

A NEW SPECIES OF *ORTHOSEIRA* WITH AN ENIGMATIC DISTRIBUTION.

Rex Lowe¹, J. Patrick Kociolek² & Bart Van de Vijver³

¹Department of Biological Sciences, Bowling Green State University

²University of Colorado Museum of Natural History And Department of Ecology and Evolutionary Biology

³National Botanic Garden of Belgium, Department of Bryophyta and Thallophyta

While studying algal biodiversity on the relatively remote volcanic archipelago of Hawaii in the northern Pacific Ocean (Lowe & Kociolek) and Ile Amsterdam in the southern Indian Ocean (Van de Vijver), we independently discovered that lava tubes present unique isolated microhabitats that appear to support several new species of algae. So far, a few new species have already been described (Lowe & Sherwood 2010, Lowe et al. 2009) whereas several others await a formal description (Van de Vijver & Cox, unpublished results). In this case, a new species of the centric diatom genus *Orthoseira* Thwaites was independently observed on both geographic locations. Based on light and scanning electron microscopy observations, the two populations from Hawaii and Ile Amsterdam are morphologically almost indistinguishable from each other with similar size ranges, stria densities, carinoportulae number and morphology and of the large linking spines. The enigma arises from the fact that these two populations are from rare habitats on oceanic islands separated by 14,550 kilometers on opposite sides of the equator. Recent research on diatom biogeography leads us to expect that these two populations are most probably a clear example of cryptic diversity and hence represent two species but lacking molecular data, we currently cannot currently separate them.