

## GRAHAM D. SHERWOOD

Research Scientist, Fisheries Ecology  
Gulf of Maine Research Institute, 350 Commercial Street, Portland ME 04101  
Phone: 207 228 1644; E-mail: gsherwood@gmri.org

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### RESEARCH INTERESTS

*Collaborative fishery ecosystem research – Fisheries acoustics – Marine fish behaviour (movement, feeding and habitat associations) – Stock structure – Variable life-history strategies – Aquatic food-web ecology – Stable isotope ecology – Electronic and conventional fish tagging – Fish bioenergetics*

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### EDUCATION:

- 2002 Ph.D., Biology, McGill University, Montreal QC  
Thesis title: *Fish Energetics in Polluted Ecosystems*
- 1994 B.Sc., Biology and Environmental Sciences, McGill University, Montreal QC

### PROFESSIONAL HISTORY:

- 2005-present Research Scientist, Demersal Fisheries Ecology, Gulf of Maine Research Institute, Portland ME
- 2005 Research Contractor, Department of Fisheries and Oceans, St. John's NL
- 2004 Instructor (Fisheries Ecology), Marine Institute, Memorial University of Newfoundland and Labrador, St. John's NL
- 2002-2005 Postdoctoral Associate, Fisheries Conservation Group, Memorial University of Newfoundland and Labrador, St. John's NL
- 1994 Research Technician, Department of Biology, McGill University, Montreal, QC

### APPOINTMENTS:

- 2010-present External Graduate Faculty, School of Marine Sciences, University of Maine, Orono ME

### PUBLICATIONS:

Grabowski, J.H., Baillie, C.J., Alade, L., Bank, C.M., Brown, C.J., Cadrin, S.X., Richards, A., and **SHERWOOD, G.D.** Migratory behavior and habitat preferences of monkfish (*Lophius americanus*) in the northwest Atlantic. *ICES Journal of Marine Science*, in review.

- Clucas, G.V., Kerr, L.A., Cadrin, S.X., Zemeckis, D.R., **SHERWOOD, G.D.**, Goethel, D., Whitener, Z., and Kovach, A.I. Adaptive genetic variation underlies biocomplexity of Atlantic cod in the Gulf of Maine and Georges Bank. *PLoS One*, in review.
- Link, J.S., and **SHERWOOD, G.D.** Feeding, Growth and Trophic Ecology. In G.A. Rose (Ed.), *Cod: The Biology of the Fish that Changed the World*. (pp. xx-xxx). Hoboken, New Jersey: John Wiley & Sons. In press.
- Weaver, D.M., Ratten, S.K., Coghlan Jr., S.M., **SHERWOOD, G.D.**, and Zydlewski, J.D. 2018. Age and growth of a native, lightly exploited population of *Coregonus clupeaformis* (lake whitefish) in a small natural lake in Maine. *Northeastern Naturalist* 25: 599-610.
- Kenworthy, M.D., Grabowski, J.H., Layman, C.A., **SHERWOOD, G.D.**, Powers, S.P., Peterson, C.H., Gittman, R.K., Keller, D.A., and Fodrie, F.J. 2018. Movement ecology of a mobile predatory fish reveals limited habitat linkages within a temperate estuarine seascape. *Canadian Journal of Fisheries and Aquatic Science* 75: 1990-1998.
- Conroy, C.W. Calvert, J., **SHERWOOD, G.D.**, and Grabowski, J.H. 2018. Distinct responses of sympatric migrant and resident Atlantic cod phenotypes to temperature at a remote Gulf of Maine seamount. *ICES Journal of Marine Science* 75: 122-134.
- Grabowski, J.H., Conroy, C.W., Gittman, R.K., Kelley, J.T., Sherman, S., **SHERWOOD, G.D.**, and Wippelhauser, G. 2017. Habitat associations of juvenile cod in nearshore waters. *Reviews in Fisheries Science and Aquaculture* 26: 1-14.
- McMahan, M.D., Cowan, D.F., Chen, Y., **SHERWOOD, G.D.**, and Grabowski, J.H. 2016. Growth of juvenile lobster, *Homarus americanus*, in a changing environment. *Marine Ecology Progress Series* 557: 177-187.
- Churchill, J.H., Kritzer, J.P., Dean, M.J., Grabowski, J.H., and **SHERWOOD, G.D.** 2016. Patterns of larval-stage connectivity of Atlantic cod (*Gadus morhua*) within the Gulf of Maine in relation to current structure and a proposed fisheries closure. *ICES Journal of Marine Science* 74: 20-30.
- Wurtzell, K.V., Baukus, A., Brown, C., Jech, J.M., Pershing, A., and **SHERWOOD, G.D.** 2016. Industry-based acoustic survey of Atlantic herring distribution and spawning dynamics in coastal Maine waters. *Fisheries Research* 178: 71-81.
- SHERWOOD, G.D.**, and Grabowski, J.H. 2015. A comparison of cod life-history parameters inside and outside of four year-round groundfish closed areas in New England, USA. *ICES Journal of Marine Science* 73: 316-328.
- Pershing, A.J., Alexander, M.A., Hernandez, C.M., Kerr, L.A., Le Bris, A., Mills, K.E., Nye, J.A., Record, N.R., Scannell, H.A., Scott, J.D., **SHERWOOD, G.D.**, and Thomas, A.C. 2015. Slow adaptation in the face of rapid warming leads to collapse of the Gulf of Maine cod fishery. *Science* 350: 809-812.
- Le Bris, A., Pershing, A.J., Hernandez, C.M., Mills, K.E., and **SHERWOOD, G.D.** 2015. Modelling the effects of variation in reproductive traits on fish population resilience. *ICES Journal of Marine Science* 72: 2590-2599.

