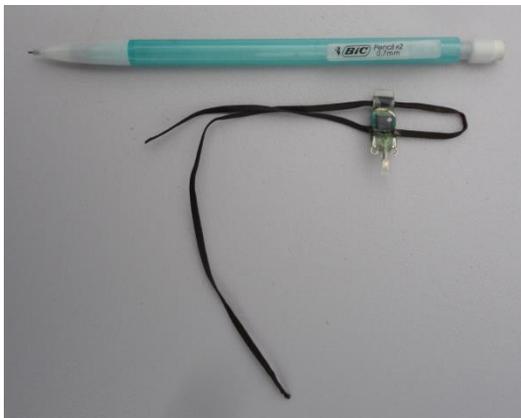


Tracking Purple Martin Migration (2012)

Amélie Roberto-Charron

Migratory species can be defined as a species where the majority of the population partakes regular cyclical movements outside of their breeding range to a foreseeable destination at regular time intervals. Species commonly migrate to areas with seasonally abundant resources, where survival prospects are best, traveling to and from breeding and non-breeding habitat via flyways or migratory routes. It is estimated that 19% of the 9,856 bird species on earth are migratory and that more than five billion migrating across North and South America each year. Determining migratory routes enables the study of over wintering grounds and stop over sites that can be used for resting and feeding during migration. Pinpointing such areas helps ensure their conservation.

Many different technologies exist to track migration, such as banding, acoustic monitoring, and various kinds of transmitters. Each technology has a number of associated advantages and disadvantages, such as cost, weight and accuracy.



Geo-locator and harness.

A lightweight tracking method that has been recently gaining popularity is the geo-locator. Geo-locators are light data loggers, approximately the size of a dime, that record light levels and time of day. From these, latitude and longitude can be determined which can then be used to derive migratory routes. These devices are non-transmitting; so to obtain the recorded data the data logger needs to be retrieved. Their accuracy is of approximately 150km, and they can have a battery life of several years. The largest advantage of geo-locators, however, is that they are lightweight.

When tracking a species an important property that should be considered is the weight of the device. The tracking device is suggested to be about 3%-5% of the animal's weight. If it is any heavier it could decrease the fitness of the animal being tracked. The use of geo-locators permits the mapping of the migratory routes of small songbirds that were previously unable to bear the weight of data loggers, such as the Purple Martin.

Purple Martins, *Progne subis*, are one of the larger members of the swallow family. The population suffered a major population crash in North America following the introduction of the European Starling that outcompeted them for nesting cavities. The



Purple Martin House.

population has therefore become dependent on man-made, monitored Purple Martin houses. If left unmonitored the Purple Martins will be outcompeted by European Starlings, and as such the responsibility is left to the Purple Martin house landowner to ensure that the inhabitants are in fact Purple Martins.

The Purple Martins migrate from South America to North America in the spring to breed; they can arrive in Alberta as early as mid-April. They do not remain long however, by the beginning of August they are already migrating south back to their wintering grounds. One of their most northern breeding sites is in Camrose, and is well known for the impressive number of Purple Martins that reside there during the summer. Camrose is also home to a number of very passionate birders and Purple Martin house landowners.



Purple Martin Equipped with Geo-locator.

It therefore comes as no surprise that Camrose was selected to take part in a study based out of York University using these geo-locators to track Purple Martin migration. This June (2012), Dr. Kevin Fraser, a post-doctoral researcher from the Department of Biological Sciences from York University, with the assistance of many Purple Martin lovers trapped and equipped 30 Purple Martins with geo-locators in Camrose. As these birds are insectivorous, and catch insects on the fly, these tracking devices were carefully placed

at the base of the spine so as to not interfere with the bird's swift flight movements. Harnessing straps around the bird's legs secured the device in place. Purple Martins have high site fidelity and therefore migrate to the same breeding grounds each year. Next spring, these devices will be removed by recapturing the birds and by cutting the harness.

The Beaverhill Bird Observatory (BBO) was lucky enough to get involved with this project. The BBO head bander, Meaghan Bouchard, and assistant bander, myself, Amélie Roberto-Charron, spent a day in Camrose trapping and banding the birds that were being outfitted with the geo-locators. The Purple Martins were trapped using a very high tech technique; a paint roller was used to trap individuals once they were observed returning to the Purple Martin house. It is a very involved process with people standing watch at each side of a Purple Martin house, with many attempts being required to trap one individual.

The use of geo-locators is innovative, and costly. It is possible to help fund this leading edge research by sponsoring a geo-locator with a \$250 commitment. For more information on this project and how to get involved, please contact Dr. Glen Hvenegaard, a professor of environmental sciences at the University of Alberta Augustana Campus in Camrose, by email at glen.hvenegaard@ualberta.ca