

A PRELIMINARY NATIONAL OVERVIEW OF MONITORING *for* RAPTORS IN POLAND

## Predhodni nacionalni pregled monitoringa populacij ptic roparic na Poljskem

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The State Bird Monitoring programme in Poland covers most breeding species of birds of prey and owls. As part of the bigger State Environment Monitoring System, it is engaged in 16 different projects, aimed at individual species or groups of species, including raptors. State Bird Monitoring is conducted by three organisations, the Eagle Conservation Committee (KOO), Polish Society for the Protection of Birds (OTOP) and Owls Protection Society, coordinated by the Institute and Museum of Zoology of the Polish Academy of Sciences on request by the General Inspectorate of Environmental Protection (GIOŚ). Two monitoring models are used, one based on sampling of populations (of widespread and common species), while the other covers a complete (or near complete) census of rare species. The data are publicly available in Polish. Apart from the State Bird Monitoring, there are numerous professional organisations, NGO's and individuals engaged in conservation and study of birds of prey, although none of them within the framework of a true monitoring system. Apart from the protection guaranteed by Polish law, nests of rarest species, including birds of prey, are protected by special protection zones excluded from forest management. Currently, there are ca. 2,900 zones covering ca. 1,500 km<sup>2</sup> in total.

**Keywords:** Poland, state monitoring, birds of prey, owls, population studies, protection zones

**Ključne besede:** Poljska, državni monitoring, ujede, sove, populacijske raziskave, zaščitne cone

## 1. Law protection of raptors in Poland

Nineteen species of birds of prey and nine owl species regularly nest in Poland. In addition, a single case of the Saker Falcon *Falco cherrug* nesting in the country has been confirmed (TOMIAŁOJC & STAWARCZYK 2003, BIRDLIFE INTERNATIONAL 2004). Currently, all species are protected by Polish law. Until 1975, Goshawks *Accipiter gentilis*, Sparrowhawks *A. nisus* and Marsh Harriers *Circus aeruginosus* were allowed to be killed.

In 1984, new law was introduced – with innovative, highly effective method of protecting nests and broods through the establishment of “protection zones”. Thus, strict protection areas have been established around nests, which are closed to the public and allow no forestry activities to be carried out in them. Every forest area containing nest-site is protected within a

radius of 200 m (i.e. about 12.5 ha) throughout the year (no admittance, no other activities). In addition, the radius is extended to 500 m (ca. 78.5 ha) during the breeding season, forbidding people both to enter the zone and to conduct any forestry activities. Thus, the pressure from people (foresters, hunters, tourists, birdwatchers) is reduced to such an extent that the birds are not disturbed and can rear their offspring successfully.

The protection zones around the nests concern the following species: Osprey *Pandion haliaetus*, White-tailed Eagle *Haliaeetus albicilla*, Golden Eagle *Aquila chrysaetos*, Greater Spotted Eagle *A. clanga*, Lesser Spotted Eagle *A. pomarina*, Short-toed Eagle *Circaetus gallicus*, Booted Eagle *A. pennata*, Red Kite *Milvus milvus*, Black Kite *M. migrans*, Peregrine Falcon *F. peregrinus*, Saker Falcon, Eagle Owl *Bubo bubo* and,

since 2011, Pygmy Owl *Glaucidium passerinum* and Tengmalm's Owl *Aegolius funereus* (only within 50 m around their nests). The law has been slightly changed recently, reducing the radius of the zone to 100 m (ca. 3.1 ha) year-round for three species (Lesser Spotted Eagle, Black and Red Kite); in the breeding season, the protection zone radius has remained unchanged.

Currently, there are ca. 2,900 protection zones covering ca. 1,500 km<sup>2</sup> in total. It is worth emphasizing that the total size of established protection zones is greater than the forest area of all 23 National Parks in Poland. It is estimated that ca. 60% of all nests of targeted birds of prey are already situated in protection zones (MIZERA 2006).

