Studies on the flies occurring from the excrement of
pasturing cattle and other herbivorous animals.
3. On the 3rd stage larvae of the genus *Morellia* R.-D.
from Japan (Diptera : Muscidae)*

Satoshi SHINONAGA** and Rokuro KANO**

** Department of Medical Zoology, Faculty of Medicine, Tokyo Medical and
Dental University, 1-5 Yushima, Bunkyo-ku, Tokyo 113, Japan

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Abstract: The 3rd stage larvae of 4 species belonging to the genus *Morellia* R.-D. from Japan are described and figured. Those are *M. saishuensis* Ôuchi, *M. hortensia* (Wiedemann), *M. hortorum* (Fallén), and *M. aenescens* R.-D. External characters of those species are similar each other, however, posterior spiracles of *saishuensis*, and shape and size of anterodorsol spines in each species are characteristic. Those are most useful characters for identification of *Morellia*-larvae. The larva of *M. saishuensis* is newly described in this paper.

INTRODUCTION

Flies belonging to the genus *Morellia* are known to occur from cow or waterbuffalo dung in Japan. Hitherto 4 species of *Morellia* were recorded from Japan (Shinonaga and Kano, 1971, 1973, 1974). Of these, *M. hortorum* and *M. aenescens* are Palaearctic species and distributed in northern part of Hokkaido in Japan. *M. hortensia* is Oriental species and distributed in south of Tokara Islands in Japan, and *M. saishuensis* is distributed in Palaearctic East Asia, such as U. S. S. R., China, Korea and Japan. The larvae of *M. hortensia* was described by Thomson (1947) and Fan (1957), but the larvae of the other species are not described in detail in contrast with their adults. On the puparium, Stork (1936) described 2 species, *M. aenescens* and *M. hortorum*. In the description, he referred to the shape of

posterior spiracles and spines of abdomen. In the present paper, the authors described the 3rd stage larvae of 4 species which were obtained from the reared adults.

METHOD OF COLLECTING LARVAE

Method of collecting larvae was made by the Shinonaga's method of 1973 (Shinonaga and Kano, 1973). *M. hortorum* and *M. aenescens* were obtained in Toyotomi, northern part of Hokkaido; *M. saishuensis* in Chiba city; and *M. hortensia* in Yona, Okinawa main island.

GENERAL CHARACTERS AND IDENTIFICATION OF THE LARVAE OF
Morellia IN JAPAN

Fully matured larvae of the genus are 6 to 10 mm in length. External features of *Morellia*-larvae are not similar to the other larvae belonging to Muscidae. The body is comparatively sclerotized and yellowish brown in color. Each segment has a spine band on anterior and posterior margins (Fig. 1), and the spines are different in shape, number and size in each species (Figs. 14-17).

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** 篠永 哲, 加納六郎: 東京医科歯科大学医学部医動物学教室 (〒113 東京都文京区湯島 1-5-45)

Fig. 1 Lateral view of 3rd stage larvae of *saishuensis*

Figs. 2-5 Lateral view of cephalopharyngeal sclerite
 2. *saishuensis*; 3. *hortensia*; 4. *hortorum*; 5. *aenescens*.

Figs. 6-9 Posterior view of posterior spiracles
6. *saishuensis*; 7. *hortensia*; 8. *hortorum*; 9. *aenescens*.

Anterior spiracles divided into 4 to 7 branches (Figs. 10-13). Anal plate is narrow and has no spines. Papillae around anal plate are reduced. Posterior end of the body is diagonally truncated as in Fig. 1. Posterior spiracles are heavily sclerotized and have three curved slits (Figs. 6-9). Cephalopharyngeal sclerite is not so much different in each species (Figs. 2-5). Mouth hooks of both sides are symmetric, and accessory sclerite is usually absent. Ventral cornua of pharyngeal sclerite is longer than dorsal cornua and has triangular projection on the middle part.

The larvae of *Morellia*-species in Japan

are closely related each other, but *M. saishuensis* has a characteristic posterior spiracles. Those are heavily sclerotized and surrounded by the area (Figs. 1 and 6). Number of branches of anterior spiracles is not so good character for identification. Number of branches in *saishuensis* and *hortensia* are usually 4, and 5 to 7 in *hortorum* and *aenescens*. However, sometimes the number is different in both sides. The most useful character to separate each larva is shape and size of spines on anterior margin in each segment (Figs. 14-17). The figures showed the dorsal spines on 6th segment for comparison of each species. The spines are

Figs. 10-13 Lateral view of anterior spiracles
 10. *saishuensis*; 11. *hortensia*; 12. *hortorum*; 13. *aenescens*.

Figs. 14-17 Dorsal spines on 6th segment
 14. *saishuensis*; 15. *hortensia*; 16. *hortorum*; 17. *aenescens*.

uniform throughout the body. The spines are large and tapering in *saishuensis*; large and truncated in *hortorum*; small and round in *hortensia* and *aenescens* as shown in figures (Figs. 14-17). Spines of *hortensia* are smaller than those of *aenescens*. Stork (1936) has described on the spines of *M. aenescens* and said that the spines between the seventh and eighth segments on the dorsal side are small and inconspicuous, on the ventral side, however, clean and very numerous. Stork's descriptions were confirmed again by the authors. Thomson (1937) and Zimin (1948, 1951) described the spines of *M. simplex*, but it differs from *saishuensis* in shape of the spines on thoracic segment. Cephalopharyngeal sclerite is not characteristic in each species, however, posterior end of dorsal cornua is protruding upward in *saishuensis* and *hortensia* and straight in *hortorum* and *aenescens*. From the results of the study, it was known that the shape and size of spines on segments are the most characteristic and useful character for the identification of *Morellia*-larvae of Japan.

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摘 要

牛およびその他の草食獣糞から発生する
蠅類に関する研究

3. 日本産セジロハナバエ属の
終令幼虫について

日本産セジロハナバエ属については、篠永・加納 (1971) が成虫4種を記載している。わが国では、本属のハエはすべて牛または水牛糞から発生するが、このうちでも放牧地の牛糞からの発生が主である。

著者らは、野外で採集した雌成虫に産卵させて3令幼虫を得、これについて記載した。本属の幼虫は、他のイエバエ科幼虫と比較して形態が異なり、体の後端は斜に切断された形(図1)で外皮はかなり強く硬化している。また、各節に棘帯を有し、この棘の大きさと形は種の特徴として重要であり、これにより種の同定が可能である。