

# GARETH LAWSON

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## Education

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|----------------|---|------------------------|
| 09/00 to 06/06 | Massachusetts Institute of Technology / Woods Hole Oceanographic Institution Joint Program  | Woods Hole, MA, USA    |
|                | <ul style="list-style-type: none"><li>• Ph.D. Biological Oceanography</li><li>• Dissertation: <i>Distribution, Patchiness, and Behavior of Antarctic Zooplankton, Assessed Using Multi-Frequency Acoustic Techniques</i></li><li>• Advisors: Drs. Peter Wiebe and Timothy Stanton</li></ul> |                        |
| 01/97 to 06/99 | Memorial University of Newfoundland   | St. John's, NL, Canada |
|                | <ul style="list-style-type: none"><li>• M.Sc. Biology</li><li>• Thesis: <i>Distribution and Movements of Atlantic Cod in Placentia Bay, Newfoundland</i></li><li>• Advisor: Dr. George Rose</li></ul>   |                        |
| 09/92 to 04/96 | McGill University   | Montreal, QC, Canada   |
|                | <ul style="list-style-type: none"><li>• B.Sc. First Class Honours Biology, GPA 3.93/4.0</li><li>• Thesis: <i>The Role of Turf Algae in the Coral Reef Ecosystems of Barbados, West Indies</i></li><li>• Advisor: Dr. Neil Price</li></ul>   |                        |

## Research and Professional Experience

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| 09/09 to present | Hopkins Marine Station of Stanford University   | Pacific Grove, CA, USA |
|                  | <ul style="list-style-type: none"><li>• Post-Doctoral Research Associate, studying the distribution and movements of bluefin tuna.</li><li>• Advisor: Dr. Barbara Block</li></ul> |                        |
| 09/06 to present | Woods Hole Oceanographic Institution  | Woods Hole, MA, USA    |
|                  | <ul style="list-style-type: none"><li>• Guest Investigator, engaged in ongoing collaborations in zooplankton acoustics and ecology.</li></ul>                                     |                        |
| 09/99 to 03/00   | Department of Environmental Affairs and Tourism   | Cape Town, S. Africa   |
|                  | <ul style="list-style-type: none"><li>• Visiting Scientist, developed acoustic methods for remotely identifying fish schools.</li></ul>   |                        |
| 05/95 to 08/95   | Bellairs Research Institute, McGill University  | Barbados               |
|                  | <ul style="list-style-type: none"><li>• Undergraduate Researcher, studied coral reef fish habitat use in a marine reserve.</li></ul>  |                        |
| 05/94 to 08/94   | Centre for Food and Animal Research, Agriculture Canada   | Ottawa, ON, Canada     |
|                  | <ul style="list-style-type: none"><li>• Undergraduate Researcher, studied sow-piglet communication in the domestic pig.</li></ul>   |                        |

## Teaching Experience

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| 07/07          | Friday Harbor Laboratories, University of Washington  | Friday Harbor, WA, USA |
|                | <ul style="list-style-type: none"><li>• Guest Lecturer, Marine Bioacoustics Course (graduate level).</li></ul>                      |                        |
| 09/04 to 04/06 | Woods Hole Oceanographic Institution  | Woods Hole, MA, USA    |
|                | <ul style="list-style-type: none"><li>• Co-founder and organizer of a marine policy seminar series and discussion group.</li></ul>  |                        |
| 09/98 to 04/99 | Memorial University of Newfoundland   | St. John's, NL, Canada |
|                | <ul style="list-style-type: none"><li>• Teaching Assistant, Ecology and Vertebrate Biology courses (undergraduate level).</li></ul> |                        |

## Research Interests

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Pelagic Ecology: The physical and biological processes that determine variability in zooplankton and fish distributions; schooling and migratory behaviors; predator-prey interactions.

Advanced Technologies: The development and application of new techniques for studying marine ecosystems, especially high-frequency acoustics.

