



## ***Staurophora brantii*, a new diatom (Bacillariophyta, Anomoeoneidaceae) from the northwestern Great Plains, USA**

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### **Abstract**

*Staurophora brantii* is described from streams of the northwestern Great Plains in the western United States. The new species is placed in *Staurophora* by virtue of its plastid type, valve structure, and ecology. It is distinguished from similar species by its size, valve shape, end shape, striae count, and habitat. *Staurophora brantii* sp. nov. lives in alkaline freshwater streams with soft, muddy bottoms and elevated concentrations of electrolytes, particularly sodium and sulfate. *Stauroneis tackei*, an associate of *Staurophora brantii* on the Great Plains, is transferred to *Staurophora*.

**Key words:** *Staurophora tackei*, *S. wislouchii*, *Dickieia*, *Stauroneis*, United States

### **Introduction**

Over the last 30 years several hundred benthic algae samples have been collected for various water quality monitoring projects from streams of the northwestern Great Plains in eastern Montana, northeastern Wyoming and western North and South Dakota. The region is rolling semiarid steppe, vegetated sparsely by bunchgrasses and sagebrush and underlain with marine shales, mudstones, and sandstones (USEPA 2000). In about 150 of these samples there occurs a distinctive naviculoid diatom with a prominent transverse central area. Persistent attempts to identify this taxon from a published description have failed, prompting its recognition as new. It is described here as a new species.

### **Materials and methods**

At each site, diatoms were collected from the surface of fine sediments using a tablespoon or a large-bore pipette with suction bulb. Samples were preserved with Lugols (IKI) solution before transport to the laboratory, where they were treated with concentrated sulfuric acid (H<sub>2</sub>SO<sub>4</sub>), potassium dichromate (K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>), and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) to remove organic matter (APHA *et al.* 1992). After several rinses in distilled water, cleaned diatom material was mounted permanently on slides using Hyrax or Naphrax and examined under light microscopy (LM) with differential interference contrast optics using a Leica DM LB2 research microscope and a Spot Insight Model 14.0 monochrome digital camera. Slides and cleaned material from these samples have been deposited in the Montana Diatom Collection (MDC) in Helena and duplicate slides have been deposited in the University of Montana Herbarium (MONTU) in Missoula (<http://herbarium.dbs.umt.edu/diatoms.asp>).

Valve measurements were made from digital images using Spot Software (version 4.5). Some cleaned diatom material was filtered and air-dried on aluminum stubs, coated with gold-palladium (Pelco Model 3 Sputter Coater) and examined under scanning electron microscopy (SEM) with an Hitachi S-4700 Type II