

**Fishermen, Scientists and Communities:**  
*Collaborating  
in the Gulf of Maine  
1995-2004*

*Benjamin Neal, Marine Programs Officer*



Congress on Building Capacity for Coastal Solutions

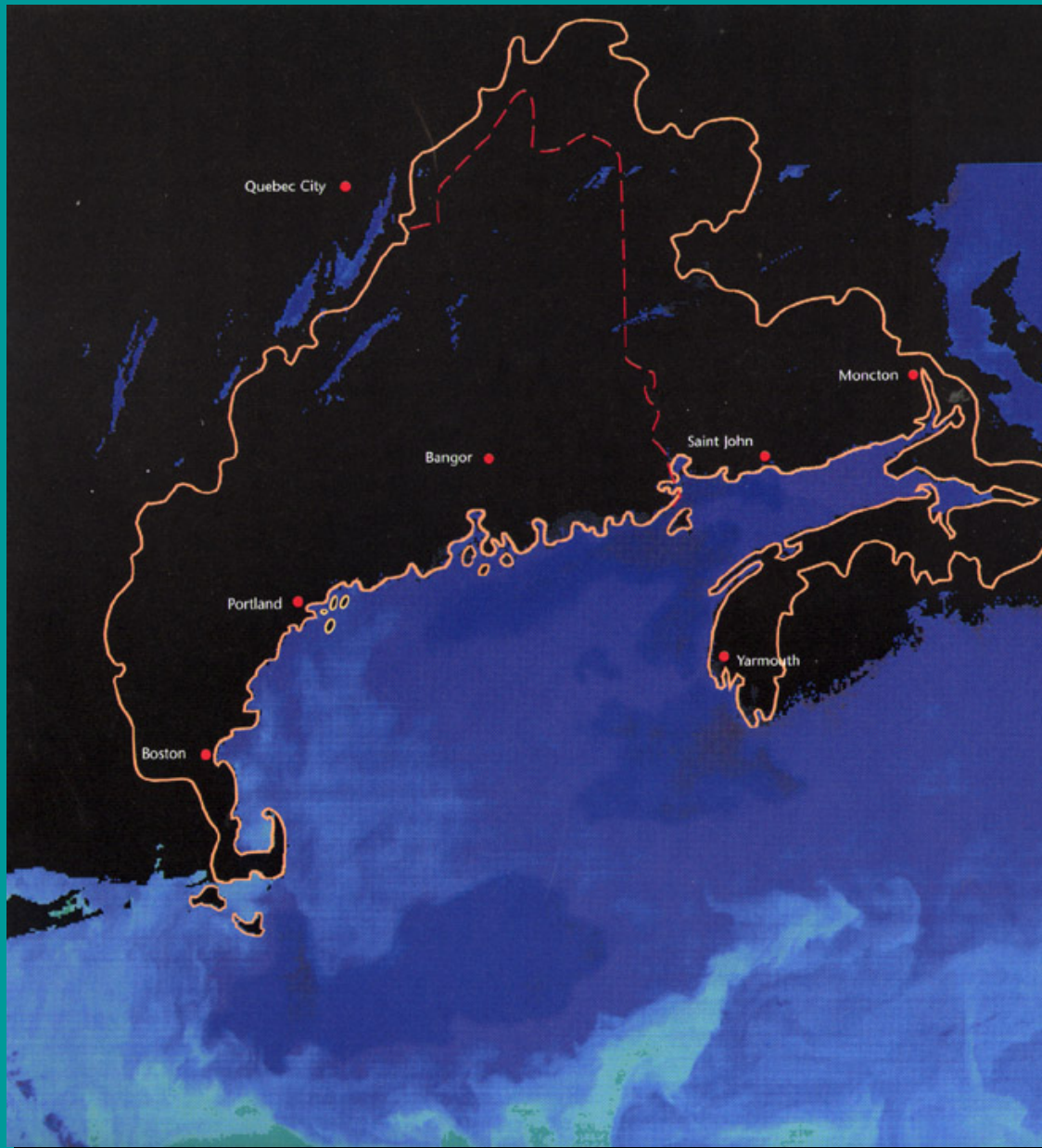
Washington D.C., December 6<sup>th</sup>, 2004

### *3 Case Studies*

1. Penobscot Bay Lobster  
Collaborative

2. Cod and Haddock Spawning Area  
Mapping

3. Northeast Regional Cod Tagging and  
Tracking









The Fox Islands: Vinalhaven and North Haven



This staged, promotional image shows two men dressed as fishermen and superimposed on a photograph of the fish drying yard. They are thought to be Edwin Lane and Thomas Libby.





An aerial photograph of Penobscot Bay, Maine, with a color overlay representing water transport mechanisms. The land is shown in shades of green, while the water is depicted with various shades of blue. A prominent blue line traces the coastline of the bay, and several other blue lines branch out into the surrounding waters, indicating specific transport pathways or currents. The text "Penobscot Bay Project" is overlaid in a large, yellow, serif font at the top, and "Larval Lobster Transport Mechanisms" is overlaid in a smaller, yellow, serif font in the center.

# Penobscot Bay Project

## Larval Lobster Transport Mechanisms

# Penobscot Bay Project

## Combining data from space with local knowledge to sustain the lobster fishery in Penobscot Bay, Maine

- Innovative collaboration among the Federal government, the State of Maine, fishermen and NGOs
- Application of remote sensing technology to complex marine resource issue
- Result: cooperative, ecosystem-based approach is prototype for effective fisheries management