## Publications

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- Lawson, G.L.**, P.H. Wiebe, T.K. Stanton, and C.J. Ashjian. In press. Euphausiid Distribution Along the Western Antarctic Peninsula – Part A: Development of Robust Multi-Frequency Acoustic Techniques to Identify Euphausiid Aggregations and Quantify Euphausiid Size, Abundance, and Biomass. *Deep-Sea Research II*.
- Lawson, G.L.**, P.H. Wiebe, C.J. Ashjian, and T.K. Stanton. In press. Euphausiid Distribution Along the Western Antarctic Peninsula – Part B: Distribution of Euphausiid Aggregations and Biomass, and Associations With Environmental Features. *Deep-Sea Research II*.
- Ashjian, C.J., C.S. Davis, S.M. Gallagher, P.H. Wiebe, and **G.L. Lawson**. In press. Distribution of larval krill and zooplankton in association with hydrography in Marguerite Bay, Antarctic Peninsula, in austral fall and winter 2001 described using the Video Plankton Recorder. *Deep-Sea Research II*.
- Ribic, C.A., E. Chapman, W.R. Fraser, **G.L. Lawson**, and P.H. Wiebe. In press. Top predators in relation to bathymetry, ice, and krill during austral winter in Marguerite Bay, Antarctica. *Deep-Sea Research II*.
- Rose, G.A.\*, I.R. Bradbury, B. deYoung, S.B. Fudge, **G.L. Lawson**, L.G.S. Mello, D.R. Robichaud, G. Sherwood, P.V.R. Snelgrove, and M.J.S. Windle. In press. Rebuilding Atlantic cod: Lessons from a spawning ground in coastal Newfoundland. In: G.H. Kruse, K. Drinkwater, J.N. Ianelli, J.S. Link, D.L. Stram, V. Wespestad, and D. Woodby (Eds.). 24<sup>th</sup> Lowell Wakefield Fisheries Symposium Proceedings: Resiliency of gadid stocks to fishing and climate change. Alaska Sea Grant, University of Alaska Fairbanks. \*Authorship alphabetical after senior author.
- Lavery, A.C., P.H. Wiebe, T.K. Stanton, **G.L. Lawson**, M.C. Benfield, and N.J. Copley. 2007. Determining dominant scatterers of sound in mixed zooplankton populations. *Journal of the Acoustical Society of America*, 122: 3304-3326.
- Lawson, G.L.**, P.H. Wiebe, C.J. Ashjian, D. Chu, and T.K. Stanton. 2006. Improved parameterization of Antarctic krill target strength models. *Journal of the Acoustical Society of America*, 119: 232-242.
- Friedlaender, A.S., P.N. Halpin, S. Qian, **G.L. Lawson**, P.H. Wiebe, D. Thiele, and A.J. Read. 2006. Whale distribution in relation to prey abundance and oceanographic processes in shelf waters of the Western Antarctic Peninsula. *Marine Ecology Progress Series*, 317: 297-310.
- Lawson, G.L.**, P.H. Wiebe, C.J. Ashjian, S.M. Gallagher, C.S. Davis, and J.D. Warren. 2004. Acoustically-inferred zooplankton distribution in relation to hydrography west of the Antarctic Peninsula. *Deep-Sea Research II*, 51: 2041-2072.
- Ashjian, C.J., G.A. Rosenwaks, P.H. Wiebe, C.S. Davis, S.M. Gallagher, N.J. Copley, **G.L. Lawson**, and P. Alatalo. 2004. Distribution of zooplankton on the continental shelf of Marguerite Bay, Antarctic Peninsula, during austral fall and winter, 2001. *Deep-Sea Research II*, 51: 2073-2098.
- Wiebe, P.H., C.J. Ashjian, S.M. Gallagher, C.S. Davis, **G.L. Lawson**, and N.J. Copley. 2004. Using a high powered strobe light to increase the catch of Antarctic krill. *Marine Biology*, 144: 493-502.
- Chu, D., P.H. Wiebe, N.J. Copley, **G.L. Lawson**, and V. Puvanendran. 2003. Material properties of North Atlantic cod eggs and early stage larvae and their influence on acoustic scattering. *ICES Journal of Marine Science*, 60: 508-515.
- Lawson, G.L.**, M. Barange, and P. Fréon. 2001. Species identification of pelagic fish schools on the South African continental shelf using acoustic descriptors and ancillary information. *ICES Journal of Marine Science*, 58: 275-287.
- Rose, G.A., S. Gauthier, and **G.L. Lawson**. 2000. Acoustic surveys in the full monte: simulating uncertainty. *Aquatic Living Resources*, 13: 367-372.
- Lawson, G.L.**, and G.A. Rose. 2000. Small-scale spatial and temporal patterns in spawning of Atlantic cod (*Gadus morhua*) in coastal Newfoundland waters. *Canadian Journal of Fisheries and Aquatic Sciences*, 57: 1011-1024.
- Lawson, G.L.**, and G.A. Rose. 2000. Seasonal distribution and movements of coastal cod (*Gadus morhua* L.) in Placentia Bay, Newfoundland. *Fisheries Research*, 49: 61-75.
- Lawson, G.L.**, and G.A. Rose. 1999. The importance of detectability to acoustic surveys of semi-demersal fish. *ICES Journal of Marine Science*, 56: 370-380.
- Lawson, G.L.**, D.L. Kramer, and W. Hunte. 1999. Size-related habitat use and schooling behaviour in two species of surgeonfish (*Acanthurus bahianus* and *A. coeruleus*) on a fringing reef in Barbados, West Indies. *Environmental Biology of Fishes*, 54: 19-33.
- Weary, D.M., **G.L. Lawson**, and B.K. Thompson. 1996. Sows show stronger responses to isolation calls of piglets associated with greater levels of piglet need. *Animal Behaviour*, 52: 1247-1253.

