Developing Complementary Programs to Assess Monitoring Condition: The National Coastal Assessment and Oceans.US

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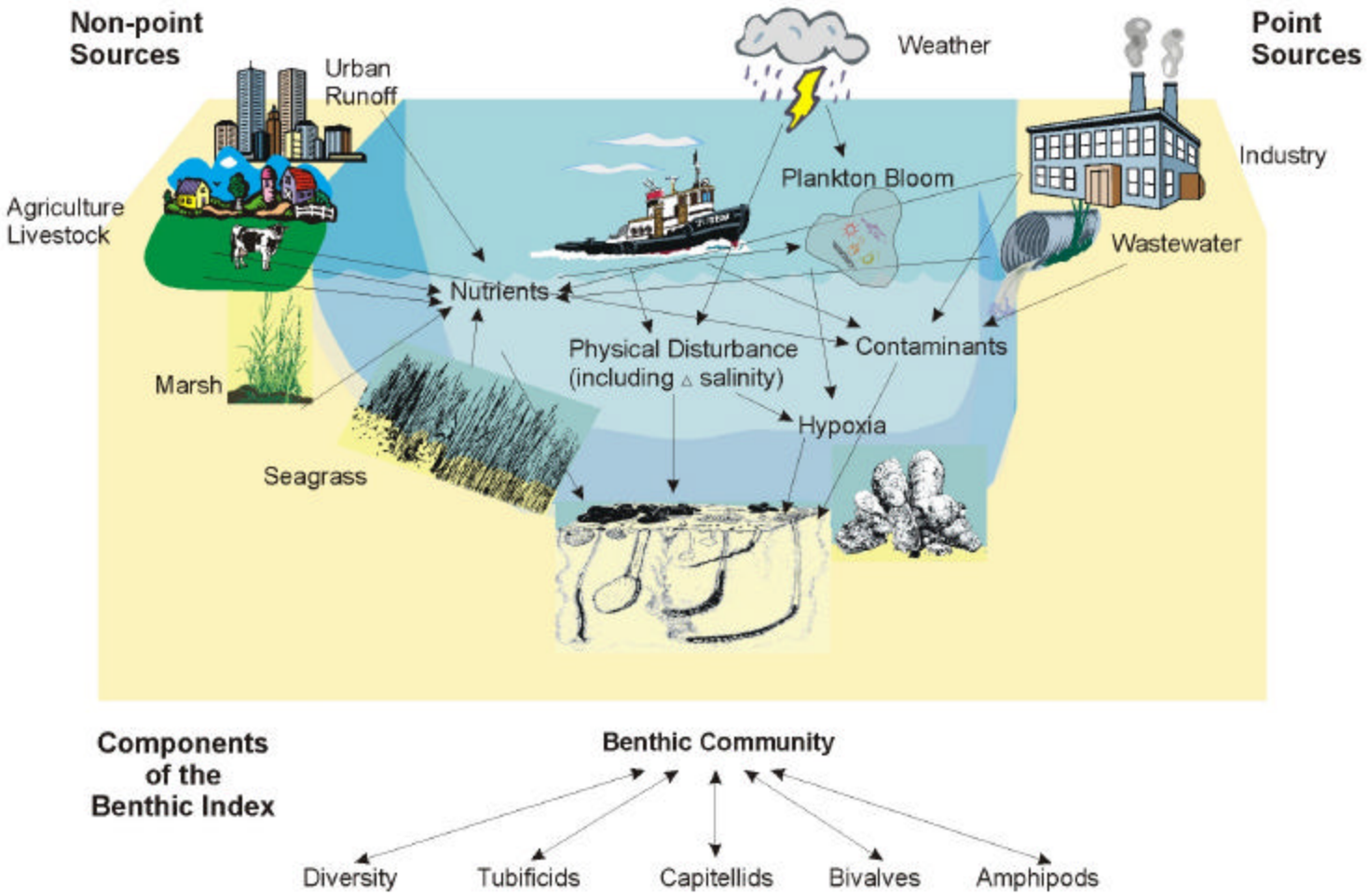
National Coastal Assessment Goal

