

Electric Fences in Bear Country

National Park Service
U.S. Department of the Interior



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Photograph © John Gookin

Bear Behavior and Learning

Bears are curious animals and always searching for a meal. They may be attracted to the scent of human belongings or camps. Or, human belongings simply appear novel, and may contain something interesting to the bear, even without scent.

Fortunately, bears also behave in a way that avoids or reduces risk. An easy meal is one thing. Investigating a scent which causes a jolt probably isn't worth it.

Therefore, the idea behind the electric fence is to teach the bear that approaching too close to human belongings is unpleasant. You get shocked!

Bears then, like many animals, require an explicit, negative stimulus that associates an unpleasant encounter with the fence. The electrical shock provides negative reinforcement, and deters the bear from obtaining any positive reward (e.g., food, equipment). The system works on the same premise as invisible dog fencing.

Adding flagging, lights or other methods to help the bear see the fence before it's touched can help the bear learn from the first "sting." High visibility also helps other animals avoid running through the fence by accident. Fence knockdowns by other animals are a common cause of system failure.

Importantly, a highly motivated bear will likely get through any electric fence. Keeping a clean camp and handling food and garbage responsibly will minimize the bear's motivation to approach the camp or attempt a breach. The electric fence does not replace proper food handling or camping guidelines.

Behaviorally, bears generally respond by avoiding risks. The combination of keeping a clean camp, an electric fence, and maintaining human presence acts as a strong deterrent.



NPS photograph

Keep all food and scented items under your immediate control at all times. While camping, keep a clean camp and store food in a bear resistant food container (BRFC).

Camping

The fence provides reduced risks and greater assurance for backcountry campers, while serving as a tool for minimizing negative bear and human encounters along with reducing defense-of-life-and-property killings.

Simply put: an electric fence is a safe and responsible way to camp. It does not replace proper food handling or camping guidelines.

Keep all food and cosmetics in the bear resistant food container (BRFC) when not in use. Place any snacks, wrappers, lip balm, sunscreen, etc. that were used while kayaking or hiking into the BRFC.

An electric fence provides a layer of safety for you and the bear in terms of distance, and therefore time. Basically, the encounter between you and the bear occurs at the electric fence, and not at your tent or other belongings. This increases the buffer distance between you and the bear, reducing the chance of you startling the bear and causing an attack. It also allows you to use methods such as noise, and your presence to deter the bear, before it gets too close. This also increases safety for the bear. It reduces its chances of obtaining human belongings or causing harm, and therefore its risk of getting shot.

You have more time to act. The bear has a greater opportunity, and motivation to leave.

Other Applications

The electric fence reduces the risk of negative bear encounters. It also provides greater assurance and security for backcountry users. It has the ability to protect your camp and gear in these and other situations:

Backpacking—protect tent, gear, and food.

Group Camp—protect camp, equipment, and food.

Rafting/Kayaking—protect camp; optional second fence to protect craft.

Hunting—protect the camp; optional second fence to protect meat cache.

Fly-in Camping—protect the plane and camp.



Don't let bears make decisions for you—consider using an electric fence.

Electric fencing is not a substitute for use of BRFCs and proper food handling.

Bears generally avoid risks and will quickly learn to avoid properly installed electric fences.

Proper set up and maintenance of electric fencing is key.

There are an estimated 35,000-45,000 brown bears in Alaska.

Electric fencing is an option to protect aircraft at remote landing sites.

Setting up an Electric Fence

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How Electric Fences Work



A bear fence unit provides a very brief, intense jolt of electricity that will reach through paws and fur to sting the bear enough to provide a very unpleasant experience. Setting up the unit the right way assures you that the unit will do its job.

Achieving a good ground with the electrical fence is important. This provides a return circuit for the electrical pulse to shock a bear. A poor grounding system is the most common error in electric fence installation and causes low voltages that are inadequate to deter bears.

