



PESTS OF HONEY BEES

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Honey bees are fortunate in that they have relatively few pests. This is due in part to the fact that they are not native to North America but even in Asia, where they originated, honey bees aren't bothered by many other animals. In local areas a pest like a bear or ants may be of some consequence; wax moths annually destroy millions of dollars worth of bee comb especially in the warmer Southern U.S.

This leaflet describes the pests a beekeeper is likely to encounter and gives recommendations for their control. If in doubt as to the cause of a problem it is best to seek expert assistance before attempting any control procedure.

BEARS

The black bear of North America can be a serious pest of honey bee colonies. An individual bear that discovers bee colonies returns night after night to feast on brood and honey. The bear pounds and smashes the hive equipment to get to the beeswax comb and quickly destroys a bee hive beyond repair. Stings apparently are of little deterrent. **Control:** Bear control is difficult short of moving bee colonies. Before bear damage begins, an apiary can be protected by a sturdy electric fence. Alternately, a stout wire cage around groups of 4 or more colonies can be constructed or the bee colonies elevated on sturdy bear-proof platforms. Once bears discover an apiary site, these measures may be not adequate. Fortunately, bear damage is uncommon and moving colonies to another location is feasible in most instances.

LIVESTOCK

Large animals like cattle, horses or goats are not pests but bees and livestock are best separated to avoid problems. The animals may attempt to scratch against colonies or they may knock them over accidentally as they browse. The bees may buzz around livestock, such as horses, making them nervous and less manageable. **Control:** Locate bee colonies outside enclosures fenced for livestock or fence in an apiary site for bees.

SMALL MAMMALS

Skunks and other night-time foraging animals may find bee colonies an easy food source. The animal scratches on the outside of a hive and as guard bees come out to investigate

the disturbance they are rolled with the animal's paw and then chewed. As long as only a few bees come out at a time the skunk (or opossum, or raccoon too, apparently) can avoid being stung. Continued feeding means continued disturbance and the bee colony may become very aggressive to the beekeeper. **Control:** The best control for skunk, opossum or raccoon is to make the entrance less accessible or to increase the possibility of stings to the animal. Elevation of the entrance on a hive stand or large mesh wire ("chicken wire") before the entrance can be very effective. Both make it less easy for the animal to crouch down when the bees come out to respond to the scratching and more stings on the face and tender underside quickly discourage a skunk. Traps or poison baits also can be used but may mean removal of dead (and smelly) animals. If conditions permit, offending animals can be shot but since most are night-time pests this may not be easy. Usually screening and/or elevation of the entrance is adequate control.

Bee equipment being stored may provide a home for animals like rats or squirrels. It is best to close all stacks of supers and hive bodies to keep such animals out. They can do considerable damage to frames and soil combs and equipment, making bees more reluctant to use it. (In Europe, badgers, and in Africa, ratel or honey badger, can be serious pests of bee colonies.)

MICE, MOLES AND SHREWS

A serious pest problem of bee colonies is mice. Adult mice move into bee colonies in the fall and make their nest in the corner of the hive away from the bee cluster. They may disturb the wintering bees somewhat but their nest is the major problem. They chew comb and gnaw frames to make room for their nest. Their urine on comb and frames makes bees reluctant to clean out the nest in the spring. When the comb is repaired the bees usually construct drone comb rather than worker size cells. **Control:** Mice entry is relatively easy to control by use of an entrance reducer. Each colony, in areas where mice may occur, should have the entrance reduced in early fall. Wood, wire or metal may be used and there are several types of commercial entrance reducers available. Entrance reducers can be combined with wire or other provisions for skunk control. If a mouse is found inside a colony it should be chased out, the nest removed and re-entry restricted. If comb chewing is extensive, the frames should be replaced.

Other small animals may nest in or burrow under bee colonies. Reducing the colony entrance is usually all that is needed for control. Placing bees on hive stands can reduce the problem with burrowing animals.

FROGS AND TOADS

Frogs and toads are general insect feeders and they may include an occasional bee in their diet. Outside of Bermuda, Jamaica and other islands of the Caribbean they are seldom serious pests. A giant toad on these islands is a pest; the toad has been introduced into Florida and could become a problem there.

