

NOTES ON SOME BEES FROM THE PALAU ISLANDS (HYMENOPTERA, APOIDEA)

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Abstract

Five species of bees are recorded from the Palau Islands, among them *Heriades plumosa* is newly recorded from Babeldaob Is., *Megachile laticeps* and *Apis mellifera* from Malakal Is., and *Trigona clypearis* from Babeldaob Is., Malakal Is. and Peleliu Is. A problem on the treatment of species names of the genus *Trigona* from the Caroline Islands was noted.

Key words: bees, faunistic, the Palau Islands.

Introduction

The Palau Islands, the southwestern-most major unit of Micronesia, is located in the western Caroline Islands, and consists of several islands (Fig. 1). The larger islands, north of Koror, are of volcanic origin, and the islands south of Koror are raised limestone material.

The bee fauna of the Palau Islands is described in faunistic papers on Apoidea of Micronesia. They are as follows (except for scattered descriptions): YASUMATSU (1935, 1939a, 1939b, 1942) and COCKERELL (1942) reported bees of Micronesia based on the material collected by the Esaki expeditions carried out from 1936 to 1940. After World War II the economic survey of Micronesia by the U.S. Commercial Company was made in 1946, and KROMBEIN (1950) revised the bees of Micronesia and listed 26 species, including 10 species from the Palau Islands.

Further, GRESSITT et al. (1961) pointed out that the insect fauna of the Palau Islands was the richest among the Caroline Islands. And HIRASHIMA (1971) revised the subgeneric classification of the genus *Ceratina* Latreille of Asia and West Pacific.

Recently, with respect to the species number, endemism and so on, TADAUCHI (1994) summarized bee fauna in the Bonin Islands and Micronesia based on his own data adding to KROMBEIN (1950). According to him, next to South Mariana Islands (14) the species number is the richest in the Palau Islands (10) and the Bonin Islands (10). The Palau Islands have the highest endemism (60.0%) next to the Bonin Islands (90.0%) and Yap Island (71.4%, the species number is 7 for reference).

Thus, bee fauna of the Palau Islands is comparatively well known. Among our collection data reported here, some new records of bees are included in each island of the Palau Islands. And a little biological information on the nest of *Trigona* (*Tetragonula*) *clypearis* is reported. Further, we visualize a problem on the names of species of the genus *Trigona* from the Caroline Islands.

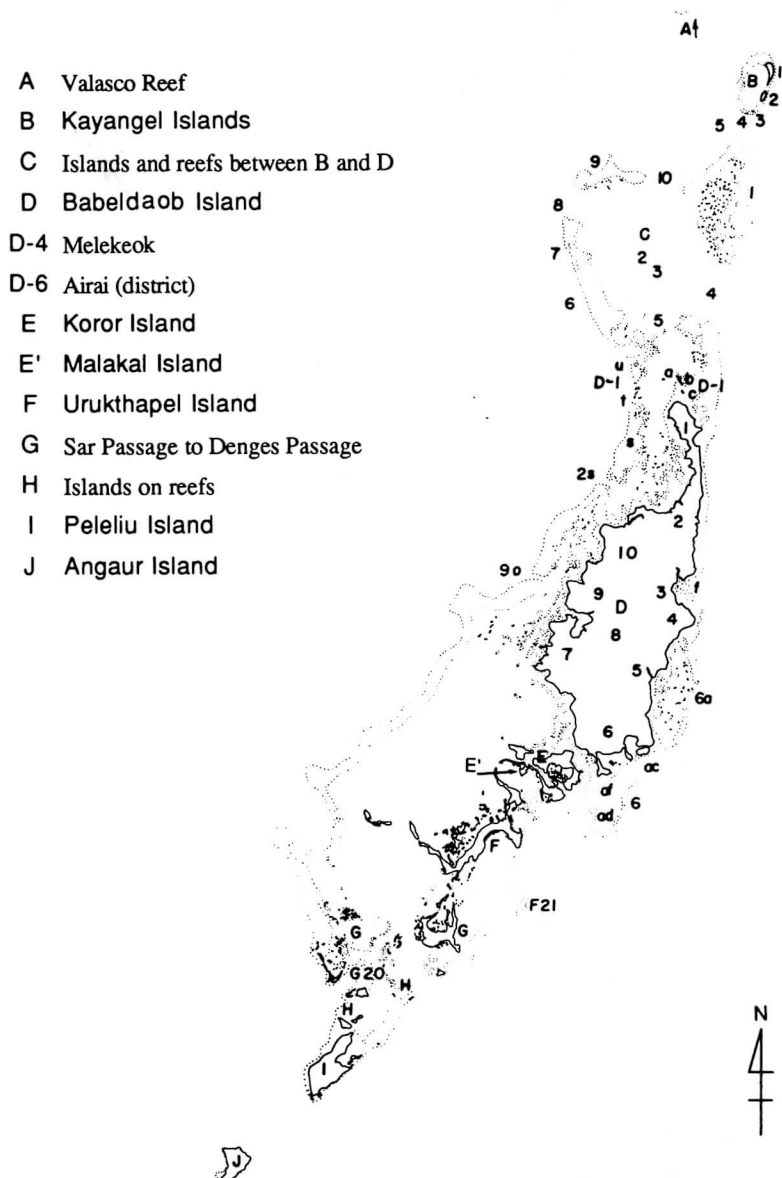


Fig. 1. A map of the Palau Islands. See BRYAN (1971) for details of the number which corresponds to the names of places or districts. (Changed a part of it.)