- Fodrie, J.F., Yeager, L.A., Grabowski, J.H., Layman, C.A., **SHERWOOD, G.D.**, and Kenworthy, M.D. 2015. Measuring individuality in habitat use across complex landscapes: approaches, constraints, and implications for assessing resource specialization. *Oecologia* 178: 75-87.
- Wilkinson, E.B., Grabowski, J.H., **SHERWOOD, G.D.**, and Yund, P.O. 2015. Influence of predator identity on the strength of predator avoidance response in lobsters. *Journal of Experimental Marine Biology and Ecology* 465: 107-112.
- McMahan, M.D., Brady, D.C., Cowan, D., Grabowski, J.H., and **SHERWOOD, G.D.** 2013. Using acoustic telemetry to observe the effects of a groundfish predator (Atlantic cod, *Gadus morhua*) on movement of the American lobster (*Homarus americanus*). *Canadian Journal of Fisheries and Aquatic Sciences* 70: 1625-1634.
- McMahan, M.D., Cowan, D.F., **SHERWOOD, G.D.**, Grabowski, J.H., and Chen, Y. 2012. Evaluation of coded microwire tag retention in juvenile American lobster, *Homarus americanus*. *Journal of Crustacean Biology* 32: 497-502.
- SHERWOOD, G.D.**, and Grabowski, J.H. 2010. Exploring the life-history implications of colour variation in offshore Gulf of Maine cod (*Gadus morhua*). *ICES Journal of Marine Science* 67: 1640-1649.
- Runge, J.A., Kovach, A.I., Churchill, J.H., Kerr, L.A., Morrison, J.R., Beardsley, R.C., Berlinsky, D.L., Chen, C., Cadrin, S.X., Davis, C.S., Ford, K.H., Grabowski, J.H., Howell, W.H., Ji, R., Jones, R.J., Pershing, A.J., Record, N.R., Thomas, A.C., **SHERWOOD, G.D.**, Tallack, S.M.L., and Townsend, D.W. 2010. Understanding climate impacts on recruitment and spatial dynamics of Atlantic cod in the Gulf of Maine: integration of observations and modelling. *Progress in Oceanography* 87: 251-263.
- Pershing, A.J., Christensen, L.B., Record, N.R., **SHERWOOD, G.D.**, and Stetson, P.B. 2010. The impact of whaling on the ocean carbon cycle: why bigger was better. *PLoS One* 5(8): e12444.
- Rose, G.A., Bradbury, I.R., deYoung, B., Fudge, S.B., Lawson, G.L., Mello, L.G.S., Rideout, R., Robichaud, D.R., **SHERWOOD, G.D.**, Snelgrove, P.V.R., and Windle, M.J.S. 2008. Rebuilding Atlantic Cod: Lessons from a Spawning Ground in Coastal Newfoundland. In *Resiliency of Gadid Stocks to Fishing and Climate Change*. Alaska Sea Grant College Program.
- Rasmussen, J.B., Gunn, J.M., **SHERWOOD, G.D.**, Iles, A., Gagnon, A., Campbell, P.G.C., and Hontela, A. 2008. Direct and indirect (foodweb mediated) effects of metal exposure on the growth of yellow perch (*Perca flavescens*): implications for ecological risk assessment. *Human and Ecological Risk Assessment* 14: 317-350.
- SHERWOOD, G.D.**, Rideout, R.M., Fudge, S.B., and Rose, G.A. 2007. Influence of diet on growth, condition and reproductive capacity in Newfoundland and Labrador cod (*Gadus morhua*): insights from stable carbon isotopes. *Deep-Sea Research II* 54: 2794-2809.
- SHERWOOD, G.D.**, and Rose, G.A. 2005. Stable isotope analysis of some representative fish and invertebrates of the Newfoundland and Labrador continental shelf food web. *Estuarine Coastal and Shelf Science* 63: 537-549.

- Kövecses, J., **SHERWOOD, G.D.**, and Rasmussen, J.B. 2005. Impacts of altered benthic invertebrate communities on the feeding ecology and growth of perch (*Perca flavescens*) in metal contaminated lakes. *Canadian Journal of Fisheries and Aquatic Sciences* 62: 153-162.
- Campbell, P.G.C., Hontela, A., Rasmussen, J.B., Giguère, A. Gravel, A., Kövecses, J., kraemer, L., Lacroix, A., Levesque, H., and **SHERWOOD, G.D.** 2003. Differentiating between direct (physiological) and food-chain mediated (bioenergetic) effects on fish in metal impacted lakes. *Human and Ecological Risk Assessment* 9: 1-5.
- SHERWOOD, G.D.**, and Rose, G.A. 2003. Influence of swimming form on otolith  $\delta^{13}\text{C}$  in marine fish. *Marine Ecology Progress Series* 258: 283-289.
- Kövecses, J., **SHERWOOD, G.D.**, and Rasmussen, J.B. 2002. The role of ontogenetic diet shifts in metal exposure to yellow perch (*Perca flavescens*). *SETAC Globe* 3(4): 42-44.
- SHERWOOD, G.D.** 2002. Fish energetics in polluted ecosystems. Ph.D. Thesis, McGill University, Montréal, Canada. 169 pp.
- SHERWOOD, G.D.**, Pazzia, I., Moeser, A., Hontela, A., and Rasmussen, J.B. 2002. Shifting gears: enzymatic evidence for the energetic advantage of switching diet in wild-living fish. *Canadian Journal of Fisheries and Aquatic Sciences* 59: 229-241.
- SHERWOOD, G.D.**, Kövecses, J., Hontela, A., and Rasmussen, J.B. 2002. Simplified food webs lead to energetic bottlenecks in polluted lakes. *Canadian Journal of Fisheries and Aquatic Sciences* 59: 1-5.
- SHERWOOD, G.D.**, Rasmussen, J.B., Rowan, D.J., Brodeur, J., and Hontela, A. 2000. Bioenergetic costs of heavy metal exposure in yellow perch (*Perca flavescens*): in situ estimates with a radiotracer ( $^{137}\text{Cs}$ ) technique. *Canadian Journal of Fisheries and Aquatic Sciences* 57: 441-550.
- Hontela, A., Leblond, V., **SHERWOOD, G.D.**, and Rasmussen, J.B., 1999. Effects of xenobiotics on adrenal steroidogenesis and growth in fish. *Comparative Biochemistry & Physiology Part A, Molecular & Integrative Physiology* 124:
- Brodeur, J.C., **SHERWOOD, G.D.**, Rasmussen, J.B., and Hontela, A. 1997. Impaired cortisol secretion in yellow perch (*Perca flavescens*) from lakes contaminated by heavy metals: In vivo and in vitro assessment. *Canadian Journal of Fisheries and Aquatic Sciences* 54: 2752-2758.

