

Records of the Lesser Spotted Eagle (*Aquila pomarina*) nests with two fledged young without human intervention in Slovakia

Prípady s dvomi vyvedenými mláďatami z hniezd orlov kriľavých (*Aquila pomarina*) bez zásahu človeka na Slovensku

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Abstract: An intensive research of the Lesser Spotted Eagle biology is conducted in Slovakia since the 80ties of the 20th century. A lot of attention has been paid to the process of cainism. Despite this strong feature in the species bionomy, scarcely cainism is overcome and 2 young fledge from a single nest without human intervention. In 1981 the first finding of this kind was recorded in Slovakia. Since then until the year 2008 there were 64 records of this kind out of 1775 surveyed productive breedings recorded in Slovakia. In the mentioned time period, it represents 3.61 % on average (in individual years it varied from 1.15–9.65 %) when 2 young fledged from a single nest without human intervention.

Abstrakt: Od 80. rokov 20. storočia sa na Slovensku vykonáva intenzívny výskum biológie orla kriľavého, u ktorého je skúmaný aj proces kainizmu. Aj napriek tejto silnej črte sa v bionómii druhu vyskytli vzácné prípady prekonania kainizmu, ktorého výsledkom boli dve úspešne vyletené mláďatá z jedného hniezda bez pomoci zo strany človeka. Od roku 1981, kedy sa na Slovensku zaznamenal prvý takýto prípad, do roku 2008 vrátane sa zaznamenalo spolu 64 prípadov z celkového počtu 1775 kontrolovaných produktívnych hniezd na Slovensku. Za uvedené obdobie to predstavuje v priemere 3,61 % (v jednotlivých rokoch 1,15–9,65 %) prípadov vyvedenia dvoch mláďat bez zásahu človeka.

Key words: Lesser Spotted Eagle, *Aquila pomarina*, two chicks, Slovakia

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Introduction

Lesser Spotted Eagles usually have a two-egg clutch, less frequently one-egg clutch and very rarely even a three-egg clutch. Meyburg (1970) has determined the proportions between one-egg (16.3 %), two-egg (81.5 %) and three-egg (2.2 %) clutches from 178 clutches of known size from the area of Germany, Belarus, Slovakia, Hungary, Romania, Moldova and Macedonia. Abuladze (2001) has confirmed similar percentage proportions from the clutches from Armenia, Georgia and Azerbaijan in the period 1975–1992, when out of 25 clutches of known size, there were 22 two-egg clutches (88 %), only 2 one-

-egg clutches (8 %) and a single three-egg clutch (4 %). In Slovakia, Švehlík & Meyburg (1979) recorded 32 (68 %) two-egg clutches and 15 (32 %) one-egg clutches out of 47 clutches of known size. A three-egg clutch was not recorded.

Even when 2 chicks hatch from two-egg clutches, the second chick is often a victim of cainism or perishes (e. g. Sládek 1959, Meyburg 1970, 1974, 2001, 2002). Cainism on the Lesser Spotted Eagle nest was also recorded using camera system (Scheller & Meyburg 1996a, b). Only exceptionally, when cainism is overcome and the weaker resp. the second chick fledges together

with its older sibling, two young fledge from a single nest without human intervention. The first data on two fledged Lesser Spotted Eagle young from a single nest come from Germany from the year 1930 and 1959 (Gerth & Dornbusch 1973).

The fact that fledging of two young from a single nest (without human intervention) is very scarce is proved by the percentage ratio of these cases in comparison to the nests from which only 1 young fledged. In Lithuania, Drobelis (1996) gives only a single record (2.85 %) of a nest with two young out of 35 productive breeding pairs and Treinys & Dementavičius (2001) have recorded only 3 identical cases (3 %) out of 99 productive nests. Väli (2003) reports only 5 cases (1.8 %) of this kind out of 276 productive pairs in Estonia in the years 1981–2002. Out of 29 productive nests in Belarus, 2 young fledged from a single nest only in one case (3.4 %) (Ivanovsky 1996), in Latvia 3 identical cases (2.5 %) were recorded out of 118 productive nests (Bergmanis et al. 2001) and in Poland 9 like cases (about 3 %) were recorded out of approximately 300 productive nests until the year 1991

(Rodziewicz 1996). In Eastern Poland (Lubelszczyzna) during 1986–2008 Wójciak has found 27 cases (2.4 %) with two fledged young without human intervention from total 1208 productive nests (Wójciak in verb.). In comparison with 1304 cases when a single young fledged from a nest, there was only a single record of fledging of two young without human intervention in Germany (0.076 %) (n = 286 in Brandenburg and 1018 in Mecklenburg-Western Pomerania; Meyburg et al. 2008).

