
HOOK, LINE AND THINKER

The Newsletter of the Fishermen and Scientists Research Society

Issue: 2002 - 2

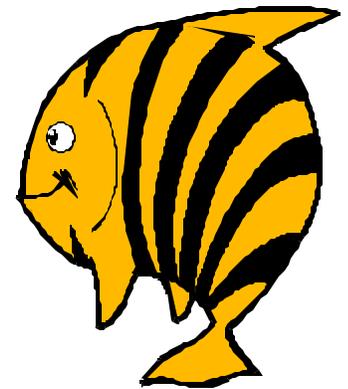
Spring 2002

FSRS WELCOMES NEW RESEARCH INTERNS

The Fishermen and Scientists Research Society (FSRS) has received funding for five research interns for April 2002 to March 2003. The funding is through the Department of Fisheries and Oceans (DFO) Science and Technology Youth Internship Program. The Program is aimed at providing practical work experience to rural youth, which will better equip them to obtain meaningful employment upon completion of the internship program and give them an opportunity to develop an extensive network of contacts which will be valuable in procuring employment. This is the fifth year the FSRS has participated in the program.

Please join me in welcoming our new interns: Brian Conrad, Melanie Hurlburt, Molly Spears, Corrine Siefker, and Curtis Young. To learn more about the new interns and how to contact them, please see their articles on pages 14 and 15 of this issue.

With the arrival of the new interns, it is time to bid a fond farewell to last year's interns. I ask all members to join me in extending our thanks to the departing Research Interns for their hard work over the past year, and in wishing them the best of luck in their future endeavours. Best of luck to Crystal Doggett, Denise Muise, Sean Neary, Jill Moore and Dylan Buchanan.



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AN UPDATE FROM THE NEW CHAIRMAN OF THE SCIENTIFIC PROGRAM COMMITTEE

By John Batt, FSRS Scientific Program Committee Chair

Well I guess the first thing I should say as the new Chair of the Scientific Program Committee is hello. For many of you who know me, my background is well known, but for the rest I will give you a brief summary. Currently, I am the Manager of the Aquatron Laboratory at Dalhousie University. The Aquatron Laboratory is a sizable marine research facility with some amazing research facilities, including a 50 ft diameter research tank plus a 33 foot deep tank. Our research within the facility ranges from Cod spawning behavior to fish health concerns. Prior to joining the program here at Dalhousie, I worked in the fishing and aquaculture industries for nearly 10 years. My research experience ranges from cod to scallops and my interests continue to grow.

Since becoming Chair of the FSRS Scientific Program Committee, I have had a chance to meet with Society Manager Patty King and discuss the upcoming year. As a result, I have decided that we have a bit of organizing to accomplish in the coming year. First of all, we will be aiming to keep the committee members to about 18 people and will be confirming with the current members to see who is staying on and who will step aside and allow new members to serve on the Committee. If positions become available, we expect to draw upon the growing waiting list of interested members. In addition to membership, we will be wrestling with the growing number of project ideas and developing a way to process them.

In the near future, the Committee will be meeting to discuss the wide variety of project ideas developed at the Annual Meeting, including ways to expand the current lobster work and initiate new projects. I would like anyone who has project interests or ideas to make your FSRS Research Intern aware, as this is an excellent way to have your ideas come forward to the Committee. In addition, if there are members out there who would be interested in helping in projects, ranging from university student programs to our major initiatives, please contact your Research Intern. Please include what you are willing to volunteer such as your time, vessel time, etc...

Well this brings things to a close. I expect the upcoming year to be challenging but when finished I hope the Committee will be well organized, have a way to process new ideas and projects submissions and have a list of new projects ready for the Executive Committee and next Annual Meeting.

Until then, thanks for your time.



FSRS 9TH ANNUAL CONFERENCE

The Fishermen and Scientists Research Society held its 9th Annual Conference and Annual General Meeting at the Howard Johnson Hotel in Halifax, NS on February 22nd and 23rd. On behalf of the members I would like to gratefully acknowledge the Director's Office, Science Branch, Maritimes Region, Department of Fisheries & Oceans; Marine Fish Division, Department of Fisheries & Oceans; Nova Scotia Department of Agriculture and Fisheries; Dalhousie University; Atlantic Marine Conservation Office, World Wildlife Fund, Canada; Aquatic Animal Health, Atlantic Veterinary College; Atlantic Catch Data Ltd.; Halifax West Commercial Fishermen's Association; Shelburne County Competitive Fishermen's Association; First Choice Sportswear; and Metrographic Printing Services Limited for their support and financial contributions, without which the conference would not have been possible.

The conference was well attended, with over 120 people in attendance. Some guests and members travelled great distances to attend, including fishermen from as far away as Quebec. And as always we had guests who came to learn more about the FSRS and to explore opportunities to collaborate with us.

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: Ross Claytor - Estimating Lobster Exploitation Rates From FSRS Recruitment Traps; Don Clark - 4X Cod Tagging Study; Paul Fanning - Stock Status Traffic Lights - What Are They and How Are They Used; and Vladimir Kostylev - Benthic Habitat Classification.

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:

- Tanya Baker - Nova Scotia Leatherback Turtle Working Group
- Jason Cheverie and Tammy Rose - Marine Geomatics, Centre of Geographic Sciences
- Ken Drinkwater - Temperature - Salinity Characteristics During 4VsW Sentinel Survey
- Cheryl Frail, Tim Willis and Doug Pezzack - Lobster Lifecycle/Reproduction
- Andrew Hebda and John Gilhen - NS Museum of Natural History
- Carl MacDonald and John Tremblay - Lobster Recruitment Index From Standard Traps (LRIST)
- Denise McCullough - Oceans and Coastal Management Division, DFO
- Jill Moore - Joint Industry/DFO Clam Research Project
- Bob Rangeley - Atlantic Marine Conservation Office, World Wildlife Fund, Canada
- Jayne Roma - Marine Invertebrate Diversity Initiative (MIDI)
- David Scott - Centre for Marine Geology, Dalhousie University
- Maxine Westhead - Fundy Forum

RECEPTION

Not all 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. Participants had a chance to win some fabulous prizes throughout the evening, as well as throughout the two days of the conference. A special thanks to the companies who donated the prizes:

Associated Marine Products	Maritime Safety Equipment
Bakers Point Fisheries	Olands
Barrington Wilson's Shopping Centre Ltd.	Rainbow Net and Rigging
Belmac Supply	Sambro Fisheries
Classic Seafoods	Shelburne Wood Workers
Halterm LTD	Home Hardware
Hi-Liner	Sydney Mines Vol. Fire Dept
Howard Johnson Halifax Hotel	Tusket Ford
IMP	Tusket Toyota
Leblanc Boat	Vernon D'eon Lobster Plugs
Lockeport Home hardware	Yarmouth Chrysler
Lockeport Town Market	Yarmouth Motor Mart
Lunenburg Foundry	

ESTIMATING EXPLOITATION RATES IN LOBSTER FISHERIES USING INDEX TRAP CATCHES

A REVIEW OF ROSS CLAYTOR'S PRESENTATION

By Carl MacDonald, Senior Data Analyst

Exploitation rate is described as the catch of lobsters over the season divided by the population of lobsters in that area ($ER = \text{Catch} / \text{Population Number}$). Exploitation rate can be used as an indicator to measure fishing effects on the population, as a tool to calculate success of lobster management decisions and helps to evaluate egg-per-recruit targets.

The catches from the lobster recruitment traps are useful in determining exploitation rates because the fishermen record the catch information daily over the whole season. At the first of the season there will be a certain ratio of legal size lobsters to under size lobsters (Figure 1). The number of legal size lobsters are being depleted over the season while the number of under size are not being depleted. The number of under size lobster remains constant, as they are not depleted. So, the change in the ratio of legal size lobster to under size lobsters during the season is used to estimate exploitation rate. The more the ratio of legal to under size lobsters declines the higher the exploitation rate (Figure 2).

**Figure 1: When Season Starts
10 Large for every 10 Small
1/2 of Catch are Large**

X— large lobster
x—small lobster

X X X X X x x x x x
X X X X X x x x x x

**Figure 2 : High Exploitation Rate
At the End of the Season
2 Large for every 10 Small
1/6 of Catch are Large**

X— large lobster
x—small lobster

X X x x x x x
 x x x x x

Ross Claytor analysed the lobster recruitment data for all LFAs involved in the FSRs Lobster Recruitment Project. However, some LFAs in our study area do not have a large number of participants which causes too much uncertainty in the results, hence those LFAs were not presented. Ross presented the results for LFAs 27, 32, 33, and 34. The results indicated that large legal lobsters have a higher exploitation rate than smaller legal lobster in two of the study areas. The results also showed a decline in exploitation rates within all legal sizes of lobster over the three years of the project. A declining exploitation rate is an encouraging indicator, as it suggests that fishermen are not removing as many lobsters as in previous years.

The data from the Lobster Recruitment Index Standardized Traps Project is very useful. The data provided by fishermen supplies information that is otherwise unobtainable via other avenues. The collecting of data leads to cooperation between fishermen and scientists. The data collected is cost effective as fishermen can collect the data during the normal commercial fishing.