## Publications Submitted

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Kurota, H., M.K. McAllister, B.A. Block, **G.L. Lawson**, J. Nogueira, and S.L.H. Teo. A sequential Bayesian methodology to estimate movement and exploitation rates using electronic and conventional tag data. Submitted December 2007 to *Canadian Journal of Fisheries and Aquatic Sciences*.

Friedlaender, A.S., **G.L. Lawson**, and P.N. Halpin. Evidence of resource partitioning between humpback and minke whales around the Western Antarctica Peninsula. Submitted February 2008 to *Oecologia*.

## Government Publications and Other Documents

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Kurota, H., M.K. McAllister, B.A. Block, **G.L. Lawson**, J. Nogueira, and S.L.H. Teo. 2007. Estimates of fishing mortality rates for Atlantic bluefin tuna in 1990-2006 from Bayesian statistical analysis of three kinds of tag records. International Commission for the Conservation of Atlantic Tunas Standing Committee on Research and Statistics Document SCRS/2007/137.

Wiebe P.H. and **G.L. Lawson**. 2007. Acoustic sampling on the US SO GLOBEC survey cruises. GLOBEC International Newsletter, 13(1): 57-59.

Friedlaender, A.S., **G.L. Lawson**, and P.N. Halpin. 2006. Evidence of resource partitioning and niche separation between humpback and minke whales in Antarctica: implications for interspecific competition. International Whaling Commission Scientific Committee Document SC/58/E32.

Bradbury, I.R.\*, **G. L. Lawson**, D. Robichaud, G. A. Rose, and P.V.R. Snelgrove. 2000. Success and failure of Atlantic cod, *Gadus morhua*: a case study from coastal Newfoundland. Canadian Stock Assessment Secretariat Research Document 00/22. \*Authorship assigned alphabetically.

**Lawson, G.L.** 2000. Development of acoustic techniques for identifying anchovy, sardine, and round herring schools, and application to South African fisheries management. Canadian International Development Agency Project Report.

**Lawson, G.L.**, and G.A. Rose. 1999. Changes in the timing and location of cod spawning in Placentia Bay. Canadian Stock Assessment Secretariat Research Document 99/43.

Brattey, J., **G.L. Lawson**, and G.A. Rose. 1999. Seasonal migration patterns of Atlantic cod (*Gadus morhua*) in Subdivision 3Ps based on tagging experiments during 1997-1998. Canadian Stock Assessment Secretariat Research Document 99/37.