Summary of records from Slovakia

An intensive research of the Lesser Spotted Eagle biology is conducted in Slovakia since the 80ties of the 20th century. The first record of a nest fledging two young in Slovakia comes from the year 1981. Since then, this phenomenon has been studied and its results are chronologically presented in this article (see also Tab. 1) and some cases with two young on the nests are consequently shown (see Figs 1–8).

The first finding of a Lesser Spotted Eagle nest fledging two young without human intervention was recorded



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Fig. 1. Two *A. pomarina* young at Hrhov (eastern Slovakia, Slovak Karst), 7 July 2007.

Obr. 1. Dve mláďatá *A. pomarina* na lokalite Hrhov (východné Slovensko, Slovenský kras), 7. júl 2007.

by Lipták in the “Slanské vrchy” Mts at Zemplínska Teplica in 1981 (Danko 1982). Two chicks were recorded on the nest on July 9. The second finding in Slovakia (and 4th in the world) was recorded in the “Levočské vrchy” Mts at Nižné Ružbachy in the year 1984 (Danko 1985, 1986) when 2 fully feathered eaglets were recorded on a nest on August 1 shortly before fledging (for both records see also Danko 1984). The third finding comes from the “Beskydské predhorie” foothill at Sedliská when Kaňuch recorded and for the first time photo documented two young on the nest on July 22, 1987 (Danko 1989, Kaňuch 1991). The same pair fledged two young from the same nest even in the year 1989. The 5th finding was recorded by Boháčik in central Slovakia in 1989 (Danko 1991). The next case is reported from the year 1990 but due to a lack of information in the literature cited (Danko 1992b) it is not evident whether it was fledging of two young without a human intervention or not. In the year 1991 6 nests with two eaglets were found: 2 records in Stará Ľubovňa district (Bělka et al. 1992), 2 records in Liptovský Mikuláš district and a single record in Dolný Kubín district and same ap-

plies in Humenné district (Danko 1992a, Karaska 1994), which all together with the previous cases gives a total of 11 findings. In the year 1992, single finding was recorded in Dolný Kubín district and another findings were found out in Stará Ľubovňa district (Danko 1994, Karaska 1994), which was 12th and 13th finding in rank. 3 records come from the year 1993 – 2× in Dolný Kubín district (Karaska 1994), once in Martin district and 1994 – 2× in Stará Ľubovňa district and 1× in Dolný Kubín district (Danko et al. 1995a, b). Two findings were reported in 1995: 1× in Slanské vrchy at the village of Slančík and 1× at the village of Žiar in Liptovský Mikuláš district. Another record was found close to Jasov in “Košice-okolie” district in 1996 as a nest, which fledged two eaglets. In the year 1998 and likewise in 1999 a single finding was recorded in Stará Ľubovňa district. Hence until the end of 1999 24 findings were recorded in Slovakia.

The year 2000 represents a breakpoint in the Lesser Spotted Eagle research as colour ringing of the species has been launched (Dravecký et al. 2008). In the same year there were 11 findings of the Lesser Spotted Eagle



B. Maderič

Fig. 2. Ringed *A. pomarina* siblings on a nest. Zemplínske Hámre (eastern Slovakia, “Vihorlatské vrchy” Mts), 13 July 2004.
Obr. 2. Okružkované susedence *A. pomarina* v hniezde. Zemplínske Hámre (východné Slovensko, Vihorlatské vrchy), 13. júl 2004.

Tab. 1. Frequency of nests fledging two chicks without human intervention in comparison to the total number of surveyed productive pairs in Slovakia

Tab. 1. Frekvencia počtu prípadov vyvedenia dvoch mláďat bez zásahu človeka vzhľadom na počet kontrolovaných produktívnych párov na Slovensku

