



The LISS Environmental Indicators Program Overview

“We all have the right to assess progress by seeing the data ourselves”—*State of the USA* National Indicators Report

Contributors

Julie Rose, NOAA
Robert Burg, NEIWPC

Jason Krumholz, NOAA
Mark Tedesco, EPA

Environmental Indicators in New England Workshop, September 25, 2012
Narragansett, RI

Overview

- Background/History
- Present Status
- Website Walkthrough
- Future Directions

Overarching Themes

- How the Program is utilized
- Lessons Learned
- Challenges Faced



Background

- Program began in 1998
 - Driven by Govt. Perf. and Results Act (GPRA)
- Initial purpose:
 - Identify goals and objectives
 - aid in management decisions
 - provide information to Office of Management and Budget (OMB)
- Initially based on goals of 1994 CCMP

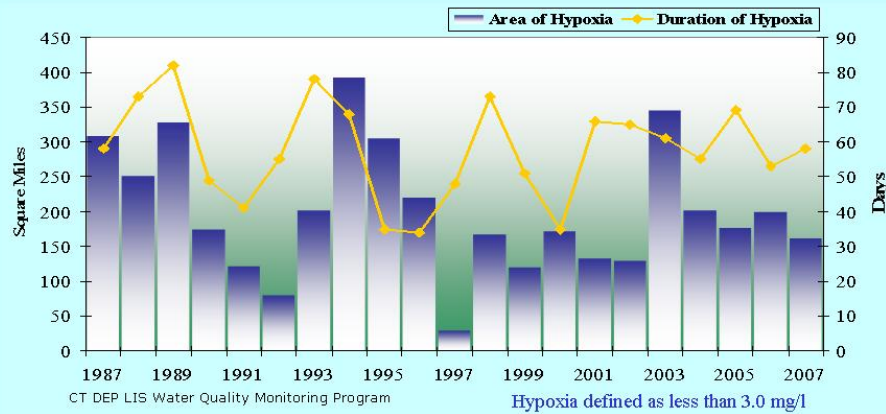
Taking Shape

- From the outset, designed with public outreach (e.g. *Sound Health, Protection and Progress Report*) in mind
- Initially 85 indicators identified in 6 categories
 - Presently 51 indicators in 4 categories: Water Quality, Marine Animals, Habitats, Land Use/Population
- Initially website used PDF of a powerpoint slide for each indicator
 - Presently website is more interactive, allowing for more content and easier updates
- 20-25 “Key Measures” are highlighted in *Sound Health*, published biennially
 - Updates done every two years to coincide with *Sound Health*
- Indicator data come from a wide variety of sources



Initial Layout

Maximum Area and Duration of Hypoxia



The maximum area of hypoxia averaged 201 square miles from 1987 through 2007. Hypoxia has been below the average for eight out of the last 10 years. The summer of 2007 was the seventh least severe year since 1991 with hypoxic conditions at 162 square miles. In 2007, the duration of hypoxia in the bottom waters lasted 58 days, one day above the average from 1987 through 2007.

Indicator Type: State

LISS Indicators: Water Quality (2.1)

2010 Revision

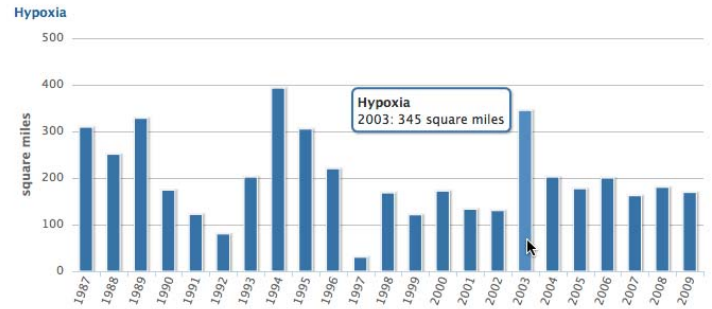
Status and Trends: LISS Environmental Indicators

TYPE OF INDICATORS: ▲ Health/Condition ● Response/Performance ■ Socio-Economic ■ Historical/Background

Water Quality Living Marine Resources Habitat Quality Land Use

▲ Area of Hypoxia

Area of Hypoxia Moderate to Severe Anoxia



Source: LISS Water Quality Monitoring Program, CT DEP

WHAT IS HYPOXIA?

