

# *Ohio Sea Grant & Stone Lab*



FRANZ THEODORE  
**STONE LABORATORY**  
*Ohio's Lake Erie Laboratory Since 1895*



Education  
Research  
Outreach

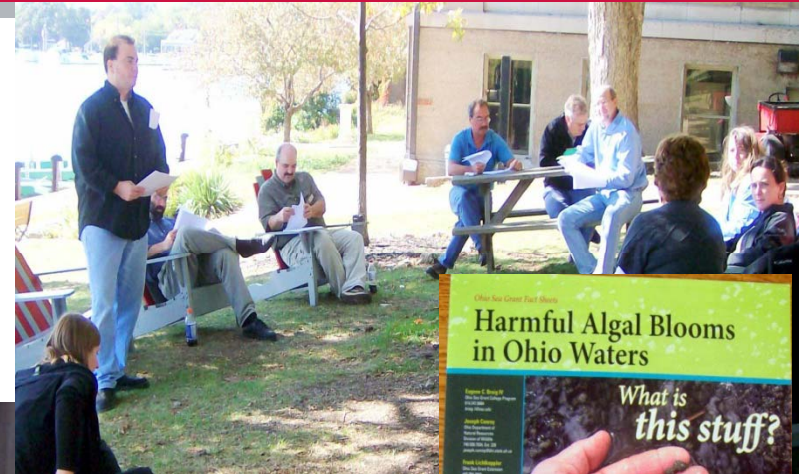


*Frank Lichtkoppler, Ohio Sea Grant Extension 27 June 2012*



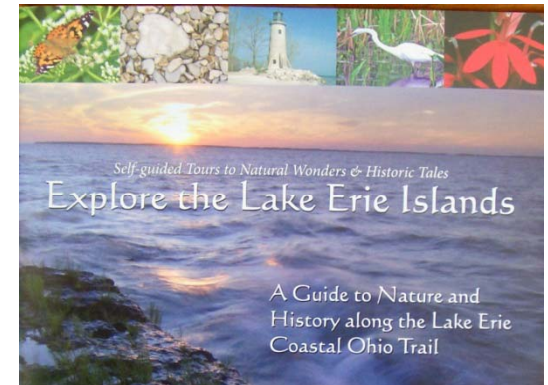
# Ohio Sea Grant Extension How We Work

Partnership of Academia,  
Government,  
and the Private Sector  
Combine Research,  
Education,  
and Outreach Teaching  
Focus on the Economy,  
Environment, and  
Education

