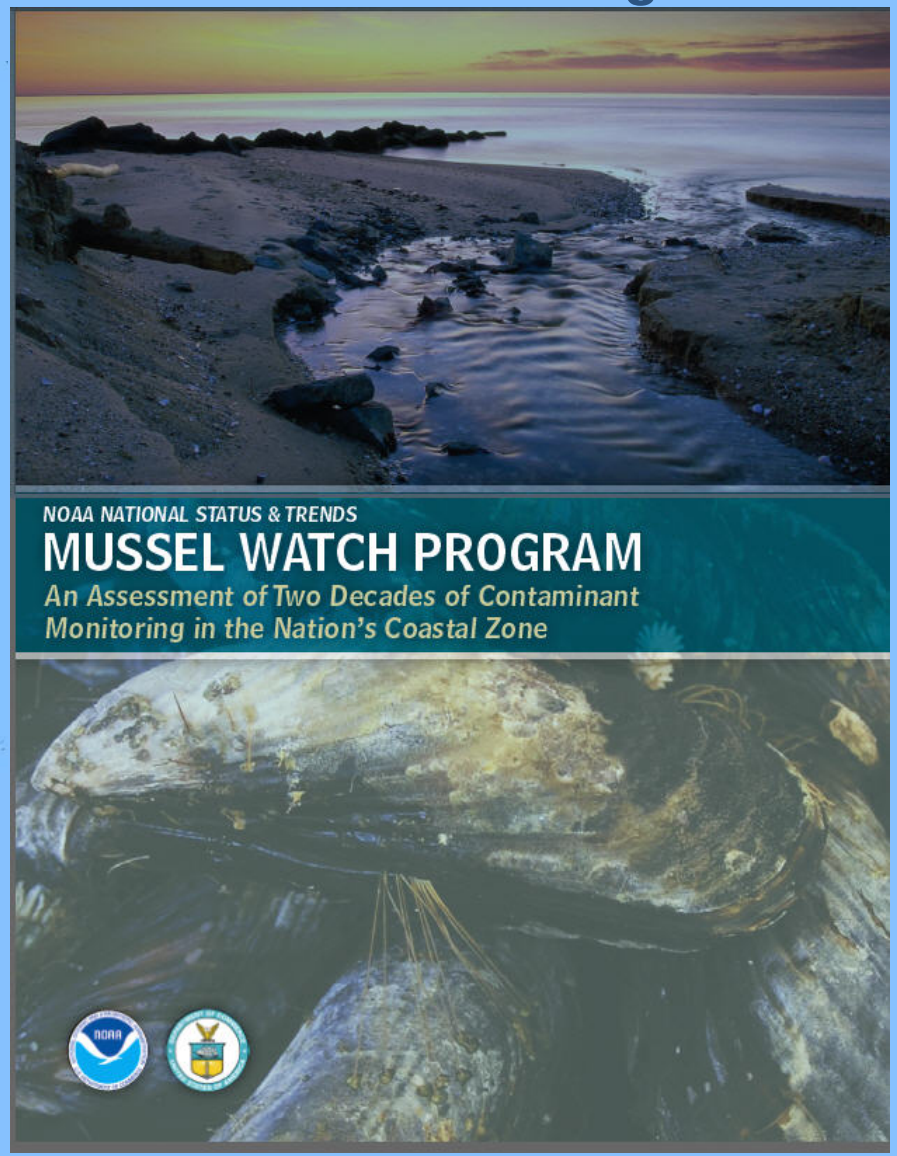
NOAA National Status and Trends Mussel Watch Program

