

MYRIOPODA OF THE MARQUESAS ISLANDS*

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INTRODUCTION

This report is based on the field work of the members of the Pacific Entomological Survey, including the writer, from 1929 to 1931. Dr. Filippo Silvestri has very kindly identified the Survey collection of myriopods, in which eight species are represented. As far as the writer is aware, there are no previous specific records from the Marquesas, except for that of *Scolopendra morsitans* by Rollin.⁶¹

In the recording of native names and other information given by Marquesans, the Survey was fortunate in having the assistance of Monsieur LeBronnec, who has been a resident for many years in the islands. Dr. E. S. Craighill Handy, Ethnologist at Bernice P. Bishop Museum, has been kind enough to look over the Marquesan names here recorded and to give information regarding them. For helpful advice in the preparation of this paper the writer is grateful to Dr. F. X. Williams and Mr. R. H. Van Zwaluwenburg of the Hawaiian Sugar Planters' Association Experiment Station.

CHILOPODA

FAMILY SCOLOPENDRIDAE

***Scolopendra morsitans* Linnaeus.**

Hivaoa: north side of Mt. Temetiu, altitude about 2,000 feet, July 27, 1929, numerous specimens, collected by natives.

Mohotani: altitude 1,200 feet, February 2, 1931, 3 immature specimens, LeBronnec and H. Tauraa.

Fatuuku: altitude 990 feet, November 19, 1930, 2 immature specimens, in dead wood of *Pisonia* species, H. Tauraa.

Uahuka: Vaipae Valley, near sea level, March 19, 1931, 1 immature specimen; Haahue Valley, altitude 800 feet, March 20, 1931, 1 immature specimen, under bark; LeBronnec and H. Tauraa.

***Scolopendra subspinipes* Leach.**

Hivaoa: Aimoa, altitude about 1,700 feet, March 7, 1929, 2 specimens, Mumford and Adamson.

⁶¹ Rollin, Louis, *Les îles Marquises*, p. 53, Paris, 1929.

* Pacific Entomological Survey Publication I, article 23. Issued December 21, 1932.

Tahuata: Tehue Valley, altitude 750 feet, May 27, 1930, 1 specimen; Vaitahu, May 30, 1930, 1 immature specimen; Vaitahu, seashore, June 4, 1930, 1 immature specimen; Vaitahu, altitude 500 feet, June 16, 1930, 1 immature specimen; Amatea, altitude 2,100 feet, June 30, 1930, 1 specimen; LeBronnec and H. Tauraa.

Fatuhiva: Omoa [Oomoa] Valley, altitude 450 feet, September 18, 1930, numerous immature specimens, LeBronnec.

Mohotani: above Anaoa, altitude about 350 feet, August 13, 1929, 1 immature specimen, Adamson.

Uahuka: Vaipae Valley, altitude 270 feet, March 18, 1931, 1 specimen with eggs; Hanatea Valley, altitude 100 feet, March 11, 1931, 1 immature specimen; LeBronnec and H. Tauraa.

Uapou: Hakahetau, altitude 500 feet, December 17, 1929, 1 immature specimen; Hakahetau Valley, altitude about 1,000 feet, January 22, 1930, 1 specimen; Ouhaupakoa, altitude 500 feet, December 17, 1929, 1 immature specimen; Whitten.

Eiao: near middle of island, east side, altitude 1,665 feet, September 28, 1929, 4 immature specimens, Adamson; 3 immature specimens, at altitudes of 1,600 feet, April 16, 1931, 1,650 feet, April 24, and 1,700 feet, April 24, LeBronnec and H. Tauraa.

As these records show, *S. subspinipes* is by far the commoner of these species in the Marquesas. Specimens identified by the writer and not included in the above records were collected also on Nukuhiva; none were taken on Hatutu [Hatutaa] or Fatuuku, and it is possible that this species has not yet reached these uninhabited and very rarely visited islands. On the six larger islands it is abundant everywhere from sea level to between 1,000 and 2,000 feet, except in very dry regions; it was not taken by the Survey in the cloud zone. LeBronnec, of the Survey, found it exceptionally abundant on Eiao in 1931. Although widely distributed in the Marquesas, *S. morsitans* is comparatively uncommon. It is never found in the villages.

