

## THE NICARAGUAN SEED-FINCH (*ORYZOBORUS NUTTINGI*) IN COSTA RICA

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**ABSTRACT.**—Records of the Nicaraguan Seed-Finch (*Oryzoborus nuttingi*) indicate that it is fairly continuously distributed over the Caribbean slope of Costa Rica, linking its previously known ranges in Nicaragua and Panama. The species has apparently expanded its range owing to the greater availability of its preferred marshy habitat, following the clearing of lowland forests. The nest, newly described, is a flimsy cup of grass situated in sedges or a low shrub. The eggs and vocalizations, also described, resemble those of *O. funereus*. Measurements of a series of specimens of *O. nuttingi* indicate that *loftini* should not be recognized as a valid subspecies without better evidence. The Central American *O. nuttingi* is closely related to the South American *O. maximiliani*, and they are best considered as the component allospecies of a superspecies. Since the former is no longer limited to Nicaragua, a more appropriate English vernacular name might be “Pink-billed Seed-Finch.”

The Nicaraguan Seed-Finch (*Oryzoborus nuttingi*) is a sparrow-sized (ca. 25 g), very heavy-billed finch that inhabits wet grassy areas from northeastern Nicaragua to northwestern Panama. The conspicuously pale-billed males have entirely deep black plumage, except that the inner webs of the primaries are greyish-white basally. Females and immatures are dark-billed, with rich brown dorsal plumage and more or less reddish-brown underparts.

The taxonomy of this species presents problems on two levels: a race described from Panama (Wetmore 1970) must be reevaluated in the light of new distributional data, and the relationships of the entire *nuttingi* complex with the South American *O. maximiliani*, with which it has sometimes been lumped (e.g., Meyer de Schauensee 1970), also must be reassessed. The resolution of these problems has been hindered by the paucity of knowledge on the bird’s biology. The only published information on the Nicaraguan Seed-Finch in life has been Howell’s (1957) brief account that mentioned habitat, crop contents, gonads, and soft-part colors. In this note I provide new data on the distribution and natural history of *O. nuttingi*, including the first descriptions of its song, nest, and eggs, and review its taxonomy in the light of this information.

### DISTRIBUTION AND HABITAT

The Nicaraguan Seed-Finch was long considered to be one of the very few bird species endemic to Nicaragua (Howell 1957). In the late 1960s specimens were collected in northern Costa Rica (Dickerman 1971) and northwestern Panama (Wetmore 1970). Wetmore’s description of the Panama birds as the race *O. n. loftini* may have been influenced by his be-

lief that they were separated from the northern populations by a gap of at least 300 km. However, since 1971 I have encountered this finch at eight localities scattered over the Caribbean slope of Costa Rica (Fig. 1). These localities span the supposed gap in the bird’s range, and indicate that *O. nuttingi* is fairly continuously distributed between Nicaragua and northwestern Panama, insofar as its rather specific habitat requirements and patchy habitat permit. All of these localities are within 50 m of sea level, except for the Lago de Arenal, which is situated at ca. 500 m in a broad mountain pass.

My encounters with the Nicaraguan Seed-Finch have all been in areas of fairly short to tall grass growing in or near shallow water, and flanked by taller vegetation (either forest or second growth). Usually shallow open water was within 10–50 m of the site. The exact situation varied somewhat: marsh, flooded pasture, or tall grass beside an oxbow lagoon, pond, or sluggish stream. The habitat in which Howell (1957) found the bird in Nicaragua was similar; and on 14 April 1967 I saw *O. nuttingi* in a grassy marsh at forest edge at Siuna, northern Nicaragua. In Caribbean Costa Rica, this sort of habitat was undoubtedly quite scarce and local before the widespread clearing of wet forest for planting pasture over the last 30–40 years (cf. Stiles, in press). This change in land-use has certainly increased the available habitat manyfold, and has removed previous forest barriers to population expansion of this finch. Whether the bird was previously present in Costa Rica (or Panama) is conjectural. However, given the amount of collecting and observation in appropriate areas (cf. Slud 1964), and the conspicuousness of at least the adult

