

## The Bostrichidae Found in Hawaii (Coleoptera)

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There are no endemic bostrichids in the Hawaiian islands. Seven species have been introduced and apparently established, and one (*Polycaon stouti*) is occasionally bred from furniture or lumber imported from western North America. There have been no local keys written to aid in the identification of the species found in Hawaii, and it is principally for that reason that this paper is presented to the Society.

The classification and synonymy followed here is principally that of Lesne in his revisional papers (Ann. Soc. Ent. France, 1896-1909) and in *Coleopterorum Catalogus*, part 161, 1938.

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### LIST OF THE SPECIES

1. *Polycaon stouti* (Le Conte).
2. *Dinoderus minutus* (Fabricius).
3. *Rhyzopertha dominica* (Fabricius).
4. *Sinoxylon conigerum* Gerstaecker.
5. *Amphicerus cornutus* (Pallas).
6. *Xylothrips religiosus* (Boisduval).
7. *Xylopsocus capucinus* (Fabricius).
8. *Xylopsocus castanoptera* (Fairmaire).

### KEY TO THE SUBFAMILIES

1. Head not hidden from above by the prothorax, but obviously exposed; pronotum not denticulate in front.....**Polycaoninae.**
- Head, in normal position, concealed from above by the prothorax which is armed with denticles in front..... 2
- 2(1). Pronotum with the fore edge convex, not truncate nor conspicuously emarginate; tarsi shorter than the tibiae.....**Dinoderinae.**
- Pronotum with the fore edge either truncate, concave or conspicuously emarginate; tarsi as long or distinctly longer than the tibiae .....**Bostrichinae.**

## POLYCAONINAE

Genus **Polycaon** Castelnau

*Polycaon* Castelnau: in Silberman's Revue Ent., 4: 30, 1836.  
*Exops* Curtis: Trans. Linn. Soc. London, 18(2): 204, 1839.  
*Allaocnemis* Le Conte: Proc. Phil. Acad. Sci., 6: 233, 1853.

1. **Polycaon stouti** (Le Conte).

*Allaocnemis stouti* Le Conte: Proc. Phil. Acad. Sci., 6: 233, 1853.  
*Polycaon ovicollis* Le Conte: Report of Exploration and Survey, Mississippi to Pacific, 12(3): 49, 1857.

The first record of this species in Hawaii is that by Swezey [Proc. Haw. Ent. Soc., 5(2): 192, 1923] who recorded the emergence of two specimens of the beetle from an oak table in Honolulu in 1922. In 1932 Van Zwaluwenburg recorded the emergence of a specimen from a piece of furniture in Maui in August, 1931. The furniture had been brought from the Pacific Coast in November 1929. In 1934 Pemberton recorded that a second specimen had issued from the same piece of furniture in 1933. There are several specimens in the Hawaiian Sugar Planters' Association Experiment Station collection which emerged from walnut and maple furniture several years after importation to Hawaii from the west coast of North America.

This species is all black and varies from 17 to 20 mm. or more in length. Its range includes Arizona, California and Oregon. It has not been known to reproduce in Hawaii.

## DINODERINAE

## KEY TO THE GENERA FOUND IN HAWAII

Ventrite 5 with the hind margin entire, subtruncate or slightly convex  
 but not concave.....**Dinoderus**.  
 Ventrite 5 with the hind margin conspicuously concave.....**Rhyzopertha**.

Genus **Dinoderus** Stephens

*Dinoderus* Stephens: Illustrations British Ent., Mandibulata, 3: 352, 1830.  
*Patea* Casey: Journ. New York Ent. Soc., 6: 66, 1898.

2. **Dinoderus minutus** (Fabricius).

*Apate minutus* Fabricius: Syst. Ent., p. 54, 1775.  
*Dinoderus substriatus* Stephens (not Paykull): Illustrations British Ent., Mandibulata, 3: 352, 1830.  
*Bostrichus vertens* Walker: Ann. Mag. Nat. Hist. 3: 260, 1859.  
*Rhyzopertha sicula* Baudi: Berlin. Ent. Zeitschr., 17: 336, 1873.

Most of the species of the genus have been described from Indonesia. Perkins (Fauna Haw., 3: 643, 1910) recorded this species from bamboo furniture from Oahu, and I have seen specimens reared from bamboo furniture in Honolulu only. The species has become cosmopolitan.

Genus *Rhizopertha* Stephens

*Rhizopertha* Stephens: Illustrations British Ent., Mandibulata, 3: 354, 1830.

3. *Rhizopertha dominica* (Fabricius), Stephens, loc. cit.

*Synodendron dominicum* Fabricius: Ent. Syst., 1(2): 359, 1792.

*Synodendron pusillum* Fabricius: Ent. Syst., Suppl. V, p. 156, 1798.

*Ptinus fissicornis* Marsham: Ent. Brit., 1: 82, 1802.

*Ptinus piceus* Marsham: op. cit., p. 88.

*Apate rufa* Hope: Trans. Ent. Soc. London, 4: 17, 1845.

