

SECTION 2  
CHAPTER  
9

# SILVERFISH AND FIREBRATS

## LEARNING OBJECTIVES

After completely studying this chapter, you should:

- Be able to identify the various silverfish/firebrat species on the basis of their appearance and recognize the signs of silverfish damage.
- Be able to identify key features in the life cycle, habits, and habitat of silverfish and firebrats.
- Know the steps needed to effectively control and manage silverfish and firebrat pests.

Silverfish and firebrats are among the most ancient of insects. They were on earth before insects developed wings. These pests were among the most common insects in homes and businesses when wallpaper was the usual wall covering and when coal furnaces had glued, taped, insulated pipes.

The silverfish and the firebrat are the most common representatives of the “bristletails.” Pest bristletails are about  $\frac{1}{2}$  inch long when adult and, unlike other insects, they continue to molt and may shed their exoskeletons as many as 50 or 60 times when full grown. They have long antennae in front and three antenna-like processes on the abdomen (the “bristles” of the bristletails). They are slender, broadest in front and gradually tapering toward the rear. In general, they shun light and prefer dark, undisturbed sites.



Figure 9.1. Silverfish.

## COMMON SILVERFISH (*Lepisma saccharina*)

The silverfish is about  $\frac{1}{2}$  inch long when full grown and is covered by a sheen of silvery scales. It prefers temperatures between 70 and 80 degrees F, and requires high humidity. Adults can live from two to three years. They feed on starchy substances such as flour, starch, glue, paste, and the starch sizing on textiles and papers, but they can also digest cellulose fibers.

Silverfish build up around the materials they are feeding on, such as spilled flour in cupboards, corrugated cardboard boxes in damp basements, insulation glue, and stored books in unventilated attics. Their feeding leaves irregular, yellow-stained holes in sized textiles and paper, surfaces removed from corrugated cardboard, and irregular areas grazed off cloth-bound books. Damaged products will often have a dark fungus growing on them as a result of the humidity and insect fecal deposits.

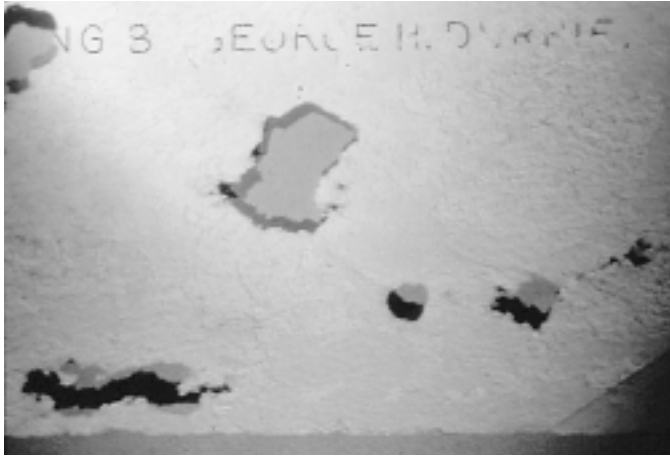


Figure 9.2. Silverfish damage.

Large populations of silverfish spread out into other humid areas. Silverfish are often trapped in wash basins and bathtubs in bathrooms to which they migrate from the basement or out of wall voids penetrated by pipes.

### GRAY SILVERFISH (*Ctenolepisma longicaudata*)

The gray silverfish is uniformly gray, sometimes very dark. This species occurs indoors in the South, the Midwest, and southern California. It prefers drier areas than the common silverfish, such as crawl spaces and attics, but may occur around water pipes in bathrooms. This species is more a pest of paper and textiles.

### FOUR-LINED SILVERFISH (*C. quadriseriata*)

The four-lined silverfish has four dark lines down its abdomen and is very slightly longer than the common silverfish. It builds up in the mulch of flowerbeds and under roof shingles, then enters attics and upstairs rooms. This species is common on the East Coast and West Coast and the Midwest. High humidity from overhanging trees in summer promotes buildup of this species. It often lives indoors and infests attics, particularly if the roof is made of wooden shingles. It may be found outdoors in summer. Its life cycle is similar to that of the common silverfish but is not as limited by temperature and moisture.

### FIREBRATS (*Thermobia domestica*)

Firebrats are not silvery but mottled dark gray and dull yellow. Their distribution, size, shape and appendages are like those of silverfish, but firebrats prefer decidedly higher temperatures and surroundings warmed to 90 degrees F or more. Examples of firebrat habitat are bakeries, where heat and starches are prevalent; furnace rooms; steam pipe tunnels; hot apartment bathrooms; and partition walls of water heater rooms.