The Marquesan name for centipede is *ve'i* (Maori, *weri*, "the smaller centipede"; Samoan, *veli*, "a fish which stings on being touched"; Tahitian, *veri*, "the centipede," "a marine insect"; Hawaiian, *weli*, "a long black worm found in the sea"; Tongan, *veli*, "an insect in the water, like a centipede"; Mangarevan, *veri*, "a poisonous sea-insect"; Manganian, *veri*, "a centipede"; Tuamotuan, *veri*, "a centipede").⁶² Because the Marquesans regard *S. morsitans* as a native species they have given it the name *ve'i enata* (native centipede); on Uapou the alternative name *ve'i mao'i*, with the same meaning, was recorded for it. On the other hand, *S. subspinipes*, which is recognized as distinct, is known as *ve'i papaa*. *Papaa* is Tahitian, meaning "foreign." The name *ve'i*

⁶² Tregear, Edward, Maori-Polynesian comparative dictionary, Wellington, 1891.

taa, recorded from Uapou, as distinct from the *ve'i papaa*, is also probably applicable to *S. subspinipes*. The Marquesans believe that the *ve'i papaa* has been introduced into the islands within the last fifty years or thereabouts; residents of Fatuhiva stated that they could recall times when no *ve'i papaa* were present. The Marquesans further assert that the *ve'i enata* was formerly as abundant and widely distributed as the *ve'i papaa*, which is supposed to have replaced it, now is. Mohonui, a keen observer of natural history, expressed the belief that the *ve'i enata* is now extinct on the island of Uapou. Jardin, writing in 1858, states⁶³ that very large Scolopendras appear to be absent from the Marquesas, which seems to lend support to the statements of the Marquesans regarding the recent introduction of *S. subspinipes*, since this species is considerably larger than *S. morsitans*.

Among the writings of early voyagers to the Marquesas, references to centipedes, presumably *Scolopendra*, are made by Porter⁶⁴ and Torrey⁶⁵. In a Marquesan legend recorded by Handy⁶⁶ the name "*Vei-oho-mana*" (Potent-hairy-centipede) is used figuratively for the tongue of an ogres. The reference must be to *Scolopendra*, rather than to the smaller and less venomous *Orphnaeus* or *Mecistocephalus*.

The above evidence would lead one to suppose that *S. morsitans* had reached the Marquesas either as a natural immigrant or with the Polynesians themselves, and that *S. subspinipes* had been introduced through modern commerce.

In the Hawaiian islands *S. subspinipes* is abundant, but the writer has not yet come across any information regarding the time of its arrival. *S. morsitans* has never been reported from Hawaii. Both species have been recorded⁶⁷ from the Society, Tuamotuan and Cook islands, and from Samoa. Buxton⁶⁸ writes:

Residents in Samoa profess to know several species of venomous centipede, distinguished in size and colour, but all those which we brought home were determined by Mr. H. W. Brolemann as *S. subspinipes*, Leach. . . . It seems most probable that this creature was carried about the Pacific by the Polynesians during their migrations.

It would be interesting to learn more of what the Samoans know of these centipedes, and to compare their beliefs with those of the Marquesans.

⁶³ Jardin, Edéstan, Essai sur l'histoire naturelle de l'archipel de Mendana ou des Marquises, 3me partie: Mém. Soc. Imp. Cherbourg, tome 6, p. 184, 1858.

⁶⁴ Porter, David, Journal of a cruise made to the Pacific Ocean, vol. 2, p. 128, New York, 1822.

⁶⁵ Torrey, William, Torrey's narratives: or the life and adventures of William Torrey, p. 118, Boston, 1848.

⁶⁶ Handy, E. S. C., Marquesan legends: B. P. Bishop Mus., Bull. 69, pp. 22, 25, 1930.

⁶⁷ See Chamberlin, R. V., The Myriopoda of the Australian region: Harvard Mus. Comp. Zool., Bull. 64, no. 1, 1920.

⁶⁸ Buxton, P. A., Researches in Melanesia and Polynesia, pts. 1-4, p. 52, London, 1927.

FAMILY ORYIDAE

Orphnaeus brevilabiatus (Newport).

Hivaoa: Atuona, low level, July 20, 1929, 1 specimen, Mumford and Adamson.

Tahuata: Hanateio Valley, altitude 500 feet, July 25, 1930, 5 specimens, LeBronnec and H. Tauraa.

Mohotani: altitude about 350 feet, August 13, 1929, 1 specimen, Adamson; northern part, altitude 500 feet, February 4, 1931, 1 specimen, under stone, altitude 1,200 feet, February 2, 1932, 2 specimens, LeBronnec and H. Tauraa.

