

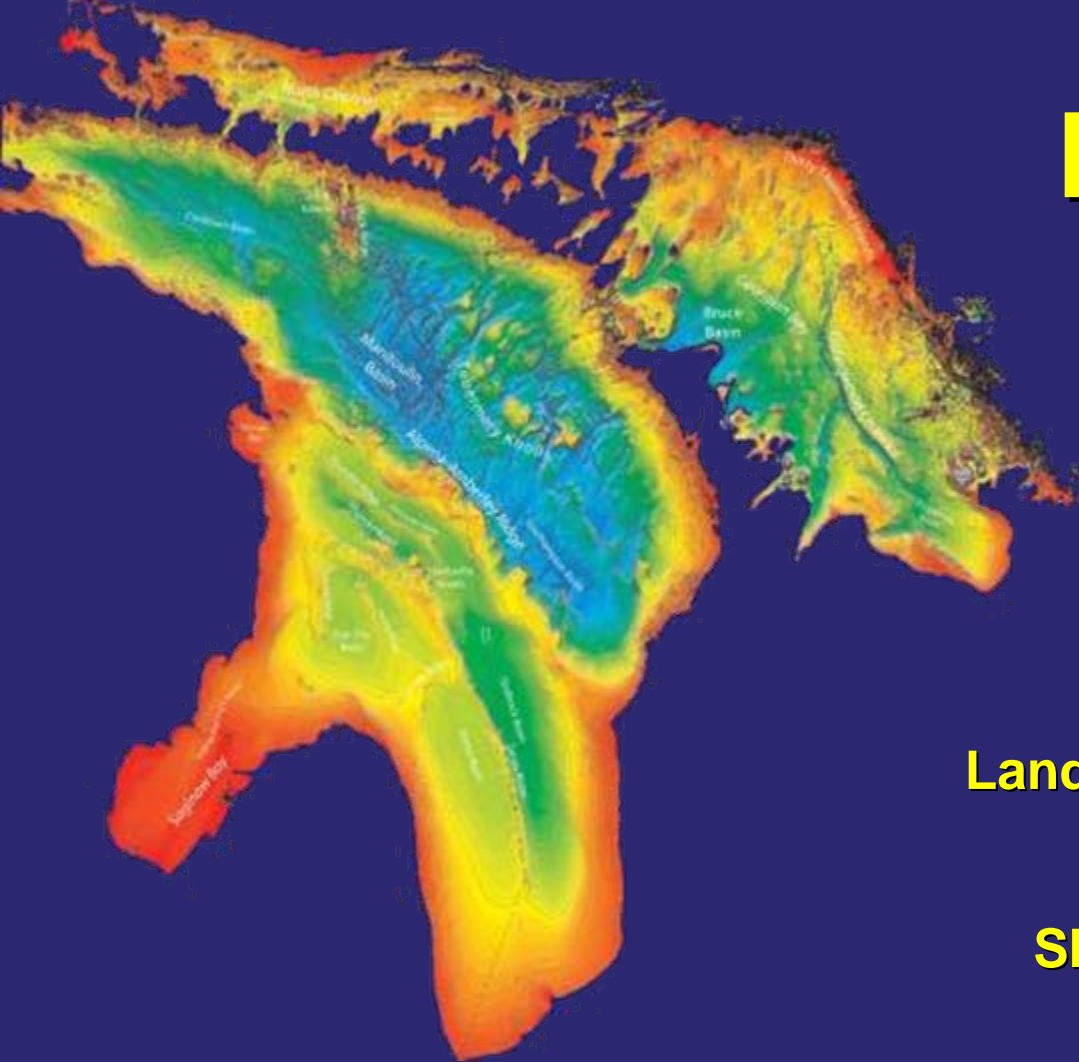
US EPA ARCHIVE DOCUMENT



Lake Huron

Pamela Scharfe
Huron County Health Unit

Lake Huron



Volume 850 cu. mi.
3,540 cu. km.

Water Area 23,000 sq. mi.
59,600 sq. km.

Land Drainage Area 51,700 sq. mi.
134,100 sq. km.

Shoreline Length 3,827 mi.
6,157 km.