## 2. Main players in monitoring activities

The coordinating unit of the State Bird Monitoring programme in Poland is the Institute and Museum of Zoology of the Polish Academy of Sciences, which is also responsible for ornithological ringing programme in Poland. Many universities and institutes employ ornithologists, some of them to work on birds of prey projects. Also, there are several ornithological and environmental NGOs in Poland, which are active in the area of population studies and monitoring of birds of prey. The organizations particularly interested in this work are the Eagle Conservation Committee (Komitet Ochrony Orłów – KOO; [www.koo.org.pl](http://www.koo.org.pl)), Falcon Society (Stowarzyszenie na Rzecz Dzikich Zwierząt Sokół; [www.peregrinus.pl](http://www.peregrinus.pl)), Polish Society for the Protection of Birds (OTOP, Polish Birdlife partner; <http://www.otop.org.pl>), Owls Protection Society (Stowarzyszenie Ochrony Sów; <http://sowy.sos.pl>) and PTOP (Polskie Towarzystwo Ochrony Ptaków; <http://www.ptop.org.pl>), as well as many regional organisations, some of which specialise in certain bird species.

Among the NGOs involved in the protection of birds of prey, the KOO is probably the most influential one. With ca. 500 members and volunteers, it was established in 1981 and is the oldest NGO in Poland. Searching for nests, setting borders of the occupied protection zones are activities entrusted to foresters and/or members of the KOO. Every year, 1,000–2,000 nests are censused by both professionals and amateurs, with 20 most active members of KOO controlling about 1,000 nests annually. Each nest is controlled twice a season, which allows determining the numbers of breeding pairs, breeding success and the number of nestlings reared. The results of these inventories are published in special reports in Newsletter of the Eagle Conservation Committee (Biuletyn Komitet Ochrony

Orłów). 18 reports were published in the 1982–2012 period (<http://www.koo.org.pl/promocja-i-edukacja/biuletyn-koo>).

The State Bird Monitoring is financed by the Chief Inspectorate for Environmental Protection (GIOŚ), which is also the main data user. The key findings are published in a database and summarised in reports, all of which are publicly available on the webpage in Polish language, where basic information on individual programmes is also provided (<http://monitoringptakow.gios.gov.pl>). An English version of the website is now in preparation and will be ready in the course of 2013.

## 3. National coverage, key species

### 3.1. State monitoring programme

The State Bird Monitoring programme in Poland is engaged in 16 different projects concerning breeding species, with each project having its own network and coordinator as well as its own scheme. Monitoring schemes for birds of prey are conducted by the KOO, for owls by the Owls Protection Society, and monitoring of common breeding birds by the OTOPI. More common and widespread species are monitored on a basis of sampling plots that are controlled a few times a year, while rare species are monitored through a country-wide census of all or most known breeding territories (Table 1). All monitoring schemes focus on population data – numbers, range and, for some species, reproduction rate as well. Presented here is the situation as existing in 2011.

A nationwide programme to monitor 11 widespread species of birds of prey was launched in 2007 under the *Monitoring of Birds of Prey* (MPD) scheme. Therein, birds of prey are counted on forty 10 × 10 km sampling plots (Figure 1). These plots were selected during stratified random sampling, to ensure that field effort was maximized in areas with most birds. In addition, this approach allows estimating the population sizes of raptors in the whole country (CENIAN 2009, NEUBAUER *et al.* 2011). In short, four surveys per year are performed on each sampling plot, and due to the different breeding phenology of birds these take place between 20 March and 20 July. At each plot, nine fixed observation points were selected. Data on observations, interpretations and ways of recording are maximally standardized. At each point, all the birds are counted for 30 min (for more methodological details, see <http://monitoringptakow.gios.gov.pl>).

