Wilson Bull., 110(3), 1998, pp. 426–429

Single-egg Removal from an Artificial Nest by the Gray Catbird

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ABSTRACT.—Brood parasitic birds often remove an egg from host nests. At least one previous author interpreted single-egg removal from a nest as a sign of Brown-headed Cowbird (*Molothrus ater*) activity. Partial clutch reduction, however, cannot be taken as a clear indication of brood parasitic activity at natural or artificial nests because egg predators may also cause partial clutch reduction by pecking and removing some but not all eggs. Video-taping at an artificial nest baited with plastic eggs showed that the Gray Catbird (*Dumetella carolinensis*), a known egg-predator, was responsible for a single-egg removal event, even though it also pecked other eggs in the nest. Thus, partial clutch reduction in general, and single-egg removal in particular, cannot be interpreted as clear signs of either brood parasitism or egg predation. In addition, the use of plastic eggs, however convenient and realistic they may seem, is inappropriate to distinguish between the activities of brood parasites and egg predators. *Received 9 Sept. 1997, accepted 22 Jan. 1998.*

Predation at birds' nests frequently results in the loss of the complete clutch or brood while partial clutch reduction is often associated with brood parasitism (Belles-Isles and Picman 1986, Wolf 1987, Brown and Brown 1989, Burgham and Picman 1989, Soler et al. 1997; but see Sealy 1994). Several interspecific brood parasites, such as female Brown-headed Cowbirds (*Molothrus ater*), often remove one host egg per parasitized nest (Wolf 1987, Scott et al. 1992). In at least one report, single-egg removal events at natural and artificial nests were suggested to be indicators of nest discovery by brood parasites, even in the absence of subsequent appearance of parasitic eggs (Lowther 1979). However, Wolf (1987) found that in one year only 58% of Dark-eyed Junco (*Junco hyemalis*) nests actually parasitized by cowbirds had any eggs removed. In another study on Yellow Warblers (*Dendroica petechia*), only 11% of the eggs lost in parasitized nests were removed by the cowbird parasite itself (Burgham and Picman 1989). Thus, demonstration of brood parasite activity should not be based solely on partial clutch loss nor should all partial clutch losses be attributed to parasite activity. Here I report a video-taped predation attempt by the Gray Catbird (*Dumetella carolinensis*) at an artificial nest that resulted in the reduction of the clutch by a single egg. Pecking and removal of eggs from heterospecific nests by catbirds have been reported or studied extensively at few locations in North America [e.g., in Ontario by Dixon (1930), Belles-Isles and Picman (1986), and Spooner et al. (1996); in Manitoba by Sealy (1994)], and there is only one prior record of these activities of catbirds from a New York population (J. B. W. 1884).

As part of a study to determine the cues used by female Brown-headed Cowbirds to locate host nests, 15 artificial open cup nests were placed at heights between 1–2 m in low shrub habitat at the perimeter of the Cornell Experimental Ponds, Ithaca, New York, in May 1997. Two days after a nest was placed in the field, host activity was simulated by adding one egg daily to each nest for four days to reach a "clutch-size" of four (Thompson and Gottfried 1981). The eggs were not glued to the nests and all nests and eggs were acquired commercially (Birds and Accessories, Inc., Omaha, NE). The nests were made of fine dark twigs, ranged between 8–12 cm in diameter and 4–8 cm in depth, and were secured to branches using green wire twist ties. The plastic eggs were off-white with brown speckles (much like warblers' eggs), 16–20 mm in length and about 2 mm thick. I filled the eggs with dark colored water to increase their weight. The content of each nest was monitored daily, usually before noon, for 10 days; any eggs that disappeared or were found on the ground near the nests were replaced. Both nests and eggs were removed from the field at the end of the observation period.

During this study no cowbird eggs were found in any of the 15 nests, but 13 (87%)