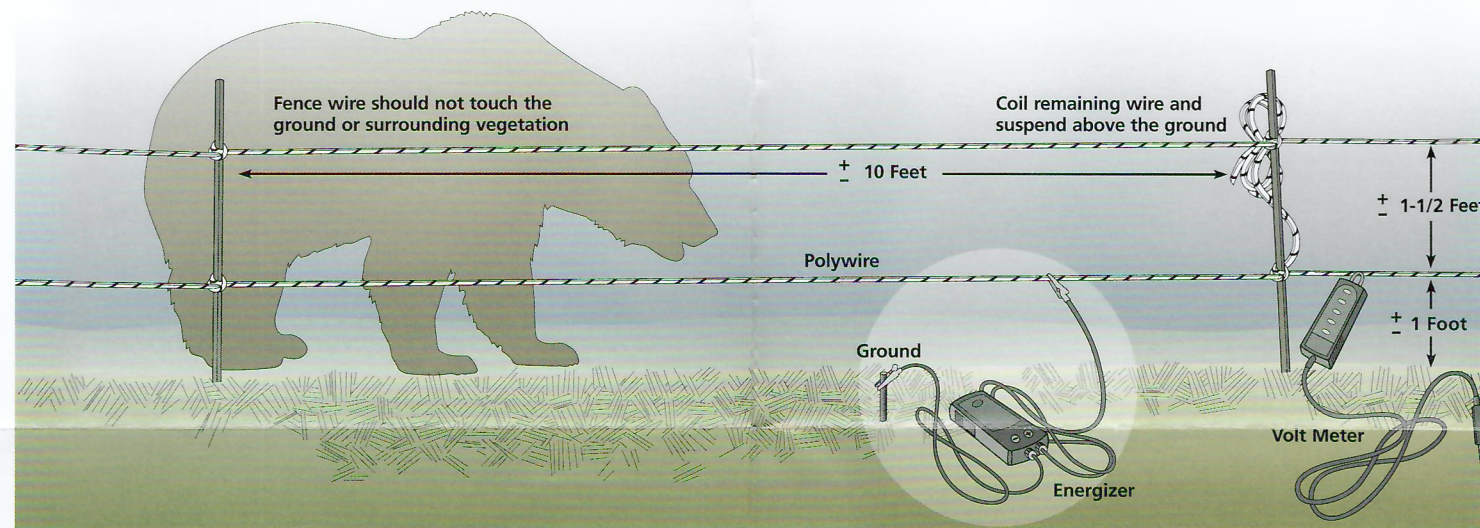
The time it takes to set up a fence varies with perimeter size and location. With experience, a typical fence can easily be assembled in less than 30 minutes.

Electric fences are small and light.

When packed, they fit into a small stuff sack. One with 14 poles spaced 10 feet apart weighs approximately 6 lbs.

Generally, the fence works in all weather conditions when bears are active. At a minimum, tents should be pitched 10 feet inside the wire, to prevent a bear reaching in. A greater distance provides for increased reaction time and space when responding to a bear at the fence.

A suitable bear fence can be purchased or assembled for under \$200.



Setting Up the Fence

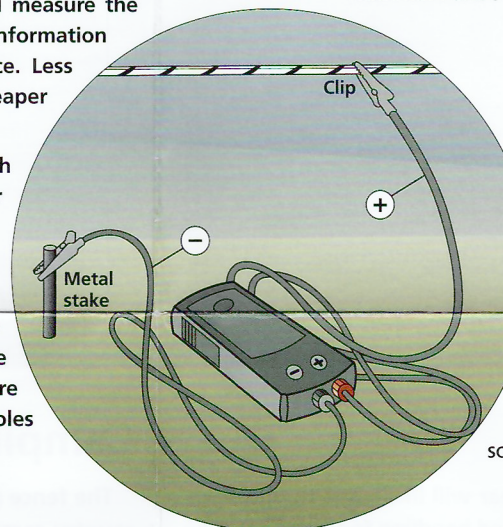
Setting up an electric fence requires these components:

- Energizer
- Grounding rod and connectors
- Fence poles
- Fencing—polywire (polyethylene line with strands of stainless metal wire interwoven) which resembles string more than conventional wire)
- Volt Meter—to test if the wire is carrying current and measure the current strength. A digital voltmeter gives you precise information about how well you have installed your electric fence. Less expensive testers with a few neon bulbs are a cheaper alternative that may be acceptable.
- Alarm—low voltage alarm. An additional tool worth considering is an alarm indicating an animal contact or voltage drain from plants on the wire.

