AED Peer Review '07

# National Coastal Assessment Overview (ECO MYP)

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## ) Agency Problem

Clean Water Act (CWA) Section 305(b) directs States to assess the overall quality of the waters in the States, to determine whether that quality is changing over time, to identify problem areas and management actions necessary to resolve those problems, and to evaluate the effectiveness of CWA programs. The Agency needs ability to assess and track risks to ecosystems. To successfully meet CWA requirements, States and Tribes need tools to monitor, maintain, and restore their aquatic resources including estuaries, flowing waters, and lakes.

he late 1990s, less than half of all waters were assessed and monitoring was not coordinated among states. States used their own methods and sampling designs. Data from different states could not be compared, and regional and national assessments of condition were not well supported scientifically. Due to inconsistent orting on environmental conditions from the States, EPA had difficulty assessing the regional and national effectiveness of EPA and State regulations designed to restore and protect aquatic resources. Research was needed to address these deficiencies, which lead to the initiation of the EPA ORD, Environmental Monitoring Assessment Program (EMAP). The National Coastal Assessment (NCA), the latest version of EMAP, is an interagency effort involving EPA, NOAA, U.S. Fish & Wildlife Service, and USGS designed to provide the data needed to assess the condition of the Nation's coastal waters. AED has responsibility for implementing A in the Northeast.

## 3) Methods/Approach

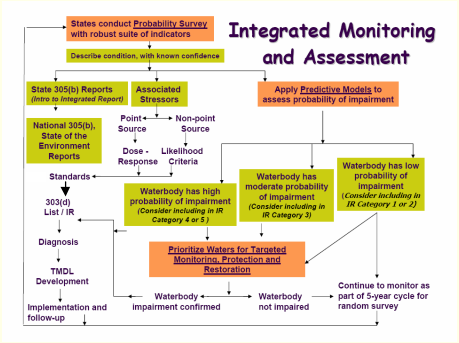
Utilize consistently measured indicators to assess and help explain estuarine condition

Utilize Probability surveys

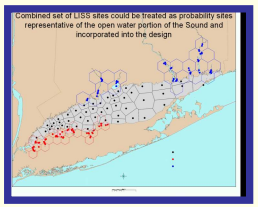
- Extrapolates to all of estuarine waters
- Addresses 305(b) requirements & GPRA
- 100 % assessed waters

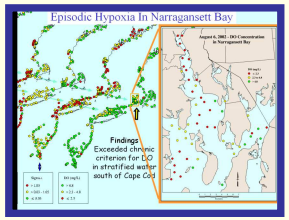
Partnerships with States and other Federal agencies

Incorporate existing monitoring programs and develop hybrid monitoring designs




***Hybrid Sampling Designs Serving national and more local needs***

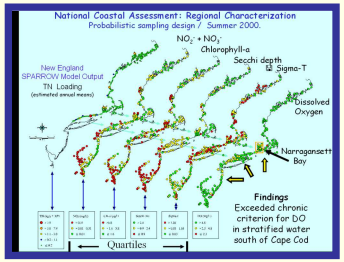


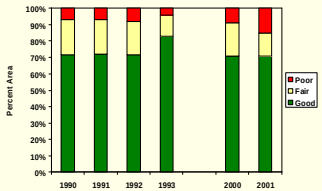

Minimum DO follows minimum tidal range during 3rd lunar quarter neap tide.

RI is now requiring treatment plants to reduce N loading by 50%

***Initial Probability Survey Results***




**Trends in Northeast Estuaries Sediment Contamination**




In the Northeast, no change in the % area poor for: sediment contamination, sediment toxicity, bottom layer dissolved oxygen, total organic carbon, or benthic communities

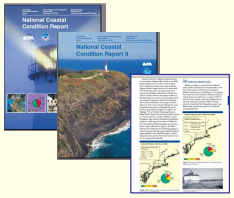
## (2) Research Goals

NCA has three major goals:

- Assessing the ecological condition of estuarine resources, based on unbiased data of known quality
- Determining reference conditions for studies on ecological responses and stressors.
- Building assessment infrastructure in states and EPA Regions.

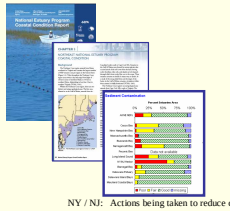
NCA is testing and demonstrating the EMAP probability survey approach nationally in diverse estuaries to ensure applicability and to establish the statistical variability of the measured parameters. NCA sampling from 2000-2006 has been completed in the U.S. Northeast. Data are being used in national, state, and estuary specific reporting. Methods are being developed to assess and compare variations in benthic communities in relation to a variety of natural and anthropogenic stressors. EMAP indicators, designs and analysis tools are being used to objectively compare conditions objectively among different estuaries based on unbiased data of known quality. Data analysis is continuing with the final National Coastal Condition report scheduled for release in 2009.

