

Studies on Oriental *Cydnidae*. VIII. On *Aethus indicus* (Westwood),
A. philippinensis Dallas and *A. pseudindicus* n. sp.
(*Heteroptera: Pentatomoidea*)

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ABSTRACT. Previous records of *Aethus indicus* (WESTWOOD) - one of the most common Palaeotropical cydnid species - have turned out to pertain to three different species: *A. indicus* (WESTWOOD) [India, Sri Lanka, Burma, Thailand, and one record from Sulawesi], *A. philippinensis* (DALLAS) dist. sp. [Indonesia, Malaysia, Philippines, Singapore, Nicobar Isles, New Guinea, Australia, Halmahera Isl. Solomon Isles and one record from South India], and *A. pseudindicus* n. sp. [South China, Taiwan, Laos, Vietnam and probably also Japan]. Differences in genital structures of each species are described and figured. *Cydnus indicus* ab. *rufino* BREDDIN, 1905 and *Cydnus ceylonicus* MAYR, 1866 are synonymized with *A. philippinensis* DALLAS, 1851.

INTRODUCTION

Aethus indicus (WESTW.) was reported hitherto as a very common and widely distributed Palaeotropical species. Pending my studies on Oriental burrower bugs I had an opportunity to revise specimens previously determined as *A. indicus* from both Oriental and Australian Regions, and study undetermined material of the genus *Aethus* DALL., as well. It turned out that morphologically similar specimens usually determined as *A. indicus* belonged in fact to three very closely related species - *A. indicus* (WESTWOOD), *A. philippinensis* DALLAS and *A. pseudindicus* n. sp. - which can be recognized only on the basis of male genital structures.

Abbreviations. BMNH - British Museum (Natural History), London, England; CWS - Carl W. Schaefer collection, Storrs, USA; HEC - Hope Entomological Collections, Oxford, England; HNHM - Hungarian Natural History Museum, Budapest, Hungary; IRSNB - Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium; JAL - the author's collection; MCSN - Museo Civico di Storia Naturale, Genova, Italy; MNHN - Muséum National d'Histoire Naturelle, Paris, France; MNHU

- Museum für Naturkunde, Humboldt-Universität, Berlin, Germany; NhMW - Naturhistorisches Museum Wien, Vienna, Austria; SMNS - Staatliches Museum für Naturkunde, Stuttgart, Germany; ZIL - Zoological Institute, St. Petersburg, Soviet Union; ZMC - Zoological Museum, Copenhagen, Denmark; ZMHU - Zoological Museum, Helsinki University, Helsinki, Finland.

Acknowledgements. I'd like to express my sincere thanks to the following persons for the loan of material: Prof. C. W. SCHAEFER (CWS), Prof. I.M. KERZHNER (ZIL); Prof. N. MØLLER ANDERSEN (ZMC); Dr. U. ASPÖCK (NhMW); Dr. T. VÁSÁRHELYI (HNHM); Dr. D. PLUOT-SIGWALT (MNHN); Mrs J. MARGERISON-KNIGHT (BMNH); Dr. I. LANSBURY (HEC); Dr. P. GROOTAERT (IRSNB); Dr. V. RAINERI (MCSN); Dr. J. DECKERT (MNHU); Dr. L. HULDEN (ZMHU) and Dr. W. SCHAWALLER (SMNS).

TAXONOMY

Aethus indicus (WESTWOOD)

- Cydnus Indicus* WESTWOOD, 1837: 19; LETHIERRY, 1891: CLXII; LETHIERRY and SEVERIN, 1893: 66 [part].
Cydnus indicus: SIGNORET, 1881: 632 [part]; DISTANT, 1899: 221; 1902: 90, 1903: 230; BREDDIN, 1904: 407, 1909: 263; MAXWELL-LEFROY, 1909: 305; China, 1935: 295; CHANDRA, 1953: 87.
nec *Cydnus indicus*: SIGNORET, 1881: 632 [part]; BREDDIN, 1900: 289, 1906: 10; DISTANT, 1901a: 101; SCHOUTEDEN, 1933: 44.
Aethus indicus: DALLAS, 1851: 114; WALKER, 1867: 155 [part]; SIGNORET, 1882: 28 [part]; ATKINSON, 1887: 47 [part]; BERGROTH, 1915: 170; KUMAR, 1962: 45, 49, 53, 54, 56; SCHAEFER, 1981: 232; PAWAR, 1973: 212; MOIZUDDIN and AHMAD, 1990: 313; LIS, 1991a: 175 [part], 1991b [part].
nec *Aethus indicus*: HSIAO et al., 1977: 44; SCHAEFER, 1988: 24; LIS, 1991a: 175 [part], 1991b [part].
Cydnus ceylonicus MAYR, 1866: 362 [paralectotype from Ceylon]; DISTANT, 1902: 91 [part].
Cydnus Ceylonicus: LETHIERRY and SEVERIN, 1893: 65 [part].
Aethus? ceylonicus: SIGNORET, 1882: 30 [part].
Aethus ceylonicus: WALKER, 1867: 158 [part]; KIRBY, 1891: 80 [part].
Lactistes rastellus: DISTANT, 1901: 101 [part].