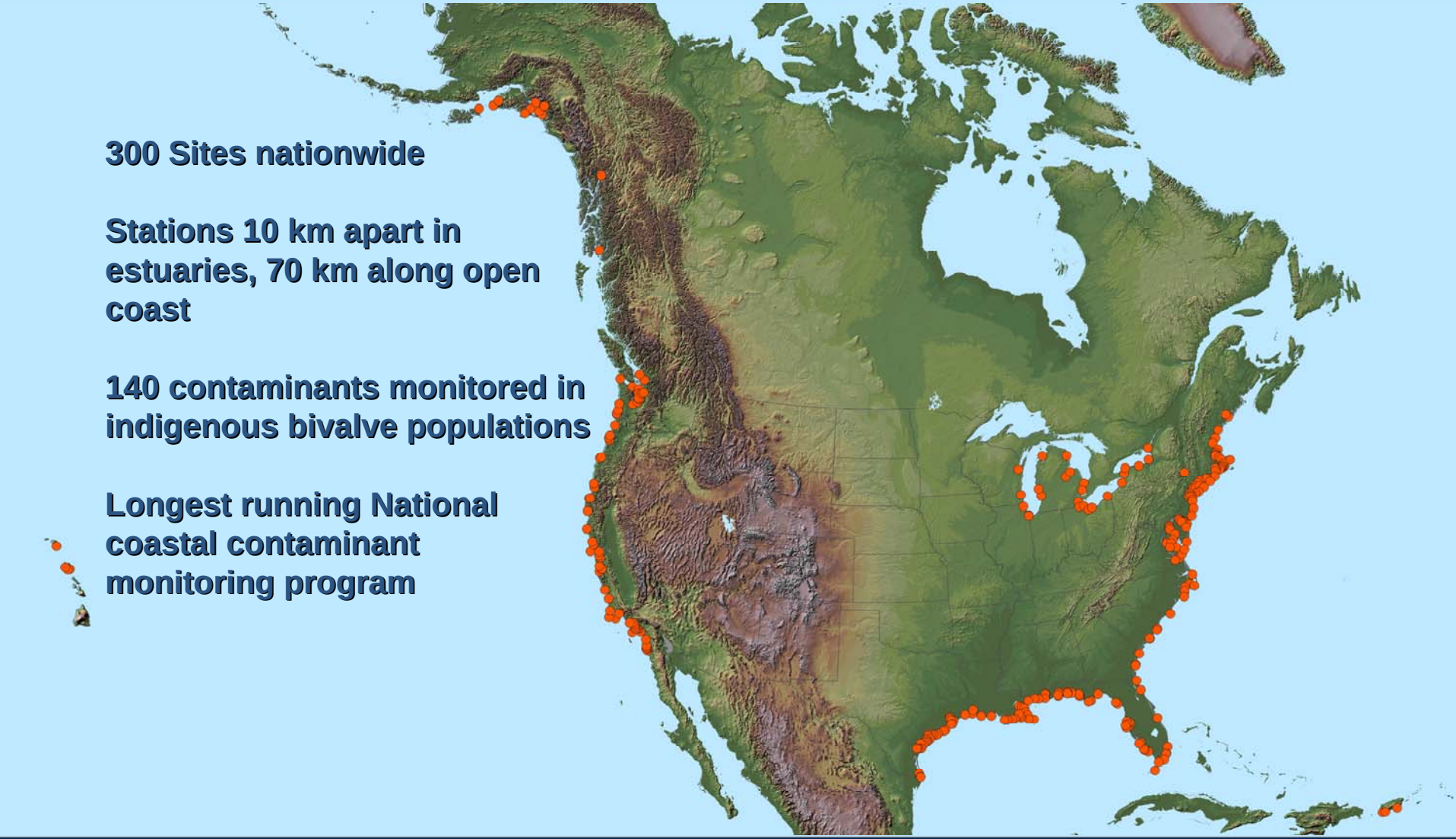


Two Decades of Contaminant Monitoring in the Nation's Coastal Zone

Presentation by
Ed Johnson, Kimani Kimbrough, Gunnar Lauenstein, John Christensen, and Dennis Apeti
Center for Coastal Monitoring & Assessment, Coastal Oceanographic Assessment, Status & Trends Branch (COAST)

NOAA National Status & Trends Mussel Watch Program

Program at a Glance



300 Sites nationwide

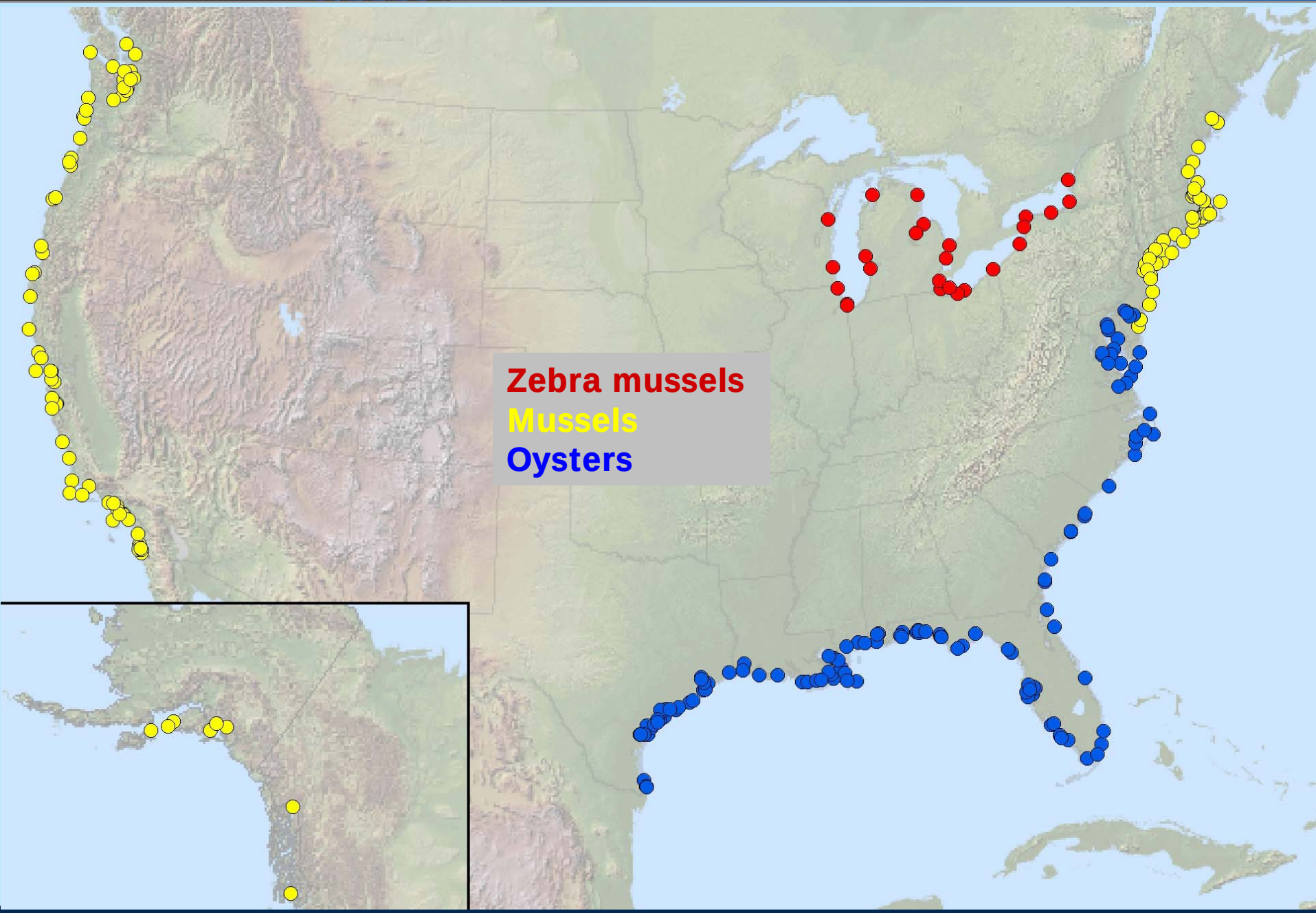
Stations 10 km apart in estuaries, 70 km along open coast

