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EDUCATION

- 2006 Ph.D. Biology, Northeastern University, Boston, MA
Dissertation: *Physiological Stress and Mortality in an Exploited Elasmobranch*
1996 B.A. Psychology, University of Rochester, Rochester, NY

PROFESSIONAL APPOINTMENTS

Primary

- 2016-present Vice President, Anderson Cabot Center for Ocean Life/Chief Scientist, Fisheries & Habitat Conservation, New England Aquarium

Secondary

- 2015-present Adjunct Associate Professor, Department of Biomedical Sciences, Cummings School of Veterinary Medicine, Tufts University
2013-present Research Faculty, School of the Environment, University of Massachusetts Boston
2012-present Adjunct Assistant Professor, Department of Fisheries Oceanography, School of Marine Science and Technology, University of Massachusetts Dartmouth
2010-present Research Associate Faculty, Department of Marine Sciences, University of New England
2006-present E-Learning instructor, Online and Distance Learning Program, Northeastern University

Past

- 2013-2016 Senior Scientist/Director of Research, John H. Prescott Marine Laboratory, New England Aquarium
2007-2013 Research Scientist, John H. Prescott Marine Laboratory, New England Aquarium
2006-2008 Visiting Faculty/Instructor, Biology Department, Northeastern University
2007-2008 Wild Fisheries Scientist, Conservation Dept., New England Aquarium
2007 Associate Research Scientist, Research Dept., New England Aquarium
2006-2007 Postdoctoral Fellow, Research Dept., New England Aquarium

PRIMARY RESEARCH INTERESTS

Comparative marine fish (primarily elasmobranch) physiology and applied and experimental fisheries biology, physiological ecology and conservation physiology. More specifically: 1) the physiological consequences of exposure to anthropogenic stressors in fishes; 2) the mortality of discarded bycatch in fishing operations; 3) strategies to reduce discard mortality.

PUBLICATIONS (PEER REVIEWED)

(Students—at the time of publication—underlined)

Sulikowski, J.A., Benoit, H.P., Capizzano, C.W., Knotek, R.J., **Mandelman, J.W.**, Platz, T., Rudders, D.B. Evaluating the condition and discard mortality of winter skate, *Leucoraja ocellata*, following capture and handling in the Atlantic monkfish (*Lophius americanus*) sink gillnet fishery. Fisheries Research. In press.

- Lawrence, M. J., Eliason, E. J., Brownscombe, J. W., Gilmour, K. M., **Mandelman, J. W.**, Cooke, S. J. 2017. Influence of supraphysiological cortisol manipulation on predator avoidance behaviours and physiological responses to a predation threat in a wild marine teleost fish. *Integrative Zoology*. In press.
- Knotek, R.J., Rudders, D.B., **Mandelman, J.W.**, Benoit, H.P., Sulikowski, J.A. 2018. The survival of rajids discarded in New England scallop dredge fisheries. *Fisheries Research*. 198:50-62.
- Talwar, B., Brooks, E., **Mandelman, J.**, Grubbs, D. 2017. Stress, post-release mortality, and recovery of commonly discarded deep-sea sharks caught on longlines. *Marine Ecology Progress Series*. 582:147-161.
- Lawrence, M. J., Eliason, E. J., Brownscombe, J. W., Gilmour, K. M., **Mandelman, J. W.**, Cooke, S. J. 2017. An experimental evaluation of the role of the stress axis in mediating predator-prey interactions in wild marine fish. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*. 207:21-29.
- Talwar, B., Bouyoucos, I., Shipley, O., Rummer, J., **Mandelman, J.**, Brooks, E., Grubbs, D. 2017. Validation of a portable, waterproof blood pH analyzer for elasmobranchs. *Conservation Physiology*. 5(1): cox012. doi: 10.1093/conphys/cox012
- Bouyoucos, I.A., Suski, C.D., **Mandelman, J.W.**, Brooks, E.J. 2017. The energetic, physiological, and behavioral response of lemon sharks (*Negaprion brevirostris*) to simulated longline capture. *Comparative Biochemistry and Physiology A: Molecular & Integrative Physiology*. 207:65-72.
- Bouyoucos, I., Suski, C., **Mandelman, J.**, Brooks, E. 2017. Effect of weight and frontal area of external telemetry packages on the kinematics, activity levels, and swimming performance of small-bodied sharks. *Journal of Fish Biology*. doi: 10.1111/jfb.13290
- Bouyoucos, I. A., Montgomery, D. W., Brownscombe, J. W., Cooke, S. J., Suski, C. D., **Mandelman, J. W.**, Brooks, E. J. 2017. Swimming speeds and metabolic rates of semi-captive juvenile lemon sharks (*Negaprion brevirostris*, Poey) estimated with acceleration biologgers. *Journal of Experimental Marine Biology and Ecology* 486C pp. 245-254 doi: 10.1016/j.jembe.2016.10.019
- Dapp, D., Huveneers, C., Walker, T.I., **Mandelman, J.W.**, Kerstetter, D., Reina, R.D. 2017. Using logbook data to determine the immediate mortality of blue sharks (*Prionace glauca*) and tiger sharks (*Galeocerdo cuvier*) caught in the commercial U.S. pelagic longline fishery. *Fishery Bulletin*. 115:27-41. doi: 10.7755/FB.115.1.3
- Barnes, C.J., Butcher, P.A., Macbeth, W.G., **Mandelman, J.W.**, Smith, S.D.A., Peddemors, V.M. 2016. Movements and mortality of tagged and released *Carcharhinus plumbeus* (sandbar shark) and *C. obscurus* (dusky shark) following longline capture off eastern Australia. *Endangered Species Research*. 30:193-208.
- Capizzano, C.W., **Mandelman, J.W.**, Hoffman, W.S., Dean, M.J., Zemeckis, D.R., Benoit, H.P., Kneebone, J., Jones, E. A., Stettner, M.J., Buchan, N.J., Langan, J.A., Sulikowski, J.A. 2016. Estimating and mitigating post-release mortality of Atlantic cod (*Gadus morhua*) in the Gulf of Maine's recreational rod-and-reel fishery. *ICES Journal of Marine Science*. doi:10.1093/icesjms/fsw058.
- McClellan K., **Mandelman J.W.**, Burgess E., Cooke, S.J., Nguyen V.M., and Danylchuk A.J. 2016. Catching sharks: recreational saltwater angler behaviors and attitudes regarding shark encounters and conservation. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 26: 689–702. doi: 10.1002/aqc.2581.
- O'Shea, O.R., **Mandelman, J.W.**, Talwar, B., Brooks, E.J. 2015. Novel observations of an opportunistic predation event by four apex predatory sharks. *Marine and Freshwater Behavior and Physiology*. doi: <http://dx.doi.org/10.1080/10236244.2015.1054097>
- Knotek, R.J., Gill, S.M., Rudders, D.B., **Mandelman, J.W.**, Benoit, H.P., Sulikowski, J.A. 2015. The development of a low cost refrigerated flow-through seawater system for at-sea operation and estimation of post-release mortality. *Fisheries Research*. 170:152-157.

- Butcher, P.A., Peddemores, V.M., **Mandelman, J.W.**, Cullis, B.R.. 2015. At-vessel mortality and blood biochemical status of elasmobranchs caught in an Australian commercial longline fishery. *Global Ecology and Conservation*. 3:878-889.
- Benoît, H.P., Capizzano, C.W., Knotek, R.J., Rudders, D.B., Sulikowski, J.A., Dean, M.J., Hoffman, W.S., Zemeckis, D.R., **Mandelman, J.W.**. 2015. A generalized model for longitudinal short- and long-term mortality data for commercial fishery discards and recreational fishery catch-and-releases. *ICES Journal of Marine Science*, doi:10.1093/icesjms/fsv039.
- Harter, T.S., Morrison, P.R., **Mandelman, J.W.**, Rummer, J.L., Farrell, A.P., Brill, R.W., Brauner, C.J. 2015. Validation of the i-STAT system for the analysis of blood gases and acid-base status in juvenile sandbar shark (*Carcharhinus plumbeus*). *Conservation Physiology*. 3:doi:10.1093/conphys/cov002.
- Stoot, L.J., Cairns, N.A., Cull, F., Taylor, J.J., Jeffrey, J.D., Morin, F., **Mandelman, J.W.**, Clark, T.D., Cooke, S.J. 2014. Use of portable blood physiology point-of-care devices for basic and applied research on vertebrates—a review. *Conservation Physiology*. 2(1): doi: 10.1093/conphys/cou011
- Danylchuk, A.J., Suski, C.D., **Mandelman, J.W.**, Murchie, K., Haak, C., Brooks, A., Cooke, S.J. 2014. Hooking injury, physiological status, and short-term mortality of juvenile lemon sharks (*Negaprion brevirostris*) following catch-and-release recreational angling. *Conservation Physiology*. 2(1): doi: 10.1093/consphys/cot036
- Jordan, L.K., **Mandelman, J.W.**, McComb, D.M., Fordham, S.V., Carlson, J.C., Werner, T.B. 2013. Linking sensory biology and fisheries bycatch reduction in elasmobranch fishes: A review with new directions for research. *Conservation Physiology*. 1: doi: 10.1093/conphys/cot002
- Mandelman, J.W.**, Cicia, A.M., Ingram Jr., G.W., Driggers III, W. B., Coutre, K.M., Sulikowski, J.A. 2013. Short-term post-release mortality of skates (family Rajidae) discarded in a western North Atlantic commercial otter trawl fishery. *Fisheries Research* 139:76–84.
- Taylor, J. K. D., **Mandelman, J. W.**, McLellan, W. A., Moore, M. J., Skomal, G. B., Rotstein, D. S. and Kraus, S. D. 2013. Shark predation on North Atlantic right whales (*Eubalaena glacialis*) in the southeastern United States calving ground. *Marine Mammal Science*. 29:204–212.
- Mandelman, J.W.**, Morrison, R.A., Cavin, J.M., Farrington, M.A. 2012. The blood chemical status of Atlantic cod, *Gadus morhua*, following capture by jig and demersal longline with differential hook removal methods. *Journal of Fish Biology* 81: 1406–1414.
- Skomal, G.B., **Mandelman, J.W.** (equal contribution to authorship). 2012. The physiological response to anthropogenic stressors in marine elasmobranch fishes: a review with a focus on the secondary response. *Comparative Biochemistry and Physiology Part A*. 162: 146–155.
- Sampson, K., Merigo, C., Lagueux, K., Rice, J., Cooper, R., Weber III, E.S., Kass, P., **Mandelman, J.W.**, Innis, C. 2012. Clinical Assessment and Post-Release Monitoring of Eleven Mass Stranded Dolphins on Cape Cod, Massachusetts. *Marine Mammal Science*. 28:E404–E425
- Mandelman, J.W.**, Skomal, G.B. 2012. The physiological stress response in elasmobranch fishes: selected papers from a symposium at the 26th annual meeting of the American Elasmobranch Society. *Comparative Biochemistry and Physiology, Part A*. 162:71–72.
- Cicia, A.M., Schlenker, L.S., Sulikowski, J.A., **Mandelman, J.W.** 2012. Seasonal variations in the physiological stress response to discrete bouts of aerial exposure in the little skate, *Leucoraja erinacea*. *Comparative Biochemistry and Physiology, Part A*. 162:130–138.
- Brooks, E.J., **Mandelman, J.W.**, Sloman, K.A., Liss, S., Danylchuck, A.J., Cooke, S.J., Skomal, G.B., Philipp, D.P., Sims, D.W., Suski, C.D. 2012. The physiological response of the Caribbean reef shark (*Carcharhinus perezi*) to longline capture. *Comparative Biochemistry and Physiology, Part A*. 162:94–100.

