

# USING CABLE DEVICES

in North Dakota

A Guide to  
Responsible Use





# Acknowledgements

This handbook and educational material is provided by the North Dakota Cooperative Fur Harvester Education Program, which is sponsored by the North Dakota Game and Fish Department and the North Dakota Fur Hunters and Trappers Association. Illustrations and photographs are protected by copyright laws. Information on reproduction rights and privileges are available from the NDCFHEP.

The products and success of the NDCFHEP remains the result of hours of dedication and commitment from volunteers. The common denominator among these hard-working volunteers is the interest and desire that future generations enjoy the same fur hunting and trapping opportunities we have today. This education program and its volunteers are charged with the execution of those duties.

Our gratitude extends to the Association of Fish and Wildlife Agencies for supporting this effort and the North Dakota Game and Fish Department for acknowledging the importance of fur hunting and trapping by providing the resources and financial support for the program.

## Authors:

- Rick Tischaefter, President of the North Dakota Fur Hunters and Trappers Association (Box 334, Butte, North Dakota, 58723, [www.ndfhata.com](http://www.ndfhata.com))
- John F. Olson, Furbearer Specialist, Wisconsin Department of Natural Resources

## Editors:

- John Paulson, USDA Wildlife Services; Stephanie Tucker, Furbearer Biologist, North Dakota Game and Fish Department; Ron Wilson, Editor, North Dakota Outdoors; Craig Bihle, Communications Division, North Dakota Game and Fish Department, and Dr. Dan Grove, Wildlife Veterinarian, North Dakota Game and Fish Department

## Graphic Design:

- Connie Schiff, North Dakota Game and Fish Department



FIRST EDITION





# Table of Contents

Introduction .....	1
Chapter 1 – North Dakota Cooperative Fur Harvester Education Program.....	2
Chapter 2 – History of Cable Devices in North Dakota.....	3
Chapter 3 – Best Management Practices for Cable Devices .....	4
Chapter 4 – Legal, Responsible and Ethical Use of Cable Devices.....	6
Chapter 5 – How a Cable Device Can Kill .....	10
Chapter 6 – Constructing a Lethal Cable Device .....	13
Chapter 7 – How a Cable Device Can Restrain .....	18
Chapter 8 – Constructing a Non Lethal (Restraining) Cable Device .....	19
Chapter 9 – Treating Cable Devices .....	22
Chapter 10 – Tools and Equipment Used with Cable Devices .....	23
Chapter 11 – Targeting Furbearers and Being Selective with Cable Devices .....	24
Chapter 12 – Dry Land Techniques with Cable Devices .....	26
Chapter 13 – Water and Ice Techniques With Cable Devices.....	31
Chapter 14 – Dispatching Furbearers and Incidental Catches.....	33
Appendix A – Testing Breakaway Devices .....	35
Appendix B – North Dakota Game and Fish Department Testing Standard for Breakaway Devices – August 2015.....	39
Appendix C – A Sample of Cable Device Components and Assemblies .....	42

# Introduction



RICK TISCHAEFER

*Coyote trail in cattails.*



CHRIS GRONDAHL

*This trapper uses cable devices to catch coyotes on her land. She selected some of those coyotes to make a beautiful coyote stroller.*



RICK TISCHAEFER

*Livestock producers rely on cable device users to reduce the potential for depredation.*

Cable devices are an effective and efficient way to catch wild canines during the winter months in North Dakota, because the harsh conditions from November through March make it difficult to be effective with other capture devices.

States consider animal welfare, efficiency, selectivity and safety when they select legal traps. Each state regulates the types of traps that are legal. Legal traps and sets are either kill-type or live-restraining devices. Cable devices are tools that can perform both tasks. Therefore, it is important to be knowledgeable about cable device components, setting methods and regulations to ensure trappers are effective and responsible. The information in this booklet is developed to help in that endeavor. This booklet is not intended as a complete list of trapping regulations, but it will help you understand many of the regulations specific to cable devices and why they apply. Refer to the Game and Fish Department's annual Furbearer Hunting and Trapping Guide for a complete list of trapping regulations.

In most states, trapping is an individual privilege available to citizens who choose to follow regulations and behave responsibly. The decision to become a trapper represents a serious time commitment and dedication to responsible behavior. If trappers as a group do not behave responsibly, citizens may decide to prohibit trapping. So remember, trapping is an individual privilege, not an individual right.

Some states have made it a collective right to hunt, fish and trap. This protects the activity of trapping for future generations. It does not protect trapping privileges for people who violate trapping regulations. Judges can, and do, suspend trapping privileges for serious violations.

The Game and Fish Department recognizes that regulated fur hunting and trapping is a versatile, safe, efficient and ecologically sound means of capturing individual animals without impairing the survival of furbearer populations or damaging the environment. Trapping and hunting provide an outdoor lifestyle for many North Dakota citizens through the use of an abundant natural resource, as well as an effective means of harvesting, managing and studying furbearers; controlling damage caused by furbearers; and, at times, reducing the spread of harmful diseases. The Department also recognizes that trapping does concern some people who oppose trapping, the use of specific trapping devices, or consumptive use of animals.

# Chapter 1

## North Dakota Cooperative Fur Harvester Education Program

Trapping is part of the North American heritage. A cable device (snare) is a tool used for trapping, just like any foothold, body-grip, or cage trap. Our fur harvester education courses teach basic techniques, while focusing on responsible treatment of animals, legal methods, safety, selectivity and ethical trapper behavior.

The program is a cooperative effort between the North Dakota Game and Fish Department and the North Dakota Fur Hunters and Trappers Association. The learning process does not stop with this handbook. You can learn more by attending a course or an association event. Both activities are directed at educating individuals to become more successful, while at the same time being ethical and responsible stewards of our resources. Watch for advertisements or check the websites at [gf.nd.gov](http://gf.nd.gov) or [ndfhta.com](http://ndfhta.com).

North Dakota has an education program with resources, materials and experienced volunteers ready to help. The trapping community includes you and many others. That also means there are many individuals and resources that exist to help you be successful. If you need help, just ask.

The Department supports regulated trapping and efforts to address societal concerns through appropriate education, research, enforcement and regulatory programs. Such programs are designed to increase awareness and acceptance of trapping by seeking to enhance animal welfare, while maintaining wildlife management capabilities and other benefits associated with this activity.

The demand for classes across the state continues to increase. To meet those needs, the program welcomes dedicated and experienced volunteers to assist or conduct classes. If you would like to volunteer as an instructor, please contact the Game and Fish Department's education program through the website or at 701-328-6322.



RICK TISCHAEFER

*Education classes are rewarding opportunities for both experienced and not-so-experienced individuals.*



RICK TISCHAEFER

*"Hands on" cable device instruction is a part of every fur harvester education class.*

# Chapter 2

## History of Cable Devices in North Dakota



RICK TISCHAEFER

*An illegal cable device. The continued use of illegal equipment threatens each one of us.*



LARA ANDERSON

*Our future is depending on you to be ethical, responsible, and humane.*

Just the mention of the word “snare” brings less than positive images to many people. Some envision a wire loop attached to a bent sapling that jerks an animal from its feet when triggered, suspending it mid-air. It is unfair to leave this image without further explaining that the only things available for making snares in historic times were sinew, woody fibers, and in later years, cord or thin, single-strand wire. None of these materials could hold large mammals. The materials used allowed even small animals to easily cut them with their teeth or break free by lunging. In addition, early trappers had no means of keeping the noose closed, so they cleverly used saplings and gravity to solve this problem. Individuals used snares in that fashion for catching rabbits and other small game for food. The spring action of the sapling may have provided a humane death to rabbits, and suspending the catch above ground denied ground-dwelling predators that same food.

**What’s in a name?** It is important to accurately name and define the tools we use. We understand names because they are common to those of us who use them. However, those with no experience often have trouble getting a clear picture of what is being described, resulting in different views or opinions, which may be contrary to the original intent. The word “snare” can be used as either a noun or verb and has many meanings. In the context of this handbook and as a noun, a “snare” is more accurately described as a “cable device” because it leaves little to misinterpret.

Unfortunately, some people have used cable devices in less than a legal, responsible, ethical or selective manner. This poor behavior has made these devices illegal at times; resulting in many hours of hard work by volunteers to restore this valuable tool to legal use.

In North Dakota, the century code outlines the basic parameters for using cable devices. The Game and Fish Department provides more detailed information and requirements through the administrative code and annual proclamation. The past 40 years is no different than any given day today – illegal, irresponsible and unethical behavior remains the greatest threat to using this valuable tool.

# Chapter 3

## Best Management Practices for Cable Devices

State fish and wildlife agencies, trapping organizations, veterinarians and university researchers help develop best management practices for regulated trapping in the United States.

A trapping BMP includes documents that provide information to help trappers practice safe, humane and efficient capture techniques. A BMP describes different types of traps, which includes cable devices, how they work, how traps should be set, and what training may be needed for people who use BMP-recommended traps.

Five criteria are considered when developing a trapping BMP:

- **Animal welfare** – Researchers tested live-restraining traps for injuries to furbearers using two methods. One system evaluated specific injuries, and the other grouped the injuries into categories from mild to severe. BMP-approved traps must have a low rate of injuries to the targeted furbearers. Recommended traps resulted in moderate, mild, or no injury to at least 70 percent of captured animals.
- **Efficiency** – Traps meeting BMP criteria must be able to capture and hold at least 60 percent of the furbearers that are captured.
- **Selectivity** – Traps must be set and used in a fashion that limits the risk of capturing nontarget species, while increasing the chances of capturing the targeted furbearer.
- **Practicality** – Each recommended live-restraining trap was evaluated by experienced trappers and wildlife biologists for practicality. Criteria used to measure practicality of each trap included cost, ease of use, ease of transport, storage, weight and size, reliability, versatility and expected life span.
- **Safety** – Each recommended live-restraining trap was evaluated for safety to the user and other people who might come in contact with the trap.



RICK TISCHAEFER

*BMP research revealed restraining cable devices (proper components, entanglement free set locations, and daily checks) work well when needed.*



*This coyote was captured in Bismarck with a restraining cable device in October 2014. The coyote was fitted with a radio collar and released.*

BMP research for restraining cable devices began in Wisconsin in 1999. Early on, the field projects occurred east of the Mississippi River because eastern states had no history of legal use of cable devices while trapping, and many wanted that opportunity. As the program developed, many other states, including North Dakota, were involved in the field research.

The cable restraint design used in the first field research projects was the identical tool designed by Rob Erickson (Illinois) and Byron Reichert (Indiana) to capture, radio-collar and release coyotes in urban and suburban Chicago. In 2013, the United Tribes Technical College initiated a similar multi-year coyote study in Bismarck, North Dakota. This same tool is described for use in capturing and restraining wild canines later in this handbook. Since 1999, eight different lock designs have been studied in field research projects conducted in seven states, including North Dakota. Some have met the criteria and some have not.

As of 2013, BMP research has provided trappers with the opportunity to legally use cable devices where they were previously illegal (seven states, United Kingdom and many countries within the European Union). For more information about the trapping BMP program, go to [http://www.fishwildlife.org/index.php?section=best\\_management\\_practices](http://www.fishwildlife.org/index.php?section=best_management_practices).

# Chapter 4

## **Legal, Responsible and Ethical Use of Cable Devices**

### **Obey the Law**

There are legal and social obligations to follow trapping regulations. Trapping is a privilege and society expects trappers to behave in certain ways. That is why we have regulations for seasons, traps, sets, permission to trap and public safety. The law is the minimum standard for our behavior. Those who fail to follow regulations face possible fines, jail time and the loss of licenses.

### **Be Ethical**

Ethics is a system of principles for good conduct. Many trappers, hunters and anglers discuss ethics. Ethics is not a science, but deals with the right or wrong in human behavior. Your character, for example, is defined by what you do when no one is looking. If you don't know what to do, ask yourself these questions:

- Would your family approve of what you decided to do.
- If what you did appeared on the national news, would you be proud of what the rest of the nation is seeing?

For each situation consider:

- What could you do?
- What should you do?
- What are you going to do?

### **Be Responsible**

Responsible trapping involves many decisions that cannot be defined by law. Laws cannot define what is appropriate for you in every situation. You must use judgment based on your knowledge, skills, attitude and experience to decide what is an appropriate action. You will be a responsible trapper when you behave in ways that are good for animal welfare, landowners, other outdoor users and the public. Your relationships with other people and social acceptance as a trapper develop as people learn how you behave.

When securing written permission to trap, show landowners your tools and explain how they work. Give them a copy of this booklet, or photocopy portions that explain how the device works. Landowners will better understand what you are doing on their property, which will continue to build trust and may provide greater opportunities.



DEAN JANZEN

*This coyote was harvested by a hunter. It has the remnants of an illegal cable device around the front leg.*



NDCFHEP

*Written permission from the landowner is required. Landowners can be an excellent resource for animal activity and prime locations.*



*Our landscape may seem vast and empty at times, but in some locations there is nothing farther from the truth. Preseason scouting, written landowner permission, and daily risk assessments are key to a conflict free season.*

**Your character is defined by what you do when no one is looking.**

Millions of North Americans participate in outdoor activities. Responsible trapping is compatible with other activities at most times and places. To avoid potential conflicts with other outdoor users you should:

- Ask landowners who else might be using their property during trapping season. Communicate with them to find out when and what those other users might be doing.
- Avoid land trapping on public or private property when hunters, especially those with dogs, may be out in numbers.
- Because most furbearer activity is nocturnal, check traps as early in the morning as possible to remove animals that may be seen by others.
- Wear florescent orange clothing during hunting season so others can clearly identify you.
- Be a responsible steward for all wildlife and habitats.

### **Be a Risk Manager**

Trappers must be risk managers on their trap lines. Knowing what animals may be present, knowing the appropriate capture systems to employ, and evaluating the risk associated with each must be an ongoing, daily process. Incorrect loop size or loop height, poor location, illegal equipment, or failing to check your sets in a timely manner will surely draw unneeded attention, thereby increasing the potential to lose the privilege. There is no furbearer worth the risk of losing the privilege to use this tool.

Many people do not understand that wildlife is abundant or that trapping benefits wildlife and people. Your attitudes and behavior will affect people in a positive or a negative way. You should:

- Avoid setting cable devices near property boundaries where you do not have permission.
- Check cable devices routinely.
- Avoid making sets in areas that might capture nontarget animals.
- Explain trapping as a highly regulated activity that provides positive benefits to society.
- Be a public advocate for animal welfare and wildlife management.
- Know the trapping/furbearer hunting regulations and follow them.
- Use discretion when transporting animals and disposing of carcasses.

Trappers must cooperate with each other to ensure the continued use of trapping as an accepted wildlife management technique. You can do this by:

- Joining a state and/or national trapping organization to learn from others and share your knowledge.
- Avoid and respect other trappers' areas and sets.
- Report illegal trapping activity, as one individual's conduct affects everyone's perception of trapping.
- Help teach new trappers.

