sciendo

Raptor Journal 2021, 15: 57–74. DOI: 10.2478/srj-2021-0003
© Raptor Protection of Slovakia (RPS)

Overview of raptor and owl ringing in Slovakia in 2020

Prehľad krúžkovania dravcov a sov na Slovensku v roku 2020

Roman SLOBODNÍK & Michal JENČO

Abstract: In 2020, 1296 raptors and owls (23 species) were ringed in Slovakia. The most abundant was the common kestrel (719 individuals), then the western marsh harrier (126) and saker falcon (92). The proportion of nestlings among all the ringed individuals was 76.7%. In the given period, 145 recoveries of raptors and owls (15 species) were recorded in the Bird Ringing Centre database. This number included 77 recoveries of colour-marked individuals recovered in our territory. There were 43 recoveries of birds ringed in Slovakia and resighted abroad. The last 25 recoveries were of individuals ringed abroad and recovered in Slovakia. In summary, most of the recoveries (of all types) were of red-footed falcon (69 recoveries), then common kestrel (17) and eastern imperial eagle (15). Most of the recovery circumstances were ring reading (almost 76% in total), findings of bird cadavers (6%) and recaptures (5%). Electrocutions and predations by other animals (3% each) were frequent causes of their deaths.

Abstrakt: V roku 2020 bolo na Slovensku okrúžkovaných 1296 dravcov a sov (23 druhov). Najpočetnejšie boli krúžkované sokol myšiar – 719 jedincov, kaňa močiana – 126 a sokol rároh – 92. Podiel mláďat zo všetkých okrúžkovaných jedincov predstavuje 76,7 %. V sledovanom období bolo v databáze Krúžkovacej centrály zaevidovaných 145 spätných hlásení dravcov a sov (15 druhov). 77 spätných hlásení sa týkalo jedinca označeného a zároveň aj nájdeného na našom území. 43 hlásení predstavovali vtáky označené na Slovensku a zaznamenané v zahraničí. 25 hlásení reprezentujú jedince označené v zahraničí a nájdené na Slovensku. V sumárnom počte bolo najviac hlásení (všetky typy) získaných u sokola červenonohého (69 hlásení), nasleduje sokol myšiar (17) a orol kráľovský (15). Väčšina okolností týchto hlásení tvoria odčítania krúžkov (spoločne takmer 76 %), nasledujú nálezy uhynutých jedincov (6 %) a kontrolné odchyty (5 %). Početnou okolnosťou sú aj zásahy elektrikou a ulovenia inými živočíchmi (po 3 %).

Key words: birds of prey, owls, ringing data, recoveries, Slovakia

Roman Slobodník, Raptor Protection of Slovakia, Trhová 54, 841 01 Bratislava, Slovakia. E-mail: slobodnik@dravce.sk.
Michal Jenčo, Slovak Ornithological Society/BirdLife Slovakia, Bird Ringing Centre, Námestie osloboditeľov 1, 071 01 Michalovce, Slovakia.

Acknowledgements: We are thankful to those who met their targets and sent the results from their ringing activity processed in the RINGS programme, by which they made the composing of this report, among other things, possible. We are grateful to many Slovak and foreign finders and observers who sent the data of recoveries, and to all the foreign ringing centres for their cooperation. We express our thanks to the colour-ringing programme coordinators for their help and coordination.

Introduction

The report on the results of raptor and owl ringing has been regularly published in the Raptor Journal in the past (Slobodník & Jenčo 2020 being the latest). Similarly to the last summary report, this report brings the same results from the viewpoint of the evaluation of collected data according to the annual overview of the Czech Bird Ringing Centre in Prague (Cepák & Klvaňa 2021 being the latest). In that period, ringing was perfomed on the basis of the decisions of the Ministry of Environment of the Slovak Republic permitting exemptions from the requirements of Act No. 543/2002 Coll. on nature and landscape protection. One exemption (Decision No. 269/132/05-5.1) authorises ringing of birds, including raptors and owls. The special exemption (Decision No. 664/297/05-5.1 pil) enables members of the Raptor Protection of Slovakia to make a research on raptors and owls and to ring them. Since 2019, a new exemption (Decision No. 3320/2019-6.3 of 8 April 2019) has been in force.

Results and discussion

In 2020, 1296 raptors and owls were ringed in Slovakia, which represented 2.1% of all birds ringed in Slovakia (62,456 individuals) in the given period (Jenčo & Repel 2021, Bird Ringing Centre Database). From the total number, raptors (Accipitriformes and Falconiformes orders) outnumbered the owls with 84.9% (1100 individuals, 15 species). Owls (Strigiformes order) represented only 15.1% (196 individuals, 8 species). Common kestrel (*Falco tinnunculus*) with 719 individuals, western marsh harrier (*Circus aeruginosus*) with 126 and saker falcon (*Falco cherrug*) with 92 were the most abundant raptors. Among the owls, it was long-eared owl (*Asio otus*) – 64 individuals, barn owl (*Tyto alba*) – 61, and Eurasian eagle-owl (*Bubo bubo*) – 27, which were most commonly ringed (Tab. 1). The given total number represents the highest amount of ringed raptors and owls in the history of ringing in Slovakia. Compared to year 2019 (Slobodník & Jenčo 2020), we observed a slight decrease of ringed nestlings and, by contrast, an increase in the number of ringed adult birds. Decreased number of nestlings is largely related to the local overpopulation of common vole in conditions of central Europe in year 2019 and subsequent decline of vole population in 2020 (Baláž et al. 2019), that was shown in the abundance of "mice-hunting" species of raptors and owls (i.e. Boháč 2019, Bělka et al. 2020, Horváth et al. 2020 or Škorpíková et al. 2020) and in subsequent ringing activities of some ringers (Slobodník & Jenčo 2020, Cepák & Klvaňa 2021). In spite of that, overall, we may observe in the ringing of raptors and owls an increasing trend, which we may see mainly in the number of ringed common kestrels representing 55.5% (Fig. 1). Among the remaining species, numbers of ringed individuals (e.g. *Haliaeetus albicilla*, *A. heliaca*, *C. aeruginosus* or *B. bubo*) remained stable. Another group comprised the species in which the number of ringed individuals is declining (e.g. *C. pomarina*, *B. buteo*).

The proportion of nestlings was 76.7% (994 individuals; Fig. 2), which is almost the same as it had been in Slovakia in the recent past (e.g. Slobodník & Slobodník 2012). In comparison with other ringed bird groups (orders, families), the proportion of chicks is higher (Jenčo & Repel 2019) not only in Slovakia but also in other countries (e.g. Walker et al. 2014, Cepák & Klvaňa 2021), which is caused by the long-term specialization of ringers focusing on the chicks of raptors and

Tab. 1. Raptors and owls ringed in Slovakia in 2020 (pull. – young, f. g. – full grown, A – bird ringed and recovered in Slovakia, Z – bird ringed in Slovakia recovered abroad, C – bird ringed abroad recovered in Slovakia).
Tab. 1. Dravce a sovy krúžkované v roku 2020 na Slovensku (pull. – mláďatá, f.g. – plne vyvinuté, A – vták krúžkovaný aj zaznamenaný na Slovensku, Z – slovenský krúžkovanec zaznamenaný v zahraničí, C – vták krúžkovaný v zahraničí zaznamenaný na Slovensku).

			recoveries / nálezy		
species / druh	**pull.**	**f.g.**	**A**	**Z**	**C**
Pandion haliaetus	0	0	0	0	1
Pernis apivorus	0	1	0	0	0
Haliaeetus albicilla	11	0	0	6	6
Circus aeruginosus	125	1	2	1	0
Circus pygargus	9	0	0	0	1
Accipiter gentilis	0	3	0	0	0
Accipiter nisus	0	14	2	0	0
Buteo buteo	6	16	0	0	0
Clanga pomarina	15	0	6	2	1
Aquila heliaca	23	0	5	4	6
Aquila chrysaetos	7	0	1	0	0
Falco tinnunculus	524	195	11	5	1
Falco vespertinus	35	0	42	22	5
Falco subbuteo	0	3	0	0	0
Falco cherrug	91	1	2	1	0
Falco peregrinus	20	0	2	1	2
Tyto alba	55	6	3	1	1
Otus scops	0	13	1	0	0
Bubo bubo	27	0	0	0	0
Athene noctua	13	2	0	0	1
Strix aluco	8	4	0	0	0
Strix uralensis	0	2	0	0	0
Asio otus	25	39	0	0	0
Asio flammeus	0	2	0	0	0
∑	994	302	77	43	25

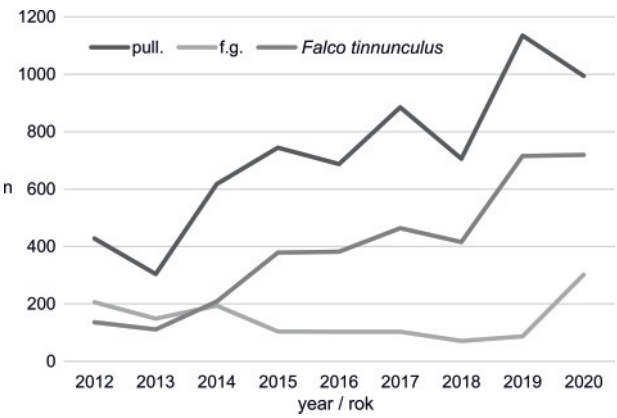

Fig. 1. Development of ringing of all raptors and owls, especially common kestrel, in Slovakia (2012–2020).
Obr. 1. Vývoj početnosti krúžkovaných dravcov a sov, osobitne sokola myšiara, na Slovensku (2012 – 2020).

owls in their nests (e.g. Cepák et al. 2008, Saurola et al. 2013).