Department of  
Marine Resources



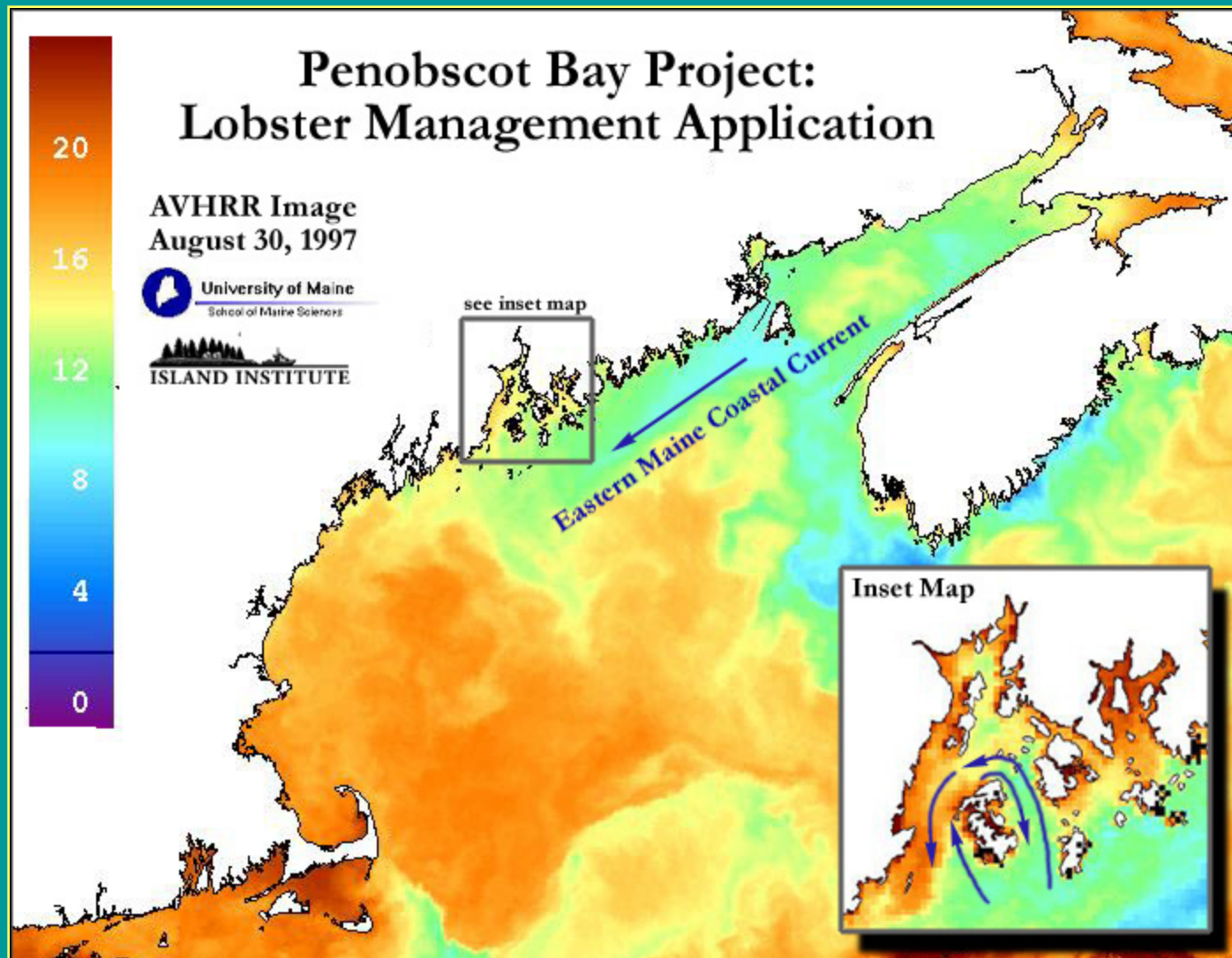
School of Marine Sciences

Maine  
State  
Planning  
Office

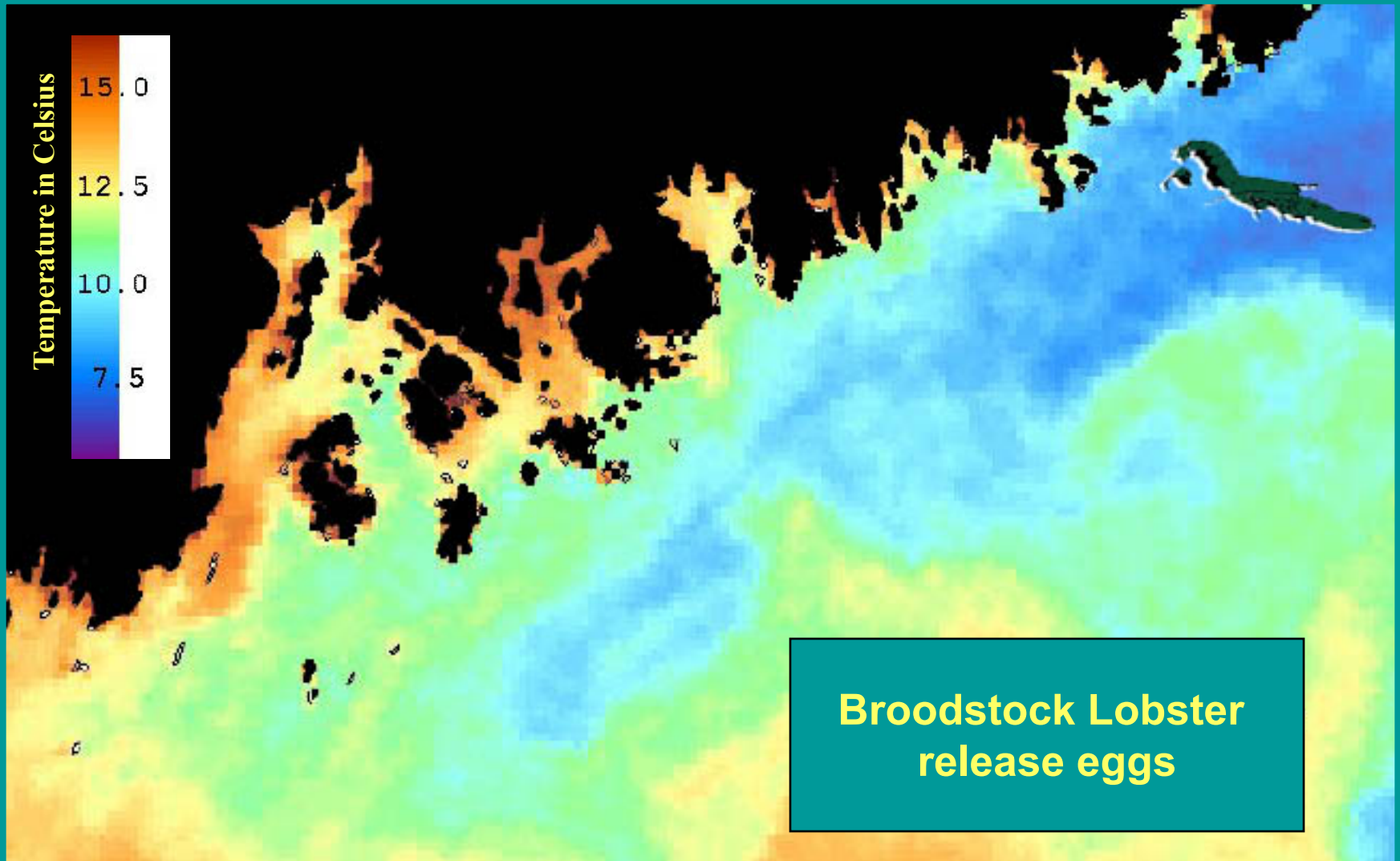


