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DESTRUCTION OF NESTS BY THE SHORT-BILLED MARSH WREN

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ABSTRACT.—Short-billed Marsh Wrens (*Cistothorus platensis*) examined experimentally offered nests of Red-winged Blackbirds, Yellow-headed Blackbirds, Long-billed Marsh Wrens, and conspecifics. They also pecked eggs of Zebra Finches, Long-billed Marsh Wrens, Red-winged Blackbirds, and Cinnamon Teal, and once a male wren also pecked nestling Red-winged Blackbirds. Marsh wrens broke all small eggs, but the largest (teal) eggs survived the wrens' attacks. Results suggested that Short-billed Marsh Wrens attack eggs regardless of their size and color, but can destroy only small eggs. These wrens probably have a significant impact on nesting success of other small sympatric birds, including conspecifics. By destroying nests, Short-billed Marsh Wrens probably exclude other birds from the vicinity of their activity centers and thereby reduce interference from them.

Among all temperate zone passerines, marsh-nesting birds suffer the highest nest mortality rates, mainly through predation (Ricklefs 1969). Predators include raccoons, mink, hawks, owls, jays, crows, and water snakes (Allen 1914, Bent 1958, Robertson 1972). Other studies have shown that one of the most important predators destroying nests of marsh-dwelling passerines in North America is the Long-billed Marsh Wren (*Cistothorus palustris*; Allen 1914, Orians and Willson 1964, Burt 1970, Verner 1975, Picman 1977a, 1980). Destruction of nests by small passerines appears rare, but has been observed in several species of wrens, including the House Wren (*Troglodytes aedon*; Kendeigh 1941); Long-billed Marsh Wren (Allen 1914); Cactus Wren (*Campylorhynchus brunneicapillus*; Anderson and Anderson 1973); and Bewick's Wren (*Thryomanes bewickii*; Picman, pers. observ.). This indicates that nest-destroying behavior might be a common feature of the wren family.

In this study, we investigated nest-destroying behavior of another wren, the Short-billed Marsh Wren (*Cistothorus platensis*) which breeds on wet sedge and grass meadows adjacent to marshes of eastern and central North America (Bent 1948). This species frequently is sympatric with Red-winged Blackbirds (*Agelaius phoeniceus*), Long-billed Marsh Wrens, Common Yellowthroats (*Geothlypis trichas*), Savannah Sparrows (*Passerculus sandwichensis*), Henslow's Sparrows (*Ammodramus henslowii*), Swamp Sparrows (*Melospiza georgiana*), and Song Sparrows (*Melospiza melodia*; Walkinshaw 1935, Bent 1948, Kroodsma and Verner 1978, this study). Nest destruction by this wren, therefore, might present an important factor reducing reproductive success of these and possibly other marsh-nesting birds.

The questions we asked during this study were: (1) Do Short-billed Marsh Wrens normally destroy nests? (2) What kinds of nests and eggs will these wrens attack? (3) Do they attack nestlings? (4) Do affected species interact behaviorally with Short-billed Marsh Wrens? (5) Why do these wrens attack nests with eggs or young?

METHODS

This study was conducted early in July 1979 near Lake Manitoba in the Delta Marsh, at the University of Manitoba Field Station. Short-billed Marsh Wrens occur there on wet whitetop (*Scolochloa festucacea*)-sedge (*Carex atherodes*) meadows. Other abundant birds nesting sympatrically with Short-billed Marsh Wrens in this habitat were Red-winged Blackbirds, Yellowthroats, and Savannah Sparrows.

We studied nest-destroying behavior by offering wrens nests with eggs or nestlings. We offered nests to singing males in their courtship centers, usually within 2 m of their courtship nests. We attached the experimental nests, holding one or two eggs or nestlings, to the vegetation with elastic bands. We observed the birds at distances of at least 15 m from the offered nests for 30 min after the first approach by a wren to a nest.

