

Taxonomic Changes and New Records of Japanese Bark and Ambrosia Beetles (Coleoptera, Curculionidae, Scolytinae)

Roger A. BEAVER

161/2 Mu 5, Soi Wat Pranon, T. Donkaew, A. Maerim, Chiangmai 50180, Thailand,

Hisashi KAJIMURA

Laboratory of Forest Protection, Graduate School of Bioagricultural Sciences,
Nagoya University, Chikusa, Nagoya, 464–8601 Japan

and

Hideaki GOTO

Kyushu Research Center, Forestry and Forest Products Research Institute,
Kurokami, Kumamoto, 860–0862 Japan

Abstract In this study of some Japanese species of scolytine bark and ambrosia beetles, the following new synonymy is proposed: *Arixyleborus malayensis* (SCHEDL) (= *Xyleborus yakushmanus* MURAYAMA, syn. n.), *Coccotrypes longior* (EGGERS) (= *Dryocoetes naidaijinensis* MURAYAMA, syn. n.), *Microperus perparvus* (SAMPSON) (= *Xyleborus tsukubanus* MURAYAMA, syn. n.). The synonymy of *Ernocryphalus* MURAYAMA, with *Scolytogenes* EICHHOFF, and not *Cryphalus* ERICHSON as given by WOOD and BRIGHT (1992), is confirmed. The following new combinations are given: *Xyleborinus octiesdentatus* (MURAYAMA), comb. n. from *Xyleborus*. The following species are newly recorded from Japan: *Ambrosiodmus asperatus* (BLANDFORD), *Xyleborus haberkorni* EGGERS, *Xyleborus mucronatus* EGGERS, *Xylosandrus discolor* (BLANDFORD). The following species are newly recorded from the southern part of the Ryukyu archipelago: *Euwallacea fornicatus* (EICHHOFF), *Hypothenemus birmanus* (EICHHOFF), *Hypothenemus eruditus* WESTWOOD.

Key words: Curculionidae, Japan, new combination, new record, new synonymy, Ryukyu Islands, Scolytinae.

Introduction

The Japanese fauna of bark and ambrosia beetles (Curculionidae, Scolytinae) is one of the best known in East Asia, thanks largely to the studies of BLANDFORD (1893–1894), NIISIMA (1905–1943), MURAYAMA (1929–1971) and NOBUCHI (1959–1985).

A bibliography of many papers by these and other workers is included in WOOD and BRIGHT (1987, 1992). NOBUCHI (1985) lists the species recorded from Japan. However, further collecting can still reveal previously unrecorded species, particularly in the subtropical Ryukyu archipelago. This paper records four species for the first time from Japan; three species are recorded for the first time from the southern Ryukyu islands. In addition, we propose three new synonyms, and correct the generic placement of one species. Further references to all the species mentioned and details of previously published synonymy can be found in the catalog by WOOD and BRIGHT (1992) and its supplements (BRIGHT & SKIDMORE, 1997, 2002). For the new records, we cite only the current generic affiliation of the species as given by WOOD and BRIGHT (1992), and not the original genus in which the species was described. The latter information can be obtained from the catalog. The following abbreviations are used for collections: NHML, Natural History Museum, London; RAB, R. A. BEAVER's private collection, Chiang Mai; USNM, United States National Museum, Washington.

Taxonomic Changes

Arixyleborus malayensis (SCHEDL)

Xyleboricus malayensis SCHEDL, 1954, 150.

Xyleborus yakushmanus MURAYAMA, 1955, 83. Syn. n.

The male of the species was described from Java by SCHEDL (1954) in the genus *Xyleboricus* EGGERS. The female was described by SCHEDL (1958) and the species transferred to *Arixyleborus* HOPKINS (= *Xyleboricus* EGGERS). We have compared female specimens from Malaysia and Thailand determined as *A. malayensis* by SCHEDL and F. G. BROWNE in NHML and RAB with two females from Japan (Kyushu) determined as *Xyleborus yakushmanus* by M. KNIZĚK by comparison with MURAYAMA's holotype (USNM). The specimens are clearly conspecific. *X. yakushmanus* therefore becomes a synonym of *A. malayensis*. This is the only species of *Arixyleborus* which occurs in the Far East (China and Japan). Its distribution, however, extends from Sri Lanka and Northeast India through Southeast Asia to Indonesia. The species, like most ambrosia beetles, is polyphagous, and has been recorded from a taxonomically wide range of hosts (BROWNE, 1961; YIN *et al.*, 1984; MAITI & SAHA, 2004). No hosts have yet been recorded in Japan, but the species is likely to attack a wide range of hardwood trees.