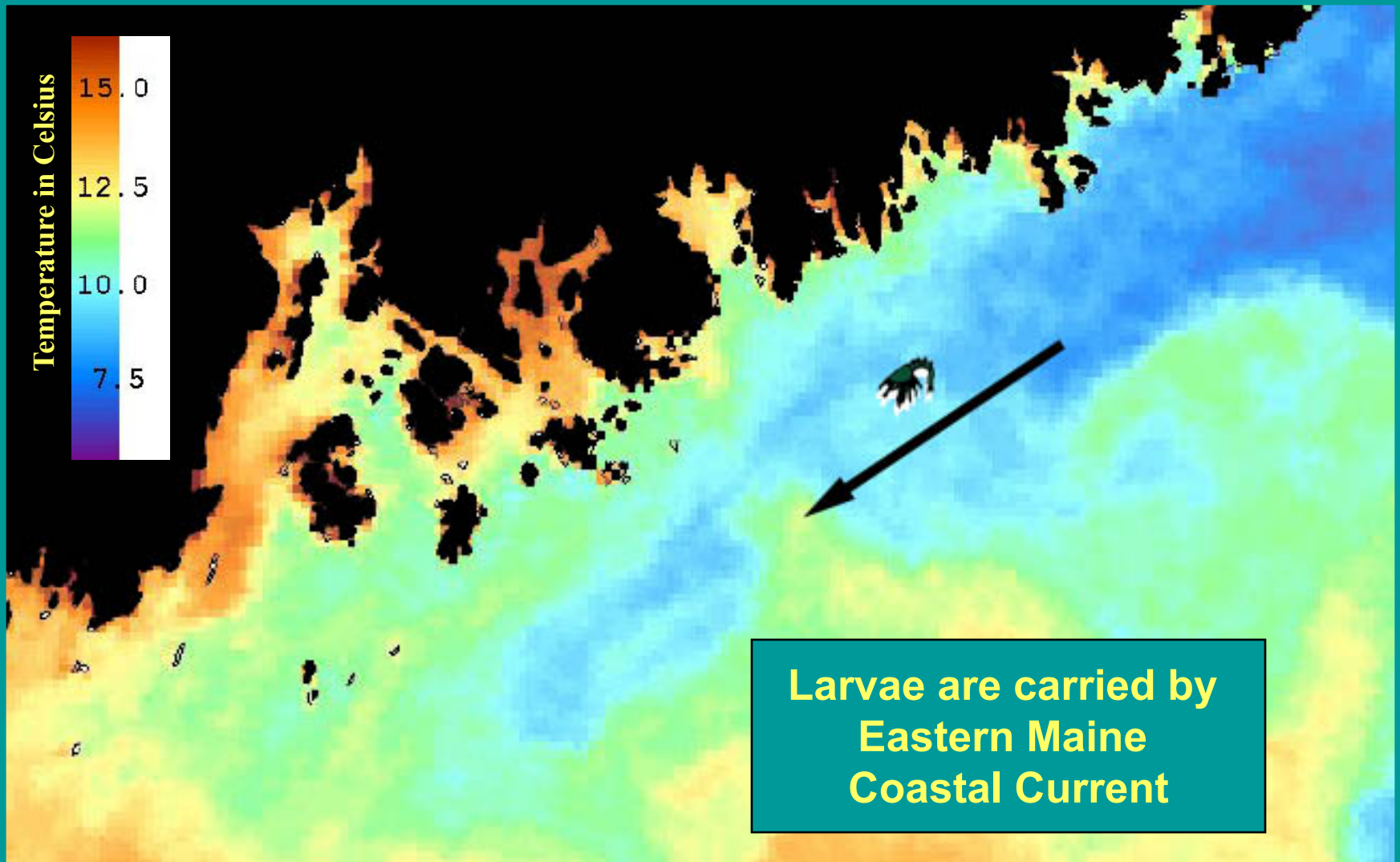


# Circulation in the Gulf of Maine and Penobscot Bay



# Eastern Maine Current is Larval Lobster Transport Mechanism







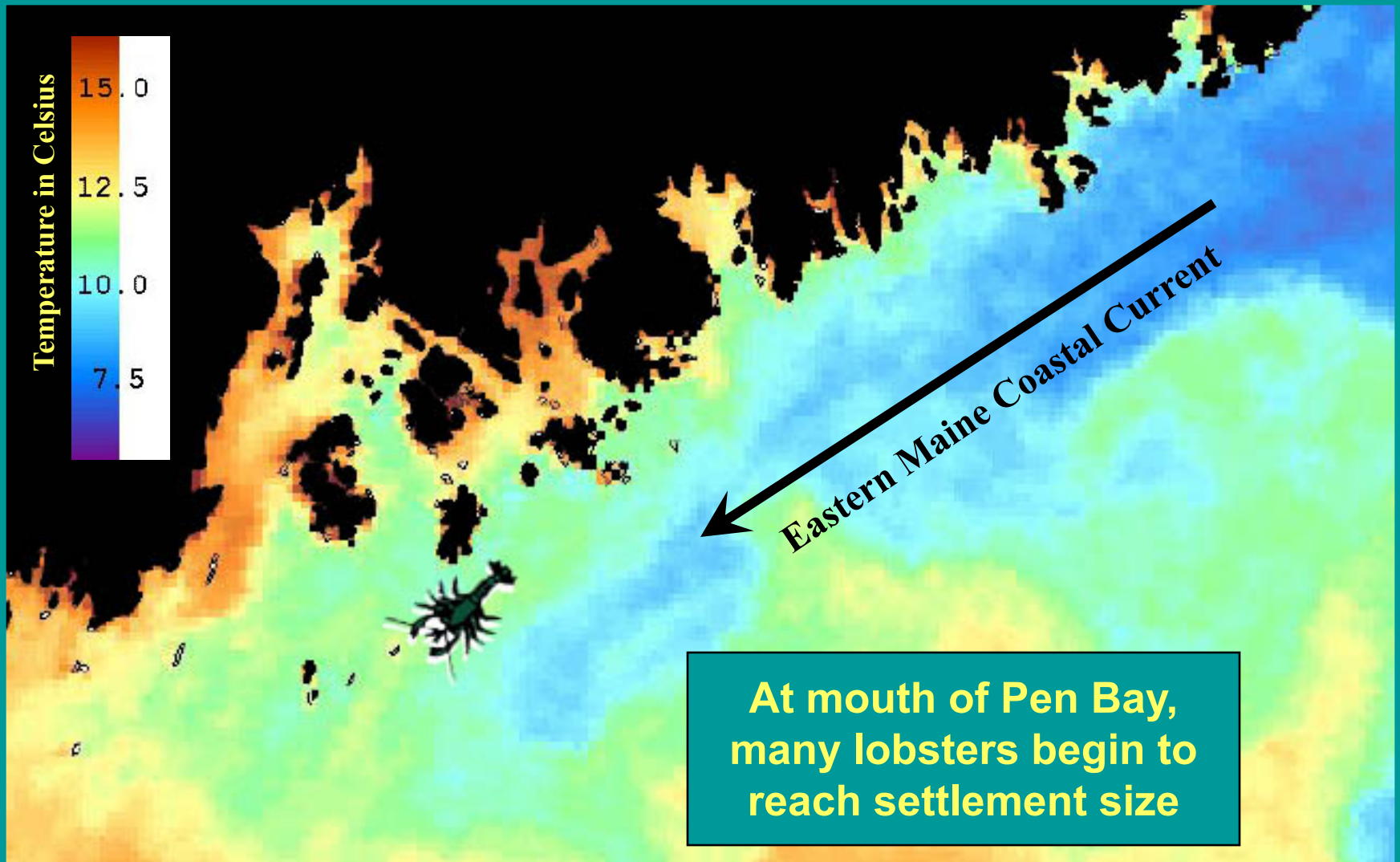




