

NEUROPTERA FROM THE MARQUESAS *

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Edward P. Mumford has kindly asked me to examine and give a report upon the neuropterous insects collected by the Pacific Entomological Survey in the Marquesas. It gives me great pleasure to undertake this work, because so little is known of the fauna of the Marquesas and the adjacent islands.

As far as I am aware, only the following species are mentioned in the literature as occurring in the Marquesas: *Chrysopa basalis* Walker,¹ *Chrysopa flaveola* Schneider¹ (the material reported under this name belongs probably to *C. basalis*), *Chrysopa delmasi* Navas² (this is the same as *C. basalis*), *Megalomus* species,¹ *Nesomicromus marquesanus* Kimmins.³

The material before me contains 772 imagines and 76 larvae of *Chrysopa* and 9 specimens of a hemerobiid. The most remarkable feature in the collection is that all the above-mentioned specimens of *Chrysopa* belong to a single species, *Chrysopa basalis*; whether other species are to be found is a problem which can only be solved by still further collecting.

It seems that *Chrysopa basalis* is common everywhere in the islands. The material here reported upon was taken in some eighty localities, distributed over all 10 islands.

In this connection it may be remembered that the imagines of chrysopids and especially their larvae are very useful because they feed chiefly upon Aphididae and Coccidae.

FAMILY CHRYSOPIDAE

Chrysopa basalis Walker (figs. 1, 2).

Chrysopa basalis Walker: List of Neuropterous Insects in Brit. Mus., p. 239, 1853, (Loochoo Islands).

Chrysopa delmasi Navas: Pontific. Accad. Romana, Mem., p. 20, 1927 (Marquesas Islands).

Chrysopa skottsbergi Esben-Petersen: Insects of Samoa, pt. 7, p. 104, pl. 3, fig. 4, 1928 (Samoa and Ellice Islands).

¹ Cheesman, L. E., Contribution towards the insect fauna of French Oceania: Ent. Soc. London, Trans., vol. 75, p. 160, 1927.

² Navas, Longinos, Pontific. Accad. Romana, Mem., p. 20, 1927.

³ Kimmins, D. E., Two New Hemerobiidae (Neuroptera): The Entomologist, vol. 65, p. 160, figs. 4, 5, 1932.

* Pacific Entomological Survey Publication 8, article 2. Issued January 2, 1935.

Chrysopa basalis has until now been a misunderstood species, chiefly because of Walker's brief and incomplete description. For instance, he does not mention the distinct rectangular dark brown spot on the basal segment of the antennae, an important character. After consultation with Mr. D. E. Kimmins of the British Museum, I have decided the material listed below all belongs to Walker's species.

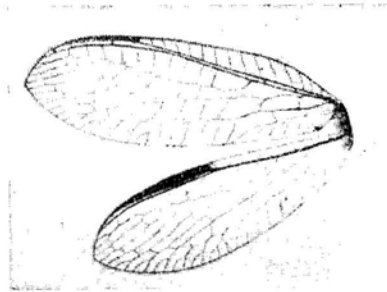


FIGURE 1.—*Chrysopa basalis* Walker, male, from Fatuuku: left fore and hind wings.

In my description of *Chrysopa skottsbergi* in the Insects of Samoa, I call attention to the very conspicuous and large pterostigma, especially in the hind wings. In the male the pterostigma is more distinct and strongly colored than in the female.

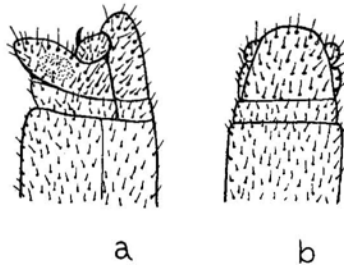


FIGURE 2.—*Chrysopa basalis* Walker, apex of abdomen, male: *a*, from side; *b*, from below.