Coccotrypes longior (EGGERS)

Poecilips longior EGGERS, 1927, 83.

Dryocoetes naidajinensis MURAYAMA, 1957, 605. Syn. n.

Poecilips longior was described from the Philippines by EGGERS (1927). It was

automatically transferred to the genus *Coccotrypes* EICHHOFF following the synonymy of the two genera (WOOD, 1973). Further synonyms are listed by WOOD and BRIGHT (1992). The holotype of *Dryocoetes naidaijinensis* and about 50 other specimens from MURAYAMA's collection (USNM) have been compared with specimens from Brunei Darussalam, East and West Malaysia, Indonesia (Sulawesi), Papua New Guinea and Thailand in R. A. BEAVER's collection, which had earlier been compared with a syntype of *C. longior* in NHML. The vestiture of the elytral declivity varies from moderately long hairs to shorter, more strongly flattened setae, but other characters are much less variable, and only a single species appears to be represented. The species is distributed from India through Southeast Asia and Indonesia. It has been imported to Japan in timber from New Britain and the Solomon Islands (OHNO *et al.*, 1988). It breeds below the bark of a variety of trees (BROWNE, 1961), and also in the petioles of large fallen leaves (BEAVER & BROWNE, 1979).

Microperus perparvus (SAMPSON)

Xyleborus perparvus SAMPSON, 1922, 151.

Microperus perparvus: MAITI & SAHA, 1986, 97.

Coptodryas perparva: WOOD & BRIGHT, 1992, 826.

Xyleborus tsukubanus MURAYAMA, 1954, 195. Syn. n.

The species was described from West Bengal (India) by SAMPSON (1922) in the genus *Xyleborus* EICHHOFF. It was transferred to *Microperus* WOOD by MAITI and SAHA (1986). However, WOOD and BRIGHT (1992) considered this genus to be a synonym of *Coptodryas* HOPKINS. *Microperus* was reinstated as a good genus by HULCR *et al.* (2007) based largely on the characters of the antenna, but *M. perparvus* was not returned to the genus in that paper. The antennal club of *M. perparvus* is obliquely truncated in profile not rounded. On the anterior face the first segment is strongly sclerotized and occupies about one half of the club height, its apical margin forming a pronounced circular costa, the second segment is soft and unsclerotized. On the posterior face only the first segment is visible. These characters and others indicate that the species was correctly placed in *Microperus* by MAITI and SAHA (1986). We have directly compared specimens of *M. perparvus* in RAB from Thailand and West Malaysia, which had earlier been compared with syntypes in NHML, with two specimens of *Xyleborus tsukubanus* MURAYAMA from Japan which had been identified by reference to the holotype (USNM) by M. KNIŽEK. Only a single species is represented. We therefore place *X. tsukubanus* in synonymy with *M. perparvus*.

The native distribution of the species extends from India throughout Southeast Asia and Indonesia. It may have been introduced to the Solomon Is. This is a polyphagous ambrosia beetle breeding mostly in small stems up to about 15 cm diameter (BROWNE, 1961). It is not known to have any economic importance.

Scolytogenes EICHHOFF

Scolytogenes EICHHOFF, 1878, 497.

Ernocryphalus MURAYAMA, 1958, 934. Synonymy: SCHEDL, 1962, 203.