Collection data

The names of collector in the following data are omitted, as all were collected by one author, K. KUSIGEMATI. Localities with an asterisk are new ones so far as we know. The name of islands is based on BRYAN (1971).

HALICTIDAE

1. *Homalictus palaonicus* (COCKERELL, 1939)

Specimens examined: 44 ♂♂, Melekeok, Babeldaob Is., Oct. 26, 1995.

Distribution: Caroline Islands (Yap Is., PALAUS: Babeldaob Is., Koror Is., Arakabesan Is., Peleliu Is.)

MEGACHILIDAE

1. *Heriades (Michenerella) plumosa* KROMBEIN, 1950

Specimens examined: 1 ♂, Ngerbekebekur, Airai, Babeldaob Is., Oct. 27, 1995.

Distribution: Caroline Islands (PALAUS: Babeldaob Is. *, Peleliu Is.)

2. *Megachile laticeps* SMITH, 1853

Specimens examined: 2 ♂♂ and 1 ♀, Airai, Babeldaob Is., Oct. 18, 1995; 1 ♀, Koror, Koror Is., Oct. 19, 1995; 2 ♂♂ and 2 ♀♀, Koror, Malakal Is., Oct. 24, 1995; 2 ♂♂ and 5 ♀♀, Koror, Malakal Is., Oct. 29, 1995.

Distribution: Marianas (Agrihan Is., Pagan Is., Alamagan Is., Anatahan Is., Saipan Is., Tinian Is., Rota Is., Guam Is.), Carolines (Yap Is., Truk Atoll, Ponape Is., Kusaie Atoll, PALAUS: Babeldaob Is., Koror Is., Arakabesan Is., and Malakal Is. *), Philippines, Borneo.

ANTHOPHORIDAE

1. *Ceratina (Neoceratina) palauensis* YASUMATSU, 1939

Specimens examined: 5 ♀♀, Ngetengchau, Peleliu Is., Oct. 20, 1995; 1 ♀, Ngerbekebekur, Airai, Babeldaob Is., Oct. 27, 1995.

Distribution: Caroline Islands (Ulithi Atoll, Yap Is., PALAUS: Babeldaob Is., Angaur Is., Peleliu Is.).

APIDAE

1. *Trigona (Tetragonula) clypearis* FRIESE, 1908

Specimens examined: 145 ♂♂ and 147 workers, Airai, Babeldaob Is., Oct. 18, 1995; 1 ♂ and 28 workers, Ngetengchau, Peleliu Is., Oct. 20, 1995; 1 worker, Elauesachel, Imeliik, Babel-



Fig. 2. Entrances of nests of *Trigona (Tetragonula) clypearis* that is in activity in the traditional Palauan meeting house called "bai". Left: knothole of pillar. Right: interstice of window frame.

daob Is. (at the field of sweet potato), Oct. 23, 1995; 2 workers, Koror, Malakal Is., Oct. 24, 1995; 37 workers, Ngerngesang, Melekeok, Babeldaob Is. (at the field of sweet potato), Oct. 26, 1995; 13 workers, Ngerbekebekur, Airai, Babeldaob Is., Oct. 27, 1995; 28 ♂♂ and 35 workers, Koror, Malakal Is., Oct. 29, 1995.

Distribution (only cited from Palau): Babeldaob Is. *, Malakal Is. *, Peleliu Is. *

Biology: It was observed that this species nested in knotholes of pillars or beams of wooden houses, interstices of window frames (Fig. 2), holes or interstices of concrete blocks, etc.

2. *Apis mellifera* LINNAEUS, 1758

Specimens examined: 3 workers, Koror, Koror Is., Oct. 19, 1995; 12 workers, Malakal Harbor, Koror Is., Oct. 23, 1995; 3 workers, Koror, Malakal Is., Oct. 24, 1995; 1 worker, Koror, Malakal Is., Oct. 29, 1995.

Distribution (only cited from Micronesia): Marianas (Pagan Is., Saipan Is., Rota Is., Guam Is.), Carolines (Ponape Is., PALAU: Koror Is., Malakal Is. *). FULLAWAY (1913) noted that this species was introduced to Guam from Hawaii in 1907.

On species names of the genus *Trigona* from Carolines

Hitherto the genus *Trigona* from the Caroline Islands is recorded 2 species, that is, *T. (Tetragona) iridipennis* var. *valdezi* COCKERELL, 1939 and *T. (Tetragona) fuscobalteata* CAMERON, 1939 (KROMBEIN 1950, perhaps based on the system by SCHWARZ 1939). According to SAKAGAMI (1978), a true species of *T. iridipennis* belongs to the subgenus *Tetragonula* (erected by MOURE 1961 as a genus) and is for the populations of India and Sri Lanka. And for the populations of *T. iridipennis* var. *iridipennis* SMITH, 1854 and *T. iridipennis* var. *valdezi* COCKERELL (type locality Singapore) in S. E. Asia by SCHWARZ 1939, he adopts the name of *T. laeviceps* proposed by MOURE (1961).

Then, the problem is whether the populations treated as *T. iridipennis* var. *valdezi* in the Caroline Islands (Truk Atoll) is *T. laeviceps*, *T. clypearis* distributed in Australia and New Guinea, or not. Dr. SAKAGAMI suggests in our private communications that it is not *T. laeviceps* but another Australian species. If so, *T. clypearis* recorded here from the Palau Islands becomes the third species of the genus *Trigona* in the Caroline Islands. This is a subject for future study.

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