Northwest Science Notes

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A Small Drop-Net versus Clover Traps for Capturing Mule Deer in Southeastern British Columbia

Abstract

Clover traps are commonly used for capturing wild deer, particularly when the absence of open flat terrain precludes other methods. Clover traps can be inefficient because of non-target captures, escapes, and a reluctance of deer to enter the trap. To increase capture efficiency, we devised a small inexpensive drop-net for capturing targeted mule deer in steep forested terrain. We suggest that drop-netting may be more efficient, primarily by eliminating non-target captures. We recommend considering the use of drop-nets anywhere Clover trapping is used or considered.

Introduction

Several techniques have been developed for capturing wild deer. Among the more common techniques are Clover traps (Clover 1954, McCullough 1975, Haulton et al. 2001), box traps (Haulton et al. 2001), rocket nets (Hawkins et al. 1968), darting (Kilpatrick et al. 1997), drive-netting (Sullivan et al. 1991), and drop-netting (Ramsey 1968, Conner et al. 1987). Many of these techniques require high deer densities in flat open terrain. Clover traps are commonly used because they are portable, relatively inexpensive to build, and can be used in closed forest conditions. However, clover traps require animals to enter an enclosed trap, be entirely within the trap, and subsequently trip a baited door-release mechanism. Deer are often reluctant to enter the relatively enclosed space of the trap, trap malfunctions are common, and non-target species are often captured. These failed target-captures increase project expense by increasing the amount of time and resources spent capturing target deer. Clover traps have also been associated with high rates of capture mortality and myopathy (Haulton et al. 2001). To increase capture efficiency, we developed a small drop-net apparatus for capturing wild mule deer (*Odocoileus hemionus*) in the Selkirk Mountains of southeastern British Columbia. Our objectives were to provide details of this apparatus and offer comparisons and recommendations relative to Clover traps for capturing wild mule deer in mountainous, forested terrain.

Study Area

The trap site was located in the Selkirk Mountains near the mouth of Lemon Creek, ~23 km northwest of Nelson, British Columbia. Terrain in the area was generally steep and broken with slope gradients commonly > 45° and elevations ranging from 548 m to 2,405 m. The surrounding

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landscape was dominated by coniferous forest interspersed with logging roads and harvest blocks. Trap and drop-net sites were located on a 1-km section of unplowed logging road on a steep (35°) forested slope within a traditional mule deer winter range area. Snow was persistent on the ground from December to March at trap sites. White-tailed deer (*Odocoileus virginianus*) are sympatric to mule deer in this area and were present during trapping.

Methods

Clover Traps

Trapping occurred between 22 January and 10 March in 1998–2002. Adult mule deer were our target individuals. We always preceded trapping efforts by pre-baiting alfalfa 5–7 days before setting traps, to attract deer to sites and provide a degree of habituation. During this pre-baiting phase, modified clover traps (McCullough 1975) were in place, but not set for capture. Clover traps can be constructed relatively inexpensively from locally available hardware and netting suppliers.

Following pre-baiting, we set one trap at each of three pre-baiting sites. We set traps in mornings and left them unattended until the following morning. Traps were baited and monitored by a single person. If a trap contained a captured deer, additional handlers were called to the site to assist with handling. Captured target deer were physically restrained by handlers, blindfolded, fitted with a radiocollar equipped with a mortality sensor, then released immediately after handling was complete. Non-target deer (white-tailed deer and fawns) were released immediately without handling. Radiocollared deer where relocated within 1–3 days following handling and thereafter 1-3 times per month for ~ 1 yr, and thus permitted us to monitor capture myopathy rates.

Drop-Net

In January 2002, we constructed and used a small drop-net apparatus (Figure 1) in conjunction with our Clover trapping efforts. One person constructed the apparatus in 4 hr using basic tools and materials bought at a local hardware store, and a 6.1-m x 6.1-m piece of netting purchased from a netting supply outlet. Total cost of materials to construct the drop-net was similar to the cost of one clover trap.

