

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

2013 Annual Report



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ABSTRACT

This report summarizes the 2013 hummingbird monitoring efforts in Idaho City on private lands directly adjacent to the Boise National Forest, Idaho. Through our collaboration with the U.S. Forest Service International Programs and the Hummingbird Monitoring Network, we hope to improve the ability of the Boise National Forest to monitor population trends, and migration and breeding phenology of hummingbirds that use the National Forest. We also aim to provide data that are useful to inform land managers so key habitats can be managed in ways that support hummingbird populations and also helps agencies meet their management objectives.

From late May to late August, we used standardized banding and feeder counts and focused on three main species that are present for migration and breeding: the Black-chinned, Calliope, and Rufous Hummingbirds. 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 2013, we captured 372 hummingbirds (315 new and 57 recaptures) including 197 Calliope, 125 Black-chinned, and 48 Rufous Hummingbirds. We also caught 1 Anna's Hummingbird (a first for the project) and a hybrid Black-chinned x Calliope Hummingbird . We recaptured 43 hummingbirds that were originally banded at the same site in 2012.

INTRODUCTION

Hummingbirds are extremely popular with the public, yet the published literature for Trochilidae (the hummingbird family) is lacking in a number of areas (WHP 2010). Many of the Birds of North America species accounts for hummingbirds are “data deficient” in describing habitat requirements both temporally and spatially (WHP 2010). Across their entire range in the Americas, more than 60% of currently threatened or endangered hummingbirds do not even have their nests described (Wethington and Finley 2009). The U.S. Fish and Wildlife Service (USFWS) places the Calliope and Rufous Hummingbirds on their list of “Birds of Conservation Concern” (USFWS 2008) and 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).

Long-term programs are needed to monitor population trends for hummingbirds. Moreover, we need programs that provide specific information about population demographics (i.e., productivity and survivorship). If populations are declining, population trend data alone cannot point to where in their life cycles the population declines are occurring, i.e., on the breeding grounds, somewhere during migration, or on the wintering grounds (IBP 2007). This lack of demographic information for migratory bird populations can impede conservation efforts.

Many of the techniques used to monitor land birds (e.g., point counts, breeding bird surveys) fail to monitor hummingbird populations adequately. Species such as hummingbirds that are detected only in brief events or incidental “fly-bys” will generally be recorded in proportion to the amount of time that is spent observing. Point counts generally are not long enough to record brief hummingbird events, and therefore fail to monitor populations sufficiently. Standardized banding efforts can provide demographic information including annual indices of adult population size and post-fledging productivity, estimates of adult survivorship and recruitment into the adult population (IBP 2007).

Our objective is to conduct standardized population monitoring that generates information about relative abundance, productivity, population trends, migration timing, migratory routes, and survivorship. We hope data collected from this project will contribute to a larger, nationwide dataset (Western Hummingbird Partnership and the Hummingbird Monitoring Network [HMN]) which will allow long-term monitoring across multiple states and National Forests.

Before 2011, there was no HMN site in Idaho and furthermore no HMN sites in the nation within the breeding range of the Calliope Hummingbird. This was a gap in the network that the Idaho Bird Observatory has started to fill. Since 2011, we have banded over 650 hummingbirds of five species. We have also banded one hybrid hummingbird – a hybrid of a Black-chinned and Calliope.

STUDY AREA AND METHODS

Our study area is approximately one mile south of Idaho City, Idaho on private property directly adjacent the Boise National Forest. The habitat is characterized by ponderosa pine/Douglas fir forest interspersed with shrubby meadows. The site is approximately 3,900 feet in elevation. We

followed the standardized Hummingbird Monitoring Network (HMN) protocol which is outlined below. We banded from late May to late August 2013.

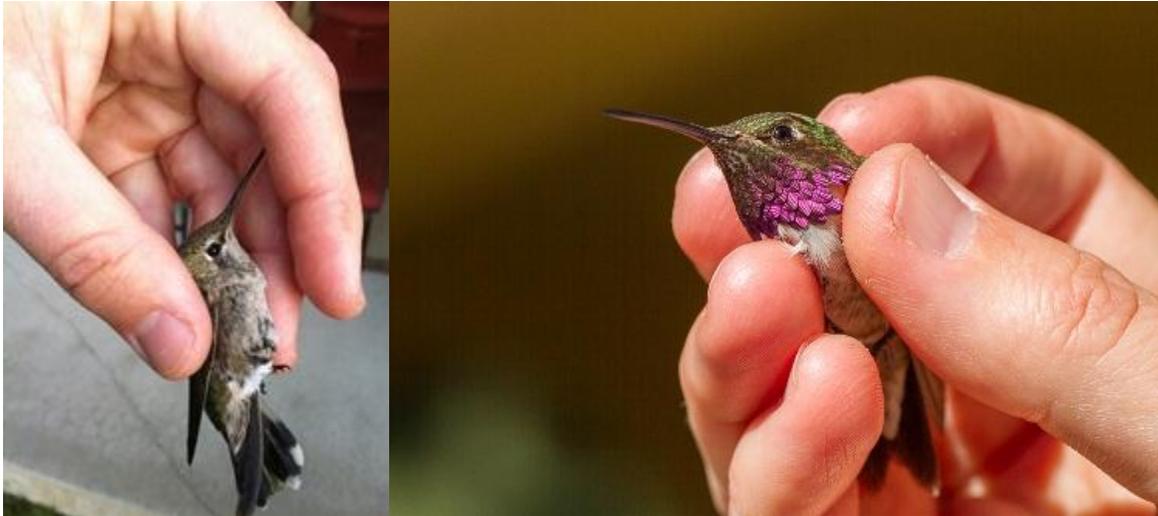
Seven feeders are maintained at the study site throughout the season when hummingbirds are present (typically April to October). We trap and band hummingbirds once every two weeks on dates pre-determined by HMN. Trapping and banding begins within one half-hour of sunrise and continues for five hours. 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 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 cause 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, we process birds in chronological order and hold them no longer than 30 minutes. The bander(s) determines how many birds that they 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, they inform the trappers to start catching birds and again records the time. Effort data is also collected in a standardized manner (i.e., the number of minutes each trap is operated for). For each bird we record species, age, sex, wing chord, culmen length, fat, feather wear, and other morphometric features to support species identification for females and juveniles. Once the bird is placed on the scale and the weight recorded, the bird is fed and released.