Hypoxia is a condition that occurs in bodies of water as dissolved oxygen concentrations decrease to levels where organisms become physically stressed and ultimately cannot survive. Prolonged hypoxic conditions result in severe die-offs of animals that are unable to move out of hypoxic waters, mass migrations of mobile animals, changes in water chemistry and other adverse ecological effects. The Long Island Sound Study defines hypoxia as waters with dissolved oxygen concentrations less than 3 mg/L.

For more information on hypoxia and efforts to reduce its occurrence in Long Island Sound visit: <http://longislandsoundstudy.net/about/our-mission/management-plan/hypoxia/>

Show/Hide Table Data

Learn More

- Hypoxia Management Plan Chapter
- Long Island Sound Water Quality Monitoring Program

Benefits

- Long-term commitment to maintaining indicators program
- Long-term datasets that can be useful in making management decisions
- Used by LISS, other estuary programs, researchers, and the public
- Outreach and education goals

Let's take a look at the website...

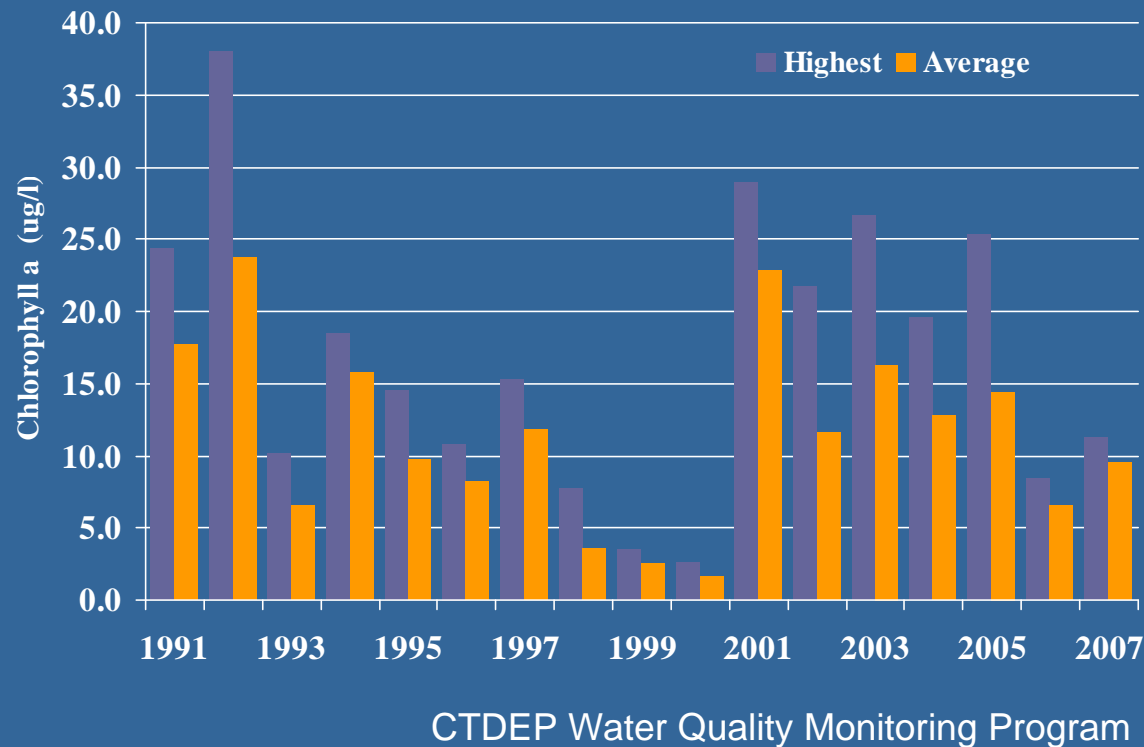




Gap Analysis and Challenges

- Gaps in spatial resolution
 - Embayments
- Consistency of Data
 - Multiple data sources
 - Unit problems
 - Data continuity
- Incorporating opportunities for higher temporal resolution
 - e.g. buoys, ferry monitoring data, USGS gage data
- Gaps in CCMP topic areas
 - e.g. floatable debris, pathogens
- Obtaining LIS specific data

Example: Chlorophyll data in LIS



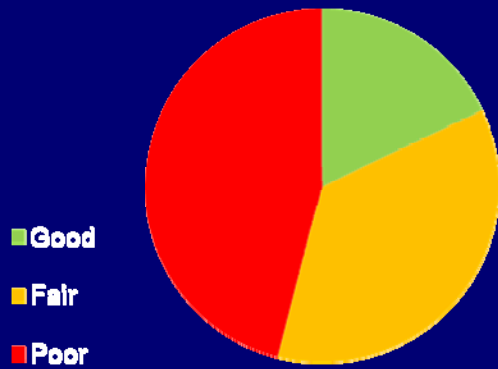
- Stations used?
- Months used?
- Depth used?
- How is highest calculated?
- How is average calculated?



