



ORDER THYSANURA

Silverfish

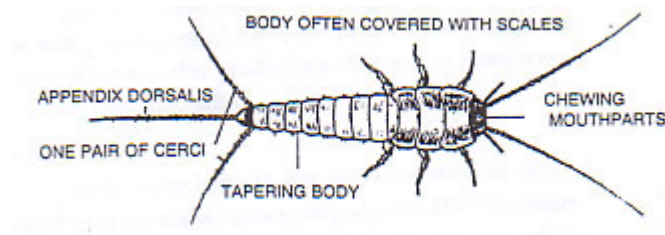
Approximate number of species: world 370, Australia 28.

Type of metamorphosis: primitive (no metamorphosis)

Silverfish are primarily insects that constitute the Order Thysanura. In Australia, this rather small insect order is represented by only 28 described species. These are agile, fast-running, scale covered insects that are primitively wingless. About 5 species of silverfish have successfully invaded buildings. These pest species restrict their activities to relatively undisturbed areas (e.g. bookcases, storage rooms) where they may damage paper, fabrics and other materials.

Appearance

Silverfish have flattened bodies and most species are clothed in tiny scales. They are wingless and have chewing-type mouthparts and medium to long thread-like antennae. Most have a silvery appearance and, because the body tapers to the rear, they are often said to have a fish-like appearance. Antennae are usually long and slender and three long appendages from the rear of the abdomen are very conspicuous. Compound eyes may be present, reduced or absent.



Biology and Habits

In their natural habitat, silverfish live under bark and in soil, leaf litter and rotting logs. Being nocturnal, they mostly hide during the day, becoming more active at night when they seek food. They seem to be mostly omnivorous, although some have a preference for materials of vegetable origin. They are fast running and agile, and their easily detached scales probably serve as a means of escaping the clutches of predators. Their inability to climb smooth surfaces often results in their being trapped in bathtubs and basins.

Reproduction in silverfish is a little unusual, for, although it is mostly sexual, copulation as such does not take place. Rather, during courtship, the male deposits a sperm capsule (spermatophore) on the ground and this is duly picked up by the female and transferred to the appropriate part of her anatomy. Eggs are laid singly or in batches, usually in cracks and crevices. Because silverfish have a primitive metamorphosis, the young are almost exact miniature replicas of the adults. The young grow slowly, undergoing a number of moults and maturing in about 3 to 24 months. After reaching maturity, the adult silverfish continues to moult throughout its life, which may be as long as four years.

Pest Status

Within buildings, silverfish may be found almost anywhere. While frequently found in roof cavities, they may also occur in wall voids, subfloor areas and many places within the dwelling parts of premises. They feed on most types of human food but seem to prefer starchy materials. When paper or photographs are attacked, it is often the outer, shiny layer that is most damaged. As well, book bindings, cottons, linens and wallpaper are often damaged. Any sources of glue, starch or sizing are likely to be attractive.

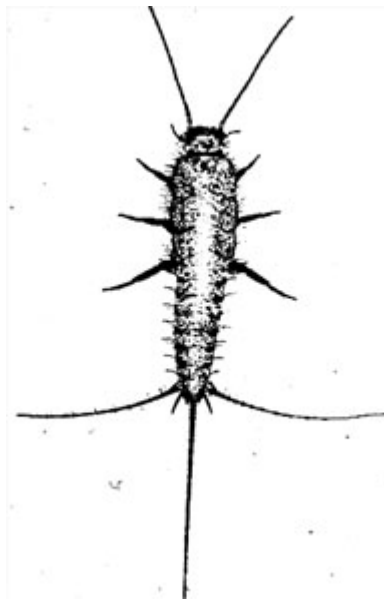


Figure 6.2 Silverfish (*Ctenolepisma longicaudata*) - 15 mm (Family Lepismatidae)

Control of Silverfish

Silverfish can be quite widespread within a given dwelling. Inspection is an important prerequisite to treatment. Thorough inspection should involve moving stored articles to reveal disturbed silverfish, and in some cases the use of an aerosol-flushing agent can help to locate activity. The possibility of populations residing in wall cavities can make control more complex and demanding.

Non-chemical methods of prevention and control

Inspecting incoming goods that may harbour silverfish (eg second hand books) may help to avoid infestation. As well, books, papers, files and so on should, where possible, be stored in light and airy conditions. Books hidden away in closed cabinets, particularly if infrequently opened, can provide very suitable conditions for silverfish development. In kitchen areas, tight containment of foods and frequent cleaning of scraps and crumbs helps to reduce the suitability of that environment to the silverfish.

Chemical Control

Owing to the often widespread distribution of silverfish within premises, it is usually necessary to use a combination of treatments to achieve effective levels of control.

Where possible, particularly in conditions of poor hygiene, a clean up prior to insecticide application can be most beneficial. Broadly, some types of insecticide formulations and methods of application are summarised as follows:

Surface-sprays: A variety of surface-sprays, mostly organophosphorus, carbamate and synthetic pyrethroid types, are registered for use in silverfish control. Where it is possible and safe to do so, these residual surface-sprays should be applied to surfaces on which the silverfish rest or travel.

Space-sprays: The application of space-sprays, in the form of mists, fogs or high-pressure aerosols, can be a useful back up to surface spray applications. Applied properly, insecticides (eg pyrethrins, dichlorvos) can be distributed in the spaces of a building to control silverfish that may avoid contact with treated surfaces.

Dusts: Dry dust formulations can be useful in silverfish control. Often, the areas in which silverfish dwell are not suited to wet sprays (eg certain parts of libraries, archives, roof voids etc.). Dusts applied to surfaces tend to leave a very fine layer, which can give good residual control. Ceiling voids, which often serve for silverfish harbourage, can be safely and efficiently treated with dusts.

Baits: Some silverfish control may be achieved by placing insecticidal baits in appropriate locations. Placement is very important, and competition from other food sources can limit their effectiveness.

In summary, silverfish control often relies on:

1. Thorough and extensive inspection/survey of the premises,
2. Careful application of insecticides so as to make likely contact with the insect pests
3. Avoidance of unnecessary longer-term storage of paper, books and so on in closed-up boxes and bookshelves
4. Thorough hygiene and sanitation.