A c c i p i t r i f o r m e s o r d e r

Compared to the past, there was a significant decrease in the number of ringed birds of many species. European honey buzzard (*Pernis apivorus*), both kite species (*Milvus milvus* and *Milvus migrans*) or northern goshawk (*Accipiter gentilis*) were either not ringed at all or only minimally. From the viewpoint of their abundance though, we do not observe any significant decrease, except for the black kite (Černecký et al. 2020). But more likely they are now less in focus of ringers, because a higher number of mainly chicks on their nests was ringed in the past (Formánek 1977, Danko 1985, Slobodník & Slobodník 2010). In 2020, there was not even a single chick of the above-mentioned species ringed. By contrast, 11 chicks of white-tailed eagle (*Haliaeetus albicilla*) is the highest number recorded since 2016 (Slobodník & Jenčo 2020). This increased number of ringed chicks may be related to the increasing abundance of this species in Slovakia (Černecký et al. 2020). As far as the western marsh harrier is concerned, we continue to record an increased numbers of their nestlings being ringed in their nests, mainly thanks to the colour-ringing programme implemented mostly in eastern Slovakia (Jenčo & Repel 2018). In the case of Montagu's harrier (*Circus pygargus*), we deal with the ringing of chicks of semicolonially nesting pairs in Ponitrie associated with protection of nests from agricultural works (more in e.g. Millon et al. 2002, Krupiński et al. 2012, Poprach et al. 2016). Hen harrier (*Circus cyaneus*) and rough-legged buzzard (*Buteo lagopus*) were not ringed at all, as the specialization from the past continues to be absent (Formánek 1977, Danko 1985, Danko 1988, Danko 2000). For the past six years, the rough-legged buzzard has not been ringed in our territory (Slobodník & Jenčo 2020). In the case of common buzzard (Buteo buteo) the numbers of ringed birds are very low – in 2020, only six chicks were ringed in Slovakia, though it is one of the most abundant raptor species in Slovakia (Danko et al. 2002, Černecký et al. 2020). Numbers of ringed Eurasian sparrowhawks are connected mainly to the captures of songbirds during their autumn migration or on feeders. In comparison to the recent past, chicks have not been ringed (Jenčo & Repel 2020, Slobodník & Jenčo 2020). The number of ringed chicks of lesser-spotted eagles has still been falling significantly, mainly in the areas in which they were monitored for a long time in the past (Dravecký et al. 2015a, 2015b). With the next two eagle species, the numbers of ringed individuals remained stable despite the increasing abundance of both species (Bagyura et al. 2002, Černecký et al. 2020). All the ringed eagles were chicks in their nests (Tab. 1).

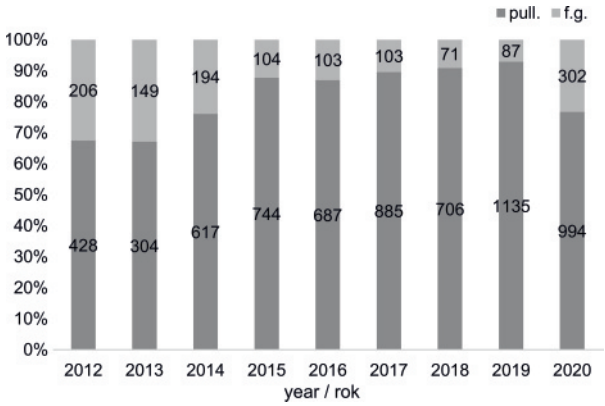

Fig. 2. Number of ringed chicks and other raptor and owl individuals in Slovakia (2012–2020).
Obr. 2. Počty okrúžkovaných mláďat a ostatných jedincov dravcov a sov na Slovensku (2012 – 2020).

F a l c o n i f o r m e s o r d e r

The common kestrel was the most frequently ringed raptor species in 2020 as well as it was in the past years (e.g. Danko 1985, Danko 1988, Cepák et al. 2008, Slobodník & Jenčo 2020). In this species, chicks ringed in their nest (or a nesting box) highly predominate. They has been ringed within the colour-ringing programme implemented mainly in western Slovakia (Jenčo et al. 2017). After significant increase in the number of ringed red-footed falcons (2016–2019), there was a slight decrease in the number of ringed chicks as well as it was in the case of common kestrel (Slobodník & Jenčo 2020). We attribute this decrease of ringed birds to the abundance of common vole, to which the raptors subsequently respond (Solonen et al. 2015). After its gradation in 2019 in central Europe, the common vole population decreased in 2020 (Baláž et al. 2019), what manifested itself in the number of ringed individuals, mainly chicks also in Slovakia (Tab. 1). Eurasian hobby has been ringed in Slovakia sporadically, compared to the past, when more attention had been paid to it (Lipták 2007) as shown in the number of ringed individuals (Formánek 1977, Slobodník et al. 2009). Even though its population is low, the saker falcon belongs to the species ringed the most (Chavko 2010, Chavko et al.

2014, Chavko et al. 2019). Just as in the case of the red-footed falcon, all the chicks were ringed in their nests. In the case of peregrine falcon, the number of ringed individuals has not increased despite the population and area trend in Slovakia getting higher (Chavko 2002). In Slovakia since 2018, every chick of both the big falcon species has also been ringed with colour rings (Jenčo & Repel 2018).

Strigiformes order

There has been a dramatic decrease in the barn owl population in central Europe (e.g. Mátics et al. 2017, Šálek et al. 2019) and in Slovakia (Danko et al. 2002, Černecký et al. 2020), whilst we consider the population estimate stated by Černecký et al. (2020) highly overestimated compared to reality. Development of the number of ringed chicks proves the given condition if we consider that in 2002, 170 individuals were ringed (Slobodník 2007). Not a single chick was ringed in Slovakia from 2011 until 2016 (Slobodník & Jenčo 2020), therefore 55 chicks ringed in 2020 has been the highest number since 2002 when 142 chicks were ringed (Slobodník 2007). Eurasian scops owl has been rarely ringed in Slovakia. That is the reason why 13 individuals ringed in 2020 is the highest number in history. The increased abundance of ringed individuals is linked to the methodological guideline (Lučan 2019, Cepák & Klvaňa 2021) and its targeted captures in southern Slovakia. The Eurasian eagle-owl population in Slovakia went through certain local changes (Flajs 2019, Černecký et al. 2020). Compared to the past the number of ringed chicks in total (22) is rather even (Slobodník 2007). In 2020, small forest species of owls: Eurasian pygmy owl, boreal owl (*Glaucidium passerinum*, *Aegolius funereus*) were not ringed at all. Ringing of chicks and young individuals has been absent in comparison with the Czech Republic (Klvaňa & Cepák 2018, Cepák & Klvaňa 2021). It is similar in the case of the little owl, though its abundance (Dobrý 2009), and mainly the fact that it is able to breed in artificial nest-boxes (e.g. Poprach et al. 2018), facilitates the possible specialisation and has led to a higher number of ringed individuals. Nest-boxes also help preventing the species from becoming locally extinct (Šálek et al. 2019). In both *Strix* and *Asio* species, the numbers of ringed birds are far lower than in the past, as this activity has been performed less frequently mostly in eastern or western Slovakia (Formánek 1977, Danko 1985, Danko 2000, Lengyel 2006).

List of selected recoveries (2012–2019)

During 2020, the ringing station database recorded 145 recoveries of raptors and owls (Tab. 1), from which there was at least one recovery in each of the 15 species recorded. The total proportion of recoveries was as follows – 77 recoveries were of an individual both ringed and recovered in our territory (i.e. Recovery Type A, Jenčo et al. 2016). Then there were 43 recoveries of birds ringed in Slovakia and resighted abroad (Type Z, 8 countries in total, Tab. 2), of which the most were recovered in the surrounding countries: Hungary (30 recoveries) and Austria (6). The other 25 individuals were ringed abroad and recovered in Slovakia (Type C, 6 countries in total, Tab. 3), in which cases most of them were ringed in Hungary (16), then Austria, the Czech Republic, Poland and Italy (totally 2 in each country) and Finland (1). In summary, most of the recoveries (of all types) were of red-footed falcon (69 recoveries), then common kestrel (17), and eastern imperial eagle (15). After assessing only the individuals ringed in Slovakia (Type A and Z), the order is identical, as follows: red-footed falcon (64), common kestrel (16), and eastern imperial eagle (9).

Most of the circumstances of these recoveries were ring readings (almost 76% in total) in which cases colour rings (66%) prevailed over aluminium ones (10%). Then there were findings of cadavers (6%) and recaptures (5%). Raptors and owls frequently die due to electrocution and some of them were caught by other predator (Tab. 3).

Tab. 2. Number of recoveries of raptors and owls ringed in Slovakia and recovered abroad (Z) and ringed abroad and recovered in Slovakia (C) in 2020.

