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学位論文内容の要旨

博士の専攻分野名称：博士（農学）

氏名：Namiki Kikuchi

学位論文題名

A systematic study of the tribe Platylabini (Hymenoptera: Ichneumonidae:
Ichneumoninae) from Japan

(日本産Platylabini族（膜翅目ヒメバチ科ヒメバチ亜科）の体系学的研究）

The family Ichneumonidae is one of the most species-rich family of Hymenoptera with over 23,000 described species within 38 subfamilies. They are parasitoids on insects, spiders, or other arthropods and they usually kill their hosts during the course of their lifecycles. Thus, they play a very important role in terrestrial ecosystems. The subfamily Ichneumoninae is one of the largest monophyletic subfamilies of Ichneumonidae, including 16 tribes, 424 genera and over 4,300 described species. All current records indicate that they are solitary parasitoids of Lepidoptera. Not only in natural ecosystems but also in agriculture and forestry, parasitoids of herbivorous insects are very important as natural enemies of many pest insects. Despite their importance, the actual diversity of the subfamily in Japan is still unclear.

In this study, I focused on the systematics of Japanese Platylabini. So far, only five genera and 14 species have been recorded from Japan. I examined specimens from across Japan and I have found many new and previously unrecorded species and genera. Additionally, phylogenetic analysis was conducted using molecular markers.

1. Taxonomic Revision of Japanese Platylabini

Through my detailed examination of Japanese specimens, I found 16 genera of Platylabini from Japan. The genera *Apaeticus* Wesmael, 1884, *Clypeolabus* Heinrich, 1974, *Cratolabus* Heinrich, 1974, *Cratolaboides* Tereshkin, 2009, *Dentilabus* Heinrich, 1974, *Ectopius* Wesmael, 1859, *Heinrichiellus* Tereshkin, 2009, *Linyctus* Cameron, 1903, *Notoplatylabus* Heinrich, 1936 and *Poecilostictus* Ratzeburg, 1852 were newly recorded from Japan. *Clypeolabus* was previously only recorded from the Oriental region and is thus new to the Palearctic region. I also found one peculiar species which could not be placed in any other genera and described it as a new genus, *Metopilabus* **gen. nov.**

Within these genera, 36 new species and three newly recorded species have been found from Japan. Updated keys to Japanese genera and species of Platylabini are provided.

2. Molecular identification and Phylogenetic analysis

Based on DNA barcoding methodology, partial sequences of the mitochondrial COI gene were obtained from Japanese specimens. For two genera, *Linycus* and *Hypomecus*, I compared DNA barcodes to continental specimens. Japanese specimens of *Linycus* strongly resemble *L. exhortator* (Fabricius), except in body coloration but the phylogenetic difference between Japanese *Linycus* and European *L. exhortator* was more than 5%, so in this study, I treated the Japanese species as a new species, *L. rugosobasalis* **sp. nov.** I also used COI sequences for phylogenetic analyses. A maximum-likelihood tree was constructed from 56 OTU of Ichneumoninae, including 45 genera within 8 tribes. The tree recovered monophyly for most genera of Platylabini. However, *Heinrichiellus* was not found within Platylabini and morphological observations also support these results. The genus *Poecilostictus* was also not recovered within the Platylabini. In contrast to *Heinrichiellus*, morphological characteristics resemble other genera of Platylabini, but not *Hoplismenus* Gravenhorst, 1829, which was recovered as its sister group in this tree.

From my study, the number of taxa recorded from Japan has been updated to 16 genera and 53 species of Platylabini (including *Poecilostictus* and *Heinrichiellus*). I predict that more species remain unrecorded from Japan, updated keys will play important roles in further research.