

GPS-GSM technology for the long journey of the Egyptian vulture, an endangered species

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Marking the six Egyptian vultures with GPS-GSM emitters allows the tracking of their movements and use of space. Credit: Conservation Biology Group (University of Barcelona-IRBio)

The Egyptian vulture is an endangered migratory species usually found in our area between March and September, and which stays in Africa during the rest of the year. However, there is not a lot of information about its transcontinental journeys—whether it stops to eat, where it stops and for how long, and about its mortality, and the number of losses and their causes.

Therefore, during the breeding season in 2018, the Conservation Biology Team of the University of Barcelona marked six Egyptian vultures with GPS emitters to conduct tracking: The birds were named Ros, Obac, Avenc, Orís, Picatxo and Asticot. The first three birds were born in 2018; Ros and Obac came from the Natural Park of Sant Llorenç del Munt i l'Obac, and Avenc, from Espai Natural de les Guilleries-Savassona. Orís was born in 2017, and came from another recovery center; Picatxo was born in 2016 in la Garrotxa, and Asticot was born in 2014 in southern France. The last three formed a group of Egyptian vultures that had been caught and released in Osona.

The GPS-GSM technology allowed the precise tracking of the movements, use of space, and the migration process of these Egyptian vultures to Africa. "This is one of the first times that GPS-GSM emitters have been used in this species, which is endangered worldwide, with the aim to know about their transcontinental movements and to track their way back to Catalonia in Spring," says lecturer Joan Real, head of the Conservation Biology Team of the UB.

Tracking vultures with GPS technology was possible thanks to the collaboration of several organisations and naturalists. In this joint action, the Biodiversity and Environment Service of Generalitat de Catalunya provided the authorization for the marking and tracking of vultures, while the Grup de Suport de Muntanya del Cos d'Agents Rurals (mountain support group of foresters) of Generalitat de Catalunya carried out climbing tasks and caught the young birds. Expert Víctor

García, member of the Subdirectorate-General of Natural Environment and Forestry of the Ministry for Ecological Transition, captured the vultures and placed the emitters. The Conservation Biology Team of the UB, a distinguished group in the study of threatened birds of prey, conducted the tracking of the vultures and took measurements and biological samples. All animals that were found injured or dead were diagnosed by the experts from the Recovery Center on Torreferrussa from Generalitat de Catalunya. The project also received the support of the experts from the Natural Park of Monteserrat, the Natural Park of Sant Llorenç del Munt i l'Obac, the la Garrotxa Volcanic Zone Natural Park, the Natural Area Guillerics-Savassona and the Consortium of Natural Spaces of Ripollès, in addition to the foresters of the cited places who took part in the tracking of the vulture population.

Migratory behaviour and threats

Within a few weeks, the six Egyptian vultures had generated a great amount of data regarding feeding areas, phenology, movements and causes of death. As with many other raptors, death linked to human activity is a big problem for the preservation of the species. Although the venom used to illegally hunt carnivorous animals is one of the main threats to these raptors, the data show that such things as electrocution with electric lines cause deaths, and are probably a threat to the viability of Egyptian vulture populations.

The destinations of the six Egyptian vultures were very different. Orís was released in a landfill to ease its contact with other beings from the same species and to find food. Orís got used to this place and remains in the landfill. It entered a recovery center after leaving the nest and remained there until it was released last spring, and could not migrate. This fact could cause the loss of the migratory instinct, since it has not shown any signs of leaving.

As expected, Picatxo and Asticot were the most active due their non-breeding condition. During July and August, they traveled within a wide area, mainly in Catalonia, and visited feeding areas such as reeds, landfills and areas with extensive livestock. Both coincided in a feeding area for some days before starting the active migration, which was rapid. Picatxo crossed the Strait of Gibraltar on August 16, while Asticot did so on September 3. They reached southern Mauritania in a few days. There are no signs of location for Picatxo, probably the bird traveled in an area without GSM coverage. The researchers were able to track Asticot.

Regarding the young birds, migration took place later, as expected. Once Avenc left the nest, it stayed in the landfill area for some weeks, probably with its progenitors. It started its active migration on September 7 and after a scale of a few days in Catalonia and Aragon, it crossed the Strait on September 18. It is now in the south of Mauritania. The other young birds from Sant Llorenç del Munt i l'Obac have a different ending.

Obac began the active migration in late August and reached Albacete in two days, where it was non-fatally electrocuted by electric lines. It survived for several days until it was caught on September 20 by foresters in Castilla-La-Mancha, who brought him to a recovery center. However, the researchers do not know if it will fully recover from the injury.

Ros began active migration in early September and reached southern Spain in a few days, stopping for five days. On September 10, while flying over Granada, it had an accident. Although this is under investigation by Environment agents from Junta de Andalucía, the cause of this accident may be human activity.

In this context, the obtained data is important and of great interest to address the challenges of the conservation of this endangered species.

Also, within the frame of the project, active from 2017 to 2020, the researcher intend to tag more Egyptian vultures with GPS emitters to continue studying how they live and obtain resources, and therefore accumulate more scientific data on their survival and movements.

Provided by University of Barcelona

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