Some project considerations being considered are to expand number of participants in some areas, expand areas where traps are located, and possibly conduct some lobster tagging studies.

Questions and Answers

Q. The recruitment traps cannot be moved around throughout the season. Could not moving traps around cause errors in the exploitation rate?

A. The recruitment data is the best data we have to use currently. Certainly, it would be nice to test this data by recording what is caught in an equal number of commercial traps that can be moved around. Studying commercial trap data would be useful and provide a way of cross-referencing.

Q. The exploitation rates are based on the ratio of legal lobsters to sub-legal lobsters. At the first of the season small lobsters won't go into a trap full of legal size lobsters. Won't this cause a problem with the exploitation rate?

A. Undersize lobsters do go into the traps with the legal size lobsters at the first of the season, as the data shows this. This catchability problem has not been studied fully. For an experiment, one could load a trap with legal lobsters and test the catchability of sub-legal lobsters.

Q. How does the movement of lobster effect the exploitation rates? That is, lobsters are migrating either to an area or leaving an area. These lobsters are not removed from the population by fishing.

A. Yes, the movement of lobster does effect the exploitation rates. However, the migration patterns of lobsters should be the same from year to year. So, movement of lobsters is considered constant from year to year and thus it is not a factor. The trend in exploitation rates is what we are interested in mainly. We want to determine if exploitation rates are increasing or decreasing.

4X COD TAGGING STUDY

By Jeff Graves, FSRS Sentinel Technician

On February 22, 2002 at the FSRS 9th Annual Conference, Department of Fisheries and Oceans scientist Don Clark gave a very informative presentation on an extensive cod tagging study currently underway in the Bay of Fundy, Gulf of Maine, and the Scotian Shelf. The purpose of this study is to see migration patterns and growth rates between 4X and Georges Bank cod stocks and 4X and 4VSW cod stocks. So far 15000 fish have been tagged for the study. The fish have been caught by draggers and handliners. Tagging has been done on 40-50 cm fish from the Scotian Shelf and 60-70 cm fish from the Bay of Fundy, and fish of up to one meter in length were tagged on Browns Bank. It was noted that five year old fish caught on the Scotian Shelf average 60 cm in length where as five year old fish caught in the Bay of Fundy measure 75 cm on average.

People who catch tagged fish and send in the tag receive a letter stating where the fish was tagged, and where it was recaptured. In addition, each tag is entered into a draw for various prizes. The top prize that will be awarded is \$1000. Participants that help with the tagging receive a hat and a summary of tag returns from the fish that they helped tag

Results for the first year have shown a tag return rate of 1%. This is due in large part to the short time the study had been in operation. Most tagging studies expect to get a return rate of between 8 and 10 %. Tagging studies carried out in the 1950's provided return rates as high as 20 % and in some studies in Newfoundland the return rates have been as high as 25%. It was also noted that 95% of tag returns occur within the first five years of the study.

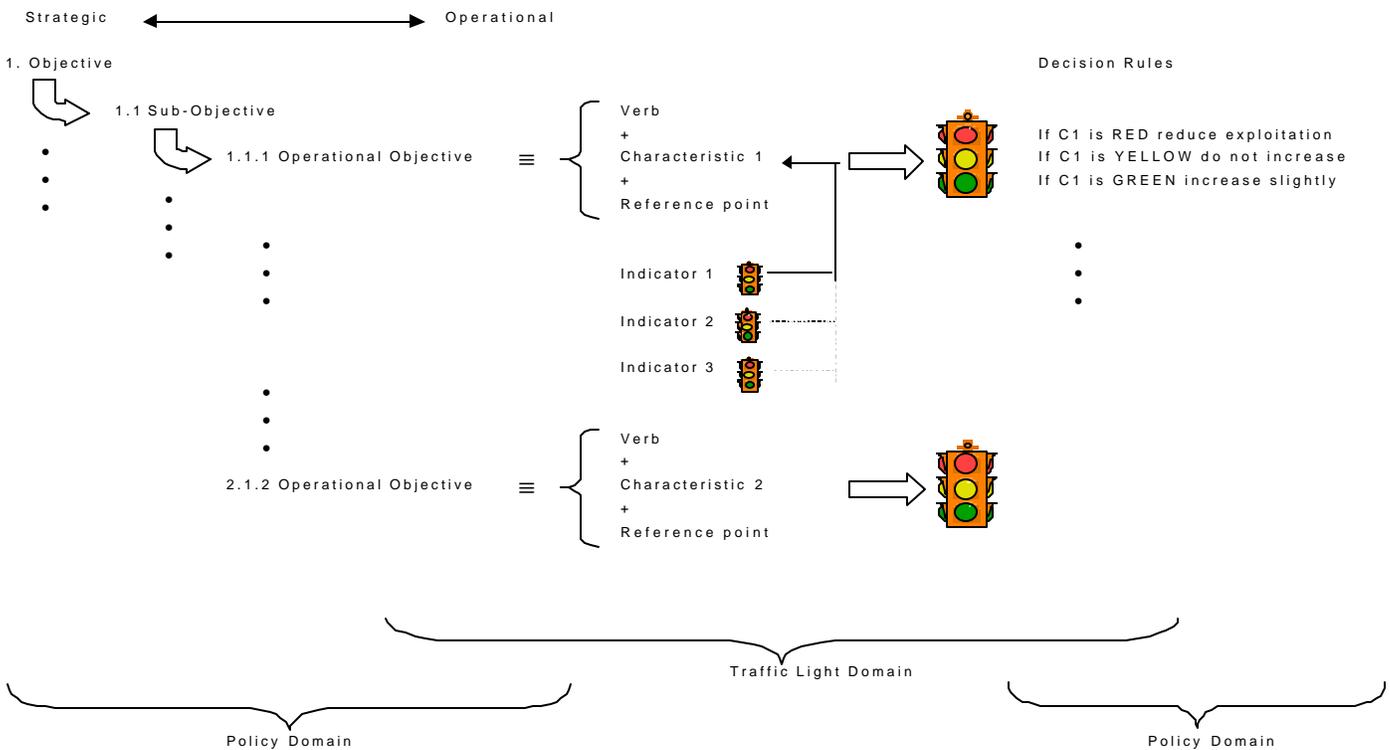
TRAFFIC LIGHT APPROACH TO INTEGRATED FISHERIES MANAGEMENT

By Shannon Scott, FSRS Senior Lab Technician, FSRS



As part of the Fishermen and Scientists Research Society 9th Annual Conference, Paul Fanning, a senior assessment biologist for DFO, gave a talk on a new method for stock assessment called the Traffic Light Method. The old method was based more on one species approach and didn't really account for interactions between co-habiting species. The new approach for stock assessment and fisheries management is taking a broader approach which includes a more ecosystem based management and also includes some socio-economic characteristics.

The science behind designing a new assessment scheme is based on the precautionary approach that considers: unacceptable outcomes (limits), uncertainty, and pre-agreed decision rules (conflict resolution). The Traffic Light analysis method is data based rather than model based. It is a method used for the integration and presentation of resource status information; used for presenting fisheries data. Similar to a street traffic light, it uses red (bad), yellow (intermediate), and green (good) lights as ways of viewing the status of specific indicators. Various methods were developed when it was clear that the fisheries management scheme was not working. People were dissatisfied with the current stock assessments; more specifically, the failure in incorporating the full scope of biological knowledge on populations and the effect of the environment on resource productivity.



One of the key principles in the Traffic Light analysis is transparency of all indicators, their values and how they are grouped. This approach uses indicators derived from single species evaluations that reflect the impact of ecosystem processes on those species, such as variations in natural mortality. Traffic light indicators require definition of bad/ good ranges corresponding to prospects of serious harm to stock and meeting management objectives respectively.

In the current model for Traffic Light Analysis, a fuzzy logic scheme has been determined to utilize more factors. There are three levels of decision making: a need to determine the boundaries between red/ yellow/ green, to determine how different indicators are integrated into characteristics or a single event, and determination of the appropriate fisheries management measures as a result of the stock status. This means it is possible to have more than one light on at a time, showing that the indicator used in the assessment can be associated with more than one of the categories. Integrating procedures of indicator have to be flexible enough to reflect biological reality. Some indicators, such as stock size, are more reliable than others and should be weighted more heavily in determining the summary values.

If there are any questions about the Traffic Light Analysis method, please call the FSRS office (1-800-226-3777) and we will try and answer what we can.

BENTHIC HABITAT CLASSIFICATION

By Sean Neary, FSRS Research Intern

Benthic habitats are areas of the ocean floor, which support life and marine organisms. They are physically, chemically, and biologically distinct from other seafloor surroundings. The presentation by Vladimir Kostylev focused on high resolution mapping of benthic habitat using multi-beam technology. The multi-beam technology surveys the seafloor 150 degrees from surface to seafloor.

The Georges Bank imagery was shown in the presentation, revealing the geology of the seafloor. One could see the effect of the glacial movements, which left behind coarse and fine particles. The imagery also revealed the evolution of the seafloor ridge. Particles such as sand and gravel were easily noticeable, along with their ecologically distinct habitats. If you can imagine flying in a glider and observing the geography of the land below you, that is what viewing the imagery of the multi-beam technology is like, the only difference is that it is the ocean floor.