Population 4,525,344
US (2000); Can (2001)

Retention Time 22 years

Average Depth 195 feet
59 meters

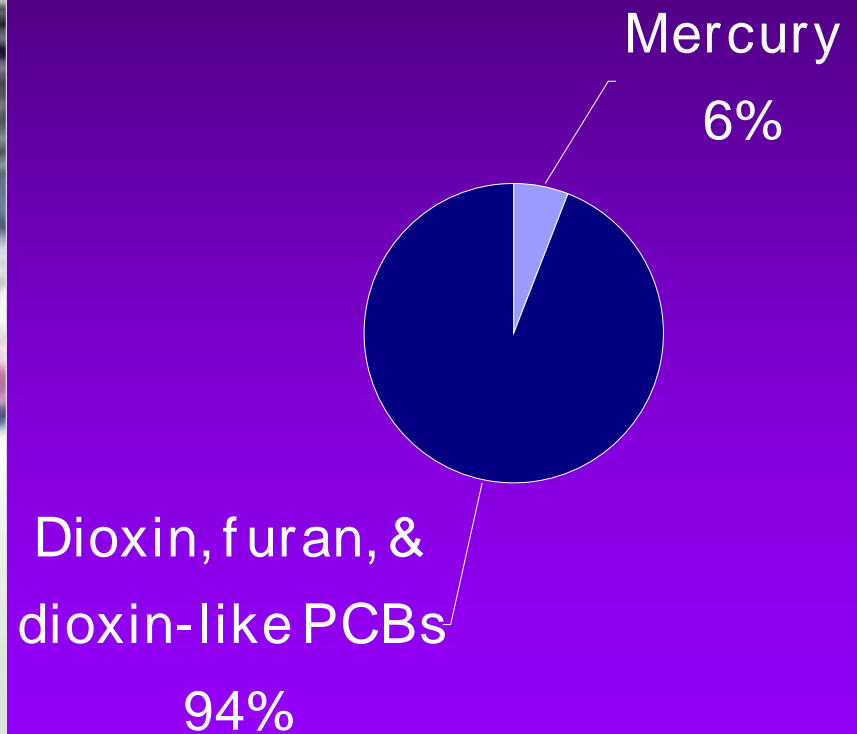
Maximum Depth 750 feet
229 meters

Lake Huron Issues

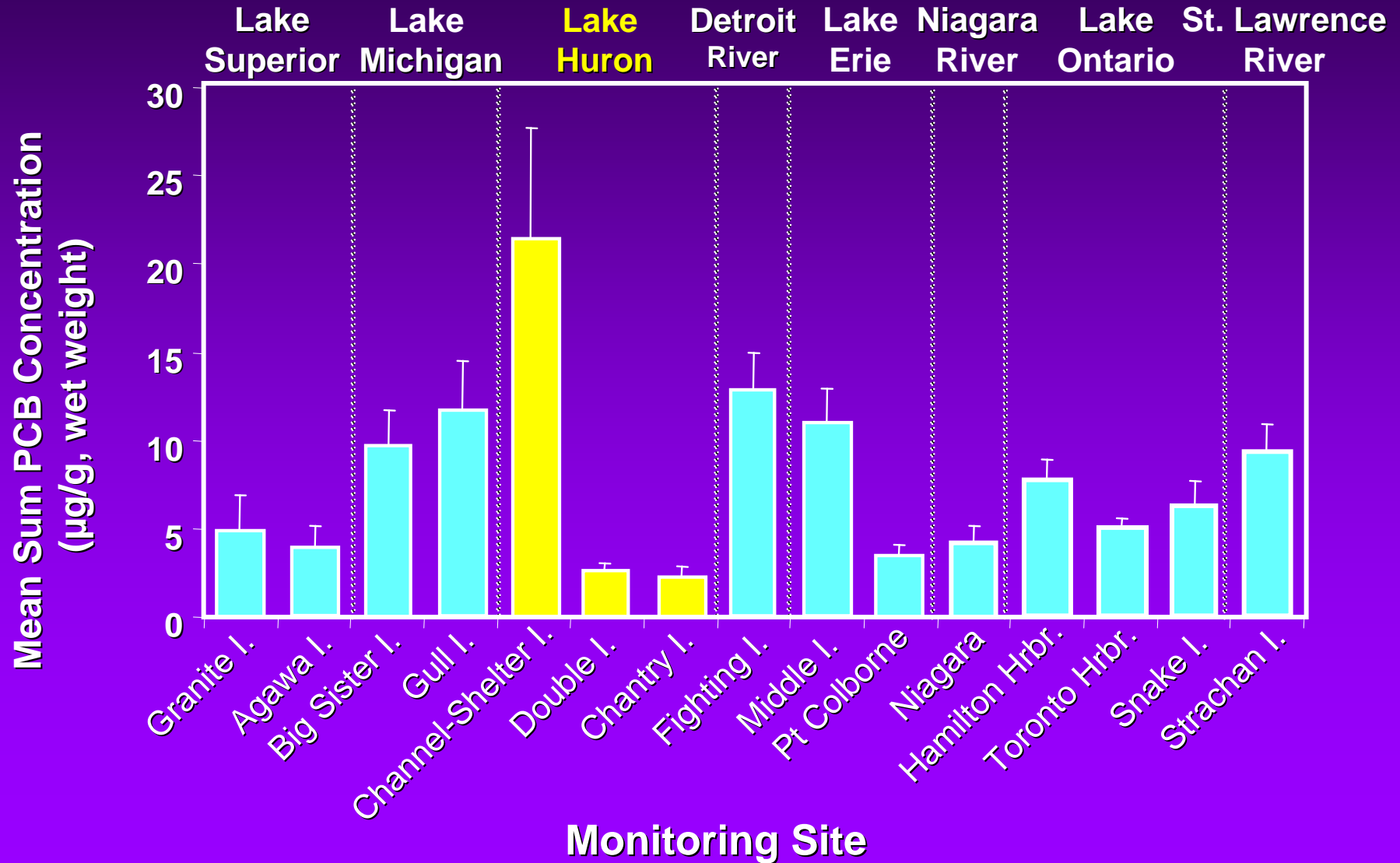
Overview:

- Restoration, but mostly protection, stewardship
- Contaminants in fish and wildlife
- Aquatic communities – major changes to food web
- Aquatic and terrestrial habitat – high quality, protection, binational biodiversity strategy
- AOCs
- Other issues: water levels, botulism, VHS
- Beaches – bacteria, algal fouling
- Nearshore focus: bacterial contamination at beaches
- Summary

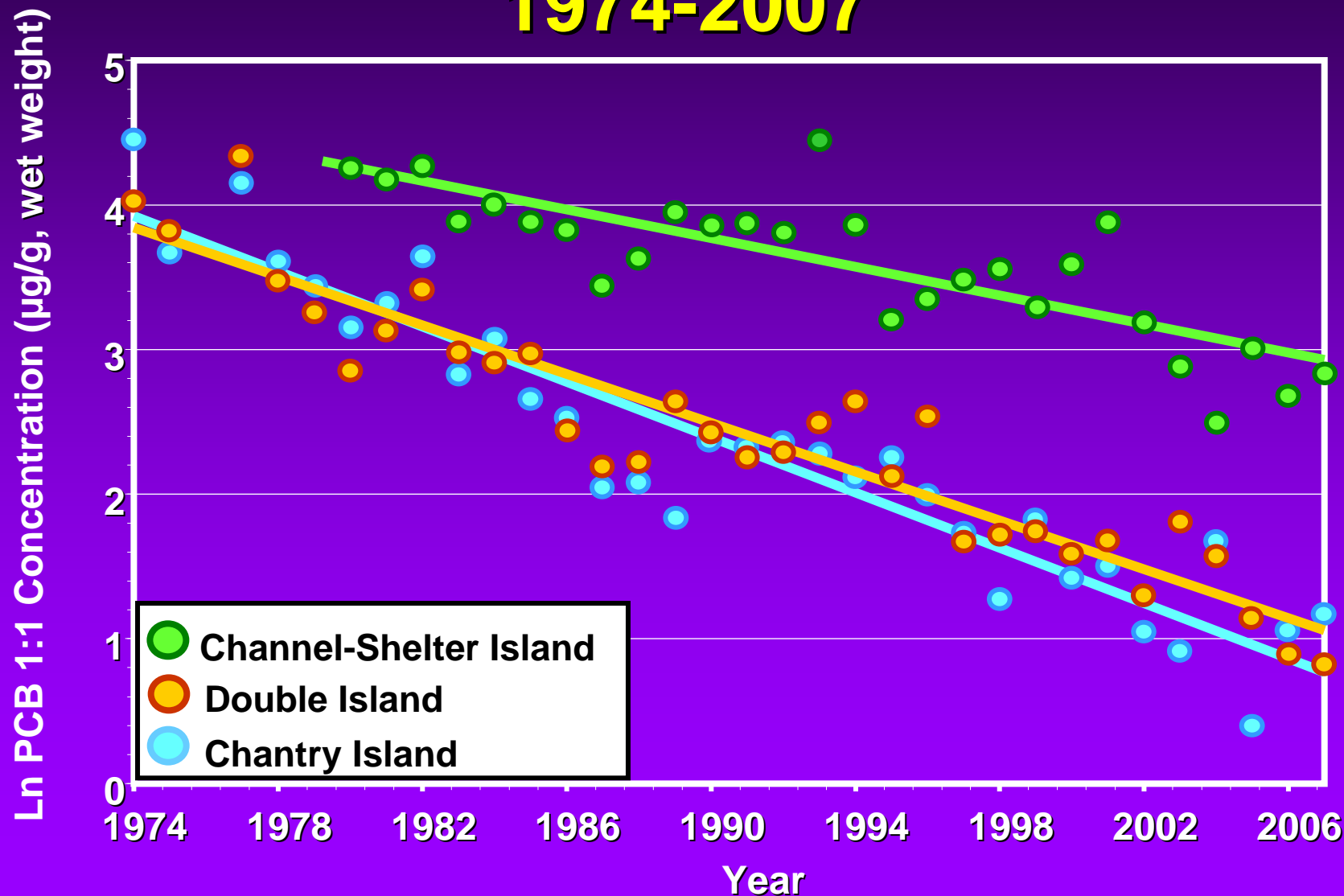
Fish Consumption Advisories in Lake Huron



