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# HOOK, LINE AND THINKER

The Newsletter of the Fishermen and Scientists Research Society

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Issue: 2010-3

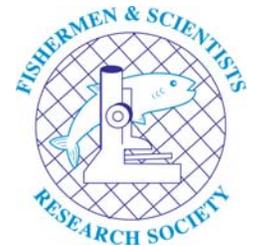
Summer 2010

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**YOU'RE INVITED...**  
**FSRS 18<sup>TH</sup> ANNUAL CONFERENCE**  
**MARCH 24 - 25, 2011**  
**AND**  
**FSRS-GOMLF JOINT LOBSTER SCIENCE WORKSHOP**  
**MARCH 23, 2011**

The Fishermen and Scientists Research Society (FSRS) is holding its **18<sup>th</sup> Annual Conference** on March 24 - 25, 2011 at the Best Western Glengarry Hotel in Truro, NS. The conference will include a range of workshop sessions, the Scientific Program Committee Report and Workplan for 2011/2012, and the Annual General Meeting. The agenda is still under development so if you have a topic on which you would like to see a presentation or poster let us know. Contact Patty King with your presentation and poster ideas at 902-876-1160 or [info@fsrs.ns.ca](mailto:info@fsrs.ns.ca).

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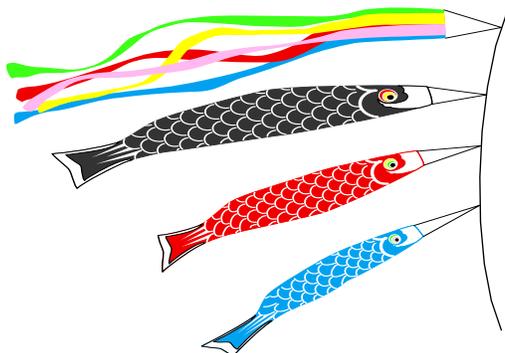
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The Annual Conference will be preceded by the **Joint FSRs-GOMLF Lobster Science Workshop** on March 23, 2011. The theme of this year's workshop will be "Back to the Basics", looking at what we know and what we don't know about lobster biology. The workshop will help identify gaps in our knowledge and priorities for research to address those knowledge gaps. We will also look at how lobster data is being used and how it contributes to and its importance in conservation and management.

*Check out our website at [www.fsrns.ca](http://www.fsrns.ca) for more details as they become available.  
We hope you can attend. See you there!*



## THE FSRs WELCOMES NEW MEMBERS



The Fishermen and Scientists Research Society would like to welcome the following members, whose applications were approved at the July Executive Committee meeting. We trust that the addition of these new members to the FSRs will prove to be beneficial to all involved.

Charlene Bergeron  
Farhad Kaymaram  
Rémy Rochette  
Richard Wahle

## CALL FOR POSTERS/DISPLAYS

In addition to the workshop sessions, the conference will include posters and displays. To reserve booth or poster space, contact Patty King or complete the Poster/Display Reservation Form below or complete it online at <http://fsrs.ns.ca/events/ac2011.html>.

### POSTER/DISPLAY RESERVATION FORM

Please return completed form to Patty King by January 30, 2011

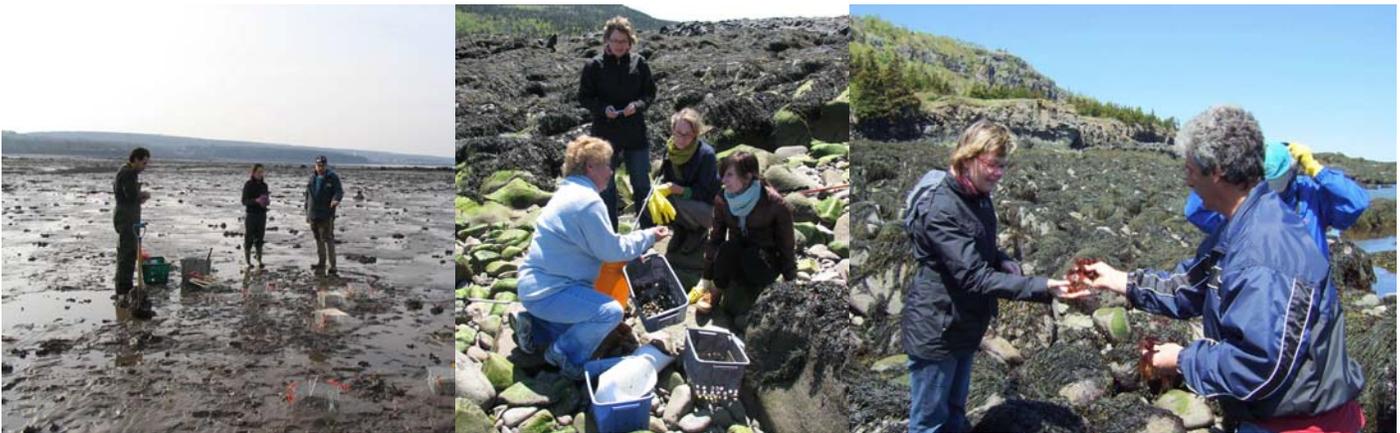
Fax: 902-876-1320; E-mail: [info@fsrs.ns.ca](mailto:info@fsrs.ns.ca)

