

Abstract

The longhorn beetles are mostly wood feeding beetles infesting different types of plants. They are well documented in the all types of crop ecosystem from dense forest to savannah. The present study provides the consolidated information on longhorn beetle fauna of Gujarat, includes 12 species comes under 11 genera of the four sub-families. Among the subfamilies, the Cerambycinae contributes larger diversity of species followed by Lamiinae, Prioninae and Lepturinae. All the 12 species are first time reported and added to the fauna list of Gujarat.

Keywords: Longhorn beetles, Gujarat, description

Introduction

The Longhorn beetles are the members of Phytophaga which contains a highly derived group of polyphagous beetles that feed primarily on vascular part of the plants by larvae and adults (Ślipiński *et al.*, 2011). These beetles belong to one of the specious family Cerambycidae of the order Coleoptera and are economically most important groups of insects of the world. They are also well documented in the all types of crop ecosystem from dense forest to savannah. Many species causes damages to forests, forest products, shade trees, fruit and nut trees, vegetable and field crops, seeds, orchids, and flowers (Linsley, 1959). Gujarat is bestowed with one of the most diverse and unique bio diversity hotspots. Even though the state is having the most diverse ecosystem, the study related to longhorn beetles, which one of the important pest of agriculture and forest ecosystem are least studied. as per the existing literatures, till now only two species have been reported from the state Kariyanna *et al.*, (2017). Hence, the present study is an endeavour to give the comprehensive account of longhorn beetles diversity in Gujarat.

Materials And Methods

Collection: The beetles were collected by using sweep netting, light trap and hand picking methods. The collected specimens were killed in bottles charged with ethyl acetate and were later individually pinned using entomological pins. All the specimens labelled with information contain geographic coordinates, collection date and method, host plants.

Identification: All the collected specimens were identified up to the species based on the morphological characters using the published literatures. The book of Gahan, (1906) and Rondon and Breuning (1970) were used as the primary materials for identification of the longhorn beetles.

Repository: All the specimens studied in the course of investigation were deposited in the Museum of ICAR-NBAIR (National Bureau of Agricultural Insect Resource, Bengaluru) with proper label.

Results

Subfamily: Cerambycinae

1. *Aphrodisium cantori* (Hope, 1839)**Synonyms**

Callichroma cantori Hope, 1839

Aphrodisium cantori Gahan, 1906

Aphrodisium (*s. str.*) *cantori* Gressitt & Rondon, 1970

Aphrodisium (*Aphrodisium*) *cantori* Löbl & Smetana, 2010

Diagnostic characters: Body dark metallic green; first antennal joint glabrous and densely punctuate, the next five or six dull or subnitid (Fig. 1).

Specimens collected from: Gujarat: Junagadh

Distribution: North-Eastern India; Assam; Tripura; Sikkim; West-Bengal: Darjeeling; Uttarakhand, Uttar Pradesh.

2. *Diorthus cinereus* (Fabricius, 1793)**Synonyms:**

Cerambyx cinereus Fabricius, 1793

Cerambyx holosericeus Olivier, 1795

Hammaticherus simplex White, 1853

Cerambyx vernicosus Pascoe, 1859

Pachydissus inclemens Thomson, 1865

Neocerambyx sordidus Pascoe, 1888

Diorthus simplex Gahan, 1896

Diorthus cinereus Aurivillius, 1912

Taurotagus brevipennis Mateu, 1963

Diagnostic characters: Body is dark brown to reddish brown; pronotum rugose transverse and narrowed at anterior part (Fig. 2).

Specimens collected from: Gujarat: Navsari and Junagadh

Distribution: Tamil Nadu: Nagapattinam; Kerala; West-Bengal.

3. *Stromatium barbatum* (Fabricius, 1775)**Synonyms:**

Callidium barbatum Fabricius, 1775;

Cerambyx (*Callidium*) *tranquebaricus* Gmelin, 1790;

Callidium variolosum Fabricius, 1798;

Callidium funestum Boisduval, 1835;

Stromatium barbatum Castelnau, 1840

Diagnostic characters: Body dark brown or black to reddish brown; Antennae around one-third longer than body; elytra appears coarse with compact puncture (Fig. 3).

