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A Snapshot of Hummingbird Migration in Southeastern Arizona

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ABSTRACT

As a group project during the 1997 hummingbird banders' conference in southeastern Arizona, participants banded hummingbirds simultaneously at six sites on 31 Aug. Five sites were within the Santa Cruz River drainage and one site was along the San Pedro River. Eight hummingbird species were banded: Black-chinned, Anna's, Broad-billed, Rufous, Magnificent, Allen's, Calliope, and Plain-capped Starthroat. Species abundance and richness varied among the sites, but very large numbers of individuals, especially of Black-chinned Hummingbirds, indicate a major migration route in the area. Sites had from two to six species. The site on the San Pedro River had the fewest species and fewest birds, perhaps because it was east of a migration corridor. Although numerous variables in the methodology were not controlled, this simple project was useful in describing features of fall migration.

INTRODUCTION

In late August 1997, as a project for banders attending a conference on hummingbirds near Tucson, Arizona, we asked if the diversity and numbers of migrant hummingbirds varied among sites in the region. From previous studies, we knew that large numbers of hummingbirds migrate through southeastern Arizona in late summer and early fall. Data from our two major banding sites in Santa Cruz County show that southeastern Arizona is a major migration route for Black-chinned (*Archilochus alexandri*), Anna's (*Calypte anna*), and juvenile Rufous (*Selasphorus rufus*) hummingbirds (Wethington and Russell, in preparation). Migration of these species is spaced over time with Black-chinned numbers peaking in late August, Rufous in September, and Anna's in

October. Although we knew the general timing of fall migration, we did not know if some areas were visited by more hummingbirds than other areas.

METHODS

Study Area - We chose five banding sites within the Santa Cruz River watershed and one site along the San Pedro River, roughly 85 km east of the Santa Cruz River. Hummingbird feeders had been maintained at all sites except at Mowry, where they had been present for only three weeks. The banding sites represented a variety of habitats and elevations (Figure 1, Table 1).

Participants from the conference captured and banded hummingbirds from 06:00 to 11:00 on 31 Aug 1997 under provisions of state and federal permits. One to three people banded at each site, two persons banded concurrently at most sites. Hummingbirds were captured using a trap (Russell and Russell 2001) made from a 6-m long mist net with a 24-mm mesh, arranged as an open-ended box and baited with one or two feeders on poles inside. Another mist net covered the top. We applied U.S. Fish and Wildlife Service bands and aged and sexed individuals using plumage and flight feather shapes (Stiles 1972, Baltosser 1987) and bill corrugations (Ortiz-Crespo 1972).

RESULTS AND DISCUSSION

Eight hummingbird species were banded during the morning. In descending order from the most to least common, they were Black-chinned (BCHU, *Archilochus alexandri*), Anna's (ANHU, *Calypte anna*), Broad-billed (BBLH, *Cynanthus latirostris*), Rufous (RUHU, *Selasphorus rufus*), Magnificent (MAHU, *Eugenes fulgens*), Allen's (ALHU, *S*

Table 1. Description of the study sites including the number of species and individuals banded at each site.

<i>Study Site</i>	<i>Elevation (m)</i>	<i>Vegetation Type</i>	<i>Number of Species</i>	<i>Number of Individuals Banded</i>	<i>Estimate of Birds Trapped/Birds Entering Trap</i>
Madera Canyon	1463	Riparian in Oak-Pine Woodlands	6	41	100%
Tanque Verde Guest Ranch	854	Riparian in Arizona Uplands	3	78	100%
Santa Cruz River Near Nogales	1117	Mesquite Grasslands	4	114	<5%
Harshaw Creek	1401	Riparian in Oak Woodlands/Mesquite	4	99	<19%
Mowry	1690	Pine/Oak Woodland	5	81	<10%
San Pedro River	1190	Riparian in Desert Grasslands	2	21	100%

Table 2. The percentage and number of individuals banded per species at each study site. The numbers of individuals banded are in parentheses ().

