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*Wilson Bull.*, 99(4), 1987, pp. 706–707

**Vocalizations of female Red-winged Blackbirds inhibit sexual harassment.**—Breeding female Red-winged Blackbirds (*Agelaius phoeniceus*) are frequently vocal in the vicinity of their nests, where they typically utter chatter-like vocalizations when arriving and departing as well as while flying through their mates' territories. Beletsky and Orians (1985) identify these vocalizations as "Type 1" songs, thought to be used by females primarily for intrapair communication (Beletsky 1983). They suggest that the function of these vocalizations, when given around nests, is to identify females and their breeding statuses to their mates. One suggested benefit of frequent vocal identification in these situations is sexual noninterference by males, who regularly pursue, often for long distances, females that fly into their territories. If resident females were pursued in this manner, their abilities to build nests, incubate, and feed nestlings could be impaired. Beletsky and Orians (1985) support this suggestion with data showing that female Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*), which also usually vocalize when leaving and approaching their nests, are chased by their mates significantly more often if they depart silently than if they vocalize when leaving. Here we present similar data for Red-winged Blackbirds.

The breeding biology of Red-winged Blackbirds is described in detail by Orians and Christman (1968) and Orians (1980). Our observations were made during May 1986 at a marsh in the Columbia National Wildlife Refuge, Grant County, Washington. The marsh contained 12 territorial male Red-winged Blackbirds and more than 30 breeding females. All males and most females were color banded for individual identification. We observed female movements and male behavior from a 6-m high cliff overlooking the marsh. For each arrival at and departure from a nest, we recorded whether the female vocalized and whether she was chased by her mate. All females monitored during this study, and previously (Beletsky and Orians 1985), vocalized near their nests.

We observed 47 departures and 44 arrivals of females at their nests. More than 10 different females were observed. For all arrivals, females were returning from foraging off the territories of their mates. None of the departing females that vocalized was chased (0/37), whereas 40% (4/10) of females departing silently were chased. Three percent (1/33) of females that vocalized while arriving were chased, whereas 36% (4/11) of those arriving silently were

chased. Females departing or arriving silently were therefore chased significantly more often than those that vocalized ( $\chi^2 = 11.45$ , 1-tailed test,  $P < 0.001$  and  $\chi^2 = 6.09$ ,  $P < 0.02$ , respectively).

Our results suggest that these vocalizations decrease the probability that a female is chased and possibly diverted from nest-tending duties. Many females that were chased vocalized at some point during the chase, but because chases were so rapid and sometimes obscured by vegetation, we could not tell if males recognized the females when they vocalized and stopped chasing them. After being chased, females usually returned quickly to areas near their nests.

Given the large number of breeding females with which a territorial male interacts (up to a dozen on his own territory plus dozens of others on adjacent areas), selection for mechanisms that enable males to discriminate between those females potentially responsive to courtship and copulation and those females already engaged in nesting is likely. Males also should benefit by not chasing females it is not to their advantage to chase. Type 1 songs may also have the longer-term effect of promoting pairbonds during those nesting stages when direct contact between mates is infrequent, e.g., during incubation (Beletsky and Orians 1985).

Because in the majority of instances all females leaving and arriving at their nests vocalize (Beletsky and Orians 1985, pers. obs.), the observation that 20–25% of movements around nests are performed in silence may be revealing. Although females apparently vocalize in these situations regardless of the presence of their mates (Beletsky and Orians 1985), patterns and contexts of silent departures have not been studied. Silent flights that regularly elicit chasing when detected by mates or other males may provide females in relatively advanced nesting phases means of affecting male behavior. For example, earlier-nesting females may have interests in delaying breeding of later-arriving females in order to reduce competition in foraging or to monopolize male parental investment (Yasukawa and Searcy 1981, 1982). By mimicking strangers by flying silently, nesting females might elicit chasing, thus distracting their mates' attentions from other females.

We thank G. Orians for reviewing a draft of this note and the journal's referees for their constructive comments. This study was supported by NSF grant BNS 8405486 to G. Orians and National Geographic Society grant 3030-85 to L. Beletsky.

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