A new trap for Long-billed Marsh Wrens

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Long-billed Marsh Wrens, *Cistothorus palustris* (Troglodytidae), are small North American passerines that breed in high densities in marshes (Bent 1948). Several features of marsh wren ecology make this species an interesting subject to study.

First, adult marsh wrens of both sexes and recently-fledged young attack nests with eggs and even nestlings of other sympatric birds as well as conspecifics (Picman 1977a, 1977b). Second, marsh wrens are frequently polygynous (e.g. Verner 1964). Conducting a detailed study of marsh wren ecology, however, requires an observer to be able to identify individual birds within a study population. This has been achieved by capturing male marsh wrens in a mist net that is placed in a swath trampled within their territories, and color-banding the captured birds (Verner and Engelsen 1970). This trapping technique has two disadvantages: first, it requires destruction of a large amount of vegetation in a wren territory; second, it is efficient for capturing males only. The second technique used by Verner (1965) is to capture marsh wrens of either sex in string-pull traps that are attached to the front of brood nests. This technique is faster, more efficient, does not require destruction of a large amount of vegetation, but it can be used only for capturing breeding marsh wrens (males could be trapped in this way only during the nestling period when they were feeding young).

In 1976 I began studying the evolution of polygyny in the Long-billed Marsh Wren. Because my study required the recognition of individual birds within the study population, I designed a new trapping technique that exploits the nest-destroying habit of marsh wrens. Inasmuch as marsh wrens indiscriminately attack various types of nests and eggs, it should be possible to capture them in a trap baited with a nest and eggs. Because nest destruction by marsh wrens is an important nest mortality factor in Red-winged Blackbirds (*Agelaius phoeniceus*), with which marsh wrens are usually sympatric (Picman et al, unpublished data), I used redwing nests and eggs as bait.

The trap consists of a cage (28 x 22 x 8 cm) to which a redwing nest and a hoop-netting trap are attached (Fig. 1a). The cage consists of a floor and sides and is made of wire-mesh (1.2 x 1.2 cm). The hoop-netting trap is attached to the top of the cage. Two hoops of the trap are made of a hardened stainless steel wire (piano wire, diam. 2 mm). One hoop is attached to the cage, the other is left free. When the trigger is released, springs — wound from a hardened stainless steel wire (piano wire, diam. 0.8 mm) — force the free hoop to flip over on the top of the cage. A metal lock (Fig. 1a,b) secures the hoop and prevents the captured bird from lifting the free hoop and escaping. The netting attached to both hoops has a mesh approximately 1 x 1 cm (light netting made of thin nylon makes the trap more efficient). When the trap is set, the netting is held close to the hoops by three netting guides (made from piano wire, diam. 0.5 mm) that are attached to one side of the cage (in two corners and close to the hoop retainer; Fig 1b). These netting guides reduce chances of the net being held back and the trap malfunctioning.

The trigger parts (Fig. 1b) are made of a hardened stainless steel wire (piano wire, diam. 1.0 mm). A redwing nest is attached to the floor of the cage and a slit is cut in its side. Through this slit the trigger is introduced (Fig. 1b). The end of the trigger has two loops to which two redwing eggs are glued (Fig. 1b). These eggs are then covered with several layers of a transparent glue so that the wrens cannot break them. When a marsh wren pecks the redwing eggs, it lowers the trigger and sets off the trap. Because marsh wrens are very small (about 11 g), the trigger must be very sensitive. The sensitivity of the trigger may be altered easily by slightly bending the end of the wire retaining the free hoop (Fig. 1b). To camouflage the trap, I painted all metal parts of the trap olive brown, and

