
HOOK, LINE AND THINKER

The Newsletter of the Fishermen and Scientists Research Society

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FISHERIES AND AQUACULTURE FUNDING ENSURES CONTINUATION OF ALMQ PROJECT

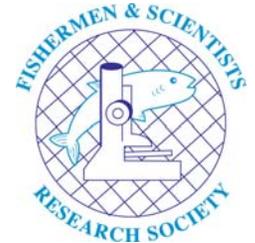
By Patty King, General Manager, Fishermen and Scientists Research Society

The Atlantic Lobster Moulting and Quality Project is a collaborative investigation, involving lobster harvesters, buyers, dealers, processors, and scientists. It began in 2004 in Lobster Fishing Areas (LFA) 33 and 34 with at-sea sampling of blood protein, shell-hardness and moult stage during the summer. In subsequent years, the project expanded to include year round at-sea and shore-based sampling and expanded into LFA 35.

The research program was designed to better understand the relationship between temperature and food sources on the moult cycle. Changes in temperature, diet, and other ecosystem factors affect moult-timing. Timing of moult is important because a period of time after moulting is required before lobsters harden and are ready for market.

Soft-shell lobster have not reached their full maturation, ie: they haven't had time to harden and fill with meat. The soft-shell condition is a market issue as customers prefer the hard-shell lobster full of meat.

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Therefore, when the soft-shell lobster are harvested, the market for this product is low end and as a result affects the price fishermen receive for their catch. The practice of harvesting soft-shell lobster has impacted the economic return for processors and fishermen, particularly during the fall of 2003 and again in the fall of 2011.

Understanding the biological moult cycle of lobster and collecting data that will assist in better fishing practices being investigated is vital to the sustainability and health of the Southwest Nova Scotia lobster industry and requires continued annual data collection. The Atlantic Lobster Moult and Quality Project provides that data collection.

Prior to this year, the AVC Lobster Science Centre at UPEI was the lead on this project. The Fishermen and Scientists Research Society was responsible for contracting the vessels to do out-of-season sampling and assisting in the administration. When the project's funding ended in December 2011, all the collaborators in the project agreed that it was critical that this research continue. After months of intensive effort, the Society has been successful in securing \$127,895 from the Nova Scotia Department of Fisheries and Aquaculture to ensure the continuation of the project in 2012.

“Our government has been a strong supporter over the years of the important research undertaken by the Fishermen and Scientists Research Society,” says Sterling Belliveau, Minister of Fisheries and Aquaculture. “We recognize its value in helping ensure a sustainable fishery through collaborative science, and communication between fishermen and scientists.”



Photo courtesy of NS Fisheries and Aquaculture

The society and project collaborators extend sincere thanks to Minister Belliveau and his staff for their efforts on our behalf to secure the funding needed. Their continued support and on-going contributions are invaluable and contribute greatly to the Society's ability to do the vital research needed in the lobster fishery.

STATUS OF EUTROPHICATION IN THE GULF OF MAINE

By The Gulf of Maine Council's EcoSystem Indicator Partnership (ESIP)

The Gulf of Maine Council's EcoSystem Indicator Partnership (ESIP) has just released a fact sheet about eutrophication in the Gulf of Maine/Bay of Fundy. The fact sheet summarizes data from the Gulf of Maine for four key indicators – nutrient loading, water clarity, chlorophyll *a*, and dissolved oxygen - along with a snap shot of the indicator data.

The fact sheet introduces the concept of indicators as a means for tracking change. It demonstrates the value of indicators as a tool to better understand the wide-ranging effects being seen in the Gulf of Maine region/Bay of Fundy. The fact sheet also brings together data from numerous sources ranging from coast watch groups to federal agencies.

ESIP's Eutrophication fact sheet is available at www2.gulfofmaine.org/esip.

You can use the same website to read about other ESIP activities including fact sheets on aquaculture, aquatic habitats, and climate change.

THE THEORY OF STOCK ASSESSMENT

By Fisheries and Oceans Canada

If you had to sum up in a few words what the process of fish stock assessment is all about, most science literature on the subject describes it as “turning data into advice.” One scientist who lives by such a dictum is Dr. Noel Cadigan, a researcher with Fisheries and Oceans Canada (DFO), working out of St. John’s, Newfoundland. The focus of his entire career has been stock assessment - trying to figure out as precisely as possible how many of which species of fish are in eastern Canadian waters. It is critical work, the results of which inform DFO about the health of the marine ecosystem in general, and more specifically, the status of specific commercial fish stocks from one fishing season to the next, and what are sustainable harvests.



Atlantic cod captured

Photo: Fisheries and Oceans Canada

He can't do this in isolation of course because fish tend to ignore national boundaries! That is why scientists from around the world pool their knowledge. In the case of the North Atlantic, they coordinate their efforts primarily under two organizations known as the International Council for the Exploration of the Sea, or ICES for short, and the Northwest Atlantic Fisheries Organization (NAFO). ICES acts as a meeting point for a community of more than 1,600 marine scientists from 20 countries. NAFO has 12 member countries from North America, Europe, Asia and the Caribbean. Working together gives them a much more balanced picture of what is really happening in the sea.

One of the challenges for those in the stock assessment business is the quantity and quality of data they have. Dr. Cadigan: “You just can't change a data deficiency situation quickly. It's not something that you say, 'Okay, we're going to assess the stock. Let's go out and collect the data on it.' You can't do that in one year. Usually, you need a time series of monitoring data that you collect annually. You track over time what has been happening to the stock.”

The data comes from a variety of sources including landings at ports, from fishers, and research vessel surveys. Universities can be involved in some specialized monitoring, such as acoustic surveys. As Dr. Cadigan notes, “There's data being collected virtually every day of the year somewhere; including by Fisheries and Oceans Canada of course, whose annual monitoring surveys are primarily for stock assessment purposes.”

