

***DEVELOPMENT OF BENTHIC  
INDICATORS FOR NEARSHORE  
COASTAL WATERS OF NEW  
JERSEY  
A REMAP PROJECT***

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**2008 National Water Quality Monitoring Conference  
18 – 22 May 2008  
Atlantic City, NJ**

# EMAP

“The Environmental Monitoring and Assessment Program (EMAP) is a research program to develop the tools necessary to monitor and assess the status and trends of national ecological resources.”

*a.k.a* National Coastal Assessment, Coastal 2000

# *Regional EMAP (REMAP)*

- REMAP was initiated to test the applicability of the EMAP approach to answer questions about ecological conditions at regional and local scales.
- Using EMAP's statistical design and indicator concepts, REMAP conducts projects at smaller geographic scales and in shorter time frames than the national EMAP program.

# ***REMAP Objectives***

- Evaluate and improve EMAP concepts for state and local use.
- Assess the applicability of EMAP indicators at differing spatial scales.
- Demonstrate the utility of EMAP for resolving issues of importance to EPA Regions and states.

# Partners



ORD & Region 2

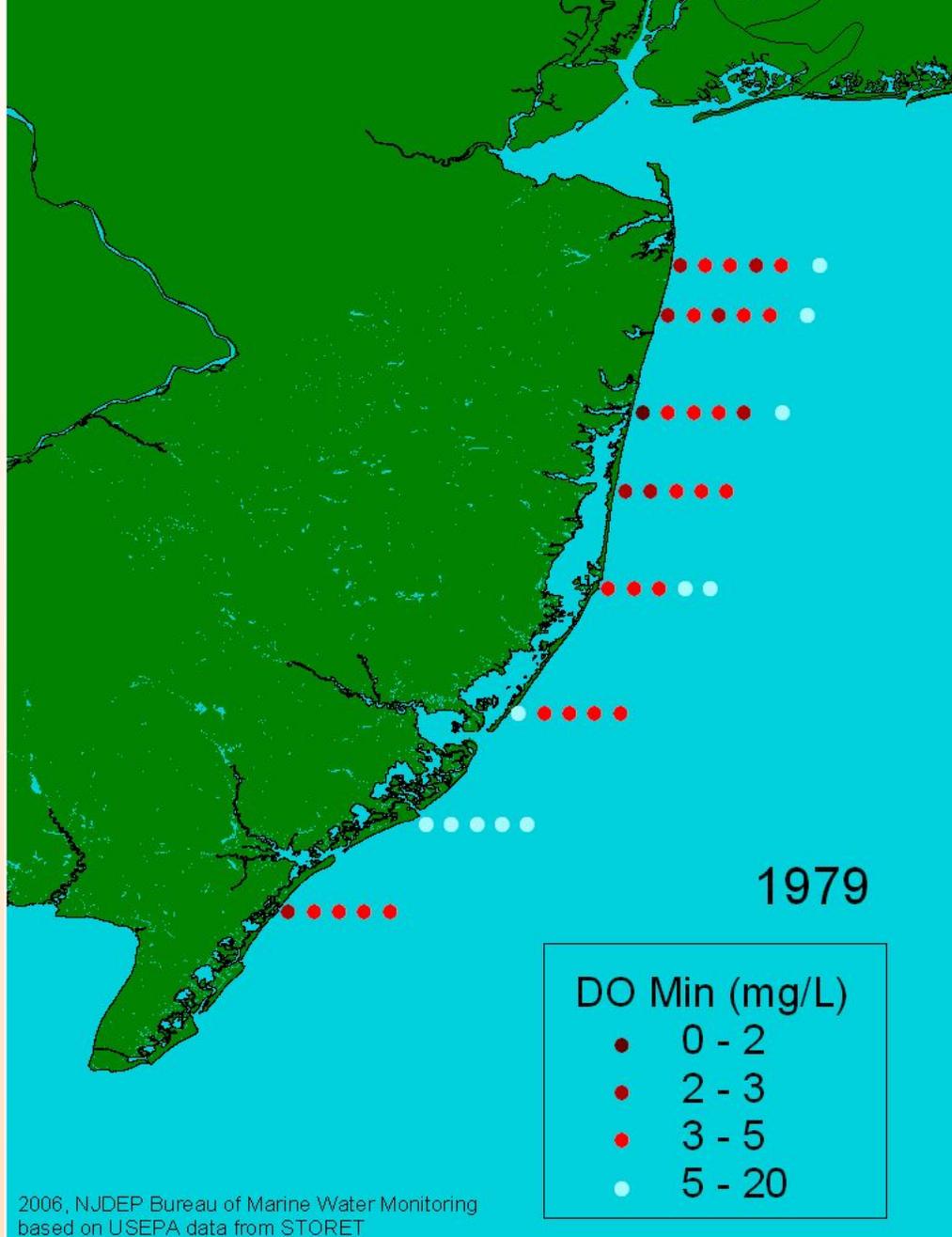


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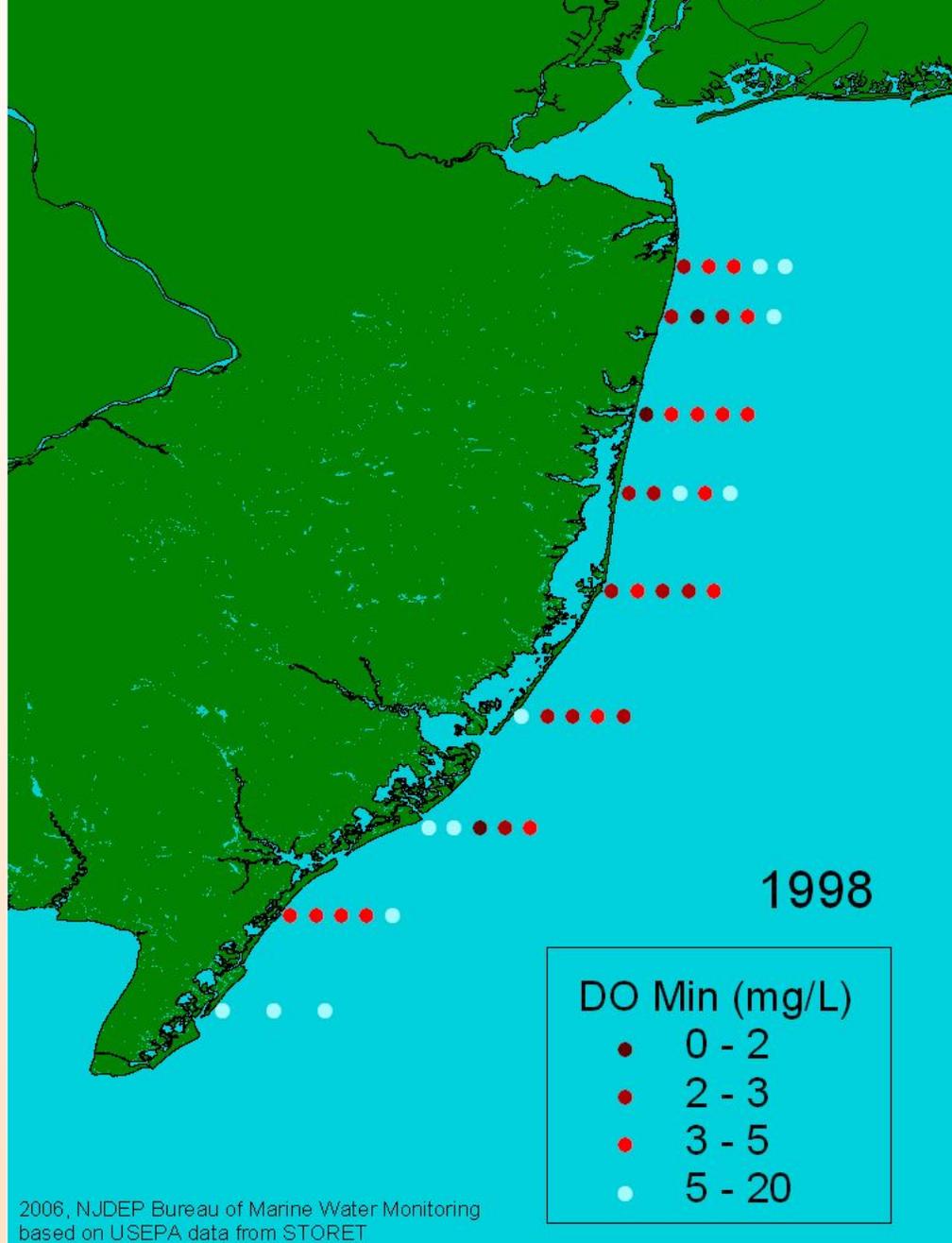
# *NJ Coastal Hypoxia*

- First evidence was the “black tide” in the mid 1970s
  - Bottom oxygen levels approached zero
  - Significant effects on surf clam community
  - Caused by unusual meteorological conditions
- Sporadic blooms occurred in the 80s and 90s
- Values can dip to below 2 mg/L



