Long-term monitoring of Hummingbirds in Southwest Idaho in the Boise National Forest

2012 Annual Report

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ABSTRACT

This report summarizes the 2012 efforts to monitor the abundance, breeding condition, and migratory timing of three hummingbird species (Calliope, Rufous, and Black-chinned) in southwest Idaho at a site directly adjacent the Boise National Forest. This effort is part of the Hummingbird Monitoring Network and the Western Hummingbird Partnership. This project includes intensive trapping, banding, and feeder count efforts. Both Rufous and Calliope hummingbirds are on the Partners in Flight Watch List (a species that is moderately abundant with declines or high threats (Rufous) and a species with restricted distribution or low population size (Calliope) (PIF 2008). During 2012 we captured 368 (320 new bands and 48 recaptures) hummingbirds including 178 Black-chinned, 13 Rufous, and 177 Calliope Hummingbirds. Male Calliope Hummingbirds were conducting their territorial displays in June and we captured 33 Calliope females in breeding condition (swollen abdomens and/or visible eggs). The main spring migratory push was in early and mid-June. The timing of the fall migratory push was less obvious, but it appeared that most birds had left the study area by mid-September. We assume that Calliopes, as well as Black-chinneds, are breeding in the nearby Boise National Forest, whereas Rufous appear to use the area only on north- and south-bound migration

INTRODUCTION

Despite hummingbird's popularity, little is known about their life history from an ecological and conservation standpoint (WHP 2010). Many of the Birds of North America (BNA) accounts for hummingbirds are data deficient in describing habitat requirements at different times of year and at different spatial scales (WHP 2010). Range wide, over 60% of currently threatened or endangered hummingbirds do not even have their nests described (Wethington and Finley 2009). The US Fish & Wildlife Service places the Calliope and Rufous Hummingbirds on their list of "Birds of Conservation Concern" (USFWS 2008). Both Rufous and Calliope hummingbirds are on the Partners in Flight Watch List (a species that is moderately abundant with declines or high threats (Rufous) and a species with restricted distribution or low population size (Calliope) (PIF 2008).

Due in part to hummingbirds fast movements, they can be difficult to monitor. Many of the techniques used to monitor land birds (e.g. point counts, breeding bird surveys, etc.) fail to monitor hummingbird populations adequately. Point counts are typically not ideal at detecting rare species across the landscape, such as hummingbirds. Species that have patchy distributions or are detected in brief events or incidental "fly-bys" will generally be recorded in proportion to the amount of time that is spent on the point count. Point counts generally are not long enough to record brief hummingbird events, and therefore fail to monitor populations adequately.

Our objective is to conduct standardized population monitoring that generates information about relative abundance, productivity, population trends, migration timing, migratory routes, and survivorship. We also have community goals that include training citizen scientists, partnering with land managers like the US Forest Service, and conducting environmental education and outreach for the public. Another goal of this project was to join the Hummingbird Monitoring Network (HMN) and the Western Hummingbird Partnership and establish a study site within the *breeding* range of the Calliope Hummingbird. Before 2012, there was no HMN site in Idaho and furthermore no HMN sites within the breeding range of the Calliope Hummingbird. This was a gap in the network that the Idaho Bird Observatory filled in 2012 (and anticipates continuing in future years).

STUDY AREA AND METHODS

Our study area is about one mile south of Idaho City, Idaho on private property directly abutting the Boise National Forest. The habitat is characterized by pine/fir forest interspersed with shrubby meadows. The site is approximately 3,900 feet in elevation. We followed the Hummingbird Monitoring Network (HMN) protocol which is outlined below:

Banding (HMN Protocol)

Five feeders are maintained at the study site throughout the season when hummingbirds are

present (typically April to October). Hummingbirds are trapped and banded once every two weeks (dates are pre-determined by HMN). Trapping and banding begins within one half-hour of sunrise and continues for five hours. Banders have all required permits from governmental agencies. Temperature may cause a delay in the start of monitoring. If the temperature is below 32°F or 0°C, the session is delayed until it is above freezing. For temperatures below 38°F or 3°C, the bander will use discretion as to when to start. If few birds are present or the team has a heater or warm place to hold the birds, the session can start normally with increased emphasis on bird safety. If the start of monitoring is delayed, monitoring should still last 5 hours. When conditions such as a short rainfall events, windy conditions, or bees dominating the feeders, causes interruption, the monitoring session may be stopped. If these conditions are temporary and last less than 30 minutes, we extend the monitoring session so the total time of active monitoring is 5 hours. If the conditions last longer than 30 minutes, the bander may choose to end the monitoring early. At the banding table, birds are processed in chronological order and are held no longer than 30 minutes. The bander determines how many birds that he/she can safely band within 30 minutes. When this number is reached, the bander requests the trappers to stop trapping and records the time of the request. When the bander is ready to accept more birds, he/she informs the trappers to start catching birds and again records the time. Once the bird is placed on the scale and the weight recorded, the bird is fed and released.

