

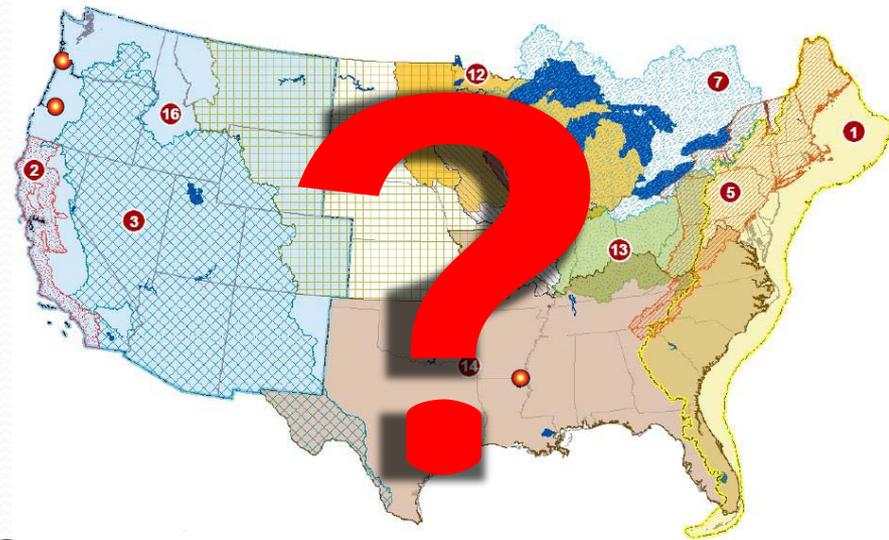
# National Fish Habitat Action Plan 2010 Coastal Fish Habitat Assessment

Joe Nohner, Allison Candemmo,  
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David Moe Nelson, Hiroo Imaki,  
Kay McGraw, Kirsten Larsen, Steve Brown



# How do we make the most strategic use of conservation resources?

- *Where should restoration and protection efforts focus?*
- *What threats should restoration and protection efforts focus on?*
- *How can we show benefits?*

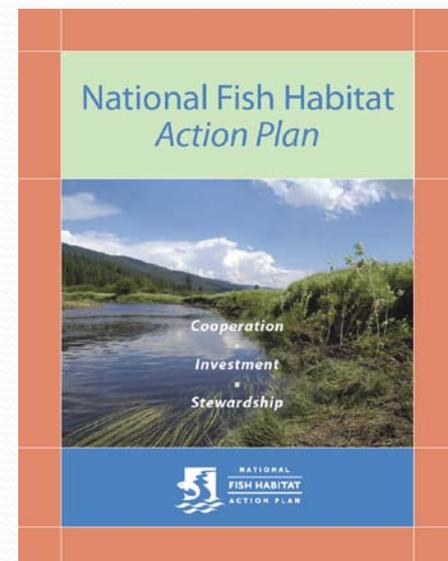


# Overview

- NFHAP and the need for an assessment
- Assessment objectives
- Methods
- Results
- Comparison of estuary and river assessments
- Uses for the 2010 coastal assessment
- Next steps and collaboration information

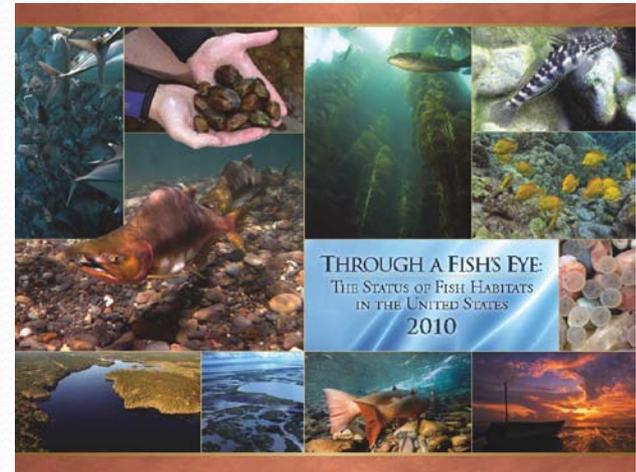
# 2010 Assessment Objectives

- Conduct a condition analysis of all fish habitats within the United States by 2010.
- Identify priority fish habitats and establish Fish Habitat Partnerships targeting these habitats by 2010.
- Establish 12 or more Fish Habitat Partnerships throughout the United States by 2010.
- Prepare a “Status of Fish Habitats in the United States” report in 2010 and every five years thereafter.



# 2010 National Fish Habitat Assessment

- Identify causative factors for declining fish populations in aquatic systems.
- Use an integrated landscape approach that includes the upstream/downstream linkages of large-scale habitat condition factors.
- Assess and classify the nation's fish habitats.
- Provide partners easy access to information to support their work.



