

# CHAPTER 9

## *Occasional Invaders*

### Learning Objectives

- ✓ Identify key features in the life cycle, habitat, and appearance of miscellaneous invaders.
- ✓ Discuss integrated pest management procedures for common miscellaneous invaders.

Occasional invaders are pests that do not usually live and breed inside buildings but can wander or migrate seasonally into structures. Some of these pests are associated with trees, shrubs, mulch, or other habitats that encourage pest development. Others are attracted to lights at night. Environmental extremes, such as excessive rainfall, drought, temperature changes, or poor drainage around a building may stimulate pest movement indoors.

Many of these pests can be managed by eliminating nearby conditions that allow them to build up to large numbers. Generally, sanitation or basic landscaping will help eliminate pest-infested sites near structures. Also, pest exclusion, caulking, weather stripping, screening of vents, and lighting location can solve many problems with occasional invaders.

### MITES

Mites are small arthropods with two body regions, sucking mouthparts, no antennae, and four pairs of legs as adults. A mite's life cycle is divided into four stages: egg, larva, nymph, and adult. Completion of the life cycle requires 1 to 4 weeks. Favorable conditions may result in huge populations. Mites are occasionally found in or near homes and attack humans in the absence of their normal hosts - birds, stored materials, or rodents. Bites may be painful and cause severe skin irritation.

### Species

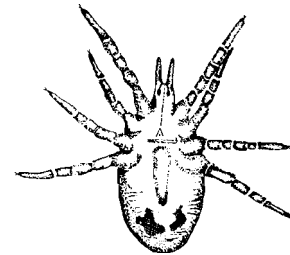
#### **BIRD MITES:**

**Northern Fowl Mite**—*Ornithonyssus sylviarum*

**Chicken Mite**—*Dermanyssus gallinae*

**Tropical Fowl Mite**—*Ornithonyssus bacoti*

The northern fowl, tropical fowl, and chicken mites are common bird mite species in the Southeast. The northern fowl mite (Figure 9-1) is a major pest to commercial poultry flocks in Mississippi, and it is also a parasite of various wild bird species in the state. The adult female fowl mite lays eggs on the host bird. The egg hatches in 1 to 2 days into the 6-legged larva, which does not feed. The larva molts to the nymphal stage in about 8 hours. The nymphs and adults have piercing mouthparts and seek blood meals. The complete life cycle from egg to egg-laying adult can take



**Figure 9-1.** Northern fowl mite.

from 5 to 7 days or longer, depending on environmental conditions such as temperature and humidity.

Bird mites will occasionally enter homes from bird nests located in eaves, rafters, or chimneys. They prefer to feed on fledglings in the nest, but when these leave, the mites will migrate to other areas in search of a blood meal. Many times an infestation of buildings occurs when bird roosts and nests are disrupted or destroyed.

#### **RODENT MITES:**

**House Mouse Mite**—*Liponyssoides sanguineus*

**Tropical Rat Mite**—*Ornithonyssus bacoti*

The two most abundant rodent mites in buildings are the tropical rat mite and the house mouse mite. Rodent mites are primarily external parasites of rats and house mice, but they will also feed on humans. The life cycle of rodent mites is similar to the bird mites and usually takes 10 to 12 days.

Rodent mites can cause severe irritation and dermatitis in humans. Areas bitten by mites may remain swollen for several days and leave red spots. Scratching of bites may result in secondary infection.

**Management Guidelines for Mites.** Management of household mites is best accomplished by eliminating nests and roosting areas for birds and by controlling rodents. Insecticide total release or mechanical aerosols and foggers are effective in killing mites but do not prevent re-infestation. You may need to repeat the application in 2 to 3 weeks.

Treat bites with an antiseptic to ease the irritation. Persons with severe dermatitis caused by mites should consult their physician for treatment.

## HOUSE DUST MITES

House dust mites are a little known and rarely mentioned group of mites of medical significance to humans. Mites, mite bodies, or fecal materials are allergens found in house dust, and the materials may produce reactions when inhaled by humans. Several papers published during the late sixties to early seventies, however, reported that less than 5 percent of children and even less of the adult population are sensitive to this mite allergen. People with a predisposition to asthma are more severely affected than the general population.

The adult female house dust mite is about 500 microns long, and the males are even smaller. They are colorless except for some sclerotized areas on the body, which tend to be darker. The adult female lays about an egg a day for 30 days. The eggs hatch and develop into adults in about one month.