Hivaoa: Kopaafaa, altitude 2,770 feet, August 2, 1929, 4 specimens; west of Taaoa crest, altitude 2,800 feet, June 3, 1929, 1 specimen; Mataovau, altitude 390 feet, June 5, 1929, 5 specimens; ridge northwest of Taaoa, altitude 2,800 feet, June 3, 1929, 1 specimen; Anatikaue, altitude 1,750 feet, August 1, 1929, 6 specimens, on *Piper latifolium*; Mumford and Adamson. Kaava Ridge, altitude 2,800 feet, January 7, 1932, 9 specimens, on *Reynoldsia* species, *Rapanea* species, *Hibiscus tiliaceus*, *Weinmannia* species, *Metrosideros collina*; altitude 2,820 feet, January 6, 1932, 1 specimen; altitude, 2,750 feet, January 6, 1932, 2 specimens, on *Weinmannia* species; alti-

tude 2,000 feet, October 27, 1931, 17 specimens, on *Glochidion ramiflorum*; Kakahopuanui, altitude 2,500 feet, January 5, 1932, 4 specimens, sweeping herbage and beating *Weinmannia* species; Temetiu Ridge, altitude 3,900 feet, January 4, 1932, 2 specimens, on *Metrosideros collina*; Feani Ridge, altitude 3,900 feet, January 21, 1932, 3 specimens, beating on *Cyrtandra* species; Kaava Ridge, Kakahopuanui, altitude 2,800 feet, October 27, 1931, 5 specimens, beating on *Glochidion ramiflorum*; Temetiu summit, altitude 4,160 feet, January 20, 1932, 1 specimen, beating on *Reynoldsia* species; Avaoa Valley, altitude 1,350 feet, January 4, 1932, 1 specimen; LeBronnec. Near Ootua spring, February 13, 1929, 1 specimen, in dead flowers of *Zingiber* species; Mumford and Adamson. Mount Temetiu, altitude 730 feet, May 27, 1929, 1 specimen, Mumford and Adamson.

Uahuka: Vaikivi [Vaikiva] Valley, altitude 1,300 feet, March 6, 1931, 20 specimens; Vaipae Valley, altitude 150 feet, March 10, 1931, 7 specimens; Hiniaehi Valley, altitude 150 feet, March 10, 1931, 7 specimens; Vaipae Valley, altitude 250 feet, March 17, 1931, 4 specimens; Haave [Haavei] Valley, altitude 200-250 feet, March 19, 1931, 129 specimens; Vaitiake, altitude 1,000 feet, March 24, 1931, 53 specimens; Teavamataiki, altitude 730 feet, March 19, 1931, 1 specimen; LeBronnec and H. Tauraa.

Hatutu: altitude about 1,000 feet, April 28, 1931, 1 specimen; altitude 1,200 feet, April 28, 1931, 2 specimens; altitude 1,300 feet, April 28, 1931, 1 specimen; altitude 1,500 feet, April 28, 1931, 1 specimen; LeBronnec and H. Tauraa. Middle of east side, altitude 1,010 feet, October 30, 1929, 3 specimens, on *Pisonia* species, Adamson.

Nukuhiva: Tovii [Toovii], altitude 2,500 feet, August 4, 1931, 2 specimens; Ooumu, altitude 3,000 feet, May 28, 1931, 1 specimen; Tapuaooa, altitude 3,100 feet, November 11, 1931, 5 specimens; LeBronnec and H. Tauraa. Teuanui, Tovii [Toovii], altitude 2,500 feet, October 29, 1929, 1 specimen, beating on *Weinmannia parviflora*, Mumford and Adamson.

Uapou: Hapava, altitude about 500-600 feet, December 13, 1929, 22 specimens; Hakahetau, altitude 500 feet, December 13, 1929, 6 specimens; Vakaoakee [Vakokokee], altitude about 300 feet, December 17, 1929, 3 specimens, R. R. Whitten. Tekohepu Summit, altitude 3,000 feet, November 30, 1931, 37 specimens, beating on *Metrosideros collina*, *Cyathea* species, *Weinmannia* species, *Cheirodendron* species, *Cyrtandra* species and ferns; altitude 3,200 feet, November 28, 1931, 8 specimens, beating on *Cheirodendron* species and *Freycinetia* species; altitude 3,300 feet, November 27, 1931, 1 specimen, beating on *Sclerotheca* species; LeBronnec. Teoatea, Hakahetau Valley, altitude 1,950 and 2,000 feet, November 19, 1931, 22 specimens, beating on *Metrosideros collina* and *Vaccinium* species; altitude 2,200 feet, November 20, 1931, 7 specimens; altitude 1,950 feet, November