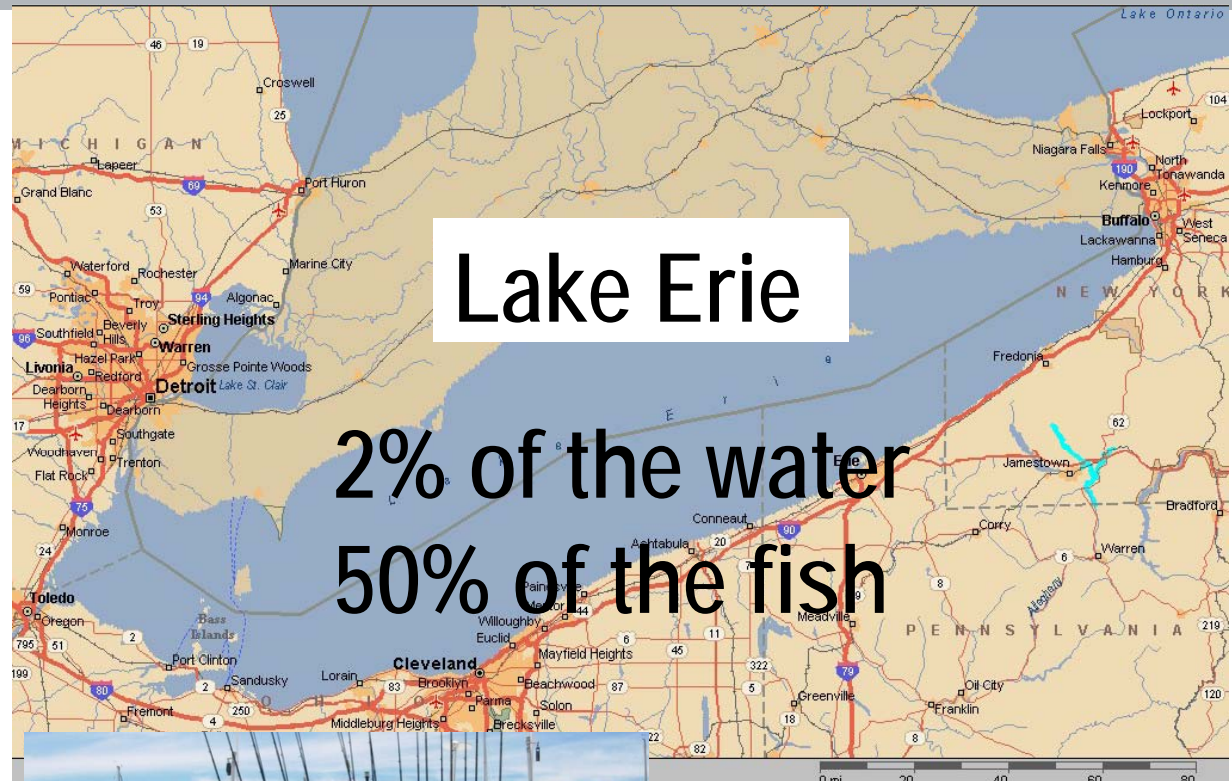


# Ohio Sea Grant Extension

Educators  
Objective  
Credible  
Scientific  
Information  
Brokers



- \*Southernmost Great Lake
- \*Most biologically productive
- \*Shallowest
- \*Warmest
- \*Wide diversity of aquatic habitats
- \*Wide diversity and abundance of naturally reproducing, native fish stocks



Lake Erie has Multiple Uses  
Recreation, Conventions, Tourism  
Drinking Water  
Waste Disposal  
Power and Industry  
Commerce and Transportation





## Lake Erie Issues

Sedimentation & Dredging

Nutrient Loading & Phosphorous

Harmful Algal Bloom's (HAB's)

Anoxic Zones

Aquatic Invasive Species (AIS)