Uahuka: Hanahoua Valley, altitude 250 feet, March 10, 1931, 1 specimen, under stone; Vaipae, near sea level, March 24, 1931, 2 specimens, in grass; LeBronnec and H. Tauraa.

Hatutu [Hatutaa]. Near middle, east side, altitude 1,080 feet, September 30, 1929, 2 specimens, under bark of *Pisonia* species, Adamson. Altitude 100 feet, April 28, 1931, 1 specimen; altitude 600 feet, April 28, 1931, 1 specimen; altitude 700 feet, April 28, 1931, 1 specimen, under dead bark of *Pisonia* species; LeBronnec and H. Tauraa.

This species is not uncommon at low to medium elevations; it probably occurs on all of the islands.

FAMILY MECISTOCEPHALIDAE

Mecistocephalus tahitiensis H. F. Wood.

Hivaoa: Mt. Temetiu, altitude 1,500 feet, May 27, 1929, 1 specimen; Mt. Temetiu, northeast slope, altitude 3,620 feet, July 24, 1929, 2 specimens; Anatuakina, altitude 1,500 feet, June 1, 1929, 1 specimen, under bark of *Xylosma suaveolens*; Mumford and Adamson.

Nukuhiva: Ooumu, altitude 4,050 feet, November 12, 1929, 2 specimens, altitude 3,200 feet, November 13, 1929, 1 specimen, Mumford and Adamson; altitude 3,890 feet, July 20, 1931, 1 specimen, on the ground under moss, LeBronnec and H. Tauraa.

Uahuka: Hanatekeo, Hane Valley, altitude 1,250 feet, February 25, 1932, 1 specimen, in dead log of *Hibiscus tiliaceus*; Penau Ridge, altitude 1,650 feet, February 27, 1931, 1 specimen; Hitikau Ridge, at altitudes of 2,950 feet, March 3, 1931, 3 specimens, from dead stipes of *Angiopteris* species, 2,910 feet, March 4, 1931, 3 specimens, in dead stipes of *Cyathea* species, 2,800 feet, March 3, 1931, 2 specimens, 2,900 feet, March 4, 1931, 1 specimen, under stone; LeBronnec and H. Tauraa.

Uapou: Pepehitou Valley, altitude 2,700 feet, December 8, 1929, 1 specimen, under bark of *Pisonia* species, Adamson.

Eiao: Vaituha Valley, altitude 200 feet, October 3, 1929, 1 specimen under bark of *Pisonia* species, Adamson.

Hatutu [Hatutaa]: altitude 700 feet, April 28, 1931, 1 specimen, under dead bark of *Pisonia* species, LeBronnec and H. Tauraa.

Though taken by the Survey at altitudes of 200 and 700 feet on the small islands of Eiao and Hatutu respectively, this species seems, on the six large islands, to be most common in the mountain forests.

Mecistocephalus maxillaris Gervais.

Hivaoa: Tapeata (east slope of Mount Ootua), May 25, 1929, 1 specimen; Atuona Valley, altitude about 75 feet, July 11, 1929, 1 specimen; Kopaafaa, altitude 2,900 feet, February 25, 1930, 2 specimens, under dead bark of *Crossostyles biflora*; Kopaafaa, altitude 2,900 feet, February 26, 1930, 1 specimen, in dead stipes of *Marattia* species; Mumford and Adamson.

Fatuhiva: Teatotu, Hanavave Valley, altitude 1,000 feet, September 9, 1930, 1 specimen, under dead bark, LeBronnec.

Nukuhiva: Teuanui, Tovii [Toovii], altitude 2,000 feet, October 27, 1929, 1 specimen in dead stipes of *Angiopteris* species and 1 specimen under bark of *Hibiscus tiliaceus*, Mumford and Adamson.

Uahuka: Tehaevea, altitude 500 feet, February 27, 1931, 1 specimen, in dead log of *Calophyllum inophyllum*; Haahue Valley, altitude 90 feet, March 20, 1931, 1 specimen, in dead log of *Pisonia* species; LeBronnec and H. Tauraa.

Uapou: Hakahetau Valley, altitude 500 feet, December 10, 1929, 1 specimen, Whitten.

