

## OVERVIEW OF RAPTOR MONITORING IN SPAIN

### Pregled monitoringa ptic roparic v Španiji

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Raptor study and conservation has received an important public attention in Spain since the beginning of the 1970s. The rich communities of raptors and owls and the TV programmes directed by Felix Rodríguez de la Fuente might be in part responsible of such an unusual interest in raptors and owls that in a few years changed their official status of pests that should be eliminated to that of species of high conservation concern. Since, direct persecution is no longer a major factor driving raptor declines and socioeconomic changes have promoted a shift in the ways of impacting wildlife (MARTÍNEZ-ABRAÍN *et al.* 2009). Actually raptors are key species in biodiversity conservation in Spain and many of Natura 2000 network sites are devoted to raptor preservation.

Here we present a short review of the main players involved in monitoring and conservation, the key species and issues and the strengths and weaknesses related with raptors in Spain.

#### Main players

Raptor monitoring in Spain involves many different players, including research and management and conservation institutions. Since the 1970s, a large number of ecologists, naturalists and ornithologists have been devoted to raptor study and conservation.

There are at least 20 research groups that focus on raptor ecology and conservation, including species-habitat relationships, population dynamics, PVAs, trophic ecology, migration, ecotoxicology ... These research groups include CSIC (Consejo Superior de Investigaciones Científicas), particularly Doñana Biological Station (Estación Biológica Doñana) and several universities (Barcelona, Madrid, Murcia, Miguel Hernández, Alicante, Granada among others).

There are also national strategies of population monitoring coordinated by the Ministry of Agriculture, Food and Environment, SEO/BirdLife and the Autonomous Governments. These programmes

also include national strategies for biodiversity conservation focussed on particular endangered species or technical groups coordinated by the Ministry. Besides, different NGOs and Foundations also play an important role in raptor monitoring and conservation, including specific programmes for endangered species (e.g. Lammergeier and Black Vulture, Grupo Ornitológico Balear, Fundación Gypaetus), particular habitats (e.g. Wetlands, Fundación Global Nature, Asociación de Naturalistas del Sureste) and migration (e.g. Straits of Gibraltar; Fundación Migres, Colectivo Ornitológico Cigüeña Negra).

Interactions with other countries include, in particular, neighbouring France and Portugal, but there are also different research interactions with other countries in Europe and worldwide although without a regular coordination schedule.

#### National coverage

As stated above, the national co-ordination is usually conducted by the Ministry of Agriculture, Food and Environment and SEO/BirdLife with the collaboration of the Autonomous Governments, local NGOs and research groups. This includes nationwide population censuses conducted regularly for the most endangered species (<http://www.seo.org/2012/07/02/monografias-seuimiento-de-aves>). These national censuses are often based upon a combination of volunteer and professional work. There are also regular programmes for owls (NOCTUA) and common birds monitoring (SACRE) at the national level that relies almost exclusively on volunteers coordinated by SEO/BirdLife (see for example; <http://www.seo.org/2012/05/07/resultados-de-los-programas-de-seguimiento-de-avifauna>).

#### Key species and key issues

The key species addressed by monitoring include:

- (1) Avian scavengers; Spain holds the largest populations of Griffon Vulture *Gyps fulvus* (94%), Black Vulture *Aegypius monachus* (98%), Egyptian Vulture *Neophron percnopterus* (97%) and Lammergeier *Gypaetus barbatus* (63%) of Europe (MARGALIDA *et al.* 2010).
- (2) Mediterranean raptors; Spain is also the main European stronghold for many Mediterranean raptors, particularly the Spanish Imperial Eagle *Aquila adalberti*, Bonelli's Eagle *A. fasciata*, Lesser Kestrel *Falco naumanni* and Little Owl *Athene noctua* among others (LÓPEZ-LÓPEZ *et al.* 2011, HERNÁNDEZ-MATÍAS *et al.* 2013).

