
# A Community's Experience with Finfish Aquaculture

Port Mouton Bay is a special place … special because of its stunning beauty, its centuries-old fishery, and its people who successfully rallied to protect the Bay from the threat of expanding open net fish farming.

Our story is one of community engagement, co-operation, and commitment to advancing our understanding of the bay ecosystem.

Port Mouton Bay is located on the Atlantic Ocean, in Queens County, on the scenic South Shore of Nova Scotia.

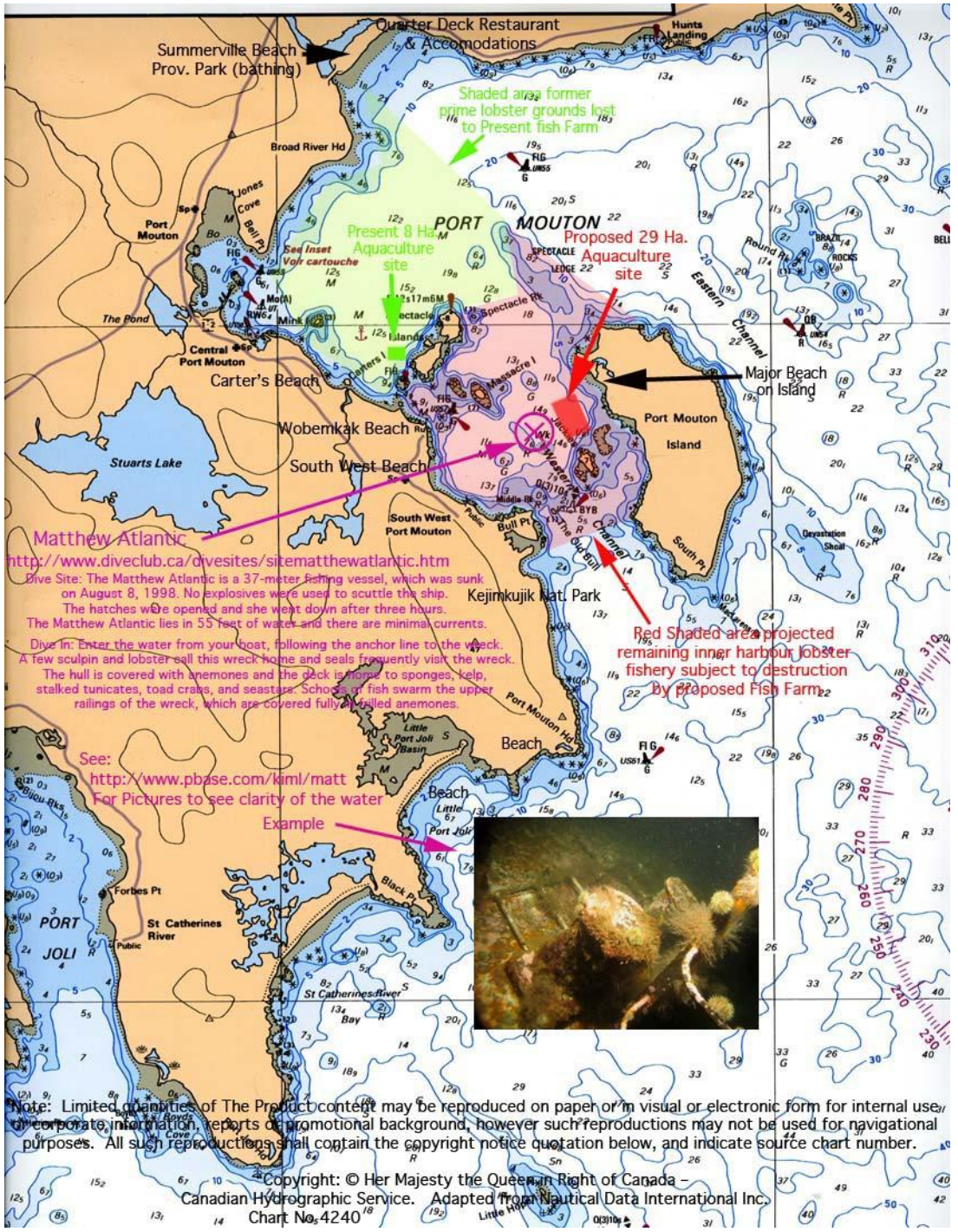

It is a large bay with islands, numerous beaches, tourism facilities, wharves and fish plants. The commercial fishery, particularly lobster, is the economic backbone here and tourism is a significant contributor to the economy.