Fish are examined for crucial information such as age, length, and breeding condition. Once enough records are collected, records that number in the thousands, mathematical and statistical models are used to convert the data into fish population estimates.

A fundamental principle of stock assessment advice is that there should be enough fish left in a stock – after fishing and deaths from natural causes – to spawn healthy new generations in future years. In Canada there are two important benchmarks that come from stock assessments: the biomass limit and the fishing mortality limit. The biomass is the total weight of fish in a fish stock, and fishing mortality is related to the fraction of the stock removed by fisheries. The biomass limit is the lowest level to which a stock should be allowed to fall. Below this level, the stock is so small that the numbers of young fish the adults are capable of spawning is likely to be seriously reduced. This means that the future of the stock is in jeopardy, and in a worst-case scenario, it may never recover to its former levels. The fishing mortality limit is the maximum acceptable removal rate for the stock. It should be less than the level of fishing that results in the greatest long-term sustainable yield.

At Fisheries and Oceans Canada, the science advice gets wrapped up with fisheries management advice in reports that eventually land on the Minister's desk for final decisions. Dr. Cadigan: "With stock assessment we could be asked to provide advice on a whole range of fundamental and common issues about trends in stock populations. We are often asked to evaluate the impact of some proposed quota options. If, in the next fishing year, we were to take X amount, X thousand pounds or whatever, what would be the impact on the stock? We would provide those evaluations for a range of quota options. We on the science side don't set quotas, but we do give fisheries managers our best understanding of the status of a stock and how a particular quota might impact it."

Asked how much of assessment is initiated on the science side, and how much is in response for specific information, Cadigan responds, "It varies. Mostly we get requests from fisheries managers, but we also respond to requests for advice from other groups. There will be some stocks that maybe no one has asked for advice on, but science decides to do the assessment anyway. Here on the East Coast we do different stocks at different times of the year. But usually we're doing those same stocks year after year. Of course, cod are always on our radar, as are American Plaice, Greenland Halibut, and Yellowtail Flounder, remembering of course that some of our stocks of interest go out beyond the 200-mile limit. And then too the shellfish stocks are really important – shrimp, lobster and Snow Crab as well as pelagics such as herring in the Maritimes regions of Nova Scotia and New Brunswick."

At times researchers are also asked to look at by-catch species. These are species caught incidentally to the primary target species, ones not regarded as commercially viable or valuable and which don't usually undergo much monitoring. However, some of these fall under the *Species At Risk Act* therefore the stock assessors must provide advice on these as well.

There are two aspects to stock assessment work. The biologists who go out to sea and do the sampling, and those who take the resulting data and try to turn it into advice. It is the second aspect that Dr. Cadigan is principally involved in. About the data he works with he notes, "It is not exactly the information that's recorded on the boats. There's data cleaning that goes on, but once it is archived in the database, I do the extraction and go with it from there."

From a training perspective he points out that there is really no definitive book on the subject. There are some that talk about the theoretical basis of modeling, say, marine populations. But a big component of stock assessment is actually analyzing and understanding data; this statistical element tends to be not well

described in the population modelling texts. “To me”, says Cadigan, “if you were to talk about the theory of stock assessment, you have to talk about the theory of fish dynamics, and the theory of statistics. You need to understand uncertainty theories and how it applies to data collection and fish stocks. I have a PhD in statistics – my thesis topic was about how to analyze fishery surveys. I mean, I’ve been learning for 20 years, and I’m still learning. The field is enormous. I remember doing statistics in university and taking all of these courses and thinking, ‘I’ll never use that again. Why do I need to know this?’ And yet within five years at Fisheries and Oceans Canada, I think I had used all of it, or 90 percent of it at least.”

It’s a good thing those classes were taken though, since the science of stock assessment is one of the fundamental components of the Fisheries and Oceans Canada science program. Sound decision making on harvest levels is critically tied to accurate stock assessments. It requires years of experience, a dogged determination to do it year in and year out, and a love for all things statistical. All of which makes Dr. Noel Cadigan the right guy in the right job.

For other publications by Fisheries and Oceans Canada, visit the Web site: <http://www.dfo-mpo.gc.ca/science/publications/article/index-eng.asp>

TWIN LOBSTER *HOMARUS AMERICANUS* PRE-LARVAE IN EASTERN NOVA SCOTIA

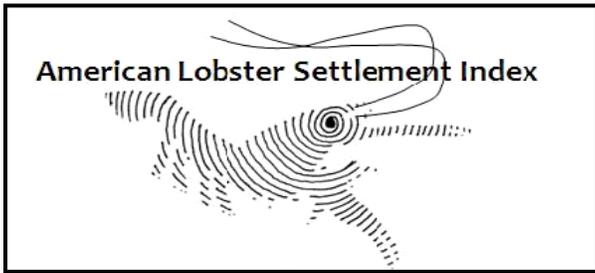
By Angelica Silva, Research Scientist, Fisheries and Oceans Canada



This is the first report on the identification of twin lobster *Homarus americanus* pre-larvae from the areas of Canso and Tangier, in eastern Nova Scotia. A small sample of lobster eggs were collected from berried females during May and June of 2011 as part of a study on maturity of female lobsters in Canso and Tangier. To determine the stage of egg development, a total of 10 eggs from each berried female lobster were examined under a stereoscope. Until 2010 only single pre-larvae with one pair of eyes were found within single egg sacs. In 2011, again the majority of pre-larvae were single with the exception of 2 twin fully formed pre-larvae found in Canso (May 4th, June 21st), and 1 twin pre-larvae found in Tangier (June 4th). In these cases, 2 pre-larvae of about half of the size of a normal pre-larvae were found developing within a single egg sac. Photographs of each observed twin pre-larvae are shown above among other single pre-larvae from Canso and from Tangier.

