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The bark and ambrosia beetles (Coleoptera: Curculionidae: Scolytinae and Platypodinae) of American Samoa

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Abstract

A survey of five of the islands of American Samoa was conducted from 2016–2018 utilizing multi-funnel traps baited with ethanol and quercivorol (attractants for xyleborine ambrosia beetles). Specimens of Scolytinae and Platypodinae from this survey, as well as specimens in the American Samoa Community College Collection were identified. A total of 53 species of Scolytinae and two species of Platypodinae are reported. Fourteen species of Scolytinae and one species of Platypodinae are reported as new to American Samoa. The following **new synonymy** and **new combinations** are proposed: *Xyleborinus artelineatus* (Beeson, 1929) (=*Xyleborinus cinctipennis* (Schedl, 1980) **syn. nov.**; *Ambrosiophilus wilderi* (Beeson, 1929) **comb. nov.** from *Ambrosiodmus*; *Beaverium swezeyi* (Beeson, 1929) **comb. nov.** from *Xyleborus*; and *Debus fallaxoides* (Schedl, 1955) **comb. nov.** from *Xyleborus*. The distribution on the islands of American Samoa and taxonomic history of each species is provided.

Key words: Biodiversity survey, Oceania, Pacific islands, exotic, invasive, adventive, new synonymy, new combinations, new records

Introduction

Bark and ambrosia beetles, in the weevil (Curculionidae) subfamilies Scolytinae and Platypodinae, are diverse groups of economically and ecologically important species (Vega & Hofstetter 2015). There are more than 6,000 species of Scolytinae and 1,500 species of Platypodinae world-wide occurring in both temperate and tropical regions (Hulcr *et al*. 2015; Alonso-Zarazaga & Lyal 2009). Bark beetles construct their gallery systems under the bark where the larvae feed on the nutrient-rich phloem, although some species also breed in twigs, leaf petioles, cones, seeds and fruits (Kirkendall *et al*. 2015). Ambrosia beetles bore into the xylem of their host plants, and carry with them symbiotic fungi which grow in the galleries, and upon which the adults and larvae feed (Kirkendall *et al*. 2015).

The bark and ambrosia beetles of the Pacific Islands consist of endemic, native and adventive species. There are more than 130 species that occur only on the Pacific Islands, and most of these are endemic to individual archipelagoes (Wood & Bright 1992; Bright & Skidmore 1997, 2002; Bright 2014; RJR unpublished data). There are approximately 100 additional species of scolytines that are found not only on the Pacific Islands, but also in other areas, and many of these (especially the twig and seed feeding bark beetles, and the ambrosia beetles) have been moved around the world through commerce (Jordal *et al*. 2001; Haack & Rabaglia 2013).

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Fifty-eight species of scolytine bark and ambrosia beetles have been previously reported from Samoa and American Samoa, and 21 of these are reported to be endemic to these islands. This is similar to the number of endemic species found in several other Pacific archipelagoes (Fiji, 31; Hawaii, 22; Federated States of Micronesia, 15) (Wood & Bright 1992; Bright & Skidmore 1997, 2002; Bright 2014). Only a single species of Platypodinae has previously been recorded from American Samoa, *Crossotarsus externedentatus* (Fairmaire), a species with a wide distribution in the Pacific, Oriental and Afrotropical regions (Beaver 2000).

American Samoa is an unincorporated territory of the United States in the South Pacific that lies just east of the independent nation of Samoa (previously known as Western Samoa). American Samoa consists of seven islands, including five volcanic islands: Tutuila (the largest and most populated), Aunu‘u, Ofu, Olosega, and Ta‘ū. The territory’s two atolls lie approximately 360 km to the north (Swains Island) and 260 km to the east (Rose Atoll) of Tutuila. Total land area of the territory is approximately 200 km^2, equivalent to only 7% the area of the islands that comprise neighboring independent Samoa. Land cover remains mostly native forest (Liu *et al*. 2011), and abundant trees include *Hibiscus tiliaceus*, *Myristica inutilis*, *Elaeocarpus ulianus*, the mangrove *Rhizophora mangle*, *Dysoxylum maota*, *Barringtonia samoensis*, *Cananga odorata*, *Cocos nucifera*, *Pipturus argenteus*, *Rhus taitensis*, and other species typical of the region (Whistler 2002; Lazaro *et al*. 2019). Nonnative invasive species such as *Adenanthera pavonina*, *Falcataria moluccana*, and *Cinnamomum verum* have established and spread in some forest areas (Space & Flynn 2000). Breadfruit (*Artocarpus altilis*), Indian mulberry (*Morinda citrifolia*), mango (*Mangifera indica*), and various *Citrus* spp. are common in villages and agroforest areas (Misa & Vargo 1993). The highest elevation is Mt. Lata on Ta‘ū Island at 931 m. The climate is warm and humid with rainfall throughout the year.

There have been several previous studies of the bark and ambrosia beetle fauna of Samoa and American Samoa. Beeson (1929) published the first comprehensive study and listed 34 species of Scolytinae, including 18 new species and a new subspecies, and two species of Platypodinae, one of them new. Schedl (1951a) added 26 scolytine species and two platypodine species to the fauna, including 12 species new to science. Beaver (1976) studied the biology of the species of Samoa, but there has been no similar study of the American Samoan fauna. Over the years the taxonomy and nomenclature of many of the species has changed, most notably through the work of Beaver (1987a, 1991) and others (Wood & Bright 1992; Bright & Skidmore 1997, 2002; Hulcr 2010; Hulcr & Cognato 2010; Bright 2014). There have been no recent studies that reported specifically on the species occurring on the various islands of American Samoa.

Species in the *Euwallacea fornicatus* (Eichhoff) complex have historically caused damage in tea (*Camellia sinensis*) plantations, and morphologically similar species, although different genetically, have been introduced into several countries and caused damage to many tree species (see Gomez *et al*. 2018 and Stouthamer *et al*. 2017 and references therein). Schedl (1951a) described *Xyleborus tapatapaoensis* from Upolu in Samoa, and Wood (1989) synonymized this species along with several others with *Euwallacea fornicatus*. In 2017, as part of a taxonomic study (Gomez *et al*. 2018) to collect specimens in this complex, especially *tapatapaoensis* from near its type locality, an extensive trapping survey was initiated across several of the islands of American Samoa.

Species records of scolytines and platypodines from this trapping survey, as well as records of species in the American Samoa Community College Collection are reported in this paper.

Materials and methods

Ethanol is a well-documented general attractant for many species of xyleborine ambrosia beetles (Byers 1989; Oliver & Mannion 2001; Miller and Rabaglia 2009). Recent studies have shown that quercivorol was more attractive than ethanol to species in the *Euwallacea fornicatus* species complex (Carrillo *et al*. 2015; Byers *et al*. 2017). Quercivorol, (1S, 4R)-p-menth-2-en-1-ol, is a pheromone of a platypodine (*Platypus quercivorus* Murayama) (Kashiwagi *et al*. 2006). During this study both ethanol and quercivorol were used to survey for members of the *E. fornicatus* complex on American Samoa.

Beetles were trapped on Tutuila and Aunu‘u Islands during July 2016–July 2017 and on Ofu, Olosega, and Ta‘ū Islands during May–June 2018. Twelve-funnel Lindgren traps (BioQuip, Rancho Dominguez, California, USA), baited with either quercivorol or Ultra High Release (UHR)—ethanol (Synergy Semiochemicals, Delta, British Columbia, Canada), were deployed at 28 sites on Tutuila, seven sites on Aunu’u, three sites on Ta‘ū, and one each on Ofu and Olosega Islands for periods of 6–24 days. No trapping was done on Swains Island or Rose Atoll. In most

cases at least one trap bearing each lure was placed at each site, with traps separated from each other by at least 30 m whenever possible. A propylene glycol solution was placed in the trap collection cups to capture and preserve the catch which was filtered, rinsed with tap water, and transferred to 95% ethanol for long-term storage prior to sorting. Areas such as the seaport, lumber yards, and warehouses that were deemed at high risk for accidental introduction of exotic beetles were a major focus, but other habitats were sampled as well, including agroforestry plots, secondary scrub vegetation, *Rhus* secondary forest, littoral strand, marsh land, and primary rainforest (Liu *et al*. 2011). Elevations sampled ranged from near sea level to 380 m.