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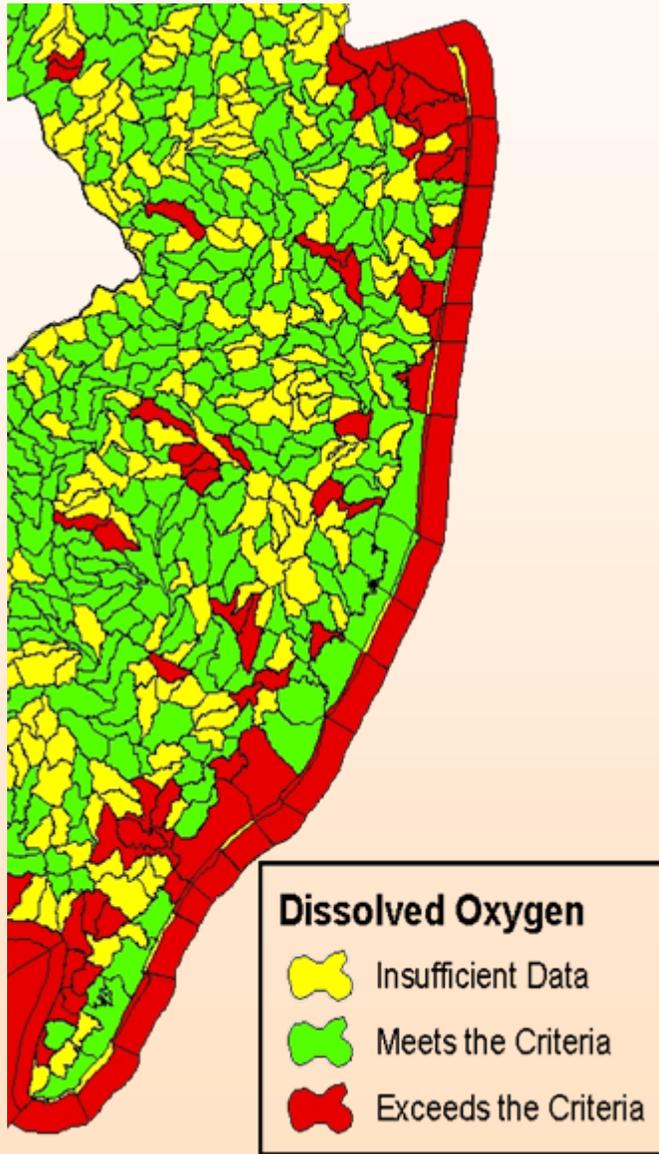
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# ***NJ 2006 Integrated Assessment Report: Dissolved Oxygen***

Criteria = 5 mg/L bottom

2004 – 100%

2002 – 70%



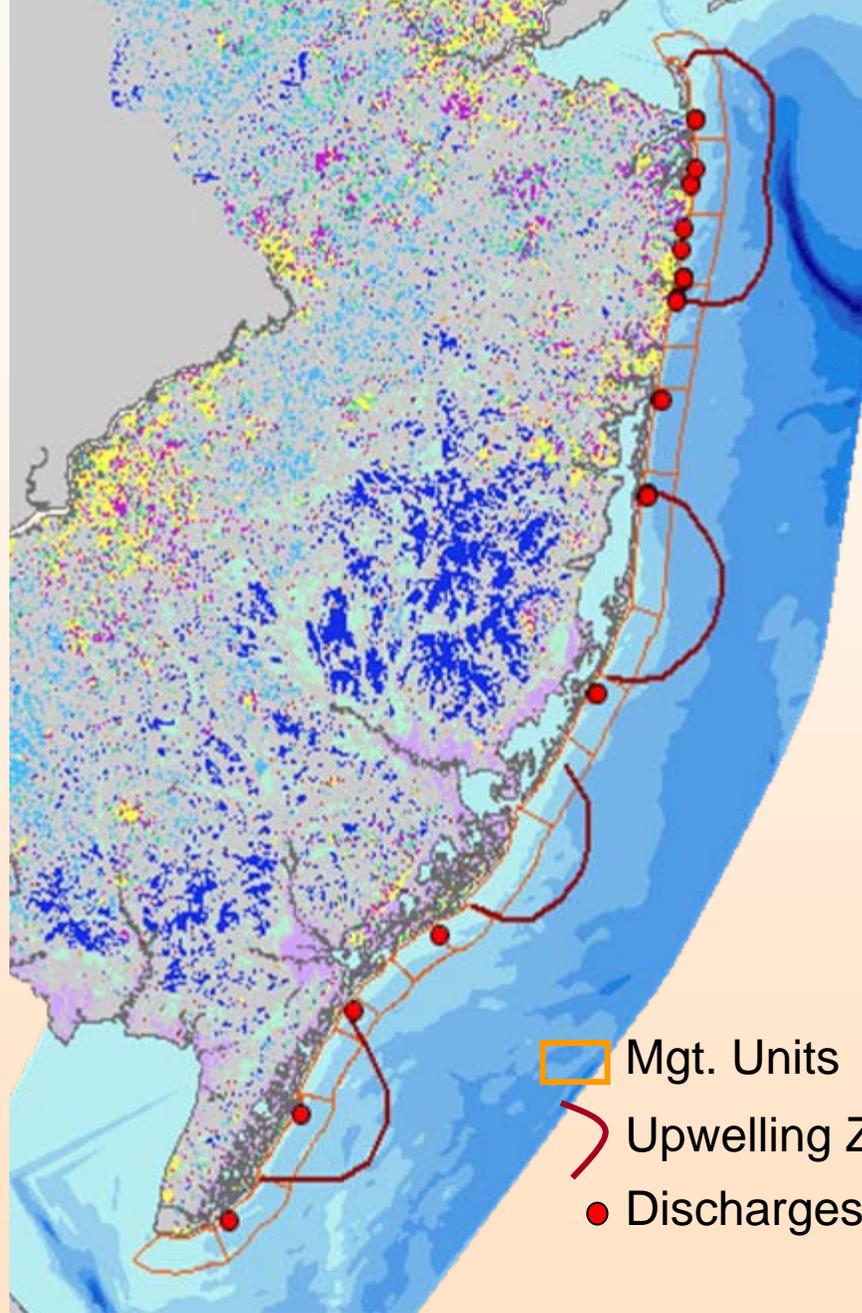
While there are no large-scale or multi-species fish kills evident in these waters, there exists no objective tool to assess the ecosystem impact of these recurrent low oxygen levels

