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The Mallard *Anas platyrhynchos* in Slovenia: a review with an estimation of its current population

Mlakarica *Anas platyrhynhos* v Sloveniji: pregled z oceno trenutne populacije

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Although the Mallard is one of the most numerous and best-studied waterbirds in the world, it received almost no attention in Slovenia. It is one of the most frequently observed waterbirds in our country, with frequency often reaching 100%. Sites with lower frequency either freeze in winter or have a low number of individuals to start with. The Mallard is also the most dominant species (17.5% and 89.0%) with higher dominance at sites less suitable for waterbirds due to the lack of available shoals. Mallards reach their maximum numbers during fall migration and winter. Spring migration has no discernible peak and has been significant only for Lake Cerknica. On shallow waters, the maximum is reached in August and September, a month before fall migration begins, indicating local movement to food-rich sites. Females make up only 36.7% of the observed Mallards and reach the maximum proportion (41.5%) in winter and the lowest in April and May (14.7%), when they nest. The breeding season in Slovenia lasts from mid-January to early December, with the majority of females rearing broods from April to July. Average brood size is 6.2 ± 2.66 and declines with season, age of young and altitude. It varies between habitat types and is highest on Treatment and Coastal Wetlands (7.3) and lowest on deep waters such as Reservoirs (5.7) and Lakes (5.6). No really high breeding densities were found in Slovenia and were similar to those in other countries. Breeding densities are higher on smaller Ponds (< 8 ha), on sites with isolated islands and breeding colonies of gulls and terns (e.g. Lake Ptuj). Breeding density also decreases with elevation. Slovenian breeding population is estimated at 1,473–3,763 bp and wintering population averages 22,237 (10,376–32,010) individuals. Data suggest a decline in the wintering population most likely due to warmer winters. The majority of Mallards winter in NE Slovenia, where eight of eleven sites have a maximum of more than 1,000 Mallards. Most Mallards winter on the Drava river with Ptuj and Ormož lakes, where the highest numbers of Mallards were also recorded (Lake Ptuj: 8,330 ind., Lake Ormož: 5,400 ind.). The highest number of individuals during spring migration was recorded on Lake Cerknica (4,581) and during autumn migration on Medvedce reservoir (3,379). Apart from standing waters, the highest density of wintering Mallards is found in urban sections of slow-flowing rivers, probably due to higher safety and food availability.

72,731 Mallards were hunted between 2001 and 2018, mainly in NE Slovenia (28% in the Pomursko hunting management district). The number of Mallards hunted is declining in all hunting areas and has declined by 64% since 2001 and even more since the 1990s. According to hunt data, hunting is by far the most important cause of the Mallard mortality in Slovenia (97.4%), followed by predation (1.1%). The Mallard mortality in Slovenia is largely unstudied and natural mortality is most likely underestimated, not only because it does not include mortality in the pre-fledging period, a period with the lowest survival, but also because the detectability of natural mortality is considerably lower. In contrast to the hunted numbers, there have been only nine recoveries of ringed individuals from abroad in the last 100 years, suggesting that hunters may not be reporting recoveries to the ringing centre. Apart from the 1972–1975 period, when 87% of Mallards were ringed, the intensity of ringing of Mallards in Slovenia is low, resulting in only seven Mallards recovered abroad. The longest distance of a Mallard ringed in Slovenia comes from Ukraine (1,290 km), while the longest distance between ringing and recovery sites is 2,075 km from an individual ringed in Finland. The only colour morphs documented in Slovenia are Mallards with paler feathers, attributed to one of the colour aberrations resulting from lower melanin productivity. Only few hybrids and mixed pairings with other wild duck species were observed.

Keywords: Mallard *Anas platyrhynchos*, Slovenia, population, breeding biology.
Ključne besede: mlakarica *Anas platyrhynchos*, Slovenija, populacija, gnezditvena biologija

1. Introduction

Waterfowl Anatidae are a diverse and often ecologically important group of birds. They contain some of the most important hunting species (Cotter *et al.* 1996, Dalby *et al.* 2013, McDougall & Amundson 2017) and can transmit diseases to domestic animals (Slemons *et al.* 1991). On the other hand, they can be a proxy for the state of a wetland (Kreakie *et al.* 2015) and can be used to test for the presence of toxins in the environment (Lumeij *et al.* 1989, Plessl *et al.* 2017). They are an important vector for the dispersal of seeds of aquatic plants (Kleyheeg *et al.* 2016, Kleyheeg *et al.* 2019) and nutrients (Post *et al.* 1998), making them a relevant part of wetland ecology.

The Mallard *Anas platyrhynchos* is the most widespread and numerous waterfowl species across most of the Northern hemisphere and by far the most numerous species of dabbling duck (Delany & Scott 2006). It is distributed over much of Eurasia and North America with small and isolated populations in northern Africa. It has been introduced to Australia and New Zealand, but also to South Africa and Mauritius (Drilling *et al.* 2020). It is found in almost all wetlands throughout Europe (BirdLife International 2020), but reaches highest breeding densities in the lowlands of Western Europe, especially in the Netherlands (Keller *et al.* 2020).

Owing to its wide distribution, adaptability, and large numbers, it is a good candidate for various environmental studies. Indeed, it is one of the most studied waterbirds with many studies on urban (Figley & van Druff 1982, Engel *et al.* 1988, Avilova 2018) and feeding ecology (Jorde *et al.* 1983), daily (Shin *et al.* 2016, Yetter *et al.* 2018) and migratory movements (Krementz *et al.* 2011,

Kang *et al.* 2014), inter- and intraspecific interactions (Marchowski & Neubauer 2019), toxicology (Friend & Trainer 1974, Plessl *et al.* 2017), virology (Wille *et al.* 2018), endocrinology (Haase 1983), physiology (Gatti 2011, Söderquist *et al.* 2014), phenology (Grishchenko 1997), population dynamics (Janke *et al.* 2017), population regulation (Hill 1984), seed dispersal (Kleyheeg *et al.* 2019), and habitat use (Link *et al.* 2011). Many aspects of breeding have also been studied, such as habitat selection (Fan *et al.* 2017), site fidelity (Clark *et al.* 2005), hybridisation (Sheppard 2018), productivity (Singer *et al.* 2016, Garrick *et al.* 2017), duckling survival (Titman & Lowther 1975, Krapu *et al.* 2006), population recruitment (Kaminski & Gluesing 1987), second (Olsen *et al.* 2003) and replacement broods (Arnold *et al.* 2010), brood size (Zicus *et al.* 2003), adult survival (Boyer *et al.* 2018), brood parasitism (Talent *et al.* 1981) and breeding ecology at the edge of the species' range (Fouzari *et al.* 2018). It has been used as a model species for testing new research methods such as census technics with the use of drones, radiotelemetry and modelling of a disease spread (Stafford & Pearse 2007, Pöysä *et al.* 2018, van Toor *et al.* 2018).

In Slovenia, the Mallard is the most numerous waterbird both during winter (Sovinc 1994) and breeding periods (Mihelič *et al.* 2019). It was present in Slovenia already in the prehistoric times (Janžekovič *et al.* 2004) and was the most numerous waterbird also in the second half of the 19th and early 20th centuries (Reiser 1925). It was especially numerous in winter (Schiavuzzi 1883) when it was hunted (Schulz 1890). In Slovenia, no studies focusing on the Mallard have been conducted so far. It has been only part of broader studies of local or regional avifauna (i.e. Tome *et al.* 2005, Bordjan & Božič 2009, Bordjan 2012, Tome *et al.* 2013). It has also been included in the national January waterbird census, carried out annually since 1997 (Štumberger 1997, Štumberger 1999, Štumberger 2000, Štumberger 2002a, Štumberger 2002b, Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2008a, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020). In the 40 volumes of the Acrocephalus journal (regional ornithological journal) there is not a single paper specifically devoted to this species, except for few short notes on the occurrence of leucistic individual (Kmecl & Rižner 1992), forceful copulation attempts by several males (Bačani 1999), mixed species pairing (Sovinc 2014) and a report on new maximum numbers for a monitored site (Bordjan 2012a). As breeding distribution was recently published (Bordjan 2019), the aim of this paper was to summarize the available knowledge on phenology, dominance, frequency, breeding estimates, densities and trend, brood size and habitat type, colour morphs, hybrids and escapees, causes of mortality and hunting activity, ringing records and non-breeding numbers of the Mallard in Slovenia.

2. Methods

2.1. Data sources

Data from the following available sources were used in the analysis: (1) ongoing and former waterbird monitoring schemes, listed here with the years of monitoring data used: Sečovlje Salina Landscape Park (KPSS) 1983–2019 (Škornik 2012, I. Škornik *pers. comm.*), Škocjanski zatok Nature Reserve (NRŠZ) 2001–2019 (B. Mozetič & D. Stanič *pers. comm.*), Medvedce reservoir 2002–2019 (Bordjan & Božič 2009b, *own. data*), Ormož Basins Nature Reserve 2007–2019, Ptuj and Ormož lakes 2009–2019 (L. Božič *pers. comm.*), Požeg reservoir 2011–2019 (*own. data*), Rački ribniki 2011–2019 (*own. data*), Lake Cerknica 2007–2011 (Bordjan 2012b, M. Cvetko & A. Škoberne *pers. comm.*, o*wn data*), Vrbje fishpond 1993–1998 and 2009–2011 (Vogrin 1996, Vogrin 2004, Gamser & Novak 2013), Gradiško Lake 2012–2013 (*own. data*), Šaleška lakes 2014–2015 (Gregori & Šere 2005, Deberšek & Bordjan 2016); (2) data from January wintering census (IWC) annual reports (Štumberger 1997, Štumberger 1999, Štumberger 2000, Štumberger 2002a, Štumberger 2002b, Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020), as well as data on domestic form of Mallards that is collected during

IWC counts since 2011; (3) all published data on Mallards from journals (Acrocephalus (ISSN 0351-2851, Vol. 1–40), Biota (ISSN 1580-4208, 5–9), Svet ptic (ISSN 1580-3600, 6–26), Scopolia (ISSN 0351-0077, 1–98), Falco (ISSN 1318-5411, 9–13/14), Annales (ISSN 1408-533X, 0353-8281, 1–29), Natura Sloveniae (ISSN 1580-0814, 1–21), Varstvo narave (ISSN 0506-4252, 1–31)), monographs (Polak 2000, Božič 2003, Gregori & Šere 2005, Tome *et al.* 2005, Škornik 2012, Tome *et al.* 2013, Denac & Kmecl 2014) and various reports (Jančar 1997, Tome 2000, Mihelič 2005, Božič 2007a, b, 2008b, Denac & Smole 2008, Figelj & Kmecl 2009, Denac 2010, Denac *et al.* 2011, Kmecl 2017, Tome *et al.* 2011, Kmecl & Figelj 2011, 2012, 2013, 2015, 2016, Kmecl *et al.* 2014, Kmecl & Šumrada 2018, Kmecl 2019, Kmecl *et al.* 2019); (4) data on the Mallard broods from the online database (DOPPS 2022) up to 2019; (5) data on the Mallard broods on the Internet, mainly from the online forum Foto narava (2022). Photos with known location and/or date photographed in Slovenia were selected; (6) data on high numbers, breeding density and observation of broods directly from observers, including data on location, date and size of broods; (7) data on the Mallard mortality in Slovenia from the online database OSLIS of the Slovenian Forestry Institute (GIS 2022), which was developed to present official data on hunting and from 10-year hunting management plans (ZGS 2012a, b, c, d, f, g, h, i, e, j, k, l, m, n, o); (8) data on ringed Mallards and foreign or domestic recoveries either published or available at Slovenian Ringing Centre (SCOP). For local recoveries, this means a period from 2013 to 2018 for which data are accessible and available.

Data on monthly spring temperatures were gathered from the Slovenian Environment Agency (ARSO 2022a).

2.2. Brood age

Each observed brood was classified into one of five groups. All observed clutches in nests were placed in the first group called "Eggs". All ducklings of known approximate age were placed in an appropriate class I, II or III according to Gollop & Marshal (1954). Class I includes all broods with ducklings aged 1–18 days with no sign of feathers. It also includes broods described in data sources as "very small," "less than a week old," or "only a few days old". Class II includes ducklings 19–45 days old with both down and feathers. Class III includes fully feathered ducklings aged 46–60 days just before independence. Descriptive names for these three classes are used throughout the remainder of this text: Downy, Partially feathered and Feathered, respectively. Broods whose ages were not known or could not be classified were referred to as Ducklings. All broods with 14 or more ducklings were not used in calculating average brood size due to the high likelihood of brood parasitism (Cotter *et al.* 1996, Seabrook-Davison 2014, Drilling *et al.* 2020).

2.3. Breeding season calculation

The duration of breeding from nest-building to independence for an individual brood was calculated depending on the observed age class. Mallards take an average of 3 (1–6) days from nest completion to the start of egg laying. They typically lay one egg per day and incubate for an average of 28 (23–30) days (Drilling *et al.* 2020). For all broods observed outside the nest, an average number of 9 eggs (Drilling *et al.* 2020) and an average duration of incubation were assumed. Other classes last as follows: I. 18 days, II. 27 days, III. 15 days (after Gollop & Marshal 1954). Since the exact age of broods was unknown, they were standardized at the centre of the corresponding (observed) period. A more conservative approach was used for broods with the unknown age class. For calculating the onset of breeding, Ducklings were treated as Downy, since feathered ducklings are rarely recognized as ducklings by observers. On the other hand, for the end of breeding Ducklings were treated as Partially feathered. Simplified formulas are used here to calculate the duration of breeding period from nest building to fledging for observed broods:

Eggs
Observation date (Obs. date) – (3 days from nest building to egg laying + Number of eggs + 14 days (half of the average incubation period))

Downy
Obs. date – (3 days + Number of ducklings + 28 days of incubation period + 9 days (half of downy period))

Partially feathered
Obs. date – (3 days + Number of ducklings + 28 days + 18 days +13 days (half of Partially feathered period))

Feathered
Obs. date – (3 days + Number of ducklings + 28 days + 18 days +27 days + 7days (half of feathered period))

Duckling
Obs. date – (3 days + Number of ducklings + 28 days + 9 days (As for Downy))

The end of breeding period was calculated by adding the estimated periods for individual classes as follows:

Eggs
Obs. date + 7 days (one fourth of the incubation period) + 18 days + 27 days +15 days

Downy
Obs. date + 9 days (half of downy period) + 27 days + 15 days

Partially feathered
Obs. date + 14 days (half of Partially feathered period) + 15 days

Feathered
Obs. date + 7 days (half of feathered period)

Duckling
Obs. date +14 days + 15 days (As for Partially feathered)

Breeding periods calculated from individual observations were summed and the proportion of all probable breeding attempts was calculated for each day.

2.4. Frequency and dominance

Frequency is defined as the percentage of specific periods when Mallards were recorded at specific monitored sites. Dominance is the percentage of Mallards compared to the total number of all waterbirds recorded (Bordjan & Božič 2009b). Some studies also include birds of prey (e.g. Bordjan 2012b). For such studies, I calculated dominance to include only waterbirds according to Božič (2020).

2.5. Phenology

For the presentation of annual dynamics of the Mallard individuals, broods and temporal dynamics of females, the year was divided into ten-day periods according to Bordjan & Božič (2009a). Data from sites with multiple-year monitoring were averaged across years for each ten-day period. To compare the phenology between study sites with markedly different numbers of Mallards, a relative abundance was used, i.e., the percentage of the annual Mallard total in a single ten-day period. The more even the yearly distribution of Mallards, the lower the maximum percentage in ten-day periods. Phenological periods were used according to Bordjan & Božič (2009a).

2.6. Wetland types

The Ramsar Classification System for Wetland Types (Ramsar Convention Secretariat 2010) was used as the basis for classifying wetland types in the study. For Human-made wetlands category, the same classification as in Ramsar (Table 1) was used. For Inland wetlands, distinction between rivers with an average annual discharge of more than 50 m^3/s, including the Drava, Mura and Sava river from Radovljica downstream, the Kolpa, Krka and Ljubljanica rivers (ARSO 2022b), and those with lower discharge was made. Permanent freshwater wetlands and Seasonal/intermittent freshwater wetlands were grouped into one category each (Table 1). All wetlands on or in the vicinity of coast, natural or man-made (e.g., Salt exploitation sites), were considered as Marine/Coastal wetlands and were not further divided.

2.7. Breeding population estimate

All available data on breeding densities or population size estimates of the Mallard in Slovenia were gathered. The former was divided into breeding densities and ecological breeding densities, separated by Ramsar wetland types (Table 1). For

larger geographical areas (e.g., Ljubljansko barje), breeding densities from literature were compared with estimated breeding densities calculated using different approaches. (1) Where raw data was available, i.e. the number of Mallards counted in a breeding period (22th Mar – 20th May, Bordjan & Božič 2009b), that number was multiplied by the average proportion of males in that period (from the count). As some females do not breed (e.g., approximately 9% of females in New Zealand Sheppard 2018), 10% was subtracted from the number of pairs calculated. (2) Another approach was to estimate the number of breeding pairs from ecological densities for each wetland type in selected areas (from habitat type). (3). In addition, the breeding population for Goričko was estimated

Table 1: Wetland type classification used in this study. First two columns are from the Ramsar Classification System for Wetland Type (RAMSAR CONVENTION SECRETARIAT 2010).

Tabela 1: Uporabljena klasifikacija tipov mokrišč. Prva dva stolpca sta povzeta po Ramsarskem sistemu klasifikacije tipov mokrišč (RAMSAR CONVENTION SECRETARIAT 2010).

Wetland type / Tip mokrišča	Wetland subtype / Podtip mokrišča	Named in this study / Poimenovano v tem delu
Human-made wetlands / Antropogena mokrišča	Aquaculture ponds / ribogojnice	Aquaculture / ribogojnice
	Canals and drainage channels, ditches / kanali, izsuševalni kanali in jarki	Canals / kanali
	Excavations / gramoznice, glinokopi, rudniški bazeni	Excavations / izkopi
	Ponds (less than 8 ha) / manjši zadrževalniki (< 8 ha)	Ponds / ribniki
	Wastewater treatment areas / sanitarna močvirja, usedalniki ipd.	Treatment / čistilne naprave
	Water storage areas (more than 8 ha) / rezervoarji, akumulacijska jezera	Reservoirs / zadrževalniki
Inland wetlands / Celinska mokrišča	Permanent freshwater marshes/pools / stalna sladkovodna močvirja, jezera, manjša od 8 ha	Lakes (Pools if smaller than 8ha) / jezera (jezerca, če manjša od 8ha)
	Permanent freshwater lakes / stalna sladkovodna jezera (> 8 ha)	
	Permanent rivers/streams/creeks* / stalne reke/potoki	Large river (more than 50 m^3/s) / velike reke (več kot 50 m^3/s)
		Small river (less than 50 m^3/s) male reke (manj kot 50 m^3/s)
	Seasonal/intermittent freshwater lakes / sezonska/občasna sladkovodna jezera	Intermittent / presihajoča jezera
	Seasonal/intermittent freshwater marshes/pools on inorganic soils / sezonska/občasna sladkovodna močvirja/mlake	
Marine/Coastal Wetlands / Obalna morkišča	Salt exploitation sites** / soline	Coast / obala
	Coastal freshwater lagoons / obalne brakične/slane lagune	
	Permanent shallow marine waters / trajno plitve morske vode	
Unknown / Neznano	Unknown / neznano	Unknown / neznano

* Ramsar does not differentiate rivers on the basis of discharge. / Ramsar ne razlikuje rek po njihovem pretoku.
** Ramsar places it as a human-made wetland. / Ramsar jih uvršča med antropogena mokrišča.

from data gathered during the survey of birds in Landscape Park (Denac & Kmecl 2014) and data from the Slovenian Bird Atlas database (estimate).

Two approaches were used to calculate the Slovenian breeding population of the Mallard. (1) All known breeding populations and those estimated in this paper using different approaches were summarized (Appendix 1) and extrapolated to the rest of Slovenia (1,821,350 ha). As there are almost no permanent water sources in many areas in Slovenia (Perko & Oražen Adamič 1998), different geographical regions were divided into three categories according to the percentage of wetland cover: more than 2%, 1–2% and less than 1% of wetland cover (Table 2). (2) Ecological densities for different wetland types were used (Table 1, Appendix 2) and extrapolated to the area size of the corresponding wetland types in Slovenia (areas with known population size were excluded) and summed with known populations. Some wetland types (e.g., torrents, fast-flowing streams...) are unsuitable for breeding Mallards and were assigned a population size of zero breeding pairs. For habitats with lacking corresponding breeding density (canals, mire, etc....), the most similar habitat type was used.

2.8. Non-breeding population

For the IWC, Slovenia is divided into eight count areas, in turn subdivided into count units (whole or large parts of rivers and meaningful geographical units such as Dravsko and Ptujsko polje), which are further divided into river sections and localities (smaller rivers, standing waters and larger areas such as Radensko polje) (Božič 2005). For the calculation of wintering densities, river sections with large dams were considered standing waters and presented in a figure as localities. Number of individuals during a non-breeding period (Appendix 3) is presented based on a maximum for a site if it is greater than 100 individuals.

2.9. Statistics

For statistical analysis, the program R (R Core Team 2017) was used. To estimate trends from IWC data for wintering Mallards in Slovenia, annual and seasonal sum of Mallards at monitoring sites (wintering, summering, spring and autumn migration), breeding population at selected sites and number of Mallards hunted, package rtrim was used, which estimates species

Table 2: Slovenian regions (Perko & Oražen Adamič 1998) sorted by wetland coverage.

Tabela 2: Slovenske regije (Perko & Oražen Adamič 1998) ločene po deležu pokritosti z mokrišči.

More than 2% of region is covered by wetlands / Več kot 2% regije je pokrito z mokrišči	1-2% of region is covered by wetlands / 1-2% regije je pokrito z mokrišči	less than 1% of region is covered by wetlands / Manj kot 1% regije je pokrito z mokrišči
Dravska ravan*, Koprska brda*, Krška ravan*, Murska raven*, Ribniško-Kočevsko podolje, Savinjska ravan, Savska ravan, Velenjsko and Konjiško hribovje, Ljubljansko barje*, Dravinjske gorice	Novomeščanska pokrajina, Julijske Alpe*, Notranjsko podolje, Strojna, Kozjak and Pohorje, Slovenske gorice, Goriška Brda, Ložniško and Hudinjsko gričevje, Voglajnsko and Zgornjesoteljsko gričevje, Krško, Senovsko and Bizeljsko gričevje, Bela krajina, Kambreško and Banjšice, Vipavska dolina, Idrijsko hribovje, Brkini and dolina Reke*, Posavsko hribovje, Srednjesotelsko gričevje*, Haloze	Pivško podolje and Vremščica, Dolenjsko podolje, Velikolaščanska pokrajina, Goričko*, Kamniško-Savinjske Alpe, Cerkljansko, Škofjeloško, Polhograjsko and Rovtarsko, Velika gora, Stojna and Goteniška gora, Zahodne Karavanke, Krimsko hribovje and Menešija, Suha Krajina and Dobrepolje, Bloke, Vzhodne Karavanke, Gorjanci, Raduljsko hribovje, Mala gora, Kočevski rog and Poljanska gora, Trnovski gozd, Nanos and Hrušica, Boč and Macelj, Kras, Javorniki and Snežnik, Lendavske gorice, Podgorski Kras, Čičarija and Podgrajsko podolje

* Regions partly or completely covered by available data on breeding population of Mallards / Regije, ki so delno ali v celoti pokrite z znanimi ocenami populacij mlakarice

populations based on frequent (annual) counts at a varying collection of sites (Bogaart *et al.* 2020). For estimating wintering population trends, the periods 1999–2019 (Drava river) and 2000–2019 (Entire Slovenia) was used. For breeding population trends, monitoring sites with available estimated annual breeding population were used. For figures, the ggplot2 package (Wickham *et al.* 2020) was applied. For visual comparison of average brood size among years, months and wetland types, violin plots were created with a marker for the median of the data and a box indicating the interquartile range, as in a standard boxplot. Violin plots show the kernel probability density of the data at different values. Nonparametric Spearman's correlation (coefficient used in text r_s) was used (1) for analysis of annual trends in wintering Mallards on the Drava river and (2) for correlation between seasons and brood size. Parametric Pearson's correlation (r_p) was used (1) for the analysis of the relationship between monthly average temperatures, the sum of daily average temperatures in February, March and April and the annual onset of nesting, (2) between breeding density and elevation, (3) brood size and elevation. The nonparametric Kruskal-Wallis test (H) in R was used for (1) comparing brood size among different wetland types, (2) age groups and years, and (3) for comparing breeding densities among different wetland types. For spatial analysis and drawing of maps, ArcGis (ESRI 2015) was used.

3. Results

3.1. Dominance, frequency and phenology

The Mallard is a year-round species in Slovenia with frequency exceeding 70% at all monitored sites (Table 3). At eleven sites, the frequency was 100% and only in two cases the frequency was lower than 80%. It is often the most dominant species at a given site, with dominance ranging from 17.5% to 89.0% (Table 3). The average dominance for all sites is 46.4% and Mallard represents more than half of all waterbirds at seven sites.

In Slovenia, Mallards are most numerous in winter and early spring, from late December to early March, when numbers begin to decrease and reach a low point in late April and early May. Numbers increase from May to September and then fluctuate until December (Figure 1). There are large differences in phenology between studied sites (Table 4). In the Ormož Basins Nature Reserve, Mallards are mostly absent in winter. Shallow sites (Medvedce, Rački ribniki, Požeg, Ormož Basins Nature Reserve) reach maximum numbers during autumn migration, while deep reservoirs (Ptuj, Ormož and Gradiško lakes) reach maxima during winter. Mallards reach their maximum at the end of winter in February on Lake Cerknica and in late February and early March on Vrbje fishpond. The number of Mallards fluctuates on the deep lakes in Šaleška valley with a maximum in November and in late

Table 3: Frequency and dominance of Mallards *Anas platyrhynchos* at different sites

Tabela 3: Frekvenca in dominanca mlakarice *Anas platyrhynchos* na posameznih območjih

Location / Lokacija	Frequency [%] / Frekvenca [%]	Dominance [%] / Dominanca [%]	Source / Vir
Lake Bled (June-August)	100.0	89.0	Jančar *et al.* (2007)
Lake Bohinj (June-August)	100.0	88.0	Jančar *et al.* (2007)
Lake Bled (June-August)	100.0	81.0	Jančar *et al.* (2007)
Lake Pernica lower	100.0	84.5	Gregori (1989)
Lake Pernica upper	100.0	74.9	Gregori (1989)
Drava river in Maribor (Apr.-Sept.)	100.0	71.7	Logar & Božič (2014)

Continuation of Table 3 / Nadaljevanje tabele 3

Location / Lokacija	Frequency [%] / Frekvenca [%]	Dominance [%] / Dominanca [%]	Source / Vir
Lake Moste (December-January)	100.0	60.0	Jančar *et al.* (2007)
Lake Bohinj (December-January)	100.0	50.0	Jančar *et al.* (2007)
Drava river in Maribor	100.0	42.9	Logar (2009)
Lake Ormož	100.0	41.4	L. Božič *pers. comm.* / L. Božič *osebno*
Lake Moste (June-August)	100.0	39.0	Jančar *et al.* (2007)
Drava river in Maribor (Oct.-March)	100.0	38.6	Logar & Božič (2014)
Šaleška lakes	100.0	29.6	Deberšek & Bordjan (2016)
Medvedce reservoir 2010–2019	100.0	28.7	*Own data / lastni podatki*
Lake Cerknica	100.0	27.2	Bordjan (2012b)
Lake Ptuj	100.0	19.7	L. Božič *pers. comm.* / L. Božič *osebno*
Sečovlje salina nature park	100.0	4.9*	I. Škornik *pers. comm.* / I. Škornik *osebno*
Vrbje fishpond 2009–11	97.2	17.5	Gamser & Novak (2013)**
Rački ribniki	95.8	34.0	*Own data. / lastni podatki*
Lake Radehova	93.0	49.2	Gregori (1989)
Lake Komarnik	93.0	49.0	Gregori (1989)
Vrbje fishpond 1994–95	93.0	22.2	Vogrin (1996)
Požeg reservoir	92.2	50.2	*Own data. / lastni podatki*
Medvedce reservoir 2002–2009	92.0	31.9	Bordjan & Božič (2009a), *Own data. / lastni podatki*
Fishponds in Pesnica valley	89.0	74.2	Gregori (1989)
Žovnek reservoir	83.3	58.6	Vogrin (2005)
Lake Gradišče	81.0	65.3	Gregori (1989)
Lake Pristava	78.0	77.4	Gregori (1989)
Ormož Basins Nature Reserve 07–10	72.1	26.7	L. Božič *pers. comm.* / L. Božič *osebno*
Lakes Trboje and Zbilje	Present in all months	49.0	Trontelj (1992)
Nature reserve Škocjanski zatok	100.0% in most years		Škornik *et al.* (1990), D. Stanič *pers. comm.* / D. Stanič *osebno*
Ljubljana	Present year round		Tome *et al.* (2013)
Ljubljansko barje	Present year round		Tome *et al.* (2005)

* all bird species / vključuje vse vrste ptic
** source includes birds of prey / vir vključuje tudi ujede

December and early January. At most sites, the maximum percentage of Mallards in a ten-day period compared to the annual total is around 9%. Medvedce and Šaleška lakes have a lower maximum of 6% and 4%, respectively, while Lake Cerknica and Ormož Basins Nature Reserve have higher maximum of 13.8% and 12%, respectively (Table 5).