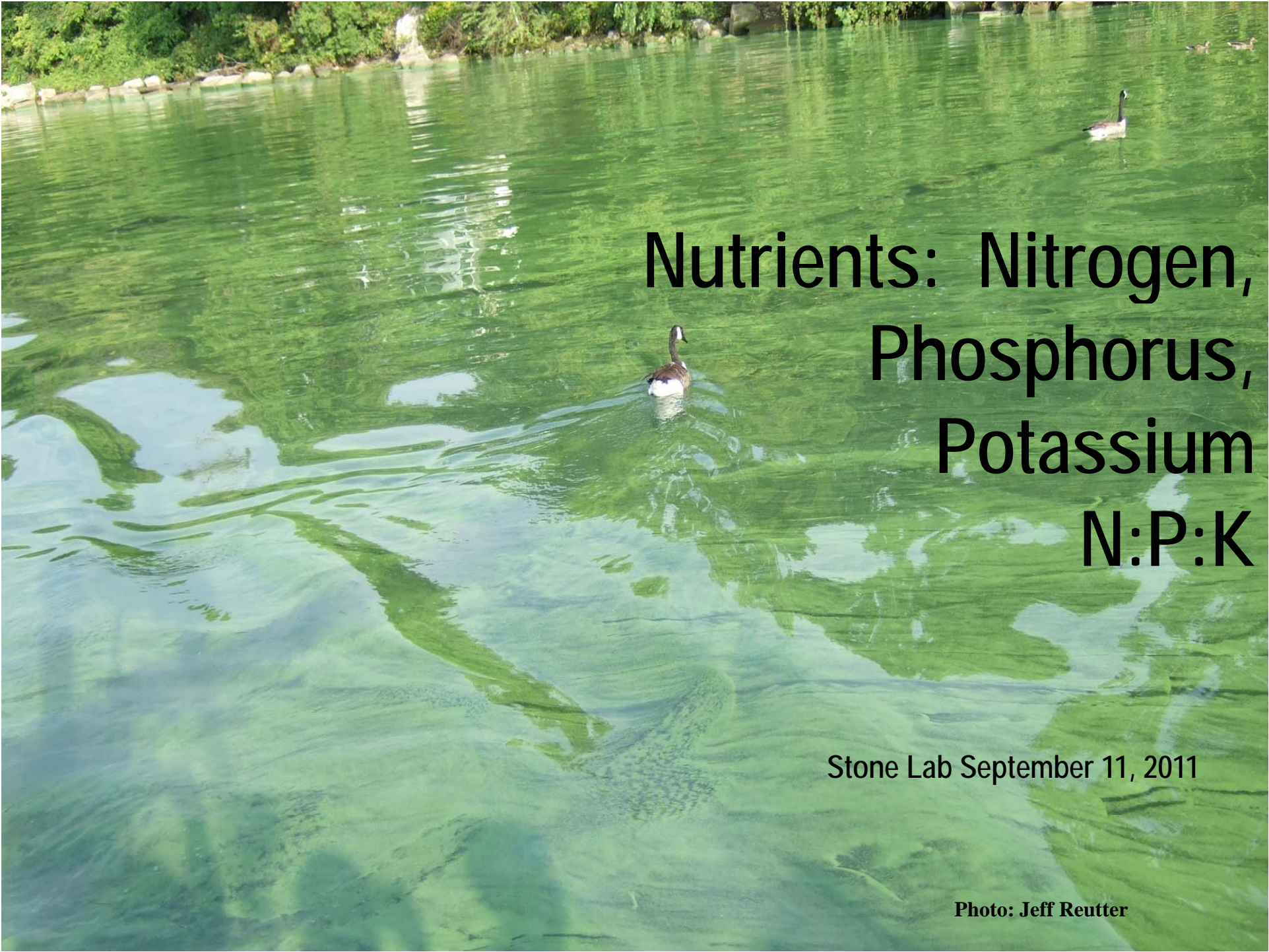
Climate Change

Coastal Community and Economic Development

A satellite image of a coastal region, likely a large estuary or bay. The land is a dark brown color. The water is a deep green. There are several areas of lighter green and yellowish-brown, indicating sedimentation or other water quality issues. The sedimentation is most prominent in the central and lower-left areas of the water body. The word "Sedimentation" is written in white text at the bottom center of the image.