- Brooks, E.J., Sloman, K.A., Liss, S., Hassan-Hassanein, L., Danylchuck, A.J., Cooke, S.J., **Mandelman, J.W.**, Skomal, G.B., Sims, D.W., Suski, C.D. 2011. The stress physiology of extended duration tonic immobility in the juvenile lemon shark, *Negaprion brevirostris* (Poey 1868). *Journal of Experimental Marine Biology and Ecology*. 409:351–360.
- Jordan, L., **Mandelman, J.**, Kajiura, S. 2011. Behavioural responses to weak electric fields and a lanthanide metal in two shark species. *Journal of Experimental Marine Biology and Ecology*. 409:345–350.
- Storai, T., Zinzula, L., Repetto, S., Zuffa, M., Morgan, A., and **Mandelman, J.W.** 2011. Bycatch of Large Elasmobranchs in the Traditional Tuna Traps (Tonnare) of Sardinia from 1990 to 2009. *Fisheries Research*. 109: 74–79.
- Gallagher, A.J., Frick, L.H., Bushnell, P.G., Brill, R.W., and **Mandelman, J.W.** 2010. Blood gas, oxygen saturation, pH, and lactate values in elasmobranch blood measured with a commercially available portable clinical analyzer and standard laboratory instruments. *Journal of Aquatic Animal Health*. 22:229–234.
- Innis, C. Davis, D., **Mandelman, J.**, Gibson, P., Charron, K., Schumacher, I., Murphy, W., and Weber III, E.S. 2010. Hematologic values of captive Acadian redfish (*Sebastes fasciatus*). *Journal of Zoo and Wildlife Medicine*. 41:432–437.
- Mandelman, J.W.**, and Farrington, M.A. 2009. The physiological status of the spiny dogfish, *Squalus acanthias*, subsequent to capture by otter-trawl. In: *Biology and management of dogfish sharks*. American Fisheries Society Symposium. Editors: Galluci, McFarlane, Bargmann. Pgs. 219–228.
- Tallack, M.L., and **Mandelman, J.W.** 2009. Do rare earth metals deter spiny dogfish? A feasibility study on the use of mischmetals to reduce the bycatch of *Squalus acanthias* by hook gear in the Gulf of Maine (USA). *ICES Journal of Marine Science*. 66: 315–322.
- Mandelman, J.W.**, and Skomal, G. 2009. Differential sensitivity to capture stress assessed by blood acid-base status in five carcharhinid sharks. *Journal of Comparative Physiology, Part B*. 179 (3): 267–277.
****One of the 10 most frequently cited papers in Journal of Comparative Physiology, Part B in 2012.*
- Mandelman, J.W.**, Cooper, P.W., Werner, T.B and Lageaux, K. 2008. Shark bycatch and depredation in the U.S. Atlantic pelagic longline fishery. *Reviews in Fish Biology and Fisheries*. 18(4): 427–442.
- Gilman, E., Clarke, S., Brothers, N., Alfaro-Shigueto-J., **Mandelman, J.**, Mangel, J., Petersen, S., Piovano, S., Thomson, N., Dalzell, P., Donoso, M., Goren, M., Werner, T. 2008. Shark interactions in pelagic longline fisheries. *Marine Policy*. 32: 1–18.
- Mandelman, J.W.**, and Farrington, M.A. 2007. The physiological status and mortality associated with otter-trawl capture, transport, and captivity in an exploited elasmobranch, *Squalus acanthias*. *ICES Journal of Marine Science*. 64: 122–130.
- Mandelman, J.W.**, and Farrington, M.A. 2007. The estimated short-term discard mortality of a trawled elasmobranch, the spiny dogfish (*Squalus acanthias*). *Fisheries Research*. 83: 238–245.

PUBLICATIONS (NON-PEER REVIEWED)

(Students—at the time of publication—underlined)

- Capizzano, C.W., D.R. Zemeckis, W.S. Hoffman, M.J. Dean, S.X. Cadrin, **Mandelman, J.W.** 2017. Estimating the discard mortality rate and best catch and release guidelines for haddock (*Melanogrammus aeglefinus*) discarded in Gulf of Maine recreational fisheries. Final technical report to NOAA/NMFS Saltonstall-Kennedy Program # NA15NMF4270281.
- Capizzano, C.W., D.R. Zemeckis, W.S. Hoffman, M.J. Dean, S.X. Cadrin, **Mandelman, J.W.** 2016. Determining the post-release mortality rate and “best capture and handling” methods for haddock (*Melanogrammus aeglefinus*) discarded in Gulf of Maine recreational fisheries. Final technical report to NEFMC (via the Northeast Consortium) # FNA10NMF4410008.

- Mandelman, J.W.**, Sulikowski, J.A., Capizzano, C.W., W.S. Hoffman, M.J. Dean, D.R. Zemeckis, M.J. Stettner. 2015. Elucidating post-release mortality and 'best capture and handling' methods in sublegal Atlantic cod discarded in Gulf of Maine recreational hook-and-line fisheries. Final technical report to NOAA/NMFS Bycatch Reduction Engineering Program # NA12NMF4720256.
- Capizzano, C.W., **J.W. Mandelman**, W.S. Hoffman, M.J. Dean, D.R. Zemeckis, H.P. Benoit, M.J. Stettner, J. Kneebone, N.J. Buchan, J.A. Langan, J.A. Sulikowski. Estimating and mitigating post-release mortality of Atlantic cod (*Gadus morhua*) in the Gulf of Maine's recreational rod-and-reel fishery. Technical note. 19 Feb 2015.
- Mandelman, J.**, Capizzano, C., Hoffman, W., Dean, M., Zemeckis, D., Stettner, M., and Sulikowski, J. 2014. Elucidating post-release mortality and "best capture and handling" methods in sublegal Atlantic cod discarded in Gulf of Maine recreational hook-and-line fisheries. NOAA Bycatch Reduction Engineering Program 2013 Annual Report to Congress, 9 pp.
- Capizzano, C.W., **Mandelman, J.W.**, Hoffman, W.S., Dean, M.J., Zemeckis, D.R., Benoit, H.P., Stettner, M.J., Kneebone, J., Buchan, N.J., Langan, J.A., Sulikowski, J.A. 2015. Estimating and mitigating post-release mortality of Atlantic cod (*Gadus morhua*) in the Gulf of Maine's recreational rod-and-reel fishery. Technical note for NEFMC.
- Mandelman, J.W.**, Cicia, A.M., Sulikowski, J.A. 2012. The immediate and short-term post-release mortality of species in the Northwest Atlantic Skate Complex captured by gillnet and otter-trawl. Final Technical Report to NOAA. Saltonstall-Kennedy Grant Program # NA08NMF4270418.
- Cicia, A.M., Schelenker, L., **Mandelman, J.W.**, and Sulikowski, J.A. 2010. Investigating the acute physiological effects of air exposure and the implications on discard survival in skates from the western Gulf of Maine. ICES CM 2010/E:21.
- Mandelman, J.W.** 2009. Behavioral responses to rare-earth metals during feeding events in two taxonomically distinct dogfish species: the effects of hunger and animal density. In: Shark Deterrent and Incidental Capture Workshop. Ed: Y. Swimmer; J.H. Wang; L. McNaughton. NOAA Technical Memorandum. http://www.pifsc.noaa.gov/tech/NOAA_Tech_Memo_PIFSC_16.pdf.
- Gilman, E., Clarke, S., Brothers, N., Alfaro-Shigueto-J., **Mandelman, J.**, Mangel, J., Peterson, S., Piovano, S., Watling, D., Dalzell, P., Donoso, M., Goren, M., Werner, T. 2007. Shark Depredation and unwanted bycatch in pelagic longline fisheries: industry practices and attitudes, and shark avoidance strategies. Western Pacific Regional Fishery Management Council, Honolulu, USA. ISBN: 1-934061-06-9.
- Mandelman, J.W.**, and Farrington, M.A. 2006. Juvenile bycatch and survival assessment of spiny dogfish in a Western Atlantic trawl fishery. Final Technical Report to NOAA. Saltonstall-Kennedy Grant Program # NA03NMF4270126.