The multi-beam technology gives a picture of the geology and texture of the seafloor, which would allow for the prediction of the type of benthic substrate. Knowledge of benthic substrate can be used to tell which species of marine organism would live in such a substrate. The multi-beam technology will impact both the environment and economy in a number of ways. Clearwater scallop fishermen have already used the imagery to place gear in specific places, dragging less seafloor and spending less time on the water to catch their quota. A positive result is less benthic habitat will be disturbed, and less fuel will be used in the process of fishing. A negative result is that with this technology less natural marine protected areas will exist as they are discovered and fished.

LOBSTER RESEARCH PROJECTS

By Crystal Doggett, FSRS Reseach Intern

Project Manager Patty King and Senior Data Analyst Carl MacDonald presented the first session on Saturday morning. Patty began by reporting on some specific questions that had been identified at the 2001 Lobster Workshop.

One topic of interest arising from the 2001 Lobster Workshop was larval distribution, and more specifically, what is the implications of larval settlement in a given area in the fishery. At the present time, Bob Miller is planning to do work in the Canso area in the fall of 2002 that should provide some answers to this question. The FSRS will be offering assistance and will get results to present to FSRS members.

The predator/prey relationships of lobster were also a topic raised. In answer to the interest in this topic, Carl MacDonald wrote an article for the newsletter presenting an overview of what species eat lobster. Watch future issues of the newsletter for Carl's article on what lobsters eat.

The topic of year-round, standardized testing was not overlooked either, but was included as a possible FSRS Research Proposal.

In any organization, communication is essential for success to occur. Communication was yet another topic on the minds of our FSRS members. For the FSRS it is of particular importance that our scientists be able to effectively explain their work and how they use the data to produce their results. A series of articles are planned for the newsletter to describe what scientists do. A presentation covering this information is planned for the 2003 conference.

It is a priority to identify what questions the fishermen members have to ensure that they can be properly answered. If permission is granted, FSRS plans to print the answers to lobster questions that D.Cowen has on the web. The FSRS, "Ask the Fishermen", "Ask the Scientists" column will be reintroduced to the newsletter. Watch for an article in a future newsletter based on the lobster reproduction poster that Cheryl Frail, Tim Willis, and Doug Pezzack prepared for the conference.

FSRS members questioned the impact of oceanographic changes on the population. There is some information on oceanographic conditions available on the web (web addresses can be found in the newsletters and the FSRS website, www.fsrns.ca, includes links of interest for this topic).

Catchability: John Tremblay has done work that adds to our information on this topic. The information is available for those interested.

SHORT-TERM LOBSTER RECRUITMENT INDEX PROJECT

The 2002 Conference allowed for discussion about the Lobster Recruitment Index. The project was planned to run for five seasons, but with its results being deemed worthwhile and valuable, members seem willing to discuss extending this project, as well as adding other components to the study. A number of ideas have been discussed informally in past months. Using various ideas discussed by members, Carl MacDonald tried to pull some of these suggestions together for discussion. The discussion began with a critical look at how the project is going at present.

The fishermen taking part in this project also seem willing to keep their experimental traps in good condition and buy new ones when necessary. The consensus seems to be that it doesn't take long to earn the value the value of the trap back.

The question of having more participants was looked at from various angles. How to reach the key people we need to fill in the areas where we have gaps in our coverage? Should we base the number of people in the project on the percentage of vessels in the port? Should any increase in participants be based upon LFA Advisory Committee input? There will be a cost to FSRS for traps and data handling if new participants materialize. This means that the FSRS must be aware of costs at all times to avoid over extension. John Tremblay has indicated that he can probably cover the cost to subsidize some new traps.

Discussion on adding a column to the data sheet to tally rock crab and other crab by-catches touched on a number of good points. Some LFAs can't use crab if they catch them and so are likely to set in areas where they know they will encounter fewer crab or use bait they know crab don't like. Therefore, what do our numbers really tell us, if not all fishermen have an equal effort to catch crab? The fishermen seemed willing to give a quick tally, voluntarily for a year perhaps, and see how it goes.

RESEARCH PROPOSALS

The involvement of about 120 fishermen in the FSRS Lobster Recruitment Study, has produced sound results that have gained respect, attention and audience from scientists and fishermen within Canada and internationally. Inevitably, it is a priority to make sure that we continue upon a path to produce accurate and concise results. With this in mind, Carl MacDonald brought a number of proposals forth during the Saturday session of the Conference.

Carl made it clear that these suggestions were simply brought forth from discussions among our members and answers on the surveys done over the phone by the interns. These suggestions are simply open for discussion; by no means does the FSRS need to adopt all or any of these suggestions unless there is interest and further development of these ideas. Each of the ideas is outlined below.

1. Sampling with regular (commercial) traps during the Fall season.

The idea is that sampling perhaps three commercial traps in addition to the recruitment traps could give a useful comparison to see how our traps fish. Discussion lead to the question of whether the escape hatches should be opened or closed in these commercial traps, and would DFO grant permission to fish a closed hatch.

2. Sampling with regular (commercial) traps during any season (with the vents closed).

This option would provide more information on the recruitment size lobsters. Again there are a number of things that could affect the usefulness of this data; for example, the fact that fishermen have different commercial traps that are not standardized (This is also an issue to be considered in option 1). Commercial traps are designed to catch legal sized lobsters and so will not contain the smallest of recruitment lobsters. Again, permission would be necessary for closed vent to be used and the closed vents may produce skewed results.

3. Out of season sampling, tagging, and v-notching (Fall Fisheries)

This option would give an idea of what is happening to large lobsters (second molt group), where they go and when. This sampling would also test exploitation rates estimated from recruitment or regular trap sampling during the season, as well as testing recruitment and berried females indicators developed during in-season sampling. There are still many things, such as cost, that would need to be decided.

4. Season changes in lobster availability (Spring Fisheries)

This project would be intended for two particular reasons. First, are lobsters more available to traps outside the spring commercial seasons, and secondly what are the implications for both questions about commercial season changes and First Nations fishing? Again there are various ways this could be achieved. A group of fishermen could set 10's to 100's of traps once a month from August to December or numerous fishermen could set a few traps every two weeks.

(Cont'd on Page 14)

SCIENTIFIC PROGRAM COMMITTEE REPORT AND FUTURE DIRECTION OF THE FSRS

4VSW SENTINEL PROGRAM

This year, 202 random stations were completed; this is a decrease from previous years due to budget constraints. 21 Commercial Index days were done. Both the average pounds of fish and the average revenue per station decreased in comparison to last year. However, the average price per pound of fish increased this year from \$0.73 to \$0.74.

Table 1: 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
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

Table 2: Commercial Index Phase Revenue Analysis

Year	# Days Fished	Total Pounds Fish Sold	Average Pounds of Fish/Fishing Day	Total Revenue From Sale of Fish	Average Revenue Per Fishing Day	Average Price Per Pound	Vessel Share of Revenue	FSRS Share of Revenue
2001 Class 1	2	3,015	1,507.50	\$2,242.45	\$1,121.23	\$0.74	\$1,681.84	\$560.61
2001 Class 2	18	37,807	2,100.39	\$27,949.50	\$1,552.75	\$0.74	\$23,271.28	\$4,678.23
2001 Class 3	1	138	138.00	\$72.50	\$72.50	\$0.53	\$54.38	\$18.12
2001 Total	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	35,153.5	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

The Sentinel Program budget was reviewed. There is great concern about lack of funding. With past decreases in DFO funding and decreasing revenue from the sale of fish, the revenue in the Sentinel Project Fund is quickly being depleted. In an attempt to get more money for the Sentinel Program, it was suggested that letters be sent to DFO (Neil Bellefontaine and Mike Sinclair) requesting funding assistance. \$ 50,000.00 is needed to continue the Sentinel Program this year. Funding is also needed for

the Society's general operating budget; the letter will also include a request for a \$50,000.00 annual grant which will be used to ensure the continued operation of the Society and help finance the other research members want to do. Other possibilities to get more money were discussed, such as: getting everyone to sign a letter and send it to DFO; getting various fishermen's associations to send in letters; going to the chairs of the various LFA's; and sending a letter directly to the Minister of Fisheries. Hubert Saulnier agreed to would speak with the Minister and set up a meeting.

PROJECT IDEAS

During a recent membership survey conducted by the FSRS Research Interns, members were asked what research they feel is needed. The resulting ideas were discussed, with the aim of identifying project ideas for the Scientific Program Committee to consider.

Lobsters: Members felt that v-notching female lobsters as a conservation plan is covered sufficiently. There was no support for v-notching females in different zones in Southwest Nova Scotia. There was some support in improving the lobster catch and release program (LFA 32 and 31b). Releasing 100lbs of female lobsters as a conservation measure is being implemented in some areas. There was no support for placing stickers on the shells of lobsters that last until molting.