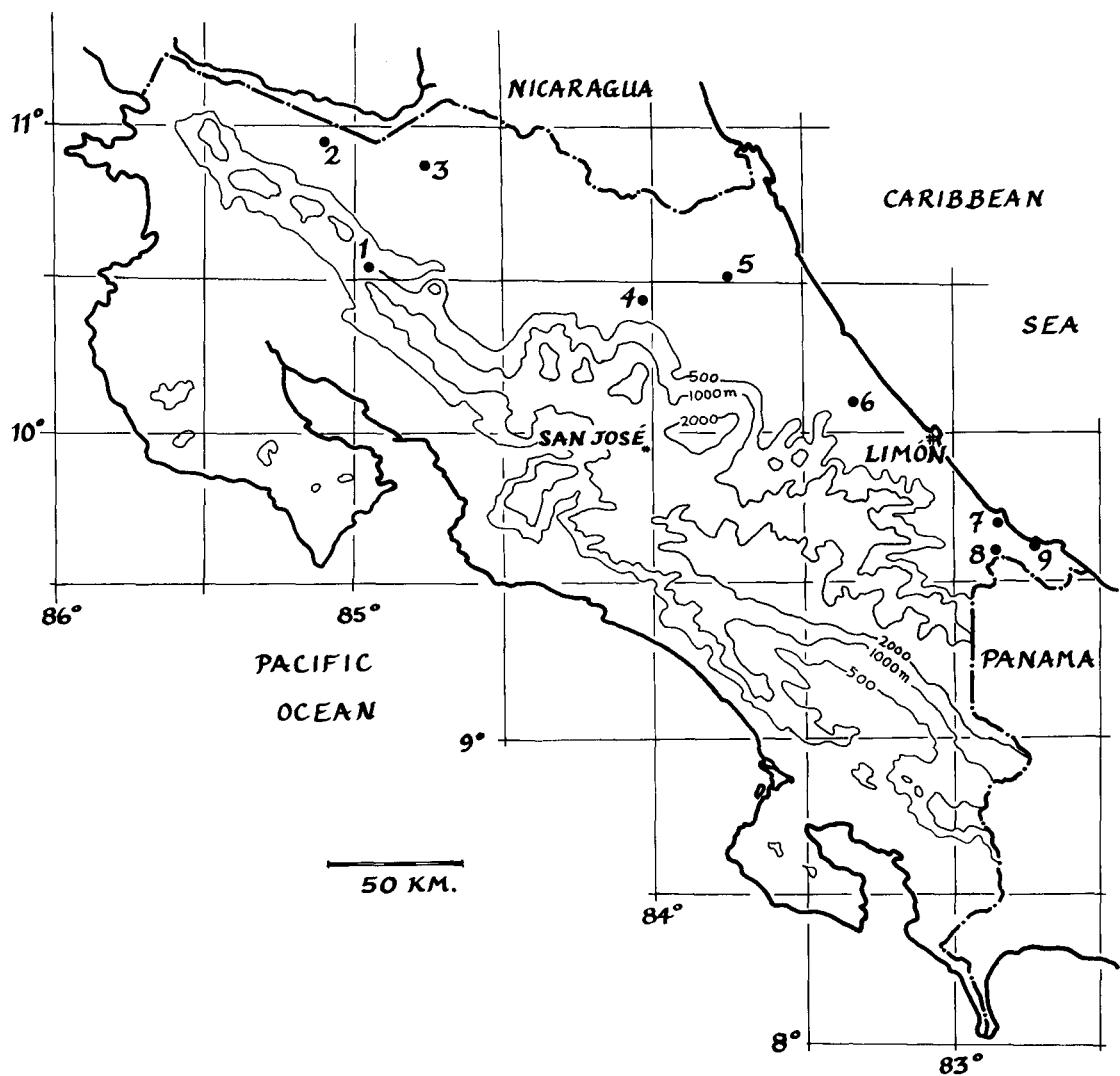


FIGURE 1. Localities at which *Oryzoborus nuttingi* has been recorded in Costa Rica. 1: Lago de Arenal, Prov. Alajuela (Dickerman 1971); 2: Las Camelias, Prov. Alajuela; 3: Finca Terrón, 3 km E Lago Caño Negro, Prov. Alajuela; 4: vic. Puerto Viejo de Sarapiquí, Prov. Heredia; 5: La Suerte, Prov. Limón; 6: Bataan, Prov. Limón; 7: Puerto Vargas, Prov. Limón; 8: vic. Bribri, Prov. Limón; 9: Punta Uva, Prov. Limón.

males (e.g., Howell 1957), I tend to doubt that it was. Rather, I suspect that the species spread rapidly through the Costa Rican lowlands into Panama, probably during the late 1950s and 1960s. Similar range expansions of open-country species into southwestern Costa Rica from Panama following removal of the Golfo Dulce forests have been documented by Kiff (1975) and Stiles and Smith (1980).

