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A synopsis of the orchid weevil genus *Orchidophilus* Buchanan (Curculionidae, Baridinae), with taxonomic rectifications and description of one new species

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Abstract

Six species of the weevil genus *Orchidophilus* Buchanan are recognized: *O. epidendri* (Murray) **comb. n.** (=*Acythopeus genuinus* Pascoe **syn. n.**, =*Baris orchivora* Blackburn **syn. n.**, =*Apotomorhinus orchidearum* Kolbe **syn. n.**), *O. aterrimus* (Waterhouse), *O. eburifer* (Pascoe) **comb. n.** (=*Acythopeus gilvonotatus* Barber **syn. n.**), *O. peregrinator* Buchanan, *O. ran* Morimoto and *O. insidiosus* Prena **sp. n.** These species appear to be native to Indonesia, Malaysia, the Philippines and Singapore but are dispersed frequently with orchid cultivars by global trade. *Orchidophilus aterrimus* has been intercepted most frequently and now is established in several Indo-Pacific regions outside its native range. Nearly as common as, and occasionally confused with, the former is *O. epidendri*. *Orchidophilus ran* is of some significance in Japan and Korea, while *O. peregrinator, O. eburifer* and *O. insidiosus* were intercepted occasionally at scattered locations before 1970. An identification key for the six species is provided. Lectotypes are designated for *Baridius aterrimus* Waterhouse, *Acythopeus genuinus* Pascoe, *Baris orchivora* Blackburn and *Apotomorhinus orchidearum* Kolbe; a neotype is designated for *Centrinus epidendri* Murray.

Key words: weevils, orchids, adventive species, *Orchidophilus*, review, taxonomy, nomenclature, distribution

Introduction

Buchanan (1935) described the genus *Orchidophilus* for dull blackish weevils that had been encountered in orchid cultures at various places in Europe, Asia, Australia, North America and Hawaii since the end of the 19th century. These beetles received considerable attention in the entomological and, more often, horticultural literature (Murray 1869, Waterhouse 1874, Blackburn 1900, Froggatt 1904, Meyer 1905, Kolbe 1906, Lea 1906, Quanjer 1906, Swezey 1912, 1934, Champion 1913, 1916, Reh 1913, Weiss 1917, Weigel & Sasscer 1923, Blatchley 1925, Schlechter 1927). Their natural distribution remained imperfectly known, while they continued to appear sporadically in greenhouses and in plant quarantine (Fullaway 1938, Swezey 1945, Kalshoven 1951, Pritchard 1959, Voss 1961, Morimoto 1994, Chen & Zhang 2002). The number of interceptions decreased in the 1950s and 1960s with the use of DDT (Pritchard 1959) but then increased again, apparently coinciding with the abandonment of this insecticide. At least one species has recently invaded several Indo-Pacific islands (Anonymous 2001, Schmaedick 2002). It is now known that these weevils are native to Indonesia, Malaysia, the Philippines and Singapore, possibly also to Taiwan, Thailand and Australia, but still little attention has been paid to their constantly growing relevance in the global trade of orchids and the actual magnitude of the problem they present to the orchid industry. In this paper, I provide an overview of the species so far intercepted at United States ports-of-entry, their taxonomy, known plant associations and current distribution. My primary objective is to clarify the nomenclature of the known species and to encourage local researchers to continue their own investigations.

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Material

The study is based on specimens intercepted by port inspectors of the United States Department of Agriculture (**USDA**), data retrieved from the Systematic Entomology Laboratory Identification System (**SELIS**), literature, information provided by orchid growers and the following collections: **AMNH**, American Museum of Natural History, New York (L. Herman); **ANIC**, Australian National Insect Collection, Canberra (R. Oberprieler); **BMNH**, Natural History Museum, London (M. Barclay); **BPBM**, Bernice P. Bishop Museum, Honolulu (S. Myers); **CNCI**, Canadian National Collection of Insects, Ottawa (P. Bouchard); **DEI**, Deutsches Entomologisches Institut, Müncheberg (L. Behne); **MNHUB**, Museum für Naturkunde der Humboldt Universität Berlin (J. Willers); **SAM**, South Australian Museum, Adelaide (the Lea and Blackburn collections, currently on loan to ANIC); **SNSD**, Staatliche Naturhistorische Sammlungen Dresden (O. Jäger); **USNM**, National Museum of Natural History, Washington. The codens and abbreviations are used to refer to the collections and sources in the text. Plant associations are based on Froggatt (1904), Kolbe (1906), Weiss (1917), Swezey (1945), Holdaway (1946), Voss (1961), Morimoto (1994), SELIS records and label data.

The following material of the *Orchidophilus aterrimus* complex is not included in the taxonomic part of this paper (but used in Fig. 1), because it either was not available or could not be identified to species (number of specimens in brackets or after collection coden). **Brazil:** Dias *et al.* (2002). **Canada:** Vancouver BC, 1973, ex orchid from Meycauayan, Philippines (CNCI, 1). **Cook Islands:** Rarotonga (Anonymous 2001). **Germany:** Tamm near Ludwigsburg, greenhouse, on orchids from the Netherlands (Voss 1961). **Great Britain:** Kew and Oxford, greenhouses (Champion 1913). **New Caledonia:** Noumea, on cultivated orchids, 2003 (J.-M. Dufermon, *in litt.*). **Papua New Guinea:** Port Moresby, botanical garden, 2003 (W. Bandisch, *in litt.*). **Philippines:** Hirao *et al.* (2001). **Sweden:** Silfverberg (2004). **United States:** Los Angeles CA, 1997–2005, interceptions, origin Philippines (4), Malaysia and Indonesia (SELIS, 6); Miami FL, 2003, interception, origin Indonesia (SELIS, 1); New Mexico, greenhouse (P. Johnson, *in litt.*); San Francisco CA, 1997–2004, interceptions, origin Philippines (SELIS, 6); Seattle WA, 1999, interception, origin Philippines (SELIS, 1). The record of Nishida & Beardsley (2002) from Midway Atoll relates to a misidentified specimen of *Acythopeus* Pascoe.