MANUSCRIPTS IN REVIEW

- Bouyoucos, I.A., Suski, C.D., **Mandelman, J.W.**, Brooks, E.J. *In situ* swimming behaviors and oxygen consumption rates of juvenile lemon sharks (*Negaprion brevirostris*). In review for Environmental Biology of Fishes.
- Lawrence, M. J., Eliason, E. J., Brownscombe, J. W., Gilmour, K. M., **Mandelman, J. W.**, Gutowsky, L.F.G., Cooke, S. J. Influence of supraphysiological cortisol manipulation on predator avoidance behaviors and physiological responses to a predation threat in a wild marine teleost fish. In review for Integrative Zoology.

SYMPOSIA AND WORKSHOPS

On "Fish and Fisheries Management" panel. Northeast Climate Science Center's Regional Science Meeting, Incorporating Climate Science in the Management of Natural and Cultural Resources in the Midwest and Northeast. May 15-17, 2017, Amherst, MA.

Moderated "Marine Life" panel, Sea to Changing Sea Symposium, Harvard University, October 2016.

Participant: NOAA workshop to develop Fisheries Action Plan for Discard and Release Mortality Science, Seattle, WA, April 2015.

Participant: 2014 Ocean Literacy Summit, New England Ocean Science Education Collaborative, Woods Hole Oceanographic Institution, November 2014.

Participant: ICES Workshop on Methods for Estimating Discard Survival, ICES HQ, Copenhagen, Denmark, 17th-21st February, 2014.

Moderated symposium: "The physiological stress response in elasmobranch fishes": accepted for AES/ASIH annual meeting (July 7-12, 2010) - Providence, RI (USA). Co-Moderator: Dr. Greg Skomal. Proceedings now published in a supplemental issue of *Comparative Biochemistry and Physiology-A* (162a(2):71-156). Funded by the Save our Seas Foundation, Fisheries Conservation Foundation, and American Elasmobranch Society.

Hosted: Shark Deterrent and Incidental Capture Workshop, New England Aquarium, April 2008.

TECHNICAL PRESENTATIONS

(Students—at the time of presentation—underlined)

Capizzano, C., **Mandelman, J.**, Jones, E., Zemeckis, D., Dean, M., Hoffman, W., Benoît, B. Deriving fishery-scale discard mortality estimates and best practices for promoting survival in the Gulf of Maine recreational groundfish fishery. Theme session: Assessing and promoting the survival of released catches and the implications of modified survival rates on aquatic systems. ICES Annual Science Conference 2017, September 18-21, 2017, Fort Lauderdale, FL.

Talwar, B., **Mandelman, J.**, Brooks E., Grubbs, R. Stress, post-release mortality, and recovery of commonly discarded deep-sea sharks caught on longlines. ICES Annual Science Conference 2017, September 18-21, 2017, Fort Lauderdale, FL.

Zemeckis, D., Capizzano, C., **Mandelman, J.**, Jones, E., Benoît, B., Dean, M., Hoffman, W., Kneebone, J., Bochenek, E., Jensen, O. Estimating and mitigating discard mortality in recreational fisheries: case studies from the northeast U.S. Symposium: Recent advances in conservation engineering – the National Bycatch Reduction Engineering Program. American Fisheries Society 2017 Annual Meeting, August 20-24, 2017, Tampa, FL.

Talwar, B., **Mandelman, J.**, Brooks, E., Grubbs, R. Discard mortality of deep-sea sharks. NOAA Seminar Series; July 2017; Silver Spring, MD.

Talwar, B., Brooks E., Bouyoucos, I., Brownscombe, J., Cooke, S., Suski, C., **Mandelman, J.** Comparative behavioral and physiological response to longline capture. American Elasmobranch Society; July 2017; Austin, TX.

Capizzano, C., **Mandelman, J.**, Jones, E., Zemeckis, D., Dean, M., Hoffman, W., Benoît, B. Trade-offs and lessons learned in deriving fishery-scale discard mortality estimates and best catch-and-release guidelines in the Gulf of Maine recreational groundfish fishery. Theme session: Use and Challenges of Catch & Release in Recreational Fisheries. 8th World Recreational Fishing Conference, July 16-20, 2017, Victoria, Canada.

Connor, C., **Mandelman, J.** Tipping the *scalability*: proactive guidelines to enhance the management application of discard mortality studies in recreational fisheries. Theme session: Use and Challenges of Catch & Release in Recreational Fisheries. 8th World Recreational Fishing Conference, July 16-20, 2017, Victoria, Canada.

McCallister, M.P., Sales, M., Smith, A., **Mandelman, J.W.**, Danylchuk, A.J., Ajemian, M.J. Field observations of mating behavior in two species of myliobatid stingrays. American Elasmobranch Society Annual Meeting, July 12-16, 2017, Austin, TX.

Swezey, B.B., Dean, M.J., Benoit, H.P., **Mandelman, J.W.**, Sulikowski, J.A. 2017. Determining post-release mortality for Atlantic cod discarded in the Gulf of Maine lobster fishery. 11th Annual Workshop and Conference on Lobster Biology and Management, June 4-9, 2017, Portland, ME.

- Mandelman, J., Capizzano, C., Zemeckis, D., Dean, M., Hoffman, W., Ribblett, N., Benoît, H., Buchan, N., Sulikowski, J., Cadrin, S.** Determining the post-release mortality rate and best capture and handling methods for haddock discarded in Gulf of Maine recreational fisheries. Presentation to the New England Fishery Management Council Groundfish Plan Development Team. 1 June 2017.
- Mandelman, J., Capizzano, C., Zemeckis, D., Dean, M., Hoffman, W., Ribblett, N., Benoît, H., Buchan, N., Sulikowski, J., Cadrin, S.** Determining the post-release mortality rate and best capture and handling methods for haddock discarded in Gulf of Maine recreational fisheries. Presentation to the New England Fishery Management Council Scientific and Statistical Committee. 25 May 2017.
- Mandelman, J.W.** 2017. Research and Aquaria. Keynote lecture. Regional Aquatic Workshop. May 8-12, 2017. Boston, MA.
- Weissman, A., Mandelman, J., Rudders, D., Sulikowski, J. 2017. Stress and observations of mortality of *Lophius americanus* in the scallop dredge fishery. International Pectinid Workshop. Portland, ME.
- Mandelman, J., Capizzano, C., Zemeckis, D., Dean, M., Hoffman, W., Ribblett, N., Benoît, H., Buchan, N., Sulikowski, J., Cadrin, S.** Determining the post-release mortality rate and best capture and handling methods for haddock discarded in Gulf of Maine recreational fisheries. Presentation to the New England Fishery Management Council Research Steering Committee. 23 March 2017.
- Weissman, A., Mandelman, J., Rudders, D., Sulikowski, J. 2017. Stress and observations of mortality of *Lophius americanus* in the scallop dredge fishery. Southern New England Chapter of the American Fisheries Society. Mystic, CT.
- Swezey, B., Dean, M., Capizzano, C., Benoît, H., Mandelman, J., Langan, J., Sulikowski, J.A. 2017. Determining Post-Release Mortality for Atlantic Cod Discarded in the Gulf of Maine Lobster Fishery, Southern New England Chapter Conference, Mystic, CT.
- Swezey, B.B., Dean, M., Benoît, H., Mandelman, J., Sulikowski, J.A. 2017. Determining Post-Release Mortality for Atlantic Cod Discarded in the Gulf of Maine Lobster Fishery, Canadian Conference for Fisheries Research. Montréal, QC, Canada.
- Smith, A., Mandelman, J., Rudders, D., Sulikowski, J. 2017. Stress and observations of mortality of *Lophius americanus* in the scallop dredge fishery. Canadian Conference for Fisheries Research. Montreal, Canada.
- Capizzano, C.W., Mandelman, J.W., Hoffman, W.S., Dean, M.J., Zemeckis, D.R., Benoit, H.P., Kneebone, J., Jones, E. A., Stettner, M.J., Buchan, N.J., Langan, J.A., Sulikowski, J.A. 2016. The use of acoustic telemetry and conditional reasoning to estimate the discard mortality of Atlantic cod in the Gulf of Maine recreational rod-and-reel fishery. American Fisheries Society 146th Annual Meeting, Aug 21-25, 2016, Kansas City, MO.
- Mandelman, J.W., Zemeckis, D.R., Capizzano, C.W., Dean, M.J., Hoffman, W.S., Ribblett, N., Buchan, N.J., Sulikowski, J.A., Cadrin, S.X.** 2016. A science-industry based partnership to estimate discard mortality and derive best catch-and-release guidelines for haddock in the Gulf of Maine rod-and-reel fishery. American Fisheries Society 146th Annual Meeting, Aug 21-25, 2016, Kansas City, MO.
- Sulikowski, J.A. **Mandelman J.W., Rudders, Capizzano C.W., Knotek R.J., D.B., Benoit, H.P.** 2016. Evaluating the Condition and Discard Mortality of Winter Skate, *Leucoraja ocellata*, Following Capture and Handling in the Sink Gillnet Fishery. Annual Meeting of the American Fisheries Society; Kansas City, MO.
- Swezey, B.B., Dean, M., Benoît, H., Mandelman, J., Sulikowski, J.A. 2016. Determining Post-Release Mortality for Atlantic Cod Discarded in the Gulf of Maine Lobster Fishery. Annual Meeting of the American Fisheries Society. Kansas City, MO.