The genus *Ernocryphalus* was erected by MURAYAMA (1958) for the single species *E. birosimensis* MURAYAMA, collected from *Pittosporum tobira* (Pittosporaceae) on Birō Island in Kagoshima Prefecture. SCHEDL (1962) having examined specimens, synonymised the genus with *Cryphalomorphus* SCHAUFUSS, a genus now considered to be a synonym of *Scolytogenes* EICHHOFF (WOOD, 1986). However, SCHEDL (1963) without reference to his earlier paper, synonymised the genus with *Cryphalus* ERICHSON. In his reclassification of the subfamilies and tribes of Scolytinae, WOOD (1978) erroneously listed *Ernocryphalus* as a synonym of both *Cryphalus* and *Scolytogenes*, but in his reclassification of the genera of Scolytinae (WOOD, 1986), the genus is given as a synonym of *Cryphalus*. This position is maintained in the catalog of Scolytinae (WOOD & BRIGHT, 1992), and its second supplement (BRIGHT & SKIDMORE, 2002). However, NOBUCHI (1971) already published a drawing of the antenna of the type species (as *Cryphalomorphus birosimensis* (MURAYAMA)), which clearly shows that the species can not be placed in *Cryphalus*, and belongs in the genus *Scolytogenes*. Examination of specimens, which were collected by H. GOTO on Iriomote Island in the Ryukyu archipelago from *Pittosporum denudatum* (GOTO, 1996) and by N. TOMISAWA on Iriomote and Ishigaki Islands in the Ryukyu archipelago from *Pittosporum tobira*, confirms the placement in *Scolytogenes*. The antennal club has an oblique septum on one side, and the basal suture is strongly procurved almost forming a circle, characters not found in *Cryphalus* but distinctive of *Scolytogenes*. The eye is entire, and not emarginate as in *Cryphalus*. The metatibia has a well-developed glabrous groove on its posterior side for reception of the tarsus. This groove is reduced or absent in *Cryphalus*. As a consequence of the synonymy of *Ernocryphalus* with *Scolytogenes*, its type (and only) species (*E. birosimensis*) is automatically included in the latter genus, in which it was listed by NOBUCHI (1985).

Xyleborinus octiesdentatus (MURAYAMA), comb. n.

Xyleborus octiesdentatus MURAYAMA, 1931, 46.

MURAYAMA (1931) described both sexes of *Xyleborus octiesdentatus* from specimens collected from *Eurya japonica* THUNBERG (Theaceae), on Cheju Island in South Korea. It was later recorded from Japan (MURAYAMA, 1934) and from China (Sichuan) (YIN *et al.*, 1984). It is listed by NOBUCHI (1985) in the genus *Xyleborus*, and in the same genus by WOOD and BRIGHT (1992). Examination of specimens collected by H. GOTO on Ishigaki Island in the Ryukyu archipelago indicates that the species should be transferred to the genus *Xyleborinus* REITTER. The genus is characterised by the presence of a cone-shaped scutellum, visible between the emarginated

bases of the elytra, and elytral mycangia (HULCR *et al.*, 2007). The species was redescribed and figured by NUNBERG (1982), and this reference should be added to those given by WOOD and BRIGHT (1992).

New Records

Ambrosiodmus asperatus (BLANDFORD, 1895, 321)

Japan: 1♀, Amami Oshima Is., Ryukyu Isls., 25-VIII-2006, M. SUNOHARA leg.

This species is recorded for the first time from Japan. It is recorded from Sri Lanka, India and China to Malaysia and Indonesia. BROWNE (1961) notes that it usually breeds in small branches, and, like most ambrosia beetles, is polyphagous attacking a wide variety of hosts.

Euwallacea fornicata (EICHHOFF, 1868, 151)

Japan: 1♀, Miyako Is., Ryukyu Isls., 28-IX-2005, H. KAJIMURA leg.

The species was recorded from the Bonin Islands (Chichi Jima Is.) by WOOD (1960), and from the Amami islands in the northern part of the Ryukyu archipelago by YAMAGUCHI *et al.* (2006), but appears not to have been recorded before from the southern Ryukyu Islands. It is not known from the main islands of Japan. It has a wide native distribution from the Indian subcontinent throughout Southeast Asia. It has been introduced to Australia and the Pacific islands, including Hawaii, Madagascar and neighbouring islands, the mainland of North America (RABAGLIA *et al.*, 2006), and to Panama. It is strongly polyphagous, attacking almost all the major tree families of the Asian tropics (BROWNE, 1961). It is well-known as a pest in tea plantations in Sri Lanka and southern India, and can sometimes become a pest of fruit and other plantation trees (HILL, 1983; YAMAGUCHI *et al.*, 2006). Further details of the biology of the species are given by BROWNE (1961) and KALSHOVEN (1958).