# 2010 National Fish Habitat Assessment

## Coastal Assessment Team

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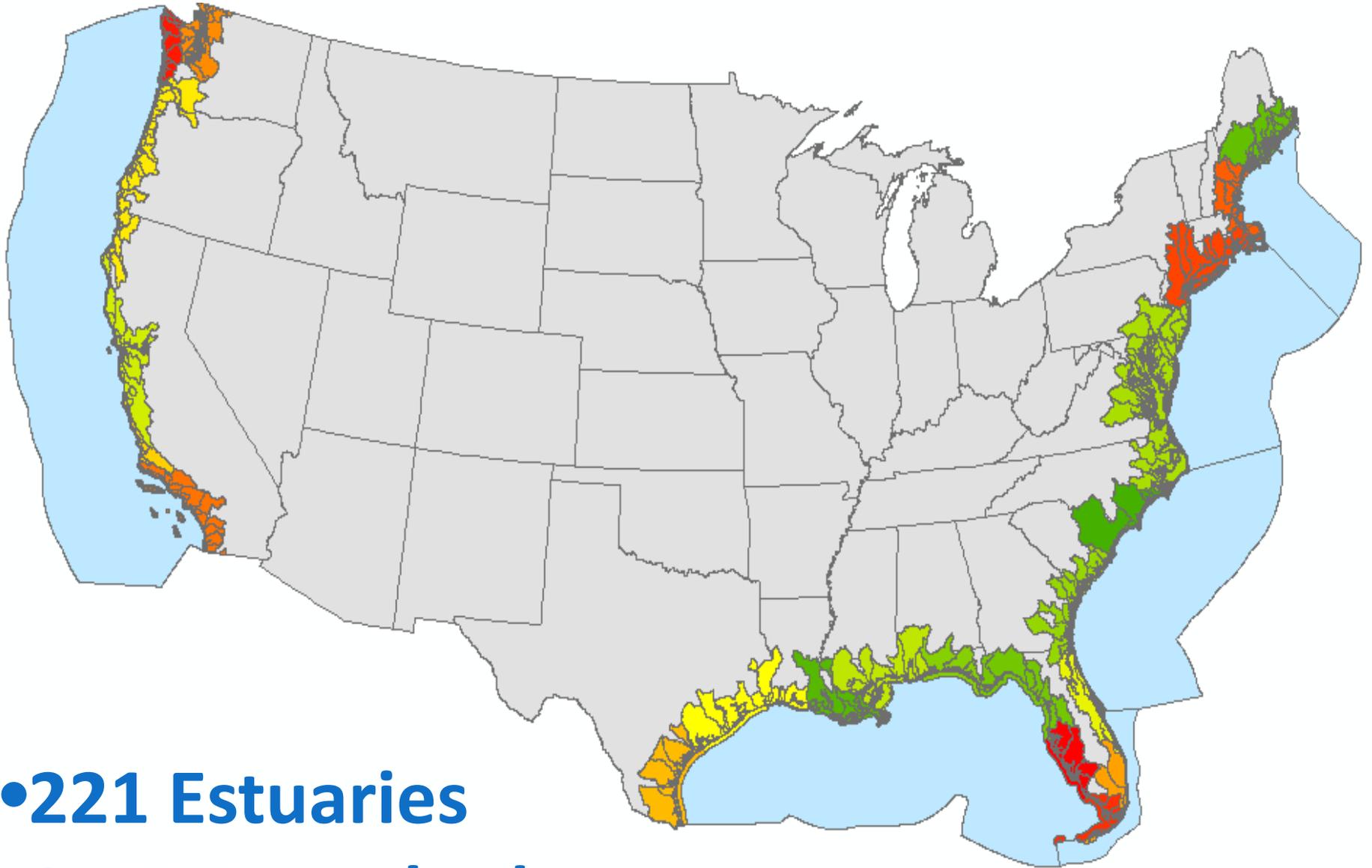
# 2010 Coastal Assessment Goal

**To create an assessment of estuarine fish habitat for protection and restoration planning activities by NFHAP and its partnerships at both the national and local scales.**

## *Characteristics*

- Based upon landscape and local indicators of habitat quality
- Relevant to fish populations
- Comparable on a national scale

# Spatial Framework



- **221 Estuaries**
- **347 Watersheds**

# Methods Overview

- National data sets represent subcomponent indices
  - Land Cover
  - River Discharge
  - Pollutant levels
  - Eutrophication
- Each subcomponent index contributes to an overall composite index: Risk of habitat disturbance score

# Methods

## National Estuarine Data Compilation

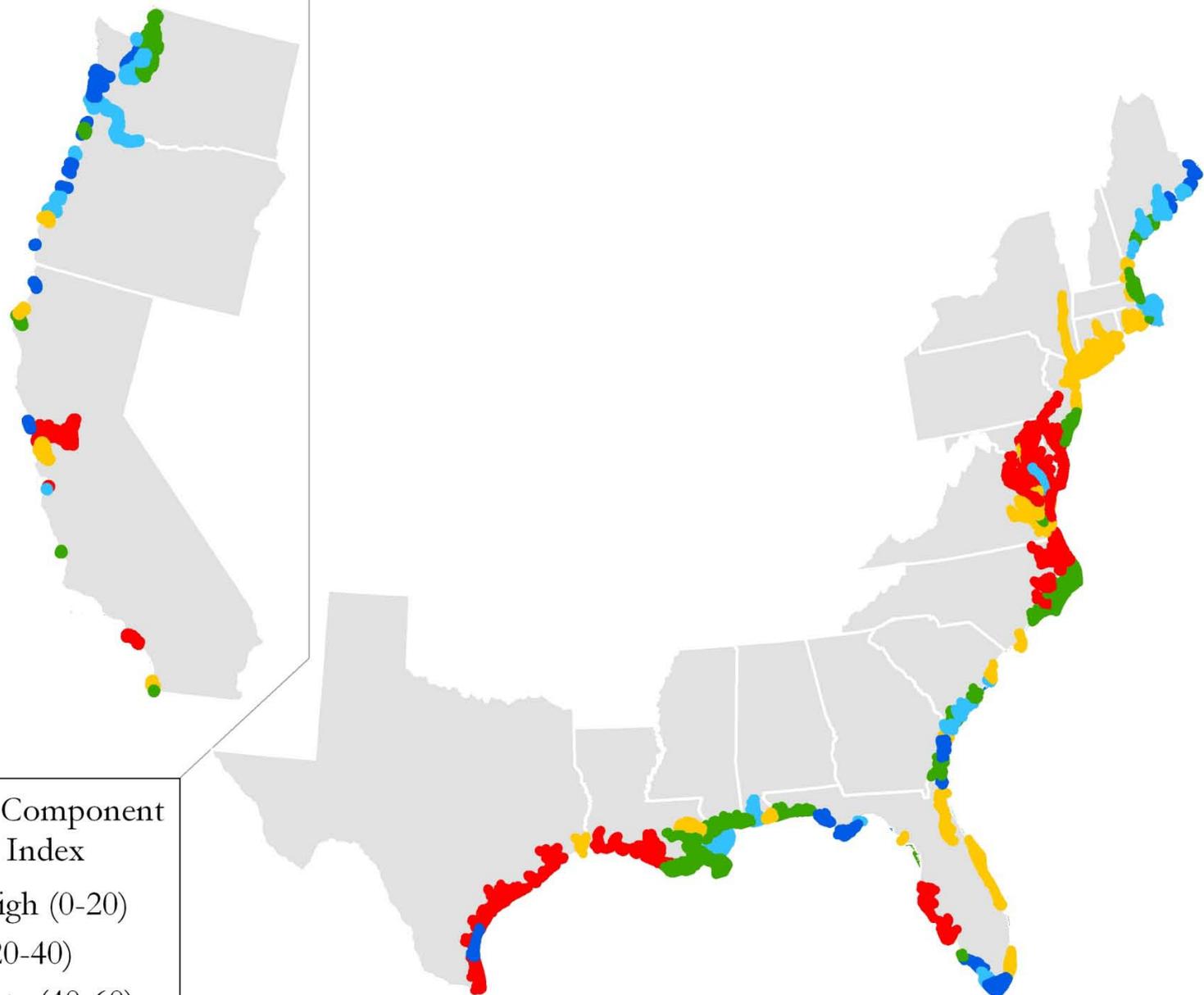
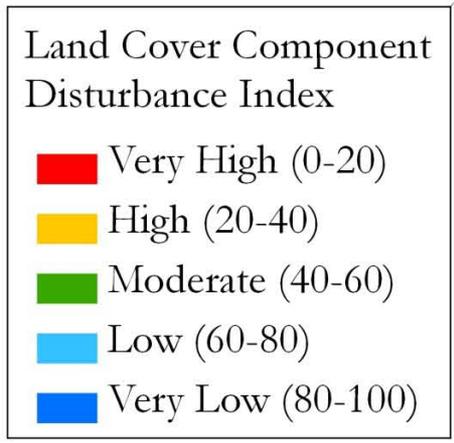


