Characterization of cryptic diversity within Paragus bicolor complex (Diptera, Syrphidae, Syrphinae, Paragini)

Tamara Tot*[1], Jelena Ačanski[2], Snežana Radenković[1], Zorica Nedeljković[3], Ana Grković[1], and Ante Vujić[1]

[1]University of Novi Sad, Faculty of Sciences, Department of Biology and Ecology, Trg Dositeja Obradovića 2, 21000 Novi Sad, Serbia – Serbia

[2]University of Novi Sad, BioSense Insitute, Dr. Zorana inića 1, 21000 Novi Sad, Serbia – Serbia

[3]Research Institute CIBIO (Centro Iberoamericano de la Biodiversidad). Science Park. University of Alicante. Ctra San Vicente del Raspeig s/n. 03690-San Vicente del Raspeig (Alicante), Spain. – Spain

Abstract

Identification of adult specimens belonging to the *Paragus bicolor* group, of the genus *Paragus* Latreille, 1804 is difficult due to the high degree of variability in the color of the abdomen. In the present literature *Paragus bicolor* (Fabricius, 1794) and *Paragus romanicus* Stanescu, 1992 are cited as valid species of *Paragus bicolor* complex, while *Paragus testaceus* Meigen, 1822 is cited as junior synonym of *Paragus bicolor*. After detailed morphological analysis, including geometric morphometry of the wing and male surstyle, existence of four cryptic species within *Paragus bicolor* complex has been confirmed. Besides *Paragus bicolor*, also *Paragus testaceus* proved to be a valid one and should be reinstated from the status of synonyms. Contrary to previous ones, *Paragus romanicus* lost this status and should be synonymized with *Paragus bicolor*. Additionally two new species have been revealed. Acknowledgements: The authors acknowledge financial support of the Ministry of Education, Science and Technological Development of the Republic of Serbia (Grant No. 451-03-68/2022-14/200125, 451-03-68/2022-14200358) and the Science Fund of the Republic of Serbia, Grant No 7737504, Serbian Pollinator Advice Strategy - for the next normal - SPAS.

Keywords: cryptic species, hoverflies, male genitalia geometric morphometrics, Paragus, species complex, wing geometric morphometrics

*Speaker