

Ocean Planning

Thinking Regionally, Managing Locally

by Inka Milewski



Rockland Harbor, Maine, 2010. Increased use of the ocean is the topic of National Ocean Policy talks around the country. Represented here are some of the stakeholders. In the background the Scottish drillship Stena Forth on its way to one of the sites around the world where it drills for oil offshore. The schooner American Eagle on a sailing tour. Tourists on the seawall and a vessel participating in the Maine lobster boat races. © Photo by Sam Murfitt

The collapse of the Northern cod stock off Canada's northeast coast stripped thousands of fishermen and fish plant workers of their livelihood in 1992.

Despite the observations of inshore fishermen regarding changes in abundance, distribution, behaviour, and size of their catch and growing scientific evidence that the Northern cod stock was in fact comprised of a number of sub-populations, Northern cod was managed as a single stock. The largest source of data used in management assessments were from the offshore fishery even though the inshore fishery accounted for one-third to one-half of all landings.

As it turned out, managing for simplicity (a single stock) rather than complexity failed to detect and incorporate the disappearance of sub-populations of cod that had begun to occur as early as the 1960s. This failure highlights a simple concept in the study of geographic patterns and their relationship to ecological phenomena- making observations at different geographic scales (e.g., local, regional or global) matters greatly in the interpretation of ecological patterns and has implications for management and policy development.

In the case of Northern cod, management decisions based on data averaged over large geographic scales masked or underestimated what was occurring at smaller geographic

scales. The collapse of the world's largest and most valuable fishery reverberated around the world and sent policy makers and managers scrambling for new management models. There was much talk about sustainable development, integrated management, ecosystem-based approaches and making better use of local knowledge.

At the same time, depletion of land-based resources and pressures for more economic growth were forcing federal, state and provincial governments to once again turn to the oceans.

Carving up the ocean frontier

Today it seems that every square inch of ocean is being eyed for oil and gas exploration, mineral potential, or aquaculture development. And, just about every living thing in the ocean is thought to have potential for human consumption, animal feed, fertilizers, pharmaceuticals, or chemical additives.

Developers, even governments, believe that the large number of laws and agencies associated with ocean management are an impediment to ocean resource exploitation and that decision-making is piecemeal. The new language of ocean management involves talk of smart regulations, streamlining regulatory processes, speeding up decision-making and reducing red tape.

In the U.S., a new initiative for better managing the nation's oceans and coasts is underway. Under the National Ocean Policy, the nation's oceans have been divided into nine regionally focused planning bodies. The first region in the U.S. to establish a regional planning body (RPB) was the New England region in November 2012 (<http://neocceanplanning.org/>). The process for coming up with a plan is the application of coastal and marine spatial planning. While there is no explanation or definition for what this process entails, the outcome will be "better, faster decisions."

Failure to launch

While regional planning bodies in the U.S. work to define their goals and how they will be implemented, the aquaculture industry in the U.S. and Canada is actively pushing for expansion of the industry. Open net pen fish farmers and their proponents believe they are poised to feed the hungry of the world, close the global protein gap, employ legions of workers and save coastal communities from economic oblivion. Apparently, a complex web of rules and regulations is restricting their growth and limiting investment.

Community-based groups and fishermen are concerned about the potential expansion of open net pen farming in Canada and the U.S. Across the Gulf of Maine in Nova Scotia, open net pen aquaculture came under siege in 2011 and 2012 as numerous community-based groups and coalitions of groups responded to a proposed expansion of the industry in that province. Lawsuits, public protests, petitions and press conferences forced the Nova Scotia government to appoint an independent panel to come up with a new regulatory framework for aquaculture (<http://www.aquaculturereview.ca>). A moratorium on licensing new finfish

sites is currently in place until that process has been completed. A key issue identified through public consultations held by the panel was the need for a planning framework for selecting sites.

Despite decades of effort in Canada, there is still no coastal zone or other spatial planning framework that could be used to identify or zone areas that are suitable or unsuitable for aquaculture or any other proposed development.

In the absence of a coastal zone planning process, the Canadian federal Department of Fisheries and Oceans (DFO) developed a decision support system (DSS) for marine finfish aquaculture in 2002 (<http://www.dfo-mpo.gc.ca/Library/269146.pdf>). The purpose of this assessment tool was to help habitat managers evaluate finfish lease applications with respect to the location of fish farms.

The DSS took into account many of the environmental, economic and social considerations that would be part of a coastal zone planning framework. For example, it considered a fish farm's proximity to critical fish habitat, endangered species, protected areas and shellfish harvesting areas, as well as factors that could impact an aquaculture operations such as other aquaculture operations, coastal industries discharging effluent and human population density.

In 2010, the DSS was applied to three proposed salmon farm sites in Shelburne Harbour, Nova Scotia. The proposed sites were approximately 100 meters from existing salmon farms whose environment ratings were poor. The proposed sites all received an “unacceptable” rating. All three leases were approved.

A cautionary tale

Reminiscent of the era prior to the cod collapse, some aquaculture industry representatives take a dim view of fishermen's observations about the impacts of fish farms on their fisheries, dismissing them as dishonest, anecdotal and/or unscientific. Some fish farmers claim that the net pens attract lobster to the farms and increase local landings. Still others point to the record high regional lobster landings as proof that fish farms and aquaculture can co-exist.

One group of lobster fishermen in Port Mouton, Nova Scotia, tackled these claims by enlisting retired scientists to help them document the impacts of a fish farm on their catch (<http://www.friendsofportmoutonbay.ca/docs/Lobster-Trap-Survey-2013-Port-Mouton-Bay.pdf>).

Historic lobster trap surveys in the inner harbour of Port Mouton Bay showed that the area had been a destination for lobster migration. Fishermen believe that Port Mouton Bay is an area to which seed lobsters migrate to moult and discharge eggs. Beginning in 1995, which coincided with the establishment of a fish farm in the area, fishermen began abandoning their historical lobster fishing territories because of very low catches. In 2010, the fish farm was followed until it re-started in 2013.

Since 2007, fishermen in the inner harbour of Port Mouton have been collecting annual trap data on the number of seed-bearing females and catch-per-unit-effort for market lobsters in five connected areas or regions. Region 2 of the five regions studied was in the area of the fish farm. The results of their study showed that seed-bearing lobsters increased noticeably in all regions except Region 2 during the following period (2010-2012) regardless of bottom temperatures and weather conditions. The pattern of low catch-per-unit-effort throughout the period 2007 to 2013, showed significantly lower abundance in Region 2 than in other regions of the Bay.

The Port Mouton study reinforces what the collapse of the northern cod stock exposed. Collecting data and making observation at the right geographic scale matters from an ecological and management perspective.

Scale matters

The Port Mouton Bay survey results are a small subset of DFO's statistical lobster landings for lobster fishing area (LFA) 33. In the overall management scheme for the lobster fishery in Nova Scotia, changes in migration patterns, landings and abundance of seed-bearing females in Port Mouton Bay would not be noticed or highlighted in the aggregated statistics used to represent a much larger management area. As a result, local concerns about the status and potential impacts of the fish farm on local stocks would not be reflected in regional management decisions.

No doubt the division of oceans and coasts in the U.S. into nine regional planning bodies makes sense socially, culturally, and even geographically. However, the forces of nature operates at many scales (e.g. local, regionally and globally).

As the Northeast Regional Planning Body begins its work to develop a spatial plan, they will need to have their eye not only on their regional social and economic goals, but, on local ecological patterns and processes.

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