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A review on biology of cerambycids (Insects)

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Abstract
The insects feed mainly on vascular plants Larvae and adults. Phytophthora, an unofficial subgroup of Cucujiformia It consists of two super families. Chrysomeloidia (long horned beetles, seeds Beetles and leaf beetles) and Karakulianoidia (weevil) more than 124,000 Described species (Lipiski *et al*., 2011). However, the solution to fix Chrysomeloidae were placed in two taxa in the form of the genera Serambicid and Chrysomelid. Prevalence in recent times. Small groups in particular have easy maturation patterns outside of Prioninae and Lepturinae which mainly lay eggs in soft, decaying wood. The most special practices are found in Lamiinae, which often uses force to regulate oviposition.

Keywords: Long horned, oxypeltidae, vesperidae, cambium, phloem

Introduction
Cerambycids are best known for their long-horned beetles, longicorn, capricorn, round-headed borer, wood beetle, goat beetle (bock-käfern), or sawyer beetles, with a single body length varying from ± 2.5 mm (Cyrtinus sp.) to is slightly more than 17 cm (Titanus giganteus) with a variety of shapes, colors and decoration (Solomon, 1995; Monné, *et al*., 2007; Slipinski and Escalona, 2013) [27, 29, 12, 28].

Longhorn beetles are high in phytophagia Derived groups of polyphagous beetles that feed mainly on vascular plants Larvae and adults. Phytophthora, an unofficial subgroup of Cucujiformia It consists of two super families. Chrysomeloidia (long horned beetles, seeds Beetles and leaf beetles) and Karakulianoidia (weevil) more than 124,000 Described species (Lipiski *et al*., 2011). However, the solution to fix Chrysomeloidae were placed in two taxa in the form of the genera Serambicid and Chrysomelid. Prevalence in recent times (Reid, 1995; Švácha and Danilevsky, 1988; 1989) [30-32]. Informal treatment of seramboid montage under superfamily Cerembocoidia currently include oxypeltidae and Vesperidae (including family) Filina, Anopladermatina and Vesperina), Dystonidae and Serambicidae (Švácha and Lawrence, 2014) [3, 33].

About 1500 species of long beetles are found from India. (Aggarwal and Bhattacharjee, 2012). However, the literature is fragmented, Unclear, inaccurate, or out-of-date that create confusion for researchers, coleopterists, and curators. Critical analysis of agriculture There has been a shortage of beetles in India for a long time.

- **General biology of longhorn beetles**

Bense (1995) [2] reported that the Adults of several species frequent flowers to feed on nectar and seeds, while some feed on the bark of trees in the crowns. Mating may occur on the flowers or on the host plants. Copulation may last anywhere from a few seconds to several hours, and it's normal to have several copulations with the same or different partners, though females may become less receptive over time (Svacha and Lawrence, 2014) [3, 33]. Most cerambycid borers that breed in living plants without killing the plant or the section tunnelled by the larva emerge in the rainy season, according to Beeson (1941) [1], while those that destroy the plant may abandon this practise.

Hanks, (1999) [24] reported that the Cerambycids do not seem to exhibit any precopulatory courtship behaviour; males usually approach females directly and attempt to mount and copulate. Pheromones that work over long distances tend to be uncommon in the Cerambycidae, which is consistent with antennal morphology. According to Schneider (1964), in other species, raising the surface area of the antennae improves response to long-range pheromones, leading to the development of branched antennae that are lamellate, pectinate, serrate, and so on.

Males in certain prionine groups exhibit such branched antennal morphologies (Linsley, 1961) [5]. All of them, it seems, use pheromones to locate their mates. Other cerambycid species that use long-range pheromones (*Hylotrupes bajulus*, *Migdolus fryanus*, and *Xylotrechus pyrrhoderus*) have antennae that are similar to prionines but have no structural difference between the sexes. *Strangalia bicolor*, a cerambycine thought to use pheromones (Itami, 1989) [6]. Long antennae are characteristic of these beetles, which are used primarily to detect pheromones, allowing mating and the identification of the suitable host plant for oviposition (Martins, 1997) [7].

Blatchley, (1910) [8] reported that, Cerambycids' elongate antennae, like a tightrope walker's pole, provide balance while walking on slender twigs. However, while Linsley (1959) [8] and Reitter (1960) [9] did not report on the adaptive significance of elongate antennae in cerambycids, sexual dimorphism in length has been taken as proof that they play a role in mate position. Adults' lives are normally estimated in weeks or even days for several species, but some large Lamiinae have been observed to be alive for many months in the laboratory when fed (Beeson, 1941; Svacha and Lawrence, 2014) [1, 3, 33]. However, according to Linsley (1959) [8], the understanding of natural survival of emerged adult cerambycids is incomplete. However, certain species' reduced feeding means that they are likely to be short-lived.