Chronology of recorded interceptions

1869	First interception in Europe documented by Andrew Murray
1899	First interception in Australia
1901	First interception in Atlantic North America (outskirts of New York City)
1905	First interception in Pacific North America (California)
1910	First interception in Hawaii
1935	Buchanan describes *Orchidophilus*
1958	First interception in Japan (Morimoto 1994); however, an interception is recorded in San Francisco in 1937 from orchids imported from Japan
2000+	Interceptions in Brazil (Neotropics), American Samoa, Cook Islands, Papua New Guinea and New Caledonia
2005	USDA intercepts first specimen with Neotropical origin (Netherlands Antilles)

Orchidophilus Buchanan

Centrinus auctt. (non Schönherr, 1825). Murray (1869; species description).
Baris auctt. [=*Baridius*, unjust. emend.] (non Germar, 1817). Waterhouse (1874; species description), Blackburn (1900; species description).

Acythopeus auctt. (non Pascoe, 1874). Pascoe (1887; species description), Lea (1906; discussion of generic assignment), Barber (1917; species description), Schlechter (1927; synopsis), Swezey (1934; note on undescribed species); Heller (1940; discussion of *Acythopeus*).

Apotomorhinus auctt. (non Schönherr, 1844). Kolbe (1906; species description).

Orchidophilus Buchanan, 1935: 45. Morimoto (1994; synopsis, key to species), Morimoto & Yoshihara (1996; key to Oriental genera), Anderson (2002; key to North American weevil genera).

Type species: *Orchidophilus peregrinator* Buchanan, 1935, by original designation.

Distribution. Native to Indonesia, Malaysia, the Philippines, Singapore, possibly Taiwan, Thailand and parts of Australia; adventive in American Samoa, Australia, Brazil, Canada, the Cook Islands, Germany, Great Britain, Hawaii, Japan, the Netherlands, the Netherlands Antilles, New Caledonia, Papua New Guinea, South Africa, South Korea, Sweden and the United States (Fig. 1).

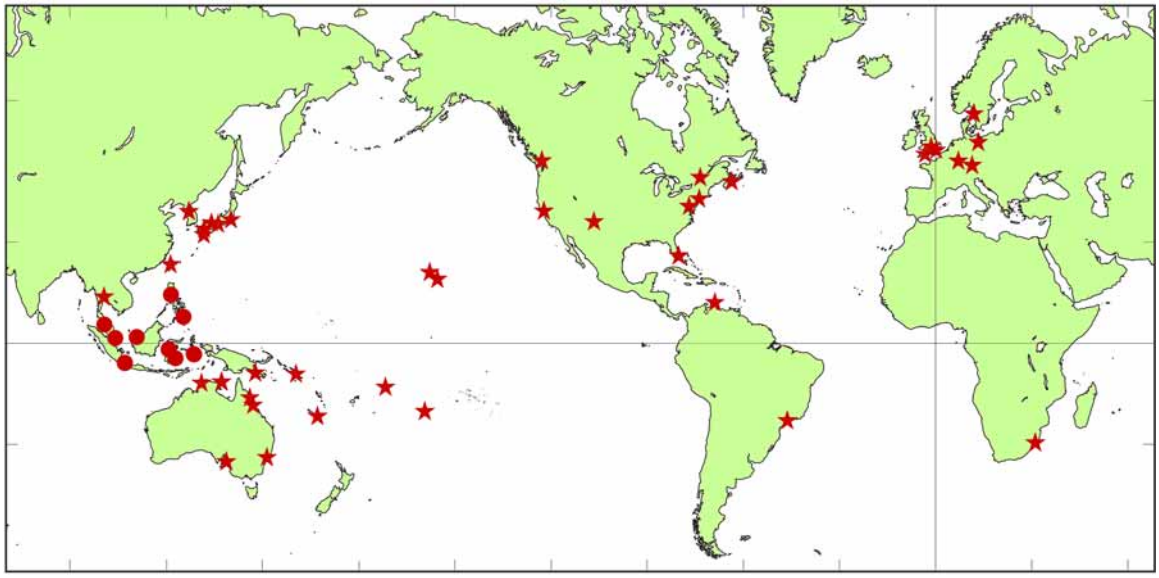


FIGURE 1. Map showing natural occurrences (bullets) and inadvertent introductions (stars) of *Orchidophilus* species.

Biology. The life history of *O. aterrimus* was studied by Mau (1983) in Hawaii and by Hirao *et al.* (2001) in the Philippines. Eggs were found to be deposited singly in holes made in stems, leaves, pseudobulbs and flowers. Mau (1983) determined the average time needed for development at 24 ºC as 11 days for eggs, 117 for larvae and 16 for pupae, followed by a pause of several weeks before emergence of the adults. Hirao *et al.* (2001) observed a faster development at 28–35 ºC, with an average of 7 days for eggs, 75 for larvae and 10 for pupae. The number of larval instars was generally five. Pupation took place inside the gallery in a cocoon made of fibres and frass. Females maintained a constant level of fecundity for approximately 40 weeks. Adult weevils were extremely long lived in the Hawaiian laboratory. Half of the males and females lived for 34 and 37 weeks, respectively; single specimens lived up to 12 months. Adults were predominantly diurnal. Feeding occurred on all epigeous parts of the host, with a preference for young growth. The larva was described by May (1994) and Pakaluk (1994). Information on pest management is given by Hara & Mau (1988), Hansen *et al.* (1991), Hata & Hara (1991, 1992) and Hara & Hata (1994).

