
HOOK, LINE AND THINKER

The Newsletter of the Fishermen and Scientists Research Society

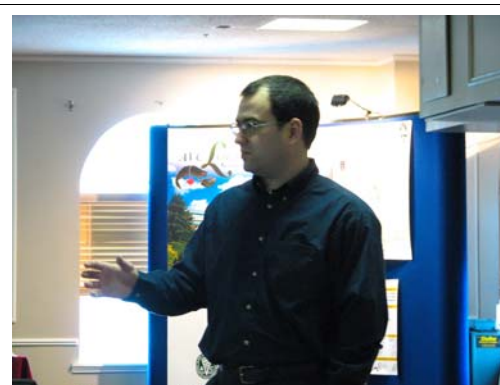
Issue: 2006 - 1

Winter 2001

FSRS 13TH ANNUAL CONFERENCE

The Fishermen and Scientists Research Society held its 13th Annual Conference and Annual General Meeting at the Howard Johnson Hotel and Convention Centre in Truro, NS on February 24th and 25th. On behalf of the members, we would like to gratefully acknowledge the Director's Office, Science Branch, Maritimes Region, Fisheries & Oceans Canada; Nova Scotia Department of Agriculture and Fisheries; Canadian Centre For Fisheries Innovation; AVC Lobster Science Centre; Halifax West Commercial Fisherman's Association; Natural Sciences and Engineering Research Council of Canada (NSERC), Atlantic Regional Office; Atlantic Catch Data Limited; Guysborough County Inshore Fishermen's Association; Nova Scotia Fish Packers Association; Sea Coast HVAC (2004) Ltd.; Scotia Fundy Inshore Fishermen's Association; Shelburne County Competitive Fishermen's Association; and Wade Company Limited for their support and financial contributions, without which the conference would not have been possible.

The conference was well attended with no blizzard warnings for the first time in three years! Some guests and members traveled great distances to attend and as always we had guests who came to learn more about the FSRS and to explore opportunities to collaborate with us.



Carl MacDonald giving his presentation at the Conference.

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WORKSHOP SESSIONS

The conference workshops dealt with a wide range of topics. On behalf of the members, thank you to all presenters for their informative and enlightening sessions: Ginny Boudreau, Bob Branton, Alida Bundy, Andy Chapman, Lew Clancey, Edwin DeMont, Nell den Heyer, Dave Duggan, Gordon Fader, Linde Greening, Peter Hurley, Karen King, Carl MacDonald, Stephen McIntosh, Ryan Stanley and Catherine Vardy. Pages 4 to 34 of this issue provide reports on their presentations, as well as the Scientific Program Committee Report presented on day two of the Conference.

POSTER/INFORMATION DISPLAYS

In addition to the workshop sessions, there were a number of poster and information displays. The scope of topics covered in the displays was broad. A special thanks to all the participants in the poster/information displays:

- A Field Investigation of the Effects of V-notching on the Health and Susceptibility to Infection of Ovigerous Female Lobsters (*Homarus americanus*) - *Jean Lavallée and Don Rainnie.*
- Announcing the 8th International Conference and Workshop on Lobster Biology and Management - *Jean Lavallée & Barry MacPhee*
- AVC Lobster Science Centre - *Jean Lavallée*
- Canadian Centre For Fisheries Innovation – *Andy Chapman*
- Canadian Centre for Marine Biodiversity Hosted Databases and Electronic Atlases - *Robert M. Branton, Gerald A. Black, and Derek Broughton*
- Clam Enhancement on the Eastern Shore – *Linde Greening and Lew Clancey*
- Developing a Bacterial Disease Model for Lobsters - *Dr. Ian Keith, Judy Peitzsche and Jean Lavallée*
- Emergence of a Regional OBIS Node - 'Summary of Present Canadian Contributions to OBIS and GMBIS' - *Robert M. Branton, Gerald A. Black, and Lou Van Guelpen*
- ESFPA V-Notch and Tagging Project - *Nellie Baker-Stevens*
- FSRS Code of Ethics
- Gulf of Maine Ocean Data Partnership - 'Building a Region Wide Information System from the Bottom Up' - *anon*
- Guysborough County Inshore Fishermen's Association Lobster Research – *Ginny Boudreau*
- Lobster Recruitment Index From Standard Traps (LRIST) - *Carl MacDonald and John Tremblay*
- NAFO: Northwest Atlantic Fisheries Organization
- Natural Sciences and Engineering Research Council of Canada (NSERC) – *Catherine Vardy*
- Nine-year Review of Gulfwatch in the Gulf of Maine: Trends in Tissue Contaminant Levels in the Blue Mussel, *Mytilus edulis* L., 1993 – 2001 – *Louise White, Peter Wells, Steve Jones, Christian Krahforst, Gareth Harding, Peter Hennigar, Guy Brun and Natalie Landry*
- NS Museum of Natural History - *Andrew Hebda and John Gilhen*
- Ocean Biogeographic Information System Management Committee (OBISMC) - 'Access to Marine Species Data From All Over the World' - *Robert M. Branton*
- The Lobster Molt and Quality Project: Data Collection - *Cheryl Frail*
- The Lobster Molt and Quality Project: Live Demonstration of the Website - *Jean Lavallée and Cheryl Frail*

RECEPTION

Not all of the Conference was serious work. Members and guests had a chance to sit back, relax and socialize during the reception that was held on the first night. Not only did this give members a chance to get reacquainted, it was also a great opportunity to continue to build better communication between fishermen and scientists.

The “Dutch Auction”, which has become a popular annual event, was an even bigger success this year, raising over \$1200 for the FSRs. Participants also had a chance to win some fabulous door prizes throughout the two days of the Conference. A special thanks to the companies who donated the door prizes and items for the auction.

Acadian Glass Art
 Adams and Knickle
 AEL
 Anonymous
 Assante Capitol Management Ltd.
 Atlantic Tractors
 Barrington Home Hardware
 Bill’s Gaff
 Boats and Realty
 Budget
 Canadian Tire
 Carl’s Store
 Carquest
 Cleves Source for Sports
 Ford
 Golf Central
 Halley Hanson
 Halterm Ltd
 Hi Liner
 Howard Johnson Hotel, Truro
 HP Fisheries
 Hydroslave
 IMP Yarmouth
 Juice Eh! – The Canadian Squeeze
 Kia, Sydney

LeBlanc Brothers
 Lunenburg Foundry
 Marel Scales
 MotorMart
 NS Building Supplies
 NSERC
 NS Museum of Natural History
 Princess Auto
 Pro Hardware Sydney Mines
 Rainbow Net and Rigging
 Rope and Wire Industries Atlantic
 Savoy Theatre
 Seefish Dockside Monitors Inc.
 Silvers Garage
 Sydney Auto Parts
 Terry’s Rentals
 Torpedo Rays
 Tusket Ford
 Tusket Motor Sports
 V & R Traps
 Vernon Deon (Cape Island)
 Vernon D’eon Lobster Plugs
 Wade’s Wire traps
 Yarmouth Honda



Conference participants enjoy the Dutch Auction.



Participants pose in front of one of the many poster displays.

CANADA'S OCEAN ACTION PLAN - INTEGRATED MANAGEMENT AS ONE OF THE PRIORITIES

Presentation by Dave Duggan
Summarized by Rebecca Goreham and Patty King

Canada's Ocean Action Plan (OAP), along with the Canadian Ocean Strategy and Canada's Ocean's Act (1997) are the basis for Canada Oceans Management Program. The OAP has four interconnected pillars that regulate delivery of the plan across government:

- International Leadership, Sovereignty and Security
- Integrated Oceans Management for Sustainable Development
- Health of the Oceans
- Ocean Science and Technology

The OAP is taking a phased approach to address key priorities. Phase I includes a series of initiatives to be completed by March 2007 that build on progress made to date, and set the foundation for achieving the long-term objectives of the *Oceans Act* and Canada's Oceans Strategy. Subsequent phases of the Oceans Action Plan will broaden the geographic scope of oceans management, deepen action across Government and take advantage of lessons learned in Phase I (http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oap-pao/index_e.asp).

The Integrated Management planning process has six steps:

- Implementation and monitoring
- Integrated Oceans management plan
- Management strategies and actions - estimated timelines and priorities
- Objectives based framework
- Collaborative planning
- Assessment

Five priority areas have been identified for Phase I of the OAP:

- Placentia Bay
- Eastern Scotian Shelf (ESSIM)
- Gulf of St. Lawrence
- Beaufort Sea
- Pacific North Coast

Phase I deliverables for ESSIM include: the identification of Ecologically and Biologically Significant Areas (EBSAs), approval of management plan, implementation of coral conservation plan, benthic conservation plan, and implementation of a fisheries management plan.

For more information about Canada's Ocean's Management and the Oceans Action Plan, check out http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oceans/index_e.asp.

SO YOU WANT TO MANAGE THE SEABED: THE NEW MAPPING

Presented by Gordon Fader

Summarized by Curtis Young, FSRS Technician

Mr. Fader began his presentation with a discussion of how far we have come in terms of the technology available to map the sea floor. In only a few decades the technology has gone from simple contour lines showing depths of the ocean to the high resolution images available today which reveal volumes about the sea floor. With the aid of colorful images Mr. Fader was able to show just how powerful the current technology is. One example which stands out from the presentation was that of a sunken ship. Starting with the most primitive technology the ship appeared as a large unidentifiable object on the sea floor, at least unidentifiable to the untrained eye. Mr. Fader then showed successive images of the sunken vessel, each acquired with more advanced technology until the final image appeared in high resolution with even the thin hand rails on the deck of the boat being visible.

Sonar technology is used to capture these images and map the sea floor. Specifically being used are side scan sonar and the more effective multibeam sonar which allows effective three dimensional mapping of ocean bathymetry. This technology allows the user to identify and distinguish between different geological features on the sea floor. A function that Mr. Fader suggests is very useful to the fishing industry.

Applications for this technology

Mr. Fader gave the audience a sample of the work he has conducted utilizing this technology, including the Confederation Bridge in the Northumberland Strait. Here the images showed one of the pillars of the bridge had been gorged out by the strong current and was no longer attached to the seafloor. This problem was later fixed but it was suggested that the problem could have been avoided if this technology had been used during the development of the bridge.

Images were shown from off the coast of Cape Breton where an abandoned coal mine can be seen. Mr. Fader points out that with this image we can see two things. Firstly, the mine shafts have collapsed leaving depressions in the sea floor and perhaps more useful from an industry stand point is that the mining was being conducted in the wrong direction. The coal deposit is seen as a distinct geological area visible from the image and the mines were cutting across the coal deposit rather than following the deposit.

A large deposit of sand was shown off the eastern coast of Prince Edward Island. Mr. Fader pointed out that this sand deposit could provide a solution to beach erosion occurring in PEI. Sand is eroded from the northern shore and transported by currents to this location. Mining of the sand could provide a self sustaining system where sand is taken from this location to battle erosion, and then currents eventually carry the sand away depositing it back to its original location. He adds that this would also create more lobster bottom and aid both the tourism and fishing industries.

Many sunken ships were identified through the presentation, most of which would still be unknown if not for this technology. Among the wrecks identified was a German submarine, which is the only submarine in dive friendly waters in Canada. Implications for heritage and tourism were both identified.

Halifax Harbour was also mapped with this multibeam sonar revealing a wealth of useful information. Visible from the images were differences in geological features, sunken ships, and anchor marks on the floor of the harbour, to name only a few of the interesting features. This work was conducted prior to

hurricane Juan in 2003. This provided the opportunity to go back to the harbour and analyze the affects of a major storm event. Noticeable differences in at least one area of the harbour were identified. The information obtained through the multibeam sonar technology has been used in the planning for the new outfall locations in the harbour.