**TECHNICAL REPORTS:**

- SHERWOOD, G.D.**, Baukus, A., and Chawarski, J. 2017. Continuation of the Maine inshore acoustic herring survey: Collaborative research to support the Maine lobster industry. Final Report to the 2014 Saltonstall-Kennedy Grant Program. 68 pp.
- SHERWOOD, G.D.**, Kerr, L.A., Gurshin, C.W.D., Howell, W.H. and Goethel, D. 2017. Synoptic acoustic and trawl survey of winter-spawning cod in Ipswich Bay, western Gulf of Maine. Final report to the Northeast Consortium 2014/2015 NEFMC Groundfish Research Program. 60 pp.

- Grabowski, J.H., **SHERWOOD, G.D.**, and Bank, C. 2014. Using archival tagging and age validation efforts to assess monkfish movement, age structure and growth. Final Report to the 2011 Monkfish Research Set-Aside Program. 56 pp.
- SHERWOOD, G.D.** 2013. Application of broadband sonar technology for fisheries assessment and research. Final Report to the Northeast Consortium. 25 pp.
- SHERWOOD, G.D.** 2013. Video and hook-and-line survey to further knowledge of cusk (*Brosme brosme*) distribution and habitat preferences: a pilot study. Final Report to the Northeast Consortium. 38 pp.
- SHERWOOD, G.D.**, and Grabowski, J.H. 2013. Tagging to assess monkfish movement: additional tagging to assess monkfish (*Lophius americanus*) movements and stock structure in the northeastern United States. Final Report to the 2009 Monkfish Research Set-Aside Program (NOAA). 30 pp.
- Grabowski, J.H., **SHERWOOD, G.D.**, and Bank, C. 2013. Northeast regional monkfish tagging program: additional archival tagging and otolith analyses to assess monkfish movements and age. Final Report to the 2010 Monkfish Research Set-Aside Program. 51 pp.
- Simpson, M.R., **SHERWOOD, G.D.**, Mello, L.G.S., Miri, C.M., and Kulka, D.W. 2013. Feeding habits and trophic niche differentiation in three species of wolffish (*Anarhichas sp.*) inhabiting Newfoundland and Labrador waters. *DFO Can. Sci. Advis. Sec. Res. Doc.* 2013/056.
- SHERWOOD, G.D.**, Bank, C., and Grabowski, J.H. 2012. A weight-of-evidence approach for validating age and growth in US monkfish (*Lophius americanus*). Final Report to the 2009 Monkfish Research Set-Aside Program. 58 pp.
- SHERWOOD, G.D.**, Wilson, K., and Willis, T. 2011. Penobscot river restoration: monitoring marine-freshwater food web linkages using stable isotopes, phase one sample collection and trial analysis. Final Report to the Nature Conservancy. 19 pp.
- SHERWOOD, G.D.**, and Grabowski, J.H. 2010. Exploring the potential inadvertent effects of Gulf of Maine and Georges Bank area closures on cod life-history variation. Final Report to the Northeast Consortium. 51 pp.
- SHERWOOD, G.D.** 2009. Is closed Area I serving as a refuge for Haddock? A study of fine-scale behavior through the use of ultrasonic tagging techniques. Final Report to the Northeast Consortium. 100 pp.
- SHERWOOD, G.D.**, Grabowski, J.H., and Tallack, M.S. 2009. A tagging study to assess monkfish (*Lophius americanus*) movements and stock structure in the northeastern United States. Final Report to the 2007 Monkfish Research Set-Aside Program (NOAA). 28 pp.
- SHERWOOD, G.D.**, and J.H. Grabowski. 2008. Diet and habitat shifts in New England (USA) monkfish (*Lophius americanus*): insights from stable isotopes and implications for fisheries assessments. Final Report to 2006 Monkfish Research Set-Aside Program (NOAA). 31 pp.
- SHERWOOD, G.D.** 2007. Stable Isotope Characterization of Feeding Mode Shifts in Gulf of Maine Herring (*Clupea harengus*), Relation to Condition, and Application to Deciphering 40-Year Trends in Recruitment. Final Report to Curtis and Edith Munson Foundation. 45 pp.

