

NEST PREDATION OF ABERT'S TOWHEES BY COACHWHIPS AND ROADRUNNERS

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Predation by snakes has been implicated as a major cause of high nesting mortality in many passerine birds (e.g., Willis 1972, Best 1978, Nolan 1978), but predation is rarely observed (e.g., Snow 1962, Lill 1974). Snakes and other predators typically consume the entire contents of a nest during one visit (e.g., Nolan 1978). Nestling starvation caused by sibling competition for food is frequently invoked to explain partial loss of broods (e.g., Ricklefs 1965, Howe 1978). While conducting a study of Abert's Towhees (*Pipilo aberti*) in the lower Colorado River valley 9.7 km north of Ehrenberg, Arizona from March to July 1980, I witnessed two instances of nest predation and one predation attempt. My observations suggest that, in some cases, predation is an alternative explanation for partial loss of broods.

On the morning of 24 May, I inspected an Abert's Towhee nest that contained two nestling towhees, one nestling Brown-headed Cowbird (*Molothrus ater*) and one towhee egg. The nest was 1.5 m above the ground in a salt cedar (*Tamarix chinensis*). At 11:15 that day as I was timing the brooding of the female, an Arizona coachwhip (*Masticophis flagellum*) coiled itself around the outer cup of the nest. The female towhee flew off the nest, but returned immediately to "pip" repeatedly at the snake. The snake disappeared, and the towhee resumed brooding. When the snake returned in about three hours, I frightened it away by approaching the nest. The fourth nestling hatched on 25 May. On 26 May, the largest Abert's Towhee nestling was missing (I marked hatchling toenails with red nail polish to distinguish individuals). When I first checked the nest at 05:30 on 30 May, another towhee nestling was gone. At 11:35 that same day I observed a coachwhip that was hanging from the nest rim drop to the ground and escape with the last towhee nestling. The unharmed cowbird nestling was gone by the next morning.

On 22 June at 08:30 a pair of towhee parents left another nest with three nestlings aged 9, 10, and 11 days unattended. I spotted a coachwhip 4.6 m above the ground in a honey mesquite (*Prosopis glandulosa*) as it approached the nest. Because I wished to observe parental activities at the nest, I frightened the snake away twice, and it did not disturb the nest the rest of that day. On 23 June at 12:15 both towhee parents began calling loudly, then flew to the nest while making harsh, rattling noises. A coachwhip was wrapped around the nest and was biting the largest nestling. The other nestlings left the nest prematurely, and the parents led them into denser vegetation. I pulled the snake down, collected the fatally injured nestling for stomach analysis, and placed it on the ground. Within the next hour, the coachwhip returned to the empty nest twice and found the dead nestling on the ground.

A third case of attempted predation occurred on 6 June at 11:45. A female towhee feeding three newly-hatched nestlings jumped suddenly off the nest and ran down the branch pipping shrilly. A Roadrunner (*Geococcyx californianus*) standing at the base of the mesquite looked at the towhee, then hopped onto the nest branch and approached the nest. I wanted the brood intact for timing of adult activities, so I stopped

the Roadrunner when it was 70 cm from the nest, and it hopped to the ground. The towhee pursued the Roadrunner over the ground for about 46 m. The Roadrunner remained in the area calling and circling near the nest tree for about two hours. The nest was empty the next morning, and an egg with a 14-day-old embryo was lying cracked on the ground below. Since this egg was star-fractured (i.e., due to hatch) the day before, the nest was probably destroyed shortly after I left the site.

My observations suggest that coachwhips do not always consume nestlings at once, but return to nests several times over periods up to a week. Facemire and Fretwell (1980) also noted this kind of "selective" predation by speckled king snakes (*Lampropeltis getulus*). Best (1974) reported that blue racers (*Coluber constrictor*) return to Field Sparrow (*Spizella pusilla*) nests following human disturbance. In the present study, human interference alone does not sufficiently account for removal behavior of single nestlings by coachwhips. Parent birds sometimes defend nests by attacking snakes with their beaks (Skutch 1976:425-426). Under these circumstances, a snake may be temporarily deterred, but return to the nest at a later date. Feeding over several days may have advantages for snakes if staying to consume the entire contents of a nest results in increased risk of predation as the alarm calls of parents and neighboring birds may attract larger predators (e.g., Roadrunners).

In conclusion, observations of continued reduction and ultimate destruction of broods support the presumption that some partial losses are caused by predation.

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