9 Case studies from around the globe

This chapter presents a compilation of case studies written by international experts. They provide a systematic assessment of the current situation on the ground across five continents from a local point of view.

9.1. Africa

CASE STUDY 1

The impact of power lines in Morocco

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Over the past few decades, Morocco has launched a large-scale integrated programme to increase electricity production capacity by diversifying sources of supply, from coal- and gas-fired power stations (in Lasfar, Safi, Tahaddart and Beni Mathar) to large renewable energy projects. The country has implemented ambitious renewable energy projects and is planning several more, with the target of increasing the contribution of renewables to 52% by 2030 (ONEE, 2016). These efforts have led to significant growth in the high-, medium- and low-voltage electricity networks, which now total 27,516, 94,243 and 244,514 km, respectively (ONEE, 2020a). This has made it possible not only to export electricity but also to achieve near-total grid coverage of the rural parts of the country, reaching 99.78% in 2020 (ONEE, 2020b).

In 2016, a major electrocution mortality hotspot was identified in the region of Guelmin (in south-western Morocco) thanks to collaboration between the Action Plan for the Spanish Imperial Eagle in Andalusia, IUCN-Med and the Kingdom of Morocco (Godino et al., 2016). In order to reconcile the development of the electricity network with current biodiversity conservation issues, the National Water and Forests Agency (ANEF, in French), in collaboration with IUCN-Med and other partners (the Government of Andalusia and European NGOs), has developed knowledge transfer activities related to the conservation of birds threatened by electrocution.

Since then, the ANEF and IUCN-Med have organised four workshops and several training courses with more than 200 participants from North African countries and

Europe on identifying and mitigating the impact on bird species of collisions and electrocutions on electricity infrastructure. One outcome of these initiatives has been the production of a practical guide to the identification and prevention of dangerous power lines to birds, published in French for the North African region (Martín Martín et al., 2019).

At the same time, national NGOs [Research Group for the Protection of Birds in Morocco (GREPOM, in French)/BirdLife, Moroccan Ornithology Group (GOMAC, in French), Moroccan Association for Raptor Protection (AMPR, in French), Association of Friends of Raptors (ASARA, in French) and Moroccan Association for the Protection of Birds and Wildlife (AMPOVIS, in French)] have conducted field surveys to characterise and identify dangerous power lines at regional level (in Guelmin in 2016–2018, and in Missour and Ifrane-Azrou in 2019). The data collected on the impact of power lines on birds, in particular raptors, revealed significant mortality of several species of birds and mammals (eagles, vultures, buzzards, falcons, storks, crows and genets) in the surveyed regions, with 59 electrocuted animals in 2016, 43 in 2017, 98 in 2018 and 213 in 2019. At the country level, this mortality is an underestimate given that other potentially dangerous regions have not yet been surveyed and that a considerable effort remains to be made to ensure full coverage of Moroccan territory.

In 2020, NGO initiatives led by GREPOM and AMPR in collaboration with the ANEF included:

➜ Organisation of webinars;

➜ Production of articles (Amezian et al., 2015) and guidelines for collecting electrocution data on birds in the field (Aourir & Radi, Unpublished);

➜ Installation of GPS transmitters on Bonelli's eagles (*Aquila fasciata*) and Rüppell's vultures (*Gyps rueppellii*) (in the framework of the Small Scale Initiative Programme for Civil Society Organizations in North Africa – PPI-OSCAN, in French) to assess individuals' ranges and mortality (Figure 186 C);

➜ Assessment of threats to birds of prey in north-western Morocco (also in the framework of the PPI-OSCAN) and

➜ Establishment of a national network of observers and organisation of surveys to identify further black spots throughout the country (https://www.grepom.org/electrocution-safe-flyways/).

Additionally, to determine the real extent of this threat to raptor populations, the ANEF and IUCN-Med launched the Atlas Programme for inventorying and monitoring raptor populations in Morocco (UICN & DEF, 2020; Figure 186 A and B).

All actions to protect birds against electrocution must be accompanied by preventative, mitigating and corrective measures. The involvement of the managing bodies of the electricity network in Morocco, such as the *Office National de l'Électricité et de l'Eau Potable* (ONEE)-*Branche Électricité*, in this endeavour is fundamental. We hope that those in charge and decision makers within the grid operators are committed to participating in this effort to conserve and protect birds, particularly birds of prey, in the face of what national and international experts consider to be the main threat to birds of prey in Morocco.

Figure 186. A: Remains of electrocuted birds collected during a sampling survey in the Guelmin area. B: Survey of raptors in the High Atlas. C: Tagging a Bonelli's eagle (*Aquila fasciata*) with a GPS transmitter. ©Justo Martín