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Nesting by Hobbies (*Falco subbuteo*) in the Košice Basin (Eastern Slovakia) from 1996 to 2005

Hniezdenie sokola lastovičiara (*Falco subbuteo*) v Košickej kotline (východné Slovensko) v rokoch 1996 až 2005

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Abstract: In the course of ten nesting seasons from 1996 to 2005 I observed nesting by hobbies in Eastern Slovakia within a territory of 1000 km^2 in the Košice Basin. During this ten-year period 218 nestings were recorded. The average population density was two pairs per 100 km^2 in the monitored territory. In certain quadrants with better occupation it was from four to seven pairs per 100 km^2. The birds nested more frequently on very high tension (VHT) electricity pylons (126 instances) than in trees (92 instances). They prefer the nests of hooded crows (*Corvus corone cornix*) (110 cases) and ravens (*Corvus corax*) (90 cases), and in only 18 cases did they use another nesting solution. When nesting in VHT pylons in the 1980's they used to make more use of crows' nests, but at the present time they prefer ravens' nests to a significant degree.

Abstrakt: V priebehu hniezdnych sezón 1996 až 2005 som sledoval hniezdenie sokola lastovičiara na východnom Slovensku v Košickej kotline na území približne 1000 km^2. Za obdobie desiatich rokov bolo zistené 218 hniezdení. Priemerná hustota bola 2 páry na 100 km^2 v sledovanom území. V niektorých štvorcoch s najlepšou obsadenosťou to bolo 4 až 7 párov na 100 km^2. Najčastejšie hniezdil na stožiaroch veľmi vysokého napätia (VVN), a to 126 krát a na stromoch 92 krát. Uprednostňuje hniezda vrán túlavých (*Corvus corone cornix*) v 110 prípadoch a krkavcov čiernych (*Corvus corax*) v 90 prípadoch, len 18 krát využil inú možnosť. Pri hniezdení na stožiaroch VVN v 80. rokoch využíval najmä hniezda vrán a v súčasnosti sú to v rozhodujúcej miere hniezda krkavcov.

Key words: Hobby, *Falco subbuteo*, Hooded Crow, Raven, density of population, Košice basin, Eastern Slovakia

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Introduction

The Hobby is studied by only a few ornithologists in Slovakia. This is probably due to the fact that observing this species requires a certain degree of specialization. Nor is there a great deal of literature from the past concerning their nesting in this country. They nest throughout Slovakia in suitable biotopes, but not very densely (Ferianc 1977). I assume that their numbers in this country are fairly stable, but their manner of nesting during the last 25 years has been "modernized". In the same way that crows and ravens have adapted their nesting habits to the use of VHT pylons, this has also come to suit the hobbies, especially as they are associated with the former species with regard to their nesting. I recorded the first example of nesting in a VHT pylon in 1979 (Lipták in Danko 1980), and this manner of nesting has also been found in Germany (Kirmse 1991). The aim of this research was to compile some

basic data on the number of nesting pairs in the Košice Basin, the location and selection of their nests, and the level of their nesting success, and thus contribute to the knowledge of their nesting biology.

Description of the territory

The Košice Basin forms part of south-east Slovakia. The observed territory has an area of approx. 1000 km^2 and extends over 12 quadrants of the Databank of Fauna in Slovakia (DFS): 7094, 7194, 7293-94, 7390-94 and 7491-93 (see map in Fig.1). It is bordered by the Slanské and Volovské Hills, the Bodvianska ridges and the Slovakian Karst. Heights above sea-level range from 160 to 450 metres, and the catchment area is of the rivers Hornád, Torysa and Bodva. The south part is an intensively-farmed plain with belts of Canadian poplar (*Populus canadensis*) planted alongside rivers and drainage canals, and forming windbreaks. The northern part around the river Torysa rises in ridges with fields and smaller, mainly oak woods, but there are also poplar belts here along the Torysa and in windbreaks. The territory is crossed by two VHT transmission lines.

Methods and materials

Nesting data were collected in three basic ways:

1. Locating nesting pairs:
This was done in June when the birds were already sitting on their clutches. Findings were only confirmed as data when the pairs were seen to be sitting firmly and taking turns on the clutch.