<i>Study Site</i>	<i>Species Code</i>							
	<i>BCHU</i>	<i>ANHU</i>	<i>BBLH</i>	<i>RUHU</i>	<i>MAHU</i>	<i>ALHU</i>	<i>CAHU</i>	<i>PCST</i>
Madera Canyon	48.8 (20)	2.4 (1)	31.7 (13)	4.9 (2)	9.8 (4)			2.4 (1)
Tanque Verde Guest Ranch	79.5 (61)	6.4 (5)	14.1 (11)					
Santa Cruz River Near Nogales	80.7 (92)	2.6 (3)	9.6 (11)	7.0 (8)				
Harshaw Creek	69.7 (69)	14.1 (14)	12.1 (12)	4.0 (4)				
Mowry	48.1 (39)	24.6 (28)		12.3 (10)		2.5 (2)	2.5 (2)	
San Pedro River	90.5 (19)			9.5 (2)				

sasin), Calliope (CAHU, *Stellula calliope*), and Plain-Capped Starthroat (PCST, *Heliomaster constantii*).

Banders at Madera Canyon had the largest number of species (six) and the San Pedro River site had the fewest species (two). The number of different individuals captured at a site ranged from 21 to 114 (Table 1). The San Pedro site had the fewest birds, and a site on the Santa Cruz River near Nogales had the greatest number. Banders at the San Pedro, Madera Canyon, and Tanque Verde sites banded every bird they could capture. Banders at the other three sites allowed most birds that entered the Russell traps to feed and depart unbanded; perhaps only 5-10% of the birds present were banded.

The most common hummingbird species at all study sites was the Black-chinned Hummingbird and it comprised 48% to 90% of the sample at each site (Table 2). Overall, adult males were fewer in number than the other age/sex classes (Table 3). The Rufous Hummingbird was the only other species that occurred at all study sites. The species comprised less than 12% of the birds banded at each site and over 88% were juveniles (Table 3). Anna's Hummingbird was the second most common species. It occurred at the five sites within the Santa Cruz River drainage but not at the more eastern San Pedro site. The greatest number was at the mountain site at Mowry. Adult males were the most common age/sex class banded and 59% of Anna's Hummingbirds were adults. Broad-billed Hummingbirds occurred at all sites except Mowry and the San Pedro. Like Anna's, the most

common age/sex class was adult male. Two species, Magnificent Hummingbird and Plain-capped Starthroat were banded in Madera Canyon only. Calliope and Allen's hummingbirds were banded at Mowry. These least abundant species were banded at the two woodland sites at the highest elevations sampled.

The results of the banding at the six sites are difficult to compare. Banders varied in their skills of capturing and processing birds and there may have

been some bias in favor of capturing species less familiar to the banders. The number of feeders at each site or in the area varied, as did the amount of naturally occurring food. The estimates of the percentage of birds banded to birds present are crude.

Although limited in scope, this simple project revealed several features of the southbound hummingbird migration in southeastern Arizona on a single morning in late August. The markedly

Table 3. The percentage of birds banded in each age and sex class for each species.

Age	Sex	Species Code							
		BCHU	ANHU	BBLH	RUHU	MAHU	ALHU	CAHU	PCST
Juvenile	Male	29.2	18.4	25.5	69.2	0.0	50.0	50.0	0.0
	Female	24.6	22.4	10.6	19.2	0.0	0.0	50.0	100.0
Adult	Male	15.9	36.7	36.2	7.7	50.0	0.0	0.0	0.0
	Female	30.2	22.4	27.7	3.8	50.0	50.0	0.0	0.0