Females make up 36.7% of the Mallards counted at five monitoring sites (Figure 2). The proportion of females is lowest during the breeding season (14.7%) and highest in winter (43.9%). At the start of the breeding season in March, females make up 41.7% of the observed Mallards. The greatest percentage decline occurs in mid-April, when it drops to 26.1% and continues to decline until early May (Figure 2).

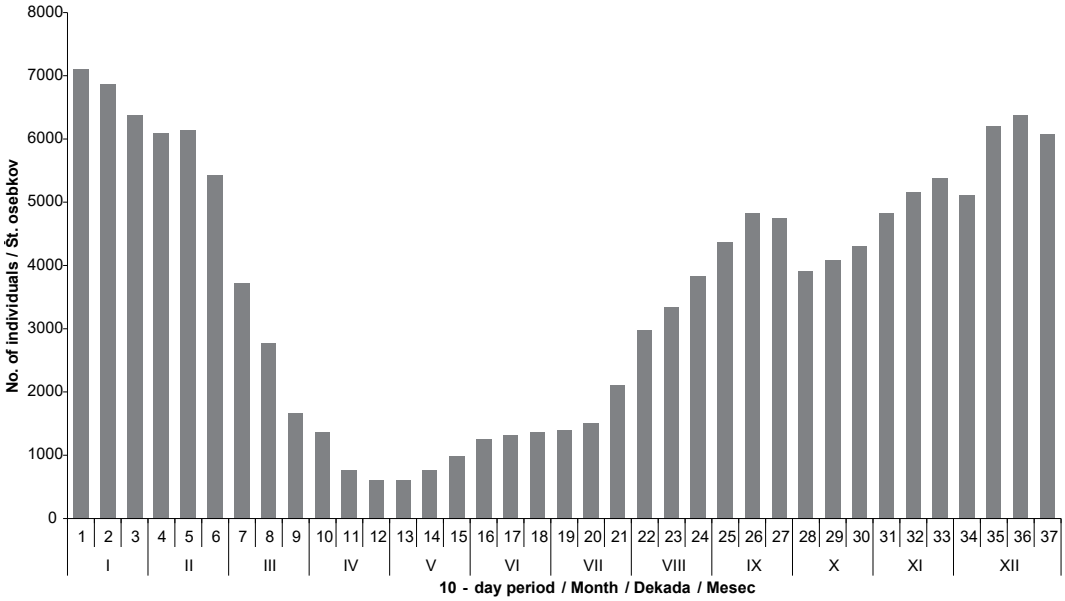


Figure 1: The sum of Mallards *Anas platyrhynchos* in a ten-day period from fifteen monitoring sites in Slovenia (Medvedce reservoir, Cerknica, Bled, Bohinj, Moste, Gradiško, Ptuj and Ormož lakes, Ormož Basins Nature Reserve, Vrbje fishpond, Rački ribniki, Požeg reservoir, Šaleška lakes, Škocjanski zatok Nature Reserve and Sečovlje Salina Lanscape park).

Slika 1: Vsota števil mlakaric *Anas platyrhynchos* v deset dnevnih obdobjih iz petnajstih območij z monitoringom vodnih ptic v Sloveniji (Zadrževalnik Medvedce, Cerkniško, Blejsko, Bohinjsko, Moste, Gradiško, Ptujsko ter Ormoško jezero, Naravni rezervat Ormoške lagune, Ribnik Vrbje, Rački ribniki, Zadrževalnik Požeg, Šaleška jezera, Naravni rezervat Škocjanski zatok in Krajinski park Sečovlje Soline).

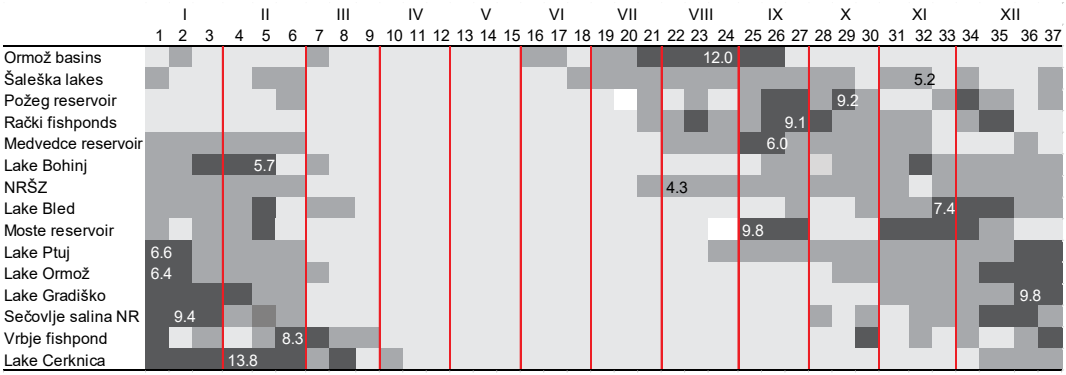
Table 4: Monthly dominance of Mallards *Anas platyrhynchos* from eleven sites (Medvedce reservoir, Cerknica, Bled, Bohinj, Moste, Gradiško, Ptuj and Ormož lakes, Ormož Basins Nature Reserve, Rački ribniki, Požeg reservoir).

Tabela 4: Mesečna dominance mlakarice *Anas platyrhynchos* iz enajstih območij z monitoringom vodnih ptic (Zadrževalnik Medvedce, Cerkniško, Blejsko, Bohinjsko, Moste, Gradiško, Ptujsko ter Ormoško jezero, Naravni rezervat Ormoške lagune, Rački ribniki, Zadrževalnik Požeg).

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Dominance / Dominanca	41.6	38.2	18.6	23.9	36.2	31.1	26.1	33.0	29.9	27.0	25.1	35.5

Table 5: The comparison of percentage of annual Mallard *Anas platyrhynchos* total in separate ten-day periods at fifteen monitored sites. Different colours represent different percentages: light grey: less than 2.7% (average for all ten-day periods); grey: 2.8 – 5.4% (double the average); dark grey: more than 5.4 %. The number presents the highest percentage in a ten-day period for a site.

Table 5: Primerjava deležev letnega seštevka števila mlakaric *Anas platyrhynchos* v posameznih deset dnevnih obdobjih na petnajstih območjih z monitoringom vodnih ptic. Različna barva predstavlja različne deleže: svetlo siva: manj kot 2.7% (povprečje vseh deset dnevnih obdobij); siva: 2.8 – 5.4% (dvakratnik povprečja); temno siva: več kot 5.4 %. Zapisano število predstavlja desetdnevno obdobje z najvišjim deležem za območje.



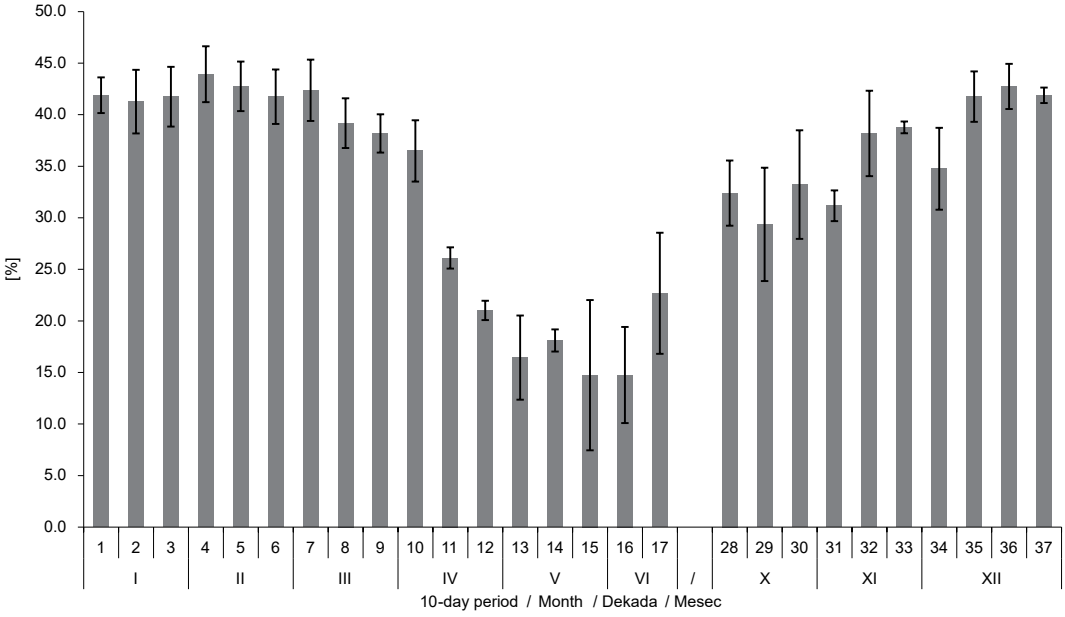


Figure 2: Yearly average percentage (±SD) of female Mallards *Anas platyrhynchos* at five monitoring sites (Medvedce reservoir, Rački ribniki, Požeg reservoir, Gradiško Lake, Drava river in Maribor). Empty space presents a period between the end of June and the end of September when sex is harder to distinguish and data are lacking or unreliable.

Slika 2: Delež (±SD) samic mlakaric *Anas platyrhynchos* na petih območjih z monitoringom vodnih ptic (Zadrževalnik Medvedce, Rački ribniki, Zadrževalnik PožegGradiško jezero, reka Drava v Mariboru). Prazen prostor predstavlja obdobje med koncem junija in koncem septembra, v katerem podatki o spolih manjkajo ali so manj zanesljivi.

3.2. Breeding biology

3.2.1. Brood phenology

1741 data on nests or broods with recorded dates were gathered during 2001–2019. Two Downy broods were sighted in late February on Ptuj (D. Bombek *pers. comm.*) and Ormož (M. Premzl *pers. comm.*) lakes without an exact date or year. Estimated start of breeding in these cases is mid-January. The earliest clutch with an exact date was a nest with eggs found on 28th February. The latest nest was found on 3rd June. The number of observed broods increased through the end of May and remained high through early July, then decreased rapidly (Figure 3). 44.7% of all broods were observed in June, 28.2% in May, 20.5% in July, and substantially fewer in other months (Table 6). Only 25 broods (1.5%) were observed in August, the last with downy young on 25th August. A very late brood with downy young was sighted in the coastal region on 17th October in Sečovlje salina.

The estimated breeding season of the Mallard in Slovenia lasts from mid-January to early December. 75% or more broods were estimated to be present between mid-May and late June, more than half between late April and mid-July, and more than 10% between late March and the second half of August (Figure 3).

Mallards start breeding earlier with warmer mean temperatures in February ($r_p = -0.51$, df = 15, p = 0.0377), but not in March ($r_p = -0.39$, df = 15, p = 0.1189) or April ($r_p = -0.2967$, df = 15, p = 0.2475). The correlation is also present for the sum of daily mean temperatures in February ($r_p = -0.64$, df = 12, p = 0.0130), March ($r_p = -0.54$, df = 12, p = 0.0466), and April ($r_p = -0.62$, df = 12, p = 0.0188).

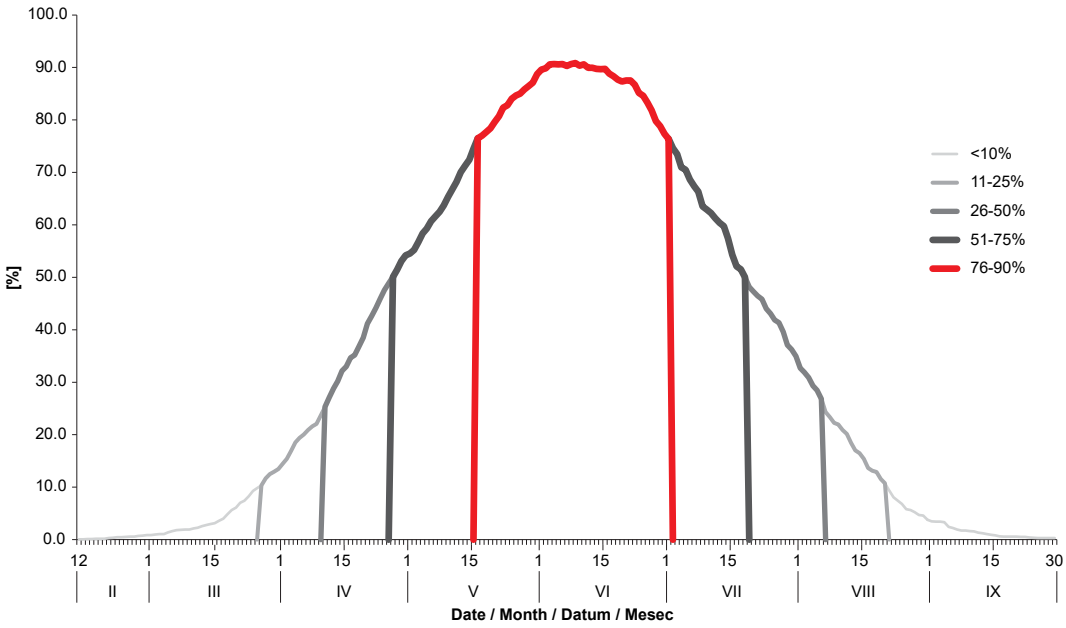


Figure 3: Calculated proportion of active Mallard *Anas platyrhynchos* broods on a given day between February and September in Slovenia, estimated from observed nests and broods. Different lines represent time periods when a certain proportion of Mallard broods were likely present. Red represents a period when more than 76% of all broods were likely to have been present.

Slika 3: Izračunan delež aktivnih zarodov mlakarice *Anas platyrhynchos* za vsak posamezen dan med februarjem in septembrom v Sloveniji. Različne črte predstavljajo časovna obdobja, znotraj katerih so določeni deleži zarodov mlakarice verjetno prisotni. Rdeča barva predstavlja obdobje, ko je bilo verjetno prisotnih več kot 76% vseh zarodov.

Table 6: Number of broods and mean brood size of the Mallard *Anas platyrhynchos* for separate months with standard deviation. Number of broods with known size is given in brackets.

Tabela 6: Število in povprečna velikost zarodov mlakarice *Anas platyrhynchos* prikazana po posameznih mesecih s standardno deviacijo. Število legel je prikazano v oklepajih.

Month / Mesec	No. of broods / Število zarodov	Mean / Povprečje	SD
February / februar	3	/	/
March / marec	4 (1)	6.0	/
April / april	82 (54)	7.9	2.63
May / maj	487 (381)	7.0	2.66
June / junij	772 (654)	6.0	2.56
July / julij	354 (285)	5.6	2.58
August / august	25 (21)	4.7	2.33
October / oktober	2 (1)	2.0	/

3.2.2. Brood size

Altogether, data (including various sources) were gathered on 1,394 of broods with known size. Most had seven young (206). More than 50% had 5–8 young (Figure 4). Eighteen broods had 14 or more young with a maximum of 29. The average brood size was 6.2 ± 2.66. There is a statistically significant difference in the average number of young among the age classes (Figure 5 & Table 7, H = 13.11, df = 4, p = 0.0108). Eggs had the largest clutches (7.2 ± 2.52) and Feathered had the smallest broods (5.2 ± 2.30, H = 79.09, df = 6, p = 5.502e–15). The brood size decreased throughout the season (Figure 6 & 7) from April (7.9 ± 2.7) to August (4.7 ± 2.3, r_s: –0.25, p = 2.2e–16). This applies for both Downy (r_s = –0.28, p = 9.823e–14) and Partially feathered (r_s –0.18, p-value = 0.00197).

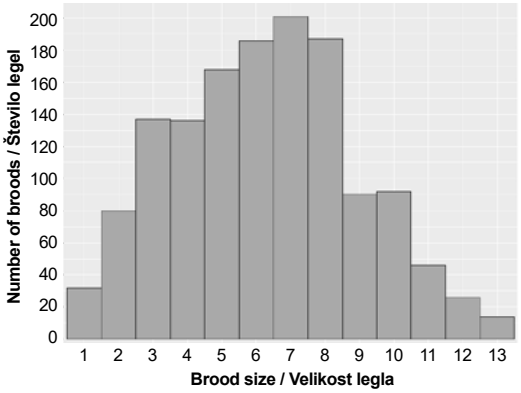


Figure 4: Number of nests and broods with certain brood sizes for Mallards *Anas platyrhynchos* (N=1,395)

Slika 4: Število gnezd in zarodov mlakarice *Anas platyrhynchos* z določeno velikostjo (N=1,395)

Table 7: Number of broods, mean brood size with standard deviation in different brood age classes of the Mallard *Anas platyrhynchos*.

Tabela 7: Število in povprečna velikost zarodov s standardno deviacijo po posameznih starostnih razredih mladičev mlakarice *Anas platyrhynchos*.

Brood age class / Starostni razred	No. of broods / Št. zarodov	Mean / Povprečje	SD
Eggs / jajca	14	7.2	2.52
Downy / puhasti	690	6.4	2.65
Partially feathered / delno operjeni	285	6.3	2.84
Feathered / operjeni	56	5.2	2.30
Ducklings / mladiči	335	6.2	2.59

Figure 5: The Mallard *Anas platyrhynchos* brood sizes for different age classes presented with boxplots, rotated kernel density plots (violin plots) and mean (red dots).

Slika 5: Velikost legel mlakarice *Anas platyrhynchos* v različnih starostnih razredih mladičev predstavljeno z grafikonom kvantilov, violinskim grafikonom in povprečjem (rdeče pike).

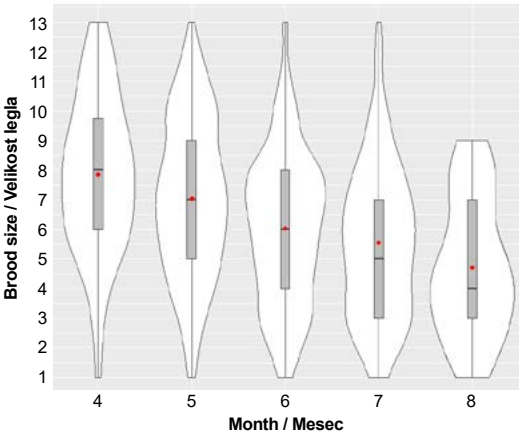


Figure 7: The Mallard *Anas platyrhynchos* monthly brood sizes (N = 1389) in Slovenia presented with boxplots, rotated kernel density plots (violin plots) and mean (red dots).

Slika 7: Velikost zarodov mlakarice *Anas platyrhynchos* v Sloveniji po mesecih (N = 1389) predstavljeno z grafikonom kvantilov, violinskim grafikonom in povprečjem (rdeče pike).

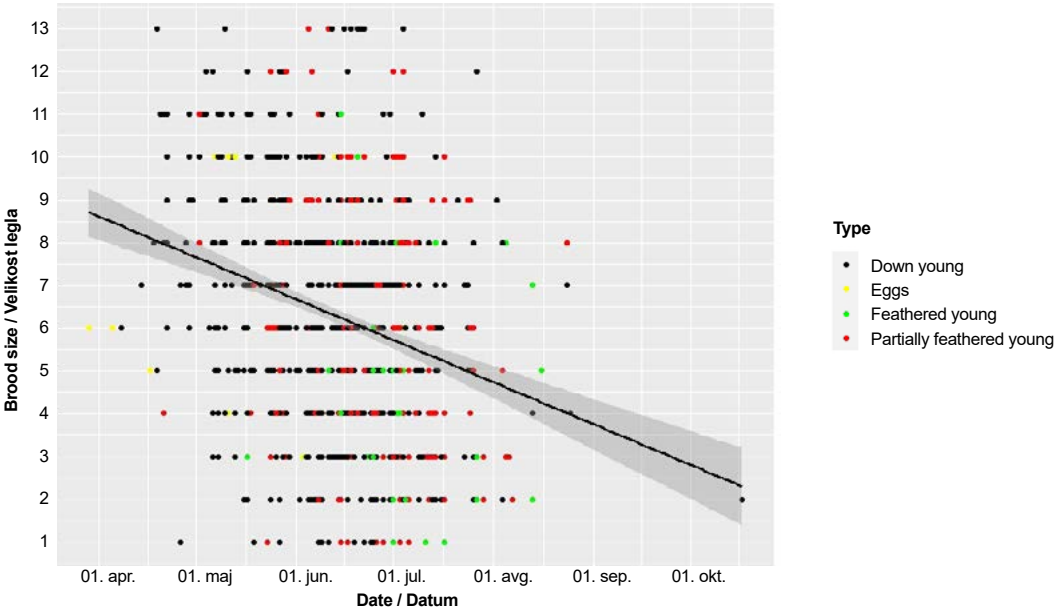


Figure 6: Seasonal distribution of brood sizes of Mallards *Anas platyrhynchos* in Slovenia for different age classes with a linear trend line ($R^2 = 0.001$, $p < 0.001$, $t = -0.09$) for brood size of all observed broods.

Slika 6: Sezonska razporeditev velikosti zarodov mlakaric *Anas platyrhynchos* v Sloveniji za različne starostne razrede mladičev s prikazom linearnega trenda ($R^2 = 0.001$, $p < 0.001$, $t = -0.09$).

3.2.3. Brood size and wetland type

Most broods were observed on Aquaculture (Table 8). Although mean brood size ranges from 5.6 to 7.3, there is no statistically significant difference among wetland types (H = 13.8, df = 10, p = 0.1833). There is also no statistically significant difference between Human-made, Coast and Inland wetlands (H = 3.3, df = 2, p = 0.1953). The largest average brood sizes were observed on wetlands currently or formerly used as treatment facilities (7.3 ± 2.96) and Coastal wetlands (7.2 ± 2.59). The smallest ones were observed at Reservoirs (5.7 ± 2.64) and Lakes (5.6 ± 2.66, Table 8). Broods with 14 or more young were observed at Aquaculture (12), on Large rivers (4), Ponds (1) and Reservoirs (1).

Brood size differs between years (H = 48.83, df = 18, p = 0.0001). Between 2003 and 2018, only one year had an average brood size greater than seven (7.5 in 2010) and five had smaller than six (min. 5.7 in 2007, Figure 8).

3.2.4. Brood size and elevation

Broods were observed from the sea level to 900 m a.s.l., with an average elevation of 242 m a.s.l. and a median of 240 m a.s.l. The majority of broods were observed in the 201–300 m a.s.l. elevation belt (90.5%). There is a statistically significant correlation between brood size and elevation (Figure 9, $r_p = -0.06$, df = 1394, p = 0.0369) with smaller broods at higher elevations (below 200 m: 7.3 ± 2.91 young per brood, above 400 m a.s.l.: 5.8 ± 2.60).

3.2.5. Mallard breeding densities

The average breeding density for different regions (size 4.1–880 km^2) covering about 10.3% of Slovenia is 0.4–0.7 bp/km^2 (Appendix 1), with the highest breeding densities recorded for lowland areas along the Mura river (7.0 bp/km^2) and the lowest for Triglav National Park (0.01–0.03 bp/km^2).

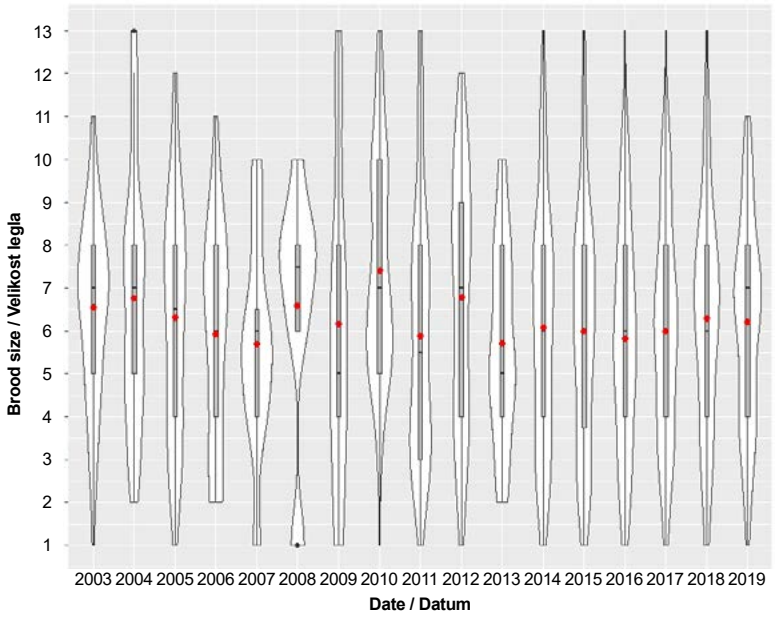


Figure 8: The Mallard *Anas platyrhynchos* brood sizes in different years (N = 1390) in Slovenia presented with boxplots, rotated kernel density plots (violin plots) and mean (red dots).

Slika 8: Velikost zarodov mlakarice *Anas platyrhynchos* v Sloveniji po posameznih letih (N = 1390) predstavljeno z grafikonom kvantilov, violinskim grafikonom in povprečjem (rdeče pike).

Table 8: Number, average size and standard deviation of the Mallard *Anas platyrhynchos* brood size for different wetland types in Slovenia. Coast combines several types of wetland on the sea coast.

Table 8: Število, povprečna večlikost in standardna deviacija velikosti legel mlakarice *Anas platyrhynchos* na različnih tipih mokrišč v Sloveniji. Obala združuje različne tipe mokrišč ob slovenski obali.

Wetland type / Tip mokrišča	No. of broods / Št. zarodov	Mean / Povprečje	SD
Treatment / čistilne naprave	15	7.3	2.9
Coast / obala	87	7.3	2.9
Excavations / izkopi	44	7.0	2.0
Large river / velike reke	97	6.4	2.9
Intermittent / presihajoča jezera	20	6.3	2.8
Small river / male reke	37	6.3	2.6
Canals / kanali	68	6.3	2.5
Aquaculture / ribogonice	1,096	6.2	2.6
Pond / ribniki	73	6.1	2.9
Reservoirs / zadrževalniki	131	5.7	2.5
Lakes / jezera	33	5.6	2.6

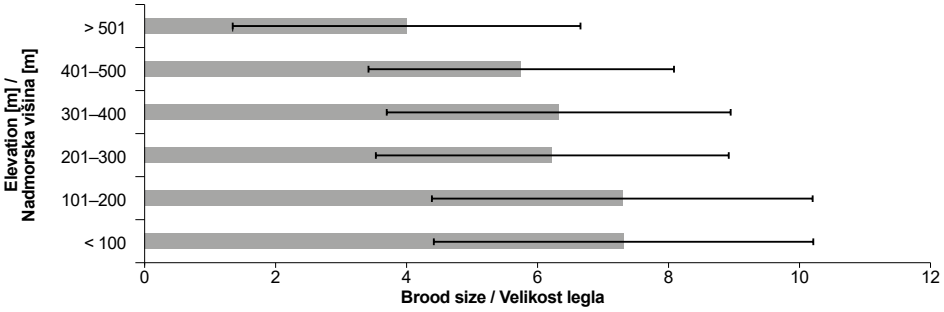


Figure 9: Average brood size (± SD) of Mallards *Anas platyrhynchos* recorded in separate elevational belts (N = 1380) in Slovenia.