Specimens collected from: Gujarat: Anand, Navsari and Junagadh

Distribution: Tamil Nadu: Nagapattinam; Manipur; Arunachal Pradesh; Pondicherry: Mahe; Karnataka: Bellary; Uttar Pradesh: Asansole, Kunbir; Andaman Island; Madhya Pradesh, Bihar: Patna.

4. *Trirachys holosericeus* (Fabricius, 1787)**Synonyms:**

Ceramryx holosericeus Fabricius, 1787

Hammaticherus holosericeus White, 1853b: 128

Pachydissus velutinus Thomson, 1865

Pachydissus similis Gahan, 1890

Neocerambyx similis Bates, 1891

Aeolesthes holosericeus Gahan, 1891

Aeolesthes holosericea Pic, 1935

Aeolesthes (*s. str.*) *holosericea* Gressitt & Rondon, 1970

Aeolesthes (*Aeolesthes*) *holosericea* Makihara *et al.*, 2008

Trirachys holosericeus Vitali *et al.*, 2017: 46.

Diagnostic characters: The first antennomere dorsally wrinkled; third antennomere smooth; pronotum wrinkled irregularly with sub-central smooth space (Fig. 4)

Specimens collected from: Gujarat: Anand, Navsari and Junagadh

Distribution: Arunachal Pradesh; Jammu and Kashmir; Maharashtra: Kolhapur.

5. *Xystrocera globosa* (Olivier, 1795)**Synonyms:**

Cerambyx globosus Olivier, 1795

Callidium marginale Goldfuss, 1805

Xystrocera globosa Audinet-Serville, 1834

Xystrocera viridipicta Fairmaire, 1896

Xystrocera globosa v. *reductevittata* Breuning, 1957

Xystrocera globosa v. *invittata* Breuning, 1957

Xystrocera globosa var. *mediovitticollis* Breuning, 1957

Xystrocera globosa m. *onomichiensis* Ohbayashi, 1963

Xystrocera globosa ssp. *diehli* Heyrovský, 1967

Xystrocera globosa *mediovitticollis* Hua, 2002

Diagnostic characters: Body is reddish brown; Pronotum reddish brown asperate; elytra brownish yellow with lateral and sutural side dark brown to black; ventral side of body and legs reddish brown (Fig. 5).

Specimens collected from: Gujarat: Anand, Navsari and Junagadh

Distribution: Manipur; Assam; Maharashtra; Karnataka; Tamil Nadu: Coimbatore, Anaimala hills; West-Bengal: Darjeeling; Arunachal Pradesh; Madhya Pradesh.

Subfamily: Lepturinae

6. *Capnolymma cingalensis* Gahan, 1906

Synonyms:

Capnolymma cingalensis Gahan, 1906;

Capnolymma (s. str.) *cingalensis* N. Ohbayashi, 1994

Diagnostic characters: Body is dark brown covered with grey pubescence; the prothorax finely rugulose-punctate (Fig. 6).

Specimens collected from: Gujarat: Junagadh

Distribution: South India: Western Ghats.

Subfamily: Lamiinae

7. *Celosterna scabrator* (Fabricius, 1781)

Synonyms:

Lamia scabrator Fabricius, 1781

Lamia spinator Fabricius, 1798

Lamia gladiator Fabricius, 1801

Psaromaia renei Pascoe, 1888

Aristobia murina Nonfried, 1894

Coelosterna spinator Fletcher, 1914

Coelosterna scabrata Lesne, 1919

Celosterna scabrator var. *griseator* Aurivillius, 1920;

Celosterna scabratrix Löbl & Smetana, 2010.

Diagnostic characters: Body generally black or dark brown; elytral disc clothed with grayish pubescence with scattered reddish brown pubescence (Fig. 7).

Specimens collected from: Guajarath: Anand, Navsari and Junagarh

Distribution: Tamil Nadu: Kodaikanal mountains, South Arcot (includes three districts Cuddalore, Viluppuram and Thiruvannamalai), Tirunelveli; Karnataka: Bangaluru; Uttar Pradesh; Chhattisgarh.