Traps (HMN Protocol)

We use two Hall traps (NABC 2001) that each covers one feeder. The remaining feeders are taken down and are not accessible to hummingbirds during the five-hour banding period. One to two people operate each trap. They are responsible for removing birds from the traps, placing them into holding bags, and opening the trap before taking the birds to the banding table. While a trapper takes a bird to the table, the other trapper(s) should watch the traps. The highest priority for trap operation is to ensure that the traps are observed throughout the 5-hour period and that the time directly at the traps is minimized. Trappers are also responsible for taking trap data (recording the number of hummingbirds that approach the trap and/or enter the trap) when trapping is temporarily paused until banders can catch up. When bird numbers are high, counting the number of birds that either enter or leave the trap provides a better estimate than trying to keep track of which birds have not been counted while feeding. The trapper records all birds that escape when actively trapping. When bird numbers are low, the trapper also records the number of birds that approach the trap but do not enter. The trapper should watch a bird as long as it is near either trap. If a bird approaches one or both traps, does not enter any, and then leaves, the trapper will mark this bird as one trap checker. This data are used to estimate abundance of hummingbirds.

Visitors

Visitors get very excited and want to get involved. We allow them to release birds by holding their hand palm up and fingers straight. We place the bird on their hand. Sometimes the bird will

perch on the hand for a while, but often they fly off immediately. It is a memorable experience for all.

RESULTS

We used the HMN standardized protocol to determine species presence, breeding condition, migration timing, and to begin to monitor long-term population trends. We captured 368 (320 new and 48 recaptures) hummingbirds including 178 Black-chinned, 13 Rufous, and 177 Calliope Hummingbirds (Table 1). Male Calliope Hummingbirds were conducting their territorial displays in June and we captured 33 Calliope females in breeding condition (swollen abdomens and/or visible eggs). Although we didn't nest search, we assume that Calliopes, as well as Black-chinneds, are breeding in the nearby Boise National Forest whereas Rufous appear to use the area only on north- and south-bound migration

We had almost 200 visitors observe the banding process while learning about the role the National Forest plays in hummingbird ecology. Visitors came from many places in the state (e.g. Idaho City, Boise, Challis, Roberts, and even from Washington and Illinois).

TABLE 1. HUMMINGBIRD CAPTURES BY SESSION (CAHU = CALLIOPE HUMMINGBIRD, BCHU = BLACK-CHINNED HUMMINGBIRD, RUHU= RUFOUS HUMMINGBIRD)

SESSION	NUMBER OF CAPTURES	CAHU	BCHU	RUHU	# BIRDS AROUND COUNTED AT FEEDERS IN 5 HOUR SESSION	# HOURS TRAPS CLOSED (OUT OF 5 HOURS) ^
MAY 19	42	31	11	0	36	1 HR 23 MIN
JUNE 2	67	39	28	0	514*	2 HR 42 MIN
JUNE 16	76	56	20	0	548*	2 HR 4 MIN
JUNE 30	33	18	14	1	169	26 MIN
JULY 14	16	3	10	3	57	0 MIN
JULY 28	50	18	30	2	154	12 MIN
AUG 11	43	3	39	1	39	0 MIN
AUG 25	37	8	23	6	31	0 MIN
SEPT 8	4	1	3	0	4	0 MIN

* There were extremely high numbers of birds in June. With the proper staffing and supplies, we could maximize captures in 2013. ^ Trapping temporarily ceases when banders cannot keep up with the high volume of birds.

DISCUSSION

Unlike most other avian families, the published literature for Trochilidae (the hummingbird family) is lacking in a number of areas (WHP 2010). Our goal is to conduct standardized population monitoring that generates information about relative abundance, productivity, population trends, migration timing, migratory routes, and survivorship. We hope this information will help contribute to designing effective measures to conserve hummingbirds. Scientific research must be well-designed and thought out, peer-reviewed, and publicly accessible so it can provide meaningful results for conservation – that is our goal and the goal of HMN and the WHP.

June was the busiest month by far. High numbers of Calliope hummingbirds were pushing through on migration as conditions in the higher elevation mountains warmed. During June there were too many hummingbirds around and, being our first full season, we did not have enough trained banders to keep up with the pulse. Therefore we were forced to shut down the traps for 2-3 hours of the 5 hour-long session on both June dates (see Table 1). With a year of training under our belts and several much more qualified helpers, in 2013 we hope to have enough trained banders on hand for those June sessions.

The WHP is a collaborative network with many partners that aim to promote hummingbird conservation through science-based monitoring, research, habitat restoration/enhancement, and education/outreach efforts (WHP 2010). WHP goals are to use these scientific results to inform land managers so key habitats can be managed in ways that support hummingbird populations and also helps agencies meet their management goals and objectives of ecosystems in general (WHP 2010).

ACKNOWLEDGMENTS

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LITERATURE CITED

North American Banding Council (NABC). 2001. The North Amertican Banders' Manual for Banding Hummingbirds. http://academic.keystone.edu/jskinner/OperationRubythroat/HUMM_MAN.pdf

Partners in Flight (PIF). 2008. PIF Continental (U.S. & Canada) Watch List Species Research & Monitoring Needs. http://www.partnersinflight.org/watchlistneeds/

U.S. Fish and Wildlife Service (USFWS). 2008. Birds of Conservation Concern 2008. http://digitalmedia.fws.gov/utils/getfile/collection/document/id/1404/filename/1405.pdf

Wethington, S. M. and Finley N. 2009. Addressing Hummingbird conservation needs: An Initial Assessment. In Proceedings of the Fourth International Partners In Flight Conference.: Tundra to Tropics.

Western Hummingbird Partnership Action Plan (WHP). 2010. http://www.hummonnet.org/pdf/201006whp_actionplan.pdf