

Daniel S. Holland

Northwest Fishery Science Center
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Senior Scientist, Supervisory Economist ZP-V

4. Education:

University of Utah	Economics	B.A.	1988
University of Illinois	Agricultural Economics Advisor: Richard Brazee	M.S.	1993
University of Rhode Island	Resource Economics Advisor: Jon Sutinen	Ph.D.	1998

5. Professional History

2017-present Senior Scientist, Supervisory Economist (ZP-V): Northwest Fishery Science Center (NWFSC), Seattle, Supervisor: Nature McGinn

I manage a multidisciplinary Human Dimensions team in the Conservation Biology division at NWFSC that includes economists other social scientists working on fishery management, protected resources, and fishing communities. I lead and participate in diverse research projects supported by both internal and external funding with NOAA scientists and academic partners. I serve on the Science and Statistical Committee (SSC) of the Pacific Fishery Management Council and began a two year term as Chair of the SSS in April 2022. I serve as an affiliate faculty in the University of Washington School of Aquatic and Fishery Sciences where I advise graduate students and postdoctoral researchers and contribute guest lectures.

Key Accomplishments:

- Conducted and published research on fishery science & management [64, 65, 66, 68, 69, 72, 73, 75, 76, 78], economics of protected resources [74, 77]; fishery diversification [64], and fishery behavioral modeling [67, 70, 71].
- Published 15 peer reviewed journal articles, 9 Tech Memos and a book chapter between 2017 and present, and have 5 manuscripts under review.
- Co-PI on successful external grants totaling over \$2 million;
- Led a national NMFS working group that developed technical guidance ABC control rules and harvest strategies for National Standards 1.
- Organized 2018 Biennial Conference of the International Institute for Fisheries Economics and Trade, to be held at the University of Washington in July 2018 with over 450 participants from 43 countries. (co-organizers Chris Anderson, University of Washington and Alan Haynie, AFSC)

- Organized workshop on Economic Research for Management of West Coast Salmon and Steelhead: Status, Needs, and Directions. The workshop was originally scheduled in 2020 and cancelled but is rescheduled for June 15-17, 2022 in Portland, OR

2014-2017 Supervisory Economist (ZP-IV): Northwest Fishery Science Center (NWFSC), Seattle, Supervisor: Jameal Samhour

I managed a multidisciplinary Human Dimensions team in the Conservation Biology division at NWFSC. I led research projects supported by both internal and external funding with NOAA scientists and academic partners. I advised fishery managers and stakeholders and the Pacific fishery management Council on fishery management design and implementation issues. I served as an affiliate faculty in the University of Washington School of Aquatic and Fishery Sciences (SAFS) and the Oregon State University Department of Applied Economics (DAE) where I advised graduate students and postdoctoral researchers, taught a course at DAE, and contributed guest lectures at SAFS.

Key Accomplishments:

- Conducted and published research on catch share system design, markets and performance [62, 60, 59, 57, 55, 54, 53, S3], fishery diversification [58, S6], and bycatch management [52, S2];
- Published 11 peer reviewed journal articles, a Tech Memo and a book chapter between 2015 and present, and have 6 manuscripts under review or in late stages of preparation;
- Co-PI on successful \$1.5 million proposal to the NSF Coupled-Natural Humans Systems (CNH) program to model how climate variation affects the dynamics of interconnected west coast fisheries;
- Developed system of automatically calculate and update quota pounds prices for the Pacific groundfish IFQ and serve this information to the public;
- Formed and led a national NMFS working group to quantify effects of catch shares on diversification and income variation;
- Co-organizer of National NOAA workshop on Increasing Resilience of Fishing Communities in a Changing Climate;
- Served as President of the International Institute for Fisheries Economics and Trade (IIFET): developed government membership program to diversify funding base; helped organize 2018 meeting in Aberdeen, Scotland; submitted successful bid in conjunction with Chris Anderson and Alan Haynie to host IIFET's 2018 Biennial Conference at the University of Washington in July 2018.

2010-2014: Economist (ZP-IV): Northwest Fishery Science Center (NWFSC), Seattle, WA
Supervisor: Mark Plummer

Participated and contracted for research projects supported by both internal and external funding with NOAA scientists and academic partners. Advised fishery managers and stakeholders and the Pacific fishery management Council on fishery management design and implementation issues. Served as an affiliate faculty in the University of Washington School of Aquatic and Fishery Sciences and the Oregon State University Department of Applied Economics where I advised graduate students and postdoctoral researchers and contributed guest lectures.

Key Accomplishments:

- Conducted and published research on ecosystem-based fishery management and modeling [51, 50, 47, 46, 41, 40, 38], bycatch management [45, 42], catch share quota markets [49], and fishery diversification [44], and social capital [43];
- Published 13 journal articles, 3 book chapters, and a 2 Tech Memos between 2011 and 2015 all submitted while at NWFSC;
- Co-PI on successful \$1.9 million proposal to the NSF Coastal SEES program to model how the 2012 ocean “heat wave” impacted the Gulf of Maine large marine ecosystem;
- Formed and led national NMFW working group to document and assess collection and use of catch share markets data;
- Developed fishery diversification indicators for California Current IEA.
- Serve as Vice President of the Marine Economics Foundation – owner of the journal Marine Resource Economics – and helped successfully transition the journal to a new publisher ensuring economic viability and broader distribution.

2005-2010 Research Scientist: Gulf of Maine Research Institute (GMRI), Portland, ME
Supervisor: John Annala

Conducted research on fishery and marine ecosystem management. Procured competitive external grant funding. Undertook policy and fishery extension work. Served as adjunct faculty in University of Maine School of Marine Science, University of Rhode Island Department of Environmental and Natural Resource Economics, and the University of Maine School of Law.

Key Accomplishments:

- Conducted and published research on fishery management [36, 35, 30, 27, 25, 18, 17, 16], managing bycatch and habitat impacts in fisheries [37, 34, 26, 24, 21, 20, 19], catch share system design [32, 31, 22], behavioral economics [29], and auction design [23];
- Published 21 peer reviewed journal articles, 3 book chapters, and 2 OECD monographs between 2005 and 2010 while at GMRI;
- Lead investigator on over \$2 million in grants and contracts for research on New England fisheries including a grant for \$1.5 million from National

Science Foundation Couple Natural Human System program which brought together nine investigators from four institutions;

- Founded and acquired funding from Moore Foundation for an ongoing extension program that provides assistance to fishermen's groups in implementing and running sectors (fishing cooperatives);
- Served on the groundfish plan development team and played key role in designing the sector management system that implemented a comprehensive catch share system in the New England groundfish fishery;
- Developed curriculum for marine science education program that served over 80% of Maine middle school students on half-day field trips;
- Served on National Research Council Committee on the Development of and Integrated Science Strategy for Ocean Acidification Monitoring, Research and Impacts Assessment and co-authored committee report.

2003-2005 Senior Economist: New Zealand Seafood Industry Council (SeaFIC), Wellington, New Zealand, Supervisor: Kevin Stokes

Developed and communicated industry positions on various aspects of New Zealand's quota management system and led joint industry-government working groups. Conducted research on fishery management. Served as adjunct faculty at the University of Rhode Island Department of Environmental and Natural Resource Economics.

Key Accomplishments:

- Managed high level joint-industry working groups that led to reforms in the cost recovery and the deemed value system for managing over-quota catch;
- Acquired funding for and carried out research on fishery management issues of key interest to industry stakeholders including habitat management [20, 21, 22], operation of the deemed value system [24], introduction of new species into the quota management system [23], and implementation of management procedures in the largest lobster fishery [16];
- Published 2 peer reviewed journal articles and 1 Tech Memo submitted while at SeaFIC and worked on 3 journal manuscripts submitted after departing.

2000-2002 Assistant Professor: School for Marine Science and Technology (SMAST), University of Massachusetts Dartmouth, New Bedford, MA., Supervisor: Brian Rothschild

Developed and taught new courses in fishery management and marine resource economics as a founding faculty member in the Intercampus Graduate School of Marine Science and Technology at the University of Massachusetts. Advised graduate students. Helped develop curriculum and the admissions process for the new degree program. Served as adjunct faculty in University of Rhode Island Department of Environmental and Natural Resource Economics and co-advised a Ph.D student there.

Key Accomplishments:

- Published 5 peer reviewed journal articles while at SMAST;
- Served on the groundfish plan development team and played key role in design of New England's initial sector program that implemented the Cape Cod Hook sector.

1998-2000: Industry Economist: Alaska Fisheries Science Center (AFSC), Seattle, WA.
Supervisor: Joe Terry

Carried out and published research on management of Alaskan fisheries and on measurement and management of fishing capacity. Co-led a project to acquire economic data from participants in federally managed groundfish fisheries off Alaska.

Key Accomplishments:

- Published 7 peer reviewed journal articles while at AFSC;
- Served on NMFS Task Force on Fishery Capacity Reduction 1999-2000 and developed and tested methods for measuring fishing capacity.

6. Honors and Awards

Publication of Enduring Significance Award - *Marine Resource Economics* 2016 for 1996 article "Marine Reserves for Fisheries Management." The paper won "for launching the economics literature on marine reserves for fisheries management, accurately situating marine reserves as a second-best policy, clearly framing the inter-temporal tradeoffs involved in forming marine reserves, and anticipating most of the issues that subsequent literature explored in greater detail."

Honorable Mention: Outstanding Article Award - *Marine Resource Economics* 2013. Holland, D.S. 2013. Making Cents Out of Barter Data from the British Columbia Groundfish ITQ Market. *Marine Resource Economics* 28(4):311-330.