### ***Be Safe and Prepared***

Trappers must always plan for the worst in North Dakota. Not only do we plan and prepare our equipment to be successful on our trap lines, but we must also plan and prepare equipment needed in case of an emergency. A few things that can have a profound effect on your personal safety are a first aid kit, hand spikes if you're working over ice, cell phone, and making sure someone knows where you are and when you should return. If you are traveling away from your vehicle, leave a note inside with instructions on your location.

Changing weather affects animal movement, set locations and personal safety. Make sure the vehicles you use are well maintained, full of fuel, and have the necessary items to sustain life (food, water, blankets, change of clothes, candles, flashlight, and other emergency equipment). Winter storms can develop rapidly and you need to plan ahead and be prepared.

Changing winter conditions do not relieve you of your responsibility to check, maintain, or remove equipment. If you know that you do not have the appropriate equipment to traverse deep snow, or that the secondary roads you travel early in the season will be blown shut by January, pull your equipment in advance. Depending on the winter, you may need equipment like a heavy duty 4-wheel drive truck, all terrain vehicle with tracks, snowmobile, trailer for hauling secondary equipment, snowshoes, cross-country skis, sled, grain shovel for digging out sets, and a system for either separating the cable device from the anchor or pulling anchors out of frozen ground.

### ***Be a Trapping Advocate***

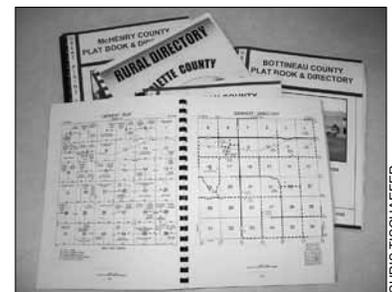
If you asked 100 strangers whether trapping was OK, many may say no. It's not because they dislike you. It's not because they oppose the use of animal products, as nearly all eat meat, drink milk or wear leather shoes.

So why are they so quick to respond? More often than not, it's because they know little about trapping, and their response is based on the belief that killing animals is wrong unless it somehow benefits society and is done responsibly. But you can change peoples' awareness of



CHRIS TISCHAEFFER

***Belt pouch and first aid equipment.***



CHRIS TISCHAEFFER

***Written permission is required to trap, which includes placing cable devices, on private land. Plat books are a good investment and excellent references to land ownership.***



CHRIS TISCHAEFFER

***Be safe – use topographic maps and a compass when working in unfamiliar terrain. Maps can also provide information to others as to where you will be.***



RICK TISCHAEFER

*Using the right equipment, at the right time, and in the right location is productive and rewarding.*



CHRIS GRONDAHL

*A trapper making a cable device set for coyote. She is being selective with the size and height of the loop, and by adding sticks to serve as guides.*

the benefits, oversight and responsibilities that come with trapping. People are less likely to oppose trapping if they recognize that it's highly regulated, doesn't endanger animal populations and benefits society. Therefore, it is important to know:

**1. Trapping does not cause wildlife to become endangered.**

Animals that are trapped in North Dakota are common or abundant in their respective habitat. In North America, endangered species are protected by laws that prohibit hunting and trapping. Trapping removes part of a surplus that's produced each year and it does not harm the population's sustainability.

**2. Trapping is highly regulated.**

Regulations are enforced by game wardens. Most harvest seasons are set in fall and winter to coincide with the time of year when young animals no longer depend on adults and better fur quality. Regulated trapping is endorsed by trained wildlife professionals who care about wildlife.

**3. Trapping provides many benefits to society.**

Trapping can help keep wildlife from becoming overpopulated, especially in areas where humans have removed natural predators or altered the habitat. In many situations, trapping is necessary to reduce or prevent damage to crops and other property. Here are more examples:

- Parts of animals that are not used for fur clothing can be processed into soap, paint, pet foods and other items that include animal by-products.
- License fees and excise taxes are collected on certain kinds of sporting equipment. These funds are used to manage wildlife in North Dakota, not just those species hunted or trapped.
- Trapping helps to keep furbearers from becoming so abundant that they harm their own environment.
- Trapping helps to reduce the potential for wildlife diseases, such as rabies.
- Trapping is an important tool for saving endangered species when their populations are being affected by predators. Additionally, trapping allows for translocations or reintroductions of endangered species into areas where they are rare or absent.
- Trapping is an effective tool to live-capture furbearers for wildlife research.
- Trapping provides opportunities for outdoor activity and helps us remain connected with our natural resources.

# Chapter 5

## How a Cable Device Can Kill

The components of the cable device and set location determine lethality. A cable device is used to capture an unsuspecting animal during travel. The device itself is a component in a system intended to capture the targeted animal. The cable device system is versatile and can be used to restrain the captured animal or kill it. We will explain the lethal system in this chapter.

Lethal cable device systems incorporate a nonrelaxing lock, and usually entanglement. A nonrelaxing lock keeps a cable loop from becoming larger after an animal is caught. More specifically, this lock will allow the loop to become smaller with tension, but will not move backward when tension stops.

Many modern systems now incorporate a small spring with a nonrelaxing lock. As the cable loop becomes smaller, the spring provides pressure on the lock to more securely bind it against the cable. In the case of hinged locks, the spring applies pressure to the part of the lock that contacts the cable. In the case of fixed locks, the spring applies pressure to the lock. These springs do not advance the cable and make the loop smaller. The loop is made smaller by the animal pulling against it.

Entanglement at a set location assists with the humane death of the captured animal. Providing an opportunity for the animal to wrap around something solid reduces the animal's free reign. Free reign may allow the animal to work the cable device system, causing a component to fail or provide time for the captured animal to chew through the cable. Some locations may have ample natural entanglement, like small trees or buck brush, and others may not. For those that do not, you may need to add entanglement like a heavy re-rod stake or "T" style metal fence post.



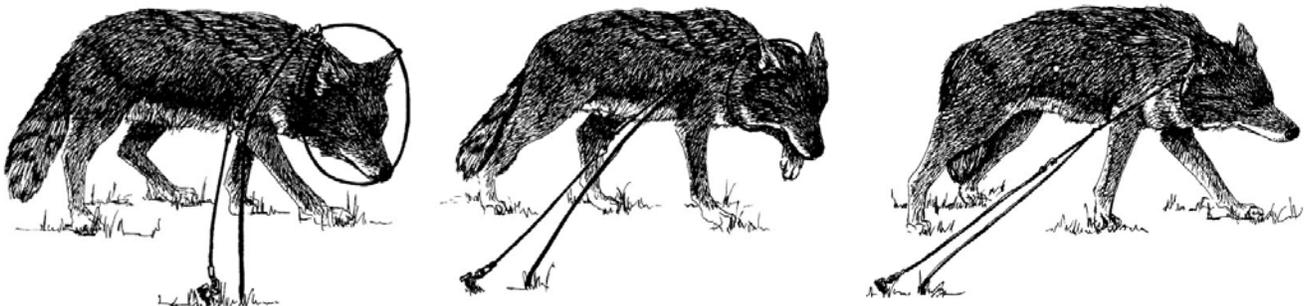
RICK TISCHAEFER

*The cable loop is close to the head. Death occurs quickly and is humane. Note there is no head or lip swelling with this coyote.*



RICK TISCHAEFER

*The pelt has been removed. Note the location of where the cable loop was on the neck. Much less muscle mass protects the airway and arteries in this part of the neck.*



NATALENE CUMMINGS

*As an animal walks forward, the cable loop closes.*



RICK TISCHAEFER

*The cable loop is too close to the shoulders. Head and lip swelling reveals death occurred slower than intended.*



RICK TISCHAEFER

*The pelt has been removed. Note the location of where the cable loop was on the neck. Much more muscle mass protects the airway and arteries in this part of the neck.*

### **Physiology and Causing Death**

The cable device loop encircles the animal's neck. In this context, the neck, or more specifically, the forward half of the neck, has to be the target. This system is not designed for capturing feet, a neck with a leg, hips, or around the chest.

Placing the loop around the forward half of the neck is critical to ensuring a humane death. There is no other point on the animal's body where the mechanisms essential to life are so close to the surface and most vulnerable. The trachea (airway), two carotid arteries, and four jugular veins carry life essential oxygen and blood. These components are in the neck, which is much less protected by muscle in the forward half than the back half.

The forward motion of the animal causes the loop to become smaller. This constricts the flow of blood and oxygen in the animal's body, rendering the animal unconscious. As long as the constriction remains, the animal will die while unconscious. The process of death in this manner is no different than that of a body-grip trap. The jaws of that trap close on the animal's neck, causing that same disruption in oxygen and blood flow. Initially, the animal is rendered unconscious, and with continued pressure, dies while unconscious.

You can tell when problems occur. Bloodshot eyes, swollen lips and head, and a yellowish-tinged fluid under the skin are evidence. The animal was not rendered unconscious because the carotid artery and trachea were not fully compressed. Essentially, there was blockage of veins carrying blood out of the head, but not the arteries taking blood to the head. This partial blockage leads to a pressure build-up and serum leaks from the vessels and accumulates under the skin. If these signs are noted, your cable device did not produce the desired effect and your methods need to be reevaluated to ensure proper functionality.

Take advantage of this knowledge and keep your loop size and height appropriate to your target animal. It is important to use quality, modern components in your cable device system. Doing so will allow for a humane capture resulting in death. Your self assessment and this knowledge can identify and correct any problems that may occur. It is your responsibility to be humane.

### **Self Assessment and Catch Site**

As you approach the set location, assess the whole scene. Be a detective and look for evidence of what occurred before, during and after the catch. If you see a problem once, that may be happenstance; if you see it twice, you have a pattern that needs attention. Take what you learn and use it to make improvements.

**Question:** Can you determine the direction of travel prior to being caught?

**Why:** This information may identify bedding areas or other potential set locations; indicate if wind direction was a factor; or if things didn't go well, whether the position of the device in the trail, or lock location on the supported loop, had anything to do with not resulting in a lethal catch. The 9 gauge support wire will generally point the direction of travel.

**Question:** Does it appear that the animal spent some time in the cable device? Is there evidence of torn ground and defined catch circle? Or, if entanglement was within reach, is there evidence of extensive branch or brush chewing? Is the animal standing and looking at you, or is it dead? If so, is there evidence of swollen lips and head?

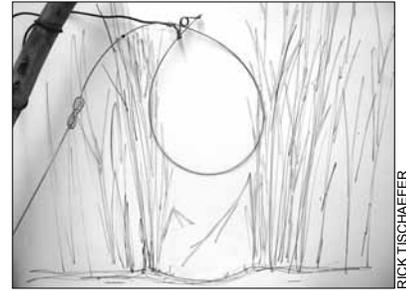
**Why:** This could indicate several problems. Let's examine each one:

- Location of the loop on the animal – The loop should be on the forward half of the animal's neck. If it's not, your loop size may be too large for the target animal; or your loop is too low to the ground. Reevaluate your loop size and height in relation to your trail sets and adjust accordingly.
- Lock slippage – Closely examine the cable where the lock is set. Is there wear and tear on the lock or the cable? This would be evidence the lock failed to grip the cable and stay in place. Reevaluate your lock choice, or if it was a used lock, throw it away.
- Poor anchor – The anchor must be immovable. Avoid anything less.
- Poor entanglement – Springy limbs, brush, or small trees do not work well for entanglement. There needs to be something solid with some mass. If it doesn't exist at your set location, add it. It can be a re-rod tangle stake or "T" post.
- Cable length – Your set location determines the length of your cable device. Open or semi-open areas may allow for 6- to 10-foot cables, whereas others, like those used in cattails, are best when only 5 feet long.

**Question:** Are the cable device components performing properly?

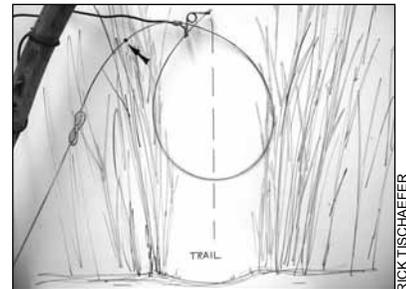
**Why:** If they are not, change them. Some things to look for:

- Evidence of cable fraying – Is the cable holding up? Based on how you are using the cable devices, you may have to move to the next size cable or change from 7 x 7 to a harder 1 x 19 configuration.
- Closely examine any parts you intend to reuse. Parts salvaged from cable devices that have made a catch have undergone a great deal of stress, and may not be the best choice for reuse.



RICK TISCHAEFER

**A small stick or stem of vegetation is placed below the cable loop to encourage the traveling coyote to lift its chin.**

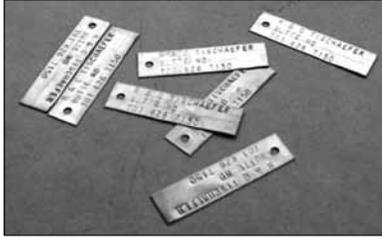


RICK TISCHAEFER

**The 12 inch loop stop provides a reference point to the support collar. Placing the support wire in the support collar approximately 4 inches from the 12 inch loop stop will provide the desired 10-inch loop for catching coyote.**

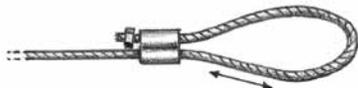
# Chapter 6

## Constructing a Lethal Cable Device



RICK TISCHAEFER

Trap tags made of copper or brass are inexpensive and will provide many years of service.



NDCFHEP

An adjustable cable loop for the anchoring end of a lethal cable device.



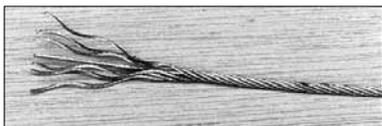
NDCFHEP

A fixed cable loop for the anchoring end of a lethal cable device.



RICK TISCHAEFER

A quick tie off end anchoring system.



NDCFHEP

Many strands of carbon steel wire are wound together to make galvanized aircraft cable.

A variety of tools are required to construct cable devices. Quality parts and tools are purchased from reliable manufacturers or supply dealers. For a cable device to perform efficiently and reliably, it must be constructed of good quality material and be assembled with care. The basic components of a device consist of an identification tag, anchoring end, cable, loop stop, support collar, lock, and breakaway device. Special attention must be given to ensure each component matches the diameter of the cable that is used. Let's look at the components:

### Identification Tag

North Dakota Century Code requires an identification tag attached to each cable device. The tag must provide the trapper's name, address and telephone number. Brass or copper tags stamped with this information will provide years of service, are inexpensive, and available from trapping supply dealers.