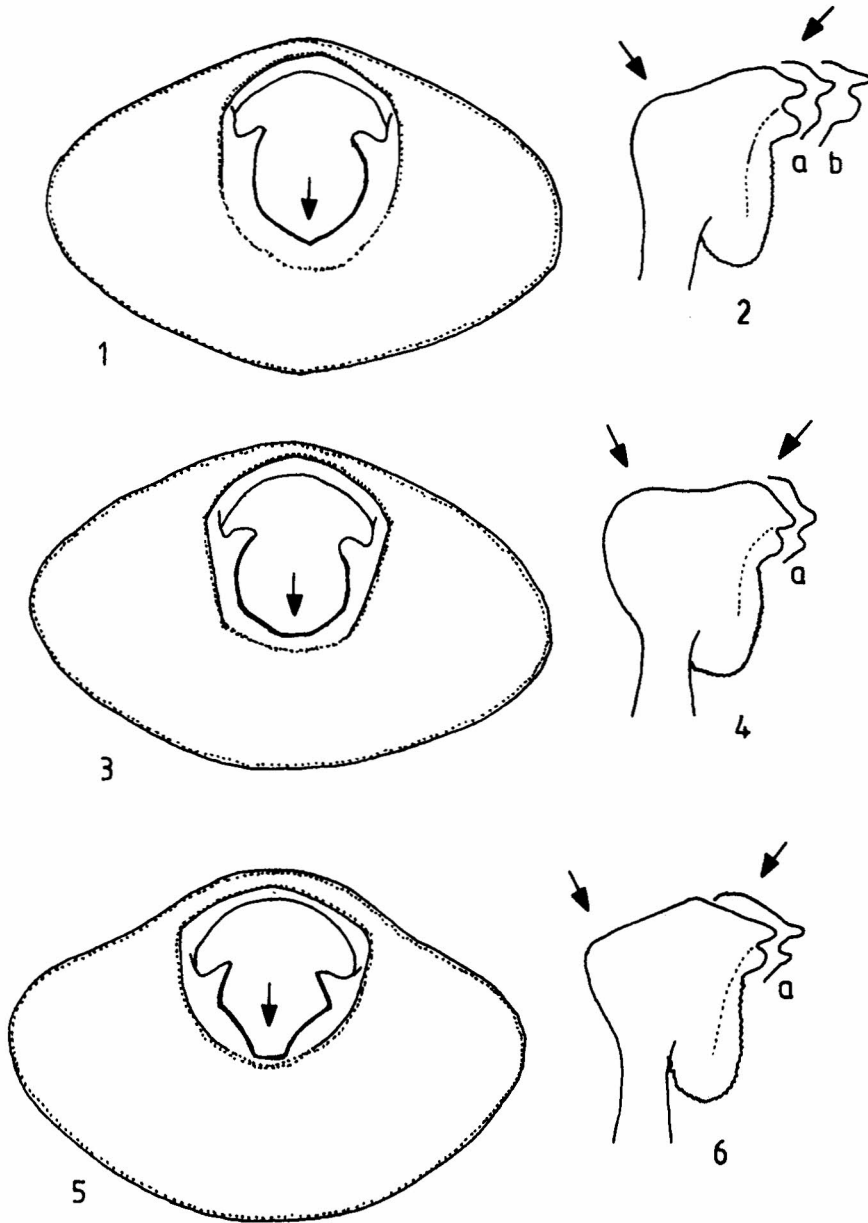
TYPE MATERIAL EXAMINED

Lectotype female of *Cydnus indicus* WESTWOOD (designated by LIS, 1991a: 175): Gogo, *Cydnus indicus* WESTW., Type, Type, WESTW. (HOPE), C. Hemipt. 1837, Part I, page 19, DISTANT P.Z.S. 1900, p. 807-825, Type Hem. No. 64, *Cydnus indicus* WESTWOOD, Hope Dept. Oxford; in the collection of HEC.

