

Psocids/Booklice



Liposcelis sp. Photo courtesy of S.E. Thorpe, Wikipedia.

Psocids or booklice are commonly encountered stored products pests in more humid parts of the country. These are tiny, pale-colored insects that resemble minute termites. Adults are about 1 mm long and wingless. They are flattened from top to bottom and have enlarged hindlegs.

Psocids require relatively high humidity to survive and thrive. Optimal humidities range between 75% and 95%. However, they can live and reproduce at humidities as low as 40%.

Psocids may also be common in homes, particularly in kitchen cupboards and storage areas. The common name *booklouse* comes from the fact that booklice are relatively easy to see on the pages of books, where they commonly feed on mildews growing on the paper (especially on books stored in attics or other non-air-conditioned rooms).

The commonest species infesting homes, storage facilities and even insect collections belong to the genus *Liposcelis*. Many of these *Liposcelis* species reproduce asexually, so females begin laying eggs right away once they are adults. *Liposcelis* eggs are large, about one-third as long as the adult insect, and translucent, glued to surfaces. Total development time from egg hatching to adult depends on temperature, taking 57 days at 20°C (68°F) and as short as 30 days at 32°C (to 90°F). Adult life expectancy increases with increasing temperature and reaches a maximum of 89 days at 30°C.

These insects feed on mold and damp dried, powdered materials, like flour, and insect specimens. They are both good indicators of too high moisture content in these materials, as well as actually feeding directly on stored products. Psocids will

selectively feed on the germ of damaged grain. Flour and other powdered products, even including powdered milk are the foods most frequently infested. However, psocids will also attack grain in storage, handling, and processing facilities and museum exhibits. Their feeding can lead to losses of product weight of up to 10%. In addition, when they are present in large numbers they contaminate the food materials they've infested and can cause allergic reactions in some people.

These insects are difficult to control because of the long adult life expectancy, ability to survive for considerable periods in adverse conditions without food, their fast population growth and asexual reproduction. Additionally, some species are resistant to residual insecticides and particularly the fumigant phosphine. Overall, the best way to limit their populations is to substantially lower the humidity, and/or moisture content in the infested area or materials.

In California the only regions likely to have consistent psocid problems indoors are along the coast where ambient humidities are consistently higher than they are inland, east of the coastal mountains. This is particularly good for museum collections and exhibits in inland institutions. However, climate-controlled buildings throughout the state tend to have humidities below 40%. In homes humidities are more variable and can be higher if there are large numbers of indoor plants, aquariums and other sources of moisture.



Liposcelis bostrychophila in cornmeal. Photo courtesy of Kathy Keatley Garvey.