UC Agriculture & Natural Resources

Proceedings of the Vertebrate Pest Conference

Title

Advances in the Modern Snare

Permalink

<https://escholarship.org/uc/item/81x2f7p0>

Journal

Proceedings of the Vertebrate Pest Conference, 26(26)

ISSN

0507-6773

Author

Jackson, Pat J.

Publication Date

2014

DOI

10.5070/V426110391

Advances in the Modern Snare

Pat J. Jackson

Utah State University, Logan, Utah

ABSTRACT: Snares are ancient tools, used since prerecorded time. Many advancements and improvements have been made in the 21st century, including aircraft cable, snare locks, swivels, and breakaway devices. Though still a popular capture tool in many parts of North America, their prevalence has declined worldwide and in some parts of the United States. I describe current snaring terms, define the difference between snares and cable restraints, summarize all commercially available snare and cable restraint components, and provide a general description of their use. I also point out some shortcomings in the current literature. I hope this will shed new light on an old tool.

KEY WORDS: aircraft cable, breakaway device, cable restraint, capture, lock, snare

Proc. 26th Vertebr. Pest Conf. (R. M. Timm and J. M. O'Brien, Eds.)

Published at Univ. of Calif., Davis. 2014. Pp. 400-404.

INTRODUCTION

Snares have been used to harvest wild animals since before recorded time; original snares were made from local materials including twisted bark, hair, leather, and other vegetative materials (Phillips et al. 1990, Shaffer et al. 1996, Vantassel et al. 2010). In the 21st century, snare technology was drastically improved with the advent of snare locks and aircraft cable. Aircraft cable is strong enough to hold any terrestrial mammal in North America, yet flexible enough to form a loop easily. Lock devices allow the snare loop to constrict but prevent it from expanding (MDC 2007).

Snaring is an important wildlife management tool, but many snaring terms lack accepted formal definitions in the scientific community, which makes comparisons between studies challenging. AFWA (2009) states:

While we are unaware of any official standard for describing or defining snare components, where possible we have adopted definitions that are generally consistent with industry language. We recognize our definitions do not supplant any current language used in individual state policies or laws. Nevertheless, we encourage states to adopt consistent language to minimize confusion amongst snare manufacturers, snare users, and natural resource agencies.

In the interest of clarity and continuity, I followed AFWA (2009) guidelines for snaring terminology whenever possible and defined a snare as “a type of capture device that uses a loop of wire, stranded wire, or wire rope designed and set to close around the neck, torso, foot or leg of an animal.” AFWA (2009), however, does not define cable restraints; therefore I used the MDC (2007) definition, “when a locking device is added to keep the loop from re-opening once it starts to close, yet stops tightening when pressure is released, the snare is turned into a non-lethal trapping method called a cable restraint.”

Snares and cable restraints are tools commonly used for both eradication and reintroduction efforts. Snares have been used to capture beavers (*Castor canadensis*) for reintroduction programs in the Intermountain West (McKinstry and Anderson 1998, McNew and Woolf

2005). “Specialized neck snares” most likely following the cable restraint definition were used to capture grey wolves (*Canis lupus*) for reintroduction in Yellowstone National Park (Fritts et al. 1997). In a study in North Dakota on nesting duck success, trapping efforts included the use of snares for mesocarnivores to improve nest success rates (Chodachek and Chamberlain 2006). In some situations, snares can be more selective than other capture methods; Guthery and Beasom (1978) found snares were 12 times more selective for predatory mammals than were foothold traps.

Snares and cable restraints have many benefits over other commonly used trapping methods, such as foothold traps. One of the largest advantages is cost. During a beaver reintroduction study, beaver snares cost approximately \$1.25 per snare when purchased or \$0.70 if handmade, resulting in less than \$350 in materials to capture 231 beavers. If Hancock or Bailey (over \$350 per trap) brand beaver traps had been used, 231 beavers would have cost over \$4,000 in materials (McNew et al. 2007). Other benefits of snares include their lighter weight, ease of carrying, ease of construction, and are easier to learn how to use than other capture methods (Etter and Belant 2011).

