

Larva of a Cantharid Species *Lycocerus suturellus suturellus* (MOTSCHULSKY, 1860) Can Be Maintained on Dry Type of Cat Food

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Recently, taxonomic studies of cantharids have advanced markedly and have revealed the diversity of Cantharidae, especially the genera *Lycocerus* (OKUSHIMA, 2005) and *Asiopodabrus* (TAKAHASHI, 2012) in Japan. On the other hand, it is known that cantharid larvae are found under stones, in leaf litter, under bark, in moss etc. and they are thought to be predaceous and chiefly feed on small arthropods living in ground debris (LESAGE, 1991). In recent studies, it has been mentioned that the bionomics of cantharid species should be clarified to use these potentially beneficial predators for pest control (YAMAZAKI *et al.*, 2003; TRAUOGOTT, 2003), because cantharid larvae are found on farmland abundantly by their high dispersal ability (TRAUGOTT, 2002; JUEN *et al.*, 2003; YAMAZAKI *et al.*, 2003) and they are voracious predators feeding on earthworms, aphids and other invertebrates (TRAUGOTT, 2003). However, little is known about the larval ecology and biology of cantharids (IMASAKA, 1998; LANGENSTÜCK *et al.*, 1998) despite the possible importance of their function in the ecosystem including the agri-ecosystem, as mentioned above. The lack of information on cantharid larvae may be due to little opportunity for many coleopterists to sample or observe the larval stage of cantharids and the lack of the basic information to reveal their biology and ecology, e.g. how cantharid larvae can be kept conveniently for observation of their life cycle.

Fortunately, TAKADA who is one of the authors, collected a cantharid larva of *Lycocerus suturellus suturellus* (MOTSCHULSKY, 1860) from under a stone on the riverbed of Mukogawa River (Itami City, Hyôgo Prefecture, Japan) on 17 February 2013 (Fig. 1). And we reared its larva in a plastic box (about 4.5 cm in depth, 10 cm in length and 7 cm in width) with a plaster layer and wet bog moss in an indoor condition in which temperature, humidity and light were not regulated to rear the larva (Fig. 2), and fed it on dry cat food (brand name: Nestle PURINA ONE) to understand the ecology and biology of cantharid larva and to explore a convenient rearing method. We provided a half of food pellet every three to ten days and removed leftover. As a result, we confirmed that cantharid larva will feed on cat foods and can be reared using the method mentioned above. Consequently, the cantharid larva became a pupa under the bog moss (confirmed date: 19 April 2013, the latest observation date before confirming the pupa: 6 April 2013) and subsequently developed to an adult of *L. s. suturellus* (confirmed date: 20 April 2013). We identified this individual into species after emergence from the pupa, because it is difficult to identify cantharid larvae into species due to lack of studies on their morphology and biology. This examination suggests that at least the larvae of *L. s. suturellus* feed on dead animal matter in the field, although it has been often emphasized that cantharid larvae are predators. This study also suggested a convenient rearing method for cantharid larvae. For example, dry cat food is easily obtained and stored at low cost, and thus will be useful for rearing cantharid larvae. Establishment of a rearing method will contribute to elucidation of the larval ecology and biology of cantharids.

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Fig. 1. Cantharid larva found under a stone on the riverbed of Mukogawa River, Itami City, Hyôgo Prefecture, Japan.



Fig. 2. Plastic box used for rearing cantharid larva with a plaster layer and wet bog moss.

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References

- IMASAKA, S., 1998. What's joh kai bon?—On the Japanese Cantharidae. *Nat. & Ins., Tokyo*, **33**(11): 7–12. (In Japanese.)
- JUEN, A., K.-H. STEINBERGER & M. TRAUOGOTT, 2003. Seasonal change in species composition and size distribution of epigeic predators in a small field. *Ent. Gener.*, **26**: 259–275.
- LANGENSTÜCK, C., U. HEIMBACH & O. LARINK, 1998. Larven der Cantharidae (Insecta: Coleoptera) auf Ackerflächen in SO-Niedersachsen und Aspekte ihrer Biologie. *Braunsch. naturkd. Schr.*, **5**: 551–568.
- LESAGE, L., 1991. Cantharidae. pp. 429–431. In STEHR, F. W. (ed.), *Immature Insects, Volume 2*. Kendall/Hunt Publishing Company, USA.
- OKUSHIMA, Y., 2005. A taxonomic study on the genus *Lycocerus* (Coleoptera, Cantharidae) from Japan, with zoogeographical considerations. *Jpn. J. syst. Ent., Monogr. Ser.*, (2): 1–383.
- TAKAHASHI, K., 2012. A taxonomic study on the genus *Asiopodabrus* (Coleoptera, Cantharidae) of Japan. *Ibid.*, (4): 1–359.
- TRAUOGOTT, M., 2002. Dispersal power, home range and habitat preference of cantharid larvae (Coleoptera: Cantharidae) in arable land. *Eur. J. Soil Biol.*, **38**: 79–83.
- 2003. The prey spectrum of larval and adult *Cantharis* species in arable land: An electrophoretic approach. *Pedobiologia*, **47**: 161–169.
- YAMAZAKI, K., S. SUGIURA & K. KAWAMURA, 2003. Ground beetles (Coleoptera: Carabidae) and other insect predators overwintering in arable and fallow fields in central Japan. *Appl. Ent. Zool.*, **38**: 449–459.

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