Best policy paper award, 16th Biennial Conference of the International Institute for Fisheries Economics and Trade, Dar es Salaam, Tanzania July 16-20 2012.

Graduate Fellowship, Department of Environmental and Natural Resource Economics, University of Rhode Island

Graduate Fellowship, Department of Agricultural Economics, University of Illinois

Undergraduate Scholar of the Year 1988, School of Business, University of Utah

6. Awards

Publication of Enduring Significance Award - *Marine Resource Economics* 2016 for 1996 article "Marine Reserves for Fisheries Management." The paper won "for launching the economics

literature on marine reserves for fisheries management, accurately situating marine reserves as a second-best policy, clearly framing the inter-temporal tradeoffs involved in forming marine reserves, and anticipating most of the issues that subsequent literature explored in greater detail.”

Honorable Mention: Outstanding Article Award - *Marine Resource Economics* 2013. Holland, D.S. 2013. Making Cents Out of Barter Data from the British Columbia Groundfish ITQ Market. *Marine Resource Economics* 28(4):311-330.

Best policy paper award, 16th Biennial Conference of the International Institute for Fisheries Economics and Trade, Dar es Salaam, Tanzania July 16-20 2012.

7. Publications

Papers Published in Peer Reviewed Journals:

- 82 Abbott, J.E., Y. Sakai, D.S. Holland. Species, space, and time: a quarter-century of fishers' diversification strategies on the US West Coast. Forthcoming at *Fish and Fisheries*.
- 81 Birkenbach, A.M., D.J. Kaczan, M.D. Smith, G.Ardini,D.S. Holland, M. Lee, D. Lipton, and M.D. Travis. Revenue Margins and Market-Based Regulation: Evidence from U.S. Fisheries. Forthcoming at *Marine Resource Economics*
- 80 Van Deynze, B., R. Fonner, B.E. Feist, S.L. Jardine, D.S. Holland. What influences spatial variability in restoration costs? Econometric cost models for inference and prediction in restoration planning. Forthcoming at *Biological Conservation*
- 79 Norman, K., D.S. Holland, J.E. Abbott. Community-level fishery measures and individual fishers: comparing primary and secondary data for the U.S. West Coast. *Ocean and Coastal Management* t. 224 (2022): 106191.
- 78 Holland, D.S. 2021. Forage Fish for Cod and People. Proceedings of the National Academy of Sciences 118(9). <https://doi.org/10.1073/pnas.2100586118>.
- 77 Bellanger, M., R. Fonner, D.S. Holland, G. Libecap, D. Lipton, P. Scemama, C. Speir and O. Thebaud 2021. Cross-sectoral Externalities Related to Natural Resources and Ecosystem Services. *Ecological Economics* 184:106990. <https://doi.org/10.1016/j.ecolecon.2021.106990>
- 76 Oken, K.L., D.S. Holland, A.E. Punt 2021. The effects of population synchrony, life history, and access constraints on benefits from fishing portfolios. *Ecological Applications* 31(4) e2307.
- 75 Holland, D.S. and J. Leonard 2020. Is a Delay a Disaster: Evaluation the Economic Impacts of the Delay of the California Dungeness Crab Fishery due to a Harmful Algal Bloom. *Harmful Algae* 98 (September 2020) 101904.
- 74 Bellanger, M., Speir, C., Blanchard, F., Brooks, K., Butler, J.R., Crosson, S., Fonner, R., Gourguet, S., Holland, D.S., Kuikka, S. and Le Gallic, B., 2020. Addressing Marine and

- Coastal Governance Conflicts at the Interface of Multiple Sectors and Jurisdictions. *Frontiers in Marine Science*, 7, p.743.
- 73 Wiedenmann, J. and D.S. Holland 2020. Tradeoffs in fishery management objectives when allowing catch limit carry-over between years. *ICES Journal of Marine Science* 77(7-8):2825-2839. doi:10.1093/icesjms/fsaa154.
 - 72 Richerson, K., Punt, A.E., Holland, D.S. and Corbett, K. 2020. Nearly a Half Century of High but Sustainable Exploitation in the Dungeness Crab (*Cancer magister*). *Fisheries Research* 226(2020) 105528. <https://doi.org/10.1016/j.fishres.2020.105528>
 - 71 Hicks, R.L., Holland, D.S., Kuriyama, P.T. and Schnier, K.E., 2020. Choice sets for spatial discrete choice models in data rich environments. *Resource and Energy Economics*, 60, p.101148.
 - 70 Holland, D.S. and C. Martin. Bycatch Quotas, Risk Pools, and Cooperation in the Pacific Whiting Fishery (Bycatch Quotas and Risk Pools PGTF) 2019. *Frontiers in Marine Science* 6:600.
 - 69 Holland, D.S., K. Norman, J.E. Abbott 2019. Fishing to Live or Living to Fish: Job Satisfaction and Identity of West Coast Fishermen. *Ambio*. 49(2):628-639. <https://doi.org/10.1007/s13280-019-01206-w>
 - 68 Bellanger, M., D.S. Holland, C.M. Anderson, O. Guyader, and C. Macher 2019. Joint and Several Liability in Fishery Cooperatives. *Fish and Fisheries* 20:715-729.
 - 67 Kuriyama, P.T., D.S. Holland, T.A. Branch, L.A.K. Barnett, R.L. Hicks, K.E. Schnier 2019. Catch shares drive fleet consolidation and increased targeting but not spatial effort concentration nor changes in location choice in a multispecies trawl fishery. *Canadian Journal of Fisheries and Aquatic Sciences* <https://doi.org/10.1139/cjfas-2019-0005>
 - 66 Richerson, K., J. Leonard, D.S. Holland 2018. Predicting the economic impacts of the 2017 West Coast salmon troll ocean fishery closure. *Marine Policy* 95:142-152
 - 65 Holland, D.S. 2018. Collective Rights–Based Fishery Management A Path to Ecosystem-Based Fishery Management. *Annual Review of Resource Economics* 10:469-85.
 - 64 Holland, D.S., J. Agar, S. Crosson, G. DePiper, S. Kasperski, D. Kitts, L. Perruso, and C. Speir 2017. The Impact of Catch Shares on Diversification of Fishers' Income and Risk. *Proceedings of the National Academy of Sciences*. 114 (35) 9302-9307
 - 63 Richerson, K. and D.S. Holland 2017. Quantifying and predicting responses to a West Coast salmon fishery closure. *ICES Journal of Marine Science* 74(9):2364-2378.
 - 62 Holland, D.S., E. Steiner, A. Warlick 2017. Can Vessel Buybacks Pay Off: An Evaluation of an Industry Funded Fishing Vessel Buyback. *Marine Policy* 82:8-15
doi.org/10.1016/j.marpol.2017.05.002.
 - 61 Nielsen, J.R., E. Thunberg, D.S. Holland, J.O. Schmidt (and 59 other authors) 2017. Integrated Ecological-Socioeconomic Fisheries Models – Evaluation, Review and Challenges for Implementation. *Fish and Fisheries* 19(1):1-29.

- 60 Woods, P.J., D.S. Holland, A.E. Punt 2016. Evaluating the benefits and risks of species-transformation provisions in multispecies IFQ fisheries with joint production. *ICES Journal of Marine Science* 73(7):1764-1773.
- 59 Holland, D.S. 2016. Development of the Pacific Groundfish Trawl IFQ Market. *Marine Resource Economics* 31(4):453-464.
- 58 Holland, D.S. and S. Kasperski 2016. The Impact of Access Restrictions on Fishery Income Diversification of US West Coast Fishermen. *Coastal Management* 44(5):1-12.
- 57 Holland, D.S., P. Pinto da Silva, A.W. Kitts. 2015. Evolution of Social Capital and Economic Performance in New England in Harvest Cooperatives. *Marine Resource Economics* 30(4):371-92.
- 56 Anderson, J.L., C.M. Anderson, Jingjie Chu, Jennifer Meredith, Frank Asche, Gil Sylvia, Martin D. Smith, Dessy Anggraeni, Robert Arthur, Atle Guttormsen, Max Schmid, Wisdom Akpalu, Finnbogi Alfredsson, Hakan Eggert, Jimely Flores, Matthew A. Freeman, Daniel S. Holland, Gunnar Knapp, Mimi Kobayashi, Sherry Larkin, Kari MacLauchlin, Kurt Schnier, Mark Soboil, Sigbjorn Tveteras, Hirotugu Uchida, Diego Valderrama, Tim Ward. 2015. The Fishery Performance Indicators: A Management Tool for the Triple Bottom Line. *PLOS One*. DOI:10.1371/journal.pone.0122809
- 55 Holland, D.S., E. Thunberg, J. Agar, S. Crosson, C. Demarest, S. Kasperski, L. Perruso, E. Steiner, J. Stephen, A. Strelcheck, and M. Travis. 2015. US Catch Share Markets: A Review of Data Availability and Impediments to Transparent Markets. *Marine Policy* 57:103–110.
- 54 Woods, P.J., C. Bouchard, D.S. Holland, A.E. Punt, G. Marteinsdóttir 2015. Catch-quota balancing mechanisms in the Icelandic multi-species demersal fishery: are all species equal? *Marine Policy* 55:1-10.
- 53 Woods, P.J., D.S. Holland, G. Marteinsdóttir, and A.E. Punt 2015. How a catch-quota balancing system can go wrong: an evaluation of the species quota transformation provisions in the Icelandic multi-species demersal fishery. *ICES Journal of Marine Science*. 16(4):576-602. Doi:10.1093/icesjms/fsv001.
- 52 Little, A.S., C. L. Needle, R. Hilborn, D.S. Holland, and C.T. Marshall 2015. Real-time spatial management approaches to reduce bycatch and discards: experiences from Europe and the United States. *Fish and Fisheries*. 16(4):576-602. DOI: 10.1111/faf.12080
- 51 Ryan, R.W., D.S. Holland and G.E. Herrera 2014. Ecosystem Externalities in Fisheries. *Marine Resource Economics* 29(1):39-53.
- 50 Lehuta, S. D.S. Holland and A.J. Pershing 2014. Investigating interconnected fisheries: A coupled model of the lobster and herring fisheries in the Northeast US. *Canadian Journal of Fisheries and Aquatic Sciences* 71(2):272-289. dx.doi.org/10.1139/cjfas-2013-0185
- 49 Holland, D.S. 2013. Making Cents Out of Barter Data from the British Columbia Groundfish ITQ Market. *Marine Resource Economics* 28(4):311-30.
- 48 Ono, K. D.S. Holland and R. Hilborn 2013. How does species association affect mixed stock fisheries management? A comparative analysis of the effect of marine protected

