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# An Effective Trap for the House Wren

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## ABSTRACT

During the breeding season, House Wrens (*Troglodytes aedon*) search for nests of other birds. When they find a nest that is momentarily unguarded, they enter it and peck holes in the eggs inside. In this article, I describe a trap that takes advantage of this behavior. The trap consists of a nest box containing a grass nest with one egg. The egg is connected by levers to a spring that closes a door over the entrance. The nest box is placed in a House Wren's territory. When a wren enters the box and starts pecking the egg, the pressure exerted by the pecking releases the spring, which closes the door, trapping the wren inside. I tested the effectiveness of the trap on unmated males. The trap captured 33 (94%) of 35 tested males; 70% of the birds were caught within 30 minutes. These results indicate that the trap can capture a high proportion of birds within a short period of time.

## INTRODUCTION

The House Wren is a small passerine bird that can be found along edges and clearings of deciduous forests (Bent 1948). House Wrens breed in cavities; but because they cannot excavate their own holes, they are dependent on the availability of natural crevices and cavities excavated by other birds. During the breeding season, House Wrens can be captured by one of two methods. First, breeding birds can be mist-netted as they enter or leave their nesting cavities. Second, territorial males can be lured into mist nets with the playback of a male's song.

In my studies of House Wren breeding biology, I have successfully used a new method which is described below. The method makes use of the House Wren's egg-destroying behavior. House Wrens are notorious for destroying eggs of other birds (Kendeigh 1941, Bent 1948). Both males and females engage in this behavior and destroy eggs of other House Wrens, other cavity-nesting species, and even eggs of species building open-top nests (Belles-Isles and Picman 1986). When a wren finds a nest that is momentarily unguarded, it

enters the nest and pecks holes in the eggs. If small young are present, they may be pecked as well (Bent 1948). Broken eggs are either left in the nest or carried out and dropped to the ground. The whole attack, from arrival on the nest to departure, may last only 14 to 50 seconds (Pribil and Picman 1992). The function of the behavior is little known: because House Wrens cannot excavate their own cavities, it is believed that they break eggs of other hole-nesting birds in order to drive them away and thereby acquire a vacant cavity for their own use (Pribil and Picman 1991, Spooner et al. 1996).

The tendency of House Wrens to enter cavities of other birds can be used to attract them into an artificial cavity, such as a nest box, and capture them there. I have constructed a nest box for this purpose and equipped it with a trapping mechanism. The nest box contains a grass nest with one egg. The egg is connected by levers to a spring that closes a door over the entrance. When a wren enters the box and starts pecking the egg, the pecking releases the spring, which closes the door over the entrance, trapping the bird inside.

This article has two objectives: first, I describe the design and operation of the trap; and second, I present the results of field trials during which the efficiency of the trap in capturing wrens is tested.

## METHODS

*Description of the trap* —The trap consists of a nest box, trapping mechanism, grass nest and an egg. The nest box is made of 1.25 cm thick plywood. The interior dimensions of the floor are 10 x 12 cm; the walls are 20 cm high. A circular entrance of 3.2 cm in diameter is centered in the upper half of the front wall. The box is attached to 1.6 m tall wooden stake. Attaching the box to a stakes allows one to place the trap in areas without trees or other suitable support for the box.

The trapping mechanism is illustrated in Figure 1. It consists of four parts: a door, string, wooden lever, and metal lever.