Recognition. *Orchidophilus* differs from the similar *Acythopeus* complex by the following characters: (1) apical portion of pygidium abruptly bent ventrad and delimited by transverse carina; (2) antennal club notably compact, with distal three segments comprising merely one-third or less of its entire length; (3) fifth tarsomere at most two times longer than third tarsomere; (4) tarsal claws short, approximately as long as fifth tarsomere is wide; (5) integument matt; and (6) association with orchids. Morimoto & Yoshihara (1996) provide a key that distinguishes *Orchidophilus* from other Oriental Baridinae.

Key to the species of *Orchidophilus*

1 Elytra without yellow spots 2
- Elytra with yellow spots, either formed by glabrous integument or by imbricate scales 5
2 Total length 2.7–6.0 mm; metepisternum broader, smaller specimens [usually from greenhouses] with two irregular rows of punctures at narrowest part, larger specimens with three rows; pronotal punctures usually smaller and more widely spaced (Fig. 2) 3
- Total length 2.8–3.8 mm; metepisternum narrower, smaller specimens with single row of punctures at narrowest part, larger specimens with indistinct second row; pronotal punctures coarse and crowded (Fig. 3) 4
3 Male with conspicuous ventral projection in distal one-third of middle tibia, projection indistinct in small specimens; male with distal margin of ventrite 5 curved gently (Fig. 6); elytral apices frequently with striae 9 and 10 deeply punctate and amalgamated with interstria to noticeable depression; total length 2.7–6.0 mm ..... *O. aterrimus* (Waterhouse)
- Male without ventral projection in distal one-third of middle tibia; male with distal margin of ventrite 5 more steeply projecting medially (Fig. 7); elytral apices with outer striae and interstriae less modified; total length 3.1–4.8 mm ..... *O. epidendri* (Murray)
4 Male with posterior margin of ventrite 5 with square median process (Fig. 8), submentum with denticle . ..... *O. peregrinator* Buchanan
- Male with posterior margin of ventrite 5 bisinuate (Fig. 7), submentum without denticle *O. ran* Morimoto
5 Elytral spots formed by dense clusters of broad, light yellow scales in basal one-fourth of interstriae 3, 5, 7 and 9 (Fig. 4); interstriae with single, widely spaced scales; rostrum evenly curved *O. eburifer* (Pascoe)
- Elytral spots formed by unpigmented glabrous integument at base of interstriae 5–8 and near declivity at interstriae 3–8 (Fig. 5); interstriae with inconspicuous hairs; rostrum strongly curved at base .... *O. insidiosus* **sp. n.**

***Orchidophilus aterrimus* (Waterhouse)**

Baridius aterrimus Waterhouse, 1874: 226. Lectotype male, here designated, labelled "Type", yellow square, "Singa-/ pore", handwritten [not by Waterhouse] "Baridius/ aterrimus/ C. Waterhouse/ (Type.)" (BMNH). Paralectotypes: 3 males, 2 females, one pair on one card, all with round label "Singa-/ pore", one with handwritten notes by Waterhouse "Froggatt to whom/ specimen was sent/ says this is Baris/ orchivora Blkb./ 7.11.04. C.W." and by Champion "wrongly/ identified/ by Froggatt" (BMNH).

Acythopeus aterrimus. Lea (1906), Champion (1913, 1916), Barber (1917), Schlechter (1927), Swezey (1934), Heller (1940).

Orchidophilus aterrimus. Buchanan (1935), Fullaway (1938), Hustache (1938), Swezey (1945), Pritchard (1959), Voss (1961), O'Brien & Wibmer (1982), Mau (1983), Zimmerman (1992), May (1994), Morimoto (1994), Pakaluk (1994), Hirao *et al.* (2001).

Distribution. Native to Indonesia, Malaysia, the Philippines, Singapore and possibly Thailand; introduced and established in American Samoa, parts of Australia, Hawaii and possibly the Cook Islands, New Caledonia and Papua New Guinea; unknown if established in the Netherlands Antilles; adventive but not established in Canada, Germany, Japan, the United States and possibly in Brazil, Great Britain, the Netherlands and Sweden.

Plant associations. Orchidaceae, Cypripedioideae: *Cypripedium curtisii*, *C. lawrenceanum*, *Paphiopedilum* sp. – Orchidaceae, Epidendroideae: *Acanthephippium mantinianum*, *Aerides crassifolium*, *Angraecum* sp., *Arachnis* sp., *Aranthera* sp., *Bulbophyllum leopardianum*, *B. mandibulare*, *Catasetum splendens* [Neotropical!], *Cattleya* sp., *Coelogyne asperata*, *C. pandurata*, *C. xyrekes*, *Cymbidium* sp., *Dendrobium chameleon*, *D. canaliculatum*, *D. compactum*, *D. crassinode*, *D. crystallinum*, *D. findleyanum*, *D. guerreroi*, *D.*

phalaenopsis, *D. pierardii*, *D. spectabile*, *D. superbum*, *D. taurinum*, *D. victoria-reginae*, *Epidendrum* sp., *Grammatophyllum multiflorum*, *G. speciosum*, *Liparis condylobulbon*, *Myrmecophila tibicinis*, *Oncidium sphacelatum*, *Phalaenopsis amabilis*, *P. rimestadiana*, *P. sanderiana*, *P. schilleriana*, *Renanthera alba*, *Rhynchostylis retusa*, *Saccolabium* sp., *Spathoglottis intermedia*, *Stauropsis lissochiloides*, *Trichoglottis brachiata*, *Vanda luzonica*, *Vanda* x Miss Joaquim. – Bromeliaceae. *Guzmania* sp. [USDA interception from Netherlands Antilles; plant association probably accidental].