The behavior of oviposition in the longhorn beetle is very different compared to another group of insects. According to Beeson (1941) [1], there are four ways to lay eggs with Cerambycid beetles: i) Outer openings in the bark in natural cracks or in cracks where eggs are hatched by ovipositors; eggs can be laid individually or in groups (especially all Cerambycinae); ii) The opening inside the bark in round holes or slabs eaten by authorized objects up to the cambium where the ovipositor and eggs are inserted tree bark and bark. Eggs are placed separately in this group (Eg a few Lamiinae such as Celosterna scabrator, Glenea spp. Etc.); iii) Maturity of transformed wood without bark, in natural or artificial cracks (eg Stromatium barbatum); and iv) Soil loosening (eg Dorysthenes (Lophosternus) huge). However, Linsley (1959) [8] concluded that, small groups in particular have easy maturation patterns outside of Prioninae and Lepturinae which mainly lay eggs in soft, decaying wood. The most special practices are found in Lamiinae, which often uses force to regulate oviposition.

Morwood *et al*. (2003) [10] suggested that coniferophase species such as Monocomus scutellatus (Psy) (Serombicidae) prefer large-diameter hosts to developing ancestors or the largest-diameter part of the host given for oviposition. Provides a lot of resources. In contrast, many species of *laminae* (Serambicidae) that attack hardwoods prefer small trees (> 20 cm) in diameter and are very small. However, Stubbing (1914) [11] reported that beetles choose freshly fallen or green spore trees in the wild to lay their eggs. As a general rule, the worm carries its eggs to the outer bark holes near the bust layer or whenever possible to the edge of some wound in the bark. This is usually the case with poplar and willow longcorn beetles, *Iolestes sarta*.

Different investigators gave different opinions about the eggs of the Longhorse beetle. According to Pervácha and Lawrence (2014a) [3, 33], long beetles are ovate and their eggs are broadly elliptical, oval or puffed and often thin, flexible in color, and may have a size suitable for tight spaces In which they are laid. Slipinski and Escalona (2013) [12, 28] revealed that, eggs of Cerambycidae are 1–7 mm long and single females usually lay 25–100 (up to 600) eggs during their lifetimes. The eggs incubation period are one to three weeks (Butovitsch, 1939) [13] and First instar larvae open the chorion by using egg burgers on their mandibles or head, thoracic and / abdomen. (Gardiner, 1966) [14].

The larva is a complete, elongate, segmented, practically legube grub when fulgroven, and is usually white or yellow or white to pale orange in color; The segment tapers only slightly below the anterior end. And there are powerful black cutting jaws or inlay, with which they are able to knock down the hardest wood. The grub has small, four-joint antennae, and in some cases may have very short legs. The upper surface and thoracic segments of the head are covered with a rigid, horned plate; Body segments often have tubercles on them, and spiracles on the edges of the segments are well marked (Stubbing, 1914) [11].

The larval instruments of longgewala beetles feeding on the wood of healthy trees vary between 7 and 10 (Linsley, 1961) [5]. The growth of larvae varies greatly, but most species typically take one to three years, with the larvae of Priininae taking the longest on average (Linsley, 1961) [5]. Growth occurs rapidly in the lamine species feeding inside the stems of fatty plants and usually complete within three months. In contrast, species capable of developing in dry and processed wood have been known to emerge from furniture, wood, or subflooring for many years. Early instar larvae usually feed under bark at the cambium and phloem before entering sapwood in later stages or in the pupate. Patterns and types of frames made by larvae in excavation of the plate are often characteristic for particular taxonomy or ecological groups of wood-boring cerambaceae (Linsley, 1961) [5].

Most Cerambicidae larvae live in tunnels that are tightly packed with wood-dust, but some species keep the tunnel clean by venting holes through the outside, i.e., Aphrodisium, Apraa, and Celosterna (Švácha and Lawrence, 2014a) [3, 33]. However, laminae grubs that feed in wood always form a straight tunnel, while those feeding on the bark form a zigzag tunnel (Beeson, 1941; Linsley, 1959; 1961) [1, 8, 5].

The pupa usually remain quite naked in the pupil chamber at the end of the larval tunnel. In the beetle Plokdarns obesus, India, the larva forms a pigeon cocoon, which resembles a pigeon's egg, in which it turns into a beetle stage (Stebbing, 1914) [11]. According to Beyson (1941) [1] discovered the chambers of the grandson of Indian Sembicidae in various groups. (i) pulp chamber without specially secreting lining; (ii) Pupal chamber with a specially secreted lining or opaculum of calcium carbonate (secreted from the Malpighi tubules) or other material; (iii) In the case of larvae boring liana the puple chamber in the supporting tree; (iv) Pulp chamber in soil. The pupil stage lasts between a week to a month and the tenoral adult remains in the pupal cell for some time after elapse before it exits through the exit hole (Slipinski and Esclona, 2013) [12, 28].

