

Morphological species descriptions of free-living nematodes: measurements, characters and their presentation in taxonomic papers

Vadim Mokievsky^{1,*}, Tania Nara Bezerra², Wilfrida Decraemer², Ursula Eisendle³, Mike Hodda⁴, Oleksandr Holovachov⁵, Daniel Leduc⁶, Dmitry Miljutin⁷, Reyes Peña Santiago⁸, Jyotsna Sharma⁹, Nicole Smol², Alexei Tchesunov¹⁰, Ann Vanreusel², Virág Venekey¹¹ and Zeng Zhao¹²

¹ P. P. Shirshov Institute of Oceanology, Russian Academy of Sciences, Russia

² Ghent University, Faculty of Sciences, Biology Department, Belgium

³ University of Salzburg, Department of Biosciences, Austria

⁴ Commonwealth Scientific & Industrial Research Organisation, Australia

⁵ Department of Zoology, Swedish Museum of Natural History, Sweden

⁶ National Institute of Water and Atmospheric Research, New Zealand

⁷ Bioconsult Schuchardt & Scholle Gbr, Germany

⁸ University of Jaén Spain

⁹ University of Texas at San Antonio, USA

¹⁰ Lomonosov Moscow State University, Faculty of Biology, Russia

¹¹ Universidade Federal do Pará, Brasil

¹² Landcare Research, New Zealand

*vadim@ocean.ru

Morphological characters remain the core markers for species identification and differentiation. More and more morphological characters being included in descriptions and diagnoses of species. Since 1998, over 1000 new descriptions and re-descriptions of species of free-living aquatic nematodes have been published (including over 200 from freshwater habitats). However, not all meet the required standards of description of nematodes, making their identification problematic and separate species status – questionable. Therefore, a modern review of taxonomically significant characters and recommendations for species description are necessary. To update and consolidate the character lists, facilitate new descriptions of nematodes and encourage their comparability, we provide an updated list of characters for description of free-living aquatic nematodes and summarize contemporary approaches for species description and diagnosis based on our experience as Nemys/WoRMS taxonomic editors. We reiterate the basic requirements for descriptions and suggest a minimal set of characters to be used in description of new species of nematodes. We also suggest ways to make descriptions more broadly comparable and standardized in format so that species can be more easily compared. Basic requirements for new species description and presentation of morphological characters and measurements in taxonomic papers are discussed.

Keywords: Nematoda, identification, taxonomic descriptions, character list, measurements, nemys