Bear Damage and Abatement in Wisconsin

Scott Hygnstrom and Scott Craven

The black bear has always symbolized the wilderness of northern Wisconsin forests. But increased human settlement and an increasing bear population have resulted in substantial human-bear conflicts. Such encounters may damage or destroy agricultural resources such as beehives, livestock and crops. Current management programs strive to minimize nuisance and damage problems while attempting to maintain a viable bear population. Bears play an important role both as trophy game animals and as part of the northern forest ecosystem.

Black bear biology

Black bears are common throughout the northern third of Wisconsin (about one bear per four square miles) and inhabit the central forested region to a lesser extent. Their population has increased from 3,500–4,000 animals in 1985 to 11,000–12,500 animals in 1995. This population increase is due partially to a more restrictive sport harvest and to the expansion of the bears' range into central and southern Wisconsin.

Females (sows) reach sexual maturity at 3½ years, usually breed in late June or early July, and give birth to a litter of two or three cubs in February. Cubs stay with their mothers throughout their first year, thus maintaining a high survival rate.

Black bears travel long distances. Males maintain an average home range of about 25 square miles; females average 5 square miles. Black bears are omnivorous, generally feeding on nuts, berries, roots, fish, rodents, insects and carrion. When wild nut and berry crops are poor, bears search for other food more actively and are more likely to interfere with human activities.

Bears' feeding behavior is opportunistic. Whether the food is "natural" (berries, nuts, grasses and small animals) or "artificial" (cultivated crops, livestock, bee hives and garbage) makes little difference to them. Furthermore, bears tend to congregate at seasonal or permanent sources of food.

The majority of bear complaints in Wisconsin are of a nuisance type (involving garbage, bird feeders, bears approaching buildings and other real or perceived problems not involving financial loss). Often the solution is as simple as properly disposing of garbage or other bear attractants. However, bear damage is a severe problem when there is substantial loss of honey, livestock or crops. This bulletin focuses on the latter problems.

Recognizing and preventing bear damage

Apiaries: Bears are about the only animals, besides skunks, that molest beehives. Evidence of bear damage includes broken and scattered combs, and hives with claw and tooth marks. Hair, tracks, scats and other signs may be found in the immediate area. A bear will usually use the same path to return every night until all of the brood, comb and honey are eaten.

With bears and bees, it is best to prevent damage before it starts. Avoid constructing apiaries in, or adjacent to, prime bear habitat—areas with documented bear activity and large tracts of forests or lowlands.

Livestock: Bears rarely kill livestock. However, if bears are suspect, look for deep tooth marks (about ½-inch in diameter) on the neck directly behind the victim's ears. On large animals, look for large claw marks (½-inch between claws) on the shoulders and sides.

A bear will occasionally open its dead prey's body cavity to remove the internal organs. The liver and other vital organs may be eaten first, followed by the hind quarters. Udders of lactating females are often preferred.

When a bear makes a kill, it usually returns to the site at dusk. Bears prefer to feed alone. If prey is killed in the open, the bear may drag it into the woods or brush and cover the remains with leaves, grass, soil and forest debris. The bear will periodically return to this cache site to feed on the decomposing carcass.

Bear predation must be distinguished from dog and coyote attacks. Dogs and coyotes chase their prey, slowing it down by slashing at its hind legs. Tooth marks on the back of the neck are not usually found on dog and coyote kills. Coyotes typically kill sheep and goats with a suffocating bite to the throat. Claw marks are less prominent, if present at all.

Proper sanitation is important to ensure that bears are not attracted to livestock. Dispose of decaying animal and vegetable matter that produces strong odors. Corralling or housing livestock at night will limit the animals' exposure to marauding bears.

Crops: Corn, oats, berries and orchards are the only plantings significantly damaged by bears in Wisconsin. Males, females and cubs alike may be responsible.