Eiao: near middle of island, altitude 1,450 feet, October 1, 1929, 1 specimen, under bark of *Thespesia populnea*, Adamson; altitude 1,600 feet, April 16, 1931, 1 specimen, under bark of *Thespesia populnea*, 1,600 feet, April 23, 1931, 3 specimens, in dead log of *Pisonia* species, 1,700 feet, April 24, 1931, 1 specimen, LeBronnec and H. Tauraa.

The distribution of this species in the Marquesas is somewhat similar to that of *M. tahitiensis*, though it was found rather more frequently at low and medium altitudes.

The following Marquesan names were recorded for the smaller species of centipedes: *ve'i puaina* (Fatuhiva), *ve'i u'upuaina* (Fatuhiva and Tahuata), *ve'i iaufenua* (Fatuhiva), *ve'i ka'opuaina* (Uapou). The following translations for these terms are among those given by Dordillon⁶⁹: *puaina*, ear; *u'u*, to enter; *ka'o*, to disappear or hide. (Compare the term "earwig" sometimes applied in America to small centipedes, as, for example, geophilids.) It is probable that these names are applied, without discrimination

⁶⁹ Dordillon, I. R., Grammaire et dictionnaire de la langue des îles Marquises, Paris, 1904.

as to species, to *Orphnaeus brevilabiatus*, *Mecistocephalus tahitiensis*, and *M. maxillaris*.

DIPLOPODA

FAMILY POLYDESMIDAE

Orthomorpha coarctata (Saussure).

Except where otherwise stated, numerous specimens were collected at each of the following localities:

Tahuata: Hanamiai Valley, 560 feet, May 30, 1930, 2 specimens, LeBronnec and H. Tauraa.

Mohotani: altitude 400 feet, January 31, 1931, 500 feet, February 2, 1931, 700 feet, February 2, 1931, LeBronnec and H. Tauraa.

Uahuka: Pouau, Hokatu Valley, altitude 500 feet, March 9, 1931, including 2 specimens *in coitu* under bark of *Hibiscus tiliaceus*, Le Bronnec and H. Tauraa.

Uapou: Hakahetau Valley, altitude 1,500 feet, January 29, 1930, Whitten.

Orthomorpha gracilis E. L. Koch.

Numerous specimens were collected at each of the following localities:

Hivaoa: Atuona Village, July 7, 1929; Mount Ootua summit, altitude 3,032 feet, February 13, 1930, in leaves of *Asplenium nidus*; Mumford and Adamson.

Tahuata: Hanamiai Valley, altitude 560 feet, May 30, 1930; Amatea, altitude 2,700 feet, June 27, 1930; LeBronnec and H. Tauraa.

Fatuhiva: Otomahe, Omoa [Oomoa] Valley, altitude 280 feet, August 20, 1930; Teaotu, Hanavave Valley, altitude 800 feet, September 9, 1930; Vairokoo, Omoa [Oomoa] Valley, August 29, 1930; LeBronnec.

Nukuhiva: Teuanui, Tovii [Toovii], altitude 2,000 feet, October 25, 1929; Taiohae Village, November 25, 1929; Mumford and Adamson.

FAMILY TRIGONIULIDAE

Trigoniulus naresii Pocock.

Except where otherwise stated, numerous specimens were collected at each of the following localities:

Hivaoa: Atuona, February 14, 1929, and July 7, 1929, Mumford and Adamson.

Tahuata: Hanamiai Valley, altitude 560 feet, May 30, 1930; Amatea, altitude 2,700 feet, June 27, 1930; LeBronnec and H. Tauraa.

Fatuhiva: Otomahe, Omoa [Oomoa] Valley, altitude 280 feet, August 20, 1930; Teaotu, Hanavave Valley, altitude 1,000 feet, September 9, 1930; LeBronnec.

Nukuhiva: Teuanui, Tovii [Toovii], altitude 2,000 feet, October 25, 1929; Taiohae Village, November 24, 1929, and November 25, 1929; Mumford and Adamson.

Uahuka: Hanatekeo, Hane Valley, altitude 750 feet, February 24, 1931, under bark of *Hibiscus tiliaceus*; Vaikivi Valley, altitude 900 feet, March 6, 1931, in dead log of *Hibiscus tiliaceus*; Pouau, Hokatu Valley, altitude 400 feet, March 9, 1931; Haahue Valley, altitude 90 feet, March 20, 1931, in dead wood of *Pisonia* species; LeBronnec and H. Tauraa.

Uapou: Hakahetau Valley, altitude 1,500 feet, January 29, 1930, Whitten.