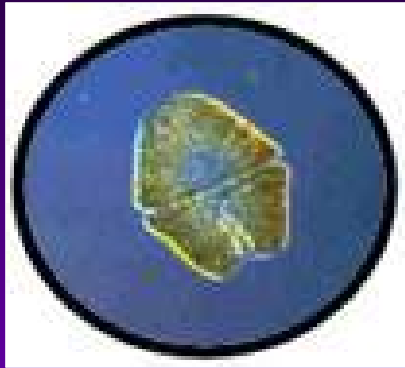
PCB Levels in Great Lakes Herring Gull Eggs, 2003-07



PCB Levels in Herring Gull Eggs from Three Lake Huron Monitoring Sites, 1974-2007



Zooplankton



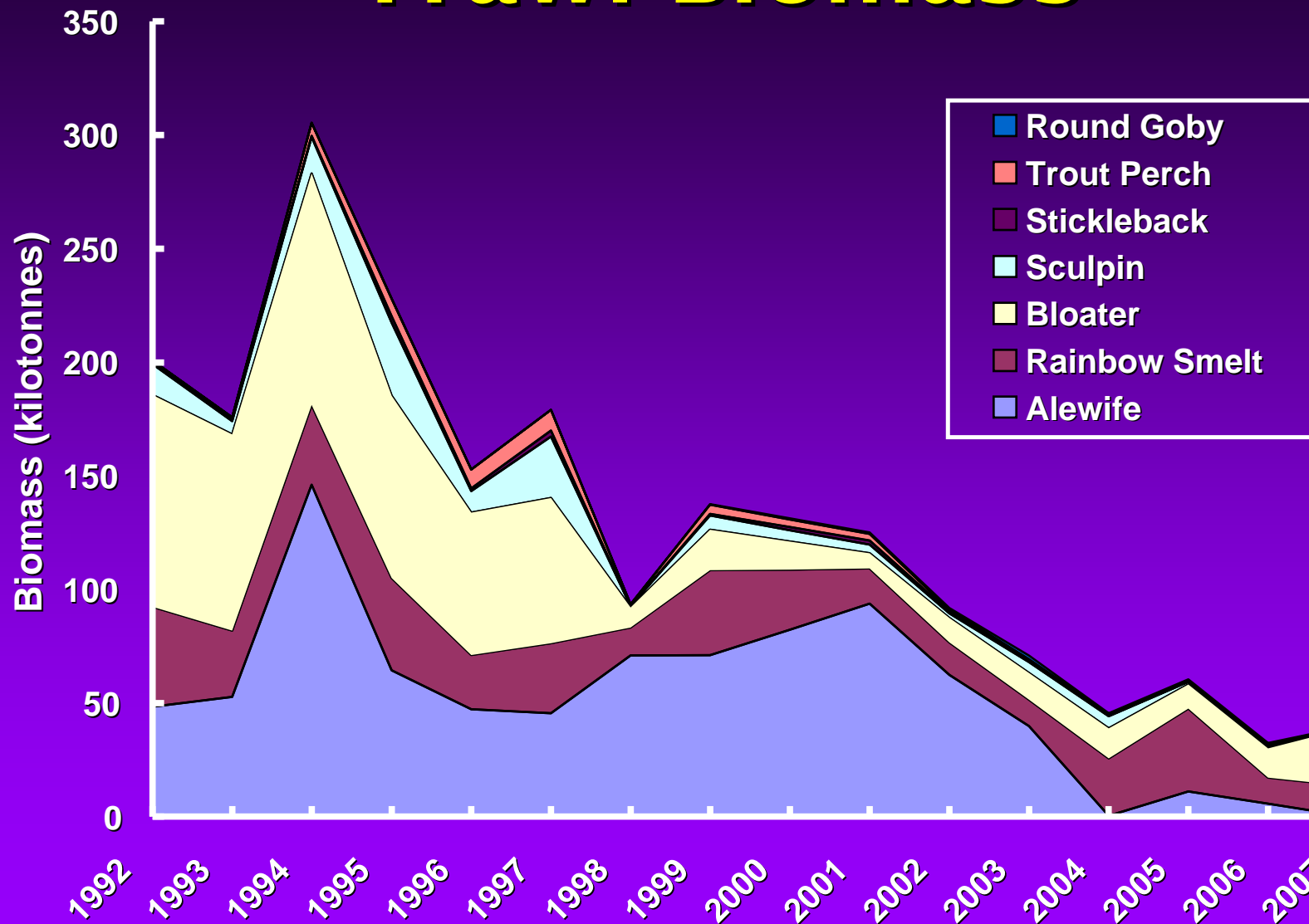
Benthic Invertebrates



Invaders



Trawl Biomass



Declines in Prey Fish

Chinook Salmon



Chinook Salmon



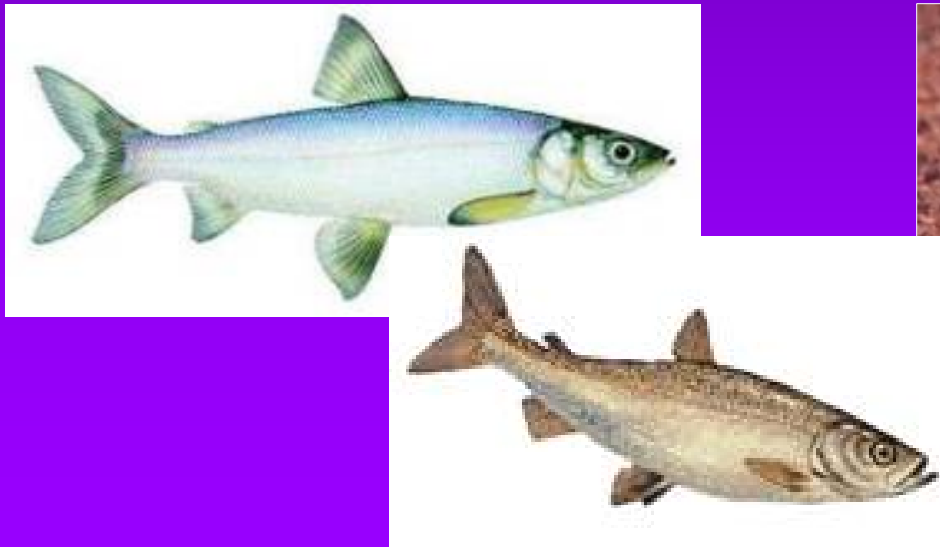
Yellow Perch & Walleye



Emerald Shiner



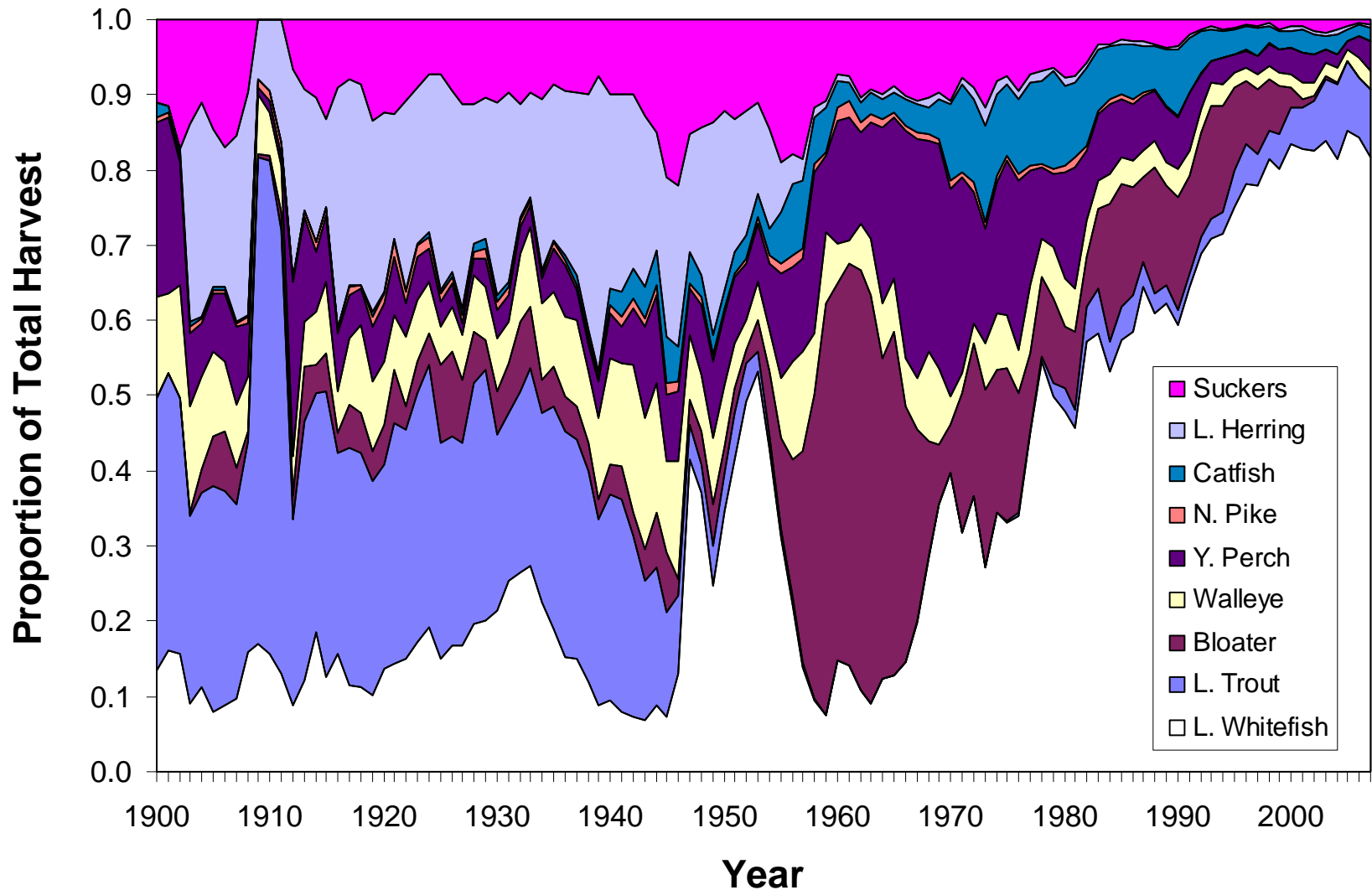
Cisco & Bloater



Lake Trout



Proportion of Total Harvest



Questions about the aquatic ecosystem

- Why are declines occurring in lower trophic levels?
- Will lack of mysis and *diporeia* for food result in continued high predation on zooplankton?
- Will alewife recover?
- Will native species continue to recover?
- What impact will more recently introduced species have? (e.g. round goby)

Aquatic and Terrestrial Ecosystems

- High in biological and landscape diversity
- Many rare and threatened species
- Coastal wetlands in the north rank among the best in all Great Lakes
- Biodiversity under stress - opportunities for protection should be pursued



Biodiversity Conservation Strategy

- Define threats to biodiversity features
- Strategies to abate these threats
- International action plan
- Priority sites for strategy implementation
- Indicators to measure health and integrity of conservation targets



Areas of Concern

- Canada:
 - Collingwood Harbor: Delisted 1994
 - Severn Sound: Delisted 2003
 - Spanish Harbor: Area in Recovery 1999
- U.S.A.:
 - Saginaw Bay
- Binational:
 - St. Marys River