Large, localized areas of broken, smashed stalks show where bears have fed in cornfields. Bears eat the entire cob while raccoons strip the ears from the stalk and chew the kernels from the ears. Bears prefer corn in the milk stage. Bears damage orchards by breaking trees and branches in their attempts to reach fruit. They will often return to an orchard nightly once feeding starts. Due to the perennial nature of orchard damage, losses can be economically significant.

Note: It is especially important to monitor crops, particularly corn, and notify your USDA Animal Damage Control office or the county within 14 days of when damage first occurs. (See Wildlife and Damage and Abatement Program.) Proper notification is necessary for program eligibility and it increases the effectiveness of some control techniques.

Measures to prevent and control damage

Before you develop a prevention program, consider the extent, longevity and expense of the damage to select an appropriate method.

Fencing

Fencing has proven to be an effective method for deterring bears from apiaries, cabins and other high-value properties. However, it is a relatively expensive abatement measure.

Numerous fence designs have been used with varying degrees of success. Electric fence charges discourage bears effectively. To repel bears, however, electric fences must deliver an adequate shock. You can lure bears into licking or sniffing the wire by attaching attractants (salmon or tuna tins and bacon rinds) to the fence. You may also increase grounding, especially during dry weather, by laying grounded chicken wire around the outside perimeter of the electric fence.

Depending on the amount of bear pressure, we recommend:

- (1) a polytape portable fence
- (2) a high-tensile wire permanent fence; or
- (3) a welded-wire permanent fence. Each style, along with a fence energizing system, is described in the following sections.

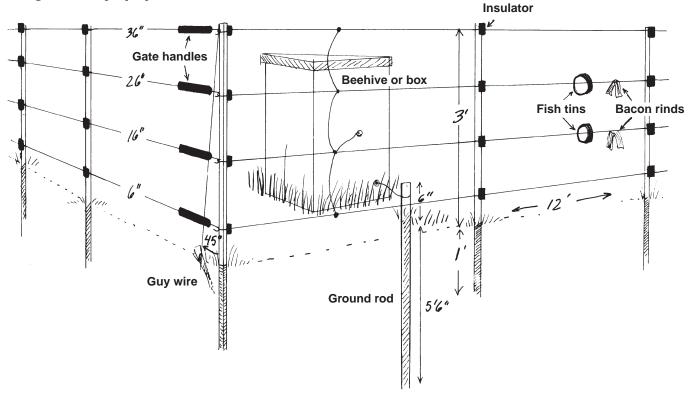
However, recent experience in Wisconsin suggests that most problems can be solved with the less expensive polytape fence.

Polytape portable fence

One person can easily and quickly install this fence. It is economical and dependable for low to moderate bear pressures. As shown in figure 1, the fence consists of four strands of polytape electric fencing that are attached to fiberglass posts. The cost per fence (35 ft x 35 ft) calculated using 1995 prices equals:

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One 220-yard roll of polytape	\$20
Four 5-ft fiberglass (%")	
corner posts	10
Eight 4-ft fiberglass (3/8") line posts	6
One 5-ft ground rod	4
Sixteen 5/8" post clips	3
Thirty-two 3/8" post clips	5
Four gate handles	16
One 12-volt fence energizer	55
One 12-volt deep cycle battery	60
Herbicide	5
Miscellaneous	5
	\$189





To install: Drive in four corner posts a foot deep and attach a guy wire. Clip vegetation in a 15-inch wide strip under the fence and apply herbicide. Attach clips on the outside of corner posts and stretch the electroplastic wire from the four posts at intervals of 6, 16, 26 and 36 inches from ground level. Hand tighten the wire and join the ends by four binder knots. Drive in the remaining posts at 12-foot intervals, attach clips (on the outside of line posts) and insert wire.

For instruction on fence charger hookup and fence maintenance, see figure 4.