Rose, G.A., and **G.L. Lawson**. 1999. Acoustic surveys in Placentia Bay and 3Ps, June 1996-1998. Canadian Stock Assessment Secretariat Research Document 99/41.

**Lawson, G.L.**, and G.A. Rose. 1998. An assessment of biases associated with inshore acoustic cod surveys. Canadian Stock Assessment Secretariat Research Document 98/68.

**Lawson, G.L.**, G.A. Rose, and J. Brattey. 1998. Movement patterns of inshore cod in Subdivision 3Ps (southern Newfoundland) based on mark-recapture studies during 1996-97. Canadian Stock Assessment Secretariat Research Document 98/24.

## Reviewer For

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Aquatic Living Resources

Journal of the Acoustical Society of America

Canadian Journal of Fisheries and Aquatic Sciences (2x)

Marine Ecology Progress Series

Deep-Sea Research Part I

NOAA Office of Ocean Exploration

Environmental Biology of Fishes (2x)

NOAA Professional Papers

ICES Journal of Marine Science (4x)

## Session Chair

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Oral session 'Understanding the Physical and Biological Coupling of Marine Population Dynamics: Zooplankton Physiology, Dynamics, and Distributions II.' 2004. American Geophysical Union Ocean Sciences Meeting, Portland, Oregon.

## Talks Given

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- Lawson, G.L.**, J. Nogueira, A. Walli, M. Castleton, and B.A. Block. 2008. Hotspots in the Distribution of Northern Bluefin Tuna in the Atlantic and Pacific Oceans. American Society of Limnology and Oceanography/American Geophysical Union (ASLO/AGU) Ocean Sciences Meeting, Orlando, Florida.
- Lawson, G.L.**, A.M. Boustany, A. Walli, S.L.H. Teo, and B.A. Block. 2007. Distribution and movements of Atlantic bluefin tuna in the northwestern Atlantic studied using electronic tags. ICES/PICES Early Career Scientists Conference: Frontiers in Marine Science, Baltimore, Maryland.
- Lawson, G.L.**, P.H. Wiebe\*, C.J. Ashjian, C.A. Ribic, E. Chapman, A.S. Friedlaender, and D. Thiele. 2007. Antarctic Krill Aggregation Structure and Vertical Migration in Relation to Features of the Physical and Biological Environment. Fourth International Zooplankton Production Symposium, Hiroshima, Japan. \*Presented by second author.
- Lawson, G.L.**, P.H. Wiebe, T.K. Stanton, and C.J. Ashjian. 2006. Development and application of multi-frequency acoustic techniques to the study of Antarctic krill distribution. Fourth Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan, Honolulu, Hawaii.
- Lawson, G.L.**, P.H. Wiebe, and C.J. Ashjian. 2006. Krill Patch Structure and Distribution Along the Western Antarctic Peninsula, With Comparison to the Gulf of Maine. ASLO/AGU Ocean Sciences Meeting, Honolulu, Hawaii.
- Lawson, G.L.** 2006. Acoustically-Inferred Zooplankton Distribution in Relation to Hydrography and Predators Along the Antarctic Peninsula. Woods Hole Oceanographic Institution Biology Department Seminar, Woods Hole, Massachusetts.
- Lawson, G.L.**, P.H. Wiebe, C.J. Ashjian, S.M. Gallagher, C.S. Davis, and J.D. Warren. 2003. Distribution, composition, and patch structure of zooplankton on the Western Antarctic Peninsula continental shelf, with emphasis on Antarctic krill. Third International Zooplankton Production Symposium, Gijón, Spain.
- Lawson, G.L.**, P.H. Wiebe, C.J. Ashjian, S.M. Gallagher, C.S. Davis, and J.D. Warren. 2002. Broad-scale distribution of zooplankton acoustic backscattering in continental shelf waters of the Western Antarctic Peninsula during austral fall and winter 2001. ASLO/AGU, Honolulu, Hawaii.
- Lawson, G.L.**, M. Barange, and P. Fréon. 2000. Species identification of pelagic fish schools using acoustic descriptors and ancillary information. Acoustical Society of America General Meeting, Newport Beach, California.
- Lawson, G.L.** 2000. Acoustic identification of pelagic fish schools and application to sardine, anchovy, and round herring stock assessment. South African Network for Coastal and Oceanic Research Seminar Series, Cape Town, South Africa.
- Lawson, G.L.**, and G.A. Rose. 1999. Do cod always spawn at the same time and place: evidence from inshore Newfoundland. American Fisheries Society Annual Meeting, Charlotte, North Carolina.
- Lawson, G.L.**, and G.A. Rose. 1999. The importance of detectability to acoustic surveys of semi-demersal fish. Shallow Water Fisheries Sonar Conference, Seattle, Washington.
- Lawson, G.L.**, and G.A. Rose. 1999. Changes in timing and location of cod spawning in Placentia Bay. Canadian Stock Assessment Meeting, St. John's, Newfoundland.
- Lawson, G.L.**, and G.A. Rose. 1998. A comparison of acoustic and submersible estimates of inshore cod density in Placentia Bay, Newfoundland. Canadian Conference for Fisheries Research, Kingston, Ontario.
- Lawson, G.L.**, and G.A. Rose. 1998. An assessment of biases associated with inshore acoustic cod surveys. Canadian Stock Assessment Meeting, St. John's, Newfoundland.