- Smith, A., Mandelman, J., Rudders, D., Sulikowski, J. Stress and discard mortality of *Lophius americanus* in the scallop dredge fishery. 2016. American Society of Ichthyologists and Herpetologists, July 6-10, 2016, New Orleans, LA.
- Talwar, B., Brooks, E., Gokgoz, A., Mandelman, J., Grubbs, D. Stress physiology and post-release mortality of Cuban dogfish and gulper sharks caught on deep-water longlines. 2016. Joint Meeting of Ichthyologists and Herpetologists, American Elasmobranch Society, July 6-10, New Orleans, LA.
- McClellan, P.K., Danylchuk, A., **Mandelman, J.,** Cooke, S., Nguyen, V., Burgess, E. 2015. Catching Sharks: Recreational Saltwater Angler Behaviors and Attitudes Regarding Shark Encounters and Conservation. American Fisheries Society 145th Annual Meeting. Portland, August 16-20.
- Zemeckis, D., Capizzano, C., Jones, E., Dean, M., Hoffman, W., Ribblett, N., Buchan, N., Cadrin, S.X., and **Mandelman, J.** Utilizing collaborative science-industry partnerships to estimate the post-release mortality rate of haddock discarded in the Gulf of Maine recreational fishery. In Science-industry partnerships: The value of cooperative research in fisheries and marine management theme session at ICES Annual Science Conference, Copenhagen, Denmark, Sept 21-25, 2015.
- Talwar, B., Mandelman, J.W., Brooks, E.J., Gokgoz, A., Grubbs, R.D. 2015. Stress physiology and post-release survivorship of Cuban dogfish and gulper sharks caught on longlines. American Elasmobranch Society Meeting, July 2015, Reno, NV.
- Capizzano, C.W., Mandelman, J.W., Hoffman, W.S., Dean, M.J., Zemeckis, D.R., Benoit, H.P., Kneebone, J., Stettner, M.J., Buchan, N.C., Jones, E.A., Langan, J.A., Sulikowski, J.A. 2015. Estimating and mitigating post-release mortality of Atlantic cod in the Gulf of Maine's recreational rod-and-reel fishery. Northeast Fish & Wildlife Conference. April 19-21, 2015. Newport, RI.
- Knotek, R., Rudders, D., **Mandelman, J.W.,** Sulikowski, J.A., Benoit, H.P., Goldman, K. Discard Mortality of Sea Scallops Following Capture and Handling in the Sea Scallop Dredge Fishery. 2015 Northeast Fish and Wildlife Conference, April 21-25, Newport, RI.
- Sulikowski, J.A., Knotek, R.J., Capizzano, C.W., Mandelman, J.W., Rudders, D.B., Benoit, H.P., Platz, T. 2015. Evaluating the condition and discard mortality of winter skate, *Leucoraja ocellata*, following the capture and handling in the sink gillnet fishery. Northeast Fish & Wildlife Conference. April 19-21, 2015. Newport, RI USA.
- Langan, J.A., Quinlan, J.E., Arciero, M.J., **Mandelman, J.W.,** Dean, M.J., Hoffman, W.S., Zemeckis, D.R., Capizzano, C.W., Stettner, M., and Sulikowski, J.A. Evaluating the management implications of discard mortality in the Gulf of Maine recreational Atlantic Cod (*Gadus morhua*) fishery. American Fisheries Society, Southern New England Chapter, 2015 Winter Meeting, URI
- Mandelman, J.W.** The plight of the discarded: examining methods and trade-offs for estimating (and reducing) release mortality. Presented at the 144th annual meeting of the American Fisheries Society, Quebec City, Canada.
- Knotek, R.J., Rudders, D., **Mandelman, J.W.,** Sulikowski, J. 2014. The survival of rajids discarded in the New England scallop dredge fisheries. Presented at the 144th annual meeting of the American Fisheries Society, Quebec City, Canada.
- Capizzano C.W., Mandelman J.W., Hoffman W.S., Dean M.J., Zemeckis D.R., Kneebone J.R., Stettner M.J., Buchan N.C., Langan J.A., Sulikowski J.A. 2014. Estimating and mitigating post-release mortality of Atlantic cod in the Gulf of Maine's recreational hook-and-line fishery. In: Annual Meeting of the American Fisheries Society; August 17 – August 21; Québec, QC, Canada.
- O'Shea, O.R., **Mandelman, J.W.,** Talwar, B., Brooks, E.J. 2014. Hierarchical predation behaviour in four maine apex predators: Does size matter? In: Joint Meeting of Ichthyologists and Herpetologists; July 30 – August 3; Chattanooga, TN, USA.
- Capizzano C.W., Mandelman J.W., Hoffman W.S., Dean M.J., Zemeckis D.R., Kneebone J.R., Stettner M.J., Langan J.A., Sulikowski J.A. 2014. Estimating and mitigating post-release mortality of Atlantic cod in the Gulf of Maine's recreational hook-and-line fishery. In: Joint Meeting of Ichthyologists and Herpetologists; July 30 – August 3; Chattanooga, TN, USA.

- Langan, J. A., Quinlan, J.E., Arciero, M.J., Mandelman, J.W., Dean, M.J., Hoffman, B.S., Zemeckis, D.R., Capizzano, C.W., Stettner M., Sulikowski, J.A. 2014. Evaluating the Recreational Discard Mortality of Atlantic cod (*Gadus morhua*). Presented at the 6th annual Northeast Undergraduate Research and Development Symposium, University of New England, Biddeford, ME (USA)
- Capizzano, C.W., Mandelman, J.W., Hoffman, W.S., Dean, M.J., Zemeckis, D.R., Kneebone, J.R., Stettner, M., Langan, J.A., Sulikowski, J.A. 2014. Estimating and mitigating post-release mortality of Atlantic cod in the Gulf of Maine's recreational hook-and-line fishery. In: 70th Annual Northeast Fish and Wildlife Conference; Apr 13 – 15; Portland, ME, USA.
- Knotek, R., Rudders, D., Mandelman, J., Sulikowski, J., Benoit, H. 2014. The survival of rajids discarded in the New England scallop dredge fisheries. In: 70th Annual Northeast Fish and Wildlife Conference; Apr 13 – 15; Portland, ME, USA.
- Mandelman, J.W.** 2014. Discard survival evaluations: lessons from the Gulf of Maine (USA). Presented at ICES Workshop on Methods for Estimating Discard Survival, ICES HQ, Copenhagen, Denmark.
- Brooks, E.J., Suski, C.D., Talwar, B.S., LaBella, R.P., Sanford, T.H., Cooke, S.J., **Mandelman, J.W.** 2013. To chill or not to chill: does on-hook behavior modulate the physiological status of longline-caught sharks? Presented at the Joint Meeting of Ichthyologists and Herpetologists, 29th annual meeting of the American Elasmobranch Society. Albuquerque, NM (USA)
- Mandelman, J.W., Jones, E.A., Le Francois, N.R., Gerlek, A.R., Sutter, D.A.H., Prohaska, B.K., Suski, C.D., Sulikowski, J.A., Rotjan, R.D.** 2012. Comparative blood chemical responses to acute and chronic stressors in two congeneric wolffish species (family Anarhichadidae). Paper presented at the 10th annual Congress on the Biology of Fish: symposium entitled: *Stress in fish. From genes to behavior*. Madison, WI (USA).
- Danylchuk, A.J., Suski, C.D., **Mandelman, J.W., Murchie, K., Haak, C., Cooke, S.J.** 2012. Short-term effects of catch-and-release angling on juvenile lemon sharks in the Bahamas. Paper presented at the annual meeting of the American Fisheries Society. Minneapolis, MN (USA).
- Cicia, A.M., Mandelman, J.W., Coutre, K.M., Driggers III, W.B., Ingram Jr., W., Jurek, J., Felch Jr., C., Sulikowski, J.A. 2012. The survival of rajids discarded in western Northwest Atlantic commercial otter-trawling operations. Paper presented Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society, *Conservation Session*). Vancouver, British Columbia, Canada.
- Cicia, A.M., Mandelman, J.W., Frederich, M., Sulikowski, J.A. 2012. Utilizing a combination of physiological and cellular stress markers to assess the impacts of trawl capture in two skate species, the thorny (*Amblyraja radiata*) and little (*Leucoraja erinacea*) skate. Paper presented Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society, *Anatomy, Development, and Physiology Session*). Vancouver, British Columbia, Canada.
- Mandelman, J.W., Cicia, A.M., Jurek, J., Felch Jr., C., Felch Sr., C., Coutre, K.M., Driggers III, W., Ingram Jr., W., Sulikowski, J.A.** 2011. *Skating* in cooperation: evaluating the immediate and short-term post-release mortality of rajids in western North Atlantic commercial otter-trawl operations. Paper presented at the Northeast Regional Collaborative Research Conference. Portsmouth, NH (USA).
- Danylchuk, A.J., Cooke, S.J., **Mandelman, J.W., Suski, C.D.** 2011. Effects of catch-and-release angling on the physiology and behavior of juvenile lemon shark (*Negaprion brevirostris*) in The Bahamas. Paper presented at the World Recreational Fisheries conference in Berlin, Germany.
- Cicia, A.M., Schelenker, L., Sulikowski, J.A., Mandelman, J.W. 2011. The seasonal blood biochemical status of the little skate, *Leucoraja erinacea*, exposed to graded bouts of aerial exposure. Paper presented Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society, *Physiology Session*). Minneapolis, MN (USA).
- Jordan, L.K., **Mandelman, J.W., Kajiura, S.M.** 2011. Behavioral Responses to Weak Electric Fields and a Lanthanide Metal in Two Shark Species. Paper presented Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society, *Conservation Session*). Minneapolis, MN (USA).