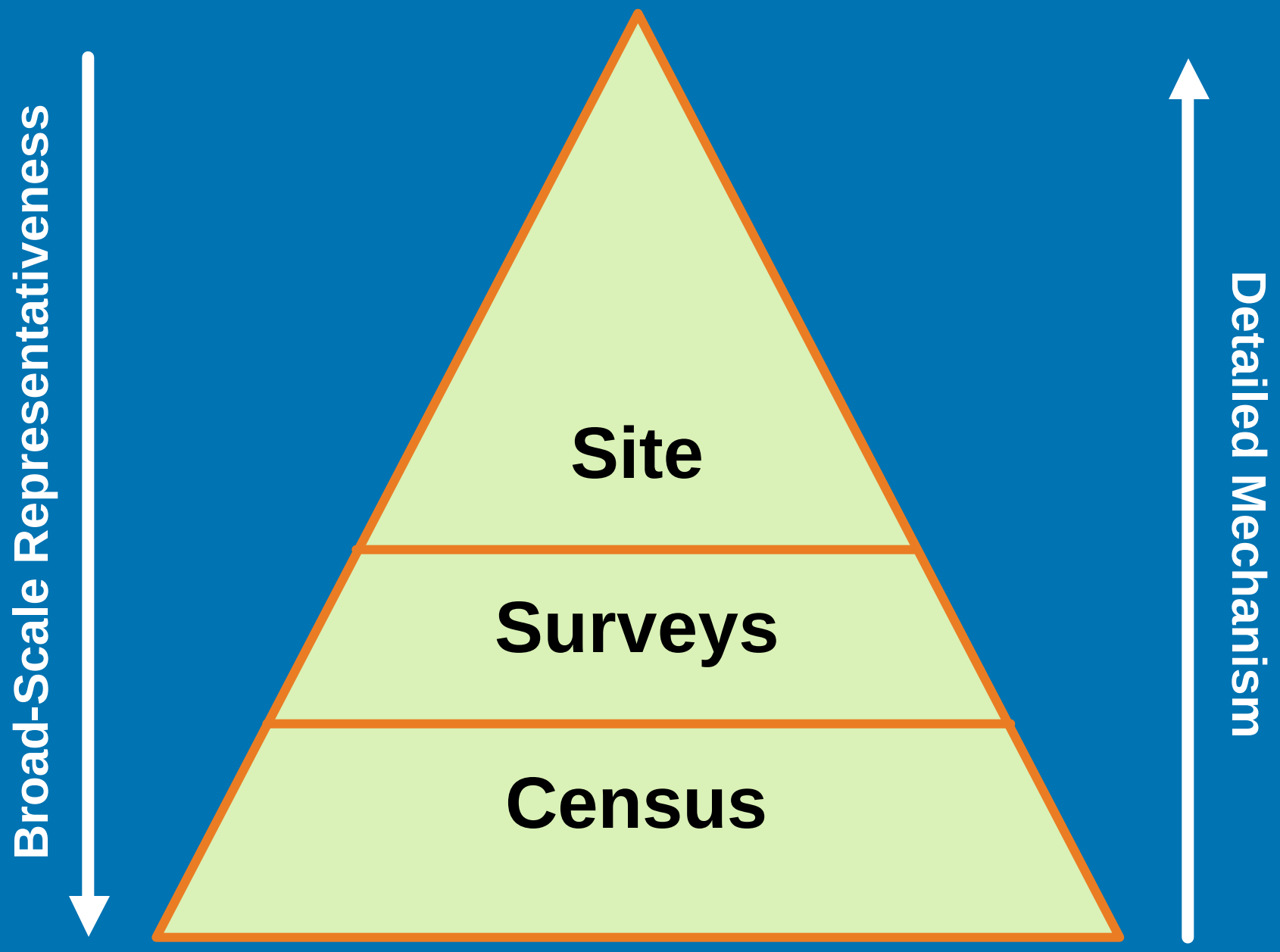
- Build the scientific basis, and the local, state and tribal capacity, to monitor for status and trends in the condition of the Nation's coastal ecosystems.

National Coastal Assessment Uncertainties/Questions

- What is the status, extent, and geographical distribution of ecological resources?
- What proportions of these resources are declining or improving? Where? At what rate?
- What factors are likely to be contributing to declining conditions?
- Are pollution control, reduction, mitigation, and prevention programs achieving overall improvement in ecological condition?