High-tensile (HT) wire permanent fence

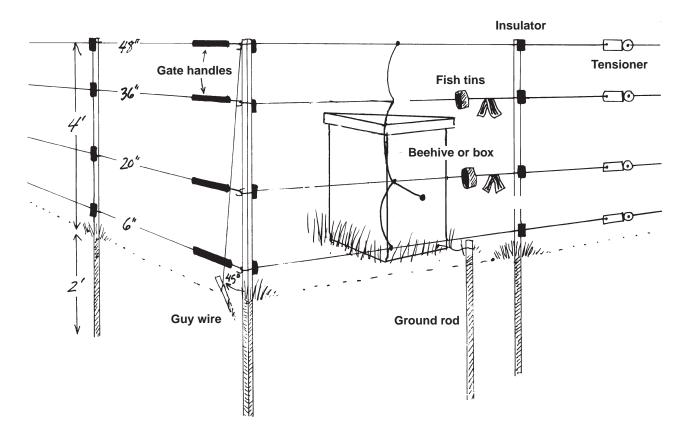
This is a more durable barrier, used under moderate to high bear pressures. It can be installed by two people in three hours. The fence consists of high-tensile smooth wire, tensioners and a tension spring (see figure 2). The cost per fence (35 ft x 35 ft) at 1995 prices is calculated as follows.

One 200-yard roll of high-tensile (14-gauge) smooth wire	9 \$12
Twelve 6-foot fiberglass "T" pos	ts \$21
Four gate handles	\$16
Four in-line strainers (in-line tensioners)	\$8
One 12-volt energizer	\$55
One 12-volt deep cycle battery	\$60
One 4-foot ground rod	\$4
Forty-eight 5/8" spring clips	\$1.50
Miscellaneous materials	\$16
Herbicide, etc.	\$5
	\$198.50

To install: Drive in four corner posts 2 feet deep at a 5-degree angle outward from the vertical fence, and attach a guy wire. Clip vegetation in a 15-inch wide strip under the fence and apply herbicide. Attach corner insulators (on the inside of corner posts). Stretch four strands of wire from the corner posts at intervals of 6, 20, 36 and 48 inches from ground level. Splice the ends together with compression sleeves and apply 100 to 150 pounds of tension with the in-line tensioners. Drive the remaining posts at 12-foot intervals and attach the insulators (on the outside of line posts).

For instructions on fence charger hookup and fence maintenance, refer to figure 4.

Figure 2. High-tensile wire permanent fence



Welded-wire permanent fence

This fence is the most durable and expensive barrier, used under high bear pressures. It can be installed by two people in eight hours. The fence consists of heavy, 5-foot welded wire, supported by wooden posts, ringed by two additional electrified wires (see figure 3). The cost per fence (35 ft x 35 ft) based on 1995 prices equals approximately \$500.

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One 50-yard roll of 6-inch square 5-foot welded wire	re mesh, \$180
One 150-yard roll of high-tensile (14 gauge) smooth wire	e \$10
Twenty-four 4" x 8' treated wood posts	\$132
Forty porcelain strain-insulators (nail-in type)	\$6.80
One 2-lb box of 1½" fence staples	\$2.50
Six gate handles	\$24
One 12-volt fence energizer	\$55
One 12-volt deep cycle battery	\$60
One 4-foot ground rod	\$4
Miscellaneous materials	\$24
Herbicide	\$5
	\$503.30

To install: Set posts 6 to 12 feet apart in 2-foot deep holes. Align four corner posts at a 5-degree angle from the vertical. Brace corner and gate posts from the inside with posts set at 45degree angles. Clip a 15-inch wide strip clear of vegetation under the fence and apply herbicide. Place one length of welded-wire vertically into the position and staple the end to a corner post. Pull the entire length of wire taut with a vehicle and staple the welded-wire to the line posts. Continue until all sides, except the gate opening, are fenced. Fasten two strands of high-tensile wire to insulators positioned 5 inches away from the welded-wire, at intervals of 6 and 56 inches above ground level.