Hypothenemus birmanus (EICHHOFF, 1878, 486)

Japan: 1 ex., Amami Oshima Is., Ryukyu Isls., 20-VI-2006, M. SUNOHARA leg.; 1 ex., Ishigaki Is., Ryukyu Isls., 25-VI-2007, S. SATO leg.; 1 ex., Okinawa Is., Ryukyu Isls., 21-VII-2006, H. CHIKUGI leg.

This species has been recorded both from the main islands of Japan, and from Chichi-Jima Is. in the Bonin Islands (NOBUCHI & ONO, 1973), but not previously from the Ryukyu Islands. It now has an almost circum-tropical distribution as a result of transport by man, but is probably of Southeast Asian origin (WOOD, 1977). It is a twig and shoot borer which attacks a very wide range of hosts. Attacks on young seedlings and transplants have been recorded (*e.g.*, BROWNE, 1968; BIGGER, 1988), although the species is not usually of economic importance.

Hypothenemus eruditus WESTWOOD, 1836, 34

Japan: 1 ex., Iriomote Is., Ryukyu Isls., 18-X-2005, N. TOMISAWA leg.; 1 ex., Ishigaki Is., Ryukyu Isls., 16-X-2005, N. TOMISAWA leg.

This minute species is one of the most commonly collected scolytines in all tropical

and subtropical regions, and is sometimes intercepted in temperate zone countries. Due partly to its pantropical distribution, it has been described under about 70 different specific names (WOOD & BRIGHT, 1992). It has been recorded from the main islands of Japan and the Bonin Is. (NOBUCHI, 1985), but not previously from the Ryukyu archipelago. It is extremely polyphagous. It breeds below bark, in the pith of twigs, in seeds and fruits, in the petioles of fallen leaves, often in drier conditions than those tolerated by the majority of scolytines. It has occasionally been recorded as a pest of seedlings and transplants, but has no significant economic importance.

Xyleborus haberkorni EGGERS, 1920, 43

Japan: 1 ♀, Ishigaki Is., Ryukyu Isls., 16–VIII–2007, S. SATO leg.

This species is newly recorded here from Japan. It was described from East Africa, but is of the Oriental origin, and was presumably transported to Africa by man. Its native distribution extends from India and Sri Lanka to Taiwan and Java. It is a polyphagous ambrosia beetle, which, like *Xyleborus mucronatus* mentioned below, is often closely associated with other xyleborines (KALSHOVEN, 1960; BEAVER & BROWNE, 1979), and may be making use of the ambrosial fungi of these species (J. HULCR, pers. comm., 2007).

Xyleborus mucronatus EGGERS, 1923, 191.

Japan: 1 ♀, Wakayama, Honshu, 15–VI–2004, T. HOGEN leg.

This species is newly recorded here from Japan. It was previously recorded from East and West Malaysia, Indonesia (Java), the Philippines and Thailand. Like most ambrosia beetles, it is polyphagous, and appears not to show host preference (BROWNE, 1961; KALSHOVEN, 1959). However, it does appear to show size preference, and is found mainly in cut poles and branches from 1.5–15 cm diameter (BROWNE, 1961). It is likely that this species, and related species, have a commensalistic relationship with other xyleborine ambrosia beetles (KALSHOVEN, 1960; J. HULCR, pers. comm., 2007). They start their galleries near those of other xyleborines and bore into wood already occupied by the ambrosia fungus of the pioneer species. This provides an immediate source of food for the later arriving species.

Xylosandrus discolor (BLANDFORD, 1898, 429)

Japan: 1 ♀, Okinawa Is., Ryukyu Isls., 21–X–2005, H. KAJIMURA leg.

This species is newly recorded here from Japan. It has a wide distribution from India and Sri Lanka, through Southeast Asia to Taiwan and the Philippines. The species is a polyphagous ambrosia beetle boring in twigs and shoots (BEESON, 1961; BROWNE, 1961; KALSHOVEN, 1959). Primary attacks on apparently healthy hosts can occur (BROWNE, 1968), and it is an occasional pest of coffee (LEPELLEY, 1968).