House dust mites feed on human or pet skin that has been shed (dander). A normal person sheds about 5 grams of skin per week. One gram of skin will feed thousands of mites for months. Mites may be found throughout a house, with high numbers found in areas where people spend time resting or sleeping, such as chairs, couches, and mattresses.

## INSECTS

---

### BOOKLICE

Booklice make up the insect order: Psocoptera and belong to a group of insects collectively called psocids. The psocids are small, soft-bodied insects, usually about 4 to 6 millimeters long. They are both winged and wingless forms and have chewing mouthparts. The majority of psocids are outdoor species with well-developed wings. They are commonly found on trunks of trees and shrubs. These psocids are frequently called "barklice." Most of the species found in buildings are wingless. Because they are often among books or papers, they are called booklice. The term "lice" in the name is somewhat misleading because none of these insects are parasites, and few of them have a louse-like appearance.

Psocids feed on molds, fungi, cereals, pollen, fragments of dead insects, or other similar materials. At times they may become extremely abundant and spread through an entire building. In such situations, they may contaminate foods and materials to the point the goods must be discarded. Damage to books may be more direct because booklice eat the starch sizing in the bindings and along page edges. Psocids are occasionally present in new housing, especially if sheet rock or drywall has been used to cover the stud walls. Very moist "mud" is used to finish the walls and seal the joints between sheets. This will support molds for a short period of time and psocids may build up on the resulting mold growth.

Psocid eggs are laid singly or in clusters and are often covered with silken webs or debris. Most species pass

through six nymphal stages. The entire life span from egg to adult is between 30 and 60 days.

**Management Guidelines for Booklice.** Reducing moisture to eliminate mold growth is an effective way to control booklice. Thoroughly clean and air infested furniture, bedding, or other movable furnishings. Clean up spilled food products, and keep all stored products tightly sealed.

If required, apply a spot treatment of residual insecticide. Aerosol applications reduce numbers but will not provide long-term reductions.

### SILVERFISH AND FIREBRATS

Silverfish and firebrats make up the insect order: Thysanura, which are among the most primitive insects. There are about 13 species of silverfish and firebrats in the United States. These small, wingless pests do not undergo complete metamorphosis; immatures look like adults but are smaller. All life stages have similar feeding habits. Immature forms may molt as many as 50 times before becoming adults. Silverfish and firebrats continue to molt during the adult stage. These insects are long lived, taking up to 2 years to reach maturity and then continuing to live for several years as adults. Under optimum conditions, the immature stage lasts 2 to 3 months.

Adults range from 6 to 18 millimeters in length, depending on the species. Silverfish are, as the name implies, silver in color and are tapered from front to back, giving rise to their fish-like appearance. Firebrats are gray with darker markings. Both silverfish and firebrats have long antennae and three long bristles, known as cerci, arising from the tip of the abdomen; because of this, they are sometimes called bristletails. Females lay about 100 eggs during a lifetime and deposit them as small batches, usually in cracks or obscure places. Eggs require 2 to 8 weeks to hatch.

Silverfish and firebrats get inside a building through openings in foundations or around pipes or wires passing through walls. They can also be carried into buildings in boxes, books, papers, or other items brought in from infested areas. These insects are attracted to buildings and survive if areas have a warm, moist environment and suitable food. They live in most indoor locations including attics, basements, and wall voids. Firebrats require warmer areas than silverfish and can tolerate drier conditions. Both silverfish and firebrats are nocturnal and are not attracted to light; thus, they are rarely seen in well-lighted locations.

Silverfish and firebrats feed on fabrics such as linen, rayon, and cotton. They are attracted to starched fabrics and feed on paper, paper sizing, bookbindings, and dead animals. They feed on any type of human food, but are especially attracted to flour and starches. They may also be found in breakfast cereals. They do not feed on wool, hair, or other animal fibers but may damage some synthetics. Silverfish and firebrats are voracious eaters but are also

capable of going without food for long periods. Besides damaging objects by feeding, silverfish and firebrats leave yellow stains and dark-colored feces on items they touch.

#### **Management Guidelines for Silverfish and Firebrats.**

Because of their nocturnal habits, silverfish and firebrats are difficult to see. If possible, make observations or surveys of silverfish or firebrats during the night using a flashlight. They may also be monitored with sticky traps. These insects may go unnoticed until populations get larger or damage becomes severe. Control may be difficult because it is hard to locate the infestation sources.

