

# An Improved Drop Net for Capturing Wildlife

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*Abstract:* An inexpensive, portable, simplistic, and safe (no blasting caps) drop net was developed and tested on ground-dwelling birds and 1 deer. The net is held up by tension and is triggered by rapid release of the tension. The net was effective on the species tested. Its simple design may lend itself for adaptation for use to capture many species of wildlife.

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A wide variety of traps and trapping techniques has been used to capture ground-dwelling birds (Day et al. 1980). Many modifications of walk-in traps have been used with varying success. These traps are economical to construct and maintain, but they capture birds non-selectively and often inefficiently. Moreover, many birds are too wary to readily enter an enclosed trap (Day et al. 1980). Mist nets also are non-selective and can only be used when certain weather conditions permit. Cannon and rocket nets allow greater selectivity in capturing animals, and can generally be hidden well enough to avoid alarming even the wariest of animals; however, these traps are extremely noisy and may modify animal behavior if fired repeatedly over an area (Silvy and Robel 1968, Watt 1969). The potential for injuring animals also is greater with cannon and rocket nets due to the tremendous force with which these nets are propelled. In addition, rocket nets may present a fire hazard if used in dry areas.

Drop nets of different types have been designed to avoid many of the above problems. Baldwin (1947) described a metal-framed drop net, suspended from trees, for capturing wild turkeys (*Meleagris gallopavo*). However, when this net fell, the

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metal frame had a potential for injuring birds. Jacobs (1958) and Ellis (1961) discussed use of drop nets suspended from steel posts with pull-pins for capturing greater prairie chickens (*Tympanuchus cupido*) and wild turkeys, respectively. However, pull-pins often stuck, resulting in escape of the intended targets (Hamerstrom 1980). Glazener et al. (1964) captured Rio Grande wild turkeys in Texas with a net elevated and stretched using a winch mechanism on corner posts. Mechanisms similar to chain tighteners used on logging trucks were attached on each corner, which, along with a pin and sliding collar on the center pole, served as triggers. These multiple triggers were attached to a pull rope leading to a blind. Ramsey (1968) described a similar net for trapping deer which used blasting caps placed in the ropes suspending the corners and center of the net.

Although the nets of Glazener et al. (1964) and Ramsey (1968) are effective in capturing animals, they are relatively expensive to construct and difficult to set. Because of the need for versatility and/or the unpredictability of trap locations during our studies of Attwater's prairie chicken (*T. c. attwateri*) and king rail (*Rallus elegans*), we needed a net that was inexpensive to construct and convenient to set by 1 person. This paper describes a modified drop net which was used for capturing Attwater's prairie chickens and king rails on the Attwater Prairie Chicken National Wildlife Refuge, Colorado County, Texas. The net also was used once to capture a Key deer (*Odocoileus virginianus clavium*) on the National Key Deer Refuge, Monroe County, Florida.

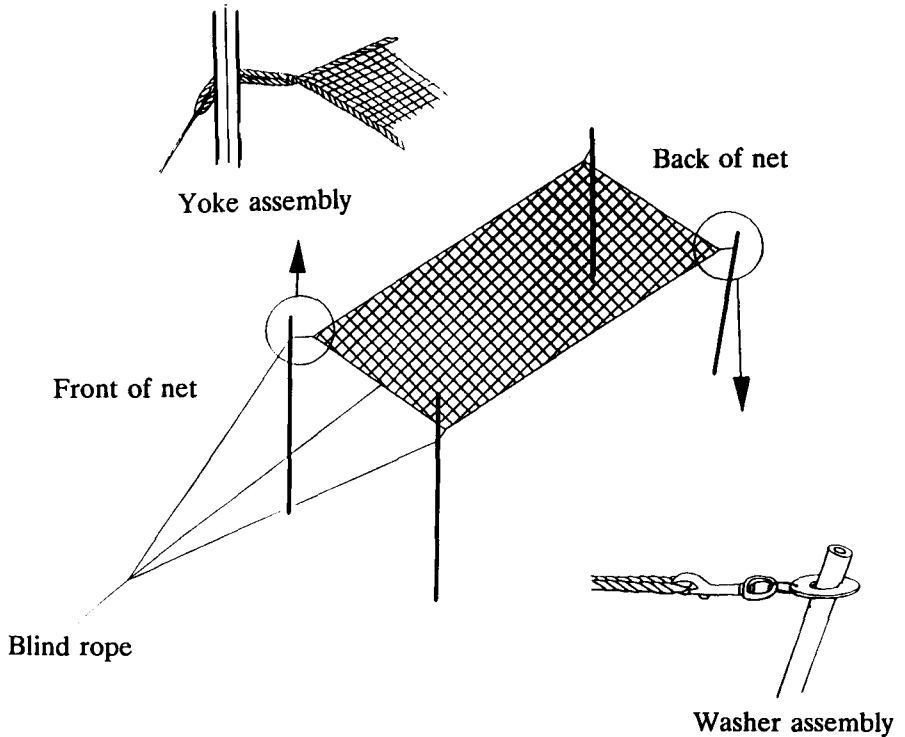
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## Methods

### Construction

Nets used to trap prairie chickens and rails were constructed using No. 208 multifilament nylon gill netting (Memphis Net and Twine Co., Memphis, Tenn.). A single panel approximately  $15 \times 2.4$  m with 7.6-cm stretch mesh was used for capturing rails. For prairie chickens, 2 panels, each  $15 \times 3.7$  m with 10.2-cm stretch mesh, were threaded together to produce a net  $15 \times 7.4$  m. Braided or twisted 1.3-cm polypropylene rope was threaded around the perimeter of the nets and tied so that 15.2-cm loops were left at each corner. Each corner loop, at the back of the net, was attached by a 1.6-cm swivel snap to a slide made of a 2.5-cm inside diameter washer (Fig. 1). The net used on Key deer measured  $4.3 \times 7.4$  m and consisted of 0.23-cm cord, 17.8-cm mesh, of No. 504 knotless nylon (Nichols Net and Twine Co., East St. Louis, Ill.). Perimeter rope, loops, swivels, and washers were identical to those described for the bird nets.