#### BREEDING BIOLOGY

In early 1971, I discovered a small breeding population (ca. 2–3 pairs) of *O. nuttingi* in a grassy marsh at Hacienda La Trinidad, ca. 2 km southeast of Puerto Viejo de Sarapiquí. In late April, a male was singing persistently from atop a 15-m tree overlooking the marsh. On

16 May, I saw a female gathering nesting material (grass stems) nearby; the nest was nearly completed on 19 May and held one egg on 20 May, two eggs on 22 May. I collected the nest and eggs on 24 May, photographing the male perched nearby in the process. During this operation the female flew back and forth 5–10 m away uttering agitated-sounding "chek" notes. The nest was situated in the axil of a sedge (*Cyperus*) inflorescence in a dense stand of sedges growing in shallow (ca. 30 cm) water. It was located ca. 45 cm above the water surface and was partly supported by adjacent sedge plants. The nest was a rather flimsy cup of grass stems and rootlets, lined with fungal rhizomorph (*Marasmius crinisiqui*) fibers. The eggs (set no. 64484, Western Foundation of Ver-

tebrate Zoology, WFVZ) were oval in shape, pale greenish-white with heavy spots of light brown, dark brown, and greyish-brown over their entire surface, forming a wreath around the larger ends. They measured  $19.96 \times 15.05$  and  $20.11 \times 15.19$  mm; dry shell weights were 0.117 and 0.125 g, respectively. The eggs are identical in color and form to the smaller eggs of the Thick-billed Seed-Finch (*O. funereus*) in the WFVZ collection (L. F. Kiff, pers. comm.), and also bear considerable resemblance to the smaller eggs of *Sporophila* spp. and to the larger ones of the Blue-black Grosbeak (*Cyanocompsa cyanoides*; pers. observ.).

In the same general area I saw females feeding fledglings on 26 May 1973 and 14 July 1976. Across the Río Puerto Viejo from Finca La Selva, 1.5 km southeast of La Trinidad, I found a nest under construction on 23 February 1983. The nest was situated 35 cm above ground in a small (ca. 50 cm) shrub, which was in a stand of tall grass (height 30–60 cm) in a seasonally flooded pasture. During about 30 min of observations, the female twice brought grass stems and incorporated them into the nest cup; in each case she was accompanied by the male, who sang both in flight and from a small tree about 10 m away.

From these observations I infer that the breeding season of *O. nuttingi* extends from late February to at least July. Each of three birds that I mist-netted at Puerto Vargas or Finca La Selva during the month of September in different years was in heavy molt; two males collected at Punta Uva on 1 October 1983 were nearly finished molting; and a female caught at Finca La Selva in December 1976 was in fresh plumage. These data and certain museum specimens indicate that the annual molt occurs from about mid-August to late October. A singing bird seen at Finca La Selva in May 1973 was in female-like plumage, from which I infer that young males do not acquire the black definitive plumage until the end of their first year, similar to the situation in *O. funereus* and *Sporophila* spp. (pers. observ.; see also Olson 1981).

#### VOCALIZATIONS

The call note of the Nicaraguan Seed-Finch is a short (ca. 0.1 s) sharp "chip" or "chek" at a frequency of about 2.5 kHz (Fig. 2A). The song is a long (ca. 4–10 s) caroling series of notes, delivered at a rate of about 4 per second. The notes are mostly slurred whistles, either pure tones or with harmonics; their frequency range is mostly 2–6 kHz, with some notes as high as 7 kHz. Many notes are doubled, some are tripled, and some occur in repeatable sequences (Fig. 2B). The song resembles that of the Thick-

billed Seed-Finch, but differs from the latter in its slower tempo and deeper, richer tone.

#### ECOLOGY

In every locality at which I have found *O. nuttingi*, the smaller (ca. 13–14 g) *O. funereus* has also been present and much more numerous. Habitat requirements of the two species overlap but *funereus* is less restricted to wet sites and occurs more widely in second growth and edge habitats. Also occurring with these finches is the smaller (ca. 10 g), and still more abundant and widespread, Variable Seedeater (*Sporophila americana*); males of the local race *corvina* resemble those of *Oryzoborus* spp. in having almost entirely black plumage. These three species often forage side by side, and occur together in mixed flocks outside the breeding season. Two smaller finches (ca. 9 g), characteristic of drier and more open habitats (Yellow-faced Grassquit, *Tiaris olivacea*; Blue-black Grassquit, *Volatinia jacarina*), also sometimes occur in these flocks. The similarities in plumages of several of these species are interesting in the light of the reported lack of territoriality or niche differentiation in some of them (e.g., Pulliam 1973, Rubenstein et al. 1977). A detailed, long-term study of the ecology of this guild would be interesting, particularly in relation to the population explosion that has probably occurred in all of its species with the extensive deforestation of the Central American lowlands in this century (cf. Stiles 1983, in press).

