



Silverfish and Firebrats Family: Lepismatidae; Order: Thysanura



Figure 1 – An adult silverfish (Clemson University – USDA Cooperative Extension Slide Series, www.Bugwood.org)



Figure 2 – An adult firebrat (Clemson University – USDA Cooperative Extension Slide Series, www.Bugwood.org)

Silverfish and firebrats are common in houses throughout the United States. Silverfish live and develop in damp, cool places, especially basements. Large numbers can sometimes be found in new buildings in which the walls are still damp. The firebrat lives and develops in hot, dark places such as around furnaces, fireplaces, and in insulation around hot water and heat pipes. Both are active at night and hide during the day. In apartment houses these insects follow pipelines from the basement to the rooms on lower floors where they find food. They may be found in bookcases, around closet shelves, behind baseboards, and behind window and doorframes.

Injury: The silverfish (*Lepisma saccharina*) (**Fig. 1**) and the firebrat (*Thermobia domestica*) (**Fig. 2**) cause damage in homes by eating foods and other materials that are high in starch, protein, or sugar. They feed on cereals, moist flour, any paper on which there is glue or paste, sizing in paper including wall paper and book bindings, starch in clothing and some fabrics. They eat holes in paper and may consume the paste that holds wallpaper to walls. Ragged edges on bindings of books may be a result of the feeding. On fabric there may be feeding marks on individual fibers, and yellowish stains, especially on linens. Firebrats are said to prefer rayon fabrics.

Description: Both silverfish and firebrats are slender-bodied, about 1/2 inch in length and wingless. Their bodies are covered with scales, shiny silver or pearl gray for silverfish, and mottled gray for firebrats. The immature insects look like the adults but are smaller in size. Both have two long antennae at the head end and three long tail-like appendages at the hind end. The appendages are almost as long as the body.

Life History: Silverfish and firebrats develop slowly under usual household conditions, and produce few young. They are able to live without food for several months. The females lay eggs at any season in secluded places, such as behind books or on closet shelves. Silverfish lay eggs singly or only a few at a time, but may deposit several batches over a period of weeks. Firebrats deposit about 50 eggs at one time, and again, may lay

several batches. Eggs hatch in 2 weeks or longer, and the rate of growth of the young depends on the temperature and humidity in the building. Silverfish and firebrats may reach maturity in 3 to 24 months.

Monitoring and Management: Conduct a thorough inspection, including little-used or disturbed places such as crawl spaces or little-used closets and basements. Sticky cockroach traps may be placed in suspect areas to monitor for activity and help catch insects. Another method to monitor for these insects is to coat an index card with a flour and water paste, let it dry, and place it in the area where you suspect activity or have spotted damage. Leave in place for two or more weeks, and then check for tiny scrape marks or ragged edges.

Reducing moisture in suspect or infested areas can help make it less habitable for these insects. Both like moist environments. Look for condensation on windows and if constantly present, make needed alterations to eliminate it. A dehumidifier may be useful in rooms that are constantly moist, but it should only be looked at as a temporary solution, and you should investigate causes of moisture and try to eliminate them. Fans that exhaust moisture to the outside may be helpful in bathrooms.

Cracks and crevices often accumulate cellulose and provide hiding places for insects. Vacuum regularly using a crevice or furniture tool. Find ways to seal cracks and crevices, especially around windows, moldings, and cabinets. Caulking, plaster and various types of putty are some choices. For areas around pipes, especially where they go through walls or floor, heat resistant caulking compounds are available for use around heat and hot water pipes.

Reducing moisture, vacuuming regularly, and using sticky traps may be enough to control these insects.

In difficult cases and to knock down large populations, insecticides may be useful tools. Two least toxic insecticide drying agents registered for home use in New York State in 2009 are boric acid and diatomaceous earth. Apply in cracks and crevices where silverfish may frequent. Other pesticides registered for use on silverfish or firebrats in New York State in 2009 include: cyfluthrin, deltamethrin, lambda-cyhalothrin, d-limonene, and permethrin. Apply in cracks and crevices, where pipes go through walls, along baseboards, and in corners of non-food storage cabinets and closets.

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The Pesticide Management Education Program (PMEP), in cooperation with the New York State Department of Environmental Conservation (NYSDEC), maintains a web site with a searchable database for pesticide products currently registered in New York State. Individuals who have Internet access can locate currently registered products containing the active ingredients suggested above at <http://pims.psur.cornell.edu/> (NYS PIMS).

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department of Environmental Conservation (NYSDEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional NYSDEC office. Read the label before applying any pesticide.

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