Other Lake Huron Issues



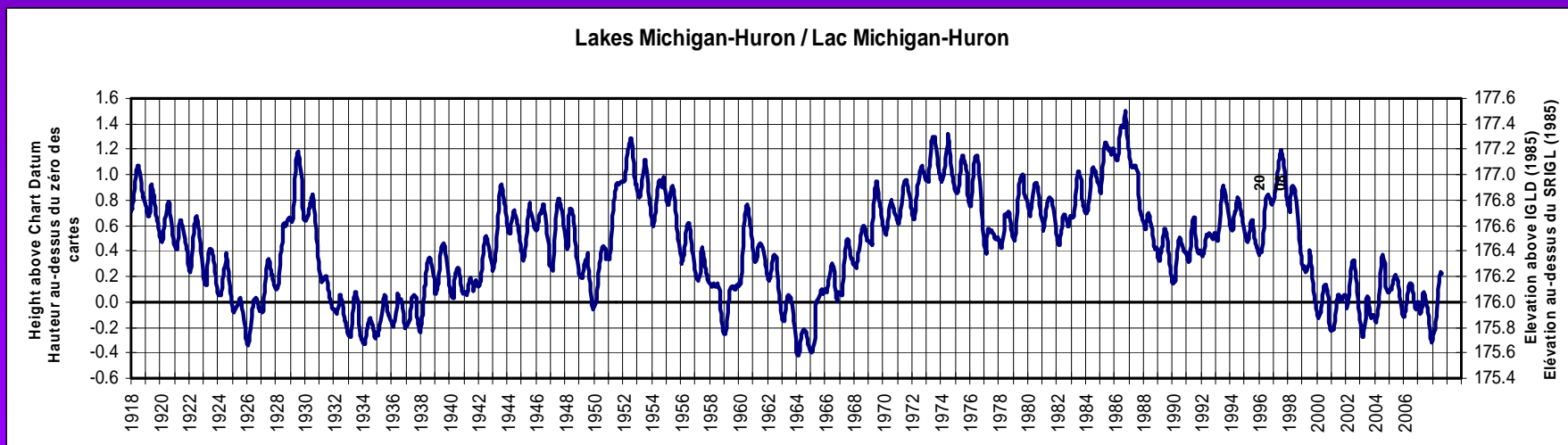
Algae Blooms



Botulism



VHS

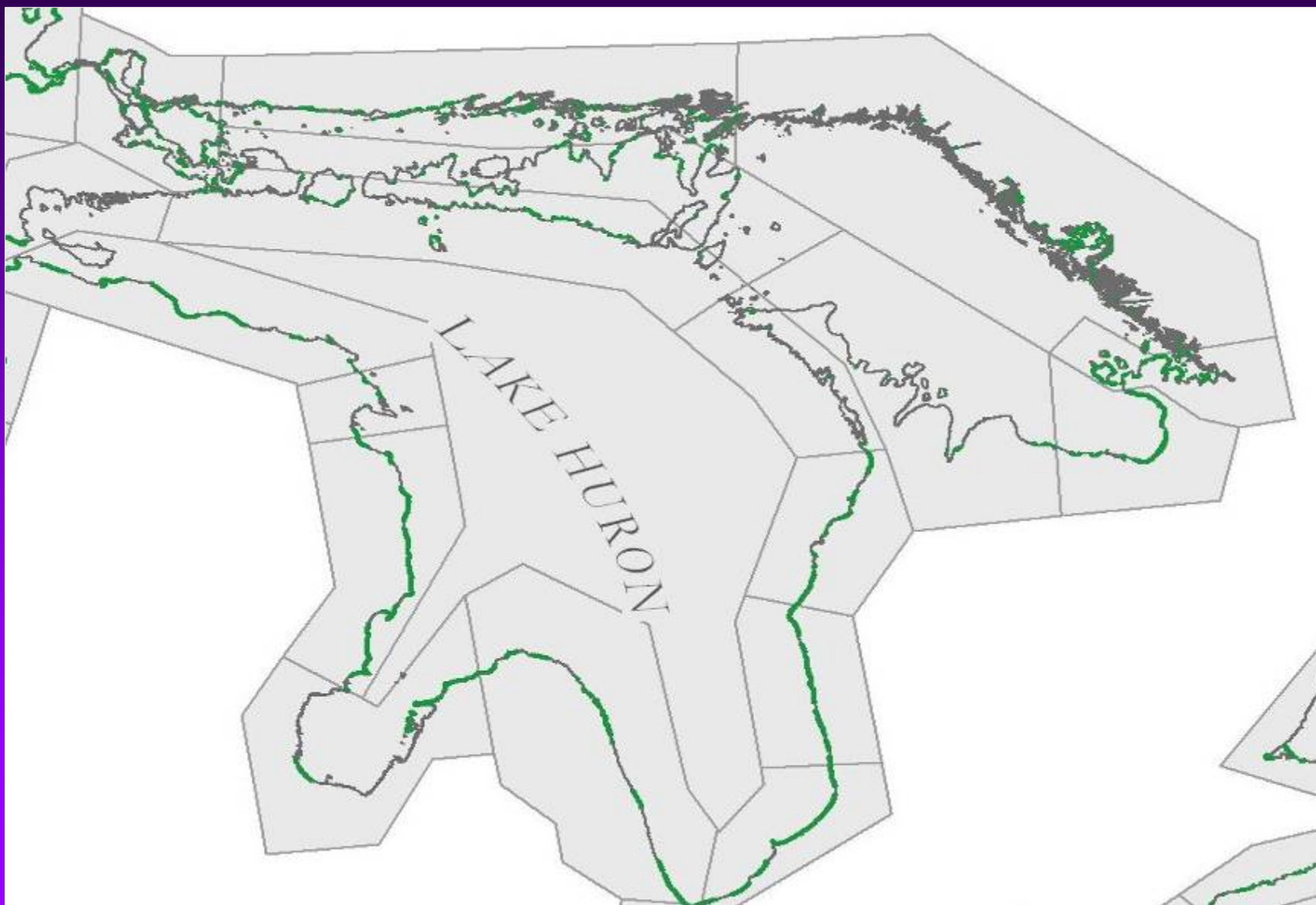


Water Levels

Nearshore Focus: Bacterial Contamination at Beaches

- Bacterial Contamination at Michigan Beaches
- Bacterial Contamination at Ontario Beaches
- Multiple Pollution Sources
- Predictive Modeling
- Communicating to the Public
- Impact of Climate Change

Lake Huron's Beaches



Algal Fouling = “Muck”





“Beach closings in Michigan on the rise,”

Jeff Kart, *The Bay City Times*,
August 06, 2008



Bacterial Contamination at Ontario Beaches

Main pollutants:

- Pathogens
- Nitrogen and Phosphorus



Algal Fouling



Beach Postings

Water Protection Steering Committee



Beach Water Sample Results

“Old News”

*If you swam yesterday, you're OK.
The water was fine!
Today might be okay too, but we won't
know because we won't be sampling
again until next Monday.*





Predictive Modeling



safe day at
THE BEACH
Huron County Beach Water Quality



Don't swim in the water if you can't see your feet at waist depth of an adult.

The water is safe to swim most of the time. However, caution must always be taken when swimming in any natural water source. Weather conditions are the leading factor that can adversely affect water quality.

Testing

Cloudy water can occur after heavy rainfall and/or due to high wave action. Several years of Huron County Health Unit public beach water sampling have shown that there are elevated levels of E. coli counts when the water is cloudy. The E. coli test is only an indicator that there is fecal contamination present from either animal or human or both. There could also be harmful bacteria, parasites and/or viruses present in the water.

