne 27.11.2010 med lovom na Možuri (UTM CM44, J črna gora, 622 m n.v.) SV od Ulcinja; oba sta priletela iz smeri gorskega grebena Rumije (1594 m n.v.); eden je odletel proti Ulcinjskim solinam, drugi pa nazaj proti Rumiji

The Golden Eagle is one of the rarest resident bird species in Montenegro. It is estimated that in the 1990–2002 period 25–32 pairs were breeding in Montenegro (Puzović *et al.* 2003). During the survey of Mt Možura (UTM CM44, S Montenegro, 622 m a.s.l.) NE of Ulcinj on 28 Nov 2010, the team consisted of Ena Šimić, Mihailo Jovićević and Borut Rubinić observed one imm. Golden Eagle, ca. 2–3 years old, flying from the direction of Mt Rumija (1,594 m a.s.l.). The eagle was scanning the slopes of Možura for 2 min, eventually glided over the ridge at a flight altitude of only ca. 10 m, and continued in direction of the Ulcinj salina. The eagle was registered at 10.45 h on the eastern side of the hill, ca. 700 m from the base station for TV and mobile telephony. Later on, another Golden Eagle, this time a juvenile individual, was seen at 12.27 hrs near the second wind measurement tower. Again, the eagle came from the direction of Mt Rumija, chased by four Ravens *Corvus corax*. The eagle was flying along the ridge at a higher altitude and then turned back in direction of Mt Rumija. Flight directions of both individuals were documented by photographing. Mt Možura is located at the contact zone of the Bojana Delta, where one Golden Eagle nesting pair was registered in the 2003–2004 study period (Schneider-Jacoby *et al.* 2006).

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Great Bustard *Otis tarda*

Velika droplja – dva osebka opazovana dne 13.1.2010 v bližini vhoda na letališče Podgorica (UTM CM59, J Črna gora) na območju Ćemovskega polja v polstepskem habitatu; zadnje opazovanje vrste v državi je bilo leta 2003 na območju Ulcinja

While driving a car from Podgorica towards the Podgorica Airport on 13 Jan 2010, I noticed two Great Bustards in the Ćemovsko polje area (UTM CM59, S Montenegro) during my approach to the airport at about 13.00 hrs. Ćemovsko polje is the only semi-steppic area in the country and qualifies as an Important Bird Area (IBA) on the basis of regular presence of important populations of several threatened species. Birds were observed from the road overpass near the entrance to the airport at a distance ca. 200 m from the road. Although this was my first observation of a Great Bustard, birds could not have been mistaken for any other species. On my return at 13.30 hrs, they were not encountered again. Great Bustard appears periodically in Montenegro during severe winters. The last finding of the species prior to my observation dates from 15 Mar 2003, when one male was shot out of the group of five individuals at Velika plaža near Ulcinj (Schneider-Jacoby *et al.* 2006).

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Great Snipe *Gallinago media*

Čoketa – en osebek splašen ob somornem močvirju sredi poplavnega gozda dne 28.4.2011 na rečnem otoku Ada Bojana (UTM CM63, J črna gora) JV od Ulcinja; en osebek je bil na tem območju zabeležen tudi v okviru intenzivnih raziskav v letih 2003–2004

It was a beautiful calm and pleasant evening of 28 Apr 2011 at the Ada Bojana SE of Ulcinj (UTM CM63, S Montenegro), which we used after a whole day of monitoring raptors on Mt Možura near Ulcinj, walking from the entrance of the camp to the Bojana river across the alluvial forest, which overgrows this river island at the Montenegrin / Albanian border. Somewhere in the middle of some 3 km long track we flushed a snipe that was obviously resting or feeding on the path crossing a brackish marsh. Since the bird was very close at the time we flushed it, I noticed clearly that each quarter of its tail was white from the sides. The snipe flew low, and not erratically as characteristic of the Common Snipe *G. gallinago*, and landed some 100 m down the same path. It called with a single soft, snipe-like call. It was quite obvious by the extent of its fully white tail feathers at the sides of the tail that the snipe was not a Common one. Since the snipe landed not far away, we proceeded towards it, hoping to observe some other field characters – i.e. white wing-bars – when the bird flushes next time. Soon we flushed the birds again, but besides its clearly white tail and similar behaviour (low calm flight) we weren't able to see any other plumage features. In Schneider-Jacoby *et al.* (2006), there is a record of one individual from the Ulcinj area,

observed during migration in the 2003–2004 intensive research period.

