

SUMMARY

Gulf of Maine Mapping Initiative: 2006-2008 Planning Workshop

February 17, 2006

Boston, MA

The Gulf of Maine Mapping Initiative ([GOMMI](#)) is a collaboration of governmental and non-governmental partners in the U.S. and Canada. The goal of GOMMI is to map the entire seafloor of the Gulf of Maine to produce maps of seafloor topography, geology, and habitat, which are essential for resource management and many commercial activities. In February 2006, GOMMI held a one-day workshop to bring together a team of advisors who could help identify and prioritize regional mapping needs and build the partnerships required to meet these needs. The meeting focused specifically on reviewing and revising GOMMI's draft Two-Year Work Plan.

Keynote Speaker

The meeting began with a presentation by Jack Dunnigan on ecosystem-based management. Dunnigan was recently appointed as Assistant Administrator for Oceans and Coastal Services, and is responsible for the execution of all activities in NOAA's National Ocean Service (NOS). He previously served as NOAA's Ecosystem Goal Team Leader, and led NOAA's efforts to move forward in the utilization of ecosystem approaches to management of ocean and coastal resources. He was Executive Director of the Atlantic States Marine Fisheries Commission for 11 years, and has served on the staff of the NOAA Office of General Counsel and the New England Fishery Management Council.

In his presentation entitled "Ecosystem approaches to management: NOAA's new way of doing business" Dunnigan emphasized the collaborative nature and process of implementing ecosystem-based management. Ecosystem-based management has a strong geographic basis and is inherently place-based, i.e., communities are nested within small ecosystems, which are in turn nested within large marine ecosystems. Management must take scientific knowledge into account, in terms of what is known as well as the limitations of that knowledge. He pointed out that mapping and inventorying of resources, as proposed by GOMMI, provide an essential foundation for ecosystem-based management.

NOAA is America's oldest scientific agency, and the year 2007 will be the 200th anniversary of first coast survey commissioned by President Jefferson. NOAA started out with a commerce mission, but has grown to include a strong stewardship component. NOAA has a strong mapping capacity through its national assets such as the Coastal Services Center and the NOAA/UNH Joint Hydrographic Center.

On the funding front, there is little money in the current NOAA budget that could be used to directly fund mapping projects. He encouraged GOMMI to seek funding from stakeholders and partners. There are limited funds for regional councils or groups like GOMMI. NOAA would be more likely to support regional governance that comes from states working together. Governors of New England states and Premiers from Atlantic Canada are in the preliminary stages of forming a Northeast Regional Association. NOAA will lead by supporting such forms of governance.

Roundtable mapping updates

In the next section of the workshop, participants were given an opportunity to briefly describe their ongoing or planned mapping projects, as summarized below.

Walter Barnhardt, USGS Woods Hole Field Center, explained that USGS is working with states, e.g., Massachusetts CZM. In such cases there is a 1:1 cost share of federal and state funding. In Massachusetts, mapping has been focused on habitat issues. Maps are being published online for Ipswich Bay, Boston Harbor and approaches, and north of Cape Ann. In addition, USGS has been working with Joe Kelley of University of Maine mostly using side scan sonar and sub-bottom profiling in Wells Bay, Saco Bay, and Penobscot Bay.

Linda Mercer, Maine Department of Marine Resources, reported that they have some limited inshore mapping data obtained using RoxAnn. DMR could offer the use of RoxAnn as tool for future work. Last year, DMR's chief lobster biologist Carl Wilson conducted multibeam surveys on a local fishing vessel in the Monhegan Lobster Conservation Area (with Tom Webber).

Joe Arbour, DFO Canada, painted a rosy picture for mapping of the Canadian portion of the Gulf of Maine. Using funding available under the Oceans Act, surveys have been completed for Browns Bank and German Bank. Surveys will focus on the Bay of Fundy starting this year and going for 3 years, with 72 multibeam ship days in the mouth of Bay of Fundy. The Ocean Mapping Group located at the University of New Brunswick has also been focusing on nearshore waters. Their data will be folded into the government dataset for the Bay of Fundy. At the end of 3 years, DFO will release 5 maps products, including benthic habitat maps.