### Land Cover

Source: Coastal Change Analysis Program

Variables: For both the shoreline and watershed, five categories of land cover were assessed (10 total):

- Percent coverage of developed land cover
  - area weighted by development density
- Percent coverage agricultural land cover
- Percent change in estuarine wetlands
- Percent change in palustrine wetlands
- Percent change in undeveloped land cover



# Methods

## National Estuarine Data Compilation



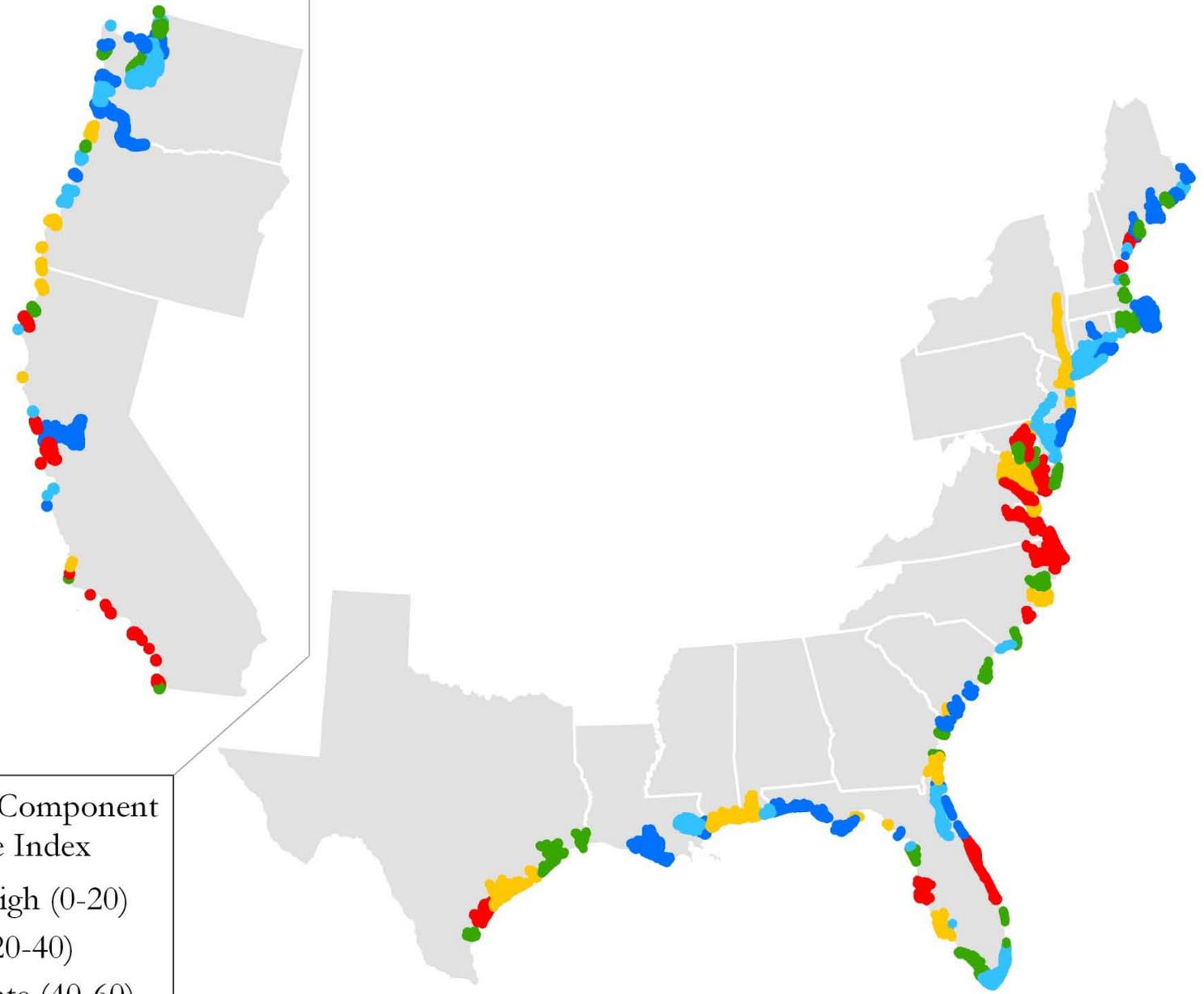
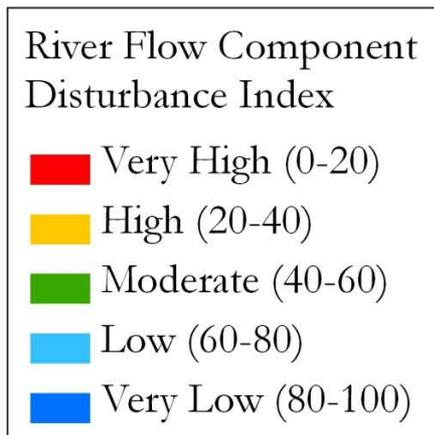
### Land Cover

