



PRIVATE LAND TECHNICAL ASSISTANCE

Technical Bulletin No. 5

Fall Edition September, 2013

In this issue:

- | | |
|---|--------------|
| A 'New' Kind of Technical Assistance: Cover Crops | Pages 3 - 5 |
| Living With Beavers: Solutions for Culverts and Dams | Pages 6 - 8 |
| Non-Lethal Tools for Protecting Trees from Beaver Damage | |
| ♦ An FWP Evaluation of Several Materials | Page 9 - 11 |
| Urban Big Game and Urban Game Birds | Page 12 - 13 |
| Human-Wildlife Interactions Abstract: | |
| ♦ <i>Deer-activated bioacoustic frightening device deters white-tailed deer</i> | Page 14 |
| Journal of Wildlife Management Abstract: | |
| ♦ <i>Effects of hunter access and habitat security on elk habitat selection in landscapes with a public and private land matrix</i> | Page 15 |



**Montana Fish,
Wildlife & Parks**

PRIVATE LAND TECHNICAL
ASSISTANCE CONTACT
INFORMATION:
Joe Weigand
Private Land Wildlife Specialist
joweigand@mt.gov / 444-3065

Coming Soon! Fish, Wildlife and Parks' newest collaborative wolf resource tool for landowners and livestock producers.



WOLVES ON THE LANDSCAPE

A Hands-on Resource Guide to Reduce Depredations

Acknowledgements

Authors: Nathan J Lance, Steve Primm, and Kristine Inman

Contributors: Joe Weigand, Brainerd Foundation, Big Hole Watershed, People and Carnivores, Montana Fish, Wildlife and Parks wolf specialists, Wildlife Conservation Society

Graphic Design: Luke Duran

Running livestock in wolf range is challenging. Profitability requires cost-effective risk management. While there is no silver bullet, there are some proven techniques for reducing risk of wolf-livestock conflict.

The goal of this brochure is to outline different tools that may suit your operation.

Your local fish and wildlife agency or certain organizations can offer additional help in evaluating and identifying options, and may offer cost sharing, materials, or labor to assist your efforts. Risk reduction may help keep ranching viable, which in turn protects open space and rangeland habitat important to local economies, wildlife and other conservation values.

Recommended Tools:

- ▶ Management Intensive Grazing (MIG)
- ▶ Livestock Guard Dogs
- ▶ Other Guard Animals
- ▶ Carcass Management
- ▶ Riders and Herders
- ▶ Fladry/Electrified Fladry
- ▶ Scare Devices
- ▶ Managing Livestock on High Risk Landscapes
- ▶ Herd Composition

Contact your local FWP Wolf Management Specialist for a free copy. **Kalispell:** Kent Laudon (751-4586), **Missoula:** Liz Bradley (542-5523), **Butte:** Nathan Lance (425-3355), **Livingston:** Abby Nelson (600-5150), **Bozeman:** Mike Ross (994-6371), **Great Falls:** Ty Smucker (454-5868),

PRIVATE LAND TECHNICAL ASSISTANCE



COVER CROPS

Introducing cover crops

Cover crops aren't new. As a matter of fact, farmers throughout the Midwest have planted cover crops since the 1930's Dust Bowl. Conservation minded farmers and agencies have been planting "secondary" un-harvested crops to hold soil in place, fix nitrogen, improve soil health and in some cases, help conserve soil moisture by cooling the soil.

Today, planting a well-planned cover crop can provide those same benefits and more.



- ◆ Plants that produce or scavenge nitrogen can reduce fertilizer costs.
- ◆ Some cover crops can suppress weeds by competition, shading, or allelopathy.
- ◆ Cover crops improve soil physical properties, increase soil organic matter, and increase soil biological activity.
- ◆ The rationale for use of cover crops is to cover the soil surface to protect against both water and wind erosion, thus conserving the soil resource base.
- ◆ Nutrient uptake protects surface and ground water quality; and thereby helps safeguard the environment and human health.
- ◆ Well planned cover crops can be harvested for hay, silage, or grazed providing increased income and incentive to plant them.