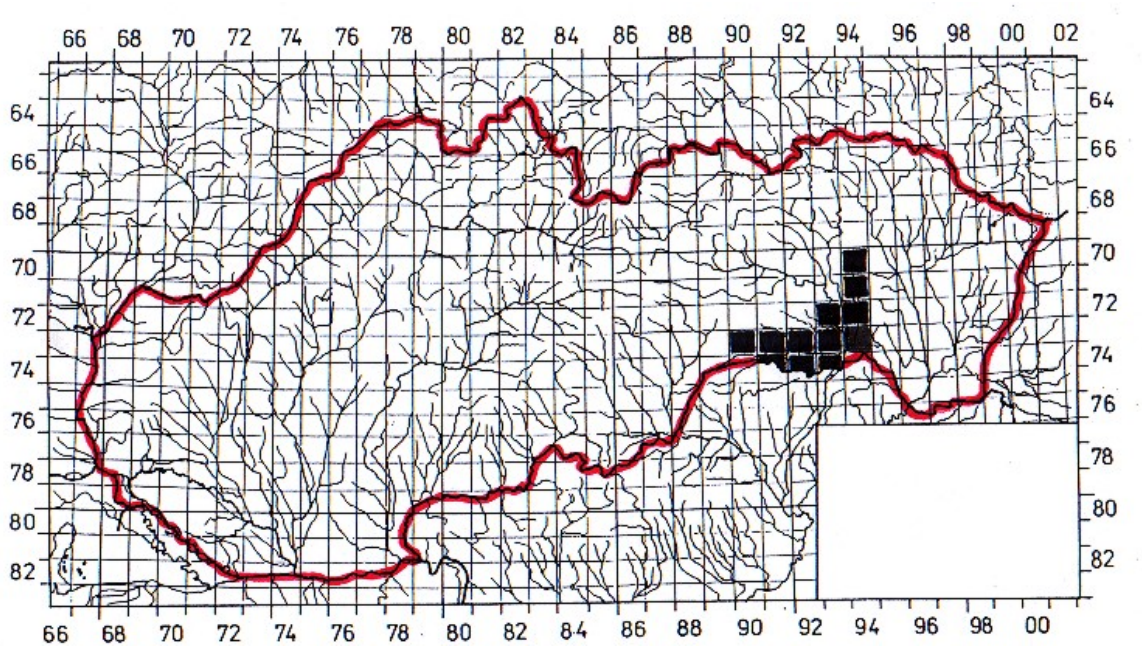
2. Checking young in the nests:
This was done in July when the chicks were more than ten days old and could be observed from the ground. I climbed up to the nests only in exceptional cases.

3. Checking fully-raised young:
This was done in August when young birds were observed in the close vicinity of the nest, or fully-fledged and capable of flight from the nest.

Due to the reason that some pairs do not nest regularly in the same locality, I carried out the locating of nesting pairs through systematic checking of suitable biotopes each year.

Fig.1. Observed territory shown as DFS quadrants covering the Košice Basin in Eastern Slovakia.

Obr 1. Sledované územie v sieti štvorcov DFS v Košickej kotline na východnom Slovensku.



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Results

During the period in question, 1996 to 2005, 218 nestings by hobbies were confirmed in the Košice Basin (Tab. 1). The highest density of nesting pairs in one quadrant was from four to seven pairs per 100 km^2, and the lowest was from zero to two pairs per 100 km^2. The closest distance between two nesting pairs was found in 2005 at just 340 metres. Average nesting success was 69%, giving 31% of losses, when not even one young bird flew from the nests.

The average number of fully-raised birds per nest in cases of successful nesting was 2.25, and the average number of young birds flying from the nests of all nestingpairs was 1.56.

The most frequent number of young birds flying from one nest was three, occurring in 47.6% of the total number of successful nestings. In terms of percentage expression of numbers of young birds flying from nests in various European countries with varying numbersof nests, these results are comparable (Tab. 2).

Tab. 1. Nesting success rate of the Hobby (*Falco subbuteo*).
Tab. 1. Hniezdna úspešnosť sokola lastovičiara (*Falco subbuteo*).