### Anchoring End

The anchoring end of the device is opposite the loop. There is no need for a swivel with the anchoring end of a lethal cable device. There are a variety of configurations that can be used:

- An adjustable loop is fashioned using an aluminum double ferrule and stop. The cable is passed through the ferrule and returned to pass through again. A stop is then crimped on the end of the cable. The loop is adjustable and works well for anchoring to steel stakes, tree trunks, fence posts, or other suitable anchors.
- A closed loop is made by passing the cable through an aluminum double ferrule and returning the cable into the ferrule, leaving a loop about 1 inch in diameter. The double ferrule is crimped to retain the cable. A closed loop can be used to attach a cable extension, re-rod stake, or other hardware for anchoring.
- A quick tie off end (or tree lock) is a device assembled in the anchoring end of the cable device. The cable passes through one end and an aluminum stop is crimped to the end of the cable. For attaching, the cable goes around any suitable anchor and the stop is fitted back in to the device.

### Cable

Steel cable is the backbone of the cable device. Cable is either made of carbon or stainless steel, with the latter being more expensive. The most common cable used for cable devices is galvanized carbon steel, commonly called galvanized aircraft cable (GAC). Although this cable

does have applications for aircraft, that is not its sole purpose. Cable sizes vary, but common diameters for cable devices are 1/16th to 1/8th inch.

In North Dakota, the smallest diameter allowed is 1/16th inch. The next smaller cable is 3/64th inch and is commonly used in other states for capturing mink. The breaking strength of 3/64th inch cable is approximately 270 pounds, which is less than the breakaway requirement in North Dakota. Therefore, if used and a nontarget animal is captured, the cable may break before the breakaway device releases. That would allow the animal to leave the set location with the loop still attached to the body.

GAC cable is multi-strand wire spun together. The three types of most common wrapped wires are referred to as 7x7, 1x19, or 7x19. Cable configured as 7x7 is made of seven strands of wire spun into a bundle; then, seven bundles are spun together to make the cable. This cable is of medium weight, durable, has a coarse finish and is the most commonly used cable. Cable configured as 1x19 is made of 19 strands of wire spun together to make the cable. This cable is light, stiff, has a smooth finish, and is the second most commonly used cable. Cable configured as 7x19 is made of 19 strands of wire spun into a bundle; then, seven bundles are spun together to make the cable. This cable is light, supple, has a smooth finish, and rarely used for cable devices.

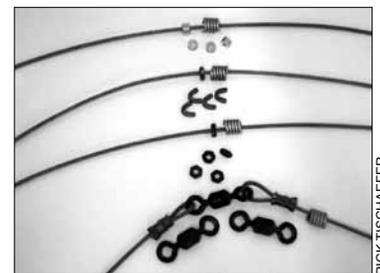
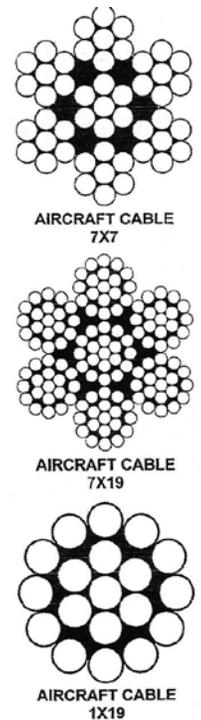
Because GAC is carbon steel wire, if you bend it, the bend will remain. If it gets damaged, it will be unusable. Once a catch is made, the cable cannot be used in another cable device. The parts can be reused, but not the cable.

Cable length for lethal cable devices varies with set location. A cable device set in cattails with added entanglement should be 5 feet long – just enough to adequately make the set. Conversely, a set in more open areas may be 8 to 10 feet long. A moving animal will be allowed to generate more force, and assist with constricting the cable loop when the cable becomes taut. These longer cables may also aid in adequate entanglement (whether placed or natural) and preserve the set location for reuse.

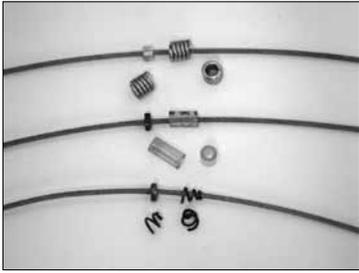
### **Maximum Loop Stop**

North Dakota Century Code requires a maximum loop stop that prevents the loop from opening to no greater than 12 inches. Heavy gauge wire, steel nuts, or crimped aluminum ferrules can be used to make this stop. The maximum loop stop prevents creating a large loop that may catch large nontarget animals with cable devices. To achieve this requirement, affix or compress the stop to the cable at a point that is approximately 37.5 inches or less from the loop end (diameter x pi = circumference; 12 inches x 3.14 = 37.68 inches).

*Cross sections of the three types of galvanized aircraft cable used for making cable devices.*



*A variety of components can be used to make a loop stop. Top to bottom – aluminum ferrule, add-on “c” stop, heat treated steel nut, and in-line swivel.*



RICK TISCHAEFER

*Various examples of support collars. Top to bottom – wire wound collar, plastic tubing, and twist on collar.*



RICK TISCHAEFER

*Hinged and fixed locks used for lethal cable devices. Top row includes Wedge Lock and Slim Lock. Bottom row includes Death Blow Cam Lock with Teeth, #5 Cam Lock with Teeth, Grawe's Mini Mag Lock, Grawe's Bullet Lock, and Gregerson #4 Lock.*



RICK TISCHAEFER

*Torsion springs (top) and compression springs (bottom).*

### **Support Collar**

A support collar is a small piece of coiled wire or plastic tube slightly larger in diameter than the cable. The support collar is slid on the cable during assembly. The diameter of wire used to support or suspend the cable loop over the trail can be 9, 11, 12, or 14 gauge (9 is larger in diameter than 14), depending on personal preference. The collar must match both cable and support-wire diameter, except for the twist-on collar. The twist-on collar will work with most diameters of cable and support wire. You want to choose the support wire that adequately supports your cable loop in the conditions where you trap. The heavier 9 gauge support wire works well in North Dakota wind.

### **Lock**

The lock completes the cable device assembly so a loop can be formed. Locks are manufactured to be used with a specific diameter cable. Insure the right lock is used with the right cable. Mismatched lock size and cable diameter assemblies will not perform as intended and only serve to cause problems. The goal for a lock in a lethal cable device system is to allow the loop to become smaller, not larger. Locks that do this are commonly referred to as nonrelaxing. Nonrelaxing locks are either fixed or mechanical and come in a variety of shapes, sizes and configurations, and are smaller in overall size than relaxing locks. Relaxing fixed locks should not be used if the intent of the set is lethal.

**Fixed locks** are made from one piece of metal. They may be bent or shaped to prevent sliding back on the cable. All are tooled to accommodate a certain cable diameter, and in some cases, accept the cable in only one direction. Some fixed locks make the loop by passing the cable through the lock twice, and some just once. Those designed for one pass use a breakaway "S" or "J" hook to complete the loop.

**Mechanical locks** are made from three pieces of metal, one of which is the hinge pin that connects the other two. Mechanical locks are tooled to accommodate a certain diameter cable and only in one direction.

### **Lock Springs**

The concept of using a spring with cable device locks is relatively new. Because the goal of a lethal cable device system is to provide a mechanism for humane death, trappers continually strive to advance components and techniques to achieve that goal. A spring and lock combination is more efficient at causing humane death than just a lock.

There are two types of springs commonly used with locks, but not all locks will work with either type of spring. Those locks that do not should be avoided as there are more efficient and humane components available.

Both types of springs have the same role in how they work with the appropriate lock. That is, to apply pressure to the lock so that it binds the cable and does not allow the loop to become larger.

**Compression springs** were designed to use with wedge locks. Wedge locks are hinged locks with a platform for the compression spring. When compressed, the spring applies pressure to the tip of the wedge where it contacts the cable. The way the cable is threaded through the lock, the loop can easily become smaller.

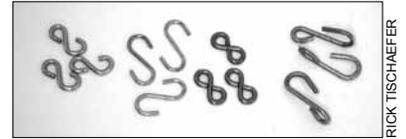
**Torsion springs** can be used with some hinged and fixed locks. The torsion spring looks like a miniature body-grip trap spring. The lock and torsion spring connections vary depending on the lock. A breakaway “S” or “J” hook is used with hinged lock applications, and with others, it is a choice between a breakaway “S” or “J” hook or release ferrule. Again, the purpose is to apply pressure to the point where the lock contacts the cable.

### **Breakaway Device**

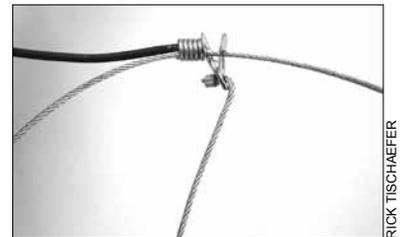
North Dakota Century Code requires cable devices have a breakaway that will disassemble the loop at 350 pounds of pressure or less. This component can be a “S” or “J” hook, aluminum release ferrule, mechanical lock pin, or the lock itself. A breakaway device is required to release large animals that may encounter a cable device, such as livestock, deer, elk, moose or wolves. When pressure is applied, the cable device loop disassembles and allows the animal to leave with no part of the cable device attached to the animal.

**“S” or “J” hooks** are used between the lock and the end of the cable loop. When a certain amount of pressure is applied to the hook(s), a curve will open and allow the cable loop to disassemble. It is the diameter and type of metal that makes the hook that determines at what point it will open. “S” or “J” hooks may be needed as a breakaway device because of the lock design. Most hooks are opened and closed with pliers, and will work with any diameter of commonly used cable.

**Aluminum release ferrules** are compressed on the loop end of the cable with a specialized crimping tool. These specialized crimping tools are designed to apply a precise amount of pressure to the release ferrule, while not crimping it too much; fencing or lineman’s pliers should not be used to affix release ferrules. When a certain amount of pressure is applied to the loop, the release ferrule will pop off the end of the cable and the loop will disassemble. Release



*“S” and “J” hook breakaway devices. Left to right – Snare Shop 285, Fastenal 170, Sullivan 280, and Snare Shop 285 (J hook).*



*The Gregerson #4 lock also serves as the breakaway device.*

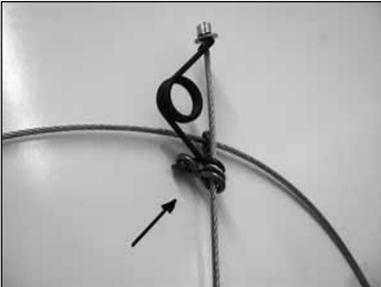


*An example of a release ferrule breakaway device.*



RICK TISCHAEFER

**A bench swagger is used to crimp aluminum ferrules. Use quality components and tools to make your cable devices.**



RICK TISCHAEFER

**An example of an s-hook breakaway device. This is a Sullivan 280# s-hook with a Grawes Bullet lock and torsion spring and intended for lethal capture.**

ferrules are specifically designed for a certain diameter cable. Release ferrules are not appropriate breakaways for each and every lock design.

**Mechanical lock pins** are graded and hold together a two-piece lock. When a certain amount of pressure is applied to the loop, the pin fails. This allows the remaining two parts of the lock to come apart and the cable loop to disassemble.

**Locks** designed as breakaways are stamped from sheet metal. When a certain amount of pressure is applied to the loop, the cable tears through the lock and allows the loop to disassemble. It is the thickness of metal from which the lock is stamped that determines at what point the cable will tear through the lock.

### **Construction**

The parts are assembled in a logical sequence on the cable until the device is complete.

- Lay the cut lengths of cable on a flat surface. Ensure they lay flat and are not sprung or damaged.
- Measure and mark the location for the loop stop (no greater than 37.5 inches or less from the loop end of the cable). Affix or compress the loop stop on the mark.
- Working on the loop end, slide the support collar on the cable.
- Slide the lock on the cable and make the loop.
- Assemble the spring and incorporate the breakaway device to finish the loop.
- At the anchor end, slide the name tag on the cable.
- With the appropriate ferrule(s), close the end for anchoring.

Check the operation of the device after assembly. The lock should move down the cable smoothly and lock on return. A completed device should also lay flat on a horizontal surface.

A cable device becomes unusable once a capture is made. The captured animal exerts pressure on the cable and causes the cable to kink, bend or curve against the natural wrap of the cable strands. The cable will no longer lay flat or hang in a natural loop. The parts may be reused if they are not damaged. Inspect each carefully to ensure they will work properly in the future. Simply cut the cable, remove reusable parts, and construct a device with new cable and ferrules.

# Chapter 7

## How a Cable Device Can Restrain

Restraining cable device systems incorporate a relaxing lock and no entanglement. A relaxing lock will allow the loop to become smaller with tension, but does not keep its place on the cable and will move slightly backward when tension stops. Relaxing locks are made so that when assembled, the cable can pass through the lock to make the cable loop smaller or larger. The holes in most cases are slightly larger, allowing the lock to slide freely on the cable. In this case, the loop simply restrains the animal and does not cause death.

Restraining cable devices should not be set so the captured animal can become entangled. This includes fences, machinery, buck brush or trees. These cable devices are usually about 5 feet in length so the amount of free reign the captured animal has is limited. If the “catch circle” is not free of entanglement, the captured animal will be able to wrap the cable tight against whatever is available. When this occurs, the lock cannot move backward and the animal can die.

Restraining cable devices should be checked daily. You may decide to use a restraining system for good reason, such as domestic dogs or other nontarget animals in the area, research, or you’re trapping too close to human habitation and activity. It is for these same reasons that you should check your restraining devices daily. Additionally, restraining cable devices are not designed to hold live animals for long periods, because it gives the animal time to strain the device and chew on the cable.

### **Pelt Studies**

As mentioned earlier, the restraining cable devices have been tested in the Best Management Practices field research programs. While not a specific BMP criteria, trappers were concerned whether a restraining lock would damage fur. The pelts from coyotes captured with the reverse bend washer lock (Reichert lock) were evaluated by professional fur graders at North American Fur Auctions, where they determined little or no damage to any furs. To this day, the reverse bend washer lock remains the best performing lock for cable devices that restrain.

### **Powered Cable Device for Restraint**

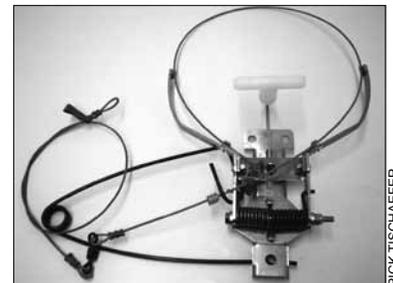
The powered cable device uses a mechanical feature, such as a spring, to place the loop on an animal’s neck or body. The components of the system are the same. One example is a spring powered Belisle™ cable device, which uses a foothold-like pan system to release springs that throw a cable around the animal’s foot. Another device is the coil-spring powered Collarum, which uses a pulling device trigger to release arms that throw a cable around the animal’s neck. The stock cables provided with these devices do not comply with North Dakota laws. Custom cables will need to be made if either of these devices are used in North Dakota.