Cover crops can certainly help benefit a farmer's bottom-line, the pocket-book, but what about wildlife? Can wildlife benefit from cover crops?

Consider this:

- ◆ Cover crops often replace fallow in a crop rotation.
- ◆ Cover crops support continued microbial activity in the soil and invertebrates continue to thrive spring through fall.
- ◆ Cover crops can provide forage as well as security and nesting cover.
- ◆ Undisturbed cover crops can provide winter cover and forage for wildlife.
- ◆ Non-game and game species benefit.



PRIVATE LAND TECHNICAL ASSISTANCE - Continued

COVER CROPS

The Natural Resource Conservation Service and Montana Fish, Wildlife and Parks can provide technical assistance and recommendations to landowners who would like to know more about cover crops and their benefits.

Financial assistance to get started may be available through the NRCS Environmental Quality Incentive Program (EQIP) and/or the Wildlife Habitat Incentive Program (WHIP).

NRCS

Contact your local NRCS Field Office

Or

Contact the state NRCS office for more information:

10 East Babcock Street
Federal Building, Rm 443
Bozeman, MT 59715
406-587-6813



FWP

Contact:

Joe Weigand
joweigand@mt.gov
406-444-3065

Or

Contact your local FWP wildlife biologist



DID YOU KNOW:

- ◆ The "Dust Bowl" lasted from 1931 until the fall of 1939.
- ◆ In April of 1935, Congress declared soil erosion "a national menace" in an act establishing the Soil Conservation Service (SCS) in the Department of Agriculture.
- ◆ Experts estimated that 850,000,000 tons of topsoil had blown off the Southern Plains during the course of 1935 alone, and that if the drought continued, the total area affected would increase from 4,350,000 acres to 5,350,000 acres by spring 1936.
- ◆ The SCS developed extensive conservation programs that retained topsoil and prevented irreparable damage to the land. Farming techniques such as strip cropping, terracing, crop rotation, contour plowing, and cover crops were advocated. Farmers were paid to practice soil-conserving farming techniques.



"And then the dispossessed were drawn west- from Kansas, Oklahoma, Texas, New Mexico; from Nevada and Arkansas, families, tribes, dusted out, tracted out. Car-loads, caravans, homeless and hungry; twenty thousand and fifty thousand and a hundred thousand and two hundred thousand. They streamed over the mountains, hungry and restless - restless as ants, scurrying to find work to do - to lift, to push, to pull, to pick, to cut - anything, any burden to bear, for food. The kids are hungry. We got no place to live. Like ants scurrying for work, for food, and most of all for land."

John Steinbeck - *The Grapes of Wrath*, 1939



Living with Beavers: Solutions for Culverts and Dams



Beavers have far reaching and important benefits for biodiversity and the environment and beaver dams provide many direct and indirect benefits to humans. Flow devices offer the opportunity to resolve most human-beaver flooding conflicts in a non-lethal, cost-effective, long-term, environmentally friendly, and humane manner. Coexisting with beavers whenever possible is in everyone's best interest.



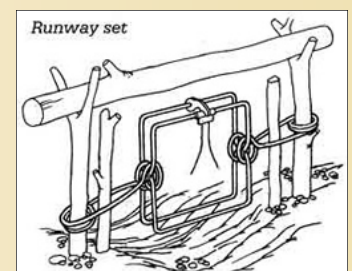
Dam Breaching

Dam breaching is a very short-term solution to flooding problems caused by beaver and is only recommended when flooding must be immediately addressed. Beavers usually rebuild dams quickly, sometimes enlarging them in the process or creating step dams throughout the watershed. Beavers are most active at night. Therefore, dams should be breached in the morning to allow water to flow all day. Dams should be breached gradually and only to the level necessary to reduce flooding. If the complete draining of a beaver pond is warranted, it is more successful during the dry summer months when there is less available water to resupply the ponds that are being drained. Ponds that are supplied by seasonal runoff can sometimes be drained during dry periods so as to discourage beaver and cause them to relocate.



