



Article

Five new species of *Stauroneis* (Bacillariophyta, Stauroneidaceae) from the northern Rocky Mountains, USA

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Abstract

Five new species of *Stauroneis* are described from the northern Rocky Mountains—*S. clarkii*, *S. lewisii*, *S. sacajaweae*, *S. spauldingiae*, and *S. thompsonii*—for a total of 21 new *Stauroneis* species from the region. All of the new species are local or regional endemics. Water bodies supporting populations of *Stauroneis* tend to be small, remote, isolated, circumneutral, oligo- or dystrophic, and with low levels of electrolytes. These findings have implications for estimating diatom biodiversity and for conserving endemic diatom species and their habitats.

Key words: Biodiversity, conservation, diatoms, endemic species

Introduction

I recently reported 52 taxa in the genus *Stauroneis* Ehrenberg (1843: 45) from the northern Rocky Mountains, including 16 species described as new (Bahls 2010). Below I describe an additional five new species from among those reported earlier based on morphological differences from known taxa. Following this, I discuss some shared ecological factors that contribute to the observed distribution of *Stauroneis* species, as well as implications for diatom biodiversity and conservation of endemic diatom species and their habitats.

Materials and Methods

At each site, diatoms were collected from aquatic macrophytes, where available, and from the surface of rocks and 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 sulfuric acid (H₂SO₄), potassium dichromate (K₂Cr₂O₇), and hydrogen peroxide (H₂O₂) 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, when available, 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).