## Posters Given

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- Lawson, G.L.**, P.H. Wiebe, C.J. Ashjian, C.S. Davis, S.M. Gallagher, and D. Chu. 2004. A multi-sensor approach to identifying the sources of zooplankton acoustic backscattering data collected on the Southern Ocean GLOBEC broad-scale cruises. American Geophysical Union Ocean Sciences Meeting, Portland, Oregon.
- Lawson, G.L.**, P.H. Wiebe, C.J. Ashjian, S.M. Gallagher, C.S. Davis, and J.D. Warren. 2002. Broad-scale distribution of zooplankton acoustic backscattering in relation to hydrography west of the Antarctic Peninsula. ICES Symposium on Acoustics in Fisheries and Aquatic Ecology, Montpellier, France.

## Academic and Other Awards

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2000	Fulbright Scholarship
2006	Natural Sciences and Engineering Research Council (NSERC) of Canada Post-Doctoral Fellowship [Declined]
2006	Outstanding Student Paper Award, ASLO/AGU Ocean Sciences Meeting
2002 - 2005	Office of Naval Research Graduate Traineeship in Ocean Acoustics
2000 - 2002	NSERC Postgraduate Scholarship-B, with Dept. of Fisheries and Oceans Supplement
1999 - 2000	Canadian International Development Agency Professional Leadership Award
1999	Fellow of the School of Graduate Studies, Memorial University of Newfoundland
1998 - 1999	Maritime Awards Society of Canada Scholarship
1997 - 1998	NSERC Postgraduate Scholarship-A
1996	Emanuel Tavares Prize (highest graduating McGill Honours Biology student G.P.A.)
1992 - 1996	McGill University Dean's Honour List
1992 - 1996	Canada Scholarship (National undergraduate award)
1992 - 1996	S.A. Smith Scholarship (McGill entrance scholarship)
1994 and 1995	NSERC Summer Undergraduate Research Award
1993 and 1995	Muriel Sykes Award (McGill Faculty of Science award)
1995	Penhallow Scholarship (McGill Faculty of Science award)
1993 - 1995	McConnell Award (McGill Faculty of Science award)