Though some literature focusing on snare and cable restraint research exists (i.e., McKinstry and Anderson 1998, Frey et al. 2007), most snare and cable restraint information is gleaned from radio-telemetry studies (Muñoz-Igualada et al. 2010, Etter and Belant 2011). Limited literature unfortunately leaves many gaps in our knowledge about snares and cable restraints (Boddicker 1982, AFWA 2009, Etter and Belant 2011). I believe the specific area needing the greatest amount of research is the use of breakaway devices (BADs): “They allow the snare loop to break open and an animal to escape completely free of the snare when a specified amount of force is applied” (AFWA 2009). In a study comparing three different snares, Phillips (1996) found 66% of deer captured were not able to activate the commercially available BAD used with the snare. Roy et al. (2005) tested 5 similar commercially manufactured BADs and reported different breaking points ranging from 79 to 146 lbs and 206 to 350 lbs in straight pull and under loop

testing, respectively. Because little literature on BADs exists, AFWA (2009) recommends standardizing BAD tests with a static load test, while Roy et al. (2005) recommends a dynamic test. Static load tests involve slowly increasing poundage until the BAD breaks, while dynamic tests involve a sudden increase in force. The high variability in breaking points of commercially available BADs and discrepancies on how they should be tested is currently unacceptable for ethical snaring. AFWA (2009) describes in detail the need and potential methods for testing BADs.

Snares and cable restraints are not a perfect tool, as they can be indiscriminant when used improperly. Guthery and Beasom (1978) reported most members of a small herd of collared peccaries (*Pecari tajacu*) were killed as nontargets during their coyote capture study. Snares were used with a combination of other techniques to remove mesocarnivores in North Dakota, where 23% of animals captured were nontargets (Sargeant et al. 1995). It is worth noting Sargeant et al. (1995) did not provide the number of nontarget animals captured but did mention snares were “especially effective” at capturing mesocarnivores. Incidental catches are not popular with the public, and at times they have fueled legislation led by anti-trapping organizations to outlaw or restrict their use (Vantassel et al. 2010).

Snares and cable restraints are so simple their components function interdependently; any small change can alter the entire performance of the snare or cable restraint (Short et al. 2012). Snares and cable restraints are simple in design, but techniques used by the trappers setting them are not. Snares and cable restraints can be set safely and humanely by following guidelines provided by Olson and Tischafer (2004) and MDC (2007), but the nuances of snare and cable restraint performance can take several trapping seasons to master. Snares and cable restraints only realize their maximum potential when set properly; this knowledge should be considered as much an art as a science.

My objective is to collect, summarize, and describe all commercially available snare and cable restraint components, with the goal of providing researchers and managers with the current choices in snaring technology. Previous research has mentioned snare components (Phillips 1996), but significant innovations in snare and cable restraint design that need more research have been made in the last two decades. To the best of my knowledge, all commercially available snare and cable restraint components are included in this paper. Mention of a product or retail source does not endorse either. I do not discuss parts that are commonly manufactured by the trapper. This paper will only cover snares and cable restraints designed to capture and restrain animals by the neck. It will not cover other materials designed to capture and restrain animals by the foot, leg, or torso, nor will it cover any power-assisted snaring devices.

SNARE PARTS

Cable

Cable, better known as aircraft cable, is the “backbone” of snares and cable restraints. Most trappers choose to use galvanized aircraft cable due to price, though stainless steel aircraft cable does exist for conditions where snares or cable restraints will be exposed to harsh, humid, or saline environments for long periods of time. Cable type is referred to by strand; for instance, 7 × 7 cable has 7 strands, and within each strand are another 7 smaller strands. The most commonly used cable for trapping situations is 7 × 7 and 1 × 19, though 7 × 19 cable is used in some situations. Cables also come in a variety of diameters that affect snare and cable restraint performance (Table 1), because cable diameter is directly related to breaking strength. Other cables exist but are rarely used for snaring situations. Refer to AFWA (2009) for more detailed descriptions on all commercially available cable.

Table 1. Breaking strengths are for galvanized cable, the most commonly used type of cable by trappers. Stainless steel cable breaking strengths can vary.

Illustrations and information courtesy of Worldwide Enterprises Inc.

	Strand Type	Diameter (in)	Diameter (mm)	Breaking Strength (lb)	Breaking Strength (kg)
7x7	1/16	1.6	480	218
		5/64	2.0	650	295
		3/32	2.4	920	417
		1/8	3.2	1700	771
1x19	1/16	1.6	500	227
		5/64	2.0	500	363
		3/32	2.4	1200	544
		1/8	3.2	2100	953
7x19	1/16	1.6	n/a	n/a
		5/64	2.0	n/a	n/a
		3/32	2.4	1000	454
		1/8	3.2	2000	907

Table 2. Commercially available snare and cable restraint locks categorized as relaxing, positive, and power-assisted locks. Note that positive locks may be non-lethal in some situations, or the snare may be modified to increase lethality. Positive and power-assisted locks are not recommended for live-capture research. Snare and cable restraint placement can be more important than lock selection. Positive locks are defined as non-relaxing locks; power-assisted locks are defined as lethal locks within the trapping supply industry.