140 contaminants monitored in indigenous bivalve populations

Longest running National coastal contaminant monitoring program

Chemical Contaminants and other Parameters Measured

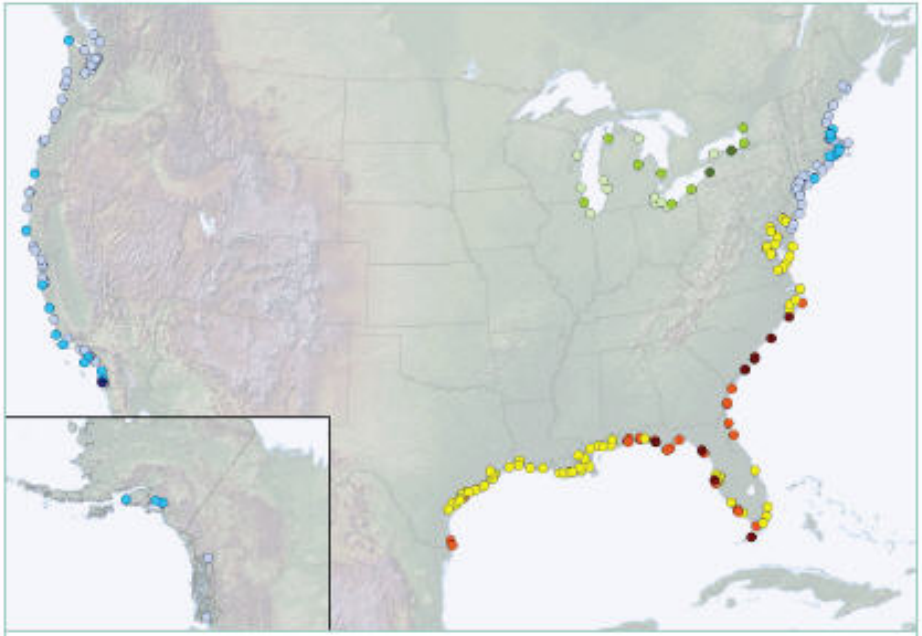
- Trace elements
- Pesticides
- PAHs
- Industrial chemicals (such as PCBs)
- Butyltins
- Ancillary environmental data (e.g. lipid content, grain size, *Clostridium perfringens*)
- Histopathology

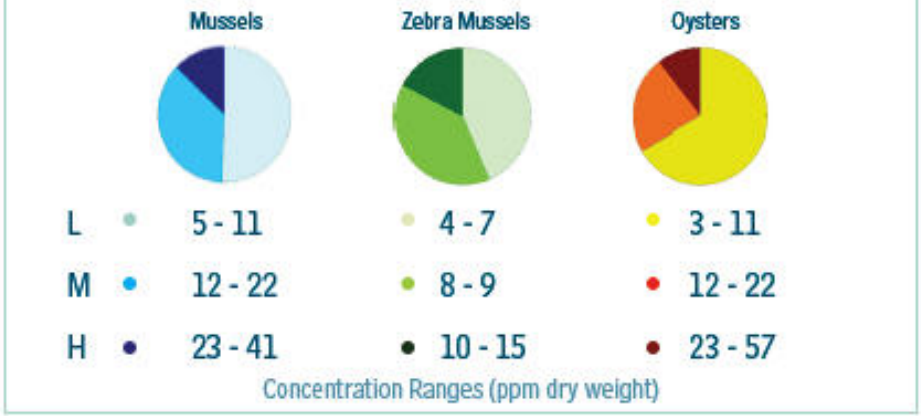

Zebra mussels
Mussels
Oysters

CONTAMINANT STATUS and TRENDS

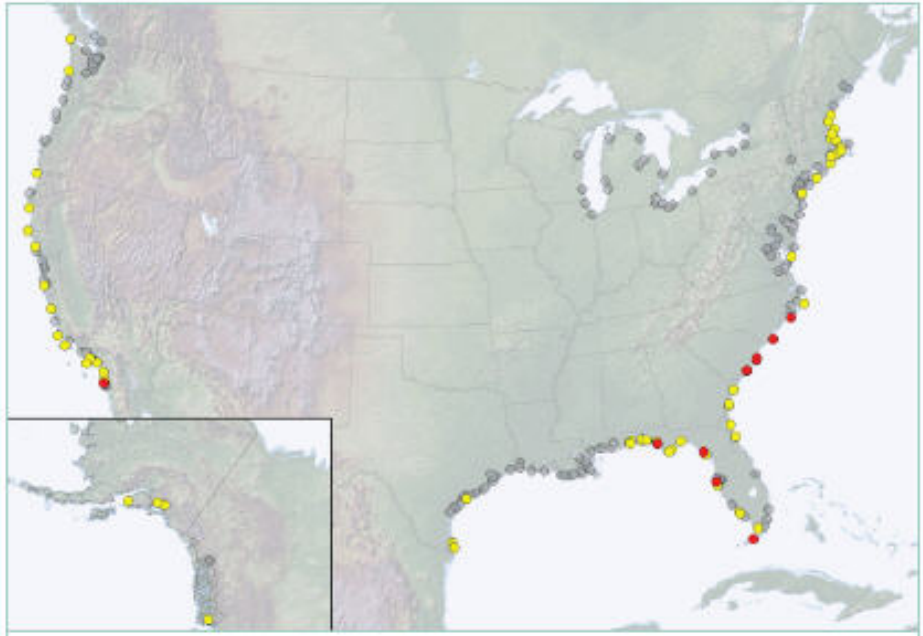
ARSENIC STATUS

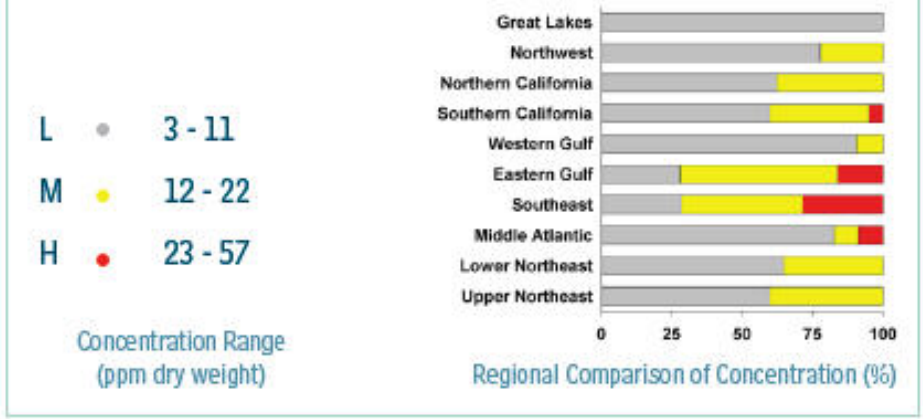
Regional Species Characterization





National Characterization



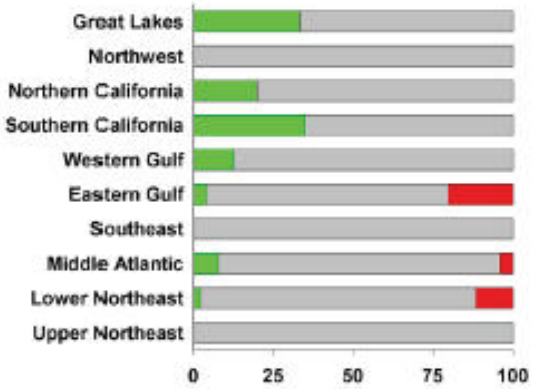


ARSENIC TRENDS

SIGNIFICANT REGIONAL TRENDS:

- Western Gulf Coast, Southern California, Great Lakes
- Eastern Gulf Coast
- Upper Northeast, Lower Northeast, Middle Atlantic, Southeast, Northern California, Northwest

SUMMARY OF SITE TRENDS MAP:

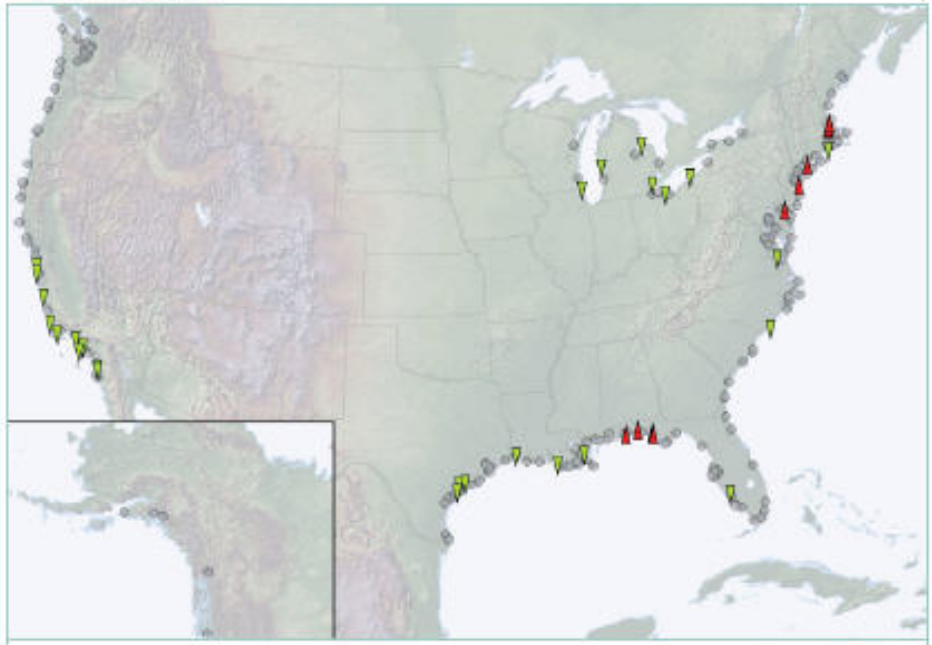


Regional Comparison of Trends (%)

Trend Percentage

SITE TRENDS

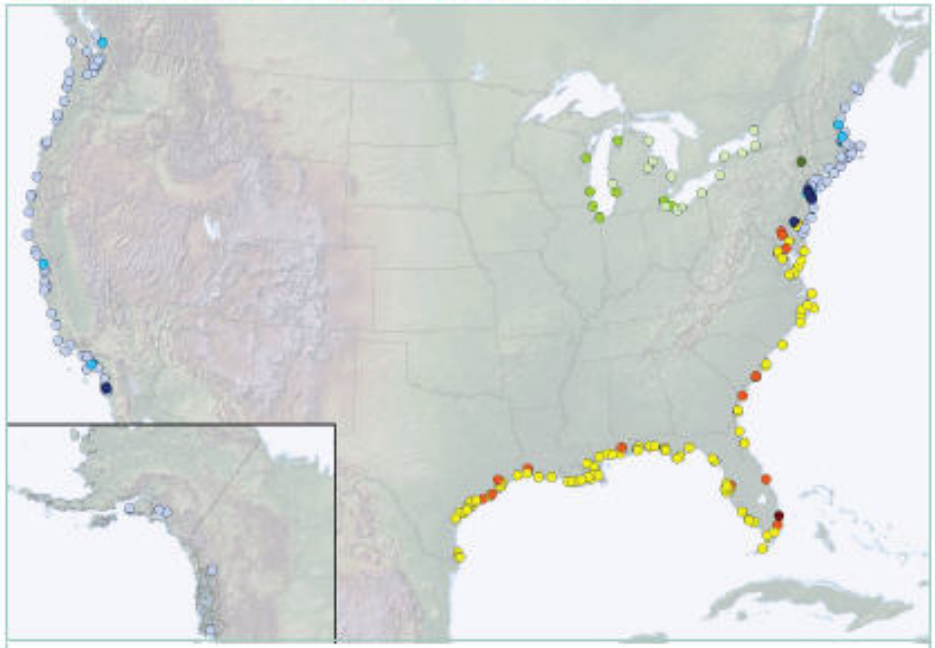
DECREASING NATIONAL TREND

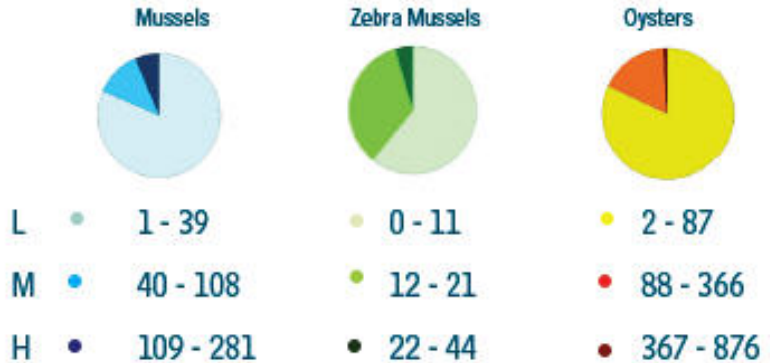


- 26 individual sites exhibited a significant decreasing trend
- 11 individual sites exhibited a significant increasing trend

