

rumped Warblers may not sing multiple song types. Two of the four mimic Yellow-rumped Warblers were observed regularly through June and early July; neither bird was heard singing a typical song or an unfamiliar mimic song.

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Misdirected displays by a solitary bird of paradise in an oropendola nesting colony.—On 19 March 1979 we spent the day roaming the forest on Little Tobago Island, a 113-ha hilly islet lying 2 km off the northeast coast of Tobago. Our objective was to track down any surviving remnants of a colony of about 50 Greater Birds of Paradise (*Paradisaea apoda*) transported from the Aru Islands off New Guinea as a conservation measure by W. Ingram in 1909 and 1912 (Ingram, *Avic. Mag.* 18:142–147, 1911; 23:341–351, 1917). Roldan George, the government-employed conservator for the islet and its seabird colonies thought that one male and possibly one female remained, and steered us to the south end of the island where he felt the male might be found. Here, in two tall palm trees (*Roystonea oleracea*) emerging above the 15-m canopy of deciduous trees a dozen or more Crested Oropendolas (*Psarocolius decumanus*) were singing and displaying noisily, among their long, pendulent nests. In the midst of the group was a single adult male bird of paradise, in full display. This bird was clearly a member of the displaying group, and we watched for an hour through the screening canopy as the bird displayed, repeatedly throwing its body and wings forward with plumes fanned upwards in typical *P. apoda* display patterns (Wallace, *The Malay Archipelago*, Harper, New York, New York, 1869; Gilliard, *Natl. Geogr. Mag.* 114:428–440, 1958; Dinsmore, *Auk* 87:305–321, 1970). Dominance and territorial relationships were difficult to determine, but the bird of paradise clearly maintained a central position in the colony and was rarely, if ever, displaced during an hour of almost continuous displaying.

Ingram's colony, despite evidence of successful breeding in early decades, has declined continuously with one or more catastrophic drops (Dinsmore, *Carib. J. Sci.* 10:93–100, 1970). Baker (*Bird-Lore* 25:295–302, 1923) observed 15 or 16 birds in one tree in the early 1920's, but other observers in that period were less successful. On a 3-week visit in 1958, Gilliard (1958) recognized 15 different individuals and estimated that as many as 35 birds might still be present. However, a hurricane in 1963 destroyed much of the forest habitat on the island and no more than nine birds have been counted since that time. Dinsmore (1970), in his intensive 9-month study of the birds in 1965–66, found only seven birds: four males and three female-plumaged (female or juvenile) birds. Four males and one female were still present in 1968 (Dinsmore 1970) but records since 1970 have been limited to an occasional sighting of a single bird (R. George, pers. comm. to Dinsmore). Residents of Speyside, a coastal town directly opposite the islet, continue to propagate rumors of one or two birds, but Richard French of Pointe-a-Pierre, Trinidad, an active ornithologist who contacts many of the ornithological visitors to the area, has been unable to confirm these

rumors in recent years. Ralph Morris (pers. comm.) saw none during an extended study of the seabirds of Little Tobago in 1975–76, but, to his surprise, encountered a single male in full display on 25 February 1981, close to the spot where we made our observations in 1979.

Single birds reared in isolation from conspecifics often form strong and persistent social bonds with their surrogate associates, using them as targets for species-characteristic displays in contexts of flocking, mating, and sexual activity. We can only guess what the post-fledging social environment of our displaying bird may have been, but with the colony in its terminal phase, possibly reduced to a single bird, opportunities for conspecific interactions must have been limited at best. We therefore speculate that the displaying oropendolas filled a gap in the social Umwelt of this individual, providing releasers for its innately programmed and motivated display movements. Superficially the Crested Oropendola is remarkably similar to the Greater Bird of Paradise in size, general coloration (rich browns and golden yellows predominating), vocalizations (raucous screeches and nasal calls), and even display movements (deep bows, spread wings, and forward tumbles). Birds of paradise, furthermore, are noted for a high frequency of misdirected displays and of hybridization in the wild and in zoos (Diamond, pers. comm.).

Oropendolas have been and remain abundant on Little Tobago, especially in the deciduous forest stands favored by the birds of paradise. Birds of paradise generally ignored and numerically dominant oropendolas on the islet (Dinsmore, M.S. thesis, Univ. Wisconsin, Madison, Wisconsin, 1967), but a single individual that strayed to Tobago in the early days of the colony was found associating with a flock of oropendolas (Baker 1923). Although birds of paradise dominated with mild but effective threat displays in all of four direct, between-species encounters observed by Dinsmore (1967), he speculated that behavioral interactions with oropendolas might become detrimental to the former as they, normally a lek species, decreased in numbers. French (pers. comm.) at one point suggested that oropendolas with their numerical dominance and similar displays might adversely affect the ability of birds of paradise to attract mates of their own species.

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Nest spacing, colony location, and breeding success in Herring Gulls.—In large-bodied, colonial-nesting *Larus* gulls, conspecific predation of eggs and chicks by neighbors represents a potential reproductive cost (Parsons, *J. Anim. Ecol.* 44:553–573, 1975). Egg and chick loss to neighbors can be substantial (Brown, *Ibis* 109:502–515, 1967; Parsons, *Br. Birds* 64: 528–537, 1971), and such predation is particularly severe in high nest density areas (Hunt and Hunt, *Ecology* 57:62–75, 1976; Butler and Trivelpiece, *Auk* 98:99–107, 1981).

There are two principal differences between adjacent Herring Gull (*Larus argentatus*) colonies near Port Colborne, Niagara Co., Ontario, Canada. One colony (Canada Furnace) is on the mainland and nests are distributed over an area of about 4 ha. A nearby (0.6 km to the west) colony (Lighthouse) is insular and nests are concentrated on an elevated rock pile about 0.5 ha (see Morris and Haymes, *Can. J. Zool.* 55:796–805, 1977 for further details of the locations). Similar numbers of birds nest at each site (80–100 pairs in recent years) in association with Ring-billed Gulls (*L. delawarensis*). In 1981 we quantified the different