### River Discharge

Source: USGS Stream Gauges, National Inventory of Dams

Variables:

- dams/km<sup>2</sup> in the watershed
- mean annual discharge
- 7-day scores for maximum flow and minimum flow
- average high and low pulse duration
- trend in low pulse duration, high pulse duration, and maximum flow



# Methods

## National Estuarine Data Compilation



### Land Cover

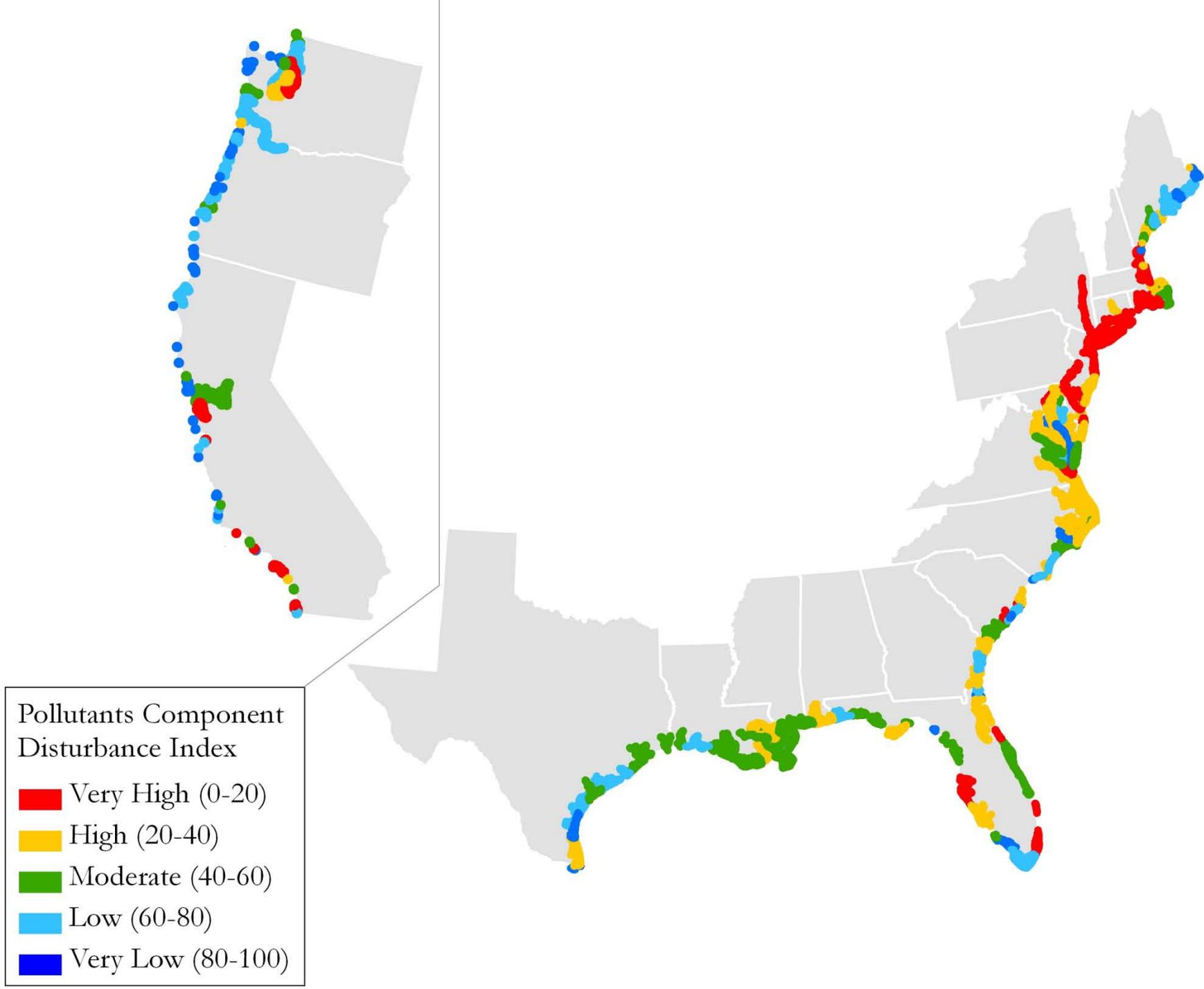
### River Discharge

### Pollutant Levels

Sources: NPDES, TRI, CERCLA, USGS

Variables: Number of sites in the watershed from:

- National Pollutant Discharge Elimination System
- Toxics Release Inventory
- Superfund National Priorities List
- USGS Active Mines and Mineral Processing Plants