- areas, discard bans, or individual fishing quotas. *Canadian Journal of Fisheries and Aquatic Sciences* 70(12): 1792-1804, 10.1139/cjfas-2013-0046.
- 47 K. Mills, Pershing, A.J., C. Brown, Y. Chen, F. Chiang, D.S. Holland, S. Lehuta, J. Nye, J.C. Sun, A. Thomas, and R. Wahle 2013. Fisheries management in a changing climate: lessons from the 2012 ocean heat wave in the Northwest Atlantic. *Oceanography* 26(2):191-5. <http://dx.doi.org/10.5670/oceanog.2013.27>.
 - 46 Kaplan, I.C., D.S. Holland and E.A Fulton 2013. Finding the gas pedal and brake in an individual quota fishery: Linking ecology, economics, and fleet dynamics to evaluate alternative management strategies for US West Coast trawl fisheries. *ICES Journal of Marine Science* 71(2):308-319. doi 10.1093/icesjms/fst114.
 - 45 Jannot, J.E. and D.S. Holland 2013. Identifying ecological and fishing drivers of bycatch in a U.S. groundfish fishery. *Ecological Applications* 23(7):1645-58.
 - 44 Kasperski, S. and D.S. Holland 2013. Income Diversification and Risk for Fishermen. *Proceedings of the National Academy of Science*. 100(6):2076-2081. doi: 10.1073/pnas.1212278110
 - 43 Holland, D.S., A. Kitts, P. Pinto da Silva, J. Wiersma 2013. Capital and the Success of Harvest Cooperatives in the New England Groundfish Fishery. *Marine Resource Economics* 28(2):133-153.
 - 42 Holland, D.S. and J.E. Jannot 2012. Bycatch Risk Pools for the US West Coast Groundfish Fishery. *Ecological Economics* 78:132-47.
 - 41 Holland, D.S. and G.E. Herrera 2012. The Impact of Age, Structure, Uncertainty, and Asymmetric Spatial Dynamics on Regulatory Performance in Fishery Metapopulation. *Ecological Economics* 77:207-18.
 - 40 Holland, D.S. 2011. Optimal Intra-annual Exploitation of the Maine Lobster Fishery. *Land Economics*, 87(4):699-711.
 - 39 Holland, D.S. 2011. Planning for Changing Productivity and Catchability in the Maine Lobster Fishery. *Fisheries Research*, 110(1):47-58.
 - 38 McConnell, W. J., J. D. Millington, N. J. Reo, L. A. Baker, N. Brozovic, L. E. Drinkwater, S. A. Drzyzga, J. Fragoso, D. S. Holland, T. A. Kohler, H. D. Maschner, M. Monticino, G. Podesta, R. G. Pontius, Jr., C. L. Redman, D. Sailor, G. Urquhart, J. Liu. 2011. Research on Coupled Human and Natural Systems (CHANS): Approach, Challenges and Strategies. *Bulletin of the Ecological Society of America* 92(2):218-228.
 - 37 Holland, D.S. 2010. Markets, Pooling and Insurance for Managing Bycatch in Fisheries. *Ecological Economics*. 70(1):121-133.
 - 36 Ryan, R.W., D.S. Holland, and G. Herrera 2010. Bioeconomic Equilibrium in a Bait-Constrained Fishery. *Marine Resource Economics*. 25(3):281-294.
 - 35 Holland, D.S. and G.E. Herrera 2010. The Benefits and Risks of Increased Spatial Resolution in Management of Fishery Metapopulations Under Uncertainty. *Natural Resource Modeling* 23(4):494-520.

- 34 Pascoe, S., J. Innes, D. Holland, M. Fina, O. Thébaud, R. Townsend, J. Sanchirico, R. Arnason, C. Wilcox and T. Hutton 2010. Use of incentive based management systems to limit bycatch and discarding. *International Review of Environmental and Resource Economics*. Vol. 4:No 2, pp 123-161. <http://dx.doi.org/10.1561/101.00000032>
- 33 Jui-Han Chang, J., Y. Chen, D. Holland and J. Grabowski 2010. Estimating season-, size-, and sex-specific spatial distribution of American lobster (*Homarus americanus*) using habitat variables. *Marine Ecology Progress Series*. Forthcoming doi: 10.3354/meps08849
- 32 Holland, D.S. and J. Wiersma. 2010. Free form property rights for fisheries: The decentralized design of rights-based management through groundfish “sectors” in New England. *Marine Policy* 34(5):1076–1081.
- 31 Johnston, R.J., D.S. Holland and S. Tuler 2010. New England Fishing Communities: Prospects and Uncertainties. *Communities and Banking* 21(2):3-5.
- 30 Holland, D.S. and G.E. Herrera 2009. Uncertainty in the Management of Fisheries: Contradictory Implications and a New Approach. *Marine Resource Economics* 24(3): 24(3):289-299.
- 29 Holland, D.S. 2008. Are fishermen rational: a fishing expedition. *Marine Resource Economics* 23(3): 23(3):323-344.
- 28 Holland, D.S. 2008. An Economist’s Perspective on Cod: The Ecological History of the North Atlantic Fisheries. *International Journal of Maritime History*. June 2008.
- 27 Johnston, R. J., D.S. Holland, V. Maharaj, T. Warner Campson 2007. Fish harvest tags: An alternative management approach for recreational fisheries in the US Gulf of Mexico. *Marine Policy* 31(4):505-516.
- 26 Holland, D.S. 2007. Managing Environmental Impacts of Fishing: Input Controls versus Outcome Oriented Approaches. *International Journal of Global Environmental Issues* 7(2,3):255-272.
- 25 Hilborn, R, J. Annala and D.S. Holland 2006. The cost of overfishing and management strategies for new fisheries on slow-growing fish: orange roughy (*Hoplostethus atlanticus*) in New Zealand. *Canadian Journal of Fisheries and Aquatic Sciences*. 63:2149-2153.
- 24 Holland, D.S. and G.E. Herrera 2006. Flexible catch-balancing policies for multispecies individual fishery quotas. *Canadian Journal of Fisheries and Aquatic Sciences* 63(8):1669-1684.
- 23 Anderson, C.M. and D.S. Holland 2006. Auctions for initial sale of annual catch entitlement. *Land Economics* 82(3):333-352.
- 22 Sanchirico, J., D.S. Holland, K. Quigley and M. Fina 2006. Catch-Quota Balancing in Multispecies Individual Fishing Quotas. *Marine Policy* 30(6):767-785.
- 21 Holland, D.S. and K.E. Schnier 2006. Protecting Marine Biodiversity: A Comparison of Individual Habitat Quotas (IHQs) and Marine Protected Areas. *Canadian Journal of Fisheries and Aquatic Sciences*. 63(7):1481-1495.

- 20 Holland, D.S. and K.E. Schnier 2006. Modeling a Rights-Based Approach to Management of Habitat Impacts of Fisheries. *Natural Resource Modeling*. 19(3):405-435.
- 19 Holland, D.S. and K.E. Schnier 2006. Individual Habitat Quotas for Fisheries. *Journal of Environmental Economics and Management*. 51:72-92.
- 18 Holland, D.S. and K. Stokes 2006. Comment: Fishing and the impact of marine reserves in a variable environment. *Canadian Journal of Fisheries and Aquatic Sciences* 63(5):1183-1185.
- 17 Stokes, K., N. Gibbs and D.S. Holland 2006. New Zealand's cost recovery regime for fisheries research services: an industry perspective. *Bulletin of Marine Science* 78(3):467-485.
- 16 Holland, D.S., N. Bentley and P. Lallemant 2005. A Bioeconomic Analysis of Management Strategies for Rebuilding and Maintenance of the NSS Rock Lobster Stock in Southern New Zealand. *Canadian Journal of Fisheries and Aquatic Sciences*. 62(7):1553-1569.
- 15 Holland, D.S. 2004. Spatial Fishery Rights and Marine Zoning: A Discussion with Reference to Management of Marine Resources in New England. *Marine Resource Economics*. 19(1):21-40.
- 14 Holland, D.S. 2003. Integrating Spatial Management Measures into Traditional Fishery Management Systems: The Case of the Georges Bank Multispecies Fishery. *ICES Journal of Marine Science* 60:915-929.
- 13 Holland, D.S. and J.J. Maguire. 2003. Optimal Effort Controls for the Multispecies Groundfish Complex in New England. *Canadian Journal of Fisheries and Aquatic Sciences*, 62(2):159-170.
- 12 Holland, D.S. 2002. Integrating Marine Protected Areas into Dynamic Spatial Models of Fish and Fishermen. *Natural Resource Modeling*. 15(3) Fall.
- 11 Holland, D.S. and S.T. Lee. 2002. Impacts of noise and specification on estimates of capacity derived from data envelopment analysis. *European Journal of Operations Research* 137(1):10-21.
- 10 Holland, D.S. and J.J.C. Ginter. 2001. Common Property Institutions in the Alaskan Groundfish Fisheries. *Marine Policy* 25:33-42.
- 9 Holland, D.S. 2000. A bioeconomic model of marine sanctuaries on Georges Bank. *Canadian Journal of Fisheries and Aquatic Sciences* 57:1307-1319
- 8 Holland, D.S. and J.G. Sutinen. 2000. Location Choice in New England Trawl Fisheries: Old Habits Die Hard. *Land Economics* 76(1):133-149.
- 7 Holland, D.S. 2000. Fencing the Fisheries Commons: Regulatory Barbed Wire in the Alaskan Groundfish Fisheries. *Marine Resource Economics*. 15(2):141-149.
- 6 Holland, D.S. and J.G. Sutinen 1999. An Empirical Model of Fleet Dynamics in New England Trawl Fisheries. *Canadian Journal of Fisheries and Aquatic Sciences* 56:253-264.