Year / Rok	Productive pairs / Produktívne páry	One young / Jedno mláďa	Two young / Dve mláďatá		Finder / Nálezca	Reference / Citácia
			n	[%]		
1981	17	16	1	5.88	Lipták (1)	Danko (1982, 1984a)
1982	4	4	0	0		Danko (1983)
1983	13	13	0	0		Danko (1984b)
1984	20	19	1	5	Danko (1)	Danko (1984a, 1985, 1986)
1985	16	16	0	0		Danko (1987)
1986	35	35	0	0		Danko (1988)
1987	30	29	1	3.33	Kaňuch (1)	Danko (1989), Kaňuch (1991)
1988	38	38	0	0		Danko (1990)
1989	49	47	2	4.08	Kaňuch (1); Boháčik (1)	Danko (1991)
1990	60	60	0	0		Danko (1992b)
1991	68	62	6	8.82	Bělka, Šreibr, Vrána (2); Vrlík (2); Karaska (1); Maderič (1)	Bělka et al. (1992), Danko (1992a)
1992	85	83	2	2.35	Bělka, Šreibr, Vrána (1); Karaska (1)	Danko (1994)
1993	89	86	3	3.37	Karaska (2); Macek (1)	Danko et al. (1995a)
1994	108	105	3	2.78	Bělka, Šreibr, Vrána (2); Karaska (1)	Danko et al. (1995b)
1995	74	72	2	2.7	Danko, Mihók (1); Vrlík (1)	Danko et al. (2000)
1996	57	56	1	1.75	Dravecký (1)	
1997	51	51	0	0		
1998	62	61	1	1.61	Bělka, Šreibr, Vrána (1)	
1999	87	86	1	1.15	Bělka, Šreibr, Vrána (1)	
2000	114	103	11	9.65	Bělka, Šreibr (3); Vrána (1); Karaska (2); Maderič (2); Boháčik (1); Vrlík (1); Dravecký (1)	this report / táto správa
2001	76	76	0	0		
2002	74	68	6	8.11	Bělka, Šreibr, Vrána (2); Dravecký (2); Boháčik (1); Šotnár (1)	
2003	68	68	0	0		
2004	113	106	7	6.19	Maderič (4); Bělka (1); Danko (1); Dravecký (1)	Maderič (2005)
2005	84	79	5	5.95	Šotnár (3); Kicko (1); Macek, Reřkovský (1)	Dravecký (2006)
2006	97	92	5	5.15	Dravecký, Lehocký (2); Kicko, Dravecký (2); Šotnár (1)	Dravecký (2007)
2007	96	90	6	6.25	Dravecký, Lehocký (4); Mihók (1); Macek, Reřkovský (1)	Dravecký (2008)
2008	90	90	0	0		this report / táto správa
Σ	1775	1711	64	3.61		

nests with two young: in Stará Ľubovňa district 3 records, in Dolný Kubín and Námestovo districts 2 records, in Humenné and Medzilaborce district 2 records, Martin 1 record, Poprad 1 record, Kežmarok 1 record and Liptovský Mikuláš 1 record. In the year 2001 there was no record of a Lesser Spotted Eagle nest with two chicks. In the year 2002 there were 6 nests with two eaglets: 2 records in Stará Ľubovňa district and 1 record for both, “Košice-okolie” district and Prešov district, 1 record in Martin district and same for Prievidza district. In the year 2003 there was no record of a Lesser Spotted

Eagle nest with two chicks. The year 2004 was quite successful with respect to the Lesser Spotted Eagle nests with two young as there were 7 records: 4 in Humenné, Medzilaborce and Snina districts and 1 in each of the following districts: Stará Ľubovňa, Sobrance and Spišská Nová Ves (Maderič 2005). In the year 2005, there were 2 records in Prievidza district, 2 records in Banská Bystrica district and another record in Ružomberok district (Dravecký 2006). Five Lesser Spotted Eagle nests with two chicks were recorded in 2006: 2 records in Poprad and Spišská Nová Ves districts, 2 records in Brezno



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Fig. 3. *A. pomarina* chicks on a nest. Spišský Hrušov (eastern Slovakia, “Hornádska kotlina” basin), 14 July 2007.

Obr. 3. Mláďatá *A. pomarina* na hniezde. Spišský Hrušov (východné Slovensko, Hornádska kotlina), 14. júl 2007.



K. Šotnár

Fig. 4. A nest with two eaglets. Tužiná (central Slovakia, “Strážovské vrchy” Mts), 8 July 2006.

Obr. 4. Hniezdo s dvomi mláďatami. Tužiná (stredné Slovensko, Strážovské vrchy), 8. júl 2006.



B. Maderič

Fig. 5. A relatively minor difference in feathering of young is evident. Palota (eastern Slovakia, “Laborecká vrchovina” highlands), 18 July 2004.

Obr. 5. Pomerne malý rozdiel vo vyperení mláďat je zrejмый. Palota (východné Slovensko, Laborecká vrchovina), 18. júl 2004.