Year	Number of occupied nests	Number of successful nestings	Number of young confirmed on nests	Number of fully-raised young	Average number of young on nests	Nesting success rate (number of fully-raised young per occupied nest)
1996	21	13	30	29	2,23	1.38
1997	24	16	34	33	2,06	1.38
1998	18	12	34	34	2,83	1.89
1999	25	17	41	39	2,29	1.56
2000	18	9	21	21	2,33	1.17
2001	24	19	37	35	1,84	1.46
2002	18	11	29	29	2,63	1.61
2003	18	14	38	37	2,64	2.06
2004	27	20	49	42	2,10	1.56
2005	25	20	45	41	2,05	1.64
TOTAL	218	151	358	340	2.25	1.56

Tab. 2. Numbers of young birds flying from nests in certain parts of Europe.
Tab. 2. Počet vyletených mláďat z hniezd v niektorých častiach Európy.

Observed territory	Period	Number of nests (n)	Numbers of young flying from nests								Source
			1		2		3		4		
			n	%	n	%	n	%	n	%	
Eastern Slovakia	1996-2005	151	19	12.5	58	38.4	72	47.6	2	1.3	This study
Danube Delta Romania	1981 1987 1988	48	6	12.5	17	35.4	23	47.9	2	4.2	Müller & Rohde 1991
Berlin	1956-1982	328	51	15.5	108	32.9	156	47.6	13	4.0	Fiuczynski 1988
England	1930-1972	38	5	13.2	16	42.1	17	44.7	0	0	Fiuczynski & Nethersole-Thompson 1980

In 126 cases in this study, nests were located in VHT pylons (Tab. 3) and in 92 cases in trees, the majority of which were Canadian poplars (91 cases), with just one instance of acacia (*Robinia pseudoacacia*). The hobbies used old crows' nests in 110 cases, ravens' nests in 90 cases, and there were 18 uses of other species' nests: magpies (*Pica pica*) five times, imperial eagle (*Aquila heliaca*) one time, common buzzard (*Buteo buteo*) one time, and there were 11 uses of artificial nest frames.

The earliest arrival here from the wintering area during the studied period was recorded on 12th April 2003, and the earliest sitting on a clutch similarly on 26th May 2003, whereas the last spotting of young birds not yet flown from the nest was on 2nd September 2004.

Tab. 3. Manner of nesting by hobbies (*Falco subbuteo*).
Tab. 3. Spôsob hniezdenia sokola lastovičiara (*Falco subbuteo*).

Year	Number of occupied nests	Location of nests		Nests originally built by			Nesting in VHT pylons	
		VHT pylon	Tree	Raven	Crow	Other	Raven	Crow
1996	21	11	10	7	11	3	7	2
1997	24	15	9	9	14	1	9	5
1998	18	14	4	11	6	1	11	3
1999	25	16	9	11	14	0	11	5
2000	18	12	6	9	8	1	9	3
2001	24	16	8	10	12	2	10	4
2002	18	13	5	10	7	1	10	2
2003	18	10	8	8	7	3	8	0
2004	27	10	17	9	15	3	9	0
2005	25	9	16	6	16	3	6	0
TOTAL	218	126	92	90	110	18	90	24

Discussion

There is no more detailed information available for the purpose of comparing numbers and nesting dynamics among the hobby population in this country. Likewise in the Košice Basin, where I have been observing hobbies for 25 years, I am unable to assess the dynamics of nesting numbers. There are several reasons for this. Deviations in particular years may be connected with natural influences on nesting such as weather, predators, availability of food and of suitable nests. Human impact on the environment is important as well – cutting down poplar belts, removal of nests from VHT pylons, and changes in agricultural use causing changes in numbers of swallows (*Hirundo rustica*) and house-martins (*Delichon urbica*), which are the hobbies' main prey.

Possibly the most important factor is the existence of a sufficient number of suitable crow and raven nests for the hobbies' nesting. One subjective reason is that I have not maintained equal intensity of observation year by year. Hobbies are small, inconspicuous raptors which are difficult to track down to their nests. For their nesting they almost always choose the current year's nests of corvine birds, and only in exceptional cases do they occupy an older nest. It often happens that in successive years certain pairs occupy different nests, maybe 2-3 kilometres away from the previous year's nesting place, and whenever there were several such pairs close to one another, I would lose track of the identities of particular pairs. It has also happened, as for example in 2005, that I was unable to locate 7 pairs which had disappeared from their original nestinng area, but then I found a further 7 new pairs nesting in different places from 5 to 20 km away.