Specimens of Scolytinae and Platypodinae from the American Samoa Community College collection were examined for additional records. These specimens were collected from 2000 to 2018 by various methods, including Malaise traps, yellow pan traps, pitfall traps, and mosquito traps, or reared from collected fruits, branches, and logs.

Format of Checklist

The higher level classification used here is that of Alonso-Zarazaga & Lyal (2009) and two recent publications (Cognato *et al*. 2020; Johnson *et al*. 2020). Genera and species of Scolytinae and Platypodinae are listed alphabetically within tribes. For each species, we give the currently accepted name, the original generic and specific names, and any synonyms which are mentioned in the text. References to the names and synonymy are included. We give detailed locality data for species recorded from American Samoa for the first time; for species previously recorded, the localities are abbreviated. The distribution of the species outside American Samoa is given based on published records. Taxonomic notes are provided where necessary. Further information on the species can be obtained from the catalog of Wood & Bright (1992), and its supplements (Bright & Skidmore 1997, 2002; Bright 2014). We use 'Samoan Islands' to include both American Samoa and Samoa.

Collections and codes referred to in this paper are as follows:

ASCC	American Samoa Community College collection, Malaeimi, American Samoa
BMNH	Natural History Museum, London, U.K.
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii, US
NHMW	Naturhistorisches Museum, Wien, Austria
NMNH	US National Museum of Natural History, Washington, DC, US
RABC	Roger A. Beaver Collection, Chiangmai, Thailand
RJRC	Robert J. Rabaglia collection, Annapolis, Maryland, US
UFFE	University of Florida Forest Entomology Collection, Gainesville, Florida, US

Results

During this project 52 species of scolytines and two species of platypodines were identified from American Samoa. Fourteen species new to American Samoa are reported and marked with an asterisk.

Checklist of Scolytinae and Platypodinae in American Samoa

Scolytinae

Cryphalini

***Cryphalus basihirtus* (Beeson)**

Hypocryphalus basihirtus Beeson, 1929: 227.

Cryphalus basihirtus (Beeson): Johnson *et al*. 2020: 21.

Beeson described this species from Upolu in Samoa, and Schedl (1951a) reported this species from Tutuila (Afono trail and Moloata [*sic*]).
Current survey records: Not found in current survey.

*** *Cryphalus capucinomorphus* Schedl**
Cryphalus capucinomorphus Schedl, 1950: 48.

This species was previously known only from Fiji.
Current survey records: American Samoa: Tutuila Isl.: Aoloaufou, 3–4 i 2008, N. Gurr coll., Malaise trap between forest and disturbed weedy pasture (UFFE:33367; 1, ASCC). Other locations: Tutuila Isl.: Aoa, Fagaalu, Fagaitua, Iliili, Leone, Malaeimi, Maloata, Masausi, Vatia; Olosega Isl.: Olosega, -14.1814 -169.6130, 16 v–6 vi 2018, M. Schmaedick coll., Malaise trap in *Rhus* 2° forest (UFFE:33372; 1, ASCC); Ta‘ū Isl.: Fitiuta, -14.2301 -169.4224; 15 v–5 vi 2018; M. Schmaedick coll.; UHR ETOH-baited multifunnel trap in 2° scrub forest (UFFE:31054; 1, UFFE).

***Cryphalus imitans* (Schedl)**
Hypocryphalus imitans Schedl, 1951a: 148.
Cryphalus imitans (Schedl): Johnson *et al*. 2020: 22.

Schedl (1951a) described this species based on specimens from Tutuila (Utulei), as well as Samoa.
Current survey records: Not found in current survey.

*** *Cryphalus mangiferae* Stebbing**
Cryphalus mangiferae Stebbing, 1914: 542.
Hypocryphalus mangiferae (Stebbing): Eggers 1930: 185.
Cryphalus mangiferae Stebbing: Johnson *et al*. 2020: 22.

This species is widely distributed throughout the tropics, and is considered to vector fungal pathogens in mango, but this is the result of widespread misidentification of the actual vector, *Cryphalus dilutus* Eichhoff (Johnson *et al*. 2017). It feeds under the bark of twigs and trunks of mango. In the Pacific region, this species also occurs in Cook Islands, Hawaii, Samoa, and Micronesia (Caroline Islands, Palau).
Current survey records: American Samoa: Tutuila Isl.: Iliili, -14.3372 -170.7325, 8–16 ix 2016, M. Meredith coll., UHR-EtOH baited multifunnel trap in mango in garden (UFFE:33356; 1, ASCC); Aunu‘u Isl.: -14.2856 -170.5509, 12–25 i 2017, M. Meredith coll., UHR-EtOH baited multifunnel trap in secondary forest (UFFE:33359; 1, ASCC); Ofu Isl.: Ofu, -14.1674 -169.6761, 16 v–6 vi 2018, M. Schmaedick coll., Quercivorol-baited funnel trap in *Rhus* 2° forest (UFFE:33357; 1, ASCC).

***Cryphalus mollis* Schedl**
Cryphalus mollis Schedl, 1955: 288.
Hypocryphalus mollis (Schedl): Beaver 1987a: 67.
Cryphalus mollis Schedl: Johnson *et al*. 2020: 22.

Schedl (1979) reported this species from Tutuila (Utulei). The species also occurs in Fiji, Niue and Tonga.
Current survey records: American Samoa: Tutuila Isl.: Malaeimi, Tafuna; Ta‘ū Isl.: Fitiuta.

***Cryphalus pexus* Schedl**
Cryphalus pexus Schedl, 1979: 104.

Schedl (1979) described this species based on specimens from Tutuila (Utulei) as well as Samoa and Fiji.
Current survey records: Not found in current survey.

***Cryphalus polynesiae* (Schedl)**

Hypocryphalus polynesiae Schedl, 1979: 105.
Cryphalus polynesiae (Schedl): Johnson *et al*. 2020: 23.

Schedl (1979) described this species based on specimens from Tutuila (Fagatogo).
Current survey records: Not found in current survey.

***Cryphalus samoensis* Beeson**

Cryphalus samoensis Beeson, 1929: 224.

Schedl (1951a) reported this species from Tutuila (Afono trail). It is also known from Samoa.
Current survey records: Not found in current survey.

***Cryphalus silvanus* Schedl**

Cryphalus silvanus Schedl, 1951a: 145.

Schedl (1951a) described this species based on specimens from Tutuila (Utulei), as well as Samoa. The species is endemic to Fiji (Schedl 1979) and the Samoan islands.
Current survey records: Not found in current survey.

***Cryphalus sylvicola* (Perkins)**

Hypothenemus sylvicola Perkins, 1900: 181
Cryphalus sylvicola (Perkins): Hagedorn 1910: 88.

Schedl (1951a) reported this species from Tutuila (Amouli). The species is widespread in the Pacific islands.
Current survey records: American Samoa: Tutuila Isl.: Aoa, Asili, Fagaalu, Fagatogo, Futiga, Iliili, Leone, Malaeimi, Mapusagafou, Masausi, Vatia; Aunu‘u Isl.; Ta‘ū Isl.: Faleasao, Fitiuta.

***Cryphalus tutuilaensis* (Schedl)**

Hypocryphalus tutuilaensis Schedl, 1951a: 147.
Cryphalus tutuilaensis (Schedl): Johnson *et al*. 2020: 24.

Schedl (1951a) described this species based on specimens from Tutuila (Fagatogo and Matafao trail).
Current survey records: Not found in current survey.

***Cryphalus upoluensis* Schedl**

Cryphalus upoluensis Schedl, 1951a: 144.

Schedl (1951a) described this species based on specimens from Tutuila (Fagasa trail and Matafao trail), as well as Samoa.
Current survey records: Not found in current survey.