Tab. 2. Počet spätných hlásení dravcov a sov krúžkovaných na Slovensku a zaznamenaných v zahraničí (Z) a krúžkovaných v zahraničí a zaznamenaných na Slovensku (C) v roku 2020.

country / krajina	Z	C
Albania / Albánsko	1	
Austria / Rakúsko	6	2
Czechia / Česko	2	2
Finland / Fínsko		1
Germany / Nemecko	1	
Hungary / Maďarsko	30	16
Italy / Taliansko		2
Poland / Poľsko	1	2
Serbia / Srbsko	1	
Ukraine / Ukrajina	1	
∑	43	25

Tab. 3. Finding circumstances of raptors and owls obtained from recoveries in Slovakia in 2020.
Tab. 3. Okolnosti nálezu dravcov a sov získaných zo spätných hlásení na Slovensku v roku 2020.

finding circumstates of bird / okolnosti nálezu vtáka	Z	A	A + Z	%
found dead / nájdený uhynutý	3	4	7	5.8
shot / zastrelený	1		1	0.8
caught and released by ringer / chytený a pustený krúžkovateľom	1	5	6	5.0
alive and probably healthy; metal ring read in field / živý; číslo hliníkového krúžku odčítané	6	6	12	10.0
electrocuted / usmrtený elektrickým prúdom	3	1	4	3.3
poisoned; poison identified / otrávený známou látkou	1		1	0.8
poisoned; poison not identified / otrávený neznámou látkou		1	1	0.8
dead on road / nájdený mŕtvy na ceste		1	1	0.8
taken by known predator / chytený známym predátorom		4	4	3.3
taken by unknown predator / chytený neznámym predátorom		2	2	1.7
general trauma; injured / prirodzené poranenie		1	1	0.8
alive and probably healthy; colour ring read in field / živý; číslo farebného krúžku odčítané	27	52	79	65.8
identification by satellite transmitter / identifikácia na základe vysielačky	1		1	0.8
∑	43	77	120	100

The most distant recoveries of individuals with Slovak rings were of saker falcon in Ukraine (1180 km) then of eastern imperial eagle in Albania (906 km) and common kestrel in Germany (608 km). Among the birds ringed abroad at the greatest distance and then recovered in Slovakia, there was a recovery of western osprey (*Pandion haliaetus*) ringed in Finland (1393 km) and two red-footed falcons ringed in Italy (both 627 km).

All the species from which there was at least one successful recovery (n = 15) in 2020 are listed in the selected recoveries.

For every recovery of a particular species, we state:

Species name
N – total number of recoveries recorded in 2020, divided according to the distance (S = 0–10 km, M = 11–100 km, L = > 100 km). C/Z/A: C – number of recoveries with rings from foreign centres recorded in the territory of Slovakia (station code and number of data in brackets), Z – number of recoveries with rings from N. MUSEUM SLOVAKIA recorded abroad (country code and number of data in brackets), A – number of recoveries with rings from N. MUSEUM SLOVAKIA recorded in Slovakia.

A selected recovery is given as follows:
1st line: station code, ring type and number, (sex and age when ringed is given in brackets), date of ringing, locality (district), country, name of the ringer (in the case of a ring from N. MUSEUM SLOVAKIA), rounded coordinates of the ringing locality.
2nd line: date of recovery, locality – district or region [country], name of the founder, rounded coordinates of the recovery locality.
3rd line: recovery circumstance code, distance between the ringing and recovery locality, time elapsed (= period from the ringing date to the recovery date) in the format y (year), m (month), d (day).

Sex:
M – male
F – female
N – unknown
Age:
1 – pullus
2 – full grown
3 – hatched during calendar year of ringing
4 – hatched before calendar year of ringing, exact year unknown
5 – hatched during previous calendar year
6 – hatched before previous calendar year, exact year

Acronyms used for the individual ringing centres (main name of the centre, country):
AUW – WIEN, Austria
CZP – PRAHA, Czech Republic
DER – RADOLFZELL, Germany
HGB – BUDAPEST, Hungary
IAB – BOLOGNA, Italy
PLG – GDANSK, Poland
SFH – HELSINKI, Finland
SKB – BRATISLAVA, Slovakia
Code of circumstances
01 – found dead

10 – shot
20 – caught and released by ringer
28, 29 – alive and probably healthy, metal ring read in the field
35 – electrocuted
37 – poisoned, poison identified
38 – poisoned, poison not identified
40 – dead on road
43 – hit wires
51 – general trauma, injured
53 – vital infection
58 – sick
60 – taken by unspecified animal
67 – taken by specified animal
78 – violent weather
81, 82, 87 – alive and probably healthy, colour mark (ring) read in the field
83 – identification based on wing-tags
85 – identification based on satellite transmitters

Western osprey (*Pandion haliaetus*)
N=1 (S 0, M 0, L 1) C 1 (Finland 1)

SFH M59187	(1N)	14.07.2012	Turku-Pori [Finland], Helsinki BRC	N60°41'	E21°42'
		20.04.2020	Rimavská Sobota [Slovakia], András Földi	N48°11'	E20°01'
			35; 1 393 km; 7y, 9m, 6d		

The single finding of this species is related to the spring migration and return to the nesting site in Scandinavia (Cepák et al. 2008). These individuals had already been recorded in our territory in the past (Slobodník et al. 2009). The finding also points out the danger of power lines for this species (Cepák et al. 2008, Demeter el al. 2004, Monti 2012). It seems to be a paradox that electric pylons represent frequent nesting sites of this species (Meyburg et al. 1995).

White-tailed eagle (*Haliaeetus albicilla*)
N=12 (S 0, M 3, L 9) A 5, Z 6 (Hungary 1, Austria 5), C 6 (HGB 4, CZP 2)

SKB SK203	(1N)	25.04.2015	Dunajská Streda [Slovakia], Jozef Chavko	N47°50'	E17°37'
		02.03.2020	Hajdu-Bihar [Hungary], Janos Tar	N47°41'	E21°07'
			28; 262 km; 4y, 10m, 7d		
SKB SK435	(1N)	28.04.2018	Dunajská Streda [Slovakia], Jozef Chavko	N47°48'	E17°43'
		06.01.2020	Niederösterreich [Austria], Klemens Wessely	N48°40'	E16°51'
		12.01.2020	Niederösterreich [Austria], Robert Kreinz	N48°40'	E16°51'
		26.01.2020	Niederösterreich [Austria], Robert Kreinz	N48°40'	E16°51'
		02.02.2020	Niederösterreich [Austria], Robert Kreinz	N48°40'	E16°51'
			28; 116 km; 1y, 9m, 5d		
SKB SK245	(1N)	27.04.2019	Levice [Slovakia], Ladislav Šnírer	N48°02'	E18°40'
		22.02.2020	Niederösterreich [Austria], Robert Kreinz	N48°40'	E16°51'
			28; 150 km; 0y, 9m, 26d		
CZP LX497	(1M)	16.05.2017	Kroměříž [Czechia], Hynek Matušík	N49°16'	E17°27'
		04.04.2020	Pezinok [Slovakia], Štefan Granec	N48°19'	E17°18'
			81; 106 km; 2y, 10m, 19d		
CZP LB7487	(2F)	30.05.2016	Břeclav [Czechia], Stanislav Čech	N48°40'	E16°57'
		22.10.2020	Malacky [Slovakia], Rudolf Jureček	N48°22'	E17°08'
			43; 35 km; 4y, 4m, 23d		
HGB E405	(1F)	24.05.2013	Fejér [Hungary], Bátky Gellért	N47°22'	E18°23'
		13.05.2020	N. M. nad Váhom [Slovakia], Jozef Chavko	N48°43'	E17°54'
			81; 153 km; 6y, 11m, 19d		

HGB H0119	(1N)	07.05.2015	Somogy [Hungary], Jakus László	N46°33'	E17°41'
		30.01.2020	Bratislava IV [Slovakia], Bohuš Číčel	N48°10'	E16°58'
			28; 187 km; 4y, 8m, 24d		
HGB H0674	(1N)	08.05.2019	Borsod-Abaúj-Zemplén [Hungary], J. László	N47°58'	E21°05'
		21.11.2020	Trebišov [Slovakia], Jozef Mihók	N48°36	E21°40'
			35; 82 km; 1y, 6m, 13d		
HGB H0227	(1N)	03.05.2019	Szabolcs-Szatmár-Bereg [Hungary], J. László	N48°18'	E22°14'
		10.11.2020	Trebišov [Slovakia], Ervín Hrtan	N48°37	E21°44'
			28; 51 km; 1y, 6m, 7d		

With the growing population of this species even in central Europe (Probst & Gaborik 2011), in the last period it is typical to read, report living individuals, mostly at foraging sites, which is often combined with the possibility of taking pictures, mainly in Hungary (SKB SK203, Horváth 2009). Ring reading is more likely to occur thanks to the colour-ringing programme, which has been implemented lately throughout most of Europe (Beran & Cepák 2010). The read individuals were largely young and juvenile individuals, as it is typical for them to roam over greater distances compared to the breeding individuals (Cepák et al.2008). Power lines continue to pose a great danger to this species (Demeter et al. 2004, Haas et al. 2005, Gális et al. 2019) which is proven by the recoveries of ringed individuals (HGB 0674, CZP LB7857).

Western marsh harrier (*Circus aeruginosus*)
N=3 (S 2, M 1, L 0) A 2, Z 1 (Hungary 1)

SKB D7258	(1N)	16.06.2020	Košice - okolie [Slovakia], Milan Olekšák	N48°36'	E20°51'
		07.09.2020	Borsod-Abaúj-Zemplén [Hungary], A. Huber	N48°33'	E20°49'
			01; 6 km; 2m, 22d		
SKB D7312	(1F)	22.06.2020	Košice - okolie [Slovakia], Milan Olekšák	N48°36'	E20°51'
		24.08.2020	Košice - okolie [Slovakia], Milan Olekšák	N48°36'	E20°51'
			01; 0 km; 2m, 2d		
SKB D6042	(1N)	07.07.2015	Košice - okolie [Slovakia], Milan Olekšák	N48°37'	E20°53'
		28.04.2020	Košice - okolie [Slovakia], Milan Olekšák	N48°32'	E21°09'
			81; 21 km; 4y, 9m, 22d		

Thanks to the focus on this species in eastern Slovakia, in the study period we recorded several valuable data (e.g. D6042) confirming the strong philopatry within it (Cepák et al. 2008, Slobodník & Jenčo 2020).