It seems this is a rare finding, since over almost 14,000 eggs have been observed from 2008 to 2011 and only 3 twin pre-larvae have been found in this study in Nova Scotia.

Field samples were collected aboard volunteer lobster fishing vessels in collaboration with the Guysborough County Inshore Fishermen Association in Canso, and by the Fishermen and Scientists Research Society in Tangier. The maturity study was conducted with a special science permit from Fisheries and Oceans and all berried females and non-legal size lobsters were promptly returned to the water. Berried female lobsters are not harvested in Canada or the United States as they are protected by fisheries regulations.



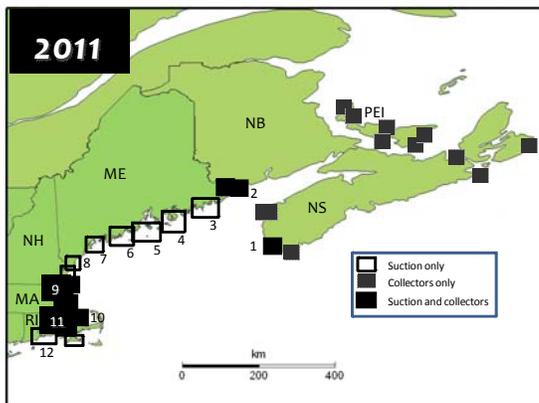
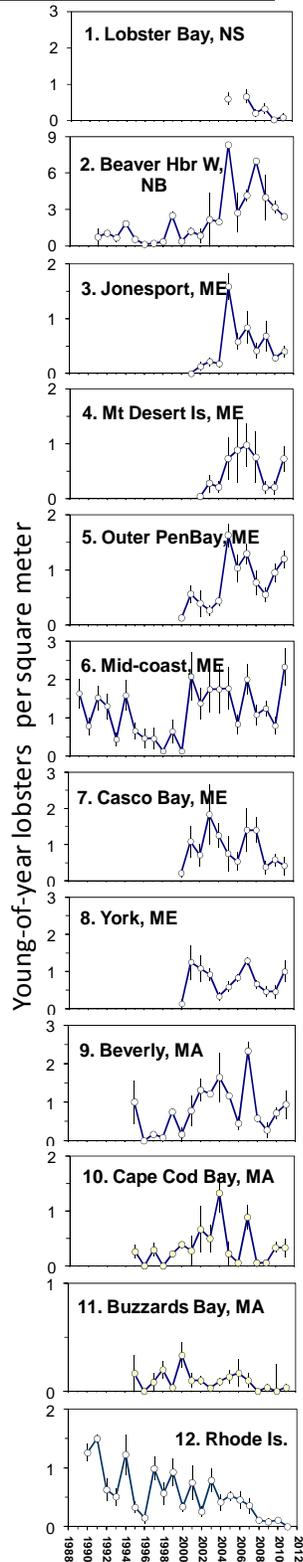
Compiled by: Richard Wahle & Charlene Bergeron (University of Maine, richard.wahle@maine.edu)

Participants: ME DMR (C. Wilson), MA DMF (R. Glenn), RI DFW (M. Gibson), NH F&G (J. Carloni), DFO Canada (M. Comeau, P. Lawton, G. Sharp, J. Tremblay), UNB (R. Rochette), Guysborough Co. Inshore Fishermen’s Assoc., NS (E. O’Leary), Fishermen & Scientists Research Soc. (P. King)

Year 2011 marks a historic coincidence in the time course of the American Lobster Settlement Index that illustrates the ever widening gap between northern and southern New England lobster stocks: Just as mid-coast Maine’s settlement index reached an all-time high the Rhode Island time series dipped to a disturbing all-time low. In this same year, Maine’s lobster fishery again boasted the highest landings on record, exceeding the hundred million pound threshold, while the threat of a fishing moratorium still looms in the memory of southern New England lobstermen. In this issue of the *Update* we recap the regional time trends and take a closer look at the increasingly worrisome situation in southern New England lobster nurseries.

Settlement 2011: Diver-based suction sample monitoring for the study areas with the longest time series continue to show strong settlement to the north and vanishingly low settlement south of Cape Cod (Figs. 1 & 2). Most newsworthy is that for the first time in the 22 year time series, the six annually monitored sites in Rhode Island produced no settlers. It is important to be clear that this does not mean there was no settlement in the region; but it does mean that settlement densities are falling below detectable levels with the current sampling effort. Gulf of Mainers shouldn’t be complacent. Although most of the study areas in the Gulf of Maine from Mt. Desert southward have seen considerable upturns in the last year or two, eastern Maine and the lower Fundy region have fallen off the highs we saw 4 to 6 years back. The time trend also agrees with the Lobster Bay, Nova Scotia, study area most recently added to the mix. The surge in Gulf of Maine lobster landings over the past decade has mostly occurred in eastern Maine, New Brunswick and southwest Nova Scotia. The implications of the downturn in settlement for this region’s fishery remain unclear.

Vessel-deployed, collector-based settlement monitoring has become well established in the southern Gulf of St. Lawrence, eastern Nova Scotia and the lower Fundy region (Figs. 1 & 3). This large scale fisherman-scientist



← **Figure 1.** Lobster settlement data were collected in 2011 by suction sampling, passive collectors, or both. Numbered boxes surround suction sampling sites used for study area averages in Fig. 2.

→ **Figure 2.** Complete time series of settlement, expressed as mean densities of young-of-year (YoY) lobsters at 12 study areas with the longest suction sampling time series.