*Apate frumentaria* Nördlinger, Klein. Feinde der Landw., p. 189, fig., 1855.

*Bostrichus moderata* Walker: Ann. Mag. Nat. His., (III)3: 260, 1859.

*Bostrichus exiguus* Walker: loc. cit.

This species was collected by Blackburn, and Perkins (Fauna Haw. 3: 643, 1910) listed it from "Oahu, Hawaii and no doubt other islands." In Bishop Museum there are six specimens collected in Honolulu in 1928 but no host data are given. There is a series of specimens in the collection of the Hawaiian Sugar Planters' Association Experiment Station reared from corn in Honolulu. A large series in the University of Hawaii collection was reared from dog biscuits.

Chittenden (U. S. Dep't Agric. Bureau of Ent. Bull. 96, part 3, 1911) calls this species the "lesser grain-borer" and gives an extensive discussion of the species including its life history, damage done, and an illustration.

## BOSTRICHINAE

## KEY TO THE GENERA FOUND IN HAWAII

1. Mandibles not decussate, but meeting nearly on a straight line; the three distal antennal segments greatly elongated transversely and forming a pectinate club in the Hawaiian species ..... **Sinoxylon.**  
Mandibles decussate; the three distal antennal segments not pectinate ..... 2
- 2(1). Intercoxal process of the first ventrite fully as broad or broader than the breadth of a fifth tarsal segment and obviously separating the metacoxae; each segment of the club of the antennae with two longitudinal grooves on their broadest sides..... **Amphicerus.**  
Intercoxal process of the first ventrite a thin lamella obviously much narrower than a fifth tarsal segment, the metacoxae subcontiguous; segments of the antennal clubs without longitudinal grooves ..... 3
- 3(2). Front of head with conspicuous, long, erect hair which is particularly dense near the anterior margin of the front on either side of the median line; the anterior margin of the first two segments of the antennal club distinctly longer than broad..... **Xylothrips.**  
Front of head without dense, conspicuous hair; first two segments of the antennal club broader than long..... **Xylopsocus.**

Genus **Sinoxylon** Duftschmidt

*Sinoxylon* Duftschmidt: Fauna Austr., 3: 85, 1825.

*Trypocladus* Guérin-Méneville: Ann. Soc. Ent. France, p. 17, 1845.

*Apatodes* Blackburn: Proc. Linn. Soc. New South Wales, (II) 3: 1429, 1889.

4. **Sinoxylon conigerum** Gerstaecker: Monatsb. Berlin Akad., p. 268, 1855.

*Sinodendron unidentatum* Fabricius: Syst. El., 2: 377, 1801.

I have records of this species having been bred from *Hibiscus rosa-sinensis*, *Ceiba*, *Gossypium tomentosum*, algaroba, avocado and pigeon peas in the islands. It does some damage to the lead sheathing around telephone cables throughout the islands by boring neat holes through the sheathing thereby permitting the entrance of water which causes short circuits. Swezey [Proc. Haw. Ent. Soc. 4(2): 247, 1920] reported that the adults bored into branches of a fallen algaroba an inch to an inch and a half in diameter nearly severing them so that they were easily broken off. The species was common in Perkins' time, but I have no record of its first capture in Hawaii.

This insect is widespread and has been found from Africa to the Pacific and also in South America.

Genus **Amphicerus** Le Conte

*Amphicerus* Le Conte: Class. Coleopt. North Amer., p. 208, 1861.

*Caenophrada* Waterhouse: Ann. Mag. Nat. Hist. (VI) 1: 350, 1888.

*Schistoceros* Lesne: Ann. Soc. Ent. France, 67: 442, 1899, (now considered a subgenus).

The members of *Amphicerus*, sens. str., are in America.

5. **Amphicerus cornutus** (Pallas).

*Ligniperda cornutus* Pallas: Spic. Zool. fasc. 9, p. 8, pl. 1, fig. 4, 1772.

*Bostrichus bicornutus* Latreille: Voy. Humboldt, 2: 65, pl. 4, fig. 6, 1833.

*Bostrichus peregrinus* Erichson: Arch. für Naturg. 13: 87, 1847.

*Apate punctipennis* Le Conte: Proc. Phil. Acad. Sci., p. 73, 1858.

*Bostrichus migrator* Sharp: Trans. Royal Dublin Soc., (II) 3: 160, 1885.

This tropical American species was collected by Blackburn and erroneously redescribed from Hawaii as new by Sharp in 1885. It is a common species of the Hawaiian lowlands. I have records of its being bred from *Hibiscus rosa-sinensis*, *Hibiscus cameronii*, algaroba, *Euphorbia*, *Scaevola koenigii*, bamboo, dry sugar cane, *Bougainvillea*, *Indigofera*, and *Gossypium tomentosum*. Bridwell [Proc. Haw. Ent. Soc. 4(2): 328, 1920] says "The eggs are deposited in the bottom of the burrow; the larvae continue to burrow further down; in this way the insect serves as a twig pruner." The species is frequently attracted to lights. Although it is probably more widely spread, I have seen Hawaiian specimens collected from Oahu, Molokai and Maui only.

