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Eastern Imperial Eagle (*Aquila heliaca*) in the Czech Republic

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Abstract: The Eastern Imperial Eagle (*Aquila heliaca* Savigny 1809) is a new breeding species in the Czech Republic since 1998, and annually 1-3 pairs breed in the south-eastern part of the country. Between 1998 and 2009 all together 22 breeding attempts took place, and 15 of them were successful (27 young fledged). The average clutch size was 2.27 (N=15), the number of hatched chicks was 1.52 (N=21) and the number of fledglings was 1.29 (N=21) per breeding pair, and 1.53 per productive pair (N=15). The average nest height was 25.8m (18-34 m, N=18). 109 prey items of 20 species were identified. The most important prey species were: Hare (*Lepus europaeus* Pallas 1778), European Hamster (*Cricetus cricetus* Linnaeus 1758), Common Pheasant (*Phasianus colchicus* Linnaeus 1758), European Roe Deer (*Capreolus capreolus* Linnaeus 1758), and small rodents. Successful breeding was confirmed in pairs formed by birds in immature plumage, such as a male in 3rd calendar year and a female in 5th calendar year. During the winter of 2007/08, the numbers of Imperial Eagles grew considerably in the breeding area; up to 10 birds (mainly immatures) stayed at the communal roost.

Key words: Eastern Imperial Eagle, *Aquila heliaca*, breeding population, Czech Republic

Introduction

The Czech Republic represents the north-western limit of the Eastern Imperial Eagle's breeding range. It is a new breeding bird species since 1998, as a result of a population increase in Hungary and Slovakia. There is no older information on confirmed breeding of the species in the Czech Republic, although older literature mentions 'possible breeding' in 1948 (based on the observation of 3 individuals at Pálava hills, South Moravia in June) and 1967 (based on the observation of 3 'young' individuals also in June, in Bílé Karpaty hills, see e.g. Hudec, Šťastný 2005). These young birds, however, were not mature individuals, which excludes the possibility of breeding. The first modern-time breeding in eastern Slovakia was confirmed in 1952 (and probably the species bred there even since 1945) and in western Slovakia in 1953 (probably even since 1947, Danko, Chavko 1996), and soon a colonization of adjacent areas of the Czech Republic was expected. Nevertheless, it took over 40 years until the species crossed the river Morava and started to breed there.

Material and Methods

The study area is situated in the South Moravia county, Břeclav district, in the floodplain of the Morava and the Dyje rivers, near their confluence which makes the border with Slovakia and Austria. Special protection area (SPA) 'Soutok – Tvrdonicko' was established in 2004 in the most valuable part of the

area (ca 9.600 ha), with nine criteria species: White Stork (*Ciconia ciconia* Linnaeus 1758), Black Kite (*Milvus migrans* Boddaert 1783), Red Kite (*Milvus milvus* Linnaeus 1758), Honey Buzzard (*Pernis apivorus* Linnaeus 1758), Saker Falcon (*Falco cherrug* Gray 1834), Common Kingfisher (*Alcedo atthis* Linnaeus 1758), Grey-headed Woodpecker (*Picus canus* Gmelin 1788), Middle-spotted Woodpecker (*Dendrocopos medius* Linnaeus 1758) and Collared Flycatcher (*Ficedula albicollis* Temminck 1815). The area is covered mainly by floodplain forests and alluvial meadows, with dense net of water bodies. This SPA is very intensively searched for raptors; following numbers of rare species breed there: White-tailed Eagle (*Haliaeetus albicilla* Linnaeus 1758) 2 pairs, Red Kite ca 15 pairs, Black Kite ca 15 pairs, Honey Buzzard ca 15 pairs, Saker Falcon 3-4 pairs. Therefore, the area is monitored very often and sufficient data about Imperial Eagles were collected since the species has bred here for the first time in 1998. Since then, each breeding was intensively monitored; in 1998-2005, the chicks were ringed and prey remains were collected in and below the nest. The new breeding territory which was occupied for the first time in 2008 is situated ca 15 km to the North but still belongs to Břeclav district and the habitat is also similar.

Results

Breeding records

The frequency of records of the species (mainly of immature birds) has risen from the early 1990s in South Moravia county, mainly in Břeclav district. In 1997, an immature pair occupied remains of old Common Buzzard (*Buteo buteo* Linnaeus 1758) nest and re-built it in the area of the confluence of Morava and Dyje rivers, near the borders with Austria and Slovakia ('Soutok – Tvrdonicko' SPA and IBA). In 1998, probably the same pair (5th calendar year female and probably only 4th calendar year male) reared 2 chicks, which was the first confirmed breeding of the species in the Czech Republic (Horák 1998). From this year on, the territory was occupied continuously, and in 2006 the female birds was changed in the breeding pair (Horal 2006). During 12 breeding seasons, the pair used 11 nests built on 10 different trees in an area of less than 50 ha and all together 22 chicks fledged. The nests were very unstable and therefore threatened by windstorms, regularly occurring in June or July in the area. In 2000 (see Horák 2000), 2002, 2003 and 2007 (see Horal 2008), altogether 4 chicks died during windstorms and a further 6 were saved only owing to immediate human intervention.

