



BEARS AND BEES

In the mountainous and heavily wooded areas of the Mid-Atlantic region, bears are an increasingly serious threat to beekeeping operations. Bears can do a great deal of damage to hives and equipment in a short period of time. They normally visit apiaries at night, smashing hives to get to the brood and honey and scattering frames and equipment around the apiary. Once bears locate an apiary, they return again and again. Damage to bee colonies is more likely to occur in early spring when young adults come out of hibernation and in the fall before young males enter hibernation dens.

Conflicts between bees and bears are not new, but in recent years the problem has escalated. Black bears once ranged over all the Mid-Atlantic region. Increased urbanization, cultivated acreage, and the trend toward monocultural agriculture reduce both bee pasture and suitable bear habitat. Today, bears are basically limited to wilderness areas but increasingly are appearing in subdivisions and outlying areas. The extensive use of herbicides and insecticides has reduced bee pasture and forced beekeepers to move their outyards into remote areas to avoid pesticide kills and some of the safest/best bee forage is located in areas of high bear density. Pennsylvania, the most heavily bear populated state in our region, may have as many as fifteen thousand bears, and in some areas the population exceeds one bear per square mile.

Solutions to the complex bee/bear conflict are highly political, expensive, and have not been totally effective. Concessions need to be made by all sides. Beekeepers, game commission personnel, sportsmen, and environmentalists must work together to help save both bee and bear habitat and work to develop management schemes that will be favorable for both animals. There are several precautions the beekeeper can take to reduce the chances of bear damage. Typically, bears move through their home ranges within preferred travel lanes or bear crossings which often follow along certain ridges, ravines,



stream-beds, or the forest edge. While these are not necessarily beaten paths, they may be. Beekeepers can thus help avoid damage from bears by careful selection of the apiary site. Placement of colonies on or near bear crossings, fall berry foraging sites or garbage dumps that bears frequent are more likely to result in conflicts. Spreading litter around an apiary site or leaving bits of burr/brace comb and pieces of drone brood removed from frames on the ground around the hive may invite trouble. Research has shown that the farther bee yards are located from the forest edge and ravines, the less chance there is of bear visitation.

Getting to know game commission personnel in your area, before bear damage occurs, can be invaluable. They can provide estimates on the size of the bear population for different areas and help identify known bear crossings. Whenever possible, game commission personnel try to get the bear to move on or trap nuisance bears and move them to areas where damage is less likely to occur. They use baited culvert traps mounted on a small trailer, or special foot snares, to capture problem bears. Such programs are expensive and relocated bears may become someone else's problem. Repeat offenders are sometimes killed.

Non-lethal controls used to deter bears include:

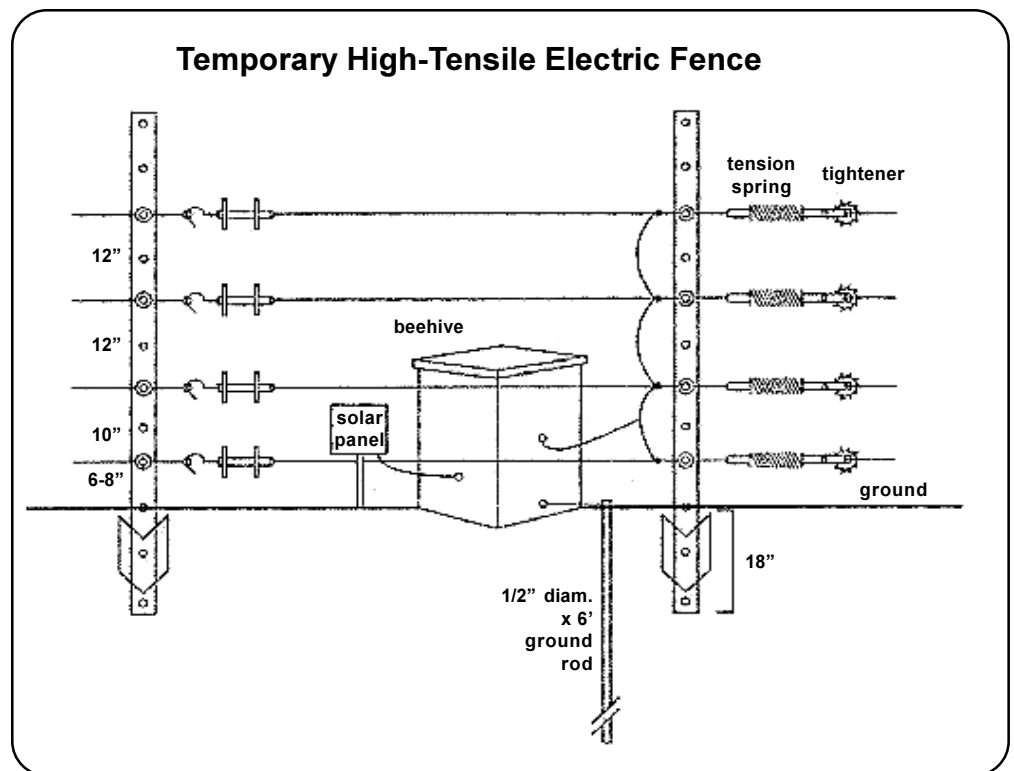
- Loud noises (e.g. horns, clapping, shouting, pyrotechnic salutes), bright lights or other harassment techniques
- Bear hounds or guard dogs to ward off bears
- Habitat manipulation (e.g. removal of protective cover) to make a site unsuitable for or unattractive to bears
- Aversive conditioning using a chemical such as lithium chloride to “teach” bears to avoid certain foods - results have been disappointing
- Bear fences.