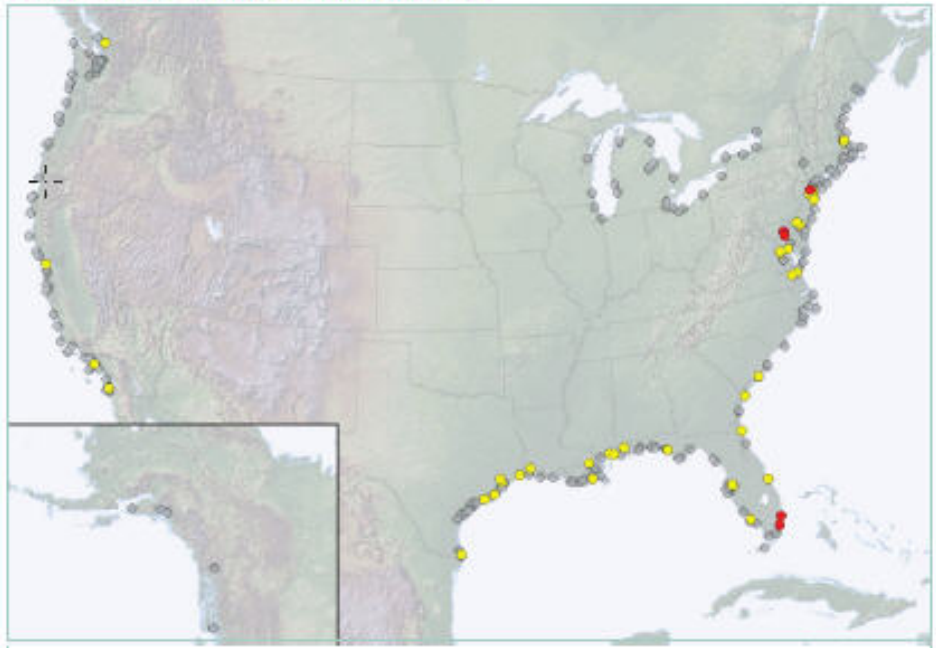
BUTYLTINS STATUS

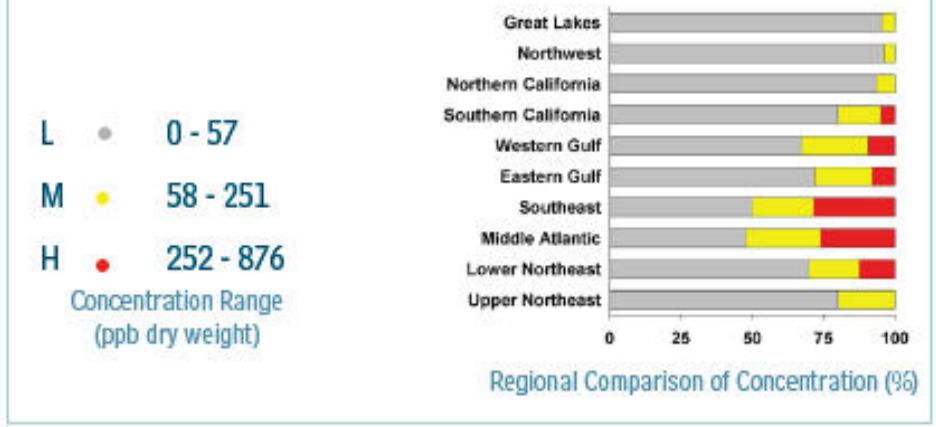
Regional Species Characterization





National Characterization



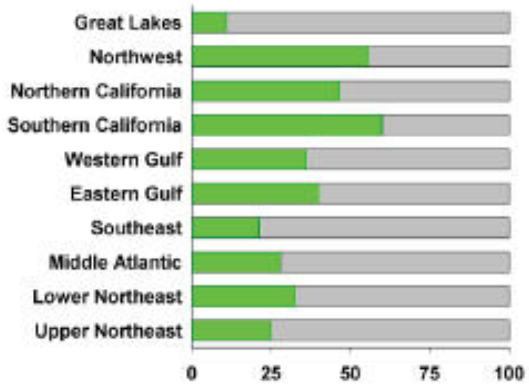


BUTYLTINS TRENDS

A Summary of Regional Trends:

- ▼ Lower Northeast, Eastern Gulf Coast, Southern California, Northern California, Northwest
- ● Upper Northeast, Middle Atlantic, Southeast, Western Gulf Coast, Great Lakes

Summary of Site Trends Map:

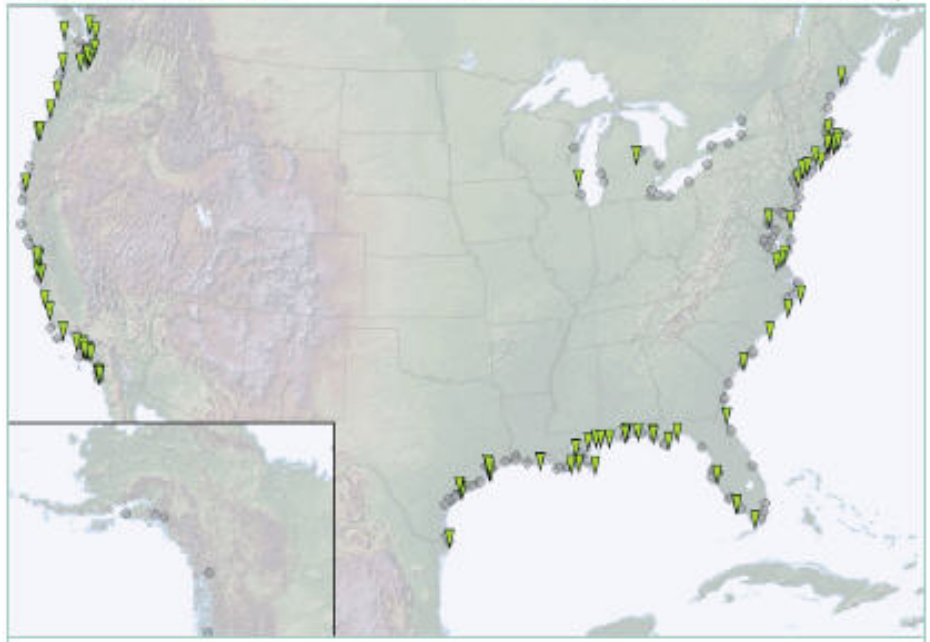


Regional Comparison of Trends (%)

