# *ARTOCARPUS HIRSUTUS* (ROSALES: MORACEAE): A NEW LARVAL FOOD PLANT OF *AEOLESTHES HOLOSERICEA* (COLEOPTERA: CERAMBYCIDAE)

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Cerambycidae is one of the richest families in beetles, which includes 35,000 catalogued species distributed throughout the world (Grimaldi & Engel 2005). The number of cerambycid species reported from India is 1,500 (Beeson 1941; Breuning 1960-62, 1963a, 1963b, 1964, 1965, 1966). *Aeolesthes* is one of the large genera of the Cerambycidae with 31 species from different parts of the world. There are 6 *Aeolesthes* species in the Indian subcontinent, but these species are well distributed in the oriental region. These 6 species are: *Aeolesthes holosericea* Fab., *Aeolesthes basicornis* Gahan, *Aeolesthes sinensis* Gahan, *Aeolesthes induta* Newman, *Aeolesthes indicola* Bates and *Aeolesthes sarta* Solsky. Mature reproductive forms range from 20 to 44 mm in length and 6 to 13 mm in width and they are usually dark brown and reddish brown (Gahan 1906). Among these 6 species of longhorn beetle, *A. holosricea*, *A. sarta*, *A. indicola* and *A. induta* have attained pest status in the natural and artificial stands. The host plants in the Indian subcontinent area as follows: *A. indicola* feeds and reproduces on *Salix* spp. (Malpighiales: Salicaceae), and *A. induta* breeds in the wood of satinwood, *Chloroxylon swietenia* DC (Sapindales: Rutaceae), and the bridal couch plant, *Hymenodictyon excelsum* (Roxb.) Wall. (Gentianales: Rubiaceae) (Beeson, 1941).

*Aeolesthes holosericea* and *A. sarta* are the most injurious species in the Indian forests. *Aeolesthes sarta* is known to feed on the 15 different plant species. *Aeolesthes holosericea* feeds on 45 different plant species in the forest area of India. These host plants are presented in Table 1 (Beeson 1941, Mamlayya et al. 2009).

Detailed information is available on the biological requirements of the *A. holosericea* along with its host range and distribution within Indian subcontinent (Gahan 1906; Stebbing 1914; Khan & Khan 1942). The grubs of *A. holosericea* are known to damage healthy green trees, sickly standing trees and even freshly felled trees (Stebbing 1914). Beeson (1941) reported that *A. holosericea* has an annual life cycle under favorable conditions but in an unfavorable environment some may survive and complete 1 generation in 2 yr. Khan & Khan (1942) studied the bionomics of *A. holosericea* and reported that it requires 2 yr and 7½ months to 3 yr to complete a single generation.

Khan & Khan (1942) found that the egg of *A. holosericea* was about 2 -25 mm long and 1-0 mm wide; being broad, elliptical, and tapering towards either edge. Full-grown larvae measured 75 mm in length and 13.5 mm. in breadth, and they were yellow in color. The pupae were yellow in color and measured 42 mm long and 35 mm wide. The adult female measured 32 mm in length and 10 mm in breadth. The size male was slightly smaller than the female (Khan & Khan, 1942).

*Aeolesthes holosericea* occurs in greater part of India according to availability of host plants. Regupathy et al. (1995) reported it on *Acacia chundra* (Rottler) Willd. (Fabales: Faaceae). Makihara et al. (2008) reported that *A. holosericea* is distributed throughout Sri Lanka, India, Pakistan, South China, Hainan, Thailand, Malaysia, Indonesia and Laos, and recorded it on 46 different plant species. Prakash et al. (2010) studied its population dynamics in arjun (*Terminalia arjuna* (Roxb.) Wight & Arn.; Myrtales: Combretaceae) ecosystem of Andhra Pradesh. They added that this species shows peak abundance in the month of Dec.