Pictorial Conceptual Model




Broad-Scale Representativeness
Site
Surveys
Census
Detailed Mechanism

Probability Survey

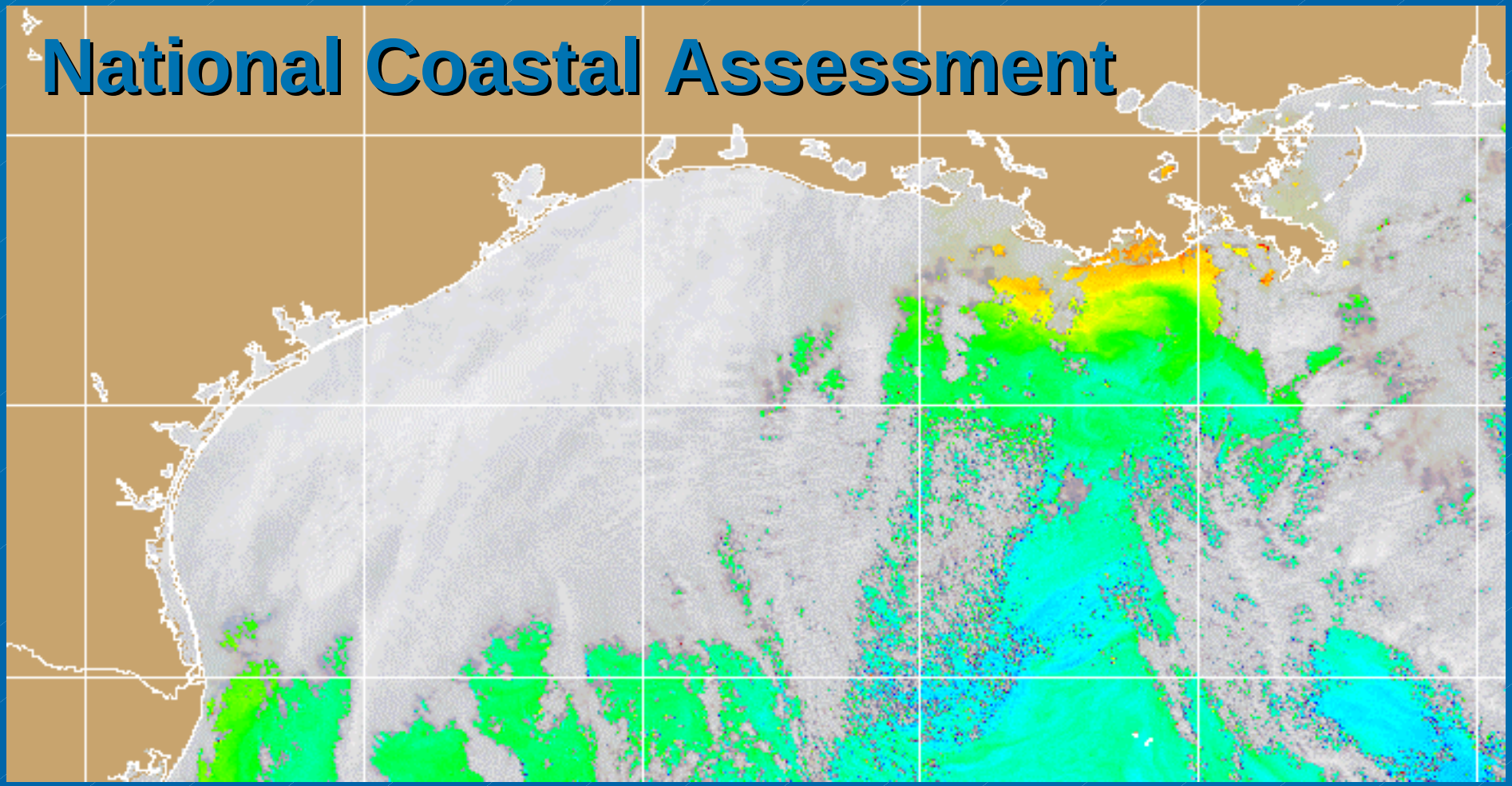
- Estimate extent and condition of resource
- Characterize trends in extent and condition of resource
- Represent spatial patterns

. . .with known certainty!

Target Population

- Target population denotes the aquatic resource about which information is wanted.
- Requires a clear, precise definition
  - Must be understandable to users
  - Field crews must be able to determine if a particular site is included
- Example – Estuaries
  - Continuous, extensive resource (2-dimensional)
  - Coastal waters that extend from saltwater-freshwater interface to the mouth of estuarine drainage basin

National Coastal Assessment



Target Population - Conceptual

all estuarine drainage areas from head of tide to mouth of estuary where it meets the Gulf of Mexico.

Sampling Stations - National (1997-2000)

Monitoring Design Information

- WWW.EPA.GOV/WED click on EMAP Monitoring Design and Analysis
  - Overview of survey design
  - Bibliography
  - Design and analysis information
- EMAP Design Team
  - Works with States, Tribal Nations, EPA Regions, Other Federal Agencies
  - Members from ORD ecology divisions, NERL, Office of Water
  - Contact: Web page above

Response Design

- You want me to do *what…, where…*?