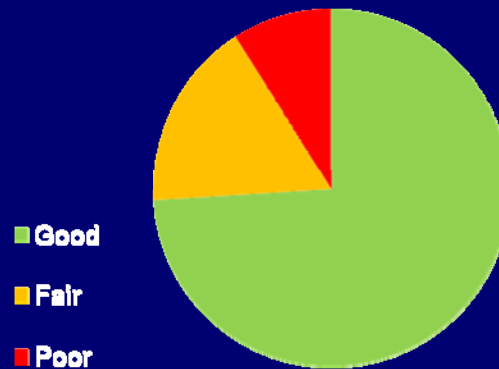
Sediment Quality Index

Sound Health 2008

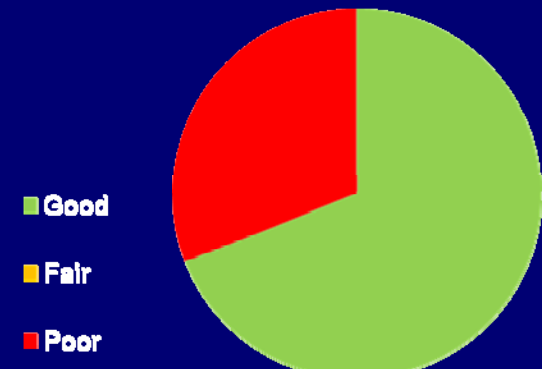
West



Central

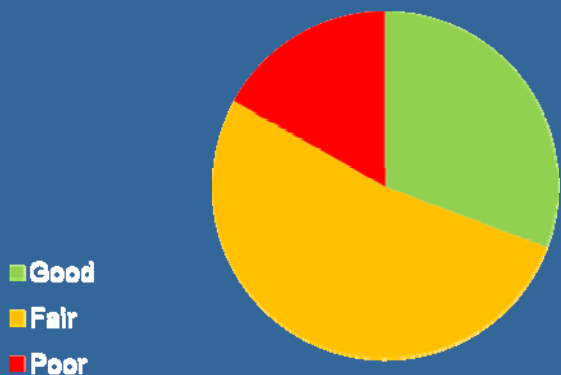


East

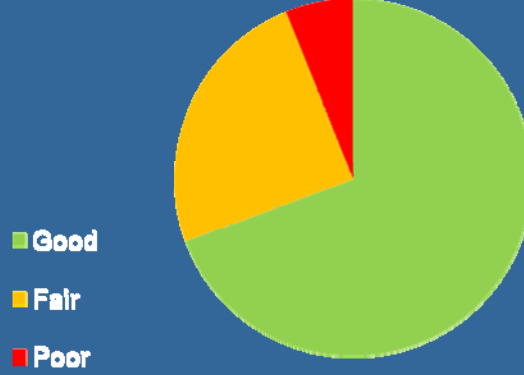


Sound Health 2012

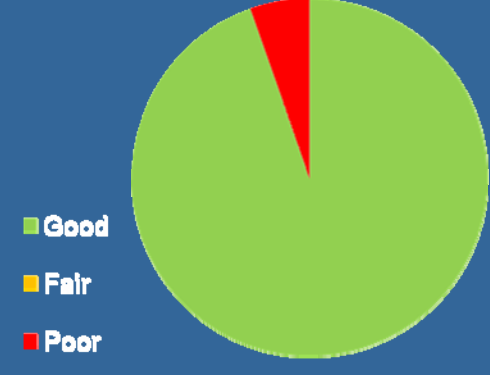
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Central



East





Next steps

- Assess condition indicators, recommend additions, deletions, improvements
 - Expand use of multimetric indices
- Recommend appropriate methods for trend analysis
- Consider further spatial disaggregation
- Report Card style presentation?

Acknowledgments

- **LISS Indicators WG**
- John Kiddon, EPA
- Samantha Wright, Boston University
- Erin Cummings, Taylor Design
- Clair Ryan & Erin Jacobs, NEIWPC