8. *Batocera rufomaculata* (Degeer, 1775)

Synonyms:

Cerambyx rufomaculatus Degeer, 1775

Cerambyx rubiginosus Voet, 1778

Cerambyx (*Stenocorus*) *cruentatus* Gmelin, 1790

Batocera chlorinda Thomson, 1857

Batocera thysbe Thomson, 1878

Batocera polli Gahan, 1890

Batocera diana Nonfried, 1892

Batocera rubra Ballou, 1916;

Batocera rufomaculata m. *flavescens* Breuning, 1950;

Batocera rufomaculata Breuning, 1957

Batocera (*Batocera*) *rufomaculata* Duffy, 1960

Batocera rufomaculata rufomaculata Ambrus & Grosser, 2012.

Diagnostic characters: Body reddish brown to dark brown colour; pronotum dark brown with two reddish-orange bean to kidney shaped spots and between them blunt eruption distinct (Fig. 8).

Specimens collected from: Gujarat: Anand, Navsari and Junagadh

Distribution: Assam; Andaman Island; Tamil Nadu: Tiruchirappalli; Arunachal Pradesh; West Bengal.

9. *Batocera rubus* (Linné, 1758)

Synonyms:

Cerambyx rubus Linné, 1758

Cerambyx albofasciatus Degeer, 1775

Cerambyx stigma Voet, 1778

Cerambyx albo-maculatus Retzius, 1783

Lamia smaculata Fabricius, 1793

Batocera rubus Dejean, 1835

Lamia octomaculata var. *boisduval* 1835

Lamia downesii Hope, 1845

Batocera octomaculata Redtenbacher, 1848

Batocera sarawakensis Thomson, 1858

Batocera mniszechii Thomson, 1859

Batocera sabina Thomson, 1878

Batocera mniszeczii Thomson, 1878

Batocera albofasciata Stebbing, 1914

Batocera (*Batocera*) *albofasciata* form *bipunctata* Kriesche, 1915

Batocera (*Batocera*) *albofasciata* *unterrasse punctatella* Kriesche, 1915

Batocera (*Batocera*) *albofasciata* subsp. *formosana* Kriesche, 1915

Batocera rubus *rasse palawanica* Schwarzer, 1926

Batocera rubus *rasse siporensis* Schwarzer, 1930

Batocera rubus var. *sarawakensis* Fisher, 1935

Batocera rubus m. *immaculipennis* Breuning, 1947

Batocera rubus ssp. *lombokensis* Breuning, 1947

Batocera rubus var. *dividopunctata* Gilmour & Dibb, 1948

Batocera rubus rubus Hua, 2002

Batocera rubus albofasciata Hua, 2002.

Diagnostic characters: Body is dark brown colour; the elytra covered with white irregular white patch with varied number distributed bilaterally (Fig. 9).

Specimens collected from: Gujarat: Navsari

Distribution: Assam: Khasi Hills; Tamil Nadu: Nagapattinam; Arunachal Pradesh.

Subfamily: Prioninae

10. *Acanthophorus serraticornis* (Olivier, 1795)

Synonyms:

Prionus serraticornis Olivier, 1795;

Acanthophorus serraticornis Audinet-Serville, 1832;

Acanthophorus (*Acanthophorus*) *serraticornis* Lameere, 1910.

Diagnostic characters: Body reddish brown in colour; pronotum unevenly convex; both sexes on metaventricle triangular shiny surface centrally and lateral sides with tawny pubescence (Fig. 10).

Specimens collected from: Gujarat: Anand, Navsari and Junagadh

Distribution: Southern India; Tamil Nadu: Nilgiri Hills; Karnataka: Canara (Udupi, Dakshina Kannada and Uttara Kannada).

11. *Bandar pascoei* (Lansberge, 1884)

Synonyms:

Macrotoma luzonum Pascoe, 1869

Prinobius pascoei Lansberge, 1884

Macrotoma fisheri Waterhouse, 1884

Macrotoma plagiata Bates, 189

Macrotoma Pascoei Lameere, 1903

Macrotoma (*Bandar*) *fisheri* Lameere, 1912

Macrotoma (*Bandar*) *pascoei* Lameere, 1912

Macrotoma (*Bandar*) *fisheri fisheri* Gressitt, 1951

Bandar pascoei ssp. *pascoei* Quentin & Villiers, 1981

Bandar pascoei pascoei Hüdepohl, 1987; *Bandar pascoei* Weigel, 2006.

