

SUMMARY

Diptera (flies), are the most numerous and one of the most common insect orders. The group of significant importance to our understanding the evolution and phylogeny of the Diptera is the family Tanyderidae, due to the fact that its representatives (both fossil and recent) are characterized by a greatest number of plesiomorphic features among the entire Diptera order. Therefore the family plays the crucial role in studying the evolution and phylogeny of the Diptera, and offers the basis for the inference of evolutionary trends in related groups. Moreover, the results of this research suggest that the family Tanyderidae is also a stem group for the family Psychodidae and Phlebotomidae the family which includes the blood-sucking and disease transferring flies. Unfortunately, the rare occurrence of the family members, in both, the sediments of the fossil and current, this is one of the least-known families of flies.

The doctoral dissertation concerns the analysis of morphology and anatomy of fossil specimens and available recent species. One of the main criteria for the classification of flies is the pattern of wing venation, which is characteristic at the generic and species level. Therefore it is a basic feature to infer relationships among the taxa. Another important set of characters is offered by the construction of the male genitalia (hypopygium), which, however, is visible only in recent specimens and those preserved in fossil resins.

The doctoral dissertation includes:

– six articles:

1. Krzemiński, W., Azar, D., and **Skibińska, K.** 2013b. *Nannotanyderus ansorgei* sp. n., the first member of the family Tanyderidae from Lebanese amber (Lower Cretaceous). In: Azar, D., Engel, M.S., Jarzembowski, E., Krogmann, L., Nel, A., and Santiago-Blay, J. (eds.), *Insect Evolution in an Amberiferous and Stone Alphabet (Proceedings of the 6th International Congress on Fossil Insects, Arthropods and Amber)*. Brill, Leiden, p. 131- 143.
2. **Skibińska, K.** and Krzemiński, W. 2013. *Nannotanyderus kubekovenssis* sp. nov. (Diptera: Tanyderidae) from the Middle Jurassic of Kubekovo (Russia). *Annales Zoologici*, 63(3):409-412. IF: 0.978; MNISW: 15 pt
3. **Skibińska, K.**, Krzemiński, W., and Coram, R. 2014. Discovery of the most ancient member of the family Tanyderidae (Diptera: Nematocera) from the Lower Jurassic (Sinemurian) of England. *Zootaxa*, 3857(1):125-130. IF: 1.05; MNISW: 20 pt

4. Dong, F., Shih, C.K., **Skibińska, K.**, Krzemiński, W. and Ren, D. 2015. New species of Tanyderidae (Diptera) from the Jiulongshan Formation of China. *Alcheringa: An Australian Journal of Palaeontology*, 39(4):494-507. IF: 1,52; MNISW: 20 pt
5. **Skibińska, K.** 2016. Nannotanyderinae: A new subfamily of Tanyderidae (Diptera). *Palaeontologia Electronica* 19.3.56A: 1-16. IF: 1.234; MNISW: 30 pt
6. **Skibińska, K.**, Krzeminski W. and Arillo, A. The first Tanyderidae (Diptera) from the Lower Cretaceous amber of Álava (Spain) – manuscript accepted to *Acta Zoologica Cracoviensia*; MNISW: 13 pt.

Articles (1 – 6, enclosed) show that Tanyderidae is a very diverse, plesiomorphic group, whose members are known already from the Lower Jurassic (Sinemurian; about 190 Ma) (article No. 3). In these articles one new fossil subfamily, two genera and eight fossil species new to the science were described. The most important results come from a research on amber inclusions: Lebanese and Burmese amber (article No. 1) and Baltic amber (article No. 5) where an unusual construction of male genitalia was discovered, and was also found in one recent species representing a recent genus. As a result of these studies a new subfamily, Nannotanyderinae Skibińska, 2016 (article No. 5), was described with three fossil genera i.e. *Nannotanyderus* Anson, 1994, *Dacochile* Poinar and Brown, 2004, *Coramus* Skibińska, 2016 and one recent genus, *Peringueyomyia* Alexander, 1921. Phylogenetic analysis (article No. 6) of fossil and recent genera revealed two co-existing evolutionary lines in the family, one of which is almost extinct (only one monotypic genus survived).