Bull. zool. Surv. India, 8 (1-3) : 1-12, 1987

INDIAN SPECIES OF THE GENUS *ARIXYLEBORUS* HOPKINS (SCOLYTIDAE : COLEOPTERA)

By

P. K. MAITI AND N. SAHA

Zoological Survey of India, Calcutta

ABSTRACT

The paper deals with taxonomic account of all the Indian species of the genus *Arixyleborus* Hopkins. The species are *Arixyleborus moestus* (Eggers), *A. malayensis* (Schedl), *A. mediosectus* (Eggers) and *A. rugosipes* Hopkins, all of which are recorded only from the eastern India, including the Islands of Andaman. The diagnostic characters of the genus have been redefined and all the species have been dealt with regard to their synonym, morphology, distribution, taxonomic remarks, etc. In addition, a key has been formulated for the easy identity of each species based on the characteristic features of the female.

Keywords. Genus *Arixyleborus* dealing with all four Indian species.

INTRODUCTION

The genus *Arixyleborus* Hopkins, belonging to the tribe Xyleborini in the subfamily Scolytinae is predominantly an Indo-Malayan genus only with a few species extending up to Japan and New Guinea. The members of the genus usually infest unhealthy trees and felled logs of mostly *Dipterocarpus* plants and are known as true ambrosia beetles for their close association with ambrosia fungi inside their tunnels in the wood.

HISTORICAL ACCOUNT

The genus *Arixyleborus* was first erected by Hopkins (1915) with its type-species, *A. rugosipes* Hopkins from the Philippines. Since then, many species have been transferred to this genus from other genera, namely, *Xyleborus* Eichhoff, *Xyleboricus* Eggers and *Webbia* Hopkins. The genus *Xyleboricus* is now synonymised with *Arixyleborus*, while the other two still exist as valid genera.

The first record of the genus from India was made by Schedl (1958) when he transferred *Xyleborus moestus* Eggers to *Arixyleborus*, which was described by Eggres (1930) from Shillong, Meghalaya. In the same paper, Schedl (1958) also considered his own species, *Xyleboricus malayensis* Schedl from Java as *Arixyleborus malayensis* (Schedl) which was later recorded by the same author (1969) from Sibsagar, Assam, India.

Beeson (1941) reported in his book *Xyleboricus medius* Eggers, a species infesting a number of host plants occurring in India and its neighbouring countries, without referring to any particular locality in India. This species has not been considered as a synonym of *Arixyleborus rugosipes* Hopkins by Schedl (1958). Similarly, another species *Xyleboricus mediosectus* Eggers was also reported by Beeson (1941) which was also transferred to this genus by Schedl (1958) as *Arixyleborus mediosectus* Eggers. In the present study, both these species have also been recorded from north-east India including the islands of Andaman. However, the taxonomic identity of all these four species referred to above is in a very confused state, since the species are poorly described mostly in different languages. No specific key is available to aid to their correct recognition and even the characteristics of the genus are not properly defined. This keeping in view, an attempt has been made in the present paper to deal with all these four species with regard to their synonyms, taxonomy, characteristics relationship, distribution, variation, etc. In addition, a key has been formulated for easy identification of respective species based on the characters of the females. Further, the characteristics and inter-relationship of the genus have also been dealt in details.

Material and Methods

The study is mainly based on the authentically identified species as well as our own identification of the unnamed collection present in the Entomological Collection of Forest Research Institute, Dehra Dun, India.

Dry, set and pinned material were studied under a Sterioscopic Binocular Microscope. The most recent classification of the family Scolytidae proposed by Wood (1978 and 1980) has been followed in the present study.

Inter-Generic Relationship

The genus is characterised in having inflated posterior surface of protibiae with distinct tubercles ; antennal funicle with 5 segments ; no suture on the posterior face of antennal club ; striae either shallowly or deeply marked with reticulate sculpture either inside or outside the punctures ; interstriae either ridged or weakly convex (except in elytral basal area) with uniseriate or multiseriate granules. Though some of these characters intergrade with some other genera, the combination of these characters keep the genus distinct from all other related genera. In spite of its name *Arixyleborus*, the genus is not very close to *Xyleborus* which is the largest and the most common genus among all the scolytid-beetles in India. However, it resembles closely to certain genera, particularly, *Cnestus* Sampson, *Xyleborinus* Reitter, *Xyleborus* Eichhoff and *Kalantanius* Nunberg in having no suture on the posterior face of antennal club, which is also absent in *Xylosandrus* Reitter and *Apoxyleborus* Wood. These two latter genera are easily separated from *Arixyleborus* in having widely separated pro-coxae. The characteristic inflated posterior surface of protibiae with distinct tubercles separates the genus from all other allied ones under the tribe Xyleborini.

SYSTEMATIC ACCOUNT

Subfamily : *SCOLYTINAE*
Tribe : XYLEBORINI
Genus : **Arixyleborus** Hopkins, 1915.