Other areas of interest discussed in the presentation included the use of this technology in locating the remains of the Swiss Air crash near Peggy's Cove in 1998. The area known as the Gully near Sable Island was also studied with this technology. Images from this area show signs of bottom damage from past fishing activities. Sea vents on the Scotian Shelf were identified, as were potential hazards such as old ammo dumps.

Direct implications for the fishing industry were discussed as well. Implications include being able to better target a species of interest and avoid damaging sensitive bottom outside the target area. The specific example of scallop dragging was discussed. Another advantage of its use in the fishing industry would be in avoiding gear hang ups.

Mr. Fader ended his presentation with a colorful and crowd pleasing movie depicting a "fly through" of Halifax Harbour as seen with the help of multibeam technology. The presentation was well received by the audience and a brief discussion followed.

Discussion

Q: How long before I have access to this new technology?

A: The geological survey is moving forward with making the maps available to the public but will take time since it is new technology and there are new protocols to follow. It is happening but it is expensive and is in partnership with business.

Comment: Not all fisherman are responsible for the damage in the Gully. He does not agree with the comment about long lines destroying coral. Feels the major damage is caused by draggers.

Comment: Fishermen have a lot of experience and geology can explain why fishermen see what they see.

Q: Who sponsored the scallop survey in Southwest NS?

A: Clearwater paid for the Georges Bank survey, so this information is private. The government paid for the Brown's Bank survey, so this information should be public. Industry drives the work to be done, but there are plans to make the information available to everyone. Contact Hydrographic Surveys about how to get access to this information.

Q: Multibeam information on Browns Bank should be available to the public. Is the information private or public?

A: Both private and public. Some areas where the surveys have been done are not available to the public since the license holders in that area have control over its access. This work should be done by the Government of Canada and made available as soon as possible.

Q: Do you take into account the effect of multibeam on organisms in its path?

A: No, there is no energy given off and it doesn't penetrate the sea floor. The effects of this technology would not be different than echo location used by most fishing boats. It's more similar to an echo sounder than to seismic.

USING METADATA STANDARDS TO ACHIEVE INTEROPERABILITY

Presentation by Bob Branton

Summarized by Megan Veinot, FSRs Fisheries Technician

As many of you know the FSRs is currently working on a project in the inshore ecosystem. A component of this project recognizes that there is a need to get all available information on the location and abundance of organisms, oceanographic data and information on habitat and bottom types gathered into or made accessible through a single source. It would be very convenient when you are looking for information if you could find it all in one database.

There are issues of concern that come into play when you put many people's data into one database to be shared, such as data privacy. Data privacy refers to the evolving relationship between technology and the legal right to, or public expectation of privacy in the collection and sharing of data (Branton, 2006). Some ways around this is to have users agree to acknowledge the use of specific records from contributing databases, and the portal in general. The users can agree to provide the portal with a full citation of any publication that cites the portal or any constituent part and also the user will need to recognize the limitations of the data.

What exactly is metadata? The term metadata is a word that seems to be used more frequently lately. Metadata is the who, what, where and when of a data set. For example it tells you how the data was collected, where it was collected, when it was collected and it could include how the data was modified. This is very useful to scientists, or anyone, when they are looking to use someone else's data in their study.

Another term commonly used when talking about metadata is interoperability. Interoperability is the consistent and reliable use of data from different and often remote systems, it results from community wide acceptance of data publishing standards, and its standards based systems may be difficult to implement, but they do give built-in interoperability (Branton, 2006).

Discovery portals allow users to search for data particular to their needs (Branton, 2006). It contains metadata provided by original data providers and it can also include links to actual data. In databases it is necessary for the people sharing the data to be unambiguous and it they will have to be qualified with a source or authority. There also needs to be standardized naming systems wherever possible. End-users generally expect to get standardized quality controlled results from project database(s).

The general plan for biological data is to start with a search for existing metadata and have public offering of that data.

If you have any questions you can contact Bob Branton at (902) 426-3537.

References:

Branton, B. (2006) Fishermen and Scientists Research Society 13th Annual Conference.

4VSW SENTINEL MONITORING PROGRAM - EVALUATING THE EFFECTIVENESS OF THE NEW PROGRAM STRUCTURE

Presentation by Peter Hurley

Summarized by Shannon Scott-Tibbetts, Research Assistant, FSRS

Peter Hurley gave a brief presentation on the Sentinel Monitoring Program in which selected fishermen participate in a survey in the 4VsW area. He gave a history of the Sentinel Program, why the program needed to be modified, and a description of the new program. He also presented some results from the new program.

In 1995, the first Sentinel Survey began and it continued through to 2001, where the funding was cut and changes were a necessity. The Joint Partnership Agreement (JPA) was the primary source for funding the Survey and its restructuring in 2004 resulted in the new Sentinel Monitoring Program.

The original Sentinel Program consisted of a Sentinel Survey with 252 randomly stratified stations using longline gear only. There were rigorous protocols followed to ensure the data was of high quality. The FSRS contracted the vessels by paying a charter fee for each station completed. The Society also retained all proceeds from the catch. The second half of the Sentinel Program was the Commercial Index. The objective of this index is to provide a catch rate index unbiased by discarding, misreporting or management restrictions, to address concerns about statistical sampling methods.

As part of the 1997 JPA between DFO and the Fishermen and Scientists Research Society (FSRS), the Sentinel Program was funded for five years, after which a review would be done. It was hoped that the FSRS would establish a “sustainable arrangement including financial, technical and management capability to operate the Sentinel Survey and Commercial Index independent of funding from the Minister...”, (From JPA document 1997). Unfortunately, the financial independence did not occur since fish stocks did not rebound, and fish catches and sales did not meet expectations. Once the review was completed, the stations were reduced to 202 for the Sentinel Survey. By 2003, the Sentinel Project Fund was in deficit and would bankrupt the FSRS if something wasn’t changed.

The JPA was restructured and a smaller Sentinel Monitoring Program was established in 2004. This program needed to follow the same objectives of the original program; to be scientifically rigorous, to be financially viable and serve as a bridge index between current stratified random survey and future ones.

Peter showed various graphs of the catches of key commercial species, such as cod, haddock and white hake from 1996-2003. They showed a definite decrease in the catch rates over the Eastern Scotian Shelf (4VsW). Parts of the inshore and the closed haddock box showed some signs of fish but not huge numbers.

The new program includes 53 randomly selected stations within six strata. Three boats, chosen from the previous Sentinel Program participants, are chartered each year.

Looking at the 2004/2005 Sentinel Survey data, it can be seen that there is still no great improvement in the cod and haddock numbers. The Commercial Index was not successful in 2004 and 2005 had only five fishing days, due to the poor economics of fishing. In November 2005, it was recommended through the Cod Recovery Strategy, that commercial index fisheries be discontinued. More thought has to be given to this program since fishermen would like it continued.

Peter concluded that the new program appears to be tracking cod and haddock stocks but might be missing other species. This program provides monitoring additional to the DFO RV surveys. It also

provides opportunity for collection of other biological data such as fish condition and fish diet sampling as well as oceanographic data.

Discussion

Q: What is the reason for the fish catches dropping when there is no effort being put on the fishery?

A: Not really sure. The effort isn't there because of economics. Price of fish has decreased, price of fuel has increased. Not feasible to go out to look for fish.

Comment: The program had to be revamped since the old program was going downhill financially. The new program is reflective of the overall objectives and the need to address fishermen's concerns as well as still be scientifically sound. The inshore strata seem to have a little bit of fish. Haddock seem to be around Emerald, and Western Bank and Sable Island.

Q: Fish stocks are not recovering even though the fishery is closed. Seals are interfering with the recovery. Knows that in the halibut fishery in 4X, they are making fishing a real problem.

A: Seals might not be the only problem. Over-fishing was certainly a factor in the initial decline of the stocks. However seal predation on the fish is definitely a concern. In the Cod Recovery Strategy - it stated that the seals are to be considered in the whole stock recovery plan.

Comment: There has been a shift in the Eastern Scotian Shelf ecosystem. Shifting up to herring, mackerel populations which also feed on the cod and haddock larvae.

Q: What about the thermal profile of the shelf?

A: There was a decrease in the bottom temperature in the late 1980s but since then the bottom temperature has increased and is getting back to normal levels. This has not lead to an increase in recruitment. One of the problems is the lack of a larval monitoring program.

Q: A number of small cod have been noticed in lobster traps; these should be large cod by now. Why?

A: There is something stopping the cod from recovery since the potential for population growth is there. The 1998-1999 year class of cod has gone through the fishery and there are almost none left now. The 2003 year class is a large stock and has potential to help in the stock re-growth.

Q: How many cod die from seal worms?

A: There are not too many estimates available. The seal worm load is increasing in other species as well.

Q: For the gut content analysis on seals, when are they taking these samples?

A: Historically they have been collecting samples through seals scat and stomach analysis but now are doing fatty acid analysis on blubber tissue to see what they are eating. The focus right now is Sable Island.

Q: COSEWIC/ SARA: Why doesn't the FSRS try and get funding through these venues for the Sentinel funding?

Q: Is there any monitoring of bait species used by lobster fishermen?

A: This is covered by DFO research vessels, which showed a shift in biomass from bottom species to pelagic and crustacean species.

Q: What do the larger species like cod eat?

A: A range of things like silver hake, sand lance, sea stars, etc..

Q: How does this compare to the Research Vessel (RV) Survey?

A: Did not have time to look at it.

Comment: Maybe they are all small fish that are not showing up in the hook and line fishing.

Q: The 2003 year class is coming to Georges bank for 2007?

A: They are showing up now. This is a one year event.

Q: Cod that I have tagged were later caught in Browns Bank and the Bay of Fundy.

A: Your cod were tagged inshore and they may move differently from the offshore cod.

Q: Offshore there are large factory ships that are still catching bycatch. Is that effecting the recruitment to the inshore?

A: There are no factory ships in this area and total bycatch is around 1000kg/year for cod.

Q: Has there been any study about seismic testing related to groundfish?

A: Unsure. There was a proposal but not sure if it went through. Norway may have some studies done in this area.

Comment: A fisherman accused seismic activity for killing fish on a long line set left for only 4 hours. The fisherman has extra tags that could be used to restart a tagging program or used in a new tagging study.

Q: Are the results stratified for fishing effort?

A: No, basically just 1500 hooks.

Q: What would you define as offshore?

A: Western Bank, Emerald and surrounding area.

Comment: Barndoor skate seems to be increasing, but it is the only one.

Q: There apparently is some talk about trying to lure fishermen out there. Is there any talk of a scientific quota?

A: With the Commercial Index there is no worry about the amount we catch because the catches are so low. The economics are not there. 3PS were given a quota and survey.

Q: DFO needed to allow quota and survey and it did happen?

A: In the Commercial Index, each vessel is allowed 12 days to go fishing anywhere in 4VsW except the closed haddock box but it has not been economical for them to go.

Q: Are there any conclusion from upsetting figures other then the downward trend. How does the ecosystem fit into this?

A: All species are showing these declines. There was a big shift from groundfish to pelagic to benthic crustaceans. We're not seeing recovery in groundfish because other species are eating the eggs (e.g. seals). On the Eastern Coastal Shelf in the mid-80's-90's the bottom temperatures were cold but are now back to the long-term average.

Q: How stable is the new situation? Industry depends on predictability. Is the new situation stable?

A: We have seen large changes; it took 30 years before the herring stock rebounded. The shift occurred over a long time so it is probably going to be a long time before they shift back. Monitoring is being done in the hope that we will see signs of recovery. It would be better if we could monitor in areas

wiped out so we could monitor recovery not just an increase in a current population.

Q: How much longer will the sentinel continue?

