Psocids – Book & Bark Lice

It is not uncommon to find that food cupboards and especially dry goods such as flour, milk powder, sugar or semolina have become infested with tiny grey or brown insects. The products themselves are usually not at fault.

What are they?

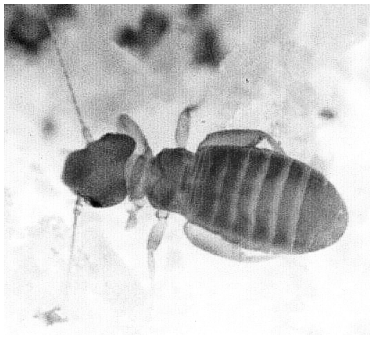
These are psocids. Psocids or Booklice are soft-bodied fragile insects with long thread-like antennae. The domestic species being smaller than a pinhead, about 1 – 1½mm in length. They are either pale grey or pale brown in colour and may or may not have wings and are common but harmless household pests, smaller than a pinhead that can live in dry powdery type foods. Psocids do not like the light preferring to live in dark, warm, humid places such as the folds of packaging in food cupboards, in dust and debris under appliances (fridge, freezer, oven, washing machine, etc).

Psocids are members of the insect order Psocoptera, and are mostly innocuous inhabitants of trees and other vegetation. They are small fragile insects ranging in size from 1 to about 10mm long and are often cryptically coloured. Many live on bark and leaf surfaces feeding on algae, fungi or lichens. Others are found in leaf litter, or in caves. A small number have extended their range to include buildings and building materials such as thatch, stored food stocks and museum exhibits. About 16 of the 87 species that have been recorded from the UK can be found associated with humans but of these,

only two or three are of any significance as pests. For example, *Lepinotus patruelis* a round bodied, 2-3mm long, dark chocolate brown psocid is a minor storage pest of grain, used in the milling and brewing industries. It is interesting to note that this wingless species, which is normally found indoors, turned up in insects sampled from low altitude air currents and this may be a significant means of dispersal for wingless psocids generally.

Life history

They can live for about six months and in that time a female may lay up to 200 eggs. Liposcelids lay eggs singly or in small batches. The eggs are large in relation to the female (about 1/3rd body size) and usually only develop one at a time. Egg production rises to a peak when the females are about three weeks old and then steadily declines until death. Maximally three to four eggs per day can be laid, a remarkable rate of production considering the relative sizes of the eggs and female. Liposcelids have 4 nymphal stages (one less for males). The nymphs are almost colourless and difficult to see on light coloured backgrounds, and populations can increase rapidly without notice until the nymphs mature into brown adults. The generation time (from egg to egg laying adult female) depends on temperature. For *L. bostrychophila* it takes approximately 56 days at 20°C and shortens to 22 days at 30°C.



Liposcelis bostrychophila female

Food

Psocids feed on microscopic moulds and mildews that flourish in warm places such as the domestic kitchen and bathroom.

Distribution

Most psocid species in the UK are not pests. Where they are found in some number this is often associated with other problems such as excess moisture and fungal growth. *Liposcelis bostrychophila* is different. It can be found in clean well kept premises and is usually associated with kitchen food stores. When individuals are distributed throughout storage areas they are difficult to detect, but they become very obvious when they congregate on a particularly attractive food source, frequently a fresh bag of flour.

Liposcelis bostrychophila is the principal and most widespread psocid pest species in the UK and in Europe. This single species, which is mainly an inhabitant of households, is responsible for virtually all of the psocid-related complaints in the UK. *Liposcelis bostrychophila* is primarily a nuisance pest and is widespread in Britain. Recent estimates are that 30% of households contain this species. It can cause considerable emotional disturbance to householders who pride themselves on cleanliness, or who have a fear of insects (are entomophobic). At high density *L. bostrychophila* taints foodstuffs with waste products and can physically damage grains (e.g. rice). In addition they may elicit allergic reactions in sensitised persons.

Several other small (about 1mm long), flattened, wingless liposcelid species (e.g. *Liposcelis corrodens*, *L. pearmani* and *L. brunnea*) can become quite common in industrial sites, particularly in the summer months but are uncommon in domestic premises.

Psocids are not caused by poor hygiene – they are just as common in the cleanest type of homes as the dirtiest. This means that damage from local populations is usually minor unless populations go unchecked for long periods of time. However, psocids are both annoying and persistent so most people do not want them around. Fortunately, they are easy to manage or eliminate in or around the home.

Research has shown that the sorts of psocids (there are many different types) found in homes are rarely found where food is produced, so they are unlikely to be brought into the home in foods. They can be found in old books, carpets and other furnishings in the home. Other insects will occur with them – eating the psocids themselves and other matter. Entire communities develop hidden away.

Causes
Psocids are associated with high humidity. This could be caused by new plaster drying out, or by condensation resulting from inadequate ventilation in the kitchen. There are many reasons but you can be sure that if you have psocids, you have humid conditions. The kitchen is likely to provide the conditions they need, and fitted cupboards provide suitable places for them to live. With ideal conditions they can rapidly increase in number.

Control
When you are cooking, boiling a kettle or even just using the washing machine or tumble drier, make sure the kitchen is properly ventilated.

If condensation shows on windows it is being produced on all other surfaces as well and may lead to mould growth on which psocids thrive.

Clean out your food storage cupboards regularly and make sure they are completely dry before you put the food back.

Care should be taken when cleaning not to get chipboard wet, as this will encourage mould growth which psocids feed upon.
All potential hiding places such as unfinished edges on chipboard should be sealed with paint or varnish so that psocids cannot hide in them.

Enclosing them in a plastic bag and placing them in a deep freezer for twenty-four hours can also treat dry goods – the cold kills the psocids. The freezer treatment is also suitable for books and other objects (although the freezing treatment needs to go on for a longer time for other insect pests such as Carpet Beetles [a week]).

Always keep dry foodstuffs, such as cereals suitably contained.

How to get rid of them
If these prevention measures fail and you do discover psocids in your food, do not use an insecticide, as there is danger of contaminating your food. If ideal conditions are still there, the psocids will remain after treatment and can still re-infest.

Dispose of infected food immediately.

Thoroughly clean the cupboards, preferably using a vacuum cleaner. Pay particular attention to the crevices. Clean out all the dust, crumbs etc. Don't forget to do underneath and behind if these are accessible.

Always make sure the cupboard is completely dry before using it again.

Foodstuffs in packets can be stored in airtight containers suitably labelled.

Labels should be removed from tinned food, bottles and jars to ensure that psocids are not in the labels. This does not apply to new food containers put into store.
Remedy the cause of the humidity to ensure a long-term solution and take measures to increase ventilation.

Psocids may be controlled by treatment with a suitable residual insecticide on affected areas, and in particular the crawl spaces (cupboard joints, worktop joints, etc) which provide excellent homes for them.

Make sure windows/doors are opened when cooking, and do not place a kettle under a cupboard. In some cases, the use of a dehumidifier may sufficiently dry out a property to prevent further cases.