## Research Cruises

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Jan. 2008	FV Sensation, Chief Scientist A. Boustany. Cape Lookout, NC, USA.
Jan. 2007	FVs Leslie Anne and Sensation, Chief Scientist B. Block. Cape Lookout, NC, USA.
Jan. 2004	RV Endeavor, Chief Scientist K. Polzin. Hudson Canyon, USA.
July 2002	RVIB N.B. Palmer, Chief Scientist P. Wiebe. Marguerite Bay, Antarctica.
July 2001	RVIB N.B. Palmer, Chief Scientist P. Wiebe. Marguerite Bay, Antarctica.
Nov. 1999	RS Algoa, Chief Scientist C. van der Lingen. South Africa.
Sept. 1998	MV Mares, Chief Scientist G. Lawson. Newfoundland, Canada.
July 1998	MV Mares, Chief Scientist G. Lawson. Newfoundland, Canada.
June 1998	MV Mares, Chief Scientist G. Lawson. Newfoundland, Canada.
May 1998	MV Innovation, Chief Scientist G. Lawson. Newfoundland, Canada.
Apr. 1998	CCGS Shamook, Chief Scientists G. Rose/G. Lawson. Newfoundland, Canada.
Nov. 1997	MV Mares, Chief Scientist G. Lawson. Newfoundland, Canada.
Oct. 1997	MV Mares, Chief Scientist G. Lawson. Newfoundland, Canada.
Aug. 1997	MV Innovation, Chief Scientist G. Lawson. Newfoundland, Canada.
June 1997	MV Innovation, Chief Scientist G. Lawson. Newfoundland, Canada.
May 1997	MV Innovation, Chief Scientist G. Lawson. Newfoundland, Canada.
Apr. 1997	CCGS Shamook, Chief Scientist G. Rose. Newfoundland, Canada.
Jan. 1997	CCGS Teleost, Chief Scientist G. Rose. Newfoundland, Canada.
Oct. 1996	HMCS Cormorant, Chief Scientist G. Rose. Newfoundland, Canada.

## Professional Societies

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American Association for the Advancement of Science  
American Geophysical Union

## Current Collaborators

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### **Southern Ocean Global Ocean Ecosystem Dynamics (GLOBEC) Program**

*Distribution of Antarctic zooplankton assessed via nets and optical techniques*

C. Ashjian (WHOI), P. Wiebe (WHOI)

*Validating theoretical models of krill behavior with observational data*

G. Flierl (MIT), A. Verdy (MIT)

*Whale niche segregation and distribution in relation to krill aggregation structure*

A. Friedlaender (Duke University), P. Halpin (Duke University)

*Seabird and seal distribution in relation to their krill prey*

E. Chapman (Old Dominion University), C. Ribic (University of Wisconsin, Madison)

### **Georges Bank GLOBEC Program**

*Assessing inter-annual variability in zooplankton abundance in the Gulf of Maine*

A. Lavery (WHOI), P. Wiebe (WHOI), T. Stanton (WHOI)

### **Atlantic bluefin tuna ecology**

*Tuna-prey-climate interactions*

C. Greene (Cornell University), A. Pershing (Gulf of Maine Research Institute/University of Maine, Orono)

*Tuna population assessment models*

H. Kurota (Far Seas Fisheries, Japan), M. McAllister, N. Taylor (University of British Columbia)

### **Zooplankton acoustics**

*Interpreting biological sources of scattering in the Gulf of Maine*

A. Lavery (WHOI), T. Stanton (WHOI), P. Wiebe (WHOI)

*Sensitivity analysis of zooplankton scattering models to parameter choice*

M. Sutor (Louisiana State University), J. Warren (Stony Brook University)

*Non-linear multi-frequency acoustic inversion methods for estimating animal parameters*

D. Chu (WHOI/NOAA NWFSC), P. Wiebe (WHOI)

## References

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Dr. Peter Wiebe, Woods Hole Oceanographic Institution, 508-289-2313, pwiebe@whoi.edu.

Dr. Timothy Stanton, Woods Hole Oceanographic Institution, 508-289-2757, tstanton@whoi.edu.

Dr. Barbara Block, Stanford University, 831-655-6236, bblock@stanford.edu.

Dr. Eileen Hofmann, Old Dominion University, 757-683-5334, hofmann@ccpo.odu.edu.

Dr. Joseph Torres, University of South Florida, 727-553-1169, jtorres@marine.usf.edu.

Dr. George Rose, Memorial University of Newfoundland, 709-778-0482, grose@mi.mun.ca.