- 5 Holland, D.S, E. Gudmundsson and J. Gates, 1999. Do fishing vessel buyback programs work: A survey of the evidence. *Marine Policy* 23(1):47-69.
- 4 Holland, D.S. 1999. On Direct and Indirect Management of Fishing Capacity. *Marine Resource Economics* 14(3):263-267.
- 3 Holland, D.S and C.R. Wessells, 1998. Predicting Consumer Preferences for Fresh Salmon: The Influence of Safety and Production Method Attributes? *Agricultural and Resource Economics Review* 27(1):1-14.
- 2 Wessells, C.R. and D.S. Holland, 1998. Predicting Consumer Choices for Farmed and Wild Salmon. *Aquaculture Economics & Management* 2:49-59.
- 1 Holland, D.S and R. Brazee 1996. Marine Reserves for Fisheries Management. *Marine Resource Economics* 11(3):157-171

Papers Submitted to Peer Reviewed Journals

- R1 Seary, R., J.A. Santora, D. Tommasi, A. Thompson, S Bograd, K. Richerson, S. Brodie, D.S. Holland. Estimating revenue loss due to whale entanglement mitigation and fishery closures. Under review at *Scientific Reports*.
- R2 Bani, Ridouan, A.E. Punt, D.S. Holland, N. Tolimieri, K. Richerson, M.A. Haltuch, N.J. Mantua, K. Oken. Oceanographic drivers of legal-sized male Dungeness crab in the California Current System. Submitted to *Fisheries Oceanography*.
- R3 Treacle, Tyler, J.K. Abbott, D.S. Holland. Not by Fishing Alone: Non-Fishing Employment and Income for US West Coast Fishers. Submitted to *Ambio*.
- R4 Lewis-Smith, C., S. Jardine, K. Norman and D.S. Holland. Drivers of Health Insurance Status in the West Coast Commercial Fishing Fleet. Submitted to...

Other Papers (book chapters, tech memos, working papers, non-peer reviewed articles)

- N23 J.I. Mardones, D.S. Holland, L. Anderson, V. Le Bihan, F. Gianella, A. Clément, K. Davidson, S. Sakamoto, T. Yoshida and V.L. Trainer. Estimating and Mitigating the Economic Costs of Harmful Algal Blooms on Commercial and Recreational Shellfish Harvesters. In *GlobalHAB: Evaluating, Reducing and Mitigating the Cost of Harmful Algal Blooms: A Compendium of Case Studies*. PICES Scientific Report No. 59, 2020
- N22 Jin, D., S. Moore, D.S. Holland, L. Anderson, W. Lim., D. Kim, S. Jardine, s. Martino, F. Gianella, K. Davidson. Evaluating the Economic Impacts of Harmful Algal Blooms: Issues, Methods, and Examples. In *GlobalHAB: Evaluating, Reducing and Mitigating the Cost of Harmful Algal Blooms: A Compendium of Case Studies*. PICES Scientific Report No. 59, 2020
- N21 Holland, D. S. 2020. An Analysis of the Pacific Groundfish Trawl Individual Fishing Quota (IFQ) Quota Pound (QP) Market Through 2019. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-157.
- N20 Harvey, C. N. Garfield, G. Williams, N. Tolimieri, K. Andrews, K. Barnas, E. Bjorkstedt, S. Bograd, J. Borchert, C. Braby, R. Brodeur, B. Burke, J. Cope, A. Coyne, D. Demer, L. deWitt, J. Field, J. Fisher, P. Frey, T. Good, C. Grant, C. Greene, E. Hazen, D. Holland,

- M. Hunter, K. Jacobson, M. Jacox, J. Jahncke, C. Juhasz, I. Kaplan, S. Kasperski, S. Kim, D. Lawson, A. Leising, A. Manderson, N. Mantua, S. Melin, R. Miller, S. Moore, C. Morgan, B. Muhling, S. Munsch, K. Norman, J. Parrish, A. Phillips, R. Robertson, D. Rudnick, K. Sakuma, J. Samhuri, J. Santora, I. Schroeder, S. Siedlecki, K. Somers, B. Stanton, K. Stierhoff, W. Sydeman, A. Thompson, D. Trong, P. Warzybok, C. Whitmire, B. Wells, M. Williams, T. Williams, J. Zamon, S. Zeman, V. Zubkousky-White, and J. Zwolinski. 2020. Ecosystem Status Report of the California Current for 2019–20: A Summary of Ecosystem Indicators Compiled by the California Current Integrated Ecosystem Assessment Team (CCIEA). U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-160. <https://doi.org/10.25923/e5rb-9f55N19>
- N19 Holland, D., D. Lambert, E. Schnettler, R. Methot, M. Karp, K. Brewster-Geisz, J. Brodziak, S. Crosson, N. Farmer, K. Frens, J. Gasper, J. Hastie, P. Lynch, S. Matson, and E. Thunberg. 2020. National Standard 1 Technical Guidance for Designing, Evaluating, and Implementing Carry-over and Phase-in Provisions. NOAA Tech. Memo. NMFS-F/SPO-203, 41 p.
- N18 Harvey, C., N. Garfield, G. Williams, N. Tolimieri, I. Schroeder, K. Andrews, K. Barnas, E. Bjorkstedt, S. Bograd, R. Brodeur, B. Burke, J. Cope, A. Coyne, L. deWitt, J. Dowell, J. Field, J. Fisher, P. Frey, T. Good, C. Greene, E. Hazen, D. Holland, M. Hunter, K. Jacobson, M. Jacox, C. Juhasz, I. Kaplan, S. Kasperski, D. Lawson, A. Leising, A. Manderson, S. Melin, S. Moore, C. Morgan, B. Muhling, S. Munsch, K. Norman, R. Robertson, L. Rogers-Bennett, K. Sakuma, J. Samhuri, R. Selden, S. Siedlecki, K. Somers, W. Sydeman, A. Thompson, J. Thorson, D. Tommasi, V. Trainer, A. Varney, B. Wells, C. Whitmire, M. Williams, T. Williams, J. Zamon, and S. Zeman. 2019. Ecosystem Status Report of the California Current for 2019: A Summary of Ecosystem Indicators Compiled by the California Current Integrated Ecosystem Assessment Team (CCEIA). U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-149.
- N17 Harvey, C. J., N. Garfield, G. D. Williams, N. Tolimieri, I. D. Schroeder, E. L. Hazen, K. S. Andrews, K. Barnas, S. J. Bograd, R. D. Brodeur, B. J. Burke, J. M. Cope, L. deWitt, J. C. Field, J. L. Fisher, T. P. Good, C. M. Greene, D. S. Holland, M. E. Hunsicker, M. Jacox, S. Kasperski, S. J. Kim, A. Leising, S. R. Melin, C. A. Morgan, B. Muhling, S. H. Munsch, K. Norman, W. T. Peterson, M. R. Poe, J. F. Samhuri, W. J. Sydeman, J. Thayer, A. R. Thompson, D. Tommasi, A. Varney, B. K. Wells, T. H. Williams, J. E. Zamon, D. Lawson, S. C. Anderson, J. Gao, M. A. Litzow, S. McClatchie, E. J. Ward, S. Zador. 2019. Ecosystem status report of the California Current for 2018: a summary of ecosystem indicators compiled by the California Current Integrated Ecosystem Assessment Team. U.S. Dept. of Commerce, NOAA Tech. Memo., NMFS-NWFSC-145, 69 p. file icon
- N16 Harvey, C. J., N. Garfield, G. D. Williams, K. S. Andrews, C. Barceló, K. Barnas, S. J. Bograd, B. J. Burke, R. D. Brodeur, J. M. Cope, L. deWitt, J. C. Field, J. L. Fisher, C. M. Greene, T. P. Good, E. L. Hazen, D. S. Holland, M. Jacox, S. Kasperski, S. J. Kim, A.

