



*Department of Entomology*

## CONSIDER BEEKEEPING IN INDIANA

*Bill Fischang, Professor of Entomology*

People have been fascinated by honey bees for thousands of years! That interest clearly continues today, since beekeeping remains an activity practiced everywhere by people from all walks of life. The lure of producing abundant fresh honey and bees wax is a captivating addition to the innate attraction of these amazing animals. Beekeeping thrives in back yards and on farms throughout Indiana.

### THE HONEY BEE COLONY

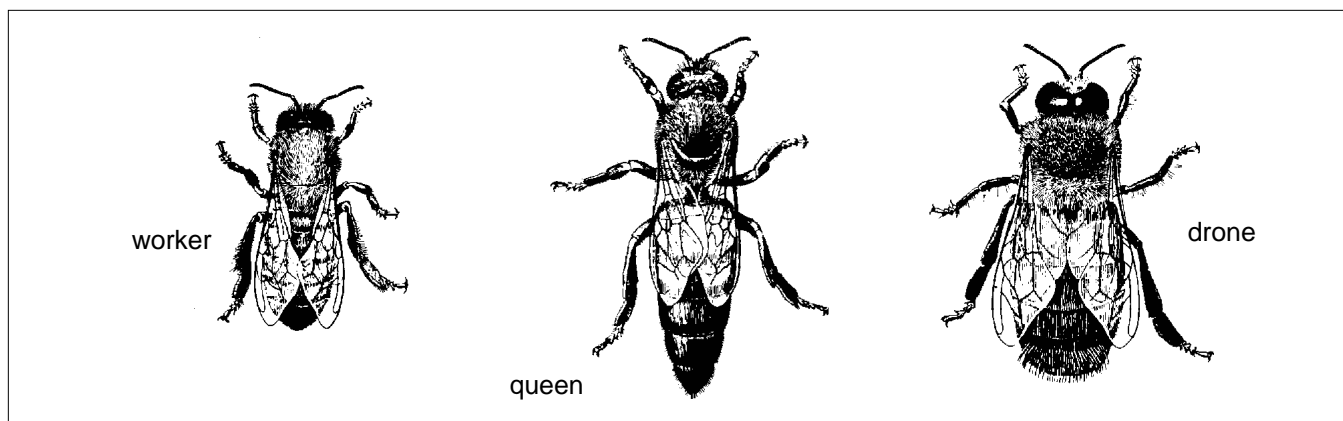
Honey bees exist only as colonies, consequently, individual bees cannot survive alone. To appreciate how honey bees function in nature or in the beekeeper's hive, you must come to view a colony as a single individual animal, for in many ways a colony functions as would a single animal. The capacities of a colony to control its environment, to make decisions, to process and store food, to provide shelter and protection, all exceed the capacities of the individual bees which form the colony. Beekeepers often learn to recognize the distinct "personalities" of their different colonies.

Honey bee nests normally are constructed within the sturdy protection of a hollow tree, although bees sometimes will nest in other cavities such as an empty space

in the wall of a building. A nest consists of parallel sheets of wax comb, each composed of thousands of hexagonal cells. These cells provide the space needed for rearing young and for food processing and storage.

A colony is comprised of three distinct forms of adult bees; workers, queen and drones. Workers are infertile females and are the most numerous colony members. They perform all tasks of the colony except reproduction. Only one queen usually inhabits the nest, and her role is to reproduce all other colony members. A mighty impressive mother she is, for at the peak of egg laying in late spring she can produce over 1500 offspring per day! The queen is the only perennial member of the colony and may live for three or more years. The large, lumbering drones are produced in a colony only during the warm months. Drones are males whose only function is to mate. Drones mate with new queens while flying high in the air. After egg hatching, immature bees are white, legless larvae. Each immature bee spends its growing and developing days within an individual wax cell at the center of the nest, where it is fed and kept warm by adult bees.