A: As long as we keep our funding we will be able to keep our 53 stations. As long as the JPA continues so will 4VsW Sentinel Monitoring Program.

Q: There are serious concerns fishing that contributes to mortality. Are there any plans for a non-invasive study and including the fishermen and scientists with non-invasive studies such as acoustic data?

A: Depends on what we can afford. I don't know, but it is not a bad idea. It doesn't really tell the big picture. There is a lack of vessels. We still need sizes to explain what shows up on acoustics.

A: Newfoundland used acoustic data. Acoustic is not invasive but you still need to sample for species and for size to get conversion for biomass. It is better for behaviour and you can see what's between sets. You need samples therefore it is not totally non invasive. It just broadens the picture.

Comment: In Norway there is effort to use acoustics.

Comment: You need to identify size of fish by catching it and with mix species and need to separate fish from bottom. There is a big advantage to see what's between sets. You also need acoustic friendly vessels. We have one large and one smaller vessel.

Comment: We use acoustic for herring. Yes there is a problem with the bottom. Our area is flat. You can look at the bottom and take so much off. Multimesh net with six panels is very important to know what you get. When we do herring it is only herring, but it would be difficult with groundfish. Sampling doesn't need to be huge. Catches are really low.

Q: How much longer is there funding?

A: Three more years.

Comment: About acoustic, there are lots of targets moving up from the bottom to near the surface. But because we can't see it we don't know what it is. It may be a bottom species migrating up.

Q: Why couldn't you use a camera for this?

A: We could consider that.

Q: It would give you size and species.

A: It is theoretically possible but definitely not cheaper.

Q: Global (*a company that does funding*) is interested in acoustics.

A: You should talk to Patty.

Q: Concerns of Sentinel Survey... Long term observation acoustic survey (boats equipped) - would this be better since it is non-invasive?

A: Not aware of any current discussion on this but it is a good idea.

A: There was an acoustic groundfish survey in Newfoundland. Yes, it is non-invasive, but there needs to be ground-truthing done. Need to catch the fish to know the species and size. Advantageous between hauls though. Need a vessel that's acoustically friendly. Have two in Nova Scotia. Have to calibrate with a bottom trawl.

A: They do herring acoustic surveys and yes there are problems. They are only surveying one species, and it must be more difficult when you don't know what is there.

Comment: The Commercial Index does not catch a lot so don't feel it's having a negative impact and there is no need to cancel it.

Q: Could the ROPs be done with a camera?

A: These are all good ideas, and yes there are a lot of possibilities, but these aren't cheaper alternatives.

CANADIAN CENTRE FOR FISHERIES INNOVATIONS MIXING SCIENTIFIC EXCELLENCE WITH ENTREPRENEURIAL ENERGY TO ACHIEVE INNOVATION

Presentation by Any Chapman

Summarized by Megan Veinot, FSRS Fisheries Technician

The Canadian Centre for Fisheries Innovation (CCFI) was established in 1989 with a mandate to support the growth of the fishery and aquaculture industry. It was established by Memorial University and the Marine Institute in St. John's, Newfoundland and it is funded through the Atlantic Innovation Fund. This not-for-profit organization's main ambition is to improve the industry's growth and prosperity. Working with Atlantic Canadian University and College partners, the CCFI is able to provide the fishery and aquaculture industry with some of the best science and engineering there is to offer. To date the Centre has taken part in 630 fishery-related research and development projects, with the project activity totaling around \$77 million.

To keep up with the demand, the CCFI recently expanded and opened an office in Bedford, Nova Scotia in 2003. Since this date, the project activity has increased significantly. In the last three years CCFI has launched \$20.8 million in projects. New Brunswick has received 28% of this funding, Prince Edward Island 4.5%, Nova Scotia 5.8% and Newfoundland has received 61%. CCFI's goal is to continue to increase the project activity in the Maritime Provinces. Since 2002, they have helped create or maintain employment and help generate revenue with newly commercialized seafood products such as: Deep Sea Foods, Benoit's Cove, NL; Innovation Ideas, Fogo, NL; Prince Edward Aqua Farms, Kensington, PEI; and Allen's Fisheries, Benoit Cove, NL. They have helped with constructing new commercial processing equipment including the raw crab leg guillotine, the sea cucumber processing machine and the automatic crab sorting machine. They also helped with producing: new ecologically sound cod pots in Newfoundland and Nova Scotia; new crab pots that can exclude small crabs; new hagfish fisheries in Prince Edward Island and Newfoundland; new sea cucumber fisheries in Newfoundland and with by-catch elimination in the yellowtail flounder fishery in Marystown, NL.

In April 2006 CCFI is seeking a new mandate from the Atlantic Innovation Fund to expand its operations with strong endorsements from the region's provincial governments, DFO, university and colleges and industry partners. They are applying for \$10 million for research and development in the Atlantic region for the next 5 years. The CCFI has made a commitment to keep at least 50% of the funding in the Maritime Provinces.

INSHORE ECOSYSTEM RESEARCH ON THE SCOTIAN SHELF

By Megan Veinot, FSRS Fisheries Technician

The inshore ecosystem research project is already underway. This project is a joint project between the Fishermen and Scientists Research Society (FSRS) and Fisheries and Oceans Canada (DFO) Science and was created because it is becoming increasingly important that we improve our understanding of the structure and dynamics of the inshore ecosystem. By ecosystem we mean all living things (including fish, crustaceans, mammals, birds, marine plants and more) and their environment. For this project, the inshore is defined as less than 50 fathoms or within 12 nautical miles from shore, whichever is furthest.

This project has many components, most of which include the help, knowledge and input from experienced fishermen. By now many of you have already participated in our Grey Seal Popping Area Survey. Some of the FSRS technicians have already been out sampling aboard lobster fishing boats and longline boats. There is literature searches taking place on DFO databases and other scientific literature to find out what is already known about our ecosystem. Currently there is some monitoring of environmental and oceanographic data. A recent addition to this project includes looking at invasive aquatic species.

The FSRS and DFO held a workshop in January inviting scientists who would have valuable knowledge of the inshore ecosystem. There was an overall turnout of about 80 people. Lots of valuable information was collected during this time. The workshop included a mapping exercise where the scientific experts mapped out where they felt there were some ecologically and biologically significant areas, such as spawning grounds, eel grass beds, area with high biodiversity and more. The Ecosystem Working Group was also invited to the Workshop and one of the fishermen from this group, Randy Boutilier, was able to attend all four days of the Workshop.

The next piece of the puzzle to be completed is a Local Ecological Knowledge Survey (LEK). The LEK survey has a two-tier approach. The first step is to call fishermen selected from the DFO database to ask them who they would identify as an expert in their local area (so put on you thinking caps now and keep this in mind). The next step, after these experts have been identified, is to meet with these people and collect their knowledge. Very shortly the FSRS technicians will be starting the first stage.

This spring and summer fisheries independent research will be starting. They will be looking at many things including latitudinal and inshore/offshore differences; at the biodiversity of benthic invertebrates, plants and fish; at determining associations between species, life-histories, and habitat types; at verifying results from at-sea analysis of commercial catch; at identifying potential ecologically and biologically significant areas (EBSAs); and measuring nutrients, Chl a, zooplankton, marine plants, demersal fish, invertebrates birds and sediment characteristic. In the near shore they will be using beach seines, and fyke nets to collect fish, amphipods (sand fleas), crabs, and more. There will also be some invasive species sampling. Out to 50 fathoms they will be sampling from chartered fishing boats. This will include: water sampling with a CTD, plankton tows with a plankton net, benthic grabs and fish and invertebrate collections with gill nets, trammel nets, crab pots, potentially shrimp traps, and recruitment traps. There will also be bird counts when possible. DFO and the FSRS are facing some constraints such as trying to fit all gear in one truck, having a sampling protocol that can be complete in one to two days of boat time, is the gear affordable, and is the sampling protocol non-destructive. They are seeking support from the local fishermen to help with this research. Perhaps you have some gear that you wouldn't mind lending? Gear needed includes gill nets, crab pots, shrimp traps, recruitment traps, buoys, highliners, anchors and more. Their scientific equipment list includes CTDs, benthic grabs and phytoplankton tows. They also need to test their gear in April and May and any experienced fishermen who have advice and/or time to give would be appreciated. Between June

and August they need two days of your time to set the gear and haul it the next day.

The FSRS is always looking for fishermen to help out. If you are interested in taking the FSRS technicians out to sea to do sampling, provide vessels services or give us your input please contact Patty King, FSRS General Manager at 902-876-1160, Carl MacDonald, FSRS Research Biologist at 1-800-226-3777 or Alida Bundy, DFO Research Scientist at 902-426-8353.

Discussion

Comment: Fishermen were concerned with the possibility of Marine Protected Areas (MPAs) being formed if they participated in this study. Then the areas of significance would be closed to them.

Comment: A fisherman commented that a boat of at least 40 feet would be needed to carry all the proposed gear for the transect work and would have to use balloons and not buoys to hold up the lines since the buoys wouldn't be strong enough to hold up the gear. The boat size will limit the amount of transects done.

Comment: No matter what gear you use in the survey, you are going to be bothered by seals.

Comment: Cod traps might be good to use since they will catch other species as well. Gillnets are good as well.

Comment: Experienced crew members would be required to operate the gear for safety reasons.

Comment: The catch processing will be very time consuming. It was noted that there should be enough people on board to take care of that.

Comment: The issue of liability insurance should be looked into to make sure that the research is covered under the captain's or DFO's insurance.

Comment: It was mentioned that Stephanie Howes is doing her masters project on tunicates and might be a good person to contact.

Q: LEK surveys – Have you looked at coastal mapping?

A: Yes, some areas a few years back, some 15 years back. And these surveys will be a little different, so the information wouldn't be very comparable.

Q: So you are looking for a footprint for what it looks like this year. Are you comparing in a few years from now?

A: Essentially we are only getting a snap shot of the present.

Comment: So everything is only for this year.

Comment: To fish this gear you need to get permits. Fishermen who might be willing to help out don't have the right permits.

A: This is taken care of. We have the permits.

Q: Will you be including beyond Cape Island? There used to be kelp and Irish Moss around Lobster Bay that is not there now.

A: The LEK will gather knowledge on the past.

Comment: There should be more involvement from people who harvest marine plants. It isn't always

the captains who have the licence. Maybe the deck hand has the licence and those are people you should talk to.

Comment: Hopefully that will be covered in the LEK survey first stage.

Comment: Tunicates – to his knowledge there is only one species here.

Comment: They are all around, but they are not all invasive species. (They're native).

Q: Will estuaries be included in sampling? Inshore are you looking at the head of rivers?

A: We are trying to stick with beach seining so we are not really sure yet. Depends on where the areas are.

Q: What about eel grass die backs compared to green crabs?

A: Yes, I went to a workshop on it and it seems like this is still an open discussion.

Q: What about Wasting Disease?

A: There is no evidence; more so on sediment accumulation, etc..

Q: Is Kejimikujik Seaside adjunct recommended for study as well as Bon Portage (although this is beyond Cape Island)?

A: Parks Canada does monitoring of the adjunct and NS protected areas do a little. We will work with them to gather information.

Comment: Acadia University has a house on an island that looks at birds

Q: Where is it?

A: Cape Sable

Q: Any thoughts to codium, is anyone studying it?

A: There is a lot of graduate research on it.

Q: Where did it come from?

A: Dynamite boats.

Q: If we are planning on setting gill nets we are going to have seal problems. Any comments or suggestion?

A: Fish trap, trap caught fish alive, and kept them alive. Gill nets only have heads left. Also with beach seines you have to have only sandy bottoms. Not much life there so it isn't going to be representative. You are missing out on a lot of areas that have more diversity than sandy bottoms.

Comment: All fishing gear has its limits.