**** Cryphalus* sp.**

Several of the specimens did not match any described species based on original descriptions, and specimens. These are likely to represent an undescribed species. This putative new species is diagnosed by the small size, by the stout body proportions, and by the long interstrial bristles which are only present on interstriae 1, 3, 5 and 7.
Current survey records: American Samoa: Tutuila Isl.: Afono, -14.2691 -170.6485, 5–12 ii 2013, N. Leifi coll., Malaise trap in secondary forest (UFFE:33377; 1, ASCC); Other sites: Tutuila Isl.: Fagaalu, Fagaitua, Leone, Masausi; Ofu Isl.: Ofu, -14.1674 -169.6761, 16 v–6 vi 2018; M. Schmaedick coll.; Yellow pan trap in *Rhus* 2° forest; (UFFE:33375; 1, ASCC); Olosega Isl.: Olosega, -14.1814 -169.6130; 16 v–6 vi 2018, M. Schmaedick coll., Malaise trap in *Rhus* 2° forest (UFFE:33376; 1, ASCC); Ta‘ū Isl.: Faleasao, -14.2175 -169.5085, 15 v–4 vi 2018, M. Schmaedick coll., Yellow pan trap in secondary scrub (UFFE:32040; 1, UFFE). Other locations: Ta‘ű Isl.: Ta‘ű.

Dryocoetini

***Coccotrypes advena* Blandford**

Coccotrypes advena Blandford, 1894b: 100.
Thamnurgides setosus Beeson, 1929: 228. Synonymy: Browne 1970: 566.

Beeson (1929) described this species as *Thamnurgides setosus* from Tutuila (Fagasa). The species is widespread throughout much of the tropics.
Current survey records: American Samoa: Tutuila Isl.: Aoloau, Tafuna.

*** *Coccotrypes carpophagus* (Hornung)**

Bostrichus carpophagus Hornung, 1842: 116.
Coccotrypes carpophagus (Hornung): Eggers 1929: 52.

This widely distributed species occurs in tropical areas of Africa, Asia, Australia, Europe, North and South America and the Pacific islands. It was first reported in Upolu, Samoa by Beaver (1976), but has not been reported previously from American Samoa.
Current survey records: American Samoa: Tutuila Isl.: Malaeimi, 14 iii–11 iv 2010, Pitfall trap in mowed vegetation near forest edge, M. Schmaedick coll. (1, NMNH, 1, RABC). Other locations: Tutuila Isl.: Leone, Mapusagafou, Masausi.

*** *Coccotrypes cinnamomi* (Eggers)**

Thamnurgides cinnamomi Eggers, 1936: 630.
Coccotrypes cinnamomi (Eggers): Beaver 1987b: 14.

Eggers (1936) described this species from Sri Lanka, but it is also known from India, Indonesia, Malaysia and the Seychelles.
Current survey records: American Samoa: Tutuila Isl.: Vatia, 18 iii. 2014, reared from fallen *Planchonella garberi* fruit, Fr. coll, no. 3648, N. Leifi coll. (1, ASCC, 2, RABC). Other locations: Tutuila Isl.: Aoloau, Fagaalu.

*** *Coccotrypes cyperi* (Beeson)**

Thamnurgides cyperi Beeson, 1929: 230.
Coccotrypes cyperi (Beeson): Beaver 1976: 538.

Beeson (1929) described this species based on specimens from Upolu, Samoa. It is known from Australia, North and South America, the Oriental region and several Pacific islands.
Current survey records: American Samoa: Tutuila Isl.: Auto, 26 v–8 vi 2010, In palm weevil bucket trap on ground, M. Schmaedick coll. (1, NMNH); Other locations: Tutuila Isl.: Aoa, Maloata, Masausi, Tafuna, Vatia; Aunu‘u Isl., 7–22 xii 2016, -14.2814 -170.5526, Quercivorol baited multifunnel trap in 2° forest, N. Leifi coll. (1, RABC); Ofu Isl.: Ofu, 16 v–6 vi 2018, -14.1674 -169.6761, Yellow pan trap in *Rhus* 2° forest, M. Schmaedick coll. (1, ASCC); Ta‘ū Isl.: Faleasao, 15 v–4 vi 2018, -14.2175, -169.5085, Yellow pan trap in 2°scrub, M. Schmaedick coll. (1, RABC). Other locations: Ta‘ū Isl.: Fitiuta, Ta‘ū.

***Coccotrypes myristicae* (Roepke)**

Thamnurgides myristicae Roepke, 1919: 24.
Coccotrypes myristicae (Roepke): Schedl 1938: 10.

Beeson (1929) reported this species from Tutuila (Fagasa). The species occurs throughout the Oriental region and eastwards to New Guinea, Australia and Fiji.
Current survey records: American Samoa: Tutuila Isl.: Leone.

***Coccotrypes tutuilensis* (Beeson)**

Thamnurgides tutuilensis Beeson, 1929: 229.
Coccotrypes tutuilensis (Beeson): Beaver 1987a: 64.
Poecilips fijianus Schedl, 1942b: 179. Synonymy: Beaver 1991: 88.
Poecilips tapatapaoanus Schedl, 1951: 149. Synonymy: Beaver 1991: 89.

Beeson (1929) described this species from Tutuila (Fagasa). It is also recorded from Fiji, New Caledonia, Niue, Samoa and Tonga.
Current survey records: American Samoa: Tutuila Isl.: Malaeimi, Pago Pago.

***Coccotrypes vulgaris* (Eggers)**

Dendrurgus vulgaris Eggers, 1923: 151.
Thamnurgides vulgaris (Eggers): Beeson 1929: 228.
Coccotrypes vulgaris (Eggers): Beaver 1976: 537.

Beeson (1929) reported this species (as *Thamnurgides vulgaris*) from Tutuila (Fagasa). It is widely distributed throughout the Oriental region and the Pacific islands.
Current survey records: American Samoa: Tutuila Isl.: Fagaalu, Leone, Mapusaga; Taʻū Isl.: Faleasao.

**** Cyrtogenius grandis* (Beeson)**

Pelicerus grandis Beeson, 1929: 232.
Cyrtogenius grandis (Beeson): Wood 1986: 74.

Beeson (1929) described this species from Upolu, Samoa. Schedl (1951a) and Beaver (1976) both reported it at light on Upolu; no hosts are known. It is endemic to the Samoan islands.
Current survey records: American Samoa: Tutuila Isl.: Mapusaga, 11 v 2004, On exterior wall of building, M. Schmaedick coll. (1, NMNH).

***Cyrtogenius samoanus* (Eggers)**

Dryocoetes samoanus Eggers, 1928: 174.
Cyrtogenius samoanus (Eggers): Beaver 1991: 90.
Pelicerus granulifer Beeson, 1929: 231. Synonymy: Beaver 1991: 90.

Beeson (1929) described this species as *Pelicerus granulifer* from Tutuila (Pago Pago) and Schedl (1951a) reported it as *Carposinus granulifer* from Tutuila (Naval Station). It is endemic to Fiji and the Samoan islands.
Current survey records: Not found in current survey.

Ernoporini

***Eidophelus marquesanus* (Beeson)**

Ptilopodius marquesanus Beeson, 1935: 101.
Eidophelus marquesanus (Beeson): Johnson *et al*. 2020: 54.
Ptilopodius zimmermani Schedl, 1951a: 143. Synonymy: Beaver 1991: 93.

Schedl (1951a) reported this species as *P. zimmermani* from Tutuila (Afono trail, Amouli and Fagatogo). The species is recorded from the Cook Islands, Fiji, French Polynesia and the Samoan Islands.
Current survey records: American Samoa: Tutuila Isl.: Afono, Maloata, Masausi; Aunuʻu Isl.; Taʻū Isl.: Taʻū.

**** Eidophelus pacificus* (Schedl)**

Ptilopodius pacificus Schedl, 1941: 111.
Eidophelus pacificus (Schedl): Johnson *et al*. 2020: 54.

This species is previously known from Micronesia (Kosrae, Marshall Islands, S. Mariana Islands) and Hawaii.
Current survey records: American Samoa: Tutuila Isl.: Tafuna, -14.3361 -170.7265, 30 xii 2016–13 i 2017, M. Meredith coll., UHR ETOH-baited multifunnel trap in weedy area behind Cost-U-Less store (UFFE: 30730; 1, UFFE). Other locations: Tutuila Isl.: Fagaitua; Aunu‘u Isl.: DoA plot, -14.2851 -170.5552, 22 xii 2016–12 i 2017, M. Meredith coll., Quercivorol baited multifunnel trap in orchard (UFFE: 33384; 1, ASCC).