# *Project Objectives*

- Develop an indicator of ecosystem health for the benthic community in the nearshore ocean waters of New Jersey
- Assess the condition of these communities
- Compare to existing assessments

# *Project Components*

- Conduct an inventory of existing data
- Convene an expert workshop (11/06)
- Conduct field survey (8/07)
- Reconvene experts
- Final assessment



- Mgt. Units
- ⤴ Upwelling Zones
- Discharges

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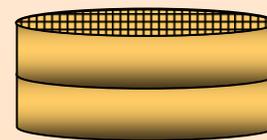
# NJ Coastal Design – Sites



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# Sampling Design – Sediment Sampling



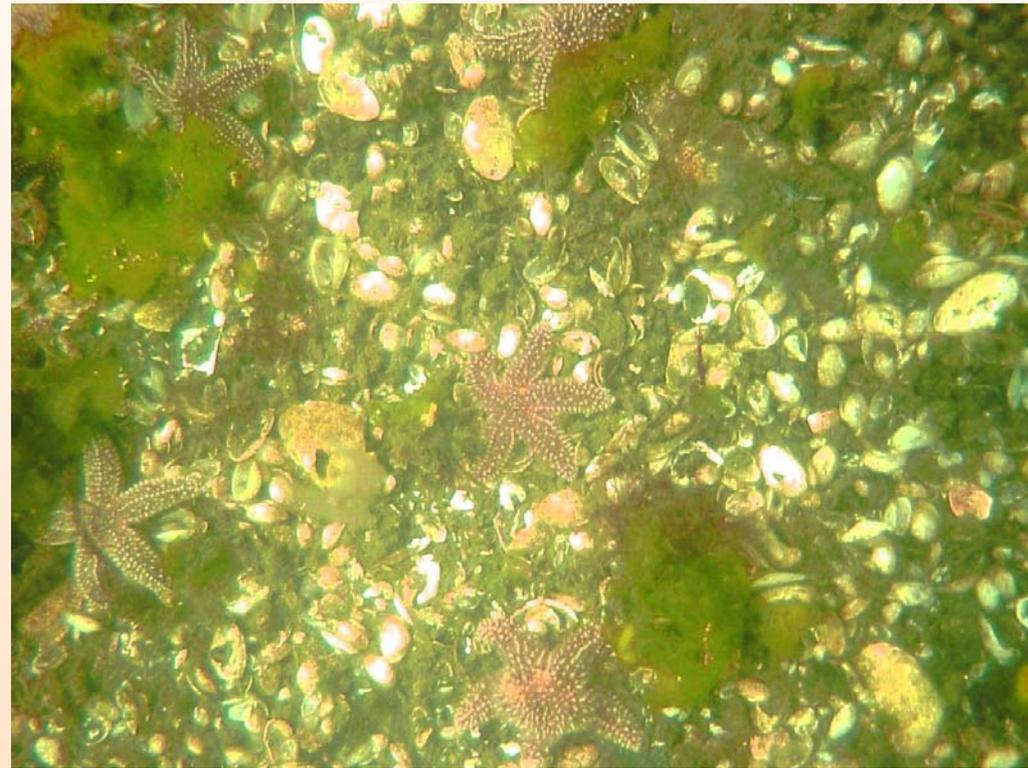
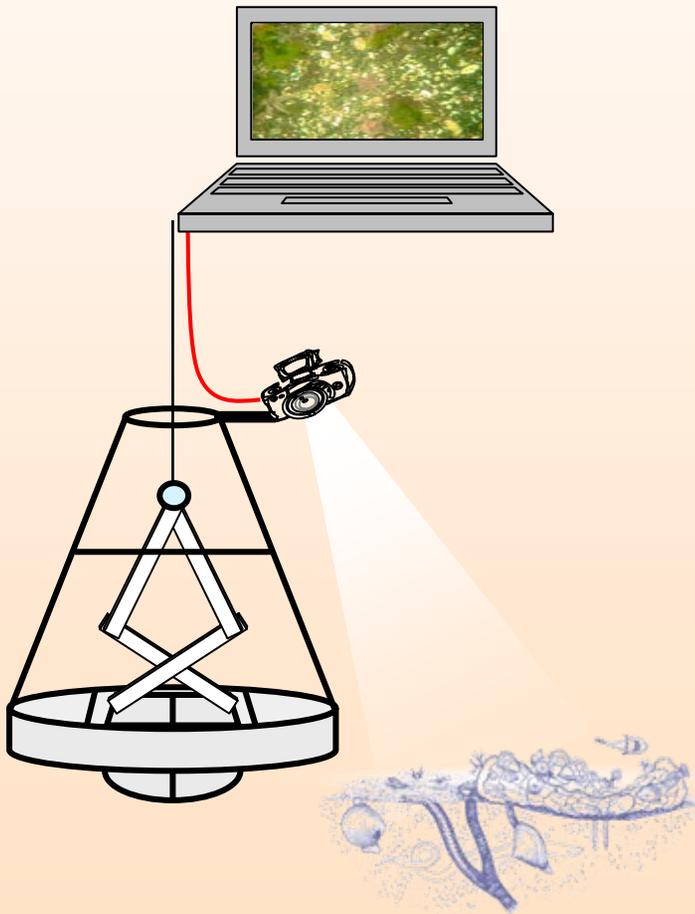
0.5 mm

0.3 mm

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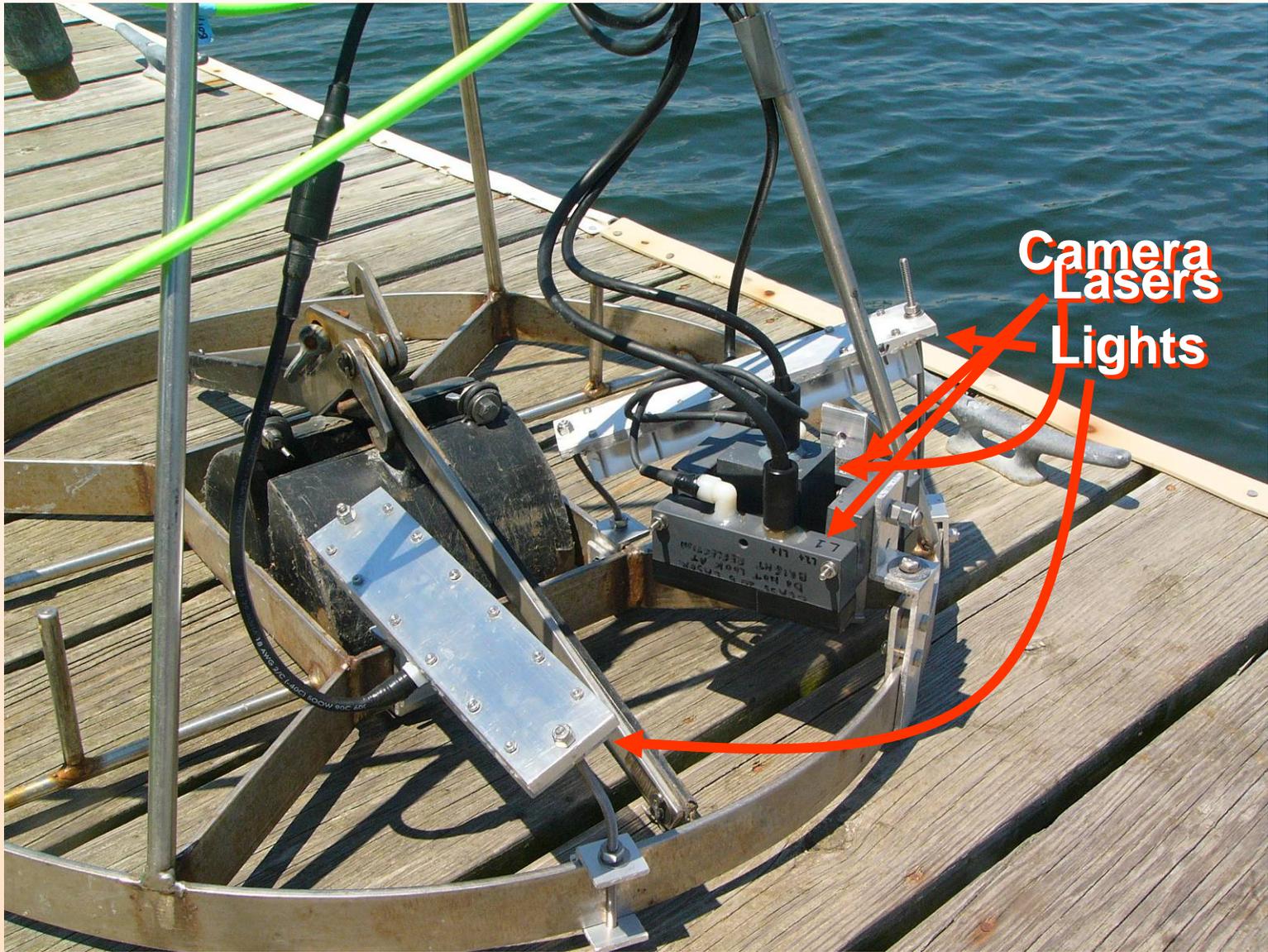
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# *Sampling Design - Plan-View Camera*



