

Color Variation in Maturing Male Rufous Hummingbirds

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Sexual dimorphism is the rule for northern temperate hummingbirds. In this grouping, the Rufous Hummingbird (*Selasphorus rufus*) has the most pronounced plumage difference between sexes. While the males of other species have iridescent green (IG) backs like the females, the Rufous male has a rusty back which is not iridescent. There is, however, considerable variation in this characteristic, ranging from entirely rufous to IG (Stiles 1972, Phillips 1975, Johnsgard 1983). Often the green is only at the tips of the dorsal feathers where it tends to be seen, in contrast with the rufous which is often hidden by overlying feathers. The nature of this plumage variability has not been studied in detail. It could represent genetic variability within populations or between populations. On the other hand, plumages of juvenile hummingbirds are usually like those of adult females; the question arises as to whether the persistence of green dorsal feathers in adult male plumages is a carryover from juvenile characters that will disappear with further maturity.

Plumage descriptions have come from museum specimens which, of course, cannot change subsequently. However, banding and recapturing offers an opportunity to test the maturation hypothesis.

METHODS

Birds were caught with a 7' x 18' nylon monofilament net, 1" mesh, and a fixed banding trap mounted around a hanging feeder. Age/sex determination, weight and wing measurements were recorded on each bird. Dorsal plumage was rated as 4/4, 3/4, 1/2, 1/4, IG until the back was 100% rufous.

RESULTS

During the 1991 breeding season, 32 AHY males were recaptured from years 1988-1990 (Table 1). Eight birds retained their 100% rufous backs. Thirteen males banded with green-tipped back feathers showed 100% rufous backs on 1991 recapture. Three of the 11 AHY birds which retained green in the back for at least one year showed the same or more green. Generally, the green metallic tips of the rufous colored feathers began to wear off from the upper tail coverts up the back, exposing more rufous color gradually from year to year.

Table 1. Back condition of recaptured male *S. rufus* in 1991.

Condition	Number
<u>AHY Males</u>	
100% rufous unchanged from banding in a previous year	8
100% rufous in contrast to part green when banded in a previous year	13
Part green back after banding with green back in 1990	11
<u>HY Males</u>	
100% rufous in 1990 and 1991 after banding in 1988	1
Retained mostly green feathers after banding in 1989	1
Retained at least one-half green feathers after banding in 1990	3

Some changes occur on the breeding grounds during the same season. Of the AHY birds that were banded and recaptured later that same year, ten showed less IG, 22 stayed the same, and ten showed more IG on their backs (Table 2). For example, AHY male Rufous 30293 banded 5 June 90 with few green-tipped feathers all over its back returned 14 Jun 90 and 29 Jun 90 with the only green-tipped feathers on its upper back. AHY male Rufous 30288 banded 3 Jun 90 with two green-tipped feathers on its upper back, returned 17 Jun 90 with a total IG back.

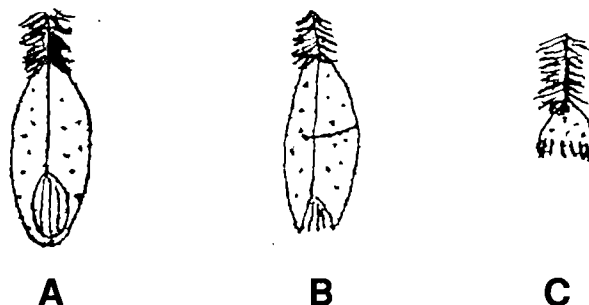
Table 2. Summary of color variation in maturing male Rufous Hummingbirds.

	Amount of Green-tipped Feathers on Back		
	Less Green	Same	More
AHYs recap. following yrs.	32	6	
AHYs recap. same year	10	22	10
Birds banded as HY, recaptured following yrs.	7	1	
HYs recaptured same yr.	17	13	

Most HY birds recaptured the years after banding showed less IG on their backs. Seven birds showed less IG backs, and one bird stayed the same with an all IG back. There were a few HY birds that made the change to almost complete rufous, except for one or two green-tipped feathers, in one year. See Table 1 for samples of 1991 HY recaptures.

HY birds banded and recaptured later in the same season were interesting. Thirteen HY birds stayed the same with 100% IG backs. Seventeen HY males began to show rufous in late July through August before migrating. At first, one or two red throat feathers, even seven in one case, would appear and the green-tipped feathers on the upper tail coverts and the lower quarter of their backs would break or wear off (Figure 1) exposing more rufous. Red throat feathers, growing out in sheaths, could be seen.

Figure 1. Feather wear of male *S. rufus*.



- a = HY unworn tail covert
 b = HY tail covert with IG tip worn off and fault bar mid-feather
 c = AHY (51896 banded 27 May 92) lower back feather worn and IG tip almost gone. One-half lower back had worn feathers creating a dull, rough appearance and the upper half had shiny IG feathers.
 Light stipple = rufous; hatching = IG; solid color = black down feathers.

CONCLUSION

Male Rufous Hummingbirds may or may not have totally rufous backs the first few years of their lives.

ACKNOWLEDGEMENTS

I thank Bill Calder, George Jonkel, Ellie Womack, Kay Burk and Dick Hutto for helping me start this study. Special thanks go to Ed Foss, Condon, Montana, for allowing me to band on his land and use his library. I also appreciate the comments of the referees.

LITERATURE CITED

- Johnsgard, P.A. 1983. The hummingbirds of North America. Washington, DC Smithsonian, *Rufous Hummingbird*, pp. 209-215.
- Phillips, A.R. 1975. The migrations of Allen's and other hummingbirds. *Condor* 77:196-205.
- Stiles, F.G. 1972. Age and sex determination in Rufous and Allen's Hummingbirds. *Condor* 74:24-32.