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

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Congress on Building Capacity for Coastal Solutions
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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.
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
Circulation in the Gulf of Maine and Penobscot Bay
Eastern Maine Current is Larval Lobster Transport Mechanism

Broodstock Lobster release eggs
Larvae are carried by Eastern Maine Coastal Current.
At mouth of Pen Bay, many lobsters begin to reach settlement size.
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.

Peak: August 10

Sea Surface Temperature in °C

Data from UMaine, Map by Island Institute, March, 2000
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

Seasonal Cod Movement Patterns
as described by Groundfishermen
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

Legend
- Cod
- Haddock
- Cod & Haddock
- 3 mile limit of Maine waters

Gulf of Maine

0 10 20 Miles

North
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

Mean Biomass

Commercial Landings

Metric tons (000's)

Year


High reward tag – worth $100 when returned
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