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An overview of monitoring for raptors in Hungary

Pregled monitoringa populacij ptic roparic na Madžarskem

András Kovács[1], János Bagyura[2], Márton Horváth[2] & Gergő Halmos[2]
[1] Koszorú u. 46, H–3300 Eger, Hungary, e–mail: andras.kovacs.ecol@gmail.com
[2] MME BirdLife Hungary, Költő u. 21, H–1121 Budapest, Hungary

A total of 47 species of birds of prey and owls have occurred in Hungary since the beginning of ornithological data collection. The systematic monitoring of birds of prey in Hungary started in the late 1970s by MME/BirdLife Hungary. Since then a nation-wide monitoring network has developed, which presently includes more than 30 organisations and around 250–300 active members. The co-ordination of national monitoring of diurnal raptors and owls has been hosted by the Raptor Conservation Group and the Monitoring Centre of MME/BirdLife Hungary for decades, with a steady increase in the capacity and participation of state nature conservation bodies, especially national park directorates. Today, the population parameters of 12 birds of prey and two owl priority species are monitored annually in a nation-wide hierarchical monitoring network, while data about all other raptor species are regularly gathered regionally and locally. The coverage of the monitoring compared to the national range of threatened raptor species is usually between 60–80%, but in flagship species it often exceeds 80%. However, only broad estimations are available on the population size and trend of more widespread species, which forms one of the most important knowledge gaps regarding raptors in Hungary.

Key words*:* Hungary, birds of prey, owls, monitoring network, conservation, SWOT
Ključne besede*:* Madžarska, ujede, sove, monitorinško omrežje, varstvo, SWOT

1. Background

Since the beginning of ornithological data collection, 35 diurnal birds of prey and 12 owl species, including 21 and 10 breeding species respectively, have been recorded within the present political borders of Hungary (MME – Nomenclator Committee 2008).

The modern nation-wide raptor (birds of prey and owls) monitoring dates back to the mid-1970s, when a handful of interested people established the Raptor Conservation Committee (the later Raptor Conservation Group – RCG) in MME/BirdLife Hungary (Hungarian Ornithological and Nature Conservation Society) and embarked upon collecting and publishing sporadically available data mainly on rare raptor species in 1974 (Haraszthy & Bagyura 1993). The systematic data collection began in the late 1970s, when the main aims of the RCG were to fight against the persecution and illegal taking of birds of prey and to protect their nest sites. In later years, raptor monitoring data greatly contributed to the establishment of protected areas and to the conservation and management of key raptor sites and habitats as parts of the wider environment.

2. Main Players

2.1. Monitoring network

The Hungarian raptor monitoring network gradually broadened over the past decades and today it involves around 30 organisations (10 national park directorates and around 20 non-governmental organisations, museums and institutes of higher education) and 250–300 active members in a variety of raptor monitoring programmes countrywide.

As an initiative of MME/BirdLife Hungary, the Hungarian Raptor Conservation Council was established by 26 key organizations in 2010 to unite raptor monitoring and conservation efforts throughout Hungary (MME – Raptor Conservation Group 2012). The national monitoring network operates in a hierarchical system consisting of invited and overwhelmingly voluntary national co-ordinators, regional co-ordinators, local activists and employees of national park directorates. An annual informal assemble is organised for raptor monitoring activists in September for mainly team building purposes. A specialist meeting is organised annually in the first quarter of a year for giving updates on the previous year's conservation work and raptor population sizes to participants in raptor monitoring and conservation programmes.

Yearly concise reports on the monitoring and conservation of raptors species and short papers have been published in *Heliaca,* the annual of the RCG MME/BirdLife Hungary, since 2004 in Hungarian with English summaries (see for latest references in Table 1). Peer-reviewed raptor research papers are regularly published in *Aquila* (GRIN 2013), the annual of the former Hungarian Institute of Ornithology, recently edited and published with the financial help of the Ministry of Rural Development.

2.2. International co-operation

International co-operation in raptor monitoring of Hungary have been influenced mainly by the geographical distribution of key raptor species and key conservation issues. Some of the flagship raptor species form a single cross-border population in the Carpathian Basin. Thus, there has been a traditional strong cooperation with Slovak raptor specialists for decades for example in the conservation and monitoring of the Imperial Eagle *Aquila heliaca* and the Saker Falcon *Falco cherrug*. The co-operation has gradually been strengthened through joint projects with Austria, Bulgaria, Croatia, Romania and Serbia in the conservation of the White-tailed Eagle *Haliaeetus albicilla*, the Imperial Eagle, the Red-footed Falcon *F. vespertinus* and the Saker Falcon since the early 2000s.

Project level co-operations have also increased with a wide range of countries within Europe and outside (e.g. Azerbaijan, Georgia, Turkey, Macedonia – Imperial Eagle, Italy, Ukraine – Saker Falcon) since the early 2000s.

2.3. Main Users

The main users of the data obtained from raptor monitoring are the Ministry of Rural Development, National Park Directorates, environmental authorities and NGOs, primarily MME/BirdLife Hungary.