Hylesinini

***Ficicis despectus* (Walker)**

Hylesinus despectus Walker, 1859: 261.
Ficicis despectus (Walker): Wood 1992: 82.
Hylesinus samoanus Schedl, 1951: 142. Synonymy: Wood 1992: 82.

Schedl (1951a) described this species as *Hylesinus samoanus* based on specimens from Tutuila (Afono trail, Amouli and Fagatogo) and Samoa. The species occurs throughout the Oriental region and eastwards to New Guinea, Australia and the Solomon Islands.
Current survey records: American Samoa: Tutuila Isl.: Iliili, Malaeimi.

***Ficicis porcatus* (Chapuis)**

Hylesinus porcatus Chapuis, 1869: 31.
Ficicis porcatus (Chapuis): Beaver 1991: 91.
Hylesinus subcostatus Eggers, 1923: 137. Synonymy: Nunberg 1956: 210.

Schedl (1951a) reported this species as *Hylesinus subcostatus* Eggers from Tutuila (Amouli and Fagatogo). The species occurs in the Oriental region, but has a more easterly distribution than *F. despectus* (Beaver & Liu 2010), and is widely distributed in the Pacific islands.
Remarks: Wood & Bright (1992) synonymized this species with *Ficicis despectus* without giving reasons, and without indicating that it was a new synonym; Beaver & Liu (2010) consider it a distinct species with *H. subcostatus* a synonym.
Current survey records: American Samoa: Tutuila Isl.: Malaeimi; Ta‘ū Isl.: Faleasao.

Trypophloeini

***Hypothenemus areccae* (Hornung)**

Bostrichus areccae Hornung, 1842: 117.
Hypothenemus areccae (Hornung): Reitter 1913: 73.
Hypothenemus oahuensis Schedl, 1941: 110. Synonymy: Wood 1960: 41.

Schedl (1951a) reported this species as *H. oahuensis* from Tutuila (Afono trail, Utulei and Maloata). This species is widespread across the tropics.
Current survey records: American Samoa: Tutuila Isl.: Aoa, Fagatogo, Iliili, Malaeimi, Tafuna; Ta‘ū Isl.: Fitiuta, Ta‘ū.

***Hypothenemus birmanus* (Eichhoff)**

Triarmocerus birmanus Eichhoff, 1878: 384.
Hypothenemus birmanus (Eichhoff): Browne 1968: 112.
Hypothenemus maculicollis Sharp, 1879: 101. Synonymy: Browne 1970: 556.

Schedl (1951a) reported this species as *Stephanoderes maculicollis* Sharp from Tutuila (Matafao trail). This species was very abundant at all trapping locations. There is an unusual level of morphological variation observed in this species in the samples from American Samoa, some of which are smaller, stouter, and with shorter declivital

interstrial bristles, and small granules on declivital interstrial punctures. These may correspond to S*tephanoderes maculicollis*, but no clear delimitation of this as a separate species was evident.

Schedl (1951a) also listed *Hypothenemus multipunctatus* (Schedl) as being present in American Samoa, based on two specimens deposited in the Bishop Museum, Hawaii, labeled "Utulei, Tutuila, Samoa, viii–24–40, 600 ft, beating dead branches" and "Apia, vii–6–40, Upolu, Samoa, at light, EC Zimmerman". Both of these records are from misidentified specimens, and are in fact *H. birmanus*.

Current survey records: American Samoa: Tutuila Isl.: Aoa, Fagaalu, Fagatogo, Futiga, Iliili, Leone, Malaeimi, Maloata, Mapusagafou, Masausi, Tafuna; Olosega Isl.: Olosega; Ta'ū Isl.: Faleasao, Ta'ū.

***Hypothenemus brunneus* (Hopkins)**

Stephanoderes brunneus Hopkins, 1915: 31.
Hypothenemus brunneus (Hopkins): Bright 1972: 54.

Bright (2019) considers this as a synonym of *H. javanus* Eggers, though morphological variation between these species, especially in the cuticular texture of the frons, warrants recognition of separate species. There are no previous records of *H. brunneus* from the Pacific islands, but it occurs worldwide in the tropics and sub-tropics.

Current survey records: American Samoa: Tutuila Isl.: Tafuna, -14.3244 -170.7194, 28 ii–7 iii. 2017, M. Meredith, coll., Querciverol baited multifunnel trap in lumberyard (UFFE:33289; 1, UFFE).

***Hypothenemus eruditus* (Westwood)**

Tomicus (*Hypothenemus*) *eruditus* Westwood, 1834: 34.
Hypothenemus eruditus (Westwood): Westwood 1840: 157.
Hypothenemus insularis Perkins, 1900: 181. Synonymy: Wood 1960: 42.

Schedl (1951a) reported this species as *H. insularis* from Tutuila (Utulei and Fagatogo). This species is probably a complex of many cryptic and pseudo-cryptic species (Kambestad *et al*. 2017).

Current survey records: American Samoa: Tutuila Isl.: Aoa, Auto, Fagaalu, Fagaitua, Fagatogo, Iliili, Malaeimi, Maloata, Mapusagafou, Masausi, Tafuna; Olosega Isl.: Olosega; Ta'ū Isl.: Fitiuta.

***Hypothenemus seriatus* (Eichhoff)**

Stephanoderes seriatus Eichhoff, 1872: 133.
Hypothenemus seriatus (Eichhoff): Wood 1973: 177.
Hypothenemus striatulus Schedl, 1942a: 12. Synonymy: Wood 1989: 175.

Schedl (1951a) reported this species as *H. striatulus* from Tutuila (Utulei and Fagatogo).

Current survey records: American Samoa: Tutuila Isl.: Iliili.

Xyleborini

***Ambrosiophilus wilderi* (Beeson) comb. nov.**

Xyleborus wilderi Beeson, 1929: 235.
Ambrosiodmus wilderi (Beeson): Wood & Bright 1992: 681.
Xyleborus upoluensis Schedl, 1951: 152. Synonymy: Beaver 1976: 542.

Hulcr & Cognato (2009) described the genus *Ambrosiophilus* for species of *Ambrosiodmus* Hopkins and *Xyleborus* Eichhoff that had a flat pronotal disc that lacked asperities, an antennal club type 3 (see Hulcr *et al*. 2007) that is flattened and rounded, and a steep declivity. Beaver (1976) reports that galleries of this species were closely associated with galleries of *Beaverium swezeyi* (Beeson), indicating possible mycocleptoparasitism, an ecological characteristic of *Ambrosiophilus* (Hulcr & Cognato 2010). Wood & Bright (1992) list this species in *Ambrosiodmus*. The species has the generic characters of *Ambrosiophilus* and is here transferred to that genus.

Beeson (1929) described *X. wilderi* based on specimens from Fagasa and Pago Pago on Tutuila. *X. upoluensis*

Schedl (1951a) from Upolu was synonymized with *wilderi* by Beaver (1976). This species is endemic to the Samoan islands and Fiji.

Current survey records: American Samoa: Tutuila Isl.: Afono, Aoloau, Fagaitua, Iliili, Leone, Malaeimi; Ofu Isl.: Ofu; Olosega Isl.: Olosega; Ta‘ū Isl.: Faleasao, Fitiuta.

***Beaverium swezeyi* (Beeson) comb. nov.**

Xyleborus swezeyi Beeson, 1929: 234.

Hulcr & Cognato (2009) described the genus *Beaverium* as differing from other Xyleborini by their robust, rounded elytral disc, distinctly flattened and posterolaterally broadened elytral declivity, and the posterolateral declivital costa that ends on the 5th interstriae. *Xyleborus swezey*i fits this description and is here transferred to *Beaverium*.

Beeson (1929) described *X. swezeyi* based on specimens from Fagasa on Tutuila. Schedl (1951a) reported additional specimens from Upolu. This species is endemic to Samoa and American Samoa.

Current survey records: American Samoa: Tutuila Isl.: Aoloau.

*** *Debus fallaxoides* (Schedl) comb. nov.**

Xyleborus fallaxoides Schedl, 1955: 302.