In 2001, a second pair started to breed in the area, ca 7 km north of the first one. Again, the female was probably in 5th calendar year and the male was in 4th calendar year plumage. Breeding failed probably due to disturbance by tree-cutting. In 2002, a 3rd calendar year male joined the pair during the nest-building period. He participated in both nest-building and female-feeding more actively than original male and during the season he replaced him in the pair bond. This year, 2 young were reared. In 2003 and 2004 breeding was not productive again, which could be caused by the potential infertility of the new male or by disturbance caused by tourists (2003) and forest works (2004). Perhaps, the 'original' male (5th calendar year in 2002) was fertile, while the new one (3rd calendar year in 2002) was not, which could be the cause for breeding failure in 2003 and 2004. Three different nests from the years 2001-2004 were located in an area of 75 ha. The birds disappeared from their territory in May 2004, with last observations from the Austrian side. They may become victims of shooting, poisoning or electrocution.

In 2004, the territory of the third pair was established between that of first and second pairs. The female was fully adult while the male was probably only in its 3rd calendar year. They reared one young. In the next year (2005), the pair were chased away by a pair of White-tailed Sea Eagles which built the new nest ca 500 m apart. The Imperial Eagles built their new nest untypically inside the dense forest stand and reared again one young. In 2006 they moved ca 2.5 km apart, breeding failed for unknown reasons (2-egg clutch abandoned). In 2007, they returned to their former territory. A 3-egg clutch was abandoned due to disturbance by forestry works. In 2008 and 2009, this pair bred successfully in Austrian territory and reared 2 young in both years. The nests from 2004-2009 are situated in the area of nearly 300 ha.

In 2008, a new territorial pair appeared ca 15 km from the former breeding area. Breeding failed

both in 2008 (immature birds not yet fertile) and 2009 (probably due to disturbance).

Eastern Imperial Eagles regularly occur at other localities within the county of South Moravia, especially in Břeclav, Hodonín and Znojmo districts, and further colonization of this area is expected.

Breeding biology

Nest building starts as early as November or December; in some years, nests were completely finished before the New Year. Egg laying occurs usually at the end of March or beginning of April; in the case of immature birds, it can be delayed for up to two weeks. In one case (2006), a fully adult pair laid the eggs as late as the end of April or the beginning of May. This was highly probably a replacement clutch. Chicks usually hatch in mid-May (incubation 42-45 days) and juveniles fledge at the end of July or beginning of August (nest care 55-75 days). The Eastern Imperial Eagle is the resident species in the Czech Republic and occurs at its breeding grounds during the whole year. Juveniles usually stay within their parents´ territory until the end of February. Rarely, they stayed there as late as April or May but in such cases, they were intensively chased away by the adults (mainly by female).

In 1998-2009, 22 breeding attempts took place, 15 of them successful (27 fledged young). The average clutch size was 2.27 (N=15), the number of hatched chicks was 1.52 (N=21) and the number of fledged young was 1.29 (N=21) per breeding pair, and 1.53 fledglings per productive pair (N=15) (Table 1). The average nest height was 25.8 m (18-34 m, N=18). Nests were built on Pedunculate Oak *Quercus robur* L. (10), White Poplar *Populus alba* L. (7) and Scots Pine *Pinus silvestris* L. (1); the age of the forest was 100-150 years (oak, pine) or 40-60 years (poplar).

During the last winters, the breeding area started to serve also as "temporary settlement areas". Up to 10 birds (mainly immature) used the communal roost in mid-January 2008, along with up to 30 White-tailed Sea Eagles.

Diet

The main feeding grounds of the Czech population of Imperial Eagle are fields and fallow lands at the Austrian side, in the area of the Bernhardsthaler Ebene plateau. The foraging distance is then up to 5-10 km from the nest. During the meadow mowing, eagles forage on injured or killed animals such as Common Pheasant, European Hare or Roe Deer also in the vicinity of their nest. Table 2 shows 109 prey items (20 species), identified during nest checks, direct observations or in the pellets. Besides the three above mentioned species, European Hamster was among the most important prey species. During the non-breeding season, eagles often prey on Common Voles (*Microtus arvalis* Pallas 1778) at large areas of fallow lands at the Austrian side, which are the results of agri-environmental schemes. Observations from the spring flood in 1997 suggest that swarming Moor Frogs (*Rana arvalis* Nilsson 1842) might also represent an important temporal food source.