Trend Percentage

National Trends

Decreasing National Trend ▼



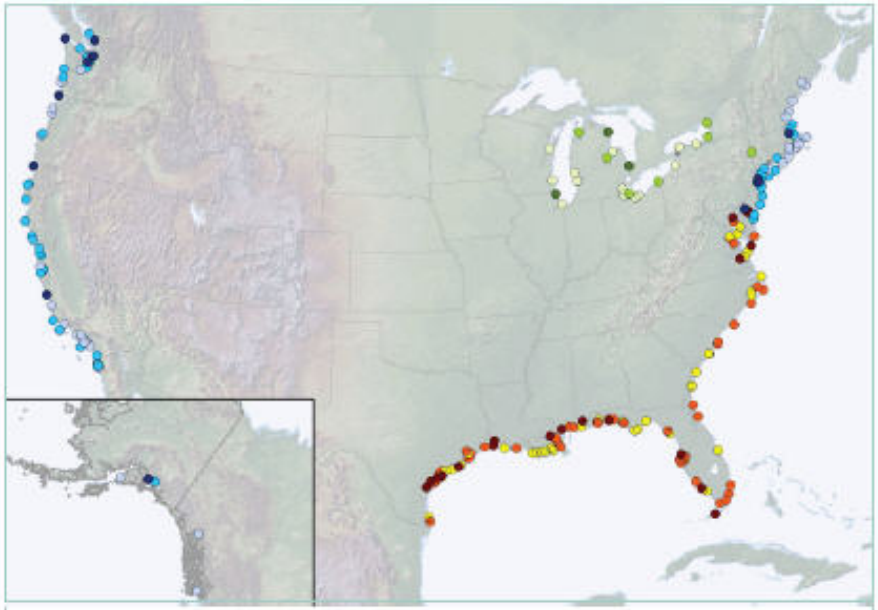
▼ 88 individual sites exhibited a significant decreasing trend

▲ 0 individual sites exhibited a significant increasing trend

NATIONAL SUMMARY

NATIONAL SUMMARY – METAL STATUS

Regional Species Characterization



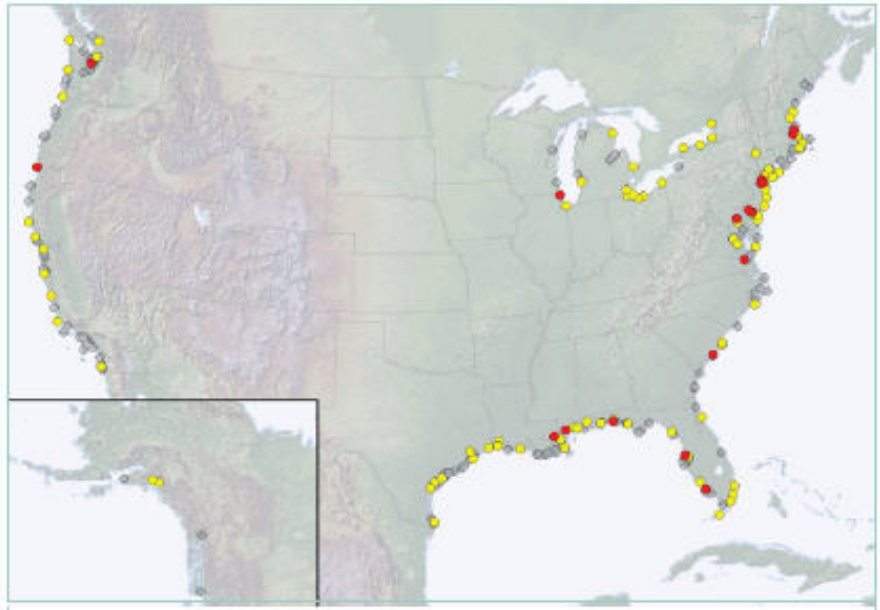
Mussels
- L
- M
- H

Zebra Mussels
- L
- M
- H

Oysters
- L
- M
- H

Regional concentrations are affected by both anthropogenic and natural phenomena.

National Characterization



National Status
- L
- M
- H

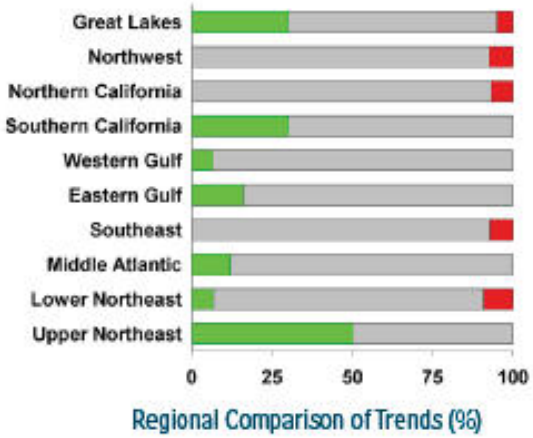
High metal concentrations are associated with urbanized and industrialized regions.

NATIONAL SUMMARY – METAL TRENDS

SIGNIFICANT REGIONAL TRENDS:

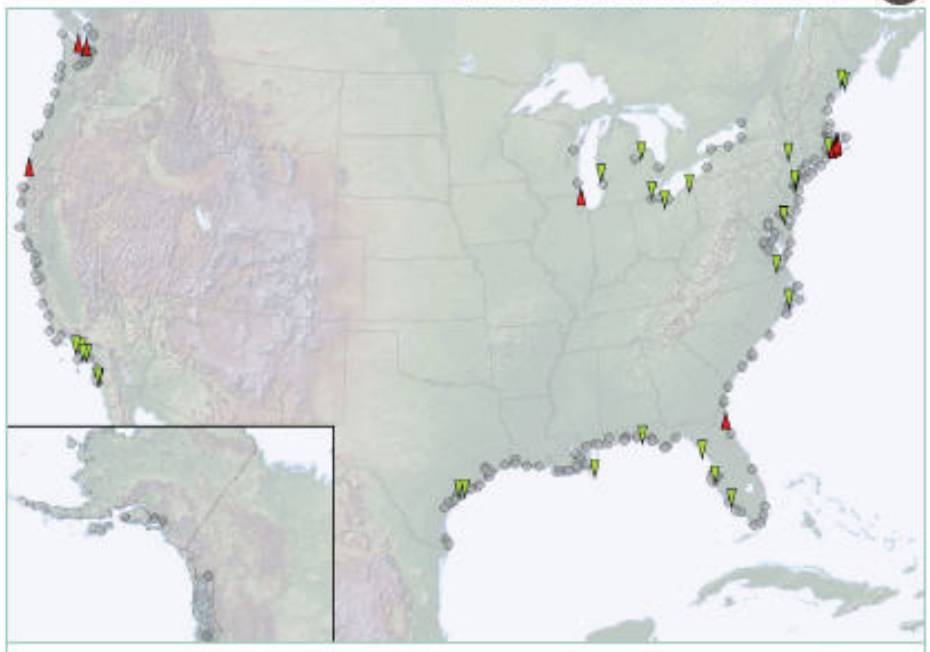
- Southern California
- Upper Northeast, Lower Northeast, Middle Atlantic, Southeast, Eastern Gulf Coast, Western Gulf Coast, Northern California, Northwest, Great Lakes

