Discovery of Nine Species of Bees from the Southwestern Islands, Japan (Hymenoptera, Apoidea)

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Abstract Distribution of 9 species of bees, Coelioxys ducalis SMITH, *Megachile disjunctiformis* COCKERELL, *Ceratina iwatai* YASUMATSU, *C. dentipes* FRIESE, *Nomada* sp., *Lasioglossum naitoi* EMBER et MAETA, *L.* sp. Y-1, *L.* sp. Y-2, and *L.* sp. O-1 are newly or additionally recorded from subtropical southwestern islands, Japan.

Key words : Distribution record; *Coelioxys*; *Megachile*; *Ceratina*; *Nomada*; *Lasioglossum*; Southwestern Is.

The bee fauna and distribution of each bee species were well studied in Japanese subtropical southwestern islands from the Tokara to Yaeyama Islands (approx. lat. 30°–24°N) by IKUDOME (2000). Up to the present, a total of 64 species of bees, belonging to the 17 genera and 5 families were recorded from the above mentioned areas (MAETA *et al.*, 1998). Through our studies on the partnership between bees and their flower resource plants, we added the following 9 species of bees to the bee fauna so far has been known.

The name of the collectors is abbreviated as follows: Y. M.: Y. MAETA; R. M.: R. MIYANAGA; Md. A. H.: Md. A. HANNAN. The specimens are preserved in Laboratory of Insect Management, Faculty of Life and Environmental Science, Shimane University.

1. *Coelioxys* (*Torridapis*) *ducalis* SMITH

IWATA (1939) briefly mentioned that Taiwanese *C. ducalis* was a cleptoparasite of *Megachile monticola* SMITH. The host species commonly occurs in southwestern archipelago, Japan. We have been trying to collect *C. ducalis* in these areas, since 1982. Our first discovery was from Ishigaki Is. in 1994. In this finding, an abandoned nest of *Xylocopa albinotus* MATSUMURA, which was superseded by *M. monticola,* involved a dead female adult of the cleptoparasite (MAETA & HIASA, 1994; MAETA *et al.*, 1996). The condition of specimen was poor, however, there was no difficulty to identify the species. The second discovery was made on September 16, 2003 by Y. M. in Iriomote Is., locating 20 km westward from Ishigaki Is. A male of *C. ducalis* (Fig. 1) was captured on a flower of *Bidens pilosa* var. *radiata* SCHULTZ-BIP. during the sampling of pollinators of the plant. *Coelioxys ducalis* was recorded from India (Dharamsala) (GUPTA, 1993), Indonesia (Sulawesi) (MICHENER, 2000), and Japanese southern archipelago, suggesting a wide range of distribution. From the previous studies, only the female adult is

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Fig. 1. Upper view of a male *Coelioxys ducalis*.

described, no male was possible to trace except for the present time. Hosts were not recorded from India and Indonesia.

2. *Megachile disjunctiformis* COCKERELL

It is well known that this megachilid bee is widely distributed from Taiwan to Japanese main islands (HIRASHIMA, 1989). However, no authentic record from Iriomote Is. so far has been made until recently. One male was collected on July 25, 2003 by Md. A. H. from this island on a flower of *Weidelia trilobata* A. HITCHC.

3. *Ceratina* (*Ceratina*) *iwatai* YASUMATSU

Up to the present, the distribution of *C. iwatai* was known from the Japanese main islands (Hokkaido, Honshu, Shikoku, and Kyusyu) and the continent of China (HIRASHIMA, 1989). We (Y. M. and R. M.) found a nest of *C. iwatai*, excavated in a pithy core of *Miscanthus sinensis* ANDRESS., involving 6 overwintering adults (2♀♀ and 4♂♂) on December 25, 1997 at Taira, Higashi-son, Okinawa Is. One of the females was the mother bee who had bred in this year. YASUMATSU and HIRASHIMA (1969) mentioned that discrimination of the females between *C. iwatai* and *C. satoi* YASUMATSU is hardly possible unless they were taken together with their males. The tubercles of *C. iwatai* in females of Okinawa Is., were with whitish markings. It differed from those of Japanese main islands, which have black colored tubercles (YASUMATSU & HIRASHIMA, 1969).

4. *Ceratina* (*Neoceratina*) *dentipes* FRIESE

This species was known to occur in southwestern islands, Japan (HIRASHIMA, 1989; IKUDOME, 2000), but not yet recorded from Iriomote Is. before this time. Two females were collected.

One was captured on a flower of *Bidens pilosa* var. *radiata* on July 3–5, 1995 by Y. M., and the other on that of *Vitex trifolia* L. on August 9, 2003 by Md. A. H. in this island.

5. *Nomada* sp.

Only one male was collected at Takae, Higashi-son, Okinawa Is., on March 18, 1998 by R. M. This species differs in many morphological chartacters from *N. amamiensis* HIRASHIMA, which is only one namadine species described from southwestern islands, Japan. It will be described elsewhere as a new species in near future.

6. *Lasioglossum* (*Evylaeus*–t) *naitoi* EBMER et MAETA

Up to the present, *L. naitoi* was collected from only Iriomote Is. and Okinawa Is. (EMBER *et. al.*, 1994; MAETA *et al.*, 1998; IKUDOME, 2000). However, 2 females of this species were collected on March 27, 1999 in Amami Is. One was captured at Setouchi-cho, Kuji and the other at Sumiyo-son, Wase.

7. *Lasioglossum* (*Evylaeus*–l) sp. Y–1

Four females and one male were collected on flowers of *Mallotus japonicus* MÜLLER-ARG. on July 13, 2002 by Y. M. in Iriomote Is. Additionally, one more female was collected on a flower of *Euodia meliifolia* (HANCE) BENTH. on November 6–9, 2003 by Y. M. This species is closely related to L. (*Evylaeus*–l) *zipangu* EBMER et SAKAGAMI.

8. *Lasioglossum* (*Evylaeus*–l) sp. Y–2

Two female were collected in Iriomote Is. One was captured on a flower of *Melastoma candidum* D. DON on May 26, 2003 by Md. A. H. and the other on that of *Zanthoxylum ailanthoides* SIEB. et ZUCC. on September 14–18, 2003 by Y. M. This species is also closely related to *L. zipangu*.

9. *Lasiolgossum* (*Evylaeus*–l) sp. O-1

Four females were collected on flowers of *B. pilosa* var. *radiata* on October 17–18, 2002 by Y. M. at Hedona, Kunigami-son, Okinawa Is. This species is also closely related to *L. zipangu*. The last 3 species of the halctine bees (7, 8, and 9) will be described elsewhere as new species by Mr. M. GOUBARA in near future.

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