Long-fingered Bat goes Fishing

Elhuyar Fundazioa

[1]The long-fingered bat (Myotis capaccinii) is on the verge of extinction; the work by the UPV/EHU biologist Ostaizka Aizpurua has been crucial in getting to know it better, to be able to take the necessary steps to protect it. Thanks to this work, the long-fingered bat has been shown to feed on fish as well as insects. What is more, it knows how to fish.

Ostaizka Aizpurua-Arrieta is a researcher in the Ecology and Behaviour Evolution group of the UPV/EHU-University of the Basque Country. Her research centres on bats and, recently, she has been observing the behaviour and habits of a bat species in Valencia. And this particular bat species (*Myotis capaccinii*, the long-fingered bat) is in fact on the verge of extinction, so it is important to know its habits to be able to take the necessary steps to protect it. Thanks to Aizpurua's work, the long-fingered bat has been shown to feed on fish as well as insects. What is more, it knows how to fish.

Aizpurua began to study bats when she embarked on her biology studies at the UPV/EHU. She had the chance to work with the research group led by Joxerra Aihartza and Inazio Garin, and also chose bats for her PhD thesis, specifically the long-fingered bat (*Myotis capaccinii*).

As Aizpurua says, her interest in that bat emerged out of a routine survey. The long-fingered bat inhabits various niches in the Mediterranean area, but its situation is critical because it is about to become extinct. That is why it is not the first time that this species is being studied in order to design management plans to protect it. In a routine study, the researchers found scales in the droppings of bats belonging to one colony. "That detail drew their attention, because until then the species had been thought to be insectivorous; in other words, they were thought to eat only insects," recalled Aizpurua.

Many questions were prompted by those scales: Was fish intake an unusual fact in long-fingered bats, or was it part of their diet? The UPV/EHU research group began to seek answers to these questions, and so did Ostaizka Aizpurua: "It was a special challenge for me because we didn't think fishing was among the habits of the long-fingered bat. Bats in fact make use of echolocation; that means they can't detect what's under the water, because the surface reflects the waves emitted. On the other hand, the long-fingered bat is very small; it weighs no more than 10 grams and that it why it is difficult to imagine it fishing".

Preference for exotic fish

According to Aizpurua, they have had to study not only the characteristics of the species but also their habitat and phenology. "You have to remember that the whole of the Mediterranean has undergone significant changes in recent years and these changes have had an effect on the bat population. Phenology looks at how the seasons and climate influence living organisms, and we suspected that it was a significant factor in the case of the bats". Specifically, according to one of the hypotheses put forward by the researchers, the bat very likely took advantage of the large concentration of fish that had accumulated in small ponds during the dry seasons to go fishing.

So they gathered samples of the droppings of a bat colony in Denia (Alicante) month by month between 2008 and 2010 to see whether remains of scales appeared, and at what point this happened.That way they reached the conclusion that eating fish was not an isolated occurrence in long-fingered bats and that this consumption was not linked to a specific season. "Although the fish remains were more abundant in August and September, we found remains throughout the year."

Apart from the scales, they also studied the otoliths, said Aizpurua. "Otoliths are a type of small bone in the ear; they are specific to each species, and that is why they are used to identify species". The study of the otoliths enabled them to reach the conclusion that the fish consumed by the long-fingered bats belong to the species Gambusia holbrooki. This is an exotic species. It is an insectivore and was introduced in the Mediterranean in the 1920s to tackle the plagues of insects. Today, it is one of the one hundred most important invasive species on the peninsula. To complete the information, the researchers measured the fish eaten by the bats. "We found that they chose the smallest fish out of those they had available."

Finally, they managed to film the bats red-handed while they were fishing: "We fitted radio transmitters to the four bats that had the most fish remains in their droppings; that enabled us to see exactly where they fished. It was a large pond with a great density of fish. For the next occasion we had the video camera set up and we filmed them while they were fishing".

There are still questions they have not yet been able to answer, like, for example, whether the bats used to fish before the Gambusia holbrooki was introduced and, if the answer is affirmative, what species they consumed. But Aizpurua and her colleagues have at least shown that the long-fingered bat is capable of fishing and that it is not an unusual activity for the members of a colony. The results of the research have been published in the specialised journal *PLOS ONE*.

Citation: O. Aizpurua, I. Garin, A. Alberdi, E. Salsamendi, H. Baagøe, J. Aihartza. 2013. “Fishing Long-Fingered Bats (Myotis capaccinii) Prey Regularly upon Exotic Fish”. PLoS ONE. DOI: 10.1371/journal.pone.0080163

Source URL (retrieved on *12/01/2015 - 2:32am*): http://www.scientificcomputing.com/news/2014/05/long-fingered-bat-goes-fishing

Links:
[1] http://www.scientificcomputing.com/sites/scientificcomputing.com/files/Long-fingered_Bat_goes_Fishing.jpg