BIRDS

Various types of birds such as shrikes, titmice, kingbirds, swifts, martins, thrushes, mockingbirds and others may eat honey bees. They consume very few bees and most bee colonies can suffer the occasional loss of a worker bee to a bird. If the bird happens to get a virgin queen on a mating flight the loss is more serious but only beekeepers who are queen breeders need to be concerned. Moving bee colonies is the usual solution in areas where bird pests are considered a problem.

Woodpeckers may locally become a pest. They don't attack all colonies but usually only one or a few in an apiary. They may be scared off, or screened from a colony, or the apiary site moved to alleviate the problem. (In Africa and Asia there are 2 groups of birds, the honey guides and the bee-eaters that can be classified as major bee pests because they selectively search for and consume bees.)

WAX MOTH

The adult wax moth flies at night and easily finds and gains entry to even the strongest bee colony. Her eggs and larvae will be removed by workers cleaning their hive. Hives that are weak and stored bee comb, however, may quickly be destroyed by the wax moth caterpillar. The caterpillar is actually after pollen and brood remains, not the wax, but it destroys the wax comb as it constructs its silken tunnels through the comb. Before turning into a pupa, the larva gnaws a boat-shaped indentation in the wooden frame or hive body to attach its silken cocoon. With heavy infestations, frame pieces may be weakened to the point of collapse. **Control:** **Colonies** – Strong hives are the pest protection. Bee colonies should only have the comb they can protect. **Stored equipment** – Any comb in storage must be protected. Cold weather limits moth activity but moths can survive inside protected shelters. All comb must be fumigated with paradichlorobenzene (PDB) except in the coldest winter season. Stacks of comb should be closed and a handful of PDB, in the form of nuggets, crystals or flakes, placed on a piece of paper at the top of the equipment stack. PDB cannot be used with bees in live colonies since it is an insecticide. The PDB will disappear and needs to be replenished in warmer storage areas or

climates. **Honey in the comb** – PDB cannot be used to control wax moth in honey filled combs. Small amounts of honey in the comb should be placed in a freezer before wrapping and sale since eggs may be on the comb as the beekeeper removes the honey from the colony. A carbon dioxide storage room also could be used if large quantities of honey are involved.

OTHER MOTHS

In addition to the wax moth, bee colonies or stored bee equipment may be attacked by other smaller moths such as the Indian meal moth and the Mediterranean flour moth. Pollen stored for bee or human use may also be subject to attack. Fortunately, the same control measures to protect against the wax moth are effective against these other moths. Pollen, like honey, should not be exposed to PDB. Freezing and storage in air-tight containers should eliminate problems.

ANTS

Various types of ants, from tiny sized pharaoh ants to the large black carpenter ants, can be bee pests. Fire ants in the Southeastern U.S. also are pests. Relatively few ants steal honey or bee brood. The real problem is the ants' nesting inside the warm dry hive and bothering the beekeeper in colony examination. **Control:** It is dangerous to attempt to use an insecticide on the ants as they may track it over the beeswax comb leaving toxic residues to kill bees. Denying the ant a closed space under a tightly fitted cover is frequently all the beekeeper needs to do to eliminate ants. Allowing the workers access to the area where ants are nesting frequently eliminates the problem. In extreme cases it may be necessary to protect the colonies with a barrier against ants. Placing colonies on hive stands with legs in fuel oil containers or a grease ring between hive and ground is normally quite effective. Some persons claim repellents like borax powder, salt and alcohol keep ants away. Moving colonies even a short distance may be effective.

WASPS

Hornets and yellowjackets may frequently be found around bee colonies. The large European hornets (*Vespa* spp.) are the most troublesome as they may attack both single foraging bees in the field or an entire colony. They are after the bee and not usually the honey. Yellowjackets may claim dead and dying bees before the colony entrance and enter fall colonies to rob a meal of honey. Other wasps, such as the digger wasp *Philanthus* (bee wolf) or velvet ants (actually wasps), may also capture bees in the field or at the hive entrance. **Control:** The only effective wasp control is at the nest. Nests may be underground (yellowjackets), in buildings (hornets and some yellowjackets) or in tree hollows. Special aerosol bombs are available to kill the wasps when their nest site is located. Control should be done at night. Moving colonies is another alternative and reducing the hive entrance will enable guard bees to better defend against intruding wasps.

FLIES

There are several predatory flies that eat bees. Some robber flies are known commonly as Southern bee-killer, Texas bee-killer, etc. The flies predate on many types of flying insects but they may become abundant in and around an apiary. No control other than moving the colonies is known.