Arixyleborus Hopkins, A. D. 1915. *Rep. U. S. Dept. Agric.*, 99 : 10 and 59. *Type-species* : *Arixyleborus rugosipes* Hopkins from Philippines ; Browne, F. G. 1955. *Sarawak Mus. J.*, 6 : 350 ; Schedl, K. E. 1958. *Tijdschr. Ent.*, 101 : 143 ; Schedl, K. E. 1959. *Trans. Roy. ent. Soc. Lond*, 111 : 491 ; Browne, F. G. 1961. *Malay. Forest Rec.*, no. 22, p. 178 ; Schedl, K. E. 1966. *Entom. Abh. Mus. Tierk. Dresden*, 35 : 43 ; Wood, S. L. 1978. *Annls. Soc. ent. Fr.* (*N. S.*), 14(1) : 114 ; Nobuchi, A. 1978. *Bull. For. & For. Prod. Res. Inst* no. 301, p. 2 and 7 ; Wood, S. L. 1980. *Gt. Basin. Nat.*, 40(1) : 96.

Xyleboricus Eggers, H. 1923. *Zool. Meded.*, 23 : 212-213, *Type-species* : *Xyleboricus canaliculatus* Eggers ; Browne, F. G. 1963. *Ent. Ber.*, 23 : 55 (Synonymy) ; Schedl, K. E. 1936. *Philipp. J. Sci.*, 60 : 59-67.

Generic characters : (i) *Female* : Body short and stout to long and cylindrical, yellowish brown to blackish brown in colour ; total length of body, 1.70-2.70 mm.

Head globose, weakly narrowing anteriorly ; frons flatly to moderately convex ; head dorsum reticulate with a few scattered punctures, fairly granulate above the epistomal margin ; median line distinctly or indistinctly marked. Eyes elongately oval, strongly emarginate on anterior margin. Antennae small, scape swollen ; funicle with 5 segments, 1st segment broad and club shaped, other gradually increasing in width ; club obliquely truncate, anterior face with segment 1 corneous with costate margin forming a complete ring, suture 2 incomplete and crescentic in shape (not visible in *A. mediosectus*) ; posterior face without any suture.

Pronotum nearly as long as or distinctly longer than broad ; basal margin substraight or weakly sinuate, lateral margins of posterior two-thirds subparallel, whence converging anteriorly and terminating into angularly or broadly rounded apex ; anterior one-third to less than half portion declivous dorsally with weak asperities gradually increasing in size anteriorly (asperities on anterior margin somewhat prominent only in *A. malayensis* Schedl) ; posterior two-thirds or almost half portion with reticulate surface with sparse shallow punctures and with or without any setae.

Elytra slightly longer than and as wide as pronotum ; lateral margins subparallel up to apical one-third, whence narrowing posteriorly and terminating into an angular or broadly rounded apex ; postero-lateral margins of declivity with or without carina ; apical one-third declivous, declivity either abrupt or gradual, with flat or weakly convex face ; elytral disc either smooth and shining or coarse and opaque with granules and tubercules ; interstriae either weakly convex or ridged with uniseriate or multiseriate granules or tubercles ; discal striae either shallowly or deeply marked by punctures, punctures sculptured reticulately within ; declivital striae usually deeply marked with punctures also sculptured within (except in *A. moestus*) ; declivital interstriae distinctly marked with granules or tubercles.

Procoxae contiguous, femur moderately long and slender, pro-tibiae having teeth at the anterior margin, posterior surface inflated with distinct tubercles ; mid and hind-tibiae dilated at middle with 6-7 marginal teeth ; tarsi 5-jointed, 4th small and emarginate.

(ii) *Male* : The generalised characters of the males are not taken into account. Out of four species, the males of *A. malayensis* (Schedl) and *A. rugosipes* Hopkins are known of which those of the former species are available for study. The males of two other species, *A. moestus* (Eggers) and *A. mediosectus* Eggers are unknown.

Key to the Indian species of the genus **Arixyleborus Hopkins** *based on females.*

1(2) Interstriae with multiseriate blunt granules (except, a narrow basal strip of elytral disc) ; both striae and interstriae somewhat obsolete on declivital face with confused irregular granules throughout ; frons with a very distinct median line ... *moestus* (Eggers)

2(1) Interstriae with somewhat uniseriate granules (except, either narrow or broad basal strip of elytral disc) ; both striae and interstriae well marked on delivital face ; frons without any distinct median line.

3(6) Interstriae either sharply or bluntly ridged and with distinct granules both on disc and declivity ; species short and stout.