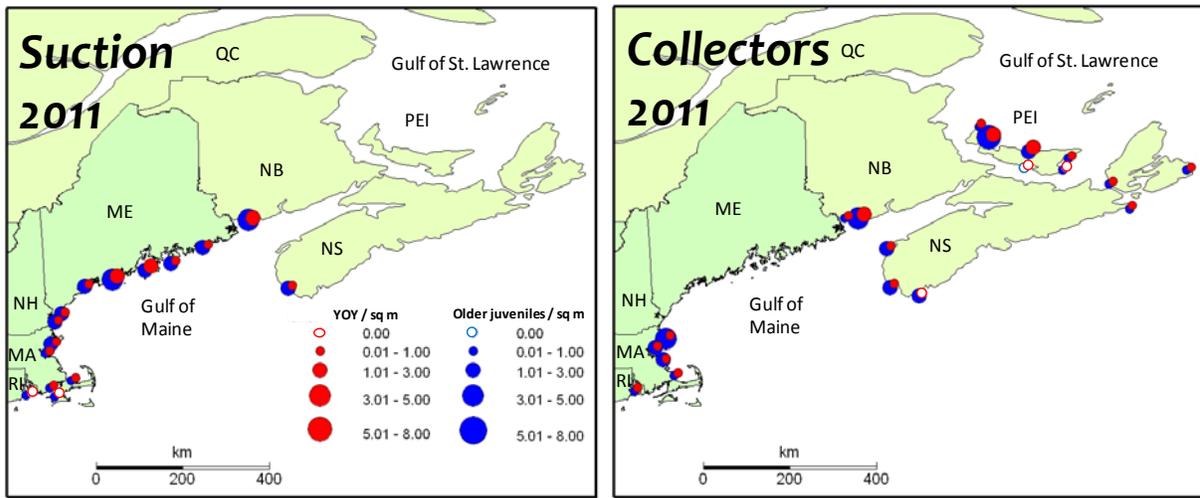


Figure 3. Spatial patterns. Average densities of young-of-year (red) and older juvenile lobsters (blue) found in suction samples (left), and collectors (right) deployed in 2011. Symbols represent multi-site averages for each study area.

collaboration has the potential to generate an especially important time series for Atlantic Canada. One emerging pattern is the consistently strong settlement on Prince Edward Island’s north side and weak settlement on the south side (Fig. 3). Northumberland Strait, between PEI, Nova Scotia and New Brunswick, may become an area of concern as physiologically stressful temperatures above 20°C (68°F) match those threatening southern New England nurseries. Keeping monitoring going should be a top priority.

Growing concern for southern New England nurseries: In 2011, with support from the Commercial Fisheries Research Foundation, UMaine lobster scientists teamed with RI Div. Fish & Wildlife, and RI Lobstermen’s Association to initiate the first comprehensive re-survey of Narragansett Bay lobster nurseries since 1990. Divers conducted both suction sampling and visual surveys, revisiting all the location sampled in 1990 along the Bay’s north-south estuarine gradient, plus a few others of interest to the industry. In 1990 dense populations of juvenile lobsters, comparable in number to those of mid-coast Maine at the time, were found on Rhode Island’s outer coast and well into the mouth of the Bay (Figs. 1 & 4). The 2011 re-survey drove home the sobering realization of how much nursery populations had declined. Even with this intensified sampling, no young-of-year (YoY) lobsters were found in suction samples taken at any site. Supplemental sampling by collectors deployed at all the suction sampling sites produced only a single YoY. These findings are consistent with collector, suction sampling, and brood stock surveys, in

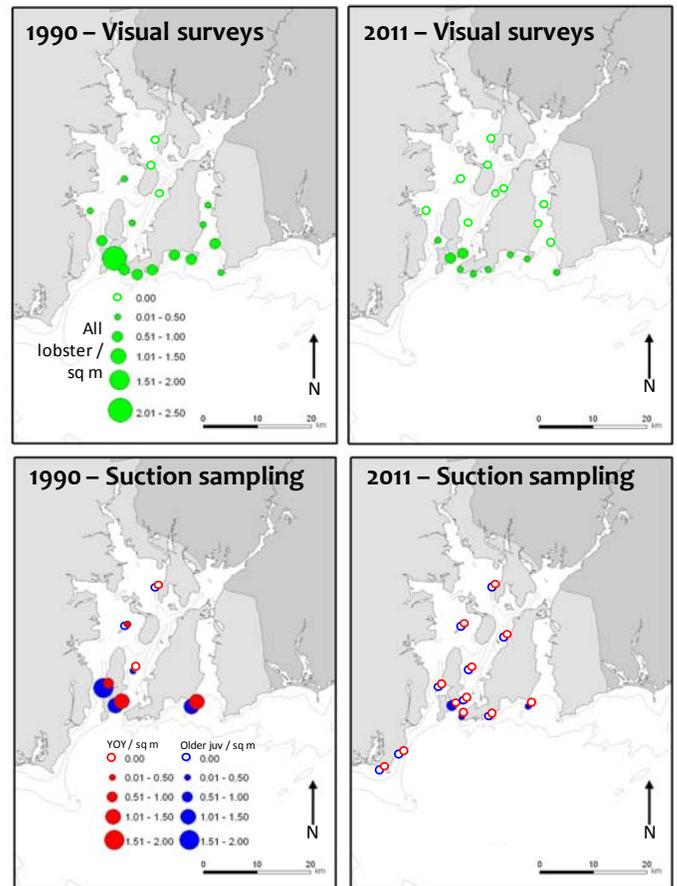


Figure 4. Shrinkage of Narragansett Bay lobster nurseries, 1990 to 2011. Diver-based visual surveys (top panels) and suction sampling (bottom panels). Suction sampling does a better job of resolving YoY lobsters, not shown in visual surveys.