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nests suffered partial or complete loss of content, often repeatedly. Out of 89 daily checks of nests which had contained at least two eggs the day before, 12 (13%) suffered full clutch losses while 29 (33%) suffered partial clutch losses. In 15 (52%) of 29 partial clutch losses a single egg was found missing. Perhaps because the artificial eggs were made of plastic, I could see no clear gnaw or peck marks on eggs that remained in nests or on the ground in the vicinity. The study area contained several bird and mammal species [e.g., House Wren (*Troglodytes aedon*), Red-winged Blackbird (*Agelaius phoeniceus*), Black-Capped Chickadee (*Parus atricapillus*), Brown-headed Cowbird, Common Grackle (*Quiscalus quiscula*), American Crow (*Corvus brachyrhynchos*), eastern chipmunk (*Tamias striatus*), and feral cats] that are known to prey on nests or peck and remove heterospecific eggs (Pessino 1968, Picman and Belles-Isles 1988, Picman and Schriml 1994, Sealy 1994). There were also several storms during the observation period, and I suspected that some eggs had fallen from nests simply because of strong winds. Therefore, to determine the cause of a partial clutch loss, on 15 May 1997 I set up a video camera, without a blind, 4 m from an artificial nest from which one of four eggs had been removed the previous day. Recording began at 10:00 EST and the camera's battery was replaced every 1.5–2 hrs during the day, at which times the contents of the nest were also checked. A single egg disappeared from the nest between 16:40 and 18:10. The recording showed that at 17:14 a Gray Catbird landed on a neighboring branch, erected its feathers, and approached the artificial nest. Within 20 seconds it grasped one of the eggs in its beak, lifting it from the nest, apparently trying to swallow it. It failed to do so and the egg fell to the ground (where it was later recovered). At 17:15 a second catbird arrived, hopped on the nest, and pecked into it six times, while the first bird moved away from the nest but remained within the camera's field of view. After 15 seconds the first bird approached the nest again, displaced the second individual, and delivered 19 visibly powerful pecks at the eggs. It lifted one of the eggs up to the perimeter of the nest three times before finally flying off at 17:17 without having removed any more eggs. No other animal approached the vicinity of the nest for the rest of the duration of the tape and no other nests were video-taped in 1997.

Until recently, the Gray Catbird itself was not recognized as a frequent and wide-spread nest-predator because there were few published observations on its egg-pecking habit (Dixon 1930, Pearson 1936, Bent 1948). However, Sealy (1994) observed, and Belles-Isles and Picman (1986) and Spooner and coworkers (1996) showed experimentally that Gray Catbirds often attack natural and artificial nests and peck, destroy, and consume eggs. In these studies catbirds always removed and damaged more than one egg when available. Two previous records of single-egg removal by catbirds were cited by Bent (1948), but when checking the source of one of those records (J. B. W. 1884), I found that it mentions the catbird breaking the heterospecific egg, not removing it.

Partial clutch reduction at birds' nests may be caused by inter- and intra-specific predators, competitors for nest sites and habitat, brood parasites, nest-owners themselves, and non-biological factors, such as strong winds and heavy rains (Sealy 1994). Single-egg removal events are known to result from the actions of several of these agents (Bent 1948, Pessino 1968, Wolf 1987, Brown and Brown 1989, Sealy 1994, Soler et al. 1997) and thus, in the absence of additional information, partial clutch reduction (including single–egg removal) cannot be attributed to any one factor unambiguously. In particular, the list of previously unknown passerine egg predators has increased in recent decades, partially as a result of the use of more direct approaches in studies of nesting success (e.g., personal monitoring: Picman and Belles-Isles 1988, Sealy 1994; photo- or videography: Picman and Schriml 1994), suggesting that nests may be attacked at varying frequencies by species that we may not have suspected before. In addition, I found that the relative frequencies of single-egg versus multiple-egg removal by brood parasites and nest predators are difficult to quantify from published observations because several researchers that used artificial nests placed only one egg per nest (Belles-Isles and Picman 1986, Picman and Schriml 1994) or reported only on rates of "nest-disturbance and failure" without further details on egg removal patterns (Gottfried and Thompson 1978, Yahner and DeLong 1992). Therefore, there is little support for the suggestion that single-egg losses can be interpreted as evidence for actions of the brood parasitic Brown-headed Cowbird (Lowther 1979).