Indicator Type	Indicator
Exposure	Nutrients Sediment Contaminants Sediment Toxicity Dissolved Oxygen concentration Contaminants in fish and shellfish
Response	Benthic community composition Benthic abundance Fish community composition Pathology in Fish
Habitat	Percent light transmittance Salinity, temperature, pH Percent silt-clay

Training

United States Environmental Protection Agency

Office of Research and Development Washington, DC 20460

EPA/620/R-01/002
May 2001

EPA

National Coastal Assessment

Quality Assurance Project Plan 2001 - 2004

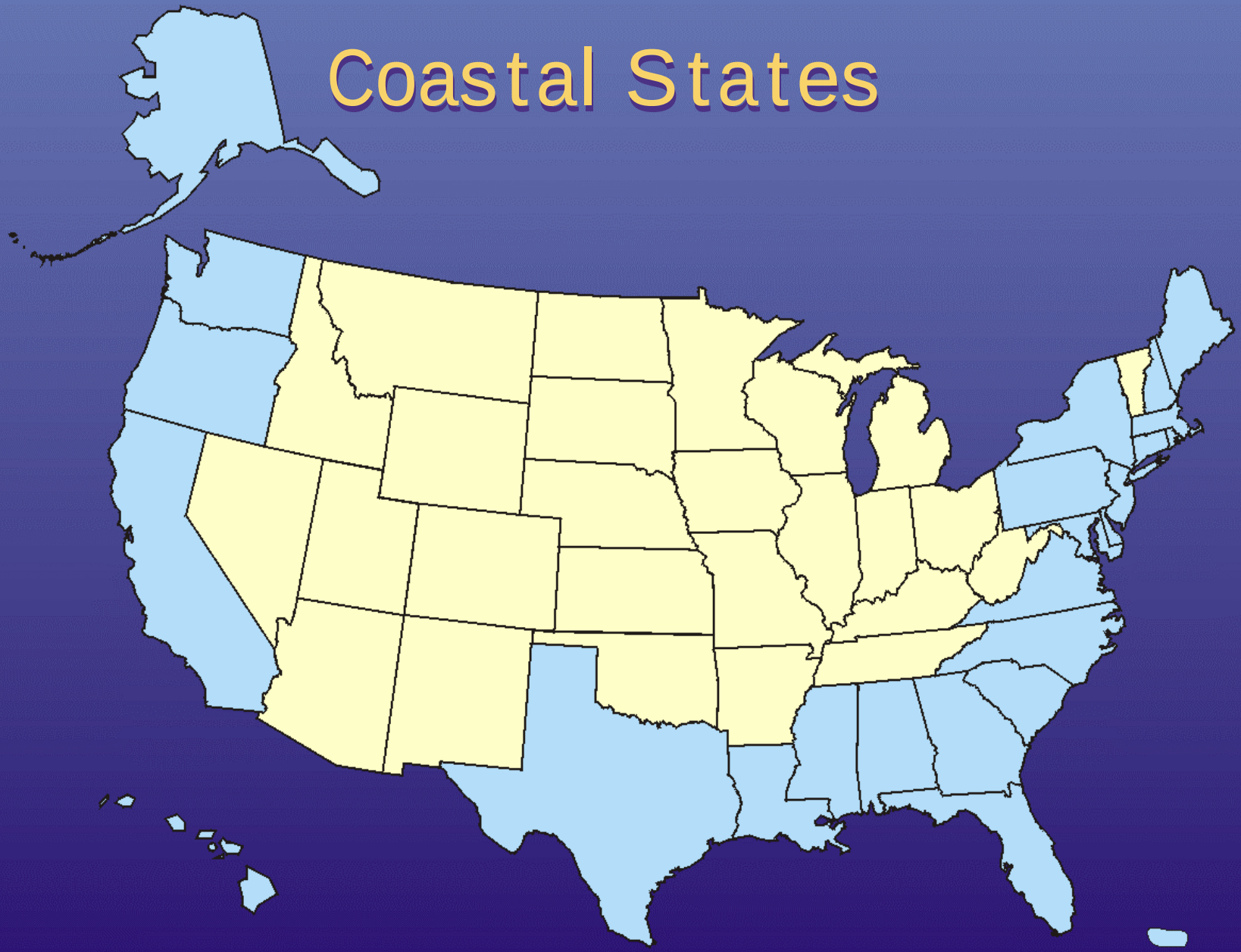
COASTAL 2000 EPA/EMAP

EMAP

Environmental Monitoring and Assessment Program

RESEARCH & DEVELOPMENT

Coastal States

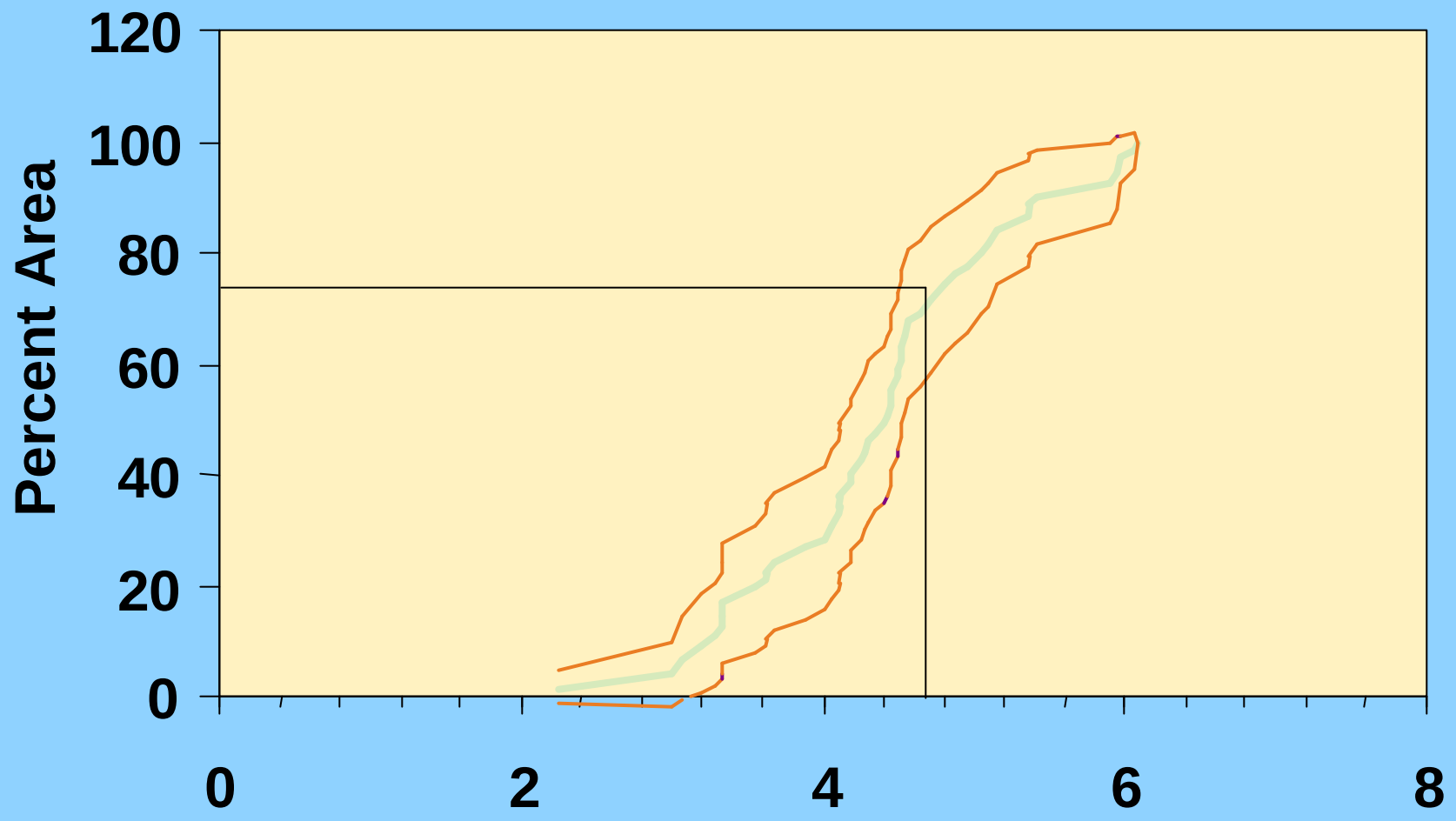


Coastal Estuarine Sampling

	1999	2000	2001	2002
Maine	-	35	35	35
New Hampshire	-	50	50	50
Massachusetts	-	35	35	35
Rhode Island	-	35	35	35
Connecticut	-	50	50	50
New York	-	35	35	35
New Jersey	-	50	50	50
Delaware	-	35	35	35
Maryland	-	100	100	100
Virginia	-	100	100	100
North Carolina	-	50	50	50
South Carolina	-	60	60	60
Georgia	-	50	50	50
Florida	-	180	180	180