# Methods

## National Estuarine Data Compilation



### Land Cover

### River Discharge

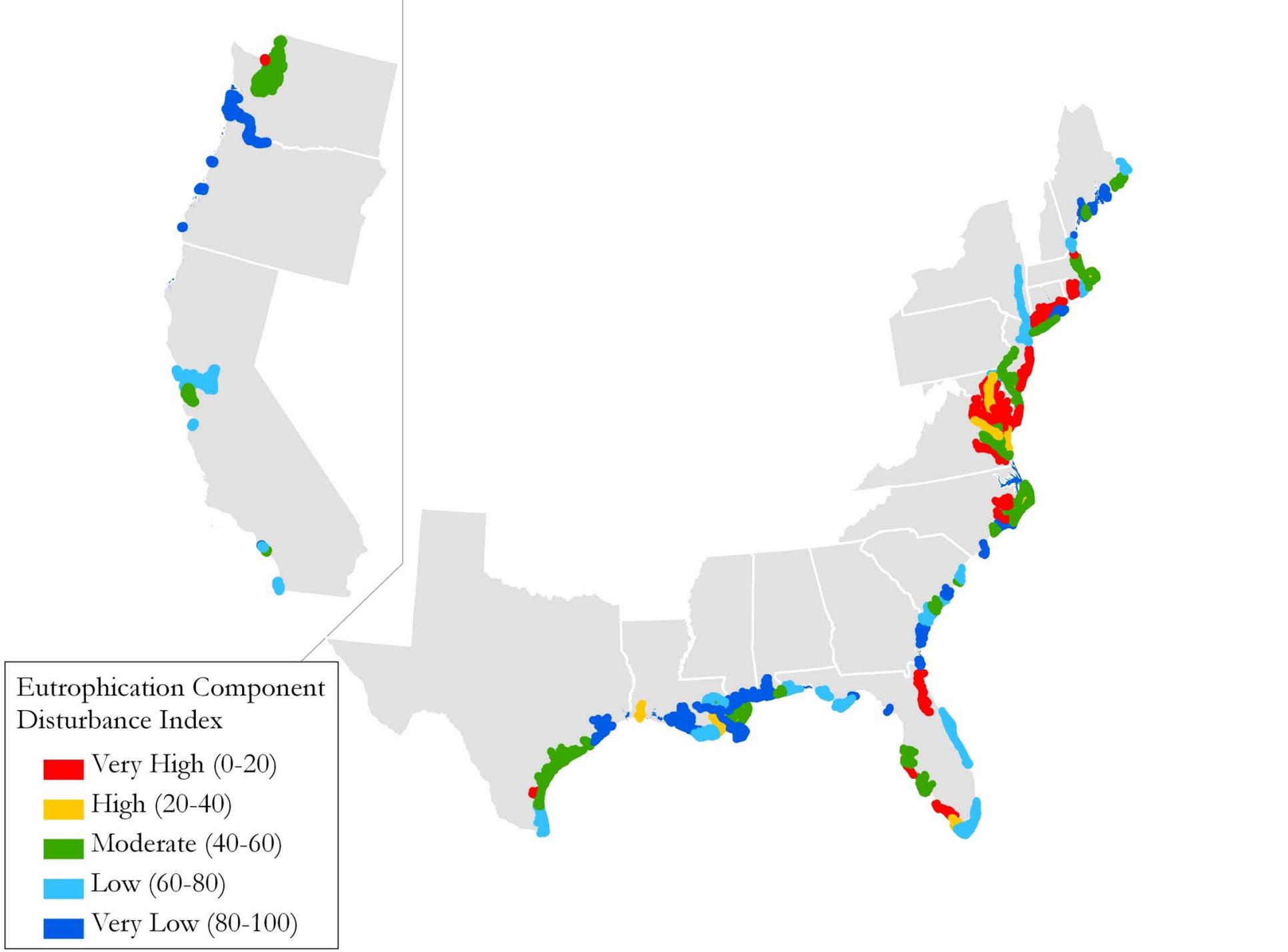
### Pollutant Levels

### Eutrophication

Source: National Estuarine  
Eutrophication Assessment

Variables:

- Chlorophyll  $\alpha$
- algal blooms
- dissolved oxygen
- impacts to submerged aquatic vegetation



Eutrophication Component  
Disturbance Index

- Very High (0-20)
- High (20-40)
- Moderate (40-60)
- Low (60-80)
- Very Low (80-100)