#### TAXONOMY

If my interpretation of the distribution of the Nicaraguan Seed-Finch is correct, the Panama population has been recently established rather than a long-standing geographical disjunct. A reevaluation of the taxonomic status of the Panama race, *O. n. loftini*, is therefore necessary. The diagnosis of *loftini* (Wetmore 1970) states that it differs from *nuttingi* in being slightly smaller and more slender-billed, and in having the female distinctly darker, less rufous brown. The type series of *loftini* consists of two males and a female (the type) from Almirante, Bocas del Toro; Wetmore compared them with a series of 11 males and 5 females from Nicaragua and Dickerman's (1971) single male from northern Costa Rica.

In order to evaluate the morphological distinctness of *loftini*, I too measured a series of museum skins, as well as several birds that I mist-netted in the area between the ranges of *loftini* and typical *nuttingi* as envisioned by Wetmore (1970). One male was collected and later remeasured as a study skin; field and museum measurements of bill, wing, and tarsus

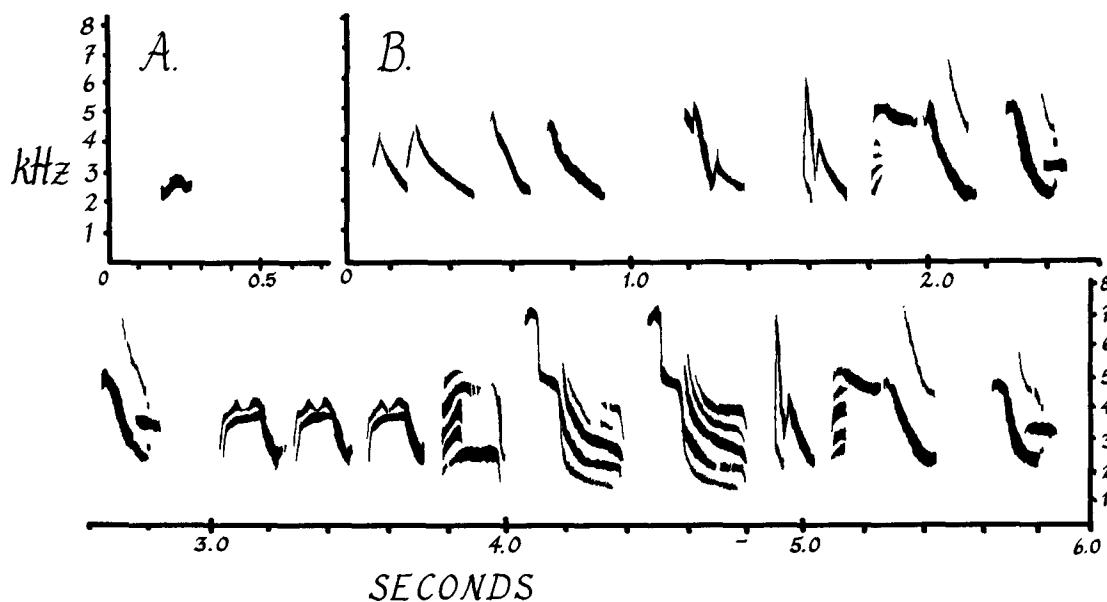


FIGURE 2. Two vocalizations of *Oryzoborus nuttingi*, drawn from sonogram of recording made by B. Whitney at Finca La Selva (locality 4 on Fig. 1) on 25 March 1983. A. "chek" call-note; B. song.

differed by 0.5 mm or less. Hence, I think it justifiable to compare the measurements of my mist-netted birds with those of museum specimens. The resulting comparisons (Table 1) do not show any clear morphological separation in any dimension between northern and southern birds, but at most a cline toward smaller size southward. This leaves the darker color of the female as the sole diagnostic character of *loftini*. However, first-year males in *Oryzoborus* typically resemble adult females but

are darker (cf. Olson 1981); since Wetmore's type specimen lacks specific gonad data, it could be a missexed young male. Consequently, I feel that recognition of *O. n. loftini* is not justified at least until a larger series of females with precise gonad data has been examined.