Denny Morrow had previously discussed with Patty King that there is less meat in lobster shells in LFA 34 this year and asked the FSRS to consider collecting data on this. Ricky Nickerson said that the protein content in the lobsters is related to their strength. The lobster quality is very bad this year. He feels that there should be a seminar held for fishermen to educate them on protein content and see what they think should be done.

There was some concern expressed about the levels of cadmium (metal) in the lobsters. It was said that the metal content in lbsters is mostly present in the thamali, which is the part that is not eaten. There was a lot of interest in the effects of the pipeline on the lobster industry. Ricky Nickerson suggested that existing information (independent information, not only from DFO) be collected and distributed to the fishermen by way of a seminar.

On the topic of the correlation between the decrease in the Bras D'Or Lakes lobster population and increases in cod, it was suggested that there be discussion with people in the Bras D'Or Lakes area and see if there is anything the FSRS can do to help study this.

There was no support for determining a better time to open the lobster season because of the amounts of berried lobsters.

The question was asked whether after the scallop fishery in LFA 34 the percentage of culls in the catch is less than the 10% stated at a past LFA 34 meeting. It is felt that studies are needed. It is important to determine whether this should be dealt with by the FSRS or by each individual LFA. There is a need to determine how to deal with this by representing all fishermen. It was decided that it should be taken back to each LFA for them to decide what needs to be done and if the FSRS can help. It was also suggested that a scallop fishery meeting should be held to discuss the potential of the possible negative effects of the scallop fishery on the lobster industry.

Seals: Seals were the number one area of interest in doing a study. There has been a population explosion of seals over the years. It was decided that there is nothing that FSRS can actually do. The FSRS previously tried to collect data on seals, however, there was a lack of interest in filling out seal logbooks. Of the 100 logbooks issued, only one was returned. There needs to be discussion on what science, with the

cooperation of the fishermen, can actually do to help. There is also a concern for tourism when it comes to seals. If a boat of tourists out seal watching see the seals being killed, it will have negative impacts on the tourism industry. It was suggested that the FSRS interns call each member with a questionnaire to determine how much equipment is lost or damaged due to seals, and then figure out what to do about it.

The Effects of Global Warming of the Lobster Fishery: It was suggested that Carl MacDonald, Jeff Graves and the interns do research on available literature, and write an article for the newsletter to inform fishermen about the effects of global warming. It will then be decided whether it needs to be studied further. Paul Fanning indicated that this is a huge area of research.

Groundfish: There is interest in doing studies on cod, white hake, pollock and finfish bio-diversity. There is also interest in having more tagging projects done, particularly for cod and haddock. An interest was expressed in having Carl MacDonald and Diane Beanlands write an article for the newsletter on how to identify monkfish egg sacks in the water column; these are not actually seen very often. With regards to the suggestion of a Sentinel Program in the Bras D'Or Lakes, there was general interest on doing more work there. However, there was concern about not stepping on anyone's toes; it was suggested that expertise and support be provided, if possible, to those already doing research in the area.

Green Crabs: There is interest in knowing if green crabs eat newly molted lobsters, it was suggested that a stomach analysis study could be conducted to look at this. Garnet Heisler indicated that there is an on-going study on crabs started last year. It was suggested that the Scientific Program Committee determine what studies are on-going and how the FSRS can help. It was also suggested that the Committee speak with scientists in Maine where a study is already being done..

Snow Crab: How far west are they going? Junior Risser is doing an experimental study in LFA 33. His data will help answer this question. Victor Wolfe indicated that there is an experimental study on-going at his wharf.

Rock Crab: Is a rock crab fishery feasible? It was noted that there is a rock crab fishery in Cape Breton. René Lavoie was asked to outline the research needed and pass it along to the Scientific Program Committee. Dr. Jim Williams (St.FX) should be contacted for information on the interaction between rock and green crabs.

Mackerel: It was suggested that the interns survey the fishermen and ask them about the abundance of mackerel in their fishing gear during the season. This will help figure out if it is all the way along the Scotian Coast. Francois Gregoire should be consulted on what studies have previously been done on mackerel and what work still needs to be done. Perhaps the FSRS can help him with his research. The Small Pelagic Research Society also has information on mackerel.

Herring: It was agreed that if the herring fishery needs any help with science the FSRS will do whatever it can.

2002 WORKPLAN

Patty King presented the proposed Workplan for 2002. Harold Pottie motioned that the workplan be accepted as written. Garth Guignon seconded the motion. The motion carried.

2002 WORKPLAN

PROJECTS	STATUS	PLAN FOR 2002
4VsW Sentinel Program	Finished Dec 15th; 202 of 203 stations completed in Random Phase; 21 Commercial Index days done.	Prepare workplan and budget. Source additional funding. Create new reports for fishermen and distribute and post to web site.
Condition Study	Results available for sampling from 1998 - 2001	Continue to sample; do analysis. Peter Hurley, Carl and Shannon working on incorporating data into DFO database and on analysis on cod and haddock.
Mimilog & CTD deployments	Mimilogs deployed by individuals and project participants. Three moored sites. CTD's used only during Sentinel.	Increase CTD sampling. Identify locations for CTD sampling and volunteers to do the sampling.
Stomach Content Project	Analysis of stomachs is on-going. Data being entered.	Complete data entry. In conjunction with DFO, produce data products.
Lobster Recruitment Project	Currently 131 fishermen participating in LFA's 27, 28, 29, 31A, 31B, 32, 33 & 34. Results available by contacting Carl MacDonald. Individuals receive own results. Group results presented at LFA and other meetings. Program working well.	Find participants for ports without coverage. Continue attending LFA meetings to present results. Implement changes presented in Lobster Research Proposal.
Lobster Tagging	Contracted by Ross Claytor to tag lobsters in LFA 33 in Fall 2001.	Possibility of doing more tagging in 2002.
Lobster At-Sea Sampling	In addition to our own samples, Doug Pezzack and John Tremblay provided funding for techs to do sampling for them. Working well.	Continue. At-sea sampling should be focus, particularly on vessels in the recruitment trap project.
Leatherback Sea Turtle	Members encouraged to report sightings.	Expand participation.
Collaboration with Dalhousie	FSRS continues to support students' research through articles in the newsletter and presentations at our conference. John Batt setting up meetings for Patty to meet with professors to explore opportunities for collaboration. Did presentation on FSRS to Biology Department grad students.	Meet with professors; explore project and funding opportunities.
Investigation of Geomatics Solutions For the Analysis and Dissemination of FSRS Data	For their school project, two COGS students are assessing existing lobster catch data (both analog and digital) and determining a viable geomatics solution for effective distribution and communication with the FSRS membership	Students to prepare a poster for the conference explaining what they are doing. Present results of project to members.
Snow Crab	Doing snow crab biological sampling at sea on contract for a member.	Pursue other contracts.
Other Lobster Research Projects	Draft proposals prepared. Present at conference for members' input and approval.	

Lobster Research Projects (Cont'd from Page 8)**5. Trap effectiveness Study**

The Lobster Recruitment Study uses the standardized trap developed by FSRS. A Trap Effectiveness Study would be done to determine if the standardized traps fish as well or better than commercial traps, if the recruitment traps do indeed catch smaller lobsters. It would also illustrate if the project traps catch an equal number of various size lobsters as the commercial traps. This study would require fishing an equal number of project traps and commercial traps with closed vents, all in the same location, and to record the same data from each trap.

DISCUSSION

The question of permission and validity of data with closed vs. open vents was a hot topic. Ultimately, any ideas the membership is interested in will have to be developed into detailed proposals and questions of permission can be dealt with from there.

Conversation came to a conclusion with the acknowledgment that perhaps some of these suggestions, such as 3 and 5 can be rolled into one program and that different LFA's may be more accepting of certain ideas. Therefore the attending membership supported a recommendation that a proposal based upon these ideas be more formally prepared, be presented to the different LFA's to seek modifications and permission. The outcome may in fact be a project customized to the interests of each LFA. The Scientific Project Committee will be giving this discussion further attention at their next meeting.

HELLO FROM YARMOUTH !

By Melanie Hurlburt, FSRS Research Intern

Hello, I am Melanie Hurlburt and I am replacing Denise Muise as the Research Intern for Yarmouth and Digby Counties. I have a B.Sc. in Marine Biology from Dalhousie University and an Advanced Diploma in Coastal Zone Management from the Marine Institute of Memorial University of Newfoundland. For the past 10 months I have been working on the Yarmouth County Coastal Resources Mapping Project and would be happy to answer any questions you may have about this project. Eager to get out of the office and get some hands on experience, I am delighted to be the new Research Intern. Having been born and raised in Yarmouth County, I am very excited to have this opportunity in my home town. I am looking forward to meeting and working with all the fishermen in my area. Anyone interested in finding out more about the FSRS and its projects or if you have any questions, please contact me at (902) 761-2180.