21, 1931, 49 specimens, beating on *Metrosideros collina* and ferns; altitude 2,000 feet, November 20, 1931, 10 specimens, beating on *Histiopteris* species; Vaihakaatiki, Hakahetau Valley, altitude 3,020 feet, November 18, 1931, 2 specimens, beating on *Vaccinium* species and *Cyrtandra* species; altitude 2,800 feet, November 19, 1931, 2 specimens, beating on *Freycinetia* species; Hapava, Hakahetau Valley, altitude 1,000 feet, November 23, 1931, 32 specimens; LeBronnec. Teepotaootetoiki, Hakahetau Valley, altitude 120 feet, November 23, 1931, 3 specimens; Vaikokoo, Paaumea Valley, altitude 2,000 feet, November 26, 1931, 1 specimen, beating on *Weinmannia* species; Teavaituhai, Paaumea Valley, altitude 3,020 feet, November 19, 1931, 2 specimens, beating on *Vaccinium* species and *Cyrtandra* species; Teavanui, Paaumea Valley, altitude 2,900 feet, November 27, 1931, 5 specimens, beating on *Freycinetia* species; Teavanui Pass, altitude 2,900 feet, November 30, 1931, 4 specimens, beating on *Cyathea* species and *Angiopteris* species; LeBronnec.

Tahuata: Hanamiai Valley, altitude 1,600 feet, May 28, 1930, 1 specimen, sweeping over grass, LeBronnec and H. Tauraa. Kiinui, altitude 1,200 feet, June 14, 1930, 4 specimens; Hanamenino Valley, sea level, July 17, 1930, 10 specimens; Hanatuuna Valley, altitude 325 feet, July 19, 1930, 1 specimen; Hanahevane Valley, seashore, August 16, 1930, 22 specimens; LeBronnec and H. Tauraa.

Fatuhiva: Uia [Ouia] Valley, altitude 500 feet, September 2, 1930, 3 specimens, Teavaipuhiau, altitude 2,150 feet, August 25, 1930, 1 specimen, sweeping over *Paspalum conjugatum*; Teatotu, Hanavave Valley, altitude 700 feet, September 9, 1930, 1 specimen, beating on *Eugenia* species; Tapuhiva, Hanavave Valley, altitude 500 feet, September 9, 1930, 1 specimen; Teavaione, Omoa [Oomoa] Valley, altitude 1,700 feet, August 29, 1930; Tahuna, altitude 2,050 feet, September 3, 1930, 6 specimens; Tetana, Omoa [Oomoa] Valley, altitude 500 feet, August 22, 1930, 7 specimens; Vaikoao, Omoa [Oomoa] Valley, altitude 1,600 feet, August 29, 1930, 8 specimens, altitude 1,500 feet, August 30, 1930, 6 specimens; Ahuava, altitude 1,800 feet, August 19, 1930, 9 specimens; LeBronnec.

Eiao: near center, altitude 1,665 feet, September 28, 1929, 4 specimens, on *Hibiscus tiliaceus*, Adamson; uplands, toward north and east side, altitude 1,875 feet, September 29, 1929, 7 specimens, Adamson; above Vaituha, altitude 1,100 feet, October 2, 1929, 2 specimens, on *Dodonaea viscosa*, Adamson; altitude 1,600 feet, April 24, 1931, 3 specimens, LeBronnec and H. Tauraa.

Mohotani: above Anaoa, altitude 160-650 feet, August 13, 1929, miscellaneous sweeping, 3 specimens, Adamson; altitude 200 feet, February 4, 1931, 9 specimens; altitude 300 feet, February 4, 1931, 2 specimens on *Coreopsis* species; altitude 900 feet, February 3, 1931, 3 specimens; altitude 1,300

feet, February 2, 1931, 4 specimens; altitude 1,400 feet, February 1, 1931, 2 specimens, on *Ageratum conyzoides*; altitude 1,500 feet, February 1, 1931, 4 specimens; LeBronnec and H. Tauraa.

Fatuuku: altitude 860 feet, November 19, 1930, 50 specimens, H. Tauraa.

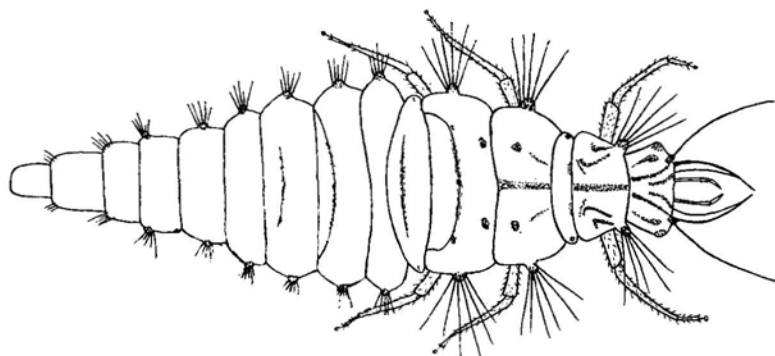


FIGURE 3.—Larva of *Chrysopa basalis* Walker.