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Whiskered Tern *Chlidonias hybrida*

Beločna čigra – opazovanja osebkov v prvem zimskem perju v milih zimah 2006/2007 in 2007/2008 na Skadrskem jezeru v Črni gori in Albaniji; dne 15.1.2007 trije osebki med lovom v bližini vasi Stërbeq (UTM CM67, SZ Albanija), dne 9. in 10.1.2008 po en osebek pod Vidikovcem, Rumija (UTM CM65, J Črna gora), ter v bližini vasi Borici pri Skadru (UTM CM76, SZ Albanija). Medtem ko vrsta ponekod v Z Sredozemlju redno prezimuje, so za Balkanski polotok znani le trije zimski podatki.

Between January 2007 and January 2010, a total of 13 waterbird counts were organized by the Euronatur Foundation on Lake Skadar in Montenegro and Albania. While the macrophyte carpets of the lake currently harbour an internationally important breeding population of up to 2,896 adult birds, most Whiskered Terns leave the area after the breeding season (Štumberger & Schneider-Jacoby 2010). During October counts, Whiskered Terns were regularly present in small numbers of 5–15 birds. In the winters of 2006/2007 and 2007/2008, when we noted maximum temperatures of 15 °C and 10 °C, respectively, during the mid-winter counts, Whiskered Terns were registered on three occasions: (1) On 15 Jan 2007, three birds were seen while hunting in the SE part of Lake Skadar near the village of Stërbeq (UTM CM67), Albania (D. Denac, U. Koce, P. Sackl, D. Ulqini); (2) On 9 January 2008 and (3) again on 10 January 2008, solitary birds were observed along the southern shore below Vidikovac, Mt Rumija massif (UTM CM65) in Montenegro, and from the NE shore close to the village of Borici on the outskirts of Shkodra (UTM CM76), Albania (D. Kitonić, P. Sackl, B. Štumberger). All records concern birds in first-winter plumage. Whiskered Terns mainly winter in tropical Africa, with smaller numbers staying as far north as Egypt's Nile Delta, Israel and Irak. In Europe, the species regularly winters in Portugal and on the Mediterranean coast of Spain and southern France (Cramp 1985). For the northern Adriatic region in Italy, Brichetti & Fracasso (2006) have reported a number of winter records (Dec–Feb) of single birds and small groups of up to five inividuals as far north as the Po Delta and Garda Lake since 2000. In contrast, for the Balkan Peninsula we know of only three winter records on the Rumanian Black Sea coast in December 1974, and in the Jazovo and Kapetanski Rit fish-farms in Serbia in November and December 2005, and in December 2006 (van den Berg 1992, Barna 2007).

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Short-eared Owl *Asio flammeus*

Močvirska uharica – en osebek splašen iz redkega sredozemskega grmičevja dne 27.3.2011 na Možuri (UTM CM44, J Črna gora, 622 m n.v.) SV od Ulcinja; ta redko zabeležena vrsta je bila na spomladanski selitvi na ulcinjskem območju opazovana že leta 2003. Verjetno se na selitvi pojavlja bolj redno, kot kažejo zbrani podatki.

On early morning of 27 Mar 2011 we were just about to finish our last line transect census of breeding birds on Mt Možura near Ulcinj (UTM CM44, S Montenegro, 622 m a.s.l.). When we started to descend, following a narrow path from the antenna-tower at the SE tip of the mountain to the northern side, Mihailo's dog flushed a bird that was sitting camouflaged in not-too-thick garigue vegetation less than a meter away from the footpath. It was evident from the very first instant that the flushed bird was a Short-eared Owl. The morning backlight offered great views of a slowly flapping sandy-coloured owl with prominent bright yellow eyes, black spots around them and long rounded wings with white underwing and an evident black half-moon towards the tip of the underwings. After being flushed, the owl flew up the slope in a slow but elegant, effortless flight and after some minute landed on the ground. The most interesting seems the place of the owl's observation – a rocky Mediterranean hill with sparse garigue vegetation. During the research of the Ulcinj area in the 2003–2004 study period, two individuals of this sparsely recorded species were observed migrating inland from the open sea (Sackl *et al.* 2004). However, these records are hardly surprising as already Rucner (1998), based on records from the 50s, states the surmise of its regular occurrence along the Dalmatian Adriatic coast.