Chris Kellogg, New England Fishery Management Council, reinforced the utility of seafloor mapping. NEFMC is using seafloor maps for Essential Fish Habitat designation, bycatch reductions, monitoring, enforcement, etc.

Tony Wilbur, Massachusetts CZM, described 3 ongoing outreach projects, including

- 1) a seafloor mapping workshop in Boston on March 23. The workshop will show products from the [CZM/U.S. Geological Survey \(USGS\) seafloor mapping initiative](#) and demonstrate the importance of seafloor maps to improve understanding of the geologic framework, habitat character and management of the seafloor [To attend this workshop, please contact [Tony](#)];
- 2) a mapping poster to increase the public's understanding of mapping technologies and to increase the public's knowledge of the variety of benthic habitat types; and
- 3) interpretative displays of underwater landscapes.

Mass CZM is also working with the Massachusetts Fishermen's Partnership on a pilot project funded by the Northeast Consortium to use fishermen's empirical knowledge to determine sampling sites for the project and with fishermen assisting the scientists with the collection and characterization of the sediments and benthic epifauna, etc., for groundtruthing. They are also scoping a project for a marine habitat classification system in Massachusetts.

Page Valentine, USGS, reported that mapping of [Stellwagen Bank](#) is progressing well. They have surveyed 1,100 sq nautical miles total, and the first map using their habitat classification system will be presented at a meeting in May 2006. Map products will include sediment mobility, benthic habitat, seabed ruggedness, and more.

Tom Noji, Northeast Fisheries Science Center, announced the upcoming conference on "[GIS and Ocean Mapping in Support of Fisheries Research and Management](#)" to be held in Cambridge, MA on April 11. He told us that despite limited funding for habitat at the ecosystem processes center, they will run 2 habitat focused cruises per year, one to Georges Bank and one to Hudson Canyon. At the end of August 2006 the cruise to Georges Bank will be focused on the invasive colonial tunicate *Didemnum*. The Northeast Fisheries Science Center has produced a broad scale habitat map using the methods created by Vladimir Kostylev and with

Vlad's assistance. The map relies mostly on hydrographic forcing factors and relatively little groundtruthing data. The Center is currently analyzing the output with respect to correlations of habitat types and trawl survey data.

Kathryn Ford recently joined the **Massachusetts Division of Marine Fisheries**, bringing skills in shallow water mapping. DMF has developed a partnership with UMass Dartmouth's School for Marine Science and Technology (SMAST) to support research directed toward fisheries management issues. For example, they are studying the lobster decline in Buzzards Bay using habitat characterization, ventless lobster traps, and diver surveys. Initial analyses are showing linkages between lobster abundance with depth and habitat strata. Another mapping project is taking place in the Cod Conservation Zone, with funding from the Northeast Consortium: DMF and the Massachusetts Fishermen's Partnership are working together to acoustically survey and groundtruth a portion of Massachusetts Bay that is associated with an annual cod aggregation using sidescan sonar to provide high resolution fish habitat associations. This project will test the feasibility of using acoustic equipment to identify areas preferred by codfish and to generate high-resolution bottom habitat maps. DMF has also added several tools to its mapping toolbox, including an EM3002 multibeam sonar system and a towed underwater vehicle (MacArtney Focus-2) that is functional to 400 m depth.

Seth Ackerman, Mass CZM and USGS, is using existing data collected by National Ocean Services for Boston Harbor. He is producing map products similar to those produced previously by USGS/Mass CZM.

Rod Evans, Science Applications International Corporation (SAIC), said their main focus is on developing software for updating nautical charts. SAIC has been mapping the continental shelf using a US Navy ship. This continental shelf project provided the \$1.5 million used to acquire acoustic imagery in 2005 for GOMMI on Cashes Ledge, Platts Bank, and northern Wildcat Knoll (1,300 sq km area of, depth range 30-150m, 70 days of ship time).