Slika 9: Povprečna velikost zaroda (± SD) mlakarice *Anas platyrhynchos* v Sloveniji po posameznih višinskih pasovih (N = 1380).

Average ecological breeding densities calculated from known localities (size 4 ha – 29 km^2) are 5.3–8.4 bp/km^2 (Appendix 2). Densities differed between different wetland types (Figure 10, H = 27.372, df = 6, p = 0.0001). The lowest mean ecological densities were found for Coastal wetlands (2.9 bp/km^2) and Lakes (3.5 bp/km^2). The highest ecological breeding densities at individual sites were found in smaller wetlands (< 8 ha), on Pools (50.4 bp/km^2), and Ponds (38.1 bp/km^2). On wetlands larger than 8 ha, the highest breeding density was recorded on Excavations (24.8 bp/km^2) and Aquaculture (13.5 bp/km^2, Appendix 2). Breeding densities for all wetland types were similar across elevations (r_p = 0.03, df = 55, p = 0.9720), but differed when smaller wetlands (higher density due to smaller size) were excluded (r_p = –2.60, df = 34, p = 0.0140).

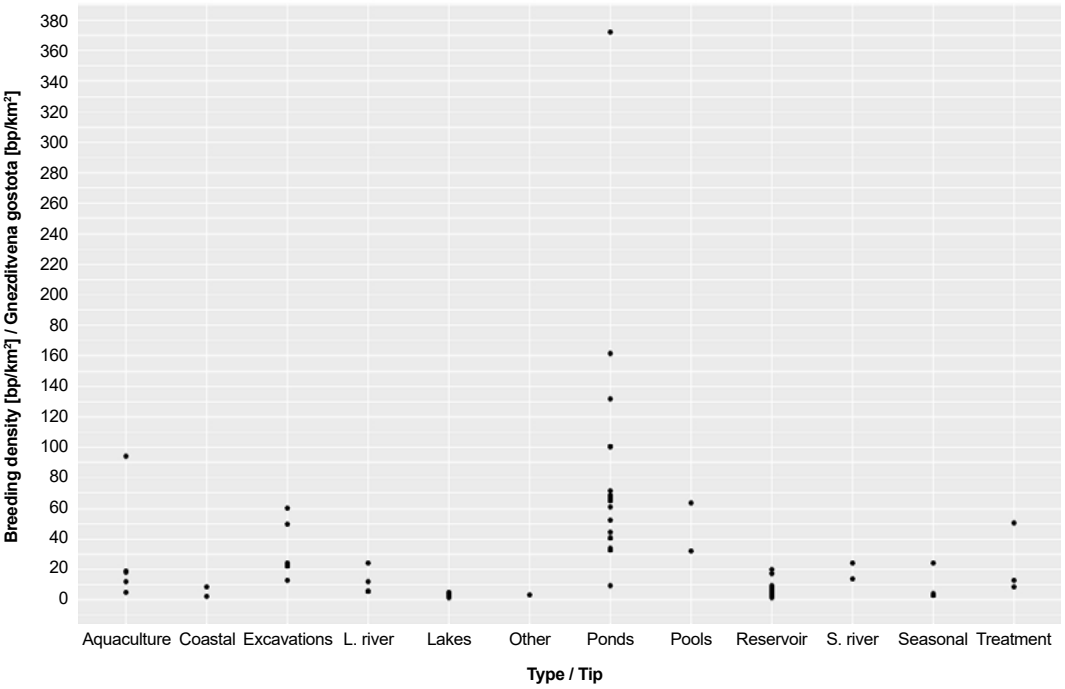


Figure 10: Breeding density of Mallards *Anas platyrhynchos* in different wetland types in Slovenia (N = 57).

Slika 10: Gnezditvena gostota mlakarice *Anas platyrhynchos* na razčnih tipih mokrišč po Sloveniji (N = 57).

3.3. Breeding population estimate

The number of estimated breeding pairs in the regions covering 10.3% of Slovenia is 854–1474 bp. Localities with known breeding populations add another 260–442 bp (Appendix 2). Lower breeding populations than in the literature were estimated for Ljubljana, Ljubljansko barje, Goričko and both sections of the Sava river (Table 9). For Ljubljana, the low estimate is similar to the estimate from the count. For Ljubljansko barje, the estimates from the count and wetland types are similar. The estimates from the wetland types are usually the lowest estimate for a region. For the Drava river, RP Kozjansko and NP Triglav the new estimates are lower but similar between methods. The number of breeding pairs using the corrected estimates for areas with known breeding population is 690–918 bp. The estimated breeding population for Slovenia using the first method is 2,736–3,763 bp, and the estimated breeding population using the second method is 1,473–2,168 bp. The combined estimated population for Slovenia is 1,473–3,763 bp.

3.3.1. Breeding population trend

Long-term monitoring of the breeding population was conducted at several sites, but data were available for only five (Table 10). Although the breeding population fluctuates from year to year, a moderate increase in the breeding population is evident at all sites combined (TRIM, multiplicative overall slope ± SE): 1.0667 ± 0.0276).

3.3.2. Non-breeding population

More than 1,000 individuals were counted at least once at eleven sites (Appendix 3), with the highest numbers at Ptuj (8,330 individuals), Ormož (5,400) and Cerknica (4,581) lakes. Six sites had more than 1,000 Mallards counted in more than one season. Ten out of eleven sites had this during winter, five

Table 9: Locations with estimated breeding populations of the Mallard *Anas platyrhynchos* acquired from literature and compared using different methods described in chapter 2.7. Estimates used for a new national population estimate are in bold.

Tabela 9: Območja z ocenjenimi velikostmi gnezdeče populacije mlakarice *Anas platyrhynchos* iz literature in primerjava z ocenami pridobljenimi na podalagi različnih metod opisanih v poglavju 2.7. Ocene uporabljane za izračunu slovenske populacije so odebeljene.

	Breeding population size estimate / Ocena velikosti gnezdeče populacije			Calculated density [bp/km²] / Izračunana gnezditvena gostota [gp/km²]		
Location / Lokacija	Min	Max	Area [km²] / površina [km²]	Min	Max	Source / Vir
Ljubljana	142	426	211	0.67	2.02	(Tome *et al.* 2013)
	145	**145**		**0.97**	**0.97**	**from count / s popisa**
	49	90		0.23	0.43	from habitat type / s habitatnega tipa
Ljubljansko barje	210	258	180	1.17	1.43	(Tome *et al.* 2005)
	161	213		0.89	1.18	without Žabnica pond* / brez ribnika Žabnica*
	110	**126**		**0.59**	**0.67**	**from count / s popisa**
	87	132		0.48	0.73	from habitat type / s habitatnega tipa
Drava river (Maribor–Ptuj)	54	54	76	0.71	0.71	(Bračko 1997)
	68	**78**		**0.89**	**1.03**	**from habitat type / s habitatnega tipa**
Goričko	150	250	448.3	0.33	0.56	(Denac & Kmecl 2014)
	26	40		0.06	0.09	from habitat type / s habitatnega tipa
	36	**69**		**0.08**	**0.15**	**estimate**
Kozjansko	10	20	198	0.05	0.10	(Jančar & Trebušak 2000)
	16	**22**		**0.01**	**0.01**	**from habitat type / s habitatnega tipa**
Triglav National Park	11	30	880	0.01	0.03	(Jančar 1997)
	18	40		0.02	0.05	from habitat type / s habitatnega tipa
Sava river (Litija–Zidani most)	10	20	2.7	3.70	7.41	(Denac 2010)
	7	**11**		**2.59**	**4.07**	**from count / s popisa**
Sava river (Krško–border with Croatia)	54	90	33.3	1.62	2.70	(Denac & Smole 2008)
	41	**71**		**1.23**	**2.13**	**from count / s popisa**

* Žabnica pond is the place where Mallards *Anas platyrhynchos* were released for hunting and formed large breeding population of 50 nesting females in the 1990's (Tome *et al.* 2005), but not anymore. / Ribnik Žabnica je lokacija, kjer je v devetdesetih letih gnezdila velika populacija (50 gnezdečih samic) mlakaric *Anas platyrhynchos*, vzpostavljena iz osebkov spuščenih v naravo za namene lova (Tome *et al.* 2005).

during spring migration and six during autumn migration. The highest number of Mallards during spring migration was counted on Lake Cerknica (4,581) and in autumn on Medvedce reservoir (3,379). Štajerska is the region with the most sites with a maximum of more than 1,000 observed Mallards (6), while Dolenska and Gorenjska regions have none (Appendix 3). The estimated trend in the number of Mallards counted in the phenological periods at the monitoring sites is a moderate to strong increase, with the exception of winter, where the trend is uncertain (Table 11.).

During the 1997–2019 period, IWC counts averaged 22,237 (10,376–32,010) Mallards (Figure 11). Mallard numbers fluctuated with two winters over 30,000 and seven winters with fewer than 20,000 individuals. On average, almost half (41.6% ± 6.40) of all individuals were counted in the Drava count area in NE Slovenia. Two other count areas (the Mura and Upper Sava) averaged more than 10% of Mallards and the top three count areas represented 73.2% of all Mallards counted (Table 12). In all count areas, more than 1,000 individuals were counted in at least three (Kolpa count area) or four (Coastland count area) years. Four count areas had more than 5,000 Mallards, and only the Drava count area had more than 5,000 individuals in all years (Table 12). Twelve IWC units had more than 1,000 Mallards counted in at least one year, and only three had more than 3,000 Mallards in a single count.

Table 10: Breeding population size estimate for the Mallard *Anas platyrhynchos* at five wetlands in Slovenia between 2002 and 2019.

Tabela 10: Ocena velikosti gnezditvene populacije mlakarice *Anas platyrhynchos* na petih mokriščih v Sloveniji med leti 2002 in 2019.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medvedce reservoir	17	26	35	16	17	12	8	11	42	23	20	43	46	30	24	39	20	16
Rački ribniki				16	10	1	1	5	7	11	4	10	8	5	6	6	6	11
Požeg reservoir				9	6		1	3	3	5	6	3	2	4	5	5	2	2
Ormož Basins Nature Reserve												20	17	17	14	14	27	22
Lake Ptuj												15	15	10	18	22	22	26

Table 11: Population trends of Mallards *Anas platyrhynchos* at monitoring sites in different phenological periods between 2003 and 2019 in Slovenia.

Table 11: Populacijski trend mlakarice *Anas platyrhynchos* na območjih z monitoringom vodnih ptic v različnih fenoloških obdobjih v obdobju med 2003 in 2019.

Phenological period / Fenološko obdobje	Trend / Trend	Trend* / Trend*
All periods / Vsa obdobja	Moderate increase / zmerni porast	1.1004 ± 0.0263
Spring / Pomlad	Strong increase / močan porast	1.2095 ± 0.0795
Breeding / Gnezdenje	Moderate increase / zmerni porast	1.1129 ± 0.0300
Summer / Poletje	Moderate increase / zmerni porast	1.0766 ± 0.0268
Autumn / Jesen	Moderate increase / zmerni porast	1.0925 ± 0.0294
Winter / Zima	Uncertain / negotov trend	1.2879 ± 0.1823

* multiplicative overall slope ± SE / multiplikativni naklon ± SE

Table 12: Average number of Mallards *Anas platyrhynchos* in separate IWC count areas in Slovenia with number of years with more than 1,000, 3,000 and 5,000 Mallards counted (after Štumberger 1997, Štumberger 1997, Štumberger 1999, Štumberger 2000, Štumberger 2002a, Štumberger 2002b, Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020).

Tabela 12: Povprečno število mlakaric *Anas platyrhynchos* na ločenih števnih območjih v Sloveniji s prikazom števila let, ko je število mlakaric presegalo 1,000, 3,000 in 5,000 osebkov (po Štumberger 1997, Štumberger 1997, Štumberger 1999, Štumberger 2000, Štumberger 2002a, Štumberger 2002b, Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020)

IWC count area / Števno območje IWC	No. of years / Št. let	Average / Povprečje	SD	Min	Max	>1000	>3000	>5000
Mura	22	3,260	1,082	1,004	5,175	22	14	1
Drava	23	8,952	2,321	6,421	14,776	23	23	23
Savinja	22	1,636	485	661	2,564	19	0	0
Upper Sava	22	3,771	964	2,355	5,872	22	16	2
Lower Sava	22	2,085	917	855	5,231	20	2	1
Kolpa	18	626	335	278	1,186	3	0	0
Notranjska & Primorska	23	1,689	770	703	3,311	20	2	0
Coastland	23	834	245	499	1,440	4	0	0
Total	22	22,741	4,082	10,376	32,010			

Remark: Some regions were underrepresented in the first count in 1997 and had substantially lower numbers than in subsequent counts and was thus not considered here. / Opomba: Posamezna območja so bila v prvem šteju leta 1997 glede na kasnejša štetja slabše zastopana, zato tukaj niso vključena.

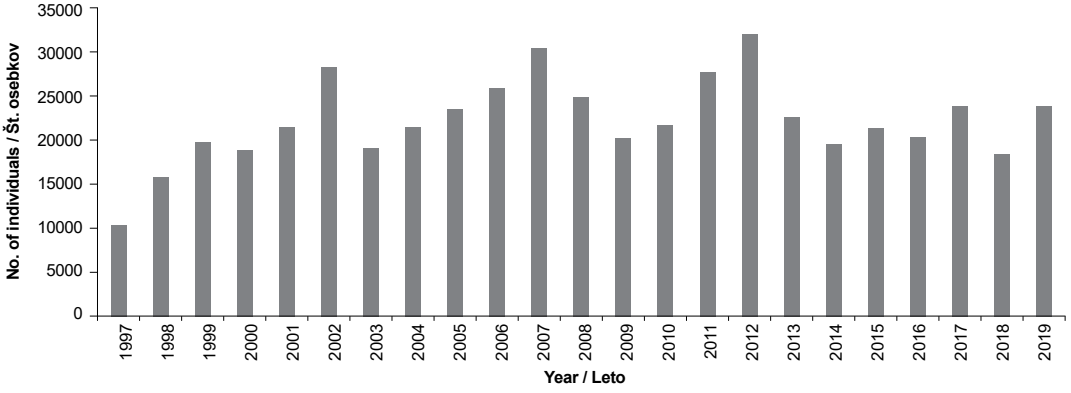


Figure 11: Number of Mallards *Anas platyrhynchos* counted during mid-winter counts between 1997 and 2019 (after Štumberger 1997, Štumberger 1997, Štumberger 1999, Štumberger 2000, Štumberger 2002a, Štumberger 2002b, Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020).

Slika 11: Število preštetih mlakaric *Anas platyrhynchos* med zimskih štetjem vodnih ptic med leti 1997 in 2019 (po Štumberger 1997, Štumberger 1997, Štumberger 1999, Štumberger 2000, Štumberger 2002a, Štumberger 2002b, Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020).

Table 13: Maximal and average number of Mallards *Anas platyrhynchos* counted in separate IWC count units between 2004 and 2019 in Slovenia with number of years with more than 1,000 and 3,000 Mallards (Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020).

Tabela 13: Maksimum in povprečno število mlakaric *Anas platyrhynchos* preštetih na posameznih števnih enotah med štetjem vodnih ptic med letoma 2004 in 2019 v Sloveniji s prikazom števila let, ko je posamezna enota imela več kot 1,000 ali 3,000 osebkov (Božič 2005, Štumberger 2005, Božič 2006, Božič 2007c, Božič 2008c, Božič 2008d, Božič 2010, Božič 2011, Božič 2012, Božič 2013, Božič 2014, Božič 2015, Božič 2016, Božič 2017, Božič 2018, Božič 2019, Božič 2020).

IWC unit / Števna enota	No. Of years / Št. let	Max	Min	Average / Povprečje	SD	% of yearly wintering population / % slovenske prezimujoče populacije	>3,000	>1,000
Drava river	16	9,219	2,822	5,894	1,875	25.0	15	16
Mura other	16	3,112	954	1,781	722	7.6	1	15
Dravsko and Ptujsko polje	16	4,152	628	1,758	991	7.5	2	13
Ljubljanica river	16	2,214	427	1,374	515	5.8	0	12
Middle Sava river	16	1,783	472	1,161	377	4.9	0	12
Krka river	16	1,357	552	1,028	236	4.4	0	9
Notranjska	16	2,566	107	975	789	4.1	0	7
Mura river	16	2,137	215	905	464	3.8	0	5
Savinja river	16	1,531	361	896	328	3.8	0	7
Upper Sava river	16	988	532	717	134	3.0	0	0
Ščavnica river	16	1,128	138	624	328	2.6	0	4
Coastal saltpans	16	964	142	612	224	2.6	0	0
Lower Sava	16	1,068	285	603	207	2.6	0	1
Kolpa river	16	894	205	528	212	2.2	0	0
Pesnica river	16	1,010	27	485	308	2.1	0	1
Savinja other	14	986	2	471	338	2.0	0	0
Ledava river	16	722	282	437	133	1.9	0	0
Dravinja river	16	554	152	347	135	1.5	0	0
Meža and Mislinja rivers	14	478	55	293	123	1.2	0	0
Sotla river	13	712	9	286	221	1.2	0	0
Drava river Alps	16	522	148	270	91	1.1	0	0
Sava plain	13	499	117	269	115	1.1	0	0
Kamniška bistrica river	12	434	53	253	126	1.1	0	0
Ljubljansko barje other	13	839	68	241	209	1.0	0	0

While the Drava river between Maribor and the border has had more than 3,000 Mallards counted in 15 of the last 16 years, the other two have had only one and two years (Table 13). Out of 38 count units (i.e. Božič 2018), 35 had more than 100 Mallards and 20 had more than 500 Mallards in at least one year (Table 13). Between 2004 and 2019, more than 25% of Mallards were counted on the Drava river and more than 5% on the Mura other, Dravsko and Ptujsko polje and on the Ljubljanica river. More than half of all Mallards were counted in the five most important subareas (Table 13).

In seventeen river sections, 51–130 Mallards were counted per river kilometre (Figure 12). Of these, eleven are in urban areas (Maribor, Celje, Ljubljana and Kranj) and only six on more natural river sections. Most sections had at least one individual per river kilometre. Additionally, four locations had more than 500 individuals, six had between 201 and 500 individuals, and 18 had between 101 and 200 individuals (Figure 12).

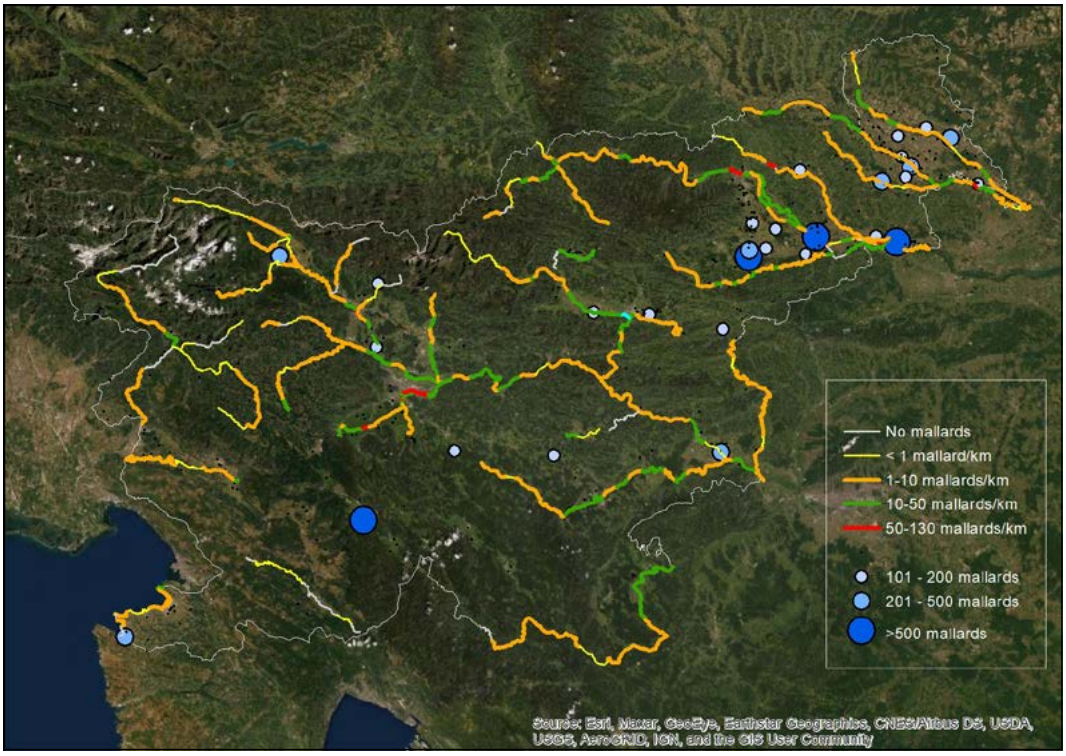
The population of wintering Mallards in Slovenia decreased moderately during 2000–2019, when more complete data were available (TRIM, multiplicative overall slope ± SE: 0.9939 ± 0.0003). Considering only the Drava river, the number of Mallards decreased significantly during 1999–2019 ($r_s = -0.64$, df = 20, p = 0.0022).

3.5. Ringing

Up till 2017, 2,774 Mallards were ringed in Slovenia, 86.9% of them in 1972-1975. Less than 0.5% of our ringed Mallards were recovered abroad (7), most of them (3 each) in the Italian Po valley and in Austria. One mallard was recovered 1,290 km away

Figure 12: Average density (river sections) and number (locations) of Mallards *Anas platyrhynchos* counted during January waterbird census in Slovenia between 1998 and 2019.

Slika 12: Povprečna gostota (rečni odseki) in število (lokacije) mlakaric *Anas platyrhynchos* preštetih med januarskim štetjem vodnih ptic v Sloveniji med leti 1998 in 2019.



in Ukraine and all were recovered within two years of ringing. Nine Mallards were ringed abroad and recovered in Slovenia. Three each were ringed in Finland and the Czech Republic (Figure 13). One in Finland was ringed approximately 2,075 km and two 1,980 km away. Mallards were ringed or recovered in directions NEE–SWW (6 Mallards), NNE–SSW (6) and N–S (4). All recovered Mallards, foreign and domestic, were recovered through hunting.

Eight local recoveries were gathered from the period with available data (Table 14). All were recovered at the locality of ringing, 6 to 1,498 days after ringing. Most were ringed in August and then recovered in September. One individual was confirmed wintering at a site.

3.6. Mortality causes

According to the 10-year hunting management plans for all hunting management areas (ZGS 2012a-o), non-hunting causes of mortality account for only 2.6% of total mortality, with 2.1–4.9% before and 0.5–1.1 after 2005 (Table 15). The majority of non-hunting mortality was caused by predators (41.2%) and traffic (14.2%). A significant percentage of mortality, especially in certain years (e.g. 2002), was due to disease. After 2005, only traffic-related mortality remained similar in number (average 17.4) to pre-2005 (18.8), while other causes showed considerably lower numbers (pre-2005: 50.4, post-2005: 4.5).

Figure 13: Locations of ringing (beginning of arrow) and recoveries (end of arrow) of Mallards *Anas platyrhynchos* ringed (red) and recovered in Slovenia (black).

Slika 13: Lokacije obročkanj (začetek puščice) in najdb (konec puščice) mlakaric *Anas platyrhynchos* občočkanih (rdeče) in najdenih (črna) v Sloveniji.

Table 14: Local recoveries of Mallards *Anas platyrhynchos* in Slovenia between 2013 and 2018 (D. Fekonja *pers. comm.*)

Tabela 14: Lokalne najdbe mlakaric *Anas platyrhynchos* v Sloveniji med letoma 2013 in 2018 (D. Fekonja *osebno*)

	Location of ringing / Mesto obročkanja	Date of ringing / Datum obročkanja	Location of recovery / Mesto najdbe	Date of recovery / Datum najdbe	Days / Št. dni	Sex / Spol	Age / Starost	Ringer / Obročko-valec	Recovery / Najditelj
1	Vrhnika	18. 8. 2013	Vrhnika	4. 9. 2013	17			T.Trilar	T.Trilar
2	Vrhnika	16. 8. 2010	Vrhnika	22. 7. 2014	1436	F	1y	Š. Pavle	Š. Pavle
3	Vrhnika	14. 8. 2011	Vrhnika	20. 9. 2015	1498		AD	Š. Pavle	B. Lapajna
4	Vrhnika	22. 7. 2014	Vrhnika	7. 8. 2017	1112	F	AD	Š. Pavle	T.Trilar
5	Ljubljana	6. 5. 2017	Ljubljana	7. 5. 2018	366	F	AD	D. Fekonja	D. Fekonja
6	Vrhnika	14. 8. 2018	Vrhnika	4. 9. 2018	21	F	AD	B. Lapajna	T.Trilar
7	Lake Bled	12. 9. 2017	Lake Bled	7. 12. 2017, 19. 1. 2018	451	F	AD	A. Mulej, Ž. Pečar	A. Mulej
8	Lake Bled	4. 9. 2018	Lake Bled	10. 9. 2018	6	M	AD	A. Mulej	A. Mulej

Table 15: Recorded Mallard *Anas platyrhynchos* mortality in Slovenia by cause between 2001 and 2020 (ZGS 2012a-o, OSLIS 2021).

Table 15: Zabeležena smtrnost mlakarice *Anas platyrhynchos* v Sloveniji ločena po vzroku med leti 2001 in 2020 (ZGS 2012a-o, OSLIS 2021).

Recorded causes / Zabeleženi vzroki	2001–2005	2006–2010	2011–2015	2016–2020	All / Vsa leta
Hunting / Lov	28,208 (96.2%)	20,115 (99.1%)	16,906 (99.6%)	12,320 (99.3%)	77,549 (98.2%)
Other causes / Drugi vzroki	1,103 (3.8%)	176 (0.9%)	69 (0.4%)	87 (0.7%)	1,435 (1.8%)
Unknown / Neznano	339	34	13	19	405 (0.5%)
Disease / Bolezni	149	4	3	0	156 (0.2%)
Road / Cesta	94	90	47	56	287 (0.4%)
Predation / Plenjenje	488	37	2	7	534 (0.7%)
Dogs / Psi	6	0	0	2	8 (0.0%)
Other / Ostalo	27	11	4	3	45 (0.1%)
All recorded mortality / Vsa zabeležena smtrnost	29,311	20,291	16,975	12,407	78,984

3.6.1. Mallard hunting between 2001 and 2018

Between 2001 and 2018, 72,731 Mallards were hunted in Slovenia. The highest number hunted in one year (2,195) and in all years (20,226) was reported for Pomursko hunting management district (LUO). The lowest number of hunted Mallards was in Triglav LUO (15 in one year, 651 in all years combined). In seven LUOs, more than 3,000 Mallards were hunted in the last 17 years (Figure 14) and only in one (Pomursko LUO) more than 10,000. The four districts with highest

numbers represent more than 60% of all Mallards hunted. The number of Mallards hunted is highest in the eastern part of the country. In the western part, only Notranjsko LUO stands out (Figure 14). The number of hunted Mallards decreased by about 64% between 2001 and 2018 (Figure 15, Appendix 4), and the decrease is significant (TRIM, multiplicative overall slope ± SE: 0.9467 ± 0.0034, moderate decrease $p < 0.01$). The significant decline was observed in all LUOs (Appendix 4). The largest decline in hunted Mallards was observed in Pomursko LUO (82%) and the smallest in Slovensko goriško and Kamniško-Savinjsko LUOs (29%, Figure 16). A decline in the number of hunted Mallards by more than 50% occurred in nine LUOs.

