

CONDUCTING A NATIONAL ASSESSMENT

Why conduct a national assessment?

- Nearly all estuaries in the United States show signs of eutrophication.
- Experts are concerned that eutrophication and associated symptoms are increasing.
- A national assessment allows for a more informed method of creating, evaluating, and updating management plans that address eutrophication.

Coastal eutrophication is a widespread national problem, though scale, intensity, and impact vary widely (Bricker et al. 1999). Whether nutrient additions result in degraded water quality depends on the extent of inputs and an estuary's susceptibility. As changes in conditions are evaluated and tracked to try to prevent further degradation, monitoring and assessment become increasingly important. A national assessment is needed to synthesize local and regional information on the eutrophic status of systems (Figure 1.2).

For several decades, scientists and natural resource managers have worked to understand, document, and improve the complex, adverse ecosystem changes associated with eutrophication. Of late,

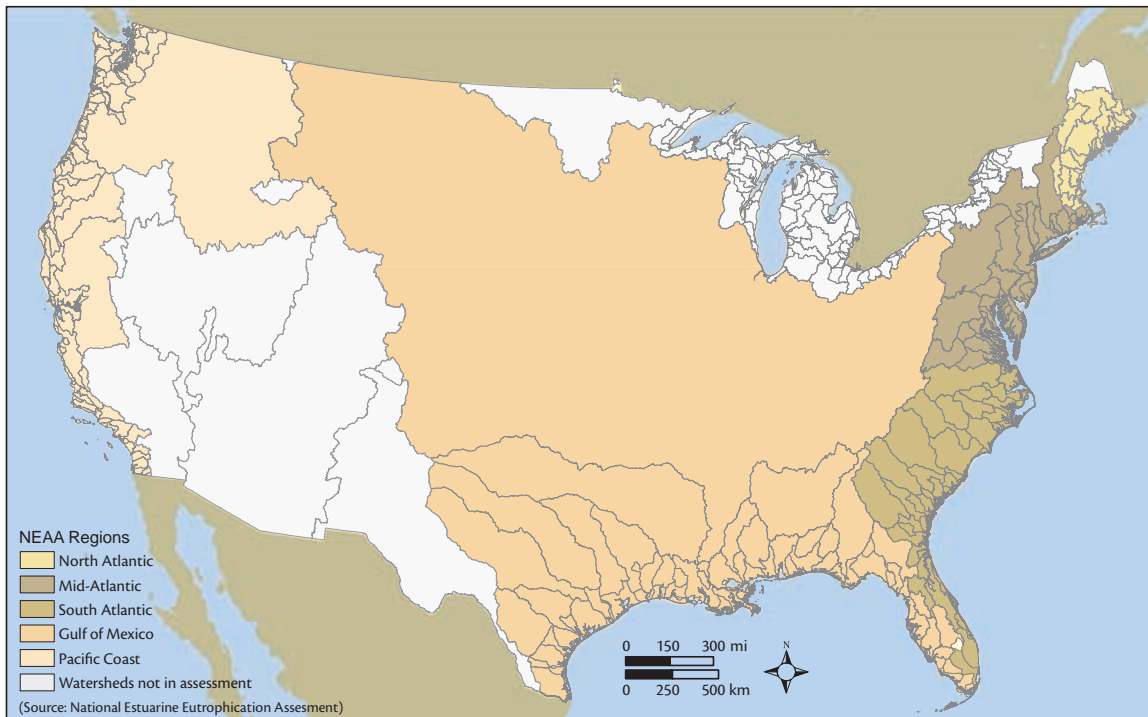


National Oceanic and Atmospheric Administration

Long Island Sound, one of the many estuaries in the United States exhibiting eutrophic symptoms.

the consequences of these symptoms have become more apparent, including extensive SAV loss, the associated loss of fish habitat, worsening episodes of low dissolved oxygen in coastal systems, and longer-lasting or first-time nuisance/toxic algal blooms. These issues have led to legislative action such as the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (reauthorized in 2004; P.L. 105-383), that calls in part for the research and assessment of hypoxia and harmful algal blooms as well as the development of mitigation strategies.

Figure 1.2. The five regions in the National Estuarine Eutrophication Assessment.



The National Estuarine Eutrophication Assessment groups the Nation's estuaries into five geographic regions. The unique features of the water bodies in these regions influence the expression of eutrophic symptoms.

UPDATING THE ASSESSMENT

Why create an update?

