

the
Western Shorefast

A joint newsletter of the Bonne Bay Marine Station and the CURRA

Upcoming Events

February 18, 3 PM
Bonne Bay
Marine Station
Norris Point

Kim Olsen and Victoria Neville will give a joint talk on their research on snow crab and voluntary snow crab closures in the western region(see pages 4 and 5).

Everyone is welcome. There will be a mug-up afterwards in the BBMS kitchen.



Fishery Tourism Update

One of the ideas discussed at the Bonne Bay Fishery Tourism Forum in June, 2010 was the community-supported fishery model.

A community-supported fishery (CSF) is a community of people collaborating with the local fishing community. Tailored after the community supported agriculture model, a CSF contributes freshly caught local seafood to the local markets while providing fishermen with a better price on a portion of their catch. CSF members give the fishing community financial support in advance of the season, and in turn the fishermen provide a weekly share of seafood during the harvesting season. Community supported fisheries aim to reconnect people with the ocean that sustains them and build a rewarding relationship between the fishermen and the shareholders.

Another idea that restaurant owner Andrea Maunder talked about was the cod pot fish that she sells in her restaurants.

Continued on page 6

Sustainable Livelihoods in the Southwest Coast Lobster Fishery

On November 5, a group of fish harvesters, researchers and government representatives met in Port aux Basques to talk about sustaining the lobster fishery on the southwest coast of the Province.

During the day-long meeting participants listened to presentations from a fish harvester in Nova Scotia, marketing analysts from PEI and the person in charge of a community-supported fish operation near Halifax. MUN biologist Dave Schneider presented some of his very compelling research on the effectiveness of lobster closures.

They shared ideas about cooperative enterprises, niche markets, small-scale fishing enterprises in Fogo and St. Anthony, and opportunities for partnerships with tourism operators. Follow-up discussions will be held in February. CURRA researcher Katie Temple prepared a report on the workshop and will be helping to organize follow-up meetings with harvesters, tourism operators and buyers in the Port aux Basques area.

Full workshop report: www.curra.ca

Memorial Presents

A public policy forum on the forestry industry was held on the SWGC campus on January 26 and 27 in partnership with the Humber Economic Development Board. The forum was open to the public on the evening of January 26. The workshop itself was all day January 27 and featured a dialogue between Memorial researchers and community leaders. In the morning they discussed work Memorial is doing in the region; in the afternoon they explored new opportunities for future research in the region.

A full report will be available on the website of the Humber Economic Development Board at <http://www.humber.nf.ca/>





Trading Books for Boats

The Bonne Bay Marine Station offered Trading Books for Boats in Bonne Bay again this fall from Sept. 29th-Oct. 5th. Grade 7, 8 and 9 students from French Shore Academy, Holy Cross All Grade, Gros Morne Academy, Jakeman All-Grade and Bonne Bay Academy participated in a full day of marine science based both in the station and out in the fjords of Bonne Bay.

The program was adapted from the Trading Books for Boats program run by ACAP Humber Arm in the Bay of Islands. The program content has recently been changed to reflect a shift in provincial curriculum and now covers outcomes in the grade 8 water quality unit. During a typical program day, students are welcomed to the station and provided with an introductory lecture to begin their time in Bonne Bay. Students move on to complete four learning stations focused on plankton, oil spill prevention and remediation, municipal wastewater treatment and coastal activities in Bonne Bay and the Gulf of St. Lawrence. Students then board the Seal Islander operated by Bon Tours and head out on the water. During their next 1.5 hours on the boat, students learn about the geographical features of Bonne Bay, use GPS for navigation, learn to read tide charts, conduct a plankton tow and use a variety of different instruments to measure temperature, salinity, dissolved oxygen and turbidity of seawater sampled in the bay. A group discussion and survey

concludes the day and not surprisingly the majority of students rate their experiences on the boat as the best part of the day. The Bonne Bay Marine Station is delighted to get students out of their classrooms, onto boats and learning about the marine environments in their own back yards.

Many thanks go out to Jennifer Dawe and Laurie Haycock who provided program instruction. Trading Books for Boats in Bonne Bay would not be possible without the continued financial support of CURRA, Western School District, Red Ochre Regional Development Board and Memorial University.

Bonne Bay Marine Station pumps up its presence on the web

Bonne Bay Marine Station can now be found on:

- Facebook-Search pages for 'Bonne Bay Marine Station'
- Grosmorne.ca
- Grosmorne.com
- Google Maps
- Wikipedia- Become a contributor and help us add to our wiki page.

See you online!

The Life of a Snow Crab (*Chionoecetes opilo*)

Snow Crabs are fascinating biological specimens as well as a valuable ecological resource. At present, snow crab landings encompass a large portion of the Newfoundland fishery and thus have significant economic impacts on coastal communities of Newfoundland.

