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# A nest trap for recurvirostrids and other ground-nesting birds

Tex A. Sordahl



## Introduction

Several methods have been used to trap shorebirds at the nest (Dorio et al. 1978, Gartshore 1978, Kagarise 1978 and references therein, Graul 1979, Mills and Ryder 1979). However, the larger species in particular remain difficult to capture.

In this paper I describe a nest trap that I used to capture 19 (13 males, 6 females) American Avocets (*Recurvirostra americana*) and 7 (4 males, 3 females) Black-necked Stilts (*Himantopus mexicanus*) at an inland salt marsh in Cache County, Utah, during 1977 and 1978. Previous investigators either have not attempted to mark avocets and stilts individually (Hamilton 1975) or have placed dye-soaked sponges in nests to mark adults (Gibson 1971, for avocets). The method described here should be effective for many ground-nesting species. A similar technique has been used successfully on American Golden Plovers (*Pluvialis dominica*) (S.T. Emlen pers. comm.).

## Trap design and placement

The trap consists of a 2 ft (0.6 m) x 11 ft (3.3 m) length of 1-in (2.5-cm) mesh chicken wire. Four sharpened stakes about 0.6 m long are attached with nails or staples at about 8 cm and 90 cm from each end of the length of wire. The sharp ends of the stakes extend 7 to 16 cm beyond the lower edge of the wire. The stakes can be pushed or driven into the ground. It is helpful to have two traps — one with longer stakes for elevated nests surrounded by shallow water or nests in dense grass, and one with shorter stakes for firmer ground. For species nesting on very hard substrates, it may be necessary to design a weighted base for the trap.

The trap is set up around the nest in a cardioid shape with an opening of about 20 cm. Thus the door funnels toward the eggs, making it difficult for birds to exit. If the entrance is wider than about two bird-widths, the birds find it too easily. A piece of large-mesh mist net is draped over the top to complete the trap (Figure 1). The net should be taut; it will hold nicely if it is nearly long enough to

reach the ground on all sides, but it can be fastened to the wire or to vegetation at one or two points to prevent flapping in strong winds. A flapping net seems to frighten the birds as they explore the perimeter of the trap.

Avocets and stilts approach and inspect the trap almost immediately after the trapper enters a blind or automobile, but they are cautious about entering. It is important that birds be able to see their eggs from the door, as this visual input apparently helps stimulate them to enter. One female stilt that would not enter the trap when grass blocked visibility of the eggs from the door entered within two min after I had rotated the trap slightly.

## Operating the trap

Once a bird has entered the trap and begun incubating, the trapper rushes from his place of concealment, sprints to the nest, and grabs the bird. It is critical that the door of the trap be on the side facing the observer's blind so that the bird moves to the back of the trap when frightened by the oncoming trapper. Most birds eventually fly up into the net and, because the net is not fastened securely, become moderately entangled.

American Avocets and Black-necked Stilts are sufficiently wary that the trapper must be concealed at a distance of 100-400 m from the nest, or the bird may refuse to enter the trap. Experience is the best guide for the trapper's distance, but the trap must be "closed" quickly to prevent: (1) the bird from locating the door or escaping from the net, (2) possible damage to the eggs, and (3) unnecessary trauma to the bird. Continuous surveillance of the trap is required, and one person should be available to operate each trap if more than one is used concurrently.

I found it best to wait 5-10 min after the bird settles on the nest before running toward the trap. This allows the bird to calm down and the eggs to approach a normal incubation temperature. The bird must be watched carefully, however; if it tries



Figure 1. Cardioid nest trap in place at a Black-necked Stilt nest.  
(Arrow points to nest.)