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Najave in obvestila

Announcements

Nagrada zlati legat 2008–2009
The Golden Bee-eater Award 2008–2009

Zlati legat je nagrada, ki jo DOPPS podeljuje slovenskim ornitologom za najboljše delo s področja ornitologije, objavljeno v preteklem letu doma ali na tujem. Nagrado sestavljata pisno priznanje in denarna nagrada. Tokrat je bila nagrada izjemoma podeljena za dve leti hkrati. Žirijo za podelitev nagrade Zlati legat za leti 2008–2009 v sestavi doc. dr. Hubert Potočnik (Oddelek za biologijo Biotehniške fakultete), doc. dr. Al Vrezec (Nacionalni inštitut za biologijo) in predsednica dr. Urša Koce (Nacionalni inštitut za biologijo) je imenoval UO DOPPS na seji 27.1.2011. Žirija je obravnavala 47 del. Sestala se je 17.2.2011 ob 14. uri na Nacionalnem inštitutu za biologijo v Ljubljani. Po pravilniku za podelitev nagrade Zlati legat je najprej vsak član žirije izmed del, ki so prišla v poštev za nagrado, izbral pet najboljših in utemeljil njihov izbor. V ožji izbor se je tako uvrstilo sedem del (našteto po abecednem vrstnem redu prvih avtorjev):

Bevk, D. & Trontelj, P. (2008): Upadanje populacije in možni vzroki za ogroženost divjega petelina *Tetrao urogallus* v Škofjeloškem, Cerkljanskem in Polhograjskem hribovju. – Acrocephalus 29 (136): 13–22.

Bordjan, D. & Božič, L. (2009): Pojavljanje vodnih ptic in ujed na območju vodnega zadrževalnika Medvedce (Dravsko polje, SV Slovenija) v obdobju 2002–2008. – Acrocephalus 30 (141/142/143): 55–163.

Božič, L., Kerček, M. & Bordjan, D. (2009): Naravovarstveno vrednotenje avifavne območja zadrževalnika Medvedce (SV Slovenija) in dejavniki ogrožanja. – Acrocephalus 30 (141/142/143): 181–193.

Denac, D., Smole, J. & Vrezec A. (2009): Naravovarstveno vrednotenje avifavne ob Savi med Krškim in Jesenicami na Dolenjskem s predlogom novega mednarodno pomembnega območja (IBA) za ptice v Sloveniji. – Natura Sloveniae 11 (1): 25–57.

Denac, K. (2009): Habitat selection of Eurasian Scops Owl *Otus scops* on the northern border of its range, central Slovenia. – Ardea 97 (4): 535–540.

Tome, D. (2009): Changes in the diet of long-eared owl *Asio otus*: seasonal pattern of dependence on vole abundance. – Ardeola 56 (1): 49–56.

Vrezec, A., Denac, D. & Tome, D. (2009): Krokar *Corvus corax* na ozemlju Slovenije in bližnje okolice: analiza pojavljanja od pleistocena do danes ter odnos človeka do vrste. – Scopolia 66: 1–63.

Žirija je v skladu s pravilnikom nato točkovala dela v ožjem izboru in tri dela z najvišjim številom točk razglasila kot nominirana dela za nagrado Zlati legat 2008–2009. Deli Denac *et al.* (2009) in Vrezec *et al.* (2009) sta se uvrstili v ožji izbor, vendar žirija zanju ni glasovala, saj je bil eden od članov žirije prvi avtor oziroma soavtor dela. V nadaljevanju je podana obrazložitev za ta izbor:

Bordjan, D. & Božič, L. (2009): Pojavljanje vodnih ptic in ujed na območju vodnega zadrževalnika Medvedce (Dravsko polje, SV Slovenija) v obdobju 2002–2008. – Acrocephalus 30 (141/142/143): 55–163.