The closest relatives of the Nicaraguan Seed-Finch are undoubtedly in the South American *O. crassirostris-maximiliani* complex (indeed, Wetmore described *loftini* as a race of *crassirostris*). Meyer de Schauensee (1970) deter-

TABLE 1. Measurements (in mm) of specimens and mist-netted individuals (see text) of *O. nuttingi*. For  $n > 2$ , mean and range are given; NT = not taken.

Localities	Sex	<i>n</i>	Culmen from base	Wing chord	Tail length	Tarsus length	Mandible width	Sources
Nicaragua, northern	♂♂	12	18.6 18.0–20.1	69.8 69.0–71.0	62.9 61.0–66.3	19.1 18.3–20.1	14.7 13.9–15.7	Wetmore 1970
	♀♀	5	18.7 18.0–19.7	67.2 66.0–69.1	60.4 59.4–65.4	19.7 19.3–20.9	14.3 13.7–14.6	
Panama (type series of <i>loftini</i> )	♂♂	2	18.0, 18.3	67.2, 67.4	58.7, 60.7	18.2, 18.8	13.3, 14.0	
	♀	1	18.1	65.0	59.0	18.2	13.7	
Puerto Vargas	♂	1	18.0	68.0	NT (molting)	18.0	14.0	This study: field
Las Selva	♂	1	18.5	65.5	61.0	18.5	13.5	measured to
Puerto Vargas	♀	1	18.5	66.5	58.5	NT	14.0	nearest 0.5 mm
La Selva	♀	1	19.0	68.5	59.0	19.5	14.0	
Nicaragua, northern	♂♂	11	18.24 17.0–19.1	69.83 67.8–72.9	NT	NT	14.55 13.8–15.5	This study: mu- seum specimens
	♀♀	4	18.25 17.5–18.9	66.30 64.3–68.6	NT	NT	14.22 13.7–14.8	
Southern Costa Rica	♂♂	3	17.83 17.2–18.1	67.95 67.6–68.5	61.80 ( <i>n</i> = 2) 61.6–62.0	17.90 17.3–18.8	14.07 13.7–14.4	

mined that *O. "crassirostris"* was in reality a composite of two species, *crassirostris* sensu stricto and *maximiliani*, and that the affinities of the Central American birds are with the latter. However, *O. nuttingi* differs in soft part colors and plumage from *O. maximiliani* (more, indeed, than the latter differs from *O. crassirostris*). The bill of male *nuttingi* varies from pale "ivory-flesh" (Howell 1957) to bright salmon-pink, especially in the breeding season; my photograph of the breeding male in Sarapiquí (see above) shows its bill to be bright salmon (in accordance with my field description). The bill color of *maximiliani*, on the other hand, is ivory-white to bone-white (cf. Phelps and Meyer de Schauensee 1978). Also, *O. nuttingi* lacks the prominent white wing speculum and wing-linings of *maximiliani*. Owing in part to the previous confusion between *O. maximiliani* and *crassirostris*, published data on song, nesting, and ecology do not apply unequivocally to the former, thus precluding dependable comparisons with *nuttingi*. Under the circumstances, I feel that the best way to recognize both the close relationship and the distinctness of *nuttingi* and *maximiliani* is to consider them the component allospecies of a superspecies. Since the distribution of *nuttingi* is not now restricted to Nicaragua, a more appropriate English vernacular name for it might be "Pink-billed Seed-Finch," emphasizing the most obvious difference between it and *O. maximiliani*.

#### ACKNOWLEDGMENTS

I thank L. F. Kiff for help in the field, for weighing and measuring the eggs of *O. nuttingi*, and for bibliographic assistance. N. Arguedas also provided field assistance; the sonogram was prepared by R. H. Barth and J. Davis from a recording made by B. Whitney. The Organization for Tropical Studies and the Servicio de Parques Nacionales facilitated logistics at Finca La Selva and Puerto Vargas, respectively. The curators and staffs of the following mu-

seums allowed me to examine specimens: American Museum of Natural History; British Museum (Natural History); Field Museum of Natural History; University of Michigan Museum of Zoology; University of California, Los Angeles; and U.S. National Museum. This study was partly supported by a Chapman-Naumburg fellowship from the American Museum of Natural History; the Vicerrectoría de Investigación, Universidad de Costa Rica; and CONICIT.

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