

ABERRANT FEEDERS AMONG JAPANESE LYCAENID LARVAE

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In Japan, there are about 58 Lycaenidae. Almost all are known to be phytophagous and many are myrmecophilous at the same time. Among them two species of *Maculinea*, *M. euphemus* and *M. arionides*, are phyto-predaceous exactly like *M. arion* of Europe, and the third one, *Niphanda fusca*, is fed by a kind of ant with the excretion of aphids, a facsimile of the Ethiopian *Lachnocnema bibulus* (subfamily Lachnocneminae of HINTON, 1951). At the same time, the homopterophagous habit has been known for *Taraka hamada*, like the Nearctic *Feniseca tarquinius*, Indo-Australian *Spalgis epius*, and Ethiopian *Spalgis lemolea* (subfamily Gerydinae and/or Spalginae of various authors). Recently, a thecline larva, *Thecla jonasi*, was quite unexpectedly and unprecedentedly found as aphidivorous. As a result, we know five aberrant feeders among Japanese lycaenid larvae at present.

The sixth, if any, and probably the last, aberrant feeder of our lycaenids may be *Spindasis takanonis*, of which the younger stages have been only partially studied.

1. *Maculinea euphemus* Hübner [Group II of BALDUF (1938) or also group II of HINTON (1951)]. The phyto-predaceous habit of this European form was observed by Dr. T. A. CHAPMAN in 1919. This habit has been confirmed in Japan on two local races: *kazamoto* Druce (in central Honshu) and *shiriyensis* Matsumura (in northern Honshu). The larva feeds at first on flowers of burnet (*Sanguisorba*) and then on ant-grubs of *Myrmica*.

2. *Maculinea arionides* Staudinger. This nearest ally to *M. arion* was supposed at first by Dr. CHAPMAN to be phyto-predaceous and cited as such by CLARK (1926). Recently, the habit was confirmed by a junior high school student by the name of SÔTA HIRAGA, on subsp. *takamukui* Matsumura. The larva feeds at first on flowers of *Plectranthus exisus* Maxim. (Labiatae) and then on ant-grubs of (probably) *Myrmica*.

3. *Niphanda fusca shijima* Fruhstorfer [a new corollary to group VI of BALDUF, or group IV of HINTON]. The remarkable ant-friend habit of this larva was first observed by F. NAGAYAMA in the course of 1948-9 (*Lep. News* 6: p. 43). This species is excretophagous-glanduliferous and quite similar in habit to the African *Lachnocnema bibulus* as studied by CRIPPS AND JACKSON (1940). The larvae are fed orally by the host-ants *Camponotus herculeanus japonicus* Myr. by the latter's disgorging of liquid foods, in and after the third instar in ant-runs, where they hibernate and pupate. *Niphanda* larvae feed directly on the excretion of dwarf-oak aphids, *Greenidea kuwanai* Pergande, in their first two instars. The difference between *Niphanda* and *Lachnocnema* lies only in that the former is related with Eriosomatidae (Homoptera), while the latter is so with Membracidae (also Homoptera). Fine photographs on the symbiosis were taken by S. TAMURA, with the aid of T. ISHIZAWA who had also assisted Mr. NAGAYAMA in latter's original research. They are published in TAMURA's "Closeups of Insects" (1951).

4. *Taraka hamada* Druce [amymecophilous-homopterophagous: group III-A of BALDUF or group III-A-1 of HINTON]. The aphidivorous habit of this larva was published by T. TSUCHIDA as early as 1898 in *Dôbustugaku Zasshi* (the Zoological Magazine 10:358-), but has not been referred to in

any literature written in European languages. SEITZ, in *Gross-Schmetterlinge der Erde* I. (1909), suspected this genus to be placed near *Spalgis* or *Gerydus*, but he remarked "Wohin sie tatsächlich gehört, wird erst die Entwicklungsgeschichte aufklären" (S. 323). In short its habit resembles very much to that of *Feniseca tarquinius* and only differs in that the *Taraka* larvae prey upon the bamboo-aphid, *Oregma japonica* Takahashi, while *Feniseca* larvae feed on alder-aphids etc. The pupae as well as larvae are also not unlike those of *Feniseca*. There is a less-known episode concerning these two distantly located aphidivores. Mr. TSUCHIDA got some hints from Dr. ALBERT KOEBELE, the famous American expert on biological control of insect pests, who en route to Australia visited Japan in 1894-5 and told Mr. TSUCHIDA the fascinating story about the discovery of *Feniseca's* habit in 1886.

5. *Thecla* (*Shirôzua*) *jonasi* Janson [the feeding habit of this larva can be placed under group III-B of BALDUF or group III-A-2 of HINTON, but the taxonomic position is quite remote from the hitherto known members of these groups such as *Gerydus* spp., and quite unique among the broad genus *Thecla* (old *Zephyrus*), the members of which are all phytophagous in the strict sense, so far as I know]. The aphidivorous habit was first discovered in 1951 by MASASUKE INOUE, who took an excellent photograph of the scene and displayed it in *Shin Konchû*, vol. 5 (1952). The larva I examined has specialized mouthparts and highly developed claws on the prothoracic legs. It has neither a slit-like honey gland nor a pair of retractile tubercles. It, however, has rows of stout club-like bristles on the back of the prothorax and 7th and 8th abdominal segments, and a pair of long tufted hairs on the front edge of the prothorax. Fringes around the body also have long hairs. Eggs are laid among the aphids on dwarf-oaks, and pupae are found in ant-runs.

All the above species are single brooded, except *Taraka* which has several broods in a year. They hibernate in the larval stage with the exception of *Thecla*, which winters as the egg.

References

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Appendix. Entomophagous Moths in Japan

1. *Epipomponia nawai* Dyar: on *Tanna japonensis* Distant, *Oncotympana maculaticollis* Motsch., *Graptopsaltria nigrofusca* Motsch., and *Meimura opalifera* Walker (all Cicadidae).
2. *Epiricania hagoromo* Kato: on *Ricania japonica* Melichar (Ricanidae), *Euricania ocellus fascialis* Walker (Ricanidae), *Dictyophara patruellis* Stål (Dictyopharidae), and *Oliarus subnubilus* Uhler (Cixidae).
3. *Oedematopoda igniptica* Butler: on *Oregma japonica* Takahashi (Eriosomatidae) on bamboo and allied plants.
4. *Oedematopoda semirubra* Meyrick: on bamboo woolly aphids.
5. *Pyralis regalis* Schiff. & Denis: on *Vespa mandarina* Smith (Vespidae).
6. *Hypsopygia regina* Butler: on *Polistes japonicus* Saussure (Vespidae).
7. *Hypsopygia mauritalis* Bdv.: on *Polistes japonicus fadwigae* Dalla Torre.