- Leising, S. R. Melin, C. A. Morgan, S. H. Munsch, K. C. Norman, W. T. Peterson, M. R. Poe, J. F. Samhour, I. D. Schroeder, W. J. Sydeman, J. Thayer, A. R. Thompson, N. Tolimieri, A. Varney, B. K. Wells, T. H. Williams, J. E. Zamon. 2017. Ecosystem status report of the California Current for 2017: A summary of ecosystem indicators compiled by the California Current Integrated Ecosystem Assessment team (CCIEA). U.S. Dept. of Commerce, NOAA Tech. Memo., NMFS-NWFSC-139, 61 p. file icon
- N15 Dalton, M., D.S. Holland, D. Squires, J. Terry, and D Tomberlin. 2018. An Economic Perspective on National Standard 1. NOAA Tech. Memo. NMFS-F/SPO-180, 70 p.
- N14 Holland, D.S. and K. Norman. 2015. The Anatomy of a Multispecies Individual Fishing Quota (IFQ) “Market” in Development. U.S. Dept. of Commerce, NOAA. NOAA Technical Memorandum NMFS-F/SPO-158.
- N13 Holland, Daniel S. 2015. Structuring Rights and Privileges in Catch Share Systems. Handbook on the Economics of Natural Resources. D. Layton and R. Halvorsen (eds.). Edward Elgar Publishing pp. 281-304.
- N12 Holland, D., E. Thunberg, J. Agar, S. Crosson, C. Demarest, S. Kasperski, L. Perruso, E. Steiner, J. Stephen, A. Strelcheck, and M. Travis. 2014. U.S. Catch Share Markets: A Review of Characteristics and Data Availability. U.S. Dept. of Commerce., NOAA Technical Memorandum NMFS-F/SPO-145, 67 p.
- N11 Johnston, R.J., J. Sanchirico, and D.S. Holland. 2014. Measuring Social Value and Human Well-Being. in Bowen, R.E., M.H. Depledge, C.P. Carlane and L.E. Fleming (eds.) *Oceans and Human Health: Implications for Society and Well-Being*. pp 113-140. John Wiley & Sons, Ltd., New York.
- N10 Gray, I.A., I.C. Kaplan, I.G. Taylor, D.S. Holland, and J. Leonard 2012. Biological and Economic Effects of Catch Changes Due to the Pacific Coast Groundfish Trawl Rationalization. In 2012 NOAA California Current Integrated Ecosystem Assessment, P.S. Levin and B. Wells, eds.
- N9 Abbott, J.K. and Holland, D.S. 2013. Protecting Marine Ecosystems in Fishery Regulation. *Encyclopedia of Energy, Natural Resources and Environmental Economics* 2:206-214. Elsevier, London, <http://dx.doi.org/10.1016/B978-0-12-375067-9.00049-8>
- N8 Guerry, A.D., Plummer, M., Ruckelshaus and D.S. Holland 2013. Modeling Marine Ecosystem Services. *Encyclopedia of Biodiversity 2nd Edition, Volume 5*. Academic Press, Waltham, MA.
- N7 Holland, D.S., Pinto da Silva P., Wiersma J. 2010. A survey of social capital and attitudes toward management in the New England groundfish fishery. US Dept Commerce, Northeast Fish Sci Cent Ref Doc. 10-12; 13 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at <http://www.nefsc.noaa.gov/nefsc/publications/>
- N6 Holland, D.S. 2010. Management Strategy Evaluation and Management Procedures: Tools for Rebuilding and Sustaining Fisheries, *OECD Food, Agriculture and Fisheries Working Papers*, No. 25, OECD, Paris, France. [Dx.doi.org/10.1787/978926075429-6-en](http://dx.doi.org/10.1787/978926075429-6-en)

- N5 Holland, D.S. 2010. Economic Considerations and Methods for Evaluating Fishery Rebuilding Strategies. In OECD, *The Economics of Rebuilding Fisheries: Workshop Proceedings*, OECD Publishing, Paris, France.
- N4 Holland, D.S. 2008. Governance of Fisheries in the US. In Grafton, R.Q., R. Hilborn, D. Squires, M. Tait, and M. Williams (eds.) *Handbook of Marine Fisheries Conservation and Management*. Oxford University Press, Oxford, UK.
- N3 Johnston, R. J., D.S. Holland, V. Maharaj and T.W. Campson 2008. Fish Harvest Tags: An Attenuated Rights Based Management Approach For Recreational Fisheries. in Leal, D.R. and V. Maharaj. *Evolving Approaches to Managing Marine Recreational Fisheries*. Rowman & Littlefield Press.
- N2 Holland, D.S. 2005. Economic Analysis of Protection of Essential Fish Habitat in Alaskan Fisheries: An Analysis of Research Needs. NOAA Technical Memorandum NMFS-AFSC-154. August.
- N1 Holland, D.S., J.N. Sanchirico, R.E. Curtis and R.L. Hicks. 2004. An introduction to spatial modeling in fisheries economics. *Marine Resource Economics*. 19(1):1-6.

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- B2 Holland, D.S., J. Sanchirico, R.J. Johnston and D. Joglekar. 2009. *Economic Analysis for Ecosystem Based Management: Applications to Marine and Coastal Environments*. Washington, DC: RFF Press.
- B1 National Research Council 2010. *Ocean Acidification: A National Strategy to Meet the Challenges of a Changing Ocean*. National Academies Press, Washington D.C.

8. Presentations

Selected Invited Papers Presentations and Keynotes:

Holland, D.S., J. Leonard, E. Steiner. Evaluating Economic Impacts of the 2016 HAB Closure on the California Dungeness Crab Fishery. U.S. West Coast. PISCES annual meeting. October 16-27, 2019.

Holland, D.S. and Olivier Thebaud. Incentive-based Approaches to Managing Bycatch. Workshop: Incentive-Based Fisheries Bycatch Reduction, Sete, France, Sept. 18-21, 2017.

Holland, D.S. Bycatch Quotas, Risk Pools, and Cooperation in the Pacific Groundfish Trawl Fishery. Workshop: Incentive-Based Fisheries Bycatch Reduction, Sete, France, Sept. 18-21, 2017.

Holland, D.S. Quota Markets in Multispecies IFQ Fisheries. Workshop: Rationalizing the Allocation of California Water. April 19 April 21, 2016. California Institute of Technology, Pasadena, CA.

Holland, D.S. Managing Bycatch Risk. Workshop: Incentive-Based Fisheries Bycatch Reduction, Sete, France, Sept. 9-12 2015.

Holland, D.S. and J. Jannot. Bycatch Risk Pools for the West Coast Groundfish Fishery. PERC Workshop: Lessons Learned in Rights-Based Fisheries Management. Bozeman, MT July 26-29, 2011.

Holland, D.S. and J. Wiersma. Free Form Property Rights for Fisheries: The Decentralized Design of Rights-Based Management Through Groundfish “Sectors” in New England. PERC Workshop: Innovations in Property Rights for Fisheries Management, UC Santa Barbara, Oct. 19-21, 2009.

Holland, D.S. Economic Considerations and Methods for Evaluating Fishery Rebuilding Strategies. Invited Paper. OECD Workshop on the Economics of Rebuilding Fisheries. Newport, RI May 21-22, 2009.

New York Times Institute on the Environment, Punta Cana, Dominican Republic, March 30-April 4, 2008. An Economic Perspective on Fisheries and Oceans.

Johnston, R. J., D.S. Holland, V. Maharaj and T.W. Campson. Fish Harvest Tags: An Attenuated Rights Based Management Approach For Recreational Fisheries. PERC Workshop on Evolving Approaches to Managing Marine Recreational Fisheries. Big Sky, MT October 5-8, 2006.

Holland, D.S. Are Marine Reserves Part of an Optimal Fishery Management System: The Case of the Georges Bank Groundfish Fishery. Invited Paper. Marine Protected Areas: Design and Implementation for Conservation and Fisheries Restoration. Woods Hole Oceanographic Institute, August 27-29, 2001.

Holland, D.S. Integrating Marine Protected Areas into Dynamic Spatial Models of Fish and Fishermen. Invited key note presentation. International Conference on the Economics of Marine Protected Areas. University of British Columbia, Vancouver, Canada, July 6-7, 2000.

Holland, D.S. Incorporating Spatial Dynamics of Fish and Fishermen in Models of Marine Exclusion Zones. Invited key note presentation. Marine Exclusion Zones in Europe: A Facilitated, Multidisciplinary Conference with Research Funding in Mind. Southampton, UK, April 26-28, 2000.

Gates, J., D.S. Holland and E. Gudmundsson. Theory and Practice of Fishing Vessel Buyback Programs. Invited Paper. UNEP/WWF Natural Resource Management Workshop on the Role of Trade Policies in the Fishing Sector, Geneva, Switzerland, June 2-3, 1997.

Conference Papers Oral Presentations (presenter in bold):

J.K. Abbott, Y. Sakai, **D.S. Holland**. Species, Space, and Time: A Quarter-Century of Fishers’ Diversification Strategies on the US West Coast. 20th Biennial Conference International Institute of Fisheries Economics & Trade Conference, Vigo, Spain July 17-21 2018.

K.L. Oken, **D.S. Holland**, A. E. Punt. The impacts of access rules and synchrony in productivity in multi-fishery systems. 20th Biennial Conference International Institute of Fisheries Economics & Trade Conference, Vigo, Spain July 17-21 2018.

D.S. Holland, R. Fonner, C. Jordan and R. Zabel. Evaluating trade-offs in promoting salmon recovery in the Columbia River Basin. Workshop: Economic Research for Management of West Coast Salmon and Steelhead: Status, Needs, and Directions. Portland, Oregon June 15-16 2022.

Van Deynze, B., R. Fonner, B. Feist, S. Jardine, and D. Holland. "The Right Tool for the Job: Evaluating and Enhancing Fish Passage Prioritization Schemes with Geospatial Cost Models." Salmon Recovery Conference. April 28, 2021.

Van Deynze, B., R. Fonner, B. Feist, S. Jardine, and D. Holland. "Econometric Cost Models for Restoration Planning: An Application to Fish Passage Barriers in the Pacific Northwest." Association of Environmental and Resource Economists Summer Conference. June 3, 2021. Selected Presentation. Virtual.