Acknowledgements

We are most grateful to N. VANDENBERG (United States National Museum, Washington) and C. H. C. LYAL and M. W. V. BARCLAY (Natural History Museum,

London) for the loan of types and other specimens. M. KNIŽEK (Forest and Game Research Institute, Prague) kindly identified specimens in the collection of R. RABAGLIA (USDA Forest Service) by reference to the types in the MURAKAWA's collection (now in USNM). We thank R. RABAGLIA for the loan of those specimens. We also thank S. SATO (Naha Plant Protection Station), H. CHIKUGI (Naha Plant Protection Station), M. SUNOHARA (Moji Plant Protection Station), N. TOMISAWA (Laboratory of Forest Protection, Nagoya University), and T. HOGEN (Forestry Experiment Station, Wakayama Research Center of Agriculture, Forestry and Fisheries) for help in collecting the specimens, and M. ITO (Laboratory of Forest Protection, Nagoya University) and Y. KAWASAKI (Laboratory of Forest Protection, Nagoya University) for assistance during sorting of the specimens. This study was supported in part by Grant-in-Aid for Scientific Research from the Japanese Ministry of Education, Culture, Sports, Science and Technology (Nos. 18405012, 18380090 and 20405025), and by funding from Tokai Science Foundation (2004), Fujiwara Natural History Foundation (2004), Inamori Foundation (2005), IFO (Institute for Fermentation, Osaka) Foundation (2007) and Shouwahoukoukai (Ito chube'e) Foundation (2008).

要 約

R. A. BEAVER・梶村 恒・後藤秀章: キクイムシ類についての学名の変更および日本からの新記録。—— 日本産のキクイムシ亜科について、以下の3つの新参異名、1つの新結合が見いだされた。

新参異名

Arixyleborus malayensis (SCHEDL) (= *Xyleborus yakushmanus* MURAYAMA)

Coccotrypes longior (EGGERS) (= *Dryocoetes naidaijinensis* MURAYAMA)

Microperus perparvus (SAMPSON) (= *Xyleborus tsukubanus* MURAYAMA)

新結合

Xyleborinus octiesdentatus (MURAYAMA)

また *Ernocryphalus* MURAYAMA は、WOOD & BRIGHT (1992) では *Cryphalus* ERICHSON のシノニムとされていたが、*Scolytogenes* EICHHOFF のシノニムであることを確認した。さらに *Ambrosiodmus asperatus* (BLANDFORD), *Xyleborus haberkorni* EGGERS, *Xyleborus mucronatus* EGGERS, および *Xylosandrus discolor* (BLANDFORD) の4種を日本からの、*Euwallacea fornicata* (EICHHOFF), *Hypothenemus birmanus* (EICHHOFF), および *Hypothenemus eruditus* WESTWOOD の3種を琉球列島南部からの初記録として報告した。

References

- BEAVER, R. A., & F. G. BROWNE, 1979. The Scolytidae and Platypodidae (Coleoptera) of Penang, Malaysia. *Oriental Insects, New Delhi*, 12: 575–624.
- BEESON, C. F. C., 1961. The Ecology and Control of the Forest Insects of India and the Neighbouring Countries. Government of India, New Delhi.