4(5) Interstriae on disc flat and shiny up to little above the commencement of declivity, whence sharply ridged and granulate up to middle of declivital face except the sutural striae ; postero-lateral margins of declivity with distinct carina ; interstriae with a few minute hairs, but a tuft of hairs on apex of sutural striae on the declivity ; pronotum subquadrate with angularly rounded apical margin marked with a few distinct pointed asperites ... *malayensis* (Schedl)

5(4) Interstriae on disc somewhat flat and shiny only on a narrow basal strip, whence bluntly ridged and tuberculate up to elytral apex ; postero-lateral margins of declivity without any carina ; interstriae with numerous short and long hairs ; pronotum subrectangular with broadly rounded apical margin marked with indistinct asperities ... *rugosipes* Hopkins

6(3) Interstriae not distinctly ridged, rather weakly ridged and granulate only near commencement of declivity ; species long and clylindrical ... *mediosectus* (Eggers)

Description of the species

1. **Arixyleborus moestus** (Eggers)

Xyleborus moestus Eggers, H. 1930. *Indian Forest Rec.*, 14(9) : 189, Female, *Type-locality* : India : Meghalaya, Shillong ; Beeson, C. F. C. 1930. *Indian Forest Rec.*, 14(10) : 73, India : Assam and West Bengal ; Beeson, C. F. C. 1941. *Ecology and Control of Forest Insects of India and Neighbouring Countries*, p. 301.

Arixyleborus moestus (Eggers) Browne, F. G. 1955. *Sarawak Mus. J.*, 6 : 350 ; Schedl, K. E. 1958. *Tijdschr. Ent.*, 101 : 145.

Material : 1 ♀, from Debrepani, 1832m, Darjeeling Dist., West Bengal, *J. C. M. Gardner coll.*, 14.ix. 1929, ex. *Quercus lamellosa* (*det.* C. F. C. Beeson).

Morphological characters : *Female* (Figs. 1, a-c) : Body stout and somewhat cylindrical ; head, pronotum and elytra blackish brown, and antennae and legs paler in colour. Body length 2.59 mm.

Head globose, weakly narrowing anteriorly, frons with a distinct median line, surface finely reticulate, with large compara-

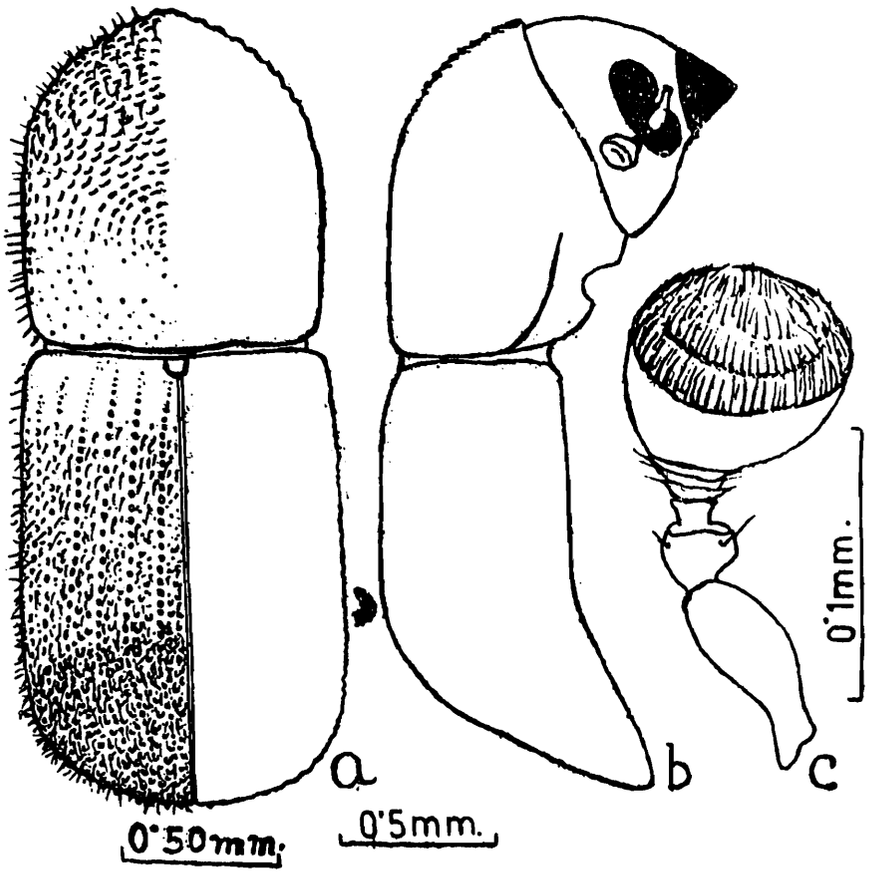

Fig. 1. a-c, *Arixyleborus moestus* (Eggers), Female : a, Dorsal view ; b, Lateral view ; c, Antenna.

tively close punctures ; epistomal margin fringed with sparse and fine hairs, and a few distinct granules somewhat in transverse rows above it. Eyes deeply emarginate. Antennal scape short and stout, funicle with 5-segments ; club obliquely truncate, anterior face with segment 1 corneous and with costate margin forming a complete ring, suture 2 conspicuous, but incomplete and crescentic in shape ; posterior face unmarked by sutures.

Pronotum subrectangular, 1.16 times as long as wide ; basal margin substraight, very weakly emarginate on either side of middle, sides subparallel up to basal three-fifths, whence weakly converging anteriorly with broadly rounded apex ; anterior half with weak asperities gradually increasing in size anteriorly and with scattered fine short hairs ; posterior half reticulate and apilose with scattered indistinctly visible granules and punctures.

Scutellum subround and shiny.