Montagu's harrier (*Circus pygargus*)
N=1 (S 0, M 0, L 1) C 1 (PLG 1)

PLG FS12598	(8M)	13.07.2018	Opolskie [Poland], Gdansk RC	N50°18'	E17°59'
		30.04.2020	Turčianske Teplice [Slovakia], M. Dobrota	N48°47'	E18°52'
			83; 180 km; 1y, 9m, 17d		

To catch an adult individual during its return to its nesting site is highly valuable data, even though it might have changed the nesting site from the previous year and, in some cases, individuals occupy nesting sites

in greater distance (Arroyo et al. 2004). The recovery circumstance is interesting – the bird was read by means of a wing mark, which is frequently used with this species (Millon & Bretagnolle 2008), though the application of wing marks in the future is questionable from the viewpoint of conservation (Zuberogoitia et al. 2012).

Eurasian sparrowhawk (*Accipiter nisus*)
N=2 (S 2, M 0, L 0) A 2

SKB K7357	(3M)	05.10.2018	Nové Zámky [Slovakia], Vladimír Hošek	N47°50'	E18°43'
		04.10.2020	Nové Zámky [Slovakia], Vladimír Hošek	N47°49'	E18°44'
			20; 2 km; 1y, 11m, 29d		

Recapture after two years confirms the species' fidelity towards the territory even in the non-breeding season (Newton & Marquiss 1982, Newton & Wyllie 1992).

Lesser spotted eagle (*Clanga pomarina*)
N=9 (S 2, M 7, L 0) A 6, Z 2 (Hungary 2), C 1 (PLG 1)

PLG BN5690	(1N)	07.07.2016	Podkarpackie [Poland], Gdansk RC	N49°18'	E22°03'
		19.09.2020	Medzilaborce [Slovakia], Martin Šepeľa	N49°20'	E21°52'
			81; 14 km; 4y, 2m, 12d		
SKB BL1520	(1N)	10.07.2015	Košice - okolie [Slovakia], Miroslav Dravecký	N48°36'	E20°54'
		08.04.2020	Borsod-Abaúj-Zemplén [Hungary], Majercsák B.	N48°13'	E21°23'
		11.04.2020	Borsod-Abaúj-Zemplén [Hungary], Majercsák B.	N48°13'	E21°23'
			81; 56 km; 4y, 8m, 1d		
SKB BL1529	(4N)	03.05.2017	Snina [Slovakia], Miroslav Dravecký	N48°57'	E22°04'
		31.07.2020	Sobrance [Slovakia], Štefan Danko	N48°43'	E22°13'
			81; 27 km; 3y, 2m, 28d		
SKB BL813	(1N)	18.07.2013	Michalovce [Slovakia], Štefan Danko	N48°51'	E21°54'
		19.07.2020	Michalovce [Slovakia], Andrej Škuba	N48°51'	E21°54'
			81; 0 km; 7y, 1d		
SKB BL1311	(1N)	05.07.2012	Liptovský Mikuláš [Slovakia], Ján Kicko	N49°06'	E19°43'
		10.04.2020	Tvrdošín [Slovakia], Martin Jaroš	N49°17'	E19°33'
			28; 24 km; 7y, 9m, 5d		
SKB BL1736	(1N)	16.07.2015	Michalovce [Slovakia], Štefan Danko	N48°51'	E21°54'
		07.07.2018	Humenné [Slovakia], Štefan Mikiara	N48°54'	E21°54'
			81; 6 km; 2y, 11m, 21d		
SKB BL381	(1M)	10.07.2005	Prievidza [Slovakia], Karol Šotnár	N48°55'	E18°34'
		02.05.2020	Prievidza [Slovakia], Šotnár Karol	N48°49'	E18°34'
			28; 11 km; 14y, 9m, 22d		

Reading of this species after more than three years is a proof of successful rehabilitation from the spring of 2017 (BL 1529). The next recapture of a chick from Horná Nitra (SKB BL381) confirms the fidelity to the locality and the species' longevity (Kasparson 1966, Slobodník & Jenčo 2020). The mentioned individuals ringed in our territory confirm the quite strong philopatry (e.g. BL813) of the species (Meyburg et al. 2005, Cepák et al. 2008, Danko et al. 2008). From the viewpoint of the recovery circumstance, ring readings predominate thanks to the colour-ringing programme (Dravecký et al. 2008, Dravecký et al. 2013).

Eastern imperial eagle (*Aquila heliaca*)
N=15 (S 1, M 9, L 5) A 5, Z 4 (Albania 1, Hungary 2, Serbia 1), C 6 (AUW 1, DER 1, HGB 4)

SKB SK482	(1N)	13.06.2015	Michalovce [Slovakia], Štefan Danko	N48°06'	E21°08'
		07.08.2020	Trebišov [Slovakia], Ervín Hrtan	N48°21'	E21°48'
			28; 39 km; 5y, 1m, 25d		
SKB SK467	(1N)	08.08.2019	Hlohovec [Slovakia], Jozef Chavko	N48°30'	E17°50'
		11.01.2020	Bratislava V [Slovakia], Jozef Chavko	N48°02'	E17°05'
			51; 76 km; 5y, 3d		
SKB SK505	(1M)	20.06.2016	Topoľčany [Slovakia], Ladislav Šnírer	N48°31'	E18°13'
		17.01.2020	Nové M. nad Váhom [Slovakia], Vlasto Opatovský	N48°42'	E17°47'
			28; 39 km; 3y, 6m, 27d		
SKB A1000	(1N)	21.06.2008	Zlaté Moravce [Slovakia], Jozef Chavko	N48°25'	E18°29'
		27.01.2020	Nitra [Slovakia], Jozef Chavko	N48°13'	E18°01'
			28; 41 km; 11y, 7m, 6d		
SKB SK456	(1N)	21.06.2019	Nové Mesto nad Váhom [Slovakia], Jozef Chavko	N48°42'	E17°55'
		24.03.2020	Nové Mesto nad Váhom [Slovakia], Dušan Marko	N48°40'	E17°51'
			38; 7 km; 9m, 3d		
SKB SK418	(1N)	17.06.2016	Nitra [Slovakia], Jozef Chavko	N48°23'	E18°10'
		05.04.2020	Győr-Mosin-Sopron [Hungary], Miklós Váczi	N47°39'	E17°05'
			37; 113 km; 3y, 9m, 19d		
SKB A2054	(1N)	21.06.2015	Košice-okolie [Slovakia], Jozef Mihók	N48°33'	E21°16'
		05.04.2020	Borsod-Abaúj-Zemplén [Hungary], József Serfőző	N48°06'	E21°08'
			49; 81 km; 5y, 9m, 15d		
SKB SK467	(1N)	08.08.2019	Hlohovec [Slovakia], Jozef Chavko	N48°30'	E17°50'
		05.04.2020	Sherishtë [Albania], Jozef Chavko	N40°27'	E19°33'
			85; 906 km; 7m, 27d		
SKB SK561	(1F)	06.06.2020	Topoľčany [Slovakia], Ladislav Šnírer	N48°29'	E18°17'
		30.12.2020	Vojvodina [Serbia], Nenad Spremo	N45°40'	E19°05'
			10; 320 km; 6m, 24d		
DER RL1213	(1N)	05.07.2016	Burgenland [Austria], Matthias Schmidt	N47°43'	E16°56'
		21.03.2020	Senica [Slovakia], Jozef Chavko	N48°34'	E16°59'
			85; 95 km; 3y, 8m, 15d		
AUW BS0077	(1N)	05.06.2017	Burgenland [Austria], Matthias Schmidt	N47°43'	E16°55'
		21.03.2020	Skalica [Slovakia], J. Svetlík, R. Jureček	N48°42'	E17°06'
			85; 111 km; 2y, 9m, 15d		
HGB AAA2025	(1N)	04.07.2017	Győr-Mosin-Sopron [Hungary], Imre Fáter	N47°35'	E17°17'
		29.03.2020	Komárno [Slovakia], Tomáš Veselovský	N47°52'	E17°56'
			85; 58 km; 2y, 8m, 25d		
HGB AAA2021	(1N)	30.06.2017	Heves [Hungary], Fatér Imre	N47°37'	E20°26'
		16.09.2020	Dunajská Streda [Slovakia], Tomáš Veselovský	N47°48'	E17°41'
			81; 208 km; 3y, 2m, 17d		
HGB AAA2185	(1N)	25.06.2018	Borsod-Abaúj-Zemplén [Hungary], Budapest RC	N48°21'	E21°09'
		18.08.2020	Trebišov [Slovakia], Ervín Hrtan	N48°37'	E21°44'
			81; 70 km; 2y, 1m, 24d		

HGB AAA2196	(1N)	26.06.2018	Borsod-Abaúj-Zemplén [Hungary], Budapest RC	N48°19'	E21°51'
		17.09.2020	Trebišov [Slovakia], Ervín Hrtan	N48°37'	E21°44'
			81; 34 km; 2y, 2m, 22d		

Illegal poisoning (SKB SK456 and SKB SK418) or shooting (SKB SK561) continue to represent a risk for the species. All these factors are considered high-risk in the whole species area (Horváth et al. 2006). The recoveries of breeding individuals in the territory of Slovakia coming from abroad (HGB AAA2025, DER RL1213, AUW BS0077) are also interesting; we were able to find them by means of satellite telemetry (Meyburg 2010, Slobodník & Jenčo 2020). Thanks to the targeted work of birdwatchers in eastern Slovakia, ring readings predominate in the recovery circumstances in comparison with the past, when the movements of eastern imperial eagles were documented mostly through findings of injured or dead individuals (Cepák et al. 2008). The story of a chick ringed in its nest quite late in August is worth mentioning (SKB SK467). Later on, thanks to a transmitter, the bird was found injured, and after a successful recovery, it was released in the territory of Slovakia in January 2020. Three months later, based on the signal from the transmitter, we observed that it had died in the territory of Albania. Transmitters give us current valuable data from the viewpoint of dispersal and philopatry of eastern imperial eagles (Veselovský et al. 2018) including limiting mortality factors (Demeter et al. 2004, Horváth et al. 2006).