Hulcr & Cognato (2010) described the genus *Debus* for species formerly placed in *Xyleborus* that have an emarginate elytral apex and a declivity that is usually impressed or excavated with sides elevated and surrounded by teeth or spines. This species has the characters of the genus and is here moved to *Debus*.

Schedl (1955) described this species based on a specimen from ‘Samoa’ with no indication of whether the specimen came from Samoa or American Samoa. The species also occurs in Fiji (Beaver 1995).

Current survey records: American Samoa: Tutuila Isl.: Afono, 12–23 i 2013, Malaise trap in *Rhus* 2° forest, -14.2682 -170.6502, N. Leifi coll. (1, RABC, 1, ASCC). Other locations: Tutuila Isl.: Fagaalu, Masausi; Ta‘ū Isl.: Ta‘ū, 14 v–5 vi 2018, Ethanol-baited multifunnel trap in coastal rainforest, -14.2517 -169.5013, M. Schmaedick coll. (1, ASCC).

***Eccoptopterus spinosus* (Olivier)**

Scolytus spinosus Olivier, 1800: 9.
Eccoptopterus spinosus (Olivier): Schedl 1962: 201.
Xyleborus eccoptopterus Schedl, 1951: 154. Synonymy: Beaver 1987a: 67.

Schedl (1951a) described this species from Fagatogo on Tutuila as *Xyleborus eccoptopterus* Schedl. The species is widespread in the Afrotropical and Oriental regions eastwards to New Guinea, Australia and the Solomon Islands.

Current survey records: American Samoa: Tutuila Isl.: Auto, Fagaalu, Fagaitua, Malaeimi, Maloata, Masausi; Ofu Isl.: Ofu; Olosega Isl.: Olosega; Ta‘ū Isl.: Faleasao, Ta‘ū.

*** *Euwallacea destruens* (Blandford)**

Xyleborus destruens Blandford, 1896: 221.
Euwallacea destruens (Blandford): Wood 1989: 173.

Beeson (1929) reported this species from Savai‘i and Upolu, Samoa. It is widely distributed in Asia, Australia and the Pacific Islands. Beaver (1976) reported it from rain forests above 600 m in Samoa; in this survey, only one specimen was collected in an ethanol-baited funnel trap at about 34 m on Tutuila Island; the species may be more common in higher elevation rain forests on the Island.

Current survey records: American Samoa: Tutuila Isl., Auto, 26 iv–4 v 2017, UHR Ethanol-baited multifunnel trap in 2° scrub, -14.2734 -170.6316, M. Meredith coll. (1, NMNH).

***Euwallacea perbrevis* (Schedl)**

Xyleborus perbrevis Schedl, 1951b: 59.
Euwallacea perbrevis (Schedl): Wood 1989: 173 (as a synonym of *E. fornicatus*).

Gomez *et al*. (2018) and Smith *et al*. (2019) used molecular and morphometric data to distinguish the species in the *Euwallacea fornicatus* complex. Specimens from trapping in this survey were determined to match both the molecular and most morphological characteristics of *E. perbrevis*. The species occurs throughout the Oriental region eastwards to New Guinea, Australia and Fiji, and has been introduced into the United States (Florida and Hawaii) and Central America (Smith *et al*. 2019). These specimens of *E. perbrevis* exhibited unusual morphology compared to those from its native range in mainland Asia and introduced populations in Hawaii, Panama and Florida, all of which had been previously used to generate diagnoses for the species in the complex (Gomez *et al*. 2018; Smith *et al*. 2019). American Samoan *E. perbrevis* are stouter than previously reported and specimens range between 2.22–2.38 times as long as wide *vs* 2.46–2.55 (Smith *et al*. 2019). It is probable that geographic isolation on these Pacific islands has led to this unique morphology thus making diagnoses of these species challenging without confirmation with molecular data.

Current survey records: American Samoa: Tutuila Isl.: Aoa, Auto, Fagaalu, Fagaitua, Iliili, Leone, Malaeimi, Maloata, Mapusagafou, Masausi, Tafuna.

***Euwallacea piceus* (Motschulsky)**

Anodius piceus Motschulsky, 1863: 512.
Euwallacea piceus (Motschulsky): Wood & Bright 1992: 692.
Wallacellus piceus (Motschulsky): Hulcr & Cognato 2010: 29.
Euwallacea piceus (Motschulsky): Storer *et al*. 2015: 396.
Xyleborus samoensis Beeson, 1929: 237. Synonymy: Wood 1960: 61.

Schedl (1951a) reported *Xyleborus samoensis* Beeson, 1929, from Amanave on Tutuila. The species was originally described from Upolu, and is now considered a synonym of *E. piceus* (Wood 1960). The species occurs in the Afrotropical and Oriental regions eastward to New Guinea and the islands of the Western Pacific.

Current survey records: American Samoa: Tutuila Isl.: Malaeimi, Maloata; Ta‘ū Isl.: Faleasao, Fitiuta.

*** *Euwallacea similis* (Ferrari)**

Xyleborus similis Ferrari, 1867: 23.
Wallacellus similis (Ferrari): Hulcr & Cognato 2010: 29.
Euwallacea similis (Ferrari) Storer *et al*. 2015: 396.
Xyleborus parvulus Eichhoff, 1868: 152. Synonymy: Schedl 1959: 505.
Xyleborus submarginatus Blandford, 1896: 223. Synonymy: Eggers 1929: 46.

This species was recorded from Upolu by Beeson (1929) and Schedl (1951a) as its synonyms *Xyleborus submarginatus* Blandford and *X. parvulus* Eichhoff. It has been moved around the world likely through commerce, and is now found through most of tropical and subtropical Asia and the Pacific, and in the Afrotropical and Nearctic Regions.

Current survey records: American Samoa: Tutuila Isl.: Masausi, 18–26 v 2017, Quercivorol-baited multifunnel trap in *Rhus* 2° forest, -14.2615 -170.6062, M. Meredith coll. (1, NMNH). Other locations: Tutuila Is: Fagaitua, Leone.

***Fraudatrix melas* (Eggers)**

Xyleborus melas Eggers, 1927: 93.
Coptoborus melas (Eggers): Wood & Bright 1992: 663.
Fraudatrix melas (Eggers): Cognato *et al*. 2020: 546.

Schedl (1972) reported this species from Tutuila. It is otherwise recorded only from the Philippines and China (Hong Kong), and Schedl’s record may be a misidentification.

Current survey records: Not found in current survey.

*** *Microperus* sp.**

A single specimen of an undetermined species of *Microperus* Wood was collected. The genus includes numerous species in the Oriental region and New Guinea, but is poorly known and needs revision. It would be premature to describe a single specimen as a new species. Additional specimens were sought in the BPBM which has extensive holdings from the Samoan Islands but none were present (SMS personal observation). Wood & Bright (1992) include 'Samoan Islands' in the distribution of *Microperus alpha* (Beeson), but the species found is not *M. alpha*. We know of no published records of *M. alpha* from Samoa or American Samoa, and no specimens have been seen from the islands. We consider the record in Wood & Bright (1992) to be an error based on the mention by Beeson (1929) that *Xyleborus alpha* is the correct name for *Xyleborus bicolor* var. α Sampson, a species from the Oriental region.

Current survey records: American Samoa: Ofu Isl.: Ofu, 16 v–6 vi 2018, Quercivorol baited multifunnel trap 2° forest, -14.1674 -169.6761, M. Schmaedick coll. (1, RABC).

***Planiculus bicolor* (Blandford)**

Xyleborus bicolor Blandford, 1894b: 113.
Planiculus bicolor (Blandford): Hulcr & Cognato 2010: 22.
Xyleborus bicolor unimodus Beeson, 1929: 238. Synonymy: Wood 1989: 172.
Xyleborus rameus Schedl, 1940: 441. Synonymy: Schedl 1958: 147.

Beeson (1929) described *Xyleborus bicolor* subspecies *unimodus* from Pago Pago, and Schedl (1951a) reported *X. rameus* Schedl from the Pago- Matafao trail; both are now considered synonyms of *P. bicolor*. The species occurs throughout the Oriental region eastwards to New Guinea and the Western Pacific islands.