B. Maderič

Fig. 6. A smaller more aggressive chick in the foreground, the difference in size and feathering is evident. Ptičie (Eastern Slovakia, “Vihorlatské vrchy” Mts), 9 July 2004.

Obr. 6. V popredí menšie agresívnejšie mláďa, vidieť badateľný rozdiel vo veku a operení. Ptičie (východné Slovensko, Vihorlatské vrchy), 9. júl 2004.

and Liptovský Mikuláš districts and 1 record in Prievidza district (Dravecký 2007). In the year 2007, there were 6 findings of nests with two chicks altogether: 4 records in Rožňava and Spišská Nová Ves districts, one record in “Košice-okolie” district (Dravecký 2008) and another in Martin district. No nest with two eaglets was recorded in the year 2008.

Since 1981 when the first finding was recorded, until the year 2008 there were 64 records of nests bearing two chicks altogether out of 1775 surveyed productive breedings recorded in Slovakia. In the mentioned time period, it represents 3.61 % on average (in individual years it varied from 1.15–9.65 %) when 2 young fledged from a single nest without human intervention.

Discussion

In Slovakia the highest frequency 3.61 % (1.15–9.65 %) of cases with two fledged young from productive nests without human intervention have been determined.

In other countries within the Lesser Spotted Eagle breeding distribution range the percentage ratio of such records is lower, ranging from 0.076 % in Germany (Meyburg et al. 2008) to 3.4 % in Belarus. However, it is important to keep in mind that the percentage ratio is also affected by the sample size i.e. the number of surveyed productive nests in relation to the number of nests with two young. And compared to 1775 breeding pairs in Slovakia, the sample sizes analysed for other European countries were significantly smaller – 29 in Belarus (Ivanovsky 1996), 118 in Latvia (Bergmanis et al. 2001), 134 in Lithuania (Drobek 1996, Treinys & Dementavičius

2001), 276 in Estonia (Väli 2003) and 300 in Poland (Rodziewicz 1996). Significant comparative data have been found in Eastern Poland where from 1208 productive pairs in 27 cases two chicks without human intervention have been fledged from nests (Wójciak in verb.) and a comparable sample comprising of 1304 breeding pairs was available from Germany but there was only a single record of a nest with two eaglets (Meyburg et al. 2008).

When comparing the countries within European *A. pomarina* breeding distribution range, the lowest frequency of nests producing two young (0.076 %) is on the western border of the species distribution range i. e. in Germany. When united, the surveyed breeding pairs in the northern region i.e. from Estonia, Latvia, Lithuania and Belarus, add up to a total of 557 productive pairs and 13 records of nests with two chicks, which represents 2.33 %. Similar frequency 2.4% have been found in Eastern Poland from total 1208 productive pairs (Wójciak in verb.). In Poland, where a part of the species population dwells in the hilly and mountainous areas of the Carpathian arch, the percentage of nests producing two young was already up to 3 % (Rodziewicz 1996). The highest percentage representation of nests bearing two young (3.61 %) was recorded in Slovakia. It remains unanswered which factors play an important role in producing two chicks without human intervention – whether it is the environmental factors such as altitude, food composition and type, different ecological conditions etc., when the difference in frequency of nests fledging two young of two countries with a comparable sample size such as Slovakia and Germany, is so enormous.



M. Dravecký

Fig. 7. Two chicks of approximately the same age and size without the signs of cannibalism. Batizovce (eastern Slovakia), 9 July 2006.

Obr. 7. Dve mláďatá približne rovnakého veku a vraztu bez náznakov kainizmu. Batizovce (východné Slovensko), 9. júl 2006.



H. Matušik

Fig. 8. Two chicks on a nest at Vyšná Rybnica (eastern Slovakia, “Vihorlatské vrchy” Mts), 18 July 2004.

Obr. 8. Dve mláďatá na hniezde pri Vyšnej Rybnici (východné Slovensko, Vihorlatské vrchy), 18. júl 2004.

When comparing the situation in the individual years of the study period (1981–2008) in Slovakia, the frequency of nests fledging two young varied from 1.15–9.65%. It is hard to say why the frequency does not oscillate just around the average 3–4%. What causes significant differences between the individual years? Is it the fluctuation in a Common Vole (*Microtus arvalis*) abundance, which is a major food staple of the Lesser Spotted Eagle in Slovakia that is responsible for it? The presented results encourage further research of this unique phenomenon in *A. pomarina* breeding range.

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