Številni priložnostni popisi in opazovanja so v preteklih slabih dveh desetletjih po potopitvi območja Medvedce, prej sistema močvirnih travnikov, vse bolj kazali na to, da ima ta lokaliteta v severovzhodni Sloveniji tudi v spremenjenih ekoloških razmerah velik pomen za ptice. Ornitologa Dejan Bordjan in Luka Božič sta mu zato posvetila posebno pozornost s sistematičnimi večletnimi periodičnimi popisi. Svoje izsledke sta objavila v znanstveni reviji Acrocephalus v prispevku Pojavljanje vodnih ptic in ujed na območju vodnega zadrževalnika Medvedce (Dravsko polje, SV Slovenija) v obdobju 2002–2008. Delo se odlikuje po izjemno velikem obsegu podatkov o številčnosti vodnih ptic in ujed na vodnem zadrževalniku Medvedce in v njegovi okolici. V letih 2002–2008 je bilo opravljenih kar 251 popisov na območju, velikem skoraj 10 km^2, zabeleženih je bilo 115 vrst vodnih ptic in ujed. V prispevku je prikazana sezonska in letna dinamika številčnosti posameznih vrst, opredeljeni so tudi njihovi statusi. Fenograme vrst dopolnjujejo opisni povzetki o njihovem pojavljanju na območju, v katerih so poudarjene glavne značilnosti vzorcev pojavljanja. Območje Medvedce z okolico se s to raziskavo izkaže kot pomembno za gnezdenje in selitev vodnih ptic in ujed. Delo je temelj za vse nadaljnje analize avifavne na območju, v tej vlogi pa se je že izkazalo kot ključna študija za opredelitev novega IBA območja »Črete«, ki je bilo razglašeno leta 2010. Zaključujemo, da je delo zato tudi pomemben mejnik v zgodovini varstva ptic v Sloveniji.

Božič, L., Kerček, M. & Bordjan, D. (2009): Naravovarstveno vrednotenje avifavne območja zadrževalnika Medvedce (SV Slovenija) in dejavniki ogrožanja. – Acrocephalus 30 (141/142/143): 181–193.

Nominirano delo je prva in za varstvo ptic izjemno pomembna nadgradnja dveh temeljnih raziskav o pojavljanju ptic na vodnem zadrževalniku Medvedce, ki so ju opravili avtorji tega prispevka v preteklih letih. To sta raziskava Dejana Bordjana in Luke Božiča o pojavljanju vodnih ptic in ujed ter raziskava Matjaža Kerčka o gnezdilkah kopenskega dela zadrževalnika. Obe deli sta bili objavljeni sočasno s tem nominiranim delom v tematski številki znanstvene revije Acrocephalus (2009; št. 141/142/143). Avtorji prispevka Naravovarstveno vrednotenje avifavne območja zadrževalnika Medvedce (SV Slovenija) in dejavniki ogrožanja so za vrednotenje naravovarstvenega pomena območja na osnovi pojavljanja ptic izbrali velik nabor sodobnih in nepristranskih metod in tako na naravovarstveno vrednost tega mokrišča pogledali z različnih zornih kotov. Takšen pristop k naravovarstvenemu vrednotenju območja na osnovi pojavljanja ptic je v slovenskem prostoru nov in kot tak pomemben vzor za nadaljnje podobne študije. Nedvomno najpomembnejši rezultat te analize je utemeljitev, da območje izpolnjuje kriterije za uvrstitev med IBA območja. Kot kvalifikacijske vrste so se izkazale tri gnezdilke: čapljica *Ixobrychus minutus*, kostanjevka *Aythya nyroca* in grahasto tukalica *Porzana porzana*. Delo obravnava in vrednoti tudi dejavnike ogrožanja ptic na območju ter tako opozori na najpomembnejše varstvene vidike, ki jih bo treba upoštevati pri upravljanju tega novo razglašenega IBA območja »Črete«.