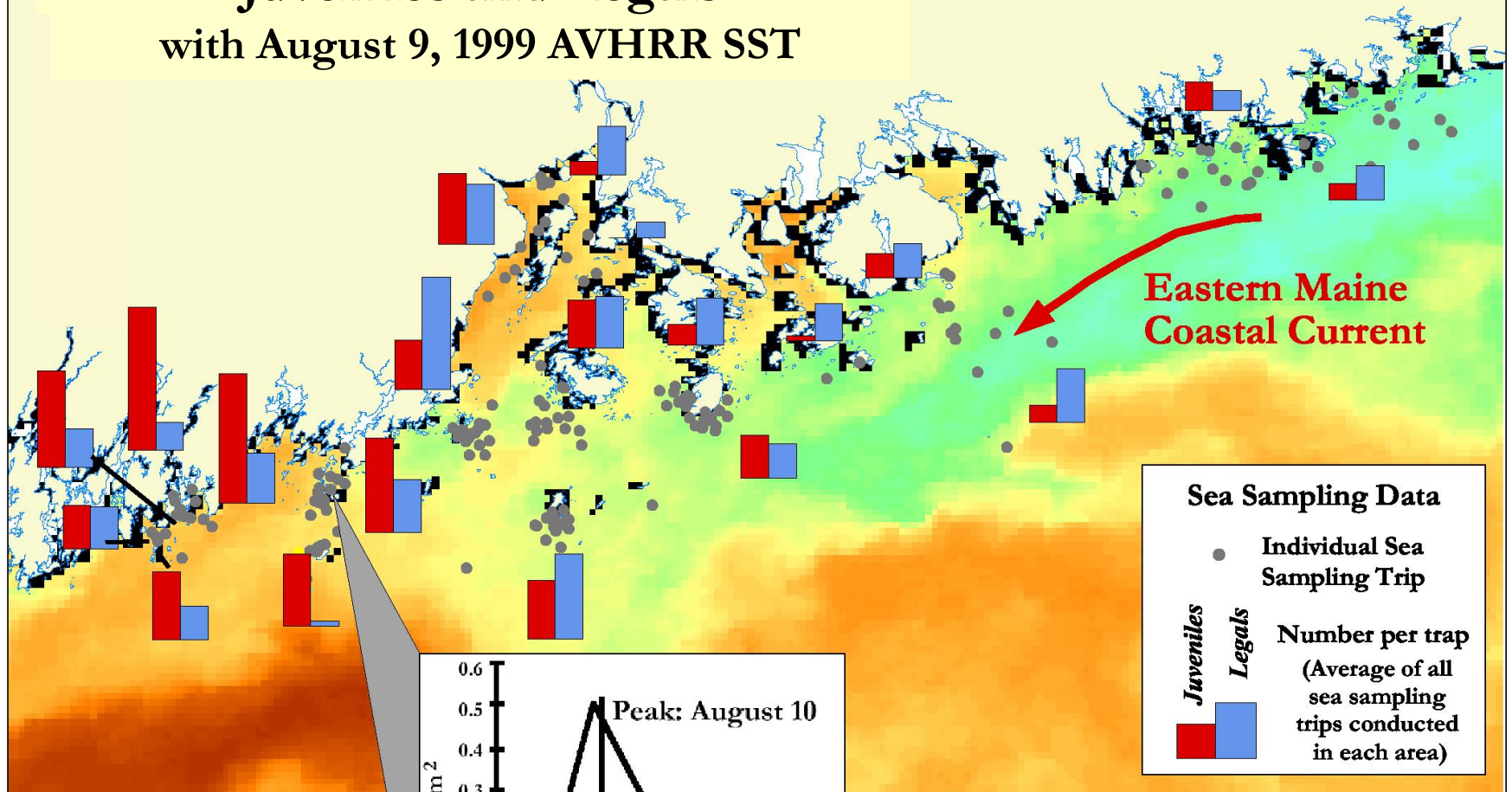
Photo by Gordon Chibrowski



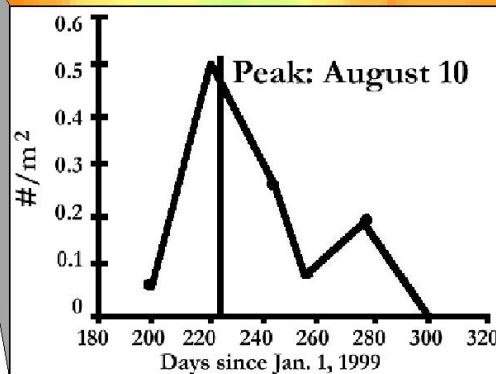
# 1999 Lobster Sea Sampling Results

## Juveniles and Legals

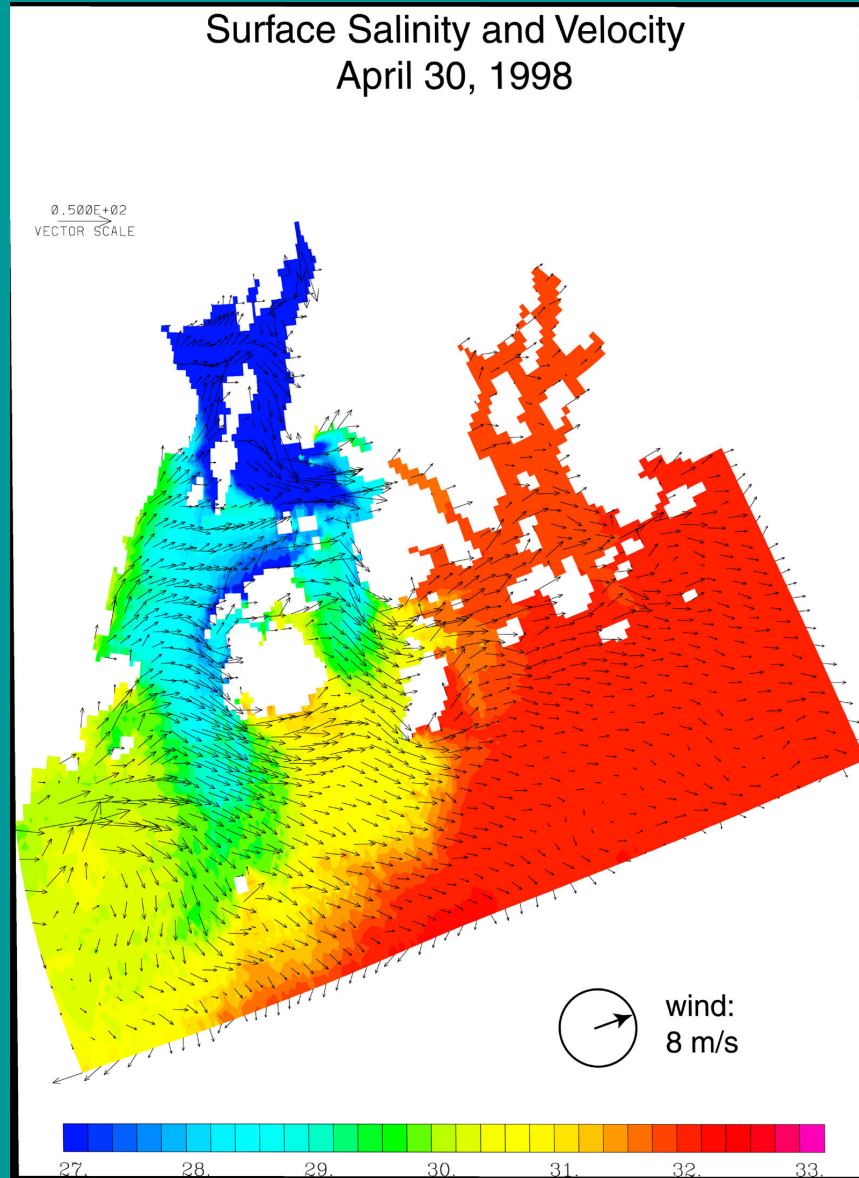