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.

In this report, we focus on 2013 data but also reference 2012 data from the same site.

RESULTS AND DISCUSSION

We captured 372 hummingbirds (315 new, 57 recaptures) including 125 Black-chinned (111 new, 3 same-year recaptures and 11 different-year recaptures), 48 Rufous (no recaptures from any year), and 197 Calliope (154 new, 11 same-year and 32 different-year recaptures) hummingbirds. We also caught one Anna's Hummingbird (a first for the project) pictured on left below and a hybrid Black-chinned x Calliope (pictured on right).



Forty-three birds were recaptured as returnees from 2012. They successfully made the migration to western Mexico and back to Idaho. Eleven were Black-chinneds (6 male, 5 female), and 32 were Calliope (11 males, 21 females). We had no previous year recaptures for Rufous (Table 1).

Table 1. Results of 2013 hummingbird monitoring. CAHU = Calliope Hummingbird, BCHU = Black-chinned Hummingbird, RUHU = Rufous Hummingbird, ANHU = Anna's Hummingbird, Hybrid = BCHU x CAHU.

Session Date	Total Captures	New/recaptures	Returns from 2012 (part of previous column recaptures, not in addition)	CAHU	BCHU	RUHU	Other Species	Birds Counted*	Minutes traps closed^
May 17	20	13/7	7	11	9	0		39	0
June 1	59	39/20	15	39	20	0		205	15
June 15	48	29/19	15	34	14	0		280	42
June 30	32	28/4	3	20	12	0		114	0
July 13	43	39/4	1	26	10	5	1 ANHU, 1 hybrid	245	64
July 29	70	67/3	2	26	15	29		384	75
August 10	46	46/0	0	18	23	5		99	26
August 28	54	54/0	0	23	22	9		235	90
Total	372	315 new 57 recaps	43	197	125	48			

*birds that either escaped (trap dropped but bird flew out), visited (bird enters perimeter of trap but trap is not dropped before they fly away), or were trap checkers (a bird comes close to the trap but does not enter it). ^ Too many birds were present and trapping had to be temporarily suspended to process birds in a safe manner.

At the beginning of the season (May 17) male Calliope Hummingbirds were already conducting their territorial displays and we captured Calliope females in breeding condition (swollen abdomens and/or visible eggs). During this session male Black-chinned Hummingbirds were also present, but females had yet to arrive. Although we didn't conduct any nest searching near the study site, the breeding condition of many female Calliope and Black-chinned Hummingbirds that we catch strongly suggests that they are breeding in the nearby Boise National Forest. In contrast, Rufous Hummingbirds appear to only use the area only during migration.

Table 2. Age and sex ratios of hummingbirds captured in 2013. CAHU = Calliope Hummingbird, BCHU = Black-chinned Hummingbird, RUHU = Rufous Hummingbird, ANHU = Anna’s Hummingbird, Hybrid = BCHU x CAHU. HY = a hatch year bird. AHY = an after hatch year bird.

Date	Total Captures	HY	AHY	Male	Female	Unknown sex
BCHU	125	37	88	73	52	-
CAHU	197	58	139	86	110	1
RUHU	48	25	23	13	35	-
ANHU	1	1	-	-	1	-
Hybrid	1	-	1	1	-	-

Public Outreach – we have engaged close to 600 people thus far since 2011. Visitors are able to see the banding process first-hand and assist us in releasing the hummingbirds. We aim to educate people about hummingbirds and their ecology.



In addition to our above-stated goals of long-term monitoring and public outreach, we have several goals we hope to begin addressing in the coming years pending available funding.

- We are hoping to identify important nectar producing plants for breeding and migrating hummingbirds in Idaho and once we have a long-term dataset we hope to begin examining flowering periods and migratory phenology of hummingbirds.
- We hope to identify what migratory route Rufous Hummingbirds take in the spring.
- We hope to begin examining our data for any trends in abundance, arrival or departure times, survivorship and productivity – however two years is a small dataset so the longer we monitor the more robust our data will be.
- We also aim to train and utilize more citizen scientists. In fact, we couldn't do this project without them!
- We also want to expand our reach into the community and provide increased environmental education and outreach about migratory birds and their relationship with the National Forests. We have had close to 600 visitors observe the banding process since 2011 while learning about the role the National Forest plays in hummingbird ecology. Two newspapers published articles on this project – the Idaho Statesman and the Idaho World.

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