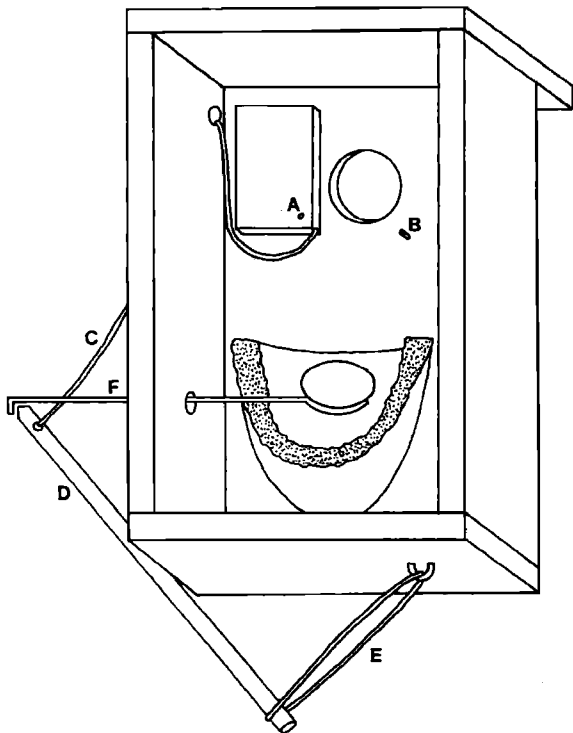


Fig. 1. The trapping box viewed from the rear, with the back wall removed. A portion of the nest is removed to illustrate the position of the metal lever and the placement of the egg. Legend: A, pin around which the wooden door revolves; B, nail protruding from the wall which keeps the door aligned over the entrance; C, string; D, wooden lever; E, rubber band; F, metal lever.

The door is made of a thin plate of wood, with a hole drilled in one corner. A nail (labelled A in Fig. 1), driven through the hole, attaches the door to the front wall and serves as a hinge around which the door revolves. Another nail (B) protrudes from the front wall below the entrance. The nail stops the door when properly aligned over the entrance. The door can be placed on the outside of the box, or on the inside. I placed it inside because it made the entrance less suspicious to an approaching bird.

The string (C) connects the door with the wooden lever. The string is tied to a small nail on one edge of the door, runs through an aperture in the wall, and is tied to a small hole near the top of the wooden lever. The aperture has smooth walls and round edges to reduce friction with the string.

The wooden lever (D) revolves around a hinge which is attached to the outside edge of the floor (Fig. 2). The upper end of the lever is tied to the string. The lower end is pulled by a rubber band (E), which is attached to a hook at the bottom of the box.

The metal lever (F) revolves around a pivot inside the wall. The outside edge of the lever is bent into a hook; the hook grasps the upper end of the wooden lever when the trap is set. The inside end of the lever is bent into a loop. The loop provides a base for the egg.

I usually made my own grass nest by pressing several layers of dry grass into a plastic bowl the size of a Red-winged Blackbird (*Agelaius phoeniceus*) nest. The layers were glued together with odorless transparent glue. However, any old nest that fits in the box is suitable. White eggs are preferable to speckled eggs, because they contrast better against the dark background and wrens are more likely to see them.

The trap is set as follows: an egg is glued to the loop of the metal lever. The top end of the wooden lever is pushed towards the box and clasped there by the hook of the metal lever. The door is opened. The trapping box is then placed at a suitable location within a House Wren territory. When a wren enters the box and starts pecking the egg, the pressure exerted by the pecking pushes the egg down and simultaneously raises the hook of the metal lever. The hook releases the wooden lever. The wooden lever, being pulled by the rubber band, pulls the string. The string closes the door.

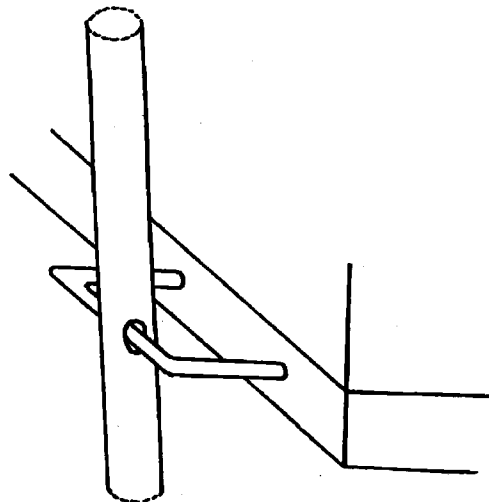


Fig. 2. A detail of the attachment of the wooden lever to the bottom edge of the box. The lever revolves around a metal hinge.