Alabama	-	98	98	98
Mississippi	-	50	50	50
Louisiana	-	50	50	50
Texas	-	50	50	50
California	80	113	-	50
Oregon	80	50	-	50
Washington	50	225	-	50
Alaska	-	-	50	-
Hawaii	-	-	80	-
Puerto Rico	-	50	-	-
Total	210	1551	1343	1368

Co-Occurrence of National Coastal Assessment Sampling Sites in NEPs and Additional Sites for Biennial Estimates

National Estuary Program	Sites in NEP Watershed	Additional Sties in NEP Watershed	Total Sites in NEP for 2-year Period
Albemarle-Pamlico	67	0	67
Barataria-Terrebone	21	9	30
Barnegat Bay	19	11	30
Buzzards Bay	16	14	30
Casco Bay	12	18	30
Charlotte Harbor	46	0	46
Coastal Bend	30	0	30
Columbia River	80	0	80
Delaware Estuary	52	0	52
Delaware Inland Bays	26	4	30
Galveston Bay	15	15	30
Indian River Lagoon	72	0	72
Long Island Sound	48	0	48
Maryland Coastal Bays	56	0	56
Massachusetts Bay	45	0	45
Mobile Bay	90	0	90
Morro Bay	2	30	32
Narragansett Bay	56	0	56
New Hampshire	80	0	80
NY/NH Harbor	36	0	36
Peconic Bays	13	17	30
Puget Sound	71	0	71
San Francisco Bay	50	0	50
San Juan Bay	8	30	38
Santa Monica Bay	10	20	30
Sarasota Bay	17	13	30
Tampa Bay	47	0	47
Tillamook Bay	30	0	30