*This coyote was caught in a cable device intended to restrain. Along with specific device components, there can be no entanglement and should be checked daily.*



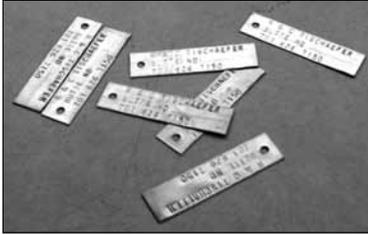
*Belisle foot snare.*



*A Collarum spring powered cable device system. The entire device is fastened and covered (much like a foothold trap) and bait is placed on the white plastic “T”. The coyote bites and pulls up on the plastic “T”, causing the spring arm to throw the cable loop around the coyote’s neck.*

# Chapter 8

## Constructing a Non Lethal (Restraining) Cable Device



RICK TISCHAEFER

Trap tags made of copper or brass are inexpensive and will provide many years of service.



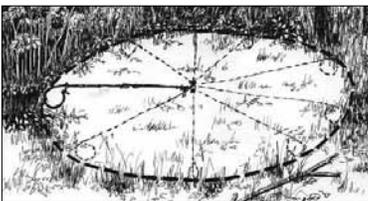
NDCFHEP

A swivel made from 9-gauge wire used at the anchoring end of a restraining cable device.



NDCFHEP

These two swivel combinations can be used for anchoring a restraining cable device. If you are using a single re-rod stake, make sure it is long enough to anchor your equipment properly.



NATALENE CUMMINGS

Restraining cable devices should be set so the capture circle is free of entanglement.

A variety of tools and knowledge are required to construct cable devices. Quality parts and tools are purchased from reliable manufacturers or supply dealers. For a cable device to perform efficiently and reliably, it must be constructed of good quality material and be assembled with care. The basic components of a restraining device consist of an identification tag, anchoring device, cable, in-line swivel, loop stop, support collar, lock, and breakaway device. Special attention must be given to ensure each component matches the diameter of the cable that is used. Let's look at the components:

### Identification Tag

North Dakota Century Code requires an identification tag on each cable device. The tag must provide the trapper's name, address and telephone number. Brass or copper tags stamped with this information will provide years of service, are inexpensive, and usually available from trapping related supply outlets.

### Anchoring End

The anchoring end of the cable device is opposite the loop end. The typical anchoring device is made of 9-gauge wire and serves as an attachment and swivel. Although this device is made with 9, 11 and 12-gauge wire, it is best to use 9 in North Dakota. It is heavy duty and will withstand the stress applied to a cable device from a nontarget capture (livestock, deer, moose, or elk). This will allow the breakaway device to work instead of a failure at the anchoring point.

### Cable

Steel cable is the backbone of the cable device. Cable is either made of carbon or stainless steel, with the latter being more expensive. The most common cable used is galvanized carbon steel that is commonly called galvanized aircraft cable (GAC). Although this cable does have applications for aircraft, that is not its sole purpose. Cable diameters vary, but the cable commonly used for restraint is 3/32nd inch spun in 7 x7 configuration. Restraining cable devices are 5 feet long – just enough cable to adequately make the set.

### In-line Swivel

A #8 barrel swivel is commonly used as an in-line swivel, but other in-line swivels will work, too. Like foothold traps, there is a humane benefit to having more than one swivel while restraining an animal. The in-line swivel, when properly placed, can also serve as the required loop stop.

### **Maximum Loop Stop**

North Dakota Century Code requires a maximum loop stop that prevents the loop from opening to no greater than 12 inches. Heavy gauge wire, steel nuts, or crimped aluminum ferrules can be used to make this stop. The maximum loop stop prevents creating a large loop that may catch large nontarget animals with cable devices. To achieve this requirement, affix or compress the stop to the cable at a point that is approximately 37.5 inches or less from the loop end (diameter x pi = circumference; 12 inches x 3.14 = 37.68 inches).

### **Support Collar**

A support collar is a small piece of coiled wire or plastic tube slightly larger in diameter than that of the cable. The support collar is slid on the cable during assembly. The diameter of wire used to support or suspend the cable loop over the trail can be 9, 11, 12, or 14 gauge (9 is larger in diameter than 14), depending on personal preference. The collar must match both cable and support wire diameter, except for the twist on collar. The twist-on collar will work with most diameters of cable and support wire. You want to choose the support wire that adequately supports your cable loop in the conditions where you trap. The heavier 9 gauge support wire works well in North Dakota wind.

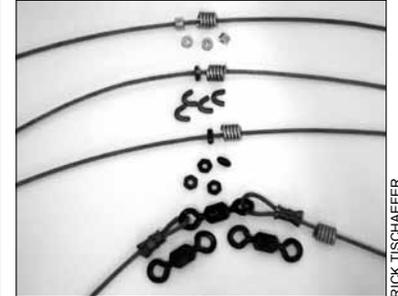
### **Lock**

The lock completes the cable device assembly so a loop can be formed. The goal for a lock in a restraining cable device system is to allow the loop to freely become smaller or larger. Locks that do this are commonly referred to as relaxing. Relaxing locks are fixed locks and usually have large surfaces. This allows the pressure from the lock closing against the captured animal to be spread over a larger area, thereby reducing the potential for injury. Non-relaxing locks or the addition of a spring with the lock should not be used if the intent is to restrain the animal.

**Fixed locks** are made from one piece of metal. They are bent or shaped to slide back on the cable. All are tooled to accommodate a certain diameter of cable, and in some cases, accept that cable in only one direction. Some fixed locks make the loop by passing the cable through the lock twice, and some just once. The latter use a breakaway “S” or “J” hook to complete the loop.

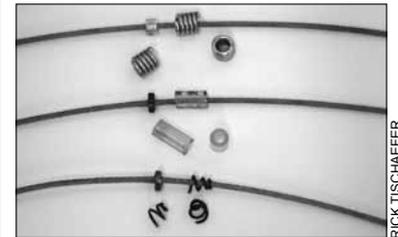
### **Breakaway Device**

North Dakota Century Code requires cable devices have a breakaway that will disassemble the loop at 350 pounds of pressure or less. This component can be an “S” or “J” hook, or alumi-



RICK TISCHAEFER

*A variety of components can be used to make a loop stop. Top to bottom – aluminum ferrule, add-on “c” stop, heat treated steel nut, and in-line swivel.*



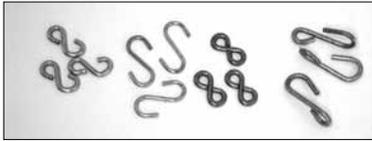
RICK TISCHAEFER

*Various examples of support collars. Top to bottom: wire wound collar, plastic tubing, and twist-on collar.*



RICK TISCHAEFER

*Fixed locks used to restrain include (left to right) Reichert 180 degree bend washer lock, Katz Relax-A-Lock, and Berkshire Bent Washer lock.*



RICK TISCHAEFER

*“S” and “J” hook breakaway devices. Left to right – Snare Shop 285, Fastenal 170, Sullivan 280, and Snare Shop 285 (J hook).*



RICK TISCHAEFER

*A variety of release ferrules and hand swagger to apply the ferrule to the cable end.*



INDOHEP

*Farm machinery, cattle, and fences are areas to avoid when using restraining cable devices.*

num release ferrule. A breakaway device is required to release large animals that may encounter a cable device, such as livestock, deer, elk, moose or wolves. When pressure is applied, the cable device loop disassembles and allows the animal to leave with no part of the cable device attached to the animal.

**“S” or “J” hooks** are inserted between the lock and end of the cable loop. When a certain amount of pressure is applied to the hook(s), a curve will open and allow the cable loop to disassemble. It is the diameter and type of metal that makes the hook that determines at what point it will open. “S” or “J” hooks may be needed as a breakaway device because of the lock design. Most hooks are opened and closed with pliers, and will work with any diameter of commonly used cable.

**Aluminum release ferrules** are compressed on the loop end of the cable with a specialized crimping tool. When a certain amount of pressure is applied to the loop, the ferrule will pop off the end of the cable and the loop will disassemble. Release ferrules are specifically designed for a certain diameter cable. Release ferrules are not appropriate breakaways for each and every lock design.

### **Construction**

The parts are assembled in a logical sequence on the cable until the device is complete.

- Lay the cut lengths of cable on a flat surface. Ensure they lay flat and are not sprung or damaged.
- Measure and mark the location for the loop stop (no greater than 37.5 inches or less from the loop end of the cable). Affix or compress the loop stop on the mark. If you are using an in-line swivel that also serves as the loop stop, cut the cable at 39.5 inches and insert the swivel using two aluminum double ferrules.
- Working on the loop end, slide the support collar on the cable.
- Slide the lock on the cable and make the loop.
- Incorporate the breakaway device to finish the loop.
- At the anchor end, slide the name tag on the cable (or it can be attached to the end swivel).
- Slide the 9-gauge swivel on to the cable, followed by a washer, and then affix an aluminum stop to the end of the cable.

Check the operation of the device after assembly. The lock should move up and down the cable smoothly. A completed device should also lay flat on a horizontal surface.

# Chapter 9

## Treating Cable Devices

### **Proper Care of Cable Devices**

Cable devices should be cleaned and dulled prior to being placed in the field. The majority of components are made of metal and the manufacturing process leaves oils and odors on the metal. Some components are galvanized and others are bare metal. In either case, they shine to a natural eye and must be dulled.

Do not use lye, bleach, muratic acid, toilet bowl cleaner, or other caustic cleaners typically used with foothold or bodygripping traps. The cable and aluminum components will quickly and easily deteriorate with exposure to these types of chemicals. Baking soda and water is all that is needed.

Begin by coiling the cable devices individually and then placing them in a kettle. Fill the kettle with water until the devices are covered. Estimate the amount of water and mix at a quantity of 1/2 cup baking soda per 1 gallon of water. Mix the baking soda in the water until it is completely dissolved and heat. Once boiling, reduce the temperature to a low rolling boil for 45 minutes to an hour. Pour off the dirty water and rinse the cable devices. Once dry, handle with clean gloves and place the cable devices in gallon size zip lock bags to keep them clean and odor free. The baking soda boil will turn the shiny metal a dull gray color and there is no need to color or dye the devices.

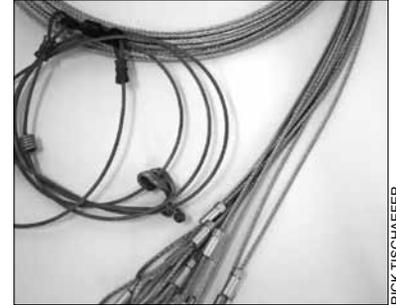
Coyote eyes are much different than human eyes. Human eyes have few rods and three cones, which allows most humans to see the full spectrum of color, but see poorly in darkness. Coyote eyes have many rods and two cones, restricting coyote to seeing only the yellow and violet spectrum of color, but see well in darkness. The rest of what a coyote sees exists between black and white, making dull gray a common and natural color for cable devices. If treating for color, match the surrounding vegetation from the level of a coyotes head, not yours. Use caution as mismatched colors will raise more suspicion than provide benefit.

### **Year-to Year Storage and Handling**

Store cable devices in sealed buckets or plastic bags to avoid being contaminated. Cable devices do not have to be boiled or treated every season as long as they do not become contaminated.

Inspect all cable devices prior to use each season. The treating process removes any protection the steel and aluminum parts may have had, resulting in rust or deterioration from environmental conditions over time.

Handle all treated cable devices with a specific and dedicated pair of gloves. Doing so will prevent cross contamination from gloves used when handling petroleum or tobacco products and trapping lures or baits.



RICK TISCHAEFER

*A baking soda boil helps remove the shine from new cable and components.*



RICK TISCHAEFER

*Items needed to properly treat and store cable devices include a heat source, container to boil water, water, baking soda, and bags to store treated cable devices.*

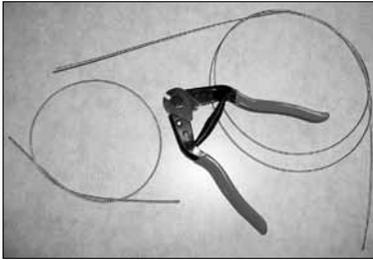
# Chapter 10

## Tools and Equipment Used With Cable Devices



*A tool belt provides easy access to the tools needed to set and maintain cable devices.*

CHRIS TISCHAEFER



*Quality cable cutters will provide years of service.*

RICK TISCHAEFER



*This activity requires a well maintained vehicle and the right equipment to meet the needs of a changing environment. Planning ahead and being prepared will make you successful.*

RICK TISCHAEFER

There are a few tools you will need while using cable devices. Some of the items will already be available from what is used while working with foothold and body-grip traps. Tools commonly used with cable devices include fencing or lineman's pliers, hammer and GAC cutter. A GAC cutter is specially designed to cut galvanized aircraft cable. You may be able to make a cut or two with higher quality fencing or lineman's pliers, but neither is designed for GAC. Make the investment in a good pair of cable cutters. It will be worth your while.

In addition to the tools, some additional equipment commonly used with cable devices includes:

- Support wire (9, 11, 12, or 14 gauge, depending on application)
- Re-rod stakes for anchoring (usually ½ inch x length needed for appropriate anchoring)
- Re-rod tangle stakes (5/8 inch x 60 inch) or "T" style fencing posts
- Satchel or similar bag to carry your equipment
- Spiked cable support wires for frozen ground
- Catchpole for releasing nontarget catches

Your strategy for using cable devices dictates anchoring. Anchoring hardware can be a single or double stake swivel, heavy duty s hooks, quick links, tree locks, or similar components. Regardless which is used, two requirements must be considered. It cannot be the weak link between the anchor itself and the breakaway device; and is a component that with the appropriate tool, allows the cable device to separate from the anchor. A cable device cannot be placed before or remain in the field after the close of the respective season. Having the ability to separate the cable device from the anchor becomes useful when weather conditions deteriorate or at the close of the season. In most cases, frozen ground or ice still exist and may make retrieving the anchor system difficult. Disconnect the cable device from the anchor for removal as required by law. Flag the set location and return at a later date to retrieve the anchoring system.

# Chapter 11

## Targeting Furbearers and Being Selective With Cable Devices

Cable devices are not the ideal tool for capturing every furbearer species. In the case of raccoon, it may be a poor choice. The purpose for capturing the animal guides the decision to use this tool. It may be the most efficient and practical tool given the conditions when resolving a human/wild animal conflict. For those using the pelts, one must consider all the tools available and the level of efficiency with each under the given conditions.

Pelts that are handled and marketed skin side out (muskrat, mink, raccoon, skunk, river otter and beaver) will reveal a capture with a cable device. The degree of marking or damage will reduce the return for the pelt. A better choice may be a foothold, body-grip, or cage trap.

Pelts handled and marketed fur side out (fisher, fox, coyote, badger and bobcat) will reveal little, if any indication the animal was captured with a cable device when done properly and checked regularly. In some cases, a cable device may be one of the better choices.