The commonest species is the Buzzard *Buteo buteo*

**Table 1:** Overview of main monitoring projects for birds of prey and owls in Poland**Tabela 1:** Pregled najpomembnejših projektov monitoringa ujed in sov na Poljskem

Project title/ Naziv projekta	Financed by/ Plačnik	Area / Območje	Raptor species included/ Vključene ptice roparice	Duration (start year) / Trajanje projekta (začetno leto)	Beneficiary/ Koristnik sredstev
Monitoring of Birds of Prey (MPD)	State Inspection of Environment (GIOŚ)	40–42 sampling plots (10 × 10 km)	<i>P. apivorus</i> <i>M. migrans</i> <i>M. milvus</i> <i>H. albicilla</i> <i>C. aeruginosus</i> <i>C. pygargus</i> <i>A. gentilis</i> <i>B. buteo</i> <i>A. pomarina</i> <i>F. tinnunculus</i> <i>F. subbuteo</i>	2007–	Eagle Conservation Committee (KOO)
Bird Monitoring Scheme: Osprey (MRY)	State Inspection of Environment (GIOŚ)	Entire territory of Poland	<i>P. haliaetus</i>	2007–	Eagle Conservation Committee (KOO)
Bird Monitoring Scheme: Golden Eagle (MOP)	State Inspection of Environment (GIOŚ)	Entire territory of Poland	<i>A. chrysaetos</i>	2007–	Eagle Conservation Committee (KOO)
Bird Monitoring Scheme: Greater Spotted Eagle (MOG)	State Inspection of Environment (GIOŚ)	Entire territory of Poland	<i>A. clanga</i>	2007–	Eagle Conservation Committee (KOO)
Common Breeding Bird Monitoring (MPPL)	State Inspection of Environment (GIOŚ)	500–645 sampling plots (1 × 1 km)	<i>A. gentilis</i> <i>A. nisus</i> <i>B. buteo</i>	2000–	OTOP (Polish Birdlife partner)
Monitoring of Flagship Birds (MFGP)	State Inspection of Environment (GIOŚ)	40–48 sampling plots (10 × 10 km)	<i>C. aeruginosus</i>	2007–	OTOP (Polish Birdlife partner)
Monitoring of Breeding Forest Owls (MLSL)	State Inspection of Environment (GIOŚ)	35–39 sampling plots (10 × 10 km)	<i>B. bubo</i> <i>G. passerinum</i> <i>S. aluco</i> <i>S. uralensis</i> <i>A. otus</i> <i>A. funereus</i>	2010–	Owls Protection Society
Peregrine Falcon Monitoring	Falcon Society	Entire territory of Poland	<i>F. peregrinus</i>	1998–	Falcon Society
Migratory birds at Baltic Sea	Fund for Environmental Protection and Water Management in Gdansk	Vistula Spit (Baltic Sea)	all migratory species	2007–	Drapolicz – Association of Migratory Birds Observers



**Figure 1:** Distribution of sampling plots of the *Monitoring of Birds of Prey* (MPD) scheme in Poland – the same model, based on sampling plots is used in *Common Breeding Bird Monitoring* (MPPL), *Monitoring of Flagship Birds* (MFGP) and *Monitoring of Breeding Forest Owls* (MLSL); after NEUBAUER *et al.* (2011)

**Slika 1:** Razporeditev vzorčnih ploskev v okviru projekta *Monitoring ujed* (MPD) na Poljskem – enak model, temelječ na vzorčnih ploskvah, se uporablja v okviru projektov *Monitoring pogostih vrst ptic* (MPPL), *Monitoring karizmatičnih ptic* (MFGP) in *Monitoring gnezdečih gozdnih sov* (MLSL); po NEUBAUER *et al.* (2011)

– recorded on 39 out of 40 plots. The size of breeding population is estimated at 52,000–63,000 pairs. The least frequently recorded species is the Black Kite, registered at nine plots only; this low frequency causes population estimate to have low precision (450–1,300 pairs). Significantly higher numbers compared to some recently published estimates (TOMIAŁOJC & STAWARCZYK 2003, BIRDLIFE INTERNATIONAL 2004) concern the White-tailed (1,250–1,700 pairs) and Lesser Spotted Eagles (2,300–3,300 pairs) (NEUBAUER *et al.* 2011).

The three rare species have their own monitoring schemes – Osprey (MRY), Greater Spotted Eagle (MOG) and Golden Eagle (MOP). These species are censused within their entire range with all known breeding territories controlled annually (Figure 2).