3.7. Colour morphs, hybrids and domestic forms

The only colour morph documented in Slovenia, apart from escapees, are Mallards with paler feathers due to one of the colour aberrations resulting from lower melanin productivity (van Grouw 2013). In the NOAGS database, there are only three entries of individuals with such colour aberrations. Another ten records from Medvedce and Rački ribniki were gathered, referring to at least three separate individuals, one male, one female and one juvenile. All three individuals were extremely pale and therefore had either brown or diluted colour aberration. Probably the same aberration occurred in two records of pale individuals found in the literature. One individual was described as "flavinistic" and occurred in two consecutive years at Lake Cerknica (Kmecl & Rižner 1992). The other individual was referred to as "leucistic" and occurred over a longer period of time on the Drava river in Maribor (Logar 2009). Most records of aberrant individuals are from domestic origin, i.e. 22 records involving at least 61 individuals in NOAGS data base. On average, 15 individuals are counted each year during IWC with a maximum of 28 individuals in 2014. 31 records of 39 individuals at three monitoring sites at Dravsko polje (Požeg

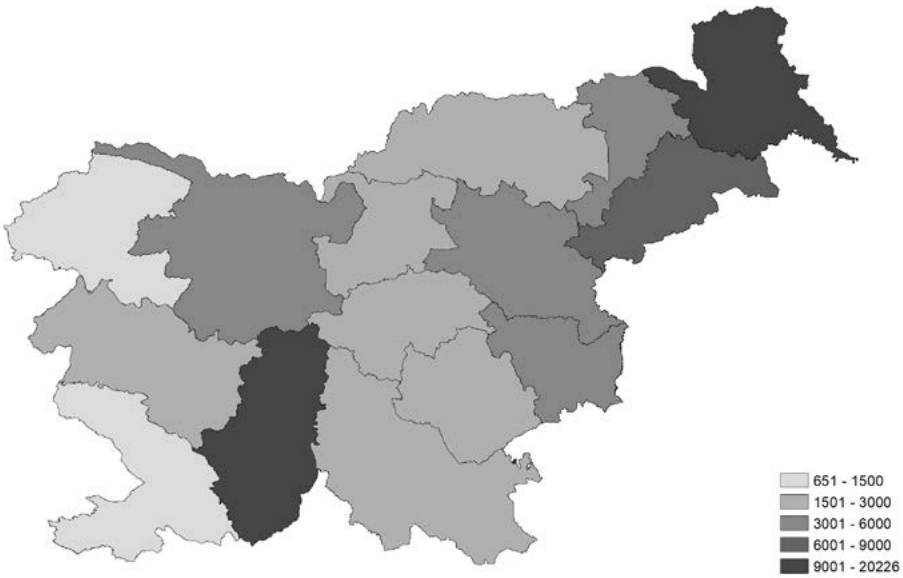


Figure 14: The number of hunted Mallards *Anas platyrhynchos* in Slovenia in separate hunting-management districts between 2001 and 2018.

Slika 14: Število odlovljenih mlakaric *Anas platyrhynchos* v Sloveniji po posameznih lovsko upravljavskih območjih med letoma 2001 in 2018.

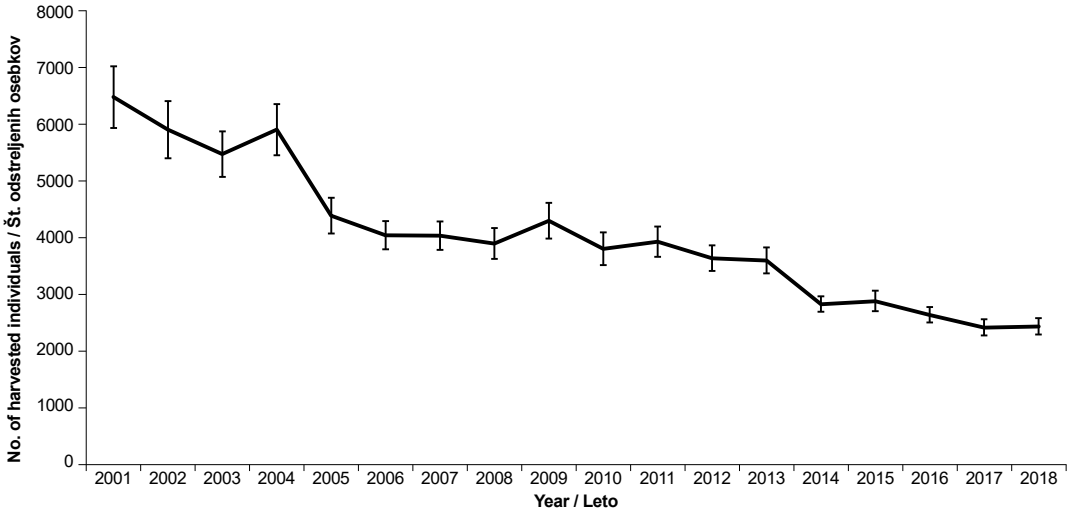


Figure 15: The number (±SD) of hunted Mallards *Anas platyrhynchos* in Slovenia between 2001 and 2018 in all hunting management districts (N= 15).

Slika 15: Število (±SD) odlovljenih mlakaric *Anas platyrhynchos* v Sloveniji med leti 2001 in 2018 za vsa lovsko upravljavska območja skupaj (N= 15).

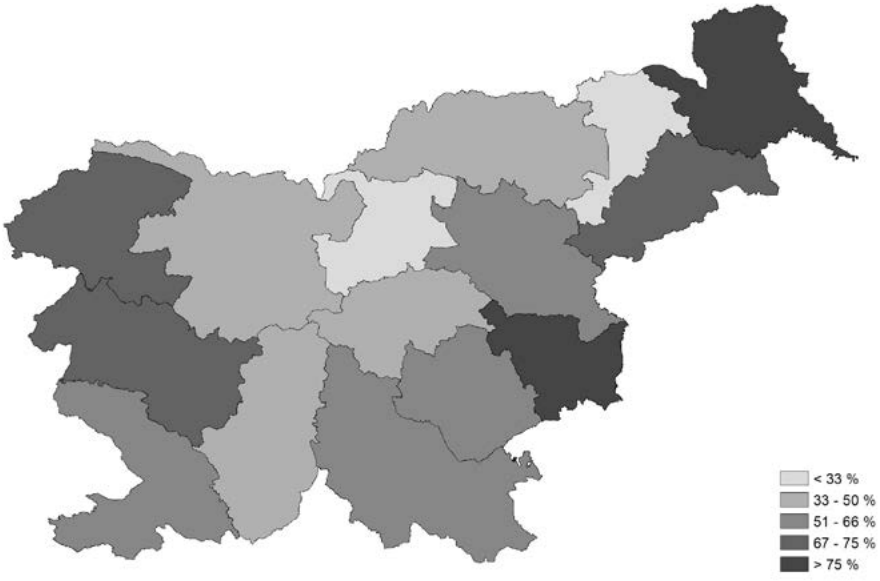


Figure 16: Map of Slovenia with regional difference in the decline in the number of hunted Mallards *Anas platyrhynchos* between 2001 and 2018.

Figure 16: Zemljevid Slovenije s prikazom razlik v upadu odlovljenega števila mlakaric *Anas platyrhynchos* med posameznimi lovsko upravljavskimi območji med leti 2001 in 2018.

and Medvedce reservoirs and Rački ribniki) in 2011–2019 were also gathered. Most were recorded between October and March, with only one record in August. They were mostly present in small numbers, usually only a single individual. 35 out of 76 cases of the Mallard domestic form gathered in the NOAGS database and during IWC are single birds, and only three records are of 10 or more individuals. In some cases, individuals stay for a longer period of time, such as at Medvedce reservoir (almost a year) and on the Drava river in Maribor (Logar 2009).

Apart from possible hybrids between domestic and wild Mallards or with Muscovy Duck *Cairina moschata*, only two wild hybrids in Slovenia were recorded. One was a male that was probably a hybrid with a Shoveler *Spatula clypeata* as parent on fishpond Črnelo near Radomlje (*own data*.). The second was a male hybrid with a Gadwall observed at Lake Ptuj (L. Božič *pers. comm*.). In addition, courtship and copulation were observed between a Mallard and a Common Teal *Anas crecca* (Sovinc 2014) and between a Mallard and a Mandarin Duck *Aix galericulata* (Denac 2004).

4. Discussion

4.1. Dominance and frequency

The Mallard has a high occurrence frequency, often reaching 100%. Frequencies below 100% are usually the result of complete freezing of individual water bodies, such as at Medvedce before 2009 (Bordjan & Božič 2009a) and at Ormož Basins Nature Reserve (L. Božič *pers. comm*.), or due to natural fluctuation of individuals at sites with low Mallard numbers (such as Gradiško lake). It is the eudominant waterbird at all monitored sites and often the most dominant. Interestingly, at some large lakes, such as Lake Constance (Werner *et al*. 2018) and Lakes Ptuj and Ormož (L. Božič *pers. comm*.), the Mallard comes only fourth or fifth among waterbirds in the non-breeding season. In Slovenia, it is most dominant on deeper water bodies (e.g. Bled, Bohinj, Pristava and Gradišče lakes). The absence or small surface area of shallows probably limits the number of other waterbird species (Deberšek & Bordjan 2016, Billerman *et al.* 2020), resulting in high Mallard dominance. Mallards, on the other hand, often feed on land and rest on water (Drilling *et al*. 2020) and may therefore occupy deeper lakes. Lake Ptuj is deep, but has lower dominance due to high numbers of other waterbird species in general, but also due to the recent significant decrease in the wintering Mallard numbers (Božič 2018, L. Božič *pers. comm*.).

4.2 Phenology

The Mallard populations reach a peak during autumn migration or winter at most monitored sites. The latter is characteristic of deep Reservoirs (Lakes Ptuj, Ormož and Gradiško) and Coast. At sites that frequently freeze over during the winter, such as Ormož Basins Nature Reserve and Medvedce reservoir, before 2009, Mallards are mostly absent during this period. The overall phenology of the Mallard in the non-breeding season between September and April is similar to that on Lake Constance (Werner *et al.* 2018). On average, the maximum in numbers at Lake Constance is reached in December (Werner *et al.* 2018), the same as at some sites in Slovenia (e.g. Ptuj, Ormož and Gradiško lakes). On the other hand, the combined Slovenian data of the last 20 years shows the maximum in January.

Already in January (Drilling *et al.* 2020), but more frequently in February (Scott & Rose 1996), spring migration starts and numbers begin to fall. The only site among those monitored with a maximum at the beginning of migration was Lake Cerknica, probably due to flooding at the end of winter at the time of monitoring (Bordjan 2012b). As at Lake Constance (Werner *et al*. 2018), there is no obvious peak during spring migration in the Slovenian data. The low numbers in late April and May can include some late migrants (Drilling *et al.* 2020), but consist mainly of breeding males. From mid-May and early June, moult migration begins (Scott & Rose 1996, Drilling *et al.* 2020), which partly explains the higher numbers in June and July for Slovenian monitoring sites. On the other hand, the majority of broods are also present at this time. In Slovenia, summer movements are more evident from the end of July. Mallards have the most prolonged autumn migration of all duck species (Drilling *et al.* 2020), starting in September (Scott & Rose 1996, Grishchenko 1997), one month later than in Slovenia. One of the

reasons could be a local movement to larger waters, which explains the increase in numbers at Ormož and Ptuj lakes, where the increase in August cannot be explained only by local breeders. Shallow waters such as the Ormož Basins Nature Reserve, NRŠZ, Medvedce reservoir and Rački ribniki also have peak numbers in August and September, indicating a movement to food-rich sites. Autumn migration of northern and eastern populations reach the peak in October and November (Scott & Rose 1996) and ends in early November or, exceptionally, in early December (Grishchenko 1997). In contrast to Lake Constance (Werner *et al.* 2018), in the Slovenian monitoring data there is a small decrease in numbers in October, most likely due to water discharge from Aquacultures in late October (e.g. Medvedce reservoir, Bordjan & Božič 2009).

The earliest documented broods are early compared to Mallards in other parts of Europe and North America (Figley & van Druff 1982, Cramp 1998, Drilling *et al.* 2020). When the influx into breeding grounds starts, usually at the end of February (Balmori 2019, Drilling *et al.* 2020), some exceptional females are already nesting in Slovenia. In early April, more than 15% of breeding females have already started nesting, and more than 50% start before the end of April, earlier than in Bavaria (Germany) and South Russia (Cramp 1998, Drilling *et al.* 2020). Southern populations start nesting earlier than those from Northern and Central Europe (Drilling *et al.* 2020), so an earlier start would be expected in Slovenia. On the other hand, the peak in the number of broods overlaps with the time of fledging in North Germany (Bräger & Ludwichowski 1995). More than half of the females fledge their young by mid-July and more than 90% by the second half of August. As with Mallards in Bavaria and England, the onset of breeding is dependent on February temperatures (Cramp 1998). Thus, due to the climate change, the onset of breeding will probably shift even further forward in the future.

4.3 Sex ratio and non-breeding females

The sex ratio of Slovenian Mallards between December and March is on average lower than in Sweden (44.6%), Finland (46.9%) and the Netherlands (46.5%, Cramp 1998). A lower proportion of females is also observed in other duck species (Bordjan & Božič 2009a, Pöysä *et al.* 2019) and could be attributed to higher mortality of females, as the sex ratio is not skewed at hatching (Donald 2007). The higher mortality of females can be attributed to several factors, such as higher predation pressure on females (Bellrose *et al.* 1961, Donald 2007), higher dispersal tendency (Donald 2007), longer migration to the wintering grounds (Cramp 1998), higher hunting pressure and lead poisoning on wintering grounds of females (Pöysä *et al.* 2019). The lower percentage of females during the breeding season is a consequence of breeding activities, as females do all the brooding (Drilling *et al.* 2020). The percentage of females starts to rebound in late May when most of them emerge with young and even more when the young fledge. Interestingly, the percentage remains low even in October, when breeding has already ended and migration begins (Drilling *et al.* 2020), suggesting that either females in our population migrate at a higher percentage or that the sex of arriving birds is shifted towards males at the beginning of migration.

4.4. Clutch and brood size

The clutch size of Slovenian Mallards is smaller than in North America (Figley & van Druff 1982, Cotter *et al.* 1996, Drilling *et al.* 2020), most of Europe (Cramp 1998) and Algeria (Fouzari *et al.* 2018), which could be due to the small sample size and the inclusion of second and replacement clutches in our sample. The latter are generally smaller (Drilling *et al.* 2020). In addition, our data likely include nests with unfinished clutches. On the other hand, average brood size is similar to other countries in Europe (Cramp 1998).

Most Mallard mortality occurs at duckling age (Hill 1984), mainly as a result of predation (Figley & van Druff 1982, Hill 1984, Singer *et al.* 2016, Fouzari *et al.* 2018). After that the survival probability increases with age (Stafford & Pearse 2007). Since Feathered young are already through the most perilous era, the average size of that age class may be close to the average Mallard productivity in Slovenia. If so, it is close to the average productivity reported elsewhere (0.83–5.4, Hill 1984, Singer *et al.* 2016).

Compared to other studies, Slovenian broods in the Downy age group contain an uncharacteristically high number of broods with fewer than 4 young (25% compared to 0% in Cramp 1998), which may indicate high mortality of young in the early stages of breeding (Krapu *et al.* 2006). As in other countries (Bräger & Ludwichowski 1995, Zicus *et al.* 2003), brood size becomes smaller as the season progresses. This may be a consequence of smaller clutch size and a higher proportion of second and replacement broods later in the season (Cramp 1998).

Brood size of Slovenian Mallards differs by wetland type, confirming the findings of Figley & van Druff (1982). Smaller broods in certain wetland types may be a consequence of poor feeding conditions (e.g. deep Reservoirs, Canals with steep banks, intensive Aquaculture, or nutrient-poor Excavations) or high breeding density (Figley & van Druff 1982, Arcese & Smith 1988, Korpiäkki & Wiehn 1998). The change in brood-size with elevation is not universal in birds (Krementz & Handford 1984, Johnson *et al.* 2006, Bordjan 2013), but it appears to decrease with altitude for Mallard.

4.5. Breeding densities

No really high breeding densities were found in Slovenia. Our breeding densities are similar to those from nearby Austria in general (Feldner *et al.* 2006) and also for fishponds (Albegger *et al.* 2015). Average breeding densities in prairies in several states in the USA and Canada range from 2.3–36 bp/km^2 (Cotter *et al.* 1996, Drilling *et al.* 2020), 49.4 bp/km^2 in urbanised brackish water lagoons in New Jersey, and 13.1 bp/km^2 in urban parks (Figley & van Druff 1982). These densities are similar to breeding densities on Aquaculture ponds, Treatment areas, and Excavations but lower than those on Ponds. Mallards reach the highest densities on wetlands with islands free of mammalian predators (Cotter *et al.* 1996, Berndt & Hill 1997, Drilling *et al.* 2020). Apart from Lake Ptuj, Ormož Basins Nature Reserve and some coastal wetlands, most shallow water bodies in Slovenia do not have isolated islands. Predator-free islands are most likely one of the main difference between the superficially similar lakes Ormož (few pairs) and Ptuj (20 pairs). Another reason for lower breeding densities is the absence of gull or tern breeding colonies on most Slovenian waters. Colonies attract a higher number of species and also allow a higher number of breeding pairs (Bräger & Ludwichowski 1995). This may also be one of the reasons for the high breeding density in the Ormož Basins Nature Reserve and as another difference between Ormož and Ptuj lakes. Mallard is a still and shallow water bird limited to water depths of less than 1 m for foraging (Cramp 1998). This explains the lower breeding densities on lakes, reservoirs and rivers. On the other hand, Aquaculture, although usually smaller and shallower, have lower breeding densities than most Ponds. This could be due to the high fish production, which reduces the food availability for ducks (Musil 2006). Breeding densities are inversely correlated with elevation. Mallards are primarily a lowland species (Cramp 1998) and as such are more abundant at lower elevations (Luder *et al.* 1998, Bordjan 2019), probably due to more severe conditions at higher elevations (Hodkinson 2005).

4.6. Breeding estimates

The estimated breeding population of Mallards on an area representing about 10% of the country represents between 25–48% of the total estimated Slovenian breeding population, indicating that the estimates used in calculation were made on the most suitable areas for Mallard. Indeed, only a few obviously suitable waters are without the estimate (e.g. lower part of the Mura river, Nanoščica, Kolpa and Krka rivers, abandoned excavations in NE Slovenia, waters in the Ljubljana basin and Vipava Valley). As most breeding populations were calculated from the number of Mallards counted (e.g. Denac & Smole 2008, Denac 2010, Tome *et al.* 2011, Denac & Kmecl 2014), some discrepancy between the population estimated in these studies and the present one may result from sex ratio, which is biased in favour of males (Bordjan & Božič 2009a, Logar 2009, *this study*). Additionally, some females (9–13.1%), especially smaller/younger ones, do not breed (Sheppard 2018), further increasing the disparity.

All previous national populations were estimated based on expert opinion, and as these estimates were often extrapolated from local populations from more suitable habitats and did not take into account sex ratios and non-breeding females, this resulted in an overestimated national population. This is reflected in the dynamics of past population estimates. Estimates in the 1990s and early 2000s were 10–20,000 pairs (Geister 1995, BirdLife International 2004). In 2014, the population estimate was reduced to less than half the previous estimate (3,000–9,000 pairs, Denac & Kmecl 2014) and was even smaller in 2019 (1,500–3,500, Bordjan 2019), without any evidence of a decline in the breeding population. The estimate from this study is similar to the last estimate and reflects the more conservative and precise method used.

4.7. Non-breeding population

Overall, 16,000–32,000 Mallards winter in Slovenia, which corresponds to about 0.5% of European wintering population and 1.1–2.3% of the regional Northern Europe/West Mediterranean population (Wetlands International 2019, Wetlands International & BirdLife International 2020). The Slovenian population has been smaller than Sovinc's (1994) estimate (25,000–50,000 ind.) for the 90's. In Central Europe, winter populations in many places have declined to the lowest level since annual surveys began (Werner *et al.* 2018). Although some European populations have increased (Guzzon *et al.* 2005), the decline in Slovenia may at least partly mirror that on the continent scale (Bairlein *et al.* 2014, BirdLife International 2017, Werner *et al.* 2018). The regional population has been increasing from the 1990s, but shows a declining trend in the last decade (Wetlands International 2019), which is also reflected in Slovenian IWC. The major decline probably took place before the year 2000, as many sites in Slovenia report much lower maximum numbers than in the 1990s. Warm winters are becoming more frequent in Europe (IPCC 2018) and in such winters the wintering range of waterbirds tend to shift NE (Pavón-Jordán *et al.* 2019). In Sweden, the number of wintering Mallards more than doubled between 1971 and 2004 due to higher temperatures and lower ice cover (Nilsson 2008), suggesting that more individuals stay closer to their breeding range. Similarly, the number of wintering Mallards in Moscow has been attributed in part to mean winter temperatures (Avilova & Eremkin 2019). This is important because northern populations are mostly migratory, with massive movements during severe winter weather (Scott & Rose 1996). On Lake Constance, Mallards were most numerous in cold winters and least numerous in warm winters (Werner *et al.* 2018). Mallards are especially prone to a north–south shift in wintering range due to winter temperatures, as the shift is more pronounced in shallow-water species (Pavón-Jordán *et al.* 2019). Traditionally, the majority of wintering Mallards in Slovenia were counted on large unfrozen natural and reservoir lakes, and gravel pits (Sovinc 1994). Recently, significant numbers of Mallards are also found on shallow waters such as Medvedce reservoir, where before 2009 the species was present only in small numbers and irregularly during winters (Bordjan & Božič 2009a), but now can hold almost 2,500 individuals at a time (*pers. data*).

The river sections with the highest density of Mallards in winter are located in urban areas (Ljubljana, Maribor, Celje and Kranj). Although the urban sections are generally shorter (1.5 km on average compared to 3.9 km for all sections), density is still high even if sections are pooled. The number of Mallards per kilometre combined for each city is still above average and Maribor and Ljubljana still hold more than 50 mallards per river kilometre (Maribor 58 and Ljubljana 59). This is not surprising, as urban areas are free of hunting and often provide a lot of antropogenic food (Chace & Walsh 2006, Avilova & Eremkin 2019) and have lower predator pressure (Minias 2016). Mallards can become well tolerant of human presence (Scott & Rose 1996) and are often abundant on waters in urban areas (Drilling *et al.* 2020), such as the Drava river in Maribor (Logar & Božič 2014).

4.8. Hybrids and domestic form of Mallards

Releasing captive-bred Mallards for hunting was a common practice in the past (Štumberger 1983a, Ciglič & Trebar 1998, Tome *et al.*

2005, ZGS 2012f) and is still common in many places in Europe (Söderquist *et al.* 2014). Today, the release of Mallards is part of the hunting management plan in Slovenia in only a few LUO's (ZGS 2012a). For example, between 2014 and 2018, 4,615 Mallards were released for hunting in Special purpose state hunting ground LPN Fazan-Beltinci (ZGS 2019). Per year, 620–1,180 Mallards were released, which corresponds to about 170% of the hunted Mallards in this district. In Sweden, such surplus individuals affect morphological traits (Söderquist *et al.* 2014) and reproduction of wild Mallards (Cramp 1998). So far, the effects on Mallards in Slovenia have not been studied. Therefore, efforts should be made to study the survival of released individuals and escapees, the impact and frequency of crossbreeding with wild Mallards using ringing (Gunnarsson *et al.* 2008) or telemetry (Stafford & Pearse 2007).

4.9. Causes of mortality

Hunting accounts for much of the observed Mallard mortality in Slovenia (ZGS 2012h). Similar findings have been made for Finnish and Swedish Mallards, where ringing was used to estimate causes of adult Mallard mortality (Gunnarsson *et al.* 2008). On the other hand, survival in the pre-fledging period is the lowest of all age groups (Hill 1984, Stafford & Pearse 2007) and it is the most influential factor of population growth (Sheppard 2018), so hunting mortality is inferior to natural causes at least in the first 100 days of life (Bergan & Smith 1993). As in other studies (Gunnarsson *et al.* 2008), predation was the most important natural cause of Mallard mortality in Slovenia. Natural causes of mortality are likely to be grossly underestimated, as Mallard mortality in Slovenia is largely unstudied and the detection probability of natural compared to hunting mortality is considerably lower (Naef-Daenzer *et al.* 2017). Moreover, the hunting season starts in September (ZGS 2012a) well after the most vulnerable period for Mallard mortality (Stafford & Pearse 2007). More efforts should be made to study natural Mallard mortality in Slovenia, especially as hunting could be an additive mortality (Burnham & Anderson 1984). In addition to studying the extent and causes of Mallard mortality, other important mortality factors such as water pollution (Choules *et al.* 1978), lead poisoning from ammunition (Pain *et al.* 2019) and climate change (Guillemain *et al.* 2013) should also be studied in Slovenia.

4.10. Hunting

As expected, more Mallards are hunted in areas with higher breeding densities and higher numbers of wintering Mallards (e.g. NE Slovenia). High number of Mallards are also hunted in the Notranjska district, which has a lower overall Mallard density (Bordjan 2019), but with larger Mallard concentrations of on Lake Cerknica and Ljubljansko barje. The lowest hunting numbers are found in districts with extensive forest cover, predominant high mountains and the absence of surface waters.

The decline in hunted Mallards in most parts of Slovenia over the last 13 years is probably a continued trend from a longer period. In the late 1980s and early 1990s, 7,900–12,600 Mallards were hunted per year (Sovinc 1994), almost three times as many as today. The decline may be the result of lower number of wintering Mallards, lower interest in smaller game (ZGS 2012a), higher availability of big game in some parts of Slovenia (Adamič & Jerina 2010), or a consequence of decreasing number of hunters in recent years (more than 2% decrease between 2012 and 2018, (LZS 2014, LZS 2019). One of the suggested reasons is the ban on raising and releasing Mallards for hunting (ZGS 2012f), but this is probably less important as the number of Mallards hunted is also lower in Pomursko LUO, where releases still take place. Moreover, some traditional areas for duck hunting are now covered by nature reserves where hunting is not allowed e.g. Ormož Basins Nature Reserve and Škocjanski zatok Nature Reserve, (Štumberger 1983b, Štumberger 1986, B. Lipej *pers. comm.*).

Hunting has an influence on various aspects of waterbirds life, e.g. movement, energy consumption and displacement from preferred feeding sites (Madsen & Fox 1995). In many places in Slovenia, there is a high proportion of other waterbirds compared to Mallards (Bordjan & Božič 2009b, Bordjan 2012b). Thus, the effect of Mallard hunting also extends to other waterbirds, including those with unfavourable conservation status. The

effects of hunting on waterbirds can be mitigated by the establishment of no-hunting reserves (Evans & Day 2002) as they greatly increase the numbers of Mallards as well as other waterbird species (Guzzon *et al.* 2005). To reduce the negative impacts of Mallard hunting, I propose the expansion of no-hunting zones to all areas important to breeding, migrating, or wintering waterbirds. In addition for sites to be designated as IBAs for waterbirds (Denac *et al.* 2011), criteria for establishing a no-hunting area could include high Mallards populations, i.e., more than 500 regularly present individuals during winter or at least 500 individuals counted during fall migration, and a high proportion of other waterbirds relative to Mallards. According to this study, four sites meet the winter criterion and another eight sites meet the migration criterion. All sites are covered by the Natura 2000 network (Denac *et al.* 2011), and some (e.g. the Škocjanski zatok and Ormoške lagune nature reserves, the Sečoveljske soline Landscape, Park Rački ribniki and Lake Ptuj) are already hunting-free areas. Of the others, the need for establishment of a no-hunting reserve is most critical at Lake Cerknica and Medvedce reservoir. Both host large numbers of Mallards as well as other waterbirds (Bordjan & Božič 2009a, Bordjan 2012b) and duck hunting is present in both areas and is recognised to have a negative impact on waterbirds (Trontelj 1993, Bordjan *et al.* 2013). Lake Cerknica also represents an isolated area of suitable habitat for waterbirds in the wider region and thus is short on places for waterbirds to retreat to from hunting.

4.11. Ringing

A relatively small number of Mallards are ringed annually in Slovenia. As the most numerous waterbird species, it is neglected by ringers in Slovenia and falls far behind other waterbirds such as Mute Swan *Cygnus olor*, White Stork *Ciconia ciconia*, Little Ringed Plover *Charadrius dubius*, Common Sandpiper *Actitis hypoleucos*, Black-headed Gull *Chroicocephalus ridibundus*, Common Tern *Sterna hirundo* and also Water Rail *Rallus aquaticus* (Vrezec & Fekonja 2016, Vrezec & Fekonja 2017, Vrezec & Fekonja 2018). The high effort in the 1970s resulted in all our foreign recoveries. On the other hand, the low number of recoveries (seven in almost 100 years) of birds ringed outside Slovenia is surprising, considering how many Mallards were hunted in Slovenia (almost 100,000 individuals in 20 years). One possibility is that hunters do not report ringed birds. If this is the case, this is a major loss of ringing data and should be addressed in the future by the Slovenian Bird Ringing Centre.

