

Electrifying Solutions for Keeping Bears Out

Excerpt from *Living With Bears Handbook*, by Linda Masterson

Ordinary fences won't keep out bears. It's easy for a bear to climb up and over to get to something it wants on the other side. Black bears are excellent diggers and can tunnel underneath as well.

A properly constructed, installed, and maintained electric fence is one of the most fool-proof and powerful bear-deterrents available.

Bears and electricity just don't mix. When a bear's super-sensitive lips, nose or tongue come in contact with 6,000 volts, the bear has an experience it never wants to repeat. Getting shocked does no permanent damage, but it makes a permanent and lasting impression. And best of all it prevents the bear from getting a food reward.

Advances in solar technology and battery capabilities mean that electricity can now be used in ways that weren't feasible even 20 years ago. Today there are permanent fencing systems powerful enough to successfully keep grizzly bears out of landfills, campgrounds, or even an entire village. There are portable electric fences that can be set up and functional in less than two hours, and solar-powered systems that can be installed anywhere there's enough sun to charge the batteries. Clever people have electrified everything from doormats and coolers to horse trailers and refrigerators.

Permanent Electric Fencing

Once properly installed, a permanent electric fence can be left in place for years. Permanent fences stand up under environmental stresses like snowloads better than portable fences. You can also tighten high-tensile wire to 200 psi, so that when a bear pushes against the wire, the tension separates the bear's fur, allowing the wire to deliver a shock right to the skin.

Portable Electric Fences

Portable electric fences can be a good solution for areas and situations where a permanent fence is impractical. A 30- x 42-foot temporary fence can hold 32 bee colonies or protect a small grove of fruit trees or a camper parked off the beaten path. There are even fences that can be used in areas without good grounding, like sand or dry gravel.

How an Electric Fence Works

An electric fence acts like an open circuit, with repeating pulses of electricity produced by the energizer flowing through the charged wires of the fence. When something touches a charged wire, it grounds the fence, creating a closed circuit—and a shocking encounter.

Voltage and Joules

Bears have heavy fur, very thick skin, a high tolerance for pain, and heavy foot pads that minimize grounding. Because they have big thick fur coats and insulating layers of fat, experts recommend a minimum of 6,000 volts to effectively shock a black bear. But it's the joules rating on your energizer that tells you the amount of energy your fence actually delivers. You need at least 0.7 joules delivered,

depending on your local moisture conditions. Enough is good; more is not better. The higher the joule output, the greater the danger to humans or pets that accidentally come into contact.

Maintenance Is Key

Anything that comes in contact with a charged wire can create a partially or completely closed circuit, including fallen tree branches, blowing vegetation, or other animals like raccoons or deer. Routine maintenance is the key to keeping an electric fence in top shape; if a downed tree branch closes a circuit, the fence is powerless until the branch is removed and the circuit is open again. For the best performance, somebody should inspect the fence line every day or two.

- Grass or shrubs touching the wires draw down voltage; keep grass cut low under the bottom wire.
- Keep wires tight and batteries charged. DC fence chargers (6- and 12-volt) need their batteries recharged every two to four weeks.
- Use at least a 70 amp-hour battery.
- The fence charger should always be on. Check voltage weekly with a voltmeter. You should have at least 3,000 volts at the furthest distance from the charger. Always recharge during the day, so the fence is at maximum output at night, when bears are most likely to come calling.
- Marine battery terminals and lead-composition eyelets resist corrosion. Keep your battery and fence charger dry and corrosion free. Disconnect lower wires if they're covered by snow.
- Gates should be electrified, well-insulated, and practical—they can range from single strands of electrified wire with gate handles to electrified panels or tubular gates.

Safe, Not Sorry

Electric fencing combines high voltage with low amperage in a pulsating charge at 60–65 pulses a minute. Breaking the circuit and getting shocked creates an involuntary muscle contraction. The pulsating charge gives the person (or bear) a fraction of a second to let go of the wire.

Whatever you do, don't wire straight into the household current instead of using a fence charger. Households use continuous alternating current (AC) and it is always on. Plug into an outlet and when something or someone gets zapped their muscles will contract and only partially release—making it hard to let go, and easy to get hurt.

Getting zapped by an electric fence doesn't do any permanent damage to bears or people. But it's highly unpleasant, so put up a warning sign. In some areas, electric fences are not permitted within city or township limits. Check with your homeowners association or local government before installing one.

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The latest edition of Linda Masterson's *Living with Bears Handbook* will help everyone who lives, works or recreates places bears live too better understand bear behavior and prevent conflicts and problems. (www.livingwithbears.com)