Current survey records: American Samoa: Tutuila Isl.: Aoloau, Auto, Fagaalu, Fagaitua, Leone, Malaeimi, Maloata; Ta'ū Isl.: Faleasao, Fitiuta, Ta'ū.

***Xyleborinus artelineatus* (Beeson)**

Xyleborus artelineatus Beeson, 1929: 239.
Xyleborinus artelineatus (Beeson): Beaver 1991: 94.
Xyleborus cinctipennis Schedl, 1980: 186. **syn. nov.**

Schedl (1951a) reported this species from Moloata [*sic*] on Tutuila. Beeson (1929) described it as a new species from Upolu. It occurs in Australia, Fiji and Samoa.

Xyleborus cinctipennis was synonymised with *Xyleborinus saxesenii* (Ratzeburg) by Wood (1989). *X. saxesenii* is a Palaearctic species which has been introduced into a number of countries in North and South America, South Africa and Australia. One of us (RAB) has examined the holotypes of *Xyleborinus artelineatus* (NHML) and *Xyleborus cinctipennis* (NMW), and compared them with specimens of *X. artelineatus* collected in Australia, Fiji and Samoa, and with numerous specimens of *Xyleborinus saxesenii* from Europe, Asia, Australia, New Caledonia, and South Africa. It is clear that Wood was mistaken, and that *X. cinctipennis* is, in fact, conspecific with *X. artelineatus* and not *X. saxesenii*. It is here placed in synonymy with *X. artelineatus*. *Xyleborinus artelineatus* can be distinguished from *X. saxesenii* by the following characters (those of *X. artelineatus* given first). 1) Elytral declivity distinctly impressed between clearly raised interstriae 3 *vs* elytral declivity convex or plano-convex, interstriae 3 at most weakly raised, usually not raised; 2) Interstriae 1 without tubercles on face of elytral declivity, a single pair on the upper margin of declivity *vs* interstriae 1 with a row of 2–4 tubercles on face of declivity in addition to pair on upper margin; 3) interstrial spines on elytral declivity strongly developed, especially on interstriae 3 *vs* interstrial spines weakly developed; 4) elytral declivity always strongly shining *vs* elytral declivity usually dull, opaque, occasionally shining. The species are distinct even where both occur at a single locality (Queensland, Australia).

Current survey records: American Samoa: Tutuila Isl.: Aoloau, Auto, Fagaalu, Leone, Malaeimi, Maloata, Masausi, Vatia; Aunu'u Isl.; Olosega Isl.: Olosega.

**** Xyleborinus exiguus* (Walker)**

Bostrichus exiguus Walker, 1859: 260.
Xyleborinus exiguus (Walker): Maiti & Saha 1986: 109.
Xyleborinus perexiguus Schedl, 1971: 381. Synonymy: Hulcr & Cognato 2013: 142.

Schedl (1951a) and Beaver (1976 as *Xyleborinus perexiguus* Schedl) reported this species from Upolu, Samoa. It occurs in Africa, Asia, Australia, North America and many of the Pacific islands. It was one of the most common species in ethanol-and quercivorol - baited traps during this survey.

Current survey records: American Samoa: Tutuila Isl.: Asili, 19 vii 2006, BG mosquito trap in village, M. Schmaedick coll. (1, NMNH); Other locations: Tutuila Isl.: Aoa, Fagaalu, Iliili, Malaeimi, Maloata, Masausi, Nu'uuli; Aunu'u Isl., 22 xii 2016–12 i 2017, Ethanol-baited multifunnel trap in DoA plot, -14.2855 -170.5550, M. Meredith coll. (2, ASCC); Ofu Isl., Ofu, 16 v–6 vi 2018, Quercivorol-baited multifunnel trap in *Rhus* 2° forest, -14.1674 -169.6761, M. Schmaedick coll. (2, ASCC); Olosega Isl.: Olosega, 16 v–6 vi 2018, Quercivorol-baited multifunnel trap in *Rhus* 2° forest, -14.1814 -169.6130, M. Schmaedick coll. (1, ASCC);Ta'ū Isl.: Faleasao, 15 v–4 vi 2018, Quercivorol-baited multifunnel trap in 2° scrub, -14.2175 -169.5085, M. Schmaedick coll. (1, ASCC).

**** Xyleborinus saxesenii* (Ratzeburg)**

Bostrichus saxesenii Ratzeburg, 1837: 167.
Xyleborinus saxesenii (Ratzeburg): Reitter 1913: 79.

Xyleborinus saxesenii had previously been recorded from the 'Samoan Islands' in Wood & Bright (1992). This record was probably based on a single specimen in the BPBM collected on Tutuila in 1965. The specimen was examined by SMS and was determined to be a misidentified specimen of *X. artelineatus*. The species is widely distributed, and has been described as many different species that are now considered synonyms (Wood & Bright 1992; Alonso-Zarazaga *et al*. 2017). In North America, it is one of the most common species in ethanol-baited traps. However, only one specimen was collected during this survey in American Samoa. It appears to be much more common in temperate and subtropical climates than in the moist tropics but does occur in the Hawaiian Islands, and Papua New Guinea. During this survey, *Xyleborinus exiguus* was the most common *Xyleborinus* species.

Current survey records: American Samoa: Tutuila Isl.: Malaeimi, Ace lumberyard, 22 vii–5 viii 2018, UHR Ethanol-baited multifunnel trap, -14.3173 -170.7365, M. Schmaedick coll. (1, NMNH).

***Xyleborus affinis* Eichhoff**

Xyleborus affinis Eichhoff, 1868: 401.
Xyleborus mascarensis Eichhoff, 1878: 372. Synonymy: Wood 1960: 71.

Schedl (1951a) reported this species as *X. mascarensis* Eichhoff from Tutuila. The species has a circumtropical distribution, but is less common in the Oriental and Pacific regions than in Africa and the Americas.

Current survey records: American Samoa: Tutuila Isl.: Aoloau, Iliili, Leone, Mapusagafou; Ta'ū Isl.: Faleasao, Ta'ū.

***Xyleborus ferrugineus* (Fabricius)**

Bostrichus ferrugineus Fabricius, 1801: 388.
Xyleborus ferrugineus (Fabricius): Ferrari 1867: 23.
Xyleborus confusus Eichhoff, 1868: 401. Synonymy: Wood 1957: 403.

Beeson (1929) and Schedl (1951a) reported this species as *X. confusus* Eichhoff from Tutuila. This species is probably of American origin, but its distribution is now circumtropical (Gohli *et al*. 2016).

Current survey records: American Samoa: Tutuila Isl.: Aoa, Fagaalu, Fagaitua, Iliili, Leone, Malaeimi, Maloata, Masausi, Vaitogi; Aunu'u Isl.; Ofu Isl.: Ofu; Olosega Isl.: Olosega; Ta'ū Isl.: Faleasao, Fitiuta, Ta'ū.

***Xyleborus perforans* (Wollaston)**

Tomicus perforans Wollaston, 1857: 96.
Xyleborus perforans (Wollaston): Eichhoff 1878: 403.
Xyleborus kraatzi Eichhoff, 1868: 152. Synonymy: Blandford 1895: 322.
Bostrichus testaceus Walker, 1859: 260. Synonymy: Blandford 1895: 322.

This species was first reported in American Samoa (Tutuila) as its synonym *X. kraatzi* Eichhoff by Beeson (1929) and by Schedl (1951a) *as X. kraatzi* and *X. testaceus* Walker. It is widely distributed in tropical areas around the world, and along with *Xyleborinus exiguus* and *Xylosandrus crassiusculus*, was one of the most common species in traps during this survey.

Current survey records: American Samoa: Tutuila Isl.: Afono, Alega, Aoa, Aoloau, Iliili, Leone, Malaeimi, Maloata, Masausi, Masefau, Pago Pago; Aunu‘u Isl.; Ofu Isl.: Ofu; Olosega Isl.: Olosega; Ta‘ū Isl.: Faleasao, Fitiuta, Ta‘ū.

***Xyleborus volvulus* (Fabricius)**

Bostrichus volvulus Fabricius, 1775: 454.
Xyleborus volvulus (Fabricius): Eggers 1929: 47.
Xyleborus silvestris Beeson, 1929: 241. Synonymy: Wood 1989: 177.