Responsible trappers use cable devices to make selective sets for many furbearers. Selective means catching one animal and not another. One of the benefits of a cable device is that one tool can be used for a variety of animals, and yet remain selective. It is the user who determines how selective the device will be. The goal of this information is to help you make good decisions. There are four factors that result in selective sets:

**Be knowledgeable.** As explained in earlier chapters, what you know is important to being a legal, responsible, ethical and successful user. You can be proactive by continuing to learn and share what you know.

**Location** means everything to being successful and is also a factor for being selective. You need to scout, spend some time following tracks, identify the variety of animals in the area, and learn where the travelways exist. This preparation will also tell you where not to set. Areas that have nontarget animal traffic are areas to avoid.

**Loop size** is another factor for being selective. With any size loop, some animals will be able to put their head in and some will not. The goal is to know the right size for the right animal, and become proficient at hanging a loop that size. Although North Dakota regulations allow setting cable device loops up to 12 inches in diameter, in many cases it may be more appropriate to use a smaller diameter loop. This chapter includes a list of sizes for each species. It is best to practice obtaining the desired size loop so it becomes natural as you place devices in the field. You can use an outspread hand or maybe a tool to help guide you with the size.

Galvanized aircraft cable will not provide a perfect circular loop when suspended over an animal's trail. GAC configured as 7 x 7 is somewhat flexible and the loop more resembles a teardrop than a circle. GAC configured as 1 x 19 is relatively stiff and the loop can more closely resemble a circle. A perfect circle is not required to catch animals and is rarely observed



RICK TISCHAEFER

*Raccoon pelts are handled and marketed skin side out. The two center pelts reveal the capture by a cable device behind the shoulders.*



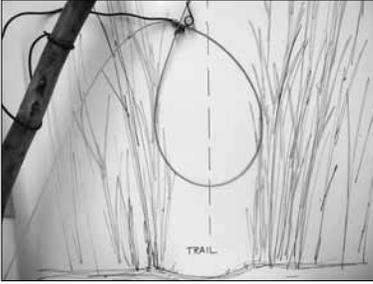
RICK TISCHAEFER

*A comparison of raccoon pelts revealing a cable device mark in the hip area. It is common for raccoon to be captured by cable devices intended for coyote – especially during the warming spells in winter.*

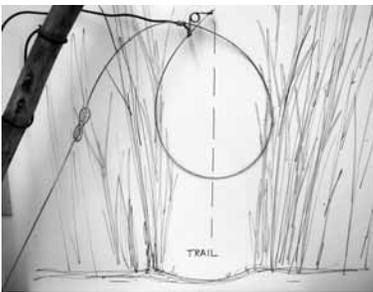


RICK TISCHAEFER

*Pelts handled and marketed fur side out include badger, bobcat, coyote, fisher, and fox. Timely checks with the right equipment and technique will reveal little, if any, marking of capture with a cable device.*



*Center the bottom of the cable loop in the center of the trail. This cable device is made with 3/32 cable (7 x 7) and represents a lethal set (components and entanglement).*



*Center the bottom of the cable loop in the center of the trail. This cable device is made with 5/64 cable (1 x 19) and represents a lethal set (components and entanglement).*



*Re-rod stakes used to cross stake for anchoring. Support wire is welded to one stake to provide a system to support the cable loop.*

in nature. Using a coyote as an example, the measurement from the chin to the tip of the ears is greater than the measurement from one side of the head to the other. Teardrop shaped loops are nothing to be concerned about. Just make sure the loop is the right size, right height from the ground, and centered on the trail.

**Loop height** is another factor for being selective. Loop height refers to the distance from the bottom of the suspended loop to the ground. As an animal passes its head through the loop, it should be the portion of the throat just under the chin that makes initial contact with the cable. Although North Dakota regulations allow setting cable device loops up to 12 inches from the ground, in many cases it may be more appropriate to set the loop closer to the ground.

Animals often travel the same trails and paths on a regular basis. Locations where the trail narrows are good places to set cable devices. Place cable devices in the center line of travel, so the targeted furbearer will walk into it. Furbearers are accustomed to walking through weeds and brush, so cable devices will not alarm them. These sizes represent a top to bottom measurement, not side to side:

- **Coyote cable loop for live restraint** – Use a 10- to 12-inch loop, with the bottom of the loop 10 inches from the ground.
- **Coyote cable loop for lethal sets** – Use a 9- to 10-inch loop, with the bottom of the loop 10 inches from the ground.
- **Bobcat cable loop** – Use a 7- to 8-inch loop, with the bottom of the loop 8 inches from the ground.
- **Fox cable loop** – Use a 6- to 7-inch loop, with the bottom of the loop 6-7 inches from the ground.
- **Beaver cable loops on land** – Use a 9- to 10-inch loop, with the bottom of the loop 2-3 inches from the ground.
- **Beaver cable loops in water** – Use a 12-inch loop.
- **Beaver cable loops (swimming on the surface)** – Use a 12-inch loop, with one third of the cable device above water.

# Chapter 12

## Dry Land Techniques With Cable Devices

Start by knowing all you can about the animals you want to catch. You have to spend time on the landscape following tracks, looking for scat, and learning what they are doing at that time of the year. Learn from their tracks, where they travel, and develop a strategy. Scouting year-round is good, but things do change. Animals found in one location in summer may not be there in the winter. You have to spend time on the landscape in winter to learn what they do in the winter. The easiest way to find animals in winter is to find their food. One animal track on a trail is a potential trail to set; two sets of tracks on a trail is a trail to set. A potential set location is where the trail narrows.

Weather influences what we do. Snow and wind can greatly change our set locations. Remember, though, that what shuts down a set location can also produce one. You have to adapt to changing conditions to be successful. As winter snows deepen, animals may begin using your trail to save energy. It is not a bad idea to set your back trail when that occurs.

Supports need to be sturdy and stiff enough to handle wind. A moving cable device can easily be detected, or the height and loop size may change. Obviously, a cable loop that has fallen will not catch the target animal, but may catch a nontarget animal. In the case of coyotes, loops that have fallen are good ways to catch coyotes by the foot. Pay attention to factors that may change your sets and visit them regularly.

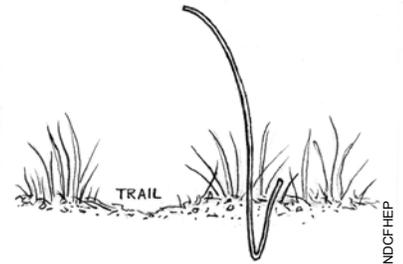
The support wire needs to hold the support collar tightly. This will make sure it takes some pressure to pull the support collar from support wire, allowing the loop to close securely on the animal's neck. Loose fitting connections will allow the loop to fall off from the wind or prematurely as the animal's head enters the loop.

Make your support wire system long enough to accommodate increasing snow depth. This will allow you to use what you place in the beginning of the season all the way to the end. If you are making reusable support wire systems with railroad spikes or re-rod, make them with 36- to 40-inch wires.

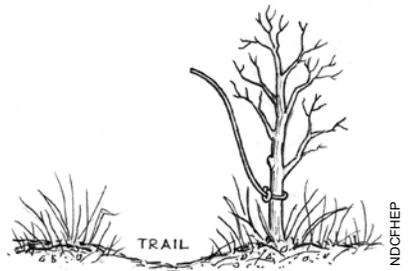
Think your set through before you place a cable device. What will be caught, what will you do if it is alive, how will you release a live nontarget animal, how will you remove the dead animal? Is a dead animal subject to damage by other predators or the sun, and will your catch be seen by anyone else?

Set locations in the shade are better than a sunny hillside. Dead animals will bloat and the belly will green up in the sun and warm temperatures, even though it may be winter.

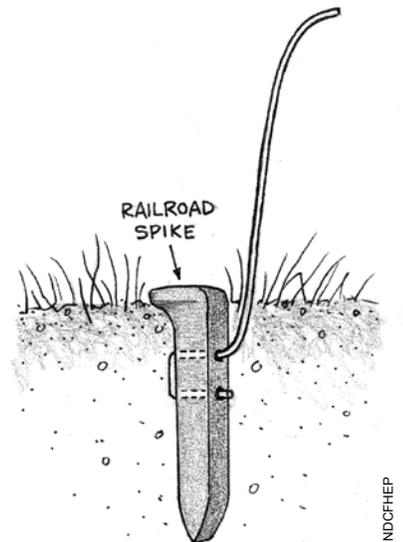
Check your cable devices regularly. It is wasteful to let rodents get to the fur, allowing the animal to spoil, or be found by another hungry predator. Additionally, it is your responsibility to collect and remove all cable devices from the field at the close of the season.



9-gauge wire used to make a support system for a cable loop.



Substantial vegetation is being used for the 9 gauge support wire.



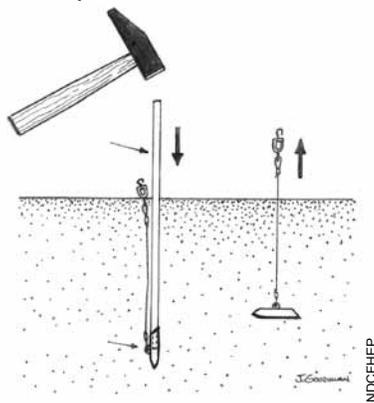
A railroad spike is used to provide a support wire in frozen ground. Re-rod can also be used for the same purpose.



**A lethal cable device in a blind trail set.**



**Cross stake your cable devices like you would anchor your foot-hold traps.**



**Earth anchors work well as an anchoring device for cable devices when soil conditions allow.**

In the case of coyotes, a significant disturbance or catch circle at the set location may not be a good place to reset a cable device. Coyotes will recognize the location and avoid it. There may be a time later in the season, once it ages or gets covered with snow, that it can be reused.

Avoid using lure or urine close to your set. Odors will cause the target animal to investigate, become cautious, or behave differently than they do while trailing. The head will not be in line with the body, they may stop or walk in circles to investigate, and depending on their status in the area, turn around and leave.

Set locations should be on straight runs in the trail, not curves or changes in the trail. Avoid setting uphill and downhill parts of a trail. Regardless of which way the animal is traveling, the head will not be in good position to enter the cable device loop. For trails that traverse on side hills, anchor your cable device on the downhill side of the trail.

Cable devices must be solidly anchored to an immovable object. This is imperative for a breakaway device to function properly, thus allowing the release of large nontarget animals. The use of drags with cable devices is prohibited because there is no assurance that the drag will catch on an immovable object. Anchoring to fence wires, such as barbed wire, is not sufficient because the wire often gives when pulled.

Fence crossings make funnel points for animals. However, use caution as barbed wire can cause fur damage, or the animal may bounce back and forth over the wire, becoming entangled. Additionally, the wire may act as a shock absorber, resulting in insufficient pressure on the cable device loop, preventing the loop from becoming smaller.

Flag locations so you know where your equipment is set. Cable devices easily blend in with the natural surroundings. Wind can move vegetation around or a little snow will change the appearance of the landscape, and a combination of the two may dramatically change the landscape. Colored survey ribbon works well as flagging, but choose a color that you can easily see. If you tie the flagging to vegetation, make sure you remove it when you leave. Mark your sets at eye level, so they are easy to see and should be high enough to avoid increasing snows through the winter. Place flagging adjacent to your set, not on top of it.

Sometimes a coyote will force the breakaway device open and release itself. Outside of being entangled in something, the animal does not know what happened or why. If you continue to work the same area, you may catch that animal again. You will know if an animal has been previously caught when you remove the pelt as there will be two cable marks on the leather side of the pelt.

The design of one cable device does not fit all applications. Match the device to how you are using it. Different designs would include:

- Shorter cables for cattails (5 feet long) and add entanglement, or check daily.
- Using a lighter breakaway device in areas frequented by nontarget animals like deer.
- Medium to long cables (8-12 feet long) in areas with good entanglement.
- Using a restraining cable device with daily checks near human or domestic animal activity.

### **Freecasting**

Freecasting is a technique where you travel the landscape with potential activity and see what you find. Cut a set of tracks and follow them. Walk parallel to the trail, not in it. Look ahead for narrow spots in the trail that will make a good set location. Approach the spot from 90 degrees and make the set from the side of the trail. Leave as little disturbance as possible.

Remember trails and locations that produce animals. The topography or vegetation may be natural travelways, used every time any animal passes through the area. You will have confidence in setting these locations, year after year, no matter the conditions.

### **Draw Stations**

Draw stations are locations that incorporate lure or bait to increase interest and activity. If you are using carcasses on private land, make sure the owner knows what you are doing. The longer a draw station is in place, the more activity. Depending on the animals that visit the draw station, there may or may not be feeding occurring. The draw station is a place for traveling animals to visit. Some may come to eat, smell identifiers (like urine or scat) left by other visitors, or leave some of their own. Regardless of the purpose, it is animal activity and that may result in set locations.

A draw station may be something as simple as a good dose of call lure on a piece of hide hung in a tree, a road-killed animal (legally possessed), carcasses from your fur shed, or dead livestock. Some draw stations are fastened in thickets or may be staked in the open. These techniques are used to keep animals from dragging the parts of the draw station around. It is your responsibility to ensure a part of a carcass does not end up too close to your set(s), as no set can be made within 25 feet of any exposed bait in excess of 1 pound. This is to prevent capturing raptors or scavengers, which may be attracted to your draw station or bait.

Once trailing occurs, backtrack those trails and choose set locations as far from the draw station as possible, with 100-500 yards being common. Here are some things to consider when making a draw station set:

- Setting too close will allow visiting animals to associate caution with the draw station.



RICK TISCHAEFER

*You must routinely check your cable devices. Although this was a lethal cable device (by components) and an intended lethal set (entanglement), this coyote opted to stay in the open. Entanglement assisting with death usually occurs soon after being caught. If it doesn't happen right away, chances are it's not going to happen. It is inhumane to leave a coyote in that device longer than needed.*



RICK TISCHAEFER

*Two examples of added entanglement. One is a common "T" post used for fencing and the other is made of two crossed 1/2" re-rod stakes.*



RICK TISCHAEFER

*Colored survey flagging threaded through the center of hinged clothespins works well for keeping cable devices organized and identifying set locations. Attach one to each coiled cable device; use it to identify the set location once the cable device is set; and recover when the cable device is removed.*



NICHOLAS

*Wild canines constantly use their nose, eyes, and ears to keep track of their surroundings. A normal travel posture is head down, eyes up.*



RICK TISCHAEFER

*A coyote trail in the cattails.*



RICK TISCHAEFER

*A snowmobile track through cattails makes a set location. Stand up the flattened cattails except where the loop will hang. Use a T-post as the anchor, support wire attachment, and entanglement. All Terrain Vehicles (ATVs) can create the same set location.*

- The closer an animal gets to the draw station, the more alert it becomes. It is their intent not to surprise or be surprised by another animal at the same location. An alert animal behaves differently than a trailing animal and makes it a poor candidate for a cable device.
- Raptors and scavengers will find your draw station. If it is in thick cover, birds will land in the open and use a trail to access the draw station. Walking 10-50 yards is common and cable devices are capable of catching large raptors and ravens. Setting too close to a draw station increases the potential for such a nontarget catch.
- Many more set locations exist farther away than closer.
- Catches made farther away will receive less attention by visiting animals than those within 100 yards of the draw station.