with August 9, 1999 AVHRR SST



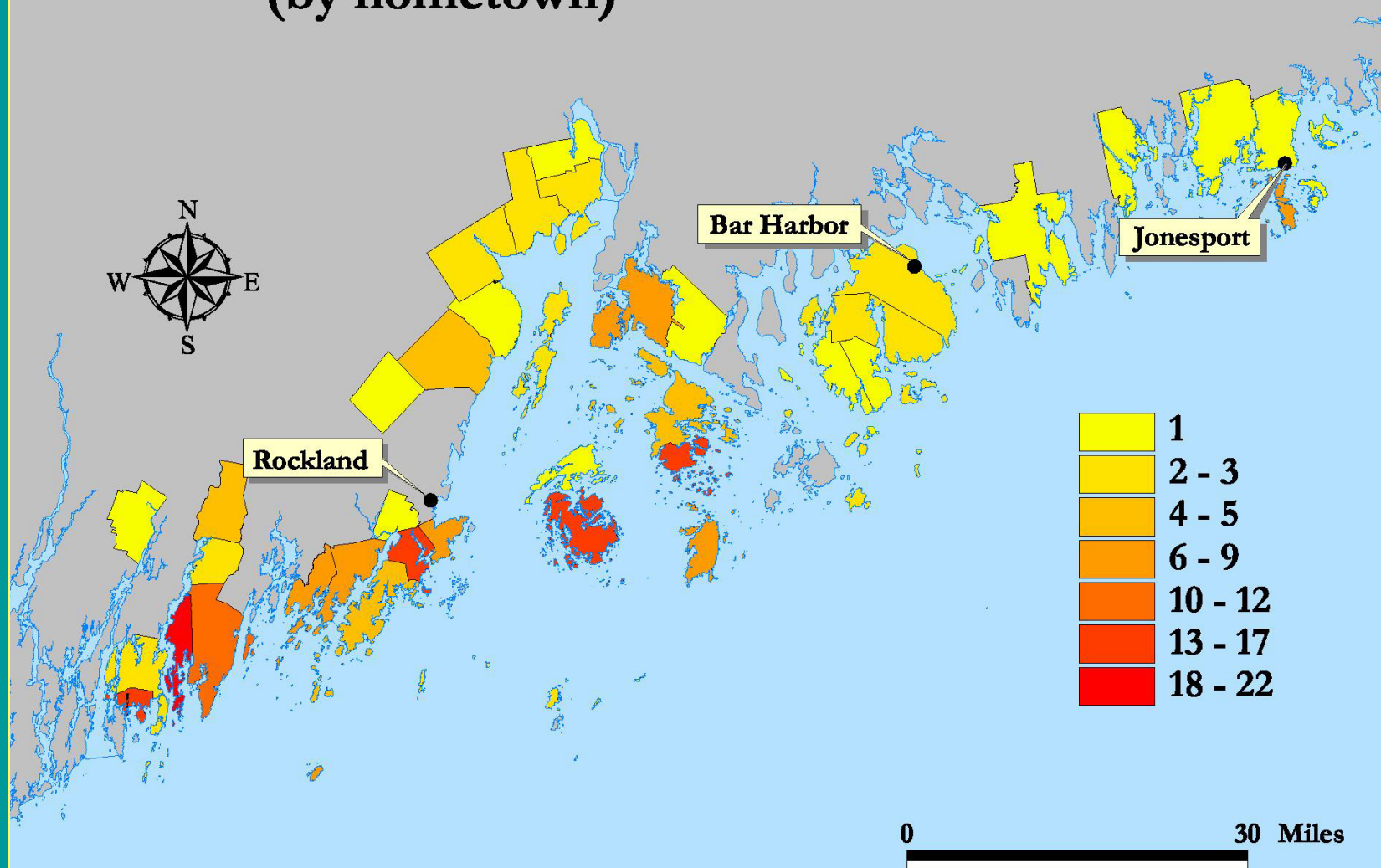
**Benthic Dive Data**  
graph illustrates the number of newly settled lobsters found at Allen Island over time.



