FIELD EVALUATION OF THREE TYPES OF COYOTE TRAPS

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ABSTRACT: A field study to evaluate the performance of 3 types of coyote traps (No. 3 Soft-Catch® coil-spring, No. 3 NM long-spring, No. 4 Newhouse long-spring) was conducted in south Texas in January and February 1991. Tests were designed to determine capture efficiency, extent of injury and effectiveness in excluding nontarget species. Results showed a capture rate of 100% for the 3 NM and No. 4 Newhouse, and 95% for the Soft-Catch. Soft-Catch traps caused the least injury to captured coyotes. All trap types were equipped with pan tension devices and were successful in excluding most small nontarget species.

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INTRODUCTION

Increasing public awareness of both traps and trapping, along with concern among wildlife professionals and trap manufacturers about the continuing need for highly effective and selective traps, have motivated considerable research effort to modify and improve animal traps. Researchers at the USDA's Denver Wildlife Research Center (DWRC) have been involved in research on traps and snares for many years.

Coyote trapping research has concentrated on two major areas: (1) determining the efficiency and selectivity of different trap types and modifications used for capturing coyotes, and (2) reducing animal injuries associated with trapping.

Much of the DWRC's recent research in this area has focused on testing the performance of Woodstream Corporation's No. 3 Soft-Catch[2] trap in comparison with other traps used in predation management programs. Results of the first field study conducted in 1984 and 1985 showed that the Victor No. 3 Soft-Catch padded trap and the Victor 3 NM trap fitted with similar rubber-jaw pads substantially reduced foot injuries to coyotes but were much less efficient in capturing and holding coyotes than the unpadded 3 NM traps (Linhart et al. 1986). Follow-up studies conducted in 1986 and 1987 again showed the Soft-Catch trap to be less effective in capturing coyotes than unpadded traps (Linhart et al. 1988). However, a fourth-generation model of the Soft-Catch trap that was re-engineered to increase closure speed became available in 1988. Field testing of this model, which incorporated specific trap setting procedures, showed increased performance which equaled that of unpadded models (Linhart et al. 1992).

Previous tests have compared the performance of the Soft-Catch trap with the unpadded No. 3 Victor coil-spring and the Victor 3 NM long-spring traps. However, no tests have been conducted to compare the capture efficiency of the No. 4 Newhouse with the No. 3 Soft-Catch. The Newhouse trap is widely used by Texas and Oklahoma Animal Damage Control (ADC) personnel and accounted for approximately 3,865 (22%) of the 17,732 coyotes taken by all ADC personnel in leghold traps in FY 90.

STUDY AREA AND METHODS

Three experienced coyote trappers participated in this test. G. Dasch and S. Blom had >25 and >15 years trapping experience, respectively, and both had participated in earlier field assessments of the Soft-Catch trap. The third trapper (J. Guthrie) was a federally supervised trapper stationed in west Texas with >10 years experience.

All trappers were provided with 12 traps of each type: (1) a standard, unpadded Victor 3 NM long-spring trap with offset malleable jaws on a 1-m kinkless chain (routinely used by the U.S. Department of Agriculture's (USDA) ADC program for coyotes in most western States); (2) a standard unpadded No. 4 Newhouse long-spring trap with offset malleable jaws and a 1-m kinkless chain (routinely used by ADC personnel in Texas and Oklahoma for trapping coyotes); and (3) the fourth-generation No. 3 Victor Soft-Catch with replaceable synthetic rubber-like jaw pads and a 15-cm center-mounted chain with attached coil-spring to reduce the forces exerted by captured animals trying to escape. All long-spring traps were equipped with Armistead style leaf spring pan tension devices; pan tension on the Soft-Catch traps was adjusted to 2-3 lbs with the built-in tension screw.

Traplines were established along unimproved ranch roads located in southern Webb County, Texas. Traps were set and checked daily from 16 January to 1 February 1991. Each of the 3 trap types was set at a site selected by the trapper based on his trapping experience and judgement. All traps were staked (46-61 cm stakes) or double staked in soft earth. Three types of lures (W-U lure, Carman's Canine Call and FAS) were used at trap locations and these were equally represented on each trapline.

