

AVC LOBSTER SCIENCE CENTRE TO LEAD STUDY INTO SNOW CRAB PARASITE

A research project on the Integrated Studies of the Effects of Bitter Crab Disease on Atlantic Canadian Snow Crabs, led by AVC Lobster Science Centre scientist and Atlantic Veterinary College professor, Dr. Rick Cawthorn, received approximately \$370,000 in funding over the next three years.

The goals of the Bitter Crab Disease research project include: better understanding the disease, the biology of the parasite and the impact that Bitter Crab Disease may have upon recruitment, abundance and distribution of snow crab. The information gained from the project will be provided to resource managers and industry, and should significantly enhance efforts toward sustaining an important Atlantic Canada fishery.

Bitter Crab Disease is a fatal parasitic disease which affects over 40 species of crustaceans globally. Although the parasite was first described in the 1930s, the disease has exploded worldwide since 1985 and new hosts continue to be discovered in cold, cool and warm oceanic environments.

Rick's co-applicants on the project are Drs. Spencer Greenwood and Andrea Battison also of the Lobster Science Centre. Collaborators include Fisheries and Oceans Canada and the National Oceanic and Atmospheric Administration based out of Seattle, Washington. The Canadian Centre for Fisheries Innovation and the Fish, Food and Allied Workers' Union of Newfoundland and Labrador are supporting organizations of the project.

NEW PUBLICATIONS

www.lobsterscience.ca/publications

Isolation and partial characterisation of four novel plasma lectins from the American lobster *Homarus americanus*

Battison AL, Summerfield RL. Dev Comp Immunol. 2009 Feb;33(2):198-204. Epub 2008 Sep 13

EASTERN CANADIAN LOBSTER INDUSTRY COMES TOGETHER TO FORM LOBSTER COUNCIL OF CANADA

The Canadian lobster industry is pleased to announce the formation of the first Lobster Council of Canada. The new Council will work immediately on several major industry issues and will strive to establish a long-term means of improving the value of the industry for all its members.

Months of careful planning went into the development an industry-driven organization to tackle the key challenges facing the lobster sector. This organization has been conceived, developed and led by industry and this will be a critical factor in its success.

The Council will focus much effort on 'telling the story' of Canadian lobster. It will develop promotional and educational campaigns which are professional, engaging and global in scope. It will clearly and effectively articulate why Canadian lobster is a superior product emphasizing key attributes such as sustainability, survivability, quality, versatility as well as its health benefits.

To support the Council in its early days, the four Atlantic Provinces, the Government of Quebec and the Department of Fisheries and Oceans have agreed to collectively provide approximately \$370,000 in direct funding to the organization over the next two years.

The concept for the Council originated during a Summit of the Atlantic Lobster Industry in Halifax in the fall of 2007. The following year, an industry-wide Lobster Roundtable was formed to determine the next steps in addressing industry-identified issues in a cooperative way. Following meetings in 2008-2009, the Roundtable formed a steering committee to establish the Lobster Council of Canada. The Roundtable and Steering Committee are composed of harvesters, processors, live shippers, distributors and First Nations representatives with government officials in a support role.

The Council's first major tasks will be the development and implementation of a long-term marketing strategy, an active communications strategy with industry and the development of a self-funding model for the organization beyond the first two years.

For more information please visit the Council web-site at : www.lobstercouncilcanada.ca

QUALITY IS A HIT!



Wow, once again what a success! More than 100 participants attended and enjoyed our 5th Annual Lobster Science Workshop, and the event is getting rave reviews. No doubt the relevance of

the Workshop theme, '*A Quality Product in Troubled Times*' definitely hit home for all industry stakeholders, and the caliber of our various presenters certainly helped make this year's event the most successful one to date.

The workshop, held this past July 15-16, was well attended with representatives of all backgrounds; fishermen, processors, live shippers, scientists and government representatives participating in this event. Both the Honourable Gail Shea, Minister, Fisheries & Oceans Canada, and the Honourable Neil LeClair, Minister for the PEI Department of Fisheries, Aquaculture and Rural Development addressed the audience during the opening remarks. This year's event consisted of two different sessions; the first one being dedicated to industry perspective on quality while the second session focused more on scientific presentations about quality issues. Dave Casoni a commercial fisherman from Massachusetts and Secretary-Treasurer for the Massachusetts Lobstermen Association was the keynote speaker for the morning session and he gave an overview of the New England lobster industry, harvesting management areas and his perspective on quality. Dave's presentation was followed by presentations from Craig Avery (PEI Fishermen's Association), Stewart Lamont (Ferguson Lobsters), Jan Spinney (Orion Seafood Group), Blaine Sullivan (Ocean Choice International) and Tim Moffatt (Darden Restaurants). The afternoon session was

