



## Crane flies and their researchers (as a preface)

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I would like to bring to the attention of the reader that this issue of *ZOOSYMPOSIA* is devoted to the blessed memory of three outstanding entomologists—taxonomists, who made inestimable contributions to the knowledge of crane flies of the World, namely, Charles Paul Alexander (1889–1981), Bernhard Mannheims (1909–1971), and Eugeniy Nikolaevich Savchenko (1909–1994). The year 2009 marks 120 years since the birth of C. Alexander and the 100th anniversary of E. Savchenko and B. Mannheims.

It is well known that the beginning of the modern period of study of tipuloid dipterans can be dated from the publication of the 10th edition of the famous “*Systema Naturae*” by Carl Linnaeus (1758) in which he used for the first time the binary names for 37 species of insects including the generic name *Tipula*. Subsequently, appreciable contributions to the taxonomy of the Tipuloidea were the works by Johann Wilhelm Meigen, who described more than 40 species that may be considered crane flies, and later on, in the second half of the 19th century, the works by Hermann Loew and Carl Robert Osten Sacken. Most of the 19th century can be called, according to Savchenko (1983), “the formal period” as the descriptions of species included only the external, visible characters, the outward appearance or habitus of specimens. During 20–25 years after the appearance of the paper by Friedrich Westhoff (1882) on the morphology of the male genitalia of the Tipulidae, research on systematics and taxonomy of the Tipuloidea was elevated to a higher level. Johannes De Meijere (1919–1921) was the first to consistently use illustrations of the male genitalia (for Limoniidae). This can be called “the natural period” (l.c.); in the early 20th century it was closely associated with the names of Karel Czižek, Maurice Goetghebuer and Paul Lackschewitz.

In the 20th century, mainly thanks to the works of C.P. Alexander, E.N. Savchenko and B. Mannheims, a great bulk of the Tipuloidea taxa of the World (in particular, more than 70% of species recognized presently) were revealed. The most significant contribution to the systematics of the Tipuloidea in the 20th century was made by C.P. Alexander who gave names to 11755 taxa (see Oosterbroek 2009b) and published more than 1000 papers. E.N. Savchenko described and gave names to 435 taxa, and B. Mannheims to 176 taxa. (see the papers by Reusch & Oosterbroek 2009 and by Lantsov 2009). C.P. Alexander, E.N. Savchenko and B. Mannheims had friendly and professional relationships with each other. They exchanged reprints, letters and specimens. At that time, there was no e-mail, and their letters revealed not only true professionalism and intelligence, but also a certain charm and warmth, which are often lost when using our modern message systems.

The phylogenetic relationships of “Lower Diptera” were repeatedly subjected to critical revisions (e.g. Alexander 1920; Steyskal 1974; Rohdendorf 1980). The position of some families is still a matter of discussion. Earlier, Rohdendorf included the Trichoceridae, Tanyderidae and Ptychopteridae along with the Limoniidae, Cyliodromidae and Tipulidae in the superfamily Tipuloidea (as “Tipulidae”—Rohdendorf 1964). Later, Rohdendorf (1977) placed the Tipuloidea

along with the superfamilies Psychodoidea, Culicoidea, Chironomoidea, Thaumaleoidea and Perissomatidea in the infraorder Tipulomorpha. Other authors (Steyskal 1974; Kalugina & Kovalev 1985) considered the infraorder Tipulomorpha to be limited to the superfamily Tipuloidea. North American authors (e.g. Alexander 1920; Wood & Borkent 1989; Byers 1991, etc.) traditionally recognized the Tipulidae, Cylindrotomidae and Limoniidae as subfamilies of Tipulidae (i.e. Tipulinae, Cylindrotominae and Limoniinae), and this tendency is been retained to present day. Most of European entomologists in the 20th century (e.g. Savchenko 1979; Starý 1992; Oosterbroek 2009; etc.) consider them as separate families, viz. Tipulidae, Cylindrotomidae and Limoniidae. Pediciidae only comparatively recently (Starý 1992) has been elevated to family status, having previously been considered a subfamily of the Limoniidae. In this volume, the opinions of Oosterbroek & Courtney (1995) and Oosterbroek (2009) are accepted, according to which the superfamily Tipuloidea includes the families Tipulidae, Limoniidae, Pediciidae and Cylindrotomidae.