Some pairs, though, remain faithful to their own nesting site for many years. One pair I have been observing for 26 years always return to the very same locality. The first time I found them using a

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▲ **Fig. 2.** Nesting biotope with poplar avenue. Photo: J. Lipták
Obr. 2. Hniezdny biotop s topoľovou alejou Foto: J. Lipták

▲ **Fig. 3.** Nesting biotope with line of high-tension pylons. Photo: J. Lipták
Fig. 3. Hniezdny biotop s líniou stožiarov vysokého napätia. Foto: J. Lipták

▲ **Fig. 4.** Hobby falcon young in a crows' nest in a high-tension pylon. Photo: J. Lipták
Obr. 4. Mláďatá sokola lastovičiara vo vraňom hniezde na stožiari vysokého napätia. Foto: J. Lipták

▲ **Fig. 5.** Hobby falcon young in a ravens' nest in a high-tension pylon. Photo: J. Lipták
Obr. 5. Mláďatá sokola lastovičiara v hniezde krkavca na stožiari vysokého napätia. Foto: J. Lipták

crows' nest in a VHT pylon, but after three years the crows disappeared from this area. Immediately, however, the crows' place was taken by some ravens which started nesting in the pylon. Since then, thanks to the ravens, the hobbies have been nesting in the same pylon every year.

Sometimes it happens that the young ravens pull the nest to pieces on flying from it, which leaves nowhere for the hobbies to nest. For this reason I installed an artificial nest frame in the pylon, made from boards measuring 60x60x15 cm and filled with a mixture of earth and woodshavings.

Since 1984 ravens have used this every year as the base for their nests, and even if they take the nest apart the hobbies can still nest in the frame. The reason is probably that they have no other nesting opportunity in this area, but this place greatly suits them. It is also most probable that during the course of this period the adult birds in the pair have been replaced.

I am able to compare past and present patterns of nesting in VHT pylons. In the 1980's the hobbies nested in pylons mainly in crows' nests. For example in 1988 out of seven pairs in pylons, six were in

Fig. 8. Hobby falcon (*Falco subbuteo*) with young in a crows' nest in a poplar. Photo: J. Lipták

Obr. 8. Sokol lastovičiar (Falco subbuteo) s mláďatmi vo vraňom hniezde na topoli. Foto: J. Lipták

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crows' nests and just one in a ravens' nest (Lipták in Danko 1988), and in 1989 out of 15 pairs, 11 were in crows' nests and four in ravens' (Lipták in Danko 1989). Table 3 shows, however, that in the last few years the trend is the opposite, that hobbies nesting in VHT pylons now almost always use only ravens' nests. This is connected with a negative population trend among crows and increasing population dynamics among ravens during the 1990's (Danko et al. 2002), when there was also a marked increase in the numbers of ravens nesting in pylons. The number of hooded crows is falling partly due to changes in local agricultural usage (declining use of pastures and manure heaps). In the Košice Basin nowadays crowsonly rarely nest in VHT pylons.

Nesting in VHT pylons provides hobbies protection against their natural enemies, especially goshawks (*Accipiter gentilis*) and pine martens (*Martes* sp.). From here they get a very good all-round view of the surrounding country, as well as the measure of height which is so important for falcons. On the other hand, the nest and the young have no protection from rain and wind, and it can also happen that lightning strikes the pylon itself.

In wet years there are more losses from these nests than from those in trees. Another dangerous phenomenon is the inclusion by crows and ravens in their nest litter of lengths of string negligently left in the fields by farm workers. Not only young birds but also adults can become tangled in the string. I have always checked for this when visiting nests.

Hobbies have nested on artificial frames 11 times in this area. They only made use of a frame when they had no other nesting opportunity. Installation of frames is a possible means of enabling nesting to succeed in a particular year, but not of increasing the number of nesting opportunities.

In conclusion I would like to mention an interesting observation from 2003. A hobby which had been unsuccessful in nesting (I found egg-shells below the nest) still remained on the nest. A young kestrel (*Falco tinnunculus*) came flying from a nearby nest and perched below the hobby's nest, and on 26th July I twice observed the hobby giving the young kestrel food. On the following three days the young kestrel camme again, but I did not observe any more presenting of food.