Elytra 1.30 times as long as and slightly wider than pronotum and 1.44 times as long as wide itself ; basal margin substraight ; lateral margins subparallel up to two-thirds, thence weakly converging posteriorly with broadly rounded apex ; postero-lateral margins not carinate, but with granules ; nearly one-fifth of basal disc somewhat smooth and shiny, rest of elytra opaque ; disc with deeply impressed striae marked by distinct punctures with sculptured within ; interstriae rather weakly convex with irregular and blunt granules increasing in

size posteriorly and a few tubercles along with granules, somewhat distinct at commencement of declivity.

Declivity commencing abruptly at posterior one-third and declivital face flat, opaque and roughened with numerous blunt irregular granules ; striae 1 and 2 distinctly marked beyond the middle and 3 and 4 up to middle and rest obsolete ; interstriae with two or three rows of irregular recumbent hair-like setae.

Distribution—INDIA : Meghalaya : Shillong (Type-locality) ; West Bengal : Darjeeling District, Debrepani.

Taxonomic remarks : The species belongs to the *granifer* group of the genus *Arixyleborus* in having multituberculate interstriae. The species can easily be distinguished from all other Indian species of the genus in having this character as well as with confused blunt granules in the declivity.

2. **Arixyleborus malayensis** (Schedl)

Xyleboricus malayensis Schedl, K.E. 1936. *Philipp. J. Sci.*, 60(1) : 64 (nom. nud.) ; Schedl, K.E. 1954. *Philipp. J. Sci.*, 83 : 150, Male, *Type-locality* : Indonesia : Java : Batoerraden.

Arixyleborus malayensis (Schedl), Schedl, K.E. 1958, *Tijdschr. Ent.*, 101 : 145, Female, Java ; Schedl, K. E. 1969. *Oriental Ins.*, 3(1) : 52, Assam : Sibsagar ; Beaver, R.A. and Browne, F.G. 1978 *Oriental Ins.*, 12(4) : 582, Malaya, Indonesia, Vietnam, India and Sri Lanka.

Material : 10 Females and 2 Males Dahura, Bagdogra and Kurseong, Darjeeling Dist., West Bengal. *N. C. Chatterjee coll.*, 25.iii.1934, ex. *Machilus* sp. (RRD : 580, B. C. R.-55, Cage-187).

Morphological characters : (i) *Female*

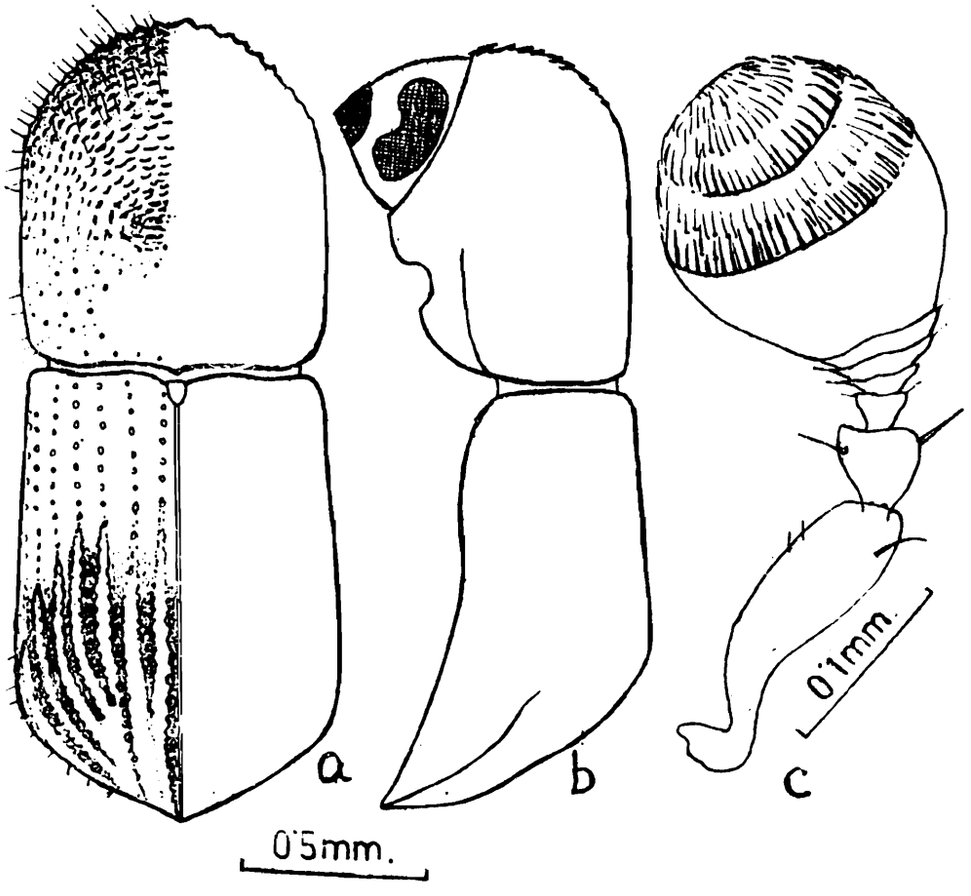

Fig. 2. a-c, *Arixyleborus malayensis* (Schedl), Female : a, Dorsal view ; b, Lateral view ; c, Antenna.