Generations of fishermen have made a living from lobster fishing within the Bay. Today, 40 lobster boats operate from the Central Port Mouton wharf.


In 2006, Friends of Port Mouton Bay (FPMB) joined together out of concern for the future of our Bay. During the previous 10 years fishermen and others living around the bay became increasingly concerned about the negative effects of the existing fish farm.

***"Something's wrong when you have to fight this hard to save your friggin' harbour."***

Map of Port Mouton Bay showing former prime lobster fishing ground degraded by fish farm (green) and area of influence of proposed farm (pink).



## LOSS OF RESOURCES

Fishermen recorded the **loss of resources** associated with existing aquaculture in Port Mouton Bay:

| | | |
|---|---|---|
| Lobster | Mussels | Bait Fish (mackerel, rock crab) |
| Scallops | Clams | Irish Moss |

## OPERATIONAL AND ECONOMIC IMPACTS

Increased Cost of Bait  Fouled Gear

Displacement from fishing grounds to more distant, less sheltered areas resulting in:

- increased travel time
- increased fuel cost
- increased safety risk
- increased gear loss
- increased investment in larger boats
- counter-productive competition with fishing grounds of other communities

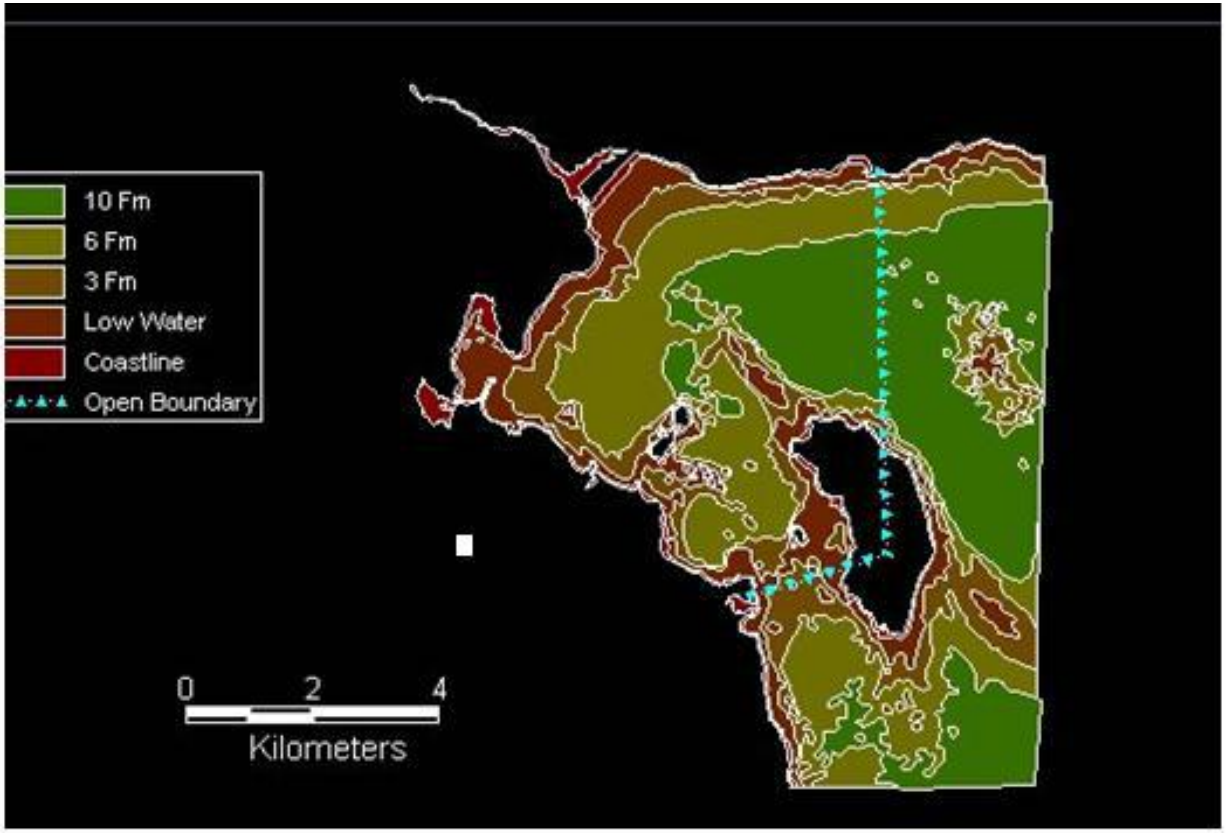
FPMB documented the **Local Ecological Knowledge** (LEK) of fishermen. This knowledge was tested and confirmed through fishermen participation in scientific experiments including a fishermen-led lobster trap survey. The experiments document the low-flushing and ecological site-specific nature of the bay.