The life of a snow crab begins within its mother's brood pouch. Female crabs protect their eggs by brooding them in an abdominal pouch until they are ready to be released. Each female can carry about a half a million eggs at a time, though only a small proportion will survive to adulthood. The egg mass is sticky and is held in the pouch by small modified legs called *pleopods*. When a female's brood pouch is full of fertilized eggs, she is what is referred to as a "berried" female. It is easy to tell the difference between a male and female Snow Crab by looking at their abdominal flaps. A female, who can carry hundreds of thousands of eggs, has a large oval flap, where a male has a small triangular flap. Also, adult females grow to about half the size of adult males. Our fishery for snow crab is directed only at the males of the species.

The mother snow crab cares for her eggs by beating her abdominal flap and *pleopods* to provide oxygenated water to the eggs while they are within her pouch. The eggs develop in her pouch, feeding on a yoke sac, until they are ready to hatch. When they are ready to hatch it is believed the eggs send a chemical signal to the mother. The mother then vigorously beats her abdominal pouch to facilitate release of the free-swimming larvae.

The larvae undergo two morphological phases before settling onto the bottom. The first stage is called the *planktonic zoea* and, during this stage, it bears little resemblance to the adult form. The young crabs remain in this free-floating (*zoea*) form for about two months before metamorphosing into their second planktonic larval form, the *megalops*. Megalop larvae are more similar to an adult crab; at this point they develop their first clawed appendages. After a few months, the megalop larvae settle onto the bottom where they metamorphose yet again, this time into a small crab (about 3.5 mm), resembling their parents.

Male and female snow crabs in Bonne Bay, courtesy of R. Hooper



Victoria Neville

As a snow crab grows and develops, it must molt. This is true for all crustaceans (that is lobsters, shrimp etc). Because their hard exoskeleton does not grow, it is shed by molting. When the crab is ready to molt, it releases biochemical enzymes that separate the old shell from the underlying skin, as a new soft shell is secreted beneath. The crab wiggles itself out of its old shell, leaving behind a perfect cast of its former self. It takes anywhere from five to ten years, depending on environmental factors, for a snow crab to reach sexual maturity. As a crab grows, its molting frequency decreases. Juvenile's molt several times a year but as they grow this process slows. Adolescent snow crabs molt annually in the spring of the year. Female's sexual maturity is reached at about 40-75 mm carapace width (across the back shell) but males may continue to molt after sexual maturity until they develop their characteristic enlarged claws. The maximum size for males ranges between 40-115 mm so some males will never grow large enough to be exploited by the fishery because the minimum legal size is 95 mm carapace width.

Snow crab reproductive behaviour can be quite intriguing. The male snow crab grasps the female underneath its body, generally for about a week, to protect her from the advances of other males. Females that are reproducing for the first time molt to the mature stage just prior to mating. The males assist the females in their final molt. After the molt to maturity, females have reached their maximum size and cease growing. Females that have reproduced in the past do not undergo a molt during the mating period

Selected references:

Hooper, R. (n.d.). Snow Crabs: Using Science to Add Value to a Resource. Bonne Bay Marine Station.
www.bonnebay.ca/marine_ecology.htm##Snowcrab

Snow Crab. (2010, April 12). Fisheries and Oceans Canada.
<http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/snow-crab-neige/snow-crab-neiges2009-eng.htm#n2.1>

ACORN-NL hosts first annual conference

Wayne Roberts, author of the acclaimed *No-Nonsense guide to World Food*, has referred to our current food situation as a “perfect wave” and a “perfect storm.” It is a perfect wave as there is a groundswell of movement towards more local food systems, which are posing increasing structures of resistance to the global food system. More and more people are looking for sources of food closer to home that support local farmers and fishers. The local food sector also has tremendous potential to contribute to new business opportunities, especially for small and medium-sized farms often squeezed out of global commodity networks, and regional economic development.

Roberts was one of the keynote speakers at the first annual conference of the Newfoundland and Labrador chapter of the Atlantic Canada Organic Regional Network (ACORN) that took place from October 22-24 2010. ACORN aims to enhance the viability and growth of the Atlantic Canadian organic agricultural community through a unified regional network (www.acornorganic.org).

The first meeting of the Newfoundland and Labrador chapter brought together farmers, researchers, government officials, community-based organizations, and citizens concerned with organic farming as well as broader issues related to food systems sustainability and food security. The three-day event featured plenary discussions, workshops on topics ranging from organic production techniques to new marketing opportunities, on-farm practical sessions, and various panel discussions including a panel about the future of food security for Newfoundland and Labrador.