Organization	
Address	
Contact Name	
Phone	Fax
E-mail	
<b>Posters</b>	
Title	
Authors	
Brief Abstract	
Dimensions _____ feet wide x _____ feet high	
<b>Displays</b>	
Brief Description of Display	
Dimensions _____ feet wide x _____ feet high x _____ feet deep	
Setup Requirements	
Table _____ 3' x 6' skirted table (check if required) Power Outlets _____ Power outlets required (standard 120v, indicate number of outlets required)	
Other Requirements (Please specify)	

## COASTAL CURA: CONNECTING INSHORE FISHERIES AND COASTAL COMMUNITIES WITH COASTAL AND OCEAN MANAGEMENT

By Tony Charles, Kate Bigney, Courtenay Parlee, Hubert Saulnier, Carolea White and Melanie Wiber, Coastal Community-University Research Alliance

For many decades, inshore fishermen across the Maritimes have been faced with threats to their well-being coming from a variety of sources. The two most commonly occurring threats over time may have been the large-boat fishing fleet and unsupportive federal fishery policies, but now fishermen are coming across more and more situations in which non-fishing uses of the coast and ocean also pose concerns for the inshore fishery. That could involve offshore oil and gas, aquaculture, industrial development along the coast, shipping, sewage spills, or many other activities.



Connections and conflicts often arise directly between fisheries and one of these other activities. In addition, however, fishery participants also need to deal with another reality - government efforts to bring the various users of ocean space together around a single table, in what is called ‘integrated management’. To cope both with the one-on-one interactions and the ‘integrated’ challenges, inshore fishermen’s associations – along with other groups, notably aboriginal and coastal communities – need new information, and new capabilities.

To meet these needs, a group of aboriginal communities, inshore fishery associations, local support organizations, and universities around the Maritime provinces starting working together a few years ago on Coastal CURA, a project to better understand how to deal with interactions of the inshore fishery with other coastal and ocean uses, to assess institutions that undertake integrated management, to build the capability to work in this world of integrated management, and to explore policy change that will promote coastal community involvement in decisions relating to coastal and ocean management.

Partners in the Coastal CURA (where “CURA” stands for Community-University Research Alliance) come from across the Maritimes, and include the Fundy Fixed Gear Council, Acadia First Nation, Bear River First Nation, the Bay of Fundy Marine Resource Centre, the Fundy North Fishermen’s Association, and the Mi’kmaq Confederacy of PEI (which includes Lennox Island First Nation and Abegweit First Nation), as well as Saint Mary’s University and the University of New Brunswick. The project is funded by the Social Sciences and Humanities Research Council of Canada.

Goals of the Coastal CURA's work include (1) more effective and more participatory decision making about coastal and marine resources, (2) improved capacity for all those involved – fishermen, aboriginal and coastal communities, governments, researchers, community groups, etc. – to learn together how to make integrated management work, (3) a Maritimes network to support community-level decision making about coasts and oceans, and (4) a useful knowledge base to support this network of coastal communities and inshore fishery participants.

The Coastal CURA is currently working on a number of research activities relating to local-level use and management of fisheries, coasts and oceans. These include both site-specific studies (Saint John harbour, Malpeque Bay, Saint Mary's Bay, Annapolis Basin) and broader policy research. Examples include (a) compiling community-oriented coastal management models in the Maritimes, across Canada and internationally, to identify factors influencing how communities and fishery groups can take part in coastal resource management, (b) assessing how coastal fisheries are affected by, and interact with, other activities such as aquaculture, shipping and industrial development, (c) analysing impacts of change in access to the coast and coastal resources, on resource users and community livelihoods, (d) examining what arrangements are needed for fishermen's organizations, aboriginal and coastal communities, governments, NGOs and others to engage fully in integrated coastal and ocean management, and (e) studying traditional and current coastal resource use within First Nations communities.

The results of Coastal CURA research so far indicates how crucial it is for decisions about balancing the many uses of coasts and oceans in the Maritimes to properly reflect the ecological, social and economic values of local communities. A key aspect of this is to ensure local benefits and social equity among users of these public resources. All this implies that coastal and ocean management decision-making needs to better incorporate community-focused values, a community-focused vision, community-focused indicators of success, and full community participation in the process. This in turn means that local fisheries and coastal communities need 'legal space' to make local decisions, and the process overall needs to deal with multiple scales of management, connecting the local to the regional. How to best make that happen is the subject of our current work.

Results from the Coastal CURA, as well as from similar efforts around the world, will be presented at a major international meeting, to be held next year in Halifax (June 26-29, 2011). For additional information about our publications to date, about the upcoming meeting, or about the Coastal CURA overall, see our website [www.coastalcura.ca](http://www.coastalcura.ca) or contact us directly at [coastalcura@smu.ca](mailto:coastalcura@smu.ca).

## QUESTIONS FROM THE WHARF

Our technicians often get questions from the fishermen they work with. In this series "Questions from the Wharf" we will be providing answers to some of the more commonly asked questions. If you have a question you would like answered, please email your query to [info@fsrs.ns.ca](mailto:info@fsrs.ns.ca) or give us a call at 902-876-1160 or 902-461-8119.

**Question:** How do you know the same lobsters are not being re-caught in the science traps?

**Answer:** Some of the lobsters are likely getting re-caught in the science traps. To see if you are catching the same lobsters maybe try either marking the knuckle with a band or you could even mark a number on their shell.





