



## ***Aulacoseira coroniformis* sp. nov., a new diatom (Bacillariophyta) species from Highlands Hammock State Park, Florida**

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### **Abstract**

*Aulacoseira coroniformis* sp. nov. is described from a short peat core recovered in Highlands Hammock State Park, Florida, U.S.A. The morphology of the new diatom species is documented by light and scanning electron micrographs and discussed in detail, including a comparison with related species in the genus *Aulacoseira*.

### **Introduction**

Highlands Hammock State Park is situated 6 km west of Sebring in Highlands County, Florida, U.S.A. (Fig. 1). The park, now encompassing over 9250 acres, was established in 1931 by local citizens in order to preserve the 690 acres of hydric hammock hardwood forest, the central vegetation unit and main attraction of the park. The park is located on the western edge of the Lake Wales Ridge, a relict Pleistocene shoreline. The edge of the ridge forms the highest elevation (46 m.a.s.l.) from where the land slopes gradually down to around 24 m.a.s.l. in the western, flatter area of the park. Within the framework of a multi-proxy palaeoenvironmental reconstruction of the Highlands Hammock area, several sediment cores were drilled in 2008. The freshwater diatom flora of the Highlands Hammock State Park, which has not been documented so far, is studied with the goal of reconstructing the hydrology of Highlands Hammock State Park during the past approximately 3000 years. Core Highlands Hammock 3 (HHA3) was taken from a seasonally inundated forest dominated by maple and magnolia trees with a fern undergrowth. In the present paper, subsamples of core HHA3 were studied for the diversity of sub-recent and fossil diatoms. We describe the new species *Aulacoseira coroniformis* Pearce & Cremer sp. nov., and document its morphological variability with high-quality light (LM) and scanning electron (SEM) microscope images.

### **Materials and methods**

Sediment core HHA3 (27°27'47.45"N, 81°32'21.48"W; Fig. 1) was drilled in April 2008 south of the road bordering South Canal in Highlands Hammock State Park (Fig. 1) from a seasonally inundated forest dominated by maple trees and a fern undergrowth. A 78 cm long peat sequence was retrieved at the coring site and subsequently stored at 2 °C. Diatom subsamples taken at 1 cm intervals were freeze-dried and approximately 1 gram dry weight was used for further analysis. Samples were treated subsequently with 30 % hydrogen peroxide (1.5 hours at 100 °C), 10 % hydrochloric acid and 65 % nitric acid (2 hours at 120 °C) for the removal of organic matter and carbonate. Excess acid was removed by repeated sedimentation procedures in demineralized water. Microscopic slides were prepared by using evaporation trays (Battarbee 1973) and the