### **Cattails**

Cattails are good locations as long as the snow is not too deep. Once the snow gets deep enough to cover cattail stalks, they are generally unusable as good cable device locations. When usable, take advantage of freecasting for locations and set accordingly. Depending on ownership and permission, you can create a draw station in the middle of a slough on the ice. Once trailing occurs, set the productive looking trails.

Cable devices used in cattails should be short – only long enough to get the job done – and provide entanglement when using devices with lethal components. Cattails are not entanglement. Cattails are dense, and trails through cattails are relatively narrow. Accordingly, loops can be a bit smaller than typically used. In most cases, set locations are not reused after a catch is made.

### **Entanglement**

Entanglement is a key component of a lethal system. Entanglement needs to be stout and have mass to absorb the stress exerted on the cable. Springy or movable objects that come between the anchor point and the captured animal will prevent or delay death.

Added entanglement can be t-posts commonly used for fencing or re-rod steel stakes. Single re-rod steel stakes should be at least 5/8 inch diameter or larger; 1/2 inch re-rod steel stakes should be doubled. Cross the two 1/2 inch re-rod stakes and wire the tops together. One stake will support the other and the wire will keep the cable from getting down between the two. The

average shoulder height of a coyote is 24 inches, so ensure the added entanglement is 24 inches or higher above the ground or compacted snow.

Use this technique when adding entanglement in open or semi open areas:

- Anchor the cable device close to the trail adjacent the set location;
- Extend the length of the cable in the opposite direction from the set location;
- With the cable extended, locate the maximum loop stop. Measure 4 – 6 inches from the maximum loop stop (in the direction of the anchor) and place the entanglement at this point.
- Move your cable back to the trail and make the set.

When the target animal picks up the loop, it will run the cable out its length. If the initial run doesn't set the loop tight and cause death, the captured animal will sweep a circle the length of the cable from the anchor point. It is during this sweep that the cable will catch the entanglement. Circling will occur and the remaining cable will be wrapped around the entanglement. The lack of free reign and loop constriction will assist with causing death.

### **Anchor First**

Setting cable devices is a repetitive process, meaning most essential tasks are performed at every set location regardless of terrain or other natural features. Develop a system to perform these tasks in a certain order with anchoring the cable device as the highest priority and the first task – every set and every time.



*A cable device loop properly supported in the trail.*



*A dropped loop in the trail could be the result of the wind, weather, or a passing animal. A loop in this position has the potential for unintended consequences. Check your equipment frequently to avoid trouble.*

# Chapter 13

## Water and Ice Techniques With Cable Devices



ALBERT TRAMPERO

Most out-of-water beaver catches are around the body. Like raccoon, there is very little opportunity to place a cable around the neck.



RICK TISCHAEFER

Beaver pelts are handled and marketed open. The beaver pelts on the left and center reveal capture by a cable device with a relaxing lock and there is very little marking. The beaver pelt on the right reveals a capture by a cable device with a non-relaxing lock, resulting in significant marking.

**CAUTION – Restrained beaver will gnaw on surrounding green trees – avoid using them for anchoring or attach at ground level or below the water line.**

A majority of techniques and strategies used on dry land can be applied to water sets. Use cable devices built for restraining animals alive when working in or under water. The common target species is beaver and these pelts are handled and marketed open. Both sides of the pelt are inspected for damage, and cable devices with nonrelaxing locks may cause more pelt damage than those with relaxing locks. In addition, the loop encircles the body of a beaver, and not the neck. A beaver has a neck, but it is very short and difficult to specifically target.

### Open Water

Look for evidence of beaver activity and trails. If the evidence indicates a beaver is using a trail while swimming on the surface, suspend a cable device in the trail with one-third of the loop above the water and two-thirds below.

For evidence of a trail used completely underwater, suspend the cable device centered in the trail so the loop is just slightly off the bottom. When beaver use these trails, they generally swim tight to the bottom. If in doubt, a dive log can be placed horizontally and cross-wise over the trail to keep the beaver tight to the bottom.

Trails and openings are used to exit and enter bank dens and lodges. Suspend the cable device so it is centered on the opening.

Cable devices used in these situations rarely cause the animal's death. The length of cable generally allows the beaver to reach the surface and breathe. Check these sets frequently. An irreversible submergence system can be used if the water is deep enough to accommodate the length of cable.

### Under Ice

Cable devices can be used to catch beaver in known trails or openings under the ice. Use the same open water techniques for underwater trails or openings. Under-ice cable devices that capture beaver deny the animal an opportunity to breathe, thereby causing death.

Cable devices can also be used in baited sets under ice. Baited sets are used at locations with established bank dens or lodges with feed beds. In most cases, the primary entrance or exit to the den or lodge is directly under the feed bed. Place baited sets on the outside edge

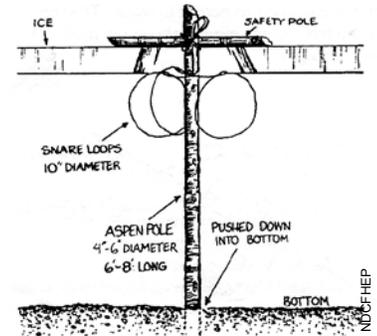
of the established feed beds for best results. Fashion a baited pole set using the information provided with the sidebar diagram:

- Acquire a fresh green aspen (poplar) log approximately 3-6 inches in diameter, long enough to be placed firmly in the bottom and extend 1-3 feet above the surface of the ice.
- Affix four cable support systems to the log, two at the top and two at the bottom.
- Affix one cable device in each support system and suspend the loop as shown. Do the same for all four support systems.
- Attach an extension wire from each cable device to reach the top of the pole.
- Place the pole vertically in the water and shove the base firmly into the bottom, then fasten the cross pole on top of the ice.
- Attach the extension wires to the cross pole.

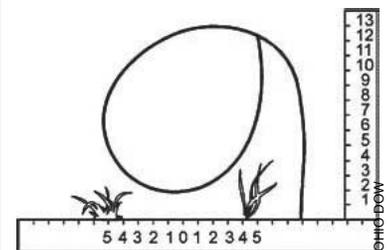
The beaver will try and cut off the bait pole just under the ice and just above the bottom, and take it to the lodge or den. A beaver will swim around the pole prior to cutting and swim in to the loop and be restrained under water. Placing cable devices top and bottom increase the potential for making a catch.

Fashion another type of baited pole set. Acquire a solid dead log approximately 3-4 inches in diameter, long enough to be placed firmly in the bottom and extend about 1-3 feet above the ice.

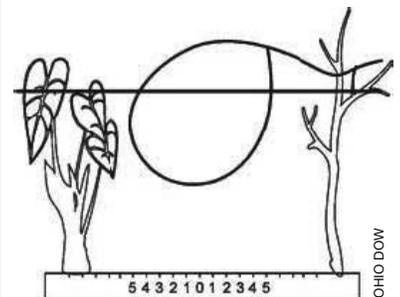
- Affix a bundle of fresh aspen (poplar) branches and twigs to the pole. This is bait.
- Affix two cable support systems to the vertical log slightly above the bundle of bait.
- Affix one cable device in each support system to suspend the loop. Do the same on the opposite side.
- Attach an extension wire from each cable device to reach the top of the pole.
- Place the pole vertically in the water and shove the base firmly into the bottom, then fasten the cross pole on top of the ice.
- Attach the extension wires to the cross pole.



*An under-ice baited pole set for beaver. Two cable devices can also be placed at the bottom of the pole.*



*Beaver set on land.*



*Beaver set in water.*



*Two thirds of a swimming beaver is below the water. Cable devices set to catch swimming beaver must be the same.*

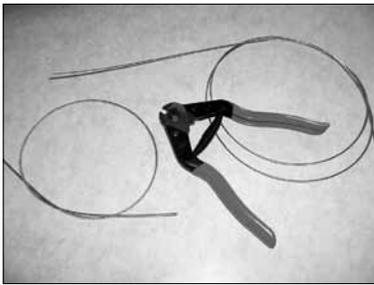
# Chapter 14

## Dispatching Furbearers and Incidental Catches



NDCHEP

*Shot placement is a critical component to being humane. Practice and be prepared.*



RICK TISCHAEFER

*Good quality cable cutters are required to release incidental catches. Cut the cable loop, not the cable between the loop and the anchor.*

Captured animals should be killed as humanely as possible. However, ideas about a particular method of dispatch differ. Some people believe that guidelines developed by the American Veterinary Medical Association should be followed when killing wild animals in the field.

We believe, as does the AVMA, that standards developed for veterinarians are not necessarily applicable or appropriate for activities like hunting and trapping. Licensed veterinarians can use lethal drugs that aren't available to the general public, and they don't need to worry about chemicals that make meat unfit for human consumption.

While these limitations explain why methods used to kill animals on the trap line differ from those used to kill animals in a laboratory or clinic, you have the same obligation to kill animals as quickly and painlessly as possible.

The best way to kill a targeted animal captured in a cable device is with a well-placed shot to the brain with a hollow-point bullet from a .22 rimfire cartridge. Trappers must plan the method of dispatch prior to placing cable devices. Planning reduces stress on you and the captured animal.

Trappers who carry firearms to shoot captured animals need to take a hunter education course from the North Dakota Game and Fish Department to learn about firearms safety. Here are some tips from the program:

- Practice safe habits around firearms at all times.
- When trapping, it is generally a good idea to keep your firearm unloaded until you need to use it. It can be difficult to maintain control of a firearm when you are carrying gear and making sets.
- When you shoot a firearm at a captured animal, be careful about ricochets.
- When trapping with companions, everyone should stand behind the shooter.
- Always look beyond your target when shooting a firearm, and only shoot if it is safe.
- Keep the muzzle under control and pointed in a safe direction at all times, even when the gun is not loaded.

### **Nontarget Catches**

North Dakota is blessed to host a variety of wildlife, some resident and some transient. As professionals, we must learn the landscape where we hunt and trap and know the types of animals we may encounter. The goal of setting cable devices is to catch target species, and one of the primary considerations in doing so is to avoid nontarget catches. Incidental catches of wolves, mountain lions, deer, turkeys, domestic animals and livestock can happen anywhere in

North Dakota, and it is our responsibility to do everything within our power to reduce the potential for this to occur.

The potential for nontarget catches will exist with every season. Your conduct in the field can reduce that potential and your preparation in advance can reduce stress if one should occur. Be prepared with the right equipment to release an unwanted catch; always remember to cut the cable loop, not the cable between the loop and the anchor, and have the contact information for the local North Dakota Game and Fish Department representative for requesting assistance.



NDGFHP

*A catch pole is useful to safely release a nontarget catch.*

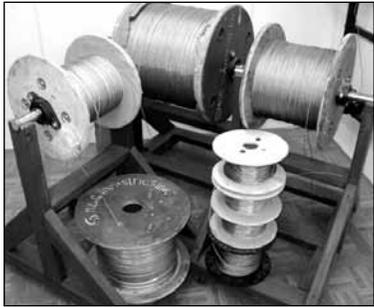


RICK TISCHAEFER

*A coyote is safely and humanely restrained with a catch pole. Snug the noose loop down to control the animal, not choke it.*

# Appendix A

## Testing Breakaway Devices



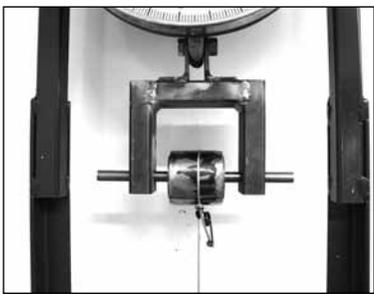
RICK TISCHAEFER

*Spools of galvanized aircraft cable (GAC) used for making cable devices. No two spools are identical.*



RICK TISCHAEFER

*A variety of release ferrules and hand swagger to apply the ferrule to the cable end.*



RICK TISCHAEFER

*The mandrel (steel cylinder) and support frame for testing cable devices. A one half inch cold rolled steel rod holds the mandrel to the frame. Cold rolled steel rod is used because it will handle the stress of the pull without bending.*

The purpose of this information is to educate you about the requirements, testing protocol, and equipment you can use to test your devices. This is important for both the builder and the buyer. The builder can simply test for accuracy, make adjustments if necessary, and remain consistent in the future. Additionally, the buyer now knows the basics and can make the right choices based on strategy and legal requirements. A cable device offered for retail sale and advertised as “North Dakota legal” is not until you prove otherwise. Equally important is ensuring the components that comprise the cable device provide a tool that is humane, efficient, and legal.

### **Cable and Components**

Cable device users have a responsibility to ensure the breakaway devices are legal. The law requires a breakaway device “must break or disassemble at no more than 350 pounds and the user is responsible for ensuring the breakaway device complies with law.” This chapter will explain the dynamics of breakaway devices and provide information on testing cable devices for compliance.

Cable configured as 1 x 19 is created from 20 individual wires spun together under some degree of tension. The result is a tightly wound cable with a smooth finish due to fewer individual wires. Cable configured as 7 x 7 is created from 49 individual wires, also spun under some degree of tension. The result is a tightly wound cable with a coarse finish due to more individual wires.

Cable diameter is affected by both the quality of individual wires and the tension applied to the wire while spun. Finished cable is spooled to a reel under tension so that the rows lay evenly and on top of one another. The tension applied to the cable during spooling also affects the diameter of the cable.

The quality of individual wires used to create cable varies with origin and manufacturer. The cable most retail businesses sell is either of Chinese or Korean origin. It has been noted that wire or cable with Chinese origin is of less quality, retains more manufacturing residue, provides a greater variance in size, and is accordingly less expensive. Conversely, wire or cable with Korean origin is of better quality and generally priced accordingly.

The diameter and finish of cable has a profound effect on release ferrules. Depending on the manufacturers recommendation, a release ferrule used on 1 x 19 cable (smooth finish) could receive as many as three crimps with their hand swagger. For 7 x 7 cable (coarse finish), manufacturers generally recommend one crimp with their hand swagger. Each manufacturer has its own recommended hand swagger and release ferrule. Variations as much as 0.008 of an inch have been noted in measuring cable diameter and 0.004 of an inch in release ferrules.

All three components – cable, release ferrule, and hand swagger – can vary in quality and a slight flaw or deviation in any one component will cascade and negatively affect the end result. Both static and tension pull testing in recent years has shown great variation in breakaway weight of manufactured release ferrules. Routine testing should be completed to insure cable devices remain in compliance.

