

Biology of *SpheX (Isodontia) maidli* Yasumatsu (Hymenoptera, Sphecidae)\*

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*SpheX maidli* Yasumatsu is rather a rare insect in Japan. When it was described in 1938 (Tenthredo, II, 1, p. 113) only three specimens were recorded from south-western regions of Japan, namely 1 ♂ from Daisen (Chugoku), 2 ♀♀ from Inunaki-Yama (Kyushu), and since then no other information thereof has appeared in the literature. During his collecting excursions around Mt. Haku, M. Japan, the writer could capture eight female specimens of this interesting species having bright yellow wings<sup>1)</sup>, and moreover, fortunate enough, could have a chance of observing its nesting habits. The specimens collected were as follows :

2 ♀♀, Koike, Fukui Pref., about 900 m. high, 28. VII, 20. VIII. 1955 ; 6 ♀♀, Ichinose, Ishikawa Pref., about 1000 m. high, 14, 16. VIII. 1956.

On Aug. 15, 1956, while collecting small wasps nesting in the hollows of logs piled up along the roadside at Ichinose, the writer took a notice of two wasps of this species entering among the logs with some greenish material. They came from time to time with the similar substance and carried it in the hollows of logs. On capturing one of them in the net it was made clear that they had been collecting green mosses, probably as material for closing the tunnels of their nests. He released the wasp to make her continue the nest building activities.

The next day the owner of the logs cut off for the writer an end of one of the logs including the wasp's nest. The other could not be pulled out of the pile. After carrying about the block of wood for two days in the mountain, he came back home and at once examined the nest. Rather elaborate task of sawing and cutting of the hard wood revealed at last that the nest was constructed in the abandoned beetle hole and it consisted of a single brood-cell and was being permanently closed by the wasp. Unfortunately, however, it had already been parasitized by a host of larvae of a Tachynid fly. The larva of the wasp as well as the prey collected for it had almost completely been devoured up by the maggots.

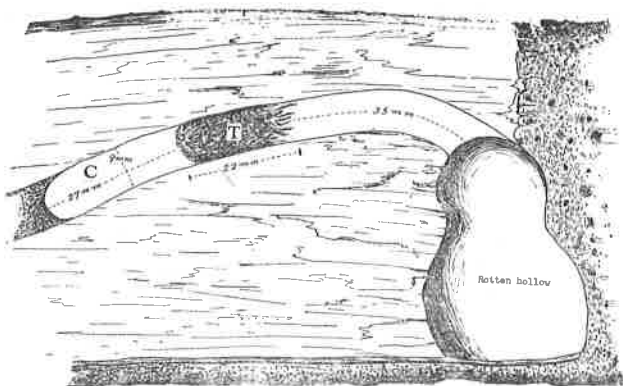
The structure of the nest was as shown in Fig. 1.

Careful collection of remains of the prey in the cell, however, gave him 1 male and 5 female caudal parts, 6 pronotums, 6 crania, 11 hind legs, 19 fore- and mid legs and 19 eggs of a certain small species of the grasshopper. In addition, one nearly intact nymphal male prey was found half buried from beneath the tampon at the entrance which, together with the remains of the pronotums, showed

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1) The characters of these specimens do not completely agree with the original description of *maidli*, especially markedly so in the ratio of width to length in some antennal joints. Judging from other part of the description, however, the difference in the latter character seems to be due to misprint. Therefore, the specimens are referred to *maidli* showing a slight variation in some characters.



A nest of *S. maidli* Yasumatsu

C : Brood-cell (27×9mm), T : Tampon of mosses (22mm long)

that the victims doubtlessly belonged to some species of the genus *Conocephalus*. Judging by the result, the prey might consist of 7 insects, including 5 females (probably 1 adult and 4 nymphs) and 2 males (both nymphs). Parasitic maggots, when counted, showed that they reached as many as 191 in number, all being 3 - 5 mm in dimension. It seems possible, therefore, that they must be laid by more-than-one flies at several times.

The packing material at the gallery consisted of a species of the lively moss which Mr. S. Kamuro of our Laboratory kindly identified with *Erythrodontium leptothallum* (C.M.) Nog. (ベニハゴケ). The tampon was not so compact as usually met with in the case of the permanent closure of the nests of similarly moss-utilizing *Isodontia* such as *S. harmandi* Pérez. It might, therefore, be a temporal closure, or at the beginning of the permanent closure. Judging from the fact that the wasp was collecting the moss a couple of days before, the matter is considered to be at the beginning of the final closure. That a prey was discovered from beneath the tampon seemed to be resulted merely from an accidental shock during the course of the transportation. This fact is important, since if the closure be a temporal one, it becomes that the wasp may have a habit of laying several eggs at first, each to a respective prey, and then gathering a mass of food for the larvae in the same cell, just as is done by *Isodontia harmandi*.

As discussed above, however, it is considered to be the beginning of the permanent closure. The amount of food assembled in the cell also well accords with the normal diet of a single larva. Still further, the space left at the entrance is regarded as proper for the final closure of a nest. Hereupon, we may say as follows:

1) *Sphex maidli* resembles *S. harmandi* in her habit of utilizing mosses as nest closing material.

2) But it is rather close to *S. (Isodontia) nigellus* Smith in her habit of depositing only a single egg in one brood-cell.

3) Apart from such an interspecific trivial difference, the most important fact is that the wasp still retains the non-burrowing and tube-renting habit, characteristic of *Isodontia*.