

Environment

Public Laboratory for Open Technology and Science

TOOLS FOR ASSESSING AND MANAGING HUMAN IMPACTS ON MAINE'S HARBORS

Spatial Analysis Project:

Cornucopia-shaped Penobscot Bay is the heart of New England's lobster industry, home of oyster farms and wild bloodworms, a destination for migrating wild atlantic salmon, sturgeon and alewife, of seabirds galore...brimming with natural viewsheds, with windjammers jamming and nature-loving tourist traffic rising and falling with the seasons, filling every local wallet, directly and indirectly. Less obvious is the connection between urban development and the condition of marine and coastal habitats and scenic viewsheds. Flanked by heavily travelled US Route 1, Penobscot Bay has experienced booms and busts of finfisheries, shellfisheries, deforestation and reforestation, and industry which has left behind a legacy of hundreds of toxic waste sites.

Stewarding Penobscot Bay is proving very difficult, primarily because decision makers and the public lack access to high quality historic and real time data about those places and waters they are being asked to make decisions about. The data is there -- but located in hundreds of file drawers, databases, and websites with varying degrees of access.

The goal of this spatial analysis project is to provide decision makers and the public with the tools needed to penetrate the murk of political and economic pressure that industrial and commercial interests routinely apply to them, so that they can make well balanced, science-based decisions about new coastal development projects, stormwater and wastewater licensing, dredging applications, biocides application permitting and a host of other activities that can change Penobscot Bay's natural productivity -- above and below the tide line.

Working with Friends of Penobscot Bay, the project includes a special focus on informing federal, state and local decision makers considering major actions affecting Rockport Harbor and Stockton Harbor, two bay subbasins greatly at risk. The former faces intensive residential and commercial development within the coastal forests that buffer it from busy US Route 1 due to sewer extension along the natural coastline. The latter, Stockton Harbor, contains contaminants from more than a century of chemical industry activity that remain almost completely unremediated, as present day companies and agencies tell the public they lack enough quality information to take action.

The mission *should you choose to accept it* will be to create arresting visual materials that synthesize historic, scientific and experiential data to educate and influence policy makers and the public, by telling the stories of the living and scenic resources of Penobscot Bay. For when decision makers and the public can share a common pool of accessible, high quality facts about every reach of Maine's biggest bay, they can make decisions that will be in the interest of everyone.

Data Available:

- Historical aerial photography (USGS), underwater fly-by videography, sidescan sonar bathymetry, Maine's scenic beauty algorithm

- Industrial enforcement and compliance sites (EPA), and mining sites
- A 1990s Environmental Impact Study of the upper bay and related environmental litigation documents
- Historic fishery maps (from Bureau of Fisheries / NOAA) and Habitat Areas of Particular Concern HAPC by species (New England Fishery Management Council)
- Historic & recent water current, temperature, and other factors from NERACOOS' West Penobscot Bay weather buoy.
- Archived citizen water quality monitoring data of Penobscot Bay -- going back at least 15 years
- Wastewater facilities and sewer outfalls, municipal separate stormwater sewer systems regulated areas, marine sewage pumpouts (possible historic data), discharge information back to the 70s, and future sewer extension plans
- Bacteria Monitoring Survey, Biomonitoring Stream and Wetland data, Overboard Discharges, Bacterial Closures and Molluscan Shellfish Habitats (discharge data refreshed daily), ozone air quality events
- NOAA Estuarine Bathymetry for Penobscot Bay
- Extensive government physiographic, biological and urban planning data (State of Maine, USGS)

Maps and Reports:

- In general, products will be visually comprehensible, logically searchable, easily accessible and navigable, and easily updatable. Choice of platform is flexible!
- Mapping the relationship through time between land use change and the extension of sewer service
- Analyzing the human useage discharges (industrial from GAC, commercial, residential and recreational) on water quality through time in regards to the health of Stockton Bay
- Online atlas of Penobscot Bay to facilitate conversations and support decision making
- Leverage GeoTrellis to develop a model for regional planners and organizations to assess the impact of development using the methodologies defined in 'A Proposed Method for Coastal Scenic Landscape Assessment' and the 'Scenic Inventory, Mainland Sites of Penobscot Bay'

How the Maps and Reports will be used:

"I'm just so tired of being in meetings where the official says, 'we just don't have that information!'," articulates Ron Huber, Executive Director of Friends of Penobscot Bay, as he reflects on decades of advocacy efforts. The maps and reports will be used by Friends of Penobscot Bay for informing local, state and federal agency staff and for advocating for the health & scenic beauty of Penobscot Bay. This organization is, in turn, supported by Public Lab organizer Sean McGinnis who will be providing mentorship for the Summer of Maps Fellow.

"We know the info is out there," Huber said. "With the help of Azavea's Summer of Maps Fellow, we will consolidate it into user-friendly formats that modern day Maine decision makers, researchers, and the public can use in deciding the future of Rockport Harbor's and Stockton Harbor's environments."

On the longer term, the results of this project could potentially form the foundation of a useful web portal with easily accessible, high quality information about the natural and scenic assets of greater Penobscot Bay and the nearby Gulf of Maine, and of human impacts past and present, easily updatable with the latest changes in species abundance and distribution, water quality, and proposed urban development.