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Data Article

Assessment of microbial populations within Chicago area nearshore waters and interfaces with river systems



Emily Sible^a, Alexandria Cooper^a, Kema Malki^a, Katherine Bruder^a,
Thomas Hatzopoulos^{b,c}, Siobhan C. Watkins^a, Catherine Putonti^{a,b,c,*}

^a Department of Biology, Loyola University Chicago, 1032W Sheridan Rd, Chicago, IL 60660, USA

^b Bioinformatics Program, Loyola University Chicago, 1032W Sheridan Rd, Chicago, IL 60660, USA

^c Department of Computer Science, Loyola University Chicago, 820N Michigan Ave, Chicago, IL 60611, USA

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ABSTRACT

The Chicago area locks separate and control water flow between the freshwaters of Lake Michigan and the network of Illinois waterways. Under extreme storm conditions, however, the locks are opened and storm waters, untreated waste, and runoff are released directly into the lake. These combined sewer overflow (CSO) events introduce microbes, viruses, and nutrients such as nitrogen and phosphorous into nearshore waters which likely affect the native species. We collected surface water samples from four Chicago area beaches – Gillson Park, Montrose Beach, 57th Street Beach, and Calumet Beach – every two weeks from May 13 through August 5, 2014. Sampling was conducted with four biological replicates for each sampling date and location, resulting in 112 samples. Each community was surveyed through targeted sequencing of the V4 16S rRNA gene. Technical replicates were also sequenced and are included in this dataset. Taxa were identified using Mothur. Raw sequence data is available via NCBI's SRA database (part of BioProject PRJNA245802).

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* Corresponding author at: Department of Biology, Loyola University Chicago, 1032 W Sheridan Rd, Chicago, IL 60660, USA.
E-mail address: cputonti@luc.edu (C. Putonti).

Specifications table

Subject area	<i>Biology</i>
More specific sub- ject area	<i>Bacterial 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 bacterial cells captured using 0.22 μm filters.</i>
Experimental features	<i>Amplification of the V4 region of the 16S rRNA 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 BioSample database by following this link. BioSample IDs include: SAMN03106100, SAMN03408290, SAMN03417850, SAMN03431409, SAMN03431410, SAMN03431411, SAMN03431413, SAMN03431415, SAMN03431417, SAMN03431418, SAMN03431419, SAMN03431420, SAMN03431421, SAMN03431422, SAMN03431423, SAMN03431424, SAMN03431425, SAMN03431426, SAMN03431427, SAMN03431428, SAMN03431429, SAMN03431430, SAMN03431431, SAMN03431432, SAMN03431433, SAMN03431434, SAMN03431435, SAMN03431436, and SAMN03431437.</i>

Value of the data

- This dataset includes microbial surveys (with replication) including an instance in which the Chicago lock system was open, releasing rain, sewage water, and runoff into the nearshore waters and thus disturbing the native microbial communities.
- The raw metagenome data is publicly available for further analysis and comparison to microbial communities within other urban and rural freshwater environments.
- The sampling regime provides the opportunity to consider temporal and spatial variation between microbial communities within the nearshore waters, particularly in comparison with our laboratory's prior sequencing efforts during 2013.

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

Four Chicago area beaches were selected as study sites: 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"

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