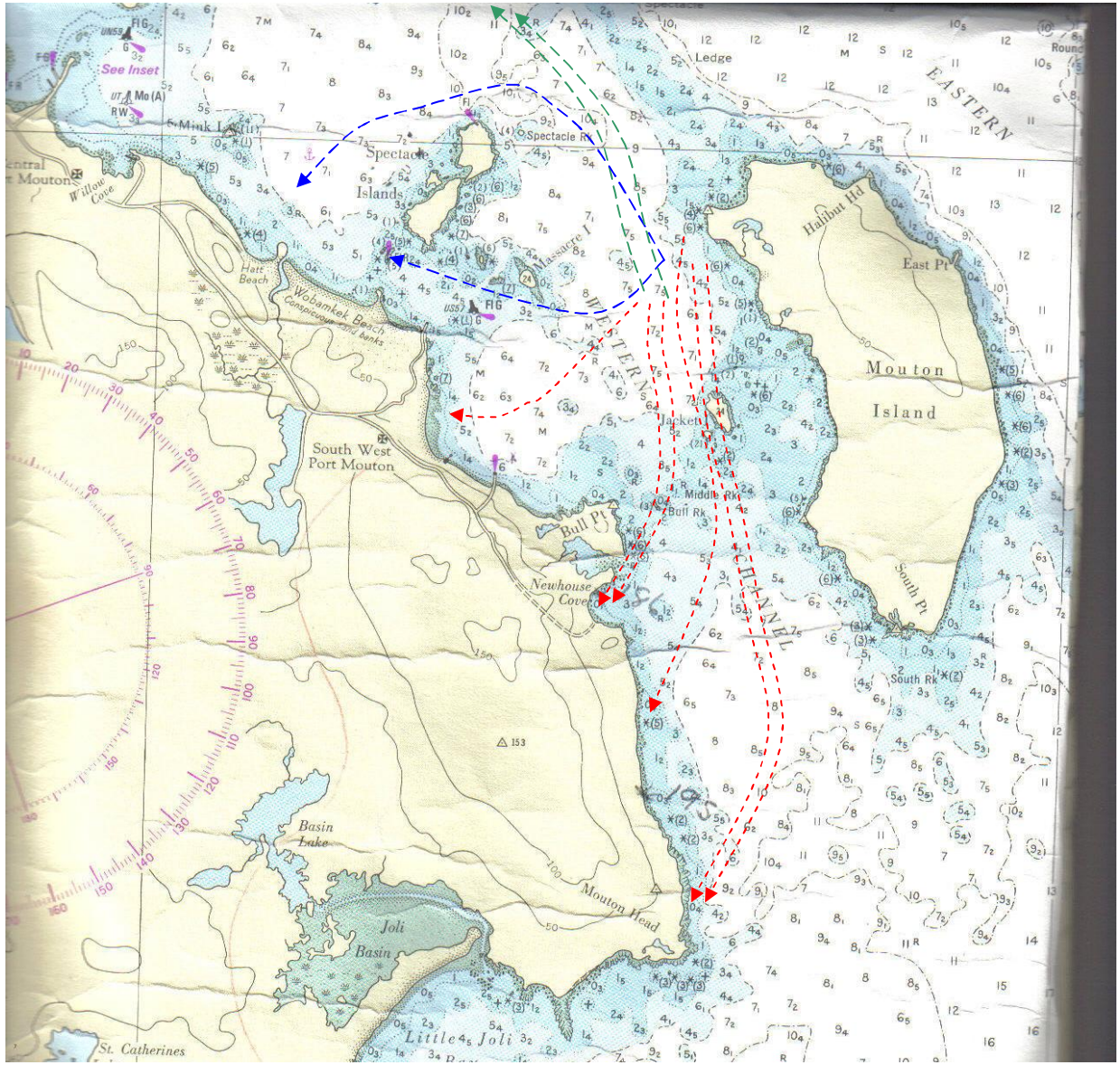
## Fishermen's LEK:

The inner bay is a semi-enclosed basin; the outer bay is an almost enclosed basin.

## Evidence:

Detailed Bathymetric Map showing shallow depths and enclosed topography






## Fishermen's LEK:

The bay is an area of accumulating bottom sediments except in the outer bay during extreme north-east winds.

## Evidence:

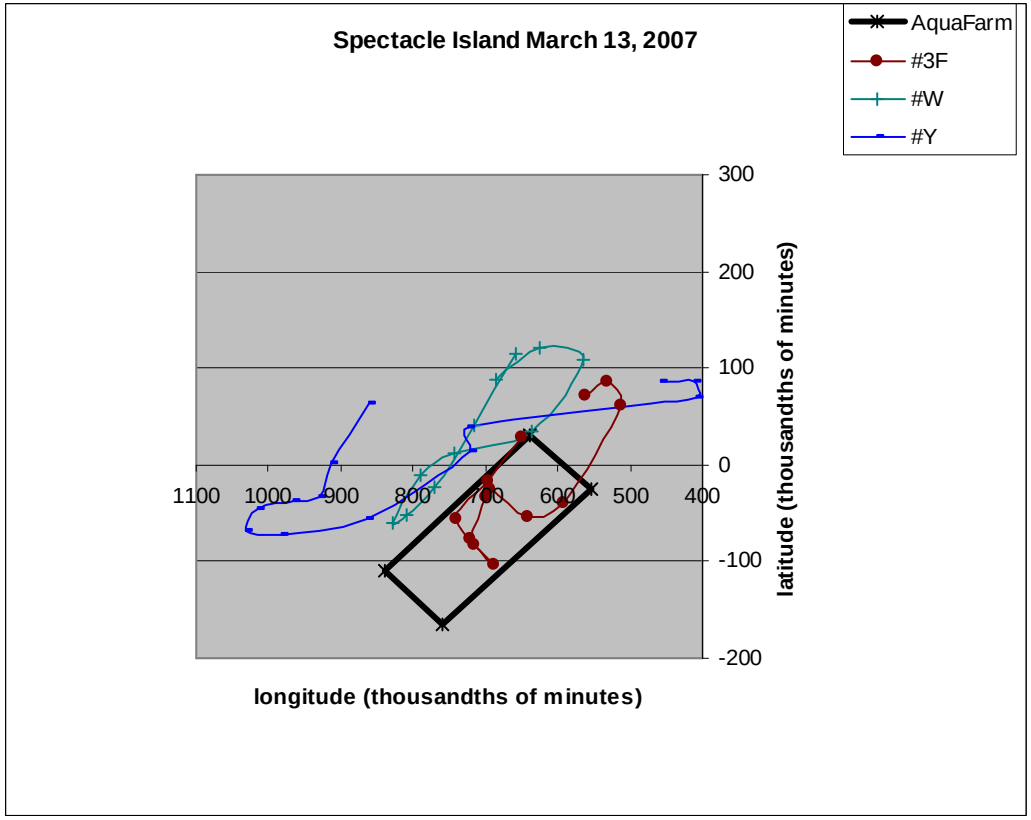
Bottom drifters released and collected many months later by community members on shorelines only after a north-east wind event.