Trapping

Trapping to remove all of the problematic beavers is usually necessary in areas where no beaver damming can be tolerated. Most often, trapping is only a short term solution as new beavers will re-colonize the habitat.

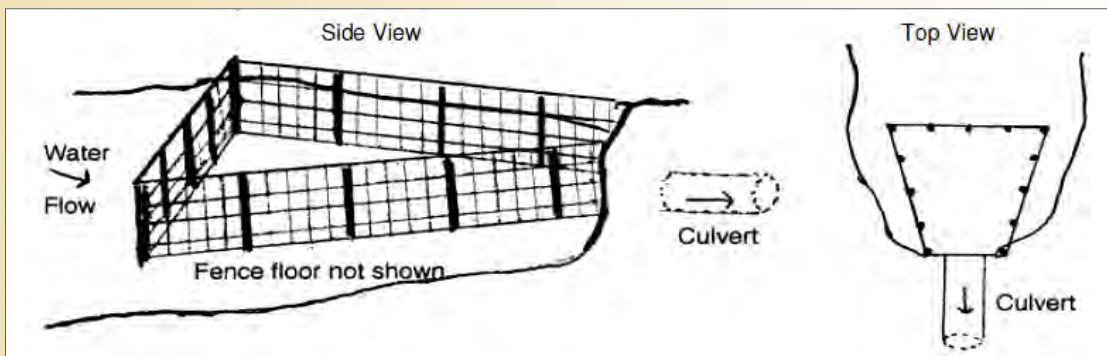


Solutions for Dams and Culverts - Continued

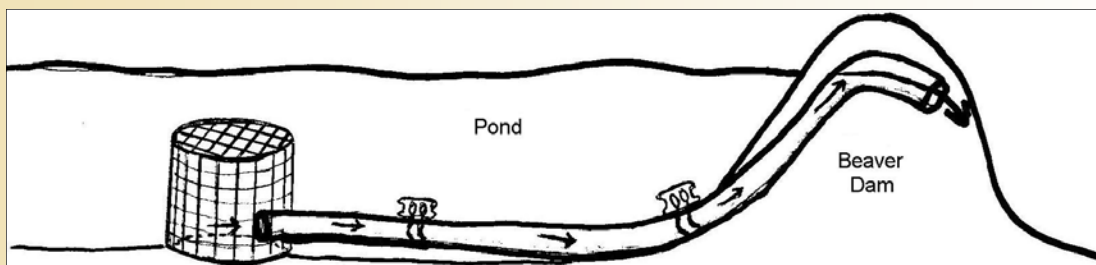
Flow Devices

A flow device is a system that either prevents or controls beaver damming activity to eliminate beaver-related flooding problems. It may be a specially designed fence system to protect a road culvert, and/or a pond leveler pipe system to control the water level in a beaver pond.

Flow devices offer year-round protection from property damage. They protect human health and safety, save time, save money, and function for many years. In addition, a flow device allows beavers to create and maintain ecologically valuable wetlands. They are proven to be long term solutions to beaver related conflicts that benefit both man and the environment. Most beaver problems can be solved with flow devices in a long-term, cost-effective manner.



Road culverts are very common damming sites resulting in flooded roads. To a beaver a roadbed with a culvert pipe looks like a dam with a hole in it. Properly designed culvert protective fences decrease stimulus for beaver damming and prevent beavers from blocking the road culvert.

