

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.

When we arrived at Fort Good Hope on 4 May, standing waters were still frozen, but the snow cover was quickly disappearing and patches of bare ground existed throughout the settlement. Spring migrants arrived during the first week of May: White-crowned Sparrows on 5 May, Tree Sparrows and Lapland Longspurs on 7 May, Rusty Blackbirds on 12 May, and Mew Gulls on 17 May. Weather during the first three weeks of May was generally sunny and clear but cold. Flocks of up to twenty sparrows and longspurs were scattered throughout the settlement, feeding in patches of exposed vegetation, while Rusty Blackbirds frequented riparian habitats. Mew Gulls flocked over narrow channels of open melt water along the Mackenzie River. No interaction between these birds was noticed until later in the month when a cold snap occurred in the area. Light snow flurries commenced during the late afternoon of 21 May, becoming heavy but intermittent during the night and the following day. It was evident on the morning of 22 May that migrant passerines had been forced into the settlement by the blizzard, as aggregations of up to 200 birds gathered in the lee of buildings where some vegetation remained exposed. We estimated that at least 500 White-crowned Sparrows foraged in the area adjacent to our trailer on 22 May, 800 on 23 May, and 600 on 24 May, along with a few Tree Sparrows, Lapland Longspurs, Rusty Blackbirds, and Mew Gulls.

On 22 May we established a ground feeder near our trailer with oats, wheat, flax, cornmeal and bread. No aggressive behaviour between birds at the feeder was noticed until the afternoon of 23 May. At 17:46 an adult male Rusty Blackbird was watched by M. G. Shepard, walking towards the feeder where 42 White-crowned Sparrows were busily feeding. When about five feet from a sparrow, the blackbird attacked and grabbed it by the nape. N. K. Dawe then observed the blackbird standing on its prey, holding it by the breast with its feet. Several feathers were plucked from the sparrow's breast before the blackbird flew to nearby trees about 20 yards away, leaving its prey behind. The sparrow flew to a nearby snow pile at the edge of the road, where it died within minutes. The blackbird returned to the dead sparrow twice, both times hovering over and trying to pick it up with its bill. On the third effort, the blackbird lifted the sparrow and carried it about eight feet, before dropping it in the middle of the gravel road. Three more times the blackbird tried to pick up its prey and fly off with it. Unfortunately a truck frightened the blackbird away at 17:59. We retrieved the sparrow carcass for examination and noticed a break in the skin, along the middle of the upper back, about one inch by five-eighths inch. We assumed the sparrow died by chilling. It was a male and weighed 20.0 grams.

At 18:10 a tailless White-crowned Sparrow was seen at the feeder, perhaps the victim of a blackbird attack. Five minutes later a male Rusty Blackbird came to the feeder, and in 15 minutes it unsuccessfully attacked three White-crowned Sparrows and a Tree Sparrow. At 18:40 a female blackbird appeared at the feeder, attacked and pecked to death a White-crowned Sparrow. The blackbird flew off leaving its prey. Within six minutes the other sparrows had returned to feed, even though the carcass of the sparrow lay nearby. An adult Mew Gull, recently arrived at the feeder, showed no interest in the carcass but fed on cubes of bread.

From 18:40 to 19:10 two Rusty Blackbirds fed on cereals and bread at the feeder with the sparrows, and at 19:13 a blackbird made a last unsuccessful attack on sparrows. At 19:14 an adult Mew Gull picked up a dead White-crowned Sparrow from the road and swallowed its head first.

In addition to the feeder observations, two aerial chases of White-crowned Sparrows by Rusty Blackbirds were witnessed. In both instances, a blackbird left a tree to swoop down on sparrows feeding under or near spruce trees. Both attacks were unsuccessful.

The following day, on 24 May, a male Rusty Blackbird was seen feeding on a White-crowned Sparrow near the feeding station. When finished, all that remained of the sparrow was the wings and tail. On the same day, Mew Gulls were twice seen feeding on White-crowned Sparrows. In the first case a dead sparrow was picked up by the head and shaken vigorously for a second or two. The carcass was dropped and then picked up and shaken again. This action was repeated twenty-two times before the gull finally swallowed the sparrow. In the second instance, involving a sparrow killed by a passing truck, the gull picked up the dead bird and swallowed its head first on a single try.

The only other observation of possible predation was recorded at Norman Wells on 25 May, where an adult male Rusty Blackbird was flushed from a carcass of a male Lapland Longspur on which it was feeding. The carcass had been opened entirely from the midback to the throat. The neck had been eaten as well as the brain.

In summary, Rusty Blackbirds attacked White-crowned and Tree Sparrows during a three day cold snap, successfully killing two White-crowns. A blackbird was also seen feeding on a Lapland Longspur and Mew Gulls on White-crowned Sparrows, but by what these birds were killed was not determined.

This paper arises from field research undertaken on behalf of the Environment Protection Board for Canadian Arctic Gas Study Limited during the summer of 1972.—R. WAYNE CAMPBELL, *British Columbia Provincial Museum, Victoria, British Columbia, Canada. Accepted 4 March 1974.*

**Variation in the Olive Sparrow in the Yucatan Peninsula.**—The Yucatan Peninsula of Mexico, British Honduras and northernmost Guatemala is well known as a major center of endemism in Middle American birds. Many species are also represented by endemic races on one or more of the islands adjacent to the peninsula. Only about a score of species show geographic variation at the subspecies level within the peninsular mainland (Paynter, Peabody Mus. Nat. Hist., Bull. 9, 1955). Most of these are represented by an endemic Yucatan race, plus another that ranges from elsewhere in Middle America into the more humid base of the peninsula, i.e., southern Campeche, southern Quintana Roo, the Petén of Guatemala, and British Honduras. In one species, the Black-throated Bobwhite (*Colinus nigrogularis*), two endemic peninsular races are recognized: a pale one confined to Paynter's (op. cit.:14-15) "Scrub" zone of the extreme north, and a dark one in the adjacent "Deciduous Forest" zone to the south.

Study of some fifty Yucatan Peninsula specimens of the Olive Sparrow (*Arremonops rufivirgatus*), virtually all in fresh plumage, has shown that this species exhibits a pattern of differentiation like that of the *Colinus*. The type locality of the presently recognized Yucatan endemic subspecies, *A. r. verticalis* (Ridgway), is Mérida, in the Deciduous Forest zone. The undescribed race of the Scrub zone may be called:

***Arremonops rufivirgatus rhyptothorax*, ssp. nov.**

*Holotype*.—Carnegie Museum of Natural History (CM) No. 141994, adult ♂, collected 12 January 1965 by R. W. Dickerman, 5 to 6 km. E of Chicxulub Puerto, Yucatan, Mexico. Original number K. C. Parkes 2056.

*Diagnosis*.—This new race differs from *A. r. verticalis* (Ridgway) in its generally paler coloration. The underparts in *rhyptothorax* are much whiter, relieved only by a pale gray breast band, which is scarcely visible in some birds. In *verticalis* only the mid-