Tome, D. (2009): Changes in the diet of long-eared owl *Asio otus*: seasonal pattern of dependence on vole abundance. – Ardeola 56 (1): 49–56.

Avtor nominiranega dela Changes in the diet of long-eared owl *Asio otus*: seasonal pattern of dependence on vole abundance obravnava prehransko ekologijo male uharice na osnovi dolgotrajnega spremljanja njene prehrane (14 let) ob hkratnem spremljanju relativne številčnosti plenskih vrst malih sesalcev. Gre za eno redkih tovrstnih raziskav o prehrani male uharice v srednjeevropskem prostoru. Delo metodološko korektno obravnava značilnosti vzorcev sezonskih in letnih nihanj v vrstni sestavi in deležu vrst plena v prehrani male uharice v odvisnosti od številčnosti voluharic kot primarne skupine plena. Avtor tako pokaže, da gre v tem odnosu plenilec–plen za funkcionalni odziv plenilca na populacijo plena v okolju, kar pomeni, da je delež določene vrste plena v prehrani plenilca zastopan glede na relativno pogostost tega plena v okolju. Gre za prvo delo o funkcionalnem odzivu plenilca na plen v Sloveniji, zato je članek pomemben prispevek k razvoju ornitologije pri nas. Odlikuje se tudi po tem, da je napisan po sodobnih mednarodnih znanstvenih standardih in objavljen v znanstveni reviji s SCI-faktorjem.

Največ točk je prejelo delo avtorjev Dejana Bordjana in Luke Božiča: Pojavljanje vodnih ptic in ujed na območju vodnega zadrževalnika Medvedce (Dravsko polje, SV Slovenija) v obdobju 2002–2008, ki je bilo objavljeno leta 2009 v reviji Acrocephalus. Avtorjema iskreno čestitamo in jima z veseljem izročamo nagrado Zlati legat!

Urša Koce
predsednica žirije Zlati legat 2008–2009

Najboljše družabno omrežje

Pred dvajsetimi leti je zapihal svež veter. In pod skoraj vsak kamen, tudi v najbolj odmaknjene konce Slovenije, ponesel Mobitelov signal. Za vedno je spremenil komunikacijo in ljudi še tesneje povezal med seboj. Svet kar naenkrat nosite v žepu, prijatelje pa imate vedno s seboj v imeniku mobitela. In vsakič, ko vam zazvoni mobitel, veste, da ste del **najboljšega družabnega omrežja**.

20 LET

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Navodila za avtorje / Instructions for authors

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Submission procedure:

Articles should be submitted by e-mail to [editor-acrocephalus@dopps-drustvo.si].The editor sends an acknowledgement within a few days and informs the authors of the further editorial procedure. Review articles and original articles are peer-reviewed by two referees, and further reviewed by the editor and editorial board. The editorial procedure can therefore be expected to last at least three months. The authors should modify the paper strictly according to the referees' detailed comments and explain non-accepted comments when returning the manuscript. The editor decides whether the manuscript should be accepted, rejected or additional review is to be made. Points-of-view and short communications are peer-reviewed by one person. Short notes 'From the ornithological notebook' are checked only by the editor, who may consult the members of the editorial board. All papers are edited for correct use of English and Slovene.

General remarks:

In general, Microsoft programmes should be used for preparing manuscripts. They should be formatted in single spacing. Please consult the editor about the use of other software. Files larger than 10 Mbytes should be sent by regular mail on DVD ROM. Send figures as RGB (8 bits per channel) in TIFF or JPG format with at least 300 dpi resolution. For vector graphics, EPS and CDR are the preferred formats. Colour dependent figures (with true colours; e.g. differences in feather colours) should be sent separately by regular mail. Send tables and graphs in XLS format, each table in its worksheet. The associated text should consist of just titles and legends; these should be sent in a separate file. English and scientific bird names should follow Svensson *et al.* [Svensson, L., Mullarney, K., & Zetterström, D. (2009): Collins Bird Guide. 2nd Edition. – HarperCollins, London.]. When other scientific names are used this should be clearly stated. Slovene bird names should follow Jančar *et al.* [Jančar, T., Bračko, F., Grošelj, P., Mihelič, T., Tome, D., Trilar, T. & Vrezec, A. (1999): Imenik ptic zahodne Palearktike. – Acrocephalus 20 (94/96): 97–162].

