Bull. Natn. Sci. Mus. Ser., A (Zool.), 6 (2), June 22, 1980

A New Herminiine Moth of the Genus *Zanclognatha* (Noctuidae) from Japan

By

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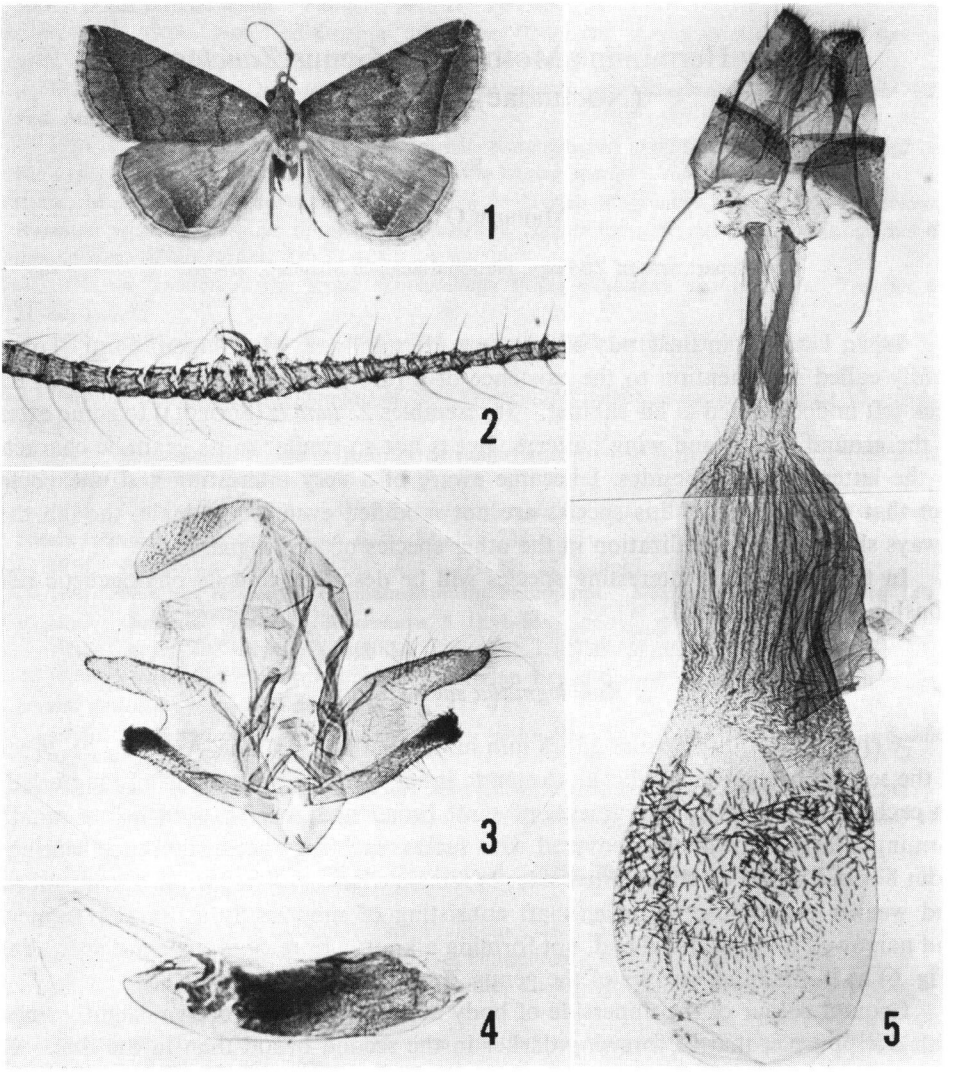
When I started in the study of Japanese Herminiinae, Mr. Shigero SUGI, Tokyo, kindly called my attention to the existence of a rare *Zanclognatha* species which had been left undetermined in his cabinet. It resembles *Z. lunalis* (SCOPOLI) to some extent in the ground colour and wing patterns, but is not so similar in its genitalic character to the latter species. Besides, I became aware of a very interesting and unexpected fact that the forelegs of this species are not modified even in the male, though they always show some specialization in the other species of *Zanclognatha*.

In this paper, this interesting species will be described and its phylogenetic relationship will be discussed.

Zanclognatha sugii sp. nov.

♂ (Fig. 1) & ♀. Expanse 25–28 mm in the first brood (June–August), 20–24 mm in the second brood (September). Antenna in male ciliate, with a pair of long bristles on each side, two or three segments of shaft broadened and flattened before middle, forming a large knot densely covered with scales, each segment of the knot bearing a stout hooked bristle on the internal side; in female ciliate, with a pair of bristles shorter and weaker than those in male, shaft consisting of moderately shortened segments and narrowed towards distal end, not forming a knot. Foreleg in male not specialized (Fig. 6) as in the other species of the genus *Zanclognatha* (Figs. 7, 8).