To contact Melanie:

Phone: (902) 7612180

E-mail:
Melaniehurlburt@
hotmail.com

**COME FROM AWAY, NOW
ONE OF OURS**

By Corrine Siefker, FSRS Research Intern

My name is Corrine Siefker, and I am the new technician with the Fisherman and Scientist Research Society for the Halifax area. Originally from Windsor, Ontario, I moved to Nova Scotia four years ago to attend Dalhousie University. This coming May I will graduate with a Double Advanced Major in Marine Biology and French. My past experience includes working with scientists in both freshwater and marine systems; so I look forward to the unique opportunity of working this coming year along side both the fishermen and scientists of Nova Scotia. The nature of the Society has created this excellent opportunity for the exchange of knowledge between our two communities; I'm sure this exchange will be quite beneficial for both my development and the future of the fisheries. I look forward to working with and learning from all of you over the coming year and would like to take this opportunity to thank you for your already warm welcome.

To contact Corrine:

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E-mail:
Corrine_siefker@
hotmail.com

G'DAY BYE! HOW'S SHE GOIN'?

(ATTENTION CAPERS)

By Curtis Young, FSRS Research Intern

Hello to all the members of the Fisherman and Scientists Research Society. My name is Curtis Young and I am the new Research Intern for the Cape Breton area. I am replacing last year's intern, Sean Neary. I was born and raised in Florence and have been exposed to the fishing industry since I was a child. After graduating from Memorial High School, I continued my studies at Mount Allison University in Sackville, New Brunswick. I have just graduated with a Bachelor of Science with a major in Environmental Science and a minor in Biology. During my time at Mount Allison, a large portion of my studies concentrated on the marine environment.

Over the last three summers I worked as a deckhand aboard my fathers lobster boat doing, everything from cutting bait to driving the boat. I have also worked aboard an eco-tourism boat in the Bras D'Or lake which involved sampling plankton and informing people about the ecological functions of the lake.

I am excited to be aboard as part of the FSRS team and I am looking forward to meeting and working with all you Capers out there. If you have any question or concerns I would be glad to hear from you; drop me a line anytime at (902) 736-6069. That's it bye, take er easy ya hear.

Curtis can be reached at:

Phone: (902) 736-6069

E-mail:
fsrscurtisyoung@hotmail.com

HOMEWARD BOUND TO SHELBURNE COUNTY

By Molly Spears, FSRS Community Technician

Hi my name is Molly Spears and I am the new Fishermen and Scientists Research Society intern for the Shelburne County area for 2002 to 2003. I have recently relocated back to my hometown after completing a Bachelor of Science with a Biology major at Saint Mary's University in Halifax. If you are within the area of Shelburne County you will be hearing from me soon, as I am excited to start fishing to obtain data, and actively recruit new members to the society.

Since my return to the community, I have kept busy with my own businesses as a Massage Therapist, Mary Kay Consultant, and working in my father's lobster plant - Raymond Garland, Miss Molly Fisheries Ltd.

I am pleased to have the opportunity to take part in the various FSRS studies and to inform everyone about the importance of the Society. I have been surprised at the number of people who are unfamiliar with the Society and it is my goal to inform others about it and what we have accomplished thus far. I am very excited to meet everyone soon!

Molly can be reached at:

Phone: (902) 635-1010

E-mail:
Molz_spears@hotmail.com

ATTENTION LUNENBURG AND QUEENS COUNTIES!

By Brian Conrad, FSRS Research Intern

My name is Brian Conrad and I am now your new Research Intern for Queens /Lunenburg Counties (replacing Crystal Doggett).

I have roots in West Berlin, Queens County, where I have fished since my childhood. I am looking forward to working with you over the next year. If there is anything I can help you with don't hesitate to ask.

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V-NOTCH CONSERVATION PROGRAM RESULTS FOR LFA 31B AND LFA 32 FOR THE YEAR 2000

By Carl MacDonald, FSRS Senior Data Analyst

In the spring of 2000, lobster fishermen along the Eastern Shore of Nova Scotia were involved in a lobster V-notching program. This program was very successful, as all fishermen in the lobster fishing areas (LFAs) 31B and 32 participated in the conservation program. Depending on their class of lobster license (A, B, or Partnership) the fishermen in LFA 31B released (236, 71, or 352 pounds respectively) non-berried female lobsters in the 2.5 pound size range into the ocean. Similarly, depending on their class of lobster license (A, B, or Partnership) the fishermen in LFA 32 released (220, 66, or 330 pounds respectively) non-berried female lobsters. An independent body, Fishermen and Scientists Research Society (FSRS) weighed and verified the pounds of female lobsters being released by most of the fishermen. In total, 16,027 pounds of female lobsters were returned to the ocean in LFA 31B. Likewise, LFA 32 fishermen returned 32,166.75 pounds of female lobsters to the ocean. The average size lobster released in LFA 31B was 111 mm or 2.49 pounds (Table I). Therefore an estimate of 6,436 non-berried female lobsters were released in LFA 31B in the spring of 2000. The average size lobster released in LFA 32 was 113 mm or 2.61 pounds. Approximately, 12,324 non-berried female lobsters were released in LFA 32 in the spring of 2000 (Table I).

Table I: A summary of the pounds of v-notch lobsters returned to the water, the average weight per female lobster, and the estimate number of females lobsters released by LFA

LFA	Pounds of females released in 2000	Average weight (lbs) per female	Estimate number of females released in 2000
31B	16,027.00 lbs	2.49	6,436
32	32,166.75 lbs	2.61	12,324

It is of great importance to the fishermen in LFA 32 to know how large of a benefit year 2000 V-notching conservation had on increasing egg production. Fishermen involved in this v-notch conservation program want to know if their project is worth while. The FSRS was not asked to assess the impact of V-notching but as an independent body designed to help fishermen with science we decided to gain some insight into the question. To gain insight on success of the V-notching program, LFA 31B and 32 fishermen who participate in a FSRS lobster recruitment study were asked to fill out 3 extra lines in their lobster recruitment log book. The categories were daily total number of V-notched lobsters caught without eggs, daily total number of V-notched lobsters caught with eggs, and daily total number of regular spawn lobsters caught. These fishermen also record their daily number of trap hauls along with a wide variety of information. In total, 6 out of the 8 FSRS participating fishermen in LFA 31B filled out the V-notching section of the logbook. In LFA 32, 9 out of the 11 FSRS participating fishermen filled out the V-notching section of the logbook. Recaptures of 2001 tagged V-notch lobsters are not included in this analysis. The results for LFA 31B are summarized in Table II and results for LFA 32 are in Table III.

Table II: 2001 V-notch catch rate results for LFA 31B. A summary from 6 fishermen catches of V-notch lobsters without eggs, V-notch lobsters with eggs, and regular spawn lobsters

LFA	# Traps Hauled	# V-notch lobsters caught without eggs	# of V-notch lobsters caught with eggs	# Regular Spawn Lobsters
31B	66,096	128	140	2049

There is a great deal of information we can realize from this data. First we can find the catch rate of V-notch lobsters per trap haul. In LFA 31B, the 6 fishermen caught in total 268 V-notch lobsters in 66,096 trap hauls. A catch rate of 0.004 V-notch lobsters per trap haul. That means on average throughout the whole season a catch rate of 4 V-notched lobsters per 1000 trap hauls.

The most important question presently posed is the percentage of spawned lobsters attributed to the 2000 V-notching program. The math is relatively simple: 140 (V-notch with eggs) / 2049 (regular spawn lobsters caught) = 7%. In other words, there are 7% more spawning lobsters in LFA 31B because of the 2000 V-notching program.

The percentage of V-notched lobsters that spawned $(140/268) = 52\%$. Approximately 48% of the V-notched lobsters did not become berried the first year. The V-notched lobsters released were large enough to spawn as they were of 2.5 pound size on average. One possible reason for the high percentage of non-berried V-notch lobsters could be that some lobsters had old V-notches and were not part of the 2000 V-notch Conservation Program. Another possible reason that not all V-notched lobsters became berried could be prolonged or inadequate holding conditions before release of the female lobsters to the wild. Various stresses on female lobsters can cause them to reabsorb their eggs. If all of the V-notched lobsters had produced eggs $(268$ V-notched lobsters caught) / 2049 (regular spawn lobsters caught), there would have been a 13% increase in the number of spawning lobsters. As well, the 48% of V-notched lobsters that did not become berried in 2001 will probably become berried in 2002. Hence, the benefit of V-notching is not lost, just prolonged.

The average number of trap hauls per LFA 31B fisherman per season is about 11,000 trap hauls. Furthermore, we can estimate the total number of trap hauls for the whole LFA 31B (approx. 70 fishermen) = $11000 * 70 = 770,000$ trap hauls for the LFA 31B season. Therefore, the estimate total number of V-notched lobsters caught in 2001 = 3080 V-notched lobsters ($770,000$ hauls * 0.004 catch rate). We then can estimate the total number of V-notched lobsters that became berried in 2001 = 1602 berried v-notch lobsters ($3080 * 0.52\%$). We can also provide an estimate for the number of regular spawn lobsters caught in the whole LFA 31B (2049 regular spawn / $66,096$ trap hauls = 0.03 catch rate). Therefore, the total number of regular spawn lobsters caught in 2001 = $770,000$ trap hauls * 0.03 catch rate = $23,100$ regular spawn lobsters.