Súhrn

Na Slovensku je o sokolovi lastovičiarovi málo podrobnejších poznatkov. Vo vhodných biotopoch hniezdi na celom území štátu, aj keď nie vo veľkom počte. Pravdepodobne sa jeho početnosť u nás v posledných desaťročiach nemení (Karaska & Danko 2002). Posledných 25 rokov sa prispôsobil hniezdeniu v hniezdach krkavcovitých vtákov na stožiaroch veľmi vysokého napätia (VVN). V období rokov 1996 až 2005 som sledoval tento druh v Košickej kotline. Územie o rozlohe 1000 km^2 zasahuje do 12 kvadrátov databanky fauny Slovenska (DFS) (Obr. 1). Nadmorská výška územia sa pohybuje od 160 do 450 m nad morom. Väčšinou je to poľnohospodársky využívaná krajina s pásmi topoľa kanadského (*Populus canadensis*), vysadenými popri vodných tokoch, odvodňovacích kanáloch a vo vetrolamoch. Južná časť kotliny je rovina a na severe prechádza do pahorkatiny. Sú tu aj menšie dubové lesíky. Cez územie vedú 2 trasy VVN.

Pri sledovaní boli vykonávané 3 základné kontroly:

1. Vyhľadávanie hniezdnych párov. Prebiehalo v júni, keď vtáky sedia na znáškach.
2. Kontrola mláďat na hniezdach. V júli sa zisťoval počet mláďat starších ako 10 dní.
3. Kontrola vyvedených mláďat. Prebiehala v auguste, keď mláďatá opúšťali hniezdo.

Výsledky

Výsledky pozorovaní o hniezdnej úspešnosti sú v Tab. 1, počtu vyletených mláďat z úspešného hniezda v Tab. 2 a spôsobu hniezdenia v Tab. 3.

Bolo zistených 218 hniezdení, z toho na stožiaroch VVN 126 krát a 92 krát na strome. Na stromoch boli hniezda na topoli kanadskom (*Populus canadensis*) 91 krát a raz na agáte (*Robinia pseudoacacia*). Na stožiaroch VVN hniezdili lastovičiare v hniezdach krkavcov 90 krát a v hniezdach vrán 24 krát. Celkom hniezdili v krkavčích hniezdach 90 krát, vo vraních 110 krát a 18 krát využili možnosti v hniezdach iných druhov vtákov: straka čiernozobá (*Pica pica*) 5 krát, orol kráľovský (*Aquila helica*) 1 krát, myšiak lesný (*Buteo buteo*) 1 krát a 11 krát použili umelú hniezdnu podložku. Na umelých podložkách hniezdili len vtedy, keď nemali inú možnosť. Posledné roky vrany hniezdia na stožiaroch zriedkavejšie.

Hniezdna hustota sokola lastovičiara v lepších biotopoch Košickej kotliny je 4–7 párov na 100 km^2, inde sú to 0-2 páry na 100 km^2. Najbližšia vzdialenosť medzi dvomi hniezdiacimi pármi bola zistená v roku 2005 – len 340 m.

Priemerná úspešnosť hniezdenia bola 69 % a 31 % tvorili straty, keď z hniezda nevyletelo ani 1 mláďa. Priemerný počet mláďat na hniezde bol 2,35 mláďaťa na hniezdo a priemerný počet vyletených mláďat na všetky hniezdne páry bol 1,56.

Najskorší prílet zo zimoviska k nám za spomínané obdobie som zaznamenal 12.4.2003, najskoršie sedenie na vajíčkach 26.5.2003 a posledné pozorovanie ešte nevyletených mláďat na hniezde 2.9.2004.

Jeden pár lastovičiarov hniezdi na tej istej lokalite už 26 rokov a v tom istom hniezde 23 rokov.

Pozorované bolo predávanie potravy sokolom lastovičiarom, ktorý mal neúspešné hniezdenie mladému, už lietajúcemu sokolovi myšiarovi (*Falco tinnunculus*).

▲ **Fig. 6.** Wooden platform with hobby falcon young in a high-tension pylon. Photo: J. Lipták
Obr. 6. Drevená podložka s mláďaťom sokola lastovičiara na stožiari vysokého napätia. Foto: J. Lipták

▲ **Fig. 7.** Plastic container with hobby falcon young in a high-tension pylon. Photo: J. Lipták
Obr. 7. Umelohmotná nádoba s mláďatmi sokola lastovičiara na stožiari vysokého napätia. Foto: J. Lipták

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