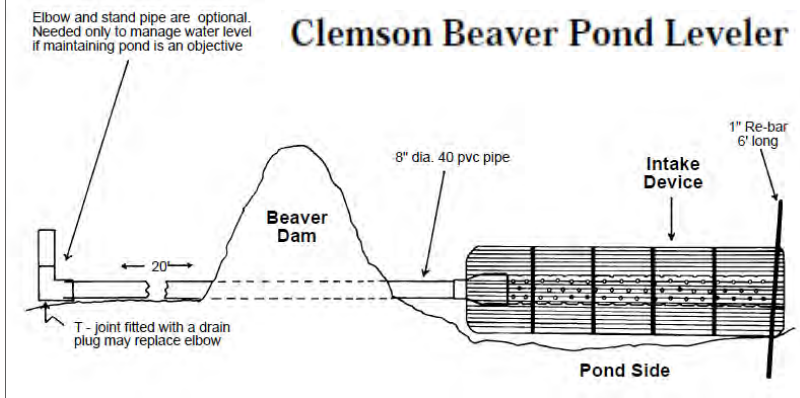


When beavers build free-standing dams but the water level threatens human interests, beaver dam pipes such as a flexible pond leveler can be very effective. Beavers are stimulated to build their dams by the sound or feel of running water. A well-designed pond leveler pipe prevents beavers from detecting the flow of water into the pipe so it remains unblocked. This creates a permanent leak in the beaver dam and controls the pond at a safe level.

Any manmade device exposed to the elements requires some maintenance. While many flow devices are designed to be very low maintenance, the little maintenance that is required is important.



Dam and Culvert Solutions - Continued



There are a number of commonly used devices that have proven effective at controlling water levels behind dams and keeping beavers from plugging culverts. Some of these devices have been designed by universities, such as the Clemson Beaver Pond Leveler, while others are proprietary and trademarked. Several trade-marked designs include the Beaver Deceiver™ and the Castor Master™ which were invented by Skip

Clemson Beaver Pond Leveler Pros (+) and Cons (-)

- + Low maintenance
- + Has been used with excellent success elsewhere
- + Can control water levels
- + Can combine several levelers together in heavy flow areas
- + Much information available on construction and use
- Requires initial investment of time and money to build and install
- Intake device must be submerged to work optimally
- Not designed for high volume or fast flowing water
- May reduce water flow and fish passage

Lisle of Beaver Deceivers International.

Successful designs have a few things in common:

- ◆ They allow water to flow freely and incorporate a design that will remain relatively clear of debris.
- ◆ They are trapezoidal in design which makes it difficult for beaver to figure out how to block flow of water.
- ◆ They minimize the amount of sound created by flowing water thus fooling beaver into thinking that water flow has been stopped by the dam.
- ◆ They will either handle maximum flow of the stream during peak runoff (culvert devices) or will allow water to naturally top over the beaver dam (pond levelers).

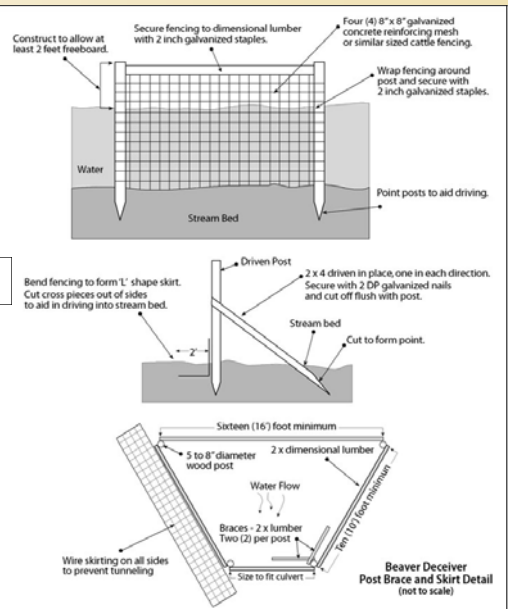
For further information and technical assistance, contact Stephen Carpenedo, MT DEQ Wetland Program, at (406) 444-3527 or SCarpenedo2@mt.gov

Contact Montana Department of Environmental Quality for permit requirements prior to disturbing a beaver dam or undertaking installation of a culvert flow device or a pond leveler.

These devices and designs are provided as examples only and FWP claims little or no experience in their use or effectiveness other than what has been reported in the literature.



Designs by Beaver Deceivers International



Non-Lethal Tools for Protecting Trees from Damage by Beavers: An FWP Evaluation of Several Methods



Beavers are well known for their dam constructing abilities and their dependence on aquatic environments surrounded by trees for food and security. Flooding caused by their dam building and the subsequent loss of trees are two of the major problems people encounter. Preventing damage to trees on a large-scale would prove costly but a few methods are discussed below for protecting smaller numbers of trees, or in the case of this project setting, the last of the trees.