Table III: 2001 V-notch catch rate results for LFA 32. A summary from 9 fishermen catches of V-notch lobsters without eggs, V-notch lobsters with eggs, and regular spawn lobsters

	# Traps Hauled	# V-notch lobsters caught without eggs	# of V-notch lobsters caught with eggs	# Regular Spawn Lobsters
32	LFA 97,967	179	317	1981

(Cont'd on Page 26)

HAVE YOU SEEN THE HEART URCHIN?

By Mike Hart, Department of Biology, Dalhousie University

Biologists at Dalhousie University are trying to track down an unusual relative of the familiar sea urchin. Called a heart urchin, *Brisaster fragilis* live in deeper water (usually 200-1000 feet or more) and on mud bottom. They are about 4-5 inches long, 2-3 inches wide, with a distinct groove down the middle of the upper surface. They are greenish-brown, with a covering of short brown spines (which are harmless). Heart urchins have very thin shells and make a living by eating mud and digesting the small organisms living in the sediment. This makes them ecologically important for recycling the rich detritus that rains down on the deep ocean from the surface layers above. They occur across the north Atlantic, and are probably found locally around the Scotian Shelf and in the Bay of Fundy.

The development of these heart urchins is also intriguing. They develop first as a small larva that swims and feeds on phytoplankton before settling into the mud and transforming into the urchin form. The two stages (larva & adult) are remarkably different. The larvae are a fraction of an inch long, with long, spindly arms, and packed with yellowish yolk (like a spare lunch). We would like to know more about how these larvae feed and grow. If we can collect the adults alive & undamaged, we can spawn them in the laboratory and raise the larvae (just as aquaculturists do with mussels and scallops).

Unfortunately, we don't know exactly where to look for the adult heart urchins. Heavy mobile gear used for groundfish would break up the fragile shells of heart urchins, so they would probably not be noticed in the catch from such gear. Lighter dredges used on mud bottoms might bring them up relatively undamaged. We'd be glad to hear from anyone who has seen these heart urchins and can tell us where to collect them. We might also be looking for a charter to dredge the adults.

To contact us, write or call:

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PATTY'S PICKS - WEB SITES OF INTEREST



Check out www.marinelife-explorer.com and follow the various images to see marine critters in their natural environment. There is even an entire section dedicated to species of Atlantic Canada. Bookmark the site and visit often to see updates and new information.

Correction to the website address for Ocean Science - Coastal Shallow Water Temperature Climatology given in the Winter 2002 issue. The correct address is:

mar.dfo-mpo.gc.ca/science/ocean/coastal_temperature/coastal_temperature.html

eSeFDee Marine Sciences Portal - www.dvz.be/Portal

For more information on this web site check out "Beachcombing – What's New in the News" on page 26 of this newsletter.

ADVENTURE ON THE HIGH SEAS

By Dylan Buchanan, FSRS Research Intern

On January 28 of this year I had the opportunity to be a part of John Neilson's scientific team on the CCGS Teleost, conducting a pollock survey off the waters of Nova Scotia. To begin I would like to inform everyone that this was my first trip on a boat over 200 feet, as well as my first time two weeks on the water, so I really didn't know what to expect once my feet left the wharf at BIO; but needless to say, it was a very memorable experience.

I guess we'll start at the wharf because it wasn't until I first saw the ship that I realized just what I had gotten myself into. I must say I was overwhelmed at first sight of the Teleost, yet I couldn't help but wish I had been aboard the Hudson, which happened to be over 300 feet and docked next to the Teleost that day. As I walked from my car to the boat, I had some doubt with regard to my being at sea for two weeks, but once aboard, I realized that 200 plus feet was more than enough to ease my mind.

We set sail at about 6:00 that night. I watched for about half an hour as we steamed through the harbour, then I went to my cabin and started unpacking. At 7:00 we met in the conference room and after discussing our agenda and doing all the introductions I went back to my cabin for a rest since I got stuck on nightshift and we were hoping to begin fishing that night. On my way to turn in, one of the ship's crew informed me that we would be hitting some nasty weather at the get go, so if I had anything laying around, I'd better get it secured. On that note I wedged my flat between the wall and a kit bag, and I called it a night.

I awoke at 12:00 that night and went to the control lab where Peter Perley gave the once over of the equipment. The equipment was made up of three desktop computers and the EK500. The EK500 was the hydro-acoustic system we used in our search for pollock, and apparently Chris Stevens, who was the expert on board, was the only one who knew exactly how it worked; the rest of us only needed to know how to read and record the data, which was fine by me. Someone had to be in the control lab at all times to monitor the equipment and keep contact with the bridge, and by the second night, although I really didn't know what I was looking for, Peter felt that I was able to take on this task. I must have made out okay that first night because no one seemed to mind leaving there from that time on.

We made our way from Halifax and began fishing once we hit Sambro. The plan was to start at Sambro, work our way to Georges, then work our way to the Bay of Fundy, but in the end we only got as far as Georges. The priority species on the trip was pollock, however, in our search for pollock there were requests to sample other species such as haddock, yellowtail, and of course, cod; Donald Clark came along for some cod tagging. We had hoped to tag more than just cod, but cod ended up being the only species that didn't die after being brought aboard.

During the first four days we had great weather, but very few fish. Up till this point we hadn't had much luck finding pollock, but there didn't appear to be much of a shortage of redfish in the ocean. I didn't really mind the fact that we were catching mostly redfish since any fish got me out of the control room and into the lab for a change of scenery. Tows normally lasted for approximately 10 minutes, but this was dependant on the read out from the EK500; if there appeared to be dense concentrations in an area, a tow could be as little as 3 minutes.

By day five our luck had run out, and the weather got a little rough. When it started to blow around 50 knots I didn't really feel all that comfortable anymore, and once again I wondered just what I had gotten myself into, however, I was relieved to hear that we were going to make our way to Shelburne and anchor

in the harbor for a day or so. With the NHL All Star Game on the next day, this proved to be a very popular decision with everyone on board, and for some it gave hope that maybe we'd be close enough to land to see the Super Bowl on Sunday.

Now keeping in mind that I'm a Patriots fan, and it had been a while since the Pats made an appearance in the big game, you can imagine my disappointment when I awoke at three o'clock Sunday morning and we were leaving Shelburne harbor to continue our survey. We began running transect again later that night and it wasn't until much later that night that I got word of the Pats victory. If nothing else, I did take the time to have a beer in celebration of the victory, but I was nowhere near the shape I had become accustomed to on Super Bowl Sunday.

By this time we were entering week two of our survey. Moral was still up although we hadn't had much luck thus far finding pollock. It was at this point that I noticed the screen saver on the computer in the biology lab; it read, "John, there are no pollock here, let's go home!" To this day it's still unknown who put the message there, but it wasn't long till they ate their words. I don't remember if it was later that morning, or the morning after that we found strong aggregations, but needless to say, team moral shot straight up when the fishing crew informed us we found pollock.

The next couple of days were busy with pollock tows at night and cod tagging during the day, and everything was going fine until once again Mother Nature decided to rain on our parade. We hit 50 – 60 knot winds for the second time of our trip, but this time we weren't close enough to take shelter. For a day and a half we steamed at about 2.5 knots off Georges, side to the wind causing a good forty-five degree lean of the boat. This didn't really bother me that much, until we approached the U.S boarder and had to turn the ship. At that time I was asleep and not really aware of how bad it really was outside, but once the crew swung the boat around and she dug into a wave, I awoke to a half- foot drop in my bunk which once again made me question my decision to come on the trip.

After a couple of days we were back fishing again. We decided that with only a couple of days left, we'd try another look where we found the large pollock aggregations, and fish one more spot for cod before heading home. As luck would have it we had as good luck in the last two days as we did in the entire first week, which really didn't make much of difference to me since for about the last three days all I could think about was stepping on solid ground. Don't get me wrong, I was having a great time, and the food alone was worth the trip, but after the last storm I didn't really care to spend much more time on the water.

At 6:00 Sunday morning I awoke with the anticipation of going home. By now we were about four and a half hours from BIO and most everyone was as thrilled as I was to get there. Once we made it to the mouth of Halifax Harbour I went to the bridge to see the sights as we made our way in. As I mentioned earlier, this was my first two week trip, and by now I looked forward to seeing the wharf at BIO, so you can imagine the joy I felt when it was within eye shot.

Once we got the boat tied, we had one last bar-b-q, I said my good byes, and headed to my car. I swear to this day, any snow that fell at BIO was plowed in front of my car since it took about 45 minutes to dig it out, but at this point I couldn't care less; I was finally going home!

ASK THE FISHERMAN, ASK THE SCIENTIST

Send your question to:

Mail: Fishermen and Scientists Research Society, PO Box 25125, Halifax, NS B3M 4H4

E-mail: patty.fsr@auracom.com

Fax: (902) 876-1320

THE TELEOST EXPERIENCE

By Denise Muise, FSRS Research Intern

On January 28th, 2002, Dylan Buchanan (FSRS intern for Shelburne County) and myself, Denise (FSRS intern for Digby and Yarmouth Counties) left for fourteen days on the Coast Guard Vessel called the Teleost. The Teleost is a very large dragger out of St. John's Newfoundland. I have heard it referred to as the "cruise ship of research vessels"! I had never been on a vessel this big before. The captain and entire crew were very friendly. A person sure feels at home on this boat. Being mostly from Newfoundland, the guys of the crew could be quite hard to understand at times. The scientific crew included (besides Dylan and myself), John Neilson, Chris Stevens, Don Clark, Peter Perley and Krista Waters. There were also several TUP's on board. There were two different shifts – the day shift ran from 6am-6pm (John, Don and Krista); the night shift from 6pm-6am (Peter, Denise and Dylan). Chris Stevens and the TUP's had alternating shifts from 12am-12pm or 12pm-12am. Depending on the time, the scientific crew was always different. The boat was very clean, and the cooks kept everyone's belly real full. On a few occasions, they even bar-b-que'd out on the deck. The Captain also cooked up some kind of fishy feast every night. I, on the other hands, stuck mostly to salted crackers.