## FROM THE RESEARCH DESK

By Shannon Scott-Tibbetts, Research Biologist, Fishermen and Scientists Research Society

Just a quick update on my current situation. I will be heading out on another adventure mid September. I will be away on maternity leave for a year. My family and I are expecting another little boy so I will be home looking after him and the other little munchkin. I will still be available through email and any messages via the FSRS office. Please feel free to contact me with any science questions or comments at shantibbetts@gmail.com or the FSRS office at 1-902-461-8119 (1-800-226-3777).

It was a busy summer. I had the opportunity to attend the Lobster Science Workshop on July 8, 2010 at the Best Western Glengarry in Truro, NS hosted by the Atlantic Veterinary College's Lobster Science Centre. An introduction and opening remarks were given by Ed Frenette, Jean Lavallée and Jerry Amirault, followed by the first keynote speaker, John Garland from Clearwater Seafoods.

In his presentation, *Maintaining Lobster Quality and Value from Trap to Table - Observations from the Shore*, John Garland reviewed some observations from the shore and tried to explain how various types of lobster handling situations affect lobster quality. Explanations were based on a review of recent research relating to the effects of the environmental conditions on a lobster and how this translates into the lobster's ability to maintain its value through the distribution chain.

How environmental conditions can affect lobster quality was also discussed. Lobster are affected by changes in oxygen, temperature and salinity.

- **Oxygen:** Lobsters will move to areas of ideal  $O^2$  for them if they can; they are osmoconformers. Low  $O^2$  (hypoxia) lobsters will start to become anaerobic, swimmeret beat frequency increases, which causes more water to flow towards the gills to try and get more  $O^2$  through the body.
- **Temperature:** Lobsters are susceptible to drastic changes in temperature; they are poikitherms (hemolymph very similar to environment). Changes in temperature affect their metabolic rate and  $O^2$  demand.
- **Salinity:** Lobsters are able to withstand slight changes in salinity; lobsters are neutrally buoyant/slightly negatively buoyant. Reduced salinity caused increased heart rate; they have sensors around their legs and gills. One (1)L water/kg lobster/minute are pumped through their gills. Extreme drop in salinity causes decrease in heart rate. Crustacean hyperglycaemic hormone is released, hemolymph osmoregularity decreases and lobster becomes turgid (swollen membranes).

Temperature, oxygen and salinity all work together and influence lobster health.

Other environmental factors that can affect lobster quality is the way lobster are handled on boats and at wharves.

- **Storage:** Crates should be closed at all time to keep the sun, wind and cold out. If the boat has live wells, have to keep constant temperature and steady water flow and be conscience of salinity.
- **Plant side:** Clearwater's practice is for the lobsters to go through handling recovery so they are held for 12-24 hours. Upon arrival, the lobsters are checked for lactate levels, then they are graded on the belt and only the good quality lobsters are kept; the others are sent out for processing.

Jean Lavallée from the AVC- Lobster Science Centre spoke about *Fishing Practices and Lobster Quality*. Lobster's recovery from stress can be shown through different stages. Once a stressor is applied:

- 1) Alarm phase - almost immediate reaction
- 2) Reaction phase - minutes

- 3) Resistance phase - hours. If the stress is taken away at this point, the lobster may recover but if the lobster is still under stress, it will likely die (exhaustion phase- death).

Impact of fishing practices: A study done by the Lobster Science Centre showed some interesting results. Lobsters caught from boats that used fresh mackerel were seven times more likely to suffer from loss of vigour; lobsters who were exposed to rain were six times weaker than lobsters protected from this element; tossing lobsters around made them three times weaker than lobsters who were handled properly; and lobsters that came from deeper water were less weak as well.

Melanie Burton from the AVCLSC gave a presentation describing the ALMQ website, *Lobster Quality: A Field Perspective*, and showed some results from the website which can be viewed by anyone. She also emphasized the factors influencing the lobster quality and how it can be measured. Total protein level below 8 and above 14, shell hardness (soft or medium), and undergoing moult stage 3 and above would indicate reduced quality in a lobster.

After lunch the keynote speaker was Dave Basti from the University of Maine. His talk titled: *Factors Affecting the Post-capture Survival of the Lobster* described a couple of studies done to measure different stressors on lobsters and their reaction. In one of the experiments, a fallow pound was stocked with fresh caught lobsters and each day the lobsters were in the pound 60 were randomly examined and 1400 tagged. Divers retrieved lobsters on three occasions. There was a spike in mortality 5-14 days after the impoundment then it levelled off. The mortality rate increased as the water temperature increased.

Geoff Irvine from the Lobster Council of Canada described his work (*Quality and Marketability in the Lobster Fishery*) and how these days 10-15% of global buyers are looking for quality over anything else. Industry needs to be aware of this and plan accordingly.

Stephan Leslie from Resource Management, DFO spoke about dimensions of quality: consumer, buyer, retailer, producer (*Economics of Lobster Quality*). They all need a quality product and each level cannot ignore the needs of the other levels. For the lobster industry, there is one source material and it is turned into multiple products, divided by product form and quality. Canada dominated the high quality live market and much of the processed. There are independent producers, no direct control or integration closer to the market with a complex harvester, buyer, and exporter relationship.

There are quality challenges, part of the market is willing to pay for quality but a large part is not. Quality and increased value results when the handling chain respects this; the appropriate grade is produced and available that matches that segment's demand. Product can move through many hands and quality practices are not the same for each sector. Participants don't control all the quality factors. Improving quality should include: integration, grading and sorting, and standards.

