



Fig. 2.—Illustrates the similarity in appearance of an Eastern Meadowlark egg (right) and the initial cowbird egg to be laid in the nest (middle). The cowbird egg on the left was laid the day after the cowbird egg in the middle. For discussion see text.

Finally, it should be pointed out that even though the hosts in this system are acceptors, evolution might still favor similarity in appearance between host and parasite eggs by reducing the frequency of nest abandonment by hosts. Possible disadvantages to increasing host-parasite egg similarities in this system are dealt with in more detail elsewhere (Elliott MS).

Analysis of cowbird egg distribution in a prairie community of hosts gives results similar to those obtained by Mayfield (op. cit.) and Preston (op. cit.). Evidence is also presented suggesting that, at least in this particular system, cowbird egg distribution is nonrandom. Possible advantages of this behavioral pattern may be related to minimizing mistaken ejections by female cowbirds.

I thank John Zimmerman, Steve Fretwell, Chris Smith, and Arthur Dayton for their advice and support during the course of this research. Additional thanks are due a number of fellow graduate students whose suggestions, ideas, and comments greatly improved this study. The Kansas State University Computer Center assisted in data analysis. Financial support for this research was provided by Kansas State University, the Bird Populations Institute, and the Frank M. Chapman Memorial Fund of the American Museum of Natural History.—PHILLIP F. ELLIOTT, *Division of Biology, Kansas State University, Manhattan, Kansas 66506. Present address: Department of Zoology, Iowa State University, Ames, Iowa 50010. Accepted 7 May 1976.*

Cannibalism in adult nesting Red-tailed Hawks.—Several accounts of cannibalism among nestlings in *buteos* have been recorded (Uttendörfer 1952, Ingram 1959, Matray 1974, Tubbs 1974). Baxter (1906) reported an adult Red-tailed Hawk (*Buteo jamaicensis*) feeding on an immature bird of the same species. Fitch et al. (1946) recorded remains of two *buteos* in the pellets of nesting Red-tailed Hawks, but cannibalism has seldom been recorded among adults. Clevenger and Roest (1974) reported seeing an adult Red-tailed Hawk carrying the partially eaten remains of another adult bird of the same species.

On 7 June 1975 one mile southeast of Francis Creek, Manitowoc County, Wisconsin, while banding nesting Red-tails, I found the remains of an adult and one live chick about 2 weeks old. Upon approaching the nest, which was 45 feet up in a white pine (*Pinus strobus*), I saw only one adult bird perched on a power pole one-quarter mile northeast of the nest tree. This bird began to call and circle above the nest as I approached and was the only bird seen the 30–45 minutes I was in the area.

When I reached the base of the tree, I found three rectrices from an adult Red-tail on the ground and several more among the branches of the tree while climbing to the nest. In the nest were four more rectrices plus the intact legs, pelvic girdle, and several vertebra of the adult bird. The one chick in the nest had a full crop and was in apparent good health. Prey remains in the nest consisted of Common Crow (*Corvus brachyrhynchos*) and rabbit (*Sylvilagus floridanus*).

On examining the skeletal remains of the hawk, I noted that the fleshy parts of the legs were still hydrated, indicating that the bird had probably only been dead a few days.

Although the possibility exists that the bird may have been killed by the remaining adult and used as food, it is more likely that the bird was either sick or wounded and died at the nest and was subsequently dismembered and fed to the chick. Because of the chick's age and the completeness with which the skeleton was cleaned, it is unlikely that the chick fed on the entire adult bird itself.

I thank Thomas C. Erdman and Frances Hamerstrom for help and suggestions in preparing this note.

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Defense of feeding sites by Orioles and Hepatic Tanagers in Mexico.—While studying the pollination biology of *Erythrina breviflora* (Leguminosae) in Mexico in September and October 1975, we noted that groups of either Northern (*Icterus galbula bullockii*) or Hooded Orioles (*I. cucullatus*) repeatedly took nectar from the flowers of *E. breviflora* and chased similar-sized tanagers and wrens from the trees. Analysis of floral nectar constituents suggests that these birds can obtain all or most of the nutrients they need from the nectar of the flowers they defend. The days and total hours of observation follow the study sites.

MORELOS: (1) Santa María ca 9 km N of Cuernavaca (21, 26-28 Sep/15 h); MICHOCAN: (2) El Alamo ca 5.5 km SE of rd to Huetamo (30 Sep, 8 Oct/4.3 h); and (3) Ruta 15 ca 3 km NW of rd to Jungapeo (9 Oct/2.5 h). At Santa María we watched the birds from midmorning (1000/h MST) to one-half hour past sundown (1840 h). We were at El Alamo from 1055 to 1415 and 1710 to 1815 and at site 3, 1245 to 1450 and 1530 to 1555. We watched Northern Orioles at site 1 and Hooded Orioles at sites 2 and 3. At sites 1 and 2, the groups included a mature male and female and an immature male. At the third site, the group included a mature male, two immature males, and two females. A male and female Hepatic Tanager (*Piranga flava*) foraged together at sites 1 and 2.

Interactions between the orioles and other similar-sized birds almost always resulted in the displacement of the other birds. At El Alamo, both mature and immature orioles chased Hepatic Tanagers and Gray-barred Wrens (*Campylorhynchus megalopterus*) from the flowering trees. At Santa María, mature orioles chased the Hepatic Tanagers from the feeding territory. On one occasion the immature male was displaced by the male tanager. On a number of occasions, just the appearance of a male oriole made the tanagers or wrens leave or move to the periphery of the feeding territory (6 of the 17 observed interactions). At all study sites, mature birds chased the immature males to the edge or out of the feeding site, but the latter always returned and foraged in the central part of the area, especially when the adult birds were out of sight or absent. No aggressive interactions occurred between mature males and females.

The major exception to oriole dominance was at El Alamo. There, tanagers chased the orioles from a set of trees in which the tanagers fed repeatedly. The trees the tanagers defended were small, more dispersed than those used by the orioles, and were visited sequentially on each foraging trip, in the same way that "trap-lining" hummingbirds visit a series of flowers or inflorescences. In contrast, at Santa María tanagers successfully foraged when orioles were out of sight or were absent from the trees. On one occasion at this site, a jay (*Aphelocoma* sp.) chased the orioles to the edge of the feeding area and then foraged at the flowers for approximately 15 minutes.