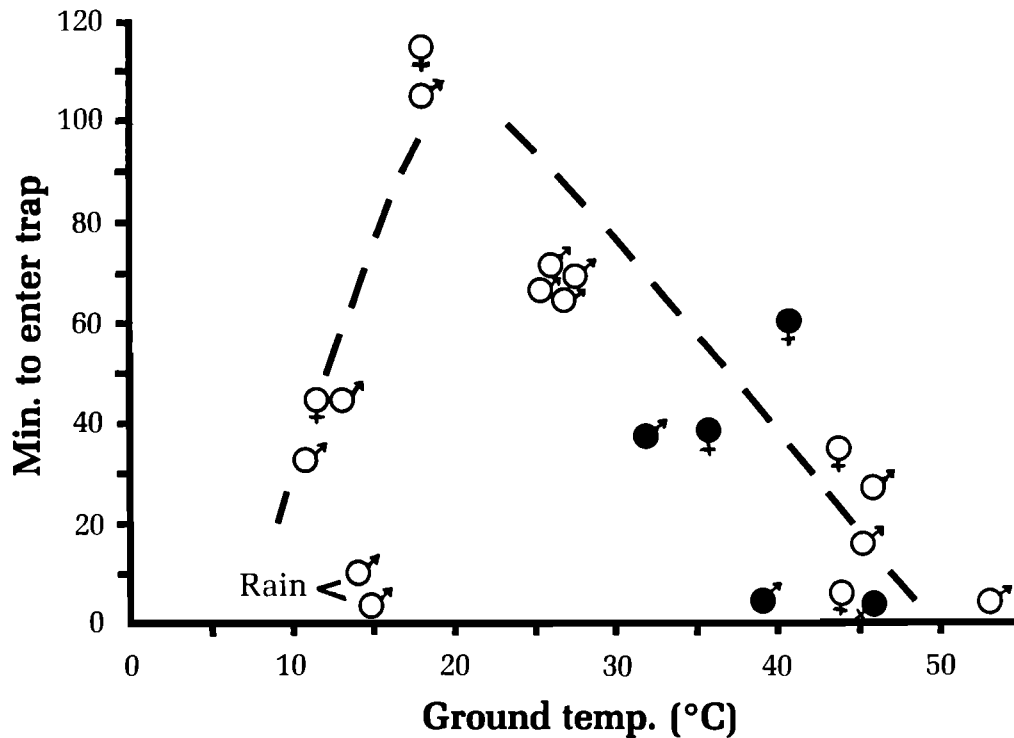


Figure 2. Relationship between weather and trapping time. Ground surface temperature is plotted against the time elapsed from trapper's concealment in a blind until birds entered the nest trap. Open circles represent avocets, and solid circles represent stilts. The curve, fitted by eye, is left open at the top to emphasize that trapping is unlikely to be successful in moderate weather.

to escape, the capture attempt should be made immediately. While there is some individual variation and females are generally more trap-wary than males, an avocet or stilt usually can be captured in 20-40 min if nest location and weather conditions are favorable.

After a capture the trap should be removed immediately. This permits the bird's mate to attend the nest if the weather is severe and prevents predators from using the trap as a nest-finding clue. One observation suggested that gulls can use the trap to locate nests. Cattle are curious and will rub against a trap, eventually destroying both the trap and the nest if not chased away. Most avocets and stilts did not seem highly traumatized by trapping and banding, and nest abandonment was not a major problem, although it may have occurred in one or two instances. The fact that 36% (13/36) of trapped nests and only 27% (17/63) of untrapped nests were successful suggests that trapping did not reduce nest success. No birds were injured by trapping, and few escaped from the trap.

The principal advantages of this trap are that it: (1) is highly portable when rolled up, (2) can be set up by one person in about one min, and (3) does not require a pull cord, which is impractical over long distances, for triggering. Because the bird is not captured while actually sitting on its nest, desertion may be less likely, inasmuch as it does not strongly associate trapping with the nest (see also Graul 1979). The main disadvantages of the cardioid trap are: (1) that it requires fast and often strenuous running by the trapper, and (2) there is a chance that the bird may escape even after it has entered the trap (this risk is minimal, however, when the trap is operated properly).

### Weather and trapping efficiency

The most efficient times for trapping are when birds are most attentive to their nests. Most shorebirds exhibit increased attentiveness during cool, rainy, or hot weather (Maclean 1967, Norton 1972, Kondratiev 1977). American Avocets and Black-necked Stilts are particularly attentive on very warm days, when they sometimes exhibit belly-soaking behavior (pers. obs., G.S. Grant pers. comm.; see review by Maclean 1975). In my study, birds entered the trap much more readily during adverse weather (Figure 2); the hot middle portion of the day was especially effective for trapping.

Avocets and stilts apparently entered the trap before temperature became lethal for their eggs. However, under extreme weather conditions, the

critical time for the eggs might be so short that trapping and other forms of disturbance should be curtailed. The relationship between nest attentiveness and weather can also be used to great advantage in locating nests, for incubating adults are far more conspicuous than nests. ❖

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- Dept. of Biology UMC 53, and The Ecology Center, Utah State University, Logan, UT 84322.*