Andy Beaver, NOAA, National Ocean Service (NOS), reported that the *Thomas Jefferson* surveyed southern Wildcat Knoll in 2005. They plan to survey Penobscot Bay in 2009, and will also be charting the approaches to Portsmouth at that time. He noted that Quoddy Bay may become a high priority because of LNG proposals in the Eastport region. A swath vessel is being built that will be housed in New Castle, NH near UNH. All new fisheries research vessels will have multibeam systems, and will be slated for multiple uses, e.g., fisheries, navigation, etc..

Discussion of GOMMI's Two-Year Work Plan

The majority of the workshop was dedicated to reviewing and refining GOMMI's draft Two-Year Work Plan. Our goals were to ensure that GOMMI's short-term objectives would meet regional needs, and that we would be able to carry out these plans by identifying and developing new sources of partnership and financial support.

The five objectives in the Work Plan are:

- 1) Coordinate mapping efforts in GoM
- 2) Broaden base of support for GOMMI
- 3) Complete pilot mapping project on Cashes Ledge and Platts Bank
- 4) Map priority areas (Penobscot Bay, Northern Georges Bank)
- 5) Encourage use of metadata and mapping standards

Based on ensuing discussions, the revised objectives and tasks—including leads, partnerships, next steps, time frames, and funding ideas—are listed in the following pages.

Objective 1) Coordinate mapping efforts in the Gulf of Maine region.

GOMMI strives to advance seafloor mapping efforts by coordinating projects, sharing information, and assisting partners.

Task 1) Maintain [coverage map](#) on GOMMI web site with links to data sources & existing maps

Lead: Seth Ackerman, USGS/Mass CZM
Partners: Sara Ellis, GOMMI
Peter Taylor, GOMC
All GoM mapping data providers
Progress: Rod Evans, SAIC, has sent data re Casco Bay
Next Steps: Seth work with Ocean Mapping Group of UNB to add data from
Passamaquoddy Bay (by March 31?).
Other data providers send any additional data to Seth (by March 15?)
Time Frame: Ongoing: map first posted Feb 15
Funding? General support for GOMMI through small grants (NOAA, GOMC),
private foundations; no additional funding needed at this time

Task 2) Write periodic e-newsletter on regional seafloor mapping activities

The newsletter will include updates on mapping endeavors, listing of upcoming conferences, links for more information, updates on GOMMI activities etc..

Lead: Sara Ellis, GOMMI
Partners: All groups with GoM mapping projects
Next Steps: Request news from workshop participants
Develop distribution list
Time Frame: Send out first newsletter by April 15: aim for two per year
Funding? General support for GOMMI through small grants (NOAA, GOMC),
private foundations; no additional funding needed at this time

Task 3) Explore the need for GOMMI to provide an online mapping clearinghouse

Lead: Sara Ellis, GOMMI
Partners: Daniel Martin, CCS re GeoSpatial one-stop
Next Steps: Explore existing resources that may already address this need; update
website and include info in first e-newsletter
Funding? General support for GOMMI through small grants (NOAA, GOMC),
private foundations; no additional funding needed at this time

Task 4) Serve as mapping liaison with GoM entities

Lead: Susan Snow-Cotter, Mass CZM / GOMMI
Tom Shyka, GoMOOS
Partners: GoMOOS
Gulf of Maine Ocean Data Partnership
Gulf of Maine Research Institute
Gulf of Maine Census of Marine Life
Northeast Regional Association
Next Steps: Sara contact various organizations; add links to GOMMI websites; solicit
descriptive paragraphs to accompany each web site listing
Time Frame: Post by March 31
Funding? General support for GOMMI through small grants (NOAA, GOMC),
private foundations; no additional funding needed at this time

Task 5) Develop partnerships with private industry

GOMMI needs to develop partnerships with private industry; this is an as yet untapped resource for manpower, logistical support, and funding.

