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Eastern coachwhip predation on juvenile Scrub Jays.—On two successive days in mid-June 1979 I saw eastern coachwhips (*Masticophis f. flagellum*) attack juvenile Florida Scrub Jays (*Aphelocoma c. coerulescens*) at the Archbold Biological Station, 13 km south of Lake Placid, Highlands County, Florida.

Both victims were members of a family group that occupies a territory composed chiefly of sparse scrubby oaks (*Quercus* spp.) 1-2 m high, palmettos (*Serenoa repens*, *Sabal etonia*), and scattered slash pines (*Pinus elliotii*). At the time of the predation this group consisted of: a breeding pair; a male and a female yearling helper; the two juveniles (J1 and J2), about two months out of the nest and strong fliers with full-length tails; and two non-flying fledglings about one week out of the nest. See Woolfenden (1973) and Woolfenden and Fitzpatrick (1978) for details of Florida Scrub Jay habitat and family structure.

The first attack occurred on 17 June. At 1733, as I watched the unattended fledglings, vigorous scolding came from other members of the family 50 m away in a dry grassy pond. Upon arrival about 20 sec. later I found J1 on the ground in the grip of a 2 m coachwhip (snake #1). The snake had its mouth around the bird's chest. J1 lay on its side with its bill open and its tongue moving in and out as if gasping for breath. In the next 12 min J1 tried unsuccessfully to break away several times, by jerking its body and flapping its wings. Occasionally it uttered some muffled distress screams. Twice in this time, though not in direct response to the jay's struggles, the snake released its grip on the bird and then immediately struck sharply at it, seizing it as before. The snake never coiled around the bird.

When I arrived, the male breeder and male yearling were scolding the snake from about 70 cm away, while J2 watched silently from a distance of 1.5 m. No other members of the family were present during the entire incident. At 1736 the male breeder suddenly flew directly to the fledglings and perched within 15 cm of them, inspecting them, as though to check their condition and be prepared to defend them. One minute later the male yearling stopped scolding and joined the male breeder near the fledglings, while J2 flew 20 m away to perch quietly in a tree.

At 1745 J1 relaxed and closed its eyes, presumably dead. During the next 15 min the snake worked at swallowing the bird head first. Several times the snake draped part of its body over the bird to assist in pushing it into its mouth. During this period the male breeder and male yearling returned to scold the snake for about one min, again remaining about 70 cm from it. They then flew more than 70 m away, not to return. At no time did the snake make any apparent response to the jays' mobbing, or to my presence, 1.5 m away. By 1800 the snake had swallowed J1 as far as the base of the wings. I then captured the snake for

marking, and to salvage the bird as a specimen. When I seized the snake it immediately released the bird.

The second attack occurred the next day. I was again watching the unattended fledglings when at 1118 muffled distress screams came from about 25 m away in an area of small oaks, palmettos, and open sandy patches. Here I found J2 being held by a coachwhip at least 2.3m long (snake #2). All of J2's tail feathers lay in a clump on the ground 2 m away. The behavior of the snake and captive bird was virtually identical to that of the previous day.

The breeders and the male yearling arrived at the same time I did, and all three immediately scolded the snake vigorously from about 30 cm away. After about 30 sec. of scolding the male breeder suddenly burst away to inspect the fledglings as he had done the day before. The female breeder and the male yearling continued to scold. Again the snake seemed to pay no attention to the mobbing jays. Based on my experience of the previous day, I approached the snake to within about 1.5 m, assuming I would not disturb it, but after about one minute the snake suddenly eyed me, released J2, and dashed 7 m away to hide in a gopher tortoise (*Gopherus polyphemus*) burrow.

J2 remained on its side about one min., then slowly righted itself and began to preen. Its left flank was heavily smeared with blood, which collected on J2's bill in such quantity that it dripped off freely in large drops. J2 then hopped slowly, with its left wing drooping to the ground, to the shade of a palmetto thicket, where it perched silently with its eyes closed. After about 10 min. it hopped out and began foraging. Within a week it began to fly again, and as of mid-October 1979 is still alive. I think it reasonable to assume that the snake would have killed J2 if I had not interrupted it; it was much larger than snake #1 and had a correspondingly larger "bite" of its victim.

My detailed observations in this Scrub Jay territory suggest to me that these same two snakes stalked this family, especially the fledglings, for many days and over long distances. In the week prior to the attacks the adults mobbed a large coachwhip (probably #2) almost daily, usually within 15 m of the fledglings. Two days after the attack on J2, this snake was again intercepted by the adults as it moved toward the fledglings at a distance of about 7 m. I released snake #1 at 1700 on 23 June, more than 250 m from the fledglings' usual perch. The next day at 1000 the scolding adults alerted me to what I think was the same snake only 7 m from the fledglings. Best (1974) and Allan (1979) report similar cases of snakes returning repeatedly to the vicinity of potential prey.

Though predation is probably the single most important cause of mortality in Florida Scrub Jays (Woolfenden 1978, Woolfenden and Fitzpatrick ms.), the predators responsible have been positively identified in only two instances prior to this report. Westcott (1970) found two nestlings in the stomach of a road-killed coachwhip, and G. E. Woolfenden (pers. comm.) saw a Marsh Hawk (*Circus cyaneus*) take a young fledgling.

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