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Use of abandoned cacique nests by nesting Troupials (*Icterus icterus*): precursor to parasitism?—On 16 September 1971, I observed five individual Troupials (*Icterus icterus croconotus*) investigating and entering disused nests of Yellow-rumped Cacique (*Cacicus cela*) along 20 km of the Río Jivino near Limoncocha, Ecuador (0° 24' S; 76° 38' W). The cacique nests were clustered together in trees overhanging the river, usually 5 to 15 nests per cluster. By 10 October, each pair of Troupials had obviously selected a nest and was repairing and using it for its own. In no case did I see more than one pair of Troupials using a given cluster of cacique nests. Along a small river at Tumi Chucua, Bolivia (11° 8' S; 66° 10' W), I observed the same kind of behavior in October and November 1972. At neither locality did I see evidence that Troupials constructed their own nests. I can find no reference to the nests of the southern race of the Troupial (*I. i. croconotus*). Phelps (*Aves Venezolanas, Creole Petroleum Corp., Caracas, 1953*) states that individuals of the northern race (*I. i. icterus*) occasionally construct their own nests in the form of a bag, but generally they repair and use old nests of other species.

In taking over abandoned cacique nests, the Troupial could be evolutionarily moving into an ideal set of circumstances for developing brood parasitism, at least in the Limoncocha and Tumi Chucua areas. Both the potential host and the potential parasite species are icterids feeding almost entirely on insects during the breeding season. The Troupial was rare compared to the Yellow-rumped Cacique, the latter being among the 10 most common species while the Troupial was more than 100th in rank of commonness. The potential host is a colonial nester, and its nesting was synchronized within a period of three months at both sites.

By using the old cacique nests, the Troupial saves a considerable investment of time and energy in repairing rather than completely constructing a nest. Furthermore, the cacique nests themselves may be attractive in that: 1, they are frequently located in trees along rivers, the foliage of which is the principal foraging area of the Troupial; 2, the nests are often in the vicinity of wasp nests, which presumably protect the young caciques and orioles from botflies and predators (Smith, *Nature* 219:690–694, 1968); 3, the nests are at the ends of branches and difficult for many potential predators to approach; and 4, the nests are clustered tightly together, which may act as a maze in deterring predators, i.e., a potential predator has a much greater chance of finding several empty nests in a cluster before discovering the single nest containing Troupial eggs or young.

If behavior were to develop in which the Troupial were to investigate clusters of nests before the caciques were through laying eggs, if the Troupial were to advance its egg-laying cycle to correspond with that of the caciques, and if the Troupial were to develop egg-dumping behavior, then brood parasitism could evolve in the species. On the other hand, few, if any, brood parasites are as gaudily colored as the Troupial (black

and bright orange in both sexes), and one would expect selection for less obvious plumage as the evolution progressed toward the advanced stages of parasitism. As an alternative to less bold coloration, one might predict selection for a coloration—at least in the female Troupial—mimicking that of the Yellow-rumped Cacique. In terms of song, a form of mimicry already exists, but in this case it is the cacique that is the mimic. Yellow-rumped Caciques will mimic almost any loud and distinct noise or song, and this includes the loud, clear, double-noted whistle that the Troupial monotonously sings. This mimetic behavior could facilitate approach of the Troupial to the active Yellow-rumped Cacique colony.

Brood parasitism has evolved independently in several families of birds. Hamilton and Orians (Condor 67:361-382, 1965) have discussed possible theories explaining the evolution of this phenomenon and have developed a list of general characteristics they believed most appropriate for a species to potentially evolve parasitic behavior. Among these characteristics for early stages of brood parasitism were: 1, the evolving species should parasitize closely related species to best ensure appropriate food for the young; 2, the potential parasite should be relatively rare with respect to the potential host, to minimize selective pressure for anti-predator devices in the host species; and 3, the host species should most likely be a colonial nester, both for easy location of nests by the parasite and because the weaker territorial tendencies of colonial species increases the possibility of access to the nests.

From these characteristics, the Troupial could be considered an example of a species potentially in the early process of developing brood parasitism. This is not to say that all or even most species that use the abandoned nests of other species are apt to become parasites. For example, the Pirate Flycatcher (*Legatus leucophaeus*) (Haverschmidt, Birds of Surinam, Oliver and Boyd, London, 1968) and the White-ringed Flycatcher (*Conopias parva*) (Haverschmidt, Auk 90:207-208, 1973) have been recorded using old Yellow-rumped Cacique nests. These species, however, do not appear to combine as broad a spectrum of preadapted characteristics to evolve brood parasitism as the Troupial.

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Rusty Blackbirds prey on sparrows.—Harsh weather or other conditions that produce food shortages may cause non-raptorial species to become predatory on other birds. Reports of such instances are not common, but included among the species one might list the Roadrunner (*Geococcyx californianus*), Common Grackle (*Quiscalus quiscula*), jays of various species, and even the Brown-headed Cowbird (*Molothrus ater*) (Roth, Condor, 73:113, 1971). In the spring of 1972, during a cold snap, several instances of predation on birds by Rusty Blackbirds (*Euphagus carolinus*) was witnessed at Fort Good Hope, Northwest Territories. The species attacked were Tree Sparrows (*Spizella arborea*) and White-crowned Sparrows (*Zonotrichia leucophrys*), and a Lapland Longspur (*Calcarius lapponicus*) was seen being eaten by a blackbird. Also, Mew Gulls (*Larus canus*) were observed eating birds of some of these species, although whether this was predation or scavenging is unknown.