Van Deynze, B., R. Fonner, B. Feist, S. Jardine, and D. Holland. "Econometric Cost Models for Restoration Planning: An Application to Fish Passage Barriers in the Pacific Northwest." Northeastern Agricultural and Resource Economics Association Annual Meeting. June 15, 2021. Selected Presentation (Plenary Session on Evidence Based Policy).

Phillips. A., **K. Norman,** D.S. Holland. "Community-level measures and individual fishers: primary and secondary data for the U.S. West Coast" Society for Applied Anthropology Annual Meeting, March 24, 2021

K.L. Oken, D.S. Holland, A. E. Punt. A bioeconomic simulation for understanding the roles of synchrony and permit access in driving revenue stability. ICES annual science conference. September 6-10, 2021

K.L. Oken, , Andre E. Punt. A bioeconomic simulation for understanding the roles of synchrony and permit access in driving revenue stability on the U.S. West Coast. PISCES annual meeting. October 16-27, 2019

Y. Sakai, J. Abbott and D.S. Holland. "Limited entry management and fishers' diversification strategy." The Society for Environmental Economics and Policy Studies (SEEPS) 2020. September 27th, 2020.

Y. Sakai, J. Abbott, D.S. Holland. "Should I Stay or Should I Go? Participation, Inactivity, and Exit in US West Coast Fisheries." Marine Socio-Ecological Systems (MSEAS) 2020. Postponed.
Sakai, Y., D.S. Holland, J. Abbott. An empirical analysis of limited entry permit choices. 10th Biennial Conference North American Association of Fishery Economists, Halifax, Nova Scotia, May 21-24, 2019.

Sakai, Y., D.S. Holland, J. Abbott. A comparison of individual and network level analyses in the fishery context. 10th Biennial Conference North American Association of Fishery Economists, Halifax, Nova Scotia, May 21-24, 2019.

Bellanger, M., **D.S. Holland**, C.M. Anderson, O. Guyader. Incentive effect of joint and several liability in fishery cooperatives on regulatory compliance 10th Biennial Conference North American Association of Fishery Economists, Halifax, Nova Scotia, May 21-24, 2019.

Vasquez-Caballer, S. Sylvia, G., D.S. Holland. Fishery participation and location choice model: The West Coast salmon troll commercial fishery. Incentive effect of joint and several liability in fishery cooperatives on regulatory compliance 10th Biennial Conference North American Association of Fishery Economists, Halifax, Nova Scotia, May 21-24, 2019.

Holland, D.S., J. Abbott, K. Norman. Fishing to Live or Living to Fish: Job Satisfaction and Identity of West Coast Fishermen. 10th Biennial Conference North American Association of Fishery Economists, Halifax, Nova Scotia, May 21-24, 2019.

Richerson, K., D.S. Holland, and J. Leonard. Quantifying and predicting impacts of salmon ocean fishery closures. Joint Meeting of American Fisheries Society/The Wildlife Society, Reno, Nevada, September 30 2019

Richerson, K. A.E. Punt, D.S. Holland. A Half Century of Sustainable Exploitation in the Dungeness Crab (Cancer magister) Fishery. Joint Meeting of American Fisheries Society/The Wildlife Society, Reno, Nevada, September 30 2019.

Fonner, R., M. Bellanger, D.S. Holland. Conflicting Mandates and Overlapping Institutions in Marine Conservation: evaluating the potential of alternative governance structures for salmon in the Pacific Northwest. 19th Biennial Conference International Institute of Fisheries Economics & Trade Conference, Seattle, WA, July 17 2018.

R.L. Hicks, **Holland, D.S.**, K. Schnier. Choice Sets for Fishery Location Choice Models in the Presence of Fine-scale Spatial and Temporal Heterogeneity. 19th Biennial Conference International Institute of Fisheries Economics & Trade Conference, Seattle, WA, July 17 2018.

Richerson, K. D.S. Holland., and J. Leonard. Quantifying and predicting impacts of salmon ocean fishery closures. 19th Biennial Conference International Institute of Fisheries Economics & Trade Conference, Seattle, WA, July 17 2018.

Holland, D.S., Evolving Bycatch Risk in the Pacific Groundfish Trawl IFQ. 9th th Biennial Conference of the North American Association of Fishery Economists. La Paz, Mexico March 2017.

Richerson, K. and D.S. Holland. Quantifying and predicting responses to a West Coast salmon fishery closure. 9th Biennial Conference of the North American Association of Fishery Economists. La Paz, Mexico March 2017.

Vasquez-Caballero and D.S. Holland, Model of Fishery Participation and Location Choice for the West Coast Salmon Fishery. 8th Biennial Conference of the North American Association of Fishery Economists. La Paz, Mexico March 2017.

Holland, D.S., J. Agar, S. Crosson, G. DePiper, S. Kasperski, D. Kitts, L. Perruso, and C. Speir. The Impact of Catch Shares on Fishing Income Diversification. 18th Biennial Conference of the International Institute for Fisheries Economics and Trade, Aberdeen, Scotland July 2016.

Manuel Bellanger, D.S. Holland, C.M. Anderson, O. Guyader¹, C. Macher. A game theoretic model of monitoring and compliance in fishery cooperatives. 18th Biennial Conference of the International Institute for Fisheries Economics and Trade, Aberdeen, Scotland July 2016.

Martin, C. and D.S. Holland. Cooperative Bycatch Management in Pacific Whiting Fishery in Concept and in Practice. 18th Biennial Conference of the International Institute for Fisheries Economics and Trade, Aberdeen, Scotland July 2016.

Holland, D.S., J. Agar, S. Crosson, G. DePiper, S. Kasperski, D. Kitts, L. Perruso, and C. Speir. The Impact of Catch Shares on Fishing Income Diversification and Fleet Diversity. 8th Biennial Conference of the North American Association of Fishery Economists. Ketchikan, AK May 2015.

Holland, D.S. The Anatomy of a Multispecies Individual Fishing Quota (IFQ) “Market” in Development. 8th Biennial Conference of the North American Association of Fishery Economists. Ketchikan, AK May 2015.

Steiner, E. and D.S. Holland. Varying Profitability across Gear Types in a Multi-Gear, Multispecies IFQ Fishery. 8th Biennial Conference of the North American Association of Fishery Economists. Ketchikan, AK May 2015.

Holland, D.S. and S. Kasperski. Fishery Diversification Along the US Pacific Coast. Mark L. Plummer Memorial Symposium, Seattle, WA June 3, 2015.4.

Woods, P., D.S. Holland, A.E. Punt. Can species transformation provisions help multi-species fisheries management systems adapt to an uncertain future? ICES Annual Science Conference, Copenhagen, Denmark Sept. 21-25, 2015.

Nielsen, R., E. Thunberg, D.S. Holland, J. Schmidt. Evaluation of Integrated Ecological-Economic Models – Review and Challenges for Implementation (presented by Rasmus Nielsen) ICES Annual Science Conference, Copenhagen, Denmark Sept. 21-25, 2015.

Steiner, E. and D.S. Holland. The Dynamic Role of Sablefish in a Multispecies, Multigear IFQ Fishery. 17th Biennial Conference of the International Institute for Fisheries Economics and Trade, Brisbane, Australia July 2014.

Hicks, R.L., **D.S. Holland**, and K. Schnier. Location Choice and Bycatch Avoidance in the Pacific Groundfish Trawl Fishery Under ITQs. 88th Annual Conference of the Western Economic Association International. Seattle, WA 2013

Holland, D.S., Making Cents Out of Barter Data from the British Columbia Groundfish ITQ Market Annual Conference of the Western Economic Association International. Seattle, WA 2013

Kasperski, S., Holland, D.S., Can Species Diversity Improve the Resiliency of Fishing Communities? 88th Annual Conference of the Western Economic Association International. Seattle, WA 2013

Holland, D.S. Making Cents Out of Barter Data from the British Columbia Groundfish ITQ Market. 7th Biennial Conference of the North American Association of Fishery Economists. St. Petersburg, FL, 2013.

Holland, D.S., and K. Norman. Network Analysis of the Quota Pounds Market for the Pacific Groundfish ITQ. 7th Biennial Conference of the North American Association of Fishery Economists. St. Petersburg, FL, 2013.

Woods, P., D.S. Holland, A.E. Punt. Catch-quota balancing regulations in the Icelandic multi-species demersal fishery: are they useful for advancing the ecosystem approach to fisheries? 7th Biennial Conference of the North American Association of Fishery Economists. St. Petersburg, FL, 2013.

Holland, D.S. 2012 West Coast Fisheries Forum. Monterey, CA, Sept. 2012: Managing Constraining Species in Multispecies Fisheries

Holland, D.S. and J. Jannot. Bycatch Risk Pools for the West Coast Groundfish Fishery. 16th Biennial Conference of the International Institute for Fisheries Economics and Trade, Dar es Salaam, Tanzania July 2012.

Kasperski, S. and **D.S. Holland**. Fishery Income Diversification and Risk for West Coast Fishermen and Fishing Communities. 16th Biennial Conference of the International Institute for Fisheries Economics and Trade, Dar es Salaam, Tanzania July 2012.

Lehuta, S. **D.S. Holland** and A.J. Pershing. A coupled model of the Gulf of Maine lobster, herring and groundfish fisheries. 16th Biennial Conference of the International Institute for Fisheries Economics and Trade, Dar es Salaam, Tanzania July 2012.

Holland, D.S., Jointly Modeling Fish and Fishing in the Maine Lobster Fishery. 141st Annual Meeting of the North American Fisheries Society, Seattle, WA, Sept. 2011.

Holland, D.S. and J. Jannot. Bycatch Risk Pools for the West Coast Groundfish Fishery 141st Annual Meeting of the North American Fisheries Society, Seattle, WA, Sept. 2011.

