Care of Bessbugs

Live Material Care Guide

Background

The Bessbug (*Odontotaenius disjunctus*) beetle is perfect for classroom studies. These common beetles are also known as patent-leather beetles, Betsy bugs and horned passalus. The adults are 1–1.5 inches long with golden "fringe" on the middle legs, pronotum and on the antennae. The common name patent-leather beetle comes from the shiny, black exoskeleton. Although they have wings, they fly very rarely. Instead, they slowly amble in search of food within rotting hardwood logs.

The Bessbug is a true beetle with head, thorax, and abdominal regions. They have six legs, antennae, and mandibles. The narrow head also has a single protrusion that resembles a horn. The division in the thorax is only visible on the ventral side. The shiny, black pronotum covers the dorsal thorax. In the midline of the pronotum is a single groove. The last dorsal segment is the striated elytra. Elytra are the hardened forewings. They are raised when the hind flight wings are in use.

Bessbugs exhibit complete metamorphosis but reproduction is unlikely in a lab setting. Determining the sex of the beetles is difficult, although females tend to be slightly larger than the males. The young can take a year to develop from egg to adult. Adults can live for 12 to 14 months. The exact age of the shipped specimens is hard to determine.

Bessbugs exhibit subsocial colony behavior. Both sexes protect and tend to their offspring. Immature adults also contribute to the care of the colony. Once mature, the adults will fly to another nearby location typically at night. This is likely the only time the beetle will fly. Bessbugs also play host to a mite that has coevolved with the beetles. These mites are not harmful to the Bessbugs or to humans. The mites will only survive on their host and are not able to survive elsewhere.

Adults can produce different sounds by rubbing their hind wings against their abdomens. Fourteen sounds are known and the most common is a small squeak when the beetle is startled. In order to demonstrate the sound, gently blow on the beetle.

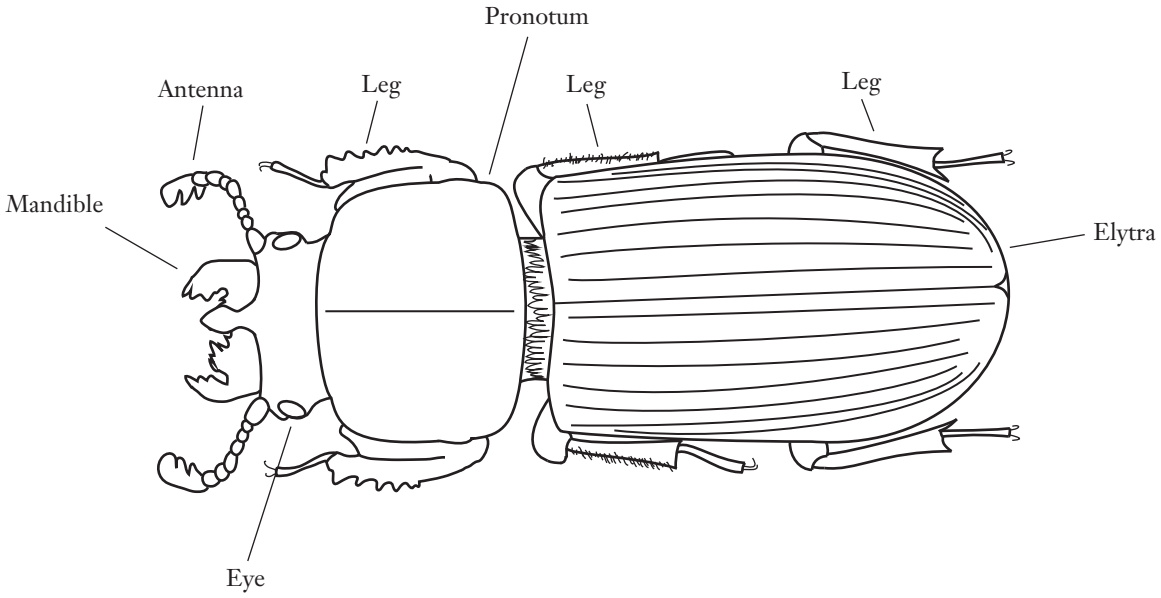

Figure 1. Bessbug

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Housing and Feeding

As with any live material shipment, immediately open the culture jar and ensure the Bessbugs arrived alive. In the event there is a problem, please contact Flinn Scientific right away.

For short-term cultures of two or three weeks, simply keep the Bessbugs inside the same culture jar but out of direct sunlight. The culture jar contains soil, wood, and damp paper towels to help maintain the proper moisture content. Dampen the paper towels with chlorine-free water as needed to keep a humid environment for the Bessbugs. The lid already has enough pin-sized air holes so leave the lid securely screwed on the jar. Bessbugs are strong and would be able to tip the lid off of the jar if it is only resting on the top.

For long-term cultures, transfer the Bessbugs and the contents of the culture jar to a larger container with a secure lid with pin-sized air holes. Add coconut bedding, sphagnum moss, soil or large chunks of decaying hardwood that is free of pesticides and herbicides. Keep the culture moist by adding water to the paper towels. Replace the towels as necessary but do not remove the frass (feces).

Bessbugs must have rotting hardwood such as oak or elm in order to survive. The wood must be partially decayed and the presence of decomposing fungi and bacteria is required. Exactly what they eat is debated. Some sources state that Bessbugs eat decomposers. Others state they digest the wood and the decomposers or that the Bessbugs chew through the wood to create frass (feces) upon which fungi grow, the Bessbugs then eat the frass and fungi. In any case, rotting hardwood is required to maintain the Bessbugs.

Bessbugs require high humidity. Mist the enclosure and paper towels frequently to ensure the humidity level is sufficient for proper hydration, respiration, and to maintain the decomposers within the rotting wood.

Keep the culture out of all direct sunlight. Bessbugs prefer darkness and even though they will burrow into the substrate, direct sunlight can easily overheat the colony.

Potential Issues

Bessbugs can pinch and may squeak when being handled. Move them using a Petri dish or other clean dish or cup to ensure they don't get dropped by a startled handler.

If the culture becomes oversaturated with water, add more substrate or leave the lid off for a few hours.

Do not use rotting conifer wood. If no rotting oak or elm is available, use another deciduous tree.

Safety Precautions

Always treat live organisms with respect and proper care. Wash hands thoroughly before leaving the lab. Follow all laboratory safety guidelines.

Disposal

Never release live animals into the local environment. They may harbor pathogens that could decimate the local population. Deceased animals may be disposed of according to Flinn suggested Biological Waste Disposal Method Type IV. Please consult your current *Flinn Scientific Catalog/Reference Manual* for general guidelines and specific procedures, and review all federal, state and local regulations that may apply, before proceeding.

Materials for *Care of Bessbugs* are available from Flinn Scientific, Inc.

Catalog No.	Description
LM1246	Bessbugs, pkg. of 3
FB0102	Sphagnum Moss, Long Fiber
FB1352	Naturebed Compressed Bedding
FB0509	Animal Cages. Plastic, Mini

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.