Records. American Samoa: Tutuila Island, Malaeimi, 2002 (USNM, 1, Schmaedick 2002). **Australia:** Adelaide, botanical garden, 1904 (SAM, 1); Cairns, 1949, 1965 (ANIC); Townsville, 1948 (ANIC); Darwin, 1982, interception, origin Singapore (ANIC); Gove Peninsula, 1982, ex orchids from Queensland (ANIC); Howard Springs, 1987, ex orchid (ANIC); Adelaide, 1987, interception, origin Singapore (ANIC); Port Adelaide, 1988, interception, origin Singapore (ANIC). **Canada:** Montreal, 1968, ex orchid from Hawaii (CMNC, 1); Halifax, 1984 (Majka *et al.* 2007). **Germany:** Munich, 2002, botanical garden (A. Riedel, pers. comm.). **Indonesia:** Batavia [Jakarta], 1933 (BMNH, 1); Java (BMNH, 1). **Japan:** interceptions since 1958 (Morimoto 1994). **Malaysia:** Tohore [Tohor?], 1929 (BMNH, 2); Penang, 1913, 1916 (BMNH, 2); Kuching, 1964 (BMNH, 2). **New Caledonia:** Noumea, 1976, ex orchid (ANIC). **Philippines:** Manila, 1914 (USNM, 2), prior 1942 (SNSD, 3); Santo Tomas, Batangas, 1997 (BMNH, 6). **Singapore:** 1895 (1), 1896 (1), 1902 (16), 1909 (2), 1922 (10), without date (10) (BMNH, 40). **"Straits Settlements":** 1897 (BMNH, 1). **Thailand:** Bangkok, 1938 (BMNH, 3). **United States:** Bound Brook, NJ, greenhouse (AMNH, 1); New York, 1996, interception, origin Indonesia (USNM, 1); Washington, DC, greenhouse, 1906, origin Philippines (USNM, 3), ditto, 1926, origin Singapore (USNM, 1), 1936, interception, origin Philippines (USNM, 1); San Francisco, CA, 1915, 1938 (2), interceptions, origin Philippines (USNM, 3); 1936 (4), 2007, origin Singapore (USNM, 5); Miami, FL, 2005, interception, origin Netherlands Antilles (USNM, 1); Hawaii, since 1910, interceptions and in nursery, origin Straits Settlements and Philippines (USNM, 53).

Notes. This is the most frequently intercepted and noxious species of *Orchidophilus*, but has been lumped variously with *O. epidendri*. Apart from rather sporadic occurrences in numerous major cities, *O. aterrimus* now has extended its range in the Indo-Pacific region from secondary dispersal with traded orchid cultivars. The number of interceptions has been scanty in Europe and North America for decades but increased recently in other regions that have not been confronted with this problem before. More recent developments are Neotropical records and associations with New World orchids. To accomplish stability in this difficult complex of orchid weevils, I here designate a male specimen as lectotype of *O. aterrimus*, with the data given above.

Orchidophilus eburifer (Pascoe), comb. n.

Baris eburifera Pascoe, 1887: 359. Holotype male, labelled "Holo-/ type", "India?", "Baris/ eburifera/ typus Pascoe", "Pascoe Coll./ B.M. 1893-60.", "Baris/ eburifera Pasc." (BMNH). Hustache (1938), Morimoto (1994).

Acythopeus gilvonotatus Barber, 1917: 17. Holotype female, labelled "Washington/ Nov. 16, 06 DC", "Executive/ Greenhouses", "on orchids/ from Philip-/ pine Islands", "Acythopeus/ gilvonotatus/ Barber/ Type no. 21067 USNM" (USNM). Paratypes: 2 males, labelled "on Orchids frm./ Philippin. Islds./ Nov. 16, 1906", "in Executive/ Greenhouse/ Wash. DC.", "Paratype/ No. 21067/ U.S.N.M.", "♂", "Baris/ eburifera/ Pascoe/ det. R. T. Thompson 1973/ comp. with type" (USNM); "on greenhouse/ Phalaenopsis", "Bergen Co/ NJ", "rec[eive]d. 1916 from H. B. Weiss Coll.", "Paratype/ No. 21067/ U.S.N.M.", "WEISS", "♂" (USNM). **syn. n**.

Orchidophilus gilvonotatus. Buchanan (1935), Hustache (1938), Swezey (1945), Pritchard (1959), Voss (1961), O'Brien & Wibmer (1982), Morimoto (1994), Hirao *et al.* (2001).

Distribution. Native to the Philippines; adventive but not established in Great Britain and the United States (including Hawaii).

Plant associations. Orchidaceae, Epidendroideae: *Aerides lawrenceae*, *Phalaenopsis amabilis*, *P. schilleriana*, *P. stuartiana*, *Vanda teres* (ex stalks).

Records. Great Britain: England, greenhouse (BMNH, 1), specimens with undocumented origin, ex *Vanda* sp. (BMNH, 6). **Philippines:** Hirao *et al.* (2001). **United States:** Bergen Co., NJ, 1916, greenhouse (USNM, 1 PT), Bound Brook, NJ, greenhouse (AMNH, 1); Washington, DC, 1906, greenhouse (USNM, HT + 1 PT), 1923, interceptions, origin Philippines (USNM, 3); Hawaii, 1916, greenhouse (BPBM, 1), 1930, 1932, interceptions, origin Philippines (USNM, 2), 1933, interception (BPBM, 1). **"Dutch East Indies"**: (BMNH, 1).

Notes. Pascoe (1887) and Barber (1917) provided detailed descriptions and referred explicitly to orchids as the larval host. Nevertheless, the identity of *Baris eburifera* as an *Orchidophilus* and its synonymy with *O. gilvonotatus* went unnoticed until 1973, when Richard Thompson, London, compared type material of the two species and indicated the synonymy on his label. *Orchidophilus eburifer* has been dispersed occasionally with traded orchids but so far has not become established inside or outside greenhouses.