- Integration: quality is determined as early as possible in the production chain, all hands work to produce quality product, all hands respect the quality needs for all the sectors.
- Grading/Sorting: sorting product into agreed grades reduces risks and costs for everyone; requires consistency.
- Standards: health and safety, weights and measures already exist. Baseline standards are essential for public safety and fairness in trade. The industry might also need to impose rules that reduce the likelihood of someone getting a sub-standard product. Standards are required for sorting and grading and this requires an understanding of the appropriate markets and grade needed by the shifting requirements of these markets, and adapting the standards to fit.

Betty Ann Hatt from Oxford Frozen Foods spoke about quality control in her industry and its importance. She spoke about food safety issues and how the company has regulations and measures in place to deal with anything that happens in the plant and through their supply chain.

This will be my last *From the Research Desk* update for a little while. We will still continue to attend LFA meetings and any other science related meetings over the next year so you will be seeing Tricia, Shaun or Patty in my stead. Please feel free to contact the FSRs office if you have any questions about lobster science or any strange and unusual things that are happening in your area. All the best to everyone.

## UNDERSTANDING THE RELATIONSHIP BETWEEN LOBSTER AND COD

Reprinted from Tidings - Gulf of Maine Research Institute Newsletter, Spring/Summer 2010

Marissa McMahan, a graduate student at the University of Maine, is working at the Gulf of Maine Research Institute (GMRI) while she completes her master's degree in marine biology. Her interest in science began in Georgetown, Maine, where she grew up on her father's lobster boat. She became a sternman and obtained a student lobstering license, hauling traps by hand. Now she is part of a team of five researchers who are taking a multi-disciplinary look at the interactions between herring, lobster, and groundfish, with funding from the National Science Foundation - one of the valuable outcomes of the GMRI/UMaine partnership.



When Gulf of Maine cod populations plummeted in the mid 1980s, lobster stocks took off and grew, until about five years ago when the population hit a plateau. Much work has been done to restore the cod stocks, and both lobstermen and researchers wonder: "What will happen to the lobsters?"

Marissa has been researching lobster behavior in the presence of predators, along with GMRI Scientists Graham Sherwood and Jon Grabowski. They observed the movements of five lobsters in a pound at The Lobster Conservancy in Friendship, Maine, using state-of-the-art acoustic receivers. Without predators present, the lobsters explored the perimeter, moved around frequently, set up territories, and tended to stay in the deepest and coldest parts of the pound. When three cod were released into the pound, the lobsters moved around significantly less. The team is conducting a second phase of this experiment this summer. They hope to gain important insights about the relationship between lobsters and cod.



Visit GMRI's blog at <http://blog.gmri.org> to see a video of the lobster/cod movements that Marissa posted.

For more information, contact Blaine Grimes at [bgrimes@gmri.org](mailto:bgrimes@gmri.org) or (207) 228-1655.

## NEW TO THE FSRS LIBRARY

Spring/Summer 2010, Vol #2, Issue #1; Guysborough County Inshore Fishermen's Association.

Volume Number 27, Number 5; Atlantic Fisherman - Off The Hook; August 2010, Halifax, NS

Volume Number 27, Number 9; Atlantic Fisherman - Off The Hook; Sept 2010, Halifax, NS



## LIFE CYCLE OF A LOBSTER – FROM EGG TO ADULT

By Hannah Campbell, Fisheries Technician, Fishermen and Scientists Research Society

Most of us only know of a lobster's behaviour from what we see once they've landed. But in their natural habitat, lobsters display complex behaviours that are dictated by their reproductive life cycle. At the upcoming Joint FSRS-GOMLF Lobster Science Workshop being planned for March 23, 2011, we will be discussing lobster biology, including the basic life cycle of a lobster. With that in mind, I thought it would be helpful to provide a quick refresher course in lobster reproduction and development and the interesting behaviours that lobsters exhibit during this whole process.

### Moulting

Juvenile lobsters (lobsters from a few years old to legal size) moult 2-3 times per year, while fully mature lobsters (4-7 years old) moult once a year or less. When a lobster is ready to moult, it starts growing a new shell underneath the old one, which becomes hard and darkens. The line running along the lobster's back begins to split in half and eventually the shell falls away. The inner shell is very soft and malleable, enabling the lobster to pull its claws and tail easily out from the old shell. The lobster, being very vulnerable to predation, retreats to a shelter until its shell begins to harden. The lobster may eat the old shell for calcium recovery.

### Reproduction

A female lobster can mate only just after she has shed her shell. She searches for the den of the largest male lobster she can find. Once she has found a suitable mate, she releases a chemical known as pheromones into the male lobster's den. If he is also ready, he will use his swimmerets to waft the chemical throughout the den. He will then exit the den, displaying aggression, which the female curbs by placing her claws on his head, signaling her intentions to mate. They return to the den and remain there for a period of hours to days, until the female moults. After the moult the male waits a few minutes for the female's shell to start to harden before gently placing the female lobster on her back. The male lobster inserts his first pair of swimmerets, which are rigid, into a receptacle between her first pair of swimmerets, known as the spermatheca. Sperm is passed through the male swimmerets into the spermatheca, afterwards forming a mucus plug to seal the receptacle. The female will carry the sperm until she is ready to produce eggs, which can be up to a year after mating.