Diagnostic characters: Body is brown to dark brown colour; the pronotum with series of spines laterally with backwardly pointed large spine posteriorly (Fig. 11).

Specimens collected from: Gujarat: Junagadh

Distribution: Himachal Pradesh: Hill region of Kulu; West Bengal: Darjeeling; Arunachal Pradesh; Chhattisgarh; Madhya Pradesh; Assam; Tripura; Sikkim.

12. *Stromatium barbatum* (Fabricius, 1775)

Synonyms: *Prionomma atratum* (Gmelin, 1790)

Armiger hussarus ceilonensis Voet, 1778

Cerambyx (Prionus) atratus Gmelin, 1790

Prionus buphtalmus Fabricius, 1793

Prionus orientalis Olivier, 1795

Prionus tranquebaricus Fabricius, 1798

Armiger hussarus ceilonensis Voet, 1806

Prionomma orientalis White, 1853

Prionomma (Prionomma) atratum Lameere, 1910

Prionomma atratum Quentin & Villiers, 1982.

Key Characters: Body appear dark brown or black to reddish brown; pronotum generally reddish brown with 5 raised tubercles on disc; elytra coarsely with punctured compactly (Fig. 12).

Specimens collected from: Gujarat: Navsari and Junagadh

Distribution: Tamil Nadu: Nagapattinam; Manipur; Arunachal Pradesh; Pondicherry: Mahe; Karnataka: Bellary; Uttar Pradesh: Asansole, Kunbir; India Orientalis; Andaman Islands; Madhya Pradesh.

Discussion

Total of 12 species of longhorn beetles were identified and documented based on the morphological characters from Gujarat. They are classified into 4 subfamily and 12 species. Among the reported subfamilies, Cerambycinae comprises of five number species, namely (*Aphrodisium cantori* (Hope, 1839), *Diorthus cinereus* (Fabricius, 1793), *Stromatium barbatum* (Fabricius, 1775), *Trirachys holosericeus* (Fabricius, 1787), *Xystrocera globosa*

(Olivier, 1795). The subfamily Lamiinae and prioninae contributes six species each (*Celosterna scabrator* (Fabricius, 1781), *Batocera rufomaculata* (Degeer, 1775), *Batocera rubus* (Linné, 1758) and *Acanthophorus serraticornis* (Olivier, 1795), *Bandar pascoei* (Lansberge, 1884), *Stromatium barbatum* (Fabricius, 1775) and Lepturinae with one species (*Capnolymma cingalensis* Gahan, 1906) were documented. While perusal of earlier literatures shows that only single species (*Paripocregyes terminaliae*, Fisher (193)) has been reported from this state (Kariyanna *et al.*, 2017). The present study revealed that, all 12 species are new addition to the fauna of Gujarat and need a more studies to document all the available and unexplored longhorn beetles fauna of this region.

Acknowledgement

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Fig. 1. *Aphrodisium cantori* (Hope, 1839)



Fig. 2. *Diorthus cinereus* (Fabricius, 1793)



Fig. 3. *Stromatium barbatum* (Fabricius, 1775)



Fig. 4. *Trirachys holosericeus* (Fabricius, 1787)



Fig 5. *Xystrocera globosa* (Olivier, 1795)



Fig 6. *Capnolymma cingalensis* Gahan, 1906



Fig. 7. *Celosterna scabrator* (Fabricius, 1781)



Fig. 8. *Batocera rufomaculata* (Degeer, 1775)



Fig. 9. *Batocera rubus* (Linné, 1758)



Fig. 10. *Acanthophorus serraticornis* (Olivier, 1795)



Fig. 11. *Bandar pascoei* (Lansberge, 1884)



Fig. 12. *Stromatium barbatum* (Fabricius, 1775)

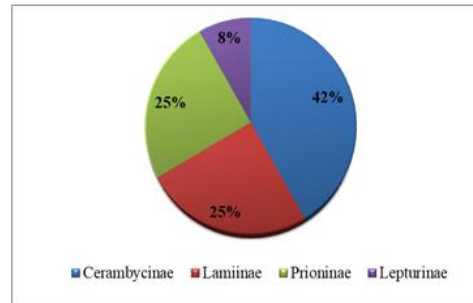


Fig. 13. Subfamily-wise species diversity of Longhorn beetles of Gujarat