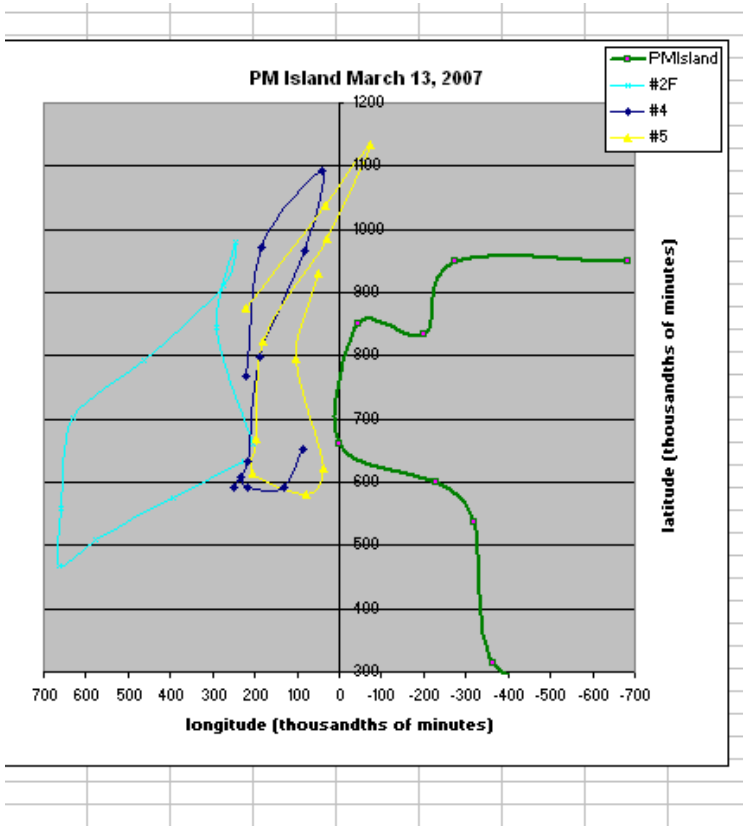
## Fishermen's LEK:

Tidal currents are weak and in the absence of wind provide little flushing.

## Evidence:

Drogue tracking by fishermen and an oceanographer shows that currents re-circulate here.