The small number of available foreign recoveries suggests that migratory movements, timing and direction are similar to Mallards in Croatia, most of which belongs to the same flyway (Kralj *et al.* 2013), and to those in Germany, which belongs to two separate flyways (Bairlein *et al.* 2014). All birds were recovered within the Northern Europe/West Mediterranean population boundaries (Scott & Rose 1996, Wetlands International & BirdLife International 2020). Birds ringed within Slovenia move shorter distances than foreign birds recovered in Slovenia. This is similar to Croatia (Kralj *et al.* 2013) and can be explained by shorter migration distances of southern populations compared to more northern ones (Cramp 1998, Drilling *et al.* 2020). Our few local recoveries suggest site fidelity, especially for the non-breeding season. Although the data is limited, it may suggest that at least some individuals are resident (e.g. Mallard ringed in early fall on Lake Bled and recovered in winter).

5. Povzetek

Namen prispevka je zapolniti vrzel v znanju te sicer zelo razširjene in številčne vrste v Sloveniji. Mlakarica je ena najpogosteje opazovanih vrst vodnih ptic pri nas, ki na območju rednih monitoringov pogosto doseže frekvenco pojavljanja 100 %. Mlakarica je tudi najbolj dominantna vrsta vodne ptice pri nas z razponom dominance 17,5–89,0 %. Samice dosegajo samo 36,7 % vseh opazovanih mlakaric z najvišjim deležem (41,5 %) pozimi in najnižjim v začetku gnezdenja (14,7 %), ko so samice na gnezdih. Mlakarica je najštevilčnejša med jesensko selitvijo in pozimi. V Sloveniji zabeležena gnezditvena sezona traja večji del leta, od sredine januarja pa vse do začetka decembra. Glavnina samic spelje svoje v povprečju 6,2 ± 2,66 veliko leglo med aprilom in julijem. Velikost legla upada s časom, starostjo mladičev in nadmorsko

višino in je najvišja na bazenih za odpadne vode ter na obalnih mokriščih (7,3), najnižja pa na globokih zadrževalnikih (5,7) in jezerih (5,6). Zares visokih gostot gnezdečih parov v Sloveniji nismo zabeležili in gostote so bile podobne povprečnim gostotam mlakarice po svetu. V Sloveniji ocenjeno gnezdi 1473–3763 parov in prezimuje v povprečju 22.237 (10.376–32.010) osebkov mlakaric. Velika večina mlakaric prezimuje v SV Sloveniji, največ na reki Dravi na Ptujskem (do 8330 os.) in Ormoškem jezeru (do 5400 os.). Največ mlakaric prezimuje na stoječih vodnih telesih, na rekah pa na urbanih odsekih, kjer se zadržujejo v večjem številu zaradi krmljenja in varnosti. Slovenska zimska populacija mlakarice je v upadu, verjetno zaradi vse toplejših zim. Najvišje število mlakaric na selitvi je bilo zabeleženo spomladi na Cerkniškem jezeru (4581) in jeseni na zadrževalniku Medvedce (3379).

V obdobju med 2001 in 2018 je bilo ustreljenih 72.731 mlakaric, večina v SV Sloveniji (28 % v Pomurskem lovsko-upravljavskem območju). Število letno ustreljenih mlakaric upada v vseh lovsko-upravljavskih območjih in je upadlo za 64 % od leta 2001. V lovskih evidencah je najpomembnejši vzrok smrtnosti mlakaric lov, ki dosega 97,4 % vse zabeležene smrtnosti. Med drugo zabeleženo smrtnostjo je najpomembnejše plenjenje, ki dosega 1,1 % smrtnosti. Ker je pri mlakarici največja zabeležena smrtnost pri mladičih, ki niso zajeti v uradne lovske statistike, ter ker je zaznavnost naravne smrtnosti občutno nižja od lova, je zelo verjetno naravna smrtnost vrste pri nas močno podcenjena.

Kljub dolgi tradiciji obročkanja in velikemu številu ulovljenih mlakaric imamo zelo malo ponovnih najdb obročkanih mlakaric, v zadnjih 100 letih le devet tujih najdb. Slednje nakazuje na možnost, da lovci ne poročajo o najdbah Slovenskemu centru za obročkanje ptic. Z izjemo obdobja 1972–1975, ko je bilo obročkanih 87 % vseh mlakaric, je intenzivnost obročkanja mlakarice pri nas zelo nizka. Rezultat je samo sedem najdb naših mlakaric na tujem. Največja razdalja na tujem najdene mlakarice je iz Ukrajine (1290 km), medtem ko je izvor najdaljše tuje najdbe pri nas je iz Finske (2075 km).

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DODATEK 1 / APPENDIX 1

Regional and linear (2 km transects) breeding densities of the Mallard *Anas platyrhynchos* in Slovenia.
Regionalne in linijske (2 km transekti) gnezditvene gostote mlakarice *Anas platyrhynchos* v Sloveniji.

Breeding density [bp/km²] / regionalana gnezditvena gostota [gp/km²]	Breeding population size estimate / Ocena gnezditvene gostote			Calculated density [bp/km²] / Izračunana gostota [gp/km²]		
Location / Lokacija	Min	Max	Area [km²] / Površina [km²]	Min	Max	Source / Vir
Ljubljana	142	426	211.0	0.67	2.02	Tome *et al.* (2013)
Ljubljansko barje	210	258	180.0	1.17	1.43	Tome *et al.* (2005)
Drava river between Maribor and Ptuj	54	54	76.0	0.71	0.71	Bračko (1997)
Goričko	150	250	448.2	0.33	0.56	Denac & Kmecl (2014)
Landscape park Škocjanske jame	1	2	4.1	0.24	0.48	Figelj & Kmecl (2014)
Kozjansko	10	20	198.0	0.05	0.10	Jančar & Trebušak (2000)
Triglav National Park	11	30	880.0	0.01	0.03	Jančar (1997)
Upper Reka river valley	2	5	17.0	0.12	0.29	Polak (2000)
Dragonja valley between Dragonja and Župančiči	6	7	5.3	1.14	1.33	Sovinc (1998), Gregorič & Sovinc (2016)
Jovsi	5	5	4.6	1.09	1.09	Trontelj & Vogrin (1993)
Sava river between Krško and Croatia	54	90	33.3	1.62	2.70	Denac & Smole (2008)
Tivoli, Rožnik in Šišenski hrib	2	2	4.6	0.44	0.44	Mihelič (2005)
Mura, Šentilj-Veržej	207	325	36.8	5.63	8.83	Božič (2007a)
Average	854	1,474	2,098.9	0.41	0.70	
Linear density [bp/km] / linearna gnezditvrna gostota						
Slovenian Farmland bird indeks				2.06	2.06	Božič (2007b, 2008b), Figelj & Kmecl (2009, 2011, 2012, 2013, 2015, 2016), Kmecl *et al.* (2014), Kmecl (2017, 2019), Kmecl & Šumrada (2018)
Dinaric region				4.45	4.45	
Pannonian region				1.15	1.15	
Mediterranean region				2.29	2.29	
Alpine region				1.76	1.76	
Wet meadows				7.62	7.62	
Mosaic farmland				1.37	1.37	
Mediterranean mosaic				3.34	3.34	
Intensively used farmland				1.51	1.51	
IBA				3.47	3.47	
non-IBA				1.96	1.96	

DODATEK 2 / APPENDIX 2

Ecological breeding densities of the Mallard *Anas platyrhynchos* in Slovenia.

Ekološke gnezditvene gostote mlakrice *Anas platyrhynchos* v Sloveniji.

		Breeding population size estimate / Ocena gnezditvene populacije			Calculated density [bp / km^2] / Izračunana gnezditvena gostota [gp / km^2]		
Wetland type / Tip mokrišča	Location / Lokacija	Min	Max	Area [ha] / Površina [ha]	Min	Max	Source / Vir
Aquaculture ponds / ribogojnice		**19**	**69**	**269**	**7.07**	**25.69**	
	Water reservoir Medvedce	8	46	160	5.00	28.75	Bordjan & Božič (2009a), *Own data*
	Rački fishponds	4	16	36	11.14	44.57	*Own data*
	Fishpond Vrbje 1996	2	3	14	14.81	22.22	(Vogrin 1996)
	Fishpond Vrbje 2013	2	3	55	3.66	5.48	Gamser & Novak (2013)
	Turnovi fishponds	3	6	5	66.67	133.33	*Own data*
Excavation / izkopi		**24**	**37**	**120**	**19.99**	**30.81**	
	Gravel pits along the Lower Sava river	9	15	49	18.33	30.55	Denac & Smole (2008)
	Stavbarjeva gramoznica Hoče	2	2	16	12.58	12.58	Vogrin (1994a)
	Hotinja vas	3	5	6	46.88	78.13	*Own data.*
	Koseški bajer	2	2	4	50.00	50.00	Mihelič (2005)
	Gravel pit Stari grad	2	5	14	13.90	34.75	Denac & Smole (2008)
	Gravel pit Vrbina	6	8	30	19.80	26.40	Denac & Smole (2008)
Coast / obala		**15**	**30**	**730**	**2.05**	**4.11**	
	Sečovlje salina	10	20	650	1.54	3.08	Škornik (2012)
	Brackish lagoon (NRŠZ)	5	10	80	6.23	12.45	B. Mozetič *pers. comm.*
Lakes / jezera		**11**	**52**	**693**	**1.59**	**7.50**	
	Lake Bled	2	12	145	1.38	8.28	Jančar *et al.* (2007)
	Lake Bohinj	1	24	318	0.31	7.55	Jančar *et al.* (2007)
	Šaleška lakes	8	16	230	3.48	6.96	Deberšek & Bordjan (2016)

Nadaljevanje dodatka 2 / Continuation of Appendix 2

		Breeding population size estimate / Ocena gnezditvene populacije			Calculated density [bp / km^2] / Izračunana gnezditvena gostota [gp / km^2]		
Wetland type / Tip mokrišča	Location / Lokacija	Min	Max	Area [ha] / Površina [ha]	Min	Max	Source / Vir
Pools / jezerca		**4**	**7**	**11**	**38.10**	**66.67**	
	Oxbow lake Prilipe	1	2	4	22.73	45.45	Denac & Smole (2008)
	Petišovsko jezero	3	5	6	49.18	81.97	Bračko (1994a)
Ponds / ribniki		**34**	**55**	**65**	**52.47**	**84.87**	
	Hraše fishponds	5	5	3	161.29	161.29	B. Blažič *pers. comm.*
	Hodoško jezero	5	5	5	96.15	96.15	Vrezec (2004)
	Ljutomerski ribniki	3	5	12	25.13	41.88	Bračko (1994b)
	Proseniško fishpond 1	1	2	<1	263.16	526.32	M. Gamser *pers. comm.*
	Proseniško fishpond 2	1	2	2	48.39	96.78	M. Gamser *pers. comm.*
	Proseniško fishpond 3	0	1	<1	0.00	250.13	M. Gamser *pers. comm.*
	Proseniško fishpond 4	1	5	5	18.24	91.21	M. Gamser *pers. comm.*
	Proseniško fishpond 5	1	2	1	71.19	142.38	M. Gamser *pers. comm.*
	Proseniško fishpond 6	5	6	8	65.33	78.39	M. Gamser *pers. comm.*
	Proseniško fishpond 7	1	1	2	60.95	60.95	M. Gamser *pers. comm.*
	Proseniško fishpond 8	1	2	4	23.97	47.95	M. Gamser *pers. comm.*
	Fishpond Črnelo	1	2	2	47.62	95.24	*Own data.*
	Fishponds in Prevoje	1	2	3	31.29	62.58	*Own data.*
	Accumulation on Rača river	1	2	1	71.19	142.38	*Own data.*
	Fishpond Lokve	3	5	6	50.41	84.01	NOAGS
	Fishpond Rogaška slatina	1	3	1	76.28	228.84	NOAGS
	Jezerce (NRŠZ)	3	5	7	40.54	67.57	B. Mozetič *pers. comm.*

Nadaljevanje dodatka 2 / Continuation of Appendix 2

		Breeding population size estimate / Ocena gnezditvene populacije			Calculated density [bp / km^2] / Izračunana gnezditvena gostota [gp / km^2]		
Wetland type / Tip mokrišča	Location / Lokacija	Min	Max	Area [ha] / Površina [ha]	Min	Max	Source / Vir
River / reke		**128**	**185**	**1,546**	**8.28**	**11.97**	
	Sava river between Krško and Croatia	45	75	245	18.36	30.60	Denac & Smole (2008)
	Drava river between Maribor and Ptuj	54	54	454	11.90	11.90	Bračko (1997)
	Drava river in Maribor	9	9	155	5.81	5.81	Logar & Božič (2014)
	Mura river	7	15	384	1.82	3.91	Božič (2007a)
	Sava river between Litija and Zidani most*	10	20	270	3.70	7.41	Figelj & Kmecl (2014)
	Landscape park Škocjan cave	1	2	6	16.95	33.90	Denac (2010)
	Kamniška bistrica river from Kamnik to Domžale	2	10	32	6.18	30.92	*Own data.*
Seasonal/ intermittent freshwater wetlands / presihajoča jezera		**276**	**364**	**5516**	**5.00**	**6.60**	
	Marsh (NRŠZ)	7	10	35	20.00	28.57	B. Mozetič *pers. comm.*
	Volčeke meadows	4	4	91	4.39	4.39	Štumberger (1994)
	Floodplain forest along Mura river (Šentilj-Gornja Radgona)	80	120	450	17.78	26.67	Božič (2007a)
	Mixture Flodplain forest/farmland along Mura river (Šentilj-Gornja Radgona)	5	10	180	2.78	5.56	Božič (2007a)
	Flodplain forest along Mura river (Gornja Radgona-Veržej)	80	110	1340	5.97	8.21	Božič (2007a)
	Mixture Flodplain forest/farmland along Mura river (Gornja Radgona-Veržej)	10	20	520	1.92	3.85	Božič (2007a)
	Cerknica lake	90	90	2,900	3.10	3.10	Bordjan (2012b)

Nadaljevanje dodatka 2 / Continuation of Appendix 2

		Breeding population size estimate / Ocena gnezditvene populacije			Calculated density [bp / km^2] / Izračunana gnezditvena gostota [gp / km^2]		
Wetland type / Tip mokrišča	Location / Lokacija	Min	Max	Area [ha] / Površina [ha]	Min	Max	Source / Vir
Water storage areas / zadrževalniki		**44**	**60**	**829**	**5.31**	**7.24**	
	Lake Zbilje	10	10	57	17.54	17.54	Trontelj (1992)
	Lake Trboje	5	5	65	7.69	7.69	Trontelj (1992)
	Lake Ptuj	10	15	350	2.86	4.29	L. Božič *pers. comm.*
	Lake HE Moste	1	1	56	1.79	1.79	Jančar *et al.* (2007)
	Žovnek reservoir	1	3	49	2.04	6.12	Vogrin (2005)
	Požeg Reservoir	2	6	74	2.70	8.11	*Own data.*
	Lake Slivnica	6	6	62	9.60	9.60	M. Vogrin *pers. comm.*
	Lake Gradišče	4	7	27	15.04	26.32	*Own data.*
	Lake Šmartinsko	5	7	89	5.64	7.90	M. Gamser *pers. comm.*
Other / drugo							
	East Teharsko lake	1	3	20	4.90	14.71	M. Gamser *pers. comm.*
	West Teharsko lake	2	4	23	8.77	17.54	M. Gamser *pers. comm.*
	Ormož Basins Nature Reserve	10	30	35	28.99	86.96	L. Božič *pers. comm.*
	Golf course Ptuj	2	2	55	3.64	3.64	Vogrin & Miklič (2004)
	Farmland along Mura river (Šentilj-Gornja Radgona)	5	10	480	1.04	2.08	Božič (2007a)
	Farmland along Mura river (Gornja Radgona-Veržej)	10	20	560	1.79	3.57	Božič (2007a)
Overall ecological density / Skupna ekološka gostota		**585**	**928**	**10,951**	**5.34**	**8.47**	

DODATEK 3 / APPENDIX 3

Highest recorded numbers of Mallards *Anas platyrhynchos* for separate locations and regions.
Abbreviations: R – random, M – monitoring, C – census.

Najvišja zabeležena števila mlakaric *Anas platyrhynchos* na posameznih lokacijah in območjih.
Okrajšave: R – naključni podatek, M – monitoring, C – popis.

		Max	Spring / Pomlad	Autumn / Jesen	Winter / Zima	Type of data / Tip podatka	Source / Vir
Dolenjska	Rudniško Lake	343	33		343	R	Štumberger (1983b), NOAGS
	Kolpa (Metlika-Rosalnice)	453			453	M	IWC
	Kolpa (Pobrežje-krasinec)	490			490	M	
	HE Krško	562	254	203	562	R	NOAGS
Gorenjska	HE Moste	330	275	330	224	M	Jančar *et al.* (2007), NOAGS
	Lake Bohinj	145	145	139	138	M	Jančar (1994, 1997), Jančar *et al.* (2007)
	Lake Gradiško	125	65	64	125	M	*Own data.*
	Lake Zbilje	220	220	50	70	M	Trontelj (1992), NOAGS
	Lake Bled	687	551	687	641	M	Kozinc (1992), Jančar *et al.* (2007), NOAGS
	Lake Trboje	600		35	600	M	Trontelj (1992)
Notranjska	Pivka lakes	150	35	150	40	C	Tome (2000), NOAGS
	Lake Cerknica	4,581	4,581	2,500	2,500	M	Gregori (1979), Kmecl & Rižner (1993), Bordjan (2012a, 2012b,)
Central Slovenia	Ljubljansko barje	800	100	800	300	C	Tome *et al.* (2005)
	Ljubljanica (Ljubljana, Fužine)	547			547	M	IWC
	Ljubljanica (Ljubljansko barje, from 2 km before railway bridge to the bridge)	561			561	M	IWC
	Ljubljana and surroundings	1,739			1,739	C	Tome *et al.* (2011)
Prekmurje	Mura at Murska šuma	500	500			C	Kolenko (2001)
	Gravel pit Nograd Dobrovnik	1,230			1,230	M	IWC
	Gravel pit Babinci	549			549	M	IWC
	Gravel pit Zgornje Krapje	1,069			1,069	M	IWC
	Gravel pit Murska Sobota	850			850	M	IWC
	Gravel pit Ivanci	588			588	M	IWC
	Lake Ledava	501	77	501	186	R	NOAGS

Nadaljevanje dodatka 3 / Continuation of Appendix 3

		Max	Spring / Pomlad	Autumn / Jesen	Winter / Zima	Type of data / Tip podatka	Source / Vir
Primorska	Škocjanski zatok Nature Reserve	501	345	501	328	M	D.Stanič *pers comm.*
	Most na Soči reservoir	238			238	M	IWC
	Sečovelje salina	2,600	1,500	894	2,600	M	(Vrezec (1999), Polak (2000), Škornik (2012), I. Škornik *pers. Comm.*
Štajerska	Žovnek reservoir	464	250	464	150	M	Koprivšek (1993b, 1994), Kmecl & Rižner (1995), Vogrin (2005), NOAGS
	Lake Ormož	5,400	3,005	1,132	5,400	M	Bibič (1988), Bračko (1992), L. Božič *pers. comm.*
	Lake Gajševci	941			941	M	IWC
	Lake Ptuj	8,330	1,796	2,145	8,330	M	Bibič (1988), Vrezec (1997), L. Božič *pers. comm.*
	Vrbje fishpond	294	151	294	124	M	Koprivšek (1993a), Vogrin (1996), Gamser & Novak (2013)
	Komarnik fishpond	450			450	M	IWC
	Lake Pernica	1,052	300	209	1,052	C	Bibič (1988), Bračko (1994c), NOAGS
	Medvedce reservoir	3,379	2,137	3,379	2,800	M	Bordjan & Božič (2009a), *Own data.*
	Požeg reservoir	3,000	428	1,131	3,000	M	Vogrin (1994b), Bordjan (2003), Own data.
	Rački ribniki	1,696	350	1,696	784	M	Vogrin (1990), Own data
	Lake Vonarje	427	427		239	R	(Podhraški (1997, 2001, 2011)
	Gravel pit Kunguta	323			323	R	NOAGS
	Lake Pristava	137			137	C	Bibič (1988)
	Lake Radehova	150			150	R	NOAGS
	Šaleška lakes	165	137	165	132	M	Deberšek & Bordjan (2016)
	Lake Slivnica	271			271	C	NOAGS
	Ormož Basins Nature Reserve	663	138	663	499	M	L. Božič *pers. comm.*
	Drava river in Maribor	1,303	488	466	780	M	Logar & Božič (2014)

DODATEK 4 / APPENDIX 4

The number of hunted Mallards *Anas platyrhynchos* and trends in separate hunting-management districts (LUO) between 2006 and 2018. All trends are statistically significant.

Število odlovljenih mlakaric *Anas platyrhynchos* in izračunan trend po posameznih lovsko upravljavskih območjih med leti 2006 in 2018. Vsi trendi so statistično značilni.

Name of the LUO / Ime lovsko upravljavskega območja	Min	Year / Leto	Max	Year / Leto	All years / Vsa leta	R	p
Gorenjsko	149	2017	304	2004	4,274	-0.89	<0.001
Kamniško-Savinjsko	50	2017	140	2001	1,647	-0.51	0.032
Kočevsko-Belokranjsko	16	2015	185	2003	2,004	-0.65	0.003
Notranjsko	337	2016	762	2002	9,331	-0.77	<0.001
Novomeško	69	2017	211	2004	2,733	-0.84	<0.001
Pohorsko	72	2018	162	2001	1,801	-0.58	0.012
Pomursko	428	2014	2,195	2001	20,226	-0.92	<0.001
Posavsko	125	2017	577	2004	4,577	-0.84	<0.001
Primorsko	52	2018	131	2003	1,357	-0.76	<0.001
Ptujsko-Ormoško	253	2015	965	2001	8,742	-0.87	<0.001
Savinjsko-Kozjansko	123	2018	375	2004	4,424	-0.93	<0.001
Slovensko goriško	247	2014	428	2001	5,958	-0.76	<0.001
Triglavsko	15	2018	60	2005	651	-0.87	<0.001
Zahodno visoko kraško	70	2017	273	2002	2,600	-0.86	<0.001
Zasavsko	87	2010	201	2003	2,406	-0.82	<0.001
All LUOs / Vsa lovsko upravljavska območja	2,421	2017	6,492	2001	72,731	-0.95	<0.001

DODATEK 5 / APPENDIX 5

The maximum number of Mallards *Anas platyrhynchos* counted in winter on several water bodies in two time periods. Sources for the first period are Sovinc (1994) and Polak (2000), and Božič (2015, 2016, 2017, 2018, 2019) for the second period.

Največje število mlakaric *Anas platyrhynchos* preštetih pozimi na izbranih vodnih telesih v dveh ločenih obdobjih. Viri so za prvo obdobje Sovinc (1994) in Polak (2000), ter Božič (2015, 2016, 2017, 2018, 2019) drugo obdobje.

	In 1980's and 1990's / v 80' in 90' letih	2015–2019
Požeg reservoir	1,300	37
Šaleška lakes	3,000	400
Sečovlje salina	2,600	1,222
Drava river below Maribor	15,000–30,000	7,302
Lake Ptuj	8,150	1,890
Lake Ormož	5,150	1,765
Lake Pernica	2,500	53

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First confirmed breeding of the Mediterranean Shag *Gulosus aristotelis desmarestii* in Romania after 60 years of its absence

Prvo potrjeno gnezdenje sredozemskega vranjeka *Gulosus aristotelis desmarestii* v Romuniji v zadnjih 60-ih letih

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Introduction

The European Shag *(Gulosus aristotelis)* is a colonial seabird that breeds in the Western Palearctic. The species can be found along the entire Atlantic coast of Europe as far north as Finland and Iceland and as far south as the coast of Morocco. It ranges through the entire Mediterranean, nesting on parts of the coastline of most European and North African countries, as well as parts of the Black Sea coast (del Hoyo *et al.* 1992). The species is listed as Least Concern (LC), with its global population estimated at 230,000–240,000 individuals, while the European population is estimated at 153,000–157,000 mature individuals. The overall trend is decreasing (BirdLife International 2019). Three subspecies are recognized, *G. a. aristotelis* (Linnaeus, 1761) – Iceland and Scandinavia to southern coasts of Iberian Peninsula, *G. a. desmarestii* (Payraudeau, 1826) – Mediterranean and Black Sea, and *G. a. riggenbachi* (E. J. O. Hartert, 1923) – coast of Morocco. The shags are essentially marine birds, especially along rocky coastlines or island groups (Snow and Perrins 1998). This paper presents the first confirmed breeding of the European Shag in Romania after 60 years of its absence.

Materials and methods

The site of the present study is the Constanta harbour situated on the Western Black Sea coast, south-eastern Romania. It covers 3,926 ha of which 1,313 ha is land and the rest, 2,613 ha is water. The two breakwaters located northwards and southwards shelter the port, creating safety conditions for port activities. The Port of Constanta is the largest on the Black Sea and the 17th largest in Europe (Wikipedia contributors 2019).

Since 2013, the Constanta harbour has been one of the sites covered by the Romanian Ornithological Society during the International Waterbird Census carried out in mid-January. In this particular time, all inland wetlands are generally already frozen and many waterbirds, especially ducks, grebes, swans, coots, gulls and cormorants find favourable shelters and foraging grounds in the harbour bays. The harbour area is covered by 13 fixed count points from which the birds are counted. The observations are done with the help of binoculars 10x42 or 10x50 and spotting scopes 20–50x. The time spent at each fixed observation points differs due to the abundance of the waterbirds present, but don't last more than 20 min per point. Apart from the harbour infrastructure facilities located on the mainland, one semi-submersible platform is situated in the southern part of

Figure 1: The semi-submersible platform is situated in the southern part of the Constanta harbour where the small colony of Mediterranean Shag was found, 19. 3. 2019 (photo: Emil Todorov)

Slika 1: 19. 3. 2019 je bila najdena manjša kolonija sredozemskih vranjekov na polpotopni ploščadi, ki se nahaja v južnem delu pristanišča Konstanta (foto: Emil Todorov)

Figure 2: Nests of Mediterranean Shags situated on the semi-submersible platform, 23. 4. 2019 (photo: Emil Todorov)

Slika 2: Gnezda sredozemskih vranjekov na polpotopni ploščadi, 23. 4. 2019 (foto: Emil Todorov)

the harbour area 1,700 m offshore and 550 m away from the southward breakwater (Figure 1). Around the platform at a distance between 100 to 700 m in the southern direction, 4 floating navigation buoys are situated that are regularly utilized by the Great Cormorants *(Phalacrocorax carbo)* as breeding sites. The southward area of the Constanta harbour was visited 5 times from January to June 2019 and the observations were made from fixed observation point located at the southward breakwater dike (N 44.088555, E 28.677497) at a distance of 1,200 m.

Results

First observations of the Mediterranean Shag in the study area were made in mid-January 2019. A total of 13 individuals, adults and immatures were registered, resting on anchored navigation buoys, flying over or foraging in the harbour waters. Another visit was performed on 26 February, when 10 adult cormorants were observed, showing behaviour of pair formation. On 17 March, three well visible nest with Mediterranean Shags sitting in incubating position were observed, located on the south-western column of the platform approximately 18 m above the water level. Apart from the shag's nests found on the platform, another 26 occupied nest belonging to the Great Cormorant *(Phalacrocorax carbo)* were recorded on 4 floating buoys nearby. On 23 April, 5 nests occupied by Mediterranean Shags were registered. Successful breeding was confirmed on 11 May when in 3 out of 5 nests, chicks were observed. Due to the long distance, the exact number of chicks per nest was impossible to determine, but an estimation between 1–2 chicks per nest was the most likely breeding succes.

