

## A COMPOSITE TREADLE/BAL-CHATRI TRAP FOR LOGGERHEAD SHRIKES

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In the past 2 decades, some populations of loggerhead shrikes (*Lanius ludovicianus*) have undergone a precipitous decline and currently are diminishing in numbers at about 5% per year (Graber et al. 1973, Morrison 1981, Bys-trak 1983, Hands et al. 1989). This decline has resulted in much research on the species throughout its range (Lohrer 1974, Mills 1979, Kridelbaugh 1982, Luukkonen 1987, Brooks 1988). Several workers have discussed efficient trapping methods for this species (Clark 1967, Lohrer 1974, Kridelbaugh 1982). Clark (1967) suggested a way to modify bal-chattris for trapping shrikes, and Kridelbaugh (1982) found "treadle" traps were more efficient than bal-chatri traps. However, no comparative study of the 2 methods has been done. We report an experiment in which perched shrikes were offered a simultaneous choice between the 2 trap types and a new and effective composite treadle/bal-chatri trap for capturing shrikes.

### METHODS

The study was conducted during June-August and December 1990 and June-July 1991 at the MacArthur Agro-ecology Research Center, Archbold Biological Station, Lake Placid, Florida. This 4,120-ha cattle ranch consists primarily of improved pasture, with scattered cabbage palm (*Sabal palmetto*) hammocks, native wetlands, and live oak (*Quercus virginianus*) uplands.

We made 1 bal-chatri (Clark 1967) and 1 treadle trap (Kridelbaugh 1982). To ensure that prey was easily seen by shrikes, all trapping attempts were conducted on a dirt road instead of in adjacent pastures with uneven-height grasses. Similar-size white laboratory mice (*Mus musculus*) were used in both traps throughout the experiment. Upon sighting a shrike from a slowly moving vehicle, traps were placed about 13 m apart and equidistant from the perched individual. The

experiment was done on free-ranging shrikes that were individually marked with colored leg bands after their capture. Only unbanded individuals caught during their first attempt at traps were included in the analysis.

### RESULTS AND DISCUSSION

The 2 trap types were set simultaneously 74 times; on 43 of these occasions, a shrike was caught. No trapped birds were injured during this study. Shrikes approached the treadle trap first (60.8%) more often than the bal-chatri (39.2%), but the difference was not significant ( $\chi^2 = 3.26$ , 1 df,  $P > 0.05$ ). However, significantly more shrikes were caught by the bal-chatri than the treadle trap ( $\chi^2 = 36.4$ , 1 df,  $P < 0.05$ ; Table 1). Of the 42 shrikes that approached the treadle trap first, 37 soon thereafter approached the bal-chatri; the other 5 flew away. Of these 37 shrikes, 18 were caught at the first attempt and 6 in the second attempt. The other 9 shrikes caught on the bal-chatri were those that tried it initially.

We conclude that when given a choice between 2 similar prey items, shrikes attempted to catch prey that was more readily seen through the wide-spaced bars of the treadle trap. Upon encountering difficulty in reaching prey, and aware of alternative prey in the vicinity, a shrike gave up and flew to the alternate prey. Perhaps more individuals could have been trapped by the treadle trap had that been the only choice. Lohrer (1974) and Kridelbaugh (1982) had greater success (73%) with the treadle trap, but they did not state the amount of time required to trap each bird. The shrikes we tested spent little time search-



Fig. 1. A composite treadle/bal-chatri trap used by the authors for capturing loggerhead shrikes at the MacArthur Agro-ecology Research Center, Archbold Biological Station, Florida, June–August and December 1990 and June–July 1991.

ing for the entrance to the treadle trap. This apparent difference in shrike behavior may be the reason our results differ from the studies mentioned above.

After obtaining these results, we modified the treadle trap by adding a “skirt” (Clark 1967). We added 3-kg-test monofilament line nooses to the roof and skirt of the treadle trap (Fig. 1). With this modified treadle trap, we attempted to catch 32 unbanded shrikes and caught 23 (72% success). Of these 23, 14 were caught immediately in the nooses on the roof of the trap, 6 shrikes entangled their feet on the skirt, and the other 3 entered the treadle trap.

A modular approach to trap construction is portable and can easily be replaced when damaged. For our combination treadle/bal-chatri trap, nooses should be tied on a piece of wire mesh that can be stored separately from the trap to protect them from damage. When the trap is set, the noose-laden wire mesh can be attached with soft copper wire, spring-steel binder clips (available from office supply merchandisers), or similar materials.

Instructions for trap construction (Clark 1967, Kridelbaugh 1982) specified 0.6-cm ( $\frac{1}{4}$ -inch) hardware cloth for the bal-chatri and 2.5- $\times$  1.3-cm (1- $\times$  1 $\frac{1}{2}$ -inch) welded wire for the

Table 1. Relative effectiveness (no. [%]) of bal-chatri, treadle, and composite traps for capturing loggerhead shrikes at the MacArthur Agro-ecology Research Center, Archbold Biological Station, Florida, June–August and December 1990 and June–July 1991.

	Trap type		
	Treadle	Bal-chatri	Composite
Caught at first attempt	3 (7)	27 (93)	22 (96)
Not caught at first attempt	42 (93)	2 (7)	1 (4)

treadle trap. Because our results suggest the better visibility of bait in a welded-wire trap as a factor influencing trap choice by shrikes, we recommend using welded wire for trap construction instead of hardware cloth. Also, welded wire is stiffer than hardware cloth and better withstands the rigors of fieldwork. If mice are used as bait in a welded-wire trap, they should be in a 1.3-cm ( $\frac{1}{2}$ -inch) hardware cloth baitcage because they might escape through the 2.5- $\times$  1.3-cm (1- $\times$   $\frac{1}{2}$ -inch) welded wire (Lohrer 1974).

The new trap combines the best characteristics of both the treadle and bal-chatri. In the field, shrikes apparently see mice in treadle traps as accessible prey but are hampered by the bars and have difficulty locating the entrance. We believe that our modified trap gives the appearance of ease of access to prey, as does the treadle trap, but trapping is enhanced by the nooses, resulting in trapping success similar to that of bal-chatri. We also believe that by combining characteristics of the 2 trap types, our composite trap will result in improved trapping success for loggerhead shrikes.

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