# Methods

National Estuarine Data Compilation



Land Cover

River Discharge

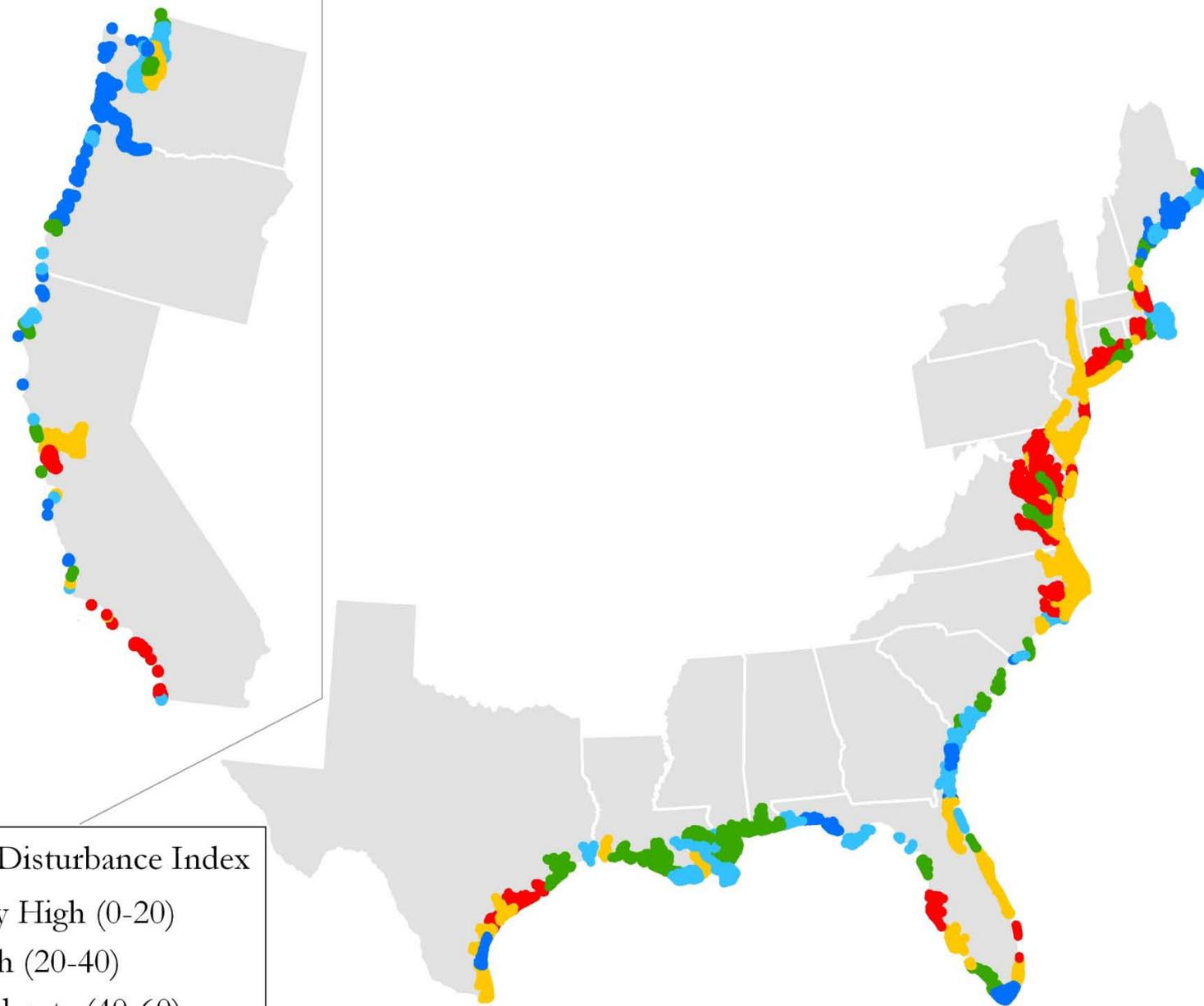
Pollutant Levels

Eutrophication



Risk of Habitat Disturbance Score

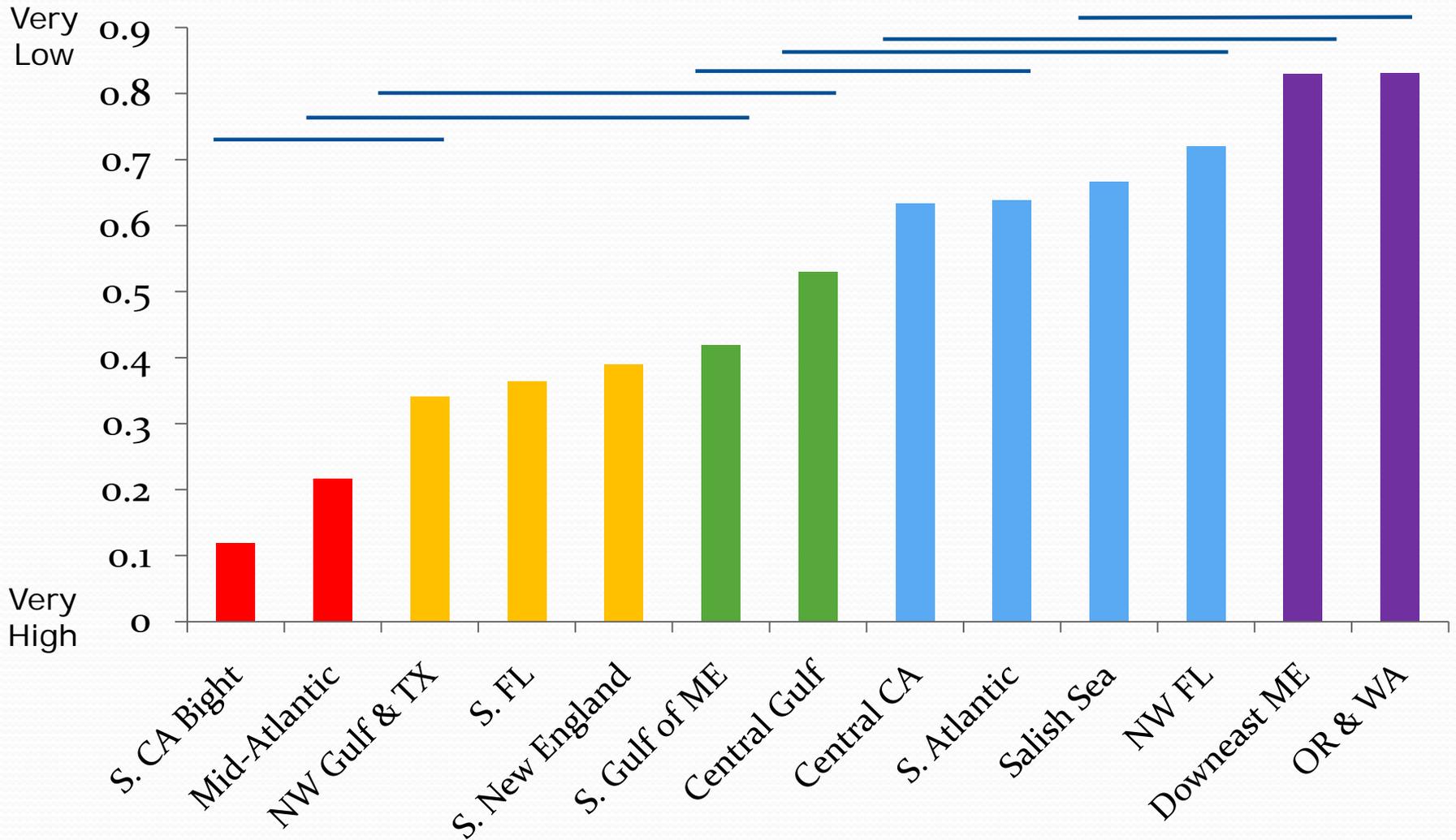
• Geometric mean of subindices, expressed as a percent rank.