In the title of this volume, we use the name “crane flies” (sensu Alexander 1920) for the group of families of similar appearance considered in this issue (i.e. Tipulidae, Limoniidae, Pediciidae, Trichoceridae, Ptychopteridae and Tanyderidae). However, we take into account the fact that many of these families are not closely related and presently are placed into different superfamilies and infraorders of the Nematocera (Lower Diptera). In this issue three different variants of spelling are used: “crane flies”, “craneflies” and “crane-flies”. Allowing for this, it is necessary to note that the mode of spelling is not a question of entomology itself, but mostly of historical traditions and style. As the editor of the issue I have chosen “crane flies” in the title and in my contributions following “The American heritage dictionary of the English language” (1976: 309) and “New English–Russian biological dictionary” (2003: 315).

The Tipuloidea is the largest taxon of the Diptera in terms of the species number. According to the latest information (Oosterbroek 2009; on 3.X.2009), the total number of names of species and subspecies in the Tipuloidea is no less than 17548, and 15303 of them are “good” (recognised as valid) species or subspecies. The World fauna of the Cylindrotomidae includes 71 species, that of Limoniidae 10489 spp., Pediciidae contain 486 spp., and Tipulidae 4256 spp. (l.c.).

The Tipuloidea display many evidences of biological evolutionary success such as high number of species, wide adaptive radiation, and high abundance of adults and immatures in various habitats, landscapes and regions of the World. This group of insects is of high importance not only in nemoral and boreal landscapes but also, and especially, in Arctic, Subarctic and mountain communities. For example, the crane fly *Tipula (Savtshenkia) glaucocinerea* Lundström, 1915 occurs in the polar desert zone where it penetrates through intrazonal biotopes. Crane flies occur at high altitudes in the mountains, for example, *Tipula (Savtshenkia) nivalis* Savchenko, 1961 is in the Caucasus and *Tipula (Pterelachisus) glacialis* (Pokorny, 1887) in the Alps. Although the group as a whole is characterized by being markedly hygrophilous, some of its representatives (e.g. the subgenus *Eremotipula*) are diverse in arid habitats (Gelhaus 2005).

The majority of papers in this volume concern the families of the Tipuloidea, including taxonomic, ecological and faunistic works as well as articles on preimaginal stages. We have also included several papers on recent members of two other families of lower Diptera, the Trichoceridae and Ptychopteridae, and the results of palaeontological research on the Trichoceridae, Tanyderidae and Limoniidae, taking into consideration that C.P. Alexander, E.N. Savchenko and B. Mannheims were interested in these taxa and their problems.

A number of authors who took part in this issue knew Charles P. Alexander, Eugeny Savchenko or Bernhard Mannheims personally, and/or were in correspondence with them, some for a long time. All those who had opportunities to communicate with them keep the kindest memories.

I sincerely thank all of my friends and colleagues who supported the idea from the very first days of its existence to create the memorial volume. My special thanks to the members of the Editorial Board—Fenja Brodo, Pjotr Oosterbroek, Jaroslav Starý, Andrey Przhiboro and also to Jon Gelhaus. I am grateful to Sigitas Podenas for presenting the photos of his palaeontological material of limoniids. On behalf of the Editorial Board I would like to thank all authors who have sent their papers and so have made it possible to issue this anniversary edition, although the time for this was very short. I express gratitude to all colleagues who spent a lot of time in reviewing the presented manuscripts, for their valuable remarks and for critical and constructive comments.

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