**PUBLISHED ABSTRACTS, PRESENTATIONS AND INVITED LECTURES:**

**Sherwood, G.D.**, Baukus, A., and Chawarski, J. Collaborative acoustic survey of spawning herring in nearshore Maine waters: Influence of temperature on biomass estimates. 148<sup>th</sup> Annual Meeting of the American Fisheries Society. Atlantic City NJ, Aug 20-24, 2018 (oral).

**Sherwood, G.D.**, Bank, C., Grabowski, J.H., and Platz, T. Monkfish research set-aside collaborative tagging program. 148<sup>th</sup> Annual Meeting of the American Fisheries Society. Atlantic City NJ, Aug 20-24, 2018 (oral).

**Sherwood, G.D.** What does the future hold for Gulf of Maine cod? Shoals Marine Laboratory, invited lecture to Sustainable Fisheries class. Isles of Shoals, June 14, 2018.

**Sherwood, G.D.**, Grabowski, J.H., McMahan, M., Wilkinson, E., Yund, P., Brady, D., Cowan, D. Lobster-predator interactions in Maine: evidence for the importance of behavior and predator identity. 11<sup>th</sup> International Conference and Workshop on Lobster Biology and Management. Portland ME, June 4-9, 2017 (oral).

**Sherwood, G.D.** There and back: The long road to recovery for Newfoundland cod and lessons for New England. The Atlantic International Chapter of the AFS, UNH Student Subunit. Durham NH, March 10, 2016 (oral, invited).

**Sherwood, G.D.** Climate change and closed area management in the northeast region. MPA Federal Advisory Committee Meeting. Schoodic Point ME, May 26, 2016 (oral, invited).

Conroy, C.W., Grabowski, J.H., and **SHERWOOD, G.D.** The consistent behaviors of Atlantic cod morphotypes within the Gulf of Maine. 145<sup>th</sup> Annual Meeting of the American Fisheries Society. Portland OR, Aug 16-20, 2015 (oral).

**SHERWOOD, G.D.**, and Grabowski, J.H. A comparison of cod life-history parameters inside and outside of four year-round groundfish closed areas in New England, USA. Transboundary Resource Assessment Committee (TRAC) Meeting. St. Andrew's NB, July 6-7, 2015 (oral, invited).

**Sherwood, G.D.** Potential drivers and consequences of cod recovery in the northwest Atlantic. Shoals Marine Laboratory, invited lecture to Sustainable Fisheries class. Isles of Shoals, June 24, 2015.

**SHERWOOD, G.D.**, Grabowski, J.H., Jekielek, P., and Wahle, R. The influence of diet on the stable carbon ( $\delta^{13}\text{C}$ ) and nitrogen ( $\delta^{15}\text{N}$ ) isotope composition of muscle tissue in American lobster (*Homarus americanus*). 44<sup>th</sup> Annual Benthic Ecology Meeting. Quebec QC, Mar 4-7, 2015 (oral).

**SHERWOOD, G.D.** Resiliency in fisheries: why ecology matters. GMRI Science Café. Portland ME, Nov 18, 2014 (oral, invited).

**SHERWOOD, G.D.**, Brown, C., Bank, C., and Grabowski, J.H. Tagging and otolith microchemistry evidence for non-linear growth in New England monkfish (*Lophius americanus*). 144<sup>th</sup> Annual Meeting of the American Fisheries Society. Quebec QC, Aug 17-21, 2014 (oral).

Wurtzell, K., **SHERWOOD, G.D.**, Baukus, A., Brown, C., and Jech, M.J. Use of commercial fishing vessels for surveying herring in the Gulf of Maine. ICES Working Group on Fisheries, Acoustics, Science and Technology (WGFAST). New Bedford MA, May 5-7, 2014 (oral).

**SHERWOOD, G.D.** What can we learn about fish from simple photographs? Fishermen's Forum, Symposium on "The Secret Lives of Groundfish". Rockland ME, Mar 1, 2014 (oral and panel, invited).

**SHERWOOD, G.D.** Potential drivers and consequences of cod recovery in the northwest Atlantic. Bates College Biology Seminar Series. Lewiston ME, Jan 30, 2014 (oral, invited).

**SHERWOOD, G.D.**, and Grabowski, J.H. The ins and outs of closed area management for New England cod. ICES Gadoid Symposium: the ecology and management of rebuilding. St. Andrew's NB, Oct 15-18, 2013 (oral).

**SHERWOOD, G.D.** Evaluating closed areas and habitat protection measures. A climate of Change: Climate Change and New England Fisheries Workshop. Portland ME, July 31-Aug 1, 2013 (oral and panel, invited).

Kenworthy, M., Fodrie, J., Grabowski, J., Layman, C., and **SHERWOOD, G.D.** Fine-scale habitat utilization of red drum in a structurally complex intertidal ecosystem. 42<sup>nd</sup> Annual Benthic Ecology Meeting. Savannah GA, Mar 20-23, 2013 (oral).

McMahan, M., **SHERWOOD, G.D.**, Grabowski, J.H., Chen, Y., and Cowan, D.C. Growth of juvenile lobster, *Homarus americanus*, in a changing environment. 42<sup>nd</sup> Annual Benthic Ecology Meeting. Savannah GA, Mar 20-23, 2013 (oral).

**SHERWOOD, G.D.**, and Grabowski, J.H. The ins and outs of closed area management for New England cod. 42<sup>nd</sup> Annual Benthic Ecology Meeting. Savannah GA, Mar 20-23, 2013 (oral).

**SHERWOOD, G.D.** Foodweb interactions and lessons from Newfoundland. Fishermen's Forum, Symposium on "Our Changing Ocean: What Factors May be Inhibiting Groundfish Recovery?" Rockland ME, Mar 1, 2013 (oral and panel, invited).