Relaxing Locks	Positive Locks	Power-Assisted Locks	Springs
ADC Washer Lock ¹	Adam's/DMD C-Lock ¹	Amberg Wedge Lock ^{1**}	25# Dispatch Spring ¹
Berkshire Washer Lock ¹	Berkshire Sure Lock ¹	Berkshire Modified L Type Lock ^{1**}	50# Dispatch Spring ¹
Hansen Washer Lock ¹	Bridger Sure Hold Cam Lock ²	Lightening Lock ^{8**}	Quick Kill Spring ¹
Heavy Duty Washer Lock ¹	Butera BMI Mini Lock ¹		Senneker Kill Spring ^{7***}
Hoffman Lock ³	Butera BMI Slide Free Lock ¹		Senneker Magnum Kill Spring ^{7***}
Large Washer Lock ²	Dakota Line Biter Cam Lock ³		
No-Line Lock ⁴	Cam Lock ¹		
Penny Lock ¹	Dakota LoPro Lock ^{6*}		
Reichart Lock	Grawes Bullet Lock ¹		
Relax-a-Lock ¹	Gregerson Lock ¹		
Thompson Release Lock ⁵	Kieper Lock ¹		
	Micro Lock ^{1*}		
	Slim Lock ^{1*}		
	Small Washer Lock ²		
	Mini Cam Lock ¹		
	O'Gorman High Dessert Cam Lock ⁷		

¹ Snare Shop (2014)

² Minnesota Trapline Products (2014)

³ Northland Animal Lures (2014)

⁴ Newt Sterling, Snare One, pers. comm.

⁵ Thompson Snares (2014)

⁶ Dakota Line Snares (2014)

⁷ O'Gormann (2013)

⁸ Senneker (2014)

* Indicates discrepancy in relaxing definition between retailer and trapper (Jayme Johannes, ADC's Skinners, pers. comm.). Noted locks may be defined as relaxing, particularly if the factory burr has been removed.

**Indicates use of a kill spring with lock.

***Intended to be used with Alberta Powersnare Trigger

Figure 1. Labeled parts of a snare or cable restraint.
1 = collar support, 2 = lock, 3 = breakaway device (BAD),
4 = end stop, 5 = minimum and maximum loop stop.

Locks

Snare and cable restraint locks are arguably the “brain” of the device. Their design dictates the amount they will or will not loosen once the animal stops pulling against the snare or cable restraint. This determines how

lethal the snare or cable restraint will be. AFWA (2009) describes 3 types of locks: relaxing, positive, and power-assisted. Relaxing locks are intended to be used for cable restraints. Positive and power-assisted locks are designed for snares (Table 2, Figure 1). It is worth noting that positive and power-assisted locks are referred to as non-relaxing locks within the trapping retail supply industry. Many locks can be recycled and reused.

Breakaway Devices

Breakaway devices (BADs) are designed to break at a certain amount of force. The concept is they will hold the desired animal but release larger nontargets that are stronger and can exert more force. They can be attached to the snare or cable restraint lock, built into the lock itself, or a ferrule can be attached to the end of the cable with a special tool (Table 3, Figure 1). There are many discrepancies between different BADs, and much research is needed (Phillips 1996, Roy et al. 2005, AFWA 2009). AFWA (2009) recommends all managers and agencies use static load tests.

Swivels

Swivels are designed to prevent the cable from twisting, kinking, and ultimately breaking while the animal in the snare or cable restraint struggles. Swivels may help in decreasing lethality of a snare or cable restraint. End swivels are built onto the end of a snare or cable restraint. Midline swivels are built within the snare

or cable restraint; at times, it is recommended to use multiple midline swivels (MDC 2007). Most end and midline swivels can be recycled and reused (Table 4, Figure 2).

Other Parts

Ferrules and Stops

Double ferrules, single ferrules, and stops are normally made of aluminum or steel nuts. Double

Figure 2. (A) End swivel and (B) midline swivel examples for snares and cable restraints.

Table 3. Commercially available breakaway devices and their breaking points. It is important to note manufacturers do not state if breaking points were determined with static or dynamic tests (Roy et al. 2005).

Break Away Type	Breaking Point (lb)	Breaking Point (kg)
B.A.W. J-Hook ¹	220	100
Sullivan S-Hook ¹	280	127
Hopkins S-Hook ¹	90-300*	41-136*
Snaresnap S-Hook ¹	285	129
Snaresnap H-Hook ¹	285	129
Snaresnap Release Ferrule ¹	240-350*	109-180*
Amberg Release Ferrule ¹	270	122
Gregersen Lock ¹	339	154
Thompson Release Locks ²	280	127
Senneker Elite S-Hook ³	265-1000*	120-454*
Dakota Line J-Hook ⁴	285	129
Dakota Line S-Hook ⁴	285	129

¹ Snare Shop 2014

² Thompson Snares (2014)

³ Senneker (2014)

⁴ CNTS (2014)

* The device is available in different sizes/breaking weights

Table 4. Midline and end swivels commercially available.