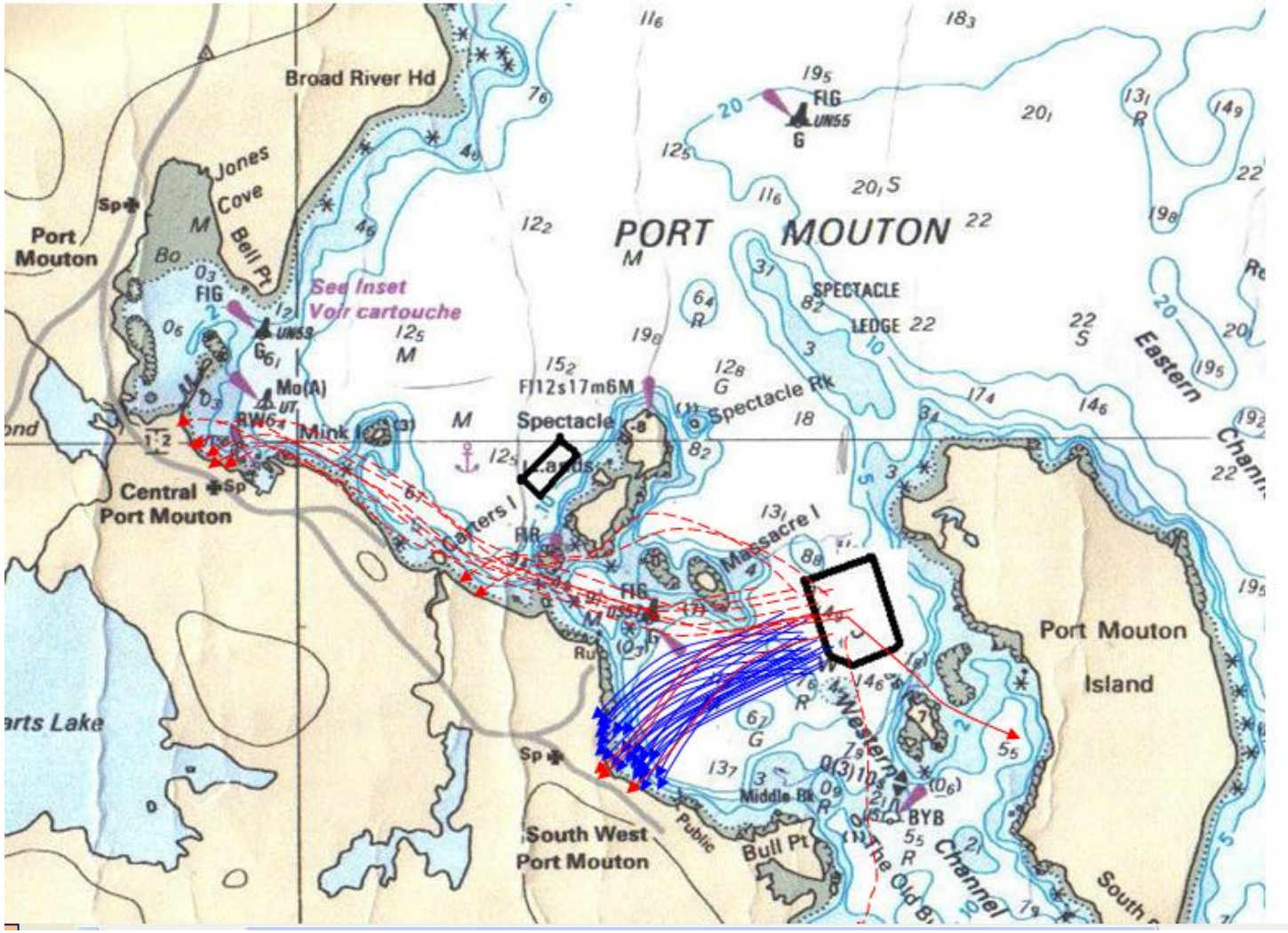



## Fishermen's LEK:

Surface currents can carry dissolved waste between basins and toward protected beaches.

## Evidence:

Surface drifters designed and released at proposed farm site by fishermen and collected on shorelines by community members confirm these pathways.