Keep silverfish and firebrats from entering buildings by caulking or otherwise closing outside openings. Caulk cracks and fill other openings inside to eliminate hiding places. Moisture attracts these insects, so it is important to repair leaking pipes and drains and insulate water pipes to prevent water condensation. When possible, eliminate sources of food; store flour, cereals, and similar items in tightly sealed containers.

Chemical control methods for firebrats and silverfish are similar to those used for German cockroaches. Spray insecticides around building foundations; apply desiccant dusts to attics, crawl spaces, and voids in walls and beneath cabinets. Insecticides used in this manner create barriers that keep silverfish and firebrats out of building interiors when openings cannot be blocked or located.

Apply a liquid insecticide with residual activity to locations where silverfish or firebrats are most concentrated. Inject the spray into cracks and crevices. Dust formulations may be preferred in dry areas where visible residues are not objectionable. Blow dusts into wall voids, attics, and into cracks and crevices. Do not apply liquid or dust formulations to books or papers or other objects that might be stained, or to items that people might come into close contact with.

#### **CRICKETS:**

**House Cricket**—*Acheta domesticus*

**Field Cricket**—*Gryllus spp.*

Crickets belong to the insect order: Orthoptera. These insects undergo a gradual or incomplete metamorphosis; therefore, the young resemble adults except they do not have functional wings. Both have similar feeding habits. Crickets can be a nuisance in buildings because of the numbers that will enter the building and the noise they make with their chirping. The noise factor is magnified when it is late at night and people are trying sleep. These insects will feed on fabrics that contain food or perspiration stains, sometimes causing significant damage.

The most common crickets to invade buildings include the house cricket, *Acheta domesticus*, and the field cricket, *Gryllus spp.*, which are similar in appearance. House cricket adults are between 12 and 18 millimeters long. They may be light yellowish-brown, with three dark bands on the head or solid shiny black. This species has long, slender antennae.

The field cricket is slightly larger, up to one inch in length and usually brown or black. Females of both species have a long, thin ovipositor projecting from the tip of the abdomen.

**Management Guidelines for Crickets.** The key to managing crickets inside is exclusion. Seal cracks and other openings from the outside that provide access. Caulk or otherwise seal inside cracks and crevices that provide hiding places. Crickets may also be found behind or under furniture and appliances, behind baseboards, or in other inaccessible areas. Remove weeds and debris around the outside of the building to eliminate attractive habitats. Change outside lighting to sodium vapor lights or yellow incandescent lights that are less attractive to crickets (and other insects). Garbage and other refuse should be stored in containers with tight lids and elevated off the ground on platforms or bricks.

Use insecticides only when exclusion and sanitation cannot accomplish control quickly enough to stop the damage within a reasonable time. Use diluted insecticide sprays registered for indoor use as a spot spray in cracks and crevices and other areas where crickets may hide. Sorptive powders may also be blown into inaccessible areas. Apply liquid sprays around the perimeter of the building or in other outdoor areas if crickets cannot be controlled through sanitation. Avoid using outdoor spray materials in indoor areas unless the label states this is permissible. Insecticide impregnated baits or granular formulations of certain materials may also be used outdoors. Granules are suitable in lawns and other areas subject to moisture or frequent watering. If complaints are made during the evening hours, encourage the clients to try to remove the offending insect with a strong vacuum cleaner.

Cricket infestations are usually seasonal. Problems often occur in the fall, as evenings become cooler. The insects seek buildings for warmth and shelter. Because of this, application of long residual insecticides is not usually needed indoors for adequate control.

#### **SPRINGTAILS**

Springtails belong to the order: Collembola. They are usually found in decaying organic matter such as thatch accumulations in lawns; however, they will occasionally invade homes in enormous numbers. Therefore, they fulfill an important role in soil development and enrichment. There may be as many as 50,000 springtails per cubic foot in forest litter. They can also be indoors in potted plants and decaying bulbs.

**Description and Habits.** These insects are white or gray. They have a forked appendage to the rear and bottom of the abdomen. This appendage, used as a lever, allows these insects to jump or spring into the air, which is how they got their name.

They infest buildings that have constant high humidity. This is usually in a basement but may be in other areas with water leaks. Consequently, the best method of control is to

stop the leak or decrease the humidity. Fans may be used to dry out wet areas quickly.

### PLASTER BAGWORMS—*Tineola walsinghami*

Plaster bagworms belong to the order: Lepidoptera. They are similar in appearance and closely related to clothes moths. Bagworm larvae live in a flattened, gray, watermelon seed-shaped case about 12 millimeters long. The case is made of silken fiber and covered with sand particles, lint, paint fragments, and other debris. The case has a slit-like opening at each end so the larva is able to move around and feed from either end.