Comment: Look to fish traps. Some countries developed them better. Check it out.

Q: What kind of fish do you anticipate catching in the gill nets?

A: There will be two types of bottom sets to catch everything on the bottom. Set at night and for a 24 hour period.

Comment: Seals will pick them clean before you get them back up, especially along the eastern shore.

Comment: You will not get any fish because of the seals. I can't set a mackerel net without the seals cleaning it. The only way is to set at night and haul it back very quickly.

Q: Over the past 5-10 years there have been two significant changes. 1) loss of eel grass beds and 2) increase in *Codium*. What are the impacts on smaller species that live in these environments?

A: Not aware of the results of such studies on community systems. There is some evidence to show that eel grass beds may be coming back.

Q: What are demersal fish?

A: Bottom fish.

Comment: I see a lot of change at Cape Sable. Loss of eel grass. Seals are bothering us even at 50-80 fathom. Use bait bags. Even in 80 fathom. We have a problem with halibut fishing; the seals steal a quarter of the fish and that is 20-30 miles off shore. I see seal pups on the beach in the winter.

Q: Seals will clear all your gear (long line). In nets your only left with the heads.

A: We may be able to use the heads for identification purposes.

Comment: The heads fall out as you haul the net. There is no eel grass left in his harbour east of Sheet Harbour. Now only green slime.

Q: There is a broad range of species, and species identification guides. Which is being used?

A: A wide range of identification guides will be used and most of the identification will take place on site. Some specimens will be taken home for further analysis.

A: The Atlantic Reference Center is a good one.

Q: Who is writing the EOAR?

A: There will be input from a range of sources. Nell will collect and assemble them and we hope to have a peer review process. The dead line is March 31, 2007.

Q: Impact of land based activities?

A: Give us some names later.

Q: When you are talking about nutrients are you talking about pollution or just food?

A: Major question subjects are pollutants. We could look at the question of where the nutrients come from, i.e. inshore vs offshore impacts.

Q: Why sample in summer only?

A: Due to money constraints.

Comment: You could use pollock or mackerel traps instead of gill nets. Make them with a smaller mesh size like 1 to 1 ½ inch. They were used in Newfoundland and worked well for collecting fish.

CLAM ENHANCEMENT ON THE EASTERN SHORE: NSDAF INNOVATION IN FISHERIES PROGRAM IN ACTION

Presentation by Linde Greening and Lew Clancey
Summarized by Shannon Scott-Tibbetts, FSRS Research Assistant

Linde Greening and Lew Clancey from the NS Department of Agriculture and Fisheries work with the Innovation in Fisheries Program. Through this program the Department is able to provide funding support for industry projects. In their presentation, they talked about the Clam Enhancement Project on the Eastern Shore as an example of the type of initiatives in which they are involved.

In April 2005, a project application was received from the clam harvesters to research enhancement methods that have been investigated in Maine. A proposal was submitted by the Eastern Shore Clam Fishers' Association and the Clam Harbour Harvesters' Association. After a lot of research, a company in St Louis, MO, provided the collection mat. The mat wasn't received until late June so the start of the project was delayed. The mats were Astroturf cut into 3 feet by 55 feet mats. The mats sat for a minimum of eight weeks, mid-July to the first week in November. Both groups retrieved their mats and stripped them using running water and filtering through window screen. Once stripped, the collected spat was held in bait bags with vexar or window screen trays in a sheltered area near a wharf. Favourable weather allowed the seed to be left in open water. Both groups were happy with the pilot project for this season. The collection mats worked well and were not intrusive to the environment. Green crab still remains an issue. A more effective and less time consuming process for stripping the mats should be investigated. Improved grading and screening is necessary to ensure that only clam seed is placed in grow out units for over wintering. Linde Greening closed the presentation with a slide on further research for 2006, such as collection deployment, predator mitigation, spat counts, growth, yield and mortality studies.

Lew Clancey presented different techniques used in Maine on their clam enhancement projects. They found that a large amount of clam seed collected under predator nets. The seeds were 5-10 mm in size when retrieved in the fall. Doormats, which were inexpensive but efficient, were used for spat collectors. Approximately 1200-1600 clams per square meter were retrieved. There was an option to enhance growth in the fall by placing the seed in floating trays. There was a good growth rate; 5-10 mm clam grew to 8-12 mm in two months. The seed was planted on flats or placed in over wintering cages until April. There was no growth over the winter. There was unpredictable survival on clam flats due to storms and ice scouring and rafting. Small clams only burrow within the first few inches and are vulnerable to winter conditions. The spat collection cages were simple in design. They used lobster wire and vexar mesh construction. 22 000 clams (8-12 mm) were placed per level in the cage. The seed is placed in window screen net bags. The cages had weighted bottoms and floatation at the top. The cost per cage was approximately \$120. In the spring, over wintering clams were placed on beds in the mid-intertidal zone. Since small seed is susceptible to predation and tidal currents, protective netting with floats to allow water exchange was placed over the clams. There was 50% survival of 20-30 mm clams by the end of season one.

The Innovation in Fisheries Program has also contributed funding to lobster research. The FSRS accessed funding in the past through the program to assist them in purchasing project traps for the FSRS Lobster Recruitment Index Project. Funding was also made available through the program to support the lobster soft shell research done in LFAs 33 and 34. For more information about the Innovation in Fisheries Program please contact Linde Greening at 424-0161 or e-mail greenijl@gov.ns.ca.

ASSESSING POTENTIAL IMPACTS OF THE ENERGY SECTOR ON CRUSTACEAN LOCOMOTION

Presentation by Edwin DeMont, Ginny Boudreau, Karen King, Stephen McIntosh, and Ryan Stanley
By Jennifer LeBlanc, FSRS Fisheries Technician

The Comparative Biomechanics Laboratory, under the guidance of Professor Edwin DeMont, at St. Francis Xavier University (St. FX) has been studying the potential effects of pipelines on crustaceans (mainly lobster and snow crab). The studies include the ability of lobsters to climb over a pipeline, the use of swimmerets when climbing over the pipeline, the effect of temperature on lobster activity, and the effect of pipelines on snow crab larvae. Ginny Boudreau spoke on behalf of the Guysborough County Inshore Fishermen's Association, a non-profit association of 134 multi-species license holders, concerned about the possible effects of pipelines and seismic activity on the fishing industry. They encouraged this research.

The pipeline is monitored by the oil and gas company to make sure that the soil around the pipeline is not eroding away. They have research vessel (RV) monitoring and have done dynamic positioning as well. This data will not be publicly accessible for five years. Tagging studies done by the Eastern Shore Fishermen's Protective Association (ESFPA) have shown that the lobsters either move west or stay in the area, and Ms. Boudreau indicated that there has not been any apparent negative effect on the population to date.

Karen King, a Master's student at St.FX has been studying the effects of pipelines on lobster mobility and concluded that lobsters could climb over pipelines covered in a *shotcrete* coating (a concrete based material used in Europe) much easier, but the wrap coating (used in North America) was more difficult for the lobsters to grip. Also, pipelines that were less exposed (i.e. covered, to some degree, with sediment) were easier to climb over. Smaller lobsters flipped their tails in order to make it over the top, but larger lobsters mostly crawled over. Bait on the other side of the pipe enticed lobsters to climb over it.

Stephen McIntosh, another student, studied the effects of water temperature on lobster mobility over pipelines. At all temperatures the lobsters attempted to get over the pipe but at low (2°C) and high (16°C) temperatures, the lobsters were not as successful in climbing the pipeline as they were at 10°C. In fact, at 2°C, no lobsters were successful. This suggests that, at certain times of the year, the movement of lobsters is confined by pipelines.

Ryan Stanley, another student working on the pipeline project, studied the impact of seismic energy on the mobility of stage one snow crab zoea (recently hatched crabs). Snow crab zoea that hatched off of female snow crabs that were exposed to seismic were observed under a microscope to determine if their swimming ability was hindered but they did not show any deformities or have any problems swimming.

Questions

- Q:** Who did the Guysborough County Inshore Fishermen's Association contact to get this research started?
- A:** The Association went to every oil and gas meeting and repeatedly asked these questions but the oil and gas representatives were never able to answer them. There were a lot of stakeholders attending and the oil and gas people were put on the spot, and after the fishermen kept pushing for answers, they finally relented to initiating research.
- Q:** What was the purpose of the temperature study, because it is expected that at 2°C the lobsters' mo-

bility would be lower?

A: Yes, this is expected, but the lobsters were not immobile. They still attempted to climb the pipeline, they just were not successful. It appeared that the lobsters at 2°C were not able to tail flip, which is how they successfully climbed the pipeline in warmer temperatures.

Q: Have you considered the effects of pressure on the lobsters' ability to climb?

A: Since it is an experiment for temperature, other variables had to be controlled. So pressure was not changed.

Q: Were some animals climbing over more than others (and so affecting the number of crossings)?

A: Yes, it was the same animals that were always successful.

Q: Was time of day accounted for?

A: The experiments were conducted over 24 hours in total darkness so this was not an issue.

Q: The most crossings occurred at 10°C, but lobsters migrate in colder temperatures. So they could potentially be trapped in or out.

A: Yes.

Q: Seismic impact on finfish affects balance. Could you test that on the zoea?

A: Zoea don't have pressure sensors, so they don't have balance. There have been studies on larval morphology and fatty deposits associated with seismic, but we did not see any morphological problems.

Comment: Seismic energy was full scale 2D survey work. There are stronger 3D and 4D happening but these were not tested. This is just a start to studying the effects.

Q: Did you look at the effects of seismic on migration?

A: Two effects. 1) Could affect the physiology, making it difficult to swim. 2) The animals could move away from or towards the seismic. In this experiment, the animals were caged, so movement of adults was not studied. Seismic shots occurred as usual and the sampling was opportunistic.

Q: Why are there differences in swimmerets?

A: Likely due to the different sizes of lobsters at maturity in the different regions.

Q: What is the force of the crusher claw of the lobster?

A: Not sure; the force was generated in Newtons in the lab. It can change by the size of the lobster by region. We are trying to understand why the strength of the crusher claw varies between regions. The crusher claw definitely has enough force to bend the wire in a lobster trap.

Q: Was there any damage to the larvae from the seismic activity?

A: The larvae were examined at the lab in Mt. Allison and there was nothing significant found wrong with them. There was damage found to the liver and pancreas in adults from seismic testing.

Q: What size lobster were you using?

A: A range of sizes from undersized to approximately 5 lbs.

Q: Temperatures are not realistic. The temperatures in the area of the pipeline are lower.

A: These temperatures were chosen because previous research used these temperatures.

Q: Did you measure the success rate of hatching crabs?

A: No

Q: Will this research be used to advise the people building pipelines?

A: This is part of a larger study. There are some DFO papers out on these issues.

Q: What did you do to expose the crabs to seismic?

A: The berried crabs were pre-exposed to seismic by another group before they were brought into the lab.

Q: When dealing with viewing crab larva there are good and bad performers; how did you deal with this?

A: Used only good zooplankton. No broken rostrums, etc..

Q: Was any work done on mortality and fecundity?

A: Not done, however, there was a difference in hatch time. The non seismic group hatched first

Q: Are there plans for further studies or on older animals?

A: Not yet.