We offered wrens eggs in nests of Red-winged Blackbirds, Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*), Long-billed Marsh Wrens, and Short-billed Marsh Wrens. The birds were presented real eggs of Zebra Finches (*Poephila guttata*), Long-billed Marsh Wrens, Red-winged Blackbirds, and Cinnamon Teal (*Anas cyanoptera*). Zebra Finch eggs served as

TABLE 1. Responses of Short-billed Marsh Wrens to various nests.

Type of nest	Response	
	Positive	Negative
Red-winged Blackbird	19	4
Yellow-headed Blackbird	1	4
Long-billed Marsh Wren	3	2
Short-billed Marsh Wren	5	0
Total	28	10

Short-billed Marsh Wren egg mimics. Because only two blackbird eggs were available, we covered them with a transparent glue and thus made them unbreakable for marsh wrens. We offered nestling Red-winged Blackbirds (approximately 2 and 3 days old) in a Red-winged Blackbird nest to five male Short-billed Marsh Wrens that had pecked eggs in earlier trials.

Offering one nest with eggs or nestlings to a wren was considered a single trial. Each wren was offered one nest per day, but individual wrens were offered two to four nests in trials conducted on consecutive days. All trials were conducted between 06:00 and 12:00. In each category (egg, nestling, or nest), five or more trials were conducted with different marsh wrens. We carried out a total of 40 trials during which 16 male Short-billed Marsh Wrens were offered nests with eggs or nestlings. A positive response to a nest consisted of the bird landing on it, and a positive response to an egg or nestling consisted of the bird pecking it.

RESULTS

RESPONSE TO NESTS

Short-billed Marsh Wrens responded positively to the four different types of nests in 28 of 40 trials (Table 1). Thirteen wrens (10 males, 3 females) responded to the offered nests in at least one trial. Wrens that responded positively usually approached the offered nests slowly and cautiously through the vegetation from below, perched on them, and examined their contents. Some of the wrens then pecked the eggs while standing on the nest edge. All the birds responded positively to conspecific nests and a majority also responded to blackbird nests (Table 1). In two trials male wrens removed some nest material from the offered Long-billed Marsh Wren nests and used it immediately for building their own nests.

RESPONSE TO EGGS

Nine (7 males, 2 females) of 13 marsh wrens that responded positively to nests also pecked the offered eggs (15 trials) in one or more trials. Short-billed Marsh Wrens pecked all eggs regardless of their size or color (Table 2). Wrens broke all small eggs (Zebra Finch and Long-billed Marsh Wren) they pecked, but could not break the largest (teal) eggs. On only one occasion (of 11 cases when wrens broke the eggs) a male wren was seen to eat something from a broken Long-billed Marsh Wren egg. After breaking the eggs, wrens removed them by either dropping them from the nest edge (seven cases) or by carrying them away from the nests (four cases). On one occasion a male wren carried the broken egg approximately 30 m away from the offered nest.

RESPONSE TO NESTLINGS

Four of five male Short-billed Marsh Wrens that were offered Red-winged Blackbird nestlings approached the nest, landed on its top, and examined its contents. However, only one of these birds pecked weakly at the young before it left. When the nest was examined for any damage, the two young showed no noticeable wounds.

ADDITIONAL BEHAVIORAL OBSERVATIONS

Two Red-winged Blackbird females attacked male Short-billed Marsh Wrens that

TABLE 2. Summary of trials with four types of eggs offered in various nests to Short-billed Marsh Wrens.

Type of eggs	Color of eggs	Size of egg (mm)*	No. trials	Response		No. eggs offered in trials with positive results	No. eggs		Type of nest(s) used in trials
				Positive	Negative		Broken	Removed	
Zebra Finch	White	13.8 × 10.6	5	3	2	6	6	6	Red-winged Blackbird
Long-billed Marsh Wren	Dark brown	15.8 × 12.5	20	8	12	10	10	10	Both blackbirds and both wrens
Red-winged Blackbird	Light blue, spotted	25.5 × 18.6	5	1	4	2	—	—	Red-winged Blackbird
Cinnamon Teal	Olive brown	47.6 × 33.2	5	3	2	3	0	0	Red-winged Blackbird
Total			35	15	20	21	16	16	

* Dimensions of one measured egg of each species are given.

