Island. Here any exposed egg of a frigatebird, Swallow-tailed Gull, or Brown Noddy (*Anous stolidus*) is immediately surrounded by several of these finches which peck at the egg for several minutes before losing interest. No eggs were actually seen to be broken, but any cracked or hatching eggs would probably be destroyed. This same finch on Wenman Island has been shown by Bowman and Billeb (Living Bird 4:29, 1965) to peck at the wing feathers of boobies in order to feed on blood. On Plaza Island (off Santa Cruz) I have seen another species of finch (*Geospiza fuliginosa*) feeding on blood. There is here a large colony of sea lions (*Zalophus californianus*), and during the period when the young are born these finches are frequently seen pecking at the afterbirths and drinking at the pools of lost blood. As suggested by Bowman and Billeb (*op. cit.*) the Wenman finch may well have acquired a taste for blood by eating the numerous hippoboscid flies on the boobies. There is, however, a large colony of fur seals (*Arctocephalus australis*) on Wenman and these finches could conceivably have first "tasted" blood from the afterbirths of these mammals and later taken to eating blood-gorged flies.

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INTERSPECIFIC TERRITORIALITY AMONG HUMMINGBIRD SPECIES

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North American species of hummingbirds are typically separated by habitat during their breeding seasons (numerous references), although Anna's and Allen's Hummingbirds have been found to breed in adjacent territories in California (Legg and Pitelka 1956). In contrast, the wintering ranges and habitats of many of the species overlap. In this situation and during migration hummingbird species come into contact with one another. For instance, in southern California Stott (1942) reported a probable five species all feeding in one eucalyptus tree. Where several species have thus been found together, interspecific territoriality, or at least strong interspecific aggression, has been observed quite commonly (see fig. 1, and the review in Orians and Wilson 1964). This note reports additional instances of interspecific territoriality among hummingbirds. The species concerned are migratory Allen's, Calliope, Broad-tailed, and Rufous Hummingbirds, and resident Costa's Hummingbirds. The observations were made in the Mohave Desert near Amboy, California, in March and April 1967. Figure 1 summarizes this and previous information, and further details are given below.

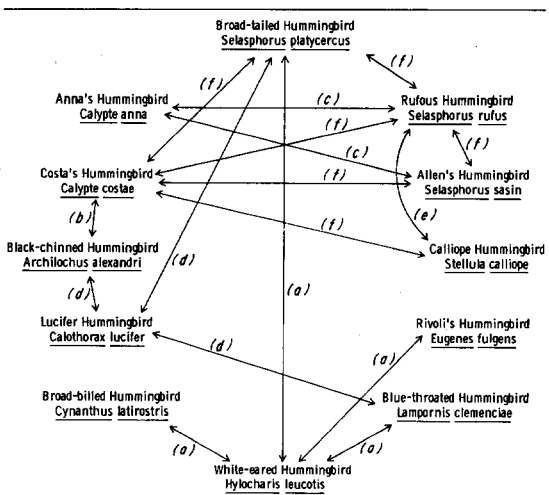

FIGURE 1. Records of interspecific territoriality among North American hummingbirds. Figure references are: (a) Moore, 1939; (b) Bené, 1942; (c) Pitelka, 1951 and Legg and Pitelka, 1956; (d) Fox, 1954; (e) Armitage, 1955; (f) this report.

The following observations were made from 22 to 26 March and from 22 to 25 April 1967. The first of two study sites was a narrow arroyo at the foot of the Granite Mountains where, in March, the territories of 15 individuals of three species (10 ♂ Rufous, 1 ♂ Costa's, 1 ♂ Allen's, and 3 ♀ Rufous or Allen's Hummingbirds) were plotted in an area 100 × 50 feet. These territories were nonoverlapping and vigorously defended (18 aggressive encounters in 15 minutes) against adjacent territory holders, regardless of species identity. All hummingbirds fed exclusively on one plant species, namely bladderpod (*Isomeris arborea*), and defended on the average three to four bushes per individual. The location and ownership of these territories were constant over the four-day period. On the second visit, 13 territories were plotted in this same area (3 ♂ Rufous, 2 imm. ♂ Rufous, 2 ♀ Costa's, and 6 ♀ Rufous or Allen's Hummingbirds), which were again mutually exclusive and again centered around bladderpods, the only flowering species.

