

## WASPS OF GUAM

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There are only a few species of wasps in Guam, and apparently they are immigrants from other regions. D. T. Fullaway collected seven species of wasps in Guam in 1911 (Haw. Ent. Soc., Proc. 2: 283, 1913). In 1936, we found four additional species, which surely must have arrived there more recently, three of them being already quite common.

Several species are abundant and are beneficial, for they prey on caterpillars to feed their young, either storing them in cells for their larvae to consume or chewing up the captured caterpillars for daily feeding to larvae in individual cells of paper nests. Leafroller caterpillars of various kinds are the ones mostly preyed upon, but some noctuid caterpillars are also used. At least one species of the wasps captures young grasshoppers. Four of the wasps store up spiders, and two of them store up crickets for their young.

## FAMILY LARRIDAE

1. *Liris aurata* (Fabricius).

*Sphex aurata* Fabricius, Ent. Syst. 2: 213, 1793.

*Liris aurata* (Fabricius) Syst. Piezatorum, 228, 1804. Williams, Hawaii. Sugar Plant. Assoc., Ent. Bull. 14: 138, 1919.

Piti, May 13, Aug. 20, 25, Sept. 1, 6; Agana, Aug. 20, Swezey.

This beautiful golden-marked, cricket-hunting wasp was not previously recorded in Guam, but F. X. Williams gives an account of observations on its habits in the Philippines. The half dozen specimens which I obtained in Guam were mostly in the vicinity of buildings. Several times I saw a female hunting among boxes at the back of our residence where a common cricket (*Grylodes sigillatus*) was abundant. One was captured on a cement walk; another flew into the automobile. The Guam specimens were identified by F. X. Williams.

2. *Notogonidea manilae* (Ashmead).

*Notogonia manilae* Ashmead, U. S. Nat. Mus., Proc. 28: 130, 1905.

*Notogonidea williamsi* Rohwer, Hawaii. Sugar Plant. Assoc. Ent. Bull. 14: 9, 1919.

*Notogonidea manilae* (Ashmead) Williams, Hawaii. Sugar Plant. Assoc., Ent. Bull. 19: 75, 1928.

Dededo, May 11; Merizo, June 11; Mt. Alifan, June 19, Swezey.

This is a smaller plain black cricket-hunting wasp. It was not previously recorded from Guam. I obtained only three specimens, all in forest or field.

Dr. Williams has given an account of the habits of this wasp in the Philippines, and has also identified the Guam specimens.

## FAMILY TRYPOXYLONIDAE

3. *Pison argentatum* (Shuckard).

*Pisonites argentatus* Shuckard, Ent. Soc. London, Trans. 2: 79, 1837.

*Pison argentatum* (Shuckard) Bingham, Fauna Brit. India, Hymenopt. 1: 220, 1897.

Piti, April 30, May 19, 24, 30; June 1, 3, 13; July 5, 28; Aug. 9; Sept. 13; Oct. 29; Nov. 6, Swezey, Usinger; Merizo, June 11, Swezey.

Among the wasps collected by Fullaway in Guam in 1911 (in Bishop Museum) there are at least four species of *Pison*, all undetermined, and no *P. argentatum* among them. In 1936 we procured more specimens of *P. argentatum* than of all the others. We have 21 specimens of *P. argentatum*, all but one from Piti, where they were quite common in and about our residence. The little mud nests were common on walls and in corners of back rooms. These nests are made up of one to six cells in which the wasp stores up small spiders on which its larvae feed. There is considerable parasitism by *Melittobia hawaiiensis*, a tiny parasite whose larvae feed externally on the wasp larvae. There may be up to 100 parasite larvae on one wasp larva. On May 19, a nest containing 6 cells was collected on the scale shed at the Agricultural School, Piti, each cell containing a *Pison* cocoon in which were tiny exit holes where parasites had issued; hence, a parasitism of 100 percent. On September 24, several nests were collected and examined at the residence. These nests totalled 19 cells, the contents of which were: four with dead pisons; one with dead spiders, one with caterpillars stored by *Pachodynerus nasidens*; two with roach egg case; ten had cocoons showing exit holes of *Melittobia*; one had living pupae of *Melittobia*. In this nest, the parasitism would have been at least 56 percent.

This wasp occurs in Madagascar, India, Philippines, and Hawaii. It has undoubtedly become introduced into Guam in somewhat recent years, from Hawaii or the Philippines.

4. *Pison lagunae* Ashmead, U. S. Nat. Mus., Proc. 28: 131, 1905.

Piti, July 11, Swezey, one specimen.

This Philippine species was collected by Fullaway in Guam in 1911. There are ten specimens of it in the collection at Bishop Museum. I obtained only one specimen, identified by F. X. Williams.

5. *Pison* species.

Three other species were collected, but are as yet unidentified.

## FAMILY VESPIDAE

6. *Polistes macaënsis* (Fabricius).

*Vespa macaënsis* Fabricius, Ent. Syst. 2: 259, 1793.

*Polistes macaënsis* (Fabricius), Syst. Piezatorum, 272, 1804.

*Polistes hebraeus* (Fabricius) Fullaway, Haw. Ent. Soc., Proc. 2: 283, 1913.

Agana, March 27, 28, Bryan, May 25, Swezey; Piti, May 23, Swezey, June 2, Usinger, Oct. 12, 31, Swezey; Talofoto, June 11, Nov. 18, two specimens dead with parasitic fungus, one fastened on a leaf, the other on a nest, Swezey.