[Figure 9.3. Firebrat, *Thermobia domestica*.

## CONTROL AND MANAGEMENT OF SILVERFISH AND FIREBRATS

### Inspection

- Place silverfish and firebrats in alcohol to preserve them. They are soft and very fragile. When they are captured for identification, scales are usually rubbed off and appendages broken off.
- Check all starch-based materials in the infestation area, including glued boxes, wallpaper, books and book bindings, art prints, file boxes, kitchen and bathroom cupboards, glued insulation batts, flour paste, and stored textiles, especially those that are starched or sized.
- Inspect rooms connected to infested areas through wall or floor penetrations, or through closet ceilings.
- Note areas with high humidity and high temperatures.

### Habitat Alterations

- Locate moisture sources.
- Mend pipe leaks.
- Ventilate closed rooms, attics, and crawl spaces.
- Dehumidify humid spaces.
- Eliminate standing water.
- Make changes in grade and guttering where water runoff causes damp basements and walls.
- Eliminate stored materials that harbor bristletails.
- Dispose of infested storage boxes and relocate stored materials in dry spaces after inspection of materials.
- Trim trees where shade is causing moist conditions on roofs and roof eaves.

### Pesticide Application

- Use crack and crevice applications of registered pesticides in areas of infestation to kill newly hatched bristletails.

- Use dust as spot treatments where it will not drift. Dusts can also be used in crack and crevice applications.
- Use naphthalene flakes in sealed textile storage for protection of materials.
- Use fogs to eliminate heavy populations and to keep the active, exposed pests from migrating into new areas.
- Treat attics where four-lined silverfish are found.

### Follow-up

Educate the client regarding the bristletail's need for starch-based foods and humid conditions, and the firebrat's attraction to areas with high temperatures.

## SECTION 2 CHAPTER 9

# Review Questions

## Chapter 9: Silverfish and Firebrats

Write the answers to the following questions and then check your answers with those in Appendix A in the back of this manual.

1. The common silverfish prefers moderate heat and high humidity.
  - A. True
  - B. False
2. The most common silverfish outside is the:
  - A. Common silverfish.
  - B. Firebrat.
  - C. Four-lined silverfish.
  - D. Gray silverfish.
3. The firebrat prefers moderate heat and high humidity.
  - A. True
  - B. False

## SUMMARY

Ancestors of silverfish and firebrats are among the most ancient insects. Silverfish prefer a moist or humid environment with a moderate temperature. Several species of silverfish live outside and inside. Firebrats, on the other hand, seek very hot places such as bakeries, furnace rooms, and hot apartment bathrooms.

Both silverfish and firebrats feed on starchy materials such as flour, paste, glue, and textiles and paper sized with starch. They prefer boxes of books, corrugated cardboard, flour or cake mix spills, glued insulation batts, taped heat pipes, etc. They also eat paper.

Removing the infested material is the first step in control of these pests. Ventilating moist or hot spaces and using pesticides will quickly suppress these pests

4. Silverfish and firebrats prefer to consume:
  - A. Carbohydrates.
  - B. Starches.
  - C. Proteins.
  - D. Vitamins.
5. Trimming overhanging trees is a control recommendation for:
  - A. Common silverfish.
  - B. Gray silverfish.
  - C. Four-lined silverfish.
  - D. Firebrats.
- 5-11. Match the following to the appropriate description.
  - A. Silverfish
  - B. Firebrat
  - C. Both
  - D. Neither

\_\_\_\_\_ 6. Most likely to be found in a furnace room.

\_\_\_\_\_ 7. Molt 50 to 60 times as adults.

\_\_\_\_\_ 8. Can fly as adults.

\_\_\_\_\_ 9. Prefer dark, moist areas.

\_\_\_\_\_ 10. Mottled dark gray and dull yellow.

\_\_\_\_\_ 11. Have "bristletails."

12. Which is a sign of silverfish feeding?
- A. Irregular holes in houseplants
  - B. Irregular, yellow-stained holes in paper
  - C. Areas grazed off of cloth-bound books
  - D. Infested grain and cereal products
  - E. B & C
13. List some habitat alterations for controlling silverfish and firebrats.
14. List some pesticide applications for controlling silverfish and firebrats.