were singing on the top of vegetation. The two wrens immediately stopped singing and hid low in the vegetation. Male Short-billed Marsh Wrens stopped singing and became very cautious after they were approached by male Red-winged Blackbirds (five cases), a male Yellow-headed Blackbird (one case), and a Savannah Sparrow (one case). Male wrens, however, did not respond to numerous swallows that foraged around them. This indicates that, like Long-billed Marsh Wrens (Picman, unpubl. data), Short-billed Marsh Wrens respond specifically to birds that are aggressive towards them. During one trial a female Red-winged Blackbird landed on the Short-billed Marsh Wren nest, examined it, and pecked at its top.

DISCUSSION

During our experiments, Short-billed Marsh Wrens attacked four different types of nests and eggs. This suggests that these wrens may have a significant impact on nesting success of other, small, sympatrically nesting birds. In addition, the finding that these wrens attacked conspecific nests suggests that intraspecific nest destruction may be an important cause of nest loss in this species. Also, the wrens pecked eggs of Zebra Finches (conspecific eggs were not available), which are very similar in color and size to their own eggs. The eggs of both species are pure white, and Short-billed Marsh Wren eggs are only slightly larger (16.0 × 12.0 mm; Bent 1948) than those of Zebra Finches (Table 2).

Almost one-half of the male Short-billed Marsh Wrens pecked eggs during one or more trials. We cannot use these data to evaluate rates of nest destruction or the differences in responses to nests or eggs of different species because sample sizes were small and because the study was conducted late in the season when many birds had already finished breeding.

Both sexes of Short-billed Marsh Wrens pecked eggs during our trials. The fact that only two females pecked eggs does not indicate that females are less prone to attack nests than males. Female wrens were not given an equal opportunity to destroy eggs, since we offered nests with eggs specifically to males in their courtship centers.

Short-billed Marsh Wrens destroy nests much as Long-billed Marsh Wrens do (Picman 1977a, b). Individuals of both sexes of the latter species also attack various nests and eggs, including those of conspecifics, and remove the broken eggs and nest material from the attacked nests. Long-billed Marsh Wrens also kill and remove small nestlings (Picman 1977a, b). Our data suggest that the relationships between Short-billed Marsh Wrens and other sympatric marsh-nesting passerines are similar to those between Long-billed Marsh Wrens and blackbirds (e.g. Verner 1975).

Why do Short-billed Marsh Wrens destroy eggs? Although eggs could provide an important energy resource, in only one of our 16 observations of egg-destruction did a wren eat something from the broken egg. It seems more likely that, through nest destruction, Short-billed Marsh Wrens may reduce interference competition with other species as well as conspecifics. This hypothesis requires further testing.

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RECENT PUBLICATIONS

The Common Loon/Proceedings of the Second North American Conference on Common Loon Research and Management.—Edited by Scott A. Sutcliffe. 1979. National Audubon Society. 162 p. Paper cover. $6.50. Source: Loon Preservation Committee, Main St., Meredith, NH 03253. Concerns over the decline of the Common Loon in North America have brought about several responses in recent years. Presented here are the Proceedings of a conference held at Syracuse University in January 1979, sponsored by that university, the U.S. Fish and Wildlife Service, and the National Audubon Society. Seventeen papers treat the biology of the species, state surveys, the role of state and federal agencies, and management. In conclusion, Richard L. Plunkett presents the major elements of a five-year comprehensive plan of research and management for the Great Lakes and Northeastern U.S. populations of loons. This volume will interest those who study, manage and/or enjoy these birds. Its findings, proposals, and most of all, collaboration of many individuals and agencies, give hope for their restoration.

Transactions of the Forty-third Federal Provincial Wildlife Conference.—1979. Canadian Wildlife Service. 252 p. Paper cover. This is the complete record of the Conference. Reports from several Canadian and U.S. government agencies and private organizations are followed by papers from panels on wildlife habitat, land use ethics, funding wildlife habitat programs, and various other documents. The volume will be of value to the conferees and others who are concerned about the preservation of wildlife habitat, especially in Canada.