Data are used for decision making in Strategic Environmental Assessments (SEA) and Environmental Impact Assessments (EIA) by state conservation organisations and also for follow-up reporting to international conventions and to the European Commission under the Birds Directive (EC 2009) on the status of raptor species and on the general state of biodiversity.

Data collection in NGOs helps to follow and present the changes in raptor populations in the long term to the stakeholders and the general public. Since Hungarian people traditionally have a considerable cultural binding to raptors, presenting basic data about birds of prey and owl populations can significantly increase public awareness on environmental problems.

3. Key species

Key species addressed by co-ordinated national monitoring principally include threatened and rare diurnal raptors and owls (Table 1). Basic population data on these species are collected in a hierarchical system co-ordinated by a usually volunteer national co-ordinator. Data on some owl species are also collected by national co-ordinators, but these species are generally much less known than diurnal raptors.

4. Monitoring methods and national coverage

The method used for the monitoring of key species is predominantly annual total count of known territories of each species. The search for new territories and nest-sites takes place all year round based on data coming from point counts, synchronous and occasional observations in and outside the breeding season. In most key species, all known nests are checked more than once a year in order to localize occupied nest-sites, to record the brood size and the breeding success as well as to intervene if the brood is directly threatened by natural and human-related factors.

The total count of raptors is used during the winter raptor survey called *Eagle Synch*, when hundreds of observers record birds of prey simultaneously on the same winter date in a particular area within a coordinated effort.

Table 1: Population status and monitoring of diurnal birds of prey ad owls covered by co-ordinated national monitoring in Hungary

Tabela 1: Populacijski status in monitoring ujed in sov, ki se opravlja v okviru koordiniranega nacionalnega monitoringa na Madžarskem

Species / Vrsta	Population size/ Velikost populacije (pairs / pari)	Monitoring season / Obdobje monitoringa	Monitored population parameters / Spremljani populacijski parametri	Responsible organisation/ Odgovorna organizacija**	References / Viri
Black kite *Milvus migrans*	123 (observed)	Breeding season	D, BP, BS	MME, BNPD	Török *et al.* (2010)
Red kite *Milvus Milvus**	4 (2 observed)	Breeding season, winter count	D, BP, BS, NB	MME	Bank & Balázs (2010)
White-tailed Eagle *Haliaeetus albicilla**	250 (226 observed)	Breeding season, winter count	D, BP, BS, NB, CD, G, MD	MME, DDNPD	Horváth (2010)
Short-toed Eagle *Circaetus gallicus**	32 (observed)	Breeding season	D, BP, BS	MME, BNPD	Szitta *et al.* (2010)
Montagu's Harrier *Circus pygargus*	170–200 (estimated)	Breeding season	D, BP, BS	MME	MME NC (2008)
Long-legged Buzzard *Buteo rufinus**	15 (9 observed)	Breeding season, winter count	D, BP, BS, NB	HNPI	Tihanyi *et al.* (2010)
Lesser-spotted Eagle *Aquila pomarina**	30 (27 observed)	Breeding season	D, BP, BS	MME, BNPD	Pongrácz *et al.* (2010)
Imperial Eagle *Aquila heliaca**	135 (125 observed)	All year	D, BP, BS, NB, CD, G, MD	MME	Horváth *et al.* (2010)
Golden Eagle *Aquila chrysaetos**	5 (observed)	Breeding season, winter count	D, BP, BS, NB, CD	MME	Firmánszky *et al.* (2010)
Red-footed Falcon *Falco vespertinus**	774 (observed)	Breeding season, congregation sites	D, BP, BS, NB, CD, MD	MME	Solt *et al.* (2010)
Saker Falcon *Falco cherrug*	220 (172 observed)	All year	D, BP, BS, NB, CD, G, MD	MME, BNPD	Bagyura *et al.* (2010)
Peregrine Falcon *Falco peregrinus**	21 (observed)	Breeding season	D, BP, BS, NB, CD, MD	MME, PITE	Prommer *et al.* (2010)
Eagle Owl *Bubo bubo*	75 (60 observed)	Breeding season	D, BP, BS, NB, CD	MME	Petrovics (2010)
Long-eared Owl *Asio otus*	2,300–2,700 ind.	Winter roost (n = 92)	WP	HNPD	Monoki *et al.* (2010)

* Species in which the annual monitoring of population parameters supposedly covers more than 80% of the known national range

** BNPD – Bükk National Park Directorate; DDNPD – Duna - Dráva National Park Directorate; HNPD – Hortobágy National Park Directorate; MME – BirdLife Hungary; PITE – Pilis Nature Conservation Society

Parameters: D – distribution, BP – breeding population, WP – wintering population, BS – breeding success, NB – non-breeders, CD – causes of death, G – genetic variation, MD – migration and dispersal

Point counts and line transects are less often used but applied for example in the monitoring of the number of raptors in temporary settlement areas preferred by non-breeding individuals, or congregation sites.