Rhode Island Sound and Buzzards Bay, led by Bob Glenn of MA DMF under a previous CFRF project (see *Comm. Fish. News*, March 2012). The jury is still out as to the key factors at play, but evidence is accumulating that the combination of both warming sea temperatures and shell disease are increasing mortality and forcing remaining broodstock to deeper, cooler, offshore waters where hatching larvae are less likely to end up in coastal nurseries.

Looking Ahead: With the Atlantic Coastal Cooperative Statistics Program, ALSI will launch a Web portal later in 2012 to streamline data entry, reporting and outreach of settlement index results. This will set the stage for a more comprehensive assessment of the predictive power of the index for time trends in the fishery region-by-region over the next two years.

FSRS STAFF IN PLACE ACROSS THE PROVINCE

This summer the FSRS has hired seven additional staff to help with the many projects we are working on across the province. Some of the faces you may recognize from previous summers but we are happy to have some fresh faces as well. Please make them feel welcome and give them a wave if you see them on a wharf in your area.



Hi, I'm Eric Branton, one of the new Fisheries Technicians. I completed a BSc. with a major in Biology from Dalhousie University in 2007. Following this I have worked at the Department of Fisheries Oceans off and on for the last few years. I also worked for FSRS for a year in Yarmouth on the Lobster Moulting and Quality Project followed by another year with the AVC Lobster Science Centre. I have now moved back to my home town of Dartmouth, Nova Scotia and have been working with FSRS on the at-sea sampling and V-notching Program in LFA 32 and 31B.

Hello FSRS! My name is Susan Murray and I am looking forward to working as the Assistant Data Analyst at FSRS this summer. I was born and raised in Halifax, N.S., and I will begin my 4th year at Saint Mary's University in the fall, pursuing an Honours degree in Environmental Science. Growing up in Nova Scotia has allowed me to gain an appreciation for the importance of the fisheries industry within Atlantic Canada, so I am happy to be assisting FSRS fisheries research projects. I am excited to meet and learn from as many of you as possible during my time here.



My name is Kelly Regan and this is my second year as a Fisheries Technician and I will be helping out with the NSERC CCFRN Lobster Node research sampling of berried lobsters as well as the sea and plant samples for lobsters fished in LFAs 32 and 31b and V-notching. I grew up on the Eastern Shore, graduated from the University of Guelph and am happy to return home to work with the FSRS to collect data on the well being of the fishery. I look forward to seeing familiar faces and working with a few new fishermen too.



Hey there! My name is Elizabeth Baker and I am from Head of Jeddore, Nova Scotia. I have just finished my second year towards a BSc. in Animal Science and Aquaculture at the NSAC. I will be working as a Fisheries Technician this summer for the FSRS primarily focusing on the NSERC CCFRN Lobster Node Project as well as plant and at-sea sampling. I have grown up listening to stories from my father, Randy Baker and two older brothers about fishing and being on the ocean and am looking forward to having some of my own to tell! I look forward to working with you and contributing to these awesome projects!

Hello! My name is Claire Haysom, and I am from Dartmouth, Nova Scotia. I will be joining the FSRS team for this summer as a Fisheries Technician. I will mainly be covering LFA 27 in Cape Breton, and will be collecting data for the Lobster Node Project, conducting at-sea samples, and assisting with the Lobster Recruitment Project.

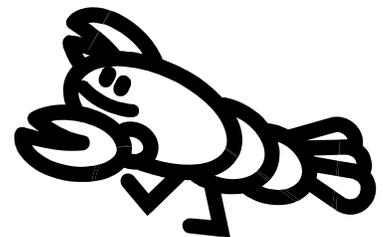
I hold a B.Sc in Natural Resources Conservation through the University of British Columbia, and will be returning to school in September to start a Marine Geomatics program through COGS in Lawrencetown. I'm looking forward to spending a summer outdoors, gaining lots of great hands on experience, and contributing to the wonderful work being done by FSRS.



Hi, everyone! My name is Kristen MacLeod, and I am back for a second year working for the FSRS as a Fisheries Technician. I am from River Ryan and have just completed my third year towards my BSc. in Biology at Cape Breton University. I had a great experience working for the FSRS last fishing season and expect this season to be just as exciting! This year I will be working on the Lobster Node Project and the Lobster Recruitment Project.

I had the opportunity to meet and work with a lot of great fishermen from LFA27 last year and hope to get the chance to meet many more of you throughout the summer.

Hello, my name is Jennifer Dagley and I recently started working for the FSRS as a Fisheries Technician. I will be focusing on the Lobster Moults and Quality project in the Yarmouth area. I graduated from UNBSJ with a BSc. in Marine Biology. I then ventured to Alaska where I spent 6 years working as a Fisheries Biologist collecting data for the Alaska crab industry. After which I switched gears and became a lead researcher for a pharmaceutical research company in Seattle. A year ago I moved back to my roots in Nova Scotia and I am thrilled to be now working back on the water.



LIVELIHOODS IN THE SOUTHWEST NOVA SCOTIA LOBSTER FISHING INDUSTRY

By Allain Barnett, Arizona State University

Fishing communities in Nova Scotia have been faced with many challenges in the past two decades, including the Marshall decision, the moratorium and reduction of quotas on groundfish, rising fuel prices, and decreasing lobster prices. For many this has resulted in an increased dependence on lobster fishing as the “backbone of Atlantic Canadian fisheries”. The lobster fishery provided a means for some fishermen to continue to make an income from fishing, but recent economic trends have presented the fishery with new challenges.