SUMMARY OF SITE TRENDS MAP:



SITE TRENDS

NO OVERALL NATIONAL TREND

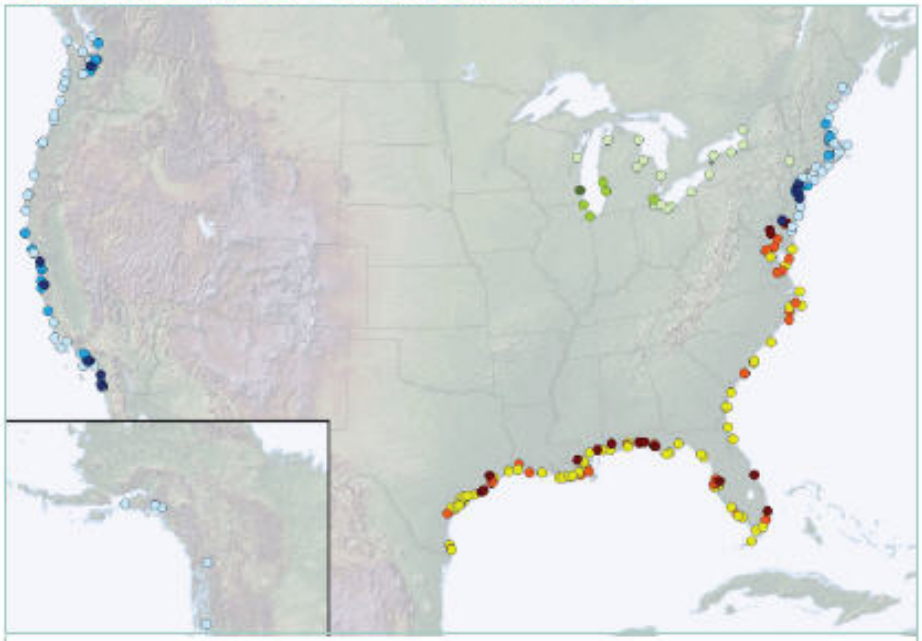


▼ 27 individual sites exhibited a significant decreasing trend

▲ 9 individual sites exhibited a significant increasing trend

NATIONAL SUMMARY – ORGANIC STATUS

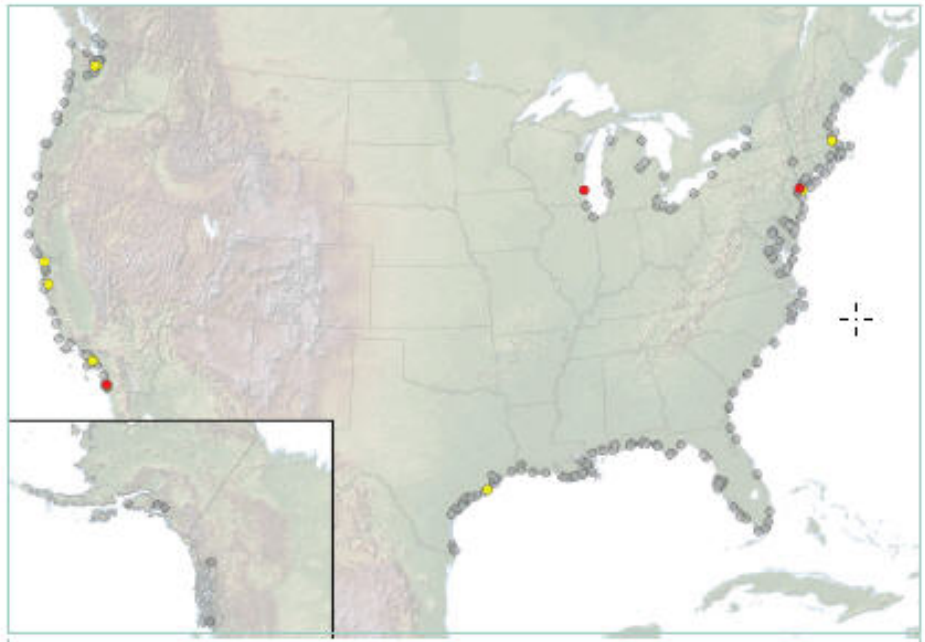
Regional Species Characterization



Mussels	Zebra Mussels	Oysters
L	L	L
M	M	M
H	H	H

Elevated concentrations of organic contaminants are predominantly found in urban areas at the regional level.

National Characterization



National Status
L
M
H

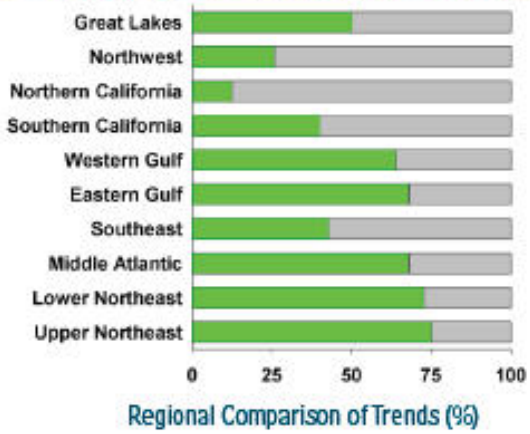
A small number of sites in urbanized areas have elevated concentrations nationally.