# Numerical Modeling



# Number of fishermen participating in 1998-99 Sea Sampling effort (by hometown)





# Cooperative Research

Fishermen have key role in data collection and analysis



# Project Outcomes

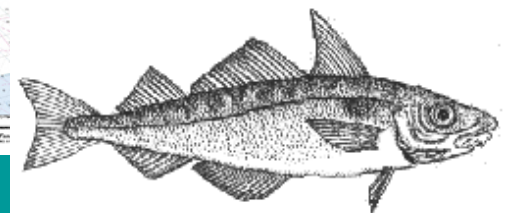
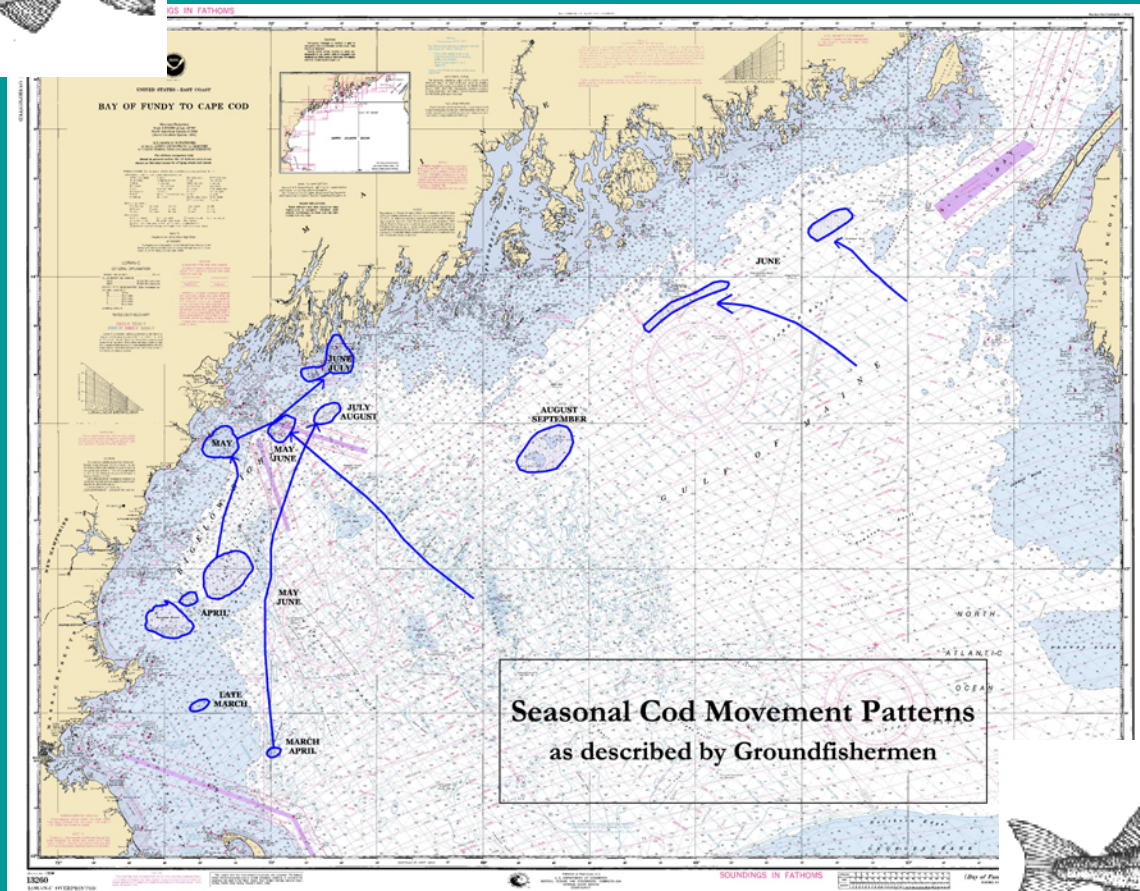
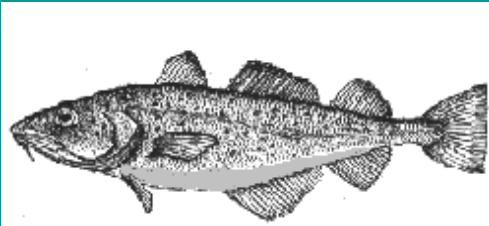
- Ecological characterization captured in GIS database and made widely available
- Adoption of data and techniques by Maine Department of Marine Resources
- Cooperation among fishermen, scientists and managers in development of a predictive model
- Ecosystem orientation for wide range of coastal management issues



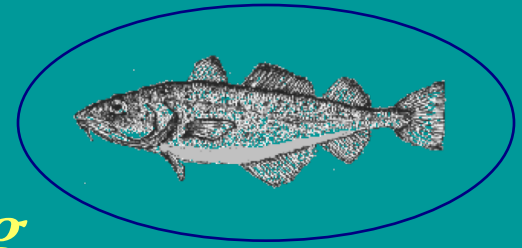
# Project Legacy: Laying the groundwork for new efforts

- Gulf of Maine Ocean Observing System (GoMOOS) established as the pilot for a national oceanographic monitoring system
- Fishermen, managers, scientists, and NGOs form Gulf of Maine Fisheries Research Collaborative to promote cooperative, ecosystem-based research