It is important that the rubber band continues to pull on the string even when the door is closed. The continuous pull keeps the door secured and prevents the bird from accidentally opening it. In a prototype version of the trap, the door revolved around a pin located above the entrance. When the door was released, it swung down over the entrance, where it remained by virtue of its own weight. I found that some wrens managed to push the door aside and escape from the box.

To remove a captured bird, I detached the rubber band from the wooden lever, and then opened the door with a finger. While using the finger to block the entrance, I placed a basket net (netting stitched to a wire frame) over it and removed the finger. If a net was unavailable, I used a clear plastic bag. When the bird saw the light through the entrance, it usually flew out into the net. Sometimes, the bird was hesitant to leave because it was hiding beneath the grass nest and could not see the light. In such cases, I gently scratched the floor of the box to induce it to leave.

*Field tests of the trap* — To establish the effectiveness of the trap in capturing House Wrens, I placed it in territories of several males. Each male defended a nesting box on his territory and advertised the box with song to prospecting females. All males were unmated (i.e. no females had settled on their territories). On some territories, I observed the trap from a concealed location 40 m or more away and measured the time between the introduction of the trap and the capture of the male.

## RESULTS

I tested the trap on territories of 35 unmated males. Of these, 33 (94%) males were captured. For 20 males, I measured the time necessary to capture the wren: 14 (70%) males were caught within 30 minutes (in fact, often in 5 to 10 minutes) of introducing the trap, 4 (20%) males were caught within 30 to 60 minutes, and 2 (10%) males required more than 60 minutes to be captured.

## DISCUSSION

The results of the field trials indicate that the trapping box was very effective in capturing

unmated males, both in terms of the number of birds caught and in terms of the time required to capture them. During the field trials and during the subsequent use of the trap, I have noticed that the effectiveness of the trap is influenced by two factors: (1) location of the trap within a territory; and (2) time of the breeding season. The best location for the box appears to be in open space, several meters away from shrubs and trees. The trapping box should be clearly visible from the House Wren nest. The distance between the trapping box and the nest is important. If the trapping box is placed too close (i.e. 1 to 5 m from the nest), the wrens may avoid it. The avoidance is presumably due to the fact that wrens are inhibited from pecking eggs near their nest, presumably to prevent the destruction of their own eggs (Pribil and Picman 1992). If the trapping box is placed too far (i.e. more than 40 m from the nest or outside of the territory), the wrens may not find it or they may not be motivated to visit it. The optimum distance between the trap and the House Wren nest seems to be 15 to 25 m.

Because the trapping box makes use of the egg-pecking behavior, its effectiveness depends on the intensity of the behavior. The intensity of the behavior changes during the breeding season. It is the highest in early spring, before pair formation. At this time, all males and all females peck eggs in experimental nests (Belles-Isles and Picman 1986). After pair formation, the intensity of the behavior declines. During the incubation and nestling periods, 8% of females and 26-35% of males continue to peck eggs in experimental nests (Pribil and Picman 1992). The changes in the intensity of the behavior presumably reflect the changing benefits that wrens derive from pecking eggs. Early in the season, wrens need to acquire nesting cavities for breeding and, consequently, all wrens engage in the behavior. Once a cavity is acquired, females cease to peck eggs. Males are, however, polygynous (i.e. one male breeds with several females) and need to acquire new cavities for additional females. This seasonal pattern of egg-pecking intensity indicates that the trap would be most effective in capturing wrens early in the breeding season.

The trapping box has three advantages over a mist net. First, it can be used during inclement

weather (wind, drizzle), when mist-netting would be difficult. Second, the captured bird is protected inside the box from predators and the sun. Third, the box can easily be positioned anywhere in a territory without the need to clear vegetation. Because of these advantages and because of its efficiency, I highly recommend the trap to anyone interested in capturing House Wrens.

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