When the female is ready to produce eggs, she turns onto her back and cups her tail, releasing stored sperm and eggs simultaneously, fertilizing them. The fertilized eggs are stored under her tail, with a sticky substance gluing them together. Eggs are released in intervals over a period of two weeks. Females can

release anywhere from 5,000 to 80,000 eggs, depending on their size. To provide oxygen and keep her eggs clean, the female lobster fans her tail periodically. The eggs are carried for 9 to 11 months and when they are ready to hatch, the female lifts her tail and releases them into the current.

### Development

Once released and hatched, the free-swimming larvae will remain within one metre of the water's surface, where they are subject to high levels of predation by seabirds and other larger animals. Often referred to as "bugs" by fishermen, these larvae are the size of mosquitoes and do not resemble lobsters yet. They feed on planktonic organisms, breathe through external gills, and swim with the aid of feathery hairs on their legs. The larval stage lasts from 3-10 weeks depending on the water temperature, currents, and predation. Larvae undergo 3 moults (stages 1-3) before they begin to look like miniature adult lobsters. Only 10% of larvae survive past this stage.

The next stage is the post-larval stage, or stage 4. The miniature lobsters have adopted more adult characteristics such as enclosed gills, an elongated form, and can propel themselves by beating their tail and swimmerets. They have developed into better swimmers and can move up and down the water column. The lobsters begin to look for places to settle on the ocean bottom, preferring hard bottoms with cobble for hiding.

Once on the bottom, the lobster moults again to become a fifth stage lobster, and after finding a shelter confines itself for the next few years to avoid predators, such as cod, sculpin, skates, and larger lobsters. The lobster creates a current into its shelter by using its abdominal swimmerets and feeds on the small prey carried inside. It rarely leaves its shelter, but when it does it will hide under seaweed and rocks, catching food that drifts down to it. The lobster may also prey on sand fleas, even though they may be twice its size.

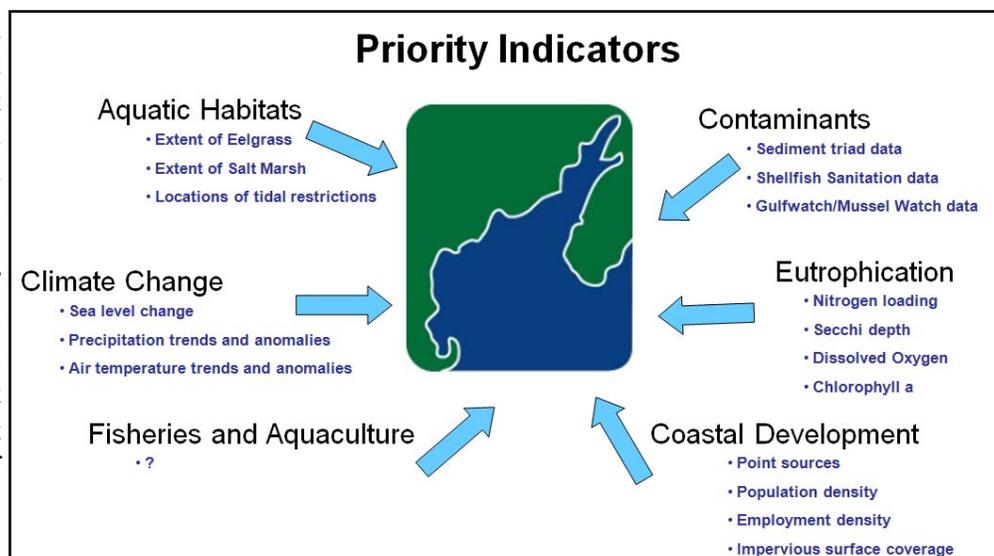
## ESIP WORKING ON BASELINE INDICATOR INFORMATION FOR THE GULF OF MAINE

By Christine Tilburg, Gulf of Maine Council on the Marine Environment's Ecosystem Indicator Partnership

The Gulf of Maine Council on the Marine Environment's Ecosystem Indicator Partnership (ESIP) has made huge leaps and bounds in the effort to deliver baseline indicator information for the Gulf of Maine. This work relies strongly on the passion and volunteer efforts of experts throughout the Gulf of Maine region. Analysis is almost completed on the climate change and aquaculture indicators with fact sheets due out by the end of the 2010. Next year

expect to see fact sheets on aquatic habitats and eutrophication. If you can't wait until then, much of the information is available through one of ESIP's webtools:

[www2.gulfofmaine.org/esip/reporting](http://www2.gulfofmaine.org/esip/reporting). In addition, spots are available in the Fisheries Subcommittee. Please contact Christine Tilburg at [ctilburg@securspeed.us](mailto:ctilburg@securspeed.us) if you'd like to join in this exciting and valuable work.



## SCIENCE NEWS FROM DFO

The publications listed in the following table were released recently on the Canadian Science Advisory Secretariat (CSAS) web site ([http://www.dfo-mpo.gc.ca/csas/Csas/Home-Accueil\\_e.htm](http://www.dfo-mpo.gc.ca/csas/Csas/Home-Accueil_e.htm)).