For a 12-foot gate opening, attach three strands of high-tensile wire to insulators on the gate posts. Space the wires at intervals of 6, 36 and 56 inches above ground level. Connect them to the two strands previously strung around the fence. These wires will be connected to the positive fence charger terminal. Attach three more wires to gatepost insulators at intervals of 20, 48 and 64 inches above ground level. These three wires will be connected together and to the ground rod. Fit insulated gate handles to the free ends of all six gate wires.

For information on fence charger hookup and fence maintenance, see figure 4.

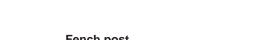
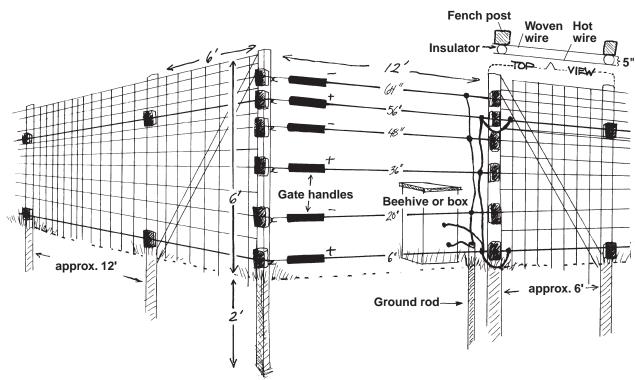


Figure 3. Welded-wire permanent fence



Fence energizing system and maintenance

Figure 4 shows how to energize the fences described here. To begin, use a 12-volt deep cell (marine) battery connected to a high-output 12-volt fence charger. The battery is designed to operate continuously and can be run down and recharged with no ill effects. A fully charged 70-amp hour, 12-volt battery will last four to eight weeks between recharging. Solar-powered energizers are an effective and efficient alternative to battery power.

Place the fence charger and battery in an empty beehive or box to protect them against weather and theft. Drive a ground rod 5 to 7 feet into the ground, preferably into moist soil. Connect the positive and negative terminals of the battery and fence charger. Connect the ground terminal of the charger to the ground rod with a 1-guage copper wire. Connect the positive fence terminal to the fence with a short piece of fence wire. Use connectors to ensure good contact. As an option, you may place a chicken wire apron beneath the fence to facilitate good grounding during dry conditions.

To maintain the fence, check the fence voltage away from the fence charger each week; it should yield 3,000 volts. Make sure you have a reliable voltmeter as part of your fencing equipment. To protect against voltage loss, keep the battery and fence charger dry and their connections free of orrosion. Make certain all connections are secure and check for faulty insulators (arcing between wire and post). Also clip vegetation beneath the fence. Each month, check the fence tension and replace baits with new fish tins and bacon rinds. Always recharge the battery during the day, so the fence is energized at night. Keep the batteries fully charged when not in use.

Other preventive measures

Repellents and toxicants:

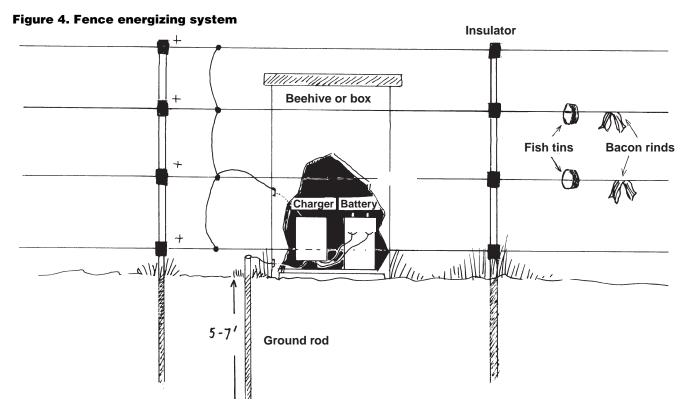
Repellents and toxicants are not registered for use on black bears in Wisconsin.

Scare devices: Exploder cannons, fireworks, gunfire, flashing lights, loud music, tethered dogs and scarecrows may be used as temporary measures to repel bears. Relocating scare devices regularly improves their effectiveness.