The Greater Spotted Eagle's population seems to be stable at 22–23 pairs (including mixed pairs with Lesser Spotted Eagle; MACIOROWSKI & MIZERA 2010). The recent situation as far as the Osprey is concerned is critical: in 2009, only 24–29 nesting pairs were found (NEUBAUER *et al.* 2011) in contrast to 53 pairs and estimated population of 70–75 pairs in the 1990s and

2000 (ADAMSKI *et al.* 1999, BIRDLIFE INTERNATIONAL 2004, MIZERA 2009) as shown on Figure 3.

A special project aimed at few easily identifiable species is the *Monitoring of Flagship Birds* (MFGP), which includes only one bird of prey species, the Marsh Harrier.

The last project dealing with birds of prey is the nationwide *Common Breeding Bird Monitoring* (MPPL; <http://www.mppl.pl>). Here, on the sampling plots of 1 × 1 km in size, all recorded bird species are counted. Such work was performed on 562 plots throughout the country in 2009 (random stratified sampling approach was used to ensure the representativeness of results). Field work has been carried out since 2000; each season, two surveys are performed along fixed two 1 km long routes. The project involved 290 volunteer ornithologists in the years 2008–2009 (NEUBAUER *et al.* 2011). Regarding birds of prey, the *Common Breeding Bird Monitoring* results include population indices and trends of several species, e.g. Goshawk, Sparrowhawk, Buzzard, Kestrel, Marsh Harrier, etc. (CHYLARECKI & JAWIŃSKA 2007, NEUBAUER *et al.* 2011).

In 2010, the project *Monitoring of Breeding Forest Owls* (MLSL) that covers six species was launched. Included here are: Tawny Owl *Strix aluco*, Ural Owl *S. uralensis*, Long-eared Owl *Asio otus*, Tengmalm's Owl, Pygmy Owl and Eagle Owl. Currently, there are 35–37 sampling plots, each 10 × 10 km in size. The most widespread and most numerous species are the Tawny Owl, Tengmalm's Owl and Pygmy Owl.

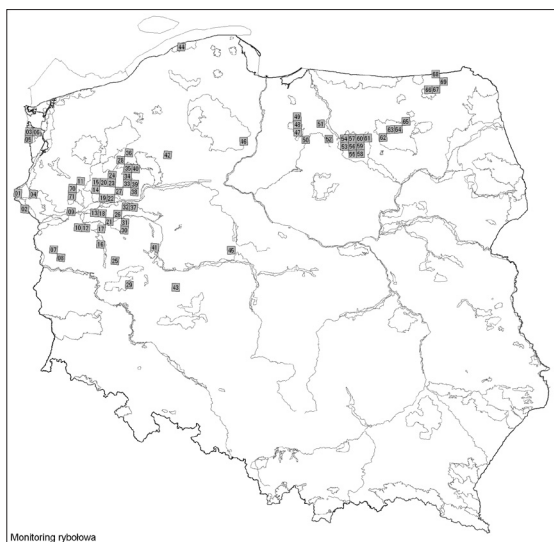
### 3.2. Other programmes

Many ornithologists and regional or local organizations conduct various state-independent population studies of raptors.

Monitoring of Peregrine Falcon population has not been included in the national scheme as yet, but has been conducted by the Falcon Society since first confirmed breeding of this species in Poland in 1998 (SIELICKI & SIELICKI 2009).

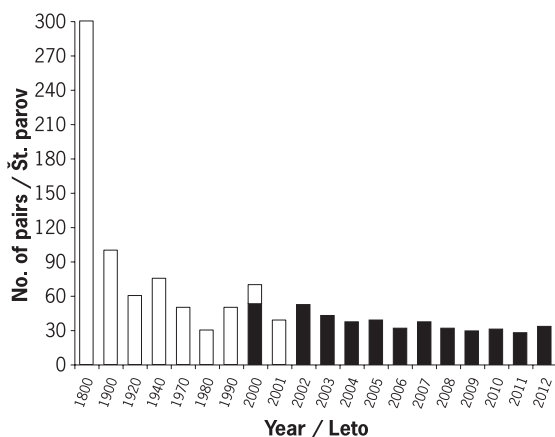
Worth mentioning are the activities carried out by Drapolicz – Association of Migratory Birds Observers that include the ongoing autumn counts of migratory birds of prey (among other birds), which started in 2007, and the study of migration dynamics of owls, mainly the Long-eared and Short-eared *A. flammeus* Owls (initiated in 2011) at Vistula Spit in the Baltic Sea (BELA *et al.* 2012; <http://www.drapolicz.org.pl/index.php?lang=en>).

