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Data Article

18S rDNA dataset profiling microeukaryotic populations within Chicago area nearshore waters

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ABSTRACT

Despite their critical role in the aquatic food web and nutrient cycling, microeukaryotes within freshwater environments are under-studied. Herein we present the first high-throughput molecular survey of microeukaryotes within Lake Michigan. Every two weeks from May 13 to August 5, 2014, we collected surface water samples from the nearshore waters of four Chicago area beaches: Gillson Park, Montrose Beach, 57th Street Beach, and Calumet Beach. Four biological replicates were collected for each sampling date and location, resulting in 112 samples. Eighty-nine of these samples were surveyed through targeted sequencing of the V7 and V8 regions of the 18S rDNA gene. Both technical and biological replicates were sequenced and are included in this dataset. Raw sequence data is available via NCBI's SRA database (BioProject PRJNA294919).

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Specifications Table

Subject area	<i>Biology</i>
More specific sub- ject area	<i>Microeukaryotic metagenomics</i>
Type of data	<i>Text files: sequences</i>
How data was acquired	<i>Illumina MiSeq Desktop Sequencer</i>
Data format	<i>Raw</i>
Experimental factors	<i>DNA extracted from microeukaryotic cells captured using 0.45µm filters.</i>
Experimental features	<i>Amplification of the V7 and V8 regions of the 18 S rDNA gene. Sequencing using the MiSeq Reagent Kit v2 (500-cycles) kit for the Illumina MiSeq platform.</i>
Data source location	<i>Chicago, IL, USA: Montrose Beach (41°58'0.71"N, 87°38'13.35"W), 57th Street Beach (41°47'25.54"N, 87°34'41.25"W), and Calumet Beach (41°43'8.18"N, 87°31'32.51"W); Wilmette, IL, USA: Gillson Park (42°4'45.10"N, 87°40'59.10"W).</i>
Data accessibility	<i>Raw data is available through NCBI's BioProject database, Accession: PRJNA294919 (http://www.ncbi.nlm.nih.gov/bioproject/PRJNA294919).</i>

Value of the data

- This is the first broad, high-throughput inquiry of microeukaryotic species from freshwater nearshore waters within the Great Lakes region.
- The data provide a survey of microeukaryotic diversity within urban freshwaters during the summer months.
- The inclusion of biological replicates within the dataset documents putative microeukaryotic diversity within sites.
- While microeukaryotic surveys can target a variety of genetic markers, the data presented here can serve as a benchmark for the breadth and resolution of taxonomical classification possible by the 18S V7 and V8 regions in complex environmental communities.

1. Experimental design, materials and methods**1.1. Sample collection**

The nearshore waters of four Chicago area beaches were sampled: Gillson Park (42°4'45.10"N, 87°40'59.10"W), Montrose Beach (41°58'0.71"N, 87°38'13.35"W), 57th Street Beach (41°47'25.54"N, 87°34'41.25"W), and Calumet Beach (41°43'8.18"N, 87°31'32.51"W). Surface water was collected in sterile polypropylene bottles (4 L capacity) at a distance from the shore such that the water level was approximately 0.5 m deep. No specific permits or permissions were required for the water samples collected from the Chicago nearshore waters; a permit was obtained for Gillson Park in accordance with the Wilmette Park District. For each site, four replicates (within a 5 m area) were collected every two weeks between May 13 and August 5, 2014. In total, 112 samples were taken.

1.2. Microeukaryotic Isolation

The water was filtered through sterile 0.45 µm bottle-top cellulose acetate membrane filters (Corning Inc., Corning, NY) to capture plant matter, sand, debris, and eukaryotic cells. While 16 samples containing high concentrations of mineral and organic solids were processed using two filters (2 L each), the other samples were processed through a single filter. The filter paper was removed from the bottle-top filter using a sterile scalpel and forceps. The filter membrane was then

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