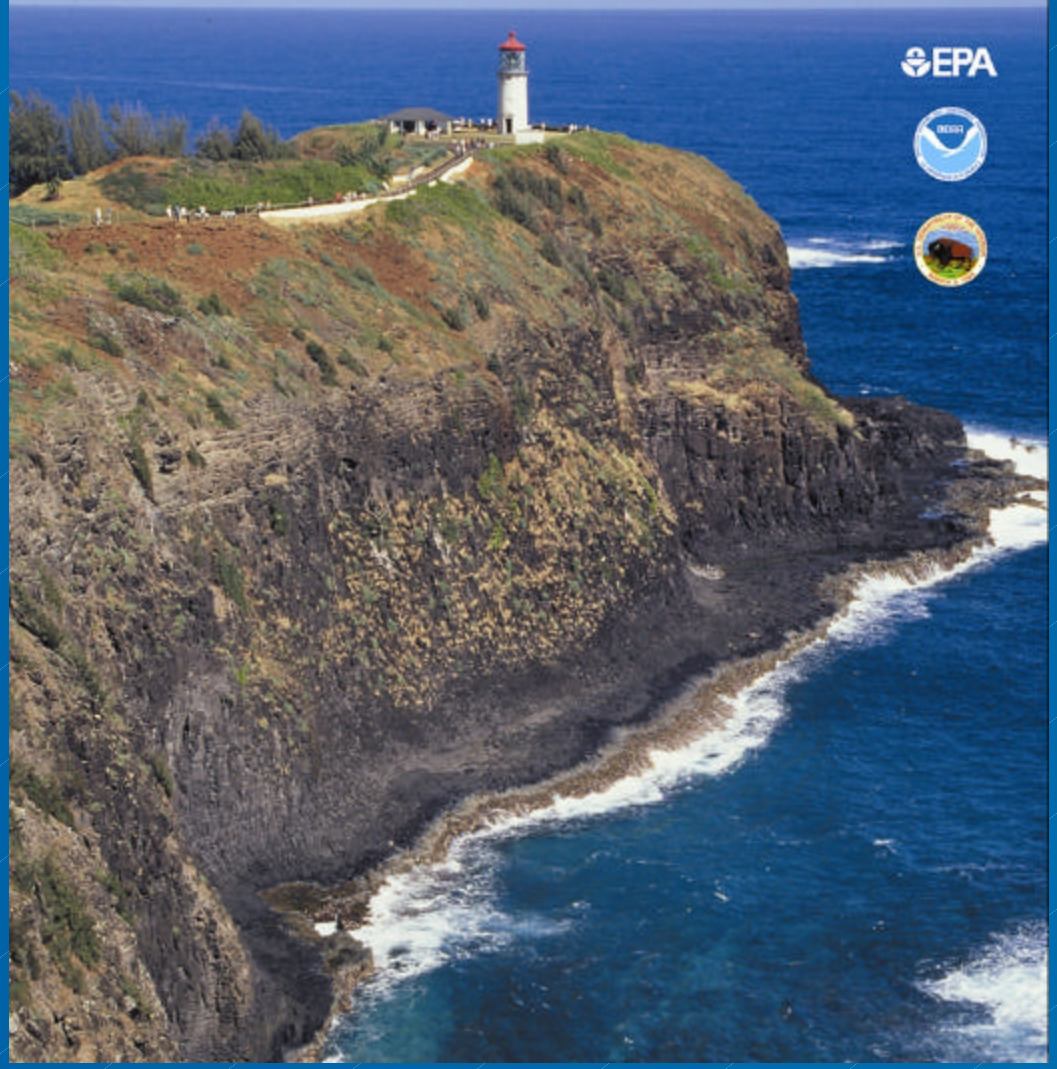
Estimate the cumulative total (or proportion) of a resource class with an indicator of condition less than or equal to a specified value (e.g., the proportion with indicator values less than or equal to some criteria)