### Proceedings (1996+)

Number	Region(s)	Title	Author(s)/Contact(s) *
2010/011	National Capital Region	Proceedings of the National Peer-review Meeting on Aquaculture Pathways of Effects ; 19-23 October, 2009	DFO-MPO
2010/023	National Capital Region	Proceedings of the CSAS Peer-review of the Risk Assessment for New Zealand Mud Snail in Canadian Waters; 24-25 March, 2010	DFO-MPO
2010/024	Newfoundland & Labrador	Proceedings of the Newfoundland and Labrador Regional Advisory Process for the Review of the Gilbert Bay Marine Protected Area monitoring indicators, protocols and strategies, and an assessment of the Gilbert Bay cod population; October 22, 2009	DFO-MPO
2010/029	Pacific	Proceedings of the Centre for Science Advice, Pacific Region Review of a Science Advisory Report on Rationale for Index Site Selection for Olympia Oysters in British Columbia; April 15, 2010	DFO-MPO
2010/031	Central & Arctic	Proceedings of the Central and Arctic Regional Science Advisory Process on the Recovery Potential Assessment of Wavy-rayed Lamppussel ; 26 May 2010	DFO-MPO
2010/032	Pacific	Proceedings of the Centre for Science Advice, Pacific Region Review of Ocean disposal in resident killer whale critical habitat; March 25, 2010	DFO-MPO
2010/033	Central & Arctic	Proceedings of the Central and Arctic Regional Science Advisory Process on the Recovery Potential Assessment of Spotted Gar in Canada ; 23 June 2010	DFO-MPO

### Research Documents (1977+)

Number	Region(s)	Title	Author(s)/Contact(s) *
2009/100	Pacific	Information used in the Recovery Potential Assessment for the misty lake stickleback pair	Harvey, B.
2010/005	Maritimes	2009 Update Status Report for Atlantic Whitefish ( <i>Coregonus huntsmani</i> )	Bradford, R.G. Bentzen, P. Campbell, D.M. Cook, A.M. Gibson, A.J.F. Whitelaw, J.
2010/041	National Capital Region Maritimes	Delineating Coral and Sponge Concentrations in the Biogeographic Regions of the East Coast of Canada Using Spatial Analyses	Kenchington, E. Lirette, C. Cogswell, A. Archambault, P. Archambault, D. Benoît, H.P. Bernier, D. Brodie, B. Fuller, S. Gilkinson, K. Lévesque, M. Power, D.J. Siferd, T. Treble, M. Wareham, V.

Number	Region(s)	Title	Author(s)/Contact(s) *
2010/046	National Capital Region Pacific	Ecosystem Status and Trends Report: Coastal Waters off the west coast of Vancouver Island, British Columbia	Ianson, D. Flostrand, L.
2010/048	National Capital Region Pacific	A Review of the Biological Characteristics and Ecological Functions Served by Corals, Sponges and Hydrothermal Vents, in the context of Applying an Ecosystem Approach to Fisheries	Boutillier, J.A. Kenchington, E. Rice, J.
2010/050	National Capital Region Newfoundland & Labrador	Hydrothermal Vent Ecosystems	Banoub, J.H.
2010/054	Gulf	The Basin Head Irish Moss ( <i>Chondrus crispus</i> ) Population Abundance and Distribution 1980 to 2008	Sharp, G.J. Semple, R.E. Vandermeulen, H. Wilson, M. LaRocque, C. Nebel, S.
2010/055	Maritimes	Effects of pH, Temperature and Salinity on Age 0+ Atlantic Whitefish ( <i>Coregonus huntsman</i> ) with Implications for Recovery Potential	Cook, A.M. Bradford, R.G. Hubley, B. Bentzen, P.
2010/057	Maritimes	Scallop Fishing Area 29: Stock status and update for 2010	Smith, S.J. Hubley, B. Pezzack, D.S. Lundy, M.J. Sameoto, J. Denton, C.
2010/061	Quebec	Estimation of northern shrimp ( <i>Pandalus borealis</i> ) biomass and abundance from the annual trawl survey in the Estuary and the northern Gulf of St. Lawrence from 1990 to 2009	Savard, L. Bourdages, H.
2010/063	Central & Arctic	Information to support the assessment of Arctic Char ( <i>Salvelinus alpinus</i> ), from the Isuituq River system, Nunavut	Harris, L.N. Tallman, R.F.
2010/065	Gulf	Risk assessment of smallmouth bass ( <i>Micropterus dolomieu</i> ) introductions to rivers of Gulf Region with special consideration to the Miramichi River (N.B.)	Chaput, G. Caissie, D.
2010/066	National Capital Region Central & Arctic	Ecosystem status and trends report: Arctic Marine Ecozones	Niemi, A. Paulic, J. Cobb, D.
2010/067	National Capital Region Pacific	Overlap of predicted cold-water coral habitat and bottom-contact fisheries in British Columbia	Finney, J.
2010/070	National Capital Region Maritimes	Ecosystem Status and Trends Report for the Gulf of Maine and Scotian Shelf	Worcester, T.
2010/071	Central & Arctic	Modelling the Cosmos 2600 shrimp trawl	Siferd, T.
2010/073	Central & Arctic	Recovery Potential Modelling of Wavy-rayed Lamppussel ( <i>Lampsilis fasciola</i> ) in Canada	Young, J.A.M. Koops, M.A.
2010/074	Central & Arctic	Information in support of a Recovery Potential Assessment of Wavy-rayed Lamppussel ( <i>Lampsilis fasciola</i> ) in Canada	Bouvier, L.D. Morris, T.J.
2010/085	Maritimes	Assessment of the Status of Division 4X5Y Haddock in 2009	Mohn, R.K. Trzcinski, M.K. Black, G.A.P. Armstrong, S. Young, G.A. Comeau, P.A. den Heyer, C.E.