The coverage of raptor monitoring differs from species to species. In key species (Table 1) the coverage of annual monitoring is in most cases between 60–80% of the known national breeding range. In flagship species, the annual monitoring of population parameters such as occupied territories, number of breeding pairs and breeding success can cover up to 80–95% of the estimated national populations.

As for more common species, such as the Buzzard *Buteo buteo* and Marsh Harrier *Circus aeruginosus*, the monitoring coverage and capacity are much lower and usually only scarce local studies have been available on their population parameters. The national breeding population sizes and population trends of such species are estimated by a randomised sampling design used in the Common Bird Census scheme (Szép & Gibbons 2000). Changes in numbers of wintering Hen Harriers *C. cyaneus*, Buzzards and Rough-legged buzzards *B. lagopus* are monitored in parallel with winter eagle surveys and relevant national data are collected by MME/BirdLife Hungary.

5. Assessment of the present state of raptor monitoring in Hungary

The *key monitoring issues* are closely associated with the monitoring of the general state of biodiversity and environmental parameters, such as the main specific and widespread threats to raptors including electrocution on electric poles, poisoning and illegal shooting, and habitat loss due to land use changes, agricultural and forestry intensification.

The *main strengths* of monitoring for raptors in Hungary are the experienced and enthusiastic nation-wide volunteer network consisted of numerous active field workers, professional full- and part-time raptor specialists at nature conservation organisations with effective international fundraising skills, and the hierarchical network of data collection.

The *main weaknesses* of monitoring for raptors in Hungary are probably the lack of strategic and project planning for monitoring in line with conservation and research needs; the limited international networking capacities due to inadequate knowledge of foreign languages; and that the monitoring results are rarely published in international peer-reviewed journals.

The main gap in species monitoring has been so far the lack of targeted national monitoring of common raptor population parameters especially in the Marsh Harrier, Buzzard and the Goshawk *Accipiter gentilis*. For filling this gap, a pilot monitoring scheme was introduced by MME/BirdLife Hungary in 2012 aiming at collecting raptor data annually in 2.5 × 2.5 km sample plots.

International networking could further increase the effectiveness of the Hungarian raptor monitoring through the development of standardised international monitoring schemes. Sharing international experience in the monitoring of the populations of common birds of prey species, and in advocacy efforts could contribute to their long-term conservation; and to the mitigation and elimination of the main human-induced threats to birds of prey (e.g. electrocution, poisoning and persecution). Developing negotiation skills with key stakeholders on the sustainable use of national resources, joint research planning and publication of available data would also improve the potential outputs of raptor monitoring and conservation efforts.

Sharing of good/best practice internationally would be beneficial to the Hungarian raptor monitoring activities in the planning of monitoring and related research in line with conservation needs; in collaboration and publication through joint projects; and in the more effective use of monitoring results in conservation policy and practice.

As *priorities* for future work, we can mention the development of a national raptor monitoring strategy that clearly defines the aims, objectives and potential applications of the results of raptor monitoring activities; the expansion of common raptor monitoring in terms of area and participants; and the strengthening of the national co-ordination of survey efforts in key conservation issues.

The main *capacity building needs* of the Hungarian raptor monitoring network are to establish an effective national planning, co-ordinating, data collecting, processing and interpreting unit and to recruit volunteers from younger generations.

After all it must be mentioned that with all gaps and weaknesses the monitoring of birds of prey and owls is traditionally one of the most successful and effective national bio-monitoring networks in Hungary thanks to the enthusiastic and devoted work of many volunteers and professionals.

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6. Povzetek

Od začetka zbiranja podatkov o pticah na Madžarskem je bilo v tej državi zabeleženih 47 vrst ujed in sov. Sistematičnega monitoringa se je v poznih 70. letih lotil MME/BirdLife Madžarska. Od tedaj se je razvilo vsedržavno monitorinško omrežje, ki trenutno vključuje več kot 30 organizacij in med 250 in 300 aktivnih članov. Za koordinacijo nacionalnega monitoringa ujed in sov že desetletja skrbita Skupina za varstvo ptic roparic in Center za monitoring pri MME/BirdLife Madžarska ob nenehno naraščajočem sodelovanju državnih naravovarstvenih teles, še posebno direktoratov narodnih parkov. Danes so populacijski parametri 14 prioritetnih vrst (12 vrst ujed in 2 vrst sov) spremljani v vsedržavnem hierarhičnem monitorinškem omrežju, medtem ko se podatki o vseh drugih vrstah ptic roparic redno zbirajo regionalno in lokalno. Pokritost monitoringa je glede na madžarski areal ogroženih vrst navadno 60–80 %, medtem ko pri karizmatičnih vrstah pokritost pogosto presega 80 %. Kljub temu so na voljo le grobe ocene o velikosti in trendih populacij pogostejših vrst, kar pa je tudi ena največjih vrzeli v poznavanju ptic roparic na Madžarskem.

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