# Cod & Haddock Spawning



# Utilizing Fishermen's Knowledge: *Mapping Historic Groundfish Spawning*



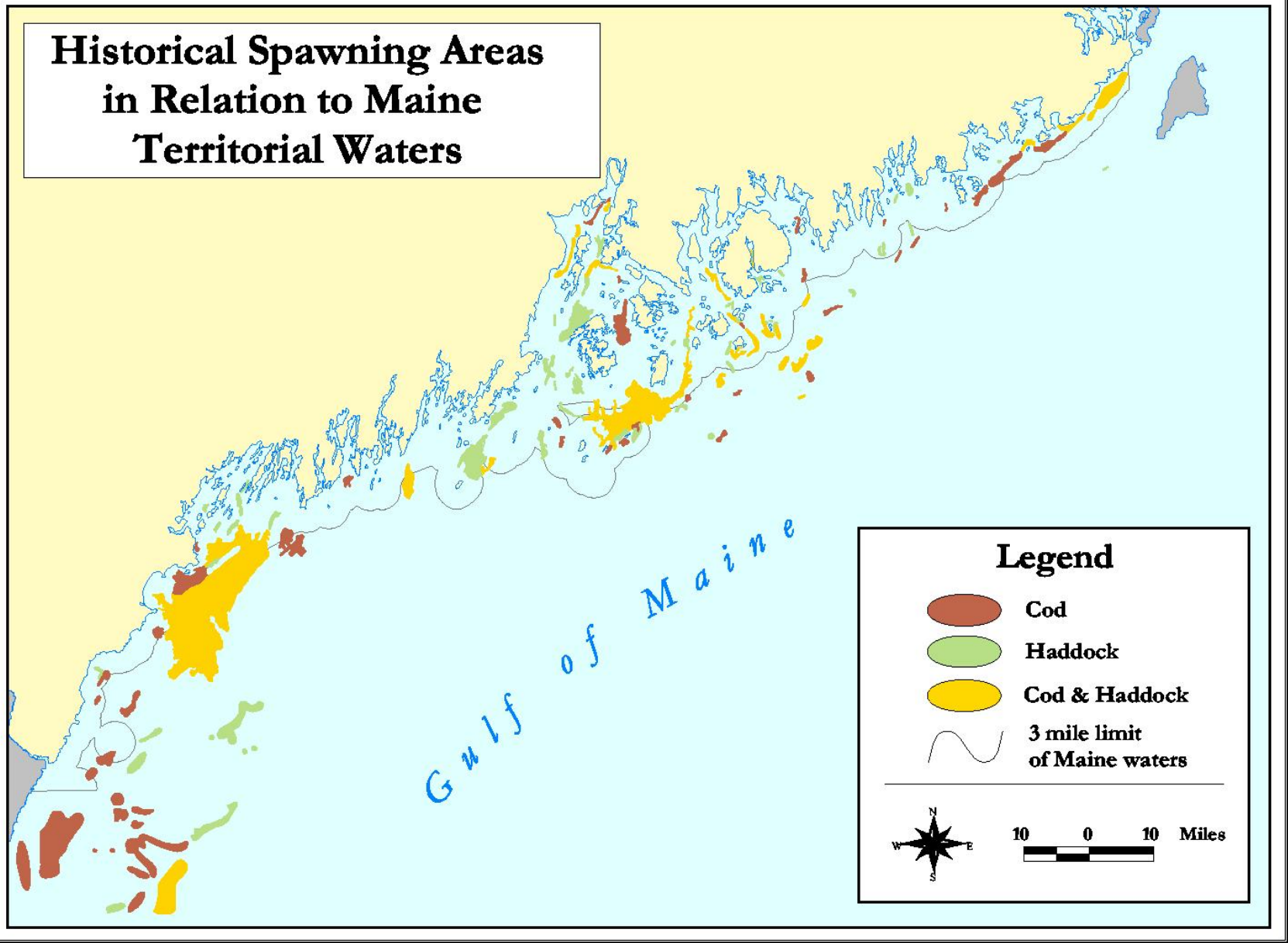
A project developed by Ted Ames and the Island Institute attempted to identify and map the historic spawning patterns of Atlantic cod and haddock spawning in the Gulf of Maine, using information acquired through interviews with fishermen.

In 1995, Ted Ames began interviewing older fishermen along the coast of Maine to learn where they had hauled in ripe and running cod and haddock.

Information was compiled into a series of GIS maps, and analyzed to make hypothesis about the collapse of the fishery.

The results suggest why some resource management strategies concerning these fish species may have failed.

# Historical Spawning Areas in Relation to Maine Territorial Waters





# Project Outcomes

- Understanding of the complexity and importance of nearshore spawning patterns
- Use of data by Maine Department of Marine Resources in instituting a five-year seasonal spawning closure
- Preservation of historical information for future management issues such as designating MPAs

# Northeast regional cod tagging program



Project funded by NOAA Fisheries Cooperative Research Partners Initiative

- **Goal:** to improve understanding of cod movement in the Gulf of Maine and to provide new information on essential habitat and behavior, with the ultimate goal of expanding the information base for Atlantic cod.