- Lead:* Joe Arbour re Canadian fishermen
Linda Mercer re Maine fishermen
- Partners:* Regional fishing associations (e.g. Mass Fishermen's Partnership, ME and MA lobstermen's associations)
Technological groups, e.g. SAIC, Marine Ocean Technology Network
- Next Steps:* Rod Evans of SAIC will inquire with competitors to see if they have and GOM seafloor mapping data; request they send data to Seth Ackerman
Tom Noji/Vince Guida will contact heads of NEC to see if there could be a convergence between GOMMI's & NEC's mapping priorities
- Time Frame:* Ongoing
- Funding?* Northeast Consortium for projects with fisherman & scientists
(NEC Planning letter due April 11: 75/25% fishermen/scientists split)

Task 6) Facilitate collaboration of US/Canadian trans-border mapping

This summer, Natural Resources Canada is initiating a multi-year mapping project in the Bay of Fundy. They are interested in collaborating with the US by extending survey tracks into US waters.

- Lead:* Andy Beaver, US NOS/ GOMMI
Joe Arbour, DFO Canada
- Partners:* NOS/OCS
DFO
- Next Steps:* Brian Todd of NRCan proposes this summer to survey a small area of US waters adjacent to the mouth of the Bay of Fundy
Susan is contacting Katie Reis of National Ocean Service. She will provide her with a short list of needs, including a point person from Office of Coast Survey re Canadian surveys in US waters south of the Bay of Fundy
- Time Frame:* Summer 2006
- Funding?* 2006 survey costs already covered by NRCan

Objective 2) Broaden base of support for GOMMI

The Planning Workshop brought together a wide range of participants, all sharing the common aim of advancing seafloor mapping efforts in the Gulf of Maine. One of GOMMI's high priorities is to broaden our base of support in several ways: add new members to the Steering Committee; build an additional Advisory Committee to help with outreach, project planning, and financial support; and, spread awareness of GOMMI through presentations, workshops, and the website.

Task 1) Develop Team of Advisors to build support for and understanding of GOMMI

- Lead:* Susan Snow-Cotter, Mass CZM / GOMMI
- Progress:* Andy Beaver from NOAA/NOS and Jim Case from CCOM and the NOAA/UNH Joint Hydrographic Center have both agreed to join the GOMMI Steering Committee.

Next Steps: Consider idea of formalizing an Advisory Committee that is larger than the Steering Committee
Advisory Committee might include representatives from industry (e.g., Marine Technology Society; fishermen's organizations) and NGOs (e.g., Ocean Conservancy).

Time Frame: Ongoing

Funding? None needed

Task 2) Undertake legislative outreach campaign

The GOMMI Steering Committee needs help with legislative outreach. Discussions emphasized the need to include diverse partners as signatories (especially fishing industry) to make funding requests stronger and that it is important to make requests repeatedly.

Lead: Susan Snow-Cotter, Mass CZM / GOMMI

Partners: GoMOOS
NOAA/UNH JHC
NEFMC
Fishing/industry organization
Others?

Next Steps: Consider holding GOMMI events, e.g., hold a media event in conjunction with 200th anniversary of NOAA's first hydrographic survey, e.g., take NOAA Administrator Lautenbacher and other high ranking officials out on a survey vessel.

Set up small meeting for Capitol Hill Oceans Week, June 12-16, 2006

Talk to Tom Shyka re IOOS regional associations (GoMOOS is a model).

How can GOMMI get mapping on the table as integral to all ocean observations?