Paralectotype male of *Cydnus ceylonicus* MAYR (with neither head nor pronotum): Novara Exp., Ceylon, *ceylonicus*, Paralectotype, det. J.A. LIS; in the collection of NhMW.

OTHER MATERIAL EXAMINED

INDIA: Berhampur, 6 females 2 males, ATKINSON collection, Bought 1895 (HEC, JAL); Indien or., Dald, Nr. 592, 2 females 1 male, Zool. Mus. Berlin, labelled as *Aethus varians* FAB. (MNHU); S. India, St. Thomas Mount, 1 female XII 1950, P.S. NATHAN



1-2. *Aethus indicus*; 3-4. *A. pseudindicus*; 5-6. *A. philippinensis*: 1, 3, 5 - genital capsule, dorsal view; 2, 4, 6 - paramere (a, b - variations of the blade shape)

(CWS); Coimbatore, Madras St., 6 females 3 males XI 1950, 10 females 8 males XI 1972, 1400', P.S. NATHAN (CWS, JAL); Inde, Deccan, 8 females 3 males, Kurduvadi (IRSNB, JAL); Inde, Konbir, 1 male 1891 (IRSNB); Inde, Barway, 1 female 1 male, R.P. CARDON (IRSNB); Inde, Asanol, 1 male (IRSNB); Indes anglaises, Ajmer-Rajpudana, 10 females 11 males, ex. coll. MULLER (IRSNB, JAL); Inde, Pondichery, 1 female 3 males 12 IX 1901, M. MAINDRON (IRSNB), 1 male, *Geotomus*, collection E. DE BERGEVIN (MNHN); Inde, Bihar, Raxaul, 5 males 24 X 1965, Y. DOMALAIN (IRSNB, JAL); S. India, Singara, Nilgiri Hills, 3400ft, 13 females 14 males V 1954, Réc. P.S. NATHAN (IRSNB, JAL); S. India, Malabar, Walayar Forest, 100ft, 2 females 1 male X 1956, Réc. P.S. NATHAN (IRSNB); Maissour, Silvapoor (Mt. Tabourel), 1 female, R. OBERTHUR 1899, Muséum Paris (MNHN); Inde, Balasore, 1 male, R. OBERTHUR 1899, Muséum Paris (MNHN); Indes Anglaises, Surada (Ganjam district), 2 females, G. BABAULT, Muséum Paris (MNHN); Delhi, 1 female 21-27 VIII 1957, Shver (ZIL); India, 75km W. Bengalur, 1 female 1 male, 25 XII 1969, K. GORSEV (ZIL, JAL); Berrar, Ind. Or., 2 males, STAUDINGER and BANG-HAAS (ZIL); S. India, Karnataka, 1 female, Mudigere area, c. 900m, 2-10.XI.1977, Zool. Mus. Copenhagen Exp. (ZMC); Côte de Malabar, Mahe, 4 females 3 males, M. MAINDRON 1902, Museum Paris, *Cydnus indicus*, WE-I YANG det. 1935 (MNHN); Inde, Bellary, 4 females 4 males, DE MORGAN 1896, Muséum Paris (MNHN); Inde Merid., Trichinopoli, 11 females 6 males, coll. NOUALHIER 1898, Muséum Paris (MNHN); Inde, Balasore, 1 male, R. OBERTHUR 1898, Muséum Paris (MNHN); Coromandel, Genji, 1 male, M. MAINDRON, Muséum Paris (MNHN). SRI LANKA: Ceylon, 1 female 1869, JANSON, coll. CAMILLE VAN VOLXEM (IRSNB); S. Ceylon, Habaraduwa, 6 females 7 males, 20.1.-4.2. 1983, T. OSTEN leg. (SMNS, JAL); SW Sri Lanka, Habantota, 1 female, 3.5.1984, DOSER leg. (SMNS). BURMA: Pegu, 1 female, ATKINSON collection, Bought 1895 (HEC); Tenasserim, 1 male, ATKINSON collection, Bought 1895 (HEC); Toungoo, 1 female 1 male, L. FEA, V-X 88, misdet. as *Lactistes rastellus* by DISTANT, Museo Civico di Genova, *Lactistes rastellus* (MCSN); Birmania, Prome, 1 male, FEA XII 1886, misdet. as *Lactistes rastellus* by DISTANT, Museo Civico di Genova (MCSN); Minhla, Birmania, 5 females 1 male, D. COMOTTO 18, misdet. as *Lactistes rastellus* by DISTANT, 1 male COMOTTO 81, misdet. as *Cydnus indicus* by DISTANT, 1 male COMOTTO 82 misdet. as *Cydnus indicus* by DISTANT, Museo Civico di Genova (MCSN); Palon (Pegu), 1 female, L. FEA VIII. IX. 87, 198, misdet. as *Lactistes rastellus* by DISTANT, Museo Civico di Genova (MCSN); Birmanie, Rangun, 1 female, J. CLAINE 1902, Museum Paris (MNHN). THAILAND: Sai Yok, waterfall area, 5 females 1 male, 9 VIII 1979, B. PETERSEN leg. (ZMC, JAL). INDONESIA: Iles Moluques, Celebes, Mandar, 1 male, Coll. R.I.Sc.N.B., det. as *A. indicus* (Lis, 1991b)