- BIGGER, M., 1988. The insect pests of forest plantation trees in the Solomon Islands. *Solomon Islands' For. Pest Rec.*, **4**: 1–190.
- BLANDFORD, W. F. H., 1895. A list of the Scolytidae collected in Ceylon by Mr. George LEWIS, with descriptions of new species. *Ann. Mag. nat. Hist.*, (6), **15**: 321–328.
- 1898. On some Oriental Scolytidae of economic importance, with descriptions of five new species. *Trans. ent. Soc. London*, **1898**: 423–430.
- BRIGHT, D. E., & R. E. SKIDMORE, 1997. A Catalog of Scolytidae and Platypodidae (Coleoptera), Supplement 1 (1990–1994). NRC Research Press, Ottawa.
- & ——— 2002. A Catalog of Scolytidae and Platypodidae (Coleoptera), Supplement 2 (1995–1999). NRC Research Press, Ottawa.
- BROWNE, F. G., 1961. The biology of Malayan Scolytidae and Platypodidae. *Malayan For. Rec.*, **22**: 1–255.
- 1968. Pests and Diseases of Forest Plantation Trees. Clarendon Press, Oxford.
- EGGERS, H., 1920. 60 neue Borkenkäfer (Ipidae) aus Afrika, nebst zehn neuen Gattungen, zwei Abarten. *Ent. Blätt.*, **16**: 33–45.
- 1923. Neue indomalayische Borkenkäfer (Ipidae). *Zool. Meded., Leiden*, **7**: 129–220.
- 1927. Neue indomalayische Borkenkäfer (Ipidae). II. Nachtrag. *Philipp. J. Sci.*, **33**: 67–108.
- EICHHOFF, W., 1868. Neue amerikanische Borkenkäfer-Gattungen und Arten. *Berl. ent. Z.*, **12**: 145–152.
- 1878. Ratio, descriptio, emendatio eorum Tomicinorum qui sunt in Dr. Medin. CHAPUIS et auctoris ipsius collectionibus et quos praeterea recognovit. *Mém. Soc. r. Sci. Liège*, (2), **8**: 1–531.
- GOTO, H., 1996. Notes on distribution and host of *Scolytogenes birosimensis* (Coleoptera: Scolytidae). *Pulex, Fukuoka*, (85): 461. (In Japanese.)
- HILL, D. S., 1983. Agricultural Insect Pests of the Tropics and their Control. 2nd edition. Cambridge University Press, Cambridge.
- HULCR, J., S. A. DOLE, R. A. BEAVER & A. I. COGNATO, 2007. Cladistic review of generic taxonomic characters in Xyleborina (Coleoptera: Curculionidae: Scolytinae). *Syst. Ent.*, **32**: 568–584.
- KALSHOVEN, L. G. E., 1958. Studies on the biology of Indonesian Scolytoidea. I. *Xyleborus fornicatus* EICHH. as a primary and secondary shot-hole borer in Java and Sumatra. *Ent. Ber., Berlin*, **18**: 147–160.
- 1959. Studies on the biology of Indonesian Scolytoidea. 4. Data on the habits of Scolytidae. Second part. *Tijdschr. Ent.*, **102**: 135–173.
- 1960. A form of commensalism occurring in *Xyleborus* species? (Studies on the biology of Indonesian Scolytoidea. No. 6). *Ent. Ber., Berlin*, **20**: 118–120.
- LEPELLEY, R. H., 1968. Pests of Coffee. Longmans, London.
- MAITI, P. K., & N. SAHA, 1986. Contributions to the knowledge of the bark and ambrosia beetles (Scolytidae: Coleoptera) of the Andaman and Nicobar Islands. *Rec. zool. Surv. India, Misc. Publ., Occ. Pap.*, **86**. 182 pp. Zoological Survey of India, Kolkata.
- & ——— 2004. Scolytidae: Coleoptera (Bark- and Ambrosia-Beetles). Volume 1 (Part 1). Introduction and Tribe Xyleborini. *Fauna of India and the Adjacent Countries*. 268 pp. Zoological Survey of India, Kolkata.
- MURAYAMA, J., 1931. Révision des familles des Ipides et Platypides (Coléoptères) de l'île de Quelpart. *Annotnes. zool. Japon.*, **13**: 39–61.
- 1934. Notes on the Ipidae (Coleoptera) from Kyushu. *Ibid.*, **14**: 287–300.
- 1954. Scolytid-fauna of the northern half of Honshu with a distribution table of all the scolytid-species described from Japan. *Bull. Fac. Agric. Yamaguti Univ.*, **5**: 149–212.
- 1955. Supplementary notes on the scolytid-fauna of Japan. *Ibid.*, **6**: 81–106.
- 1957. Studies in the scolytid fauna of the northern half of the Far East. III. Dryocoetinae. *Ibid.*, **8**: 587–632.
- 1958. Studies in the scolytid fauna of the the northern half of the Far East. IV. New genera and new species. *Ibid.*, **9**: 927–936.
- NOBUCHI, A., 1971. Studies on Scolytidae IX (Coleoptera). Key to the subfamilies, tribes and genera of