(Figs. 2, a-c) : Body stout and cylindrical ; head, pronotum and elytra blackish brown with legs and antennae yellowish brown in colour. Body length 2.10-2.15 mm.

Head globose, slightly narrowing anteriorly, frons weakly convex, surface reticulate with a few scattered punctures and hairs, and without any distinct median line ; a few scattered granules above the epistomal margin. Eyes elongate and deeply emarginate. Antennal scape short ; funicle with 5-segments ; club obliquely truncate, anterior face with segment 1 corneous with costate margin forming a complete ring, suture 2 conspicuous and crescentic in shape ; posterior face unmarked by suture.

Pronotum subrectangular, 1.18 times as long as wide ; basal margin weakly bisinuate on either side of median portion, sides subparallel up to anterior one-third, whence weakly narrowing anteriorly and terminating into angularly rounded apex, a few distinct asperities (6 or so) and hairs on apical mangin ; less than anterior half with asperities gradually increasing in size anteriorly and with a few scattered hairs ; summit not at all raised ; posterior half finely reticulate with minute punctures.

Scutellum subrounded and distinctly shiny.

Elytra slightly longer than and as wide as pronotum and 1.38 times as long as its width ; basal margin weakly incurved on either side of middle ; lateral margins subparallel up to anterior two-thirds, whence narrowing posteriorly and terminating into an angular apex ; postero-lateral margins with distinct carina ; elytral basal third smooth and shiny, striae marked by minute and shallow punctures ; interestriae flat with indistinct punctures ; interstriae on apical two-thirds somewhat ridged, gradually becoming narrow within declivity and marked by uniseriate granules ; striae in the area just before the commencement of declivity rather impressed and marked by large close punctures reticulately sculptured within ; striae 1, 2, 3, 6 and 7 extending up to apical margin, while striae 4 and 5 terminating almost at the middle of declivity ; interstriae 2, 4, 5 terminated in the middle of declivity and others almost reaching to the apical margin ; interstriae with setiferous uniseriate granules ; dense setae towards apical portion of sutural interstriae.

Declivity steep and commencing at apical third, declivital face weakly convex ; sutural interstriae raised a little below the middle of dectivity.

(ii) Male—The male is very similar to the female. Only the differentiating characters are stated below.

Frons paler in colour ; a weak median depression above epistomal margin.

Pronotum 1.3 times as long as wide, slightly broader anteriorly ; anterior margin broadly rounded with a few weak but distinct asperities ; dorsal summit feeble and slightly anteriorly placed.

Elytra slightly shorter than pronotum ; interstriae on anterior half of disc as well as on declivity not so strongly ridged as in the female.

Distribution : INDIA : Assam ; Indonesia : Java and Sumatra, Malaysis, Vietnam and Sri Lanka.

Taxonomic remarks—The species, *Arixyleborus malayensis* Schedl, can easily be distinguished from all other Indian species in having strongly ridged interstriae with

distinct uniseriate granules and distinct asperities on the anterior portion of pronotum. Striae are deep in between ridged interstriae and marked by distinct large punctures which are sculptured reticulately within.

3. **Arixyleborus mediosectus** (Eggers)

Xyleboricus mediosectus Eggers, H. 1923. *Zool. Meded.*, 7 : 215, ♀, *Type-locality* : Sinabang, Simalur Island (South Sumatra) ; Schedl. K. E. 1936. *Phillip J. Sci.*, 60 : 64 ; Beeson, C. F. C. 1941. *Ecology and Control of Forest Insects of India and Neighbouring Countries*, p. 361.

Arixyleborus mediosectus (Eggers), Schedl, K. E. 1958. *Tijdschr. Ent.*, 101 : 145 ; Schedl, K. E. 1959. *Trans. Roy. ent. Soc.*, 111 : 492 ; Browne, F. G. 1961. *Malay. Forest Rec.*, no. 22, p. 182 ; Schedl, K. E. 1969. *Kontyu*, 37(2) : 206 ; Beaver, R. A. and Browne, F. G. 1978. *Oriental Ins.*, 12(4) : 582.