Schedl (1951a) reported this species from Tutuila as its synonym *X. silvestris* Beeson. It is a common species throughout the tropics, and although it was not recorded during this survey, it is possible that the species was confused with the thousands of specimens of *X. perforans* from which it is distinguished with difficulty.

Current survey records: Not found in current survey.

**** Xylosandrus compactus* (Eichhoff)**

Xyleborus compactus Eichhoff, 1876: 201.
Xylosandrus compactus (Eichhoff): Nunberg 1959: 434.

Beaver (1976) recorded this species for the first time in Samoa (Upolu), and stated that it was presumably a fairly recent introduction, but had spread to the edge of the rain forest. It is widely distributed in tropical and subtropical areas on most continents, and in some areas is a serious pest of cultivated trees and natural forests. It was commonly found in most locations trapped during this survey.

Current survey records: American Samoa: Tutuila Isl.: Mapusaga, 20 viii 2000, Galleries in tree seedlings in screenhouse, M. Schmaedick coll. (2, RABC; 5, ASCC); Other locations Tutuila Isl.: Aoa, Asili, Fagaalu, Fagaitua, Masausi, Pago Pago; Aunu‘u Isl., 12 i -1 ii 2017, Ethanol-baited multifunnel trap in mangrove swamp, -14.2879 -170.5571, M. Meredith coll (1, ASCC); Ofu Isl., Ofu, 16 v–6 vi 2018, Quercivorol-baited multifunnel trap in *Rhus* 2° forest, -14.1674 -169.6761, M. Schmaedick coll. (1, ASCC); Ta‘ū Isl.: Faleasao, 6–10 iv 2015, Yellow pan trap in 2° scrub, -14.2186 -169.4812, M. Schmaedick (1, ASCC), Other locations Ta‘ū Isl.: Ta‘ū.

***Xylosandrus crassiusculus* (Motschulsky)**

Phloeotrogus crassiusculus Motschulsky, 1866: 403.
Xylosandrus crassiusculus (Motschulsky): Wood 1977: 68.
Xyleborus semigranosus Blandford, 1896: 211. Synonymy: Schedl 1959: 496.

This widely distributed species was first reported from American Samoa by Schedl (1951a) as its synonym *Xyleborus semigranosus* Blandford. *X. crassiusculus* is the most widespread xyleborine species in the world and occurs in tropical, subtropical and temperate regions (Flechtmann & Atkinson 2016). It was one of the most common species in ethanol-baited traps during this survey.

Current survey records: American Samoa: Tutuila Isl.: Aoa, Fagaalu, Fagaitua, Iliili, Leone, Malaeimi, Maloata, Masausi, Masefau, Nuuuli; Aunu‘u Isl.; Ofu Isl.: Ofu; Olosega Isl.: Olosega, Ta‘ū Isl.: Faleasao, Fitiuta.

***Xylosandrus morigerus* (Blandford)**

Xyleborus morigerus Blandford, 1894a: 264.
Xylosandrus morigerus (Blandford): Reitter 1913: 84.

First reports of this common and widely distributed species in American Samoa were by Schedl (1951a) who reported it in several locations on Tutuila. *X. morigerus* is distributed worldwide in tropical and subtropical areas, and in some areas is a serious pest of cultivated trees (Browne 1961).

Current survey records: Tutuila Isl.: Aoa, Fagaalu, Fagaitua, Iliili, Leone, Malaeimi, Masausi, Pago Pago, Vatia; Aunu‘u Isl.; Ofu Isl.: Ofu; Olosega Isl.: Olosega.

Xyloctonini

***Scolytomimus maculatus* Beeson**

Scolytomimus maculatus Beeson, 1929: 223.

Beeson (1929) described this species based on specimens from Upolu and Tutuila. It is endemic to Fiji and the Samoan Islands.

Current survey records: American Samoa: Tutuila Isl.: Alofau, Asili, Maloata, Tula; Olosega Isl.: Olosega.

Platypodinae

***Crossotarsus externedentatus* (Fairmaire)**

Platypus externedentatus Fairmaire, 1849: 78.
Crossotarsus externedentatus (Fairmaire): Chapuis 1865: 81.

Beeson (1929) lists this species from Tutuila (Leone), and Schedl (1951a) from Tutuila (Naval Station and Pago Pago). The species is widely distributed in the Afrotropical and Oriental regions and the Pacific Islands.

Current survey records: American Samoa: Tutuila Isl.: Auto, Iliili, Maloata; Ofu Isl.: Ofu; Olosega Isl.: Olosega; Ta‘ū Isl.: Faleasao, Fitiuta, Ta‘ū.

**** Euplatypus parallelus* (Fabricius)**

Bostrichus parallelus Fabricius, 1801: 384.
Euplatypus parallelus (Fabricius): Wood 1993: 275.

This invasive, Neotropical species has been spreading widely through the Oriental region where it was probably introduced post-World War II (Beaver 2013). It occurs in Papua New Guinea and Australia, and was recently reported for the first time in the Pacific Islands in Hawaii (Gillett & Rubinoff 2017).

Current survey records: American Samoa: Tutuila Isl.: Vailoatai, 14–17 xiii 2008, M. Schmaedick coll., Malaise trap in 2° forest (1, NMNH). Other locations: Tutuila Isl.: Afono, Auto, Malaeimi; Ofu Isl.: Ofu, -14.1674 -169.6761, 16 v–6 vi 2018; M. Schmaedick coll. Yellow pan trap in secondary forest, (UFFE: 3104; 1, UFFE); Olosega Isl.: Olosega, -14.1814 -169.6130; 16 v–6 vi 2018; M. Schmaedick coll. Malaise trap in secondary forest (UFFE: 30718; 1, UFFE); Ta‘ū Isl.: Faleasao, -14.2174 -169.5085, 15 v–4 vi 2018, M. Schmaedick coll., Malaise trap in secondary scrub (UFFE: 31046; 1, UFFE).

Discussion

Previous to this survey, 37 species of Scolytinae and 1 species of Platypodinae were recorded from American Samoa. This survey added 14 species of Scolytinae and 1 species of Platypodinae to the American Samoan fauna. In addition, two species of undescribed scolytines are reported, bringing to 53 the total number of species of Scolytinae

found in American Samoa; there are two species of Platypodinae (Table 1). The taxonomic composition is restricted with only five of the 25 currently recognized tribes of Scolytinae present, and the fauna dominated by the Cryphalini (*sensu* Wood, 1986) (20 species) and Xyleborini (21 species). In this respect, it resembles many other Polynesian islands (Jordal *et al*. 2001). Of the fifty-five species present, 33 are inbreeding (60%) and 22 outbreeding (40%). Very similar percentages (58% inbreeding, 42% outbreeding) were given by Jordal *et al*. (2001) for Tutuila prior to the current survey. Thirty-two of the species (58%) are ambrosia beetles (xylomycetophagous), 23 (42%) are 'bark beetles' (including phloeophagous, myelophagous, spermatophagous species) (Kirkendall *et al*. 2015). The high proportion of ambrosia beetles is typical of tropical faunas: in temperate regions, the percentage is much lower (Kirkendall 1993).

Only two species are endemic to American Samoa: *Cryphalus polynesiae* and *C. tutuilaensis*, neither of which were collected during this survey. In contrast, Samoa has six species reported to be endemic*: Eidophelus samoanus* Schedl*, Cryphalus afiamalus* (Schedl)*, Ficicis pacificus* (Beeson), *Xyleborus baculum* Beeson*, X. longicollis* Browne*,* and *X. mustus* Schedl. In addition to these eight species there are six additional species endemic to both Samoa and American Samoa: *Cryphalus basihirtus*, *C. imitans, C. samoensis, C. upoluensis, Cyrtogenius grandis*, and *Beaverium swezeyi*.

We did not collect any specimens of *Euwallacea fornicatus* as part of our survey. This was particularly surprising because one of the synonyms of *E. fornicatus*, X. *tapatapaoensis*, was described from Samoa, and the Samoan Islands share many species. A search of the BPBM Samoan Islands collection, likely the largest collection of Samoan Island scolytines, did not contain any *E. fornicatus* complex species (SMS personal observation).