Ground colour of the upperside of body and wings greyish brown, slightly tinged with dark purple, that of forewing darker in the second brood than in the first. On the upperside of forewing, antemedial line dark brown, outwardly rounded, waved; reniform stigma dark brown, linear, almost right angled in middle; postmedial line dark brown, oblique from costa, angulate at the outside of reniform stigma, inwardly oblique from that angle to vein Cu_{1b}, and protruding outwards on vein 1A+2A; subterminal line pale ochreous, internally shaded with dark brown scales, arising from pale ochreous costal mark situated just before apical mark, moderately arcuate inwardly to dorsum: apical mark blackish brown; terminal line dark brown, narrow, usually continuous; cilia greyish brown. On the upperside of hindwing, postmedial line dark brown, faint, vanished towards costa; subterminal line pale ochreous, shaded internally with dark brown scales, prominent near hind angle; terminal line



Figs. 1–5. *Zanclognatha sugii* OWADA sp. nov. —— 1. Paratype, male. —— 2. Male antenna, scales removed. —— 3. Male genitalia. —— 4. Aedeagus. —— 5. Female genitalia.

and cilia the same as in forewing. Underside of body and wings slightly paler than the ground colour of upperside; markings dull and rather broad, almost of the same patterns as on the upperside.

Male genitalia (Figs. 3, 4). Uncus almost straight, gradually broadened towards apex, which ends in a small hook-like point. Tegmen and vinculum moderate. Valva rather simple, bilobed; costa smoothly arcuate, cuculus rounded, succulus developed, with short broad process which is densely covered with short blackish hairs. Aedeagus

broad, slightly curved; vesica well scobinate, without prominent cornutus.

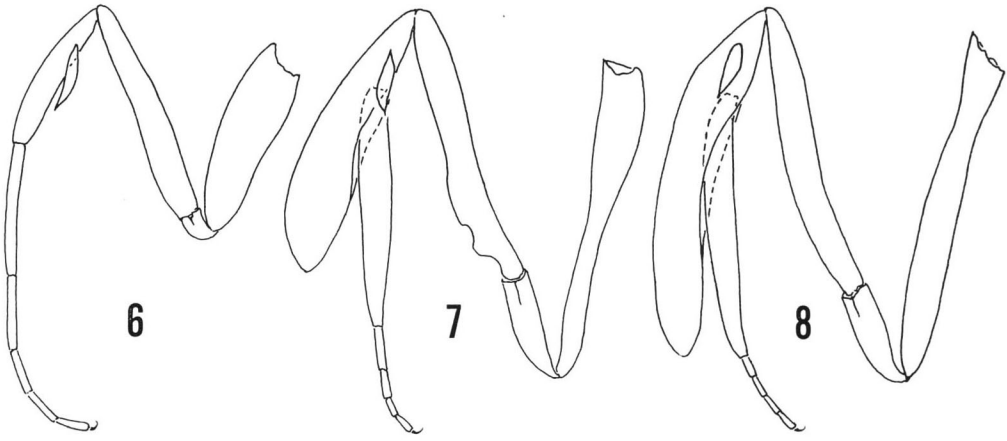
Female genitalia (Fig. 5). Papillae anales and 8th abdominal segment moderate. Ostium bursae membraneous. Ductus bursae straight, with a pair of lateral sclerites which are separated from each other. Cervix bursae weakly sclerotized, with many longitudinal furrows. Corpus bursae slightly larger than cervix bursae, membraneous, with many straight spines. Ductus seminalis arising from cervix bursae, coiled once in basal portion.

Holotype. ♂, labeled "JAPAN, HYOGO: Miki, 10. VI. 1972, M. OWADA." Preserved in the National Science Museum, Tokyo.