The key issues include the following:

- (1) Most of the species listed above depend on extensive agricultural and cattle grazing landscapes. Changes mediated by European regulations (i.e. common agricultural practices or animal by-product regulations) might directly influence their populations through changes in habitat quality and shortage of food resources (TELLA *et al.* 1998, DONÁZAR *et al.* 2009).
- (2) Some old problems such as illegal poisoning and electrocution keep being an important issue affecting population trends and viability for different species (CARRETE *et al.* 2007, LÓPEZ-LÓPEZ *et al.* 2011, PÉREZ-GARCÍA *et al.* 2011).
- (3) New problems such as wind farm impacts, public recreational use, or lead poisoning are arising and might be major drivers of population decline for some species (GARCÍA-FERNÁNDEZ *et al.* 2005, CARRETE *et al.* 2009 & 2011).

### **Strengths and weaknesses**

In my opinion, the main strength is the interest of the general public on raptor conservation and the large research effort. Spain leads in the surface of Important Bird Areas (IBAs) selected for raptor conservation and also leads in raptor research in Europe (1<sup>st</sup>) and 2<sup>nd</sup> in the world ranking, just after USA (THOMSON REUTERS 2013).

There are no large gaps, except for low monitoring effort on common species and some interregional differences in data quality. The main problem derives from the little communication between researchers and managers that affect implementation of monitoring and conservation “know-how” (KNIGHT *et al.* 2008). In this sense, Spain might clearly benefit from international sharing of good/best practice.

### **Priorities, capacity-building**

Under the economic crisis scenario, biodiversity will be put at risk if research and conservation programmes are paralyzed (MARGALIDA 2012). As a result, the priority should be to maintain cost-effective monitoring and conservation programmes. This would need a review of current knowledge on raptor ecology and conservation to evaluate research priorities, cost-effective and cost-benefit analysis of raptor monitoring and conservation programmes and coordination proposals and the analysis of the research-implementation gaps.

### **Povzetek**

Španija se lahko pohvali z bogato združbo ujed in sov, hkrati pa je tudi poglavitno evropsko oporišče za obligatne mrhovinarje, kot so beloglavi jastreb *Gyps fulvus*, rjavi jastreb *Aegypius monachus*, brkati ser *Gypaetus barbatus* in egiptovski jastreb *Neophron percnopterus*, za velike teritorialne orle, kot so španski kraljevi orel *Aquila adalberti*, planinski orel *A. chrysaetos* in kragulji orel *Aquila fasciata*, in za male ujede in sove, kot sta južna postovka *Falco naumanni* in čuk *Athene noctua*, ki so vsi tesno povezani z agroekosistemi z nizko intenzivnostjo kmetovanja. Hkrati v Španiji obstajajo mnoge javne in zasebne inštitucije in posamezniki, ki so vsaj do neke mere posvečajo preučevanju in varovanju ujed in sov po vsej državi. Monitoring in varovanje teh ptic sta že po tradiciji koordinirana na nacionalni ravni, kar omogoča posodabljanje ocen populacij najbolj ogroženih vrst. Kljub kakovostnim raziskavam in zanimanju javnosti za varstvo ptic roparic pa so monitoring in znanstveni programi močno prizadeti zaradi močno zmanjšanih proračunskih sredstev, kar utegne imeti pomembne dolgoročne posledice.