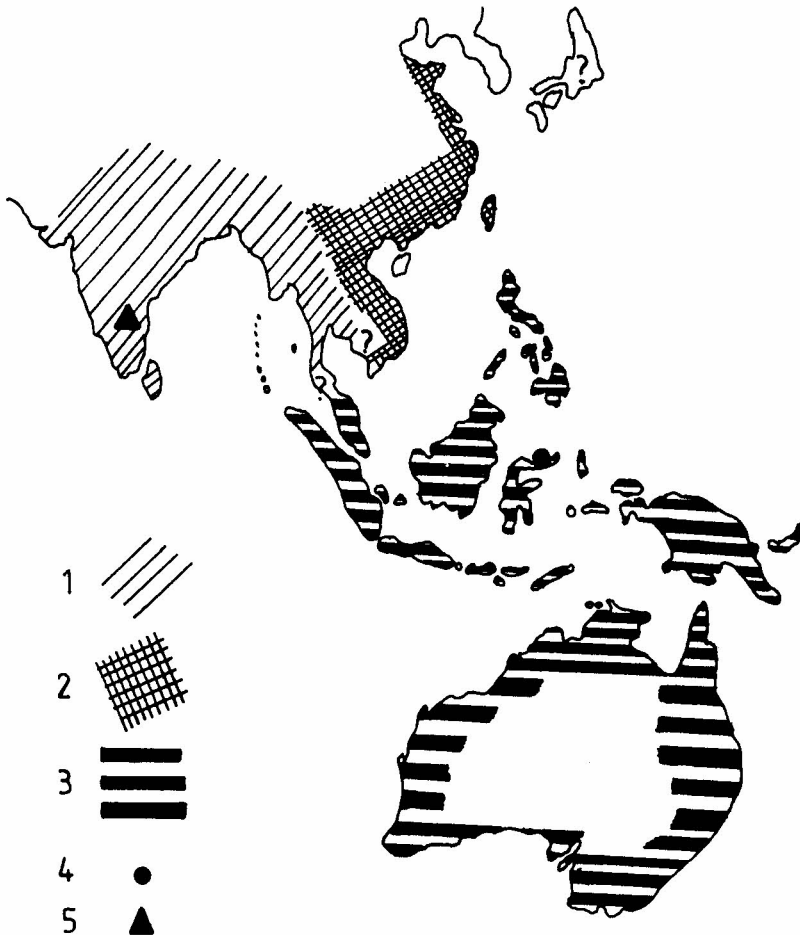
COMPARATIVE NOTES

Because *A. indicus* is a well known species its description is not repeated here. Males of these three species (*A. indicus*, *A. pseudindicus* and *A. philippinensis*) are recognizable only by differences in male genital structures, especially in the shape of

parameres and the external opening of the genital capsule (figs 1-6; differences are indicated by arrows). Females of these species are recognizable only by their areas of distribution, because other characters are not reliable for distinguishing.

Paramere (fig 2): More slender than in both *A. philippinensis* and *A. pseudindicus*; outer lobe narrow, not broadly rounded; upper edge of blade short and sometimes only slightly steep. Genital capsule (fig. 1): Lateral margins of external opening rounded, forming the incision.

Distribution (fig. 7) Burma, India, Sri Lanka, Thailand, and one record from Celebes.