Material—42 Females, Middle Andaman, *B. M. Bhatia* coll., 8. xii. 1928, ex. *Canarium euphyllum* ; 1 Female N. Andaman, *C. F. C. Beeson* coll., 2. iii. 1930, ex. *Artocarpus chaplasa* ; 15 Females, Stewart sound, North Andaman, *C. F. C. Beeson* coll., 4. iii. 1930 ; 1 Female, North Andaman, *C. F. C. Beeson* coll., 9. iii. 1930, ex. "unknown wood" ; 1 Female, North Andaman, *B. M. Bhatia* coll., 16. xii. 1929, ex. *Terminalia bialata* ; I Female, North Andaman, *C. F. C. Beeson* coll., 9, iii. 1930, ex. *Dendrocalamus strictus* ; 19 Females, North Andaman, *B. M. Bhatia* coll., 15-16. xii. 1928, ex. *Dipterocarpus turbinatus* ; 12, Females, North Andaman, *C. F. C. Beeson* coll., 8. iii. 1930, ex. *Dipterocarpus turbinatus* ; 3 Females. Digboi Reserve, Lakhimpur, Assam, *C. F. C. Beeson* coll., 2. iii. 1936, ex. *Dipterocarpus pilosus.*

Morphological characters— : (i) *Female* (Figs. 3, a-c) :—Body long and cylindrical ;

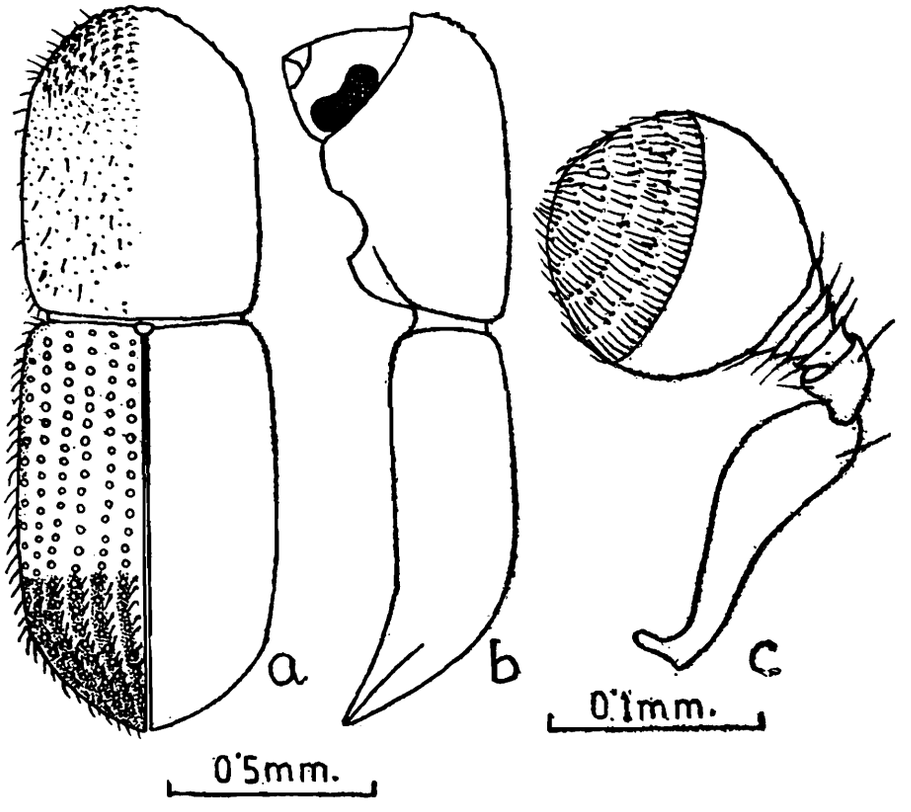

Fig. 3. a-c, *Arixyleborus mediosectus* (Eggers), Female : a, Dorsal view ; b, Lateral view ; c, Antenna.

pronotum blackish brown and elytra, legs and antennae light brown in colour. Body length 2 mm, 2.8 times as long as wide.

Head globose, weakly narrowing anteriorly, frons moderately convex, surface reticulate with sparse punctures and fine hairs ; median line absent ; fringe of long hairs along epistomal margin distinct and irregular indistinct granules below it. Eyes elongate, deeply emarginate. Antennal scape short and funicle with 5 segments ; club obliquely truncate, anterior face with segment 1 corneous with costate margin forming a complete ring, suture 2 not visible ; posterior face unmarked by sutures.

Pronotum elongate, 1.3 times as long as wide, basal margin substriaght, sides substraight and subparallel up to posterior two-thirds, antero-lateral margins weakly narrowing and broadly rounded anteriorly ; anterior one-third with fine asperities, with sparse erect long setae ; posterior portion finely reticulate with sparse minute punctures.

Scutellum sub-round and small.

Elytra 1.1 times as long as and as broad as pronotum ; basal margin substraight ; lateral margins straight and subparallel up to basal three-fourths, then narrowing posteriorly and terminating into an angular apex ; nearly half of elytra smooth, flat and dull ; striae not at all impressed, but marked by moderately large and very shallow punctures ; interstriae with sparse hair-like setae in row, becoming weakly ridged slightly before the commencement of declivity.

Declivity abrupt, commencing from posterior one-fourth of elytra, declivital face plano-convex, postero-lateral margins of declivity distinctly carinate ; declivital striae marked by large and shallow punctures, punctures weakly reticulately sculptured inside and with a single minute hair in each ; interstriae weakly but sharply ridgeds slightly before the commencement of declivity up to centre of declivital face ; interstriae with prominent tubercles and recumbent hairs in row, particularly at the commencement of declivity whence gradually distinctly marked towards lateral margin of declivital face than at the middle.

(ii) *Male* : Unknown.