Discussion

The very first observation of the European Shag in Romania was made on 14 July 1959 on the Black Sea coast in offshore zone of the city of Constanta (Cătuneanu *et al.* 1978). Along the 240 km Romanian coastline there are no rocky coastlines, the preferred breeding habitats for the shags. The only suitable breeding area within the territorial waters of Romania is Snake Island (nowadays Ukrainian territory) located offshore the Danube Delta, 35 km away from the Romanian border, where breeding was confirmed (Linția 1955). The low-slope rocky island covers 17 ha and was a former Romanian territory before its accession to the former Soviet Union in 1948. In the recent ornithological history of Romania, the first confirmed observation of the species with photos was made on 12 September 2012 near Vama Veche at the border with Bulgaria (Daróczi pers. comm.). Afterwards, the species became much more regular, but still rare with small numbers of up to 20 individuals mainly along the southern Romanian Black Sea coast. The nearest breeding colony of the species is located in Bulgarian territory near Cape Kaliakra, 50 km away from the Romanian border, estimated at 180–250 breeding pairs (Iankov 2007). Another possible breeding site within Romanian waters might be on the Evangelia shipwreck (Wikipedia contributors 2019), 15 km south from the semi-submersible platform. The deck of the shipwreck has been a well-known breeding area of the Great Cormorant since 2012 when 63 breeding pairs were registered (Romanian Ornithological Society 2019). The presence of adult Mediterranean Shags in breeding plumage was registered on the shipwreck's deck in June 2017 (Lajos pers. comm.), but without clear signs of breeding activity. In April 2019, up to 3 pairs were

registered and copulations observed (Stanciu pers. comm.). Although these are encouraging signs of breeding, nests were not registered, probably due to the fact that the shags chose to nest inside the shipwreck.

The newly established small colony represents the first confirmed breeding of the Mediterranean Shag in Romania after 60 years of its absence and the first established on an artificial breeding structure. In 2013, another newly established colony was found along the Southern Bulgarian Black Sea coast on a small rocky island (Mladenov 2014), which clearly indicates that the species' population along the Western Black Sea coast is increasing and occupying new habitats.

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Povzetek

240 kilometrov dolga črnomorska obala v Romuniji nima skalnatih pečin, ki so primarno gnezdišče sredozemskega vranjeka. 23. aprila 2019 je bilo v južnem delu pristanišča Konstanca najdenih pet gnezd sredozemskih vranjekov *Phalacrocorax aristotelis desmarestii*. Gnezda so se nahajala približno 18 metrov visoko na jugozahodnem stebru polpotopne ploščadi, zasidrane 1700 m od kopnega. To je prvo potrjeno gnezdenje te vrste v Romuniji po več kot 60 letih njene odsotnosti.

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Redke vrste ptic v Sloveniji v letu 2019 – Poročilo Nacionalne komisije za redkosti

Rare birds in Slovenia in 2019 – Slovenian Rarities Committee's Report

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Poročilo Nacionalne komisije za redkosti (KRED) obravnava opazovanja redkih vrst ptic med 1. 1. in 31. 12. 2019, z dodanimi datumi za leto 2020, če je bil osebek, prvič opazovan v letu 2019, opazovan tudi leta 2020 (npr. prezimovanja). Pri nekaterih vrstah so dodane dopolnitve za prejšnja leta. Komisija je delovala v naslednji sestavi (po abecednem vrstnem redu): Dejan Bordjan, Luka Božič, Mitja Denac (predsednik), Jurij Hanžel, Milan Vogrin.

Komisija obravnava vrste, ki so bile kot redke označene v Seznamu ugotovljenih vrst ptic Slovenije s pregledom redkih vrst in v zadnjem poročilu KRED (Hanžel & Šere 2011, Denac *et al*. 2019), ne glede na prej veljavni kriterij o redkosti, da je vrsta redka, če je po letu 1950 znanih manj kot 10 opazovanj. Seznam obravnavanih vrst in podvrst je dostopen na spletu (DOPPS 2020).

Razvrstitev v kategorije, način navajanja kraja opazovanj in način navajanja virov sledijo smernicam v Seznamu (Hanžel & Šere 2011). Upoštevana so taksonomska priporočila Mednarodnega ornitološkega kongresa (International Ornithological Congress – IOC World Bird List), in sicer je bila za namene tekočega poročila uporabljena verzija 9.2 (Gill & Donsker 2019). Številki poleg imena vrste v oklepaju pomenita število opazovanj med 1. 1. 1950 in 31. 12. 2018 ter število osebkov, opazovanih v tem časovnem obdobju. Takšen način podajanja opazovanj je standardiziran po priporočilih Združenja evropskih komisij za redkosti (AERC – Association of European Rarities Committees) (AERC 2017). Nekatere redke vrste obravnava KRED šele od 1. 1. 2013 dalje in zanje podatki pred tem datumom niso zbrani, zato ta opazovanja niso oštevilčena. Opazovanja regionalnih redkosti so predstavljena ločeno od opazovanj nacionalnih redkosti.

V letu 2019 zbujajo pozornost v kategoriji A naslednja opazovanja: drugo opazovanje kraljičice *Phylloscopus proregulus*, četrto opazovanje rdečevrate *Branta ruficollis* in belolične gosi *Branta leucopsis*, ponovno opazovanje pojočih pritlikavih tukalic *Porzana pusilla* (četrti podatek za Slovenijo), šesto opazovanje male gosi *Anser erythropus*, sedmo opazovanje ostroglega *Calcarius lapponicus* in osmo opazovanje ploskokljunega liskonožca *Phalaropus fulicarius*. V kategoriji E je bila opazovana novi vrsta – orjaški jezerec *Haliaeetus pelagicus*. Do vključno 31. 12. 2019 je bilo v Sloveniji ugotovljenih 390 vrst ptic (376 v kategoriji A, 5 v kategoriji B in 9 izključno v kategoriji C; štiri vrste so umeščene v kategoriji A in C hkrati). V kategoriji D je 7 vrst, v kategoriji E pa 41, med katerimi sta dve umeščeni v kategorijo E*. Vrste iz kategorij D in E niso del seznama ugotovljenih vrst ptic Slovenije. Razlaga posameznih kategorij in podkategorij je podana v Seznamu ugotovljenih vrst ptic Slovenije (Hanžel & Šere 2011) ter na spletu (DOPPS 2020).

V Dodatku 1 so predstavljene dokumentarne fotografije opazovanj redkih vrst ptic iz leta 2019, ki še niso bile objavljene v slovenskih tiskanih virih z navedenim datumom, krajem in številom osebkov.

Potrjena opazovanja iz kategorije A / Accepted Category A records

Rdečevrata gos *Branta ruficollis* (3, 4)

(4) 17.–23. 11. 2019, zadrževalnik Medvedce, do 3 os (D. Bordjan, A. & E. Vrezec, M. Gamser *pisno*)

Belolična gos *Branta leucopsis* (3, 3)
(4) 16. 11. 2019–2. 2. 2020, zadrževalnik Medvedce, 1 os. (D. Bordjan, L. Božič, M. Vogrin, A. & E. Vrezec, M. Denac *pisno*)

Mala gos *Anser erythropus* (5, 5)
(6) 18. 12. 2019, zadrževalnik Medvedce, 1 ad. (Denac 2019a)

Labod pevec *Cygnus cygnus* (14, 29)
(15) 30. 4. 2019, Hraše, 1 os. (D. Bordjan *pisno*)

Črna raca *Melanitta nigra*
– 7. 12. 2019, morje pred Piranom, 7 os. (Denac 2019b)

Zimska raca *Clangula hyemalis*
– 24. 12. 2019, Rački ribniki, 1 os. (M. Vogrin *pisno*)

Pritlikava tukalica *Porzana pusilla* (3, 7)
(4) 7.–8. 5. 2019, med Osredki in Martinjakom, Cerkniško jezero, 3 ad. (M. Gamser, B. Blažič *pisno*)

Dular *Charadrius morinellus* (20, 43)
(21) 1. 4. 2019, Ratitovec, 1 ad. (V. Kržišnik *pisno*)
(22) 25. 8. 2019, Slavnik, 1 juv. (B. Rakar, A. Marsič *pisno*)

Ploskokljunec *Calidris falcinellus* (14, 31)
(15) 16.–17. 5. 2019, zadrževalnik Medvedce, do 5 ad. (B. Blažič, T. Pršin, M. Denac *pisno*)
(16) 25.–26. 8. 2019, Sečoveljske soline, 1 juv. obr. (T. Mihelič, A. Božič *pisno*)
(17) 29. 8. 2019, Škocjanski zatok, 1 juv. (Stanič & Cernich 2019)

Čoketa *Gallinago media* (17, 17)
(18) 24. 3. 2019, Koritno, Bled, 1 os. (A. Mulej *pisno*)
(19) 12. 4. 2019, Iški morost, Ljubljansko barje, 1 ad. (B. Blažič *pisno*)

Ozkokljuni liskonožec *Phalaropus lobatus* (17, 30)
(18) 22. 4.–2. 5. 2019, Sečoveljske soline – muzej, 1 os. (D. Bordjan, A. Božič *pisno*)

Ploskokljuni liskonožec *Phalaropus fulicarius* (7, 7)
(8) 11. 4. 2019, Blejsko jezero, 1 ad. (B. Blažič *pisno*)

Črnonoga čigra *Gelochelidon nilotica* (24, 32)
(24) 25. 7. 2018, Škocjanski zatok, 2 ad. (D. Bosch & A. Božič *pisno*)
(25) 31. 5. 2019, Brežiško jezero, 2 ad. (G. Bernard *pisno*)
(26) 14. 6. 2019, Ključi, Cerkniško jezero, 1 ad. (B. Blažič, T. Pršin *pisno*)

Sredozemski viharnik *Puffinus yelkouan*
– 27. 10. 2018, morje pred Piranom, 5 os. (D. Bosch, A. Božič, B. Blažič, T. Pršin *pisno*)
– 30. 10. 2018, morje pred Piranom, 6 os. (D. Bosch, A. Božič, D. Lepage *pisno*)
– 3. 11. 2019, morje pred Piranom, 4 os. (D. Bosch, A. Božič *pisno*)

Plevica *Plegadis falcinellus*
– 23.–24. 4. 2019, Škocjanski zatok, do 16 os. (D. Stanič, D. Bosch *pisno*)
– 24. 7. 2019, Škocjanski zatok, 1 os. (D. Stanič *pisno*)
– 26. 7. 2019, Brežiško jezero, 1 os. (D. Klenovšek *pisno*)

Kraljevi orel *Aquila heliaca* (16, 16)
(17) 17. 2. 2019, Spodnja Hajdina, 1 2cy (S. Hren *pisno*)
(18) 19. 5. 2019, Šentrupert, 1 2cy, podatek s telemetrijo (Bird telemetry 2019)

Stepski lunj *Circus macrourus* (60, 62)
(61) 31. 3. 2019, zadrževalnik Medvedce, 1 ♀,(D. Bordjan *pisno*)
(62) 12. 4. 2019, Šmarca pri Kamniku, 1 ♂ (D. Bordjan *pisno*)
(63) 14. 4. 2019, Podova, 1 ♂ (D. Bordjan *pisno*)
(64) 27. 4. 2019, Zgornji Brnik, 1 ♂,(J. Habicht, J. Florjančič *pisno*)
(65) 2. 11. 2019, zadrževalnik Medvedce, 1 ♀ (J. Leskošek, T. Basle, N. Kocjan *pisno*)

Koconoga kanja *Buteo lagopus*
– 10. 10. 2019, Ig, Ljubljansko barje, 1 juv. (Denac 2019c)

Močvirska uharica *Asio flammeus* (43, 74)
(44) 5. 1. 2019, Ig, Ljubljansko barje, 1 os. (Denac 2019d)

(45) 8. 2. 2019, Medvedce, 1 os. (D. Bordjan *pisno*)
(46) 20. 2.–5. 3. 2019, Ig, Ljubljansko barje, do 7 os. (Denac 2019d)
(47) 19. 9. 2019, Veliki Oltar, Julijske Alpe, 1 os. (Denac & Poljanec 2019)
(48) 2. 12. 2019, Poljče, 1 os. – kadaver (A. Mulej *pisno*)

Južna postovka *Falco naumanni* (11, 29)
(12) 20. 5. 2019, Ustje, Ajdovsko polje, 1 2cy ♂ (D. Bordjan *pisno*)

Rjavoglavi srakoper *Lanius senator*
– 1. 5. 2019, Laze pri Gorenjem jezeru, Cerkniško jezero, 1 os. (Stanič 2019a)
– 19. 5. 2019, Sečoveljske soline, 1 os. (A. Božič *pisno*)
– 4. 6. 2019, Podraga, Vipavska dolina, 1 os. (K. Denac *pisno*)

Mušja listnica *Phylloscopus inornatus* (20, 20)
(21) 9. 10. 2019, Cerovo, 1 obr. (J. Bricelj *pisno*)
(22) 19. 10. 2019, Vrhnika, 1 obr. (R. Tekavčič *pisno*)

Kraljičica *Phylloscopus proregulus* (1, 1)
(2) 27.–30. 3. 2019, Osp, 1 os. (Stanič 2019b)

Plevelna trstnica *Acrocephalus agricola* (10, 10)
(10) 10. 8. 2018, Vrhnika, 1 ad. obr. (B. Lapanja *pisno*)[1]
(11) 31. 8. 2019, med Dolenjim Jezerom in Otokom, Cerkniško jezero, 1 1cy obr. (R. Tekavčič *pisno*)

Bledi vrtnik *Iduna pallida* (15, 16)
(15) 12. 7. 2017, Fontanigge, Sečoveljske soline, 1 os. (I. Škornik, A. Božič *pisno*)

Rožnati škorec *Pastor roseus* (44, 427)
(45) 23. 5. 2019, Bevke, Ljubljansko barje, 1 ad. (V. Antešič *pisno*)

Travniški vrabec *Passer hispaniolensis* (16, 249)
(17) 14. 7. 2019, Gradišče pri Vipavi, Vipavska dolina, 1 ♂ (Stanič 2019c)

Severni brezovček *Acanthis flammea*
– 15. 11. 2017, Pragersko, 6 os. (D. Bordjan *pisno*)

Konopeljščica *Carduelis citrinella* (23, 32)
(24) 13.–16. 6. 2019, Vogel, Julijske Alpe, do 3 os. (Lunczer 2020)[2]
(25) 14. 10. 2019, Karavanke, 1 2cy obr. (D. Grohar *pisno*)

Ostroglež *Calcarius lapponicus* (6, 6)
(7) 30. 11. 2019, Stržen, Ljubljansko barje, 1 os. (Denac 2019e)

Snežni strnad *Plectrophenax nivalis*
– 10. 11. 2019, zadrževalnik Medvedce, 1 ♀ (D. Bordjan *pisno*)
– 26. 12. 2019–20. 2. 2020, Slavnik, 1 os. (T. Puzić, R. Kraševec, M. Mlakar Medved, J. & L. Poljanec, M. Denac, D. Stanič, S. Cernich, M. Gamser *pisno*)

Črnoglavi strnad *Emberiza melanocephala*
– 18. 5. 2019, Dolenja blata, Cerkniško jezero, 1 ♂ (D. Bordjan, A. Božič, D. Bosch *pisno*)
– 22. 5. 2019, Ajdovsko polje, Vipavska dolina, 1 ♂ (Cernich & Stanič 2019)
– 2. 6. 2019, Zgornja Slivnica, 1 ♀ (N. Pišec *pisno*)

Regionalne redkosti / Regional rarities

Beloliska *Melanitta fusca*
– 20.–26. 1. 2019, Brežiško jezero, 1 os. (G. Bernard, M. Denac, D. Kapš *pisno*)

Zlatouhi ponirek *Podiceps auritus*
– 26. 1. 2019, Brežiško jezero, 3 os. (M. Denac, D. Kapš *pisno*)

Plamenec *Phoenicopterus roseus*
– 17. 8. 2013, Strunjanske soline, 6 os. (L. Kastelic *pisno*)
– 16. 7. 2015, Strunjanske soline, 1 os. (L. Kastelic *pisno*)

[1] Podatek je bil objavljen že v prejšnjem poročilu Komisije (Denac *et al.* 2019), vendar je bil napačno oštevilčen, zato so v tem poročilu objavljeni vsi podatki iz let 2018 in 2019.

[2] Ptice so bile opazovane pri gradnji gnezda, zato lahko upravičeno domnevamo, da so se na območju zadrževale dalj časa, kot je bilo potrjeno s strani opazovalcev.

– 10. 4. 2016, Strunjanske soline, 1 os. (L. Kastelic *pisno*)
– 30. 8.–27. 12. 2019, Škocjanski zatok, do 2 os. (Stanič 2019d)
– 17.–18. 11. 2019, Trebnje, 2 os. (Govedič & Bizjak Govedič 2019)

Progastorepi kljunač *Limosa lapponica*
– 6. 8. 2019, Brežiško jezero, 1 ad. ♀ (D. Klenovšek *pisno*)

Kamenjar *Arenaria interpres*
– 7. 5. 2019, Škocjanski zatok, 1 os. (Stanič 2019e)

Veliki prodnik *Calidris canutus*
– 2.–3. 9. 2019, Ormoško jezero, 1 juv. (M. Denac, M. Mlakar Medved, M. Gamser *pisno*)
– 3.–4. 9. 2019, Zabovci, Ptujsko jezero, 1 juv. (L. Božič, M. Gamser *pisno*)

Peščenec *Calidris alba*
– 25. 9. 2017, letališče Lesce, 1 juv. (B. Kozinc, B. Blažič, T. Pršin, A. Mulej, T. Pušenjak, J. Hribovšek *pisno*)

Srebrni galeb *Larus argentatus*
– 2. 1. 2019, zadrževalnik Medvedce, 1 ad. (D. Bordjan *pisno*)
– 8. 2. 2019, zadrževalnik Medvedce, 1 2cy (D. Bordjan *pisno*)

Rjavi galeb *Larus fuscus*
– 5. 4. 2018, morje pred Sečoveljskimi solinami, 1 ad. (D. Bosch, A. Božič *pisno*)

Kaspijska čigra *Hydroprogne caspia*
– 4. 4. 2018, Škocjanski zatok, 2 ad. (D. Bosch *pisno*)
– 6. 4. 2019, Škocjanski zatok, 1 ad. (D. Bosch *pisno*)
– 29. 4. 2019, Dolenje Jezero, Cerkniško jezero, 1 ad. (J. Habicht *pisno*)
– 21. 5. 2019, Škocjanski zatok, 1 ad. (D. Stanič *pisno*)

Kričava čigra *Thalasseus sandvicensis*
– 7.–8. 6. 2019, Ranca, Ptujsko jezero, 2 ad. (L. Božič *pisno*)
– 24. 6. 2019, Turnišče, Ptujsko jezero, 3 ad. (L. Božič *pisno*)

Mala čigra *Sternula albifrons*
– 2.–6. 7. 2019, Ormoško jezero, 1 ad. (D. Bordjan, L. Božič *pisno*)

Kravja čaplja *Bubulcus ibis*
– 5.–7. 4. 2019, zadrževalnik Medvedce, 4 os. (D. Bordjan, M. Gamser *pisno*)
– 11. 5. 2019, Dolenje jezero, Cerkniško jezero, 1 ad. (B. Blažič, T. Pršin *pisno*)
– 25. 8.–6. 9. 2019, Ormoško jezero in Lagune, 1 os. (J. Hanžel, M. Denac *pisno*)
– 8. 11. 2019, Predoslje, Kranj, 1 os. (T. Trebar *pisno*)

Beloglavi jastreb *Gyps fulvus*
– 23. 6. 2018, Brana, Kamniško-Savinjske Alpe, 21 os. (L., J. Poljanec, M. Denac, G. Golob *pisno*)

Kačar *Circaetus gallicus*
– 27. 4. 2018, mejni prehod Metlika, 1 os. (D. Bordjan *pisno*)
– 18. 5. 2019, Ormož, 1 os. (J. Novak *pisno*)

Črnočeli srakoper *Lanius minor*
– 19. 5. 2019, Sečoveljske soline, 1 ad. (A. Božič *pisno*)

Vrtni strnad *Emberiza hortulana*
– 20. 4. 2019, Dolgo Brdo pri Mlinšah, 1 ♂ (M. Sešlar *pisno*)

Potrjena opazovanja iz kategorije C / Accepted Category C records

Nilska gos *Alopochen aegyptiaca* (10, 16)
(11) 3. 12. 2019, Škocjanski zatok, 1 os. (D. Stanič, B. Rakar, B. Lipej *pisno*)

Mandarinka *Aix galericulata*
– 3. 5. 2019, Ptujsko jezero, 1 ♀ (J. Habicht *pisno*)
– 7. 12. 2019, Ptujsko jezero, 1 ♂ (M. Sešlar *pisno*)

Belolična trdorepka *Oxyura jamaicensis* (3, 3)
(4) 11. 12. 2019–6. 4. 2020, Ormoško jezero, 1 ♀ (L. Božič, J. Hanžel, D. Bombek *pisno*)

Rjavi jastreb *Aegypius monachus* (1, 1)
(2) 9. 6. 2019, Golac – Ajdovščina – Gorica, 1 2cy, podatek s telemetrijo (Vulture Conservation Fundation 2019)[3]
(3) 11. 10. 2019, Log pod Mangartom – Postojna – Zabiče, 1 2cy, podatek s telemetrijo (Vulture Conservation Fundation 2019)[3]

Potrjena opazovanja iz kategorije D / Accepted Category D records

Belolična gos (3, 3)
(4) 7. 6. 2019, Ptujsko jezero, 1 os. (T. Basle *pisno*)

Potrjena opazovanja iz kategorije E / Accepted Category E records

Virginijski kolin *Colinus virginianus* (10, 20)
(10) 28. 6. 2018, letališče Črnotiče, 1 os. (D. Bosch *pisno*)
(11) 21. 4. 2019, Petrinjski kras, 1 ♂ (D. Bordjan *pisno*)
(12) 10.–17. 5. 2019, med Črnotičami in Petrinjami, do 3 os. (D. Bosch, A. Božič *pisno*)
(13) 24. 5. 2019, letališče Črnotiče, 1 os. (D. Bosch *pisno*)
(14) 8. 6. 2019, Movraški Kuk, 2 os. (D. Bosch *pisno*)
(15) 5. 10. 2019, Petrinjski kras, 9 os. (D. Bordjan *pisno*)

Črni labod *Cygnus atratus* (5, 6)
(6) 10. 3. 2019, Ihan, ob Kamniški Bistrici, 2 os. (D. & L. Bordjan *pisno*)
(7) 2. 6. 2019, Žovneško jezero, 6 os. (J. Leskošek *pisno*)
(8) 15. 6.–4. 7. 2019, Rački ribniki, 4 os. (D. Bordjan, M. Gamser *pisno*)

Klavžar *Geronticus eremita* (18, 27)
(19) 4. 1. 2019, Podraga, 1 1cy ♀ (P. Krečič *pisno*)
(20) 17. 12. 2019, Ilirska Bistrica, 2 os. (A. Osterman *pisno*)

Orjaški jezerec *Haliaeetus pelagicus* (0, 0)
(1) 26. 1.–24. 2. 2019, Ormoško in Ptujsko jezero, 1 ad. (L. Božič, T. Basle, M. Zabavnik, P. Oberc *pisno*)

Zavrnjeni podatki / Rejected records

- Rjava komatna tekica *Glareola pratincola*, 25. 4. 2019, Cerkniško jezero, 1 os. Obrazložitev: Na podlagi priložene dokumentacije Komisija ni mogla izključiti možnosti, da je šlo za črno komatno tekico *G. nordmanni*, zato je opazovanje sprejela kot komatno tekico *Glareola sp.*
- Veliki klinkač *Clanga clanga*, 15. 10. 2019, Ormoške lagune, 1 ad. Obrazložitev: Na podlagi priložene dokumentacije Komisija ni mogla zatrdno sklepati, da je šlo res za velikega klinkača, zato je opazovanje sprejela kot klinkača *Clanga sp.*
- Veliki klinkač *Clanga clanga*, 8. 11. 2019, Petrinjski kras, 1 ad. Obrazložitev: Na podlagi priložene dokumentacije Komisija ni mogla zatrdno sklepati, da je šlo res za velikega klinkača, zato je opazovanje sprejela kot klinkača *Clanga sp.*
- Stepski lunj *Circus macrourus*, 14. 4. 2019, med Hrašami in Zapogami, 1 2cy ♂. Obrazložitev: Na podlagi priložene dokumentacije Komisija ni mogla izključiti možnosti, da je šlo za mladega samca pepelastega lunja *C. cyaneus*.
- Plevelna trstnica *Acrocephalus agricola*, 30. 9. 2019, Vrhnika, 1 1cy obr. Obrazložitev: Na podlagi priložene dokumentacije je Komisija ob posvetu s Stephenom Menziejem trstnico določila kot močvirsko *A. palustris*.

Zahvala

Člani Komisije se zahvaljujemo vsem opazovalcem, ki so nam posredovali svoje podatke ter soglašali z objavo fotografij v Dodatku 1, za mnenje o plevelni trstnici pa se najlepše zahvaljujemo tudi Stephenu Menzieju.

[3] Isti osebek, ki je med opazovanjema zapustil Slovenijo.

Summary

This report by the Slovenian Rarities Committee presents records of rare bird species in Slovenia in 2019, with some additional observations for previous years. The numbers in brackets refer to the number of records (first number) and number of individuals observed (second number) between 1 Jan 1950 and 31 Dec 2018. Since 1 Jan 2013, submission to the Committee has been required for 37 additional species, 21 of which are regional rarities. Records of this species are not numbered, since the Committee does not possess all the records from previous years. In 2019, no new species for Slovenia were observed, although some notable observations were collected, including second record of Pallas's Leaf Warbler *Phylloscopus proregulus*, fourth record of Red-breasted *Branta ruficollis* and Barnacle Goose *Branta leucopsis*, at least three singing individuals of Baillon's Crake *Porzana pusilla* (fourth record for Slovenia), sixth record of Lesser White-fronted Goose *Anser erythropus*, seventh record of Lapland Longspur *Calcarius lapponicus* and eighth record of Red Phalarope *Phalaropus fulicarius*. Additionally, Steller's Sea Eagle *Haliaeetus pelagicus* was a new species in Category E. The list of birds recorded in Slovenia (as of 31 Dec 2019) contains 390 species (376 in Category A, 5 in Category B, 9 exclusively in Category C; 4 species are both in Categories A and C). Category D contains 7 species, while Category E contains 41, two of which are classified into Subcategory E*. These two categories (D and E) are not part of the list.

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Sprejeto / Accepted: 17. 11. 2022

DODATEK 1 / APPENDIX 1

Dokumentarne fotografije opazovanj iz leta 2019, ki doslej še niso bile objavljene v slovenskih tiskanih virih z navedenim krajem, datumom in številom osebkov.

Documentary photos from 2019, so far not published in Slovenian printed sources with site name, date and number of individuals given.