Recently it has become increasingly common for lobster prices to be as low as they were in the 1980s, when the costs of fuel and bait were much cheaper. This can partially be explained by global economic trends; the US exchange rate and the economic crisis of 2008 has decreased demand for lobsters, and the costs of fuel have been steadily increasing due to greater demand worldwide. But to only look at international trends will hide important processes that determine price within communities and at the port. One example of this is recent attempts of the 1688 Professional Lobster Fishing Association (LFA 33 and LFA 34) to negotiate a price of \$5 per pound.

Given the issues and challenges described above, I am interested in trying to answer the following general questions in my research.

- 1) What types of changes in the fishery make it difficult for fishermen to maintain their livelihoods?
- 2) What can and do fishermen do to respond to these changes?
- 3) What enables fishermen to respond in the way they do?
- 4) What limits the ability of fishermen to respond?
- 5) How do these responses affect fishing practices?

As a social scientist with a strong interest in fisheries policy and livelihoods in fishing communities, I have come to Nova Scotia to study the southwest Nova Scotia lobster fisheries. Most of the people I have met so far have asked me “If you are from Arizona State University, why are you all the way over here?” The summarized answer to this is that the PhD program I have taken at Arizona State University has allowed me to read about many cases of fishing, farming, and forestry, all over the world, but I have been most interested in learning from the experiences of fishermen in Atlantic Canada.



Allain Barnett, somewhere off the coast of Nova Scotia.

I am currently living in Barrington Passage, and you may see me talking to fishermen at ports, attending meetings, or out on fishing trips with a captain and his crew. These are common practices in the social sciences, including participant observation and interviewing. In participant observation, researchers will attempt to participate as much as they can in the lives of the people they are studying. They will then take notes about their experiences and what they learn from them and later on write them up. For example, on May 28th, I went out lobstering from a port in LFA 33, mostly just watched the captain and his crew do their work and tried to stay out of the way, but I did also help out by filling and emptying bait bags. When I do interviewing, I ask questions and write down or record the responses from fishermen, crew, and other members of the communities.

When a student decides to do research on people, they have to take extra care to ensure they do not hurt any of the people they study. This involves taking care to protect the confidentiality of information given, and ensuring that people cannot be identified when I write papers or give presentations at conferences and meetings. But I believe it is important to go beyond this. This is why I also follow guidelines requiring me to get feedback from the communities, and to address the concerns of people in the community before I present or publish my work.

If you want to learn more about my research and the methods I am using, you can contact me at 902-630-0040, or email me at ajbarnet@asu.edu.

WORKING TOWARDS INTERNATIONAL COLLABORATION – FSRS ATTENDS MAINE FISHERMEN’S FORUM

By Shaun Allain, Fisheries Technician, Fishermen and Scientists Research Society

In early March of this year, FSRS General Manager Patty King and I loaded up a couple of vehicles with some of the Society’s members and took off to the 37th Annual Maine Fishermen’s Forum which was held at the Samoset Resort in Rockland, Maine. With us were John Levy, Wilford Smith, David Baker, Garnet Heisler, Randy Boutilier, Bill Bond, and Hughie Boutilier. Every two years staff and members make the trek to the forum as an effort to maintain and improve international collaboration with our American neighbours.

This year’s forum was jam packed with seminars, a massive tradeshow, live and silent auctions, and a free health clinic. The group split up to cover off as much of the events and seminars as possible and the variety of topics allowed everyone to take in their own interests. Topics ranged from marine weather buoys, first aid response to fish bone poisoning, and the effects of ocean acidification, to name a few. We also had the opportunity to get a refresher on our survival training by putting on immersion suits and running through a few pool scenarios with the US Coast Guard. After long days of checking out the tradeshow and sitting in on presentations we were able to unwind and be treated to seafood dinners, charity actions, and a DJ spinning some tunes.



From left to right: Hughie Boutilier, Shaun Allain, Garnet Heisler, Patty King, Wilford Smith, John Levy, David Baker, Randy Boutilier, Bill Bond.

Though the weekend was a busy one with lots going on, we did manage to find time to sit down with some of the different research groups working out of Maine and elsewhere in the United States, to talk about how we could collaborate on projects. Before we checked out of the resort

and headed for home, we were invited to sit in on a focus group to provide some Canadian perspective of how our fishermen use information from current weather tracking mechanisms. These conversations proved really useful and we are now looking into ways of sharing information from our growing Nearshore Temperature Monitoring Project in exchange for data on temperature buoys in the Gulf of Maine.

Since the forum, a number of conference calls and email correspondence have taken place to develop proposals and brainstorm ways of working together on a number of initiatives. The connections and working relationships developed during the trip have already proven to be productive and we look forward continuing to grow this collaboration in the future.

KICKING OFF SUMMER WITH WORLD OCEANS DAY!

By Shaun Allain, Fisheries Technician, Fishermen and Scientists Research Society

As usual with World Oceans Day on the Halifax waterfront, rainy weather caused for...*just kidding!* The sun actually came out this year! The great weather allowed for everyone to set up their booths and exhibits outside on the boardwalk with others taking advantage of the surplus of space available inside the Maritime Museum of the Atlantic. With June 8th falling on a Friday, this year's celebration took place on the actual day of the event. This marked the 20th anniversary of the concept of World Oceans Day which was first introduced by the government of Canada at the Earth Summit in Rio de Janeiro. The event was also a great opportunity to show off our sweet new display banners that will be an awesome addition to our booth at events we attend and very nicely visualizes the work the Society does.

This year the FSRS teamed up with the Fisheries Museum of the Atlantic in Lunenburg to enhance each other's displays and increase our communications efforts as a whole. Our side-by-side booths and complementing areas of interest really worked well to attract a large number of students and adults to our displays. The museum educated everyone about the Coriolis Effect and its impact on our ocean currents with hands on activities as well as a demonstration on how landscapes affect the rate of water flow caused by tides. The FSRS booth was busy with young students reaching into a Lobster Recruitment science trap to fish out a small toy lobster to take home with them while parents and teachers took an interest in hearing about our areas of research on the province's fisheries.

