

Molecular Phylogeny of *Thrips* Genus-group (Thysanoptera: Thripidae) Based on Nuclear 18S rDNA Sequences*

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The order Thysanoptera is composed of approximately 6,000 described species distributed in nine families. The Thripidae is the largest family, and one of its subfamilies, Thripinae, includes approximately 110 genera. These genera are split into 12 genus-groups based on 76 adult morphological characters. The *Thrips* genus-group (*Tgg*) includes *Thrips* which is the largest genus among thripine thrips, and consists of 17 genera. All *Tgg* genera have an autapomorphic character: abdominal tergites V to VIII with paired ctenidia that are mesad of the spiracles on tergite VIII. Moreover, although the molecular phylogenetic analysis by Buckman *et al.* (2013) supported *Tgg* monophyly, it rejected *Thrips* monophyly. *Tgg* includes 10 monotypic genera, but the relationships among the monotypic genera, particularly relative to *Thrips*, remain unclear. In the present study, we conducted a molecular phylogenetic analysis of *Tgg* thrips species to reveal the relationship between *Thrips* and other *Tgg* genera using the nuclear 18S rRNA gene as a genetic marker.

We sampled 26 species of seven genera in Japan for the molecular phylogenetic analysis. The nuclear 18S rRNA gene (~644 bp) was sequenced, and phylogeny was estimated by

maximum likelihood (ML) under the K2+G model. Similar to the results from Buckman *et al.* (2013), the ML tree supported *Tgg* monophyly but not *Thrips* monophyly. *Stenchaetothrips* monophyly was also not supported, and the four analysed species in the present study were divided into two clades: one clade included *S. dentatus*, *S. pleioblasti*, and *Tsutsumiothrips ryukyuensis*, and the other included *S. biformis* and *S. undatus*. The monotypic genus *Fulmekiola* was sister to *Thrips palmi*. Two monotypic genera, *Microcephalothrips* and *Sphaeropothrips*, were monophyletic with *Ernothrips lobatus*. This indicates that these three taxa may have synapomorphic character(s).

A molecular phylogenetic analysis using other genetic loci, such as the nuclear 28S rRNA gene, will improve the robustness of these inferences and help verify the phylogenetic relationships within *Tgg*.

Reference

Buckman, R.S., L.A. Mound and M. Whiting (2013) Phylogeny of *Thrips* (Insecta: Thysanoptera) based on five molecular loci. *Systematic Entomology*, **38**, 123-133.