Genus **Xylothrips** Lesne

*Xylothrips* Lesne: Ann. Soc. Ent. France, 69: 620, 1901.

This genus contains three species, probably all Indo-Malayan in origin. The following species has not yet been reported from outside of Oceania.

6. **Xylothrips religiosus** (Boisduval).

*Apate religiosus* Boisduval: Voyage de l'Astrolabe, 2: 460, 1835.

*Apate religiosæ* Fairmaire: Rev. Mag. Zool., (II) 2: 50, 1850.

*Apate destructor* Montrouzier: Ann. Soc. Agric. Lyon, (II) 7: 55, 1855.

*Apate liguana* Montrouzier: Ann. Soc. Ent. France, (IV) 1: 267, 1861.

Blackburn collected this species. Perkins said that it was "very abundant," but few samples are in local collections. I have seen specimens bred from dead *Hibiscus tiliaceus* and avocado, and from Kauai, Oahu and Hawaii.

Genus **Xylopsocus** Lesne

*Xylopsocus* Lesne: Ann. Soc. Ent. France, 69: 627, 1901.

Most of the 13 species of this genus are Indo-Pacific in origin.

## KEY TO THE SPECIES OF XYLOPSOCUS FOUND IN HAWAII

- Antennae 9-segmented; lateral margin of elytral declivity carinately elevated nearly to or to the suture; elytra, in front of the declivity, deeply and densely punctate, the derm appearing asperate.....  
 .....**X. capucinus** (Fabricius).
- Antennae 10-segmented; lateral margin of elytral declivity without a carina extending upward to or near the suture; elytra only shallowly punctate in front of the declivity....**X. castanoptera** (Fairmaire).

7. **Xylopsocus capucinus** (Fabricius).

*Apate capucinus* Fabricius: Spec. Ins. 1: 62, 1781.

*Bostrichus eremita* Olivier: Enc. Meth. Ins., 5: 110, pl. 2, fig. 11, 1795.

*Apate marginatus* Fabricius: Syst. El., 2: 382, 1801.

*Enneadesmus nicobaricus* Redtenbacher: Reise der Novara, 2(1): 114, 1868.

This species is recorded from a single example collected by M. B. Linford, March 12, 1939 on Lanai. The specimen bears the label "Pineapple fields, flight," but Sakimura and Linford [Proc. Haw. Ent. Soc. 10(3): 452, 1940] record the capture as "resting in automobile." It may be that the species is established in the Hawaiian islands, and I have, therefore, included it here.

8. **Xylopsocus castanoptera** (Fairmaire).

*Apate castanoptera* Fairmaire: Rev. Mag. Zool. (II) 2: 50, 1850.

*Apate affinis* Brancsik: Jahresheft Naturwiss. Ver. Trencsin. Comt., 15: 235, 1893.

This species was collected by Blackburn in Hawaii and is now a common species. I have records of its being bred from the stems

of pigeon peas, *Gossypium tomentosum*, avocado, dead cotton, algaroba, dead sugar cane, and *Leucaena glauca*.

In addition to these species, there are four specimens of *Heterobostrichus aequalis* (Waterhouse) in Bishop Museum which were taken by J. C. Bridwell from the wood of a packing case imported from Manila to Honolulu, November 1, 1919. I have not included this species in the keys because this is the only record of its interception that has come to my attention.

### Argentine Ant in Hawaii

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(Presented at the meeting of October 14, 1940)

The Argentine ant, *Iridomyrmex humilis* Mayr, has been discovered in the islands for the first time well established at Fort Shafter in Honolulu. Residents of the area stated that the ants had caused considerable trouble in their houses since late spring or early summer, thus indicating that the ant had become well established several months ago. A preliminary survey of the area showed that the ants were very abundant and widespread at Fort Shafter with numerous strongly developed colonies established. Where the Argentine ants were numerous, other ants, particularly *Pheidole megacephala* (Fabricius), were scarce or not found. The shallow nests were common in the soil around the bases of trees, under trash and in debris in holes and cavities in trees. No other ants were found on trees, shrubs or at flower blossoms on which the Argentine ant foraged.

The Argentine ant is commonly intercepted at quarantine in goods coming from California, and it appears unusual that the species has not hitherto become established in Hawaii.

The development and spread of this ant in Hawaii will present some interesting biological, ecological and economical problems. In those regions where it is established on the continent it is a serious pest in house, garden and field. Not only does the ant cause considerable annoyance and eat sweet foods and meats wherever available, but it tends such honeydew producing insects as aphids, mealybugs and scale insects. The ants not only carry honeydew producing insects from plant to plant, but they also reduce the efficiency of parasites of honeydew producing insects. Wheeler (Revised List of Hawaiian Ants, Bishop Museum Occasional Papers, 10(21):8, 1934) writing of the Argentine ant said: "Should it eventually secure a foothold in the islands, we may look forward to a repetition of what has occurred in Madeira and the Canary Islands, where it has not only exterminated *Pheidole megacephala*, but has also practically wiped out the indigenous ant fauna at elevations below 3,000 feet, . . ."