## Science Advisory Report (2005+)

Number	Region(s)	Title	Author(s)/Contact(s) *
2010/030	National Capital Region	2010 Canadian Marine Ecosystem Status and Trends Report	DFO-MPO
2010/035	Central & Arctic	Assessment of Walleye ( <i>Sander vitreus</i> ) from Tathlina Lake, Northwest Territories	DFO-MPO
2010/042	Maritimes	Recovery Potential Assessment for Loggerhead Sea Turtles ( <i>Caretta caretta</i> ) in Atlantic Canada	DFO-MPO
2010/045	Central & Arctic	Recovery Potential Assessment of Wavy-rayed Lampmussel ( <i>Lampsilis fasciola</i> ) in Canada	DFO-MPO
2010/046	Pacific	Impact of at sea disposal on resident killer whale ( <i>Orcinus orca</i> ) critical habitat: Science in support of risk management	DFO-MPO

## Science Response (2006+)

Number	Region(s)	Title	Author(s)/Contact(s) *
2010/010	Maritimes	Update for Scallop Fishery Area/Time Closure to Reduce Yellowtail Flounder By-Catch on Georges Bank in 2010	DFO-MPO

# LATEST OTN RECEIVER ARRAY IS DEPLOYED ACROSS THE MINAS PASSAGE

By Susan Dufault, OTN (Ocean Tracking Network) Headquarters, Article courtesy of OTN and Acadia University

On July 14, 2010, OTN deployed the fourth receiver array of its proposed worldwide listening network. The Minas Passage Line, consisting of 12 acoustic receivers, extends across the Minas Passage from Cape Sharp to Cape Split, the narrowest portion of the Passage.

OTN technician Duncan Bates led the deployment team that included Jeremy Broome, Colin Buhariwalla, and Peter Porskamp, researchers from Acadia University, Nova Scotia, Canada. The fishing vessel *Cape Rose*, piloted by captain Croyden Wood, was used to deploy the line.

OTN's other three operational lines are located off Halifax, Nova Scotia, off Perth, Australia, and in the Cabot Strait, Nova Scotia.



Photo by Duncan Bates, OTN HQ

Additional images from the Minas Passage deployment can be found in the OTN Multimedia Gallery. <http://oceantrackingnetwork.org/news/index.html>

# UPPER BAY OF FUNDY LOBSTER FISHERY MONITORING PROJECT UPDATE

By Monica Finley, Project Biologist

The Environmental Impact Assessment (EIA) for the Modifications to the Petitcodiac River Causeway Project predicted no significant impact on commercial fisheries, however, as a precautionary measure, one of the conditions of EIA approval was that a Commercial Fisheries Follow-up Program be implemented. The Fishermen and Scientists Research Society (FSRS), in collaboration with Fisheries and Oceans Canada (DFO), the AMEC Study Team (consultants retained by the NB Department of Supply and Services (DSS) for the Project), and the fishing industry, developed the Upper Bay of Fundy Lobster Fishery Monitoring Program to address the need for monitoring the lobster resource and fishery as part of the Commercial Fisheries Follow-up Program. In September, 2008, the FSRS was awarded a contract from AMEC Earth and Environmental to implement a monitoring program comprising:

- 1) an at-sea sampling program in exposure and control zones before and after opening the gates in the causeway; and
- 2) a juvenile trapping program in exposure and control zones before and after opening the gates in the causeway.

Sampling for Stage 1 of the Commercial Fisheries Lobster Monitoring Program was completed December 2009. This stage involved gathering data to determine a baseline before the opening of the causeway gates. Lobster catch rates in commercial and FSRS juvenile recruitment traps were monitored during the open fishing seasons between October 14 - December 31, 2008, April 1 - July 31, 2009 and October 15 - December 31, 2009, and during an out-of-season trapping survey between August 14 - and September 20, 2009.

## In-Season Sampling

During the open fishing season, aboard commercial fishing vessels, the FSRS technicians record the lobster carapace length, sex and the number of berried individuals in each trap they sample. In addition to the data collected from commercial traps by the technicians, fishermen also collect data during the season from FSRS juvenile traps. During the fall 2009, eleven fishermen each deployed five FSRS juvenile recruitment traps. The traps are set in close proximity to the commercial traps in a location determined by the fishermen to have a reasonable expectation of catching juvenile lobsters. The fishermen measure the lobsters from the juvenile traps and record the sex and if the lobsters are berried.

Table 1. A summary of the lobster sampling during the fall 2009 season.

Season	Trap type	Number of sampled trap hauls	Number of lobsters sampled
Fall 2009	Commercial	2,574	12,747
Fall 2009	Juvenile	775	4,838

The Petitcodiac River causeway gates were opened by DSS on April 14, 2010 restoring tidal exchange. Data collection for the second stage of the Commercial Fisheries Lobster Monitoring Program commenced April 26, 2010. Lobster catch rates in commercial and FSRS juvenile traps were monitored during the open fishing season between April 26 and July 31, 2010. Lobster catch rates in commercial and FSRS juvenile traps will continue to be monitored during the fall 2010 fishing season.