Time Frame: Spring/Summer 2006

Funding? General funding for GOMMI to support outreach, travel, etc.

e.g., [National Fish & Wildlife Foundation](#), private foundations
NOAA 200th Anniversary internal mini-grant

Task 3) Hold workshops and sessions at other conferences on GOMMI and map products

Lead: Sara Ellis, GOMMI

Partners: GoMOOS, Coastal Services Center

Conference: Maine Fishermen's Forum, Rockland, ME; March 2-4, 2006 (Sara)
[Maine Coastal Waters Conf](#), Rockport, ME; April 10, 2006 (Megan)
[GIS & Ocean Mapping in Support of Fisheries Research & Management](#), Cambridge, MA; April 11, 2006 (Sara / Tom Noji)
[Fish Expo](#), Providence, RI April 5-6, 2006
[Canadian Hydrographic Conference](#), Halifax, NS; June 5-9, 2006
[Oceans '06 MTS/IEEE](#); Boston, MA; Sept. 18-21 2006
[New Bedford Working Waterfront Festival](#), New Bedford, MA Sept. 23-24
[ICES 2006](#), Boston, MA, Oct 30-Nov 3
[Massachusetts Lobstermen's Association](#) Annual Weekend, Hyannis, MA, Feb. 2007

Workshops: Types of workshops suggested:
-practical applications of mapping for oceans management, fisheries, etc;
-comparisons of different technologies

-metadata standards, creation techniques, and tools

Time Frame: Several presentations already planned for Spring & summer 2006
Workshops to be determined

Funding? EPA offers funding for workshops
Maine Sea Grant development funds

Task 4) Maintain and improve web site

Lead: Sara Ellis, GOMMI

Partners: Peter Taylor, GOMC Web Master

Next Steps: Add more links, e.g., GeoSpatial one stop, GoM mapping portal, lists of mapping conferences, links to information of metadata standards, list of mapping protocols, citations of people who have moved from geophysical maps to benthic habitat maps

Time Frame: Start in March 2006; ongoing

Funding? General funding for GOMMI through small grants (NOAA, GOMC), private foundations
[National Fish & Wildlife Foundation](#) (pre-proposal due April 1)

Objective 3) Continue pilot mapping project on Cashes Ledge and Platts Bank

GOMMI's top mapping priority is to complete the project that began in 2005 when CCOM-JHC and SAIC collected acoustic imagery on Cashes Ledge and Platts Bank. CCOM-JHC is currently processing the data, which will be used to produce maps of contoured topography and backscatter. In 2006 & 2007, GOMMI proposes to collect the geological data required for groundtruthing as well as biological data, resulting in maps of sediment types, benthic habitat and other interpretive maps.

Leads: Tom Noji /Vince Guida, NEFSC / GOMMI
Andy Armstrong, NOAA/UNH JHC

Partners: Nick Wolff, Gulf of Maine Census of Marine Life (Platts Bank);
Jonathan Grabowski, Gulf of Maine Research Institute (Cashes Ledge)
Kathryn Ford, Mass DMF (cruise time)

Next Steps: Tom/Vince set up conference call between all partners to start planning (March 17?)
Hold planning meeting at CCOM (April 17?) (Page and Megan attend too)
Ensure CCOM processes 2005 acoustic data well in advance of 2006 summer cruises (Andy Armstrong; April 14?)
Try to get graduate student to take on project
CCOM/UNH? University of Northern Ireland?

Funding? NOAA money at CCOM re UNH graduate student?
NOAA/NOS/Coastal Services Center (CSC)
NOAA's [Cooperative Research Partners Program](#) (CRPP)
Census of Marine Life??
Others?

Objective 4) Map priority areas identified in User Needs Assessment

During GOMMI's 2004 User Needs Assessment workshop, participants identified two coastal and two offshore mapping priorities. To fit within a manageable two-year plan, the GOMMI Steering Committee narrowed these down to one of each: Penobscot Bay

(coastal) and northern Georges Bank (offshore). In the lead up to this Planning Workshop, however, we discovered that NOAA/NOS/Office of Coast Survey plans to map Penobscot Bay in 2009. In light of this, planning workshop participants suggested that we focus short-term mapping efforts on Casco Bay instead. Casco Bay is an important area for fishing, industrial use, recreation, and industrial transport (especially oil). SAIC has already mapped a sizeable chunk of Casco Bay (~10%) using multibeam sonar for NOAA Office of Coast Survey. We also discussed mapping other small areas of the Gulf of Maine opportunistically.