### **References**

- CARRETE, M., GRANDE, J.M., TELLA, J.L., SÁNCHEZ-ZAPATA, J.A., DONÁZAR, J.A., DÍAZ-DELGADO, R. & ROMO, A. (2007): Habitat, human pressure, and social behaviour: Partialling out factors affecting large-scale territory extinction in an endangered vulture. – *Biological Conservation* 136 (1): 143–154.
- CARRETE, M., SÁNCHEZ-ZAPATA, J.A., BENÍTEZ, J.R., LOBÓN, M. & DONÁZAR, J.A. (2009): Large scale risk-assessment of wind-farms on population viability of a globally endangered long-lived raptor. – *Biological Conservation* 142 (12): 2954–2961.
- CARRETE, M., SÁNCHEZ-ZAPATA, J.A., BENÍTEZ, J.R., LOBÓN, M., MONTOYA, F. & DONÁZAR, J.A. (2012): Mortality at wind-farms is positively correlated to large-scale distribution and aggregation in griffon vultures. – *Biological Conservation* 145 (1): 102–108.
- DONÁZAR, J.A., MARGALIDA, A., CARRETE, M. & SÁNCHEZ-ZAPATA, J.A. (2009): Too sanitary for vultures. – *Science* 326 (5953): 664.
- GARCÍA-FERNÁNDEZ, A.J., MARTÍNEZ-LÓPEZ, E., ROMERO, D., MARÍA-MOJICA, P., GODINO, A. & JIMÉNEZ, P. (2005): High levels of blood lead in Griffon Vultures (*Gyps fulvus*) from Cazorla Natural Park (southern Spain). – *Environmental Toxicology* 20 (4): 459–463.
- HERNÁNDEZ-MATÍAS, A., REAL, J., MOLEÓN, M., PALMA, L., SÁNCHEZ-ZAPATA, J.A., PRADEL, R., CARRETE, M., GIL-SÁNCHEZ, J.M., BEJA, P., BALBONTÍN, J., VINCENT-MARTIN, N., RAVAYROL, A., BENÍTEZ, J.R., ARROYO, B., FERNÁNDEZ, C., FERREIRO, E. & GARCÍA, J. (2013): From local monitoring to a broad-scale viability assessment:

- a case study for the endangered Bonelli's eagle *Aquila fasciata* in Western Europe. – *Ecological Monographs* 83 (2): 239–261.
- KNIGHT, T., COWLING, R.M., ROUGET, M., BALMFORD, A., LOMBARD, A.T. & CAMPBELL, B.M. (2008): Knowing But Not Doing: Selecting Priority Conservation Areas and the Research-Implementation Gap. – *Conservation Biology* 22 (3): 610–617.
- LÓPEZ-LÓPEZ, P., FERRER, M., MADERO, A., CASADO, E., & McGRADY, M. (2011): Solving Man-Induced Large-Scale Conservation Problems: The Spanish Imperial Eagle and Power Lines. – *PloS ONE* 6 (3): e17196. doi:10.1371/journal.pone.0017196
- MARGALIDA, A. (2012): Baits, budget cuts: a deadly mix. – *Science* 338 (6104): 192.
- MARGALIDA, A., DONÁZAR, J.A., CARRETE, M. & SÁNCHEZ-ZAPATA, J.A. (2010): Sanitary versus environmental policies: fitting together two pieces of the puzzle of European vulture conservation. – *Journal of Applied Ecology* 47 (4): 931–935.
- MARGALIDA, A., CARRETE, M., SÁNCHEZ-ZAPATA, J.A., DONÁZAR, J.A. (2012): Good news for European vultures. – *Science* 335 (6066): 284.
- MARTÍNEZ-ABRAÍN, A., CRESPO, J., JIMÉNEZ, J., GÓMEZ, J.A. & ORO, D. (2009): Is the historical war against wildlife over in Southern Europe? – *Animal Conservation* 12 (3): 204–208.
- PÉREZ-GARCÍA, J.M., BOTELLA, F., SÁNCHEZ-ZAPATA, J.A. & MOLEÓN, M. (2011): Conserving outside protected areas: edge effects and avian electrocutions in the periphery of Special Protected Areas. – *Bird Conservation International* 21 (3): 296–302.
- TELLA, J.L., FORERO, M.G., HIRALDO, F. & DONÁZAR, J.A. (1998): Conflicts between Lesser kestrel conservation and European Agricultural Policies as identified by habitat use analysis. – *Conservation Biology* 12 (3): 593–604.
- THOMSON REUTERS (2013): Isi Web of Sciences. – [<http://ip-science.thomsonreuters.com/es/productos/wok/>], 5/2/2013.

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