Materials evaluated

1. Heavy-gauge welded wire / hardware cloth
2. Plastic mesh deer fence
3. Fine-mesh welded wire / hardware cloth
4. Metal flashing
5. Standard-gauge welded wire / hardware cloth / sheep fence
6. 4-The-Birds liquid bird repellent



A variety of methods were used to install the materials and included the use of fiberglass posts and metal t-posts.

1.) The heavy gauge welded wire was installed around one aspen tree with fiberglass posts. Wire was also wrapped directly around a second nearby aspen tree. Both methods performed equally well and the trees were undamaged by beaver by season's end. This may be a particularly handy method for protecting small numbers of trees using scrap fence materials from around the farm or ranch.



Non-Lethal Tools - Continued



2.) Plastic deer fence was installed around one aspen using fiberglass posts for support and another tree was protected using the plastic fence with t-posts for support. Beaver did not disturb either tree during the first two years of evaluation.

It should be noted that although beaver did not penetrate the plastic fence material during this evaluation, the plastic fence is not considered impermeable and persistent beaver could likely succeed in breaching the material.



3.) The fine mesh welded wire was installed directly around an aspen tree. A second layer of wire was installed near the base of the tree. Beaver did not damage the tree.

This material and several others were installed directly against the tree trunk. To prevent the material from adversely impacting trees during growth of the trunk, installing materials away from the trunk using metal or fiberglass posts is recommended. Fiberglass and wood posts must always be installed on the inside of the protective material to prevent beaver from gnawing on the post.



4.) The metal flashing was installed directly around an aspen tree and kept in place with wire. Although a very simple method, it successfully kept beavers from damaging the tree. Scrap pieces of tin and roof flashing are often on hand on many farms and ranches making this a potentially economical means of protecting a few prized trees.

Non-Lethal Tools - Continued



5.) Regardless of whether you call it welded wire, sheep fence or paige-wire, this material is likely already sitting in the back corner of the barn or ranch yard. We evaluated its effectiveness wrapped directly around an aspen tree and also supported away from the tree with metal t-posts. Beaver did not damage either tree.

As stated before, it is recommended that if the material is to be left in place for many years, that it is supported by posts, away from the tree trunk. Materials wrapped directly around a trunk may harm the tree as it grows.



6.) Several trees were treated with 4-The-Birds repellent. The liquid repellent was applied following label instructions using a pressurized hand-sprayer. Although the manufacturer claims that the sticky substance will keep beavers from gnawing on trees, the trees we treated were felled by beaver within a few days of application.

This quick and simple evaluation conducted by a few FWP staff members revealed that a number of materials that may be already lying around the farm or ranch just might be the best tools to make it physically impossible for beaver to access the tree trunk.



Though not included in this evaluation, some sources and websites recommend using sand mixed with paint as a means to protect trees from beaver damage. If you have tried this method, or try it in the future, or if you have used some other method to prevent beaver damage to trees, please share your results.

Contact Joe Weigand at 444-3065 or joweigand@mt.gov.

Urban Big Game and Urban Game Birds

American Pronghorn (a.k.a. antelope)

Considered an animal of the prairie, herds of antelope can often be found wandering and feeding through subdivisions across Montana including those of Billings, Great Falls, Glasgow, and Helena. Most serious conflict situations with antelope involve small airports where the animals pose a significant threat to human safety. Most well-constructed fences of standard designs will keep antelope out of where they are not wanted.



Black Bear

In western Montana, problematic black bears probably consume more FWP staff time and resources than any other single species of animal. Bear problems aren't isolated to Montana or the US. Many countries, including Japan, have urban bear problems. There are simply far too many day-to-day activities by people that attract bears. Common bear attractants include pet food, bird feeders, barbeque grills, and garbage. Properly addressing these attractants is the most effective preventive measure.

Canada Geese

River Front Park in Great Falls is a classic example of Canada geese setting up camp in a location where they are not always welcome. Every year, and now practically yearlong, geese utilize parks and golf courses in Montana for grazing the lush green grass. Predators aren't a worry for geese in these urban settings, so nesting and raising goslings on the greens is becoming increasingly common. Keeping geese from nesting and getting comfortable is critical to reducing future problems. Taste aversion repellents that are applied to the grass are gaining popularity, as are scare-devices such as the Eagle Kite®. Effectiveness of these methods and products varies.



