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New diatoms (Bacillariophyta) from western North America

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Abstract

Twelve new species of diatoms are described from material collected in Colorado, Montana, Oregon, Washington, and Wyoming, USA, and in Alberta and British Columbia, Canada. The new species are *Cavinula davisiae*, *Craticula johnstoniae*, *Craticula sardiniana*, *Cymatopleura internationale*, *Cymbella cosleyi*, *Cymbopleura edlundii*, *Gomphonema johnsonii*, *Navicula supleeorum*, *Navicula trilatera*, *Neidium bobmarshallensis*, *Stauroneis boyntoniae*, and *Staurophora columbiana*. Two varieties are elevated to species: *Neidium fogedii* (replaced synonym: *N. kozlowii* var. *densestriata*) and *Neidium undulatum* (replaced synonym: *N. kozlowii* var. *undulata*). Two species are transferred to new genera: *Cymbella rainierensis* to *Cymbopleura* and *Navicula soodensis* to *Staurophora*. An Alberta population of *Neidium inconstans* representing significant morphological variation and range extension for this species is also presented. Water quality preferences of these taxa run the gamut from ultraoligotrophic to hypereutrophic and fresh water to hypersaline. Thirteen of these taxa are either local or Northwest regional endemics. Four of these taxa are members of the Holarctic diatom flora or they are cosmopolitan.

Key words: Biodiversity, biogeography, endemism, water quality

Introduction

The Montana Diatom Collection (MDC) contains over 14,000 permanent slides and 2,000 vials of cleaned material representing diatom collections from over 5,000 localities in the northwest United States and western Canada. In 2012, about 100 samples were added to the MDC, including 50 samples from high elevation lakes collected by volunteers with Adventurers and Scientists for Conservation (ASC 2012), and samples from various habitats collected by other volunteers and the author.

As I consult old and new samples in the MDC for taxa to post to the Diatoms of the United States website (Spaulding et al. 2010), I often encounter species that are new to science, species that need to be transferred to another genus, and varieties that need to be elevated to species and given new names (e.g., Bahls 2010, 2011, 2012a, 2012c, 2012d). This paper is my latest contribution in an ongoing effort to refine and better define the varied and unique diatom flora of western North America.

Materials and Methods

Slides consulted for this study are deposited in the MDC at the University of Montana Herbarium (MONTU) in Missoula (Dyer 2012). MONTU is a regional public herbarium registered with Index Herbariorum. Isotype slides, when available, have been deposited in the ANSP Diatom Herbarium, Philadelphia.

The study area encompasses all or parts of the nine northwestern United States and parts of Alberta and British Columbia, Canada. Physiographically, the study area includes various ranges of the Rocky Mountains and Cascade Mountains, the Coast Range, Northwestern Great Plains, Columbia Plateau, and Great Basin (USEPA 2000).

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