Feasibility of Using Portable Electric Fencing to Prevent Damage to Livestock and Apiaries by Bears and Other Predators

Prepared for:
ANIMAL DAMAGE MANAGEMENT BOARD

by
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Introduction

Damage by predators to livestock and property continues to be a serious problem for wildlife managers in Wyoming. Many techniques including the use of guard dogs (Green and Woodruff, 1989), barricade lights, sirens, rubber bullets, and other deterrent devices have been used in attempts to decrease damage caused by black bears, grizzly bears, coyotes, and other wildlife. Permanent electric

fencing has been very effective in reducing damage by bears and other predators (Madel 1996). However, fencing remote areas, such as sheep bedgrounds in Wyoming, would require a less traditional, more portable type of fence. The purpose of this project was to determine the feasibility and effectiveness of such a system.

Study Area and Methods

Initially, we tested the fence's ability to repel bears in areas where grizzlies historically visited. The first site was on the Diamond G Ranch in the Du Noir valley north of Dubios, WY, where high concentrations of bears during the Spring have been documented. We placed 3 mule deer carcasses at a remote site on the ranch and erected the fence around them. We installed two-150 foot sections of Electronet™ temporary fence. The fence was an 8 strand, 33 inch-high polywire fence supported by built-in fiberglass support posts every 12 feet. The bottom wire was neutral and then each wire from bottom to top alternated positive then negative. Each 150 foot section weighed 10 lbs. The fence was energized by an Intellishock™ 55B, 12 volt charger equipped with a 40 watt solar charger and a 40 amp. sealed lead acid deep cycle battery. The system was purchased from Premier Sheep Supplies, Ltd., 2031 300th Street, Washington, IA 52353. The second site was a dump site/boneyard on the Hoodoo Ranch in the South Fork of the Shoshone drainage, southwest of Cody, WY. We raked the dirt around the perimeter of the fences and frequent observations of the sites were conducted to determine bear activity and to monitor fence function.

We then tested the fence's capabilities of reducing grizzly bear depredations on the Tosi, Elk Ridge, Rock Creek, and Lime Creek sheep allotments in the Upper Green River area of the Bridger-Teton National Forest where sheep losses have increased steadily since 1996. We installed sections of the temporary fence around areas where sheep were bedded at night. We collected data on ease of set-up and disassembly, ability of herders to herd the sheep into the pens, effectiveness in deterring predators, and the durability of the system.

We also tested the system at apiaries in the South Fork of the Shoshone. Fences were placed around beehives at several locations where damage by grizzly bears had occurred historically.

Results

Ability of Fence to Deter Bears and Other Predators

The fence system was used at 6 sites between 1 May 2000 and 8 November 2000 for 118 nights. Sixteen grizzly bears and 2 coyotes were known to have visited and none succeeded in entering the fence perimeters. There may have been other animals that attempted to breach the fence that we were unable to detect, however, at no time did any bear appear to have penetrated the fence when it was functioning properly. Once the fence was reconnected improperly after livestock operators added carcasses to the Hoodoo site and bears were able to knock down the non-funtional fence and feed on the carcasses. After the fence was properly fixed, no bears were able to enter. There was no evidence of bear activity at the sheep bedground sites.

Ease of Set-up and Disassembly

Assembly and disassembly times varied depending on the number of sections necessary to fence each site. On the sheep allotment site, it took 2 people with 1 truck and 1 4-wheeled ATV 2 hours to erect 12 sections of fence. It took 1 hour to dismantle with the same tools and manpower. On average for the other sites, it took one person approximately 30 minutes to erect and 15 minutes to take down the fence (up to 4 150-foot sections). The only tools required were occasionally pliers and a knife (such as a Leatherman™ Tool) and a rubber mallet. Overall fence deployment was very easy and used minimal time and manpower, although at times the lightweight posts were extremely difficult to plant in rocky substrate.

Ability of Herders to Use Fence

It was difficult for us and the herder to get the sheep inside the pen each night. The fence was turned off until all of the sheep were inside. Meanwhile lambs were becoming tangled in the fence and ewes were biting at the strands, and at times sheep were able to escape over or beneath the fence prior to it being energized. However, once inside and the charger turned on the sheep appeared unaffected by the fence and did not attempt to get out.

Durability of the System

When properly constructed, the portable fence system consistently pulsed at 9 to 10 thousand volts. There was minimal fraying in the Electronet™ and some of the fiberglass tabs on the posts were broken during Summer 2000. Overall, the system handled rainy, windy, and snowy conditions well. Portions of the fence were pulled to the ground by bears on 2 occasions but still pulsed at 4 to 5 thousand volts even though they were partially grounded and continued to repel animals from entering.

ADMB Funds Allocation

Expenditure to date:	$2925.55 in materials (out of $3300.00 grant) Department manpower in conjunction with damage control field work.
Time line for remaining revenues:	Replace and/or repair any necessary materials (batteries, wires, posts) Winter 2000-2001.

Conclusions

The electric fence system is very effective in deterring bears and possibly other predators. Applications of the system are very diverse including preventing occasional damage that occurs in or around grain sheds, beehives, fruit orchards, and small livestock pastures, or pens in front-country situations. Applications are much more limited in remote areas such as domestic sheep bedgrounds. It would require substantial manpower to set up, maintain, and dismantle the system as frequently as necessary to utilize multiple bedgrounds throughout the season. Additionally, the solar panel may be difficult to transport via horseback, however, it would likely be effective in situations when a sheep band is currently experiencing substantial depredation on a regular basis and temporary protection was a priority. We have yet to determine the long-term durability of the system. Repeated use of the fences has already shown some fraying of the material, but so far it still appears to be functioning exceptionally well. Replacement costs every 3-4 years might be acceptable in relation to damage liability to agencies. Additionally, benefits to preserving wildlife may far outweigh those costs. The system has some limitations when utilized in uneven or rocky terrain. The fences usually pulse at about 9500 to 11000 Volts which appears adequate to deter most predators in most situations.

Synopsis

Since many predators are sympatric with livestock over much of Wyoming, and the distribution of those protected carnivores (i.e. wolves and grizzly bears) is expanding, the need for non-lethal methods of predator control is crucial. Livestock producers, environmental organizations, the public, and wildlife managers are determined to reduce damage caused by wildlife while at the same time, maintaining healthy and well distributed wildlife populations. Portable electric fencing has widespread application for non-lethal control. Portable electric fence systems could potentially be implemented to reduce damage to haystacks and small crop fields by wild ungulates. Monies used toward electric fencing projects would be an investment in the future of multiple land use and wildlife coexistence. The more tools that managers have at their disposal to promote coexistence, the less damage will be incurred and the more wildlife species will be tolerated.

Literature Cited

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