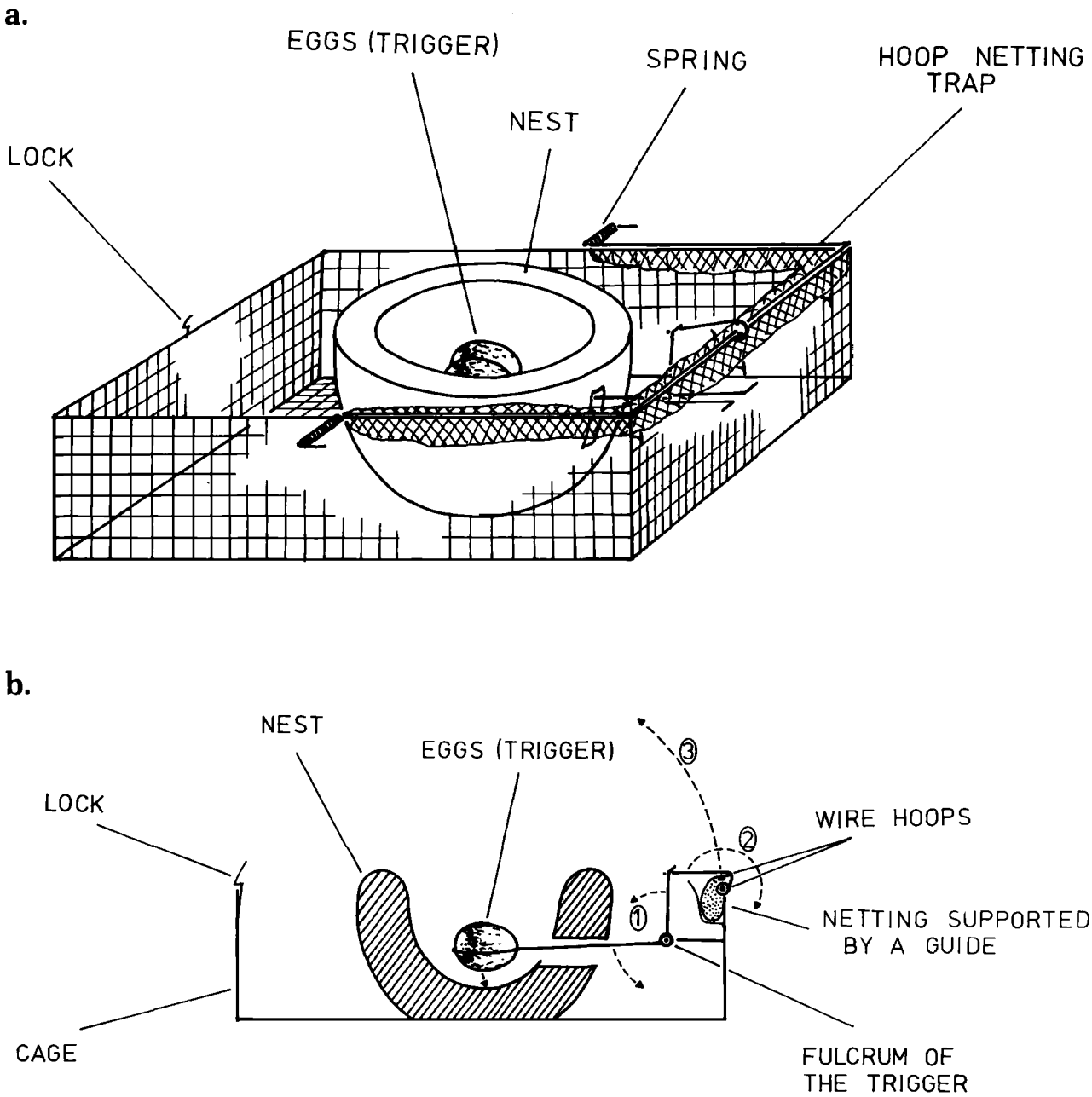

Figure 1. The major components of the trap (a), and details of the trigger mechanism (b). The dashed arrows indicate movement of individual parts of the trigger mechanism (the sequence of events is described by numbers 1—3).

laid pieces of cattail and bulrushes on the bottom of the cage (around the nest). This vegetation, however, must not interfere with any moving parts of the trap.

I set the trap on cattail or bulrush, on a little platform made by breaking off the top of the vegetation. To capture the territorial male marsh wren, I set the trap in a courtship site of the male (near his favorite singing perch or courtship nest); to capture a breeding female, I set the trap within 1 m of her breeding nest. Fledglings tend to stay in small groups and may be captured by setting the trap anywhere where they occur. The best time for trapping marsh wrens is early morning (before 1000) and late afternoon (after 1700), on calm, sunny days. The trapping is more efficient if several traps are set simultaneously in several marsh wren territories (using 4 traps, I captured as many as 20 marsh wrens during one day). Also, setting 2 traps in a single territory increases the chances of capturing both male and female marsh wrens.

I used this trap during the 1976-1979 seasons, when I captured and color-banded more than 200 territorial male marsh wrens. A small proportion of males (5%) that I did not capture may either have escaped from the faulty traps (e.g. the vegetation prevented the free hoop from locking down, or the trigger was too sensitive so that the trap was set off too early by a wren landing on a cage) or did not come to peck the eggs. Marsh wrens that cannot be captured in this trap may sometimes be captured using a similar trap with a marsh wren nest and eggs (Picman 1977b). In addition, I captured 93 females and 36 fledgling marsh wrens. The fact that I captured fewer females than males is a consequence of my setting the traps in courtship sites of males. Fledgling marsh wrens may be captured late in a breeding season (in July and August).

To conclude, I recommend this trapping technique because it is fast, efficient, simple, causes little damage to the vegetation, and can be used for trapping both male and female marsh wrens. In addition, this technique may be used to investigate the rates of nest destruction within a population of marsh wrens. This technique probably could be modified for capturing other birds that exhibit the egg-pecking behaviour.

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