Monitoring fish migration timing & cues in Great Lakes tributaries via citizen science

K. Murchie, C. Knapp, P. McIntyre, E. Washburn, S. Schooler
Sucker phenology study

• Aim – document long-term shifts in timing of fish migrations using sucker (Catostomidae) species
• Suckers are ubiquitous, abundant & easy to see
• Latitudinal gradient on western-shore of L. Michigan & longitudinal spread on southern-shore of L. Superior
• 10 min observations daily during spawning run
Sucker phenology study

- Based on a 2011-2012 pilot by University of Wisconsin-Madison (Dr. Pete McIntyre & Evan Childress)
Sucker phenology study

- Advantage of engaging so many volunteers to simultaneously sample numerous sites
- Taking global issues (e.g., climate change) and putting them into a local context (e.g., local stream)
- Connecting people to the environment – stewards for action
- Connecting people to the animals – enthusiasm for species that are not necessarily charismatic (but very cool!)
Sucker phenology study

- Fall 2016/Winter 2017 – site & volunteer solicitation
- Extensive partnerships – WDNR, USFWS, GLIFWC, Ridges Sanctuary, Huron Mountain Club, Urban Ecology Center
- 17 sites selected
- March 2017 – station set-up & citizen science training
- March/April/May 2017 – monitoring for suckers

Fig 1 – Monitoring stations (yellow dots)
Station set-up

- 3.32 ft gauge on rebar
- ½ cinder block with Onset HOBO water level monitor (U20L) – recording every 15 minutes
# Citizen science monitoring

## 2017 Sucker migration monitoring data sheet

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Weather</th>
<th>Water depth (ft)</th>
<th>Lowest # you can read on the water gauge</th>
<th>Water clarity (clear or muddy)</th>
<th>Suckers present? (Y/N)</th>
<th>Total # of suckers during a 10 minute observation</th>
<th>Comments (any other species noted or any other observation)</th>
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**Date:** follow day-month-year format e.g. 27Mar17  
**Time:** Use military system or indicate am/pm  
**Weather:** sunny, partly cloudy, cloudy, raining, snowing  
**Lowest # on gauge:** record the lowest # you can read clearly on the staff gauge (the number will be under the water)  
**Water clarity:** Write CLEAR if you see bottom, MUDDY if you cannot see the river bottom  
**Suckers present:** Y for Yes, N for No  
**Total # of suckers present:** total # observed during 10 min
Citizen science monitoring

- Amber lens polarized sunglasses given to all volunteers
CITIZEN-SCIENTISTS PLAY ROLE IN THE ECOSYSTEM

Volunteers track migrating sucker fish as native species returns to streams feeding Great Lakes

BY MICHAEL HAWTHORNE
Chicago Tribune

Great Lakes fish stories can be downright scary. Pollution dumped by industries and cities make some fish unsafe to eat. Invasive species spread by cargo ships decimate yellow perch, lake trout and other native fish. Warmer water in a changing climate triggers algae blooms that create oxygen-depleting, fish-harming dead zones.

But on a crisp April afternoon, Karen Murchie waded into a Lake Michigan inlet and spotted a sign that nature still works wonders when humans get out of the way. Clustered in a shallow pool a few feet from the Highland Park shoreline were a dozen white suckers, native bottom-feeding fish resting on their way up the narrow creek to spawn.

“You wouldn’t have seen this a few years ago,” said Murchie, a Shedd Aquarium biologist, pointing to a spot where the Park District of Highland Park and the local water utility had removed a steel wall that once blocked the mouth of the waterway. “As soon as that barrier was gone, the fish started coming back.”

The Ravine Drive creek is among more than two dozen tributaries of Lake Michigan and Lake Superior where Murchie is tracking the annual spawning run of white and longnose suckers — fish that play an important, though largely unheralded, role in the complicated ecosystem of the Great Lakes.

Chicago Sports

Ten reasons it’s OK to panic about the Cubs’ slow start

Obama Center opts out of presidential library network

The break from the National Archives will free up the Obama Foundation, the nonprofit group charged with building the center, in several ways.

Chicagoland, Page 7

NUCCIO DI NUZZO/CHICAGO TRIBUNE

‘SNATCHED’

The action comedy starring Amy Schumer and Goldie Hawn is funny here and there, but in ways that make the bulk of the formulaic material all the more frustrating, writes Michael Phillips.

A+E Movies

Turn to Fish, Page 10
Next stages

- June 2017 – collect data and loggers
- Summer/Fall 2017 – analyze data and produce a manuscript
- Fall 2017 – plan for 2018 (increase # of locations & volunteers = increase in knowledge + increase in citizen engagement)
Great Lakes Coastal Resilience

Panelists:   Gretchen Hansen – Minnesota DNR
            Mary Khoury – The Nature Conservancy
            Brad Potter – UMGL LCC
            Lisa Walter – GLs Fishery Commission

Topics:   1) Which NECSCC research themes offer greatest opportunities for partnership?

2) What is missing from NECSCC portfolio?

3) How to boost public engagement?