Holland, D.S. An Introduction to Modeling Participation and Location Choice Decisions in Fisheries. 6th Biennial Conference of the North American Association of Fishery Economists. Honolulu, HI , May, 2011

Holland, D.S. and T. Herrera. Management of Fishery Metapopulations Under Uncertainty: The Role of Age Structure and Asymmetry in Migration. 6th Biennial Conference of the North American Association of Fishery Economists. Honolulu, HI , May, 2011

Holland, D.S. Assigning Rights and Responsibilities in Fishery Catch Share Systems: Individual Quotas vs. Harvest Cooperatives Pacific Catch Share Workshop, Honolulu, HI May 2010.

Holland, D.S. Markets, Pooling and Insurance for Managing Bycatch in Fisheries. 15th Biennial Conference of the International Institute for Fisheries Economics and Trade, Montpellier, France, July 2010.

Holland, D.S. Optimizing Intra-annual Harvest in the Maine Lobster Fishery. 15th Biennial Conference of the International Institute for Fisheries Economics and Trade, Montpellier, France, July 2010.

Holland, D.S. Management Strategy Evaluation and Management Procedures: Tools for Rebuilding and Sustaining Fisheries. 15th Biennial Conference of the International Institute for Fisheries Economics and Trade, Montpellier, France, July 2010.

Holland, D.S. and T. Herrera. The Benefits and Risks of Increased Spatial Resolution in Management of Fishery Metapopulations Under Uncertainty. 5th Biennial Conference of the North American Association of Fishery Economists. Newport, RI, May, 2009

Holland, D.S. Economic Considerations and Methods for Evaluating Fishery Rebuilding Strategies. 5th Biennial Conference of the North American Association of Fishery Economists. Newport, RI, May, 2009

Holland, D.S. and R.W. Ryan. Managing Coupled Fishery Systems: The Case of a Bait-Dependent Fishery. US-International Association of Landscape Ecologists Symposium. Snowbird, Utah, April 12-16, 2009.

Holland, D.S. and T. Herrera. Dealing with Uncertainty in Management of Fisheries: Contradictory Advice and a New Approach. 14th Conference of the International Institute for Fisheries Economics and Trade, Nha Trang, Vietnam, July 2008.

Hicks, R.L., **D.S. Holland**, and K. Schnier. Linking ecology, economics, and fleet dynamics to evaluate alternative management strategies for US West Coast trawl fisheries. 14th Conference of the International Institute for Fisheries Economics and Trade, Nha Trang, Vietnam, July 2008.

Holland, D.S. Are Fishermen Rational? A Fishing Expedition 4th Biennial Conference of the North American Association of Fishery Economists. Merida, Mexico March, 2007.

Holland, D.S. Managing Environmental Impacts of Fishing: Input Controls vs. Outcome Oriented Approaches. ICES Symposium: Fishing Technology in the 21st Century: Integrating Fishing and Ecosystem Conservation. Boston, MA, Nov. 2006

Holland, D.S. and T. Herrera. Balancing Efficiency and Risk with Flexible Catch Balancing Policies for Multispecies ITQ Fisheries. 13th Conference of the International Institute for Fisheries Economics and Trade, Portsmouth, UK, July 2006.

Holland, D.S. and T. Herrera. Balancing Efficiency and Risk with Flexible Catch Balancing Policies for Multispecies ITQ Fisheries. 3rd World Congress of Environmental and Resource Economists. Kyoto, Japan July 2006.

Holland, D.S. and K. Schnier. Protecting Marine Biodiversity with Individual Habitat Quotas 3rd Biennial Conference of the North American Association of Fishery Economists. Vancouver, Canada May, 2005.

Holland, D.S. and K. Schnier. Protecting marine biodiversity: a comparison of individual habitat quotas and marine protected areas. 5th William R. and Lenore Mote International Symposium. Sarasota, Florida, November 2004.

Stokes, K., N. Gibbs and D.S. Holland. Incentives in research planning and procurement: an industry perspective on New Zealand's cost recovery regime. 5th William R. and Lenore Mote International Symposium. Sarasota, Florida, November 2004.

Holland, D.S. and K. Schnier. Individual Habitat Quotas for Fisheries. 12th Biennial Conference of the International Institute for Fisheries Economics and Trade, Tokyo, Japan, July 2004.

Anderson, C.M. and **D.S. Holland.** Auctions for Initial Sale of Annual Catch Entitlement. 12th Biennial Conference of the International Institute for Fisheries Economics and Trade, Tokyo, Japan, July 2004.

Anderson, C.M. and **D.S. Holland.** A Laboratory Assessment of Sealed-bid Auction Mechanisms for Initial Sale of Annual Catch Entitlements. 12th Conference of Annual Conference of the New Zealand Association of Economists, Wellington, New Zealand. June 2004.

Holland, D.S. Optimal Effort Controls for the Multispecies Groundfish Complex in New England. 11th Biennial Conference of the International Institute for Fisheries Economics and Trade, Wellington, New Zealand, July 2002.

Holland, D.S. A Retrospective Look at the Feasibility of Predicting Response of Fishermen to Regulatory Change in the New England Groundfish Fishery. 1st Biennial Conference of the North American Association of Fishery Economists. New Orleans, LA April 1-4, 2001.

Holland, D.S. Balancing Biological and Financial Risks for the New England Groundfish Complex. 2nd World Congress of Environmental and Resource Economists. Monterey, CA June 24-27 2002

Holland, D.S. Integrating Spatial Controls into Fishery Management Systems: The Case for the Georges Bank Multispecies Groundfish Fishery. 2001 ICES Annual Science Conference, September, 2001.

Holland, D.S. and T. Lee. The Impact of Noisy Catch Data on Estimates of Efficient Output Derived From DEA and Stochastic Frontier Models: A Monte Carlo Comparison. 10th Conference of the International Institute for Fisheries Economics and Trade, Corvallis, Oregon, July 2000.

Holland, D.S. and J.J.C. Ginter. and Common Property Institutions in the Alaskan Groundfish Fisheries. 8th Biennial Conference of the International Association for the Study of Common Property (IASCP). Bloomington, IN 2000.

Holland, D.S. and D. Brazee. Marine Reserves for Fishery Management. 8th Biennial Conference of the International Institute for Fisheries Economics and Trade, Marrakech, Morocco, July 1996.

Wessells, C.R. and D.S. Holland, World Aquaculture Society annual meetings, Las Vegas, Feb, 1998. Predicting Consumer Preferences for Seafood: What's in a Label?

9. Funded Research

2021; S. Jardine, B. R. Fonner, D. Holland, Mark Scheuerell, B. Van Deynze. Washington Sea Grant . Maximizing returns on investing in barrier culvert removal in Washington state. \$256,398.

2020; Kling, D., D.S. Holland, S. Jardine. J. Sanchirico, G. Sylvia, NOAA-NOS-NCCOS-2020-2006219. Evaluation of mitigation strategies for harmful algal blooms in the West Coast Dungeness crab fishery. \$1,197,739.

2016; Abbott, J., Holland, D.S., Pinsky, M., Poe, M., Punt A. National Science Foundation, Couple Natural Human Systems. CNH-L: The Dynamics of Adaptation to Climate-Driven Variability in California Current Fisheries and Fishing Communities. \$1,500,000.

2013; Pershing, A.J., K. Mills, C. Y. Chen, F. Chiang, T. Farmer, D.S. Holland, J. Nye, J.C. Sun, A. Thomas, and R. Wahle. National Science Foundation, Coastal SEES. Collaborate Research: Resilience and Adaptation of a Coastal Ecological-Economic System in Response to Increasing Temperature. \$372,055 (part of \$1.9 million collaborative proposal).

2012; Holland, D.S., Hicks, R.L. and Schnier, K.E. Risk Aversion and Bycatch Avoidance in the West Coast Groundfish Trawl Fishery. Pacific States Marine Fisher Commission. \$40,000.

2011-2013; Holland, D.S., Anderson, C.M., Uchida, H. An Experimental Evaluation of Individual Quota and Pooling Approaches for Managing Incidental Catch of “Choke Species” in Catch Share Systems. NOAA, NMFS Science and Technology. \$50,100.

2010-2012; Holland, D.S. Saltonstall-Kennedy Grant Program. Understanding Opportunities and Barriers to Increased Profitability for the Gulf of Maine Lobster Industry. \$165,658.

2007-2012; Holland (lead PI), D.S., J. Grabowski, A. Lishness, and G. Sherwood, GMRI, G. Herrera, Bowdoin, A. Pershing, J. Runge, Y. Chen, , U. Maine, L. Incze, USM.) National Science Foundation, Dynamics of Couple Natural Human Systems Program (Award #0709527); Collaborative Research: Direct and Indirect coupling of fisheries through economic, regulatory, environmental and ecological linkages \$872,023 (part of \$1.5 million collaborative proposal).

2009-2010; Holland, D.S. (the NMFS collaborators Patricia Pinto da Silva and Andrew Kitts); Understanding Determinants of Success of New England Groundfish Sectors. Cooperative Institute for the North Atlantic Region (CINAR). \$89,015.

2008-2010; Holland, D.S., G. Herrera, Bowdoin College: Maine Sea Grant, “The Benefits and Risks of Increased Spatial Resolution in Management of New England Groundfish Stocks,” \$99,350.

2008-2010; Holland, D.S., T. Lee. NMFS, Northwest Fishery Science Center. “Modeling the British Columbia Groundfish ITQ Market,” \$US40,805.

