Award Details

Evolutionary drivers of variation in bat migration

Research Details

Competition Year:	2018	**Fiscal Year:**	2018-2019
Project Lead Name:	Fraser, Erin	**Institution:**	Memorial University of Newfoundland
Department:	Grenfell Campus	**Province:**	Newfoundland and Labrador
Award Amount:	28,000	**Installment:**	1 - 5
Program:	Discovery Grants Program - Individual	**Selection Committee:**	Evolution and Ecology
Research Subject:	Animal morphology	**Area of Application:**	Life sciences (including biotechnology)
Co-Researchers:	No Co-Researcher	**Partners:**	No Partners

Award Summary

Many animals migrate, completing movements that range from relatively short trips to awe-inspiring continental-scale journeys. Variation in migratory movements is common within species and is often linked to variation in other traits. For example, longer-distance migrants may have body shapes that allow them to travel more efficiently than shorter-distance migrants of the same species. Studying variation among animals that migrate different distances can help us to better understand the factors that have contributed to the evolution of migration.**** Many bat species migrate, but migration in bats has not been studied nearly as much as in other groups. Because bats are nocturnal and difficult to observe, tracking them across space and time is challenging. Thus, we know surprisingly little about their basic movements. This is a problem because many North American bats are at risk and understanding their movements is important for their conservation. Previous research, including my own work, has shown that within-species variation in migratory movements is common in bats, but the factors driving this variation are largely unknown. Investigating this knowledge gap is a long-term research goal of mine.**** My research program has three immediate objectives. First (1), my students and I will study the links between variation in migratory movements, morphology, and life history categories (e.g. age, sex) in bats. To do this, we need to (2) continue describing basic bat migratory movements and (3) improve the techniques that we use to learn about bat migration.**** Previously, I have used chemical (stable hydrogen isotope) analyses of fur samples to study bat migration. We will continue to use and improve this technique and will also develop a less common method – strontium isotope analysis – for use on bats. Finally, we will use the Motus Wildlife Tracking System, an initiative that allows researchers to track migratory animals as they move. These three approaches will allow us to track migrants across a range of scales and with varying resolutions. We will be able to link the migratory movements of bats with other physical characteristics in ways that were not previously possible. My research team will work at locations across North America (including locally in Newfoundland), and with both live bats and museum specimens.**** Because bats are very distinct from other small flying migrants (e.g. birds, insects) this work will add a new dimension to our understanding of migratory theory. My proposal to study links between migratory and morphological variation is the first step in a longer-term plan to similarly examine variation in other aspects of physiology and behavior among migrant bats. The proposed analytical developments will improve bat tracking abilities and will be useful for other researchers. Improved understanding of bat movements is necessary for bat wildlife management decisions and species recovery efforts.***