Some of these projects cover only small areas and are not conducted on regular basis due to dependence



**Figure 2:** Distribution of sampling plots for monitoring of Osprey *Pandion haliaetus* (MRY) in Poland – the same model based on census study plots aimed to cover the species' entire range is used for Golden Eagle *Aquila chrysaetos* (MOP) and Greater Spotted Eagle *A. clanga* (MOG); after NEUBAUER *et al.* (2011)

**Slika 2:** Razporeditev vzorčnih ploskev za monitoring ribjega orla *Pandion haliaetus* (MRY) na Poljskem – enak model, ki temelji na preučevanju celotnega areala vrste s štetjem na določenih ploskvah, se uporablja za planinskega orla *Aquila chrysaetos* (MOP) in velikega klínkača *A. clanga* (MOG); po NEUBAUER *et al.* (2011)



**Figure 3:** Population development of Osprey *Pandion haliaetus* in Poland in 1800–2012; after MIZERA & SZYMKIEWICZ (1996) and MIZERA (2009), supplemented (white columns – estimate, black columns – census data)

**Slika 3:** Razvoj populacije ribjega orla *Pandion haliaetus* na Poljskem v obdobju 1800–2012; po MIZERA & SZYMKIEWICZ (1996) in MIZERA (2009), dopolnjeno (beli stolpci – ocena, črni stolpci – podatki, pridobljeni s štetjem)

on availability of observers and their professionalism (especially as far as migrant counts at the sea are concerned). Also, some caution is needed in the interpretation of their results.

#### 4. Strengths and weaknesses

The current monitoring system is rather comprehensive and is still developing. The network of 400–500 researchers has officially been included into the project plus few more hundreds of volunteers. The instructions as how to conduct fieldwork for each programme are available on the website of each monitoring programmes. Two guides presenting the methodology for monitoring species or their groups (CHYLARECKI *et al.* 2009 for breeding birds) are available in Polish. These materials are easily adapted for other countries, if there is such a need. Some species currently not included (especially Peregrine Falcon) should be added to the State Bird Monitoring in the following years.

The quality of birds of prey monitoring depends on the availability of specialists and volunteers interested in taking part. Networking, international exchange programmes, books and instructions should help. Polish monitoring scheme is very well organised and effective and could be used as model for other countries. Only well-designed monitoring programmes will produce robust results, which can then represent a base for generalizations (trends, population sizes) across wider areas. Monitoring of birds of prey needs to consider the variable breeding biology of species and specificity of areas where performed.

#### 5. Povzetek

Državni monitoring ptic na Poljskem vključuje večino gnezdečih vrst ujed in sov. Kot del večjega Državnega sistema za monitoring okolja se posveča šestnajstim različnim projektom, namenjenim preučevanju posameznih vrst ali skupinam vrst, vključno s pticami roparicami. Za monitoring ptic so zadolžene tri organizacije, in sicer Komite za varstvo orlov (KOO), Poljsko društvo za varstvo ptic (OTOP) in Društvo za zaščito sov, katerih delo koordinira Inštitut za zoologijo in muzej Poljske akademije znanosti na zahtevo Generalnega inšpektorata za varstvo okolja. V rabi sta dva modela monitoringa: prvi sloni na vzorčenju populacij (splošno razširjenih in pogostih vrst), drugi pa na popolnem (ali skoraj popolnem) štetju redkih vrst. Podatki so na voljo javnosti v poljskem jeziku. Poleg Državnega monitoringa ptic se z varstvom

in preučevanjem ptic ukvarjajo še mnoge poklicne organizacije, nevladne agencije in posamezniki, pa čeprav ne v okviru pravega sistema monitoringa. Poleg zaščite, ki jo zagotavlja poljski zakon, so gnezda najredkejših vrst, vključno s pticami roparicami, zavarovana s posebnimi zaščitnimi conami, izvzetimi iz gozdnogospodarskih območij. Trenutno obstaja 2.900 takšnih con, ki skupaj pokrivajo 1,500 km<sup>2</sup> ozemlja.