The present study reports the first record of the grubs of *A. holosericea* occurring in the branches of the wild jackfruit, *Artocarpus hirsutus* Lam. (Rosales: Moraceae). In Aug 2011, on the Shivaji University campus, Kolhapur District (MS) India, 4 grubs and 1 pupal case of *A. holosericea* were found under bark of *A. hirsutus*. These larvae were obtained from single tree of *A. hirsutus*. The sample was collected from a single branch of 3 m (10 feet) length and 30 cm diam. These developing stages were brought to the laboratory with the pieces of the same branch and kept for rearing under laboratory conditions at 28 °C to 30 °C with varying RH. After an interval of 9 months, adults were obtained from the pupal cases. Mating was also observed under laboratory conditions, which lasted for 1.5 h. The mated female laid eggs on the surface of a branch piece of *A. hirsutus* (60 cm (2 feet) long and 30 cm in diam) in the laboratory. The eggs (Fig. 1), the full grown larva (Fig. 2), the adult (Fig. 3) and larval damage to the trunk (Fig. 4), are shown in the plate I. In the laboratory the adults were quantified and their morphological peculiarities were observed under stereomicroscope. The identification of the species was made with the help of available literature (Gahan 1906).

The Shivaji University Campus is spread over 341 ha (853 ac) and located at N 16°40'39. 98"

TABLE 1. EARLIER REPORTED HOST PLANTS OF *AEOLESTHES HOLOSERICEA* FAB. FROM FORESTS OF INDIA.

| Sr. No. | Scientific Name | Family | Reference |
|---|---|---|---|
| 1 | *Acacia arabica* | Fabaceae | Beeson 1941 |
| 2 | *Aegle marmelos* | Rutaceae | |
| 3 | *Alnus nitida* | Betulaceae | |
| 4 | *Anogeissus latifolia* | Combretaceae | |
| 5 | *Bauhinia acuminata* | Fabaceae | |
| 6 | *Bauhinia retusa* | Fabaceae | |
| 7 | *Bauhinia variegata* | Fabaceae | |
| 8 | *Bombax malabaricum* | Malvaceae | |
| 9 | *Bridelia retusa* | Phyllanthaceae | |
| 10 | *Butea frondosa* | Fabaceae | |
| 11 | *Careya arborea* | Lecythidaceae | |
| 12 | *Cedrela toona* | Meliaceae | |
| 13 | *Cholroxylon switenia* | Rutacea | |
| 14 | *Duabanga sonnera* | Sonneratiaceae | |
| 15 | *Eucalyptus robusta* | Mrytaceae | |
| 16 | *Excaecacaria agallocha* | Euphorbiaceae | |
| 17 | *Ficus bengalensis* | Moraceae | |
| 18 | *Grewia oppositifolia* | Malvaceae | |
| 19 | *Hardwickia binata* | Fabaceae | |
| 20 | *Kydia calycina* | Malvaceae | |
| 21 | *Lagertsroemia parviflora* | Lythraceae | |
| 22 | *Lannea grandis* | Anacardiacea | |
| 23 | *Mallotus philippinensis* | Euphorbiaceae | |
| 24 | *Mangifera indiaca* | Anacardiaceae | |
| 25 | *Miliusa velutina* | Annonaceae | |
| 26 | *Morus alba* | Moraceae | |
| 27 | *Myristica andamanica* | Myristicaceae | |
| 28 | *Ougeinia dalbergioides* | Diptocarpaceae | |
| 29 | *Pinus longifolia* | Pinaceae | |
| 30 | *Prunus communis* | Rosaceae | |
| 31 | *Psidium guajava* | Myrtaceae | |
| 32 | *Pterocarpus marsupium* | Fabaceae | |
| 33 | *Pyrus communis* | Rosaceae | |
| 34 | *Quercus incana* | Fagaceae | |
| 35 | *Sapium sebiferum* | Euphorbiaceae | |
| 36 | *Shorea assamica* | Diptocarpaceae | |
| 37 | *Shorea robusta* | Diptocarpaceae | |
| 38 | *Soymida febrifuga* | Meliaceae | |
| 39 | *Tamarix articulata* | Tamaricaceae | |
| 40 | *Tectona grandis* | Lamiaceae | |
| 41 | *Terminalia belerica* | Combretaceae | |
| 42 | *Terminalia myriocarpa* | Combretaceae | |
| 43 | *Terminalia tomentosa* | Combretaceae | |
| 44 | *Terminalia arjuna* | Combretaceae | Prakash et al. 2010 |
| 45 | *Albizzia lebbeck* | Fabaceae | Mamlayya et al. 2009 |
| 46 | *Samanea saman* | Fabaceae | |
| 47 | *Acacia chundra* | Fabaceae | Regupathy et al. 1995 |