Casco Bay

Leads: Megan Tyrrell, Wells NERR / GOMMI

Partners: Maine DMR
Maine Coastal Program
Gulf of Maine Research Institute
GoMOOS
Gulf of Maine Census of Marine Life
CCOM?
Casco Bay Estuary Partnership
Friends of Casco Bay
Island Institute
Ocean Conservancy
SAIC
Bowdoin College (Geology Professor Ed Laine)
Southern Maine Community College
St. Joseph's College

Progress: SAIC has provided data re previously mapped portion of Casco Bay; Joe Kelley's data will be added soon

Next Steps: Explore potential partnerships via phone calls/e-mail (by March 17)
Set up conference call or planning meeting (by March 31)

Funding? Northeast Consortium, lobster boats (Planning letter due April 11)
NOAA's [Cooperative Research Partners Program](#) (CRPP)
Maine Sea Grant Program Development funds (proof of concept)
(Maine Oil Spill Advisory Council, next RFP won't be out until 2007 for 2008 work)

Northern Georges Bank

NOAA's new vessel the *R/V Bigelow* would be the vessel of choice for offshore work. It will be equipped with a new Simrad ME70 multibeam echosounder.

Leads: Tom Noji /Vince Guida, NEFSC /GOMMI
Page Valentine, USGS

Partners: NOAA NEFSC
CCOM
Others?

Next Steps: Tom Noji /Vince Guida will try to reserve dedicated time for the *Bigelow* for 2008 (Would it be possible to get some work done earlier by having them do some of their multibeam testing on Georges Bank?)

Time Frame: Bigelow not available until 2008; need to start planning well in advance.

Funding? Getting ship time is easier than getting funding for staff overtime; seek volunteers?

Other small areas for opportunistic mapping:

GOMMI may be able to help map other smaller, more manageable areas by coordinating opportunistic mapping efforts. Some areas that might be worth mapping include NEFMC's proposed Habitats of Particular Concern (HAPC) for subtidal age-0 Atlantic cod, extending from MLW to 10 m below MLW, within existing Essential Fish Habitat (map available on request). CCOM's summer class on mapping techniques might be able to do some mapping work near the NH/ME border or in Casco Bay.

Leads: Jim Case, CCOM/JHC /GOMMI
Partners: CCOM/JHC
NEFMC
Maine DMR
Progress: Sally McGee has forwarded a map showing NEFMC's proposed HAPCs
Next Steps: Contact CCOM/JHC to discuss feasibility of mapping by summer class (Megan coordinate with Jim Case)
Other opportunistic mapping possibilities??
Time Frame: Start planning March 2006
Funding? If surveys opportunistic, shouldn't need additional funding; in some cases may need funding for data processing

Objective 5) Encourage use of metadata and mapping standards for all GoM mapping

The general consensus was that GOMMI should increase access to FGDC/CGDI-compliant metadata. There was also interest in having GOMMI facilitate the use of common mapping standards, starting with a comparison of current mapping protocols/standards used around the Gulf Maine. To increase access to metadata standards there would be no need for GOMMI to invent new tools, as many are already in place (e.g. data portals, lists of standards, etc.). Instead GOMMI's role should be to share information, e.g., data sharing tools, metadata creation techniques and tools, and be an advocate for using metadata in the GoM mapping community. Sharing could be accomplished through workshops and/or the GOMMI web site.

Lead: Jim Case, CCOM/JHC / GOMMI
Partners: National Geophysical Data Center (NGDC)
Lamont-Doherty Earth Observatory (LDEO)
Federal Geographic Data Committee (FGDC)
Canadian Geospatial Data Infrastructure (CGDI)
Next Steps: Explore new ways to share information
Post general info or links re metadata on GOMMI website
Time Frame: Ongoing
Funding? None needed at this time

GOMMI Planning Workshop Participants, February 17, 2006

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GOMMI Planning Workshop Participants (continued)

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