
RECENT RESEARCH ACTIVITIES

Establishment of mass cultures of wood-attacking beetles

(Laboratory of Innovative Humano-habitability, RISH, Kyoto University)

Izumi Fujimoto and Tsuyoshi Yoshimura

The recent increase in global wood imports and exports has accelerated the invasion of wood-attacking beetles into new areas. In addition, housing structures in Japan have been shifting to air-tight, high-insulation systems to save energy and achieve stable temperature conditions inside the home. These trends increase the risk of infestation and growth of wood-attacking beetle species, both domestic and exotic. To study the ecology of insect pests and develop effective management systems, establishment of mass cultures of target species is indispensable. We have been trying for many years to establish mass cultures of economically and culturally important wood-attacking beetles in the Deterioration Organisms Laboratory (DOL) of the Research Institute for Sustainable Humanosphere (RISH) for many years, and recently succeeded in specific efforts.

Nicobium hirtum – a most important pest for wooden cultural products

Nicobium hirtum is a species of “Death-watch beetle” and is well known as the most important pest for wooden cultural products in Japan. However, its ecology is still a mystery due to the lack of mass culture. We obtained *N. hirtum*-infested timbers and maintained the colony for several years with an artificial diet originally designed for *Lyctus* beetles. Finally, some adults who emerged from the timbers laid eggs, and the larvae grew to produce healthy adults. Thus, we have established the first mass culture of *N. hirtum* and have started ecological studies on this beetle.

Heterobostrychus aequalis – a possible pest for hardwood timbers

Heterobostrychus aequalis is an exotic species of “False powder-post beetle” and constitutes an important wood pest in the Asian tropics. Recently, infestation by *H. aequalis* has been increasing in Japan. We began a mass culture of the beetle using artificial diets in 2010. The mass culture has been well maintained, and we are now ready for laboratory experiments with *H. aequalis* larvae and adults.

Lyctus species other than *L. brunneus* and *L. africanus*

Lyctus brunneus and *L. africanus* are the 2 economically important species of “True powder-post beetle” in Japan. They cause serious problems in service timbers/composite materials, and are available at DOL. However, other related species, such as *L. sineisis* and *Lyctoxylon dentatum*, are also sometime found in Japan. We collected fresh larvae of these insects from infested timbers and have been trying since 2014 to establish mass cultures of these insects using artificial diets. The mass cultures of these two beetle species are now close to being fully established.

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Figure 1. An adult and a larva of *Nicobium hirtum* obtained from a mass culture.

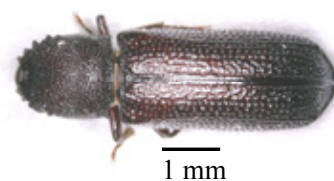


Figure 2. An adult of *Heterobostrychus aequalis* obtained from a mass culture.