The season in which adults emerge is characteristic of the species; Four provenance periods were recognized. Summer, dry or premature season, southwest monsoon season and post monsoon season. The onset of the monsoon rainfall, the amount and distribution of monsoon rainfall (Seasons and Bhatia, 1939) [15], is strongly influenced by the rise of the monsoon. Once near the woman, a male immediately attempts to mount and copulate and the act of copulation occurs at night or late, in most prionnaeae, assiminae and the more primitive cerambicinae, and between sunny lepturina, clatini,

and calidini. With many exceptions (Linsley, 1959) [8].

Eggs (an egg or group of eggs) are usually deposited under the bark or in the wood with the help of ovipositors. Some species of Jena snakera and monochemus dig into wood and deposit an egg in this hollow. During the development of larvae, which lasts mostly 1-3 years, many larvae pass through stages (up to 14 in the laboratory of Anoplophora globrypsen, for example), characterized by the host tree ending with pipation within the relative cells (Bains, 1995) [2]. The annual life cycle can be considered as a fundamental rhythm but is characteristic of a species rather than a climatic zone or a habitat (Beeson, 1941) [1]. However, the life cycle in various Indian species varies from two and a half months to 10 years. In temperate climates, the life cycle is longer or longer; In the tropics, species with annual cycles are characteristic of species with shorter cycles. In the majority of dead-wood borers, a brood normally includes short-cycle and long-cycle larvae, so that growth can be prolonged by multiples of short duration ranging from ovulation to two or three years (Beeson and Bhatia, 1939) [15].

Microclimate of tree trunks, canopy and branches is a very important factor for the pests of forests. Similarly, Morewood *et al*. (2003) [10] suggested that the upper trunk and prominent branches, where the bark is relatively thin and smooth, are reportedly favored by Anopolfora globrypson (Coleoptera: Cerambycidae). According to Paulino Neto *et al*. (2005) [16] Oncidaire hermellis (Cerambicidae) females prefer Myconia celloviana with more secondary branches, indicating that in addition to trunk diameter, the number of secondary branches may also influence plant choice for beetle attack.

Temperature plays an important role in the localization of insects living in tree trunks. For example, the life cycle of Cerambicide, Monocamus scutellatus, is limited to one year of exposure to sunlight and three years in shaded trunks. In addition, subcentric temperatures exposed to trees and sunlight may be several degrees (5–30 SHAC) compared to shady parts of sunshine (Graham, 1925; Exceed, 1939; Wallace, 1953) [17]. The shaded side of logs versus those experienced in hot sun can cause a difference of 1to 2 years in the time of development of phloem-feeding cerambicid beetles (Graham, 1925; Hosking, 1977) [17, 19].

Dajoz (1992) [20] emphasized the importance of wind for the spread of some insects and Memuna (2011) [21] showed that the largest number of holes originating in the beetles of Longo are Acacia mellifera (63.6%) and the highest on the south-side of the tree the number is. A. on the west side. Senegal (83.3%) was found. It can also be related to wind direction. According to Stebbing (1914) [11] longhorns are powerful flyers, and probably travel a considerable distance in search of suitable trees (storms), this phenomenon has proved that beetles are sufficient to fly in heavy wind and rain at night.

Gillot (2005) [22] also found that rain likely indirectly exerts its effect on most insect populations, particularly by affecting food availability and quality or disease incidence. However, Nair (2007) [23] argues that the cerambicide borer population on the high rainfall amount of shorbera (Sal tree) favors the development of Hoplocarembix spinicorn. Hanks *et al*. (1999) [24] claimed that larvae can be particularly vulnerable to moisture conditions because they are embedded in the tissues of their host plant, and bark is susceptible to moisture susceptibility to drought stress and host This may be responsible for the association between sensitivity that is specific to many phloem -boring insects, particularly cerambic beetles. Havik *et al*. (2008) noted that drought is often cited as an important factor in decreasing tree growth rates before oak degradation. Thatcher (1961) [25] revealed that Megacillin robinii (Forst.) (Coleoptera: Cerambycidae), the most damage to living trees attacking wood-boring beetles, coincides with drought conditions, because drought is in large numbers Enables larvae to survive. Spite and Wiley (2005) also concluded that deaths related to eucalyptus plantation attack by Phoracantha semipactata (Cerambicidae) were highest for trees planted in soil with high sand content.

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