You may be surprised to learn that honey bees do not hibernate so are active all winter. In fact, the queen begins laying eggs during the frigid months of January or

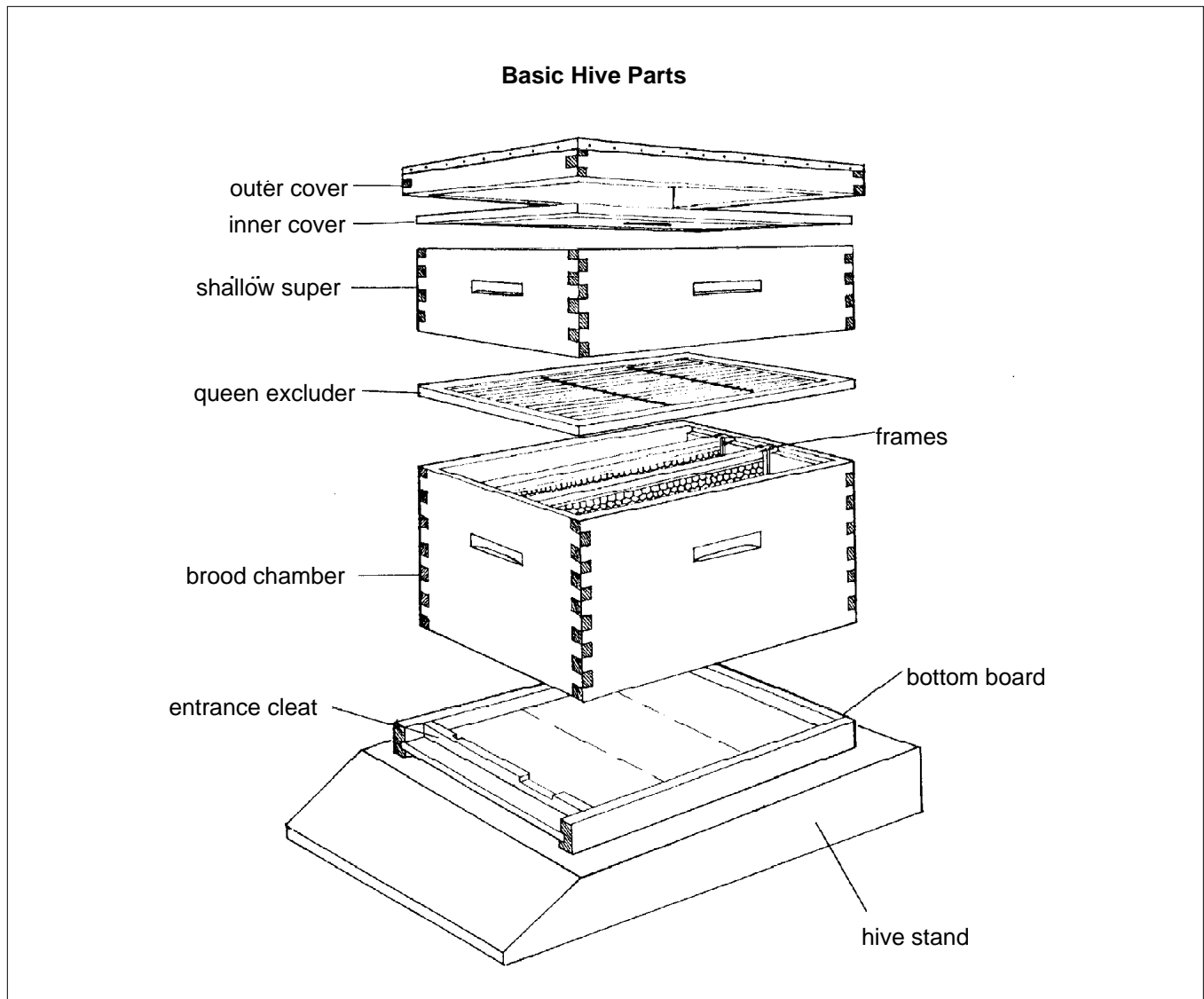


February, thus the colony will have a growing population of young bees when spring flowers provide the first available fresh food of the year. To remain active and rear young in winter, temperature within the hive must constantly be maintained at a high level. Bees accomplish this feat by first clustering in a tight insulating ball which conserves heat within the cluster. As outside temperature falls, bees at the cluster center produce needed heat by contracting their huge flight muscles. The fuel used to fire these muscular heaters is honey which was stored in the hive during the previous season. In this manner, worker bees are able to continuously maintain temperatures of the outer cluster at near 46°F and of the cluster center at an astounding 93-96°F!!

