Xylophagous insects

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Potential competing interests: No potential competing interests to declare.

Xylophagous insects are a category of insects that can feed on wood. These insects are known to cause significant damage to wooden structures such as furniture, buildings, and trees. In this glossary, we will explore more about these insects and understand how they can affect the environment and the economy. Wood-feeding insects have specific characteristics that make them capable of feeding on wood. They have strong jaws adapted to gnawing on wood, as well as digestive enzymes that help break down wood components. Termites, wasps, and some species of beetles such as those belonging to the weevil and woodworm families are examples of wood-eating animals [1-3].

There are several types of xylophagous insects, each with its own characteristics and food preferences. Some common examples include termites, wood borers, and wood beetles. Each of these insects has specific adaptations to feed on wood and cause damage to structures. Termites are social insects that live in colonies and feed on cellulose found in wood. They are known to cause extensive damage to buildings and trees and can compromise the structural integrity of these materials. Termites can feed on dry wood and even materials such as paper and fabric [3-5].

Wood borers are insects that lay their eggs in cracks in wood. The larvae of these insects feed on the wood as they develop, causing significant damage. Wood bits are commonly found in antique furniture and exposed wooden structures. Wood-feeding beetles are insects that feed on wood in the larval stage. They lay their eggs in wood and the larvae feed on the material as they develop. These beetles are known to cause damage to trees and wood used in construction (Figure 1) [5-7].

Figure 1. Common furniture beetles Anobium punctatum (De Geer 1774) are a type of wood-boring insect in the. Ptinidae family.

Source: ©Tomasz Klejdysz/Shutterstock.com and Jennifer Geer and https://a-z-animals.com/reference/xylophagous/.

Wood-feeding insects can cause several negative impacts on both the environment and the economy. They can compromise the integrity of buildings, furniture, and trees, leading to significant expenses for repairs and replacements. Furthermore, the infestation of these insects can affect air quality and biodiversity in forest areas. Several measures can be taken to prevent and control the infestation of xylophagous insects. One of them is the use of wood treated with chemicals that repel these insects. Additionally, regular maintenance of buildings and furniture, such as applying varnishes and paints, can help prevent infestation [7-11].

Systematic

Order Coleoptera

Families: Anobiida, Anthribidae, Bostrichidae, Buprestidae, Cerambycidae, Curculionidae, Elateridae, Lucanidae, Lymexylonidae and Scarabaeidae.

Order Diptera

Family Agromyzidae.

Family Cecidomyiidae.

Species:

Helicomyia saliciperda Dufour, 1841.

Rabdophaga saliciperda (Dufour, 1941).

Family Syrphidae.

Family Tipulidae.

Family Xylophagidae.

Order Hymenoptera.

Cimbex femorata (Linnaeus, 1758).

Cladardis elongulata (Klug, 1814).

Sirex noctilio (Fabricius, 1793).

Strongylogaster lineata (Christ, 1791).

Urocerus gigas (Linnaeus, 1758).

Xeris spectrum (Linnaeus, 1758).

Order Lepidoptera

Species

Aegeria apiformis Clerck 1759.

Cossus cossus Linnaeus, 1758.

Cydia pactolana Zeller, 1840.

Ectoedemia atrifrontella Stainton, 1851

Ectoedemia liebwerdella, 1940.

Epinotia tetraquetrana Haworth, 1811.

Laspeyresia pactolana Zeil., 1966.

Paranthrene tabaniformis Rottenburg, 1775.

Petrova resinella (Linnaeus, 1758)

Retinia resinella Linnaeus, 1758.

Sesia apiformis (Clerck, 1759).

Stenolechia gemmella Linnaeus, 1758.

Synanthedon spechiformis Schiffermüller, 1775.

Synanthedon tipuliformis Clerck, 1759.

Zeuzera pyrina Linnaeus, 1761.

Characteristic of some species.

Anobium punctatum (De Geer 1774) (Coleoptera: Anobiidae) [9-11].

Damage: Holes in the wood and the presence of sawdust. Occurs in untreated wood.

Control: Spraying with an insecticide on and around infected areas.

Life cycle: By far the most common of all insects that attack dry wood. The adult insect lays its eggs, between 20 and 80, in cracks in the wood. Hatching occurs in 2 to 4 weeks, the larva burrows through the wood for 2 to 4 years. Normally between April and May, the adult insect emerges through the characteristic holes to fly [12-14].

Xestobium rufovillosum (Geer, 1774) (Coleoptera: Anobiidae).

Damage: Holes in the wood Presence of dust in the holes exposed tunneling in the most severe cases.