opened by Sharon Boyne-Travis, Acting Manager for the Fish, Seafood & Production Division, East, for the Canadian Food Inspection Agency. Sharon gave an overview of how the CFIA is involved in ensuring lobster quality for our industry. Following this keynote presentation, John Garland from Clearwater talked about shipment success, from the lobster's producers perspective. The last four presentations were all given by AVCLSC staff: Jerry Amirault (presenting on behalf of Jean Lavallée), Andrea Battison, Rick Cawthorn and Spencer Greenwood. Those presentations featured brief overviews of some of the research activities currently taking place at the AVCLSC, including recent work on a Paralytic Shellfish Poisoning toxins survey in Canadian lobsters, preliminary results from an investigation of lobster mushy tail syndrome, the plan for an upcoming project on Bitter Crab disease, and finally the potential for 'state of the art' molecular techniques in assessing lobster quality. In what is now tradition at the Annual Workshop, the event ended with a fabulous banquet where, of course, lobster was king!

The AVCLSC would like to express their gratitude to the following contributors to the workshop, without whom this event would not have been possible: Chase's Lobster Pound Limited, Clearwater Seafoods Limited Partnership, DFO - Maritime Science Branch, Ferguson's Lobster Pound Co., Mi'kmaq Confederacy of PEI, NL Department of Fisheries & Aquaculture, NS Department of Fisheries & Aquaculture, Ocean Choice PEI Inc., Paturel International Company, PEI Department of Fisheries, Aquaculture and Rural Development, R. I. Smith Lobster Co., Sobeys Inc. and the University of Prince Edward Island. We want to extend our thanks to the staff of the Rodd Charlottetown for their professionalism throughout the preparation and delivery of the Lobster Science Workshop. Finally, we would like to sincerely thank all attendees for participating in our workshop. We hope that all stakeholders in the lobster industry benefitted from this Lobster Science Workshop. See you all next year!



WELCOME NEW TEAM MEMBERS: The AVC Lobster Science Centre Would like to Welcome the Following People to its Team:

Byron Parsons - Lab Technician and Dr. **Melanie Buote** - Graduate Student with the Bitter Crab Disease Project. This project focuses on *in vitro* development of *Hematodinium* sp., a dinoflagellate that causes bitter crab disease in many crustaceans. Melanie is under the co-supervision of Drs. Andrea Battison and Rick Cawthorn.

Michael Ciaramella - Graduate Student - Hemolymph Biochemistry Project - Michael joined the team in September 2009 and is under the co-supervision of Drs. Andrea Battison and Barbara Horney, (Department of Pathology and Microbiology). His project will be examining the ability of plasma biochemistry profiles to predict the nutritional status of lobsters.

Mitchell Moore - Graduate Student - Microarray Project - Mitchell joined the team in September 2009 and is under the supervision of Dr. Spencer Greenwood, working on the Atlantic Lobster Moulting & Quality project focusing on gene expression in reproductive females.

Dan Hines - Graduate Student - Microarray Project Dan joined the team in September 2009 and is under the supervision of Dr. Spencer Greenwood. His project is focused on discovering genes specifically associated with moulting in larval lobster.

AVC OPEN HOUSE



The 2009 AVC Open House was held on September 26, 2009. The focus of the AVC Lobster Science display at the 2009 AVC Open House was on lobster growth and

development. Lead Field Technician, Melanie Burton, and Lead Lab Technician, Rachael Summerfield, explained to visitors how lobsters hatch from small eggs and develop through larval and juvenile stages until they are fully mature. Samples of lobster eggs and all four larval stages were on display, as well as four live juvenile lobsters. A male and female market-size lobster were available for visitors to touch and to learn how to distinguish between the two sexes.

What type of bottom do lobsters prefer?

Lobsters prefer rocky bottoms with lots of algae. This gives them lots of places to hide and the algae attracts much of the food they would eat. They can also be found in sandy or muddy bottom locations but this is not preferred as it provides little shelter from predators.

ATLANTIC LOBSTER MOULT AND QUALITY PROJECT: Field Monitoring Update - October 2009

The Field Monitoring section of the Atlantic Lobster Moulting & Quality project continues to expand and grow. It currently encompasses both LFAs 33 and 34 in Southwest Nova Scotia (SWNS); all of Prince Edward Island (LFAs 24, 25 and 26a) and there is also one sample being collected out of the Digby area in LFA 35.