Distance from ground level to bottom wire is approximately one foot; ensure that the wire is clear of all vegetation and at a height which precludes a bear cub from ducking under it. Do not use trees or shrubs to tie off wires because the unit will not work. The second wire should be +/- 1.5 feet above the bottom line. Space fence poles depending on topography to maintain a taut line.

Most electric fences do not have a gate, one simply steps over the wires. Gates are an option, but create opportunity for failure because they are often improperly installed or left open interrupting the circuit. When choosing your tent site avoid areas frequented by bears, (e.g., river corridors and trails).

Equipment Availability: Additional information is available on the National Park Service website: www.nps.gov/akso



For an energizer to work, two wires are attached to the unit, usually by small screws. In most cases, they have clips at the other end. One wire, marked (-) for negative, must be clipped to a metal stake which is driven into the soil. Avoid rocky dry soils. Also, for the fence to work well, the other wire, usually marked (+) for positive, must be firmly clipped to the fence wire. Don't let the fence wire touch the soil, trees, brush, weeds, etc.

Frequently Asked Questions

Q: How portable are electric fences?

A: Typical electric fences for backcountry camping are quite portable. They weigh only a few (6-7) pounds, and are capable of being packed in a mattress stuff sack.

Q: How reliable are electric fences?

A: A critical component for electric fences to work is obtaining a good ground. Also, if your energizer will get rough handling in a backpack you should consider gluing all components to the circuit board to reduce damage from vibration (some models with this feature are available for purchase).

Q: What are common errors?

A: Poor grounding, leaving the fence turned off, leaving a gate open, energizer broken from rough handling.

Q: How do I get a good ground?

A: Obtaining a good ground depends on several things: soil particle size and moisture content (generally, the finer and wetter the soil the better the ground); having a grounding rod of sufficient length; and keeping vegetation from touching the wires. The best way to check if your setup is grounded effectively is to check it with a voltage meter.

Q: Is the fence safe for people and animals?

A: Yes, but still keep toddlers and people with pacemakers away from any electric fence.

Q: Will the fence repel a bear?

A: Electric fences used in the backcountry are employed as deterrents not repellents. Typical curious bears are easily deterred by electric fences. Bears being chased by other bears or bears that have received significant food rewards may get through fences.

Q: Does the fence replace appropriate handling of food?

A: No. In some cases, careless food handling may attract bears and provide sufficient motivation to overcome the deterrence effect of an electric fence. Remember: Keep all food and cosmetics in a Bear Resistant Food Container (BRFC) when not in use. Place any snacks, wrappers, lip balm, sunscreen, etc. into the BRFC before entering your tent or leaving camp unattended. Keep all food and scented items under your immediate control at all times.

Q: Can I leave the fence unattended? If so, for how long?

A: An electric fence around an unattended camp will generally deter most bears for short durations of several hours as long as the energizer has power and food and garbage is properly handled. Your gear is at no greater risk when left unattended inside an electric fence than without it. Solar augmented energizers afford greater run time than do equivalent battery operated units, but are more suitable for stationary camps where they will remain in the sun all day long.

Q: What do I do when a bear is at the fence?

A: Contact with an active fence should be sufficient to deter a bear away from your camp. Do not allow bears to remain in proximity to the fence or mess with it. Establish a minimum distance at which you will haze bears from the fence using aversive techniques such as yelling and clapping. Have other forms of bear protection at hand, including bear spray.

Q: How and where do I get more information?

A: Here are some links that provide additional information on electric fencing for camping:

http://www.nols.edu/resources/research/movies/bearfence_xl.shtml
<http://www.wildlife.alaska.gov/index.cfm?adfg=bears.efences>

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