- Caruso, C.C., Idjadi, J.A., Langueux, K, **Mandelman, J.W.** 2011. Impacts of Liquid Natural Gas (LNG) Terminals on Native Fish Populations in Massachusetts Bay. Paper presented at the Northeast Undergraduate Research and Development Symposium, Biddeford, ME (USA).
- Monmaney, J., Fennimore, R., Isquith, R., Abboud, S., **Mandelman, J.**, Rotjan, R. 2010. Making waves below the surface: examining acoustic stress in benthic fishes. Paper presented at the Northeast Undergraduate Research and Development Symposium, Biddeford, ME (USA).
- Fennimore, R., Monmaney, J., Isquith, R., Abboud, S., **Mandelman, J.**, Rotjan, R. 2010. Assessing fish stress using a non-invasive water cortisol assay with plasma validation. Paper presented at the Northeast Undergraduate Research and Development Symposium, Biddeford, ME (USA).
- Caruso, C.C., Idjadi, J.A., Langueux, K, **Mandelman, J.W.** 2010. Impacts of Liquid Natural Gas (LNG) Terminals on Native Fish Populations in Massachusetts Bay. Paper presented at OCEANS 10' MTS/IEEE, Seattle, WA (USA)
- Kajiura, S.M., **Mandelman, J.W.** 2010. Lanthanide Metals as Shark Repellants. Presentation at the annual Consortium for Wildlife Bycatch Reduction Meeting. Boston, MA (USA)
- Idjadi, J.A., Caruso, C.C., Lagueux, K., **Mandelman, J.W.** 2010. No Evidence of a fish aggregation (FAD) effect for submerged liquid natural gas structures in Massachusetts Bay. Paper presented at the 91st Annual Western Society of Naturalists Meeting, San Diego, CA (USA).
- Cicia, A.M., Schlenker, L., **Mandelman, J.W.**, and Sulikowski, J.A. 2010. Investigating the acute physiological effects of air exposure and the implication on discard survival in skates from the western Gulf of Maine. Paper presented at the ICES Annual Science Conference. Nantes, France.
- Isquith, R., Abboud, S., Rotjan, R. and **Mandelman, J.W.** 2010. Assessing the synergistic effects of ship noise and structure on cortisol levels in winter flounder, *Pseudopleuronectes americanus*. Pending (2010) Paper presented at the 66th Northeast Fish and Wildlife Conference, Boston, MA (USA).
- Gallagher, A. J., **Mandelman, J.W.**, and Frick, L.H. Examining the precision and efficacy of a portable clinical analyzer when examining selected blood acid-base properties in elasmobranch fishes. Paper presented at the 39th Benthic Ecology Meeting, Wilmington, NC (USA).
- Skomal, G.B., and **Mandelman, J.W.** 2010. Investigations into Physiological Stress in Elasmobranchs: A Historical Perspective. Paper presented in the symposium entitled: Physiological stress response in elasmobranch fishes at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society). Providence, RI (USA).
- Cicia, A.M., Schlenker, L., Sulikowski, J.A., and **Mandelman, J.W.** 2010. The acute physiological effects and recovery from graded periods of air exposure in skates from the western Gulf of Maine. Paper presented in the symposium entitled: Physiological stress response in elasmobranch fishes at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society). Providence, RI (USA).
- Brooks, E., Danylchuk, A., Cooke, S., **Mandelman, J.W.**, Skomal, G.B., Philipp D., Sloman, K., Sims, D., Liss, S., and Suski, C. 2010. The Physiological Consequences of Longline Capture in Caribbean Reef Sharks (*Carcharhinus perezi*). Paper presented in the symposium entitled: Physiological stress response in elasmobranch fishes at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society). Providence, RI (USA).
- Gallagher, A. J., Frick, L.H., Bushnell, P.G., Brill, R.W., and **Mandelman, J.W.** 2010. Blood gas, oxygen saturation, pH, and lactate values in elasmobranch blood measured with an i-STAT® portable clinical analyzer and standard laboratory instruments. Paper presented at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society *Physiology* Session).
- Cicia, A.M., Driggers III, W.B., Hendon, J., Hoffmayer, E.R., **Mandelman, J.W.**, and Sulikowski, J.A. 2009. Investigating the physiological effects of environmental salinity on the distribution of adult female Atlantic sharpnose sharks,

Rhizopriondon terraenovae, in the northern Gulf of Mexico. Paper presented at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society *Physiology* Session). Portland, OR (USA).

Mandelman, J.W., Tlusty M., Stratton, MT., Fisher, T., Tallack, S., Harary, C., and Wernerfelt, N. 2008. The shifting baseline of threshold feeding responses to electropositive metal deterrents in two species of dogfish. Paper presented Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society *Conservation* Session). Montreal, Canada.

Mandelman, J.W., Tlusty M., Stratton, MT., Fisher, T., Tallack, S., Harary, C., and Wernerfelt, N. 2008. The shifting baseline of threshold feeding responses to electropositive metal deterrents in two species of dogfish. Paper presented *Shark Deterrent and Incidental Capture Workshop*, New England Aquarium. Boston, MA (USA).

Mandelman, J.W., and G. Skomal. 2007. Blood acid-base status in longline-caught carcharhinids: links between interspecific differences and observer reported at-vessel mortality. Paper presented at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society *Physiology* Session). St. Louis, Missouri (USA).

Mandelman, J.W., and M.A. Farrington. 2006. The physiological changes induced by otter-trawl capture in the spiny dogfish (*Squalus acanthias*). Paper presented at the 7th annual Congress on the Biology of Fish: symposium entitled- *Fish Capture and Discard: Behavioral and Physiological Aspects*. St. Johns, Newfoundland (Canada).

***awarded best oral presentation**

Mandelman, J.W., and M.A. Farrington. 2005. Mortality, physiological stress, and general resiliency of the spiny dogfish, *Squalus acanthias*, captured by commercial fishing gear. Paper presented at the First International Symposium on the *Management and Biology of Dogfish Sharks*. University of Washington (Washington Dept. of Fish & Wildlife), Seattle, WA (USA).

INVITED SEMINARS AND GUEST LECTURES

- 2017 Panelist: Jaws and Shark Conservation, Center for the Arts in Natick, Natick, MA
- 2017 *Sharks in danger: Silver fins or silver lining?*, lecture for New England Aquarium Lecture Series, New England Aquarium, Boston, MA
- 2015 Talk for the Massachusetts Marine Educators Boston Harbor Educators Conference, Boston, MA
- 2015 Fisheries and bycatch: what is the impact on commercially valuable species in New England, graduate student seminar at University of Massachusetts Boston, School for the Environment
- 2014 *The mortality of discarded fisheries bycatch*, presentation at the 2014 Ocean Literacy Summit (New England Ocean Science Education Collaborative), Woods Hole, MA
- 2014 Introduction for Wendy Benchley, Peter Benchley night, W20, Boston, MA
- 2014 *Assessing the potential of colored fishing ropes to reduce right whale entanglements and solving a cod-undrum: the catch-and-release survival of an iconic New England fish*, presentation to the Bycatch Reduction Engineering Program Committee
- 2014 *Solving a cod-undrum: the catch-and-release survival of an iconic New England fish*, lecture for NMFS, Gloucester, MA
- 2014 *Solving a cod-undrum: the catch-and-release survival of an iconic New England fish*, lecture for New England Aquarium Dive Club, New England Aquarium, Boston, MA
- 2014 *Solving a cod-undrum: the catch-and-release survival of an iconic New England fish*, lecture for New England Aquarium Lecture Series, New England Aquarium, Boston, MA
- 2014 *Shark research confessions: introductions and adventures in the field with New England shark experts*, hosted event for New England Aquarium Lecture Series, New England Aquarium, Boston, MA
- 2014 *Unwanted but not forgotten: the nature and importance of incidental (bycatch) mortality in fisheries*, seminar for School for Marine Science and Technology, University of Massachusetts Dartmouth, Dartmouth, MA
- 2013 *Conservation physiology of sharks, stingrays and skates*, seminar for University of New England, Biddeford, ME
- 2013 *Menacing or being menaced? The New England Aquarium's role in the conservation of imperiled sharks, stingrays & skates*, talk for NEAq Board Meeting, Boston, MA
- 2013 *Conservation Physiology*, lecture for Island School Reunion Event, Eleuthera, The Bahamas
- 2013 *Menacing or being menaced? The biology and conservation of sharks and their relatives*, talk for Mass Audubon, Boston, MA
- 2013 Invited shark talk, Forestdale Elementary School, Malden, MA