Midline Swivels	Size	End Swivels	Size
Barrel Swivels ³	#0-#12*	Thompson Swivels ²	#1-#5*
Stainless Steel Swivels ¹	3.15-3.94	Snare Swivels ¹	9 & 11 ga*
Heavy Swivel ²	#4-#5, #4SS*		

¹ Thompson Snares (2014)

² Thompson Snares (2014)

³ Snareone (2014)

* indicates manufacturer sizing

ferrules are designed to form a permanent loop in the non-lock end of a snare or cable restraint. Single ferrules and stops are used to form the end of the loop in the snare or cable restraint (Table 3). Copper double and single ferrules are available for conditions where snares or cable restraints will be exposed to harsh, humid, or saline environments for long periods of time. Some stops are designed to be used as BADs (Table 5, Figure 1).

Table 5. Assorted commercially available parts necessary to assemble a snare or cable restraint.

Ferrules and Stops	Cable Size (in)	Cable Size (mm)
Aluminum Stops ¹	1/16-1/4	1.6-6.4
Copper Stops ¹	1/16-1/4	1.6-6.4
Aluminum Double Ferrules ¹	3/64-1/8	1.2-3.2
Copper Double Ferrules ¹	1/32-1/8	0.8-3.2
Mini Steel Cable Stops ¹	3/32	2.4
Heavy Duty Steel Ends ¹	3/16-7/32	4.8-5.6
Loop Stops		
Standard Loop Stops ^{1*}	1/16-1/8	1.6-3.2
Mini Loop Stops ^{1*}	3/32	2.4
Squeeze-on Loop Stops ^{1*}	1/16-1/8	1.6-3.2
Collar Supports		
Twist-on Collars ¹	1/16-1/8	1.6-3.2
Support Collars ¹	9 & 11 ga wire	n/a
Double Ferrules ¹	1/16-1/8	1.6-3.2

¹ Snare Shop (2014)

*The word "deer" instead of loop was used by retailer

Loop Stops

Loop stops are designed to prevent the lock from either closing (minimum loop stops) or opening past (maximum loop stop) a certain point (AFWA 2009). Minimum loop stops are also referred to as deer stops, because they are primarily used to exclude ungulate legs (MDC 2007). Loop stops can be built from aluminum or steel and are normally built into the snare or cable restraint. Squeeze-on loop stops are available for snares and cable restraints, if normal loop stops were not included during manufacturing but are required (Table 5, Figure 1). Minimum loop stops should prevent the loop from contracting smaller than 2.5" (6.4 cm) (Olson and Tischefer 2004). Minimum and maximum loop sizes will differ depending on local non-target species.

Collar Supports

Collar supports, also known as "whammies," are designed to hold the snare or cable restraint loop off the

ground at a certain height. They can be made from steel or aluminum; double ferrules may also be used as whammies (Table 5, Figure 1). Many trappers make their own collar supports or own supporting system, rather than using a support collar. Collar supports can often be recycled and reused.

CONCLUSION

Snares and cable restraints are currently used to capture every fur-bearing mammal in North America. This amounts to hundreds of thousands, if not millions of animals harvested annually with snares and cable restraints. Though much research has been conducted on snares and cable restraints, more work is needed, particularly on breakaway devices. The fur trapping industry will continue to make advancements in snaring and cable restraint technology; managers and researchers should strive to keep up. A standardized terminology is also needed, so that all researchers, authors, managers, and trappers can easily communicate.

ACKNOWLEDGMENTS

I thank Jayme Johannes and Newt Sterling for sharing information on snare and cable restraint products. Conversations with Trevor Walsh were also particularly helpful. I also wish to thank Worldwide Enterprises Inc., Wisconsin Dept. of Wildlife, and Natalene Cummings for use of their illustrations. Finally, I thank Cory Mosby, Connor Wood, Dan Olson, and Michael Conover for their editorial comments.

