or with a faint suffusion of rusty on otherwise black barbs, include the upper back, throat (mostly black), malar region, auriculars, and the side of the neck. The rump is uniformly black. Chestnut also appears prominently on the tips of the greater and middle secondary coverts forming two incomplete wing bars. The specimen is also unusual in having more rufous on the white underparts. Rufous is prominent on the upper abdominal region as well as on the sides and flanks where it is characteristic.

Sibley (1954: 288) raised the question of the origin of chestnut color in the black plumage of male Rufous-sided Towhees north of the hybrid and introgressive zones in Mexico. He presented data suggesting that the incidence of this variant is not related to proximity to hybrid populations in central Mexico, but that it appears in local populations throughout the range of the species. The present specimen provides some support for this view. The extensive distribution of chestnut on the wings and body cannot be accounted for by hypothesizing introgression from either distant or nearby *ocai* populations.

The further possibility that the chestnut color is due "to the occasional expression of 'ancestral' genes" (Sibley, 1954) is enticing though unproved. If so, ancestral populations of modern *erythrophthalmus* must have had rufous or chestnut on the body and wings as well as the crown (chestnut cap). This theory is supported by the existence of other specimens of male Rufous-sided Towhees with reddish-brown-tipped feathers on various parts of the body. I found two such specimens collected in the New York City area at the American Museum of Natural History (AMNH No. 367970 and AMNH No. 60539). The former specimen has many reddish-brown-tipped feathers on hindneck, interscapulars (especially prominent), breast, scapulars, secondary coverts, and upper tail coverts. The feathers so marked are fresh and unworn. The second specimen shows conspicuous reddish-brown only on the back, but also has a few white feathers with rufous tips on the upper abdomen.

The relative rarity of specimens with chestnut in the black plumage of the body, compared to those with the color in the pileum only, suggests that the chestnut cap was lost more recently than chestnut color on other parts of the head and body. The specimen also supports the hypothesis that the two melanins producing black and chestnut may be so similar chemically that a point mutation could produce the aberrant chestnut variant *de novo*.

I collected the specimen while studying towhee populations in New Jersey supported by a grant from the Frank M. Chapman Memorial Fund of the American Museum of Natural History and an NSF Ecology Training Grant GB-3343 from Rutgers University.—Jon S. Greenlaw, *Biology Department, C. W. Post College, Greenvale, New York 11548.* Accepted 27 Apr. 72.

White-crowned Sparrow parasitized by Brown-headed Cowbird in western Washington.—During 5 years of study (1967–71) of the Puget Sound White-crowned Sparrow, *Zonotrichia leucophrys pugetensis*, in the lower Puget Sound region of western Washington, mainly on Camano and Whidbey Islands, I examined more than 100 active nests and a larger number of fledglings attended by one or both parents. The only case of Brown-headed Cowbird, *Molothrus ater,* parasitism I found was of a White-crown nest in a fencerow at the unusual height of 127.0 cm above ground in new growth in an area of especially high cowbird abundance on Camano Island. This nest contained three White-crown and one cowbird eggs when found on 29 May 1968. The three sparrow eggs were laid by a banded female (No. 016-158306), originally caught in a mist net at 09:10 PST on 16 May 1968

and released on territory at 09:25 after banding, weighing, and laparotomy. Gross ovarian examination revealed no postovulatory follicles and the largest preovulatory follicles were fluid-filled and without evident yellow yolk, so she was several days away from ovulation (Farner and Lewis, 1971: 357; Lewis, 1971; Lewis and Orcutt, 1971: 19). She weighed 26.3 g, which is slightly above average for a female on this date. On 23 May she was seen carrying nesting material into the bush where the nest was later found. I located and briefly examined the nest on 29 May, when it contained only the three sparrow and one cowbird eggs. The female sparrow was present at the nest. On 30 May, though a fourth sparrow egg had been laid, the nest appeared abandoned. I noted that one of the sparrow eggs was cracked and contained a relatively fresh embryo; all eggs were cool to the touch. Neither this female nor her mate were seen on subsequent visits to this territory. Thus she apparently laid the first egg of a clutch of four on about 25 May and abandoned the nest and the territory within 1 or 2 days after cowbird parasitism. This nest and the eggs are now in the Burke Museum, Seattle, Washington.