E 74°15'06.77" The floral diversity of the campus includes herbs, shrubs, plants of social forestry importance, timber plants, medicinally important plants and forest trees. The soil is red brown and the area receives annual rainfall about 1900 mm. The campus has only 1 *Artocarpus hirsutus* tree on the grounds of the Department of Botany.

According to the earlier reports on the host plants of *A. holosericea*, the floral community of Shivaji University Campus includes 10 host plant

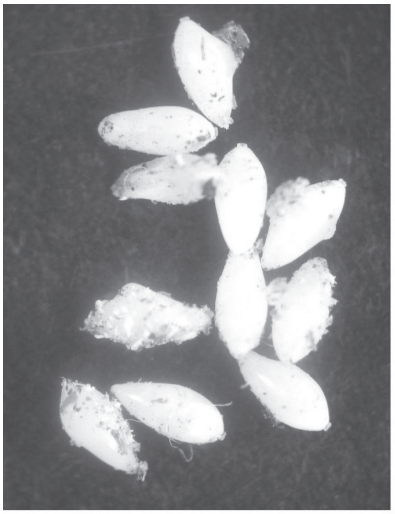

Fig. 1

Fig. 2

Fig.3

Fig. 4

Plate 1. Some life stages of the cerambycid, *Aeolesthes holosericea,* and damage caused by its grubs to the trunk of *Artocarpus hirsutus.* Fig. 1, eggs; Fig. 2, last instar larva, Fig. 3, adult; and Fig. 4, damage caused by the grubs to the truck of *Artocarpus hirsutus*.

species of *A. holosericea*. They are *Acacia Arabica* (Lam.) (Fabales: Fabaceae)*, Butea frondosa* Roxb. (Fabales: Fabaceae), *Eucalyptus robusta* Sm. (Myrtales: Myrtaceae)*, Ficus bengalensis* L.

(Rosales: Moraceae), *Mangifera indica* L. (Sapindales: Anacardiaceae), *Morus alba* L. (Rosales: Moraceae), *Tectona grandis* L. (Lamiales: Lamiaceae), *Terminalia belerica* (Gaertn.) Roxb. (Myrtales: Combretaceae), *Terminalia arjuna* (Roxb.) Wight & Arn., and *Terminalia tomentosa* Wight & Arn. Mamlayya et al. (2009) reported the occurrence of *A. holosericea* in the Shivaji University Campus on *Albizzia lebbeck* (L.) Benth. (Fabales: Fabaceae) and *Samanea saman* (Jacq.) (Fabales: Fabaceae). During the present observations, the immature stages of *A. holosericea* were recorded in the branches of *A. hirsutus*. The species was confirmed from the laboratory obtained specimens.

## Summary

This work contributes the knowledge regarding diet breadth of the cerambycid wood borer, *Aeolesthe holosericea* Fab., and which was found to develop and reproduce on *Artocarpus hirsutus.* Prior to this study, *A. holosericea* was reported on 47 different plant species. The earlier studies on the biology, occurrence and distribution did not report *Artocarpus hirsutus* as a larval food plant, but this study clearly showed that *Artocarpus hirsutus* is a new larval food plant of *A. holosericea*.

Key Words: life cycle, damage, jackfruit, host, distribution

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