7. Distribution of species: 1 - *A. indicus*, 2 - *A. pseudindicus*, 3 - *A. philippinensis*, 4 - the record of *A. indicus* in Sulawesi (Celebes), 5 - the record of *A. philippinensis* in South India

REMARKS

Previous records of *A. indicus* from Australian Region, Philippines, Indonesia and Malaysia pertain to *A. philippinensis*. Records of *A. indicus* from China (HSIAO, 1977), Laos and Vietnam (LIS, 1991a) and most probably also from Japan (KOBAYASHI, 1974; SCHAEFER, 1988) pertain to *A. pseudindicus* n. sp.

Aethus pseudindicus, new species

Aethus indicus: ?KOBAYASHI, 1974: 123 [Japan]; HSIAO et al., 1977: 44 [China]; ?SCHAEFER, 1988: 24 [Japan]; LIS, 1991a: 175 [Laos, Vietnam].

TYPE MATERIAL

Holotype male: Nha-Trang, S. Annam, DAVYDOV 930-34 (JAL). Paratypes: 1 male, Kiang-Si, VILLARD, det. as *A. indicus* (NhMW); 1 male, Formosa, SAUTER, Takao 1907, det. as *A. indicus* (HNHM); 2 males, Formosa, SAUTER, Teraso, IV 1909, det. as *A. indicus* (HNHM, JAL); 1 male, Asia, Laos, det. as *A. indicus* (JAL); 1 male 3 females, Tonkin, SAUTER 1901 (SMNS, JAL); 1 male, Laos, Tonkin, STAUDINGER and BANG-HAAS, det. as *A. indicus* (JAL); 1 male, Kushan, Fooschow, Fuc-zen, Kitaj, M.S. YANG, 6/IX 957 (JAL); 1 male, Pr. Annam, Thang Hoa, ex. col. OBERTHUR, det. as *A. indicus* (JAL).

COMPARATIVE NOTES

Paramere (fig. 4): Stouter than in *A. indicus*; outer lobe broadly rounded; upper edge of blade short and steep. Genital capsule (fig. 3): Lateral margins of the external opening almost round, with no incision.

Distribution (fig. 7) South China, Taiwan, Laos, Vietnam and probably Japan.

Aethus philippinensis DALLAS, distinct species

Aethus philippinensis DALLAS, 1851: 118; WALKER, 1867: 160; LETHIERRY and SEVERIN, 1893: 67.

Cydnus Indicus: LETHIERRY and SEVERIN, 1893: 66 [part].

Cydnus indicus: SIGNORET, 1881: 632 [part]; BREDDIN, 1900: 289, 1906: 10; SCHOUTEDEN, 1933: 44.

Aethus indicus: WALKER, 1867: 155 [part]; SIGNORET, 1882: 28 [part]; ATKINSON, 1887: 47 [part]; FROESCHNER, 1967: 12; LINNAVUORI, 1977: 37 and fig. 22f; LIS, 1991a: 175 [part], 1991b [part].

Cydnus indicus ab. *rufino* BREDDIN, 1905: 114, new synonym.

Cydnus ceylonicus MAYR, 186a: 362 [lectotype from Java]; DISTANT, 1902: 91 [part], new synonym.

Cydnus Ceylonicus: LETHIERRY and SEVERIN, 1893: 65 [part].

Aethus? ceylonicus: SIGNORET, 1882: 30 [part].

Aethus ceylonicus: WALKER, 1867: 158 [part]; KIRBY, 1891: 80 [part].

Lactistes rastellus: DISTANT, 1899: 218.

TYPE MATERIAL EXAMINED

Lectotype male of *Aethus philippinensis* DALLAS (present designation): Type (white with red margins); 4222 (white); *Aethus philippinensis* DALLAS, Type (white); *philippinensis* identified by DALLAS (white); Brit. Mus. Type No. Hem. 295 (pink); in the collection of BMNH. Lectotype male of *Cydnus ceylonicus* MAYR (present designation): Novara Exp., Java (white); *ceylonicus* det. MAYR (white); Lectotype, *Cydnus ceylonicus* MAYR, labelled by R.C. FROESCHNER 59 (pink); Coll. Nat. Mus. Wien (yellow); in the collection of NhMW.