It is possible that the catbirds in my observation did not remove or destroy more than one egg because the eggs were artificial. Based on the recorded behavior of the catbirds, had there been natural eggs in the nest, more than one egg would have been eaten and/or destroyed because, unlike plastic ones, eggs of many species can be swallowed or broken through pecking by catbirds (Belles-Isles and Picman 1986, Sealy 1994). In addition, if the artificial eggs had been made of plaster (as commonly and historically used in nest predation and egg mimicry studies; e.g., Selander and Yang 1966), I probably would have noticed characteristic peck marks on the remaining eggs in the nest. Thus, the use of plastic eggs may not be appropriate to discriminate partial clutch reductions associated with brood parasitism (in which egg removal is usually not accompanied by egg pecking; Wolf 1987) from those accompanying egg predation attempts. It also remains unknown how frequently catbirds are responsible for single-egg removal events at natural nests. Nonetheless, had I not recorded with a camera the activity of catbirds, I would not have had evidence for the catbirds' attempts to peck the other eggs so the end-of-day observation would have been a single-egg removal event. The aim of this note is thus three fold: (1) to document the occurrence of egg pecking and removal by catbirds in the Ithaca, New York, population, (2) to discourage the use of commercially available and inexpensive plastic eggs in studies of egg predation and parasitism, and (3) to caution about the interpretation of egg removal events in general, and single-egg removal events in particular, as evidence for the activities of brood parasites in the absence of direct observations.

ACKNOWLEDGMENTS

D. Winkler and R. Johnson made my study on brood parasitism at the Cornell Experimental Ponds possible. B. and P. Brennan encouraged the use of video cameras in my work. I thank S. Emlen and P. Wrege for loaning equipment and M. Schiffman for assistance in the field. The editor and the reviewers of the Wilson Bulletin gave valuable criticism on drafts of the manuscript. Financial support was provided by a Howard Hughes Predoctoral Fellowship, Cornell University, and the Exploration Fund of the Explorers Club.

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Wilson Bull., 110(3), 1998, pp. 429–430

First Record of Shiny Cowbird (*Molothrus bonariensis*) in Yucatán, Mexico

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ABSTRACT.—Since the early 1900s, the Shiny Cowbird (*Molothrus bonariensis*) has expanded its range from northern South America through the West Indies. This spread has had detrimental effects on several species, especially endemics confined to islands. Here, I report the first record for Shiny Cowbirds in Mexico. The establishment of this species in the Yucatan Peninsula seems likely, and may pose a problem for the conservation of Yucatan endemics. *Received 18 June 1997, accepted 5 March 1998.*

The Shiny Cowbird (*Molothrus bonariensis*) has rapidly expanded its range since the turn of the century, island hopping from Trinidad and Tobago north through the Lesser Antilles, and west through the Greater Antilles (Post and Wiley 1977, Post et al. 1993). The species was first recorded in Cuba in 1982 (Garrido 1984) and in Florida in 1985 (Smith and Sprunt 1987). From the Greater Antilles, the Shiny Cowbird has been expected to invade into Florida and the Yucatan Peninsula of Mexico (Post and Wiley 1977, Howell and Webb 1995).

On 27 May 1996, I observed a single male Shiny Cowbird in an area of burned mangroves adjacent to an intact mangrove forest at the eastern edge of the town of Río Celestún, Yucatan, Mexico. Identifying field marks of the bird were a slender conical bill, uniform dull blue-black plumage, squared-off tail, and a solid dark eye. Of Yucatan resident species with which the Shiny Cowbird could be potentially confused, eye color and plumage differentiated it from Bronzed Cowbird (*M. aeneus*), and the bill and tail shape separated it from Melodious Blackbird (*Dives dives*). The appearance of Shiny Cowbird in mangrove forest is not unexpected, as this seems to be the preferred lowland habitat of the species in the Antilles (Post and Wiley 1977, Post et al. 1990).

The spread of Shiny Cowbirds through the West Indies has been favored by the conversion of forested areas to early successional habitats, and by the absence of native brood parasites (Post and Wiley 1977, Cruz et al. 1995). Contact with Shiny Cowbirds has proven detrimental for some West Indian bird species, particularly the endangered Yellow-shouldered Blackbird (*Agelaius xanthomus*) and the Puerto Rican Vireo (*Vireo latimeri*; e.g., Post and Wiley 1976, Post 1981, Wiley et al. 1991, Faaborg et al. 1997). Birds that have no evolutionary experience with brood parasites may suffer high rates of parasitism and reproductive failure (Wiley 1985, Post et al. 1990, Cruz et al. 1995).

Eventual establishment of Shiny Cowbird populations in the Yucatan Peninsula seems likely, given that 25% of the region's forest has been converted to agriculture (Toledo and Ordóñez 1993). Yucatan birds may not be as vulnerable to brood parasitism as West Indian birds because of contact with the Bronzed Cowbird, which is resident throughout the Peninsula. However, experience with the Bronzed Cowbird may be limited among Yucatan birds because this species is less of a generalist parasite, specializing mostly on ic-

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