***NCA Provides Coastal Condition Reporting***



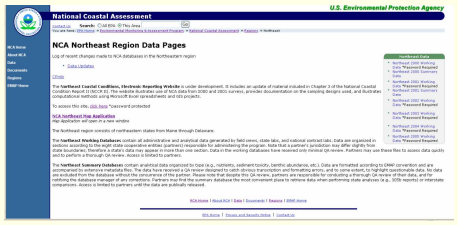

NCA creates traditional hard copy reports which summarize conditions at national and regional scales

***The NCA Reporting format has been adopted by Northeast States and other monitoring efforts such as the National Estuary Program (NEP) for reporting on estuarine conditions.***



NY / NJ: Actions being taken to reduce contaminant loading are resulting in improvements (see REMAP Poster)

***Data Management***




NCA compiles sampling data in disparate formats from state and national labs, performs quality assurance and stores the data in SAS and Oracle. The data are then made available through a public password protected web page at http://www.epa.gov/emap/nca/html/regions/northeast.html

## Results/Expected Results

l Performance Goal. The condition of estuarine coastal ecosystems is determined for the US by 2006

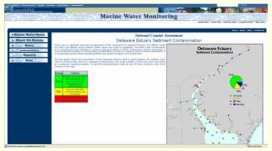
**ts:**

M - Report on the condition of coastal ecosystems in the US by 2003 - (USEPA, 2003) National Coastal Condition Report II
M - Report on the trends in condition of coastal ecosystems in the US by 2006 (USEPA, 2006). National Coastal Condition Report III

regional data analysis in support of National Coastal Condition Report IV will be completed in 2008, with NCCR IV scheduled for release in 2009.

## (5) Impact and Outcomes

The EMAP approach is being demonstrated to the EPA Office of Water, state, tribal and local agencies. The Agency can now make unbiased comparisons of conditions among estuaries, and for some analyses of change over time (for trends analysis in the Northeast, NCA data have been compared with data collected in 1990-1993 EMAP Virginia Province effort). NCA data are being used in conjunction with other more detailed estuary specific data sets, and being used to describe baseline conditions for more detailed estuary specific studies of outcomes related to estuarine management. The Long Island Sound and Chesapeake Bay programs are examples where other monitoring designs have been incorporated into the NCA sample frame. Several states (including VA, NJ and NH in the Northeast) continue to use the approaches for estuarine surveys even without continued NCA funding. Improvements in information storage and transfer are helping promote utilization of NCA information. NCA cooperators have increasing capacity and computational tools for the design and analysis of information from statistical monitoring designs, to investigate data structures in more localized areas, for more complete CWA reporting.




***NJ DEP Online Reporting***

**Direct technical support to Northeast States in conjunction with other Federal Agencies:**

Demonstrated functionality of website to 11 States (ME south thru MD & VA)

- used website for data transfer & QA,
- use of and adaptation of analysis tools by States (Excel workbook calculators, ArcMap project(s)

How NCA data can be easily used with other information

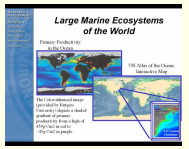
- Model output from USGS *New England Sparrow Mode*
- GIS coverages on impaired waters list

**EXPECTED OUTCOME:**

Others will be able to reproduce and adapt our NCA analyses:

- Diverse local applications (e.g. State level analyses)
- Comparing targeted sampling data to NCA regional baseline & reference conditions.
- Using NCA data for reporting on regional pollution in Large Marine Ecosystems, or biogeographic provinces

Contribute to improvements in restoring and protecting the nation's estuaries (improvement in "outcomes").




***Ecosystem Health and Pollution Reporting Module***

## Ongoing and Future Directions

**xt Steps:**

Use of computational tools and website in other U.S. coastal regions

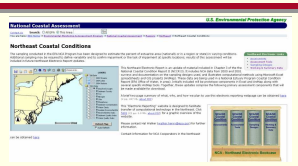
Potential use of website by other Federal agencies

NOAA: NOA and NMFS for reporting on pollution in Large Marine Ecosystems in the U.S.

Adaptation of computational tools for assessment of New England Lakes and Ponds (REMAP)

Promotion of **Electronic Reporting & Reproducible Research**, making use of the EPA Environmental Science Connector

Projects include electronic reports which allow for compilation of dynamic graphics and statistics now only available in static format




Future projects will include the development of ArcGIS Server application which will provide spatial analysis tools through a web browser.

Also being developed are traditional statistical tools, and R based conditional probability tools that will be downloadable from the web.

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