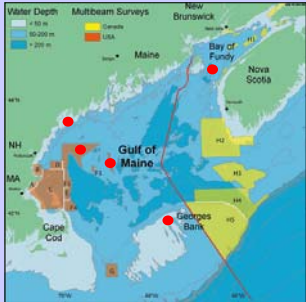


GULF OF MAINE MAPPING INITIATIVE: A FRAMEWORK FOR REGIONAL FISHERIES RESEARCH AND MANAGEMENT

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Gulf of Maine Mapping Initiative



The Gulf of Maine Mapping Initiative (GOMMI) is a partnership of government and NGOs in the US and Canada whose goal is to map the entire Gulf of Maine basin.

Maps of seafloor topography, geology, and habitat will help implement ecosystem-based management.

GOMMI's strategy is to coordinate ongoing mapping efforts, spearhead new projects in priority areas, and make data widely available to users and stakeholders.

For GOMMI to succeed, partnerships between government, academia, and the private sector; between researchers and managers; and between state/provincial and federal governments are essential.

Approximately 20% of the Gulf of Maine has been mapped using multibeam sonar.

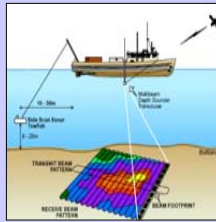
- 2006-2008 priority mapping areas: Platts Bank, Cashes Ledge, Casco Bay, Northern Georges Bank, Bay of Fundy



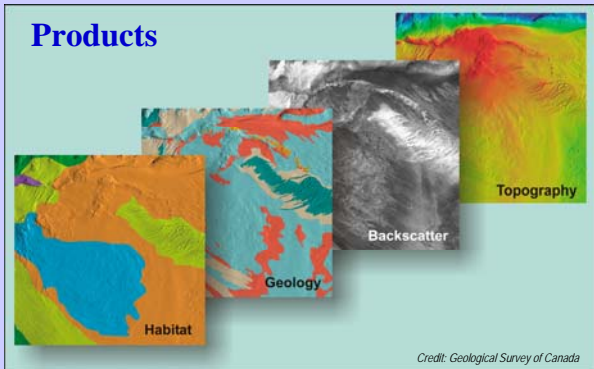
Credit: Simrad

Advanced Technology

Recent advances allow seafloor mapping on an unprecedented scale. Multibeam sonar systems image a wide band of seabed on a single pass of a survey vessel.



Credit: SAIC



Credit: Geological Survey of Canada

Maps of seafloor topography and backscatter are derived from acoustic (multibeam) surveys. Maps of geology and benthic habitat are interpreted products, based on acoustic imagery combined with geological and biological samples, photos, and video collected during "groundtruthing" surveys.

Diverse Habitats

The composition of the seafloor (e.g., fine mud, sand, gravel, cobble, boulders) determines which animals live there.



Credits: US Geological Survey

Tools for Fisheries Research....

Maps of the seafloor are important tools for fisheries research, allowing scientists to study:

- Linkages between species abundance, depth, and habitat
- Recovery of closed areas
- Distribution of invasive species, and
- Effects of fishing gear on bottom habitat.

...and Management

Benthic habitat maps help managers visualize the distribution, diversity and extent of marine communities under their jurisdiction. Maps can be used to guide many types of management decisions that can affect fisheries, e.g.,

- Siting of
- Closed fishing areas
- Aquaculture leases
- Oil and gas pipelines and transport
- Fiber-optic cables
- Alternative energy projects
- Dredged material disposal, and
- Sand and gravel mining

Potential Benefits to Fishing Industry

Maps of seafloor topography and habitat can be used to :

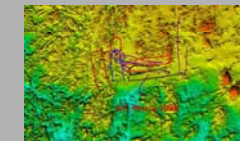
- Improve fishing efficiency
- Minimize gear impact on seafloor
- Reduce by-catch
- Reduce gear loss
- Minimize closed areas (e.g., regulate small-scale aggregations of cold-water corals rather than the entire area where they occur)



Proof of concept: Improved fishing efficiency

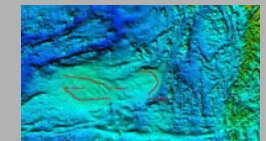
Multibeam mapping of scallop beds on German Bank by the Geological Survey of Canada helped improve fishing efficiency.

TRACKS BEFORE MAPPING



Credits: Geological Survey of Canada

TRACKS AFTER MAPPING



Multibeam imagery shows that, before mapping, tracks ran through mixed bottom: sand, gravel, and rocky outcrops.

With multibeam imagery, tracks could be targeted on sand and gravel, avoiding rocky outcrops.

After mapping, captains landed the same amount of scallops by dragging only 25% as much area. Savings of ~ 75% in towing time and distance led to lower costs for fuel and crew, reduced wear on fishing gear, and reduced impacts on habitat.

PARTNERS

- International: Gulf of Maine Council on the Marine Environment
- National: NOAA Fisheries, National Ocean Service, Office of Coast Survey, Coastal Services Center, US Geological Survey, Geological Survey of Canada, Fisheries and Oceans Canada, Canadian Hydrographic Survey
- State: MA Coastal Zone Management, ME Coastal Program, NH Coastal Program, ME Dept of Marine Resources, MA Division of Marine Fisheries, Wells and Great Bay National Estuarine Research Reserves
- Regional: Gulf of Maine Ocean Observing System, Gulf of Maine Census of Marine Life, Gulf of Maine Research Institute, Casco Bay Estuary Partnership
- Academic: UNH/NOAA Joint Hydrographic Center, Center for Coastal Ocean Mapping, University of Maine, UNB Ocean Mapping Group
- Industry: Science Applications International Corporation, MA Fishermen's Partnership