We pre-baited the capture area in the fashion described for Clover trapping and chose a single site with suitable rigging trees 50 m from a Clover trap location. We positioned the drop-net over the center of a wide (10 m) section of unplowed logging road. We suspended the net 1 m and 2 m above compacted snow using ropes attached to trees on either side of the road (Figure 1). One person took ~2 hr to install the drop-net, which was in place during pre-baiting.

Following the pre-baiting period, a small amount of alfalfa was placed, as bait, on the snow directly beneath the center of the drop-net. We attached a 60-m cord to a release mechanism (Figure 1) and extended the cord to a location out of visual range. A concealed spotter signaled when target deer were beneath the drop-net. We then released the drop-net by pulling on the 60-m cord, which activated the release mechanism. Captured deer were handled similar to that described for clover traps.

Results

During four annual trapping periods, we captured 26 deer in Clover traps: 15 target and 11 non-target (2 fawns, 9 white-tailed deer). All Clover trap captures were of single deer. At least three deer escaped from traps. Trapping effort per target deer with Clover traps was calculated as 18.3 hr in the first year, 27.8 hr in the second year, 46.3 hr in the third year, and 21.5 hr in the fourth year (based on time spent by one person monitoring traps and handling deer, plus additional handler time). Drop-netting was only used in the final year and we captured three mule deer by this means. Of three capture attempts with the drop-net, the first attempt resulted in a deer escaping before being engulfed by the drop-net. Upon resetting the net 1 m from the ground, the second attempt resulted in two captured target deer, which we chemically immobilized for handling. The third attempt resulted in one captured target deer, which we physically restrained for handling. Effort for drop-netting was calculated as 9.0 hr/target-deer. We did not observe any cases of capture mortality among any captured deer or any cases of capture myopathy among radiocollared deer.

Discussion

In previously reported cases of drop-netting, high-density white-tailed deer were captured in flat open