NATIONAL SUMMARY – ORGANIC TRENDS

SIGNIFICANT REGIONAL TRENDS:

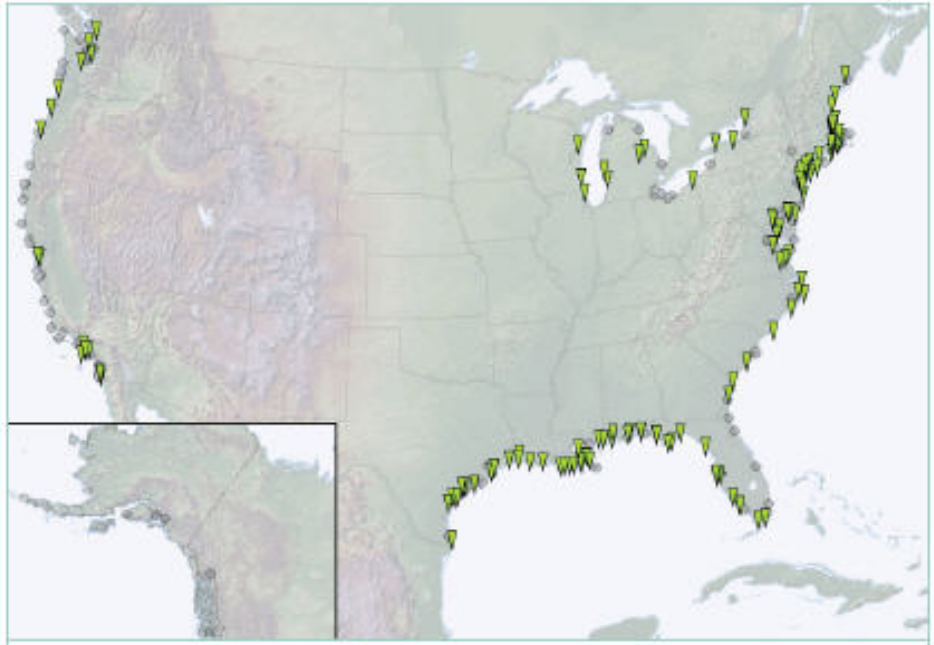
- Upper Northeast, Lower Northeast, Middle Atlantic, Southeast, Eastern Gulf Coast, Western Gulf Coast, Southern California, Northwest, Great Lakes
- Northern California

SUMMARY OF SITE TRENDS MAP:



SITE TRENDS

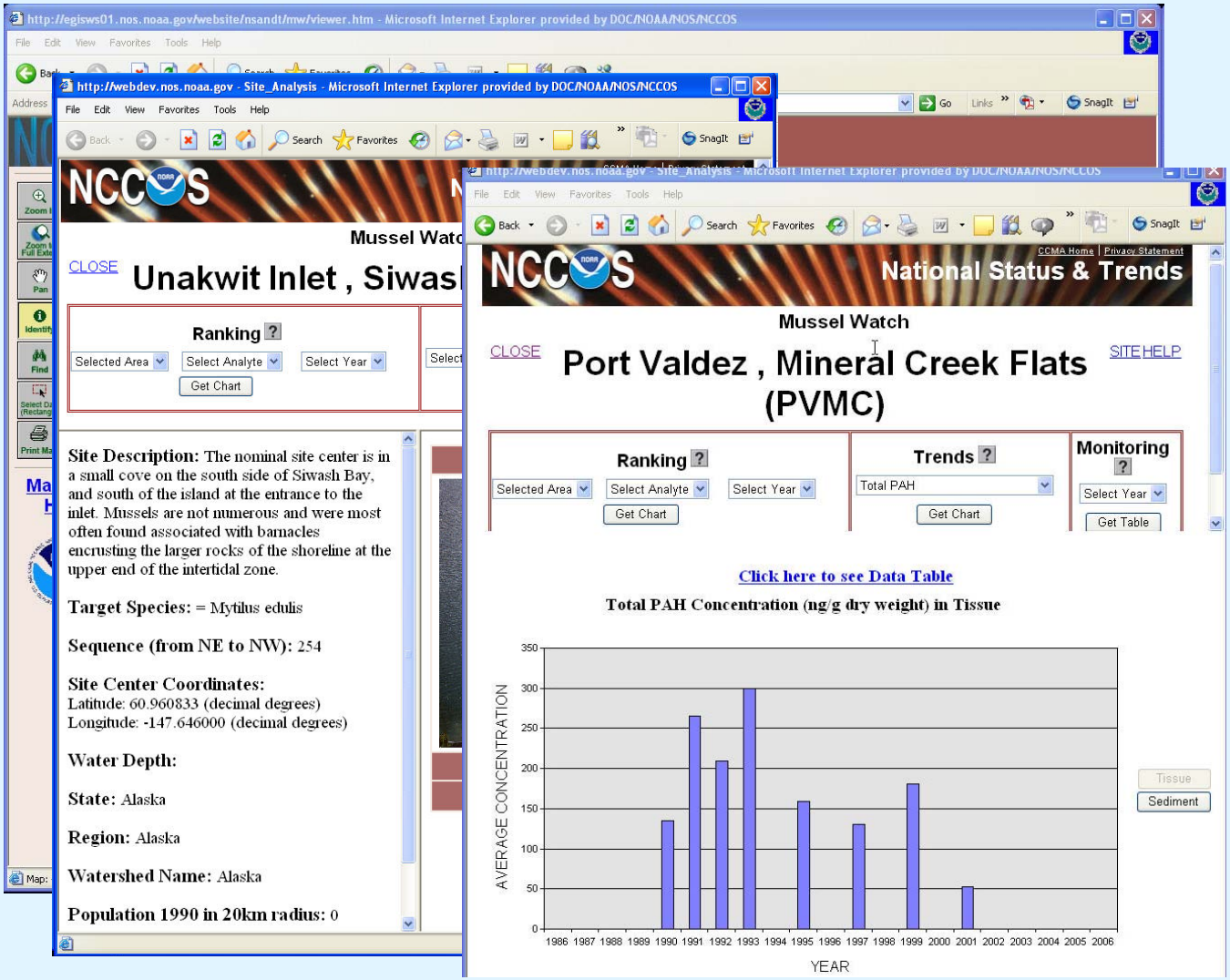
DECREASING NATIONAL TREND



133 individual sites exhibited a significant decreasing trend

0 individual sites exhibited a significant increasing trend

NOAA's National Status & Trends Program Data Portal:
Our History of Monitoring at Your Fingertips



- **Web-enabled database**
- **Map query to select data**
- **Site description tool to learn more about the location sampled**
- **Data plotting and analysis tools to compare sites and evaluate trends**
- **Custom data downloads**

National Status and Trends Mussel Watch Program
Please visit our booth (#105) or on the web at
http://NSandT.noaa.gov