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Discovery of living Potamolepidae (Porifera: Spongillina) from Nearctic freshwater with description of a new genus

JOHN COPELAND¹, ROBERTO PRONZATO² & RENATA MANCONI³

¹Department of Biology, Lincoln Memorial University, Cumberland Gap Parkway, Harrogate, Tennessee 37752, USA.

E-mail: john.copeland@lmunet.edu

²Dipartimento di Scienze della Terra, dell'Ambiente e della Vita, Università di Genova, Corso Europa 26, 16132 Genova, Italy.

E-mail: proncato@dipteris.unige.it

³Dipartimento di Scienze della Natura e del Territorio, Università di Sassari, Via Muroni 25, 07100 Sassari, Italy.

E-mail: r.manconi@uniss.it

Abstract

We report here the first record of a living Potamolepidae (*Cherokeesia* n. gen.) from the Nearctic Region and from the northern hemisphere. The new species *Cherokeesia armata* from southern Appalachians diverges at generic and specific level from all the other known taxa of the family Potamolepidae in its unique combination of diagnostic traits: gemmular theca armed by gemmuloscleres ranging from small strongyle-like spicules to stout, large oxeas; absence of pneumatic layer; spiny oxeas as main skeleton megascleres; irregular, slender pauci- to uni-spicular skeletal network. The most similar species belong to the genera *Potamophloios* and *Oncosclera*. The circumtropical biogeographic pattern of extant Potamolepidae, previously considered of Gondwanian to Gondwanian-like origin, is enlarged to the Nearctic. The present Tennessee discovery confirms a wider range of the family. An updated species inventory of Nearctic Spongillina, a checklist of the family Potamolepidae at the global level together with a key to the genera of Potamolepidae are also provided.

Key words: Biodiversity, USA, Appalachians, Tennessee hydrographic basin, sponges, morphology, SEM, taxonomy, biogeography, *Cherokeesia armata* n. sp.

Introduction

The importance of freshwater biodiversity cannot be overstated. Freshwater organisms account for almost 6% of all described species, even though freshwater accounts for only 0.01% of the World's water and approximately 0.8% of the Earth's surface (Dudgeon *et al.* 2005).

Due to Pleistocene glaciation, topography, and climate, the southern Appalachian Mountains (East South Central USA) are one of the most biologically diverse regions in the temperate world. High aquatic species diversity has led to this region being recognized as a global center of aquatic biodiversity (McLarney 1999; Curtin *et al.* 2002). Tennessee is considered to be one of the most biologically diverse inland states of the United States (Stein 2002). According to Etnier & Starnes (1993), Tennessee's aquatic fauna diversity is due to the state's geologic and hydrographic diversity.

Six physiographic provinces and five major river drainages are found within Tennessee. The eastern headwater tributaries of the Tennessee River are recognized for their aquatic diversity, and one of these, the Clinch River, is considered a critical watershed for protecting freshwater diversity (Master *et al.* 1998). However, freshwater sponges from Tennessee and the southern Appalachians are poorly known and scarcely documented. The only reports concerning freshwater sponges of Tennessee are those of Hoff (1943) and Parchment (1966). Hoff (1943) documented four species from the Reelfoot Lake region of Tennessee: *Eunapius fragilis* (Leidy, 1851), *Heteromeyenia tubisperma* (Potts, 1881), *Rackiela ryderi* (Potts, 1882), and *Radiospongilla crateriformis* (Potts, 1882). Parchment (1966) recorded *Spongilla lacustris* (Linnaeus, 1759) from Stone River.

Selected Tennessee rivers and streams were surveyed for sponges during June, July and August of 2013 and