Distribution : INDIA : Assam, Andaman ; Khmer Republic (Cambodia), Sri Lanka ; Malaysia ; Indonesia : Sumatra and Vietnam.

Taxonomic remarks—The two-thirds of elytra smooth, weakly impressed striae line and interstriae not at all convex except only at the commencement of declivity where it is distinctly raised with prominent tubercles. None of the other Indian species possess this character along with its slender and narrow body form.

4. **Arixyleborus rugosipes** Hopkins

Arixyleborus rugosipes Hopkins, A.D. 1915. *Rep. U.S. Dept. Agric.*, 99 : 59, Female, *Type-locality* : Pagbilae, Philippines ; Schedl, K. E. 1959. *Trans. Roy. ent. Soc. Lond.*, 111 : 492, Sri Lanka ; Browne F.G. 1960. *Philipp. J. Sci.*, 89 : 207, Male ; Schedl, K.E. 1965. *Ark. Zool.* 18(3) : 22, Sumatra ; Schedl, K.E. 1966. *Entom. Abh. Mus. Tierk. Dresdren*, 35 : 44.

Webbia medius Eggers, H. 1927. *Philipp. J. Sci.*, 33 : 104-105, Female, *Type-locality* : Mindanao and Mindoro, Philippine Islands.

Xyleboricus medius (Eggers), Schedl, K. E. 1936. *Philipp. J. Sci.*, 60 : 64 ; Beeson, C.F.C. 1941. *Ecology and Control of Forest Insects of India and Neighbouring Countries*, p. 307 ; Schedl, K.E. 1951-52. *Ent. Bl.*, 47-48 : 161-162 (Synonymy).

Webbia camphorae Eggers, H. 1936. *Ann. Mag. nat. Hist.*, 17(10) : 634, Femals, *Type-locality* : Johore : Khrang, Malaya Archipelago ; Browne, F.G. 1955. *Sarawak Mus. J.*, 6 : 351 (Synonymy).

Xyleboricus camphorae (Eggers), Beeson, C.F.C. 1941. *Ecology and Control of Forest Insects of India and Neighbouring Countries*, p. 307 ; Schedl, K.E. 1958. *Tijdschr. Ent.*, 101 : 145.

Meterial—31 Females, Middle Andaman, *B. M. Bhatia* coll., 8-29.xii.1928. ex *Canarium euphyllum* ; 11 Females, North Andaman, *B.M. Bhatia* coll., 15.xii,1928, ex. *Sterculia villosa* ; 1 Female, North Andaman, *B.M, Bhatia* coll., 16.xii.1928, ex. *Terminalia bialata* ; 6 Females, North Andaman, *B.M. Bhatia* coll., 16,xii.1928, ex. *Dipterocarpus turbinatus* ; 1 Female, North Andaman, *C.F.C. Beeson* coll., 8.iii.1930, ex. *Dipterocarpus turbinatus* ; 1 Female, Stewart Sound, North Andaman, *C.F.C. Beeson* coll., iii,1930 ; 1 Female, Middle Andaman, *B.M. Bhatia* coll., 8.xii. 1928, ex. *Terminalia manii* ; 2 Females, North Andaman *C.F.C. Beeson* coll., 9.iii.1930, ex. *unknown wood* ; 1 Female, North Andaman, *B.M. Bhatia* coll., 16. xii. 1928, ex. *Diospyros oocarpa* ; 1 Female, Middle Andaman, *B.M. Bhatia* coll., 15.i.1929, ex. *Artocarpus chaplasa*.

Morphological characters :—(i) *Female*, (Figs. 4, a-d) :—Body long and cylindrical ; head, pronotum and elytra deep reddish brown, legs and antennae yellowish brown. Body length 1·7 mm.

Body globose, weakly narrowing anteriorly, frons moderately convex, surface finely reticulate, with a few scattered punctures and fine hairs ; median line indistinct ; fringe of hairs below epistomal margin distinct and with irregular indistinct granules below it. Eyes elongate, deeply emarginate. Antennal scape short ; funicle with 5 segments ; club obliquely truncate, anterior face with segment

