Article

Diversity of sessile rotifers (Gnesiotrocha, Monogononta, Rotifera) in Thale Noi Lake, Thailand

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Abstract

In response to a clear gap in knowledge on the biodiversity of sessile Gnesiotrocha rotifers at both global as well as regional Southeast Asian scales, we performed a study of free-living colonial and epiphytic rotifers attached to fifteen aquatic plant species in Thale Noi Lake, the first Ramsar site in Thailand. We identified 44 different taxa of sessile rotifers, including thirty-nine fixosessile species and three planktonic colonial species. This corresponds with about 40 % of the global sessile rotifer diversity, and is the highest alpha-diversity of the group ever recorded from a single lake. The record further includes a new genus, *Lacinularoides* **n. gen.**, containing a single species *L. coloniensis* (Colledge, 1918) **n. comb.**, which is redescribed, and several possibly new species, one of which, *Ptygura thalenoiensis* **n. spec.** is formally described here. *Ptygura noodti* (Koste, 1972) **n. comb.** is relocated from *Floscularia*, based on observations of living specimens of this species, formerly known only from preserved, contracted specimens from the Amazon region. In addition, ten of the species recorded are added to the fauna of the Oriental region, twenty-seven are new to Thailand.

Key words: aquatic macrophytes, biogeography, epiphytic rotifers, new genus, new species, taxonomy

Introduction

Sessile and colonial rotifers, belonging to four families of superorder Gnesiotrocha, are common and abundant on submerged aquatic plants and other substrata in freshwater habitats (Edmondson 1939, 1940, 1944; Koste 1975; Wallace 1980, 1987; Segers *et al*. 2011). Many are quite attractive and easily spotted organisms, so that already Anthony Van Leeuwenhoek was able to record observations on some of them in the 17th and early 18th century, and two species, *Floscularia ringens* and *Sinantherina socialis*, were named as early as 1758 by Carolus Linnaeus in his *Systema Naturae*. Nevertheless, and even though they are relatively easy to observe, there are few recent papers dealing with the animals. Most freshwater biodiversity studies treat representatives of sessile and colonial rotifers on an *ad hoc* basis at best, because classic sampling methods fail to collect them effectively (Wallace *et al*. 2006). As a consequence, there are substantial hiatuses in our knowledge on the taxonomy, biogeography and biodiversity of the organisms globally, and this holds in particular for tropical regions including Southeast Asia. This is illustrated by Segers *et al.* (2011), who report a significant number of novelties while analyzing a very limited number of samples from commonplace habitats.

To address this knowledge gap, we started a comprehensive study of the sessile and colonial rotifers of Thailand, starting with an inventory of Thale Noi Lake. This lake, a Ramsar site, is a complex ecosystem, regarding both its chemical and biological characteristics. The free-living rotifers of the lake have been documented by Segers & Pholpunthin (1997). It has diversified and patchy macrophyte stands including floating islands, and is inhabited by some sixty different aquatic plant species belonging to thirty-two families, with some twenty species dominating (Office of Environmental Policy and Planning 2000; Leingpornpan & Leingpornpan 2005). The lake can be subdivided in several zones based on depth, water chemistry, and flows (Inpang 2008), and is an important