- 2013 Invited shark talk, Mozart Elementary School, Boston, MA
- 2013 Invited shark talk, Pine manor College Child Study Center, Boston, MA
- 2013 Filmed coursework content for EdX course for Harvard/MIT on neurobiology of fishes, Boston, MA
- 2012 Invited Lecture for Three Seas Program students, Marine Science Center, Biology Department, Northeastern University
- 2012 Invited talk for school-wide assembly, Beaver Country Day School, Boston, MA
- 2012 Spring Seminar Series: Division of Math and Science, Roger Williams University
- 2011 *Conservation Physiology in Elasmobranch Fishes*, guest lecture for “Deep Sea Biology”, Harvard University, Cambridge, MA
- 2011 Invited Lecture for Three Seas Program students. Marine Science Center, Biology Department, Northeastern University, Boston, MA
- 2011 *The Conservation Physiology of western North Atlantic fishes*, guest lecture for Tufts Veterinary School, Tufts University, Medford, MA
- 2011 *Fishing capture/handling stress & mortality*, guest lecture for “Marine Urban Ecology”, Boston University Marine Program, Boston, MA
- 2011 *Who's Menacing Whom? Human Threats to Sharks, Rays & Skates*, lecture for “University Hour”: Eastern Connecticut State University, Willimantic, CT
- 2011 Invited Lecture for Three Seas Program students. Marine Science Center, Biology Department, Northeastern University.
- 2010 *Fish Out of Water: Examining the Impacts of Fishing Capture and Handling on Sharks, Rays and Skates*, lecture for New England Aquarium Lecture Series, New England Aquarium, Boston, MA
- 2009 *Trash Fish or Getting Trashed: Skates in New England Waters*, lecture for New England Aquarium Lecture Series, New England Aquarium, Boston, MA
- 2009 *Shark bycatch and depredation in longline fisheries: progress and research gaps in reducing shark interactions*, lecture for the Annual meeting for the Consortium for Wildlife Bycatch Reduction, New England Aquarium, Boston, MA
- 2009 *Sharks and capture stress: the extent and consequences of shark by-catch in high seas fisheries*, talk for University of New England seminar series University of New England, Biddeford, ME
- 2009 *Trash Fish or Getting Trashed: Skates in New England Waters*, lecture for NMFS Northeast Regional Office (NERO) Scientific Lecture Series Gloucester, MA
- 2009 Invited Lecture for Three Seas Program students. Marine Science Center, Biology Department, Northeastern University.
- 2009 *Sharks and capture stress: the extent and consequences of shark by-catch in high seas fisheries*, talk for The School for Marine Science and Technology, University of Massachusetts Dartmouth, New Bedford, MA
- 2009 *The physiological stress response in fishes: applied lessons on the effects of human impacts*, talk for Meeting for the New England Branch of the American Association for Laboratory Animal Science, MIT. Cambridge, MA
- 2008 Closing remarks and Q & A following screening of Richard Theiss's *Island of the Great White Shark*, Harvard University Museum of Natural History, Cambridge, MA
- 2008 *Incidental capture of sharks in high seas fisheries*, lecture for Spring Lowell Lecture Series New England Aquarium, Boston, MA
- 2007 *Stressed out fishes: the rigors and consequences of fishing capture*, lecture for Boston University Marine Program (BUMP) Fall Seminar Series Boston University, Boston, MA
- 2007 *“Pain” in the net: capture stress in fish and implications for discarded bycatch*, talk for Gulf of Maine Research Center Spring Seminar Series Portland, ME
- 2007 *Discard survivability in the spiny dogfish (Squalus acanthias)*, talk for New Hampshire Sea Grant Fisheries Roundtable Series: Dogfish Management. Portsmouth, NH
- 2006 *Painful hyperbole for fisheries bycatch: the mountains of stress from capture and the physiological implications for discards*, talk for Biology Department, University of Massachusetts Dartmouth, Dartmouth, MA
- 2006 *Pain in the net: capture stress in fish and implications for discarded bycatch*, talk for Fall Seminar Series Biology Department, Northeastern University Marine Science Center, Nahant, MA
- 2006 *Sharks and mankind: who is the real predator here?* Talk for Spring Lowell Lecture Series New England Aquarium/Simons IMAX Theatre, Boston, MA
- 2005 *Post-release mortality of discarded Squalus acanthias in a NW Atlantic otter-trawl fishery*, talk for Fall Seminar Series Biology Department, Northeastern University Marine Science Center, Nahant, MA
- 2005 Introductory address to screening of *Jaws*, New England Aquarium, Simons IMAX Theatre, Boston, MA

- 2005 *Post-release mortality of discarded Squalus acanthias in a NW Atlantic otter-trawl fishery*, talk for Graduate School of Oceanography's (GSO) Spring Seminar Series at University of Rhode Island (URI), Narragansett, RI
- 2005 *Elasmobranchs and stress: physiological changes and post-release mortality associated with fishing capture*, talk for Northeast Fisheries Science Center's (NOAA/NMFS) Spring Seminar Series, Woods Hole, MA

SCIENTIFIC POSTERS

- Capizzano, C., Mandelman, J., Hoffman, W., Dean, M., Zameckis, D., Kneebone, J., Stettner, M., Langan, J., Sulikowski, J. 2014. Estimating post-release mortality of Gulf of Maine Atlantic cod in recreational hook fishery. American Fisheries Society - Southern New England Chapter's 2014 Winter Meeting, Hadley, MA USA.
- Knotek, R., Rudders, D., Mandelman, J., Benoit, H., Gill, S., Sulikowski, J. 2014. The survival of rajids discarded in the New England scallop dredge fisheries. American Fisheries Society - Southern New England Chapter's 2014 Winter Meeting, Hadley, MA USA.
- Govare, T., Le François, N.R., Mandelman, J.W., Rotjan, R.D., Wong, E. 2011. Evaluation of the stress response of the wolffishes (*Anarhichas minor* & *A. lupus*): acoustic and handling stress. Aquaculture Association of Canada. QC, Canada.
- Eskin, T.L., Rotjan, R.D., Mandelman, J.W. 2011. Does ship noise stress out Atlantic cod? Poster presented at the 40th Benthic Ecology Meeting, Mobile, AL (USA).
- Caruso, C.C., Idjadi, J.A., Langueux, K., Mandelman, J.W. 2010. Impacts of Liquid Natural Gas (LNG) Terminals on Native Fish Populations in Massachusetts Bay. Poster presented at OCEANS 10' MTS/IEEE, Seattle, WA (USA).
- Fennimore, R., Isquith, R., Abboud, S., Rotjan, R. and Mandelman, J.W. 2010. A non-invasive assay for quantifying fish stress hormones. Poster presented at the 66th Northeast Fish and Wildlife Conference, Boston, MA (USA).
- Fennimore, R., Isquith, R., Abboud, S., Rotjan, R. and Mandelman, J.W. 2010. A non-invasive assay for quantifying fish stress hormones. Poster presented at the 39th Benthic Ecology Meeting, Wilmington, NC (USA).
- Isquith, R., Abboud, S., Rotjan, R. and Mandelman, J.W. 2010. Assessing the synergistic effects of ship noise and structure on cortisol levels in winter flounder, *Pseudopleuronectes americanus*. Poster presented at, 39th Benthic Ecology Meeting, Wilmington, NC (USA).
- Ford, T., Kneebone, J., Elder, D., Furey, N., Cicia, A.M., **Mandelman, J.W.**, Sulikowski, J., Tsang, P., Howell, W.H. 2008. Assessment of stress in Atlantic cod (*Gadus Morhua*). Poster presented at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society Poster Symposium). Montreal, Canada.
- Farrington, M.A., and **Mandelman, J.W.** 2006. Characterization of the normal physiological status of western North Atlantic cod (*Gadus morhua*) in the wild. Poster presented at the Biology of Fishes Congress: symposium entitled- Fish Capture and Discard: Behavioral and Physiological Aspects. St. Johns, Newfoundland (Canada).
- Mandelman, J.W.**, and Farrington, M.A. 2004. Stress and survival in elasmobranch fishes: physiological changes and mortality associated with commercial fishing. Poster presented at the NOAA Fisheries: Bycatch in Northeast Fisheries Workshop. Sheraton Colonial Conference Center, Wakefield, MA (USA).
- Farrington, M.A., Carr, A., Milliken, H., Szymanski, M., Pol, M., and **Mandelman, J.W.** 2004. Atlantic cod bycatch survival from longline fishing gear. Poster presented at the NOAA Fisheries: Bycatch in Northeast Fisheries Workshop. Sheraton Colonial Conference Center, Wakefield, MA (USA).
- Mandelman, J.W.**, and Farrington, M.A. 2003. The physiological effects of commercial fishing on the spiny dogfish (*Squalus acanthias*). Poster presented at the Joint Meeting of Ichthyologists & Herpetologists (American Elasmobranch Society Poster Symposium). Manaus, Amazonas, Brazil.