The No. 4 Newhouse and 3 NM traps were set horizontally to the ground in the customary manner. Soft-Catch traps were set according to specific directions as suggested by Woodstream Corporation's trapping specialist, W. E. Askins. This procedure is described in detail by Linhart et al. (1992).

Trappers recorded the following data each day as traps were checked: trap type, presence of a coyote track over the trap pan, sprung trap, coyote caught but pulled out of the trap, and coyotes caught and held with a notation or code depicting the degree of visible foot injury (Table 1). Coyote legs were not examined for evidence of internal injuries; thus we did not utilize the standard scoring system of Olsen et al. (1986) and our injury observations are not directly comparable to other studies.

Capture rate was defined as the number of coyote cap-

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[2] Mention of commercial products for identification does not imply endorsement by the authors or the federal government.

Table 1. Categories used to describe visual leg injuries of coyotes trapped in padded and unpadded leghold traps.

Description of injury	Code
SLIGHT OR NO INJURY	
No visible injury.	S-1
Swollen foot.	S-2
A small (less than 0.5 cm) shallow puncture hole or cut through the skin and underlying tissue or fascia. If visible, no damage to tendon(s) or bone(s)	S-3
Cuts or skin abrasions larger than 0.5 cm, but not extending through the skin, underlying tissue or fascia.	S-4
MODERATE OR SEVERE INJURY	
A large (greater than 0.5 cm) deep cut through skin and underlying tissue or fascia. Tendon(s) and bone(s) exposed.	M-1
A series of 2 or more smaller (less than 0.5 cm) but deep cuts across the paw exposing tendon(s) or bone(s).	M-2
Cut tendons.	M-3
Cut bones.	M-4

tures per trap type divided by the number of potential captures. Potential captures occurred when coyotes sprung traps, were caught but pulled out, or were caught and held.

RESULTS AND DISCUSSION

Sixty-one coyotes were captured; one of these escaped from the trap (Table 2). Little difference was noted in the capture rates among the 3 trap types. The capture rates for the long-spring traps were the same (100%) or slightly higher than those reported in earlier studies (Linhart et al. 1986, 1988, 1992). However, the capture rate for the Soft-Catch trap was higher (95%) than reported in any of the previous studies. We attribute the improved performance of the Soft-Catch trap to the trappers closely following the trap setting procedures recommended by Woodstream Corporation.

We recorded the location of the trap jaws on the limbs of the 60 coyotes recovered during this study (20 for each of the trap types). In 52 of 60 instances, trap jaws were positioned above the foot pads. The remaining 8 coyotes were caught by ≥ 1 toe (5 for long-spring and 3 for Soft-Catch).

Trapping conditions during this test were judged to be generally favorable (moderate temperatures mostly above freezing, 14 of 17 days without rain and a high coyote density).

Soft-Catch traps caused the least visible injury to captured coyotes with 10 animals showing no visible injuries and 10 having only slight injury (swollen foot and small cuts or abrasions). The 3 NM long-spring caused the most evident foot injury with 80% of the animals categorized as having moderate to severe injuries. The No. 4 Newhouse was intermediate in terms of injury with 55% of the animals having slight or no visible injury and 45% having moderate to severe injury. These results were similar to those reported by Olsen et al. (1986) for padded and unpadded traps.

Table 2. Capture rates for coyotes in 3 types of foothold traps in southern Texas during January and February 1991.

Trap Type	Caught and held	Pulled out	Capture rate (%)
No. 3 Soft-Catch	20	1	95.0
No. 4 Newhouse	20	0	100.0
3 NM long-spring	20	0	100.0

The pan tension devices on all 3 trap types were successful in excluding most of the small nontarget species (rodents and rabbits) that stepped on trap pans. Only 2 nontarget animals were caught and held (1 striped skunk (*Mephitis mephitis*) in a No. 4 Newhouse and 1 cottontail rabbit (*Sylvalagus* spp.) in a Soft-Catch).

Our data confirm the results of an earlier study by Linhart et al. (1992) which demonstrated that the capture rate of Soft-Catch trap was comparable to other types of coyote traps used in the favorable trapping conditions of southern Texas. Further testing is needed in other geographic areas with different weather conditions and soil types before the Soft-Catch can be fully evaluated.

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