***Chrysopa basalis* Walker (fig. 3).**

Larva. Body pale brownish yellow. The jaws with a narrow brown stripe along their margin exteriorly. Basal antennal joint rather stout, and with a brownish stripe along the interior and exterior margins; second joint unmarked, narrower than the basal joint but somewhat longer; the rest of the antennae finely brownish annulated. Head with three pairs of brownish markings as shown in the figure. Prothorax broader than long and with brown markings. Each front angle with a strongly developed tubercle, provided with a tuft of yellowish setae. Mesothorax and metathorax with laterally placed tubercles, and with a pair of dark brown sclerites dorsally. Mesothorax with a brown longitudinal median streak and a pair of two narrow obliquely placed brown streaks in front of the sclerites. Abdominal segments 1 to 6 with brown tubercles laterally, bearing rather long yellowish setae. Dorsum of thorax and abdomen with numerous minute short brown bristles and a few longer yellowish hairs. Legs yellowish white and yellowish haired; claws and empodium brownish black. Under side of the body pale brownish yellow.

Hivaoa: Kakahopuanui, altitude 2,610 feet, January 5, 1932, 5 specimens, beating on *Weinmannia* species; Kaava Ridge, altitude 2,750 feet, January 6, 1932, 7 specimens, beating on *Weinmannia* species; altitude 2,800 feet, January 7, 8, 1932, 16 specimens, on *Metrosideros collina* and *Weinmannia* species; LeBronnec.

Uapou: Teavaituhai, altitude 3,000 feet, November 19, 1931, 4 specimens; Vaikokoo, Paaumea Valley, altitude 2,000 feet, November 26, 1931, 4 specimens; Teavanui, altitude 2,900 feet, November 27, 1931, 1 specimen; Tekohepu summit, altitude 3,000 feet, November 30, 1931, 2 specimens; LeBronnec.

Uahuka: Hanahoua Valley, altitude 280 feet, March 10, 1931, 1 specimen, LeBronnec and H. Tauraa.

Tahuata: Hanahevane Valley, seashore, July 16, 1930, 5 specimens, on *Pisonia* species; altitude 150 feet, July 17, 1930, 10 specimens; LeBronnec and H. Tauraa.

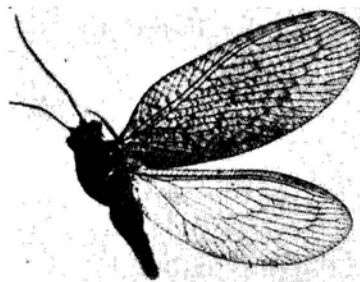


FIGURE 4.—Wings of *Archaeomicromus marquesana* (Kimmins).

Fatuhiva: Uia [Ouia] Valley, altitude 15 feet, September 2, 1930, 1 specimen, on *Triumfetta bartramia*; Uia [Ouia] Valley, altitude 500 feet, September 2, 1930, 6 specimens; LeBronnec.

Eiao: toward northeast side, altitude 1,900 feet, September 29, 1929, 4 specimens, Adamson.

Mohotani: north part, altitude 200 feet, February 4, 1931, 4 specimens, on *Melochia velutina*, LeBronnec and H. Tauraa.

Hatutu: middle, east side, altitude 800 feet, September 30, 1929, 2 specimens, Adamson.

It is, of course, not absolutely certain that the larvae belong to the species *Chrysopa basalis*, but I think it is most probable because this is the only species known from the islands. A study of its life history will, I hope, confirm this supposition.

FAMILY HEMEROBIIDAE

Archaeomicromus marquesana (Kimmins) (fig. 4).

Nesomicromus marquesana Kimmins: The Entomologist, p. 160, figs. 4, 5, 1932 (Marquesas Islands).

Hivaoa: Tenatinaei, Feani Ridge, altitude 3,970 feet, January 12, 1932, 2 individuals; January 13, 1932, 2 males, 2 females; LeBronnec. Temetiu, slope north of summit, altitude 3,860 feet, December 30, 1930, 2 females, at light, H. Tauraa.

Uapou: Vaihakaatiki, altitude 2,800 feet, November 19, 1931, 1 male, LeBronnec.

Kimmins placed this species provisionally in the genus *Nesomicromus* Perkins, but it now has to be transferred to *Archaeomicromus*, which genus contains the second known Polynesian species, *A. navigatorum* Brauer.