Cowbird parasitism of *Z. leucophrys* is rare and, to my knowledge, the above is the first recognized and fully documented case of such parasitism of the race *pugetensis* to be published. Unpublished accounts of cowbird parasitism of this race in British Columbia near the northern limit of the breeding range may not be especially uncommon (Friedmann, pers. comm.; Lemon, 1969). Friedmann (1971) reported three cases that he attributed to the "race *gambelii,* all from British Columbia: Ferguson Point at Stanley Park, 17 August 1960; Campbell River, 31 July 1967; and Burnaby, 2 May 1962. The first two of these records were of fledgling cowbirds attended by their foster parents, the third a cowbird egg in a nest of the White-crowned Sparrow. All these records are from the Pacific Nest Records Scheme at the University of British Columbia." From the locations of these observations, as well as the dates of observation in cases 1 and 3, very probably all these subjects were of the race *pugetensis* (see Cortopassi and Mewaldt, 1965; Lewis, 1971). These two races cannot be distinguished confidently except in the hand (Banks, 1964; Lewis, 1971). In the absence of specimens or records within the normal breeding range of the race, cowbird parasitism of *Z. l. gambelii* remains unsubstantiated.

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Literature Cited

Banks, R. C. 1964. Geographic variation in the White-crowned Sparrow *Zonotrichia leucophrys*. Univ. California Publ. Zool., 70: 1–123.

Cortopassi, A. J., and L. R. Mewaldt. 1965. The circumannual distribution of White-crowned Sparrows. Bird-Banding, 36: 141–169.

Farner, D. S., and R. A. Lewis. 1971. Photoperiodism and reproductive cycles in birds. Pp. 325–370 *in* Photophysiology: current topics in photochemistry and photobiology, vol. 6 (A. C. Giese, Ed.). New York, Academic Press.

Friedmann, H. 1971. Further information on the host relations of the parasitic cowbirds. Auk, 88: 239–255.

Lemon, E. K. 1969. Bewick Wren, host to Brown-headed Cowbird. Canadian Field-Naturalist, 83: 395–396.

Lewis, R. A. 1971. The temporal organization of reproductive and associated cycles of the Puget Sound White-crowned Sparrow, *Zonotrichia leucophrys pugetensis* Grinnell. Unpublished Ph.D. dissertation, Seattle, Univ. Washington.

LEWIS, R. A., AND F. S. ORCUTT. 1971. Social behavior and avian sexual cycles. Scientia, 65: 447–472.

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Dominance relationships in nectar-feeding birds at St. Croix.—In recent years there has been considerable research on the social hierarchy of nectar feeding birds at their food plants. I can add a report on the dominance relationships of one of the simplest nectar-feeding communities, that of a small hummingbird, a large hummingbird, and a coerebid in the Virgin Islands.

In eastern St. Croix, near the Fairleigh-Dickinson University West Indies Laboratory, the region is primarily Cactus-*Acacia* scrub and scattered dry forest, with an annual rainfall of less than 60 inches. Three nectar-feeding birds are common throughout the island; the Green-throated Carib (*Sericotes holosericeus*), the Antillean Crested Hummingbird (*Orthorhyncus cristatus*), and the Bananaquit (*Coereba flaveola newtoni*). All three were conspicuous at the flowers of succulents, especially at *Euphorbia* sp. (Euphorbiaceae) and *Bryophyllum* sp. (Crassulaceae). *Euphorbia* has small (2 cm) bright-red flowers, and was exploited by the Bananaquit and Antillean Crested Hummingbird. *Bryophyllum* has tubular (4 cm) flowers, light-green with purple, and was exploited by the Bananaquit (at the corolla base) and Green-throated Carib.

I watched the birds on 28 and 29 December 1971, and then recorded dominance relationships on 30 December, with notes on 242 supplanting attacks (08:00–10:00). I was able to watch the interactions closely in an area roughly 10 feet × 50 feet, and noted the attacking and the supplanted species. The data yield a diagram of the social hierarchy based on dominance relationships (Figure 1).

Interspecific dominance is usually based on body size or weight superiority, and this is reflected here in the Bananaquit's dominance over the other two species

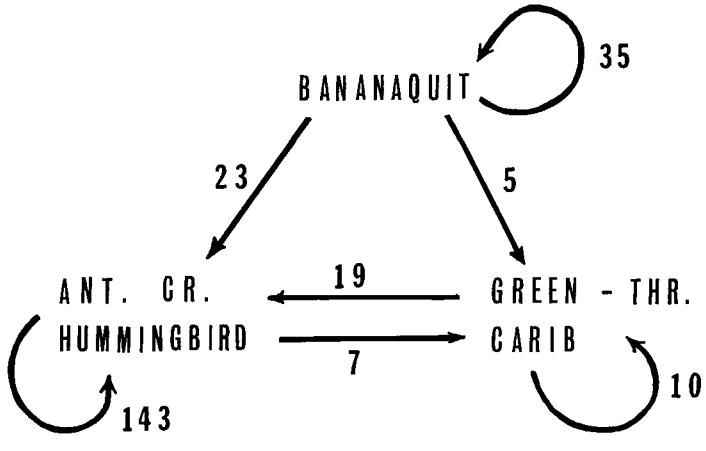

Figure 1. Dominance relationships of three nectar-feeders at St. Croix. Arrows point from supplanting species to supplanted species, with the number of records. Circular arrows represent intraspecific supplanting attacks.