Wurtzell, K., **SHERWOOD, G.D.**, Baukus, A., and Brown, C. Collaborating with the lobster industry to assess bait availability in inshore Maine waters. The American Lobster in a Changing Ecosystem: a US-Canada Science Symposium. Portland ME, Nov 27-30, 2012 (poster).

**SHERWOOD, G.D.**, and Grabowski, J.H. Impact of Gulf of Maine and Georges Bank closed areas on cod life-history variation. Closed Area Technical Committee Meeting. Braintree MA, Oct 29, 2012 (oral, invited).

Wurtzell, K., **SHERWOOD, G.D.**, Baukus, A., and Brown, C. Collaborating with the lobster industry to assess bait availability in inshore Maine waters. CINAR Annual Review Meeting. Woods Hole MA, Sept 6-7, 2012 (poster).

**SHERWOOD, G.D.**, Grabowski, J.H., Brown, C., Eayrs, S., and Bank, C. An overview of monkfish RSA research at GMRI: 2006-2012. Annual Monkfish RSA Participants Meeting, New Bedford MA, June 25, 2012.

**SHERWOOD, G.D.**, and Grabowski, J.H. Morphometric analysis of Gulf of Maine and Georges Bank cod. Cod Stock Structure Workshop, Portsmouth NH, June 12-14, 2012.

**SHERWOOD, G.D.** The trouble with cod: where to go from here? GMRI Visionary Donors Dinner Presentation, GMRI, April 26, 2012.

**SHERWOOD, G.D.** Potential Drivers and Consequences of Cod Recovery in the Northwest Atlantic. Biology Seminar Series, University of Minnesota – Duluth, Duluth MN, April 12-14, 2012.

Wilkinson, E.B., **SHERWOOD, G.D.**, Yund, P.O., and Grabowski, J.H. Influence of predator foraging modality on the strength of anti-predator responses in lobsters. 41<sup>st</sup> Benthic Ecology Meeting, Norfolk VA, March 22-24, 2012.

**SHERWOOD, G.D.**, and Grabowski, J.H. Video and hook-and-line survey to further knowledge of cusk distribution and habitat preferences. Cusk Workshop, Portland ME, December 1, 2011.

**SHERWOOD, G.D.**, and Grabowski, J.H. The downeast cod problem and how to (begin to) deal with it. Workshop on Reconciling Spatial Scales and Stock Structures for Fisheries Science and Management, Portsmouth NH, June 27, 2011.

**SHERWOOD, G.D.**, and Wilkinson, E. Why are there so many lobsters in the Gulf of Maine? GMRI – Casco Bay Anglers event, April 5, 2011.

**SHERWOOD, G.D.**, Grabowski, J.H., Eayrs, S., Brown, C., and Bank, C. An overview of Monkfish RSA science at GMRI: 2006-2011. Monkfish Committee Meeting (NEFMC), Portsmouth NH, March 29, 2011.

McMahan, M.D., **SHERWOOD, G.D.**, Grabowski, J.H., and Cowan, D.F. Using acoustic telemetry to observe the effects of groundfish predators on the movement behavior of American lobster, *Homarus americanus*. Benthic Ecology Meeting, Mobile AL, March 16-20, 2011.

**SHERWOOD, G.D.**, Grabowski, J.H., Eayrs, S., Brown, C., and Bank, C. An overview of Monkfish RSA science at GMRI: 2006-2011. Monkfish RSA Participants Meeting, New Bedford MA, March 1, 2011.

**SHERWOOD, G.D.** Fine-scale population structure and type differences in Gulf of Maine cod. University of New England Biology Seminar Series, Biddeford ME, February 14, 2011.

**SHERWOOD, G.D.**, Wilson, K., Willis, T., and Grabowski, J.H. Monitoring restoration success: Assessing marine-freshwater food web linkages using stable isotopes. The Nature Conservancy Annual Participants Meeting, Brunswick ME, October 28, 2010.

**SHERWOOD, G.D.** Comments on global significance of “Connectivity mechanisms in a population complex of coastal cod” by Sigurd Heiberg Espeland. Ph.D. Thesis Defense. University of Oslo, Oslo, Norway. May 7, 2010.

**SHERWOOD, G.D.** Cod: an uncertain future for the fish that made New England. Bath Garden Club. Bath, ME. March 23, 2010 (invited).

**SHERWOOD, G.D.**, and Grabowski, J.H. Exploring the life-history basis of color variation in Gulf of Maine cod. Benthic Ecology Meeting. Wilmington, NC. March 10-13, 2010.



**SHERWOOD, G.D.** Trophic cascades and the case of Newfoundland cod: the capelin paradox. NMFS Salmon working group panel, Portland, ME. January 27, 2010 (invited).

**SHERWOOD, G.D.** Cod: an uncertain future for the fish that made New England. Yarmouth Historical Society. Yarmouth, ME. October 26, 2009 (invited).

**SHERWOOD, G.D.**, Grabowski, J.H., Windle, M. J. S., and Rose, G. A. Potential ecotypes in cod: implications for management and recovery. Gulf of Maine Symposium. St. Andrew's, NB, Canada. October 4-9, 2009 (invited).

**SHERWOOD, G.D.**, and Grabowski, J.H. Monitoring the impact of closed areas on groundfish ecology in the Gulf of Maine and Georges Bank. Gulf of Maine Symposium. St. Andrew's, NB, Canada. October 4-9, 2009.