Having the museum as a partner has already proven beneficial to the Society with their donation of the small plastic lobsters and other swag as giveaways at events and conferences. The lobsters were a huge hit with the swarms of kids enjoying the weather and taking in the event. The FSRS has, in turn, given demonstrations at museum events and currently a few of our research posters are on display at their location in Lunenburg.



Photo Courtesy of Jennifer Hackett, DFO.
The FSRS and Fisheries Museum of the Atlantic team at the World Oceans Day celebration on the Halifax Waterfront. From left to right; Kelsi Godin, Summer Student, Fisheries Museum of the Atlantic; Susan Murray, Assistant Data Analyst, FSRS; Shaun Allain, Fisheries Technician, FSRS.

A large number of other organizations were present this year showcasing research, industry, and recreational activities having to do with our oceans. As in previous years the Department of Fisheries and Aquaculture had a live touch tank while Fisheries and Oceans Canada displayed a number of fish species common to the area. Other groups in attendance were the World Wildlife Fund, Dalhousie University and the Sackville Rivers Association to name a few.

60 STUDENTS RECEIVE FSRS OCEANS 11 PROGRAM AWARD FOR OUTSTANDING ACHIEVEMENT

Sixty students from Oceans 11 classes throughout Nova Scotia received the tenth annual Fishermen and Scientists Research Society Award for Outstanding Achievement in the Oceans 11 Program. Sixteen of these students received their award at a ceremony held at the Bedford Institute of Oceanography on Oceans Day, June 8th. The students were presented with their awards and given a tour of the facilities by friendly and well-trained tour guides.

This annual award recognizes students, nominated by their teachers, who have demonstrated outstanding accomplishments in their Oceans 11 class, including level of interest, participation and contribution to the class, and scholastic achievement. The Oceans 11 Program is a science program for grade 11 students, offering them the opportunity to learn about a wide range of marine science topics including biology, oceanography, fisheries science and fisheries management.

The FSRS implemented the Oceans 11 Achievement Award to recognize the efforts of others who work towards the goals they share with the FSRS. These goals include promoting communication and education. The development of the Oceans 11 program in our schools is clearly such an effort, and the achievements of students in the program are worthy of recognition.

The FSRS congratulates the following students who received the award:

School	Student
Amherst Regional High School	Alex Christie
Annapolis West Education Centre	Brock Spears
	David Wright
Auburn Drive High School	Heather Armstrong
Avon View High School	Samson Tang
Barrington Municipal High School	Maria Adams
	Donavan Nickerson
	Ashleigh Waybret
Breton Education Centre	Joshua Keith Head
Cabot High School	Kenny LeFriend
Central Kings Rural High School	Matthew Jenkins
Charles P. Allen High School	Jessica Portinari
Cobequid Educational Centre	Brandon Clarke
	Nathan Halliday
	Devan Leadbetter
	Lynann Murphy
	Braedon Naugler
	Luke Uhren
	Tyler Shipley
Amanda King	
Digby Regional High School	Emma Dean

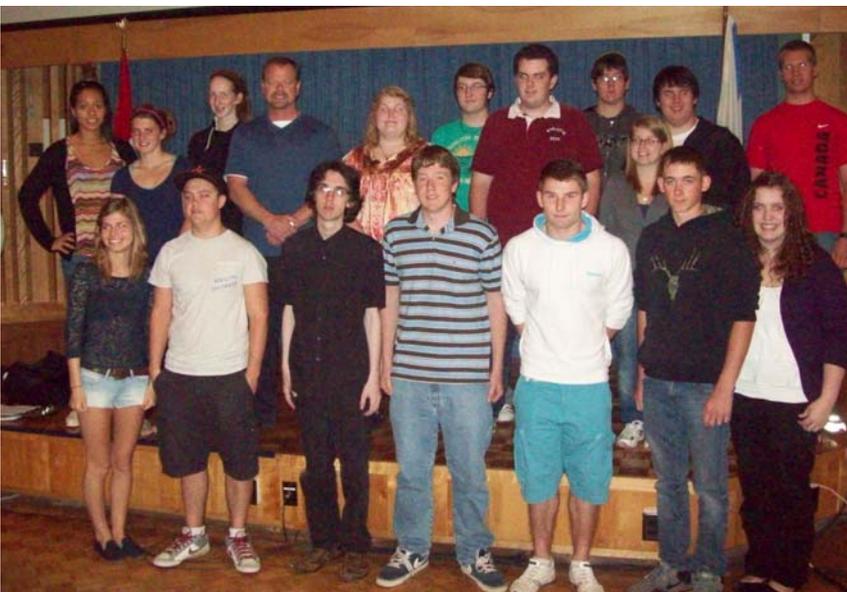
School	Student
Dr. J. H. Gillis High School	Katryn Wright
Duncan MacMillan High School	Derek Lambert
Glace Bay High School	Morgken Flemming
	Kaitlynn Hogan
	Ivy MacNeil
	Alexandra McIntyre
	AJ Michalik
	Bernard Joseph Wadden
Hants North Rural High School	Robin Hilchie
	Shantelle Mason
Horton High School	Dorian Blois
	Graham Ripley
J.L. Ilsley High School	William Hansen
	Nicholas LeBlanc
Lockeport Regional High School	Rebecca Buchanan
Middleton Regional High School	Rachael Banks
	Haley Boone
	A.J. Forsythe
Millwood High School	Erinn Denny
	Jonathan Owen
Musquodoboit Rural High School	Matija McLean
North Nova Education Center	Dylan Feltmate
Northeast Kings County High School	Stephanie Hutt
	Abigail Porter
Prince Andrew High School	Jordan Duffy
	Ryan fleet
	Alexandra Sotiropoulos
	Bethany Tremblay
Pugwash District HS	Alex Mundle
Riverview High School	Keigan Andrews
	Ashley Aucoin
	Cady Cadden
	Cory George
	Amber Hines
	Stephen MacNeil
South Colchester Academy	Hazen Hutchinson
	Lucas Langille
Spring Hill Jr./Sr. High School	Luke Jackson
St. Mary's Academy	Natalie Burns