- Japan. *Bull. Gov. For. Exp. Sta, Japan*, **238**: 149–164.
- NOBUCHI, A., 1985. Family Scolytidae. *Check-list of Coleoptera of Japan, Tokyo*, (30): 1–32.
- & S. ONO, 1973. Bark beetles from the Bonin Islands (Coleoptera, Scolytidae). *Kontyû, Tokyo*, **41**: 181–182.
- NUNBERG, M., 1982. Die Gattung *Xyleborus* EICHHOFF (Coleoptera, Scolytidae). Ergänzungen, Berichtigungen und Erweiterungen der Diagnosen, V. Teil. *Annl. zool., Warszawa*, **36**: 425–446.
- OHNO, S., K. YOSHIOKA, K. YONEYAMA & H. NAKAZAWA, 1988. The Scolytidae and Platypodidae (Coleoptera) from Solomon Islands, found in logs at Nagoya port, I. *Res. Bull. Pl. Surv. Japan*, (24): 91–95.
- RABAGLIA, R. J., S. A. DOLE & A. I. COGNATO, 2006. Review of American Xyleborina (Coleoptera: Curculionidae: Scolytinae) occurring North of Mexico, with an illustrated key. *Ann. ent. Soc. Am.*, **99**: 1034–1056.
- SAMPSON, F. W., 1922. Previously undescribed Scolytidae and Platypodidae from the Indian area. *Ann. Mag. nat. Hist.*, (9), **10**: 145–152.
- SCHEDL, K. E., 1954. Fauna Indomalayensis IV. *Philipp. J. Sci.*, **83**: 137–159.
- 1958. Zur Synonymie der Borkenkäfer. II. *Tijdschr. Ent.*, **101**: 141–155.
- 1962. Zur Synonymie der Borkenkäfer. VI. *Ent. Blätt. Biol. Syst. Käfer*, **58**: 201–211.
- 1963. Zur Synonymie der Borkenkäfer. XI. *Koleopt. Rdsch.*, **40/41**: 60–66.
- WESTWOOD, J. O., 1836. Description of a minute coleopterous insect, forming the type of a new subgenus allied to *Tomicus*, with some observations upon the affinities of the Xylophaga. *Trans. ent. Soc. London*, **1**: 34–36.
- WOOD, S. L., 1960. Coleoptera: Platypodidae and Scolytidae. *Ins. Micronesia, Honolulu*, **18**: 1–73.
- 1973. New synonymy in American bark beetles (Scolytidae: Coleoptera). Part III. *Great Basin Naturalist*, **33**: 169–188.
- 1977. Introduced and exported American Scolytidae (Coleoptera). *Ibid.*, **37**: 67–74.
- 1978. A reclassification of the subfamilies and tribes of Scolytidae (Coleoptera). *Annl. Soc. ent. France*, (n.s.), **14**: 95–122.
- 1986. A reclassification of the genera of Scolytidae (Coleoptera). *Great Basin Naturalist Mem.*, **10**: 1–126.
- & D. E. BRIGHT, 1987. A catalog of the Scolytidae and Platypodidae (Coleoptera), Part 1: Bibliography. *Ibid.*, **11**: 1–685.
- & ——— 1992. A catalog of the Scolytidae and Platypodidae (Coleoptera). Part 2: Taxonomic index. *Ibid.*, **13**: 1–1553.
- YAMAGUCHI, T., J. IWAMOTO, H. GOTO, H. NOJIMA, N. OMATU, H. TORIGOE, K. YASUDA, O. SETOKUCHI & S. HAYASHIKAWA, 2006. Insect pests of the mango plant, *Mangifera indica*, on Amami Islands, Japan. *Kyushu Pl. Prot. Res.*, **52**: 60–65. (In Japanese.)
- YIN, H-F., F-S. HUANG & Z-L. LI, 1984. Coleoptera: Scolytidae. *Economic Insect Fauna of China*, Fasc. 29. Science Press, Beijing.