United States
Environmental Protection
Agency

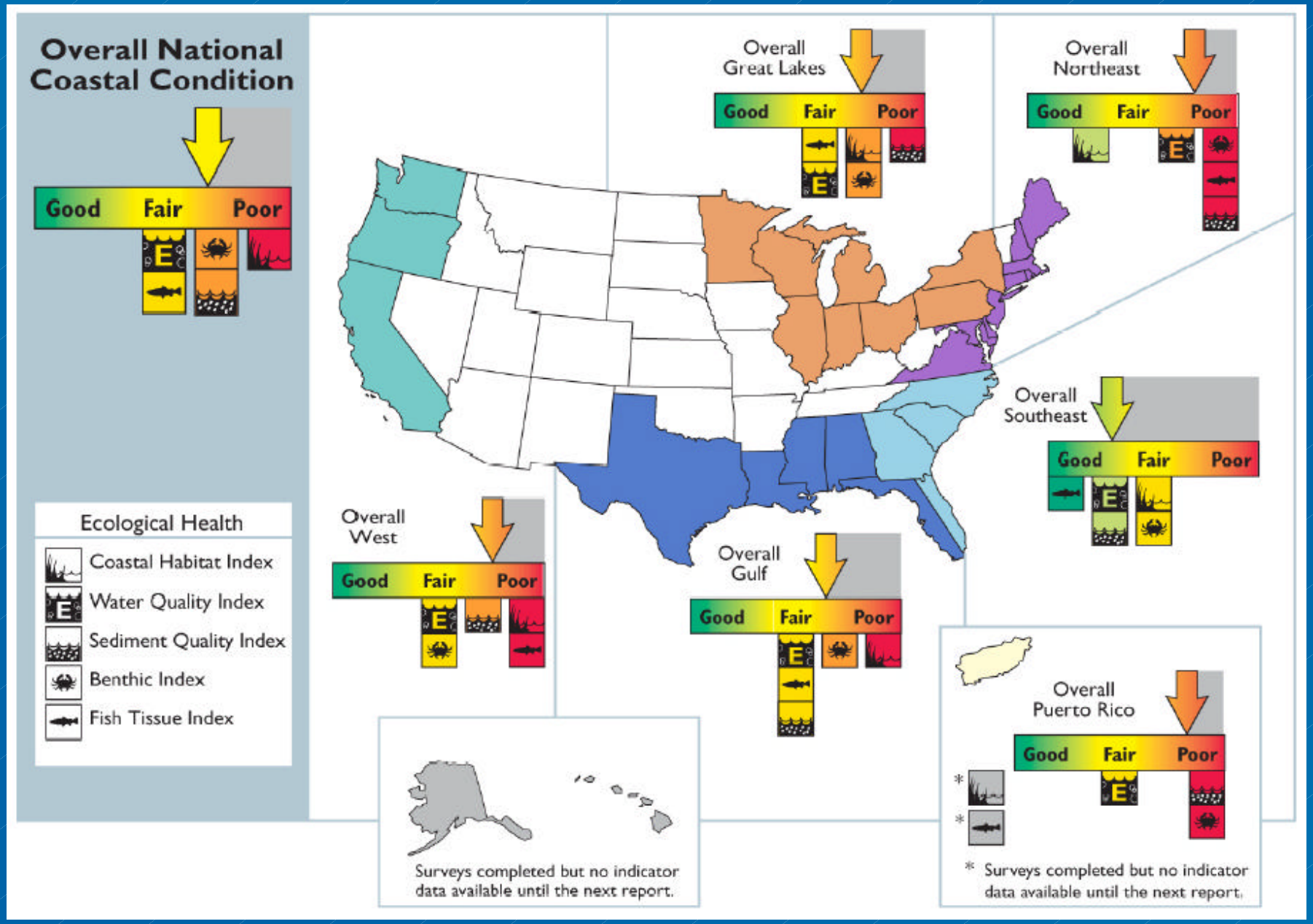
Office of Research and Development/
Office of Water
Washington, DC 20460