This very common yellowjacket wasp was collected in Guam by Fullaway and recorded under the name *P. hebraeus*, a related species which has been synonymized with *P. macaënsis* in some of the literature. It occurs in Hawaii and other Pacific island groups. It is common and widely distributed in Guam.

These wasps are useful in gardens as they habitually carry caterpillars and young grasshoppers home for feeding the larvae in their paper nests. Their abundance may be indicated by the size of nests found. One nest, four inches in diameter, contained 193 cells, in each of which a wasp had grown to maturity.

7. *Polistes semiflavus* Holmgren, Eugenes Resa, Ins., 439, 1868. Fullaway, Haw. Ent. Soc., Proc. 2: 283, 1913.

Ritidian Pt., on *Hernandia* blossoms, April 15, Bryan; Agana, May 9, Usinger; Yona, May 12, Swezey; Piti, June 22, Aug. 10, Sept. 26, Swezey; Orote Pt., Sept. 1, Swezey; Tumon, Nov. 13, Swezey.

This species is less common than *P. macaënsis* and it is smaller and has smaller colonies. It was also collected by Fullaway in 1911.

8. *Icaria marginata* (Lepeletier).\*

*Epipona marginata* Lepeletier, Hist. nat. Ins., Hymenopt. 1: 541, 1836.

*Icaria marginata* (Lepeletier) Saussure, Études Fam. Vespides 2: 237, 1853-58. Fullaway, Haw. Ent. Soc., Proc. 2: 283, 1913.

Agana, March 28, Bryan; Orote Peninsula, April 9, Bryan; Talofoto, April 11, Bryan; Yigo, April 13, Bryan; Upi Trail, May 5, Bryan; Piti, May 1, July 24, Sept. 14, Swezey; Mt. Tenjo, May 3, Swezey; Barrigada, June 14, on *Crotalaria* flowers, Aug. 28; on corn tassels, Swezey; Dededo, Aug. 11, Swezey; Mata, Nov. 11, Swezey.

This species is smaller and more abundant than the *Polistes* wasps. It is to be seen searching for caterpillars in grass lands, gardens, fields, roadsides and in the forests. Leafroller caterpillars are their particular prey. These are used for daily feeding to their larvae in paper nests. The nests are composed

\* While this paper was in press, J. Van Der Vecht published a paper on "The Indo-Australian species of the genus *Ropalidia* (= *Icaria*) (Hym.: Vespidae)" (Treubia 18 (1): 122, 1941), in which *Icaria* is treated as a synonym of *Ropalidia*. *Icaria marginata* is described as *Ropalidia marginata sundaica*, new subspecies, from Guam, Java, Marianas Islands, Malay Peninsula, Sumatra, Bangka Island, and Borneo.

of much smaller cells than those of *Polistes*. The cells are vertical, and the nest is usually elongate and hangs on a slant instead of being horizontal and nearly circular as is the *Polistes* nest. These nests are commonly found on the under side of palm leaves, in hedges and on mango leaves. One nest found among mango leaves contained 541 cells. This wasp is quick to attack when its nest is disturbed, and the sting is severe for its size. We found several specimens dead with a fungus disease, the same kind as found on *Polistes macaënsis*. This may prove to be *Hirsutella saussurei* (Cooke).

**9. *Rhynchium brunneum* (Fabricius).**

*Vespa brunnea* Fabricius, Ent. Syst. 2: 264, 1793.

*Rhynchium brunneum* (Fabricius) Bingham, Fauna Brit. India, Hymenopt. 1: 355, 1897. Fullaway, Haw. Ent. Soc., Proc. 2: 283, 1913.

Agana, at Officers' Club, March 28, Bryan, May 4, 15, Swezey; Orote Peninsula, April 7, on coconut blossoms, Bryan; Ritidian Pt., April 15, on *Hernandia* blossoms, Bryan; Dededo, May 11, Swezey; Tarague, May 17, Swezey; Fadian, Sept. 18, Swezey.

This large brown wasp is very abundant and widely distributed. It is usually to be found in gardens, and is often seen abundantly on country roadsides and trails. It is a caterpillar hunter, storing the caterpillars in empty burrows of tree-boring beetles in stumps, trunks, or dead branches. Enough caterpillars are placed in a burrow to supply food for one larva, then plugged with mud. Their presence on or along roadsides is for the purpose of gathering mud for plugging the nests. Fullaway collected this wasp in 1911. It occurs in Borneo, Sumatra and all through southern Asia.

**10. *Pachodynerus nasidens* (Latreille).**

*Odynerus nasidens* Latreille, Humboldt and Bonpland, Voy. Regions équinoxiales . . ., Zool. 2: 112, 1812.

*Pachodynerus nasidens* (Latreille) Saussure, Smithsonian Misc. Coll. 16 (254): 232, 1875.

Piti, April 30, May 11, 22, 30, 31, June 8, July 6, Swezey, Usinger; Sumay, June 22, Swezey.

This wasp is apparently a recent immigrant in Guam, as it was not previously recorded. Its home is tropical America, and it is very common in the Hawaiian islands, where it was first observed in 1911. Probably it has reached Guam from Honolulu since that year. It frequents houses, and habitually makes use of empty cells of muddauber wasps' nests to store caterpillars for food for its larvae. The caterpillars stored are those of Microlepidoptera, commonly tortricid larvae. In Guam, *P. nasidens* was found using empty nests of *Pison argentatum* about our residence at Piti. It was found generally throughout Guam, but the specimens in our collection were nearly all from Piti.