In late spring a honey bee colony reaches its peak growth with 40,000 to 60,000 adult bees! As this time of maximum size approaches, each colony usually will send

out a swarm to begin a new colony elsewhere. Swarms consist of the old queen and more than half of the adult worker bees of the old colony. At the time of swarming, the old colony is provided with a maturing new and vigorous queen who will assume egg-laying duties. While honey bee swarms often create fear and generate much local attention on television and in newspapers, swarming bees seldom sting and are actually quite docile. Swarming is the normal, healthy manner of colony reproduction.

The foods of honey bees are pollen and nectar collected from flowers, usually within a mile or two of the hive. Pollen provides proteins, fats and other nutrients especially required to feed growing larvae. Nectar provides the carbohydrates needed for the high energy demands of a colony. Since nectar cannot be stored, it



is converted by the bees into honey and stored in the wax combs for later use when flowers no longer are blooming. Storage of food takes on awesome proportions when you consider a huge year-round need for food and the fact that floral sources of food are not available in Indiana for approximately six months each year.

### KEEPING BEES

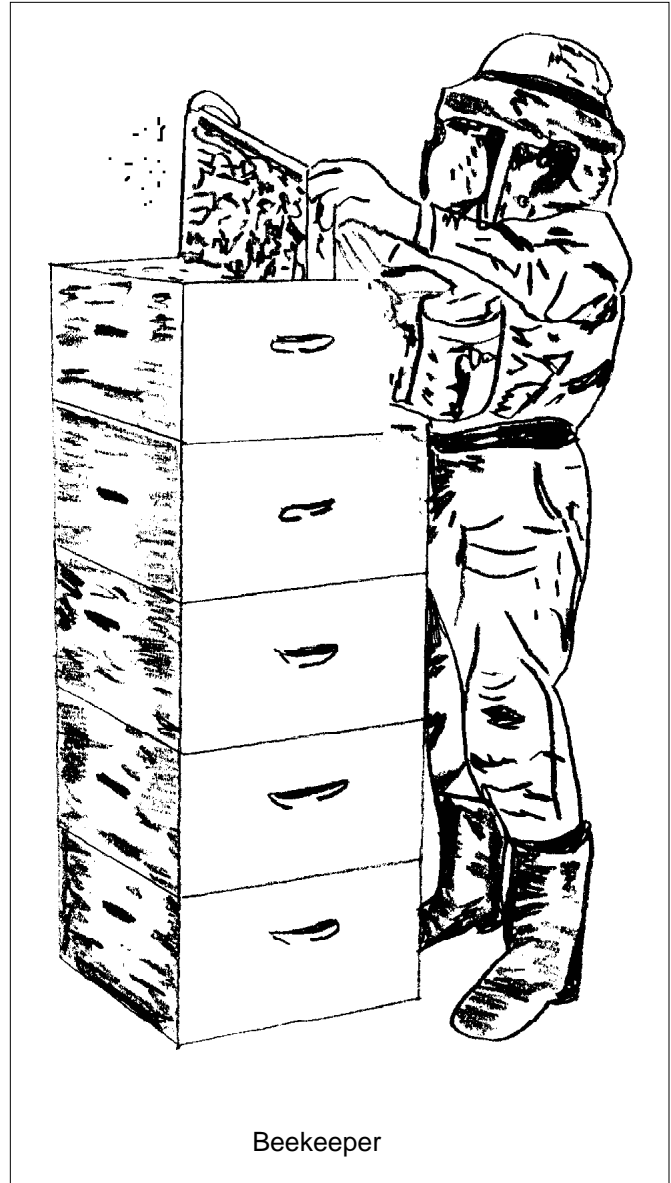
Beekeepers maintain colonies of honey bees in wooden hives which meet the natural requirements of bees, but which also allow the beekeeper to manage space and arrangement of components within the nest. Bees are enticed to build their wax combs within hanging wooden frames, so that the beekeeper can remove each comb for inspection, repositioning, or removal of honey.