EPA-620/R-03/002
September 2004
www.epa.gov/owow/oceans/NCCR/index

Draft National Coastal Condition Report II

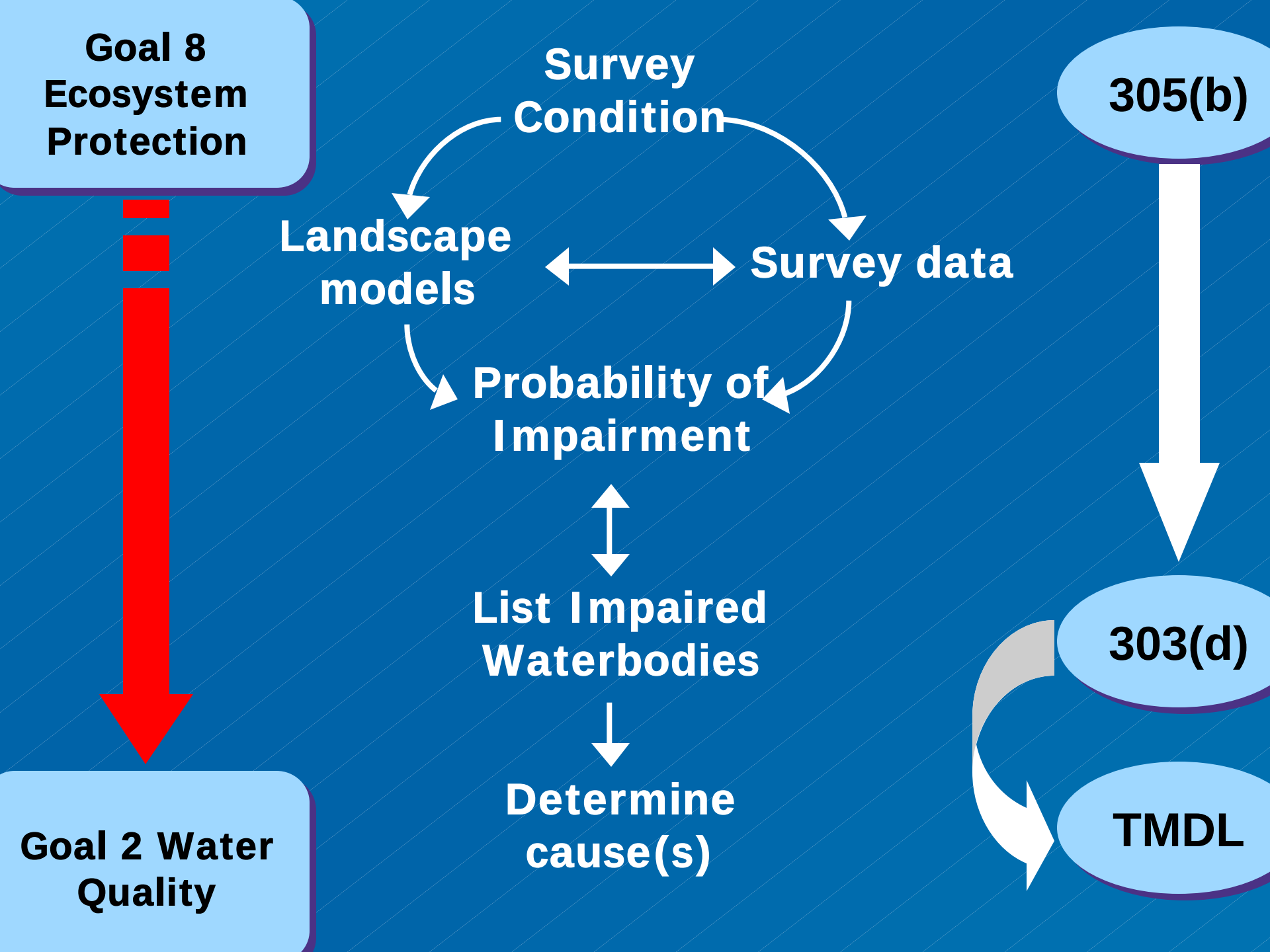


RESEARCH & DEVELOPMENT


Overall National Coastal Condition
Good
Fair
Poor
Ecological Health
Coastal Habitat Index
Water Quality Index
Sediment Quality Index
Benthic Index
Fish Tissue Index
Overall Great Lakes
Good
Fair
Poor
Overall Northeast
Good
Fair
Poor
Overall Southeast
Good
Fair
Poor
Overall West
Good
Fair
Poor
Overall Gulf
Good
Fair
Poor
Surveys completed but no indicator data available until the next report.
Overall Puerto Rico
Good
Fair
Poor
* Surveys completed but no indicator data available until the next report.

The Big Five

- There are five generic questions posed by decision-makers and the public:
  - How big is the problem ?
  - Is it getting better or worse ?
  - What's the cause ?
  - What can be done about it ?
  - Are we making a difference ?


Goal 8 Ecosystem Protection
Survey Condition
Landscape models
Survey data
Probability of Impairment
List Impaired Waterbodies
Determine cause(s)
305(b)
303(d)
TMDL
Goal 2 Water Quality

Products

- 2001
  - National Coastal Condition Report
- 2004
  - National Coastal Condition Report II
- 2006
  - Trends in Coastal Condition
- 2000-2004
  - National Coastal Assessment Data Base (www.epa.gov/EMAP)

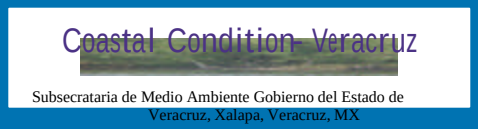
International Interactions

Stressors

- EPA provides Mexico with monitoring technologies/design
- Veracruz collects all coastal data
- Veracruz/EPA analyze and report jointly
- Veracruz uses monitoring results to address environmental issues
- Caribbean, Baltic Sea, Bay of Bengal, China Sea, Mexico

Monitoring Design

Data Collection



Reporting