The majority of the 53 species of scolytines and two species of platypodines found on American Samoa are not endemic to American Samoa nor the Pacific islands. Many of them are adventive species widely distributed across the tropics. During this survey, 11 species of Scolytinae and Platypodinae not endemic to the Pacific islands were found in American Samoa for the first time. Several species, such as *Xylosandrus compactus, Xyleborinus exiguus, Euplatypus parallelus* and three species of *Coccotrypes* have become widely distributed among many continents through human assisted movement. Most of these species that are moving through trade are either ambrosia beetles or seed feeding species which makes them more easily transported with wood packaging, lumber or seeds.

Many of the widespread species are also inbreeding, with a breeding system in which one or a few males fertilize all their sisters before emergence from the gallery system and dispersal (Kirkendall 1993; Kirkendall *et al*. 2015). Inbreeding potentially allows colonization of an island by a single female (Jordal *et al*. 2001). The proportions of inbreeding species relative to outbreeding species in the same distributional category, that are 1) endemic to American Samoa, 2) occur on neighboring island groups (Samoa, Fiji), 3) occur more widely in the Pacific region, and 4) are widespread in the tropics are 20%, 31%, 38% and 87% respectively. It is clear that the outbreeding species have a higher degree of endemism, and the inbreeding species are more likely to be widespread. These trends in the proportions of inbreeding *vs* outbreeding species parallel those found for a number of other small, tropical islands (Jordal *et al*. 2001). Human assisted movement coupled with inbreeding has allowed the rapid invasion and spread of many species of scolytines to both continental and island areas.

The majority of species found in American Samoa do not cause economic or ecological damage to forest trees, although some species are known to cause damage to seedlings, transplants or individual trees. Several species of *Hypothenemus* have contributed to mortality of mango seedlings in Samoa (Beaver 1976) and other tropical countries (Browne 1961). The three species of *Xylosandrus* found in American Samoa are potentially the most damaging. *Xylosandrus compactus* and *X. morigerus* are reported to cause twig mortality on many different species of trees in other areas (Chong *et al*. 2009; Greco *et al*. 2015), and *X. crassiusculus* has caused mortality to trees stressed by flooding or drought in North America (Ranger *et al*. 2013), and degraded recently cut timber (Atkinson *et al*. 2005). The various species of ambrosia beetles, especially *Xyleborus ferrugineus, X. perforans* and the two platypodine species, are potential pests of weakened trees or recently felled timber, and some species of ambrosia beetles have caused extensive tree mortality in non-tropical areas by vectoring pathogenic fungi (Fraedrich *et al*. 2008). Members of the *Euwallacea fornicatus* complex have caused tree damage to many species in both their native and introduced ranges (Walgama 2012; Eskalen *et al.* 2013; Coleman *et al.* 2019). Although *E. fornicatus* was not found in American Samoa during this survey (but has been reported from Samoa), the closely related *Euwallacea perbrevis*, the tea shot-hole borer, does cause damage to *Camellia* and many other hosts. However, based on its wide distribution across Tutuila, it likely has been in American Samoa for many years with no significant impacts.

TABLE 1. Records of species on the islands of American Samoa, their larval feeding habits and breeding systems.

	Previously reported from Tutuila	Specimens from American Samoa Collection and Trapping					Biology of Species	
		Islands					Larval Feeding Habits	Breeding System
Subfamily/Tribe/Genus/Species		Tutuila	Ta‘ű	Aunu‘u	Olosega	Ofu		
Scolytinae								
Cryphalini								
Cryphalus basihirtus (Beeson)	x						P	O
Cryphalus capucinimorphus Schedl *		x	x		x		P	O
Cryphalus imitans (Schedl)	x						P	O
Cryphalus mangiferae Stebbing*		x		x		x	P	O
Cryphalus mollis Schedl*	x	x	x				P	O
Cryphalus pexus Schedl	x						P	O
Cryphalus polynesiae (Schedl)	x						P	O
Cryphalus samoensis Beeson	x						P	O
Cryphalus silvanus Schedl	x						P	O
Cryphalus sylvicola Perkins	x	x	x	x			P	O
Cryphalus tutuilaensis (Schedl)	x						P	O
Cryphalus upoluensis Schedl	x						P	O
Cryphalus sp.		x	x		x	x	P	O
Dryocoetini								
Coccotrypes advena Blandford	x	x					P, S	I
Coccotrypes carpophagus (Hornung) *		x					S	I
Coccotrypes cinnamomi (Eggers) *		x					P, S	I
Coccotrypes cyperi (Beeson) *		x	x	x		x	H, P, S	I
Coccotrypes myristicae (Roepke)	x	x					S	I
Coccotrypes tutuilensis Beeson	x	x					H, P, S	I
Coccotrypes vulgaris (Eggers)	x	x	x				P	I
Cyrtogenius grandis (Beeson) *		x					P	O
Cyrtogenius samoanus (Eggers)	x						P	O
Ernoporini								
Eidophelus marquesanus (Beeson)	x	x	x	x			P	O

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TABLE 1. (Continued)

Subfamily/Tribe/Genus/Species	Previously reported from Tutuila	Specimens from American Samoa Collection and Trapping					Biology of Species	
		Islands					Larval Feeding Habits	Breeding System
		Tutuila	Ta‘ű	Aunu‘u	Olosega	Ofu		
Eidophelus pacificus (Schedl)*		x		x			P	O
Hylesinini								
Ficicis despectus (Walker)	x	x					P	O
Ficicis porcatus (Chapuis)	x	x	x				P	O
Trypophloeini								
Hypothenemus areccae (Hornung)	x	x	x				P, M	I
Hypothenemus birmanus (Eichhoff)	x	x	x		x		M	I
Hypothenemus brunneus (Hopkins)*		x					M	I
Hypothenemus eruditus Westwood	x	x	x		x		H, P. M, S	I
Hypothenemus seriatus (Eichhoff)	x	x					P, M, S	I
Xyleborini								
Ambrosiophilus wilderi (Beeson)	x	x	x		x	x	X	I
Beaverium swezeyi (Beeson)	x	x					X	I
Debus fallaxoides (Schedl) *		x	x				X	I
Eccoptopterus spinosus (Olivier)	x	x	x		x	x	X	I
Euwallacea destruens (Blandford) *		x					X	I
Euwallacea perbrevis (Schedl)		x					X	I
Euwallacea piceus (Motschulsky)	x	x	x				X	I
Euwallacea similis (Ferrari) *		x					X	I
Fraudatrix melas (Eggers)	x						X	I
Microperus sp.						x	X	I
Planiculus bicolor (Blandford)	x	x	x				X	I
Xyleborinus artelineatus (Beeson)	x	x		x	x		X	I
Xyleborinus exiguus (Walker) *		x	x	x	x	x	X	I
Xyleborinus saxesenii (Ratzeburg) *	x	x					X	I
Xyleborus affinis Eichhoff	x	x	x				X	I

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TABLE 1. (Continued)

Subfamily/Tribe/Genus/Species	Previously reported from Tutuila	Specimens from American Samoa Collection and Trapping					Biology of Species	
		Islands					Larval Feeding Habits	Breeding System
		Tutuila	Ta‘ű	Aunu‘u	Olosega	Ofu		
Xyleborus ferrugineus (Fabricius)	x	x	x	x	x	x	X	I
Xyleborus perforans (Wollaston)	x	x	x	x	x	x	X	I
Xyleborus volvulus (Fabricius)	x						X	I
Xylosandrus compactus (Eichhoff) *		x	x	x		x	X	I
Xylosandrus crassiusculus (Motschulsky)	x	x	x	x	x	x	X	I
Xylosandrus morigerus (Blandford)	x	x		x	x	x	X	I
Xyloctonini								
Scolytomimus maculatus Beeson	x	x			x		P	O
Platypodinae								
Crossotarsus externedentatus (Fairmaire)	x	x	x		x	x	X	O
Euplatypus parallelus (Fabricius) *		x	x		x	x	X	O

*—New American Samoa records.

Larval Feeding Habits (for definitions see Kirkendall *et al*. (2015): H Herbiphagous; M Myelophagous; P Phloeophagous; S Spermatophagous; X Xylomycetophagous.

Breeding system: I Inbreeding; O Outbreeding.

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