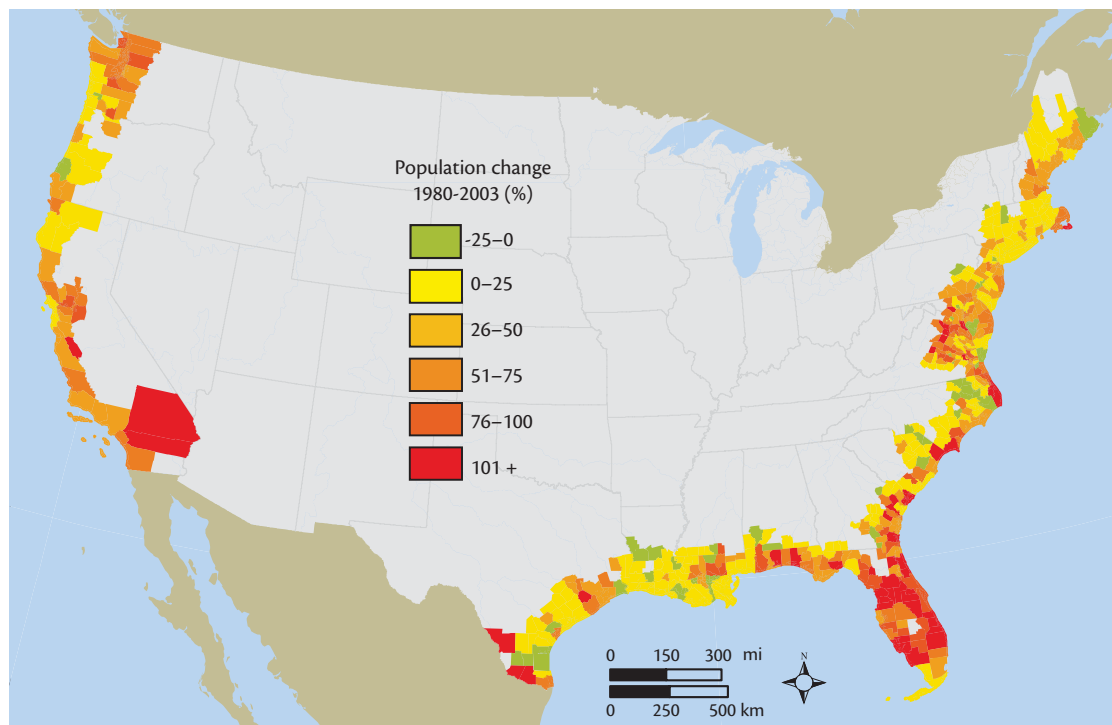
An update to the 1999 assessment will:

- Identify locations of changes that have occurred;
- Determine what influenced these changes; and
- Increase scientific, management, and community involvement.

Given the rising concern of the scientific community and the public about the health of U.S. estuaries, the National Oceanic and Atmospheric Administration (NOAA) began to evaluate the need for a more deliberate National response to the problem of estuarine eutrophication in the early 1990s. The *National Estuarine Eutrophication Assessment*, a survey of the extent, severity, types, and probable causes of eutrophic symptoms, was conducted in the early 1990s and released by Bricker et al. in 1999. The results showed that for 84 of 138 systems included in the study, overall eutrophic conditions were at a moderate to high level, occurring along all coastlines. Sixty-nine of these systems also showed impairment of everyday uses, including swimming and consumption of fish due to lower abundance or quality. Alarming, experts contributing to the report suggested that conditions in 86 of the 138

estuaries were expected to become worse by the year 2020 due to high-density populations and significant population increases currently occurring or expected in coastal areas. This is of particular concern for nutrient-sensitive estuaries with assimilative capacities that may not accommodate new loading scenarios. Only eight estuaries where management measures had been or were about to be implemented were projected to improve with time. The poor prognosis for the health of the Nation's estuaries suggested that regular updates were needed to assess the health of these systems and to evaluate the success of management strategies (Bricker et al. 2004). This update is an attempt to look at the changes in estuaries that have occurred since the 1999 assessment. It should be noted that two new systems, Wells and Waquoit Bays, have been added to this assessment. Considering the significant increase in U.S. coastal and upstream population density, this assessment is vital (Figure 1.3). The updated assessment focuses on evaluating where and why eutrophic changes have occurred and what can be done to prevent future worsening conditions. In addition, it is hoped that public involvement will be stimulated by presenting the best available information about these problems to concerned citizens, resource managers, and policy makers.