Paratypes. Honshu—4 ♂, Tôgatta, Miyagi Pref., 15–16. VII. 1967 (T. WATANABE); 2 ♀, same locality, 25. VII. 1967 (T. WATANABE); 1 ♂, Ôkura-dam, Miyagi Pref., 22. VII. 1966 (T. WATANABE); 3 ♀, Mt. Funagata-yama, Miyagi Pref., 28. VII. 1967 (T. WATANABE); 1 ♂, Shizugawa, Miyagi Pref., 26. VII. 1971 (T. WATANABE); 2 ♀, Izumigatake, Miyagi Pref., 22. VII. 1967 (T. WATANABE); 2 ♂, Takao-san, Tokyo, 22. VIII. 1960 (R. SATO); 1 ♀, Todai, Kami-ina, Nagano Pref., 7–11. VII. 1973 (T. SAKURAI); 2 ♀, same locality, 11. VIII. 1971 (M. OWADA); 1 ♀, same locality, 21. VIII. 1971 (M. OWADA); 5 ♀, Tera, Ina, Nagano Pref., 14–18. VIII. 1971 (M. OWADA); 1 ♀, Yasaka, Nagano Pref., 25. VII. 1957 (M. KURATA); 1 ♀, Lake Shoji-ko, Yamanashi Pref., 14. VIII. 1969 (H. INOUE); 1 ♀, Katsuta, Haibara, Shizuoka Pref., 28. VI. 1972 (T. SAKURAI); 2 ♂, Mt. Yahiko, Niigata Pref., 30. VII. 1960 (R. SATO); 1 ♂, Mt. Akibasan, Niitsu, Niigata Pref., 23. VI. 1963 (R. SATO); 1 ♂, same locality, 10. VII. 1959 (R. SATO); 1 ♀, same locality, 7. IX. 1962 (R. SATO); 3 ♂, same deta as holotype; 1♂3♀, same locality as holotype, 4. IX. 1972 (M. OWADA). Shikoku—1 ♀, Fujio-jinja, Takamatsu, Kagawa Pref., 2. IX. 1976 (T. MASUI). Kyushu—1 ♀, Mt. Sobo-san, Oita Pref., 4. VII. 1932 (HORI *et al.*). Tsushima Is.—1 ♂, Nenbutsu-zaka, 27. VI. 1973 (T. WATANABE); 1 ♀, Mitake, 1. VII. 1973 (T. WATANABE); 1 ♀, Kônoki-yama, 29. VI. 1973 (T. WATANABE); 2 ♀, Mt. Ariake-yama, 5. IX. 1973 (K. UEDA *et al.*); 1♂1♀, Tsutsu, 8. IX. 1973 (K. UEDA *et al.*). Quelpart Is.—1 ♀, Kannonji (600 m), 12. VII. 1968 (T. SHIRÔZU & Y. NISHIDA). Korea—2 ♀, Hakdong, Koje Is., 20. VII. 1969 (S. W. PAK); 2 ♀, Mt. Sudosan, Kyongsangpuk-do, 13–16. VII. 1971 (K. YAMAGISHI); 1♀, Mt. Soraksan, Kangwon-do, 3. VIII. 1974 (Y. ARITA).

Distribution. Japan (Honshu, Shikoku, Kyushu and Tsushima Is.) and Korea (Quelpart Is. and southern part of the mainland).

Remarks and discussion. The genitalia of this species have a resemblance to those of *Z. subgriselda* SUGI, 1959, and its wing patterns are also similar to those of the latter. However, this species can easily be distinguished from the latter by the following characters:—Ground colour of wings tinged with dark purple, antemedial line of forewing curved and waved; costa of valva smoothly curved and without process; process of succulus short; female genitalia small, lateral sclerites of ductus bursae straight, basal portion of ductus seminalis moderate. In *Z. subgriselda*, the ground colour of wings is ochreous brown and not tinged with dark purple, the antemedial line of forewing is almost straight; the costa of valva is almost straight and



Figs. 6–8. Male foreleg, all scales and tufts of hairs removed. —— 6. *Zanclognatha sugii* OWADA sp. nov. —— 7. *Zanclognatha lunalis* (SCOPOLI). —— 8. *Zanclognatha subgriselda* SUGI.

with two short processes, the process of succulus is long and slender; the female genitalia are large, the lateral sclerites of ductus bursae are slightly arcuate, and the basal portion of ductus seminalis is broadened. Superficially this species is also similar to *Z. lunalis* (SCOPOLI) in ground colour and ante- and postmedial lines of forewing, but the subterminal line of this species is arising from apex which has a prominent blackish mark, while the subterminal line of *Z. lunalis* is arising from costa before apex which has no apical mark.

The specialized feature of the male forelegs of *Zanclognatha* are briefly summarized as follows:— Coxa, trochanter and femur elongated; tibia forming a sheath covering the first segment of tarsus; first tarsus elongated and broadened (Figs. 7, 8). The shape and length ratio of those segments are relatively stable among closely allied species and seem to serve a good diagnostic character for separating species-groups of *Zanclognatha* (OWADA, 1977). In view of this, it can be safely surmised that the common ancestor of *Zanclognatha* may have possessed this organ, and that the unspecialized foreleg of *Z. sugii* has been derived by degeneration from a specialized one. In the genitalic character, this species cannot be separated from *Zanclognatha*, and is probably the closest relative of *Z. subgriselda* in which the male foreleg is specialized (Fig. 8).

Acknowledgements

I whish to express my hearty thanks to Mr. Shigero SUGI, Tokyo, who kindly gave me a opportunity to study this interesting *Zanclognatha* species. I also wish to thank Proffesors S. ITO and H. KUROKO, University of Osaka Prefecture, for their constant guidance and encouragement. I would like to thank following friends of

mine for supplying me with the materiales: Messrs. Y. ARITA, T. MASUI, T. SAKURAI, R. SATO, K. UEDA, T. WATANABE and K. YAMAGISHI. Finally I thank to Dr. S.-I. UÉNO of our museum for his kindness in reading the manuscript.

References

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