

TAXONOMY, ULTRASTRUCTURE AND BIOGEOGRAPHY OF THE  
DIATOM GENUS *DIADESMIS* FROM NEW ZEALAND, HAWAII, AND  
GREAT SMOKEY MOUNTAINS NATIONAL PARK

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We present identifications and ultrastructural observations on frustular features on *Diadlesmis* taxa found in three geographically distinct locations; Great Smoky Mountains National Park (USA), the Hawaiian archipelago and the South Island of New Zealand. Using light and scanning electron microscopy we detail the frustular morphology of 22 different *Diadlesmis* taxa, including 7 new species and 2 *Navicula* species we propose to transfer to the genus.

While members of this genus are commonly found in subaerial habitats around the world, individual species of *Diadlesmis* are not cosmopolitan. Species in the Great Smoky Mountains National Park, located in eastern North America, are the same or closely related to species described and found in Europe, while the species in New Zealand and Hawaii are more similar to taxa described from either Oceania or South Atlantic Islands. Each area also has endemic species, which are currently unknown outside the area from which they are described.

Based on the frustular morphology of members of this group of species, and their differences with the generitype of *Diadlesmis*, namely *D. confervacea*, we propose a new genus, *Humidophila*, to include this group of species.

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