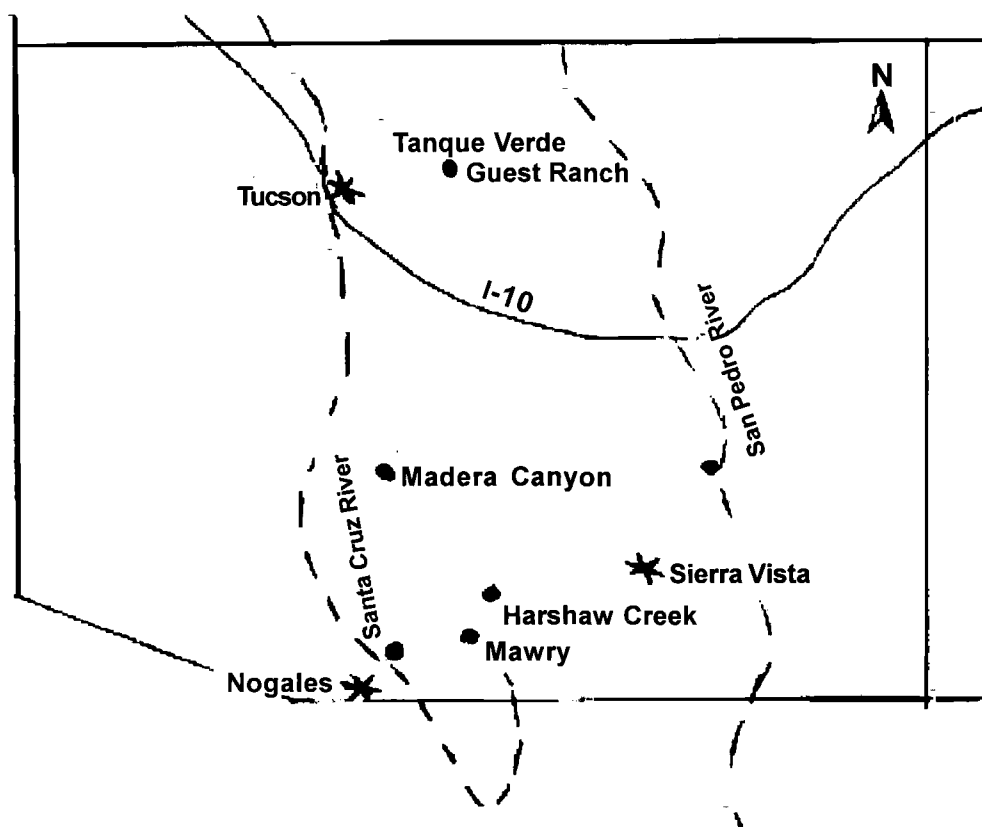


Fig. 1. Map of study sites in Santa Cruz Co., southeastern Arizona. 1 cm = 15 km

lower number of birds at the San Pedro site suggests that most of these fall migrants may be following a more westerly route, which includes the Santa Cruz River drainage. Additional studies are needed to define migration corridors.

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News, Notes, Comments

Errata: NABB 26(2) pg. 61, 2nd para.: The Latin name for American Beech should be (*Fagus grandifolia*); also in the same para., the sentence "The nest, typical of and presumably built in previous years by either a Red-shouldered (*Buteo lineatus*) or, less likely,....."

RECAPTURE RECORD?

The Rock Springs Run State Reserve (RSRS) banding station is located north of Orlando, FL. Nets are placed along the edge of scrubby flatwood. Blackberry thickets and wax myrtle bushes are in the immediate area of the nets. An adult White-eyed Vireo (WEVI), #2070-17833, was banded 19 Sep 1997.

WEVI #2070-17833 has been recaptured 28 times, four in 1997, four in 1998, seven in 1999, five in 2000 and eight times in 2001, the last time being 18 Nov 2001. The bird has been caught at 14 sites. The site of last capture is approximately 0.5 km from the original capture. The bird was first caught in the southern most net and continued to be caught in the southern portion until October 1999. Since 20 Oct 1999, the bird has been caught in the northern area in nets within 30 m of each other. It was caught twice in January, five times in February and March, two

times in April and July, once in September, seven times in October, four in November, and once in December.

During the fall of 1997, 1998, and 1999, the banding station was in operation every day from 1 Sep until 31 Oct, weather permitting. There were 60 banding days in 1997, 61 in 1998 and 57 in 1999. MAPS (Monitoring Avian Productivity and Survivorship) was conducted during the summers of 1997, 1998, and 1999 with nine banding days each year. A winter project was initiated during the winter of 1997-98. Banding occurred six times from 9 Nov 1997 to 4 Jan 1998. The station was in operation 20 times from 9 Dec 1998 to 18 Apr 1999, 24 times from 7 Nov 1999 to 26 Apr 2000, 26 times from 21 Nov until 4 May 2001 and 18 times from 19 Sep 2001 through 29 Nov 2001. The winter project is still in progress.

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