The ectoparasite, *Braula* or bee-louse, is not a louse but a fly. It rides around on the body of the bee. When it gets hungry it crawls to the mouthparts, stimulates the bee to regurgitate some honey and then feeds at will. The fly apparently doesn't harm worker bees. The fly larvae tunnel just under honey cappings and their tunnels may render honey in the comb unattractive or unsaleable. Newly emerged adult lice congregate on the queen and may result in her early replacement or hindrance in some way. No control is practical.

There are some internal fly parasites as well. Most are not numerous in bee colonies. If dead bees accumulate in the hive or before the hive entrance, fly maggots may quickly appear. They do not harm living bees, however.

DRAGONFLIES

In some locations, dragonfly adults may be numerous and their feeding on bees extensive. Only the large dragonfly species are involved since most eat insects smaller than honey bees. In some areas, queen mating has been seriously disrupted due to dragonfly adults feeding on bees, including queens flying to mate in and around the apiary. Movement of the apiary site is the only practical means of control.

ROACHES, EARWIGS, ETC.

There are several types of insects that may live for shorter or longer periods of time inside a bee hive or inside the inner cover of a bee hive. Roaches and earwigs are two good examples. Most of them do no detectable harm although the beekeeper may feel their presence unsanitary or unsightly. Some may eat bees or honey while others are just after the shelter. **Control:** Allowing bees full access to all parts of the hive, especially the inner cover area, and confining weak colonies to equipment they can inhabit and protect will reduce or eliminate these other hive inhabitants. Stacking stored equipment in closed stacks and fumigating the stacks with PDB will keep most insects out of the stored equipment.

BUGS, PRAYING MANTIDS, ETC.

Foraging bees may wander into the clutches of several types of predatory insects such as praying mantids, assassin bugs or beetles. Such insects are not usually very numerous and none selectively feed on honey bees over other types of insects. Strong, healthy colonies can afford to suffer occasional losses to such pests without harm to the colony. If some such insect becomes locally abundant the usual solution is to move the apiary site.

BETLES

Since beetles are the most numerous animals on our planet, it is little wonder that a few may be occasional bee pests. Some such as larger ground beetles may invade the colony or feast at the colony entrance. Reduction of the hive entrance or movement of the apiary location may be an effective control for these. Other beetles may live inside the shelter of a bee colony or infest stored equipment. Most are after stored pollen and bee bread and if the bees are strong enough they will keep the numbers of such beetles at a minimum. Stored equipment should be kept in tight stacks with PDB fumigation as for wax moth control. The small hive beetle, an accidental import from Africa, may be a serious problem (see leaflet on small hive beetle).

TERMITES

Since termites are wood-infesting creatures and since most bee hives are made of wood, termites have to be listed as a hive pest. Termites are only after the wood – not bees or honey. Hives placed on the ground or bee equipment left lying around on the ground or stacked directly on the ground may be subject to termite infestation. If termites destroy the bottom board the bees may not have a bottom entrance and the colony could be more difficult to move. **Control:** Termites seek wood to feed upon and live in, so beekeepers need to avoid putting wooden equipment in direct contact with the ground. Active colonies on hive stands will usually be protected against termite attacks. Keep equipment stacks and spare equipment free from contact with the ground.

SPIDERS

There are several types of spiders that may eat bees. The large web spinning spider will usually eat a bee that it can capture in its web. Some of the ground hunting spiders may also eat bees. Such spiders are seldom abundant and strong colonies should be able to suffer the occasional loss of a bee to a spider. The beekeeper will want to keep web building spiders from the immediate vicinity of his hives and out of potential flight lanes of foragers. Web building spiders in buildings should be of little concern since bees don't normally fly into buildings.

MITES

Mites are tiny relatives of insects and they can be a serious pest problem for bees. One mite, the honey bee tracheal mite, lives in the breathing tubes or trachea of worker honey bees. The mite was discovered in U.S. in 1984 and has become widespread. Bees with mites have a reduced life span and heavily infested colonies do not overwinter as well as uninfested colonies. Control measures of menthol fumigation and grease patties are only partially effective.

A second mite, the *Varroa* mite, is of greater concern. It was discovered in the U.S. in 1987. It lives on developing bees and kills or deforms them. It also feeds on adult bees. Miticide control is widespread. Treatment and regulations regarding

the mites vary from state to state so check with state apiary inspectors on current recommendations. See the leaflets on Varroa and tracheal mites for additional information.

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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>

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