Stored Product Pests: Booklice (Psocids)

FACT SHEET 18-060-0517

Just the Facts... *Booklice (Psocids) are small, soft-bodied insects. Despite their name, booklice, also called psocids, are not true lice and do not transmit disease. They prefer to feed on mold, fungi, grains, insect fragments, and other starchy material. Dry food products commonly infested include cereals, pasta, flour, powdered milk, chocolate, and yeast. Infestation of packaged food products is uncommon, but booklice can be annoying when present in large numbers. Reducing humidity below 50% will eliminate most booklouse infestations.*

What do they look like?

Booklice are only 1/25 to 1/13-inch in length and often go unnoticed because of their small size. The species that are indoor pests are wingless and resemble lice, hence the common name booklice. Related species found outdoors have wings and are referred to as barklice. Booklice are gray to brown in color and have long slender antennae. The most characteristic feature is the presence of a large clypeus or protuberance on the front of the head, which requires magnification for recognition.

Booklice infestation. Jim Kalisch, Dept. of Entomology, University of Nebraska, Lincoln

How do they get in?

Booklice rarely infest food products at the point of manufacture. A more likely scenario is that nymphs and adults are found on the outside of pallets containing food products and between boxes and bags of food on palletized cargo. The increased use of air-tight plastic or foil bags and pouches has all but eliminated booklice infestations during transit and storage. Dry animal food is more susceptible since many packages are not “air-tight” and exhibit small openings which permit booklice entry. Booklice are often attracted to moldy food or packaging.

Where do they live?

Booklice avoid light and prefer to live in cracks and crevices where the moisture is higher than the surrounding open areas. In warehouses this may be the cracks between the boards on wooden pallets, and in homes the cracks and crevices associated with kitchen cabinets and countertops. The nymphs and adults are active during the daytime. Booklice can also be found on window sills and around door frames were cracks and crevices afford shelter and dead flies, moths, and other insects provide a food source.

What is their lifecycle?

Adult booklice can live for six months and produce two generations per year. The adult female lays up to 100 eggs that take 2-4 weeks to hatch into nymphs. The nymphs are smaller, but similar in appearance to the adult. The life cycle from egg to nymph to adult takes 2-3 months.

What damage do they cause?

Booklice are general scavengers and do not bite humans. They are rarely found inside intact packaged products shipped from the factory or other warehouses, but will often invade broken or opened containers. Their presence is objectionable in food products. Booklice contaminate stored products with their feces and body parts.

Prevention methods:

Sanitation and inspection are the keys to good booklice control. Booklice infested products in warehouses often go unnoticed until a customer returns an infested product. Use sticky traps to capture the insects as they wander through warehouses and homes. The traps should be placed in locations where the booklice can walk since they do not fly. Traps should be placed along walls, at the base of pallets, next to outside doors, or other areas where booklice are suspected. Eliminate traps with poor booklice counts

and place new traps in the vicinity that produces ever-increasing insect capture until the infested product is identified. Inspect pallets of food upon arrival at warehouses, and inspect individual products when brought home from retail outlets.

Control methods.

Reduction of the humidity below 50% will eliminate most booklice infestations. Store boxes, bags, books, and papers off the floor to reduce moisture levels. Remove spilled food daily and clean warehouses with a vacuum monthly, especially along walls and the edges of pallets where booklice and food products tend to accumulate. Inspect salvage areas in food warehouses since spillage from broken packages is more common than in the storage areas. Inspect and remove spilled food product from food transportation vehicles. Place food pallets at least 18 inches from walls to permit routine inspection and cleaning. Rotate food products so that older stocks are sold first; frequently inspect food with older manufacturing dates for infestations since adult booklice tend to emerge from packages in greater numbers as the infestation ages. This principle also applies in the home since booklice from a single infested product can migrate and infest multiple food products stored in a kitchen or pantry. Store vulnerable products in containers with tight-fitting lids if the contents are not used within one week after opening. Place infested products inside plastic bags prior to disposal to reduce the spread of booklice.

Segregate infested products in warehouses from non-infested products and cover with plastic until treatment or disposal. Place infested products in a freezer at 0 degrees Fahrenheit for one day to kill eggs, nymphs, and adults. Do not reissue infested products or use for food preparation even after booklice are killed. Booklice infestations can persist in mold and dead insects and reinvade products stored in warehouses and homes after control of primary infestations. As long as outlying infestations exist, booklice will wander through warehouses and homes seeking new products to invade.

For more information on surveillance and control of stored product pests, see the Armed Forces Pest Management Board Technical Guide No. 27, Stored-Product Pest Monitoring Methods, November 2015, and Technical Guide No. 38, Protecting Meal, Ready-to-Eat Rations (MREs) and Other Subsistence During Storage, November 2015, at http://www.afpmb.org/pubs/tims/tims.htm.