Rarities should be accepted by the national rarities' committee, if it exists. Exceptionally, if the committee is not operating for more than six months after submitting the rarity, it can be assessed by editorial board and published.

Format of original articles submitted for publication:

The paper should be headed by the title, names of authors, institution or home addresses as appropriate, and e-mail addresses of all authors.

Abstract and key words should not be longer than 250 words, and should include aims, methods, main results, and conclusions. Do not refer to the main text in abstract, and do not use abbreviations. Key words have to represent the text as much as possible.

Text should follow IMRAD structure (Introduction, Methods, Results, Discussion). The scientific name, in italics, should be given in the title (if appropriate), in the first mention of a species in the abstract and in the first mention in the main text.

References should be cited in alphabetical order, and, for the same author, by chronological order. If the author has published more than one work in a year, a small letter is added to the year (e.g. Tome 1990a). In the text, references are cited as Snow & Perrins (1998) or (Snow & Perrins 1998) as appropriate. More than two authors are cited as (Zeiler *et al.* 2002). Abbreviations commonly used for journals may be found at [http://www.ueb.cas.cz/bp/notice-abbrev.htm]. Citing unpublished data should be avoided as much as possible. Citing articles in preparation, but not yet accepted for publication, is not accepted. If the language of the reference is other than English and the understanding of the title is important, an English translation can be provided in brackets (see example below). References should be in the following style:

journal paper: Sackl, P. (2000): Form and function of aerial courtship displays in Black Storks *Ciconia nigra*. – Acrocephalus 21 (102/103): 223–229. Cited as: Sackl (2000).

journal paper, language other than English (optional format): Spiridonov, Z. (1988): [Contribution to the breeding avifauna of Ludogorie]. – Orn. Inf. Bull. 23–24: 89–98. (in Bulgarian) Cited as: Spiridonov (1988).

book: Handrinos, G. & Akriotis, T. (1997): The Birds of Greece. – Christopher Helm, A & C Black, London. Cited as: Handrinos & Akriotis (1997).

chapter in book: Diedrich, J., Flade, M. & Lipsbergs, J. (1997): Penduline Tit *Remiz pendulinus*. pp. 656–657 In: Hagemaijer, W.J.M. & Blair, M.J. (eds.): The EBCC Atlas of European Breeding Birds. – T & AD Poyser, London. Cited as: Diedrich *et al.* (1997).

short note: Bordjan, D. (2005): Sombre Tit *Parus lugubris*. – Acrocephalus 26 (125/126): 147–157. Cited as: Bordjan (2005).

theses: Kuhar, B. (2005): [Diet of the Tawny Owl *Strix aluco* in Kozjansko Regional Park]. – BSc thesis, University of Maribor. (in Slovene) Cited as Kuhar (2005).

internet sources: BirdLife International (2004): Species factsheet: Pygmy Cormorant *Phalacrocorax pygmeus*. – [www.birdlife.org], 10/5/2010. Cited as BirdLife International (2004).

legislation: Uradni list RS (2004): Uredba o ekološko pomembnih območjih (no. 48/04). Cited as Uradni list RS (2004).

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Forum has special rules for publication: An author of the comment is allowed just one comment, to which the author of the original article has the right to reply in the same issue.

Short notes 'From the ornithological notebook': The title is the name of the species. The text should be in a single paragraph. A very short abstract, with two sentences at most, must contain the location with geographical coordinates (UTM, degree, Gauß-Krüger) and date of observation, and should summarize the essence of the note. In the text, references are cited as Snow & Perrins (1998) or (Snow & Perrins 1998) as appropriate. Short notes must be submitted in separate files, species by species.

Special abbreviations used in text: English: *pers. comm., unpubl., own data, in print, in prep.*; Slovene: *osebno, neobj., lastni podatki, v tisku, v pripravi.*

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