

by two or more females have been reported for both species of scaup (Bellrose 1976, Palmer 1976) and are relatively commonly observed among breeding scaup in the Great Slave Lake area (Fournier and Hines, unpubl. data).

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Wilson Bull., 108(2), 1996, pp. 381–382

Carnivory observed in the Cedar Waxwing.—On 9 Aug. 1992, I observed an adult Cedar Waxwing (*Bombycilla cedrorum*) fly to a tree branch approximately 12 m above the ground with an unidentified nestling bird in its bill. Through 7 × 35 binoculars it appeared the nestling was naked, approximately 3 cm in length and being held by the tail. It had been eviscerated, with the stomach hanging down to one side. The Cedar Waxwing paused briefly after landing, then swallowed the nestling whole in approximately three successive swallowing motions. Cedar Waxwings are frugivorous, with the exception of a relatively small proportion of invertebrate prey (Tyler 1950). To my knowledge, carnivory has not been reported for this species.

The species of the nestling was not known. It is unlikely it was a Brown-headed Cowbird (*Molothrus ater*), since cowbirds are not abundant in the area (pers. obs.), and Cedar Waxwings do not readily accept cowbird eggs (Friedmann 1963). It seems most probable the nestling was a Cedar Waxwing and was eaten either as a form of infanticide or was a dead nestling removed from the nest for hygienic reasons.

Infanticide has been reported for a variety of avian taxa (Stanback and Koenig 1992). Non-nutritional motivations for infanticide include the removal of unrelated offspring by a replacement mate and the lowering of the reproductive output of competitors (Stanback and Koenig 1992). A number of other individuals of this species were observed in the area, providing opportunity, and perhaps the motive, for infanticidal behavior. Although Cedar Waxwings may be less predisposed to cannibalism because of their largely frugivorous diet (Stanback and Koenig 1992), they are colonial nesters (Tyler 1950) which, combined with the tendency to swallow foods whole (Tyler 1950), could potentially increase their predisposition towards cannibalism (Mock 1984, Stanback and Koenig 1992). Whether or not this observation represented cannibalism or predation of another species, it certainly represents a bizarre deviation from customary Cedar Waxwing diet.

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Wilson Bull., 108(2), 1996, pp. 382–384

A case of cooperative breeding in the Hooded Warbler.—Cooperative breeding involves one or more individuals, in addition to the genetic parents, giving parental care to offspring (Stacey and Koenig 1990, Emlen 1991). In birds, this parental care may take several forms, such as feeding nestlings, nest construction, incubation, defense against predators, and territory defense (Stacey and Koenig 1990). The social organization of cooperative breeders occurs in a variety of forms including (1) nonreproductive adults helping their parents raise young, (2) “plural breeders” where more than one monogamous pair within a social group breeds simultaneously, (3) “highly gregarious” monogamous cooperative breeding groups, and (4) polyandrous or polygynandrous cooperative breeding groups (Stacey and Koenig 1990, Krebs and Davies 1991). Cooperative breeding in birds is relatively rare, existing in only 2.4% (220 of 9000) of avian species (Stacey and Koenig 1990, but see Emlen and Vehrencamp 1983). Herein, we report the first documented case of cooperative breeding in a warbler, the Hooded Warbler (*Wilsonia citrina*).

Methods.—Hooded Warblers are small, migratory songbirds that breed in selectively-logged mixed hardwood deciduous forests. We conducted this research in Crawford County, Pennsylvania (41°N, 79°W) as part of a two-year mating system study from May–August 1994 and 1995. The mating system is socially monogamous, with one male and one female occupying a single breeding territory (Stutchbury et al. 1994, Evans Ogden and Stutchbury 1994). We discovered the nest where cooperative breeding occurred on June 16, 1995. When the nestlings were five days old, a banded female, a banded male (B) and an unbanded male (U) were caught with mist nets near the nest. Unbanded adults were banded with U.S. Fish and Wildlife aluminum bands and unique color band combinations to identify individuals. Upon returning nestlings to the nest after banding them, the female and U male began chipping rapidly near the nest while the B male chipped rapidly approximately 10–15 m away. This peripheral male then flew to the nest and fed one of the nestlings.

To determine if both males were feeding nestlings, the nest was video-taped from 08:00–09:00 EDT each day for four days. Playback experiments were also conducted to determine the role of the males in territory defense. A recording of male “repeat” and “mixed” mode song patterns (Wiley et al. 1995) was used. After feeding rate observations were complete