SUMMARY OF THE FSRS LOBSTER PROJECTS RESULTS

By Carl MacDonald, FSRS Senior Biologist

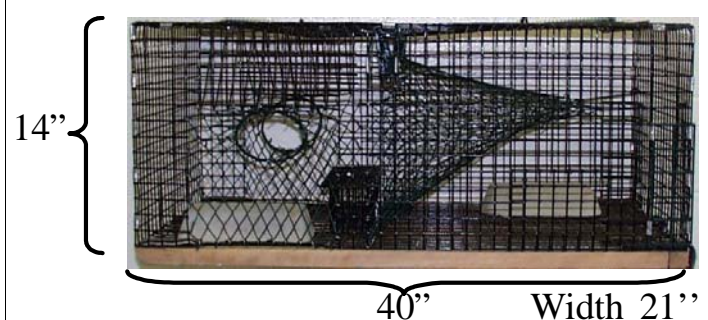
1) Lobster Recruitment Study Results

In the spring of 1999, the Fishermen and Scientists Research Society launched a Short Term Lobster Recruitment Index Project. During the regular commercial season, fishermen use a particular number of scientific lobster traps to gather information about undersize lobsters in their area. Volunteer fishermen count, sex and record the sizes of lobsters from their science traps and record them in a logbook. These fishermen also indicate if lobsters are berried, tagged, and or v-notched. Each year the standard traps are fished in the same locations to minimize that variable.

This project is designed to study the number and size of juvenile lobsters that will be recruiting into the lobster fishery in the upcoming seasons. Collecting juvenile lobster information over a number of years allows an index of recruitment to develop. Over time, trends develop in the data allowing one to predict what the lobster recruitment will be in the upcoming seasons. Lobster fisheries in Atlantic Canada rely heavily on newly recruited lobsters. Hence, we will be able predict, with some degree of uncertainty, if there will be increases or declines for the commercial lobster fishery.

It was decided that all participating fishermen should use the exact same science trap. The standardized science traps have two 5-inch entrance rings, 1-inch wire mesh, no escape vents, and a biodegradable ghost panel. This design was used to maximize the capturing and retaining of smaller size lobsters (Figure 1). The Department of Fisheries and Ocean support this initiative and supplies the scientific lobster trap tags for the project traps.

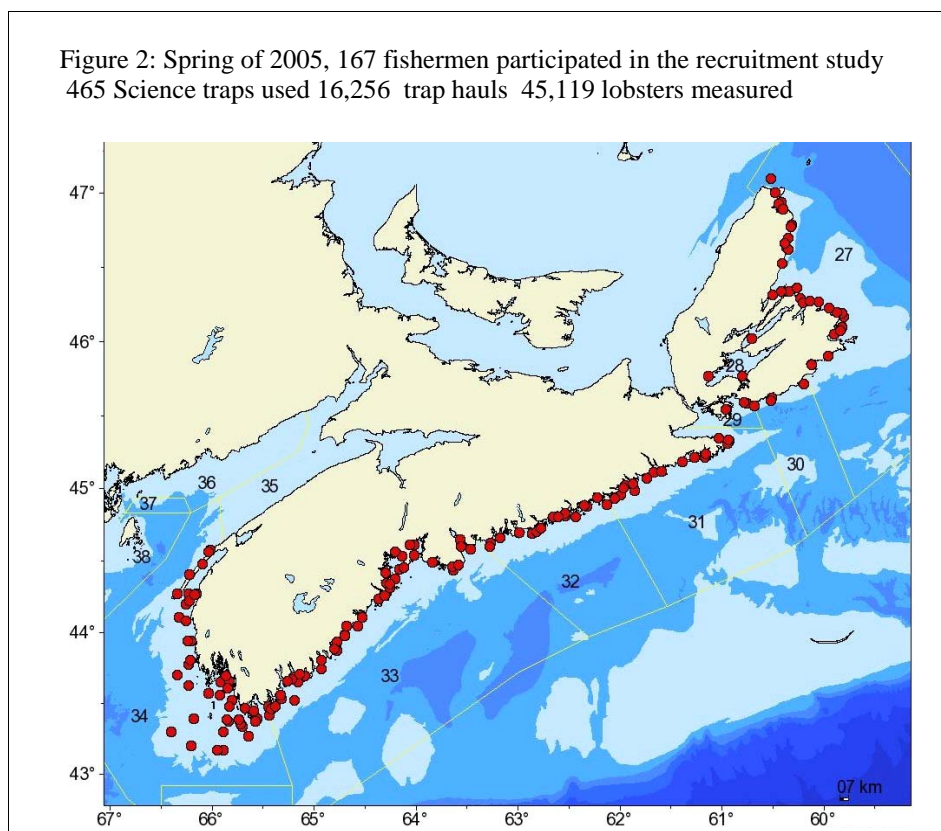
Figure 1: Standardized lobster trap used by fishermen researching undersize lobsters.



The project includes all Lobster fishing areas (LFA's) from LFA 27 to LFA 34. In the Spring of 2005, 167 fishermen throughout the study area volunteered their time to collect scientific information on lobster recruitment (Figure 2). Each participant fishes two to five traps, depending on the LFA. These traps are additional to the vessel's legal number of traps. All undersized lobsters are released after they are measured and sexed. Legal size lobsters can be kept by fishermen and offset the price of the science traps (\$60) purchased by the fishermen.

A total of 465 science traps were fished in the Spring 2005. All LFA's combined for a total of 16,221 total project trap hauls for the Spring 2005. A total of 46,875 lobsters were captured, sexed, measured and recorded by fishermen in the spring of 2005. Fishermen captured an average of 2.7 lobsters per trap haul in 2005. Overall catch composition remains approximately 50% female and 50% male. There are large differences in catch rates across LFA's.

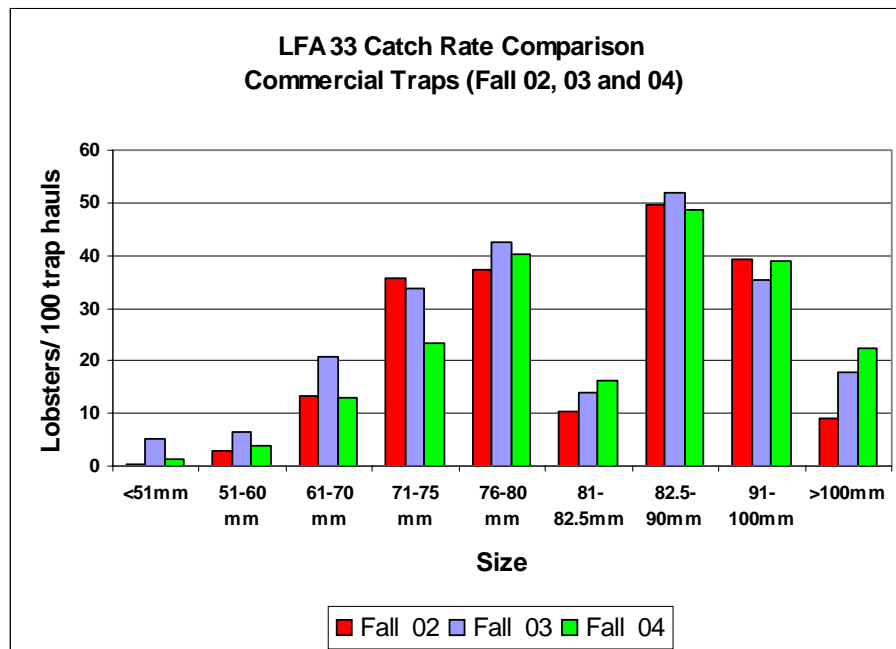
Last Fall season 2004, 96 fishermen took part in LFA's 33 and 34. In the Fall 2004, 244 project traps were fished and were marked with scientific DFO tags. A total of 4,814 project hauls were obtained in the Fall 2004. Both LFA's combined for a total of 20,116 lobsters captured. LFA 33's catch composition was 47% female and 53% male in 2001. LFA 34 catch composition: 50% female and 50% male in 2001.



In addition, each participant monitors bottom temperatures by placing a computerized temperature recorder in one of their project traps for the whole lobster season. Fishermen are given their temperature results back in a graphic format along with the original data. Copies of the temperature data from the recruitment study are also provided to the oceanographers at the Bedford Institute of Oceanography. The data are archived and kept for historical records. These water temperature data will be made public via a website. The names of the fishermen will be kept confidential.

2) LFA 33 Commercial Trap Data Results

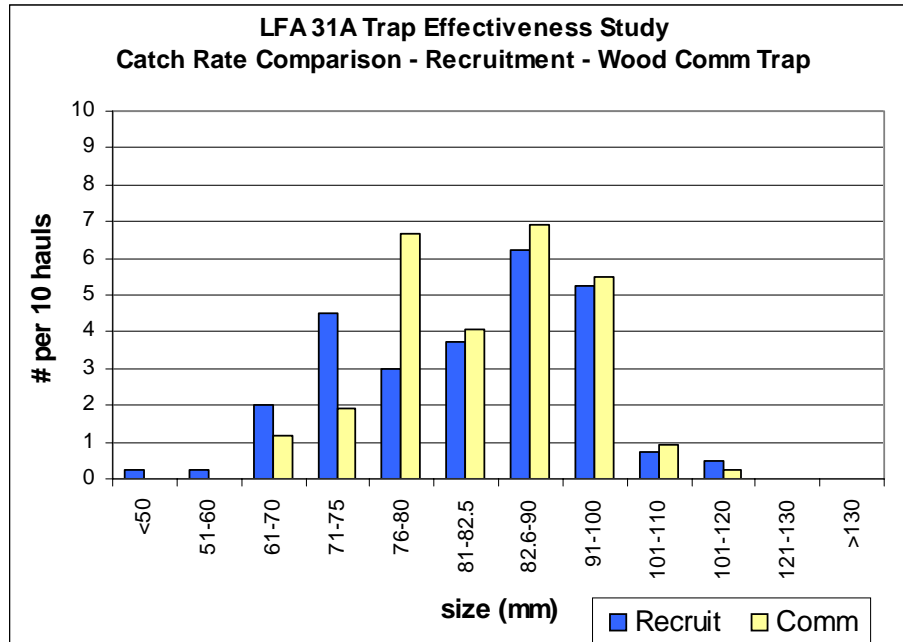
- Began as a pilot project in Fall 2002/Spring 2003. Recruitment participants were asked if they would collect data from three of their commercial traps throughout the season. There was some success; 15-20 fishermen participated with about 1500 Trap Hauls and 3000 lobsters being recorded.
- Project continued in Fall 2003/ Spring 2004 Season. Approximately 25-30 fishermen participated in LFA 33 with 3122 Trap Hauls and 6000 lobsters measured and recorded.
- DFO science, DFO managers and the LFA 33 Lobster Advisory Committee – viewed the project as a valuable part of LFA 33 science. In June 2004, the project gained approval from the Lobster Advisory Committee that the three commercial traps would be additional to the legal limit, helping ensure continued participation in the project by providing an incentive. As a result, 55 fishermen from LFA 33 participated in Fall 2004, filling all vacant spaces. Below is a bar graph showing the catch rates of lobster over the last 3 fall lobster seasons in LFA 33.



3) Trap Effectiveness Studies (Wire v.s. Wood)



A fisherman from LFA 31A agreed to record the size and sex of the lobsters captured from 2 wooden commercial traps compared with 2 FSRS recruitment traps. The traps were fished in the same area and baited with the same bait. The idea behind the project was to examine the catch size selectivity of the 2 gear types by examining the size and number of lobsters caught in a wooden vented commercial trap compared to a ventless recruitment trap. The catch rate results are shown in the bar graph below. This type of study has interesting results for both the fishermen and the scientists.



THE FSRS WELCOMES NEW MEMBERS

The Fishermen and Scientists Research Society would like to welcome the following members, whose applications were approved at the January 30, 2006 Executive Committee meeting. We trust that this expansion of the FSRS's membership will prove to be beneficial to all involved.