The second site was a 10-acre flat desert wash in which the commonest plant species were *Larrea*, *Ephedra*, and *Haplopappus*. Bladderpods occurred sparsely over about six acres of this area, but were dense over a two-acre patch in which catclaw acacias (*Acacia greggii*) and boxthorn (*Lycium*) were also prominent. Costa's Hummingbird occupied the entire eight acres with bladderpods, but interspersed with this bird in the acacia-boxthorn patch were Rufous, Calliope, and Broad-tailed Hummingbirds. In March 3 ♂ and 2 ♀ Costa's and 3 ♂ and 2 ♀ Rufous Hummingbirds were recorded. In April 4 ♂ and 3 ♀ Costa's, 2 ♂ Calliope, 1 ♂ Broad-tailed, and 4 ♂ (1 imm.) and 3 ♀ Rufous Hummingbirds were found. All of these individuals held territories except the Broad-tailed Hummingbird, which was attacked and pursued by territory-holding Rufous and Costa's Hummingbirds as it attempted to feed on the bladderpods. Again territories were nonoverlapping intra- and interspecifically and also between sexes. Territories averaged 10 times larger than at the first site, but the number of food plants per territory was about the same. In many hours of observation only one instance of feeding on plants other than bladderpod by these species was noted (a ♂ Costa's on and around *Ephedra*, perhaps picking off insects). Feeding heights and behavior were measured for three of the species, but no interspecific differences were found.

The Costa's Hummingbirds certainly bred in the second site and possibly also in the first. One nest with two eggs was found in March, but, perhaps sig-

nificantly, it was that of a female in the sparser area (both for bladderpod and other plants) away from the other hummingbird species. Two female Costa's Hummingbirds had territories adjacent to those of Rufous and Calliope Hummingbirds, but their nests, if they had any, were not found. Certainly the migrant hummingbirds were occupying habitat that appeared suitable for the resident species and which, were it not for these migrants, would probably have supported and raised Costa's Hummingbirds. This appears to be quite an unusual situation, where a resident species is breeding at the same time a closely related or ecologically similar wintering or migrant species is present, and this writer is hard-pressed to think of more examples of the phenomenon. Hartley's (1950) case of the Wheatears (*Oenanthe* spp.) might qualify.

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NESTS OF THE RED WARBLER AND CRESCENT-CHESTED WARBLER IN OAXACA, MÉXICO

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I am placing on record some additional information on nests of two little-known warblers, the Red Warbler (*Ergaticus ruber*) and the Crescent-chested Warbler (*Vermivora superciliosa*). I found two nests of each of these species in an open forest of mature pines and oaks in Cerro San Felipe, Oaxaca, at about 9000 feet elevation about 27 km by road northeast of Oaxaca City.

Only two previous nests of the Red Warbler have been described, one found at an elevation of 11,200 feet in the Federal District of México (Elliott, Condor 67:540, 1965) and the other found near 7300 feet in southern Oaxaca (Rowley, Proc. Western Found. Vert. Zool. 1:192, 1966).

I found the first of my nests at 08:35, 8 May 1967, a few minutes after John William Hardy discovered the Red Warbler carrying material. The nest site was a barely discernible cavity in the ground cover, and I suspected this was the first day of building. For four days, 8–11 May, I spent from 2 to 2¾ hours each morning at this site, watching the building process until a time between 10:00 and 11:00 when the activity seemed to have tapered off for the day. Although I visited the site briefly on two afternoons and saw no warbler activity at these times, I cannot be sure there was no building in afternoon hours. In my 10 hours of observation, I counted 254 trips with nesting material by the warbler—by days, 59, 73, 93, 29. Hence, I suspect the warbler made more than 300 trips in the course of construction. On the morning of 12 May I saw no further building at the nest during an hour before and after 08:00 when activity had been most energetic in the previous four days; however, the pair of warblers came once to within three meters of the nest and preened in the overhanging shrubbery. On 13 May, at 07:50, the female was off and the nest held one egg; on 14 May, at 07:00, the female was off the nest and it held a second egg. On 15 May the clutch was complete with 3 eggs. The female did not leave the nest when I approached at 07:00 and remained as though incubating until I flushed her at 07:55. She did not leave until my hand touched the vegetation over the nest. Thus, four days were spent in building, one day passed without activity, the sixth day brought the first egg, the seventh and eighth days completed the clutch, and incubation was in progress on the morning of the third egg's arrival.

All of the building was performed by the female. Most of the material was gathered from the ground, but some was gathered from low branches of shrubs. The identifiable materials were mostly brown pine needles and dead grass, but sometimes included green moss, gray lichens, and dried leaves. On the first day the materials were coarse and were gathered mostly within four meters of the nest, but later they were gathered farther afield, up to 20 meters away. On the final day the materials were noticeably finer, including several times the silky parachutes of a seed like a dandelion or thistle. The warbler usually approached and left the nest by horizontal flight just above the ground. She often stayed only a second or two at the nest, but now and then stayed more than a minute. Frequently the female announced her approach to the nest with a *chip*. The male meantime seemed to ignore the nest-building activity, singing and moving about high in the trees mainly, except in the first hour of the first day and briefly at the start of the second day, when he perched silently a meter or two above the busy female. The sexes appeared identical, but when working the female was almost constantly in sight while the male revealed his separate location by song.

The completed nest appeared to consist mostly of