LITERATURE CITED

- AFWA (Association of Fish and Wildlife Agencies). 2009. Modern snares for capturing mammals: Definitions, mechanical attributes and use considerations. Association of Fish and Wildlife Agencies, Washington, D.C.
- Boddicker, M. L. 1982. Snares for predator control. *Proc. Vertebr. Pest Conf.* 10:50-54.
- Chodachek, K., and M. Chamberlain. 2006. Effects of predator removal on upland nesting ducks in North Dakota grassland fragments. *Prairie Nat.* 38:25-37.
- CNTS (Cumberland's Northwest Trappers Supply). 2014. Cumberland's Northwest Trappers Supply homepage.
- Dakota Line Snares. 2014. Dakota Line Snares homepage.
- Etter, D. R., and J. L. Belant. 2011. Evaluation of 2 cable restraints with minimum loop stops to capture coyotes. *Wildl. Soc. Bull.* 35:403-408.
- Frey, S. N., M. R. Conover, and G. Cook. 2007. Successful use of neck snares to live-capture red foxes. *Human-Wildl. Interact.* 1:21-23.
- Fritts, S. H., E. E. Bangs, J. A. Fontaine, M. R. Johnson, M. K. Phillips, E. D. Koch, and J. R. Gunson. 1997. Planning and implementing a reintroduction of wolves to Yellowstone National Park and central Idaho. *Restor. Ecol.* 5:7-27.
- Guthery, F. S., and S. L. Beasom. 1978. Effectiveness and selectivity of neck snares in predator control. *J. Wildl. Manage.* 42:457-459.
- McKinstry, M. C., and S. H. Anderson. 1998. Using snares to live-capture beaver, *Castor canadensis*. *Can. Field-Nat.* 112:469-473.
- McNew, L., and A. Woolf. 2005. Dispersal and survival of juvenile beavers (*Castor canadensis*) in southern Illinois. *Amer. Midl. Nat.* 154:217-228.
- McNew, L. B., C. K. Nielson, and C. K. Bloomquist. 2007. Use of snares to live-capture beavers. *Human-Wildl. Conflicts* 1:106111.
- MDC (Missouri Department of Conservation). 2007. Missouri cable restraint training manual. Missouri Department of Conservation, Jefferson City, MO.
- Minnesota Trapline Products. 2014. Minnesota Trapline Products homepage.
- Muñoz-Igualada, J., J. A. Shivik, F. G. Domínguez, L. Mariano González, A. Aranda Moreno, M. Fernández Olalla, and C. Alves García. 2010. Traditional and new cable restraint systems to capture fox in central Spain. *J. Wildl. Manage.* 74:181-187.
- Northland Animal Lures. 2014. Northland Animal Lures homepage.
- O'Gormann, C. 2013. O'Gormann's Enterprise Catalog, Broadus, MT.
- Olson, J. F., and R. Tischaefer. 2004. Cable restraints in Wisconsin: A guide to responsible use. Wisconsin Department of Natural Resources, and Wisconsin Trapper Association. PUBWM-433, Madison, WI.
- Phillips, R. L. 1996. Evaluation of 3 types of snares for capturing coyotes. *Wildl. Soc. Bull.* 24:107-110.
- Phillips, R. L., F. S. Blom, and R. E. Johnson. 1990. An evaluation of breakaway snares for use in coyote control. *Proc. Vertebr. Pest Conf.* 14:255-259.
- Roy, L. D., C. Twitchell, M. Hiltz, and S. E. Unit. 2005. Factors influencing the effectiveness of breakaway snares to capture coyotes and release deer in Alberta. Sustainable Ecosystems Unit, Alberta Research Council, Vegreville, AB, Canada.
- Sargeant, A. B., M. A. Sovada, and T. L. Shaffer. 1995. Seasonal predator removal relative to hatch rate of duck nests in waterfowl production areas. *Wildl. Soc. Bull.* 23: 507-513.
- Senneker, M. 2014. Marty Senneker homepage.
- Shaffer, B. S., K. M. Gardner, and B. W. Baker. 1996. Prehistoric small game snare trap technology, deployment strategy, and trapper gender depicted in Inviimbres pottery. *J. Ethnobiol.* 16:145-155.
- Short, M. J., A. W. Weldon, S. M. Richardson, and J. C. Reynolds. 2012. Selectivity and injury risk in an improved neck snare for live-capture of foxes. *Wildl. Soc. Bull.* 36: 208-219.
- Snareone. 2014. Snareone homepage.
- Snare Shop. 2014. The Snare Shop homepage.
- Thompson Snares. 2014. Thompson Snares homepage.
- Vantassel, S. M., T. L. Hiller, K. D. J. Powell, and S. E. Hygnstrom. 2010. Using advancements in cable-trapping to overcome barriers to furbearer management in the United States. *J. Wildl. Manage.* 74:934-939.
- Worldwide Enterprises, Inc. 2014. Worldwide Enterprises, Inc. homepage.