The goal of the survey was to study the hydroacoustics of pollock. The weather was very calm for the first few days. However, not used to the motion of the boat, I was pretty seasick. The first night, we did not see very much fish at all, least of all pollock. During the first week, the crew did not see desired amounts of Pollock. One tow had so many Redfish in it that it busted part of the net. Krista Waters analyzed the stomach contents of the pollock, in an attempt to conduct a study to see what they are eating. The amounts of Pollock did increase as the survey went on. However, the levels of Cod caught were low throughout the entire trip, much to the dismay of Don Clark, who wished to be able to tag some.

Due to the fact that I was quite seasick, and bad weather was approaching quickly, the Teleost docked in Shelburne to drop me off. I was quite embarrassed and relieved to be on dry land. At the same time, another member of the crew needed to visit the clinic in Shelburne for undetermined medical problems. I was made aware that the Teleost did run into very bad weather, and needed to stay anchored for more than two days. The winds were making the boat rock so bad that the computers and other equipment could not give accurate readings. They also returned to Shelburne to wait out another bout of bad weather. I'm not sorry to have gotten off after hearing that news!

All in all, my experience on the Teleost was great, besides having gotten sick. The crew was great, and the work fun. I watched more movies during that week than you can imagine. It was a week that I won't soon forget.

NEW TO THE FSRS LIBRARY

Transferring A Fishing Business; Fisheries and Oceans Canada; National Library of Canada, January 2002.

Workshop on the Groundfish Sentinel Program, November 07-09, 2001, Moncton, New Brunswick; Canadian Science Advisory Secretariat; Proceedings Series 2002/003E; David J. Gillis, Fisheries Research Branch, Department of Fisheries and Oceans; March 2002.

Marine Bulletin, Conservation News for Atlantic Canada; World Wildlife Fund Canada, Vol. 1 No. 1 May 2002.

EASTERN SCOTIAN SHELF INTEGRATED MANAGEMENT (ESSIM) FORUM FEBRUARY 20-21, 2002

A Summary by Shannon Scott, FSRS Senior Lab Technician

The Eastern Scotian Shelf Integrated Management (ESSIM) initiative was developed in 1998. It is the first integrated oceans management pilot with an offshore focus under the Oceans Act. (OCMD, 2002). It is a collaborative offshore planning process led by Oceans and Coastal Management Division, DFO Maritimes Region. The Eastern Scotian Shelf area was selected for the application of integrated oceans management because it possesses important living and non-living marine resources, high biological diversity and productivity and an increasing levels of multiple use and competition for ocean space and resources (OCMD, 2001).

The objectives of the ESSIM initiative are to:

- Integrate the management of all activities in the Eastern Scotian Shelf area
- Encourage conservation, effective management and responsible use of marine resources
- Maintain or restore natural biological diversity and productivity of the marine environment
- Foster opportunities for ecologically sustainable economic diversification and wealth generation

The ESSIM Forum held on February 20-21, 2002 at Mount St. Vincent University, Halifax, N.S. brought together various groups of people who are users of the Eastern Scotian Shelf. This forum was designed to hear different viewpoints on certain issues concerning this initiative such as: developing a collaborative management and planning process, who should be involved, and what should be the elements of this integrated management plan.

There were various presentations by DFO Oceans and Environment and DFO Science personnel and small group discussions. As there are so many different sectors competing for limited space on the Eastern Scotian Shelf, it is important to be able to sit down and learn about the issues. I would like to outline some of the issues included in the ESSIM initiative. Here is a short list of ocean management issues that are part of the ESSIM initiative and relevant to anyone with interest on the Eastern Scotian Shelf:

1. Multiple oceans use
2. Marine safety
3. Marine conservation and environmental protection
4. Compliance and enforcement
5. Jurisdiction
6. Science, research and development
7. Cultural resource protection

(OCMD, 2001)

1. Multiple Ocean Use: challenge to balance competing social, cultural, economic and environmental objectives, challenge to management of ESSIM area relates to priority to ocean use by different sectors as well as inter-sectors.
2. Marine Safety: prevention and response capabilities, maintenance and modernization of aids to navigation and marine communication, concern about outdated and inadequate response equipment, training and communications are essential for effective response.

3. Marine Conservation/ Environmental Protection:
 - Ecosystem approach to oceans management: environmental regime of the Eastern Scotian Shelf critical factor for the recovery of groundfish resources
 - Ecosystem management objectives:
 - Fishing Industry Impacts: bottom habitat disturbance, bycatch
 - Marine Invasive species: ballast water, hull fouling
 - Acoustic Disturbances
 - Ship-whale conflicts: unknown spatial/seasonal distribution of whales in Eastern Scotian Shelf offshore area impedes effort to prevent future whale-ship collisions
 - Land based pollution sources
 - Point based pollution sources: ship-shore discharges, oil and gas industry discharge: concern in the fishing and environmental communities with the general trend toward offshore processing and associated ecosystem risks
 - Maritime Defense: source pollution, weapon and equipment
 - Marine Protected Area (MPA s): more cooperation is needed among Environment Canada/ Parks Canada and DFO to ensure a consistent approach to the development of a national/ regional system of MPAs, protecting the gully
 - Potential Issues: offshore mineral development, open-ocean aquaculture, climate change
 4. Compliance and Enforcement: surveillance and enforcement capacity, nature of illegal activities
 5. Jurisdiction
 - Decision making processes: existing management structures and processes will be incorporated into the integrated ocean management process
 6. Science, research and development:
 - Understanding of ecosystem based management and precautionary approaches is essential for the implementation of Oceans Act
 - Cooperation and coordination of science, research, and development is essential and must involve the entire scientific community
 - Effective oceans and coastal management must be supported and based on systematic mapping and data collection
 7. Cultural Resource Protection: Sable Island
 - Submerged cultural resources from ship wrecks are significant around Sable Island, protection from treasure hunters is important
 - Designation of Sable Island as UNESCO World Heritage Site
- (OCMD, 2001)

References:

Oceans and Coastal Management Division, 2001. The Eastern Scotian Shelf Integrated Management (ESSIM) Initiative: Issues, Challenges and Opportunities, Oceans and Environment Branch, Fisheries and Oceans Canada, Maritime Region.

Oceans and Coastal Management Division, 2002. The Eastern Scotian Shelf Integrated Management (ESSIM) Initiative: The ESSIM Story- a presentation by Joe Arbour, Division Manager, OCMD. Oceans and Environment Branch, Fisheries and Oceans, Maritime Region.

MEET OUR MEMBERS

From our modest beginning of 60 members in 1994, membership in the FSRS has grown to 278, including 203 fishermen members and 75 scientists/other members. Fishermen members are from all sectors of the fishing industry, both fixed and mobile gear, including those who fish lobster, snow crab, groundfish and pelagic, to name but a few species. Scientist members are from both the government (e.g. Department of Fisheries and Oceans) and academic communities, as well as from the private sector. Other members include individuals who work in the fishing industry in various roles, such as in plants or as fishermen representatives, and other individuals with an interest in supporting the objectives and work of the FSRS.

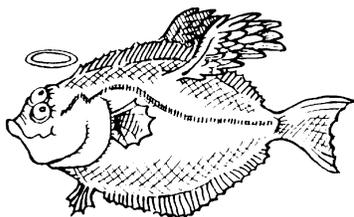
We have built a strong network that has resulted in improved communication and trust, and significant research being done. We look forward to continuing to expand our membership and strengthening the working relationship between fishermen and scientists.

SCIENTISTS

Chris Annand	Nell den Heyer	Charles Schafer	Barry Stahlbaum
Susan Arsenault	Ken Drinkwater	Shannon Scott	Wayne Stobo
John H. Batt	David Duggan	Angelica Silva	Heath Stone
Terri Batt	Daniel Duplisea	Michael Sinclair	John Tremblay
Diane Beanlands	Paul Fanning	Jean Lavallee	Ed Trippel
Patricia Betts	Cheryl Frail	Jemie Lent	Peter Tyedmers
Paul Boudreau	John Gilhen	Robert MacMillan	Tammy Watson
Veronika Brzeski	Gareth Harding	Denise McCullough	Tim Willis
Richard Cawthorn	Lei Harris	Chris Milley	Kees Zwanenburg
Tony Charles	Andrew Hebda	Bob O'Boyle	
Ross Claytor	Geoffrey Hurley	Fred Page	
Peter Comeau	Peter Hurley	Doug Pezzack	
Chris Corkett	Wolf Jacobi	Julie Porter	
Graham Daborn	Peter Koeller	Ted Potter	

Oh Fishial Info

Scientists discover snappers and most chickens are virgins!