Catherine Boyd
 Melanie Hurlburt
 Stanley King
 Harold Murphy

Bert Ficker
 Franz Kesiik
 Beth Mouat
 Dawn Robia

NSERC PRESENTS AT THE 13TH ANNUAL FISHERMEN AND SCIENTISTS RESEARCH SOCIETY CONFERENCE

By Catherine Vardy, NSERC Atlantic Regional Office

The Natural Science and Engineering Research Council of Canada (NSERC) can provide funding for researchers and students who are interested in doing research in collaboration with privately-owned companies.

NSERC's Research Partnership Programs (RPP) link with the public and private sectors through collaborative research projects. The goal of the RPP is to maximize the benefits of university research to Canada.

The Collaborative Research and Development (CRD) Grants support focused projects in collaboration with industry with specific short- to medium-term objectives as well as discrete phases in a program of longer-range research. NSERC matches the industry contribution of the grant.

Strategic Project Grants (SPG) fund project research in target areas (listed on the web) of national importance. The project must be well defined in duration, objectives and scope. SPG are awarded for one to three years. Supporting organizations include: non-governmental organizations, industries or industrial consortia, and government agencies / departments, and it involves an in-kind contribution from industry. Currently, the SPG success rate is approximately 24 per cent.

The Idea to Innovation (I2I) program accelerates the development of promising technology and promotes its transfer from a university to Canadian companies. The program supports research and development by providing assistance to university and eligible community college researchers in the early stages of technology validation and market connection.

Research Partnership Agreements (RPA) with Canadian government Departments and Agencies build strong linkages between the private sector, university researchers and federal institutes. In-kind and cash contributions are recognized for RPA projects that will be approved for terms of up to five years.

NSERC also has scholarships and fellowships programs available to university students and postdoctoral students interested in working with industry. The Undergraduate Student Research Awards (USRA) in Industry; the Industrial Post-graduate Scholarships (IPS); and the Industrial Research and Development Fellowships (IRF) are programs that provide industrial research experience for students at all levels.

NSERC offers programs that support applied research, applications development and technology transfer. For more information on any of NSERC's programs, or to discuss project eligibility, please visit www.nserc.ca, or call the NSERC Atlantic Regional Office at (506) 854 – 8154. If you would like to speak to a Research Partnership Programs Officer, please call (613) 995 – 1111, or e-mail rpp@nserc.ca.

Fast Fact Clarification

The *Fast Fact* on lobster shell hardness that appeared in the previous issue of the Hook, Line and Thinker (Issue: 2005-4, Fall 2005) was taken from the Volume 1 Issue 1 of *Tidings*, a new publication of the AVCLSC. Regrettably, the information given was incomplete and taken out of context and has now been retracted from the AVCLSC's *Tidings*. The AVCLSC would like to apologize for any inconvenience or confusion this oversight may have caused readers of the *Hook, Line and Thinker*.

SCIENTIFIC PROGRAM COMMITTEE REPORT AND PROJECTS REVIEW

By Patty King, FSRS General Manager

Scientific Program Committee and Working Groups Current Members and Vacancies

Scientific Program Committee

Ross Claytor – Chair	Patty King	Carl MacDonald	Jean Lavallée
David Brickman	Peter Hurley	Wilford Smith	Alan Reeves
Jennifer Hackett	Wayne Spinney	Ron Henneberry	Rick Nickerson
Garnet Heisler	Bill Bond	Alida Bundy	Hubert Boutilier
John Levy			

A special thanks to the outgoing members of the Committee, whose term has expired, for serving for the last two years. Thanks for your contributions: Kevin Slaunwhite, Kara Paul, Brian Petrie, Peter Comeau and Joel Comeau.

Shellfish Working Group

Patty King - Chair	Ricky Nickerson	Gordon MacDonald	Erin Pelletier
Ross Claytor	Wilford Smith	Paul Kehoe	Carl MacDonald
Cheryl Frail	Randy Boutilier	Dennis Smith	Jean Lavallée
Doug Pezzack	Ken Snow	Elliott Thomas	Patrice McCarron
John Tremblay	Rodney Manthorne		

Lobster Recruitment Project Data Management Working Group

Cheryl Frail – Chair	Ross Claytor	Bob Branton	Patrice McCarron
Erin Pelletier	Jean Lavallée	Natasha Doyle	Patty King
Carl MacDonald	Shannon Scott-Tibbetts		

Groundfish Working Group

Patty King – Chair	Peter Hurley	Bill MacEachern	Bob Mohn
Jim Simon	Mark Showell	Ross Claytor	Randy Boutilier
Nick Henneberry	Robert Courtney	James Gray	James Baker
Don Hart	Patrick Gray	Paul Drew	Rick Jewers
Jerry Creamer	Wilford Smith	Hubert Boutilier	Carl MacDonald

Ecosystem Working Group

Patty King – Chair	Ross Claytor	Carl MacDonald	Jean Lavallée
Randy Boutilier	Peter Hurley	Bob Henneberry	Robert Courtney
Junior Risser	Tana Worcester	Dave Duggan	Rick Nickerson
Brian Petrie	Jim McMillan	Alida Bundy	Herb Vandermeulen
John Levy	Rod Bradford	Kees Zwanenburg	Denise McCullough
Rick Nickerson	Nell den Heyer	Carina Gjerdrum	Shannon Scott-Tibbetts
Penny Doherty			

Anyone interested in being on the Scientific Program Committee or one of the Working Groups was asked to add their name to the waiting list posted at the Conference. If you are interested in joining the Committee or Working Groups, contact Patty King at 902-876-1160 or e-mail pmdservices@eastlink.ca. Vacancies will be filled from the waiting list as positions become available.

Shellfish Working Group Report

Lobster Recruitment and Commercial Trap Sampling Projects

See article in this issue titled "Summary of the FSRS Lobster Projects Results".

Lobster Molt and Quality Monitoring Project

The FSRS administered the Lobster Molt and Quality Monitoring ("Soft Shell Lobster") Research Project in 2005. \$58k of funding was provided by the NS Department of Agriculture and Fisheries, \$2k by DFO and \$2k by the AVC Lobster Science Centre. 16 plant samples were completed in April/May and 12 in December. 33 daily samples of blood protein and molt staging were done in Lunenburg. 54 at-sea samples were completed from June to October from Port La Tour, Argyle and Yarmouth. Plant samples are also planned for March.

The AVC Lobster Science Centre (Jean Lavallée) has prepared a proposal for the continuation of the project in collaboration with the FSRS. In addition to the financial and in-kind contributions the AVC Lobster Science Centre proposes providing, the proposal seeks funding support from NS Fisheries, DFO and industry. A surplus in the project budget of \$7300 from last year will be carried forward to this new proposal. The project seeks to continue the at-sea and shore-based sampling. It is also proposed that observations of shell disease be recorded.

Discussion

Q: What does shell disease look like?

A: There are 30 different forms of shell disease. In PEI there is an erosion on the shell. In Maine there are lesions on the shell covering most of the carapace; 70-80% of females have lesions. New England has one main bacteria responsible for the disease, which eats the protein matrix of the shell; it can be fatal to the lobsters.

Q: Can lobsters in the US die from lesions?

A: If the lesions are deep enough, they can be fatal.

Q: Do the fishermen throw back the sick animals?

A: Yes, if they are ill enough. Sickly looking lobsters don't have much market value.

Q: Wouldn't this further spread the disease?

Q: When you submitted the original project proposal did you plan for a long term study?

A: We would like to continue the project for the long term but there has been no commitment for long term funding.

Q: Do they land lobsters with lesions?

A: It depends on how deep it is.

Comment: There was a short discussion about the possible effects of continually returning diseased lobsters to the population versus landing the lobsters.

Groundfish Working Group Report

4VsW Sentinel Monitoring Project – Random Survey Phase

The 4VsW Sentinel Monitoring Project Random Survey was developed in a way that ensures a bridging index between the past stratified random survey and future if the resource recovers. The objectives and benefits listed for the original project continue to be used as much as possible. The focus is on six strata – 462, 463, 464, 465, 468, 469. Three vessels were used to complete 53 stations.

The revenue from the sale of fish was less than anticipated, resulting in a deficit in the project budget. The deficit was covered out of the FSRs General Budget.

Table 1: 2005/2006 Sentinel Monitoring Project Budget Analysis

2005/2006 Sentinel Monitoring Project		
Updated January 25, 2006		
	Projected Costs	Actual Costs
Projected Revenue		
JPA	\$37,800.00	\$37,800.00
Surplus from Last Year	\$1,524.00	\$1,524.00
Projected Revenue From Sale of Fish	\$5,000.00	\$2,989.00
Total Revenue	\$44,324.00	\$42,313.00
Projected Expenses		
General Operating Expenses	\$1,500.00	\$376.00
Staff Travel and Living	\$500.00	\$0.00
Observers	\$3,000.00	\$3,286.00
Charter Fees	\$38,425.00	\$38,425.00
Workers Comp	\$896.00	\$412.00
Total Expenses	\$44,321.00	\$42,499.00
Surplus/Deficit	\$3.00	-\$186.00

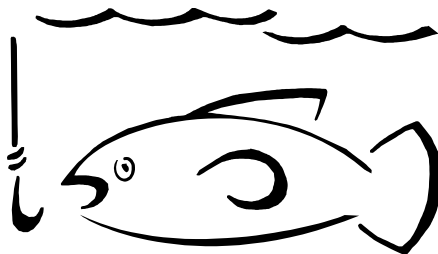


Table 2: Random Survey Phase Revenue Analysis

Year	# Stations Completed	Total Pounds Fish Sold	Average Pounds of Fish/Station	Total Revenue From Sale of Fish	Average Revenue Per Station	Average Price Per Pound
2005	53	3,712	\$70.04	\$2,265.40	\$42.74	\$0.61
2004	53	6,640	125.28	\$6,688.80	\$126.20	\$1.01 *Note
2003	201	11,032	54.89	\$8,430.35	\$41.94	\$0.76
2002	191	19,124	100.13	\$17,304.33	\$90.60	\$0.90
2001	202	19,300	95.54	\$14,287.35	\$70.73	\$0.74
2000	251	27,404	109.18	\$19,951.55	\$79.49	\$0.73
1999	253	26,865	106.19	\$22,633.70	\$85.79	\$0.81
1998	252	36,639	145.39	\$33,073.30	\$131.24	\$0.90
1997	248	23,396	94.34	\$15,376.43	\$62.00	\$0.66
1996	252	41,163	163.35	\$24,055.25	\$95.46	\$0.58
1995	221	31,168	141.03	\$25,932.76	\$117.34	\$0.83

Note: Average price/pound artificially high because of halibut. Average price/pound of halibut was \$5.51, average price/pound of all other fish was \$0.57

Table 3: 2006/2007 Sentinel Monitoring Project Proposed Budget

2006/2007 Sentinel Monitoring Project - Proposed Budget	
Updated January 26, 2006	
	Projected Costs
Projected Revenue	
JPA	\$42,275.00
Projected Revenue From Sale of Fish	\$2,000.00
Total Revenue	\$44,275.00
Projected Expenses	
General Operating Expenses	\$1,000.00
Staff Travel and Living	\$500.00
Observers	\$3,500.00
Charter Fees	\$38,425.00
Workers Comp	\$850.00
Total Expenses	\$44,275.00

4VsW Sentinel Monitoring Project – Commercial Index Phase

The 4VsW Sentinel Monitoring Project Commercial Index can utilize up to 20 boats, each allowed 12 fishing days. Larger vessels are also allowed two exploratory days. 100% DMP is required on all trips not accompanied by an Observer (At-Sea). Vessels selected for the Commercial Index must complete a minimum of 3 fishing days to remain eligible for the project in future years, although this requirement can be waived at the discretion of the Groundfish Working Group depending on circumstances. Vessels are paid 90% of the value of fish landed, except halibut, for which they are

paid 50% of the value. Vessels pay their own hail, DMP and Observer costs. The goal is to have 30% at-sea sampling on of the trips, using FSRs technicians when possible, otherwise an Observer is used.