Plaster bagworms are easily seen on light-colored walls. Close examination of the house may reveal bagworms attached to the underside of chairs, bookcases, and other furniture. They are often found along rug edges, near baseboards, or on the lower edges of walls. Bagworms are quite common in garages and underneath buildings. The larvae mainly feed on the debris that gathers around spider webs or insect nests; however, they may also feed on fabrics made of natural fiber. Samples sent to the Entomology Laboratory at Mississippi State University indicate that a number of samples are collected from bathrooms. This may indicate some association with the accumulation of human hair in this area.

Control of plaster bagworms is similar to that of clothes moths. Good housekeeping is important, especially the removal of spider webs. Sweep down and remove any spider webs and visible bagworm cases.

### EARWIGS

Earwigs belong to the order: Dermaptera and are beetle like, short winged, fast moving insects (Figure 9-2). They are about 12 to 25 millimeters long. They are usually dark brown and have a pair of pincer like appendages at the tip of the abdomen. They have chewing type mouthparts and undergo a gradual type of development.

Earwigs are active at night. They usually hide in cracks, crevices, under bark, or in similar places during the day. They are usually scavengers in their feeding habits, but occasionally feed on plants. The name earwig is derived from an old superstition that these insects enter human ears, an idea that is entirely unfounded; earwigs are harmless to man. Some species have scent glands they use to squirt a foul-smelling liquid that is probably used for protection from predators.

The striped earwig adults are dark brown with light tan markings. The males are large and robust with stout pincers. The females are somewhat smaller and lighter in color than the males. This earwig lives in subterranean burrows or under debris in areas with sandy or clay soils. They are usually outside unless populations are large or other conditions are adverse. They enter structures in search of food, a more suitable environment, or by accident.

Because they are nocturnal, they remain in the soil or under debris during the day. Heavily thatched lawns or



Figure 9-2. Earwig

mulched flowerbeds are among their preferred daytime habitats. At night they collect in large numbers around streetlights, neonlights, lighted windows, or similar locations where they search for food. Favorite foods include army worms, aphids, mites, and scales. They will also forage on food scraps or dead insects.

The female lays about 50 tiny eggs in a subterranean burrow. Eggs hatch into nymphs in about 7 days, and nymphs feed on their egg case. The female continues to care for the young, grooming and manipulating them in the burrow throughout the first nymphal stage. The young nymphs are 2 to 3 millimeters long and could be very easily confused with termites.

In about seven days, the nymphs molt into the second stage and are released from the burrow by the female. At this time, the female loses her maternal instincts and many times will devour the nymphs before they can hide. During later stages, the nymphs tend to be cannibalistic. After passing through six nymphal stages, lasting an average of 56 days, the earwig becomes an adult.

**Management Guidelines for Earwigs.** Earwigs are difficult to control with chemicals. Many times the most effective control for an errant earwig or two in the home is purely mechanical. A folded newspaper, fly swatter, broom, and dustpan provide quick and inexpensive control. For severe indoor infestations, use insecticide sprays only for spot treatment.

Proper scheduling of outdoor applications may increase the efficiency of control. Apply residual insecticides late in the afternoon or early evening because earwigs are active at night. Apply the material in a band treatment at least 10 feet wide around the entire perimeter of a structure. It may also be necessary to treat the base of mulched shrubbery or flowerbeds. Because of the high reproductive potential and habitat of earwigs, it is likely that insecticide applications will have to be repeated regularly to achieve a satisfactory degree of control.

Glass jars or tin cans baited with fish or cat food can be buried at ground level for use as pit fall traps. The earwigs cannot climb the sides of the container and are trapped. The

trap can be cleaned periodically, and the trapped earwigs destroyed.

## OTHER ARTHROPODS

### SOWBUGS AND PILLBUGS

Sowbugs and pillbugs are common crustacean, belonging to a group of animals called Isopods, and are found throughout the southeast. They are wingless, oval, or slightly elongated arthropods about one-half inch in length and slate gray in color with the body segments appearing as armored plates.

Both sowbugs and pillbugs feed primarily on decaying organic matter although occasionally they damage the roots of green plants. Their normal habitat is outside, but they occasionally wander indoors where they do no damage.

