



BUG BIZ

Pest Management and Insect Identification Series



Liposcelis bostrychophila, Book Lice (Psocodea: Liposcelidae)

Rui Chen, Chris Carlton

Description

The book louse, *Liposcelis bostrychophila*, occurs worldwide as a stored product pest in the insect order Psocodea, which includes bark lice, book lice and parasitic lice. Book lice adults are tiny, around 1 mm in length, wingless and light brown in color. Under high magnification, short, many-segmented antennae and a bulge at the front of the head are visible. The thorax is constricted, appearing smaller than the abdomen and head. The abdomen is large, oval, with distinct segments. A characteristic feature of *Liposcelis* is the expanded femur of the hind leg, the large portion of the leg that extends from beneath the abdomen. This is considered diagnostic for members of the genus *Liposcelis*. The immature nymphs resemble the adults but are smaller and lighter in color.

The genus *Liposcelis* includes over 120 species worldwide. *Liposcelis bostrychophila* is one of the most widely distributed species, but identifications of species within the genus are difficult and require examination under high magnification by taxonomic specialists. The common name book louse (plural, book lice) is a general term that may refer to multiple species associated with human activity, especially when present as indoor pests.

Life Cycle

Immature book lice, called nymphs, undergo gradual metamorphosis, meaning they resemble small versions of the adults and do not have larval or pupal stages. After hatching from eggs, the nymphs undergo four growth stages (instars), with the fourth molting into the adult. Many populations of this species are entirely female and reproduce without mating (parthenogenesis). During her lifetime, a female may deposit up to 200 eggs. Occasional males have been found in some populations, many years apart, so sexual reproduction does occur in isolated cases.



Book lice in a starling nest (Diane Young, Bugguide.net, Creative Commons license).

Ecological Significance and Pest Status

Liposcelis bostrychophila is a major pest of stored products, especially grain-based materials. Their small sizes and ability to go long periods without feeding make monitoring and prevention of infestations difficult. Populations may become resistant to commonly used insecticides, and their association with food products and warehouses renders many pesticides impractical due to contamination risks. Book lice will also infest outdoor habitats that contain food resources. These include bird and animal nests and many other areas where dry organic matter accumulates.

High humidity and temperatures favor buildup of large populations. Infestations in dried food products in households may not be noticed for many months, allowing movement to other materials in the vicinity. Book lice will also infest nonfood products, such as books stored in humid areas, where they feed on book bindings, dried plant arrangements, mold spores, and in rare cases, insect specimens in collections. High humidity is a common feature in these situations.

Control

Monitoring. Careful monitoring for a variety of stored product pests is routine in large scale food production and storage facilities. In household situations, the appearance of tiny, light brown insects without obvious larvae or winged forms in dried grain-based products (e.g., flour and corn meal) may indicate a book louse infestation. Entomology diagnosticians at the LSU AgCenter can confirm which insect is involved.



Book louse from an abandoned bird nest (Tom Murray, Bugguide.net, Creative Commons license).

Management. In household situations, a thorough inspection of stored food products, including pet food, should be conducted when book lice are discovered. Disposing of infested products and tightly sealing other materials in the vicinity often solves the problem. Freezing kills the insects and can be used if retaining infested material is desired. Maintaining low humidity levels in areas where books and plant matter are stored is important in preventing book lice infestations. In large scale food storage facilities, fumigants are sometimes used to control various pests, but this is not a practical or necessary solution for homeowners.

References

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