OTHER MATERIAL EXAMINED

PHILIPPINES: Los Banos, 1 female, P.I. BAKER, Zool. Mus. Helsinki, det. as *A. indicus* (ZMHU); PLASON, Luzon 89, 1 male, det. as *A. indicus* (NhMW). MALAYSIA: Malaisie, Johore, 1 male, det. as *A. indicus* (IRSNB). INDONESIA: Sumatra, Labuan, 2 females 1922-23, Bilik Palm., Zool. Mus. Helsinki, det. as *A. indicus* (ZMHU); Sumatra, Poinan, 1 female, WEYERS, det. as *A. indicus* (IRSNB); Java, 2 males, *Geotomus*, collection E. DE BERGEVIN, det. as *A. indicus*, Muséum Paris (MNHN); Java, 1 male, DE LA SAVINIÈRE 1878 (JAL); Java, 3 females 1 male, Zool. Mus. Helsinki, det. as *A. indicus* (ZMHU); Java, 1 male, MAINDRON 1885, Muséum Paris, det. as *A. indicus* (MNHN); Java, Tjingsana, Mts Djampang, 2 females 1 male, det. as *A. indicus* (IRSNB, JAL); Java, Toegoe, 1 male 1902, ex coll. OBERTHUR, det. as *A. indicus* (IRSNB); Java, Wynkoopsbay, 2 males II 1937, det. as *A. indicus* (IRSNB); Borneo, 1 male, Muséum Paris, coll. FALLOU, det. as *A. indicus* (MNHN); Borneo occ., Setipas, J.B. LEDRU, 4 females 1897, ex coll. OBERTHUR, det. as *A. indicus* (IRSNB, JAL); Borneo, Pontianak, 1 female, R. OBERTHUR 1898, Muséum Paris, det. as *A. indicus* (MNHN); Sulawesi Utara: Tangkoko Nat. Park, between P.P.R. bung. and Batuputi, 9-XI-1985, Station: 087, 1 male, Project Wallace; Dumoga-Bone Nat. Park, Base Camp (200m), 20-X-1985, Station: 039, 43 females 18 males, Project Wallace, det. as *A. indicus* (IRSNB, JAL); Celebes, Dumoga-Bone Base Camp, at light, 1 female 1 V 1985, 1 female 21 V 1985, Project Wallace, M.E. FRANCISCOLO, Museo Civico di Genova, det. as *A. indicus* (MCSN); N. Celebes, River Tumpan Tribot, 1 female 15 IV 1985, Project Wallace, M.E. FRANCISCOLO, Museo Civico di Genova, det. as *A. indicus* (MCSN); Halmahera, Ternate, 1 female, det. as *A. indicus* (ZIL). AUSTRALIA: Australia, 1 female 1 male (MNHN); Port Denison, 2 females 1 male (MNHN). NEW GUINEA: Dtsch. N. Guinea, 1 female 1 male, det. as *A. indicus* (ZIL, JAL); Merauke, Holl. N. Guinea, 1 male, STAUDINGER and BANG-HAAS, det. as *A. indicus* (ZIL). SINGAPORE: Singapore, Inou Or., 2 females, Muséum Paris (MNHN) (specimens from Singapore are females unfortunately, and they are classified within *A. philippinensis* basing on the area of distribution of the species). NICOBAR ISLS: presque'île de Malacca, 4 females 2 males, ERRINGTON DE LA CROIX et P. CHAPE 1899, Muséum Paris (MNHN, JAL). INDIA: S. India, Yercaud, Shevaroy Hills, 1 male, (4500ft), II/III-1955, Réc. P.S. NATHAN, det. as *A. indicus* (JAL).

COMPARATIVE NOTES

Paramere (fig. 6): Not as stout as in *A. pseudindicus*, but stouter than in *A. indicus*; outer lobe not broadly rounded; upper edge of blade long and steep. Genital capsule (fig. 5): Lateral margins of the external opening distinctly convex.

Distribution (fig. 7) Indonesia (Bali, Borneo, Celebes, Flores, Java), Malaysia, Nicobar Isles, Philippines, Singapore, New Guinea, Australia, Halmahera, Solomon Isles and one record from South India.

REMARKS

SIGNORET (1881a: 632) and DISTANT (1899a: 218) wrongly synonymized *A. philippinensis* DALL. with *A. indicus* (WESTW.) and *Lactistes rastellus* SCHI., respectively. Lectotype of *Cydnus ceylonicus* (selected by FROESCHNER) is from Java, paralectotype (somewhat damaged) is from Ceylon; thus, the name *C. ceylonicus* is a junior synonym of *A. philippinensis*.

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