Symptoms

Swimmers are at risk of developing a variety of irritations and infections when swimming in cloudy water. The most common symptoms are minor skin, eye, ear, nose and throat infections and stomach disorders.

Fun In The Sun

- Practice sun safety.
- Keep well hydrated by drinking plenty of water.
- Do not dive into unknown waters.
- Beware of undertows.
- Always supervise children in the water.



For up-to-date information contact:
Beach Water Infoline
(519) 482-5119 Ext. 2501 Toll free 1-877-837-6143 Ext. 2501

Huron County Health Unit
(519) 482-3416 Toll free 1-877-837-6143
Website: www.huroncounty.ca



Multiple Pollution Sources



Heavy Rainfall Events



Communicating Beach Results and Health Risk

- What do we do with all that data?
- When do we post/close beaches?
- How do we notify the public?



TALK TO THE PUBLIC

Climate Change Impact on Beach Water Quality?

Temperatures

Precipitation

Seasonal Changes

Water Levels

Beach Water Quality


Need to seek out partners to strengthen our beach water monitoring programs and water quality standards:

- Predictive modeling to determine and report accurate and timely beach water quality
- Inform the public in a clear and timely way
- Conduct research as to what are the pollution sources & their impact
- Identify and implement remediation strategies

Summary

- How we are dealing with the issues:
 - direction – remediation – protection?
- Stewardship and working with local communities
- Principles of Framework – awareness, support community projects, take action, monitor and adapt
- How we need to adapt to changing ecosystems?

Acknowledgments



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