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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. holosericea*, *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	<i>Acacia arabica</i>	Fabaceae	Beeson 1941
2	<i>Aegle marmelos</i>	Rutaceae	
3	<i>Alnus nitida</i>	Betulaceae	
4	<i>Anogeissus latifolia</i>	Combretaceae	
5	<i>Bauhinia acuminata</i>	Fabaceae	
6	<i>Bauhinia retusa</i>	Fabaceae	
7	<i>Bauhinia variegata</i>	Fabaceae	
8	<i>Bombax malabaricum</i>	Malvaceae	
9	<i>Bridelia retusa</i>	Phyllanthaceae	
10	<i>Butea frondosa</i>	Fabaceae	Prakash et al. 2010 Mamlayya et al. 2009 Regupathy et al. 1995
11	<i>Careya arborea</i>	Lecythidaceae	
12	<i>Cedrela toona</i>	Meliaceae	
13	<i>Cholroxylon switenia</i>	Rutaceae	
14	<i>Duabanga sonnera</i>	Sonneratiaceae	
15	<i>Eucalyptus robusta</i>	Mrytaceae	
16	<i>Excaecacaria agallocha</i>	Euphorbiaceae	
17	<i>Ficus bengalensis</i>	Moraceae	
18	<i>Grewia oppositifolia</i>	Malvaceae	
19	<i>Hardwickia binata</i>	Fabaceae	
20	<i>Kydia calycina</i>	Malvaceae	
21	<i>Lagertsroemia parviflora</i>	Lythraceae	
22	<i>Lannea grandis</i>	Anacardiaceae	
23	<i>Mallotus philippinensis</i>	Euphorbiaceae	
24	<i>Mangifera indiana</i>	Anacardiaceae	
25	<i>Miliusa velutina</i>	Annonaceae	
26	<i>Morus alba</i>	Moraceae	
27	<i>Myristica andamanica</i>	Myristicaceae	
28	<i>Ougeinia dalbergioides</i>	Diptocarpaceae	
29	<i>Pinus longifolia</i>	Pinaceae	
30	<i>Prunus communis</i>	Rosaceae	
31	<i>Psidium guajava</i>	Myrtaceae	
32	<i>Pterocarpus marsupium</i>	Fabaceae	
33	<i>Pyrus communis</i>	Rosaceae	
34	<i>Quercus incana</i>	Fagaceae	
35	<i>Sapium sebiferum</i>	Euphorbiaceae	
36	<i>Shorea assamica</i>	Diptocarpaceae	
37	<i>Shorea robusta</i>	Diptocarpaceae	
38	<i>Soymida febrifuga</i>	Meliaceae	
39	<i>Tamarix articulata</i>	Tamaricaceae	
40	<i>Tectona grandis</i>	Lamiaceae	
41	<i>Terminalia belerica</i>	Combretaceae	
42	<i>Terminalia myriocarpa</i>	Combretaceae	
43	<i>Terminalia tomentosa</i>	Combretaceae	
44	<i>Terminalia arjuna</i>	Combretaceae	
45	<i>Albizzia lebbeck</i>	Fabaceae	
46	<i>Samanea saman</i>	Fabaceae	
47	<i>Acacia chundra</i>	Fabaceae	

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

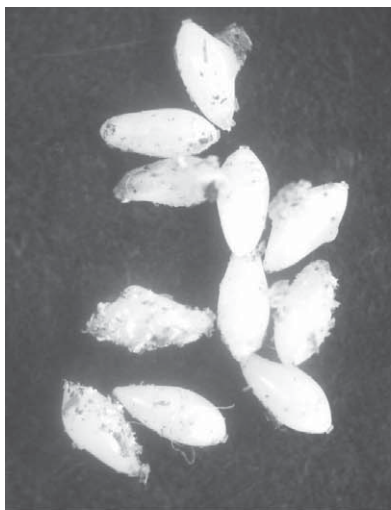


Fig. 1



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 trunk 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 *Albizia 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, *Aeolesthes 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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