Golden eagle (*Aquila chrysaetos*)
N=1 (S 1, M 0, L 0) A 1

SKB SK132	(1M)	06.07.2020	Rožňava [Slovakia], Miroslav Dravecký	N48°48'	E20°38'
		26.08.2020	Rožňava [Slovakia], Milan Olekšák	N48°48'	E20°38'
			1; 0 km; 1m, 22d		

Mortality of golden eagles in the first year of their life is typical for this long-living species (McIntyre et al. 2010). The given individual, which was found dead with no details, is added to the quite abundant database of recoveries of ringed birds of this species (Slobodník & Jenčo 2020). We assume that a part of these recoveries falls into the category of the so-called bird criminality (Formánek 1977, Voskár 1988, Kropil 2002).

Common kestrel (*Falco tinnunculus*)
N=17 (S 10, M 4, L 3) A 11, Z 5 (Austria 1, Czechia 2, Germany 1, Hungary 1), C 1 (HGB 1)

SKB H25925	(1N)	12.06.2018	Bratislava IV [Slovakia], Roman Slobodnik	N48°11'	E17°02'
		19.03.2020	Bratislava IV [Slovakia], Roman Slobodnik	N48°09'	E17°03'
			81; -- km; 1y, 9m, 6d		
SKB H25901	(6F)	06.06.2018	Nitra [Slovakia], Roman Slobodnik	N48°18'	E18°05'
		18.04.2020	Nitra [Slovakia], Roman Slobodnik	N48°17'	E18°03'
			28; -- km; 1y, 10m, 12d		
SKB H27450	(1N)	30.06.2020	Bratislava V [Slovakia], Roman Slobodnik	N48°03'	E17°08'
		30.08.2020	Skalica [Slovakia], Pavel Štepánek	N48°44'	E17°07'
			81; 79 km; 0y, 2m, 0d		
SKB H25797	(1N)	19.06.2018	Nové Zámky [Slovakia], Roman Slobodnik	N48°05'	E18°02'
		18.06.2020	Břeclav [Czechia], Stanislav Čech	N48°49'	E16°50'
			35; 120 km; 1y, 11m, 29d		

SKB H27344	(1N)	17.06.2020 09.08.2020	Trnava [Slovakia], Roman Slobodnik Uherské Hradiště [Czechia], Jaroslav Křižka 20; 73 km; 1m, 22d	N48°20' N48°59'	E17°43' E17°33'
SKB H26353	(1N)	11.06.2019 22.05.2020	Bratislava V [Slovakia], Roman Slobodnik Burgenland [Austria], AURING, AUW 01; 37 km; 11m, 11d	N48°01' N47°44'	E17°07' E16°51'
SKB H27329	(1N)	16.06.2020 28.07.2020	Bratislava V [Slovakia], Roman Slobodnik Györ-Mosin-Sopron [Hungary], Vass Tibor 35; 54 km; 1m, 11d	N48°01' N47°35'	E17°07' E17°25'
SKB H26346	(1N)	16.06.2020 17.11.2020	Bratislava V [Slovakia], Roman Slobodnik Thüringen [Germany], Joachim Müller 35; 608 km; 5m, 1d	N48°01' N51°22'	E17°07' E10°25'
HGB HA44157	(1N)	04.06.2020 05.07.2020	Bács-Kiskun [Hungary], Budapest RC Brezno [Slovakia], Ján Žiak 01; 227 km; 1m, 1d	N46°40' N48°40'	E19°05' E19°40'

The increased number of ringed chicks in western Slovakia confirmed the complex migration manners of the species (Adriaensen et al. 1997, Holte et al. 2016). Some of our chicks migrated westerly or northwesterly (recoveries in the Czech Republic and Germany) and some individuals migrated to the south (the recovery in Hungary). At the same time, the birds from Hungary may come to our territory during their post-breeding dispersal (HGB HA44157) even very early after leaving the nest, which is true also vice versa (e.g. SKB H27329). These data have been known even from the past (e.g. Slobodník & Jenčo 2020). Ring reading confirms their high fidelity (SKB H 25901) or philopatry (e.g. SKB H25925) which is typical for the species (Cepák et al. 2008, Riegert & Fuchs 2011). Online broadcasting and installation of cameras thanks to which we were able to get several valuable data resulted in higher number of read rings, similarly to the cases of other raptor species (e.g. Kristan et al. 1996, Chavko et al. 2014). As far as the circumstances are concerned, collisions with power lines keep representing a risk factor (Formánek 1977, Kumbera 1977, Demeter et al. 2004, Gális et al. 2019, Škorpíková et al. 2019), which in 2020 by the findings of ringed individuals abroad was again confirmed.

Red-footed falcon (*Falco vespertinus*)
N=69 (S 65, M 0, L 4) A 42, Z 22 (Hungary 22), C 5 (HGB 3, IAB 2)

HGB HA33654	(1N)	03.07.2019 10.09.2020	Györ-Mosin-Sopron [Hungary], Előd Győrig Bratislava V [Slovakia], Jozef Chavko 81; 8 km; 1y, 2m, 7d	N47°57' N48°03'	E17°06' E17°08'
HGB HA27903	(1N)	10.07.2020 15.09.2020	Fejér [Hungary], Solt Szabolcs Bratislava V [Slovakia], Jozef Chavko 81; 158 km; 10m, 26d	N45°59' N48°03'	E18°31' E17°08'
HGB HA28324	(1N)	10.07.2020 23.09.2020	Fejér [Hungary], István Staudinger Bratislava V [Slovakia], Jozef Chavko 81; 129 km; 2m, 13d	N47°11' N48°03'	E18°17' E17°08'
IAB H219050	(1N)	27.06.2020 09.09.2020	Parma & Reggio n.Emilia [Italy], Marco Gustin Bratislava V [Slovakia], Jozef Chavko 81; 627 km; 2m, 13d	N44°54' N48°03'	E10°17' E17°08'

IAB H216993	(1N)	27.06.2020	Parma & Reggio n.Emilia [Italy], Marco Gustin	N44°54'	E10°17'
		07.09.2020	Bratislava V [Slovakia], Jozef Chavko	N48°03'	E17°08'
			81; 627 km; 2m, 11d		
SKB K6515	(1N)	03.08.2016	Bratislava V [Slovakia], Roman Slobodnik	N48°03'	E17°08'
		14.09.2020	Bratislava V [Slovakia], Jozef Chavko	N48°03'	E17°08'
			81; -- km; 4y, 1m, 11d		
SKB K6552	(1N)	19.07.2017	Bratislava V [Slovakia], Roman Slobodnik	N48°03'	E17°08'
		19.09.2020	Györ-Mosin-Sopron [Hungary], P. Spakovszky	N47°58'	E17°10'
			81; 8 km; 3y, 2m, 0d		

Recoveries of red-footed falcons were rather unusual in the past (Cepák et al. 2008, Slobodník & Slobodník 2011). Currently it is a species with the highest number of recoveries as it has been given more attention to it due to its conservation activities (Slobodník et al. 2017). From the viewpoint of the occurrence of individuals ringed as chicks in the territory of Hungary, we may observe settling of an individual in our territory (HGB HA33654) which belongs to the common population at the borderlands and includes also the non-abundant population in Austria (Dvorak et al. 2016). Post-breeding dispersal is recorded through two individuals of Hungarian origin, which occurred more than a hundred kilometres from the place of their hatching two months after they had been ringed (HGB HA28324 resp. HA27903). These movements are for this so-called loop migrant species typical; they fly from their nesting sites in the Carpathian Basin even to northern or western Europe (Palatitz et al. 2009, Gulawski et al. 2017, Kunze & Nennstiel 2020). Most of the recoveries come from the roost site near Bratislava; in 2020, there were dozens of individuals that is typical for this social species (Fehérvari et al. 2014). The higher number of individuals in this locality is related to great food supply in southwestern Slovakia and to gradation of common vole (Baláž et al. 2019). The great quantity of readings in the SPA Sysľovské polia confirms the species' philopatry to the nesting colony, while one individual belongs to the group of 16 chicks, which were ringed in 2016 at the beginning of the colour-ringing programme in Slovakia (Slobodník & Jenčo 2020). Reading of two individuals of Italian origin is a new finding (IAB H219050, H216993). These chicks belong to a rather new and isolated population near Parma (Calabrese et al. 2020). Genetic origin of this population is in Hungary, which is the main reason of the constant migration of birds from the Italian Peninsula through the Carpathian Basin (Sponza et al. 2001). As far as the circumstances are concerned, in 2020, four chicks were caught by northern goshawk that often hunts on red-footed falcons (Bagyura & Haraszthy 1994).