Elk

Elk are a well known and frequent presence in and around Gardiner, but elk in the Gallatin and Flathead Valleys and many other areas of Montana cause problems for golf courses and home owners on an almost annual basis. Seven to eight-foot high fence is the only sure way to keep these large and potentially destructive animals out of areas like golf courses and gardens.

Urban Big Game and Game Birds - Continued

Grouse, Pheasant and Partridge

Although these highly prized game birds rarely cause problems for urbanites, the birds can often be found in subdivisions and around the periphery of many Montana cities and towns. Examples include gray partridge and sharp-tail grouse on the northern outskirts of Helena and partridge and pheasants in suburban areas surrounding Bozeman and Great Falls.



Moose

When talking about moose in town, Bozeman is probably the first place to come to mind for many folks. Very few options exist for managing moose in town other than to physically haze them out of city limits or tranquilize and move them while they are sedated.

Mountain Lion

Although having a mountain lion lying on your front porch, as has happened recently in Helena, might be a hair-raising experience, very few mountain lion attacks have occurred in Montana, let alone within a city or town. Frequently, mountain lions have moved on before FWP staff are able to locate them. Tranquilization or lethal methods are used for removal of the transient cats.



Mule Deer

Mule deer within city limits is probably the reason why mountain lions occasionally wander into town. Gardeners voice the most frequent complaints because mule deer are attracted to the quality forage that vegetable and flower



gardens provide. Bucks sometimes rub their antlers on trees and bushes too, especially during the rut. Protecting prized gardens with high fences and netting is a permanent method of damage prevention, while some commercial repellents will deter deer for a short time. One Montana city culls urban deer populations, and several have instituted archery hunting within city limits.

Turkey

As their populations increase and expand, turkeys seem to be wandering into towns more frequently. Turkeys tend to be more of a nuisance than anything, and most damage can be prevented by hazing them away or covering property, such as barley bales, with plastic netting.



White-tailed Deer

White-tailed deer create much of the same problems as mule deer, and the same methods to prevent damage are used. Both species have been known to be aggressive toward humans during certain times of year. Caution is advised when they are encountered.



Deer-activated bioacoustic frightening device deters white-tailed deer

Aaron M. Hildreth, University of Nebraska, School of Natural Resources, 3310 Holdrege Street, Lincoln, NE 68583, USA hildreth@gmail.com

Scott E. Hygnstrom, University of Nebraska, School of Natural Resources, 3310 Holdrege Street, Lincoln, NE 68583, USA

Kurt C. VerCauteren, U.S. Department of Agriculture, Wildlife Services' National Wildlife Research Center, 4101 LaPorte Avenue, Fort Collins, CO 80521, USA

Human–Wildlife Interactions 7(1):107–113, Spring 2013

Abstract

White-tailed deer (*Odocoileus virginianus*) damage urban and suburban plantings, as well as crops and stored feed. We tested the efficacy of a frightening device that played pre-recorded distress calls of adult female white-tailed deer when activated by an infrared motion sensor for a period of 13 days. This deer-activated bioacoustic frightening device (DABAFD) reduced deer entry into protected sites by 99% ($\delta = -558$, $P = 0.09$) and bait consumption by 100% ($\delta = -75$, $P = 0.06$). The frightening device that we evaluated demonstrated potential for reducing damage in disturbed environments and agricultural settings.



Additional notes from the article:

- ◆ The audio system consisted of a microprocessor with amplifier and 2 speakers (model Super Pro PA4, Bird Gard LLC, Sisters, Oreg.)
- ◆ A quad-beam infrared detection system (model PB-IN200HF, PULNiX Security Sensors Inc., Sunnyvale, Calif.) was used to trigger the audio system.