Fifty percent of female halibut are sexually mature at a size of 47 in. or 48 lbs. This suggests that many 10 -50 lb. females have not yet reproduced. The size at which 50% of males are ready to reproduce is approximately 30 in. or 12 lbs. With the decline in the abundance of large fish, the taking of sexually immature fish is a concern.

OTHER

Randy Baker	Clarrie MacKinnon
Ginny Boudreau	Ron Martin
Mark Butler	Jan Negrijn
Ronald Caissie	Peter Norseworthy
Pam Decker	Kirsten Querbach
Jennifer Dianto	Gabrielle Richard
Jeannie Eisnor	Denise Rodgers
Patrice Farrey	Nancy Shackell
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Albert Gaudet	Maxine Westhead
Terry Johnston	Wendy Williams
Bernadette Kehoe	
Tanya King	

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 Normand Comeau
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 Ernest De Baie
 Mark DeBaie
 Gerard Dixon
 Wallace Donaldson
 Dave Donovan
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 Jason Greek
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 Kevin Green
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 Peter Harrison
 Ron Hebb
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 John MacKinnon
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 Ron MacKinnon
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 Sidney MacPherson
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 Harry Malin
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 Grant Mason
 John M. Matias
 Rudy C. Matias
 Stephen Meade
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 Stephen Morash
 Micheal Muise
 Ramey Munroe
 Herbert Nash
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 Dwight Neal
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V-Notch Conservation (Cont'd from page 16)

The catch rate of V-notch lobsters in LFA 32 per trap haul is important. The 9 fishermen caught in total 496 V-notch lobsters in 97,967 trap hauls. A catch rate of 0.005 V-notch lobsters per trap haul. That means on average throughout the whole season a catch rate of 5 V-notched lobsters per 1000 trap hauls.

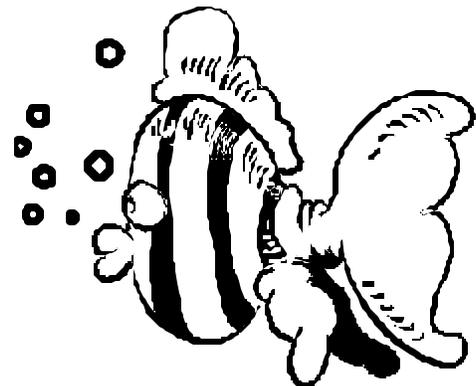
Again, the most important question is the percentage of spawned lobsters attributed to the 2000 V-notching program. With simple math we get the answer, $317 \text{ (V-notch with eggs)} / 1981 \text{ (regular spawn lobsters caught)} = 16\%$. In other words, there are 16% more spawning lobsters in LFA 32 because of the 2000 V-notching program.

The percentage of V-notched lobsters that spawned $(317/496) = 64\%$. Approximately 36% of the V-notched lobsters did not become berried the first year. Again, the V-notched lobsters released were large enough to spawn as they were of 2.6 pound size on average. Holding conditions before release of the female lobsters to the wild could be a reason that not all V-notched lobsters became berried.

The average number of trap hauls per LFA 32 fisherman per season is about 10,500 trap hauls. Furthermore, we can estimate the total number of trap hauls for the whole LFA 32 (approx. 150 fishermen) $= 10500 * 150 = 1,575,000$ trap hauls for the LFA 32 season. Therefore, the total number of V-notched lobsters caught in 2001 = 7875 V-notched lobsters ($1,575,000$ hauls * 0.005 catch rate). We then can estimate the total number of V-notched lobsters that became berried in 2001 = 5040 berried vnotch lobsters ($7875 * 0.64\%$). We can also provide an estimate for the number of regular spawn lobsters caught in the whole LFA 32 (1981 regular spawn / $97,967$ trap hauls = 0.02 catch rate). Therefore, the total number of regular spawn lobsters caught in 2001 = $1,575,000$ trap hauls * 0.02 catch rate = $31,500$ regular spawn lobsters.

One thing we have to remember is these numbers are estimates. Estimates are what we have to use as we can't see to the bottom of the ocean and count all the lobsters. For example, these estimates are all derived from the catchable population of lobsters. Not all lobsters are catchable. There may be some berried lobsters too large to crawl into a trap. Also, some berried or V-notch lobsters are being captured more than once. The problems with recaptures of the same lobsters and the difference in catchability of berried and non-berried lobsters are not considered in this report. The calculations in this report assume that v-notched berried and v-notched unberried females have the same catchability. If the catchability of berried and unberried lobsters were not equal then these calculations would have to be adjusted to reflect the catchability influence. Therefore, the estimated benefit of the 2000 V-notch Conservation Program for year 2001 is a 7% increase in the number of spawning lobsters for LFA 31B and 16% increase in the number of spawning lobsters for LFA 32. This report provides an indication of the benefit of year 2000 V-notching in LFA 31B and should not be used without the permission of the FSRs. In final, I am confident in the data collected by the FSRs lobster recruitment participants and believe the estimates are close to the actual.

**Submission Of Articles Is Open To All.
Deadline For Next Issue Is
July 15, 2002**



DEEP SEA CORALS

By John Batt, Aquatron Manager, Dalhousie University

As most of you are probably aware, interest in Deep-Sea Corals off of our coast is really taking off! At Dalhousie University we have already had one research cruise using the Canadian robotic submersible ROPOS and more cruises are in the works. Each time a cruise ventures out, more is learned about the biology, geology and ecology of the corals. Although this research is extremely valuable it is also very expensive and we need to make the best use of the time at sea. Here, in the Aquatron Laboratory at Dalhousie University, we are looking to better support these cruises and develop other ways of studying corals.

Until very recently, when most people thought about coral, they thought of warm sandy beaches many miles to the south of us here in Nova Scotia. In fact, Nova Scotia and the surrounding region has a large variety of corals. Some people are surprised to find out that there are about 26 species of corals identified and recorded in the scientific literature are being from the Scotian Shelf. In future editions of Hook, Line and Thinker, I will include more about the Biology, Ecology and Geology of deep-sea Corals. For now, I would like to tell you a bit about our plans here at Dalhousie University and in particular the Aquatron Laboratory.

The Aquatron Laboratory has a specialized infrastructure associated with it allowing us to precisely control marine environmental conditions. At this time, we are interested in applying this infrastructure to holding and learning more about deep-sea Corals. Of course, this brings up the question of how do we get corals to hold and thus study them. Well, from time to time we can participate in Scientific Research Cruises with expensive robots that collect coral and bring it back to the lab. This has the drawback of being very expensive but does give the opportunity to capture subjects in excellent condition. On other occasions, we have been able to SCUBA dive and collect coral in relatively shallow water. The problem here, is that relatively shallow water for corals (120 feet) is rather deep and dangerous for Scuba divers. This brings me to the last method for collecting which is to partner with fishermen who occasionally, accidentally capture coral and bring it to the surface.

In the past I have had fishermen bring me corals that have snagged in their gear. Usually, they are interested in learning more about their catch, sharing their interest and possibly, have me identify their quarry. Here at Dalhousie, we have also had live corals brought to us and we have had good success in holding them for long periods of time. In the future, I would like to expand upon this type of work. If anyone out there shares my interest or would like to help us collect in the future, please contact me directly or your FSRS Research Intern. If anyone has coral samples at home and think they could be valuable or have snagged something in their gear of interest, you can also contact me at the address below.

One short note, even a dead coral could provide valuable information. Some of the hard corals which have growth rings similar to trees are of geologic value, providing information on such things as past environmental conditions. Since some of these corals live in excess of 500 years they may have lots to tell us about the past. Other information of value could include the position where the coral was found. Since we think many of the coral forests have been damaged or destroyed, finding where they once were in 500m of water can prove difficult. This applies to all types of corals

As I expressed earlier, I will work to try and provide more articles on Deep-Sea Corals, especially if this is of interest to the members receiving this newsletter. If you find this of interest, feel free to drop me a line.

John Batt, Aquatron Manager, Dalhousie University, Phone 902 494 3874, Email John.Batt@Dal.Ca

BEACHCOMBING - What's New in The News

New Marine Science Portal

The eSeFDee Marine Sciences Portal for the North Atlantic and the Mediterranean has just been launched.

This is a free service offered to the marine scientific community, to managers and decision makers, and in general to anyone interested in the North Atlantic and the Mediterranean.

This marine scientific site has links to over 600 international organizations, management bodies, research institutes, information centres and data centres, whose field of operation include the North Atlantic and/or the Mediterranean, or parts thereof

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UPCOMING EVENTS

**SCIENCE AND LOCAL
KNOWLEDGE : Making the Linkages
Work in Canada's Marine Protected
Areas**
June 19th to 21st, 2002
Universite de Moncton, Moncton, NB

**AQUACULTURE CANADA 2002 :
Meeting and Trade Show**
September 17th to 20th, 2002
Delta Prince Edward in Charlottetown,
Prince Edward Island