Saker falcon (*Falco cherrug*)
N=3 (S 1, M 1, L 1) A 2, Z 1 (Ukraine 1)

SKB D5825	(1N)	07.05.2016	Trnava [Slovakia], Jozef Chavko	N48°18'	E17°39'
		07.05.2020	Šaľa [Slovakia], Jozef Chavko	N48°16'	E17°51'
			81; 15 km; 4y, 0d		
SKB D7092	(1N)	22.05.2020	Dunajská Streda [Slovakia], Jozef Chavko	N48°03'	E17°24'
		31.07.2020	Dunajská Streda [Slovakia], Jozef Chavko	N48°03'	E17°26'
			35; 3 km; 2m, 9d		
SKB D7103	(1N)	26.05.2020	Trnava [Slovakia], Jozef Chavko	N48°19'	E17°37'
		24.07.2020	Rakivka [Ukraine], Maxim Gavrilyuk	N46°54'	E33°15'
			81; 1180 km; 1m, 28d		

Thanks to the colour ringing, as in the case of red-footed falcon, the number of recoveries has increased significantly in the course of the last few years (Jenčo & Repel 2018, Slobodník & Jenčo 2020). This colour-ringing programme provides valuable information on the philopatry of nesting individuals (SKB D5825). In addition to that, we were able to identify a young saker falcon in Ukraine (SKB 7103) during the post-breeding dispersal (Prommer et al. 2012, Kouba et al. 2021). Power lines continue to be a significant factor of mortality for this species (Demeter et al. 2004, Kovács et al. 2014, European Commission, Directorate-General for Environment 2019), the highest mortality being in the case of chicks (Nemček et al. 2014). The given issue is dealt with in cooperation with the appropriate energy companies (e.g. by means of the LIFE13 project NAT/SK/001272 Energy in the land) in which case the risk localities have been greened also from the viewpoint of the occurrence of saker falcon (Gális et al. 2019).

Peregrine falcon (*Falco peregrinus*)
N=5 (S 0, M 1, L 4) A 2, Z 1 (Poland 1), C 2 (HGB 2)

HGB LY01811	(1N)	16.05.2014 24.03.2020	Fejér [Hungary], Staudinger István Malacky [Slovakia], Jozef Chavko 81; 135 km; 5y, 10m, 8d	N47°15' N48°15'	E18°08' E17°06'
HGB LY02891	(1F)	08.05.2017 07.04.2020	Fejér [Hungary], Klébert Antal Pezinok [Slovakia], Jozef Chavko 81; 140 km; 2y, 10m, 30d	N47°22' N48°27'	E18°15' E17°19'
SKB E3180	(1M)	07.06.2015 07.04.2020	Nitra [Slovakia], Jozef Chavko Malacky [Slovakia], Jozef Chavko 28; 67 km; 4y, 10m, 0d	N48°22' N48°28'	E18°10' E17°16'
SKB E4991	(1M)	15.05.2017 24.05.2020	Martin [Slovakia], Jozef Chavko Malacky [Slovakia], Jozef Chavko 81; 145 km; 3y, 9d	N49°00' N48°26'	E18°58' E17°11'
SKB E5005	(1M)	14.05.2019 22.03.2020	Malacky [Slovakia], Jozef Chavko Dolnoslaskie [Poland], Sławomir Sielicki 81; 314 km; 10m, 8d	N48°17' N51°02'	E17°03' E16°11'

Just as in the case of saker falcons, we get valuable results thanks to the colour-ringing programme (Jenčo & Repel 2018). This way ring readings contributed not only to information on philopatry of nesting individuals coming from Hungary (HGB LY01811, LY02891) but also to data on the settlement of young birds in Slovakia (SKB E3180 or E4991). Malé Karpaty Mts. have a prominent status in obtaining results, as they have been a subject of long-term monitoring of occupied nests by means of camera traps (Chavko 2016). Data on the occurrence of birds in Poland that were ringed here (SKB E5005) had been absent so far (Cepák et al. 2008).

Barn owl (*Tyto alba*)
N=5 (S 2, M 2, L 1) A 3, Z 1 (Hungary 1), C 1 (HGB 1)

HGB RE02310	(3N)	26.06.2017 09.03.2020	Fejér [Hungary], Balázsi Péter Komárno [Slovakia], Szabóné Jády Katalin 40; 58 km; 2y, 8m, 13d	N47°21' N47°47'	E18°19' E17°53'
SKB E5723	(1N)	04.09.2019 22.01.2020	Nové Zámky [Slovakia], Roman Slobodnik Bács-Kiskun [Hungary], Sápi Tamás 01; 123 km; 4m, 18d	N47°49' N46°47'	E18°32' E19°08'

SKB E5468	(1N)	21.05.2019	Dunajská Streda [Slovakia], Roman Slobodnik	N47°54'	E17°49'
		05.03.2020	Dunajská Streda [Slovakia], Richard Kvetko	N47°55'	E17°43'
			40; 7 km; 9m, 15d		
SKB E5441	(3N)	17.08.2018	Komárno [Slovakia], Roman Slobodnik	N47°52'	E17°55'
		25.06.2020	Dunajská Streda [Slovakia], Roman Slobodnik	N47°54'	E17°48'
			01; 9 km; 1y, 10m, 8d		
SKB E5781	(1N)	25.06.2020	Galanta [Slovakia], Roman Slobodnik	N48°00'	E17°48'
		31.10.2020	Dunajská Streda [Slovakia], Roman Slobodnik	N47°56'	E17°42'
			20; 11 km; 4m, 6d		

Mortaily of young barn owls (SKB E5723 or E5468) is rather high, mainly due to collisions with vehicles (Cepák et al. 2008, Marti et al. 2020). The same goes for individuals that might potentially recolonize the population from Hungary in southern Slovakia (HGB RE02310). From among the individuals restituted in 2018, we may mention the finding of a barn owl released in Žitný ostrov area and then found dead near its nesting box (SKB E5441). In the previous year, this individual has successfully bred here (Slobodník & Jenčo 2020).

Eurasian scops owl (*Otus scops*)
N=1 (S 1, M 0, L 0) A 1

SKB K7491	(5N)	11.05.2020	Michalovce [Slovakia], Matej Zámečník	N48°40'	E22°02'
		24.08.2020	Michalovce [Slovakia], Matej Zámečník	N48°40'	E22°02'
			20; -- km; 3m, 13d		

The single recovery is a proof of an individual having stayed in the locality as late as till the end of August (e.g. Klvaňa & Cepák 2020).

Little owl (*Athene noctua*)
N=1 (S 0, M 1, L 0) C 1 (HGB 1)

HGB VR09678	(1N)	31.05.2019	Fejér [Hungary], Budapest RC	N47°21'	E18°27'
		07.07.2020	Komárno [Slovakia], Roland Bobek	N47°47'	E18°10'
			t01; 53 km; 1y, 1m, 6d		

The finding of a dead individual ringed as a chick in Hungary and recorded in the district of Komárno in its breeding season is valuable. Transfers for more than 20 kilometres are very rare even in case of young birds (Génot 1995), though there are some records of transfers for a distance over 200 kilometres (Cepák et al. 2008).

References

Adriaensen F, Verwimp N & Dhondt A 1997: Are Belgian ktestrels *Falco tinnunculus* migratory: an analysis of ringing recoveries. Ringing & Migration 18: 91–101.

Arroyo BE, García JT, Bretagnolle V 2004: Montagu's harrier *Circus pygargus*. Birds of Western Palaearctic update 6: 41–55.

Bagyura J & Haraszthy J 1994: Adatok a héja (*Accipiter gentilis*) ragadozómadár- és Bagolytáplálékához [Raptors and owls in the diet of Northern goshawk]. Aquila 101: 89–92. [In Hungarian]

Bagyura J, Szitta T, Haraszthy L, Firmánszky G, Viszló L, Kovács A, Demeter I & Horváth M 2002: Population increase of imperial eagle (*Aquila heliaca*) in Hungary between 1980 and 2000. Aquila 107–108: 133–144.

Baláž I, Tulis F, Kovarová N, Šumichrast I 2019: Fluktuácia početnosti hraboša poľného na západnom Slovensku a možnosti jeho monitoringu [Abundance

fluctuation of Common vole in western Slovakia and the possibilities of its monitoring]. Ekologické štúdie 10: 25–40. [In Slovak]

Bělka T, Horal D, Mrlík V, Navrátil P, Krejčí J, Bartes P 2020: Hnízdění motáka pilicha (*Circus cyaneus*) v České republice v roce 2019 [Nesting of Hen harrier in the Czech Republic in 2019]. Crex 28: 923. [In Czech with English summary]

Boháč O 2019: První prokázané hnízdení poštolky rudonohé (*Falco vespertinus*) v České republice od roku 1973 [The first proven nesting of Red-footed falcon in the Czech Republic since 1973]. Sylvia 55: 117–121. [In Czech with English summary]

Calabrese L, Mucciolo A, Zanichelli A & Gustin M 2020: Effects of nest boxes on the most important population of red-footed falcon *Falco vespertinus* in Italy. Conservation Evidence 20: 35–39.