As the beekeeper's knowledge of honey bee biology grows, bee management skills increase, and strong, productive colonies result. In addition to lots of fun and endless impressive tales for family and friends, beekeepers in Indiana can expect their bees to produce approximately 50 pounds of surplus honey per hive each year plus enough wax to make high quality candles for special family events. It is also quite possible, that fruits and vegetables growing near the bee yard will significantly increase their yield as a result of improved pollination provided by foraging bees.

### NEW CHALLENGES

Three new challenges require special focus by Indiana beekeepers. In recent years two parasitic mite pests of honey bees have independently entered the United States, and both are now well established in Indiana. Tracheal mites, *Acarapis woodi* Rennie, live within the respiratory tract of adult bees and feed on bee "blood." These tiny parasites can greatly weaken colonies and sometimes cause colony death. *Varroa* mites, *Varroa jacobsoni* Oudemans, live on the outside of immature and adult bees, feeding on "blood" through the body wall. It is generally believed that without treatment, colonies infested with *Varroa* mites will die in about three years. Fortunately, control measures for both of these pests are available. It is essential that beekeepers become well informed about these pests and monitor their bees for pest presence.

The third challenge is presented by the 1991 establishment of the Africanized honey bee in Texas. It is doubtful that this close relative of our honey bee will ever naturally move as far north as Indiana, but if it does, the time required likely would be several years. In appearance, Africanized honey bees are nearly identical to our honey bees, although slightly smaller. Because the Africanized honey bee is much more effective in defending its home than are most of our bees, its frequent



stinging has gained it a reputation as being dangerous. Indiana beekeepers must learn about this interesting new immigrant, so that they may respond to public questions.

### MORE TO KNOW

There's much more to know about honey bees and many interesting ways to learn. Most beekeepers love talking about their craft, so if you can locate a beekeeper in your area, introduce yourself and ask questions. Contacting the Indiana State Beekeepers' Association may also prove fruitful, since this group is dedicated to promoting beekeeping in the state. For information about the State Association, you could contact Indiana's chief apiary inspector at 402 W. Washington St., Room 290, Indianapolis, IN 46204.

Many fine books are available on beekeeping. Some may be in your library. A few you may want to look for are:

Bonney, R. E. 1990. *Hive Management, A Seasonal Guide for Beekeepers*. Garden Way; Storey Comm., Pownal, VT.

Diemer, I. 1988. *Bees and Beekeeping*. Merehurst, London.

Graham, J.M. (ed.) 1992. *The Hive and the Honey Bee*. Dadant & Sons, Hamilton, IL.

Sammataro, D. and A. Avitabile. 1986. *The Beekeeper's Handbook*, 2nd ed. Collier, MacMillan, NY

Taylor, R. 1977. *The How-To-Do-It Book of Beekeeping*, 3rd ed. Linden Books, Interlaken, NY.

If you enjoy leafing through commercial catalogs, you may want to write for a beekeeping supplies catalog from:

Brushy Mountain Bee Farm, Rt. 1, Moravian Falls, NC 28654

Dadant & Sons, Hamilton, IL 62341

Walter T. Kelley, Clarkson, KY 42726

Mann Lake Ltd., County Road 40 & 1st St., Hackensack, MN 56452

Rossman Apiaries, PO Box 905, Moultrie, GA 31776

Two very informative trade magazines are:

*American Bee Journal*. Dadant & Sons, Hamilton, IL 62341

*Bee Culture*. A. I. Root, Medina, OH 44256

#### **A PROMISE**

Should you choose to continue your learning about honey bees, you will be richly rewarded with wonder and excitement. Should you also choose beekeeping as a hobby, your additional rewards will be fun adventure, new respect for another form of higher life, and delectable taste treats on your table.

Rev. 5/96

It is the policy of Purdue University Cooperative Extension Service that all persons shall have equal opportunity and access to its programs and facilities without regard to race, color, sex, religion, national origin, age, or disability.

Cooperative Extension work in Agriculture and Home Economics, State of Indiana, Purdue University and U. S. Department of Agriculture cooperating. H. A. Wadsworth, Director, West Lafayette, IN. Issued in furtherance of the acts of May 8 and June 30, 1914. The Cooperative Extension Service of Purdue University is an affirmative action/equal opportunity institution.