Orchidophilus epidendri (Murray), comb. n.

Centrinus epidendri Murray, 1869: 1279. Neotype male, here designated, labelled "Pascoe Coll./ B. M. 1893-60.", "NEOTYPUS/ Centrinus/ epidendri/ Murray 1869/ Prena design. 2007" (BMNH). Barber (1917), Schlechter (1927; synonymy with *Acythopeus aterrimus* suspected), Swezey (1945), Voss (1961).

Acythopeus genuinus Pascoe, 1887: 359. Lectotype female, here designated, labelled [on underside of card] "Conservatory/ Tunbridge Wells", "SYN-/ TYPE", "DATA/ under card", handwritten "genuinus", "Malaisia", "Pascoe Coll./ B.M. 1893-60.", handwritten "aterrimus/ C. W." (BMNH). Paralectotypes: 2 females, labelled [on underside of card] "Conservatory/ Tunbridge Wells", "SYN-/ TYPE", "DATA/ under card", "Malaisia", "Pascoe Coll./ B.M. 1893-60." (BMNH); "SYN-/ TYPE", "Conservatory/ Tunbridge", "Pascoe/ Coll./ 93–60." (BMNH). Morimoto (1994). **syn. n.**

Acythopeus geminus. Hustache (1938; lapsus).

Baris orchivora Blackburn, 1900: 61. Lectotype male, here designated, on card in red ink "6714", Maiden's [?] handwriting "Dendrobium pest/ Bot. Gardens/ Maiden, 17.6.99", Blackburn's [?] handwriting "Baris/ orchivora Blackb/ cotype", Lea's handwriting "9.10534/ Baris/ orchivora/ N. S. Wales/ Syn. of Acythopeus/ aterrimus Wath/ [in red] Cotype" (SAM). Paralectotypes: 2 females, same data as holotype without Lea's label (SAM); on card in red ink "6714" and below in black ink "1st", "Type", printed "Blackburn/ coll./ 1910–236.", Blackburn's [?] handwriting "Baridius/ orchivora, Blackb" (BMNH). Froggatt (1904), Meyer (1905), Lea (1906; synonymy with *Acythopeus aterrimus*), Quanjer (1906), Champion (1913; resurrection as valid species, generic assignment not explicitly stated); [epithet here considered a noun as first used by Champion (1916); the Latin adjective is '*vorax*']. **syn. n.**

Acythopeus orchivora. Champion (1916), Barber (1917), Weiss (1917), Weigel & Sasscer (1923), Blatchley (1925), Schlechter (1927), Hustache (1938; synonymy with *B. aterrimus*), Heller (1940).

Orchidophilus orchivora. Buchanan (1935), Swezey (1945), Pritchard (1959), Voss (1961), Zimmerman (1992), Morimoto (1994; synonymy with *O. aterrimus*).

Apotomorhinus orchidearum Kolbe, 1906: 4. Lectotype male, here designated, labelled "Java oder/ Sumatra an/ Phalaenopsis rymestadiana/ K. Klitzing.", "Apotomorhinus/ orchidearum/ n. sp. Kolbe", prothorax partially damaged (MNHUB). Paralectotypes: 2 males, 1 female, labelled "Apotomorhinus/ orchidearum/ n. sp. Kolbe" (MNHUB); "Java/ Sumatra/ (Orchid.)", "1683" (MNHUB); "Malay. Archipel" (MNHUB). Barber (1917), Buchanan (1935), Schlechter (1927; synonymy with *Acythopeus aterrimus*), Hustache (1938), Swezey (1945), Voss (1961), Morimoto (1994). **syn. n.**

Distribution. Native to Indonesia; adventive but not established in Australia, Germany, Great Britain, South Africa and the United States.

Plant associations. Orchidaceae, Epidendroideae: *Dendrobium canaliculatum*, *Dendrobium* sp., *Paphiopedilum* sp., *Phalaenopsis amabilis*.