Cepák J, Klvaňa P, Formánek J, Horák D, Jelínek M, Schröpfer L, Škopek J, Zárybnický J 2008: Atlas migrace ptáků České a Slovenské Republiky [Atlas of migration of birds of the Czech and Slovak Republic]. Aventinum, Prague. [In Czech]

Cepák J & Klvaňa P 2021: Report on Czech Bird Ringing for 2020. Kroužkovatel 32. [In Czech with English summary]

Černecký J, Lešo P, Ridzoň J, Krištín A, Karaska D, Darolová A, Fulín M, Chavko J, Bohuš M, Krajniak D, Ďuricová V, Lešová A, Čuláková J, Saxa A, Durkošová J & Andráš P 2020: Stav ochrany vtáctva na Slovensku v rokoch 2013–2018 [Condition of bird conservation in Slovakia in the years 2013–2018]. State nature conservancy of the Slovak republic, Banská Bystrica. [In Slovak]

Chavko J 2002: Sokol sťahovavý (Falco peregrinus) [The peregrine falcon (Falco peregrinus)], 216–217. In: Danko Š, Darolová A & Krištín A (eds), Rozšírenie vtákov na Slovensku [Birds Distribution in Slovakia]. Veda, Bratislava. [In Slovak with English summary]

Chavko J 2010: Trend and conservation of saker falcon (*Falco cherrug*) population in western Slovakia between 1976 and 2010. Slovak Raptor Journal 4: 1–22. DOI: DOI: 10.2478/v10262-012-0040-4

Chavko J 2016: Fotopasce – významný nástroj monitoringu ekológie živočíchov [Camera traps – an important tool in monitoring of the environment of animals], 95–97, In: Krumpálová Z, Zigová M & Tulis F (eds): Zoológia 2016, Nitra. [In Slovak]

Chavko J 2018: Význam využitia fotografie pri ornitologickom výskume [Value of using pictures during ornithological research]. Dravce a sovy 14(2): 4–9. [In Slovak]

Chavko J, Slobodník R, Deutschová L, Lipták J, Mihók J, Obuch J & Nemček V 2014: The saker falcon (*Falco cherrug*) population, diet and nest boxes in Slovakia: LIFEproject report 2011–2014. Slovak Raptor Journal 8 (2): 73–86. DOI: 10.2478/srj2014-0009.

Chavko J, Obuch J, Lipták J, Slobodník R & Baláž M 2019: Changes in nesting habitat of the saker falcon (*Falco cherrug*) influenced its diet composition and potentially threatened its population in Slovakia in the years 1976–2016. Slovak Raptor Journal 13: 75–104. DOI: 10.2478/srj20190009.

Danko Š 1985: Správa o činnosti Skupiny pre výskum a ochranu dravcov a sov v ČSSR za rok 1985 [Report on the activity of The Group for research and conservation of raptors and owls in the Czechoslovak Socialist Republic for the year 1985]. Skupina pro výzkum dravých ptáků a sov, Zprávy 6: 1–25. [In Slovak with English summary]

Danko Š 1988: Krúžkovatelia východoslovenského kraja a počet nimi okrúžkovaných vtákov v roku 1986 [Ringers of the Eastern Slovak Region and the number of birds they ringed in 1986]. Haja 1986–1987: 182–203. [In Slovak]

Danko Š 2000: Výsledky vlastného krúžkovania vtákov na východnom Slovensku v rokoch 1966–1999 [Results of bird ringing in the eastern Slovakia from 1966 until 1999]. Tichodroma 13: 205–226. [In Slovak with English summary]

Danko Š, Darolová A & Krištín A. (eds) 2002: Rozšírenie vtákov na Slovensku [Distribution of Birds in Slovakia]. Veda, Bratislava. [In Slovak with English summaries]

Danko Š, Mihók J & Fuňák M 2008: The latest results of ringing the lesser spotted eagles (*Aquila pomarina*) in Slovakia. Slovak Raptor Journal 2: 73–75. DOI: 10.2478/v10262-012-0019-1.

Demeter I, Bagyura J, Lovászi P, Nagy K, Kovács A & Horváth M 2004: Medium-voltage power lines and bird mortality in Hungary – Experience, nature conservation requirements and suggestions. MME, 29. DOI: 10.13140/RG.2.2.33211.26404.

Dobrý M 2011: The abundance of the little owl (*Athene noctua*) in Podunajská rovina lowland in 2009 and 2010. Slovak Raptor Journal 5: 121–126. DOI: 10.2478/v10262-012-0058-7.

Dravecký M, Maderic B, Šotnár K, Danko Š, Harvančík S, Kicko J, Karaska D, Vrlík P, Vrána J, Balla M,

Boucný D & Kišac P 2008: Lesser spotted eagle (*Aquila pomarina*) colour ringing program and its first results in the period 2000–2008 in Slovakia. Slovak Raptor Journal 2: 27–36. DOI:10.2478/v1 0262-01 2-001 6-4.

Dravecký M, Danko Š, Hrtan E, Kicko J, Maderič B, Mihók J, Balla M, Bělka T & Karaska D 2013: Colour ringing programme of the lesser spotted eagle (*Aquila pomarina*) population in Slovakia and its new results in the period 2009–2012. Slovak Raptor Journal 7: 17–36. DOI: 1 0.2478/srj-201 3-0008.

Dravecký M, Maderič B & Guziová Z (eds) 2015a: Ochrana orla krikľavého na Slovensku LIFE09 NAT/SK/000396. Súhrnná správa z výsledkov monitoringu populácie orla krikľavého a vyhodnotenie efektívnosti vybraných ochranárskych opatrení 2011–2014. [Conservation of the lesser spotted eagle in Slovakia LIFE09 NAT/SK/000396. Cumulative report from the results of monitoring the lesser spotted eagle population and evaluate the effectiveness of selected conservation measures 2011–2014]. Bratislava. DOI: 10.13140/RG. 2.1.3380.4568 [In Slovak]

Dravecký M, Maderič B, Topercer J, Kicko J, Danko Š, Karaska D, Guziová Z & Šotnár K 2015b: Abundance, distribution and trend of the lesser spotted eagle (*Aquila pomarina*) breeding population in Slovakia. Slovak Raptor Journal 9: 7–44. DOI: 10.1515/srj-2015-0001

Dvorak M, Berg HM & Wendelin B 2016: Ornithologische Beiträge zum Managementplan für das SPA „Parndorfer Platte-Heideboden" Auswertung ornithologischer Erhebungen aus den Jahren 2004–2015. Unpublished report for the Amt der Burgenländischen Landesregierung, Abteilung 5 – Anlagenrecht, Natur- und Umweltschutz. BirdLife Austria, Wien.

European Commission, Directorate-General for Environment 2019: Guidance on Energy Transmission Infrastructure and EU nature legislation. Publications Office. DOI: 10.2779/827210.

Fehérvári P, Lázár B, Palatitz P, Solt S, Nagy A, Prommer M, Nagy K & Harnos A 2014: Pre-Migration Roost Site use and Timing of Postnuptial Migration of red-footed falcons (*Falco vespertinus*) Revealed by Satellite Tracking. Ornis Hungarica 22(1): 36–47.

Formánek J 1977: Kroužkovaní dravců a sov v ČSSR některé poznatky získané na podkladě kroužkovaní [Ringing of raptors and owls in the Czechoslovak Socialist Republic. Several pieces of knowledge obtained by means of ringing]. Dravci 1977: 73–78. [In Czech]

Flajs T 2017: Hniezdne rozšírenie a početnosť výra skalného v Národnom parku Malá Fatra v minulosti a súčasnosti [Breeding dispersal and abundance of Eurasian eagle-owl in the National Park Malá Fatra in the past and present]. Tichodroma 29: 25–32. [In Slovak with English summary]

Gális M, Naďo L, Hapl E, Šmídt J, Deutschová L & Chavko J 2019: Comprehensive analysis of bird mortality along power distribution lines in Slovakia. Slovak Raptor Journal 13: 1–25. DOI: 10.2478/srj-20190006.

Génot JC 1995: Données complémentaires sur la population de Chouettes Cheveches, *Athene noctua*, en déclin en bordure des vosges du nord [Additional data on the population of little owl on decline along the northern Vosges]. Ciconia 19: 145–157. [In French]

Golawski A, Kupryjanowicz J, Szczypinski P, Dombrowski A, Mroz E, Twardowski M, Kielan S, Antczak K, Pagorski P & Murawski M 2017: Autumn irruptions of red-footed falcons *Falco vespertinus* in east-central Poland. Polish Journal of Ecology, 65(3): 423–433.

Haas D, Nipkow M, Fiedler G, Scheneider R, Haas W & Schürenberg B 2005: Protecting birds from powerlines. Nature and Environment 140: 90.

Holte D, Köppen U & Schmitz-Ornés A 2016: Partial Migration in a Central European Raptor Species: An Analysis of Ring Re-Encounter Data of common kestrels *Falco tinnunculus*. Acta Ornithologica 51(1): 39–54. DOI:10.3161/00016454AO2016. 51.1.004.

Horváth M, Kovács A & Gallo-Orsi U 2006: Action Plan for imperial eagle (*Aquila heliaca*) in the Southern-Caucasus. BirdLife International, Wageningen. Manuscript.

Horváth A, Bank L & Horváth G F 2020: Variation in the diet and breeding biology of the common barn-owl (*Tyto alba*) in a demographic cycle of common vole (*Microtus arvalis*) between two outbreaks. Ornis Hungarica 28(2): 37–65.

Jenčo M, Repel M & Demko M 2016: Bird-ringing results in Slovakia in 2014 and 2015. Tichodroma 28: 97–105. [In Slovak with English summary]

Jenčo M, Repel M & Demko M 2017: Bird-ringing results in Slovakia in 2016. Tichodroma 29: 33–41.

[In Slovak with English summary]

Jenčo M & Repel M 2018: Bird-ringing results in Slovakia in 2017. Tichodroma 30: 72–79. [In Slovak with English summary]

Jenčo M & Repel M 2019: Bird-ringing results in Slovakia in 2018. Tichodroma 31: 42–48. [In Slovak with English summary]

Jenčo M & Repel M 2020: Bird-ringing results in Slovakia in 2019. Tichodroma 32: 69–76. DOI: 10.31577/tichodroma.2020.32.9 [In Slovak with English summary]

Jenčo M & Repel M 2021: Bird-ringing results in Slovakia in 2020. Tichodroma 33: 69–75. DOI: 10.31577/tichodroma.2021.33.5 [In Slovak with English summary]

Klvaňa P & Cepák J 2018: Report on Czech Bird Ringing for 2017. Kroužkovatel 26. [In Czech with English summary]

Klvaňa P & Cepák J 2020: Report on Czech Bird Ringing for 2019. Kroužkovatel 30. [In Czech with English summary]

Kouba M, Slobodník R & Chavko J 2021: Postfledging dependence period, dispersal movements and temporary settlement areas in saker falcons (*Falco cherrug*). Raptor Journal 15: 77–89. DOI: 10.2478/srj-2021-0005.