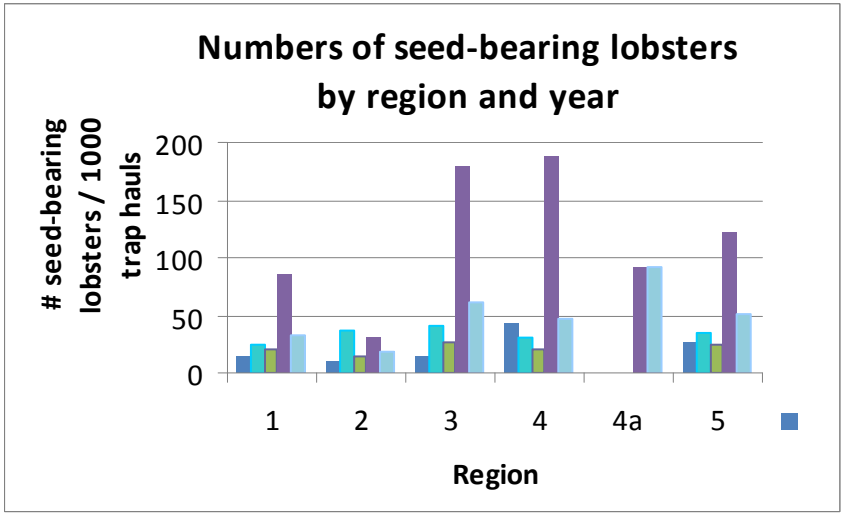


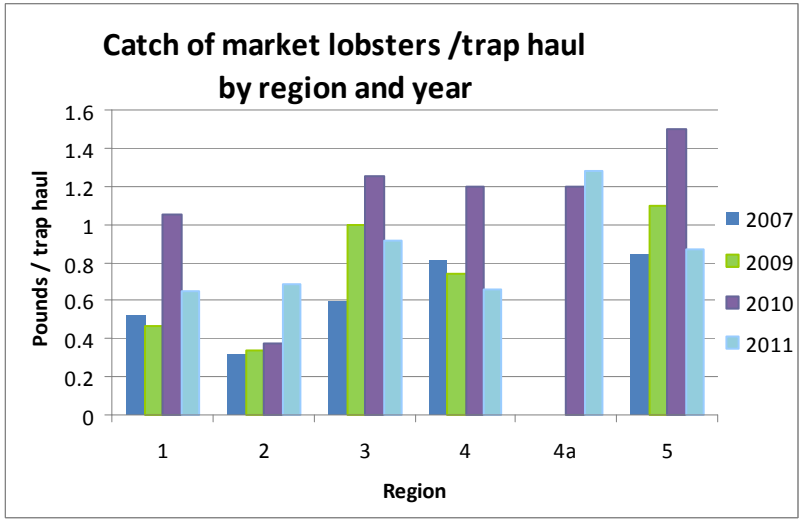
## Fishermen's LEK:

Port Mouton Bay has been a prime lobster fishing ground for generations. A salmon farm has displaced lobster fishing and other fisheries- related activity in the bay. Lobsters migrate landward in spring unless they sense a fouled area.

## Evidence:

Lobster trap surveys (2007-2011) designed and carried out by fishermen show effect of salmon farm in the inner bay (Region 2) and the continuing improvement in lobster catches in entire bay during fallowing period of 2010-2011.