The meeting served as an important venue for the food and farming community across Newfoundland and Labrador to network and engage in collaborative dialogue about the challenges and opportunities our province faces with regards to food system sustainability and food security. For more information about ACORN-NL visit <http://acornnl.wordpress.com/>

Voluntary Snow Crab Closure

For the past two years there has been a voluntary snow crab fishery closure in Bonne Bay - initiated by fish harvesters to help rejuvenate crab stocks. These ‘voluntary closures’ are gaining popularity in NL as can be seen through examples in St. Brendan’s, Trout River and Funk Island Deep. As part of her Master’s research at Memorial University, Kim Olson has been looking at what drives these voluntary initiatives.

Drawing from an example in the Bay of Islands, where a voluntary crab closure was discussed early this year (but not implemented), Kim is looking at the steps and processes that lead to or block the implementation of closures. It is important to understand what prompts their implementation because a closure can have varying environmental, social and economic impacts. They can contribute to building collaboration among resource users and can provide direct ecosystem benefits. At the same time, support for closures can vary widely and their outcomes are uncertain.

Kim spent the summer conducting face-to-face interviews with fish harvesters in the Bay of Islands. She found that declining stocks, low price, and a closure in neighbouring Bonne Bay were the main contributors to closure discussions. Crab landings and prices have decreased in the Bay of Islands since 2004, and it is increasingly difficult for harvesters to meet their quotas. Some felt a closure similar to Bonne Bay might help the declining stock.

Kim’s research was funded by the Geography Department at Memorial University, the Social Sciences Research Council of Canada, the International Coastal Network, and the Harris Centre at MUN.



Kim Olson

Continued from front page

Andrea owns two restaurants called *Bacalao*, the Portuguese name for cod, in St. John's and Clarenville. She buys a lot of cod from the Fogo Island Fishermen's Coop. It is caught in cod pots.

Cod Pot Technology

The provincial government provided about \$10,000 to support the development of a baited cod pot fishery on Fogo Island under the Fisheries Technology and New Opportunities Program, which is part of the Fishing Industry Renewal Strategy. The Fogo baited cod pot fishery project has been a success, the provincial government says. The catch in the pots was Grade A quality fish that fetched a top price.

The project provided cod to several restaurants, including *Bacalao*, that are interested in serving fresh, sustainably harvested seafood. These baited cod pots are considered to be a sustainable method of harvesting.

It also enabled harvesters to achieve a higher price for their product because cod pods help to maintain the quality of the fish. This project was a collaborative initiative between the provincial government, the Shorefast Foundation, Marine Institute, Fogo Island Co-Op and the Canadian Centre for Fisheries Innovation.

"At the end of the day, we are hopeful that the project will act as a model for the other communities in which harvesters, processors and restaurants can work together to provide top quality fish to consumers. With the exception of hand lining, few gears can produce the quality of fish captured using live baited pots," said Dr. Paul Winger, director of the Centre for Sustainable Aquatic Resources at the Marine Institute.

As part of the project, a licensed harvester who had a commercial quota for cod was selected and provided with the necessary equipment to carry out the project. All cod were harvested following

strict guidelines for quality.

You can watch a crew of Alaskan fishermen fishing with cod pots by clicking here: <http://www.youtube.com/watch?v=ydicCMJZCp8>

Barriers

Other issues that were discussed were the myriad obstacles that stand in the way of cooperative enterprises between tourism operators and fish harvesters, and between tourists and fish harvesters. The Steering Committee for the forum is currently seeking funding to complete some research to identify and make a list of these barriers, to provide the background for discussing ways and means of breaking them down.

The Steering Committee have also submitted a proposal to hire a researcher to work with some local tourism operators and fish harvesters to seek out possible synergies and opportunities for joint enterprises.

They are also looking at a possible pilot project that would involve several interested fish harvesters and tourism operators developing a tourism package that might serve as a model to the Bonne Bay region and other coastal communities.

Fishery cooperatives were suggested as a way of removing barriers to direct sales to the public as well as restaurant owners. A workshop on fishery cooperative societies for interested harvesters and tourism operators is being planned for this winter or early spring. The free workshop is contingent upon sufficient local interest.

Anybody who is interested in exploring this idea a little further in please contact the community coordinator (458-3014) or (abest@mun.ca).

Research on sound effects

In response to questions from the community about research that has been done on the effects of sound waves on marine life, we will be soon making available on our web site several articles, scholarly and informal, on this subject as it relates to the fishing and oil and gas industries. Go to www.curra.ca and follow the Community Topics link.

Please send us your questions and comments. We also welcome photos.

Top: Seismic research vessel Celtic Explorer used by Marine Institute

Bottom: Tagged whale in a Seismic Study (Duke University)



The Western Shorefast
Bonne Bay Marine Station
 P.O. Box 69
 Norris Point, NL, A0K 3V0

Contact us:
 CURRA Community Coordinator (abest@mun.ca)



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