NOTABLE MEDIA ATTENTION

(links provided where possible upon request)

Newspapers

- Boston Herald (MA)
- Cape Cod Chronicle (MA)
- Newburyport News (MA)
- Boston Globe
- Underwater Times
- Patriot Ledger (MA)
- The Metro (Boston, MA)

- Cape Cod Times (MA)

Magazines

- Defenders Magazine
- Martha's Vineyard Magazine (MA)
- Commercial fisheries news
- Atlas Magazine (Emerson College publication)
- On the Water

Online news journals/websites

- USA Today
- Boston.com (MA)
- Boston.com green blog (MA)
- Nature Network Website
- Defenders.org
- PatriotLedger.com (MA)
- ScientificAmerican.com
- WGBH.com

Web/Blog

- OCEARCH

TV and Radio

- WBUR (Boston, MA NPR – multiple segments, including Sascha Pfeiffer show in 2012)
- WBZ Radio (Most listened to station in New England; 2012 interview segment: “Nightside with Dan Rea”)
- WGBH public radio (MA) (interview with Callie Croseley)
- “Greater Boston” interviews with Emily Rooney (WGBH TV) – (three appearances spanning 2009 and 2010)
- Cape Cod times (MA)
- Good Morning America (National ABC news)
- Local Boston (MA) NBC, CBS and ABC affiliates
- Powderhouse Productions (pilot on sharks for Animal Planet)
- Chronicle
- WBZ Week of Sharks
- “Bloomberg Baystate Business Hour” on Bloomberg Radio
- “The Take” on NECN, April 2017

FUNDING AND AWARDS

(J.W. Mandelman involvement designated as lead or co-PI)

2018	Bycatch Reduction Engineering Program: NOAA/NMFS (\$142,686): Closing data gaps on discard mortality and tactical capture and handling practices to reduce mortality in the Gulf of Maine recreational groundfish fishery (PI)
2015	Bycatch Reduction Engineering Program: NOAA/NMFS (\$223,924): Identifying bottom trawl bycatch hotspots and capture-and-handling practices to reduce the incidental mortality of an overfished Species of Concern – the thorny skate – in the Gulf of Maine (PI)
2015	Saltonstall-Kennedy (S & K) Program: NOAA/NMFS (\$397,836): Determining the post-release mortality rate and “best capture-and-handling” methods for Atlantic cod (<i>Gadus morhua</i>) discarded in Gulf of Maine lobster industry (co-PI)

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- 2015 Saltonstall-Kennedy (S & K) Program: NOAA/NMFS (\$320,855): Improving the management of an overfished, data poor species: Investigating the movements and stock structure of thorny skates using novel fishery-independent tagging technology (PI)
- 2015 Saltonstall-Kennedy (S & K) Program: NOAA/NMFS (\$114,249): Estimating the discard mortality rate and deriving best catch-and-release guidelines for haddock (*Melanogrammus aeglefinus*) discarded in Gulf of Maine recreational fisheries (PI)
- 2015 Saltonstall-Kennedy (S & K) Program: NOAA/NMFS (\$224,639): Evaluation of methods to reverse the acute effects of barotraumas and increase the post-release survival of cusk (*Brosme brosme*) discarded in the Gulf of Maine recreational fishery (PI)
- 2015 Saltonstall-Kennedy (S & K) Program: NOAA/NMFS (\$113,419): Field testing an electric decoy for reducing elasmobranch bycatch in longline fisheries (co-PI)
- 2015 Northeast Consortium: 2014 NEFMC Groundfish Research Program (\$147,425): Determining the post-release mortality rate and "best capture and handling methods for haddock (*Melanogrammus aeglefinus*) discarded in Gulf of Maine recreational fisheries (PI).
- 2014 Monkfish Research Set Aside Program: NOAA/NMFS (Research portion: \$349,983): Evaluating the condition and discard mortality of winter skate, *Leucoraja ocellata*, following capture and handling in the sink gillnet fishery (co-PI)
- 2014 Davis Conservation Foundation (\$5,000): Campaigning for an iconic species: broadcasting best fishing practices to increase Atlantic cod survival (PI)
- 2014 Atlantic Sea Scallop Research Set Aside Program: NOAA/NMFS (Research portion: \$439,153): Discard mortality of sea scallops following capture and handling in the sea scallop dredge fishery (co-PI; lead institution VIMS)
- 2013 Bycatch Reduction Engineering Program: NOAA/NMFS (\$248,659): Elucidating post-release mortality and 'best capture and handling' methods in sublegal Atlantic cod discarded in Gulf of Maine recreational hook-and-line fisheries (PI)
- 2012 Private gift (\$100,000): Shark stress and survival work in Eleuthera (Bahamas) (PI)
- 2012 Atlantic Sea Scallop Research Set Aside Program: NOAA/NMFS (Research portion: \$291,598): Evaluating the Condition and Discard Mortality of Skates Following Capture and Handling in the Sea Scallop Dredge Fishery (co-PI; lead institution VIMS)
- 2010 SaveOurSeas Foundation (\$15,000): Assessing the stress of catch and release angling on coastal sharks (co-PI; lead institution UMass Amherst)
- 2009 Consortium for Wildlife Bycatch Reduction: NOAA/NMFS (\$111,452): Efficacy of electropositive metals to reduce shark bycatch in longline fisheries (PI)
- 2009 Heska Corporation (\$4,000): i-STAT validation study: blood acid-base status in elasmobranch fishes (PI)
- 2008 Saltonstall-Kennedy (S & K) Program: NOAA/NMFS (\$222,618): The Immediate and Short-Term Post-Release Mortality of Species in the Northwest Atlantic Skate Complex Captured by Gillnet and Otter-Trawl (PI)
- 2007 Contracts: Excelerate Energy, L.L.C., and Suez Energy, L.L.C. (\$1,200,000): Assessing biological impacts of the exclusion zone around the deepwater Liquid Natural Gas ports (PI)

- 2007 Consortium for Wildlife Bycatch Reduction: NOAA/NMFS (\$12,000): Behavioral responses to rare-earth metals in sharks (PI)
- 2007 Northeast Consortium Development Grant (\$25,000): The design, development, and field testing of an innovative circular net pen to be used to assess bycatch mortality of Atlantic cod at sea (PI)
- 2006 Biology of Fishes Congress Travel Award (AFS Physiology Section) (\$600)
- 2002 Saltonstall-Kennedy (S & K) Program: NOAA/NMFS (\$169,580): Juvenile bycatch & survival assessment of spiny dogfish (*Squalus acanthias*) in a western Atlantic trawl fishery (PI)
- 2000 GK-12 STEM Fellowship (3-year Fellowship) National Science Foundation via Northeastern University (\$65,000)

SERVICE

Editorial Duties

- 2015-present Editorial Advisory Board Member: *Fisheries Research*
- 2012-present Editorial Board Member (Assistant Editor): *Conservation Physiology* (Oxford Univ. Press; Steven Cooke, Editor-in-Chief)
- 2012 Subject Editor: *Marine and Coastal Fisheries* (American Fisheries Society) – special issue “Life history characteristics of elasmobranch fishes from the North Western Atlantic Ocean”
- 2010-2012 Guest editor: *Comparative Biochemistry and Physiology-A*. Special issue: “The physiological stress response in elasmobranch fishes” (162a(2):71-156).

Peer Review: Journals and Universities (19)

Aquaculture; Biological Conservation; Comparative Biochemistry and Physiology-A; Conservation Biology; Conservation Physiology; Elsevier (book proposal review); Fish and Fisheries; Fish Physiology and Biochemistry; Fisheries Research; Fishery Bulletin; James Cook University (thesis reviews); Journal of Experimental Marine Biology and Ecology; Marine Ecology Progress Series; Northeast Journal of Fisheries Management; Northeast Naturalist; Physiological and Biochemical Zoology; PLoS ONE; Reviews in Fish Biology and Fisheries; Transactions of the American Fisheries Society

Peer Review: Competitive Grant Programs (8)

MARFIN (NOAA/NMFS); Sea Scallop Research Set Aside Program (NOAA/NMFS); Cooperative Research Program (CRP) (NOAA/NMFS); Rhode Island (RI) Sea Grant; RI Sea Grant pre-proposal review committee (2009); The PEW Charitable Trusts; Florida Sea Grant; Marine Conservation Action Fund (MCAF); North Pacific Research Board (NPRB); University of Southern California Sea Grant

Boards/Committees

- 2017-present Stellwagen Bank Sanctuary Advisory Council Member
- 2017-present Board Member: Atlantic White Shark Conservancy
- 2017-present Member: Steering Committee for Boston Harbor Resilience Feasibility study (funded by the Barr Foundation)
- 2014-2017 Chair invited member: ICES-FAO Working Group on Fishing Technology and Fish Behavior
- 2013-present Skate Advisory Panel (New England Fishery Management Council)
- 2013-present Chairman: Animal Care and Use Committee (New England Aquarium)
- 2012-present Advisory Committee: Marine Conservation Action Fund (MCAF)
- 2010-2013 Vice Chairman: Animal Care and Use Committee (New England Aquarium)
- 2009-2013 Member: Three Seas Program Professional Master’s Degree Steering Committee (Northeastern University)
- 2006-present Consortium for Wildlife Bycatch Reduction (NEAq/NOAA)

Government Research Cruise Participation

2002	NMFS Winter (Mid- Atlantic) bottom trawl survey
2002	NMFS Spring (Gulf of Maine) bottom trawl survey
2002	NMFS Fall (Georges Bank) bottom trawl survey
2003	NMFS Spring (Gulf of Maine) bottom trawl survey
2004	NMFS Apex Predators Survey

Professional Affiliations

Phi Kappa Phi, American Fisheries Society (AFS), American Elasmobranch Society (AES), Center for Ocean Sciences Education Excellence (COSEE) - New England, Massachusetts Association of Science Teachers (MAST), American Institute of Fishery Research Biologists (AFIRB) Member