Background:

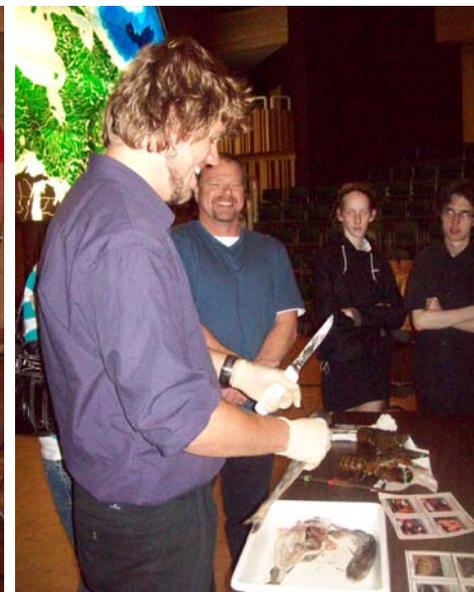
Established in January 1994, the Fishermen and Scientists Research Society (FSRS) is a non-profit organization which is an active partnership between fishermen and scientists. The FSRS was developed with the overall objectives to establish and maintain a network of fishermen and scientists capable of conducting collaborative research and collecting information relevant and necessary to the long-term sustainability of marine fisheries, and to promote effective communication between fishermen, scientists and the general public. The current membership consists of over 450 members. As the name suggests, the FSRS members are predominantly either fishermen or scientists who study the fisheries resources and the marine systems on which they depend. Other members include social scientists, educators and interested citizens. The prime requirements for becoming a member are an interest in the goals of the FSRS and a willingness to contribute towards them.

The FSRS works towards achieving the first objective in two related ways. First, members conduct science projects. These involve field collections of data, samples and specimens, and laboratory processing and analysis by FSRS technicians, interns and members. The data produced by FSRS projects have been used in stock assessments and marine mapping of fisheries resources, and published results have appeared in the primary scientific literature. The second way the FSRS seeks to improve the long-term prospects for our fisheries is through education, or more properly, co-education. Both the fishermen and scientist members have a wealth of knowledge about fisheries resources and the ocean. They certainly do not express it the same way but, more importantly it is not the same knowledge. When these two groups have put their heads together, learned each other's way of describing what they know, and pooled their knowledge, strong new insights have emerged.

As previously mentioned, one of the FSRS's primary objectives is to facilitate and promote effective communication between fishermen, scientists, and the general public. With a view to advancing communication between these stakeholders and increasing fishermen's participation in fisheries science, the FSRS has undertaken a number of initiatives since its inception, including a quarterly newsletter, an annual conference and workshops, and a web site. Promoting communication and education also includes supporting initiatives such as the Oceans 11 Program, which is educating the future stakeholders of this industry, the future scientists and fishermen.



Recipients of the FSRS Outstanding Achievement Award in the Oceans 11 Program who attended the Award Ceremony at BIO on Oceans Day, along with FSRS President John Levy (back row, fourth from the left).



FSRS Fisheries Technician Eric Branton demonstrating sampling techniques to students.

BEACHCOMBING - What's New in The News

A HOME FOR BIODIVERSITY MARINE DATA: FISHERIES AND OCEANS CANADA COORDINATES THE CANADIAN NODE OF THE OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM

The article, *A Home for Biodiversity Marine Data: Fisheries and Oceans Canada Coordinates the Canadian Node of the Ocean Biogeographic Information System* was recently published on the DFO Science Website.

The article reviews the many ways that marine scientists and others from across Canada and around the world are adding to our knowledge of ocean life through a variety of research. The article discusses the global network, Ocean Biogeographic Information System (OBIS) and the Census of Marine Life and how anyone can contribute to the data being collected.

To view this article visit the Web site:
<http://www.dfo-mpo.gc.ca/science/publications/article/2012/05-22-12-eng.html>.

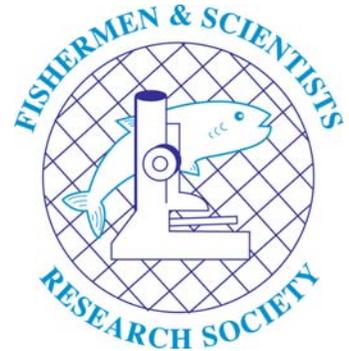
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FISHERMEN AND SCIENTISTS RESEARCH SOCIETY

P.O. Box 25125
Halifax, NS B3M 4H4

Phone: (902) 876-1160 Fax: (902) 876-1320
E-Mail: pmdservices@eastlink.ca; info@fsrs.ns.ca
Web Site: www.fsrs.ns.ca

Editor: PMD Services - Christine MacKenzie and
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UPCOMING EVENTS

**BIO 50th Anniversary and 2012
Ocean Science Expo**
September 22-23, 2012
Bedford Institute of Oceanography
For more information visit:
www.bio2012.ca

**Celebrate with us at the
Fishermen and Scientists Research
Society's
20th Annual Conference**
February 20-21, 2013
Best Western Glengarry Hotel
Truro, NS