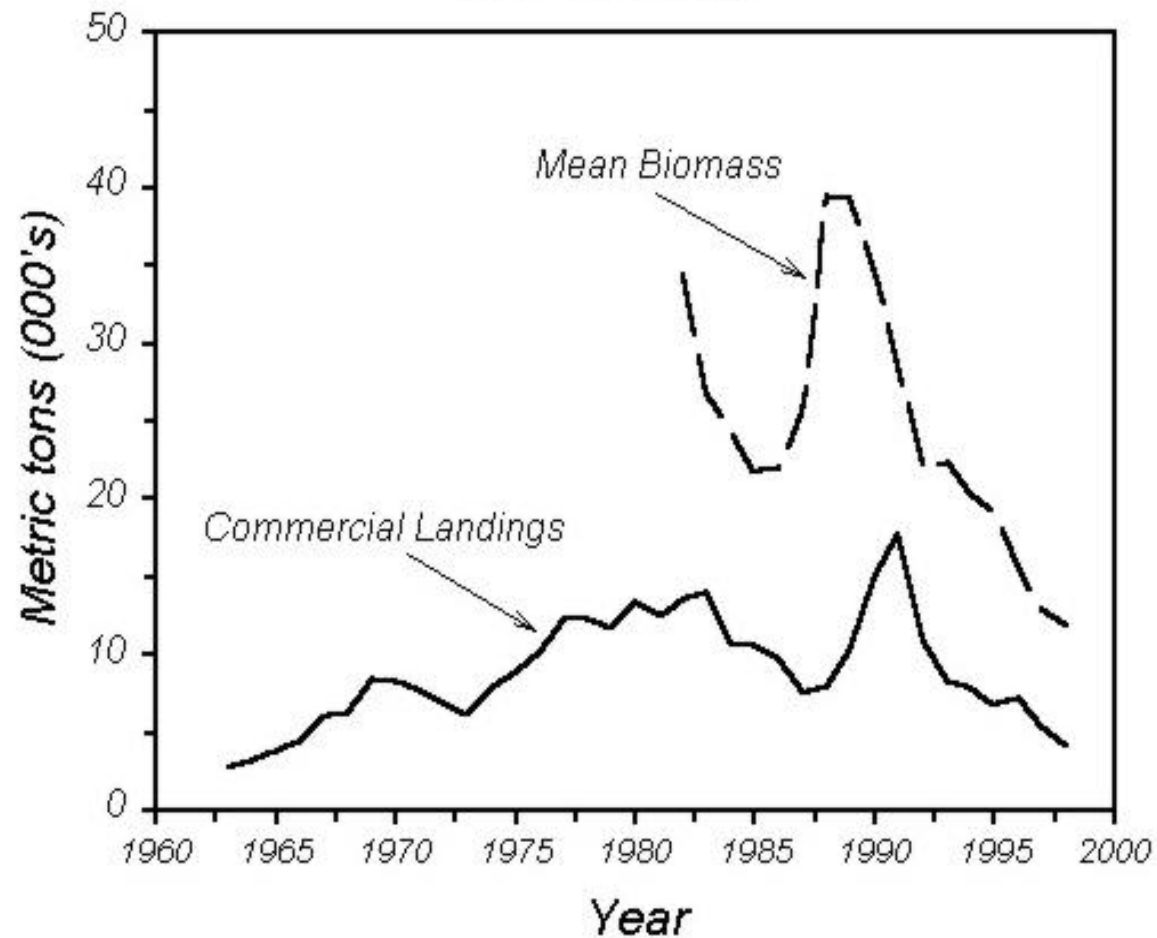
- Coordinator: Gulf of Maine Aquarium

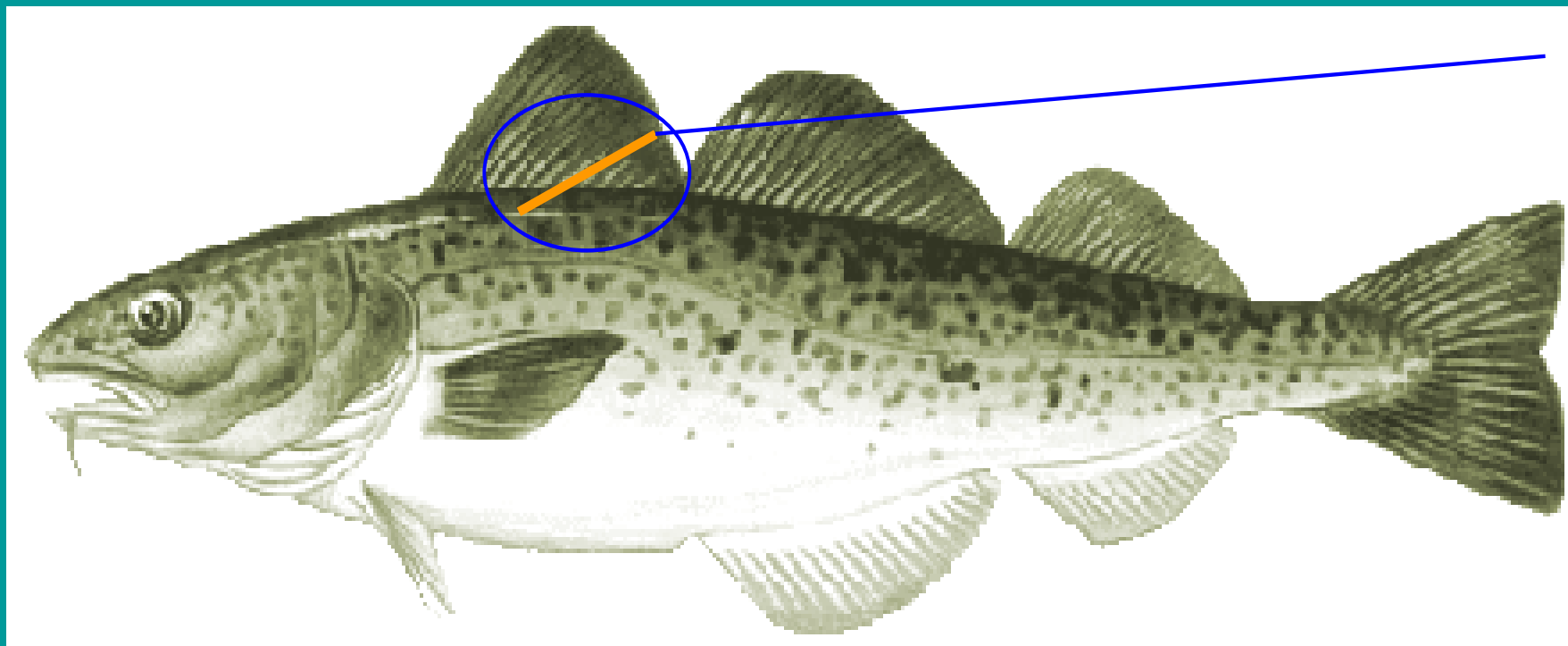
### Regional Tagging Partners:

- Maine Department of Marine Resources
- University of Massachusetts-Dartmouth, School of Marine Sciences and Technology
- Island Institute
- Cape Cod Hook Fishermen's Association
- Commercial and recreational fishermen



## ***Atlantic Cod Gulf of Maine***









High reward tag – worth \$100 when returned





**Fishing Vessel Pandora off Monhegan Island**

# Project Outcomes to date

- Local knowledge essential in efficiently finding fish for research
- There is a strong interest in applied projects by local resource harvesters
- Ecosystem or even population scale fisheries field work must have longevity

# *Conclusions for effective coastal solutions for fisheries issues in the Gulf of Maine*

- Must have funding and monitoring systems that are effective over a longer time scale
- Spatially fine scales and species interactions must be taken into consideration
- Local organizations, educational institutions, fishermen and communities can provide an effective research and management network
- Cooperation, cooperation, cooperation





