**Conservation of a critically threatened species in Doñana National Park: the Red kite**

The Red kite *Milvus milvus* is a medium-sized sedentary raptor, endemic to the western Palearctic and with a distribution essentially restricted to Europe. It is a generalist predator, typically found in open or semi-open habitats, and is often associated with human settlements, rubbish dumps, or extensively farmed landscapes. In Europe, its populations have suffered steep declines up to the first half of the XX century, increased again in portions of central-northern Europe during the second half of the XX century and then declined again in more recent years. Most of the European population is currently concentrated in Germany, France and Spain, which collectively host about 85 % of the world population. All these core populations have been recently reported as in steep decline, with 30-50 % declines in Spain, 25 % in Germany and 21 % in France. In Spain, which holds the third largest European population, continued declines have caused the urgent listing of the species as in danger of extinction in 2011 (Real Decreto 139/2011). In Andalucía - southern Spain, the species is classified as “in critical danger of extinction” due to the extremely steep declines documented in recent decades (Catalogo Andaluz de Especies Amenazadas: Decreto 23/2012, BOE, Sec I, pag. 20912). As a result, the whole regional population is essentially concentrated in Doñana National and Natural Park, which hosts 40-50 pairs of the species. Less than six pairs are known from other portions of Andalucía. Therefore, the population of Doñana represents a key nucleus for two reasons. Firstly, it is the last “substantial” population at the regional-level and could act as a potential pool of colonizers for other surrounding areas. Secondly, its occurrence in a major protected area makes it more amenable to management action.

However, declines have also been observed within the park, some animals have been recently found poisoned and it is very unclear whether the occurrence of the population within a protected area is sufficient to guarantee its safety from major threats (Sergio et al. 2005). Therefore, given the current dramatic declines of the species throughout Spain and its extreme concentration in southern Spain within a single population located in Doñana National Park, it is urgently needed to mobilise and rapidly gather all the available quantitative knowledge that could make conservation planning more informed.

In this project, we will use GPS-telemetry to answer three key questions: (1) to what extent do Red kites use areas outside the national park and what risks does this imply? In this context, GPS-telemetry will allow close monitoring of individual movements, without the bias imposed by the detection-efficiency of receiver-devices, which can be very pronounced for wide ranging species such as Red kites. Such technology will allow ready detection of the use of risky habitats with unsafe electricity poles, of game reserves with a record of illegal poisoning, or of rubbish dumps where pathogens could be accumulated. (2) What are the main sources of mortality for the population? Constant GPS-monitoring will allow rapid detection and inspection of casualties. This will help to identify the main threats to the population with less bias caused by the lack of detection of individuals that die in remote areas of difficult access. (3) What happens to pairs that fail their reproductive attempt early in the breeding season? In recent years, we have noted that such pairs sometimes seem to disappear from the park, but it is unknown whether they have died, become less detectable, or whether they moved somewhere else. In the latter case, it is important to confirm that they did not occupy other nearby territories in a sequential manner, because this would inflate the size of the surveyed population by counting the same pair twice. GPS-telemetry would allow to clarify such doubts.

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*Publications*

Sergio, F., Blas, J., Forero, M., Fernández, N., Donázar, J.A. & Hiraldo, F. 2005. Preservation of wide-ranging top predators by site-protection: black and red kites in Doñana National Park. Biological Conservation 125: 11-21.