An apiary can be protected from bears by erecting an electric fence but this must be done before bears begin to damage colonies. Such fences must be dependable, relatively cheap to construct, and capable of operating in the wilderness. An electric fence must be well grounded, sufficiently charged at all time and maintained on a regular basis (e.g. cutting or applying herbicide to vegetation growing under the fence and ground mat, recharging the battery, maintaining the integrity of the fence and checking wire voltage with a voltmeter). Permanent or temporary electric fences can be made from multiple strands of electric wire or woven wire attached to wood, steel or fiberglass posts. Key features of fence design are strand spacing, energizer type and grounding effectiveness. Wire strands on a permanent fence should be less than 8 inches apart and not more than 12 inches apart on a temporary fence. The bottom wire should be within 8 inches of the ground; the top wire need not be higher than 3 1/2 feet.

A relatively inexpensive, temporary fence that is reasonably effective in deterring bears can be erected with steel concrete reinforcing rods cut to 4-foot lengths and driven 12 inches into the ground. String three strands of barbed wire with top and bottom wires enclosed in plastic insulators where it touches each rod avoiding direct contact with the rod. The middle (ground) strand is wired to each rod with a small scrap of wire to ensure good contact with the metal. The bottom wire should be 6-8 inches above the ground with 12 inches separating the others. A stake and guy wire can be used for extra support of each corner (or stronger wooden posts substituted), and especially are useful if the ground is soft or sandy. Insulated gate handles can be used to open the fence for easy access by vehicles.

For a sturdier fence use steel T-posts driven 12 inches into the ground. String three or four strands of barbed wire, 10 to 12 inches apart, with the lowest wire 6-8 inches from the ground. The wire can be attached via insulators or slip

1 1/2 inch PVC pipe over the T-posts. Connect charge wire to one or more of the wires. An alternative is to use a 4-foot-high woven wire fence, with two strands of barbed wire 8 inches above the ground and another above the woven wire fence - connect the electric charge to the barbed wires. The illustration here is from Colorado State University website listed at end.



For all fence designs, power is supplied with a 6-or 12-volt battery which often proves to be the weak link in the system. Both the battery and electric fence charger should be protected from the weather and potential damage from animals and vandalism. Batteries can be housed in an empty box beneath an occupied hive or in an empty hive body. Be careful not to position colonies too close to the fence itself - 3 feet or more is best. Including a wire mat (earthing a 3-foot chicken wire skirt) around the outside perimeter to prevent bears from digging beneath a fence is often a good precaution.

With electric fences, it is important to have some kind of bait (e.g., suet, bacon strips or pork rind) attached to the wires. The bait gives the bear a proper introduction to the electricity when it touches the tempting morsels with its moist tongue or nose. Without the bait, the bear is likely to crash right through the wire, as impervious to the electricity as it is to bee stings. During warm weather, bacon or pork rind does not last long, so the beekeeper must continue to replace old with new. Local butcher shops can be a cheap source of bacon and pork rind.

