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NEW RECORDS OF DIATOMS FROM
BLUE LAKE WARM SPRING, TOOELE COUNTY, UTAH

Samuel R. Rushforth1 and Irena Kaczmaraska;2

Abstract.—Blue Lake Warm Spring in Tooele County, Utah, contains a rich diatom flora with a significant number of taxa that are unusual in this region. We have identified a total of 136 taxa in our samples from this locality, several of which are new records for Utah and North America.

Our studies of Blue Lake Warm Spring were initiated as a part of larger studies on the algal floras of spring systems of the Great Basin, including projects on warm springs (St. Clair and Rushforth 1976), cool seeps (St. Clair and Rushforth 1978), and wet wall hanging gardens (Rushforth et al. 1976, Clark and Rushforth in press, Johansen, Rushforth, and Brotherson 1983, Johansen et al. 1983). This investigation has provided valuable information on diatom floristics, ecology, and distribution. The present paper presents data on those species that we have determined to be new records for North America and/or Utah.

Site Description

Blue Lake Warm Spring is near the border of Nevada and Utah in Tooele County, Utah. This spring system consists of many small springs and two major pools. The larger is about 20 m deep, and the smaller about 3 m deep. They are interconnected by streams and are surrounded by several acres of wet marsh.

Blue Lake waters are mesothermic, with a temperature range between 25 and 29°C. These waters can be classified as mesohaline brackish, with total dissolved solids measured at 4831 mg/l. The most common ions were sodium and chloride. Sulfates were also somewhat elevated at 219 mg/l.

Methods

A total of 27 samples was obtained over a nine-year period from various depths and localities at the Blue Lake site. The first 16 samples were obtained in March 1973 by taking sampling vials to various depths of the larger pool, using scuba gear. Periphyton and sediment samples were collected in February 1977 from under the ice of the smaller pool. The last 9 samples were collected from the smaller pool in July 1982. They were obtained from the edge and bottom of the pool by diving.

Permanent diatom slides were prepared following standard methods with boiling nitric acid cleaning procedures (St. Clair and Rushforth 1976).

Results and Discussion

A total of 136 species was collected and identified during this study. They are described, more thoroughly discussed, and illustrated in a companion paper (Kaczmaraska and Rushforth 1983). The species that represent new records for North America and for Utah are noted in Table 1 and illustrated in Figures 1–39.

Several of the species we encountered in Blue Lake Warm Spring were unusual and difficult to place into known taxa. Some species of Achnanthes, Navicula, Nitzschia, and others were only tentatively placed into previously described species. In such cases, for the present paper, the distribution is given for the taxa of tentative placement of our specimens.

Our Blue Lake flora was very different from typical diatom floras of the standing

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Figs. 18-28: 18, Diploneis subovalis; 19, Navicula feuerborni; 20, Navicula salinarum var. capitata; 21, Navicula digitoradiata; 22, Stauroneis legleri; 23, Nitzschia pseudostagnorum; 24, Navicula subinflatoidea; 25, Navicula subinflatoidea girdle view; 26, Navicula zanoni; 27, Navicula pseudocrassirostris; 28, Nitzschia vitrea cl var. scaphiformis. All figures are X2200.
Figs. 29-39: 29, Chaeteceros amanita girdle view of short chain X1095; 30, Mastogloia aquilegiae; 31, Navicula cryptocephaloide; 32, Navicula longirostris; 33, Gomphonema intricatum cf var. fossilis; 34, Navicula parva; 35, Navicula subsulcatoides; 36, Navicula subnuralis; 37, Diploneis smithii f. rhombica; 38, Mastogloia pumila; 39, Mastogloia brauni. All figures are X2200 except where noted.
waters of our region. It was also unexpectedly different from the floras of other studied thermal systems in North America. This is particularly evident from Table 1, where it may be seen that 41 of our taxa represent new records from North America and/or Utah, which represents 31% of the total flora. Because of the unusual nature of the Blue Lake flora, we are continuing our studies of thermal systems in the Great Basin of North America. We hope to provide information on diatom floristics and ecology, particularly on the chemical and physical factors important in shaping diatom communities.

**Literature Cited**


