Taking the pulse of Great Lakes coastal wetlands: scientists tackle an epic monitoring challenge

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What we're doing

Measuring the health of all major Great Lakes coastal wetlands over a 5-year period by assessing birds, amphibians, fish, invertebrates, plants and water quality.

Project goals

- Provide critical data to the agencies and individuals responsible for coastal wetland restoration.
- Use data to investigate pressing ecological questions.

Why our project matters

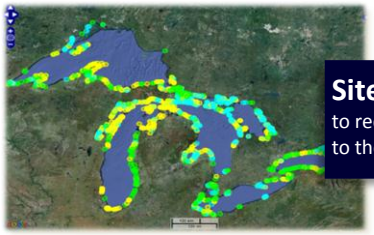
- Wetlands buffer the lakes from pollution and provide critical habitat for many important fish species, rare and endangered plants, waterfowl, shorebirds, reptiles, and amphibians.
- Unfortunately, over 50% of coastal wetland area has been destroyed since European settlement.
- Restoration and management is hindered by insufficient data on wetland flora and fauna and locations of healthy vs. impaired wetlands .

Who's involved

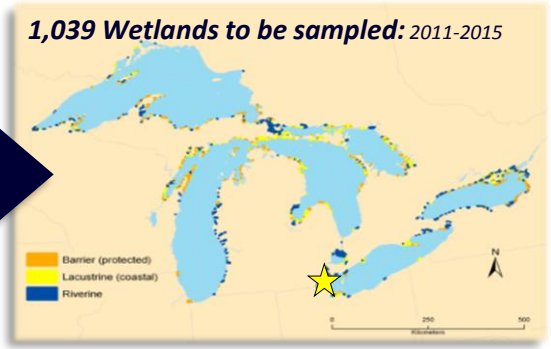
- 24 wetland scientists, 150 technicians/students from 12 institutions across the region.
- Other partners include numerous state and federal agencies and The Nature Conservancy.

More information:
MJC: http://nd.edu/~strmeco/matthew.html
Notre Dame GLOBES: http://globes.nd.edu/
Notre Dame Stream Ecology Lab: http://nd.edu/~strmeco/index.html

Methodology



Site Selection—Satellite imagery to reduce original pool of 2,768 wetlands to those >4 ha and connected to a Great Lake



1,039 Wetlands to be sampled: *2011-2015*

Invertebrates—Dip net samples in each vegetation zone per wetland.
≈7,170 samples

Fish—Triplicate fyke nets per vegetation zone per wetland.
≈3,030 net sets

Plants—Percent coverage of each species in 15 quadrats along three transects per wetland.
≈35,000 quadrats

Birds—Morning/evening visual and aural point counts at 1-6 stations per wetland, twice per year.
≈10,800 samples

Amphibians—Morning/evening aural point counts at 1-6 stations per wetland, 3 times per year.
≈14,400 samples

Water quality—A suite of chemical/physical measurements in each vegetation zone .
≈11,040 samples

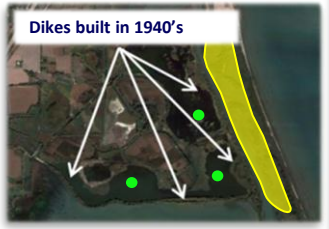
★ A case study underway: Erie Marsh Preserve

Local-scale use of our basin-wide program

A large wetland under stress…
- 2,217 acres (1,000 acres diked)
- Substantial nutrient pollution
- Close proximity to major urban areas
- Heavily invaded by *Phragmites*

A recovery in progress…
- Major players in restoration:
  - -The Nature Conservancy
  - -Erie Shooting and Fishing Club
  - -Ducks Unlimited
  - -Michigan DNR
- Reconnect marsh to Maumee Bay
- Improve water level management
- Control invasive *Phragmites*
- Implement holistic approach to managing preserve

Where we come in…
- Assess pre-restoration conditions
- Help identify restoration targets
- Track restoration success
- Facilitate adaptive management by providing real-time data on wetland communities and water quality



Water-control gate to be upgraded

Sampling fish in Erie Marsh Preserve

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