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Slike 1–6 / Figures 1–6: (1) rdečevrata gos *Branta ruficollis*, 17. 11. 2019, zadrževalnik Medvedce (foto: A. Vrezec); (2) belolična gos *Branta leucopsis*, 16. 11. 2019, zadrževalnik Medvedce (foto: A. Vrezec); (3) labod pevec *Cygnus cygnus*, 30. 4. 2019, Hraše (foto: D. Bordjan); (4) zimska raca *Clangula hyemalis*, 24. 12. 2019, Rački ribniki (foto: M. Vogrin); (5) dular *Charadrius morinellus*, 1. 4. 2019, Ratitovec (foto: V. Kržišnik); (6) dular *Charadrius morinellus*, 25. 8. 2019, Slavnik (foto: B. Rakar)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 7–12 / Figures 7–12: (7) ploskokljunec *Calidris falcinellus*, 17. 5. 2019, zadrževalnik Medvedce (foto: M. Denac); (8) ploskokljunec *Calidris falcinellus*, 26. 8. 2019, Sečoveljske soline (foto: A. Božič); (9–10) čoketa *Gallinago media*, 24. 3. 2019, Koritno (foto: A. Mulej); (11) ozkokljuni liskonožec *Phalaropus lobatus*, 22. 4. 2019, Sečoveljske soline (foto: A. Božič); (12) ploskokljuni liskonožec *Phalaropus fulicarius*, 11. 4. 2019, Blejsko jezero (foto: B. Blažič)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 13–18 / Figures 13–18: (13) ploskokljuni liskonožec *Phalaropus fulicarius*, 11. 4. 2019, Blejsko jezero (foto: B. Blažič); (14) črnonoga čigra *Gelochelidon nilotica*, 25. 7. 2018, Škocjanski zatok (foto: A. Božič); (15) črnonoga čigra *Gelochelidon nilotica*, 31. 5. 2019, Brežiško jezero (foto: G. Bernard); (16) sredozemski viharnik *Puffinus yelkouan*, 30. 10. 2018, Piran (foto: A. Božič); (17) plevica *Plegadis falcinellus*, 23. 4. 2019, Škocjanski zatok (foto: D. Stanič); (18) plevica *Plegadis falcinellus*, 24. 7. 2019, Škocjanski zatok (foto: D. Stanič)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 19–24 / Figures 19–24: (19) plevica *Plegadis falcinellus*, 26. 7. 2019, Brežiško jezero (foto: D. Klenovšek); (20) kraljevi orel *Aquila heliaca*, 17. 2. 2019, Spodnja Hajdina (foto: S. Hren); (21) stepski lunj *Circus macrourus*, 14. 4. 2019, Podova (foto: D. Bordjan); (22) stepski lunj *Circus macrourus*, 27. 4. 2019, Zgornji Brnik (foto: J. Habicht); (23) močvirska uharica *Asio flammeus*, 5. 1. 2019, Ig (foto: M. Mlakar Medved); (24) močvirska uharica *Asio flammeus*, 20. 2. 2019, Ig (foto: M. Denac)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 25–30 / Figures 25–30: (25) močvirska uharica *Asio flammeus*, 2. 12. 2019, Poljče (foto: A. Mulej); (26) rjavoglavi srakoper *Lanius senator*, 19. 5. 2019, Sečoveljske soline (foto: A. Božič); (27) mušja listnica *Phylloscopus inornatus*, 9. 10. 2019, Cerovo (foto: J. Bricelj); (28) mušja listnica *Phylloscopus inornatus*, 19. 10. 2019, Vrhnika (foto: R. Tekavčič); (29) rožnati škorec, *Pastor roseus*, 23. 5. 2019, Bevke (foto: V. Antešič); (30) severni brezovček *Acanthis flammea*, 15. 11. 2017, Pragersko (foto: D. Bordjan)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 31–36 / Figures 31–36: (31) severni brezovček *Acanthis flammea*, 15. 11. 2017, Pragersko (foto: D. Bordjan); (32) konopeljščica *Carduelis citrinella*, 16. 6. 2019, Vogel (foto: M. Denac); (33) konopeljščica *Carduelis citrinella*, 14. 10. 2019, Karavanke (foto: D. Grohar); (34) snežni strnad *Plectrophenax nivalis*, 26. 12. 2019, Slavnik (foto: T. Puzić); (35) snežni strnad *Plectrophenax nivalis*, 1. 1. 2020, Slavnik (foto: M. Denac); (36) črnoglavi strnad *Emberiza melanocephala*, 18. 5. 2019, Dolenja blata, Cerkniško jezero (foto: A. Božič)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 37–42 / Figures 37–42: (37) črnoglavi strnad *Emberiza melanocephala*, 2. 6. 2019, Zgornja Slivnica (foto: N. Pišec); (38) beloliska *Melanitta fusca*, 20. 1. 2019, Brežiško jezero (foto: G. Bernard); (39) zlatouhi ponirek *Podiceps auritus*, 26. 1. 2019, Brežiško jezero (foto: M. Denac); (40) plamenec *Phoenicopterus roseus*, 17. 8. 2013, Strunjanske soline (foto: L. Kastelic); (41) plamenec *Phoenicopterus roseus*, 16. 7. 2015, Strunjanske soline (foto: L. Kastelic); (42) plamenec *Phoenicopterus roseus*, 10. 4. 2016, Strunjanske soline (foto: L. Kastelic)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 43–48 / Figures 43–48: (43) progastorepi kljunač *Limosa lapponica*, 6. 8. 2019, Brežiško jezero (foto: D. Klenovšek); (44) veliki prodnik *Calidris canutus*, 3. 9. 2019, Ormoško jezero (foto: M. Denac); (45) peščenec *Calidris alba*, 25. 9. 2017, letališče Lesce (foto: B. Kozinc); (46) rjavi galeb *Larus fuscus*, 5. 4. 2018, Sečoveljske soline (foto: A. Božič); (47) kaspijska čigra *Hydroprogne caspia*, 4. 4. 2018, Škocjanski zatok (foto: D. Bosch); (48) kaspijska čigra *Hydroprogne caspia*, 6. 4. 2019, Škocjanski zatok (foto: D. Bosch)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 49–54 / Figures 49–54: (49) kaspijska čigra *Hydroprogne caspia*, 29. 4. 2019, Dolenje jezero, Cerkniško jezero (foto: J. Habicht); (50) kaspijska čigra *Hydroprogne caspia*, 21. 5. 2019, Škocjanski zatok (foto: D. Stanič); (51) kričava čigra *Thalasseus sandvicensis*, 24. 6. 2019, Turnišče, Ptujsko jezero (foto: L. Božič); (52) kravja čaplja *Bubulcus ibis*, 5. 4. 2019, zadrževalnik Medvedce (foto: D. Bordjan); (53) kravja čaplja *Bubulcus ibis*, 11. 5. 2019, Dolenje jezero, Cerkniško jezero; (54) kravja čaplja *Bubulcus ibis*, 25. 8. 2019, Ormoško jezero (foto: J. Hanžel)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 55–60 / Figures 55–60: (55) beloglavi jastreb *Gyps fulvus*, 23. 6. 2018, Brana, Kamniško-Savinjske Alpe (foto: M. Denac); (56) kačar *Circaetus gallicus*, 8. 5. 2019, Ormož (foto: J. Novak); (57) črnočeli srakoper *Lanius minor*, 19. 5. 2019, Sečoveljske soline (foto: A. Božič); (58) vrtni strnad *Emberiza hortulana*, 20. 4. 2019, Dolgo Brdo pri Mlinšah (foto: M. Sešlar); (59) belolična trdorepka *Oxyura jamaicensis*, 6. 1. 2020, Ormoško jezero (foto: L. Božič); (60) belolična gos *Branta leucopsis*, 7. 6. 2019, Ptujsko jezero (foto: T. Basle)

Nadaljevanje dodatka 1 / Continuation of Appendix 1

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Slike 61–66 / Figures 61–66: (61) črni labod *Cygnus atratus*, 10. 3. 2019, Ihan (foto: D. Bordjan); (62) mandarinka *Aix galericulata*, 3. 5. 2019, Ptujsko jezero (foto: J. Habicht); (63) mandarinka *Aix galericulata*, 7. 12. 2019, Ptujsko jezero (foto: M. Sešlar); (64) klavžar *Geronticus eremita*, 4. 1. 2019, Podraga (foto: P. Krečič); (65) klavžar *Geronticus eremita*, 17. 12. 2019, Ilirska Bistrica (foto: A. Osterman); (66) orjaški jezerec *Haliaeetus pelagicus*, 6. 2. 2019, Ormoško jezero (foto: L. Božič)

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10.2478/acro-2020-0009

Regular field observations are worth it: a new species to the avifauna of Sombor (NW Serbia)

Redna terenska opazovanja so vredna truda: nove vrste za avifavno Somborja (SZ Srbija)

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Introduction

Numerous monographs, books and atlases published on the subject of urban birds suggest that attention given to bird observation and monitoring in human inhabited settlements is increasing worldwide (e.g. Wichmann *et al*. 2009, Woodward *et al*. 2017). The constant monitoring of birds helps us understanding how environmental changes (both, climate related and human induced), may affect their presence and absence, variation in species composition, species richness and abundance (Marzluff 2001, Murgui & Hedblom 2017). The book "Birds of Sombor" was published in 2010, in which the authors report on observations and presence of 152 bird species (59 breeding species, and 93 guest species), recorded between 1977 and 2010 (Mérő & Žuljević 2010). Later, till 2012, the authors recorded nine new species for the town of Sombor, resulting in 161 bird species in total for Sombor (Mérő & Žuljević 2012a, 2012b). The aim of the present short study is to present new recordings of bird species for Sombor and to emphasise the importance of regular bird observations in human settlements.

Material and methods

Sombor (N 45.79°, E 19.09°; NW Serbia) is a typical lowland town, with the temperate continental climate, average annual precipitation 590 mm and average annual temperature 10.7 °C (Tomić 1996). The town is covering an area of 3,000 ha, and has a population of 50,000 citizens. Numerous trees are planted along the avenues, in parks, in gardens and yards (Vojnović 2001). While the avenues contain mainly deciduous trees, the parks and house gardens contain mixed tree stands of coniferous and deciduous trees. The town's wetlands such as canals and ponds contain reed vegetation. For more detailed information on the study area see Mérő & Žuljević (2010, 2014).

The species new to the town of Sombor were recorded at the following locations: a part of the Mostonga watercourse in the western periphery of the town (N 45.750°, E 19.108°); the orchard and old abandoned brickyard in the town's northern periphery (N 45.786°, E 19.102°); the pond Bager (N 45.788°, E 19.098°); the part of the Veliki bački canal, Tromeđa (N 45.740°, E 19.112°); the Veliki bački canal, Švraka (N 45.761°, E 19.065°); the Omladinski Park (N 45.756°, E 19.100°); the northern detour of the town (N 45.792°, E 19.108°); and the vicinity of the battery factory (N 45.768°, E 19.152°).

The new species were registered during our regular observations and ringing tours in the town during all seasons between 2013 and 2020. Field work was usually applied during the morning hours, when we recorded every species observed and heard at the study locality. In the autumn, winter and spring, fieldwork was conducted with a weekly intensity. In August and September, this intensity was slightly decreased, with fieldworks carried out approximately every 10 days. Ringing was applied near feeders or in shrub, woodland and reed habitats when bird playback sounds were used as a lure. To identify the birds, their age and/or sexes, the guides by Svensson (1992), Sangster *et al*. (2002), Svensson *et al*. (2009), and Baker (2016) were used.

Results

In the period between 2013 and 2020 we recorded 21 new bird species for the town of Sombor (Table 1).

Table 1: New bird species recorded in the town of Sombor between 2013 and 2020.

Tabela 1: Nove vrste ptic, zabeležene v mestu Sombor med letoma 2013 in 2020.

Location / Lokaliteta	Species / Vrsta	Date of observation or marking / Datum opazovanja ali obročkanja	Comments /Komentarji
Mostonga water course in western periphery / Struga reke Mostonga na zahodnem obrobju mesta	Eurasian Wigeon *Anas penelope*	31. 12. 2015 and 1. 1. 2016	Nine individuals swimming. / Devet osebkov plava.
		7. 1. 2017	Twelve individuals swimming. / Dvanajst osebkov plava.
		9. 1. 2017	Two individuals swimming. / Dva osebka plavata.
	Northern Pintail *Anas acuta*	22. 1. 2017	One male and one female swimming. / Samec in samica plavata.
	Wood Sandpiper *Tringa glareola*	7. 7. 2018, 21. 7. 2018, 26. 7. 2018	One feeding individual at sections after vegetation removal. / En osebek med prehranjevanjem po košnji vegetacije.
Orchard and abandoned brickyard in northern periphery / Sadovnjak in opuščena opekarna na severnem obrobju mesta	Collared Flycatcher *Ficedula albicollis*	20. 4. 2013	One adult male on branch. / Odrasel osebek na veji.
		2. 8. 2014, 17. 8. 2014, 28. 8. 2014	Three juvenile individuals ringed. / Trije mladostni osebki obročkani.
		20. 8. 2015	One juvenile ringed. / En mladosten osebek obročkan.
	Eurasian Curlew *Numenius arquata*	27. 9. 2014	One individual in flight. / En osebek v letu.
	Thrush Nightingale *Luscinia luscinia*	18. 8. 2014	One individual ringed. / En osebek obročkan.
		13. 8. 2015, 14. 8. 2015	On each day one individual ringed. / Vsak dan obročkan en osebek.
		17. 8. 2017	One individual ringed. / En osebek obročkan.
	Grasshopper Warbler *Locustella naevia*	11. 5. 2016	One singing male in taller weeds. / Pojoč samec v visoki travi.
	Redshank *Tringa totanus*	9. 9. 2016	One individual in flight. / En osebek v letu.
	Redpoll *Carduelis flammea*	15. 11. 2017	One adult ringed. / En osebek obročkan.
	Lesser Redpoll *Carduelis cabaret*	19. 11. 2017	One juvenile ringed. / En mladosten osebek obročkan.
	Ruff *Calidris pugnax*	28. 7. 2018	One individual feeding in the shallow pool created by heavy summer shower. / En osebek se je prehranjeval v luži, ki je bila posledica močne poletne plohe.
	Eastern Imperial Eagle *Aquila heliaca*	17. 1. 2019	One young in flight. / En mladosten osebek v letu.

Continuation of Table 1 / Nadaljevanje tabele 1

Location / Lokaliteta	Species / Vrsta	Date of observation or marking / Datum opazovanja ali obročkanja	Comments /Komentarji
Bager pond / Ribnik Bager	Bluethroat *Luscinia svecica*	6. 4. 2013	One adult male ringed. / Odrasel samec obročkan.
	Long-legged Buzzard *Buteo rufinus*	16. 4. 2013	One individual sitting on the branch. / Odrasel osebek sedi na veji.
	Lesser Black-backed Gull *Larus fuscus*	21. 4. 2013, 29. 8. 2013	On each dates one individual in low flight. / Vsak dan en osebek v nizkem letu.
	Eurasian Curlew	29. 4. 2013	One individual in flight. / En osebek v letu.
	Eurasian Spoonbill *Platalea leucorodia*	22. 8. 2013	One individual in flight. / En osebek v letu.
	Thrush Nightingale	23. 8. 2013	One juvenile ringed. / En mladosten osebek obročkan.
	Great Snipe *Gallinago media*	11. 4. 2017	One individual feeding at the borderline of fresh mud and water in the previously burned reed-bed. / En osebek se prehranjuje na robu vode/blata požganega trstišča.
Veliki bački canal, Tromeđa / Veliki Bački kanal, Tromedja	Black Tern *Chlidonias niger*	6. 7. 2018, 21. 7. 2018	One individual in low flight, foraging route above water. / En osebek se prehranjuje nizko nad vodo.
Veliki bački canal, Švraka / Veliki Bački kanal, Švraka	Montagu's Harrier *Circus pygargus*	29. 4. 2014, 28. 4. 2018	On both dates one adult male hovering low above the ground. / Vsak dan en odrasel samec lebdi lizko nad tlemi.
	Pallid Harrier *Circus macrourus*	14. 4. 2020	One adult male hovering low above the ground. / Odrasel samed lebdi nizko nad tlemi.
Omladinski Park / Omladinski park	Collared Flycatcher	18. 4. 2015	One adult male. / Odrasel samec.
The northern detour of the town / Severna mestna obvoznica	Eurasian Curlew	7. 1. 2016	One individual in flight. / En osebek v letu.
The vicinity of the battery factory / Bližina tovarne baterij	European Roller *Coracias garrulus*	17. 5. 2020	One individual in the vicinity of nesting box. On July 14, 2020 we ringed three European Roller nestlings, that fledged successfully. / En osebek v bližini gnezdilnice. 14. julija 2020 smo obročkali 3 mladiče, ki so se uspešno speljali.

Discussion and conclusions

The 21 new species increased the avifauna of Sombor to 182 species. This is partly due to the regular fieldwork conducted by the authors, but also due to the changes in the urban environment that can influence species composition, i.e. resulting in the new species structure on the study sites. For example, from the mid2010s, the bank vegetation of the Mostonga watercourse was regularly removed during late summer, resulting in a wider shallow water surface and muddy banks attracting waterfowl and shorebirds during autumn and winter. The regular and long-term avian monitoring of habitats and landscapes can help understand the changes in the species composition, abundance and breeding of birds. Therefore, we encourage ornithologists and conservationists to record bird data of their local area as frequently as possible in order to broaden the knowledge of local and regional bird communities. For example, Mérő & Žuljević (2015/2016) reported on several new breeding species for Sombor (e.g. Sparrowhawk *Accipiter nisus*, Kestrel *Falco tinnunculus*) and, on the other hand, on the absence of breeding due to the changes in the environment (e.g. *Ciconia ciconia*, Mérő & Žuljević 2021). The changes in bird species and abundance in habitats and landscapes can serve as indicators, guiding us in applying appropriate habitat management measurements (Mérő *et al*. 2015). Adequate habitat management can help many species to persist in the varying human modified landscapes.

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Povzetek

Avtorji nadgrajujejo preteklo delo opisa avifavne Somborja (Mérő & Žuljević 2010, 2012a, 2012b). Med leti 2013 in 2020 so z rednim terenskimi opazovanji v okolici Somborja zabeležili 21 novih vrst. Skupno število vrst v avifavni Somborja do vključno leta 2020 se je tako povzpelo na 182.

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Iz ornitološke beležnice

From the ornithological notebook

Slovenija / Slovenia

Duplinska kozarka *Tadorna tadorna*

Shelduck – a flock of 65 individuals observed on 29 Nov 2020 at Medvedce reservoir (UTM WM53, NE Slovenia) and a flock of 77 observed on 2 Dec 2020 at HPP Brežice reservoir (UTM WL48, E Slovenia); new record number of individuals for both areas

Duplinske kozarke se med junijem in oktobrom v velikem številu zbirajo na golitvenih območjih na baltskih obalah (Carboneras & Kirwan 2020) in takrat so pri nas manj številčne (Škornik 2012). Po golitvi se vrnejo proti jugu (Sovinc 1994). V obdobju te vrnitve med oktobrom in decembrom so duplinske kozarke na več območjih v Sloveniji dosegle svoj maksimum. Tako je bilo 16. 11. 2019 opazovanih 97 na Cerkniškem jezeru in 78 osebkov na Ljubljanskem barju, 30. 11. 2019 29 na Planinskem polju, 23. 11. 2016 19 na Komarniku ter 28. 10. 2011 12 na Ledavskem jezeru (Atlas ptic 2020a). V letu 2020 sva avtorja zabeležila maksimum v številu duplinskih kozark na še dveh območjih. Na zadrževalniku Medvedce je bilo 29. 11. 2020 preštetih 65 duplinskih kozark, na akumulaciji HE Brežice pa 2. 12. 2020 77. Za razliko od prej omenjenih območij so bile duplinske kozarke v večjem številu opazovane spomladi na Velenjskih jezerih (42 osebkov) in na Obali, kjer je bilo doslej zabeleženih tudi največ osebkov (Atlas ptic 2020a).

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Kostanjevka *Aythya nyroca*

Ferruginous Duck – an adult male observed on 20 Dec 2020, at Tivoli Pond in Tivoli, Rožnik and Šiška Hill Landscape Park, Ljubljana (UTM VL69, C Slovenia); rare observation for the area

Dne 20. 12. 2020 sem med opazovanjem ptic v ljubljanskem Tivoliju na tamkajšnjem ribniku opazoval kostanjevko. Nekaj časa je plavala po vodni gladini in se hranila, nato pa se je začela čistiti. Poleg nje je bilo tam tudi okoli 10 zelenonogih tukalic *Gallinula chloropus* in več mlakaric *Anas platyrhynchos*. Kostanjevko lahko zamenjamo s samico čopaste črnice, vendar se od nje loči po belem podrepnem perju, ki ga lahko vidimo na sliki. Kljub rednim opazovanjem v jesensko-zimskem času 2020/21 v Tivoliju kostanjevke kasneje nisem več opazil. Vrsta je na rdečem seznamu ogroženih vrst IUCN uvrščena v kategorijo NT (near threatened), njene populacije pa upadajo (BirdLife International 2021).

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Slika 1 / Figure 1: Kostanjevka / Ferruginous Duck *Aythya nyroca*, Tivoli, Ljubljana, 20. 12. 2020 (foto: M. Prevec)

Strmoglavec *Morus bassanus*

Gannet – one 2cy and one adult individual observed passing from E to W at sea off Piran (UTM UL84, SW Slovenia) on 5 Aug 2020; only 10th observation for Slovenia, but one of six collected in 2020

Dne 5. avgusta 2020 sva se avtorja okrog 12.30 ure povzpela na obzidje Piranske cerkve, od koder sva imela namen nekaj časa opazovati ptice na morju. Dan je bil jasen, vendar precej vetroven, saj je zaradi prehoda vremenske motnje pihala burja s sunki do 60 km/h. Po približno 40 minutah opazovanja (ob 13.10) sva

zagledala dve večji ptici, ki sta se nad morjem bližali iz smeri Strunjana. Ena je bil mlad rumenonogi galeb *Larus michahellis*, druga pa je letela nekoliko drugače in tudi ostrejše in ožje peruti je imela. Naenkrat sta se obe ptici vratolomno spustili kakih 20 m proti morski gladini in tik nad morjem kakih 100 m stran od obzidja brez zamahov izjemno hitro obleteli Rt Madona. Med tem sva si nenavadno ptico ogledala tudi skozi teleskop in hitro ugotovila, da imava opravka z drugoletnim strmoglavcem. Opazovanje je trajalo le nekaj sekund. Slabo uro kasneje sva tik nad seboj (nad kopnim, ne morjem) spet zagledala strmoglavca, tokrat odraslega, ki je leženo zavil nad Piran in odletel v smeri Punta Salvatore. Zaradi tehničnih težav s fotoaparati odlične fotografske priložnosti žal nisva mogla izkoristiti. Po prvem opazovanju strmoglavca v Sloveniji, ki je bilo 18. 11. 2006 (Hanžel 2008), se jih je pri nas do danes zvrstilo že kar nekaj, vsega skupaj osem do konca leta 2018 (Denac et al. 2019). Leta 2019 strmoglavec v Sloveniji ni bil opazovan, leta 2020 pa je bilo zbranih največ opazovanj do sedaj v enem letu – kar šest (A. Božič *pisno*, D. Bordjan & J. Leskošek *pisno*, D. Bosch 2020, D. Stanič & S. Cernich *pisno*). Velika večina slovenskih opazovanj je iz poletnih mesecev, v glavnem junija ter avgusta, kar se tudi časovno ujema z običajnim pojavljanjem strmoglavca v sosednji Furlaniji – Julijski krajini (Hanžel 2008). Zanimivo je morda le dejstvo, da je bilo pri nas opaženih že kar nekaj odraslih osebkov, medtem ko naj bi bili ti v omenjeni pokrajini, kjer je bil strmoglavec sicer opažen bistveno večkrat, zelo redki. Opazovanje je kot 10. za Slovenijo potrdila Komisija za redkosti.

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Čapljica *Ixobrychus minutus*

Little Bittern – 6 adults and 7 juveniles recorded on 20 Aug 2020 at Rače fishponds (UTM WM54, NE Slovenia)

Pozno poletni čas je obdobje, ko se na račkih ribnikih pojavlja kar nekaj zanimivih vrst ptic. Med mnogimi obiski sem ugotovil, da so bile čapljice letos tam zares gnezditveno uspešne, saj ga ni bilo obiska ko jih ne bi opazil vsaj 5, po navadi je to bilo kar iz avta. Tako sem se dne 20. 8. 2020 v zgodnjih jutranjih urah zadrževal na račkih ribnikih. Bil je tipičen poletni dan in temu primerne temperature. Ob pregledu vseh ribnikov sem naštel kar 13 čapljic *Ixobrychus minutus,* od tega je bilo 7 mladičev. Veliko se jih je hranilo po vodnem orešku, zato jih ni bilo težko opaziti. Isti dan sem tam opazoval še žličarko *Platalea leucordia,* 7 kvakačev *Nycticorax nycticorax*, ribjega orla *Pandion haliaetus*, 6 malih tukalic *Zapornia parva*, 5 črnih škarnikov *Milvus migrans*, 10 pritlikavih kormoranov *Microcarbo pygmaeus* in rjavo čapljo *Ardea purpurea*.

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Sokol plenilec *Falco cherrug*

Saker Falcon – one bird observed on 10 Nov 2020 between the villages of Sestrže and Šikole (UTM WM53, NE Slovenia); a very rare visitor in Slovenia

Dne 10. 11. 2020 sem bil na svojem rednem obhodu Račkih ribnikov in Medvedc. Med vračanjem iz slednjih je cesto nenadoma preletel ogromen rjav sokol. V hipu mi je misli prešinil sokol plenilec, a prepričan seveda nisem bil. Ves vzhičen in živčen sem dokaj varno ustavil avto, pograbil daljnogled in hitro pregledal okoliške njive. Na srečo sem ga opazil že na prvi njivi pred seboj in presrečno ugotovil, da gre res za sokola plenilca *Falco cherrug*. Na hitro sem naredil par posnetkov, potem pa je spet izginil. Ker sem vedel, da za razgledišča prav rad uporablja daljnovode, sem hitro pregledal vse najbližje v okolici in ga na enem izmed njih ponovno opazil. Ogledoval sem si ga vsaj eno uro, dokler ni postalo pretemno. Med časom mojega opazovanja se je zabaval s škorci *Sturnus vulgaris* in dvema kanjama *Buteo buteo*, ampak vse skupaj bolj

Slika 2 / Figure 2: Sokol plenilec / Saker Falcon *Falco cherrug*, Šikole, 10. 11. 2020 (foto: J. Novak)

za hec. Zanimivo je bilo videti, kako ponižno so nanj reagirale veliko manj okretne kanje.

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Dular *Charadrius morinellus*

Dotterel – one individual recorded migrating over Mt. Rakova špica (2545 m. a. s. l.) in the Julian Alps (UTM VM04, NW Slovenia) on 8 Sep 2020; the highest observation in Slovenia so far and one of the very few above 2,000 m. a. s. l., although the species is known to migrate over high mountain ranges

Ko sva se 8. septembra 2020 avtorja prebudila v Bivaku IV na Rušju, naju je zunaj pričakalo neprijetno presenečenje v obliki visoke oblačnosti, ki je pokrila vrhove okrog bivaka. Kljub temu sva že zgodaj začela s hojo in kmalu dosegla Zadnji dolek, kjer sva se končno dvignila nad oblake – meja je bila tistega dne na ca. 2350 m n. v. Ob 7.45 sva tik pod vrhom Rakove špice (2545 m n. v.) zaslišala nenavadno oglašanje, v katerem sva hitro prepoznala enega izmed deževnikov. Hitro sva ga tudi zagledala, kako je krožil visoko nad nama ter se neprestano oglašal, nato pa odletel proti Razorju. Oba sva takoj pomislila na dularja, kar pa sva potrdila šele kako uro kasneje, ko sva na spletni strani xeno-canto.org preverila posnetke oglašanja. Začetek septembra je najboljši čas za opazovanje dularja na selitvi pri nas, večina jesenskih podatkov pa je iz hribovitih delov Slovenije, navadno večjih travnatih planot na izpostavljenih grebenih ali vrhovih. Spomladanska opazovanja so v večji meri iz nižin, najverjetneje zaradi neugodnih snežnih razmer ter porazdelitve opazovalcev. Čeprav je dular izrazito gorska (ter tundrska) ptica, pa je le malo slovenskih podatkov iz pravega visokogorja. Nad 2000 m. n. v. je bil dular opazovan le dvakrat na Peci (Jehart 2011, Jež 1988), na Velikem vrhu (Dleskovška planota) (Cerar 2007), Lanževici (Hanžel 2013), Vrhu nad Peski ter Stolu v Karavankah (Hanžel 2016), vseh Slovenskih opazovanj pa je do konca leta 2020 29. Najino opazovanje na lokaciji, ki je vsaj dobrih 300 m višja od vseh prej omenjenih, je zato še posebej zanimivo, saj dokumentira selitev dularja čez najvišje predele slovenskih Alp, kjer doslej še ni bil opazovan. Opazovanje je potrdila Nacionalna komisija za redkosti.