Control: Spraying and drilling, with injection of insecticidal paste. Renewal if necessary.

information: Woodworm normally only attacks hardwood and are found mainly in old oak beams. It is said that its name comes from this insect's preference for the beams that are sometimes found in churches, and its characteristic nuptial call, a slight “taptoque” [14-16].

Hylotrupes bajulus (Linnaeus, 1758) (Coleoptera: Cerambycidae).

Damage: Oval holes and Structural damage. Occurs in untreated wood.

Control: Infected wood must be removed. All others must be treated with the appropriate liquid.

Information: Originally from the European continent. The danger of infestation by this insect lies in its relatively large size, with the larva growing to around 2.50 cm in length. As its life cycle can reach eight years, structural damage may occur [16-18].

Pentarthrum huttoni Wollaston, 1854 (Coleoptera: Curculionidae).

Damage: Holes and depressions in wood surfaces. Degradation by fungi.

Occurrence: Damp wood and degradation by fungi.

Control: Removal and replacement of wood.

Information: The normal prerequisite for an infestation by these insects is that the wood must already be half digested. to

a certain extent by wood rot fungi [18-20].

Ernobius mollis (Linnaeus, 1758) (Coleoptera: Anobiidae).

Damage: Holes and dust.

Occurrence: Untreated wood, still with bark.

Control: No treatment is required.

Attacked wood: Partially aged with the bark present.

Cause: Confined to the bark, with very superficial perforations in the outer sapwood; exit holes rarely stray more than 15 mm from the shell area. Holes about 2 mm in diameter. The sawdust looks sandy. Small light and dark particles shaped like buns.

Life cycle (1 to 2 years).

Adults: They emerge to lay eggs between May and August. Eggs: Are laid in the shell; white, in the shape of a 'lemon'. Larvae: They drill and live in the cork, initially; they can also superficially attack the exterior sapwood; This is what creates the light and dark particles. Pupae (cocoons): Develop at the bark/sapwood interface, 10 days before emergence.

Damage: May be confused with that of a common weevil. Bark weevil depends on the presence of bark.

Control: Do not require any treatment.

Identification: Presence of bark; light and dark particles, shaped like buns, in the sawdust. Holes in the bark and nearby sapwood [18-19].

Systematic Other groups:

Coleoptera

Anobiidae, Anthribidae, Bostrichidae, Buprestidae, Cerambycidae, Curculionidae, Elateridae, Lucanidae, Lymexylonidae and Scarabaeidae.

Diptera

Family Agromyzidae.

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Synanthedon tipuliformis Clerck, 1759.

Zeuzera pyrina Linnaeus, 1761 [20-25].

Order Isoptera

Many known xylophagous organisms cause damage to areas that depend on the use of wood products. One of the main xylophagous agents is termites. Insects of the order Isoptera, have around 2750 species cataloged around the world. They specialize in wood consumption.

Drywood termites, whose main representative in Brazil is *Cryptotermes brevis* (Walker, 1853) (Isoptera: Kalotermitidae), arrived here a few centuries ago, probably originating in Jamaica. Their colonies are extremely small when compared to other species. On average, they have 300 individuals and can reach a maximum of a few thousand.

Drywood termites are characterized by having their attacks normally restricted to a piece of wood. In other words, when a dry wood termite colony is infesting a table, it usually has all its components in that structure, rarely do we find the same colony infesting adjacent structures. There are currently several species of wood degrading agents and many of them have acquired resistance to current insecticides, resulting in a need to develop new products that can act as blockers for the degradation actions of xylophagous agents. To combat termites, compounds based on creosote, boron salts, and copper.

Order: Blattodea

Infraorder: Isoptera

Families

Archotermopsidae, Hodotermopsidae, Hodotermitidae, Kalotermitidae, Mastotermitidae, Rhinotermitidae, Serritermitidae, Stolotermitidae, Stylotermitidae, Termitidae and Termitoidae.

Species

Cornitermes cumulans (Kollar, 1832) (Isoptera: Termitidae).

Cryptotermes brevis (Walker, 1853) (Isoptera, Kalotermitidae).

Coptotermes gestroi (Wasmann, 1896) (Blattodea: Rhinotermitidae).

Heterotermes sp.

Nasutitermes spp.

Procornitermes striatus (Hagen, 1858) (Isoptera: Termitidae).

Procornitermes triacifer Silvestri, 1901 (Blattodea, Isoptera, Termitidae).

Reticulitermes flavipes (Kollar, 1837) (Blattodea, Rhinotermitidae) [26-28].

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