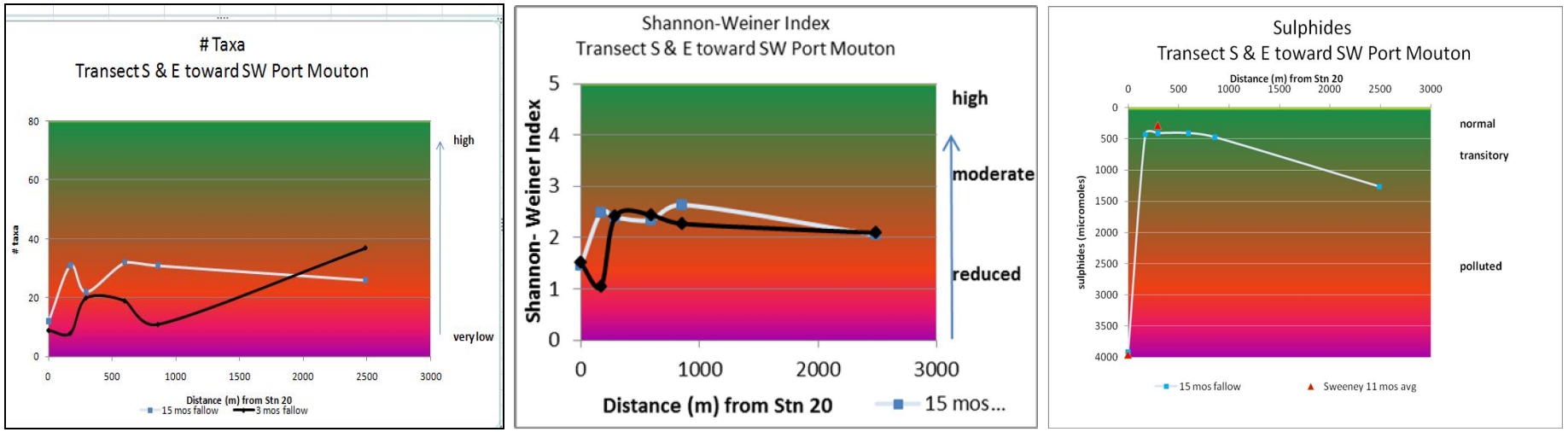


## Moratorium on expansion of finfish aquaculture expansion in Port Mouton Bay announced by Premier in 2009

Later that year FPMB reached a cooperative agreement with the new salmon farm owner, Cooke Aquaculture, who promised to respect the moratorium and to leave the current site fallow for 3 years. This agreement allowed collaboration with Dalhousie University's Oceanographic Department to conduct sediment biodiversity studies on the rate of recovery of the bay from aquaculture activity. These studies are ongoing. Some results to date are shown below.

## Species, Biodiversity and Sulphides

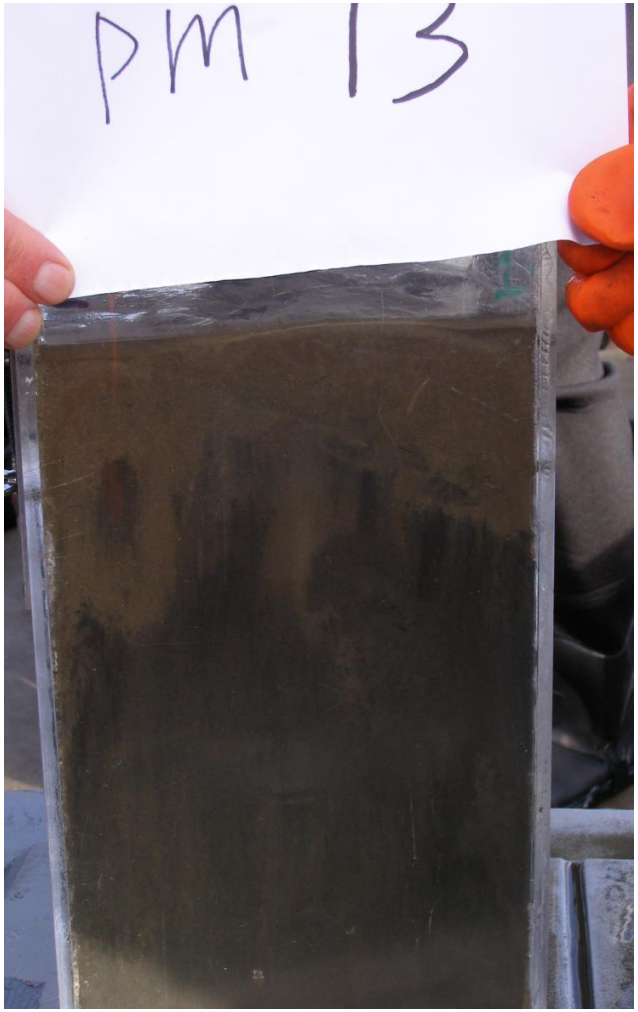



Number of Species, Biodiversity Index (Shannon-Weiner) and Sulphides in sediment on a 2500 m transect leading from farm site 0, 3 and 15 months after fallowing the fish farm.

## Images of Sediment Cores

Healthy sediment on left has an upper oxidized layer.

Grossly polluted sediment on right has *Beggiatoa* bacteria layer on surface




The collaboration and learning spirit of community members which combined local knowledge and marine/oceanographic science has been a cornerstone of our success to date.

FPMB monitoring and research offers collaborative, superior, sustainable stewardship to the ecosystem of Port Mouton Bay.

## Contaminants

Levels of copper detected in bottom sediments in 2009 (7-32 mg/kg). 2010 levels were similar. Equivalent CCME Sediment Guideline is 25 mg/kg.