The three species of millipedes listed above are abundant on all of the six larger islands, especially at low and medium elevations. None of them were observed on the smaller and drier islands of Mohotani, Fatuuku, Eiao, and Hatutu.

Millipedes are commonly called by the Marquesans, without discrimination as to species, *vei kina* (Chinese centipede). On Fatuhiva the name *tuna enata* (native "caterpillar") was once recorded for *Orthomorpha gracilis*. Neofitu, chief of Tahuata and a reliable informant, stated that he was familiar with three species of millipede, two of which were of comparatively recent appearance in the islands, and the third no longer to be found.

GEOGRAPHICAL RELATIONS

Of the above eight species, six—*Scolopendra morsitans*, *S. subspinipes*, *Orphnaeus brevilabiatus*, *Mecistocephalus maxillaris*, *Orthomorpha coarctata*, and *O. gracilis*—are so widely distributed in the tropics that their occurrence in the Marquesas calls for no comment here. *Mecistocephalus tahitiensis* is known⁷⁰ from Tahiti, Samoa, Fiji, Bismarck Archipelago, New Guinea and Australia, and *Trigoniulus naresii*⁷¹ from Samoa, the Marshall and Caroline islands, New Britain, the Seychelles, Madagascar, and (?) Guadeloupe, so that if the Myriopoda of the Marquesas, as now known, afford any evidence on the affinities of the fauna, it is merely as pointing to the west, and not to the Neotropical region in the east.

The arthropod fauna of the Marquesas is characterized by a high degree of endemism; the absence of endemic myriopods in the collection is therefore surprising. How many species not taken by the Survey are likely to occur, and whether others have become extinct owing to changes in the environment, are questions difficult to decide. It should be remembered, first, that a considerable amount of time was devoted by the Survey to collecting, on all the islands and at all altitudes, in habitats favored by myriopods; second, that

⁷⁰ See Attems, C., Myriopoden (Myriopoda): Insects of Samoa and other Samoan terrestrial Arthropoda, pt. 8, fasc. 2, p. 31, 1929.

⁷¹ Attems, C., op. cit. p. 31, as *Spirostrophus naresii* Pocock. This species was collected by the Survey on Tahiti and Moorea, Society Islands.

each of the eight species collected was found not once or twice, but many times; and third, that in other classes of arthropods certain entire orders abundantly represented in all continental regions appear to be without endemic representatives in the Marquesas.

A comparison with the faunas of other high islands in the Pacific does not bring one nearer to a decision on these questions. The myriopod fauna of Samoa resembles that of the Marquesas in that only one—*Orthomorpha granosa* Attems—of the 16 species recorded by Attems is endemic. On the other hand, in the Society Islands, where little collecting has yet been done, Chamberlin⁷² records 11 species, of which 4—*Cryptops mirus*, *C. tahitianus*, *Mecistocephalus angustior*, and *Trigoniulus tahitianus*—described by him as new, are presumably endemic. About 30 species are known in the Hawaiian islands; more than half of them have not been recorded elsewhere. No genus of myriopod is represented in Hawaii by more than one known endemic species, with the single exception of *Dimerogonus*, in which no less than 12 species were described by Silvestri.⁷³

Regarding the absence of Symphyla and Pauropoda from the Marquesan collection, it may be mentioned that in Samoa no pauropods are recorded by Attems and of the symphylids only *Hanseniella orientalis* Hansen, known also from Siam, Java, and Sumatra. Neither class is listed by Chamberlin from the Society islands. In Hawaii, Van Zwaluwenburg⁷⁴ records two symphylids, *Scolopendrella neotropica* Hansen or *S. simplex* Hansen and *Scutigerebella* species, and one pauropod, *Pauropus* species, probably *P. huxleyi* Lubbock. Mr. Van Zwaluwenburg informs the writer that these species occur elsewhere and that he regards them as introduced into Hawaii, probably in soil.

⁷² Chamberlin, R. V., The Myriopoda of the Australian region: Harvard Mus. Comp. Zool., Bull. 64, no. 1, 1920.

⁷³ Silvestri, Filippo, Myriopoda: Fauna Hawaiiensis, vol. 3, pt. 4, Cambridge, 1904.

⁷⁴ Van Zwaluwenburg, R. H., The soil fauna of sugar cane fields: The insects and other invertebrates of Hawaiian sugar cane fields, compiled by F. X. Williams, pp. 339-352, Honolulu, 1931.