Cable diameter or configuration has little to do with the breakaway performance of an “S” or “J” hook. Manufacturing “S” or “J” hooks is simple - a specific diameter wire is bent in a serpentine design to create the hook. Various products are available and commonly graded by advertised opening weight. Both static and tension pull testing in recent years has shown little variation in release weights of most manufactured “S” and “J” hooks. Consistency comes with using the same product with the same components in the same configuration. Routine testing should be completed to insure cable devices remain in compliance.

### ***The History of Breakaway Testing in North Dakota***

North Dakota State University’s Mechanical Engineering Department has been testing cable device breakaways for the North Dakota Game and Fish Department since 1995. The testing methods were either dead weight or ramped load - each method applying a known weight to the cable device loop until it disassembled.

In 2007, work began on developing a standardized testing protocol for breakaway devices. The goal of this effort was to have a standardized testing protocol that is accessible to the greatest number of potential users and be as mechanically simple and inexpensive as possible.

In addition to dead weight and ramped load testing, research began on a method considered more representative of what would occur in the field with a captured animal. This testing method used a pendulum to apply a known weight at a known speed horizontally to disassemble the cable device loop. A formula would then be used to calculate breakaway “weight” by which the cable device loop disassembled using pendulum travel speed, pendulum weight, and distance travelled. However, researchers were unable to calibrate the pendulum testing device so that an appropriate conversion formula could be developed. Additionally, the North Dakota Game and Fish Department felt this testing method would not meet the goals stated earlier. Therefore, pendulum research ended in 2009 and no formal re-examination has been conducted to authenticate this method of testing.

In 2015, the North Dakota Game and Fish Department adopted a standardized testing protocol to measure breakaway weight. This standard, included as Appendix B, was produced by the North Dakota State University’s Mechanical Engineering Department under contract



RICK TISCHAEFER

***A battery operated winch driven pulling device. The double dial scale records the weight when the loop disassembles.***



RICK TISCHAEFER

***A testing device machine used by the North Dakota Game and Fish Department. A hydraulic ram pulls the cable and a digital scale with memory records the weight of pull. A plexiglas enclosure protects the operator from flying components when the loop disassembles.***



RICK TISCHAEFFER

*A static weight testing assembly using 5 – 60# bags of dry mix concrete for known weight. A platform was built with a center stem – the bags of cement are placed on the platform and a stem to connect the cable device for the test. This test is conducted by raising the mandrel with a rafter mounted electric winch.*



RICK TISCHAEFFER

*Personal protective equipment like safety glasses, face shield, gloves, and apron are worn while testing cable device breakaways.*

with North Dakota Game and Fish Department. The purpose for the standard is to provide consistency in the construction of testing equipment and the testing procedure.

### **Breakaway Testing Devices**

Currently, the North Dakota Game and Fish Department uses a combination of equipment that costs approximately \$2,100 to test breakaway weights of cable devices; and North Dakota State University uses a testing device costing hundreds of thousands of dollars. However, it is possible to test your own cable device breakaways without this significant investment. While not exactly the same, similar lifting or pulling equipment may be closely available that can produce similar results. The constant component in any one method of testing is the mandrel – the cylinder to which the cable device loop is affixed. The standard necessitates the mandrel be made from a two inch diameter pipe with Schedule 40 sidewall for consistency. Raw materials needed to make a test fixture are available from area steel vendors.

### **Dead Weight Testing Method**

This method requires movement, but no scale. Place the cable device loop around the mandrel and suspend the mandrel from an elevated and secure position on a block and tackle, winch, or hydraulic equipment. The cable device loop is snugged to the mandrel with the lock facing downward. Place a known weight in a container or on a platform and attach the anchor end of the cable device to it. Slowly lift the mandrel to test the breakaway device with the known weight. Adjust accordingly by adding or subtracting weight until the cable device loop disassembles. The sum of those weights with the weight of your container or platform is your breakaway weight.

### **Ramped Load Testing Method**

This method of testing requires movement and a scale – preferably a double dial scale or digital scale with memory to record the weight at the time the cable device loop disassembles. Movement is achieved either by hand, mechanical, pneumatic, or hydraulic tension pull. In all cases, the cable device loop is placed around the mandrel and the mandrel secured. The cable device loop is snugged to the mandrel with the lock towards the tension pulling device. Expect a maximum of two and half inches of travel from a snug cable device loop to disassembly. A block and tackle, boat winch, or similar device assists with a tension pull by hand; a battery or electric operated winch, or similar device assists with a mechanical tension pull; an air compressor, valve, and cylinder is used for a pneumatic tension pull; and any number of

hydraulic configurations (motor and ram, loader tractor, skid steer, or vehicle lift) assists with a hydraulic tension pull.

**Caution**

Protective clothing, shields, and safety eye wear should be worn when testing cable devices. The cable device loop disassembles because components break, fail, and come apart. There is a great amount of stress on the device and loose parts travel in all directions at a very high speed.

**Consistency**

Consistency in breakaway device performance depends upon accuracy and reliability from manufacturers, suppliers, and users. During any one of these steps, variability can be introduced into the system, therefore routine testing is important and highly recommended. The goal is to have a tool that is humane, efficient, legal, and to expect nothing less.



NDCFHEP

**Coyote**

# Appendix B

## North Dakota Game and Fish Department Testing Standard for Breakaway Devices August 2015

### Scope and Purpose

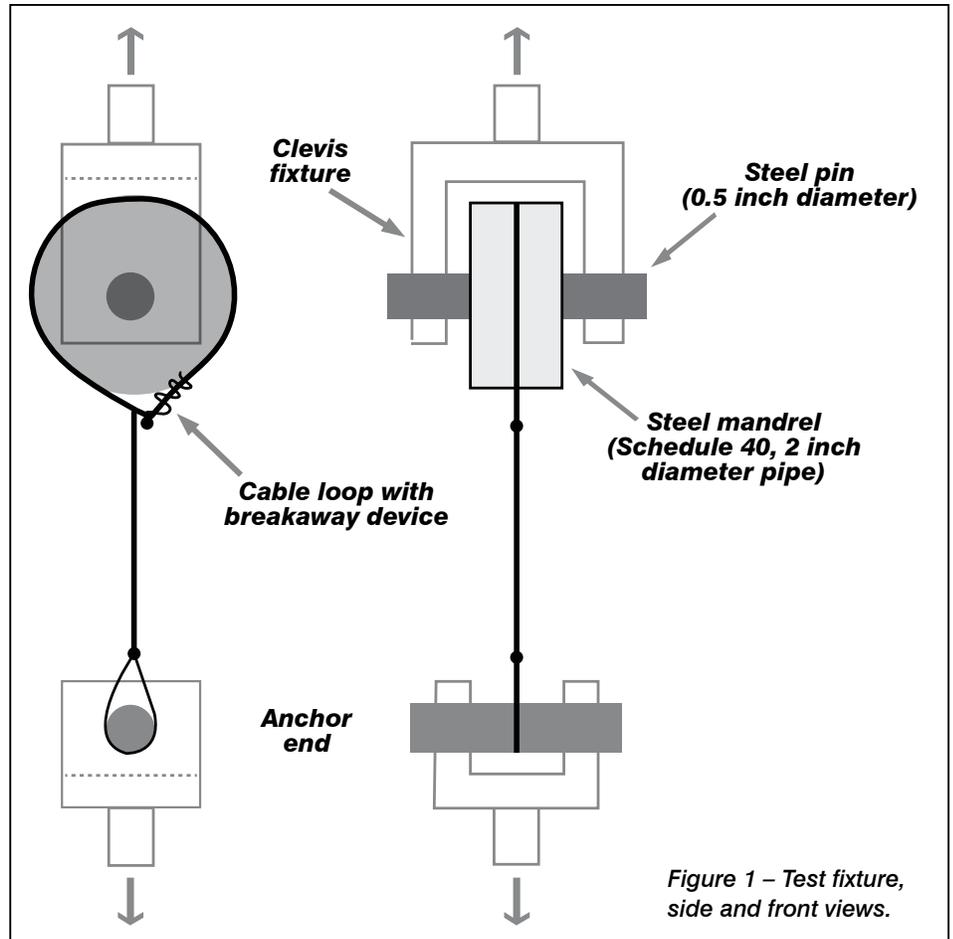
Cable devices to be legally used in North Dakota must possess a lock or breakaway device that disassembles at 350 pounds pull or less. The following standard defines the process, procedures, and equipment for conducting breakaway load testing of cable devices (e.g. snares) designed for the purpose of taking fur-bearing animals in the state of North Dakota. This standard is intended to provide for consistency in the construction of testing equipment and the testing procedure used in determining cable device compliance with North Dakota regulations.

### Requirements

Cable devices used for the purpose of taking furbearers in North Dakota must have a breakaway device that will allow the cable loop to disassemble at a pulling force of 350 pounds or less. While different mechanisms may be used for this purpose, disassembly of the device must occur when the cable loop has been placed around a mandrel of a Schedule 40, 2 inch diameter steel pipe and the tensile force in the anchor side of the cable reaches 350 pounds or less.

### Test Methodologies

Two different test methodologies are allowed under this standard. The first methodology (dead weight test) uses a go/no-go criterion in which it must be confirmed that the cable device loop successfully disassembles under a static load that does not exceed 350 pounds. The second methodology (ramped load test) uses a load frame with a force transducer (load cell) that records



the peak load at which the cable device loop disassembles.

Both methodologies make use of the same test fixture design to secure the cable loop.

### Test Fixture

The test fixture must consist of a cylindrical steel mandrel made from a Schedule 40, 2 inch diameter steel pipe that can freely rotate about its central axis on a 0.5 inch diameter steel pin or bolt, which is in turn supported in a clevis fixture. The loop end of the cable device should be placed around the mandrel with the locking mechanism oriented in the direction of pull on the cable. The anchor end of the cable must be safely restrained in a fixture on the opposite end of the testing device (see Figure 1).

### **Dead Weight Test Procedure**

The fixture on the anchor end of the cable should be secured to a static weight of  $345 \pm 5$  lb. (Note, this weight equates to approximately 0.7 cubic feet of steel, 0.75 cubic feet of cast iron, or 2.25 cubic feet of concrete). The clevis fixture on the loop side of the device should be attached to a mechanism capable of lifting a 350 pound weight off the ground at a uniform speed.

With the loop end of the cable device positioned around the mandrel and the anchor end suitably fixed to the static weight, remove all slack from the cable by hand-tightening the loop around the mandrel and raising the clevis fixture until the cable is taut. The test may then be conducted by raising the clevis fixture at a uniform speed in the range of 5 - 120 inches/minute.

Successful failure of the cable device occurs if the breakaway mechanism disassembles prior to or within 5 seconds of the weight being lifted off the ground. If the weight remains suspended for more than 5 seconds, the cable device does not meet the disassembly requirement (test failure). Should the cable device fail at a different location (e.g. the free end of the cable or attachment to the weight) prior to the weight lifting off the ground, this is considered an invalid test.

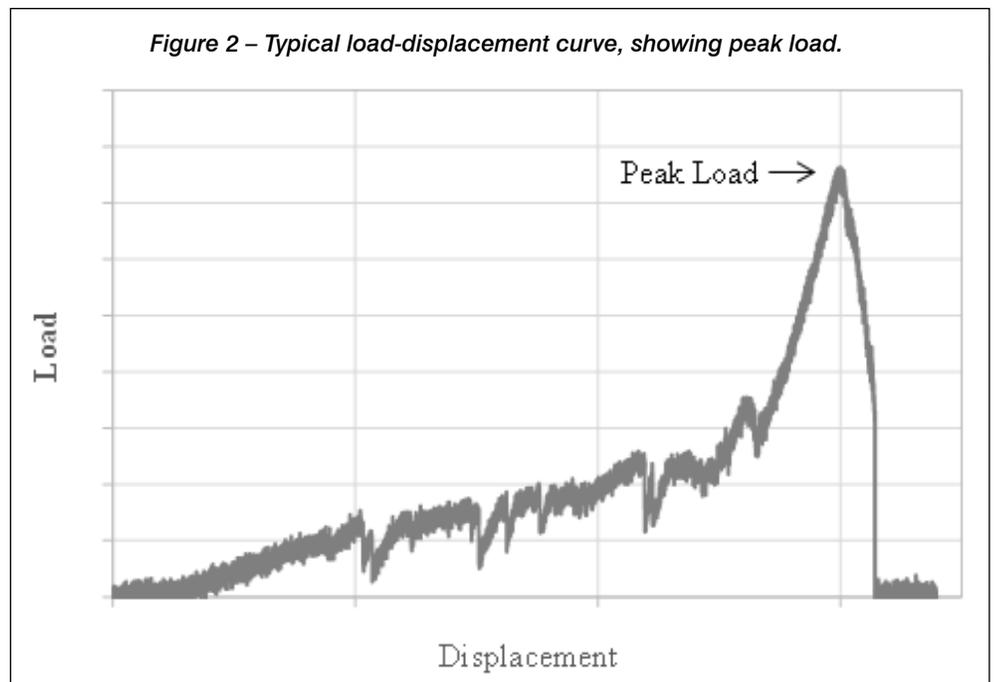
### **Ramped Load Test Procedure**

This test must be performed on a load frame actuated by suitable means (mechanical, hydraulic, or pneumatic) that is capable of achieving loads in excess of 350 pounds and which has sufficient stroke length to cause total loop separation of the cable device. The test frame must be capable of exerting a uniform rate of displacement at a speed in the range of 5 - 120 inches/minute. A force transducer (load cell) with a capacity exceeding 350 pounds

and resolution of 3 pounds or smaller, must be used to record the breakaway load. The force transducer must be calibrated within an accuracy of  $\pm 2\%$  of the applied load.

With the loop end of the cable device positioned around the mandrel and the anchor end suitably restrained in the opposite fixture, remove all slack from the cable by hand-tightening the loop around the mandrel and extending the load frame until the cable is taut. The test should be performed in displacement (stroke) control at a uniform speed in the range of 5 - 120 inches/minute. The force must be continually monitored to determine the peak load applied to the cable device prior to loop disassembly. The breakaway load is defined as the maximum force recorded on the load-displacement diagram (*see Figure 2*), corresponding to the peak load measured by the force transducer.

Successful failure of the cable device loop occurs if the breakaway device disassembles at a peak load of 350 pounds or less. If the peak load exceeds 350 pounds, the cable device does not meet the disassembly requirement (test failure). Should the cable device fail at a different location (e.g. the free end of the cable or a



ttachment to the opposite fixture) prior to reaching an applied load of 350 pounds, this is considered an invalid test.