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Camera  
Lasers  
Lights

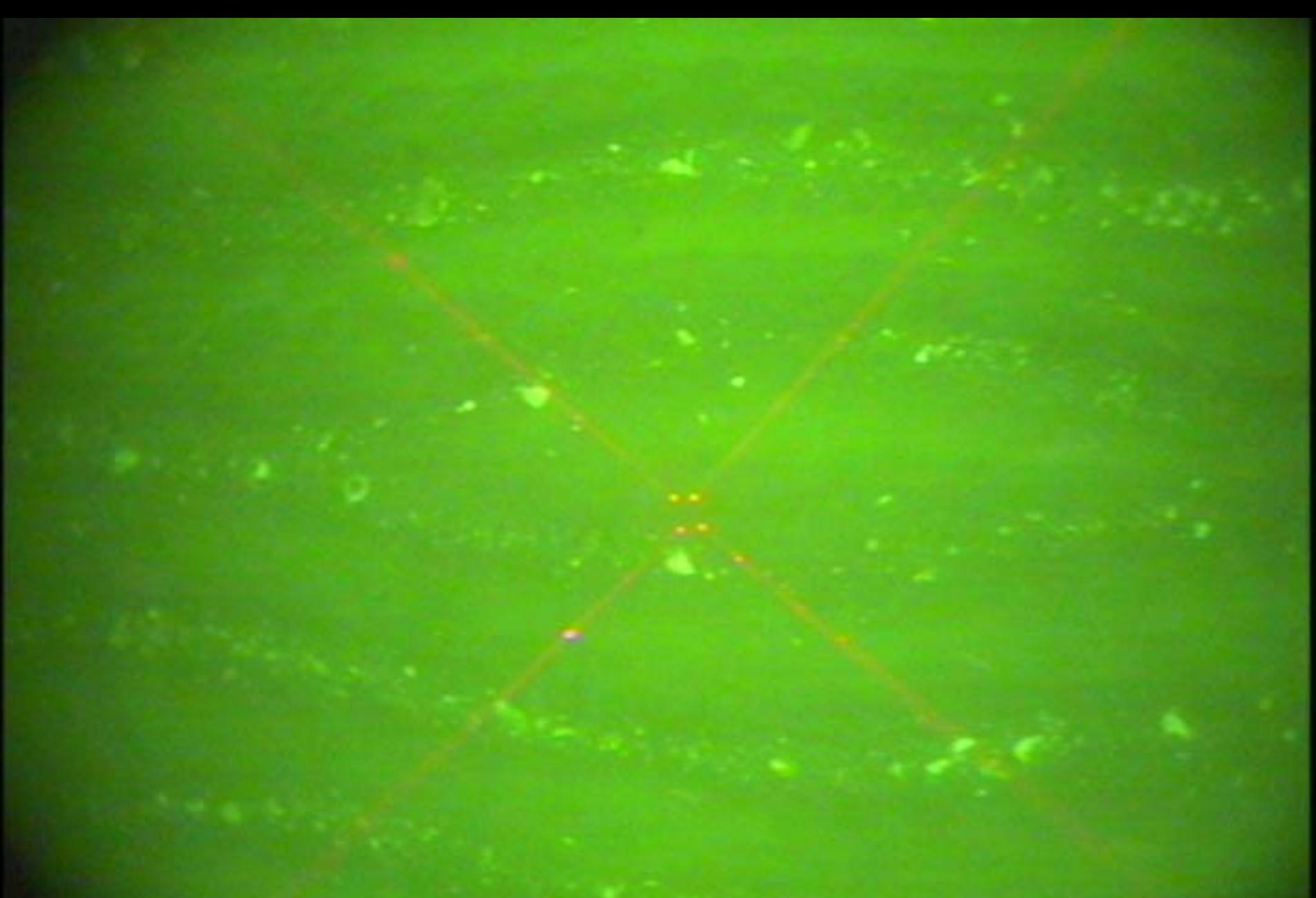
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# ***Sampling Design – Additional Indicators***