Sampling locations around Southwest Nova Scotia

This boost in collection of samples has encouraged a growth within the AVC Lobster Science Centre as well. Interviews for a full-time LSC technician based out of the SWNS office were completed. Eric Branton, who had been doing this work on contract through a partnership with the Fishermen and Scientists Research Society, was offered the position and has accepted it. Welcome aboard Eric!

Interviews also took place to create a 'casual' list for field technicians. Although we currently have 3 full time field technicians, the increased number of samples started spreading our field team just a little too thin! The casuals work on an on-call basis both on Prince Edward Island and in Nova Scotia. Welcome aboard Tamsyn Cosh, Peter Mallam, Colin McIsaac, Daniel Paynter and Elspeth Hennigar!



Sampling locations around Prince Edward Island

For the past 2 years, charters taking place in SWNS (June to November) have included temperature gauges

in the traps. Once the charters are complete, the information from the gauges is uploaded. Preliminary work to incorporate this information with the data



Placing lobster hemolymph (blood) into microfuge tube to be spun while in the field

collected throughout June to November is ongoing.

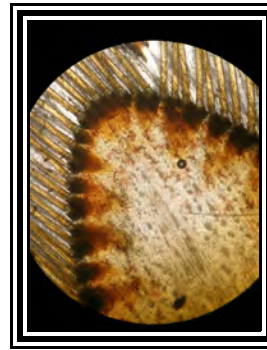
Once a month, from each LFA, extra samples are collected during field monitoring trips to generate biochemistry profiles. In addition to blood protein levels, this profile measures a number of other blood parameters including concentrations of salts, minerals, metabolites, and enzyme activity. The

first step will be to establish normal ranges for each of these parameters. This will require collecting samples from lobsters over one to two years to determine which parameters are affected by factors such as moult stage, nutritional status, geographic location, or sex of the lobster. Once these normal ranges are established, it is anticipated that information on the overall health status of the lobster will be revealed by simply collecting a blood sample. The plan is for this sampling to continue until at least the summer of 2010. Collection of lobsters for the nutritional status component began in May out of Georgetown, PE. This collection is coupled with the field monitoring portion of the ALMQ as well. Lobsters are moult-staged directly on board the fishing vessel by field technicians and only the required animals are brought back to the AVCLSC for post-mortem examination and tissue collection.

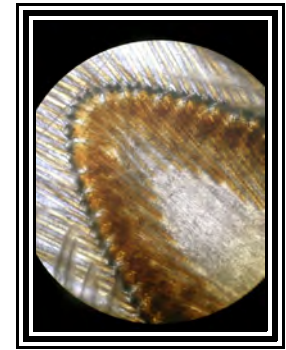
Reading pleopods (swimmerets) for moult stage is a subjective process. It was suggested by our SWNS technician, Eric Branton, that we should try to develop a process to reduce the variability of reading pleopods from technician to technician. From this suggestion, development of the AVCLSC Learning Centre began. This is an online, user friendly, website for technicians within the lobster industry. Programmer analysts at the AVCLSC designed the site is now run by Eric out of the Yarmouth office.

The site currently contains Standard Operating Procedures, a picture gallery of pleopods and an online quiz for staging pleopods. This site is still under construction and should eventually help standardize the lobster industry sample analysis techniques. Future plans for the site include a tutorial on reading pleopods, and a quiz on staging cement glands.

Pleopod (swimmeret) clippings under a microscope for staging



Stage 0




Stage 5

Since the beginning of the project there have been 84,279 lobsters sampled in 665 sampling days, throughout the Maritimes. Of those lobsters sampled, 5,960 were from around Prince Edward Island while the remaining 78,319 were from the SWNS area. We currently have approximately 12 consecutive monthly biochemistry panels in the SWNS area with an aim of achieving 24 consecutive months. The Nutritional Status component of the field monitoring sampling was recently completed.

PEI FIRST NATIONS TO ASSIST IN AVC LOBSTER SCIENCE RESEARCH

Abegweit and Lennox Island First Nations recently joined the AVC Lobster Science Centre to take part in a research project off PEI's north shore. The information collected will benefit the Island lobster fishery and will be used to build predictive models of landed lobster quality, based on environmental and biological data. The First Nations will provide boats, traps, and fishers, while the AVC Lobster Science Centre will provide technicians to do the sampling. Each sampling session will measure and examine 125 lobsters. A small blood sample will be taken and a part of a swimmeret removed for moult stage analysis. The process is harmless to the lobster, while providing useful information to researchers. The project will continue into the Fall and resume next Spring.



How do I keep lobster alive until ready to cook? Buying live to cook next day.

For freshness, it is recommended that you cook live lobsters within 24 hours of purchase. Live lobsters can be stored up to two days if placed in the coldest part of the refrigerator in the bag they were in at the time of purchase or in an open container.