“The DABAFD was nearly 100% effective at reducing the number of times deer entered protected sites and 100% effective at reducing feed consumption.” (Hildreth et. al. 2013)



Effects of hunter access and habitat security on elk habitat selection in landscapes with a public and private land matrix

Kelly M. Proffitt, Montana Fish, Wildlife & Parks, Bozeman
Justin A. Gude, Montana Fish, Wildlife & Parks, Helena
Kenneth L. Hamlin, Retired, Bozeman
Matthew Adam Messer, Montana Fish, Wildlife & Parks, Helena

**The Journal of Wildlife Management: Volume 77, Issue 3,
pages 514–524, April 2013**

Abstract

Traditional elk habitat management on public land has focused on providing security habitat for bull elk during the hunting season to provide for both adequate hunter opportunity and bull survival. This paradigm has given less consideration to adult female elk habitat use, patterns of adjacent land ownership, and hunter access. This paradigm also was developed when elk population sizes were much smaller in many areas. In many Rocky Mountain states, the focus of elk population management has recently shifted to reducing or maintaining elk population sizes, necessitating a better understanding of the implications of security habitat management, as well as patterns of adjacent land ownership and hunter access, on adult female elk. We addressed this need by testing the hypotheses that during the hunting season: 1) adult female elk selection for areas prohibiting or limiting hunter access is stronger than elk selection for publicly owned and managed elk security habitat, 2) these effects occur during the archery hunting period and intensify during the rifle hunting period, and 3) the effects of hunter access on selection are consistent among herds that occupy landscapes characterized by a matrix of public and private lands. We used global position system locations collected from 82 females in 2 different Greater Yellowstone Ecosystem (GYE) elk herds to evaluate effects of hunter access, security habitat as defined by the Hillis paradigm, and other landscape attributes on adult female elk resource selection during the pre-hunting, archery, rifle, and post-hunting periods. We found that female elk selection for areas restricting public hunting access was stronger than selection for security habitat in both study areas, and that the density of roads open to motorized use was the strongest predictor of elk distribution. Increases in selection for areas that restricted hunting access occurred during the rifle hunting period, and we did not find consistent evidence these movements were triggered by the archery hunting period. Our results provide evidence that in landscapes characterized by a matrix of public and privately owned lands, traditional concepts of elk security habitat need to be expanded to also include areas that restrict hunter access to plan for elk population management that is regulated through adult female harvest. Future efforts should investigate whether elk use of areas that restrict hunter access are flexible behavioral responses to hunting risk, or if these behaviors are passed from generation to generation such that a learned pattern of private land use becomes the normal movement pattern rather than a short-term behavioral response.



The entire article is available for members of The Wildlife Society and Fish, Wildlife and Parks employees at [http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1937-2817](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1937-2817), or by contacting Joe Weigand at 406-444-3065 or joweigand@mt.gov. See Private Land Technical Assistance Bulletin No. 2 for parallel Human Dimensions Research .



Upland game birds such as ring-necked pheasants and sharp-tailed grouse are benefitted by planting "brood strips" like this one at Freezeout Wildlife Management Area, managed by Montana Fish, Wildlife & Parks in central Montana. Planting cover crops with wildlife benefits in mind might achieve similar results plus yield additional benefits for the landowner such as increased crop yields and lower fertilizer costs.

"Montana's future is linked to its colorful past by an almost indestructible bond of wildlife heritage. Early exploration of the State was prompted by the potential harvest of wildlife. The settlement of the State was enhanced because of the wildlife populations. Wildlife was, and is dependent on the habitat, and it was this habitat, the mountains, the prairies, the clear streams and the clear big sky, that made Montana so attractive to settlement.

In man's desire and effort to develop what he assumed to be an unlimited quantity of natural resources he began to alter that habitat. This attention has not been insignificant. There are few areas left that do not carry the scars of man's activity. Progress is desirable, but in this, the 20th century, it can and should be made compatible with maintaining a quality environment for man and wildlife."

Frank H. Dunkel, Director, Montana Fish and Game Department - Game Management in Montana, 1971

To request hard copies of this Private Land Technical Assistance Bulletin or previous bulletins contact Joe Weigand at 444-3065 or joweigand@mt.gov.