**SHERWOOD, G.D.**, Windle, M.J.S., Grabowski, J.H., and Rose, G.A. Could ecotype variation have stacked the deck for harvest selection in Newfoundland cod? 2009 ICES Annual Science Conference. Berlin, Germany. September 20-25, 2009.

**SHERWOOD, G.D.** Where have all the big fish gone? Exploring the role of changing food webs with examples from freshwater and marine systems. Marine Environmental Research Institute Lecture Series, Blue Hill, ME. May 28, 2009 (invited).

**SHERWOOD, G.D.** Can foodweb/ecotype interactions help to explain the state of cod in the northwest Atlantic? USM Biology Seminar Series. Portland, ME. March 13, 2009 (invited).

**SHERWOOD, G.D.** Potential ecotypes in cod: implications for management and recovery. Northeast Regional Cod Tagging Program Industry – Science Workshop. Portland, ME. February 12, 2009 (invited).

**SHERWOOD, G.D.** Can foodweb/ecotype interactions help to explain the state of cod in the northwest Atlantic? UMaine School of Marine Sciences Seminar Series. Orono, ME. October 31, 2008 (invited).

**SHERWOOD, G.D.**, and J.H. Grabowski. Exploring the ecological significance of color variation in Atlantic cod. 138<sup>th</sup> Annual Meeting of the American Fisheries Society. Ottawa ON, Canada. August 18-22, 2008.

**SHERWOOD, G.D.**, J.B. Rasmussen, and G.A. Rose. Size-scaling anomalies in predatory fish as indicators of uneven prey-size spectra in aquatic foodwebs. American Society of Limnology and Oceanography 2008 Summer Meeting. St. John's NL, Canada. June 9-13, 2008.

**SHERWOOD, G.D.** Can ecotype/foodweb interactions explain the state of cod in the northwest Atlantic? Canadian Society of Zoologists Annual Meeting. Halifax NS, Canada. May 19-23, 2008 (invited)

**SHERWOOD, G.D.**, and J.H. Grabowski. Exploring the ecological significance of color variation in cod. Bowdoin Marine Science Symposium. Brunswick ME. May 2-3, 2008.

**SHERWOOD, G.D.** Automated acoustic monitoring of haddock in closed area I, Georges Bank. Northeast Consortium 7<sup>th</sup> Annual Project Participant's Meeting. Portsmouth NH. December 6, 2007.

**SHERWOOD, G.D.** Automated acoustic monitoring of haddock in closed area I, Georges Bank. Haddock 2007: International Symposium on Haddock Conservation, Harvesting and Management. Portsmouth NH. October 25-26, 2007 (invited).

**SHERWOOD, G.D.**, and J. H Grabowski. Diet and habitat shifts in New England (USA) monkfish (*Lophius americanus*): insights from stable isotopes and implications for fisheries assessments. 2007 ICES Annual Science Conference. Helsinki, Finland. September 17-21, 2007.

**SHERWOOD, G.D.** Cod: an uncertain future for the fish that made New England. GMRI Seminar Series. Portland ME. July 12, 2007.

**SHERWOOD, G.D.** The monkfish RSA program from a researchers' perspective. 2006 Monkfish RSA Participants Workshop. Portland ME. June 26, 2007 (invited).

**SHERWOOD, G.D.**, and J.H. Grabowski. Cod feeding ecology and possible "morphotypes" in the northwest Atlantic. Fishermens Forum. Rockland ME. March 3, 2007 (invited).

**SHERWOOD, G.D.** Cod: an uncertain future for the fish that made New England. Piper Shores Retirement Community. Scarborough ME. February 15, 2007 (invited).

**SHERWOOD, G.D.**, J.B. Rasmussen, and G.A. Rose. Size-scaling anomalies in predatory fish as indicators of uneven prey size spectra in aquatic food webs. Canadian Conference for Fisheries Research. Montreal QC, Canada. January 4, 2007.

**SHERWOOD, G.D.** Trophic cascades and the case of Newfoundland cod: the capelin paradox. CAFE Gulf of Maine 2006 Workshop. Portland ME. November 7, 2006 (invited).

**SHERWOOD, G.D.** The bigger the bait... the importance of high prey-size diversity to growing fish. USM Biology Lecture Series. Portland ME. October 27, 2006 (invited).

**TEACHING EXPERIENCE:**

2004	Instructor, Fisheries Ecology (Memorial University of Newfoundland)
1999-2000	Teaching assistant for Ecology/Behaviour Field Course (McGill University)
1999	Teaching assistant for course in Introduction to Ecology (McGill University)
1996-1997	Teaching assistant for course in Methods in Biology of Organisms (McGill University)
1995-1997	Teaching assistant/lab instructor for course in Ecology (McGill University)

**GRADUATE STUDENTS SUPERVISED:**

2009-2012	Marissa McMahon. " <i>Behavioral, Ecological and Fishery Related Impacts on the Growth of Juvenile Lobsters</i> " M.Sc. Thesis. Co-Supervised with J. H. Grabowski, D. Cowan and Y. Chen. University of Maine.
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- 2011-2013 Erin Wilkinson. “*Consumptive and non-consumptive effects of predatory fishes on lobster in southern Maine*” M.Sc. Thesis. Co-Supervised with J. H Grabowski, and P. Yund. University of New England.
- 2012-2014 Katie Wurtzell. “*Atlantic herring (Clupea harengus) spawning dynamics in the Gulf of Maine as inferred by acoustic methods*” M.Sc. Thesis. Co-Supervised with A. J. Pershing, J. M. Jech, and Y. Chen. University of Maine.
- 2016-2018 Julian Chawarski. “Age structure response of principal groundfish species to marine protected areas in New England” M.Sc. Thesis. Co-Supervised with L.A. Kerr, and G. Zydlewski. University of Maine.

