



7th International Symposium on the Syrphidae

20th - 26th June 2013 Novosibirsk, Russia

PROGRAMME AND ABSTRACTS



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Russian Academy of Sciences, Siberian Branch

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CONTENTS

Preface	4
Programme	5
Abstracts	10
List of syrphidologist	50
Index of authors	57

Abstracts

Surstylus geometric morphometry - a new approach in hoverfly (Diptera: Syrphidae) taxonomy

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The morphology of each part of the male genitalia (epandrium, surstyli, hypandrium and superior lobes) is significant mechanism for reproductive isolation between species. It is also known that genital morphology of insects and other animals with internal fertilization has often been used as a discriminant character between closely related species, because of a rapid and divergent evolution.

Some hoverflies, mainly the Syrphinae, have subtle morphological differences in male genitalia, sometimes very difficult to be noticed. This inconspicuous variation can be successfully uncovered using geometric morphometric analysis. These techniques allow a more precise identification than that provided by visual examination of the specimen.

Geometric morphometric analyses of surstylus shape have been used to species delimitations in the orders Coleoptera, Lepidoptera and also Diptera, but this analysis has never been used for the family Syrphidae. Until now, only traditional morphometry was occasionally utilized.

Species of *Chrysotoxum festivum* complex (*C. festivum* A, *C. festivum* B and *C. elegans*) were used to test the hypothesis that shape of surstyli within these species differs. Additionally, results of wing geometric morphometry, that have application in Syrphidae taxonomy, are used to compare and demonstrate efficacy of this method.

Application of this method showed that surstylus shape within *Chrysotoxum festivum* complex differed significantly using MANOVA. Discriminant analysis correctly classified species with overall classification success 100% indicating that surstylus shape has an important interspecific discrimination power. The CVA demonstrates a clear separation in the surstylus shape amongst species of *C. festivum* complex.

Surstylus geometric morphometry reveals remarkable results in separation of closely related species within *Chrysotoxum festivum* complex which are strongly consistent with the conclusions of wing geometric morphometric. Application of this method is recommended for solving similar taxonomic problems within the Syrphidae.

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Notes



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