

Genetic connectivity of a Rocky Mountain hummingbird in threatened sky-island habitats

Dear Meg and Bert Raynes Wildlife Fund,

During the summer of 2017 we visited 12 sites to collect samples from Broad-tailed Hummingbirds (*Selasphorus platycercus*). We banded and collected blood and feather samples for DNA from 221 Broad-tailed Hummingbirds throughout Wyoming and Colorado (Table 2). During our banding, we interacted with approximately 40 people and educated them about hummingbirds and ecology and conservation. At one location, a local Audubon group visited to observe the process and discuss science, and all age groups were represented from children to the elderly. We engaged several children and piqued their interest in wildlife and conservation, which was a very rewarding experience for us and them.



Figure 2. Hummingbird trapping process (modified Hall net traps)

(approximately 100), and am currently awaiting that job to be completed. Funds were used to purchase laboratory supplies necessary for the extractions and preparation of the samples. The project is on schedule to be completed in 2018.

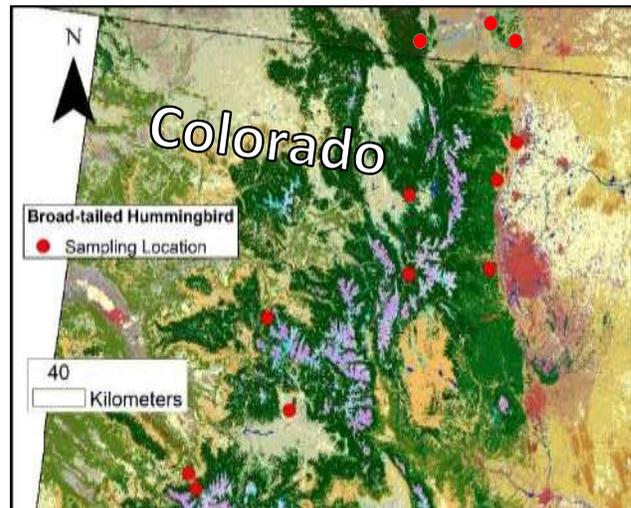


Figure 1. Sites sampled during the 2017 summer field season

At each location, I discussed the funding provided by the Meg and Bert Raynes Wildlife Fund that helped make the research possible. The summer banding season was a success and we collected the samples needed to conclude the field work portion of the project.

The field portions of this project are now successfully completed, but much more work remains to be done. I have extracted the DNA from enough samples to be sent for sequencing

(approximately 100), and am currently awaiting that job to be completed. Funds were used to purchase laboratory supplies necessary for the extractions and preparation of the samples. The project is on

schedule to be completed in 2018.

The monies provided by the Meg and Bert Raynes Wildlife Fund allowed us to sequence a large number of individuals, resulting in a geographic sampling range that will bolster the results of this project. Below is a breakdown of monies spent and remaining funds. Remaining funds will go towards paying for next-generation sequencing of the DNA samples, which are currently at the sequencing facility and scheduled to be run through the Illumina HiSeq 4000 machine.

Table 1. Budget and money spent as of January, 2018

Budget (January, 2018)	
<i>Item</i>	<i>Spent</i>
Summer Stipend	\$1,937.74
Equipment and Supplies	\$779.27
<i>Remaining Funds</i>	<i>\$1,574.10</i>
Total	\$4,291.11



Figure 3. Brady Godwin banding and sampling a Broad-tailed Hummingbird

Table 2. Nearest town of sites visited (for homeowner privacy) and number of hummingbirds collected at sampled at each site

Field Summary	
<i>Location (nearest town)</i>	<i>Individuals sampled</i>
Gunnison, CO	13
Lenore Lake, CO	25
Ouray, CO	2
Hot Sulphur Springs, CO	28
Redstone, CO	27
Dillon, CO	2
Fort Collins, CO	29
Genesee, CO	21
Lyons, CO	28
Fox Park, WY	11
Buford, WY	12
Laramie, WY	23
Total	221

All pictures taken by Laura Hagar, a banding site volunteer, 2017

Special thanks to many people and groups that helped us organize and execute the field work: Wyoming Game and Fish Department, Colorado Parks and Wildlife, Colorado Audubon Society, wyobird online group, cobird online group, professors and students at the University of Wyoming and the Wyoming State Veterinary Laboratory