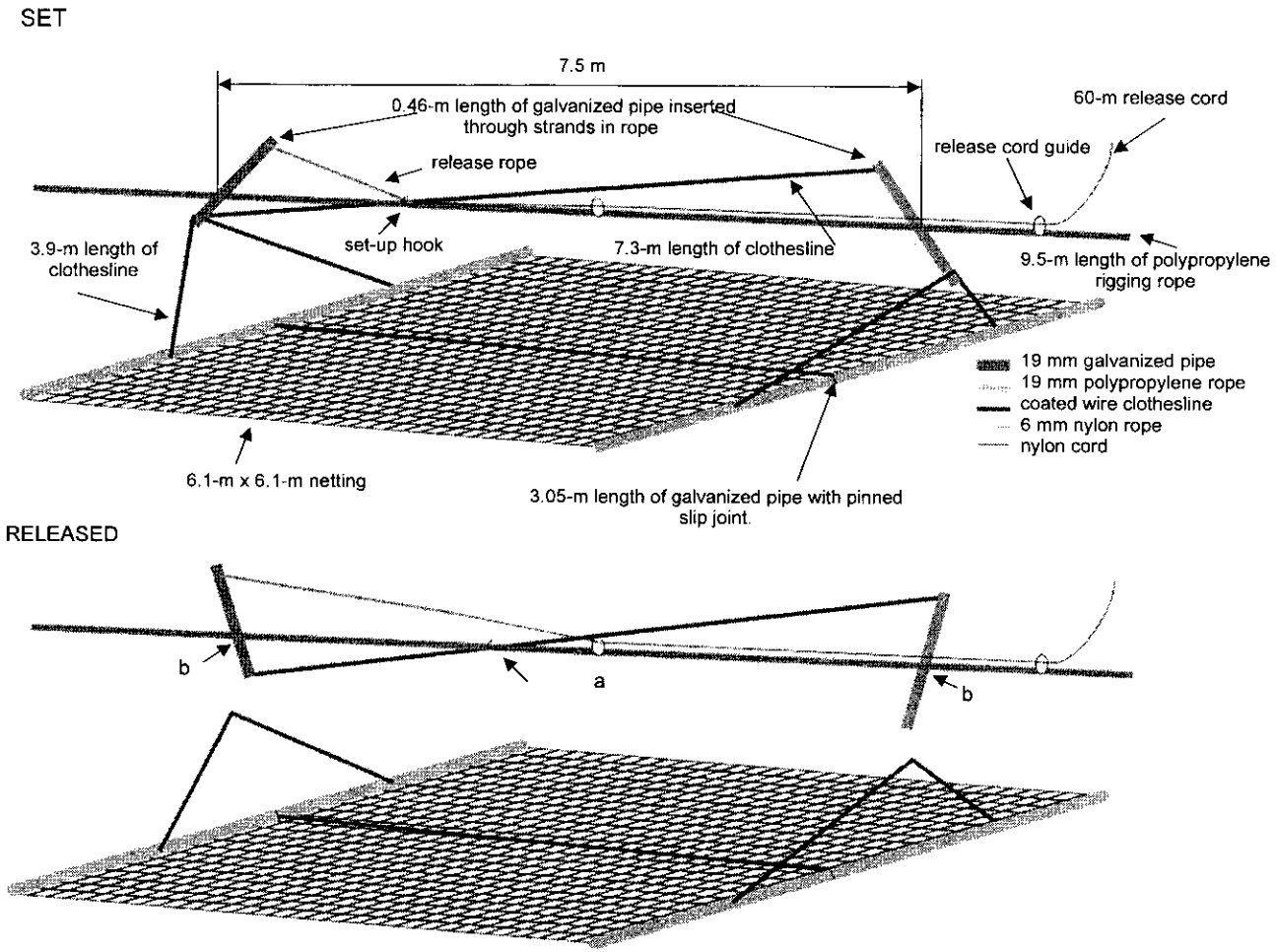

Figure 1. A small drop-net apparatus for capturing deer. The net was suspended 1.0 m from the ground between 2 large trees on either side of an unplowed logging road in steep forested terrain. A 60-m release cord was used to trigger the net. The release rope was hooked on the set-up hook to prevent release of the net during set-up. Pulling the release cord separated the release rope from the hook at a. Releasing the release cord forced the 2 pieces of 0.46-m galvanized pipe to pivot at b and allowed the net to fall.

conditions using a 17.8-m^2 net (Ramsey 1968) and 21.3-m^2 net (Conner et al. 1987). Such large nets with elaborate set-ups requiring flat open ground were not an option to us in this heavily forested and steep environment, somewhat typical of mule deer wintering habitat in the Pacific Northwest (Shackleton 1999). We found the 6.1 m^2 net was an optimal size for rigging between trees and suspension over an unplowed logging road, the only source of open flat ground.

While fewer deer can be captured simultaneously using a smaller net, multiple captures have resulted in high rates of capture mortality and myopathy (Conner et al. 1987). Beringer et al. (1996) found survival of rocket-netted deer was most influenced by the number of deer captured together and that deer captured in groups of two or more were at proportionately greater risk than those captured alone. Thus, we believe the control of a smaller net in facilitating the capture and selection of individual deer is beneficial. This was especially important because both white-tailed deer and mule deer were present. Indeed, almost half of our total captures using clover traps were non-target individuals resulting in wasted effort and resources.

If Clover traps are being considered or used to capture deer, a fundamental requirement is that deer must be attracted to bait in sufficient densities to make the effort worthwhile. If this is the case, we suggest that drop-netting may be a more efficient option. Regrettably, we cannot yet report extensive use of this small drop-net, and our effort calculations cannot reliably be compared. However, we believe in comparison to Clover trapping, drop-netting presents a potential increase in capture efficiency, primarily due to eliminating non-target captures and escapes, and a greater willingness of deer to walk underneath a drop-net compared to their willingness to enter a Clover trap. As well, the low cost and ease of use of this drop-net provides a low investment alternative. We recommend this small and relatively simple drop-net method be considered anywhere Clover trapping is used or considered.

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