Table 2. A preliminary summary of lobster sampling during the spring 2010 season.

Season	Trap type	Number of sampled trap hauls	Number of lobsters sampled
Spring 2010	Commercial	10,180	46,134
Spring 2010	Juvenile	TBA	TBA

Sediment (when present in the traps) and surface water were collected each sampling day. A total of 417 water samples were collected during the fall 2008 (67 samples), spring 2009 (132 samples), out-of-season 2009 (144 samples), and fall 2009 (74 samples) for Stage 1 of the Commercial Fisheries Lobster Monitoring Program. A total of 177 water samples were collected and analyzed for total suspended solids during the spring 2010 fishing season.

### Out-of-Season Sampling

The out-of-season trapping survey commenced August 2010. The 2010 out-of-season trapping survey target areas (Figure 1) were the same as the trap locations during the 2009 out-of-season survey; these locations were selected in direct consultation with DFO, the FSRs and LFA35 fishermen in 2009. Three vessels participated in the out-of-season sampling in 2010. The FSRs technicians completed the sampling aboard these vessels. Out-of-season trapping surveys are planned at a similar time and location for the up-coming years.

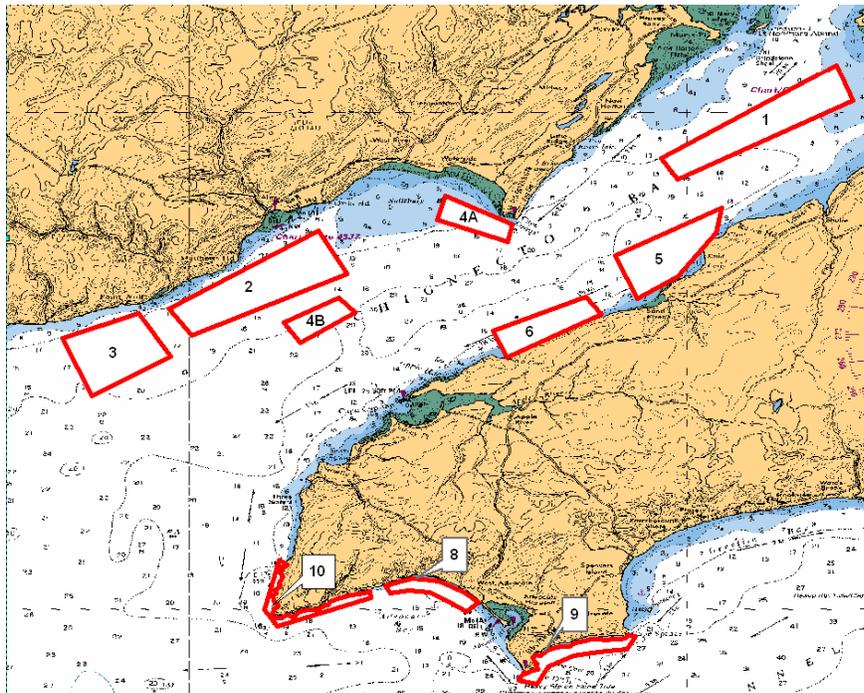


Figure 1. The boxes represent the out-of-season lobster trapping survey areas, 2010. Areas 1, 2, 3, 4A, 4B, 5, and 6 are located in the exposure zone and areas 8, 9, and 10 are located in the control zone.

A complete report on the Upper Bay of Fundy Lobster Fishery Monitoring Program component of the Commercial Fisheries Monitoring Program - Stage 1 Follow-up Program was submitted to AMEC in January 2010. Monica Finley has been rehired this year as the biologist for the project and is in the process of analyzing the data and preparing a report on the Upper Bay of Fundy Lobster Fishery Monitoring Program 2010.

## **BEACHCOMBING - What's New in The News**

### **STATE OF THE GULF OF MAINE REPORT LAUNCHED**

The Gulf of Maine Council on the Marine Environment released the *State of the Gulf of Maine Report* in June. This report is a web-based document designed to be continually updated as information is gathered.

Visit the Gulf of Maine web site at <http://www2.gulfofmaine.org/esip/> for a link to this report.

**VISIT OUR WEB SITE  
AT  
[www.fsrs.ns.ca](http://www.fsrs.ns.ca)  
FOR INFORMATION  
ON THE FSRS AND  
OUR PROJECTS**

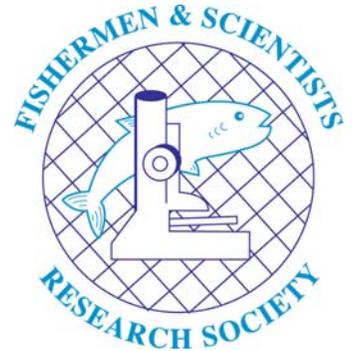
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## **UPCOMING EVENTS**

### **Mark Your Calendar! FSRS 18<sup>th</sup> Annual Conference**

March 24 - 25, 2011  
Best Western Glengarry Hotel in Truro, NS  
For more information contact Patty King at  
902-876-1160 or [info@fsrs.ns.ca](mailto:info@fsrs.ns.ca).

### **FSRS-GOMLF Joint Lobster Science Workshop**

March 23, 2011  
Best Western Glengarry Hotel in Truro, NS  
For more information contact Patty King at  
902-876-1160 or [info@fsrs.ns.ca](mailto:info@fsrs.ns.ca).