**OTHER GRADUATE STUDENTS (COMMITTEE MEMBER):**

- 2014-2016 James Becker, M.Sc. University of Maine (primary advisor: Y. Chen).
- 2013-2017 Marissa McMahan, Ph.D. Northeastern University (primary advisor: J. H. Grabowski).
- 2012-2016 Chris Conroy, Ph.D. Northeastern University (primary advisor: J. H. Grabowski).
- 2012-2014 Mitchell Jones. M.Sc. University of Vermont (primary advisor: J. Stockwell).
- 2012-2014 Mike Kersula. M.Sc. University of Maine (primary advisor: Y. Chen).

**REVIEWER FOR FOLLOWING JOURNALS:**

- *PLoS One*
- *Canadian Journal of Fisheries and Aquatic Sciences*
- *Marine Ecology Progress Series*
- *ICES Journal of Marine Science*
- *Estuarine, Coastal and Shelf Science*
- *Fisheries Oceanography*
- *Marine Environmental Research*
- *Ecological Applications*
- *Journal of Animal Ecology*
- *Ecotoxicology and Environmental Safety*
- *Canadian Journal of Zoology*
- *Estuaries and Coasts*
- *Wetlands*
- *Oceanologia*
- *Marine & Freshwater Research*
- *Fisheries Research*
- *Transactions of the American Fisheries Society*

**FUNDING HISTORY:**

- 2018-2021 **G. D. Sherwood**, and A. P. Pershing. REU Site: Integrated studies in a rapidly warming fishery ecosystem. NSF (\$227,735).
- 2015-2018 **G. D. SHERWOOD**, and L. A. Kerr. Do closed areas promote healthy age structures in New England groundfish? 2015 Saltonstall-Kennedy Grants Program (NOAA) (\$236,000).
- 2015-2018 **G. D. SHERWOOD**, A. Baukus, C. Brown. Maine inshore acoustic survey for northern shrimp. 2015 Saltonstall-Kennedy Grants Program (NOAA) (\$360,000).
- 2015-2016 **G. D. SHERWOOD**, L. A. Kerr, C. W. D. Gurshin, W. H. Howell, and D. T. Goethel. Synoptic acoustic and trawl survey of winter-spawning cod in Ipswich Bay, western Gulf of Maine. Northeast Consortium (\$156,000).
- 2014-2015 **G. D. SHERWOOD**, A. Baukus, and C. Brown. Continuation of the Maine inshore acoustic herring survey. 2014 Saltonstall-Kennedy Grants Program (NOAA) (\$385,000).
- 2014-2017 L. A. Kerr, **G. D. SHERWOOD**, A. Kovach, S. X. Cadrin, D. Zemeckis. Ecological diversity of Atlantic cod in the Gulf of Maine and its role in resiliency of a fishery. 2014 Saltonstall-Kennedy Grants Program (NOAA) (\$332,000).
- 2014-2016 C. Bank, J. H. Grabowski, and **G. D. SHERWOOD**. Archival tagging and age validation in the mid-Atlantic. 2014 Monkfish Research Set-Aside Program (NOAA) (\$17,000).
- 2014-2016 A. Allyn, A. McNight, I. Stenhouse, J. Runge, and **G. D. SHERWOOD**. The Gulf of Maine coastal ecosystem survey: mapping biological hotspots. U.S. Fish and Wildlife Service, State Wildlife Grants Program (\$90,000).
- 2014-2024 **G. D. SHERWOOD**, W. Golet, L. Kerr, K. Mills, A. Baukus, and Z. Whitener. Casco Bay Aquatic System Survey (CBASS). Anonymous donor.
- 2013-2014 Golet, W., M. Lutcavage, and **G. D. SHERWOOD**. Biological sampling to determine age, growth, and reproductive profiles of Atlantic Bluefin tuna in the NW Atlantic. 2013 Bluefin Tuna Research Program (NOAA) (\$13,000).
- 2013-2014 C. Bank, J. H. Grabowski, and **G. D. SHERWOOD**. Archival tagging and age validation efforts to assess monkfish movement, age structure, and growth in the Gulf of Maine. 2013 Monkfish Research Set-Aside Program (NOAA) (\$14,000).
- 2012-2013 **G. D. SHERWOOD**, A. Baukus, and C. Brown. AquaVentus I. Department of Energy (\$67,000).
- 2012-2013 C. Bank, J. H. Grabowski, and **G. D. SHERWOOD**. Continuing archival tagging and age validation efforts to assess monkfish movement, age structure, and