Eight vessels were selected to participate in the project for 2005/06. One vessel completed five days. Vessels found the price of fuel, bait and fish to be a detriment to participating. There continues to be an interest in doing the Commercial Index if and when the price of fuel, bait and fish, weather, etc. makes it feasible.

Table 4: Commercial Index Phase Revenue Analysis

Year	# Fishing Days Completed	Total Pounds Fish Sold	Average Pounds of Fish/ Fishing	Total Revenue From Sale of Fish	Average Revenue Per Fishing Day	Average Price Per Pound	Vessels Share of Revenue	FSRS Share of Revenue
2005	5	7,124	1,424.80	\$5,316.65	\$1,063.33	\$0.75	\$4,650.59	\$666.07
2004	0	0	0	0	0	0	0	0
2003	2	2,022	1,011	\$1,700.95	\$850.48	\$0.84	\$1,180.41	\$520.54
2002	20	52,379	2,618.95	\$45,372.95	\$2,268.65	\$0.87	\$32,790.15	\$12,582.80
2001	21	40,960	1,950.48	\$30,264.45	\$1,441.16	\$0.74	\$25,007.49	\$5,256.96
2000	4	10,943	2,735.75	\$7,893.15	\$1,973.29	\$0.72	\$5,874.74	\$2,018.41
1999	41	143,092	3,490.05	\$112,393.15	\$2,741.30	\$0.79	\$91,053.35	\$21,339.80
1998	23	85,153.5	3,702.33	\$79,999.72	\$3,478.25	\$0.94	\$58,529.92	\$21,469.80
1997	100	250,053.6	2,500.54	\$168,180.80	\$1,681.81	\$0.67	\$122,622.54	\$45,558.26
1996	44	259,509.0	5,897.93	\$186,716.00	\$4,243.55	\$0.72	\$134,545.96	\$52,170.04

Condition Sampling Project

Following the review of the Condition Sampling Project at the 2005 FSRs Conference, where it was decided the project should be continued, the project objectives and protocols were reviewed/revised and benchmarks are being set. The focus of the project will be on sampling particular species and areas, where we can get good seasonal coverage (eg: 4X cod and haddock). The revised project will also strive to:

- Improve quality assurance in data collection/entry, including doing it in a more timely manner.
- Improve techniques – improve precision.
- Increase focus on evaluating impacts on maturity and spawning.
- Improve maturity staging.
- Include fecundity determination (number of eggs a female produces).

- Involve Ed Trippel – couple field work to lab work. He will be asked to be on the Groundfish Working Group.

It was noted that FSRS

Fisheries Technicians (interns) are needed to revitalize this project. It is proposed that, if the application for an intern through the Science Horizons Youth Internship Program is approved, the intern would be used in part to work on the Condition Sampling Project

Predator/Prey Relationship Study

It was recommended that the collection of stomachs be put on hold for this year, pending analysis of what we already have and a review of where to go from there. FSRS Research Assistant Shannon Scott-Tibbetts will work with DFO Research Scientist Alida Bundy on the analysis.

Cod Tagging Study

Don Clark from the St. Andrews Biological Station is seeking assistance with his project to tag cod from lobster traps in 4X and the Gulf of Maine area. Fishermen previously involved are keen to continue the project. It is proposed FSRS Fisheries Technicians be used to distribute tags/equipment. About two weeks of a data entry person's time is also needed. The FSRS could process the tag rewards. There is interest in having a presentation of the results from past tagging studies.

Ecosystem Working Group Report

Inshore Ecosystem Project

See article in this issue titled "Inshore Ecosystem Research on the Scotian Shelf".

Grey Seal Pupping Survey

Fishermen's local knowledge of grey seal pupping areas is being gathered through an interview process. All FSRS fishermen members are being asked to participate. To date, 189 interviews have been completed (72 face-to-face and 117 by telephone), 9 people refused to participate in the interview and 40 people are still to be contacted. The results will be used to help DFO design an effective study to reliably estimate pup production in the Maritimes Region. Jim McMillan, DFO, is analyzing the data. The collected information will be summarized and reported through the FSRS newsletter and other avenues if requested/appropriate.

Comments:

- DFO may have problems with actually finding pups because not many fisheries are in these areas. Most fishermen see the adults.
- DFO has information and won't share it.
- DFO should just do a fly-by; it would be quicker and more accurate.

Science Horizons Youth Internship Program

The FSRS has submitted an application for funding to the Environment Canada (EC) Sciences Horizons Youth Internship Program. The program provides up to \$12,000 for one intern for 12 months. The project must fit Environment Canada's mandate. John Chardine, who has agreed to be

the EC mentor on the project, works on marine birds with the Canadian Wildlife Service section of EC, therefore, the project needs to have a marine bird component. The project proposes developing and implementing a Collaborative Marine Bird Monitoring Program, the main four components of which would be:

1. Observation of marine birds, particularly in the coastal and inshore areas, to determine distribution and abundance. The data will be collected by fishermen during their regular fishing activities, including lobster, groundfish, and swordfish fisheries, etc., in the inshore and mid-shore areas. The interns will accompany fishermen to sea when possible. They will also make shore based observations, targeting specific areas of interest along the coastline. Standard observation protocols provided by CWS will be adhered to where possible.
2. Observation of marine birds on islands and coastal areas during breeding season to help determine locations of breeding colonies. The data will be collected by fishermen during their regular fishing activities. Observations will be made from the water and islands will not need to be landed.
3. Explore the issue of incidental take of marine birds in fisheries along the Scotian Shelf, including prevalence, species of birds involved, types of gear, locations.
4. Collect local ecological knowledge of marine birds on the Scotian Shelf.

Discussion

Comment: Concern was expressed about how reliable the information would be since fishermen are not trained in identifying marine birds. Fishermen may need help identifying the birds. It was agreed a bird identification guide will be needed to ensure consistency in the identification as the common (locally used) name for a species can vary from area to area. It was felt the identification could be done to the family level.

Comment: Concern was expressed that the discovery of "rare" shore birds will only cause problems. There was some concern that identifying birds could result in fisheries being shut down.

Q: Why is the internship restricted to birds?

A: Patty King explained that in order to access the funding a collaborator within EC had to be identified. In this case, that person's interest is in birds.

Q: Why birds and not whales, turtles, etc.?

A: Funding sources are available to do this kind of work. If we had more time we could look at other funding sources and species. The deadline to apply for the internship funding was short notice and it was an opportunity we did not want to miss.

Q: Do birds get caught in fishing gear?

A: They interfere with fishing, but don't get caught very often.

Comment: Concern was expressed that recording information on the incidental take of marine birds could be dangerous to fisheries, that it may limit fishing if they record catching birds. It was agreed that fishermen could be asked to identify birds they see but not to ask them if they are caught in gear.

Comment: It was mentioned that DFO apparently has a camp on an island to study birds, although it was uncertain where it is. This should be looked into to find out what information they have.

Comment: It would be good to add birds to the local ecological knowledge survey.

Grey Seal Research Committee Proposal – Seal Worm Impact Research

The Grey Seal Research Committee has requested the FSRS's assistance with its research on seal worm impact. Blood samples are needed from 10 cod for ketone analysis. The presence of ketone is an indication of the presence of seal worms. The analysis will be done by a professor and her students at Dalhousie University. The Committee has also requested cod and plaice samples from three areas, up to 500 fish per sample. The samples are to be iced or frozen for shipment to the DFO lab in Moncton, where the analysis will be done by Gary McClelland. We need to determine the best way and the cost to collect the samples.

Discussion

Q: Can you include the cod blood sampling in the at-sea sampling?

A: No because there is not enough time to get back to shore and then to the lab; there is only an 8 hour window to get the blood samples to the lab.

2006/07 ANNUAL WORKPLAN

PROJECT	STATUS	PROPOSED PLAN FOR 2006/07
Science Horizons Internship Program	<p>In order to continue the desired level of field support for the long-term FSRS projects, interns are needed. Opportunity to apply for interns through Environment Canada Science Horizons Internship program with support of John Chardine, CWS; must have marine bird component.</p> <p>Patty worked with John Chardine to submit application for 3 interns (1 SWNS x 52 weeks, 1 ENS x 52 weeks, 1 CB x 13 weeks). Advised that can only apply for one per project. Submitted revised proposal. Proposal includes marine bird monitoring as an add-on to other research projects.</p>	<p>Upon approval of funding, hire intern for SWNS.</p> <p>Seek alternate sources of funding for other interns.</p>
4VsW Sentinel Monitoring Project	<p>Finish date is March 31/06; 53 stations completed in Random Phase; to date, 5 fishing days have been done on the Commercial Index. (price of fish/bait/fuel and availability of fish factors in low participation in CI)</p> <p>Results will be sent to fishermen and will be posted to web site.</p> <p>Due to low revenue from fish sales, project budget had a deficit which was covered from General Budget</p>	<p>Continue as is. Increase funding from General Budget to compensate for low projected revenue from fish.</p>

PROJECT	STATUS	PROPOSED PLAN FOR 2006/07
Condition Study	<p>Following review of project at 2005 Conference, project objectives and protocols have been reviewed/ revised and benchmarks set; used SPC Project Guidelines.</p> <p>Fisheries Technician needed to revitalize project.</p>	<ul style="list-style-type: none"> • Focus sampling on particular species and areas, where we can get good seasonal coverage. • Improve quality assurance in data collection/entry, including doing it in a more timely manner. • Improve techniques – improve precision. • Increase focus on evaluating impacts on maturity and spawning. • Improve maturity staging. • Include fecundity determination (number of eggs a female produces). • Involve Ed Trippel – couple field work to lab work. Ask him to be on the Groundfish Working Group.
Predator/Prey Relationships Project	Analysis of stomachs is on-going. Data entry is up-to-date. Number of stomachs collected/analyzed in 2005 low.	<p>Put collection of stomachs on hold for this year pending analysis of what we already have and review where to go. Shannon to work with Alida on analysis.</p> <p>Jeff is going on the March survey trip to do stomach analysis.</p>
Lobster Recruitment Project	Currently 178 fishermen participating in LFA's 27, 28, 29, 30 31A, 31B, 32, 33 & 34. Individuals receive own results. Group results presented at LFA and other meetings. Results available to others by contacting Carl MacDonald. Program working well.	<p>Fill in any gaps.</p> <p>Continue attending LFA meetings to present results.</p> <p>LFA 35 interested in project; mailout going to all fishermen in LFA seeking participants.</p>
Commercial Trap Sampling Project	54 participants in LFA 33, 7 in LFA 34. Individuals receive own results. Group results presented at LFA and other meetings. Results available to others by contacting Carl MacDonald. Program working well.	<p>LFA 35 interested in project; mailout going to all fishermen in LFA seeking participants.</p> <p>Consider expanding project into other LFAs if fishermen are interested and we have the personnel, equipment and financial resources to expand.</p>
Lobster At-Sea and Shore-Based Sampling	Focus has been on at-sea sampling. Did sampling under contract for DFO in addition to our own samples.	Continue. At-sea sampling should be focus, particularly on vessels in the recruitment trap project.
Crab Sampling	Sampling has been done on Jonah, Rock, and Toad Crab, mostly under contract to industry and DFO.	Expand sampling as time/resources permit.
Marine Bird Monitoring Project	Patty working with John Chardine to develop. Will need bird ID cards or books.	Implement.
Inshore Ecosystem Project	Commenced in October 2005. Staff have been hired. At-sea sampling and surveying fishermen for LEK has commenced. Data Gathering workshop held in January 2006. Progress made on programming to enable easy transfer of FSRS temperature data to CTS.	Continue with workplan as proposed. Adapt as necessary under direction of Ecosystem Working Group.