**Number of Test Specimens**

A minimum of 3 identical samples must be tested for determination of legality of each type of cable device. To ensure the cable devices are legal for use in North Dakota, all 3 samples

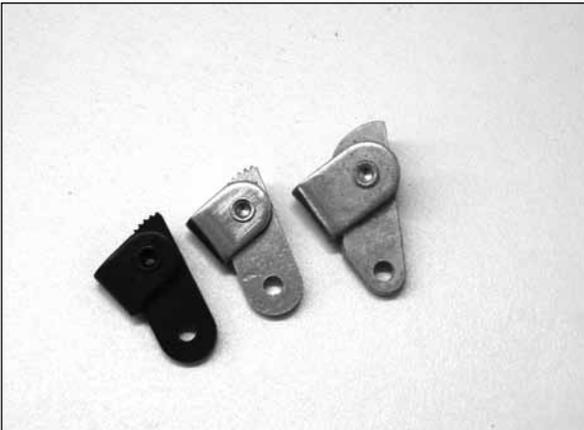
must successfully disassemble at 350 pounds or less. Cable devices then constructed in the exact same manner and with identical materials would also be considered legal for use in North Dakota. Any change in construction, materials, or any other alteration or modification of a cable device from the samples tested shall render the test results void for all such altered cable devices.

# Appendix C

PHOTOS IN APPENDIX C BY RICK TISCHAEFER

Photographs are for educational purposes only and no endorsements or promotions exist for any manufacturer or brand name.

## A Sample of Cable Device Components and Assemblies



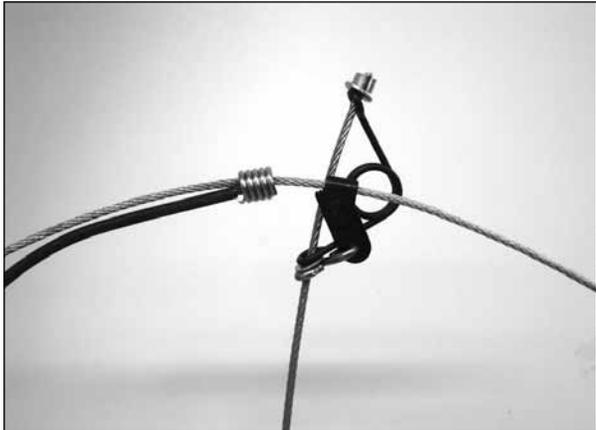
Cam locks with and without teeth. Cam locks without teeth do not grip cable properly and are poor choices for lethal devices.



Cam locks can be purchased with and without teeth. A cam lock file is used to create or repair teeth on these locks.



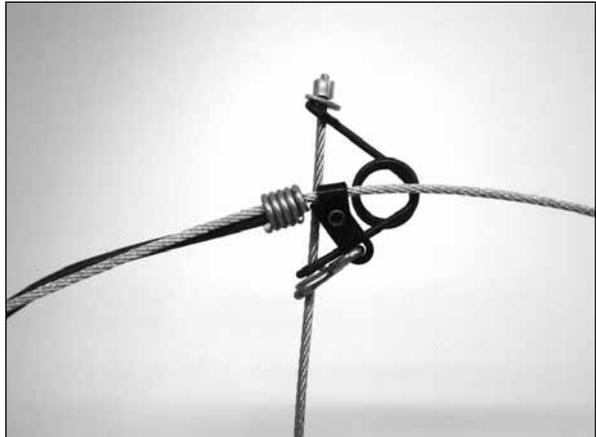
Cam lock #5 with teeth and system components – lethal.



Cam lock #5 with teeth; Sullivan 280# S hook; and torsion spring – lethal.



Death blow cam lock with teeth and system components – lethal.

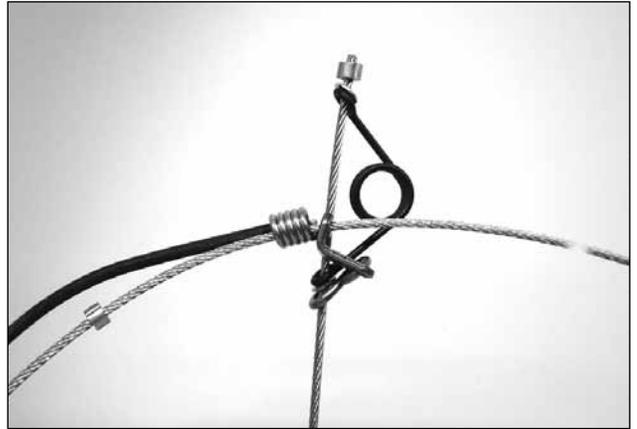


Death blow cam lock with teeth; Sullivan 280# S hook; and torsion spring – lethal.

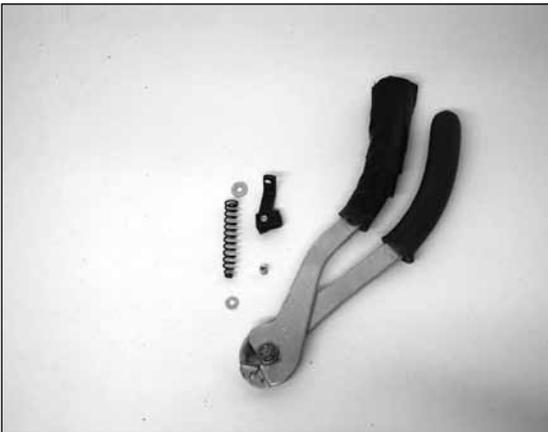
*Note: Compression springs  
may be used in lieu of torsion springs  
where shown.*



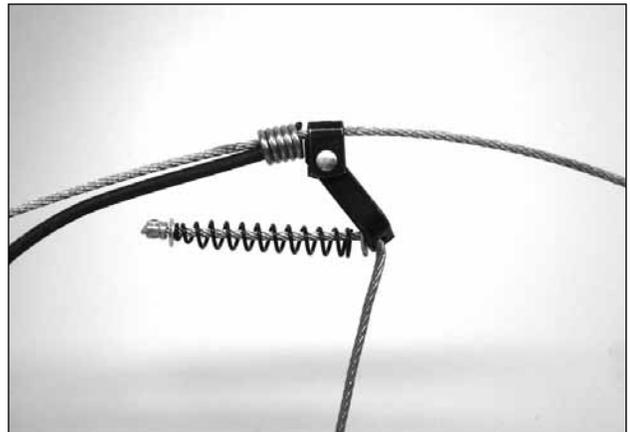
*Grawes bullet lock and system components – lethal.*



*Grawes bullet lock; Sullivan 280# S hook; and torsion spring – lethal.*



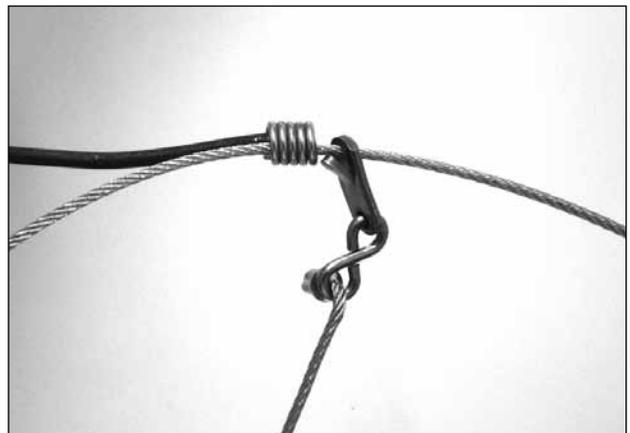
*Wedge lock and system components – lethal.*



*Wedge lock; 285# release ferrule; and compression spring – lethal.*



*Slim Lock with system components – lethal.*

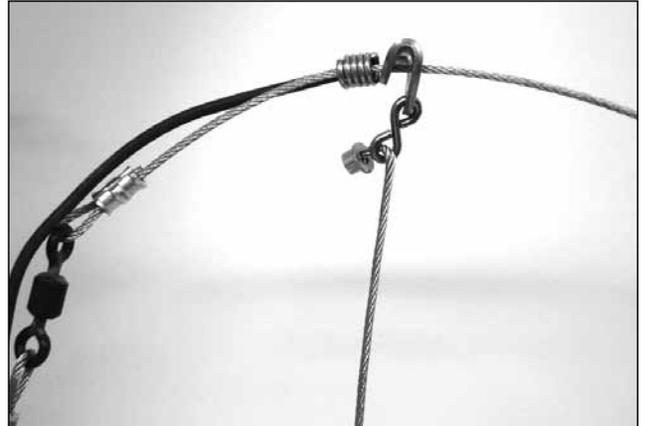


*Slim Lock Assembly – lethal.*

*Note: Fixed locks with less than a 90-degree bend (MicroLocks, MiniLocks, Penny Locks, Adams Lock Blackdog LoPro Lock), with or without a compression or torsion spring, are not recommended for lethal systems.*



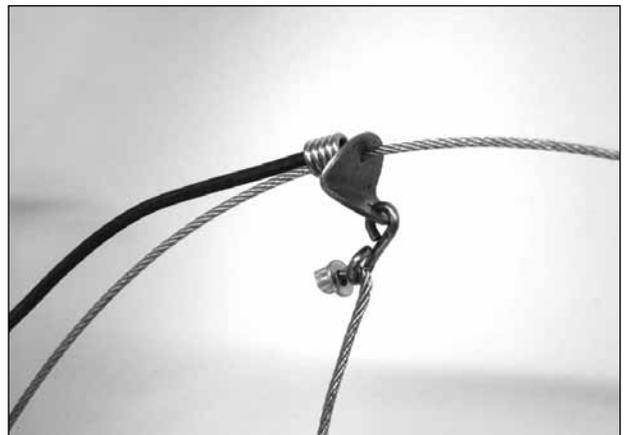
*Reichert 180 Degree Washer Lock with system components – live restraint.*



*Reichert 180 degree washer lock and Sullivan 280# S Hook – live restraint.*



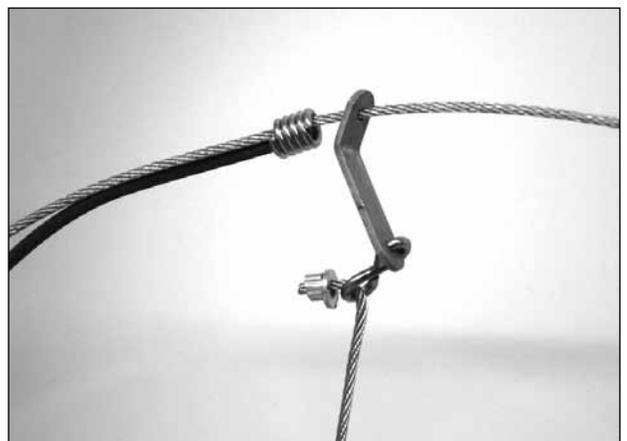
*Berkshire Washer Lock and system components – live restraint.*



*Berkshire washer lock and Sullivan 280# S hook – live restraint.*



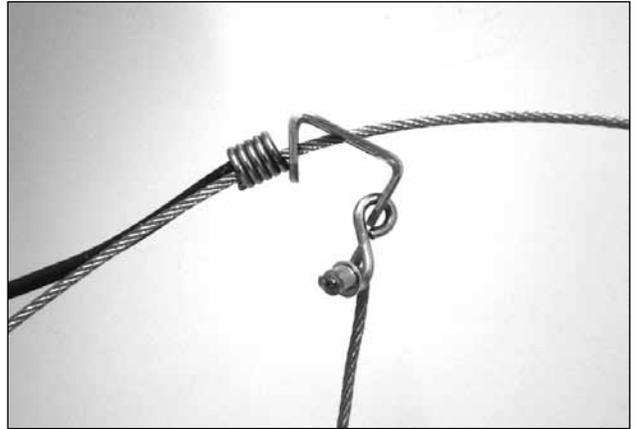
*Katz Relax-A-Lock and system components - live restraint."*



*Katz Relax-A-Lock and Sullivan 280# S hook – live restraint.*



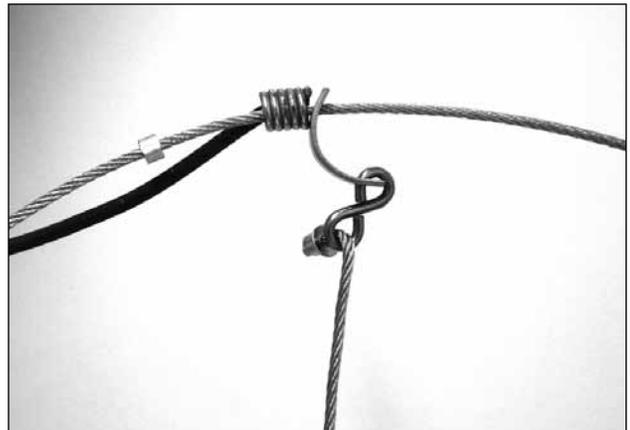
*BMI Slide Free Lock with system components – live restraint.*



*BMI Slide Free Lock Assembly – live restraint.*



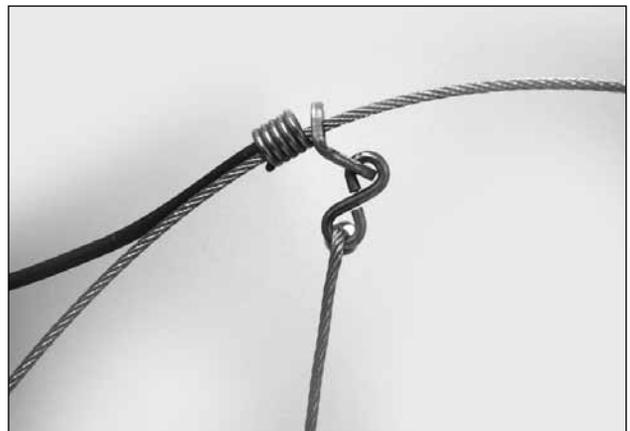
*Adams Lock with system components – live restraint.*



*Adams Lock Assembly – live restraint.*



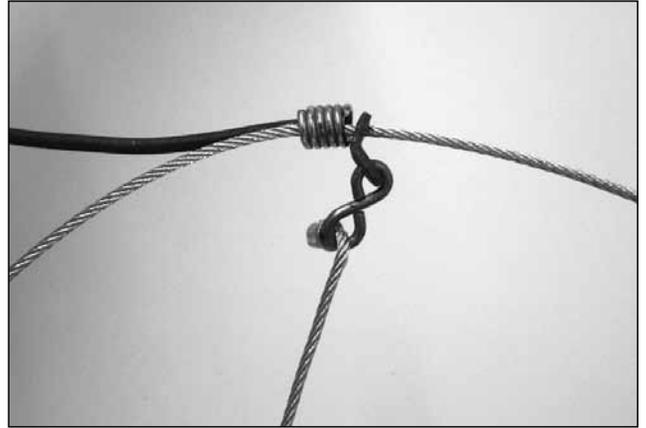
*Micro Lock with system components – live restraint.*



*Snare Shop Micro Lock Assembly – live restraint.*



*Black Dog Lo Pro Lock with system components – live restraint.*



*Black Dog Lo Pro Lock Assembly – live restraint.*