Composite Disturbance Index

- Very High (0-20)
- High (20-40)
- Moderate (40-60)
- Low (60-80)
- Very Low (80-100)

# Risk of Habitat Degradation: Regional Comparison

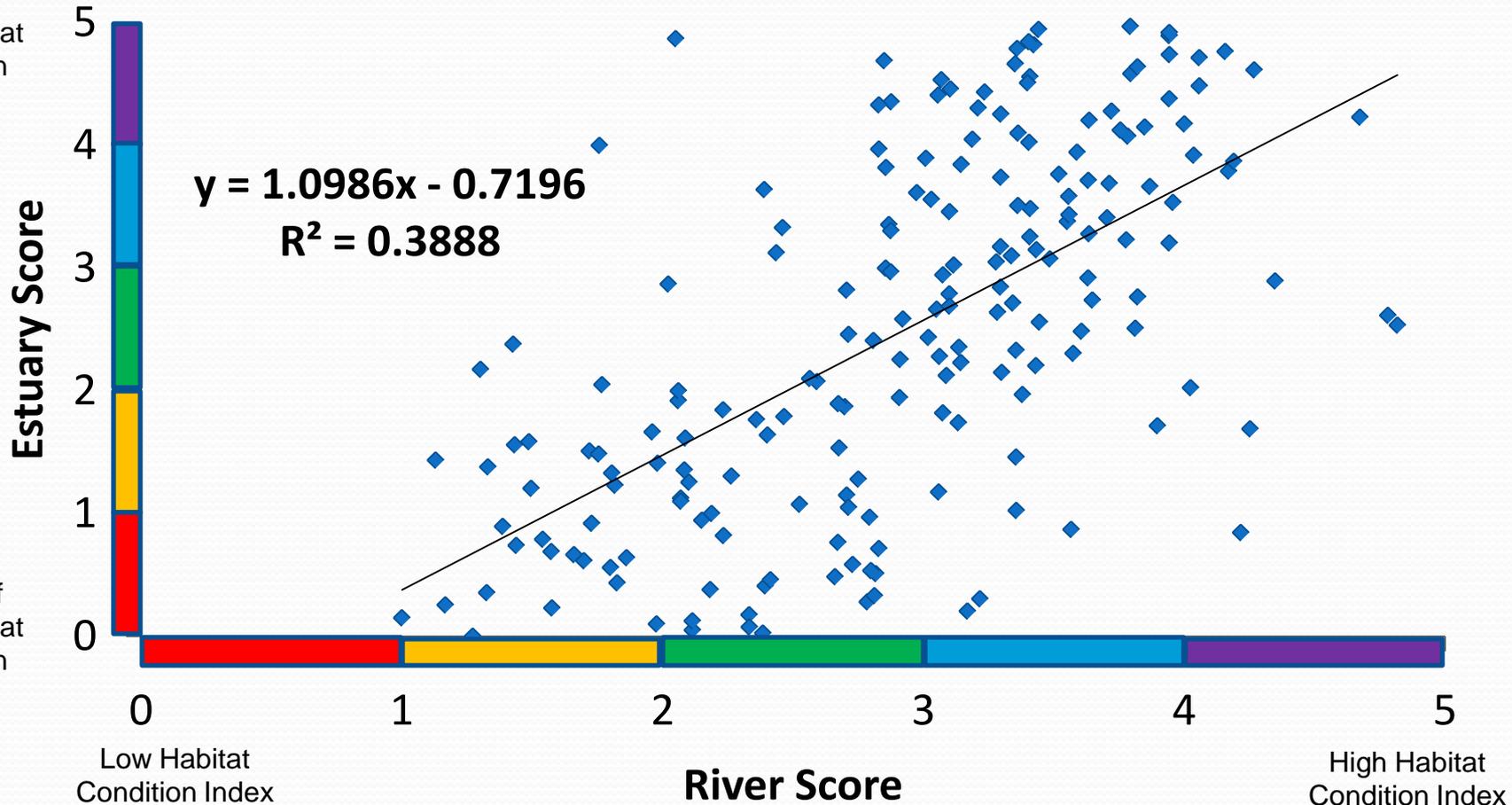


Bars indicate regions with no significant difference ( $p < 0.05$ ) using Tukey's post-hoc test.

# Estuary vs. Rivers Score Comparison

Low risk of current habitat degradation

High risk of current habitat degradation



# Further comparisons between the rivers and estuaries assessments

- Compare length-weighted average inland scores to estuary scores
- Explore relationships in which inland variables may predict coastal variables
  - Estuarine sediment toxicity related to watershed land cover
  - Eutrophication score related to watershed land cover
  - Watershed variables drive relationships more strongly than local variables

# Connecting NFHAP Science to Restoration and Conservation

- Identifies relatively healthy habitats for protection and relatively poor habitats for restoration
  - Indices comparable nationally, but applicable at regional and local scales
- Provides information on which factors contribute to habitat degradation, allowing the FHP's and others to target these threats

# National Fish Habitat Action Plan



View Risk of Current Habitat Degradation for Stream and Coastal Fish Habitats in the United States

**Map controls**

**Risk of Current Habitat Degradation for stream and coastal fish habitats**

Scale: Ecological Drainage Unit (EDU's)

- Very Low Relative risk of habitat degradation based on the mapped level of disturbance to fish habitats within the selected geographic unit (*read more.*)
- Low
- Moderate
- High
- Very High
- Not Scored

Opacity: 0  100

**Fish Habitat Partnership Boundaries**  
National Fish Habitat Partnerships target geographic and species habitat needs.