PROJECT	STATUS	PROPOSED PLAN FOR 2006/07
Lobster Blood Protein and Molt Staging Project	\$7313 surplus from 2005 Soft Shell Lobster project to be used for this project this year. Jean Lavallee and Patty working on developing a project/funding proposal.	Finalize proposal, source funding and implement.
Cod Tagging	Don Clark, SABS, interested in continuing his project working with fishermen in SWSNS to tag cod from lobster traps. He has the tags and equipment. FSRS has hats for rewards.	Pending approval at AGM, FSRS Fisheries Technicians to distribute tags and equipment to fishermen and post reward posters. FSRS to issue rewards. Identify someone to enter tagging data (propose it could be one of the interns).

THE WORKSHOP ON INSHORE ECOSYSTEMS AND SIGNIFICANT AREAS OF THE SCOTIAN SHELF: REPORT TO FSRS MEMBERS.

By Nell den Heyer, FSRS Project Officer

A *Workshop on Inshore Ecosystems and Significant Areas of the Scotian Shelf* was held at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia on January 16th to 19th 2006. There were more than 80 participants at the workshop, hosted by the Department of Fisheries and Oceans (DFO) and the Fishermen and Scientists Research Society (FSRS). The Workshop leads a new DFO-FSRS research project on the inshore ecosystem of the Scotian Shelf.

The first half of the workshop (January 16-17) brought together scientific expertise on inshore ecosystems of the Scotian Shelf (defined in this project as the area inshore out 50 fathoms or the 12 nautical miles, from Cape North to Cape Sable Island). Participants included researchers from various universities, government departments and NGOs.

The presentations included overviews on the ecology, distribution and abundance, of birds, marine and diadromous fish, marine plants, turtles and shellfish. The presentations and discussions that followed identified several topics which would benefit from focused research, including: the definition of Marine Environmental Quality Indicators such as nutrient concentration in the water, phytoplankton communities, the importance of the shape and depth of bays to nutrients concentrations, the primary production (phytoplankton and macrophytes), and the impacts of aquaculture and other human activities, including the cumulative effects of land-based activities and climate change. Of particular interest was the impact of land-based activities, particularly in the very nearshore or coastal fringe.

It was recognized that there is relatively little information on fish and invertebrates along the entire coast between diving depth and the shallowest depth of the DFO research vessel survey. It was also noted that some areas have received more research attention than others. While Halifax Harbour, Lunenburg Bay, Lobster Bay and Sydney Bight have had extended research programs, there has been less research on the eastern shore of both mainland Nova Scotia and Cape Breton. A more systematic approach to research is needed to describe the coastal ecosystem and identify areas of ecological and biological significance. Other recommendations from the workshop include the need for 1) a compilation or assembly of the ecological research on the inshore, 2) greater collaboration between the various government departments, university-seated researchers and community groups, 3) interdisciplinary research, and 4) a regional marine mammals sightings network.

The second half of the workshop (January 18-19) focused on the identification of ecologically and biologically significant areas (EBSAs) in the inshore and offshore areas of the Scotian Shelf. Discussions explored the criteria and metrics for defining EBSAs and the management implications of these criteria. The assembled experts also participated in a mapping exercise to identify possible EBSAs in both the inshore and offshore based on the EBSA criteria: uniqueness, aggregations, life history consequences, resilience and naturalness. Thirty-six potential EBSAs were identified in the inshore and 27 in the offshore. In addition, several areas of particular interest that required more research were identified. Accompanying the areas identified is a description of the rationale for site identification which may help direct future research, inform management and provide insight into the metrics to describe EBSAs.

The proceedings from the workshop are an important first step towards an Ecosystem Overview and Assessment Report for the inshore of the Scotian Shelf. Further work of the Inshore Ecosystem Project includes working with fishermen to collect data and incorporate their ecological knowledge through a local ecological knowledge survey.

To receive a copy of the proceedings contact Patty King at 902-876-1160 or email pmdservices@eastlink.ca. If you have questions, please call Nell den Heyer at 426-9780 or email denheyerc@mar.dfo-mpo.gc.ca. Copies of the workshop presentations are available for viewing on the Centre for Marine Biodiversity website at <http://www.marinebiodiversity.ca/en/other-activities/.html>.

NEW TO THE FSRS LIBRARY

2006. NAFO Annual Report 2005. Northwest Atlantic Fisheries Organization. ISSN: 0704-4798.

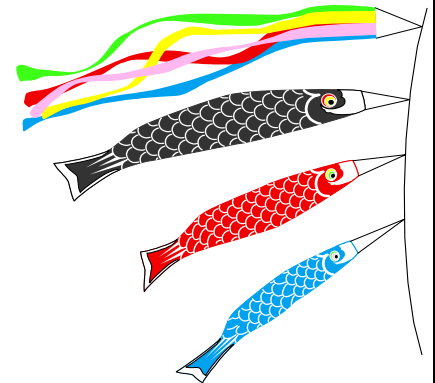
2005. NAFO Annual Report 2004. Northwest Atlantic Fisheries Organization. ISSN: 0704-4798.

2005. Annual Report 2004/05. Marine Stewardship Council.

Video: Trawl Nets, Doors, Dredges, & Twine. F/V Ocean Reporter Captain Bill Lee.

Video: Sand Lance. F/V Ocean Reporter Captain Bill Lee.

DVD: Underwater Video Equipment and Techniques.



Fast Fact

What Do Lobster Eat?

While the lobster has been called a scavenger, it actually prefers fresh food. Its diet typically consists of crabs, clams, mussels, worms, and an occasional sea urchin or slow-witted flounder, and depends on what prey is available. A lobster may eat up to 100 different kinds of animals, and occasionally some plants as well.

December 2005. Tidings, AVC Lobster Science Centre, University of Prince Edward Island. Volume 1, Issue 1.

NEARSHORE MARINE MONITORING WORKSHOP

By Marlene Doyle, Science Communication Coordinator,
Ecological Monitoring & Assessment Network Coordinating Office

Over 170 representatives from community groups, NGOs, government, aboriginal groups, industry and other organizations met to discuss opportunities to better collaborate and coordinate monitoring conducted in the nearshore marine environment across Canada so as to better inform decisions and policies. The two and a half day workshop, designed to facilitate communication and information sharing among monitoring groups and agencies in the various coastal zones of Canada, was a great success, with participants hailing from St. Johns, NL to Prince Rupert B.C. to Nunavut.

Invited representatives from national, regional and local governments described their needs for nearshore marine monitoring information and their legislative authority in the nearshore. Local, regional and national level indicators for clearly communicating nearshore marine information were described. Inventories of monitoring for each of the coastal regions of Canada, conducted in advance of the meeting, were presented along with lessons learned about the elements of successful marine monitoring programs. A panel discussion addressed how community based monitoring could be better supported by and linked with “professional” science. The participants broke out into small groups to discuss the types of information which is needed to track the threats to and changes in nearshore systems, key parameters which should be monitored and possibly standardized in the nearshore, a path forward for better coordination among nearshore monitoring agencies and organizations, and next steps to address some of these recommendations. The workshop highlighted the nearshore as a gap area in mandates and programs whose importance far outweighs the attention it receives.

The workshop steering committee is creating a summary report from the event. The steering committee will continue to work together as an ad hoc coordination committee to address several key action items raised at the meeting, including the maintenance and sharing of the nearshore marine monitoring inventories, and to maintain the momentum of the workshop. For more information and for a copy of the workshop presentations contact Marlene Doyle at marlene.doyle@ec.gc.ca.

FSRS SCIENTIFIC PROGRAM COMMITTEE CHAIR GOES ‘PUNK’ FOR THE CANADIAN CANCER SOCIETY

Before



After



Ross Claytor would like to thank all those who donated to the Canadian Cancer Society.
The total collected from all sources was just over \$1500.00.

FSRS MEMBERS HEAD TO MAINE FOR THE FISHERMEN'S FORUM

By Carl MacDonald, FSRS Research Biologist

Members of the Fishermen and Scientists Research Society attended the Maine Fishermen's Forum from March 2nd to the 4th. The Maine Fishermen's Forum is an annual three day event which focuses attention on issues affecting the State's commercial fishing industry. The forum is held at the beautiful Samoset Resort in Rockland and is attended by thousands of people, including scientists, fishing-related business, fishermen's organizations and individual fishermen. Attending on behalf of the FSRS were Carl MacDonald, Hughie Boutilier, Robert Courtney, Bill Bond, Junior Risser, Bobby Henneberry, Randy Boutilier, Garnet Heisler, Joe Burke and John Lavers.

Many seminars were offered during the three day conference. The first seminar attended focused on recent fishing gear developments and changes in fishing technologies. There were presentations and displays on a variety of fixed gear, including gill nets, cod, flounder and lobster traps. There were also many presentations on mobile gear such as shrimp and otter trawls.

The second day had many interesting presentations including a seminar put on by a fisherman on how to build underwater video equipment for approximately \$500. He also provided two underwater videos that he produced and provided a CD to demonstrate the methods he used to build his underwater cameras. These two videos and the CD are available from the FSRS library. If you would like to check out these or other resource materials from the FSRS library, contact Patty King at 902-876-1160.

A summary of the latest Lobster Stock Assessment to come out of the USA was also presented. The areas assessed were the Gulf of Maine, Georges Bank, South of Cape Cod and Long Island Sound, and Southern New England. The assessment was a mixed picture. They used a traffic light approach where some indicators were negative, others positive, and some neutral.

Endangered whales and fishing gear continues to be a very important issue in the USA. This spring there will be a new federal amendment prohibiting the use of polypropylene rope by 2008. This will mean that fishermen will need to modify their gear to a more 'whale friendly' rope that will help protect whales from entanglement. To help with this massive change of rope, a two million dollar buy back of rope is proposed.

Many other seminars were held including inshore trawl surveys, shrimp assessments, GoMoos buoys, sea urchins, and eMOLT (environmental monitors on lobster traps). The marine trade show was great as well; lots of fishing gear from Maine followed us back to Canada. We also attended a wonderful seafood reception, an auction, and those that had the moves attended the dance. We were able to say hello to some familiar faces in Maine and some new baby faces. Congratulations to you both again, Patrice McCarron and Erin Pelletier, from the Canadian connection. We all had a good time and learned from our neighbours across the Gulf of Maine.



Bill Bond, Hughie Boutilier, Junior Risser, Carl MacDonald, John Lavers, Bobby Henneberry, Joe Burke and Randy Boutilier.

BEACHCOMBING - What's New in The News

Atlantic Canada Coastal and Estuarine Science Society (ACCESS) Workshop and Annual General Meeting

The 2006 ACCESS Workshop and Annual General Meeting is being held in conjunction with a symposium organized by the Canadian Rivers Institute (at no extra cost). The ACCESS meeting will take place on the 16th and 17th May at the University of New Brunswick.

On the 18th, the Canadian Rivers Institute will hold a symposium tentatively titled: "Rivers are connected to the sea – and it does matter".

The 2006 ACCESS theme is: "The connectivity of Maritime aquatic habitats". Oral presentations and posters will be on any of four topics:

- (1) The trials and tribulations of estuary and lagoon living
- (2) Life goes on: beyond the barrier islands (the coastal zone to the edge of the shelf)
- (3) Aquaculture: the good, the bad, and the ugly.
- (4) Open

For more information contact:

Mark Hanson (hansonm@dfo-mpo.gc.ca) .

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UPCOMING EVENTS

LOBSTERMEN'S TOWN MEETING Lobster Institute

**Friday April 7, 2006
 9:30 am - 4:00 pm
 DoubleTree Hotel - Portland, Maine
 Pre-Reception - Thursday, April 6
 7:00 pm - 9:00 pm**