Table 1. Breeding of Imperial Eagles in Czech Republic (1998-2009)

Years	Breeding pairs	Successful pairs	Hatched chicks	Fledglings
1998	1	1	2	2
1999	1	1	2	2
2000	1	1	3	2
2001	2	1	3	3
2002	2	2	5	4
2003	2	1	2	2
2004	3	2	2	2
2005	2	2	3	3
2006	2	1	1	1
2007	2	1	3	1
2008	2	1	2	2
2009	2	1	4	3
Total	**22**	**15**	**32**	**27**

Ringing recoveries

Twenty five chicks were ringed, 23 of them fledged successfully. Two ringing recoveries were obtained:

(1) Pull. LB 3591, ringed on 18th June 2001, was found dead on 6th March 2003 (power line collision) near Hanfthal, Mistelbach district, Lower Austria, 43 km W (Gerhard Wolf pers. comm.).

(2) Pull. LB 3596, ringed on 3rd June 2002, was found in bad condition (possibly half-poisoned) on 16th June 2004 between Hrnčiarovce a Voderady, Trnava district, western Slovakia, 60 km SE. After

Table 2. Diet of Imperial Eagle in Czech. Republic

Prey species	Observed in nests (1998-2009)	Identified from pellets (2001-2007)	Total	Note
Capreolus capreolus	4	1	5	
Cricetus cricetus	10	9	19	
Lepus europaeus	33	12	45	Nest: 6ad., 27juv.
Microtus arvalis	0	5		
rabbit (domestic?)	1	0	1	Prob.carrion
small rodent	1	0	6	
Erinaceus sp.(ex. *concolor*)	2	0	2	
Felis domesticus	2	1	3	
Mustela erminea	1	0	1	
Mustela nivalis	1	0	1	
Martes sp.	1	0	1	
Phasianus colchicus	10	0	10	1 m., 5 f., 3 juv.
Gallus domesticus	1	0	1	
Turdus sp.	1	3	4	
Sturnus vulgaris	1	1	2	Pellet: juv.
Columba palumbus	1	0	1	
Columba livia f. *domestica*	3	0	3	
Falco tinnunculus	1	0	1	Juv.
Strix aluco	1	0	1	
Picus sp.	0	1	1	
Rana sp.	0	1	1	
Total	**75**	**34**	**109**	

necessary veterinary care, the bird was released on 24th June 2004 near Smolenice, Malé Karpaty hills (Jozef Chavko pers. comm.)

Discussion

Despite the fact that the Imperial Eagle is listed as globally threatened species (VU – vulnerable) and as Annex I species of the Birds Directive, it is not listed among strictly protected species according to Czech national legislation. It is also not a criteria species of SPA and IBA where it currently breeds. This causes some practical problems in ensuring its efficient conservation.

The main threat is human disturbance, mainly by forestry works. This was the reason of failed breeding in at least three cases (2001, 2004 and 2007). Further threats are represented by illegal shooting or poisoning, electrocution and power line collisions (mainly on 22 kV lines). In the near future possibly the massive building of wind farms in the breeding or feeding grounds could cause significant habitat destructions. Carbofuran poisoning has not been confirmed in Imperial Eagles in the Czech Republic so far but e.g. in White-tailed Sea Eagles, 16 poisoned individuals were found between 2003 and 2008, therefore it is also a probably significant threat for the Imperial Eagles as well (Bělka, Horal in press).

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Източният царски орел (*Aquila heliaca*) в Чешката република

Д. Хорал

(Резюме)

Източният Царски орел *Aquila heliaca* Savigny 1809 е нов гнездящ вид в Чехия от 1998 г. Ежегодно 1-3 двойки се размножават в югоизточната част на страната. В периода 1998-2009 г. са регистрирани общо 22 случая на размножаване, като 15 от тях са успешни (27 излетели малки). Средният размер на люпилото е 2.27 (N=15), броят на излюпените малки 1.52 (N=21), а броят на успешно излетелите малки 1.29 (N=21) на гнездяща двойка, и 1.53 на успешна двойка (N=15). Средната височина на гнездото е 25.8 m (18-34 m, N=18). Идентифицирани са 109 жертви от 20 вида. Най-често срещаните жертви са дивия заек, обикновения хомяк, фазана, сърната и малки гризачи. Успешно размножаване е потвърдено при двойки, състоящи се от птици в преходно оперение, като мъжкия екземпляр е в 3-та календарна година, а женския в 5-та календарна година. През зимата на 2007/08, броят на царските орли нараства значително в гнездовите територии, като до 10 птици (предимно в преходно оперение) остават в местата за временно пребиваване.