Fences are totally ineffective if not installed and managed properly. They also are of little help if a bear has already established a pattern of visiting an apiary site. Avoid sites with overhanging trees, because limbs falling across the wires may render the fence inoperable. It is also quite common for bears to climb trees and then drop down inside the fence. To ensure continued successful operation, you must control grass and weeds along the fence so that they will not contact the charged wires and short them out. If wires are too far apart and a bear can get its head inside the fence, it will tend to lunge forward when subsequently shocked destroying your barrier.

Under Pennsylvania state law, bears may be killed when caught in the act of destroying property. When a bear is killed, it must be reported to the game protector within twelve hours. Failure to do so may result in a stiff fine. Maryland prohibits killing of bears for any reason but when notified will work with a beekeeper to try to alleviate the problem. In West Virginia, DNR will issue permits for destruction of problem bears after two attacks by the same bear in the same location. In New Jersey homeowners (and beekeepers) can shoot a bear if caught it in the act of damaging bees. Wildlife Services must be notified within the hour. NJ Department of Environmental Protection will trap and kill offending bear or they will issue kill permits for depredating bears. There is no bear population in Delaware.

Beekeepers who suffer damage from bears may be eligible for compensation from the Pennsylvania Game Commission or Maryland and West Virginia Departments of Natural Resources. In Pennsylvania, to be eligible for remuneration, the beekeeper must be a resident of the Commonwealth and report the damage within seven days. The hives must be on land open to public hunting when damage occurred and the hives must be within 300 yards of the residence of the owner or the owner's agent. In Maryland DNR reimburses individuals that have suffered loss of property or crops due to bears. Damage must be valued at more than \$200 with a maximum of \$3,000/year. Reimbursement money comes from a "bear stamp" and if claims exceed funds available each individual gets a prorated share in reimbursement. Both Maryland DNR and PA Game Commission will provide bear fencing equipment at no charge to beekeepers that have suffered loss to bee colonies from bears. West Virginia DNR pays bear damage claims from a bear stamp fund with requirement that they be notified within three days of discovery of damage, damage estimates from three individuals and payment request submission within 30 days.

Sources of information

Fencing supplies and information are available from:

Alberta honey Producers Co-Operative, Ltd, Box 3909, Spruce Grove, Alberta, Canada T7X 3B1 Tel 780-962-5573 FAX 780-962-1653; Lamb Acres Electric Fencing, Box 100, Bulyea, Saskatchewan SOG 0L0 Tel 306-725-4820 or Margo Supplies Ltd, Box 5400, High River, Alberta, T1V 1M5 Tel 403-652-1932 email www.margosupplies.com/

Good information you can use can be found at these sources:

Alberta (www.agric.gov.ab.ca/agdex/600/1600002.htm), Colorado State University (www.ext.colostate.edu/pubs/natres/06519.html) and Virginia Tech (www.ext.vt.edu/pubs/wildlife/420-200/420-200.html) have good extension leaflets on bears and bear fencing. See also Chapter 15.

Mammals by Hood and Caron IN: Honey Bee Pests, Predators and Diseases. A.I. Root CO., Medina, OH (1997).

MAAREC Publication Prepared by: Dewey M. Caron and Jacob L. Bowman, University of Delaware.

MAAREC, the Mid-Atlantic Apiculture Research and Extension Consortium, is an official activity of five land grant universities and the U.S. Department of Agriculture. The following are operating members:

University of Delaware
Newark, Delaware

University of Maryland
College Park, Maryland

West Virginia University
Morgantown, West Virginia

Rutgers University
New Brunswick, New Jersey

The Pennsylvania State University
University Park, Pennsylvania

USDA/ARS
Bee Research Lab
Beltsville, Maryland

Requests for information or publications should be sent to: MAAREC, 501 ASI Building, University Park, PA 16802 Phone: (814)865-1896 Fax: (814)865-3048 Web site: <http://MAAREC.cas.psu.edu>

This publication is available in alternative media on request.

The mention of trade names or commercial products in this publication is for illustrative purposes only and does not constitute endorsement or recommendation by the Mid-Atlantic Apiculture Research and Extension Consortium or their employees.

The U.S. Cooperative Extension Service and the U.S. Department of Agriculture provide Equal Opportunities in employment and programs.

Participants in MAAREC also include state beekeeper associations, and State Departments of Agriculture from Delaware, Maryland, New Jersey, Pennsylvania and West Virginia.

MAAREC Publication 4.1

Visit the MAAREC Website at: <http://MAAREC.cas.psu.edu>