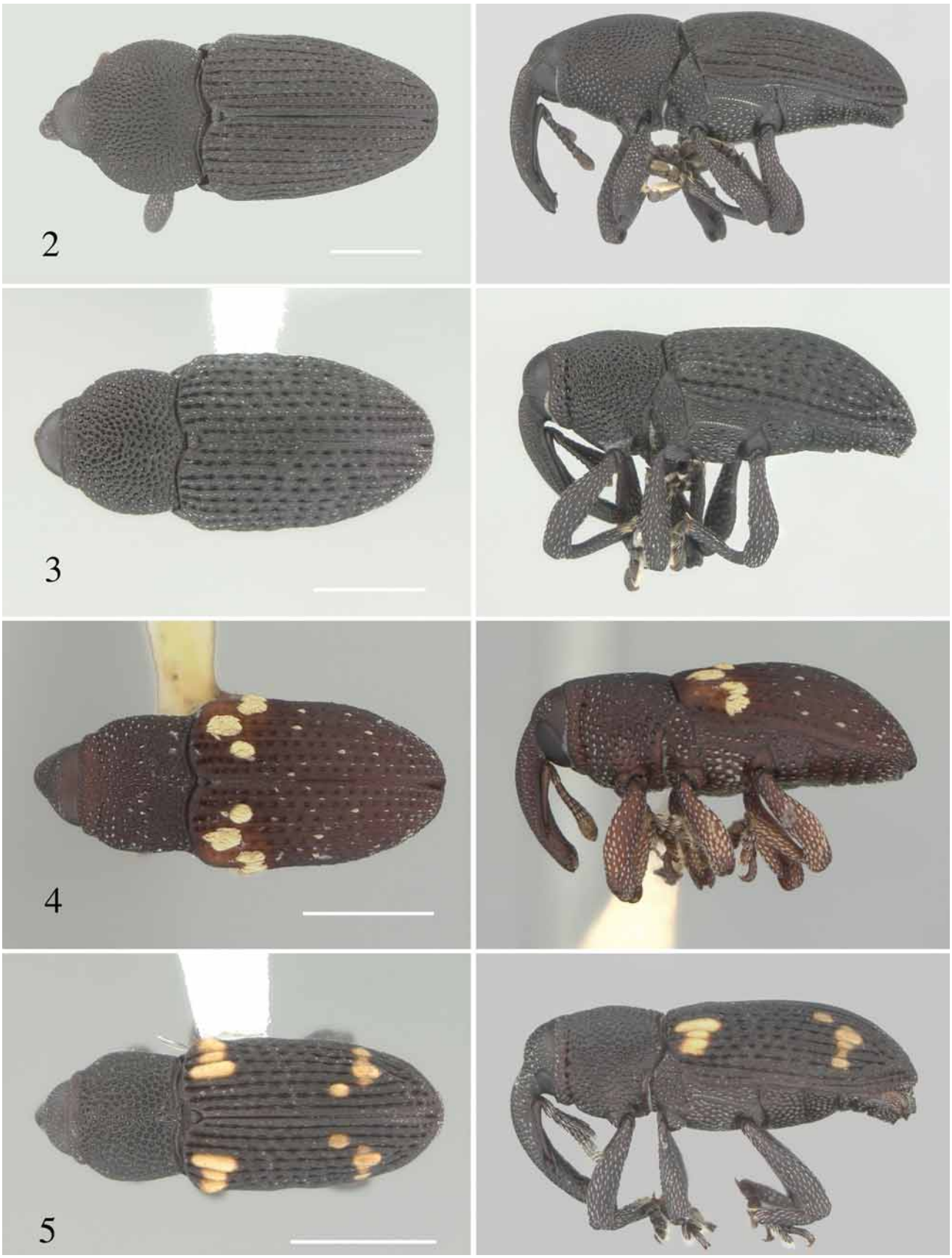
Records. Australia: Sydney, botanical garden, 1899 (SAM, 3; BMNH, 1); Queensland (SAM, 1). **Germany:** Berlin, 1906, 1912, greenhouse (ZMHB, 6; DEIC, 1). **Great Britain:** Torquay (BMNH 1); Tunbridge Wells (BMNH, 3). **Indonesia:** Buitenzorg [Bogor], 1932 (BMNH, 1), ditto, 1934 (BMNH, 1); Raha, Moena [Muna], 1936 (BMNH, 1); Ambon Island, 1937 (USNM, 7). **South Africa:** Durban (ANIC, 1). **United States:** Rutherford, NJ, 1915, 1916, greenhouse (AMNH, 21; ANIC, 1; BMNH, 2; USNM, 2); Kensington, MD, 1971, greenhouse (USNM, 9). **Without locality data:** (BMNH, 3).

Notes. The existence of a sibling species of *O. aterrimus* has been debated in the literature for more than a century. Lea (1906) compared a (now legless) male syntype of *O. aterrimus* with specimens of *O. orchivora* that Froggatt received from the director of the Sydney Botanical Garden (Froggatt 1904). The synonymy proposed by Lea (1906) was contested by Champion (1913) on grounds that are puzzling. The supposed holotype[1] of *O. orchivora* studied by Champion is a female and does not provide sufficient evidence for such a conclusion. The three specimens from Tunbridge Wells cited by him under *O. aterrimus* actually are syntypes of *O. genuinus* and agree with *O. orchivora*. The supposed *O. aterrimus* collected from *Dendrobium* in Torquay also is *O. orchivora*. Finally, the type series of *O. aterrimus* includes four males rather than one. I found no evidence that Champion recognized any *O. orchivora* before 1916 (except for the BMNH syntype), when he received two males collected by Weiss in a greenhouse in Rutherford, New Jersey (Champion 1916). *Orchidophilus aterrimus* and *O. orchivora* were synonymized again by Hustache (1938) without comment. Swezey (1945), Prichard (1959) and Voss (1961) treated both species as valid. Zimmerman (1992; unpubl. manuscript) recognized *O. orchivora* as a distinct species based on two syntypes in the Lea Collection and a representative number of other specimens. Morimoto (1994) re-established the synonymy based on the female "type" at the BMNH.