- Water quality
- Sediment chemistry (10%)
- Sediment grain size and TOC

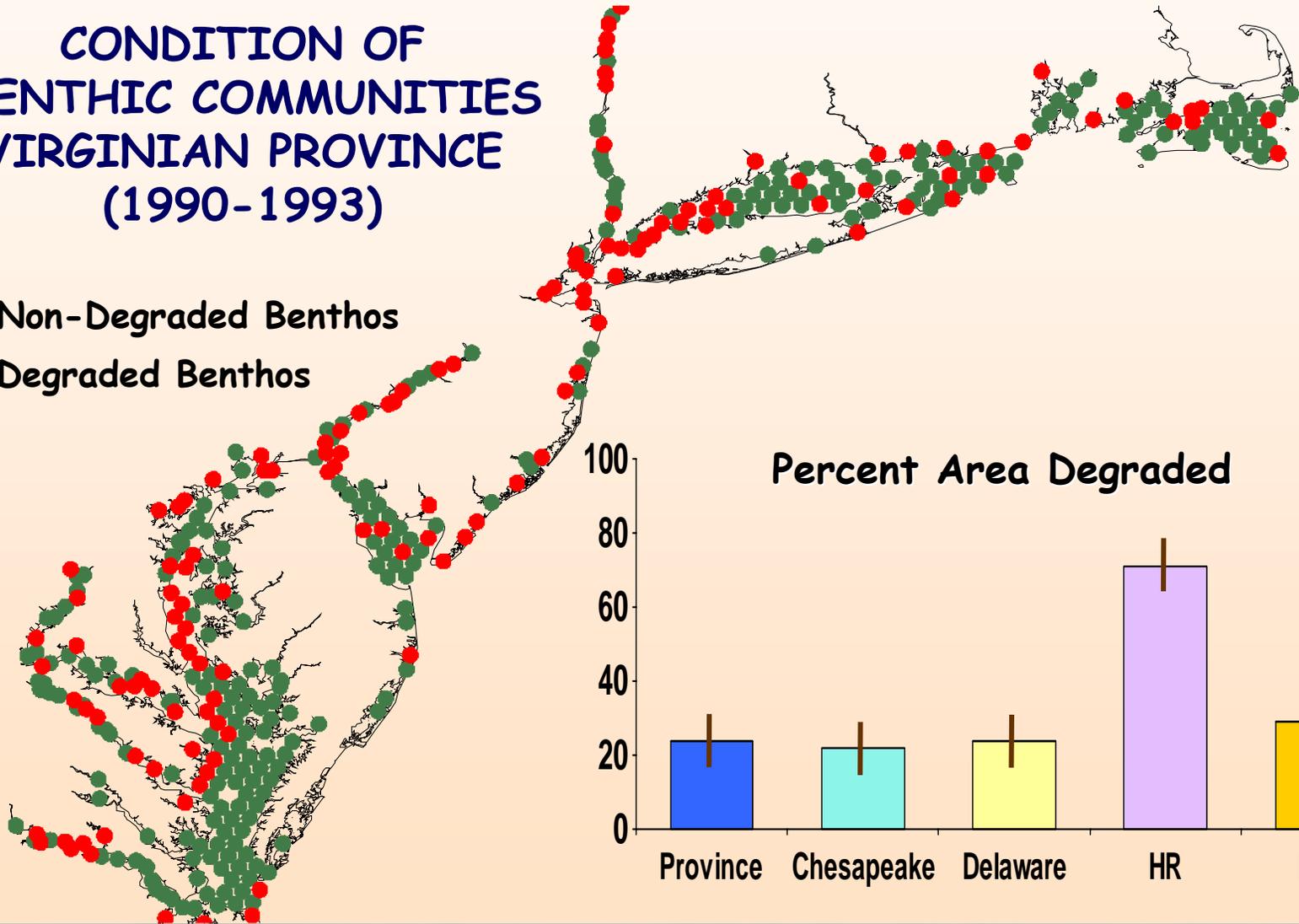
# *Progress to Date*

- Inventory completed
- Initial workshop held
- All 100 stations successfully sampled in August, 2007
- Benthic samples currently being analyzed

