

Bat Conservation Trust

Bat News



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Caring for God's Acre

The value of burial grounds

Flower power

Evolution in action

Anne Youngman

Scottish Officer extraordinaire

All British bats and their roosts
protected by law

Bats are indicators
of a healthy,
diverse environment

Bats are the
only mammals
that can fly

Species
acts

... see, but use their
echolocation
to hunt in the dark



Not Just Tequila

Kristen Lear, PhD Candidate at the University of Georgia, is a bat ecologist integrating ecological and human dimensions for bat conservation and the first winner of the Kate Barlow award, explains more.

Agaves. They are the plants that bring us tequila and mezcal. But agaves do much more than merely provide tequila and mezcal for our tables. All parts of agave plants can be used in some way by people. Their leaves are fed to livestock in times of drought; their stalks are cooked and sold as a candy, or dried and used to build fences or roofs; their flowers can be eaten; their rich, sugary sap is consumed as a beverage or boiled into honey; and they can be planted to help control erosion. All of these uses make agaves a very important cultural and economic resource for many communities in Mexico.

However, there is another actor at play in this story of agaves. Several species of nectar-feeding bats consume agave nectar and pollen as an important food source. One in particular, the endangered Mexican long-nosed bat (*Leptonycteris nivalis*), relies on agaves as their main food source during part of their 1000km yearly migration. Females migrate between their mating sites in central Mexico and their maternity sites in northeast Mexico and Texas, where they rely on agave nectar for food. Rural communities in these areas also harvest agaves, which often entails removing the stalks from the plant before flowering. When combined with agricultural and urban expansion, this practice can fragment the bats' food resources and may be contributing to their decline. To address this issue, bat conservationists have developed 'bat-friendly' tequila and mezcal in central Mexico, where producers leave a small portion of their crop to flower for the bats and make tequila and mezcal with the remaining crop. However, in northeast Mexico, tequila and mezcal cannot legally be made and sold, making this 'bat-friendly' label an unworkable solution for rural communities harvesting agaves for cultural products in this region.

With the support of the Bat Conservation Trust and the Kate Barlow Award, I am working to identify alternative, locally-appropriate approaches for 'bat-friendly' agave harvest and use in northeast Mexico, specifically in the states of Nuevo Leon and Coahuila. Developing 'bat-friendly' agave programmes with local

◀ Learning about harvesting techniques from an agave harvester



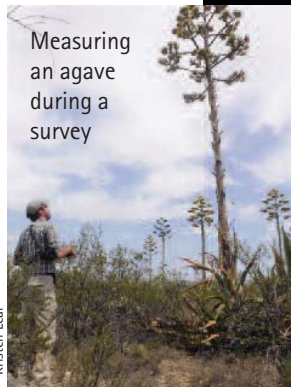
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The Mexican long-nosed bat (*Leptonycteris nivalis*)



© Emma Gomez-Ruiz

▼ Interviewing a community leader about their agave harvest and management



Measuring an agave during a survey

© Kristen Lear



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communities requires both understanding the foraging ecology of the bats, as well as the local contexts of each community that uses agaves and how best to tailor programmes to their needs. As a student in the Integrative Conservation programme at the University of Georgia, I'm taking an interdisciplinary approach to address two main questions that will lead to a better understanding of how to address this conservation challenge.

First, what agave and landscape characteristics provide high quality food resources for the bats? For example, do they prefer plants with more flowers, or areas with higher densities of flowering

agaves? To answer these questions, I am using infrared cameras (Sony FDR-AX33 camcorders with supplemental IR lamps) to measure bat feeding visits to agaves at night, and agave surveys to collect data on agave and landscape characteristics. From this information, I will determine which of these characteristics are important predictors of bat visitation and should therefore be included in the design of 'bat-friendly' management programmes.

However, designing and implementing 'bat-friendly' agave programmes is not just about the needs of the bats, but also the needs of the people. In the second aspect of my work, I am trying to identify which communities are most open to adopting 'bat-friendly' practices, and how we can incentivise communities to adopt these practices. I am conducting interviews, focus group discussions, and household surveys with community leaders, elders, and agave harvesters to understand the current economic and political contexts of each community and

how these contexts may affect their willingness to adopt 'bat-friendly' practices. For example, some communities already have programmes established to harvest agaves, and there may be opportunities within these programmes to promote 'bat-friendly' harvest. I will also conduct hypothetical choice experiments to understand which practices (e.g. planting agaves in the community or establishing harvest limits from wild agave populations) they would most willing to adopt.

Finally, environmental education will play an important role in encouraging local communities to adopt 'bat-friendly' practices. As part of my work, I will develop an educational programme to enhance communities' understanding of the ecological and economic importance of pollinating bats and how they can contribute to their conservation through 'bat-friendly' practices.

Ultimately, this work is only one piece of the conservation puzzle, but with the information gained from this project we will be better able to work together with local communities and conserve the endangered Mexican long-nosed bat.