Figure 1.3. Percent population change in coastal counties from 1980–2003.



Population growth is occurring rapidly in coastal regions, and consequently increasing nutrient inputs and stress on coastal ecosystems.

DEVELOPING AN ONLINE TOOL FOR ASSESSMENT UPDATES

What can the new online survey do?

- Provide researchers, legislators, and concerned citizens access to a resource library.
- The online survey also allows researchers to enter their own data that automatically generates analytical outputs including:
 - A conceptual diagram of eutrophication in the system;
 - A spreadsheet of data;
 - Printable, site-specific graphics; and
 - A summary of data and graphics in PDF form.

Online survey

The online survey allows participants to enter specific data to be automatically calculated into symptom expressions. In contrast, the original 1999 report involved gathering data in the form of a survey of categorical responses (e.g., low, medium, high). It was necessary to use categorical responses because resources were unavailable for collection, storage, and processing of data for 138 systems. However, the new survey provides a quick, cost-effective method for gathering synthesized information, allowing access to the original data sources. The eutrophic symptoms selected for inclusion represent the most easily

Figure 1.4. One of the improvements to the survey was an accessible online survey with automatically generated data products.

After logging on and entering data, participants can review automatically generated analytical tools including a conceptual diagram illustrating the conditions in the participant's system, printable graphics, and a summary of their data. Participants can also access resources such as the estuary database, conceptual diagrams, publications, and an image library.

Log onto <http://ian.umces.edu/nea>

Login Required

User ID: [Sign up / register](#)

Password: [Retrieve User ID / Password](#)

Select estuary

Select Estuary

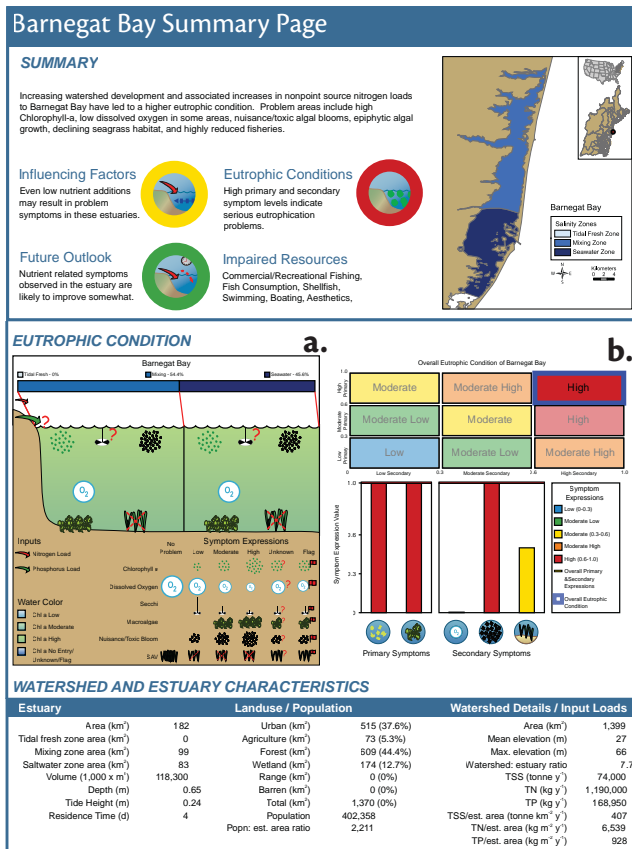
You can select an estuary either from the drop down list or you can use the Estuary Map Selection Tool. The order of the estuaries in the drop-down list can be changed by selecting an option from the first drop-down menu.

Alphabetical Confirm Estuary Change

Barnegat Bay

Review outputs

Enter data



Water body Conditions

Chlorophyll a

Salinity Zone	1999	2004	Expression
Freshwater	Expression	Parameter	Value
	High	Concentration (µL ⁻¹)	<input type="text"/>
		Spatial Coverage	<input type="button" value="Choose one"/>
Mixing	Expression	Parameter	Value
	High	Concentration (µL ⁻¹)	<input type="text"/>
		Spatial Coverage	<input type="button" value="Choose one"/>
Seawater	Expression	Parameter	Value
	Moderate	Concentration (µL ⁻¹)	<input type="text"/>
		Spatial Coverage	<input type="button" value="Choose one"/>