## 6. References

- ADAMSKI, A., LONTKOWSKI, J., MACIOROWSKI, G., MIZERA, T., RODZIEWICZ, M., STAWARCYK, T. & WACŁAWEK, K. (1999): [Distribution and numbers of rare birds of prey in Poland at the end of the 20<sup>th</sup> century.] – Notatki Ornitologiczne 40 (1/2): 1–22. (in Polish)
- BELA, G., JANCZYŻYŃ, A. & KOŚMICKI, A. (2012): [Migration of Falconiformes, Columbiformes and Corvidae on the Vistula Spit in autumn 2009.] – Ptaki Pomorza 3: 135–138. (in Polish, English summary)
- BIRDLIFE INTERNATIONAL (2004): Birds in Europe: population estimates, trends and conservation status. BirdLife Conservation Series No. 12. – BirdLife International, Cambridge.
- CENIAN, Z. (2009): [National monitoring of birds of prey – evaluation methodology of the population and distribution in large sample areas.] – Studia i materiały Centrum Edukacji Przyrodniczo-Leśnej 11, 3 (22): 10–21. (in Polish, English summary)
- CHYLARECKI, P. & JAWIŃSKA, D. (2007): [Monitoring of common breeding birds. Report for 2005–2006.] – OTOP, Warszawa. (in Polish, English summary)
- CHYLARECKI, P., SIKORA, A. & CENIAN, Z. (2009): [Monitoring of breeding birds. Methodological manual for protected species from the Birds Directive.] – GIOŚ, Warszawa. (in Polish)
- MACIOROWSKI, G. & MIZERA, T. (2010): [Research and conservation of Greater Spotted Eagle *Aquila clanga* in Poland – Project LIFE+.] – Studia i materiały Centrum Edukacji Przyrodniczo-Leśnej 12, 2 (25): 181–190. (in Polish, English summary)
- MIZERA, T. (2006): [Twenty years of the zonal protection in Poland.] – Studia i Materiały Centrum Edukacji Przyrodniczo-Leśnej 8, 2 (12): 29–53. (in Polish, English summary)
- MIZERA, T. (2009): [The Osprey, *Pandion haliaetus*, situation in Poland at the start of the 21<sup>st</sup> century.] – Studia i materiały Centrum Edukacji Przyrodniczo-Leśnej 11, 3 (12): 45–55. (in Polish, English summary)
- MIZERA, T. & SZYMKIEWICZ, M. (1996): The present status of the Osprey *Pandion haliaetus* in Poland. pp. 23–33 In: MEYBURG, B.U. & CHANCELLOR, R.D. (eds.): Eagle Studies. – WWGBP, Berlin.
- NEUBAUER, G., SIKORA, A., CHODKIEWICZ, T., CENIAN, Z., CHYLARECKI, P., ARCHITA, B., BETLEJA, J., ROHDE, Z., WIELOCH, M., WOŹNIAK, B., ZIELIŃSKI, P. & ZIELIŃSKA, M. (2011): [Monitoring of Polish breeding birds in 2008–2009.] – Biuletyn Monitoringu Przyrody 8 (1): 1–40. (in Polish, English summary)
- SIELICKI, S. & SIELICKI, J. (2009): Restoration of Peregrine Falcon in Poland 1989–2007. pp. 699–722 In: SIELICKI, J. & MIZERA, T. (eds.): Peregrine Falcon Populations – status and perspectives in the 21<sup>st</sup> Century. – Turul Publishing & Poznań University of Life Sciences Press, Warsaw - Poznań.
- TOMIAŁOJC, L. & STAWARCYK, T. (2003): [The avifauna of Poland. Distribution, numbers and trends.] – PTTT “pro Natura”, Wrocław. (in Polish, English summary)

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