- growth in the Gulf of Maine. 2012 Monkfish Research Set-Aside Program (NOAA) (\$15,000).
- 2012-2013 W. Golet, M. Lutcavage, and **G. D. SHERWOOD**. Biological sampling to determine age, growth, and reproductive profiles of Atlantic Bluefin tuna in the NW Atlantic. 2012 Bluefin Tuna Research Program (NOAA) (\$13,000).
- 2012-2017 **G. D. SHERWOOD**. Community-based research to support the Maine lobster industry. Maine Technology Asset Fund (MTAF) (\$532,000).
- 2011-2013 **G. D. SHERWOOD**. Application of broadband sonar technology for fisheries assessments and research. Northeast Consortium (\$62,000).
- 2011-2013 **G. D. SHERWOOD**, A. Baukas, and C. Brown. Inshore Gulf of Maine herring acoustic survey. Cooperative Institute for the North Atlantic Region (CINAR) (\$400,000).
- 2011-2013 A. J. Pershing, **G. D. Sherwood**, and W. J. Golet. Body Size and Resiliency: Are Bigger Fish Better? The Lenfest Foundation (\$29,000).
- 2011-2013 J. H. Grabowski, and **G. D. Sherwood**. Using Archival Tagging and Age Validation Efforts to Assess Monkfish Movement, Age Structure, and Growth. 2011 Monkfish Research Set-Aside Program (NOAA) (\$183,000).
- 2011-2012 **G. D. Sherwood** and J. H. Grabowski. Video and Hook-and-Line Survey to Further Knowledge of Cusk (*Brosme brosme*) Distribution and Habitat Preferences. Northeast Consortium (\$35,000).
- 2011-2012 W. Golet, M. Lutcavage, and **G. D. SHERWOOD**. Biological sampling program to determine age, growth, and reproductive profiles for Atlantic Bluefin tuna in the NW Atlantic. 2011 Bluefin Tuna Research Program (NOAA) (\$13,000).
- 2010-2011 **G. D. SHERWOOD**, J. H. Grabowski, K. A. Wilson, and T. Willis. Penobscot River restoration: monitoring marine-freshwater food web linkages using stable isotopes. 2009 American Recovery and Reinvestment Act Funding subaward through Penobscot River Restoration Trust (\$55,000).
- 2010-2012 J. H. Grabowski, and **G. D. SHERWOOD**. Additional archival tagging and otolith analyses to assess monkfish movements and age. 2010 Monkfish Research Set-Aside Program (NOAA) (\$156,000).
- 2009-2010 **G. D. SHERWOOD**, J. H. Grabowski, K. A. Wilson, and T. Willis. Penobscot River restoration: monitoring marine-freshwater food web linkages using stable isotopes. The Nature Conservancy (\$35,000).
- 2009-2011 J. H. Grabowski, and **G. D. SHERWOOD**. Additional tagging to assess monkfish (*Lophius americanus*) movements and stock structure in the northeastern United States. 2009 Monkfish Research Set Aside Program (NOAA) (\$113,000).

- 2009-2011 **G. D. SHERWOOD**, J. H. Grabowski, and C. Bank. A weight-of-evidence approach for validating age and growth in US monkfish (*Lophius americanus*) stocks. 2009 Monkfish Research Set Aside Program (NOAA) (\$162,000).
- 2008-2009 J. D. Stockwell, J. Runge, A. J Pershing, and **G. D SHERWOOD**. Can bottom-up effects influence energetic condition of Atlantic herring in the Gulf of Maine? UNH Large Pelagics Research Center Extramural Grants Program (\$142,000).
- 2008-2010 J. H. Grabowski, and **G. D. SHERWOOD**. Movements, growth, and habitat use of monkfish, *Lophius americanus*, based on archival tagging and otolith elemental analyses. 2008 Monkfish Research Set Aside Program (NOAA) (\$163,000).
- 2008-2010 J. H. Grabowski, **G. D. SHERWOOD**, and A. Richards. Movements, growth, and habitat use of monkfish, *Lophius americanus*, based on archival tagging and otolith elemental analyses II. Northeast Consortium (\$55,000).
- 2007-2012 D. Holland, J. H. Grabowski, A. Lishness, **G. D. SHERWOOD**, A. J. Pershing, Y. Chen, J. Runge, G. E. Herrera, and L. S. Incze. Collaborative Research: Direct and indirect coupling of fisheries through economic, regulatory, environmental and ecological linkages. National Science Foundation – Coupled Human & Natural Systems (\$872,000).
- 2007-2009 **G. D. SHERWOOD**, and J. H. Grabowski. Exploring the potential inadvertent effects of Gulf of Maine and Georges Bank area closures on cod life-history variation. Northeast Consortium (\$274,000).
- 2007-2009 **G. D. SHERWOOD**, S. Tallack, and J. H. Grabowski. A tagging study to assess monkfish (*Lophius americanus*) movements and stock structure in the northeastern United States. 2007 Monkfish Research Set Aside Program (NOAA) (\$185,000).
- 2006-2011 **G. D. SHERWOOD**, J. F. Kocik, G. Wippelhauser, G. B. Zydlewski, K. A. Wilson, T. Willis, and J. H. Grabowski. Coast of Maine Passive Acoustic Sensor System (COM-PASS). Maine Technology Institute-2006 Marine Research Fund (\$85,000).
- 2006-2011 J. H. Grabowski, **G. D. SHERWOOD**, J. Runge, and L. S. Incze. Ecosystem approaches to investigating fisheries in the Gulf of Maine. Maine Technology Institute-2006 Marine Research Fund (\$85,000).
- 2006-2008 **G. D. SHERWOOD**. Is closed area I serving as a refuge for haddock? A study of fine-scale behavior through the use of ultrasonic tagging techniques. Northeast Consortium (\$200,000).

G. D. SHERWOOD, C.V.

- 2006-2007 **G. D. SHERWOOD.** Assessing diet variability and trophic position in Atlantic herring (*Clupea harengus*): a novel stable isotope approach. Curtis and Edith Munson Foundation (\$20,000).
- 2006-2007 **G. D. SHERWOOD,** and J. H. Grabowski. Influence of diet on growth and condition of monkfish (*Lophius americanus*): towards an ecosystem-based understanding of monkfish productivity. 2006 Monkfish Research Set Aside Program (NOAA) (\$72,000).
- 2005 **G. D. SHERWOOD.** Analysis of wolffish (*Anarhichas sp.*) diet. Department of Fisheries and Oceans (St. John's) Wolffish Recovery Team (\$5,000).