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A Helper at a Tufted Titmouse Nest

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In May 1975, while working with a population of color-banded Tufted Titmice (*Parus bicolor*) in Stillwater, Oklahoma, I observed three adult titmice that had been banded the previous winter making feeding trips to a nest containing four nestlings. I used Dixon's (1965) criteria to determine that two of the birds were females and one was a male. One of the females was subordinate to both of the other adults and probably was unmated. The second female was subordinate only to the male and probably was his mate. All three of the adults were observed bringing food to the nest box although the females each fed the young approximately five times more often than did the male. Each of the adults was observed removing fecal pellets from the nest after feeding.

The young fledged by May 19. After fledging the dominant female was observed feeding fledglings three times while the subordinate female was observed feeding a fledgling once. The male was never observed feeding fledglings but escorted the young and was observed with them and the females several times.

The last sighting of the subordinate female was made July 9 after the young had dispersed. The dominant female and the male were often together throughout the fall and winter and were paired the next spring. After having laid three eggs, the female was found dead 13 April 1976 in the same nest box used the previous year. The male was never observed to remate and was last sighted 16 April 1977.

As only four young were involved in this occurrence, it did not seem likely that a double clutch was being tended by two laying females. Furthermore, I have found no reports of dump-nesting by Tufted Titmice. Wright (cited by Laskey 1957, *Bird-Banding* 28: 135-145) observed a pair of Tufted Titmice raising a second brood with the help of what he believed to be two of the young of the first brood; in the instance I observed, the helper was banded the previous winter. Brackbill (cited by Skutch 1961, *Condor* 63: 198-226) reported a banded unmated yearling feeding the young of its female parent who was mated to a new male. In this instance the male tried to drive off the yearling. The yearling also did not feed the nestlings as regularly as did the parents. In the case I observed the subordinate female possibly might have lost a mate and/or abandoned a brood. However, after being banded 8 December 1974 she was sighted 17 times and only once during the intervening months did she associate with a titmouse other than one of the pair she eventually helped. Since the nest was not observed until 4 May, after the young had hatched, it is not known whether the subordinate female began her helping behavior earlier in the nesting cycle.

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Frugivory by Swallow-Tailed Kites in Costa Rica

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On the morning of 4 July 1977 we observed a flock of 18 Swallow-tailed Kites (*Elanoides forficatus*) circling over the forested crest of a steep slope at 1,300 m in Monteverde, Puntarenas Province, Costa Rica. As the kites circled at eye level on the upslope side of a clearing planted in coffee, several birds began feeding on the fruits of a tree in the forest edge near us. The tree, *Matayba oppositifolia* (A. Rich.) Britt. (Sapindaceae), is common at this elevation in Monteverde.

Kites harvested the fruits by gliding upwind and upslope to the forest edge. There they stalled, banked, and, as they brushed the foliage, plucked fruits with their talons. The kites processed the fruits in flight, removing and ingesting both the bean-like seed and fleshy aril. We were unable to identify individuals, but in the course of 15 min (0910–0925 EDT) kites visited the tree more than 40 times and as many as three birds picked fruit simultaneously. At least six birds and perhaps the majority of the flock fed from this tree while we watched.

We rejected the possibility that the kites were taking insects, not fruit, for the following reasons: 1) on eight separate passes the kites were clearly seen to have fruit in their talons and only the husks of the fruit were dropped; 2) kites were visiting only one tree, in which no insects of appreciable size were seen; and 3) the feeding site was only 10 m from us and processing occurred at or just above eye level at distances of 25 to 60 m, so our view was unobstructed. During approximately 40 min observing the flock, the only other food item we saw was a nestling bird, about the size of a robin (*Turdus*) nestling, carried by one kite.

We find no records of frugivory for Swallow-tailed Kites. They have been reported to feed only on animal matter, primarily insects but also nestling birds, arboreal reptiles, and amphibians (Skutch 1965, *Condor* 67: 235; Snyder 1974, *Living Bird* 13: 73). Brown and Amadon (1968, *Eagles, hawks and falcons of the world*. New York, McGraw-Hill) report fruit-eating for a number of diurnal raptors, virtually all of which are scavengers (*Cathartes*, *Coragyps*, *Milvus*, *Gypohierax*, *Polyboroides*, *Daptrius americanus*, and *Milvago*). Only *Aviceda subcristata* and *Pernis apivorus* among the non-scavenging raptors have been observed eating fruit. This observation of frugivory in the tropics by a form that is primarily insectivorous parallels similar behavior in some passerine genera (Morton 1973, *Amer. Natur.* 107: 14), and may be contingent upon the relatively greater abundance and diversity of fruits there.

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