Sowbugs (Figure 9-3) are often called woodlice and possess two tail-like appendages, seven pairs of legs and well-developed eyes. They are incapable of rolling into a tight ball. Pillbugs or “roly-polies” lack the tail-like appendages and can roll into a tight ball.

The habits, biology, and control of sowbugs and pillbugs are similar. Both are slow-moving, crawling arthropods. They require high moisture and are most active at night. When resting during the day, they may be found under trash, rocks, boards, and decaying vegetation or just beneath the soil surface. A heavy infestation indoors usually indicates a large population outdoors. Mulches, grass clippings, and leaf litter often provide the decaying organic matter these bugs need to survive.

The female carries the eggs in a brood pouch on the underside of her body; eggs per brood will vary from 7 to 200. The eggs hatch in 3 to 7 weeks, and the young remain in the pouch another 6 to 7 weeks. Once the young leave the pouch, they never return. Some species produce only one brood per year, but others may produce two or more. Individuals may live up to 3 years.



Figure 9-3. Sowbug

**Management Guidelines for Sowbugs and Pillbugs.** Sowbugs and pillbugs cause no damage inside the home. Simple mechanical control such as a broom and dustpan or a fly swatter may be adequate. If they become a serious nuisance, eliminate hiding places, food, and moisture sources to reduce the infestation. Source reduction outdoors helps considerably. Remove piles of leaves, grass clippings, and fallen fruit. Boxes or boards and other debris should be stored off the ground to eliminate a moist shelter.

Indoor treatment with residual insecticides may kill sowbugs and pillbugs that wander inside. Complete control is difficult to achieve, and treatments may not last more than one month.

Perimeter sprays applied around the structure will give some relief. Treatments should be applied to and near foundation walls, around steps, or damp areas surrounding the structure. Granules, baits, or dusts are also useful for treating around foundations and crawl spaces.

### CENTIPEDES AND MILLIPEDES

Centipedes and millipedes are commonly seen in yards and occasionally enter homes. Neither centipedes nor millipedes damage furnishings, home, or food. Their only importance is that they annoy or frighten individuals.

**Centipedes.** Centipedes have many legs and belong to a group of animals called Chilopods. They are usually brownish, flattened animals with many body segments. Most of the body segments have one pair of legs. Centipedes are fast runners and may vary in length from 1 to 6 inches. They have one pair of antennae that are easily seen.

Centipedes have poorly developed eyes and are most active at night. They are active predators and feed mainly on insects and spiders. All centipedes have venom glands to immobilize their prey. The jaws of the smaller local species cannot penetrate human skin; however, the larger species may inflict painful bites.

Centipedes are usually associated with damp, dark places such as under stones, leaf litter, logs, bark, or soil crevices. Indoors, they are found in closets and bathrooms where there is high humidity.

Centipedes usually lay 15 to 55 eggs clustered together in the soil, although the eggs of some species are laid singly. Eggs hatch soon after they are deposited. The female will usually guard the eggs and the newly hatched young. Young centipedes closely resemble the adults and require 3 years to mature. Centipedes are rather long lived, and individuals may live up to 6 years.

**Millipedes.** Millipedes are commonly known as “thousand leggers” and belong to a group of arthropods called Diplopods. Millipedes are worm-like, cylindrical animals with many body segments. Most of their body segments bear two pairs of legs. Millipedes tend to coil up tightly when disturbed, and some species can secrete a foul-smelling fluid.

Millipedes feed on decaying vegetable matter and are often found under stones, flowerpots, boards, or similar debris where there is abundant moisture. Occasionally after extended periods of rain or habitat destruction, large numbers of millipedes may migrate from one point to another and enter buildings. Population pressure may also cause these animals to migrate. They can climb foundation walls and enter homes through any small opening. These pests are generally more troublesome in wooded or newly developed areas where decaying vegetation provides excellent food and breeding conditions.

Female millipedes can lay from 20 to 300 eggs singularly or in clusters in the soil. The eggs hatch in a few weeks, and the young go through seven to eight stages before maturing to adults.

**Management Guidelines for Centipedes and Millipedes.** Indoor chemical treatment will eliminate only the centipedes or millipedes already inside. Spot treat infested areas with residual insecticides. Removal of individuals with a broom or dustpan is sometimes sufficient.

A large indoor population usually indicates large numbers of millipedes or centipedes surrounding the structure. Removal of breeding sites and harborages will aid in control. Remove compost piles and decaying vegetation from areas close to the home. Outside treatments of residual sprays should help control outdoor populations. Dusts and granules may be applied to crawl spaces and around foundation walls.