Kovács A, Williams NP & Galbraith CA 2014: Saker falcon (*Falco cherrug*) global action plan (Saker-GAP). CMS Raptors MOU Technical Publication No. 2. CMS Technical Series No. 31.

Kristan DM, Golightly RT & Tomkiewicz SM 1996: A Solar-Powered Transmitting Video Camera for Monitoring Raptor Nests. Wildlife Society Bulletin: 24(2): 284–290.

Kropil R 2002: Orol skalný (*Aquila chrysaetos*) [Golden eagle], 201–202. In: Danko Š, Darolová A & Krištín A (eds): Rozšírenie vtákov na Slovensku [Distribution of birds in Slovakia]. Veda, Bratislava. [In Slovak with English summary]

Krupiński D, Lewtak J, Rzępała M & Szulak K 2012: Breeding biology of the Montagu's Harrier (*Circus pygargus*) in east-central Poland and implications for its conservation. Zoology and Ecology 22: 86–92.

Kumbera J 1977: Některé aktuální příčiny ovlivnění stavu dravců v industrializované krajině / návrhy na opatření v současné situaci. [Some of the current causes of impact of the condition of raptors in an industrialized country / suggestions for taking measures in the current situation]. Dravci 1977: 43–53. [In Czech]

Kunze D & Nennstiel L 2020: Recoveries of Ringed red-footed falcons (*Falco vespertinus*) in Germany - An update documentation. AVES Braunschweig 11.

Lipták J 2007: Nesting by hobbies (*Falco subbuteo*) in the Košice Basin (eastern Slovakia) from 1996 to 2005. Slovak Raptor Journal 1: 45–52.

Marti C, Poole A, Bevier L, Bruce M, Christie D, Kirwan G & Marks J 2020: Barn owl (*Tyto alba*). Birds of the World. DOI: 10.2173/bow.brnowl.01.

Mátics R, Hoffmann G, Farkas S, Dawson D, Frantz A, Varga D, Mátics E & Klein Á 2017: Demographic decline and detection of genetic bottleneck in a population of barn owl *Tyto alba* in Hungary. Journal of Ornithology 158(3): 811–821. DOI: 10.1007/s10336-017-1433-z

McIntyre CL, Collopy MW, & Lindberg MS 2006: Survival probability and mortality of migratory juvenile golden eagles from Interior Alaska. Journal of Wildlife Management 70 (3): 717–722.

Meyburg B-U 2010: Satellite tracking of eastern imperial eagles *Aquila heliaca*. The 6th International Conference on Asian Raptors, Ulaanbaatar, Mongolia. Poster. DOI: 10.13140/RG.2.1.1155.0564.

Meyburg B-U, Manowsky O & Meyburg C 1995: Breeding success of tree- and pylon-nesting ospreys *Pandion haliaetus* in Germany. Vogelwelt 116: 219–224.

Meyburg B-U, Bělka T, Danko Š, Wójciak J, Heise G, Blohm T & Matthes H 2005: Age at first breeding, philopatry, longevity and causes of mortality in the lesser spotted eagle *Aquila pomarina*. Limicola 19: 153–179.

Millon A & Bretagnolle V 2008: Predator population dynamics under a cyclic prey regime: numerical responses, demographic parameters and growth rates. Oikos 117:1500–1510.

Millon A, Bourrioux J-L, Riols C & Bretagnolle V 2002: Comparative breeding biology of hen harrier and Montagu's harrier: an 8-year study in north-eastern France. Ibis 144: 94–105.

Monti F 2012: The osprey, *Pandion haliaetus*, state of knowledge and conservation of the breeding population of the Mediterranean basin. Initiative PIM.

Nemček V, Chavko J & Deutschová L 2014: Movement of satellitetracked juvenile saker falcons (*Falco cherrug*) in SW Slovakia. Slovak Raptor Journal 8: 97–103. DOI: 10.2478/srj20140011.

Newton I & Marquiss M 1982: Fidelity to breeding area

and mate in sparrow hawks *Accipiter nisus*. Journal of Animal Zoology 51: 327–341.

Newton I & Wyllie I 1992: Fidelity to nesting territory among European Sparrowhawks in three areas. Journal of Raptor Research 26 (3): 108–114.

Palatitz P, Fehérvári P, Solt S & Barov B 2009: European species action plan for the red-footed falcon *Falco vespertinus* Linnaeus, 1766. European Commission. BirdLife International & MME/ BirdLife Hungary, Budapest.

Poprach K, Kunstmüller I & Veselý J 2016: Moták lužní [Montagu's harrier]. Tyto, Nenakonice. [In Czech]

Poprach K, Poprach A, Opluštil L, Krause F, Škorpíková V, Šálek M & Kodet V 2018: Sýček obecný (*Athene noctua*) na jižní Moravě v letech 1990–2017 [Little owl in the southern Moravia in the years 1990–2017]. Crex 37: 18–66. [In Czech with English summary]

Probst R & Gaborik A 2011: Action Plan for the conservation of the White-tailed Sea Eagle (*Haliaeetus albicilla*) along the Danube. Danube Parks, Donau-Auen National Park, Orth and der Donau.

Prommer M, Bagyura J, Chavko J & Uhrin M 2012: Migratory movements of Central and Eastern European saker falcons (*Falco cherrug*) from juvenile dispersal to adulthood. Aquila 119: 111–134.

Riegert J & Fuchs R 2011: Fidelity to roost sites and diet composition of wintering male urban common kestrels (*Falco tinnunculus*). Acta Ornithologica 46(2): 183–189.

Saurola P, Valkama J & Velmala W 2013: The Finnish Bird Ringing Atlas. Vol. I. Finnish Museum of Natural History & Ministry of Environment, Helsinki. [In Finnish with English summary]

Slobodník V, Slobodník R & Dravecký M 2009: Summary of raptor and owl ringing in Slovakia in 2007 and 2008. Slovak Raptor Journal 3: 63–72. DOI: 10.2478/v10262-012-0035-1.

Slobodník V & Slobodník R 2011: Summary of raptor and owl ringing in Slovakia in 2010. Slovak Raptor Journal 5: 131–135. DOI: 10.2478/v10262-012-0060-0.

Slobodník V & Slobodník R 2012: Summary of raptor and owl ringing in Slovakia in 2011. Slovak Raptor Journal 6: 41–44. DOI: 10.2478/v10262-012-0063-x.

Slobodník R, Chavko J, Lengyel J, Noga M, Maderič B & Baláž M 2017: Trend in an isolated population of the red-footed falcon (*Falco vespertinus*) at the edge of its breeding range (south-western Slovakia). Slovak Raptor Journal 11: 83–89. DOI: 10.1515/srj-2017-0007.

Slobodník R & Jenčo M 2020: Summary of raptor and owl ringing in Slovakia in the period 2012 to 2019. Slovak Raptor Journal 14: 45–72. DOI: 10.2478/srj-2020-0007.

Sponza S, Licheri D & Grassi L 2001: Reproductive behaviour and success of red footed Falcon *Falco vespertinus* in North Italy. Avocetta 25: 69.

Šálek M, Poprach K, Opluštil L, Melichar D, Mráz J & Václav R 2019: Assessment of relative mortality rates for two rapidly declining farmland owls in the Czech Republic (Central Europe). European Journal of Wildlife Research 65: article number 19.

Škorpíková V, Hlaváč V & Křápek M 2019: Bird mortality on mediumvoltage power lines in the Czech Republic. Raptor Journal 13: 27–44. DOI: 10.2478/ srj20190007.

Škorpíková V, Horal D, Štepánek P & Berka P 2020: Hnízdní invaze kalouse pustovky (*Asio flammeus*) na jižní a střední Moravu v roce 2019 [Breeding invasion of short-eared owl in the southern and central Moravia in 2019]. Crex 28: 24–43. [In Czech with English summary]

Veselovský T, Chavko J & Guziová Z 2018: Telemetria orlov kráľovských (*Aquila heliaca*) na Slovensku [Telemetry of eastern imperial eagles in Slovakia], 231–232. In: Bryja J & Solský M (eds), Zoologické dny Praha 2018. Sborník abstraktů z konference. [In Slovak]

Voskár Š 1988: Straty orlov skalných (*Aquila chrysaetos*) v rokoch 1985–1987 na východnom Slovensku [Losses of golden eagles in the years 1985–1987 in the eastern Slovakia]. Haja 1986–1987: 101–105. [In Slovak]

Walker RH, Robinson RA, Leech D I, Moss D, Kew AJ, Barber LJ, Barimore CJ, Blackburn J R, De Palacio DX, Grantham MJ, Griffin BM, Schäfer S & Clark JA 2014: Bird ringing and nest recording in Britain and Ireland in 2013. Ringing and Migration 29: 90–150.

Zuberogoitia I, Arroyo B, O'Donoghue B, Zabala-Albizua J, Martínez J & Murphy S 2012: Standing out from the crowd: Are patagial wing tags a potential predator attraction for harriers (*Circus* spp.)? Journal of Ornithology 153: 985–989. DOI: 10.1007/s10336-012-0842-2.

Received: 5. 12. 2021
Accepted: 28. 1. 2022