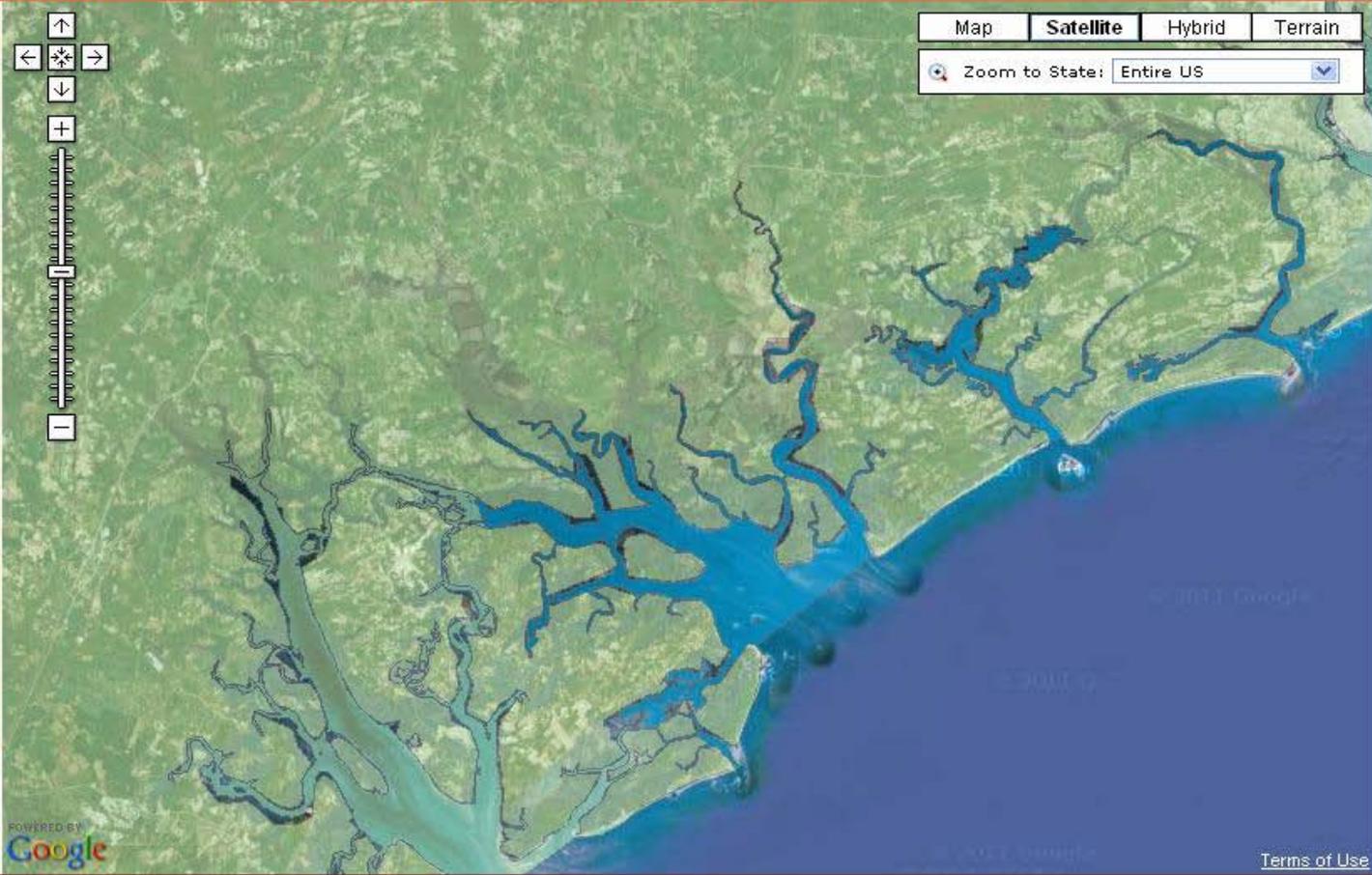
- Atlantic Coastal FHP
- California FHP
- Desert Fish Habitat Partnership
- Driftless Area Restoration

Select: All partnerships | None

Show partnership overlap areas.

**Other Layers** (*read more.*)

View: State/County Boundaries



**About this map viewer**

**Data, Metadata, and Map Services**

The National Fish Habitat Action Plan Data Viewer is hosted by the [National Biological Information Infrastructure Program](#); administered by the Biological Informatics Office of the [United States Geological Survey](#). References to non-U.S. Department of the Interior (DOI) products do not constitute an endorsement by the DOI. By viewing the Google Maps API on this web site the user agrees to these [Terms of Service](#) set forth by Google.

# Next steps

- Publish results from the 2010 Coastal Assessment in a peer-reviewed journal and NOAA Fisheries Technical Memorandum.
- Investigate relationships between inland and coastal variables
- Collect data on fish diversity and abundance for a series of regional assessments calibrated to fish communities (pilot for 2015 Assessment).
- Improve the database of habitat variables, including an expansion to offshore marine environments

# Data Needs

- Fish density, abundance, diversity
  - e.g. trawl surveys, beach seines
  - Zones: estuary, nearshore marine, offshore marine
- Shoreline armoring
- Biogenic habitat (e.g. SAV, coral, and shellfish coverage and percent change)
- Benthic habitat
- Marine debris and litter
- Sedimentation
- Contaminants
- Oil spill history
- Impacts from fishing (e.g. bottom trawl densities)



NATIONAL  
**FISH HABITAT**  
ACTION PLAN

### Additional Info:

- NFHAP 2010 Assessment: <http://fishhabitat.org>
- NFHAP Data Viewer: <http://www.nbii.gov/far/nfhap>

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