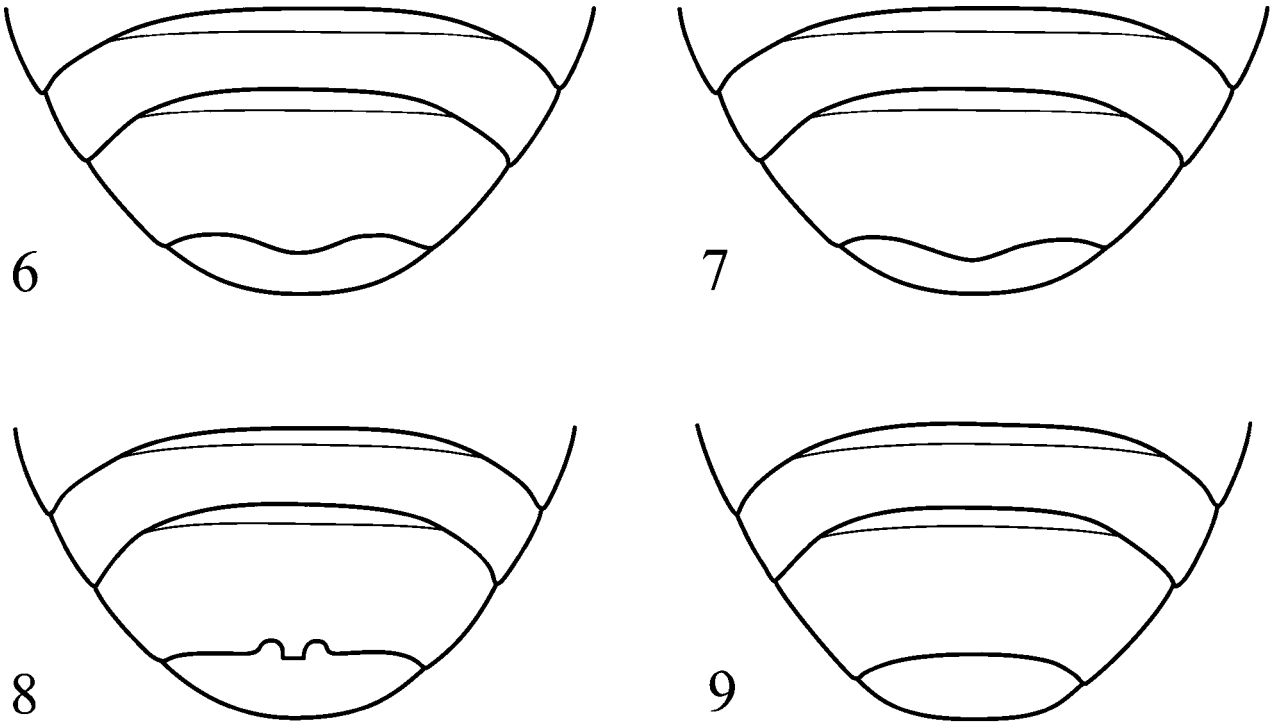
A ventral projection on the male middle tibia occurs predominantly in large specimens; its size and presence is related to body size. Edentate males usually have the outer striae and interstria less modified than dentate males. Other frequently occurring differences, such as the transversely impressed scutellum, the distally slightly more projecting margin of the fifth ventrite (Fig. 7) and the longer aedeagal flagellum in edentate males, are less conspicuous when similar-sized specimens are compared. I was unable to recognize any differences in the female genitalia or in the mouth parts. Based on comparison of specimens in the upper size range and absence of transitional forms in the large series from Singapore, Hawaii and New Jersey [H. B. Weiss material], I consider *O. orchivora* as distinct from *O. aterrimus*. Representative material from a variety of natural habitats is needed to verify this conclusion.

Baris orchivora is a junior subjective synonym of *Acythopeus genuinus* Pascoe and a senior subjective synonym of *Apotomorhinus orchidearum* Kolbe (both **syn. n.**). An even older available name is *Centrinus epidendri* Murray. Subsequent to a presentation of an infested exotic orchid at a meeting of the Royal Horticultural Society in March 1869, two anonymous notes appeared in the Gardeners' Chronicle, one by I. O. W[estwood] describing the chalcidid wasp *Isosoma orchidearum*, the other by A. M[urray] describing *Centrinus epidendri*. Murray seems to have invested considerable effort in the identification of this weevil and made a reasonable comparison with the North American *C. scutellumalbum* in the description. Even though generally ignored in catalogs, the name cannot be suppressed as a *nomen oblitum* because it was cited as valid by Barber (1917), Schlechter (1927) and Swezey (1945). The Murray Collection was auctioned by Stevens in 1878; the fate of the weevils apparently is unknown. Because (1) the specimen was reared from an orchid, (2) the description clearly fits *Orchidophilus* and (3) the name was used as valid in the 20th century and cannot therefore be suppressed as a *nomen oblitum*, I here designate a neotype for *C. epidendri* and place it in *Orchidophilus* Buchanan. Two black *Orchidophilus* species, *i.e.*, *O. aterrimus* and *O. genuinus*, have been introduced to England. I apply the name *epidendri* to the latter because *aterrimus* is an established name and *orchivora* is also junior to *genuinus* and thus will be invalid in any case. A male specimen without collecting data from the Pascoe Collection is designated here as neotype of *epidendri* and will be deposited in the BMNH. This designation clarifies the nomenclature of an economically important pest species and promotes nomenclatural stability of the name *aterrimus*. To accomplish nomenclatural stability of *epidendri*, I also here designate lectotypes for its subjective junior synonyms *genuinus*, *orchivora* and *orchidearum*, with the data given above.

1. Blackburn referred in the description to *nonnuli exempli*, hence there must have been at least three syntypes. The acquisition of Blackburn types by the BMNH in 1909 does not constitute a lectotype designation.



FIGURES 2–5. Habitus of *Orchidophilus* species, dorsal and lateral aspects. **2**, *O. aterrimus*; **3**, *O. ran*; **4**, *O. eburifer*; **5**, *O. insidiosus*. Scale bar 1 mm.



FIGURES 6–9. Form of distal ventrites of *Orchidophilus* species. **6**, *O. aterrimus*, large male; **7**, *O. epidendri*, male; **8**, *O. peregrinator*, male; **9**, *O. aterrimus*, *O. epidendri*, *O. peregrinator*, *O. ran*, female. Schematic.