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Spremenljivi prodnik *Calidris alpina*

Dunlin – three individuals observed on two occasions near Ig and Škofljica, Ljubljansko barje (UTM VL69, C Slovenia) on 28 Sep and 16 Oct 2020; rare observations for the locality, suggesting that the species may occur there more often than previously thought during flood periods

Jeseni 2020 sem se na Ljubljanskem barju s spremenljivim prodnikom srečal dvakrat. Prvič sem 28. septembra opazoval mladosten osebek, ki je letal nad manjšo zaplato vode v bližini Iga (pri Železnem mostu) in se ves čas oglašal. Osebek se je na rob vode tudi usedel, vendar ga je skoraj nemudoma preplašil pes. Drugič sem na spremenljivega prodnika naletel v obdobju nekoliko močnejših poplav na istem območju, tokrat 16. oktobra. Najprej sem na njivah severovzhodno od Iga opazoval odrasel osebek, ki se je golil v zimsko perje. Ta se je najprej zadrževal v skupini togotnikov *Calidris pugnax*, nato pa je večji del dneva počival na poplavljenem travniku skupaj z večjo skupino kozic *Gallinago gallinago*. Kasneje istega dne sem na njivah jugozahodno od Škofljice v luži ponovno zagledal spremenljivega prodnika, ki pa je bil popolnoma pregoljen v zimsko perje in očitno drug osebek, kot sem ga opazoval pred tem. Ker ni bil posebej plašen, sem napravil tudi nekaj boljših fotografij (slika 3). Čeprav se spremenljivi prodnik v Sloveniji redno pojavlja na selitvi, pa je objavljenih opazovanj z Ljubljanskega barja zelo malo (Denac 2016, Tome *et al.* 2005). Opisani opazovanji ter nekateri podatki iz jeseni 2017 ter pomladi 2018 (M. Mlakar Medved *pisno*) nakazujejo,

Slika 3 / Figure 3: Spremenljivi prodnik / Dunlin *Calidris alpina*, Škofljica, Ljubljansko barje, 16. 10. 2020 (foto: M. Denac)

da se vrsta v obdobjih poplav na Barju morda pojavlja pogosteje, kot je znano sedaj, in je bila v preteklosti spregledana.

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Ribji galeb *Ichthyaetus ichthyaetus*

Pallas's Gull – one 1cy individual moulting into 1st winter plumage observed between 16 and 19 Sep 2020 at Lake Ormož (UTM WM93, NE Slovenia); only seventh record for Slovenia

Precej stabilno in vroče vreme je zaznamovalo obdobje med 12. in 18. septembrom 2020, ko je bilo Ormoško jezero izpraznjeno. Opazovanje ptic je zato postalo po deseti uri precej oteženo zaradi močnega migotanja vročega zraka nad blatnimi in vodnimi površinami, zato sem okrog devete ure zjutraj dne 16. septembra teleskop preusmeril iz oddaljenih plitvin s pobrežniki na manjši prodnat otok, ki se je ustvaril sredi glavne struge reke Drave. Na njem se je zadrževala jata sedmih spremenljivih prodnikov *Calidris alpina* in dveh komatnih deževnikov *Charadrius hiaticula* ter skupina večjih galebov, ki sem se jo namenil pregledati. Med 13 rumenonogimi galebi *Larus michahellis* je mojo pozornost pritegnil nekoliko večji galeb z zelo dolgim in močnim kljunom ter plosko glavo, ki je sedel približno sredi jate (slika 4). Galeb ni bil odrasel, nad in pod očesom pa je imel majhni, ledvičasti beli lisi, ki sta dajali njegovemu »obrazu« precej nenavaden videz, popolnoma drugačnega od rumenonogih galebov. Hitro sem ugotovil, da opazujem ribjega galeba in o tem sem obvestil Luko Božiča, Tilna Basleta in Dominika Bombeka, ki so bili istočasno v Ormoških lagunah in so si galeba čez nekaj minut tudi ogledali, kasneje tistega dne pa ga je opazoval tudi Alen Ploj. Skupaj smo tudi zaključili, da je opazovani galeb prvoletni, ki se goli iz juvenilnega v prvo zimsko perje. Galeb se je na jezeru zadrževal še vsaj do 20. septembra (R. Lobnik *pisno*). Opisano opazovanje, ki ga je potrdila Nacionalna Komisija za redkosti, je sedmo opazovanje ribjega galeba v Sloveniji in prvo po letu 2014. Vsa opazovanja so iz severovzhodne Slovenije, v večini primerov pa so se ribji galebi pri nas zadrževali več časa (tudi več mesecev) in se skupaj z drugimi galebi klatili naokrog ter bili posledično opazovani na več lokacijah (Božič 1997, Hanžel 2013, 2015, Štumberger 2000).

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Kukavica *Cuculus canorus* in hribski škrjanec *Lullula arborea*

Cuckoo & Woodlark – an adult Woodlark feeding a young Cuckoo observed on 20 Jun 2020 on the Karst plateau near Črnotiče (UTM VL14, SE Slovenia)

Kraška planota nad Črnotičami, med Črnim Kalom in Podgorjem, je imenitna lokacija za opazovanje ptic. Med sprehodom po travniku sva z Maksom opazila hribskega škrjanca s hrano v kljunu. Zanimalo naju je, kje bi ptica lahko imela gnezdo, zato sva ga začela podrobneje opazovati ter spremljati njegova premikanja.

Slika 4 / Figure 4: Ribji galeb / Pallas's Gull *Ichthyaetus ichthyaetus*, Ormoško jezero, 16. 9. 2020 (foto: M. Denac)

Slika 5 / Figure 5: Hribski škrjanec / Woodlark *Lullula arborea,* Črnotiče, 20. 6. 2020 (foto: M. Sešlar)

Slika 6 / Figure 6: Mlada kukavica / young Cuckoo *Cuculus canorus,* Černotiče, 20. 6. 2020 (foto: M. Sešlar)

Na najino veliko presenečenje sva opazila, da ptica sledi kukavičjemu mladiču. Mladič je bil že dovolj velik, da je lahko letel kratke razdalje med drevesi in grmovjem. Odrasel hribski škrjanec mu je zvesto sledil ter mu prinašal hrano. Prav tako je mladič zelo intenzivno prosil za hrano s klicanjem. Žal nama fotografije hranjenja ni uspelo narediti, saj se je mladič kukavice spretno skrival v notranjosti dreves in grmov.

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Veliki skovik *Otus scops*

Scops Owl – one individual, presumably a female, aggressively attacked Edible Dormouse *Glis glis* close to Scops Owl nest at Studenčice (UTM VM33, NW Slovenia); Dormouse was successfully driven away from the Scops Owl nest

Strategija agresivne starševske obrambe gnezd pred plenilci je znana pri nekaterih vrstah iz družine pravih sov Strigidae, kot so kozača *Strix uralensis* (Kontiainen *et al.* 2009), lesna sova *Strix aluco* (Wallin 1986) in mala uharica *Asio otus* (Galleoti *et al.* 2000). Pri velikem skoviku *Otus scops* obramba gnezd pred plenilci ni bila zabeležena. Konec julija 2019 sem v nočnem času v bližini vasi Studenčice opazoval gnezdilnico, v kateri je gnezdil veliki skovik. Na drevesu, na katerem se je bila gnezdilnica z mladiči, sem opazil polha *Glis glis.* Ko se je ta začel približevati gnezdilnici, ga je veliki skovik agresivno naskočil. Napadal ga je s ponavljajočimi udarci in ga hitro uspešno pregnal z drevesa. Pri tem se je oglašal z značilnim zvokom tleskanja s kljunom, ki ga poznamo pri agresivnem vedenju nekaterih samic sov (Heinrich 1993, lastni podatki). Znano je, da polh lahko upleni jajca ali mladiče ptic (Adamík & Král 2008, Juškaitis 2006). Za gnezdilnicami in naravnimi dupli pa med polhi in pticami prihaja tudi do kompeticije za gnezdišča (Gatter & Schütt 1999).

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Planinski hudournik *Tachymarptis melba*

Alpine Swift – territorial behaviour of a small flock observed on 9 Sep 2020 in front of a cliff of Velika Martuljška Ponca, Julian Alps (UTM VM04, NW Slovenia); possible new breeding site for the species

Dne 9. 9. 2020 sem med vzponom proti zatrepu Velike Dnine v Julijskih Alpah opazil manjšo jato planinskih hudournikov. V krogih so neutrudno preletavali območje in se vselej, ko so bili najbližje specifični skalni steni (gre za previsno rumeno/rdečo steno z JZ ekspozicijo v Veliki Martuljški Ponci), intenzivno oglašali. Takemu vedenju sem bil priča več ur. To vedenje sem doslej opazoval npr. na znanih kolonijah na Kraškem robu, zato opisano opazovanje kljub poznemu datumu povezujem z zelo verjetnim gnezdenjem na tej lokaliteti. Domnevnost trditve je podkrepilo mnenje strokovnjaka za to vrsto Cristopha Meierja, ki pravi, da ima planinski hudournik širok časovni razpon gnezdenja, ki ga prilagaja ugodnemu stanju v naravi. Ker gre v tem primeru hkrati za visokogorsko območje in za planinskega hudournika eno višjih geografskih širin njegove razširjenosti, je utemeljeno pričakovati kasnejši začetek gnezdenja. Nadalje, ko mladiči zletijo iz gnezda, je znano, da se vračajo na prenočevanje v ali v neposredno bližino kolonije (Meier *et al*. 2020, C. Meier *osebno*). Morebitnih pristankov v steno nisem mogel potrditi, delno zaradi oddaljenosti in pomanjkanja optične opreme, predvsem pa zaradi težav pri iskanju in sledenju silhuet na modrem nebu in slušni deorientaciji, ki jo povzročajo odmevi v Veliki Dnini. Na podlagi okoliščin opazovanja pa verjamem, da so zjutraj hudourniki zleteli iz skalovja, ki obdaja Veliko Dnino. Da nekje na tem območju obstaja kolonija, sem sumil že prej, zaradi stalnih opazovanj vrste z okoliških vrhov. Razlika je ta, da jih poprej nikdar nisem slišal.

Preboj pri iskanju omenjene kolonije se je posrečil Luki Božiču leta 2016, ko je med vzponom na sosednjo Malo Martuljško Ponco zaznal značilno intenzivno oglašanje v smeri Velike Dnine, a hudournikov zaradi skalnate pregrade ni videl (L. Božič *osebno*). Tudi 16. 8. 2020 je iz doline Krnice opazoval vsaj 16 osebkov, ki so preletavali vrhove nad Veliko Dnino (L. Božič *osebno*). Glede na število hkrati opazovanih osebkov dne 9. 9. 2020 menim, da kolonija šteje 10–15 parov. Morda gre za šele 3. znano gnezdišče v naših Julijskih Alpah, verjetno tudi za največje, zagotovo pa za najvišje ležeče (ca. 2350 m n. v.). Pred tem je bila najvišja kolonija na 1950 m n. v. pod Mangrtom (Denac 2019), druga znana pa v steni nasproti izvira reke Soče.

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Planinski hudournik *Tacymarptis melba*

Alpine Swift – an unusually large flock of 117 individuals passing through Soča Valley (UTM UM93, NW Slovenia) in Julian Alps on 4 Aug 2020 during cold front passage, indicating weather movements for this species

Na območju Julijskih Alp je bilo potrjeno gnezdenje 11 parov planinskih hudournikov v dveh manjših kolonijah na območju Mangrta in Trente (Denac 2019). Dne 4. 8. 2020 sem v popoldanskem času južno od vasi Soča opazoval jato 117 planinskih hudournikov. Jata je priletela s severovzhoda, nekaj časa nizko letala nad sotočjem reke Soče in potoka Lepenjica ter se kasneje dvignila višje in odletela po dolini Soče proti jugu. Pojavljanje večjih jat iz obdobja konca avgusta je znano iz območja Dalmacije (Denac 2004), vendar pa je številčnost opazovane jate neobičajna za gnezditveni čas na območju Julijskih Alp. Osebki iz alpskih populacij v Švici gnezdijo med majem in avgustom in se selijo med septembrom in oktobrom (Arn 1960), zato je majhna verjetnost, da gre pri tem opazovanju za zgodnjo jesensko selitev. Za hudournika *Apus apus* je znano, da v obdobju deževnega vremena nekateri osebki zapustijo gnezdišča in se začasno pomaknejo nekaj sto kilometrov na območja s stabilnejšim vremenom (Svärdson 1951, Offringa 1996). V obdobju omenjenega opazovanja planinskih hudournikov v dolini reke Soče se je s severa pomikala hladna fronta (ARSO 2020), kar bi lahko nakazovalo, da planinski hudournik uporablja podobno strategijo spopadanja z neugodnimi razmerami kot hudournik.

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Čebelar *Merops apiaster*

Bee-eater – two pairs breeding in an olive grove in Aug 2020 at Strunjan Landscape Park (UTM UL93, SW Slovenia); first confirmed breeding of the species in the area

Dne 3. 6. 2020 je bil na območju Strunjana opažen par čebelarjev med gradnjo gnezdilnega rova. Osebka sta si za gnezdišče izbrala manjšo flišno steno, visoko le 1,5 metra, tik ob lokalni cesti. Čeprav je bilo gnezdišče po enem tednu opuščeno, so se trije odrasli osebki še naprej zadrževali v širši okolici rova. Dne 9. 8. 2020 sem pri opazovanju enega osebka, ki je imel hrano v kljunu, odkrila novo gnezdišče z več rovi, in sicer v flišnih bregovih sosednjega oljčnika, le 130 m stran od lokacije prvega opazovanja. Dva para sta si tokrat gnezdi izkopala v strmih bregovih oljčnika, na višini enega metra od tal, kjer so bila tla večinoma gola oziroma le deloma porasla s travo. Poleg dveh aktivnih rovov so bili v okolici tudi številni neaktivni rovi, ki nakazujejo na možno gnezditev vrste tudi v preteklih letih. Ob pogovoru z lastniki oljčnika sem ugotovila, da čebelarje na svoji parceli opazujejo že nekaj let. Na omenjenem gnezdišču sem med 9. 8. 2020 in 14. 8. 2020 opazovala do tri odrasle osebke; od teh sta dva nosila hrano v gnezdi, eden pa je ves čas »stražil« na najvišji cipresi v bližini gnezdišča. Dne 15. 8.

Slika 7 / Figure 7: Čebelar / Bee-eater *Merops apiaster*, Strunjan, 9. 8. 2020 (foto: S. Cernich)

2020 sem opazila šest speljanih mladičev, ki so posedali na žici, oddaljeni približno 100 m zračne linije od gnezdišča. Starši so mladičem še prinašali hrano. Nekaj dni zatem so čebelarji zapustili gnezdišče, saj ob zadnjem pregledu, dne 18. 8. 2020, nisem opazila nobenega osebka več. Čebelar je na Primorskem redka gnezdilka z le nekaj znanimi lokalitetami, med katerimi sta Sečoveljske soline in dolina reke Dragonje (Hudoklin 2019). Najbližje Strunjanu gnezdi ravno v Sečoveljskih solinah, kjer se je po prvem gnezdenju leta 2005 število parov v letu 2020 povzpelo na 10 (Škornik 2012, KPSS 2020).

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Smrdokavra *Upoppa epops*

Hoopoe – one individual observed on 1 May 2019 at Planina Ovčarija (1,660 m.a.s.l.) (UTM VM02, NW Slovenia), sitting above twenty lekking male Black Grouses *Lyrurus tetrix*

Prvega maja je bilo, ko smo z bratom Jonom, sestrico Emo in očetom Andražem stegovali vratove izza pastirskega stana na Planini Ovčariji, opazovaje paritveni ples dvajsetih samcev ruševca *(Lyrurus tetrix).* Neustavljive svate smo poslušali že nekatero uro in jutro se je počasi prevešalo v dopoldan, ko prileti in na vrhu bližnjega macesna pristane smrdokavra *(Upuppa epops).* Nekajkrat se spreleti nad rastiščem, nato pa kaj kmalu zapusti zasneženo macesnovje in odleti proti Bohinju. Srečanja smo se silno razveselili, predvsem pa podatek priča o neverjetnih selitvenih poteh in postankih ptic. Smrdokavra je pri nas redka gnezdilka v nižinski kulturni krajini in redna preletnica, v gorah pa se zavoljo negostoljubnosti habitata praviloma ne ustavlja. Izbrskal sem še en višinski podatek iz tujine, in sicer s prelaza Batteria Alta med Italijo in Francijo 19. 8. 2020, kjer je gospod Bianchi opazoval smrdokavro na nadmorski višini 2180m. (M. Bianchi pisno).

Slika 8 / Figure 8: Smrdokavra / Hoopoe *Upuppa epops,* Planina Ovčarija, 1. 5. 2019 (foto: E. Poljanec)

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Belohrbti detel *Dendrocopos leucotos*

White-backed Woodpecker - one male observed feeding on a Black Locust *Robinia pseudoacacia* near Zabiče (UTM VL54, Southern Slovenia) on 23 Jul 2020; with 490 m a.s.l., this is one of the lowest records for the species in Slovenia

Dne 23. 7. 2020 sem na bregu Kolaškega potoka pri Zabičah pod snežniško planoto na nadmorski višini 490 m naletel na samca belohrbtega detla podvrste *D. leucotos lilfordi*, ki se je prehranjeval na robiniji *Robinia pseudoacacia*. Gre za relativno nizko najdbo, saj se 98 % populacije v Sloveniji zadržuje nad 600 m n. v. (Denac & Mihelič 2019). Da nadmorska višina sama po sebi verjetno ni omejujoč dejavnik, ampak je na večjih višinah več ustreznega habitata z dovolj odmrlimi listavci (Denac & Mihelič 2015), nakazujejo tudi tuje najdbe iz nižinskih pragozdov (npr. Wesołowski 1995). Nova najdba se od tipične razširjenosti vrste, ki je pri nas vezana predvsem na zrele dinarske gozdove (Denac & Mihelič 2019), razlikuje tudi po habitatu, saj je bila ptica opažena v precej termofilnem, pretežno listnatem gozdu. Gre sicer za gospodarske gozdove, kjer pa sta v strmih grapah sečnja in spravilo lesa otežena, tako da ostaja kar nekaj odmrle biomase, ki je ključna habitatna zahteva te vrste (Denac & Mihelič 2015). Nenavadno je bilo tudi prehranjevanje na tujerodni robiniji, ki je znana po trdem lesu in zato ni tipična drevesna vrsta, na kateri bi se belohrbti detel prehranjeval (T. Mihelič, *pisno*). Čeprav je bil najden precej nižje od drugih najdb v okolici, domnevam, da opaženi detel pripada robu snežniške populacije, ki tvori jedro razširjenosti vrste v Sloveniji (Denac & Mihelič 2019). Glede na datum opažanja je možno, da gre za pognezditveno disperzijo (K. Denac, *pisno*), tako da bi bilo smiselno na območju opraviti popis z izzivanjem s posnetkom v času gnezditve.

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Slegur *Monticola saxatilis*

Rock Thrush – singing male and begging young observed on 4 Sep 2020 below Leskovški vrh, east of Mt. Krn (UTM UM92, NW Slovenia)

Slegur je gnezdilka zahodnega dela države (Figelj & Figelj 2019) in selivka (Collar & Bonan 2020). Najpogosteje gnezdi na južno izpostavljenih, travnatih pobočjih med 600 in 1800 m nad morjem (Figelj & Figelj 2019). Avtorja sva na slegurja naletela pod Leskovškim vrhom vzhodno od Krna, kjer je verjetno tudi gnezdil. Vrsta je sicer pogosta gnezdilka travnatih pobočij v okolici Krna, vendar zaradi poznega datuma (4. 9. 2020) opazovanja nisva pričakovala. Vrsta se razkropi iz gnezditvenih območij že avgusta in se odseli do konca septembra (Collar & Bonan 2020). Kljub temu da se vrsta septembra še pojavlja v Evropi, pa so bila v tem času pred omenjenim opazovanjem le tri opazovanja te vrste v Sloveniji. Vsa tri so iz prve polovice septembra: 3. 9. 2016 s Kobariškega stola, 7. 9. 2013 iz okolice Krna ter 13. 9. 2017 z Nanosa (Atlas ptic 2020b). Opazovanje je zanimivo tudi zaradi gnezditvenega vedenja. Samec je večkrat zapel, vsaj en rjavo obarvani osebek pa je prosil za hrano.

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Bičja trstnica *Acrocephalus schoenobaenus*

Sedge Warbler – one individual found dead on top of Mt. Jalovec (2,645 m. a. s. l.) in the Julian Alps (UTM UM95, NW Slovenia) on 9 Sep 2020; interesting finding in a very unusual habitat

9. september 2020; s prijateljema Jernejem Rotarjem in Lucijo Dolinšek smo jo tega dne mahnili proti vrhu Jalovca. V opoldanski pripeki zgodnjega kimavca smo premagovali še zadnje metre vršnega grebena, ko je Jernej med skalovjem ugledal kadaver majhne ptice. Krepko sem izbuljil oči od začudenja, ko sem prihitel bliže in v ptici prepoznal bičjo trstnico *Acrocephalus schoenobaenus*, sicer prebivalko nižinske, obvodne krajine. Že sam pogled na dva tako nasprotna si svetova je bil zanimiv, hkrati pa nam najdba ponuja redek vpogled v vsakoletno prečkanje naravne pregrade na ptičji selitveni poti – prečkanje Alp. Srečanja s selečimi se pevkami so v gorah namreč redka, saj se tam zavoljo negostoljubnosti habitata običajno ne ustavljajo. V pristanek jih tu in tam prisilijo neugodne vremenske razmere, ki so bile verjetno tudi vzrok smrti dotične trstnice. Poleg omenjenega obstaja le še en meni znani podatek o srečanju z bičjo trstnico na selitvi čez slovenske gore, in sicer avgusta 2020 na sedlu Suha v Karavankah, ko je bil en osebek ujet in obročkan (Mulej *pisno*). Zanimivi so podatki s švicarskega sedla Col de Bretolet (1920 m n. v.), kjer obročkovalci redno spremljajo selitev ptic. Bičja trstnica si sodeč po rezultatih poročila za leto 2013 redko izbere direktno pot čez Alpe; na jesenski selitvi v tem letu je bil denimo obročkan en sam osebek (Thoma & Althaus 2013).

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Slika 9 / Figure 9: Bičja trstnica / Sedge Warbler *Acrocephalus schoenobaenus,* Jalovec, 9. 9. 2020 (foto: L.Poljanec)

Svilnica *Cettia cetti*

Cetti's Warbler – 1 individual observed and its call recorded on 23 Nov 2020 near Dole pri Lavrici (UTM VL69, C Slovenia); rare and late visitor in the area

Od druge polovice oktobra dalje se lahko na Ljubljanskem barju pretežni del dneva zadržuje megla, nizke jutranje temperature pa tako onemogočajo normalen lov in obročkanje ptic. 23. novembra 2020 je bilo zjutraj na Lavrici (Ljubljansko barje) kar hladno (- 3 °C), in ko sem se peljal iz Hauptmanc proti Grmezu, mi je termometer v avtu pokazal zunanjo temperaturo – 5 °C. Ta dan je vladala toplotna inverzija, saj je bilo v gorah kar nekaj stopinj nad ničlo. Moj glavni namen v tem dnevu je bil sprehod po Barju, ob tem pa bi poslušal ali opazoval, če se

tam še vedno zadržujejo alpski brezovčki *Carduelis cabaret* na brezah, saj sem jih pred dnevi na tem mestu obročkal kar deset. Ker teh brezovčkov ni bilo, sem se ob 11h, ko se je že malo ogrelo, odpeljal v Dole pri Lavrici, kjer imam svoje lovišče v trstičevju. Ko sem stopil iz avtomobila, se je v vodnem kanalu pred menoj oglasila svilnica *Cettia cetti*. Kar verjeti nisem mogel, da se mi tako rekoč pred nosom ponuja vrsta, ki je za ta čas na Barju res neobičajna. Ker dobro poznam njeno petje in tudi oglašanje, mi je uspelo posneti njeno značilno oglašanje na diktafon Olympus WS-852 (Šere 2020). V tistem trenutku se mi je svilnica tudi pokazala, saj je njen let nad vodo oviral betonski most. Sam sem nato v trstičevju postavil dve mreži z namenom, da jo ujamem. Ko sem pri mreži predvajal še petje svilnice, je takoj priletela tik nad tlemi in se zaletela v mrežo, a se ni ujela. Predvajal sem drug posnetek svilnice in vnovič se je zaletela v mrežo in se na moje veliko razočaranje spet ni ujela. Nato sem posnetek prestavil na drugo mrežo, vendar neuspešno. Odločil sem se, da bom poskusil še zvečer, vendar neuspešno. Nadaljeval sem naslednje jutro, to je 24. novembra, vendar svilnice nisem ne opazil ne slišal. Verjetno je ponoči odletela kam drugam, vendar brez mojega obročka, ki bi ob morebitni kasnejši najdbi imel »kaj za povedati«. Svilnica je na Ljubljanskem barju v jesenskem času zelo redka vrsta, doslej sem jo ujel samo nekajkrat in to sredi septembra ali oktobra.

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Trstni strnad *Emberiza schoeniclus*

Common Reed Bunting – an adult male caught on 11 Nov 2019 at Lake Pernica (UTM WM 56, NE Slovenia); bill depth and pale plumage suggest subspecies *E. s. intermedia* or *E. s. ukrainae*

Dne 11. 11. 2019 sem v trstišču Perniškega jezera obročkal trstne strnade. Okoli poldneva se je v mrežo ujel osebek z močnim in dokaj ukrivljenim kljunom, ki je nekoliko spominjal na kljun kalina *Pyrrhula pyrrhula*. Tudi perje je imel bolj svetlo in bledo od drugih 82 tega dne ujetih strnadov (sliki 10 in 11). Vpogled v priročnik za določanje ptic v roki (DEMONGIN 2016) je pokazal, da strnad pripada debelokljuni rasi skupine »intermediate« in, kot navaja omenjeni priročnik, verjetni podvrsti *intermedia* ali pa glede na svetlo perje ssp. *ukrainae*, ki je gnezditveno razširjena na jugu Belorusije, severu Ukrajine in jugu evropske Rusije. Zanj sta značilna močan in ukrivljen kljun ter precej svetlejše, rjavo-rumeno (buff) perje (DEMONGIN 2016). Biometrični podatki: odrasel samec, dolžina peruti 82 mm, višina kljuna 7 mm in teža 22,9 gramov. Številka obročka AX17706; ptica je bila fotografirana in izpuščena. Ker gre določevalno za dokaj zahtevno podvrsto, sem za nasvet in mnenje zaprosil kolega Jurija Hanžla, ki je nato povprašal še Stephena Menzieja, vodjo RC Falsterbo in člana angleške komisije za redkosti ter dobrega poznavalca trstnih strnadov. Menzie je mnenja, da gre verjetno za ssp. *intermedia*. Dodaja še, da je pri ssp. *ukrainae* situacija težavna in podvrsta nima značilnega videza in sta si obe dokaj podobni. Nekateri vodilni svetovni ornitologi bi podvrsti *ukrainae* in *stresemanni*, ki poseljujeta vzhodno Evropo, združili skupaj s podvrsto *intermedia* in se tako izognili vsaj eni od trenutnih zmešnjav in mnogim nejasnostim okoli podvrst, ki veljajo pri trstnih strnadih.

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Sliki 10 in 11 / Figures 10 & 11: Trstni strnad / Common Reed Bunting *Emberiza schoeniclus*, Pernica, 11. 11. 2019 (foto: F. Bračko)

SRBIJA / SERBIA

Lesser kestrel *Falco naumanni*

Južna postovka – prelet osebka 15. maja 2019 blizu kraja Brza Palanka ob reki Donavi (UTM FQ 12, V Srbija); prvo opazovanje vrste v vzhodni Srbiji po več kot 70 letih

During a walk along the Danube near Brza Palanka on 15 May 2019, we spotted a single Lesser Kestrel *Falco naumanni* (Figure 12) flying over us and continuing its course to the west. In the next 10 minutes we observed, on the same spot, an adult male Levant Sparrowhawk *Accipiter brevipes*, a Common Buzzard *Buteo buteo*, a Great Egret *Ardea alba* and a territorial pair of Eurasian Hobby *Falco subbuteo*. The record of *Falco naumanni* on the Danube in eastern Serbia is very significant, considering that the last data for eastern Serbia is over 70 years old (Matvejev 1950). In Serbia, it is considered an occasional breeder, with an estimated breeding population 0–2 pairs (Puzović *et al*. 2015), but without evidence of nesting in recent decades. Based on the date of our finding, it can be seen as an indication of possible breeding in this area, but unfortunately it cannot be confirmed without additional research in the breeding period.

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Slika 12 / Figure 12: Južna postovka / Lesser Kestrel *Falco naumanni,* Brza Palanka, 15. 5. 2019 (foto: S. Marković)

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Vsebina / Contents

letnik 41 | številka 186/187 | strani 69–156
volume 41 | number 186/187 | pages 69–156