ADVISORSHIP

Post-docs

Rotjan, R.D., New England Aquarium, Ph.D. Harvard University
 Idjadi, J.A., New England Aquarium, Ph.D. University of Delaware
 Jordan, L., Florida Atlantic University, Ph.D. University of California, Los Angeles
 Zemeckis, D., University of Massachusetts Dartmouth, Ph.D. University of Massachusetts Dartmouth
 Kneebone, J., New England Aquarium, Ph.D. University of Massachusetts Dartmouth

Graduate advisement & co-advisement (Past/Present)

Wheeler, C. Ph.D. candidate, University of Massachusetts Boston
 Capizzano, C. Ph.D. candidate, University of Massachusetts Boston
 Knotek, R. Ph.D. candidate, University of Massachusetts Boston
 Madenjian, R. Barotrauma in cusk *Brosme brosme* following recreational fishing capture, D.V.M./M.S. candidate, Tufts University, expected graduation 2018
 McClellan, K. An experimental assessment of electromagnetic sensitivity in juvenile *Negaprion brevirostris* and *Urobatis jamaicensis*. Ph.D. candidate, SMS/University of Massachusetts
 Capizzano, C. Elucidating post-release mortality and 'best capture and handling' methods in sublegal Atlantic cod discarded in Gulf of Maine recreational hook-and-line fisheries, M.S., University of New England
 Knotek, R. Evaluating the Condition and Discard Mortality of Skates Following Capture and Handling in the Sea Scallop dredge Fishery, M.S., University of New England
 Cicia, A.M. 2012. Assessing the physiological effects of air exposure and tow duration in little (*Leucoraja erinacea*) and thorny (*Amblyraja radiata*) skates captured within the northwest Atlantic otter-trawl fishery, M.S., University of New England
 Jones, E.A. 2011. The influence of refuge on the blood chemical status and acute stress response of the Atlantic wolffish (*Anarhichas lupus*), M.S., Northeastern University
 Isquith, R. 2009. Assessing the synergistic effects of ship noise and structure on cortisol levels in winter flounder (*Pseudopleuronectes americanus*), M.S. Northeastern University
 Gallagher, A.J. 2009. A portable clinical analyzer provides reliable estimates of the relative blood-acid base balance in elasmobranch fishes. M.S., Northeastern University

Graduate committees (Past/Present)

O'Neill, M. Masters candidate, University of Massachusetts Boston
 Koob, E. Masters candidate, University of Massachusetts Boston
 O'Connell, C. Ph.D. candidate, SMAST/University of Massachusetts Dartmouth
 Di Santo, V. Ph.D. candidate, Boston University
 Carter, L. Capstone candidate, NOVA Southeastern University
 Bouyoucos, I., Masters candidate, University of Illinois Urbana
 Lawrence, M., Ph.D. candidate, Carlton University
 Laskey, L., Masters candidate, University of Massachusetts Boston

Undergraduate/post-graduate students and interns (45)

Nils Wernerfelt, Tom Fisher, Cheryl Harary, Michael Stratton, Christie Taylor, Marisa Villarreal, Kira Treibergs, Sara Edquist, Catherine Caruso, Sarah Abboud, Raphael Fennimore, Rachel Morrison, Lela Schlenker, Tania Lemos Eskin, Alena Gerlek, Jay Williams, Brittany Palm, Austin Hurst, Jade Heidt, Drew Rosati, Devin Flawd, Leigh Engel, Nicole Ward, Sam Johnson, Jess Bergeron, Bianca Prohaska, Dan Cear, Eric Nuber, Cassidy Peterson, Kayla Smith, Karson Coutre, Timothée Govare, Hope Ronco, Amanda Abbott, Brittany Sims, Emma Kelley, Lauren Giglio, Ian Bouyoucos, Tyler Sanford, Rachel LaBella, Alix Morris, Margot Wilsterman, Griffin Andres, Harrison Rovner, Julia Peters

TEACHING*Teaching Philosophy*

I employ an organized teaching approach that combines lectures with active learning strategies such as demonstrations, discussions, experiential activities, field-exploration, and collaborative learning. I strive to communicate enthusiastically while retaining diversity and clarity in my presentations and interactions. The overriding goal in my teaching is to promote learning through active student involvement/engagement, faculty-student interaction, and inquiry-based learning. Thus, class participation is a very important component in my classroom and one that encourages an invested role in the learning process for my students. This communicative approach also helps to endorse comprehension in that students are more inclined to inquire when not fully understanding a topic or principle. Finally, I am a huge proponent of positive reinforcement for my students. All questions are treated with respect while critical thinking and discernable efforts lauded through direct communication. While holding high expectations for my students, it is my belief that positive feedback instills confidence and fosters excitement in the material being covered. This in turn, enhances learning.

Curriculum Development Experience

- 2002 **National Science Foundation (NSF) Bridges Grant:** Aided in the development of a scientific learning module for Boston Public High-school students regarding the engineering and technology behind aluminum recycling.
- 2000-2002 **National Science Foundation (NSF) GK-12 Fellowship:** Developed curriculum, integrated experiential and laboratory activities, provided expertise and consulted middle and high-school biology teachers regarding science-oriented teaching in the Boston Public School System. Spent considerable time interacting with students, planning and running laboratory activities, and facilitating learning activities in the classroom.

Formal undergraduate/graduate teaching experience

- 2015 **The Biology and Conservation of Fishes, Environmental, Earth, and Ocean Sciences Department, University of Massachusetts-Boston.**
Survey spanning from evolution, systematics, and ecology to form and function and will culminate in environmental fish physiology and threats to populations (e.g. stressors linked to over-fishing). Class consists of upper-level undergraduates and graduate students. Responsibilities include design, and implementation of syllabus, all lectures, activities and laboratory protocols. Additional responsibilities include creating and grading all forms of assessment (exams, papers, assignments and/or quizzes).
- 2015-2016 **Physiological Ecology and Conservation of Fishes, Environmental, Earth, and Ocean Sciences Department, University of Massachusetts-Boston.**
Course material combines fundamental lessons on fish ecology and physiology with an applied conservation focus on the challenges facing today's aquatic ecosystems. Course consists of upper-level undergraduates and graduate students. Responsibilities include design, and implementation of syllabus, all lectures, activities and laboratory protocols. Additional responsibilities include creating and grading all forms of assessment (exams, papers, assignments and/or quizzes).
- 2008-2009 **The Biology and Conservation of Fishes, Biology Department, Northeastern University.**
Survey spanning from evolution, systematics, and ecology to form and function and will culminate in environmental fish physiology and threats to populations (e.g. stressors linked to over-fishing). Class consists of

upper-level undergraduates and graduate students. Responsibilities include design, and implementation of syllabus, all lectures, activities and laboratory protocols. Additional responsibilities include creating and grading all forms of assessment (exams, papers, assignments and/or quizzes).

2006 **Global Threats to Marine Biodiversity, School Professional and Continuing Studies; School of Education, Northeastern University.**

Students were New England G8-12 science teachers taking class for graduate credit. Consisted of five modules each dedicated to the primary anthropogenic threats to marine biodiversity. Course was administered solely online with a culminating field experience. Responsibilities included design, and deployment of syllabus, all lectures, links, activities, teaching tools and assignments online. Additional responsibilities included grading all forms of assessment (quizzes, papers, final paper), moderating and providing expertise within online class discussion forum and leading the final session in the field where several of the class themes were demonstrated experientially.

2005 **Intro to the Biology of Sharks, Rays and Skates, School of Education-Northeastern University.**

Students were New England G8-12 science teachers (taking class for graduate credit) and members of the Education and Fishes Departments of the New England Aquarium. Course addressed evolutionary, ecological, anatomical, physiological and behavioral aspects of elasmobranch biology. Responsibilities included design and implementation of syllabus, all lectures, activities and laboratory protocols. Additional responsibilities included creating and grading all forms of assessment (exams, papers, assignments and/or quizzes) and planning/facilitating field excursions to capture and release representative species.

2003-2004 **Tropical Marine Biology in Jamaica, School of Education-Northeastern University.**

One-week intensive field-based course in Discovery Bay, Jamaica. Students were New England G8-12 science teachers taking class for graduate credit. Course addressed ecological components of the famous North Jamaican coral reef system (plant, vertebrate and invertebrates covered). Special attention was given to the effects of anthropogenic and natural disturbances to the reef, ecological factors that have mediated the outfall from these threats, and the economic/sociological factors that have driven the human impacts. Responsibilities included planning all aspects of the science component of the excursion, design and implementation of syllabus, field activities, skin-diving instruction, lectures, paper discussions and laboratory protocols. Additional responsibilities included creating and grading all forms of assessment (papers).

2002-2004 **Learning and Investigation in Marine Environments, School of Education-Northeastern University.**

Students were New England G8-12 science teachers taking class for graduate credit. Course addressed intertidal ecology and zoology of the rocky-intertidal and subtidal New England Coast. Responsibilities included design and implementation of syllabus, all lectures, activities and laboratory protocols. Additional responsibilities included creating and grading all forms of assessment (exams, papers, assignments and/or quizzes).

2001 **Intro to Marine Biology, School of Education-Northeastern University.**

Students were New England G8-12 science teachers taking class for graduate credit. Course addressed intertidal ecology and zoology of the rocky-intertidal and subtidal New England Coast. Responsibilities included design and implementation of syllabus, all lectures, activities and laboratory protocols. Additional responsibilities included creating and grading all forms of assessment (exams, papers, assignments and/or quizzes).