# Potential For Use in 305(b) reporting:

## CONDITION OF BENTHIC COMMUNITIES VIRGINIAN PROVINCE (1990-1993)

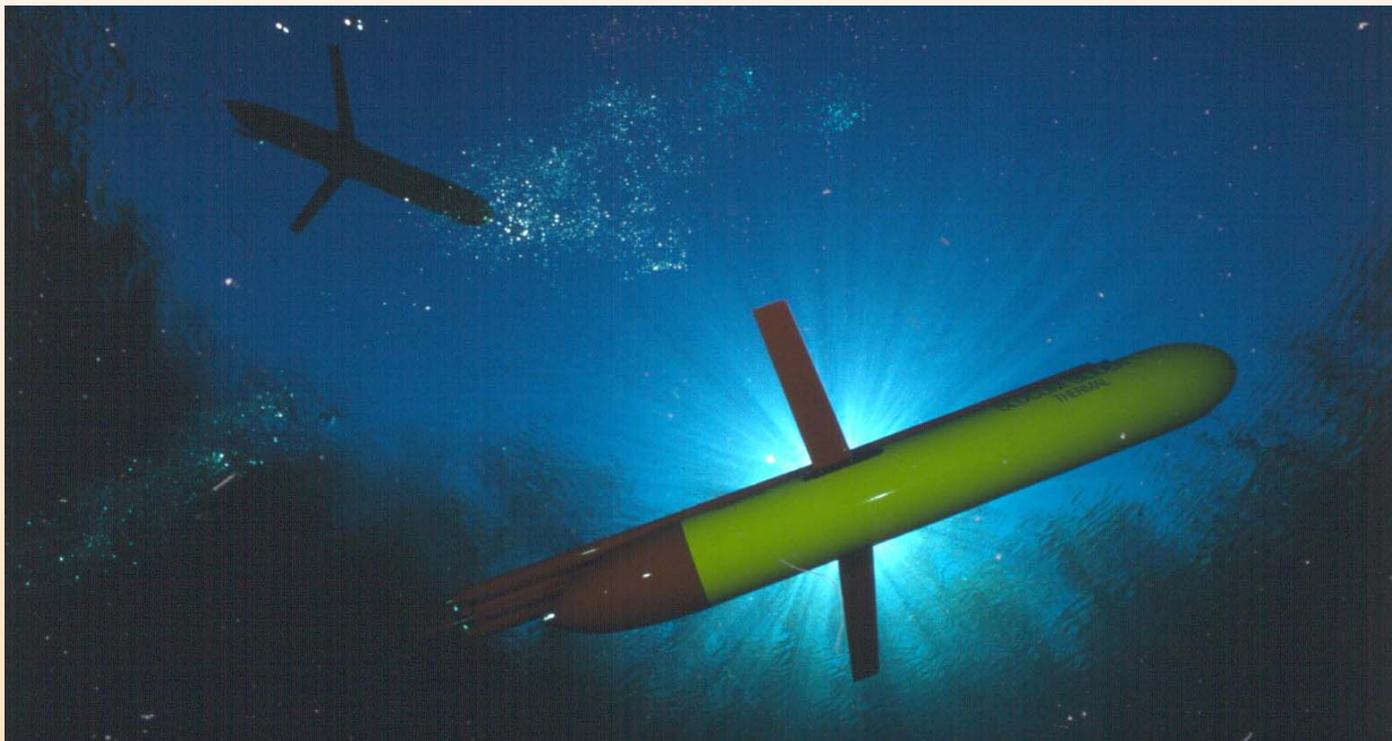
- Non-Degraded Benthos
- Degraded Benthos



# *Future Directions*

- Complete Benthic Index development and incorporate into NJ Integrated Assessment
- Transfer technology to other coastal states
- Develop alternative methods for assessing benthic communities
- Develop innovative methods for monitoring coastal hypoxia

*... “It also serves as a model for cooperation among public agencies to better gauge the health of the environment.” – Asbury Park Press, 9/5/07*



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