Assessing Estuaries with the National Coastal Condition Assessment

NWQMC 2019

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Agenda

• NARS Overview
• NCCA Background

• Review of Previous Results
  • Estuaries
  • Great Lakes

• NCCA 2015 Progress

• What’s Next?
National Aquatic Resource Surveys

• A Partnership between EPA, States and Tribes
  • Assess nation’s waters using indicators of condition and stress
  • Build/enhance state and tribal monitoring capacity

• The NARS Approach: National Consistency
  • Randomized design to report at National and Regional scales
  • Standard protocols
  • National QA and data management
  • Allows opportunities for population intensifications
National Coastal Condition Assessment

- Stratified random survey design
  - 725 estuarine sites
  - 225 Great Lakes sites

- Consistent ecological indicators across regions & periods
  - Biological Indicator
  - Eutrophication Index
  - Sediment Quality
  - Ecological Fish Tissue Contamination Index

- Introduced in 2015: Human health-related indicators
  - Microcystins
  - Enterococci
  - Mercury in Fish Filets
05-06 to 2010 Change
Results for Biological Condition
Estuaries

05-06 to 2010
Change
Results for
Eutrophication
Condition

<table>
<thead>
<tr>
<th>Year</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Not Assessed</th>
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<tbody>
<tr>
<td>2005-2006</td>
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<td>2010</td>
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<td>2015</td>
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Estuaries

05-06 to 2010 Change Results for Sediment Condition

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<tr>
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<th>2005-2006</th>
<th>2010</th>
<th>2015</th>
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</thead>
<tbody>
<tr>
<td>Good</td>
<td>70±10</td>
<td>60±10</td>
<td>50±10</td>
</tr>
<tr>
<td>Fair</td>
<td>30±5</td>
<td>20±3</td>
<td>10±2</td>
</tr>
<tr>
<td>Poor</td>
<td>10±1</td>
<td>8±0.5</td>
<td>6±0.5</td>
</tr>
<tr>
<td>Not Assessed</td>
<td>5±1</td>
<td>4±0.5</td>
<td>3±0.5</td>
</tr>
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Note: Data shows a decrease in Good conditions, with Fair and Poor conditions remaining relatively stable.
This indicator assesses the potential for adverse effects to wildlife resulting from eating whole fish. It does not assess risk to people.
2010 Results for Biological Condition

Great Lakes
2010 Results
Eutrophication Condition

Great Lakes
2010 Results for Sediment Condition

Great Lakes
This indicator assesses the potential for adverse effects to wildlife resulting from eating whole fish. It does not assess risk to people.
NCCA Reporting Redesign

- GOAL: More streamlined, simplified report format.
- Shorter and more graphic/image driven
- Estuarine and Great Lakes results reported separately
- Move some results to dashboard only
- Links to indicator definitions on NARS website rather than in-depth descriptions in the report.
The NCCA assesses biological condition using benthic macroinvertebrate indices. Benthic macroinvertebrates are ecologically important animals such as worms, mollusks, and crustaceans that live on the floor of estuaries and the Great Lakes. They play an important role cycling carbon and nutrients in the water body, and are food for a wide variety of fish, mammals, and birds. Benthic macroinvertebrates are ideal indicators of biological condition because they are easy to collect, relatively sedentary and very diverse, and the degree to which they are sensitive or tolerant to pollution and other disturbances differs from species to species.

Estuarine Biological Condition

How Does the NCCA Collect Benthic Macroinvertebrates?

The NCCA collects organisms that live in the sediment on the floor of the estuaries or Great Lakes in water that can be more than 30 meters (100 feet) deep. Crew members lower a stainless-steel collection apparatus (or ponar) to the bottom estuarine floor. When it contacts the bottom jaws snap closed, taking a “bite” of sediment. The ponar is retrieved using a winch system, and the sediment is emptied onto a sieve and rinsed away, leaving the organisms behind. They are preserved for identification in a laboratory.

Is the Condition Changing?

Biological quality has improved steadily over time in the estuaries surveyed. The NCCA has also demonstrated greater success in collecting samples, bolstering the validity of these results.

For a closer look at results, including individual parameters and additional subpopulations, please visit the NCCA Data Dashboard: https://coastalcondition.epa.gov/
What’s next?

• NCCA 2015
  • Partner review in Summer
  • Final report expected in Fall

• NCCA 2020
  • Planning has begun
  • Site draw is complete and distributed to Regions/States
  • Research indicators: OA, Microplastics in sediment, and nitrogen source tracking
Questions?

https://coastalcondition.epa.gov/  Sullivan.hugh@epa.gov