***Orchidophilus insidiosus* Prena, sp. n.**

Description. Habitus (Fig. 5): Total length (without rostrum) 2.6–2.7 mm, standard length (without head) 2.4–2.6 mm; integument dark reddish brown, matt, elytral interstriae with glabrous, incrassate, orange sections forming two irregular fasciae near base and near declivity, punctures with inconspicuous setae. **Head:** Spherical, with microsculpture, frons coarsely punctate, frontal fovea elongate and slightly larger than punctures, eyes oval, flat, rostrum 1.08x longer than pronotum, moderately thick, strongly curved at base, punctures coarse, longitudinally confluent, almost striate dorsally, mandibles decussate, with large secondary tooth, length of anteantennal portion 0.38x length of rostrum; scrobe with upper margin not reaching ventral edge of rostrum, antenna moderately thick, first funicular segment 2x larger than second, 2–7 gradually increasing in width, basal joint of club continuous with funicle, assuming approximately two-thirds of entire length of club, glabrous, with same type of setae as funicle. **Pronotum:** 1.17x wider than long, widest in middle, gradually narrowed to base, rounded to front and constricted there, lateral and ventral portions of constriction deeply punctate, punctures coarse and regularly spaced on disk, intervals narrow, postocular lobes inconspicuous. **Scutellum:** Free, square to pentagonal. **Elytra:** Humeri prominent, 1.17x wider than prothorax, sides gradually narrowed in basal two-thirds, apices rounded conjointly, subapical callosity indistinct, striae deep cut, with punctures barely affecting edge of interstriae, interstriae flat except near apex and in orange sections, sutural interstria with regular row of punctures, two irregular fasciae near base and declivity formed by incrassate, glabrous, orange sections on intervals 3–8 (5–8 at base), interstriae narrowed here. **Underside:** Coarsely but evenly punctate throughout, antecoxal portion of prosternum unmodified, prosternum and mesosternum not in same plane, exposed distal portion of pygidium abruptly curved ventrad and separated by transverse carina, metepisternum with single row of punctures at middle. **Legs:** Robust, of subequal size, venter of femora and tibiae unmodified, procoxae separated by half their width, claws short, separate at base.

Material examined. Holotype female, labelled "AUSTRALIA:/ at San Francisco/ 43982 III-24-1969/ R. T. Wion", "on Sarcochilus var./ Hartmanii root/ 69-18782", "Baridinae/ Genus? sp.?/ Det: R. E. Warner", "HOLOTYPE/ Orchidophilus/ insidiosus Prena" (deposited in USNM). Paratype female, same data as holotype (ANIC).

Specific epithet. A regular Latin adjective; denoting an 'insidious orchid friend'.

Plant association. Orchidaceae, Epidendroideae: *Sarcochilus hartmannii*.

Notes. This is the smallest and most slender of all known *Orchidophilus* species and can be recognized easily by its distinctive color pattern. The two specimens were intercepted in association with an orchid endemic to eastern Australia. Further evidence is necessary to prove that this weevil species is native to Australia.

Orchidophilus peregrinator Buchanan

Acythopeus sp., Swezey (1934).

Orchidophilus peregrinator Buchanan, 1935: 46. Holotype female, labelled "Manoa Valley/ Oahu 3-1-1928", "Atherton's/ Orchid House", "O. H. Swezey/ Collector", "TYPE USNM/ 50424", "Orchidophilus/ peregrinator/ Buchanan/ TYPE" (USNM). Paratypes 9 [supposedly 10, but 2 are actually parts of 1 specimen] (BPBM, 3, USNM, 6). Swezey (1945), Carter (1945), Holdaway (1946), Pritchard (1959), Voss (1961), O'Brien & Wibmer (1982), Morimoto (1994), Hirao *et al.* (2001).

Distribution. Native to Indonesia and the Philippines; probably introduced and then established in the Solomon Islands; adventive but not established in the United States (incl. Hawaii).

Plant associations. Orchidaceae, Epidendroideae: *Dendrobium nobile*, *Grammatophyllum multiflorum*, *Phalaenopsis amabilis*, *P. schilleriana*, *Renanthera* sp., *Vanda coerulea*, *V. luzonica*, *V. teres*, *Vanda* x Miss Joaquim.

Records. Indonesia: Celebes [Sulawesi], Minnihassa area, 1953 (USNM, 3). **Philippines:** Hirao *et al.* (2001). **Solomon Islands:** Guadalcanal, 1950 [female, record needs confirmation] (USNM, 1). **United States:** Washington, DC, 1923, interception, origin Philippines (USNM, 1 PT); San Francisco, CA, 1936, 1938, interceptions, origin Philippines (USNM, 2), ditto, 1937, origin Japan (USNM, 1); Hawaii, Oahu, Manoa Valley, greenhouse, 1928 (BPBM, 3 PT; USNM, HT+3 PT); Honolulu, 1930, 1932, 1933, 1935, 1944, 1946, 1947, interceptions, 2 with origin Philippines (BPBM, 8; USNM, 3+2 PT).

Notes. To my knowledge, this species has not been intercepted since the 1940s. Field collections were made more recently in Sulawesi and probably the Solomon Islands, but these specimens were not recognized as *O. peregrinator*. For reliable identification, male specimens should be examined for possession of the square median projection on the posterior edge of the last ventrite (Fig. 8).

Orchidophilus ran Morimoto

Orchidophilus ran Morimoto, 1994: 236. Holotype male (Kyushu Univ.). Paratypes 54 (4 examined). Hong (2000), Hong *et al.* (2000).

Distribution. Adventive but not established in Japan, South Korea and the United States. Native range unknown (possibly Philippines and/or Taiwan).

Plant associations. Orchidaceae, Epidendroideae: *Cymbidium* sp., *Dendrobium* sp., *D. nobile*, *Phalaenopsis* sp.

Records. Japan: several interceptions since 1958, origin Philippines and Taiwan (Morimoto 1994; BMNH, 4). **South Korea:** Goyang (6), Seonghwan (10), greenhouse (Hong 2000, Hong *et al.* 2000). **United States:** San Francisco, CA, 1973, interception, origin Taiwan (USNM, 1).

Notes. *Orchidophilus ran* has been intercepted in Japan (Morimoto 1994), Korea (Hong 2000) and the United States. The species is notably similar to *O. peregrinator* and *O. epidendri*, and females of these species seem to be indistinguishable. The USNM collection holds a small series of another morph of this complex, which may or may not deserve separate specific rank. Further investigations should rely on representative material and collections from natural habitats. The regionally confined intercepts in southeastern Asia, often with origin Taiwan, suggest that these specimens may have originated from just one or a few wholesale dealers or may actually be native to Taiwan.

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