# Sedimentation

Photo: NOAA Satellite Image



# Nutrients: Nitrogen, Phosphorus, Potassium N:P:K

Stone Lab September 11, 2011

Photo: Jeff Reutter

# Harmful Algal Bloom's (HABs)

Blue-green Algae  
Bloom circa 1971, Lake  
Erie ><>



Photo: Forsythe and Reutter

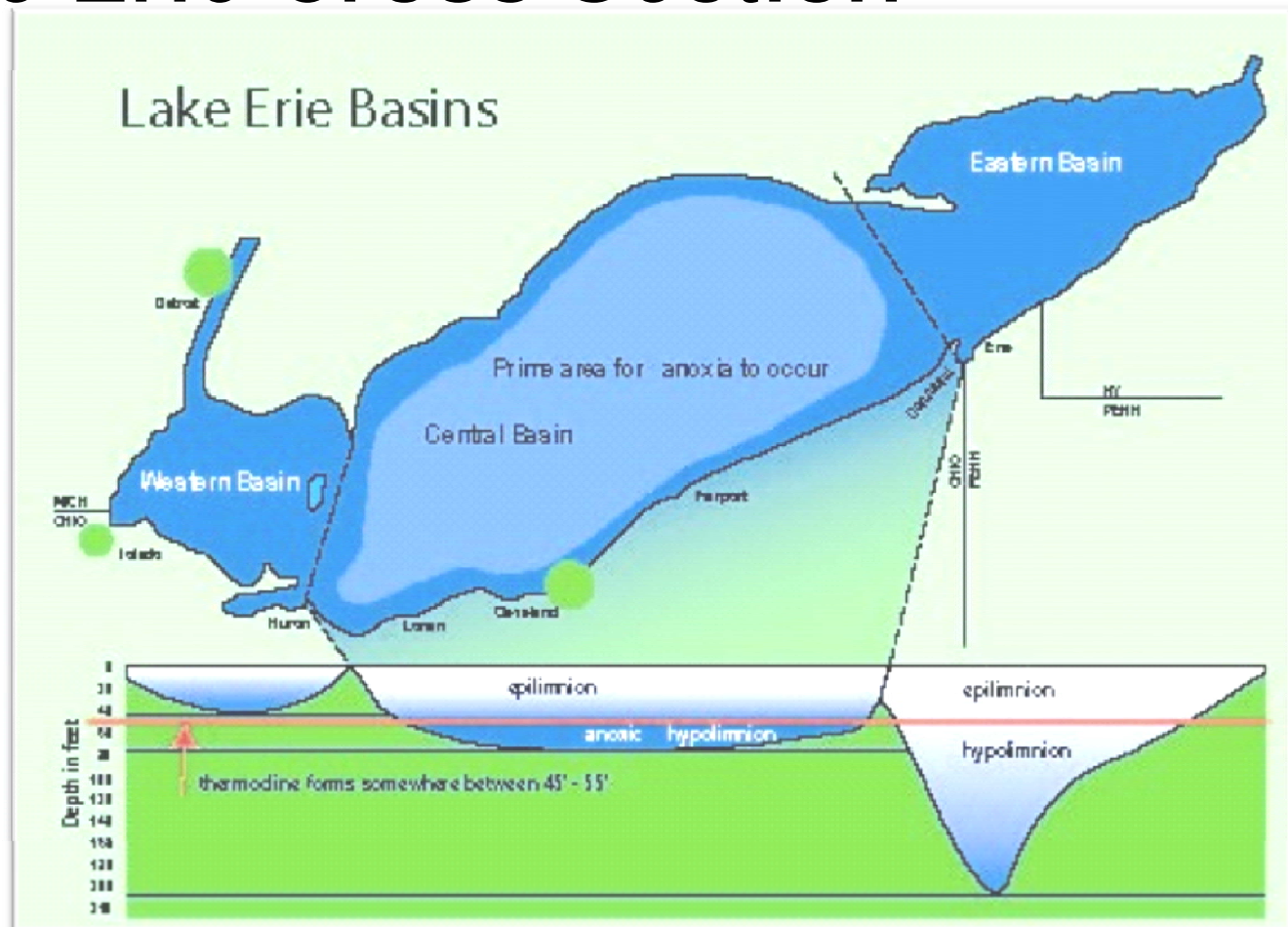


Photo: Reutter

Microcystis  
Stone Lab  
<>< 8/10/2010



# Lake Erie Cross Section



## AIS = Aquatic Invasive Species

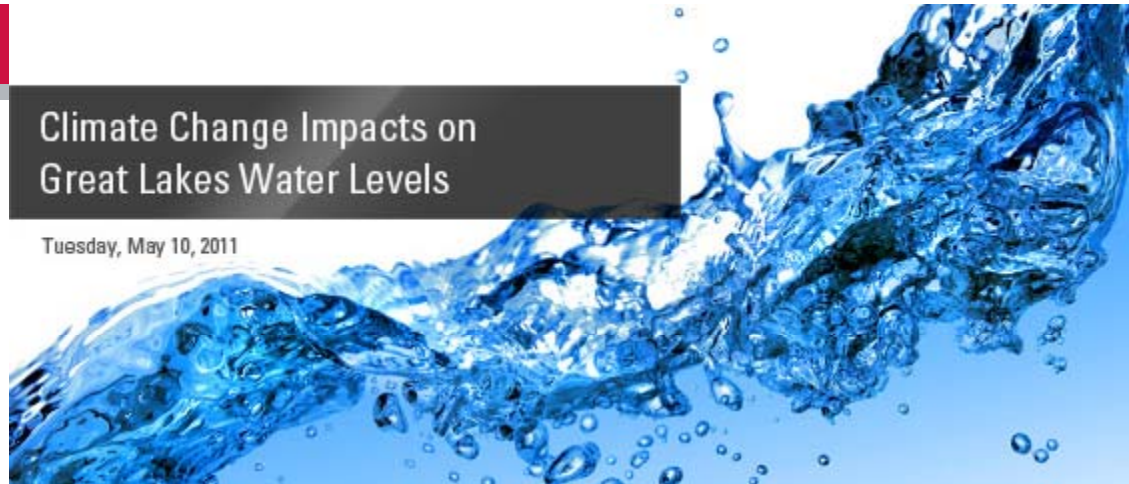


Zebra Mussel vs Quagga Mussel

Now mostly have Quagga Mussels

## Climate Change Impacts on Great Lakes Water Levels

Tuesday, May 10, 2011



<http://changingclimate.osu.edu/topics/climate/>

Do scientists disagree on the causes of  
climate change?

Of the 928 papers in scientific journals  
between 1993-2003 that listed “global climate  
change” in key words\* ...not one disagreed  
or took the position that current climate  
change is entirely natural (not caused by  
human activities).

N. Oreskes. 2004. The scientific consensus  
on climate change. Science 306:1686.

# THE HOT TOPIC

HOW TO TACKLE GLOBAL WARMING  
AND STILL KEEP THE LIGHTS ON

## Potential Impacts of Climate Change on Great Lakes Farms and Forests

Tuesday, November 2, 2010



# Ohio Sea Grant Extension

## Coastal Community and Economic Development



**Frank Lichtkoppler**  
Ohio Sea Grant Extension  
*Lichtkoppler.1@osu.edu*  
99 East Erie Street  
Painesville, Ohio 44077  
phone 440.350.2267