Over a period of time, animals usually get used to scare devices. Bears often become tolerant of human activity, too. At this point, scare devices are ineffective and human safety becomes a concern.

Removal: Bears that become a nuisance or cause damage may be trapped and relocated by USDA Animal Damage Control personnel. Live trapping is conducted on the site with culvert traps or foot snares. The landowner must check the traps daily and report to the local wildlife damage personnel when a bear is captured. The animal is then transported at least 30 miles away and released into suitable habitat.

Shooting: The last resort in solving a bear problem is to kill the animals causing the damage. A shooting permit (DNR application to "Shoot Bear Causing Damage" form 2300-219, revised 7-95) is required to kill a bear out of season. These permits are issued only when all abatement and trapping methods have failed.



To increase the probability of removing the problem bear, shooting should be done at the site where damage occurred. The best time to see bears is at dawn and dusk. A lure-can containing liquid smoke and bacon grease or well used deep frying grease can be used to attract the problem bear to your stand.

Place the lure in the damage area where there are safe shooting conditions and clear visibility. The shooting permit requires that the lure-can be removed each day at the end of the shooting period. Strive for a quick kill, using a rifle of .30 caliber or larger. Field dress the animal, suspend the carcass in a cool place and notify your local conservation warden immediately.

Other methods: For some crop damage situations where abatement and trapping techniques fail, chasing bears with dogs may be highly effective. Hire a reputable bear hunter/dog trainer and notify local landowners of your intentions. Contact your local DNR office for information on dog training and bear hunting seasons and zones.

An innovative technique for beekeepers is to place hives on a fenced (threestrand electrical) flatbed trailer (8 ft x 40 ft). Though expensive, this method makes hives less vulnerable to bear damage and makes moving them very easy. You can also place one or two

hives on a flat or low-sloping garage roof. Be sure to add extra roof braces because two hives full of honey can weigh 800 lbs or more.

The Wisconsin Wildlife Damage and Abatement Program

In past years, the DNR handled all nuisance and bear damage complaints. In this relatively new program, county governments play a more active role in administering damage abatement and claims. Landowners with severe bear damage (exceeding \$250) that occurs within a participating county may be eligible for technical and monetary assistance. This program attempts to reduce damage to a level that landowners will tolerate, through the use of fences, scare devices, trapping or shooting permits. If these measures fail, the DNR will compensate the eligible landowners for up to \$5000 in damages.

Contact either the USDA-Animal Damage Control offices located in Rhinelander (800-228-1368) and Waupun (800-433-0663), or your local county government for information on bear damage abatement and claims.

References

Boddicker, M.L. 1983. Black bears in Prevention and Control of Wildlife Damage. R. Timm, ed. Great Plains Ag Council, Coop. Ext. Serv., University of Nebraska-Lincoln. Lincoln, NE

Jackson, H.H.T. 1961. *Mammals of Wisconsin*. University of Wisconsin Press, Madison, WI 504 pp.

Kohn, B.E. 1982. Status and management of black bears in Wisconsin. Tech. Bull. 129. Wisconsin Department of Natural Resources, Madison, WI 31 pp.

Manitoba Dept. of Natural Resources. 1983. *Preventing bear damage to beehives*. Winnepeg, Ontario. 15 pp.

Wade, Dale A. and James E. Brown. 1982. Procedures for evaluating livestock losses and wildlife damage. B-1429. Texas A & M Univ. System. 42 pp.

Wisconsin Department of Natural Resources. 1976. Wild animal damage handbook. Madison, WI 59 pp.

Authors: Scott Craven is a professor of wildlife ecology with the University of Wisconsin–Madison and a wildlife specialist with the University of Wisconsin–Extension, Cooperative Extension. Scott Hygnstrom was formerly a project specialist with the University of Wisconsin–Madison and the University of Wisconsin–Extension.

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