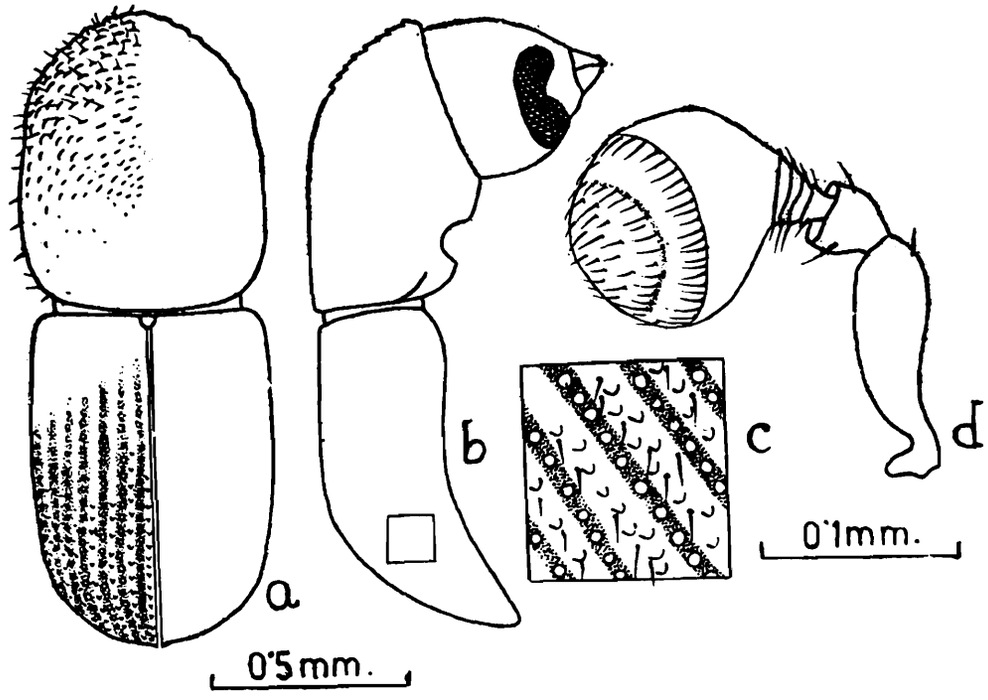

Fig. 4. a-d, *Arixyleborus rugosipes* Hopkins, Female : a, Dorsal view ; b, Lateral view ; c, Enlarged portion of elytral declivity ; d, Antenna.

1 corneous with costate margin forming a complete ring, suture 2 conspicuous and crescentic in shape ; posterior face unmarked by sutures.

Pronotum elongate, 1.3 times as long as wide, basal margin substraight, sides subparallel up to anterior one-third, antero-lateral margins weakly narrowing and broadly rounded anteriorly ; anterior half with fine asperities, gradually increasing in size anteriorly intermingled with scattered fine short hairs ; posterior half finely reticulate with sparse minute shallow punctures.

Scutellum subround and shiny.

Elytra slightly longer and as wide as pronotum, and 1.4 times as long as wide ; basal margin substraight ; lateral margins subparallel up to basal two-thirds, broadly rounded postero-laterally and terminating into a somewhat angular apex ; postero-lateral margins not carinate, rather marked by 2 rows of distinct granules ; a narrow transverse strip of elytral base somewhat smooth and shiny, rest of elytra opaque ; all striae posteriorly beyond the basal strip deeply impressed, reticulately sculptured, hardly marked by any distinct punctures ; interstriae ridged, attaining maximum height at commencement of declivity, with minute and blunt tubercules and short hairs almost in single row.

Declivity gradually sloping posteriorly, commencing from posterior one-third of elytra, declivital face moderately convex, declivital striae and interstriae distinctly marked as on the disc ; striae 1, 2, 3, 6 and 7 running almost to the posterior margin, striae 4 and 5 forming loop almost at the middle of declivity ; all interstriae running upto posterior margin except 5th ; decumbent setae at the base of tubercules in declivity.

(ii) *Male* : No male available in the present study.

Distribution : India, Philippines, Malaysia, Borneo, Vietnam, Indonesia, Sri Lanka and Australia (imported).

Taxonomic remarks : The species *Arixyleborus rugosipes* Hopkins is rather easily distinguished from all other species in this genus by somewhat flat, shiny interstriae on a narrow transverse strip of the elytral basal portion.

ACKNOWLEDGEMENTS

Grateful acknowledgement is made to the Director, Zoological Survey of India, for providing necessary facilities ; to Dr. P. K. Sen Sarma, Director, Biological Research, Forest Research Institute, Dehra, Dun, for lending some unidentified material as well as allowing us to consult reference collection of FRI ; and to Dr. S. L. Wood, Professor of Entomology, Brigham Young University, Provo, Utah, USA, for kindly confirming some of our identifications.

REFERENCES

BEESON, C, F. C. 1941. *The Ecology and Control of Forest Insects of India and the Neighbouring Countries*, ii+1007 pp., Dehra Dum (Vasant Press).

EGGERS, H. 1930. Neue *Xyleborus*-arten (Coleoptera : Scolytidae) aus Indian— *Indian Forest Rec.*, **14**(9) : 177-208.

SCHEDL, K. E. 1936. Scolytidae and Platypodidae : Fauna Philippinensis IV.— *Philipp. J. Sci.* **60** : 59-67.

SCHEDL, K. E. 1958. Zur Synonymie der Borkenkafer II.—*Tijdschr. Ent.*, **101** : 141-155.

SCHEDL, K. E. 1969. Indian Bark and Timber beetles V.—*Oriental Ins.*, **3**(1) : 46-70.

WOOD, S. L. 1978. A reclassifiation of the Subfamilies and Tribes of Scolytidae (Coleoptera)—*Annls. Soc. ent. Fr.* (*N.S*)., **14**(1) : 95-122.

WOOD, S. L. 1980. New Genera and new Generic synonymy in Scolytidae (Coleoptera)—*Gt. Basin. Nat.*, **40**(1) : 89-97.