Twine was attached to each of the 2 net corners nearest a blind (front of net) to form a yoke which was then tied to a single piece of twine leading to the blind (hereafter referred to as the blind rope; Fig. 1). An additional piece of twine was



**Figure 1.** The drop net and enlargements of the yoke assembly at the front of the net and the swivel snap-washer assembly for attaching net to back poles.

tied from the apex of the yoke to the center front of the net to reduce slack that might remain in the net after it was set. Back poles for bird nets were constructed of 2.2-cm outside diameter steel conduit, 1.5 m in length. Grooves 6 mm deep were cut 2.5 cm from the top of these poles to hold the slide washers in place when tension was applied to the net. Steel posts 1.8 m in length served as front poles. For the deer net, the length of steel conduit was 3 m and 10-cm diameter trees, located on each side of a deer trail, served as front poles.

#### Field Operation

Vegetation and debris were removed from the trap area to prevent net entanglement. Because prairie chickens display on short-grass areas, king rails feed in drainage ditches that have little bottom vegetation, and Key deer use well-traveled trails, removal of vegetation and debris did not affect their use of cleared trap sites. Nets were stretched on the ground and the front poles set just inside each front corner so that the net would fall freely from these poles. The net will not fall freely if it is held up by side-to-side tension from the front poles. The front corner loops were then temporarily placed over the front poles (around trees for Key deer) to hold the

front of the net in place. Next, the swivel snap-washer assemblies were attached to the back corner loops. The back poles were placed in the washers and the net stretched tightly. The back poles were then driven in at 60° angles to the ground with the top of the poles pointing away from the center of the net. In setting the net for Key deer, the back poles had to be locked in rocks and the top of each pole tied to a tree on each side of the trail as there was no soil in which to drive the poles. Placing the back poles at an angle allowed more tension to be placed on the net as the washers were slid up the poles. Thus, when the blind rope was cut and the net tension was released, the washers slide down the pole with force. Next, the front corner loops were placed on the outside of each front pole. As much tension as possible was then applied with the twine or light rope leading to the blind.

The washers on the back corners were then slid up the poles and locked in place in grooves cut near the pole tops. The front corners of the net were then raised. Slack in the net was removed by drawing tightly on the center piece of twine of the front yoke. Particularly for the narrower rail nets, an anchored line was necessary on each side of the net to prevent the sides from bowing in toward the center. A rope with a lead core also was attached to the perimeter of the rail nets to reduce possibility for escape under water. Nets were triggered when an observer, hidden in a blind cut or otherwise rapidly released the tension on the blind rope. This allowed the washers to jump from their grooves and slide down the back poles, while the front of the net fell free.

## Results

During the 1984–85 field seasons, 43 Attwater's prairie chickens and 15 king rails were captured using this technique. Three prairie chickens were the maximum taken during a single drop and on only 1 occasion did the net fail to capture a prairie chicken when dropped. After a lead-core line was added to the rail nets to prevent the exterior lines floating which allowed rails to escape by diving under water and swimming under the lines, all drops were successful in capturing rails. In summer 1989, a single net set for less than a half day was used to capture a mature Key deer male on an outlying island. No other sets were made with the deer net; however, this demonstrated the net's effectiveness for use in capturing deer.

## Discussion

Most male prairie chickens readily displayed under the net while a few were somewhat reluctant to go under the net. All males readily displayed around the net, often attempting to perch on the poles or net ropes. The hesitancy of some males to go under the net was an advantage in capturing females, as females often moved directly toward the net, apparently to escape male harassment. Davis et al. (1980) were unsuccessful in capturing lesser prairie chickens (*T. pallidicinctus*) with a drop net, indicating the birds were wary of the net. King rails exhibited no reluctance at

going under the net. Placing a drop net over feeding territories was the only effective technique we found to catch king rails in extensive rice-marsh habitat.

Net height (about 1 m for bird nets and 1.8 m for deer nets) could be increased by extending pole lengths, although the back poles and the washers would have to be of greater diameter to add stability. Added stability also may be necessary if poles are set in loose soil. This could be accomplished using stabilizing wires at the top of the poles.

Although the netting we used caused no serious problems, we would recommend slightly heavier netting to reduce feather loss, abrasions, and excessive entanglement by birds. Premature triggering of the net caused by high wind or prairie chickens perching on the net was eliminated by deepening the grooves in the back poles. Occasionally heavy dew or rain made the nets sag, especially the larger prairie chicken nets. However, birds still went under the nets even when the net center almost touched the ground.

The major advantages of this net were: (1) simplicity and safety (no blasting caps used), (2) low cost, and (3) ease of handling. We constructed the larger prairie chicken nets for <\$50 each in materials, the king rail nets for <\$25, and the Key deer net for <\$75 (1989 prices). In addition to these costs, routine operational expenditures included replacement of the twine leading to the blind as it became worn with use. Under normal circumstances, setting could be accomplished within 15 minutes. If several locations are used for trapping, extra poles could be left in place further reducing time to set.

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