2007-2010; L Singer and Holland, D.S. The Gordon and Betty Moore Foundation. Technical and Scientific Expertise to Fishing Sectors. \$1,065,058

2007 Holland, D.S., Johnston, R, Sanchirico, J.. Massachusetts Ocean Partnership. “Economic frameworks and data needs to support integrated multiple use ocean management in Massachusetts.” \$59,333.

2006-2007; Holland, D.S. National Marine Fisheries Service, Office of Science and Technology “A Feasibility Study of Community Based Groundfish Sectors,” \$38,000.

2006-2008; T. Lee, D.S. Holland, E.A. Fulton I. Kaplan,: NMFS, Northwest Fishery Science Center; “Linking ecology, economics, and fleet dynamics to evaluate alternative management strategies for US West Coast trawl fisheries” US\$60,500.

2005-2006; Holland, D.S. National Marine Fisheries Service, Office of Science and Technology “New approaches to understanding fishing decisions under uncertainty,” US\$24,865.

2005-2006; Singer, L.T. and Holland, D.S. A Socioeconomic Study of the Gulf of Maine Lobster Industry. National Marine Fisheries Service, Northeast Regional Office, Cooperative Research Partners Program. \$128,492.

2004-2005; Holland, D.S.; New Zealand Ministry of Fisheries; “A Bioeconomic Modeling Analysis of the Economic Efficiency and Biological Risk Associated with Alternative Catch Balancing Regimes for Multispecies Fisheries in the New Zealand QMS,” \$98,000.

2003-2005; Holland, D.S.; NMFS, Alaska Fishery Science Center; “Economics of essential fish habitat,” \$60,000.

2001-2003; Rothschild, B. and D.S. Holland; Massachusetts Office of Business Development through Massachusetts Fisheries Recovery Commission. “Improving assessment and management of the Northeast multispecies fishery,” \$200,000 .

2002-2003; Holland, D.S. NMFS, Office of Statistics and Economics; “Spatial fishery rights and marine zoning,” US\$10,000.

1997; Sutinen, J.G., J. Anderson and D.S. Holland; Rhode Island Sea Grant. “The Use of Closed Areas as a Fisheries Management Tool for the New England Groundfish Fishery: A Bioeconomic Analysis,” \$29,415.

1997; Sutinen, J. and D.S. Holland. Medical Science Foundation. “The Use of Marine Sanctuaries for Fisheries Management and Protection of the Environment: A Bioeconomic Analysis,” \$10,500.

10. Professional Activities and Service

Professional Societies and Organizations

International Institute for Fisheries Economics and Trade (IIFET)

- President 2014-2016; President Elect 2012-2014
- Board Member 2010-2012
- Scientific Committee 2010, 2012, 2016, 2020
- Co-lead Organizer 2018 Meeting to be held in Seattle, WA

North American Association of Fishery Economists (NAAFE)

- Treasurer 2011-2013
- Board Member 2009-2011
- Scientific Committee 2011 & 2013

Marine Resource Economics Foundation: Vice President 2015-present, Board 2013-2015

Panels and Advisory Services

Science and Statistical Committee, Pacific Fishery Management Council 2016-present.
(Ecosystem Subcommittee Chair 2017-2020; SSC Vice Chair 2020-2022; SSC Chair 2022 –2024)

The Interdisciplinary graduate school for the Blue Planet (IsBlue), Brest, France. International Scientific Council; 2018-present.

National Science Foundation review panels (Coupled Natural Human Systems 2013 and 2015, Coastal SEES 2014)

Advisory Board member of the European Union DISCARDLESS project 2015-2019
(<http://www.discardless.eu/>).

ICES Working Group on Integrating Ecological and Economic Models. Chair-invited Member. 2012-present

Expert Review Panel of New England Swept Area Seabed Impact (SASI) Model 2011

National Research Council Committee on the Development of an Integrated Science Strategy of Ocean Acidification Monitoring, Research and Impacts Assessment 2010.

New England Fishery Management Council Groundfish Plan Development Team 2000-2003 and 2005-2010

Joint Industry-Government Working Group of Reform of New Zealand Quota Management System Deemed Value System 2003-2005

Joint Industry-Government Working Group of Reform of New Zealand Quota Management System Cost Recovery System 2004-2005

Conference, Workshops, Conference Sessions Organized

Workshop: Economic Research for Management of West Coast Salmon and Steelhead: Status, Needs, and Directions. To be held June 15-17, 2022 in Portland, OR.

Conference: 2018 Biennial Conference of the International Institute for Fisheries Economics and Trade, held at the University of Washington in July 2018. We expect 400-500 attendees from over 30 countries. (co-organizers Chris Anderson, University of Washington and Alan Haynie, AFSC)

Workshop: Resilience of Fishing Communities in a Changing Climate Workshop. May 3-5, 2016 Silver Spring, MD. (co-organizers Roger Griffis, Rita Curtis, Kate Quigley) Increasing

Workshop: Evaluating the Impact of Catch Shares on Fishing Income Diversification and Fleet Diversity. Ketchikan, AK May xx 2015.

Evaluating the Impact of Catch Shares on Fishing Income Diversification. June 9-11 Southeast Fisheries Science Center, Miami, FL

Workshop: Sector Contract Agreements. Nov. 1-2, 2007, Gulf of Maine Research Institute. Portland, Maine. (co-organizer Rita Heimes)

Editorial Positions

Marine Resource Economics Associated Editor, 2001-present, Contributing Editor 1998-2001

Reviewer (since 2017):

Ambio

American Journal of Agricultural Economics

Aquatic Living Resources

Bulletin of Marine Science

Canadian Journal of Agricultural Economics,

Canadian Journal of Fisheries and Aquatic Sciences

Conservation Biology

Development Economics

Ecological Applications

Ecological Economics

Environment and Development Economics

Environmental and Resource Economics

Fish and Fisheries

Fisheries Research

Frontiers in Marine Science

ICES Journal of Marine Science

International Bulletin of Marine Science

Journal of Applied Economics

Journal of Environmental Economics and Management

Journal of Global Environmental Issues

Land Economics

Marine Policy

Marine Resource Economics

Natural Resource Modeling

Nature

North American Journal of Fishery Management

Ocean and Coastal Management

Plos One

Proceedings of the National Academy of Sciences

Resource and Energy Economics

Scientific Reports

Sustainability

Teaching and Mentoring

Affiliate Professor, Oregon State University, Department of Applied Economics 2014-2018

Affiliate Professor, University of Washington, School of Aquatic and Fishery Sciences 2013-Present

Adjunct Professor, University Maine, School of Marine Sciences 2006-2015

Adjunct Professor, University of Rhode Island, Department of Environmental and Natural Resource Economics 2002-2010,

Adjunct Professor, University of Southern Maine, School of Law 2008-2009

Courses Taught

Marine Resource Economics: University of Massachusetts, Dartmouth 2002

Marine Resource Economics: and at Oregon State University. 2011

Aquaculture Economics: University of the Algarve, Portugal. 1996

The Science and Economics of Fisheries Management: Univ. of Massachusetts, Dartmouth. 2001

Regulation of Marine Fisheries: University of Maine School of Law 2009

Postdoctoral Advising:

Ridouan Bani, University of Washington, SAFS 2020-Present

Kiva Oken, University of Washington, SAFS 2018-2019

Kate Richerson, University of Washington JISAO/NWFSC, *Understanding Participation and Effort in State and Federal Fisheries along the West Coast* (co-advisor with Andre Punt)

Pamela Woods, Nordic Centre for Research on Marine Ecosystems and Resources under Climate Change (NorMER). *Catch-quota balancing regulations in the Icelandic multi-species demersal fishery: are they useful for advancing the ecosystem approach to fisheries?* (co-advisor with Andre Punt, and Gudrun Marteinsdottier)

Sigrid Lehuta, Gulf of Maine Research Institute. *Couple Modeling of Gulf of Maine Lobster and Herring Fisheries*. (co-advisor with Andrew Pershing)

Graduate Committee Membership:

Kristin Privitera-Johnson, University of Washington - SAFS Ph.D. candidate

Marie, Guldin, University of Washington, Economics Ph.D. candidate.

Timothy Cline, University of Washington, School of Aquatic and Fisheries Sciences Ph.D. candidate.

Kotaro Ono, University of Washington, School of Aquatic and Fisheries Sciences Ph.D. candidate. *Weak stock management*.

Peter Kuriyama, University of Washington, School of Aquatic and Fisheries Sciences M.S. candidate. *Effects of Pacific Groundfish IFQ on Fish and Fishermen*

Jui-Han Chang, University of Maine, Ph.D. awarded 2015. *Gulf of Maine Lobster Management*.

Dominic Fitzpatrick, University of Maine, M.S. awarded 2010. *Coupled Fishery System Modeling*

Richard Ryan, University of Rhode Island, Environmental and Natural Resource Economics, M.S. awarded 2009). *Essays in Fishery Policy*.

Mark Soboil, University of Rhode Island, Environmental and Natural Resource Economics, PhD awarded University of Rhode Island 2005. *Transboundary Impacts of Fishing Activities Along the Continental Shelf*.

11. Agency Service

Chair NMFS National NS1 Technical Guidance Working Group on Subgroup 2:Harvest Strategies 2017-2020

NMFS support staff for Marine Fisheries Advisory Committee (MAFAC) Community Resilience Task Force 2016-present.

Co-organized NOAA-wide workshop on Increasing Resilience of Fishing Communities In a Changing Climate Workshop

Chair, National NMFS Ad Hoc Working Group on Measuring Fishery Diversification 2014-2016

Co-chair National NMFS Ad Hoc Working Group on Collection and Use of Data from Catch Share Markets 2013-2015

Member NMFS Task Force on Fishery Capacity Reduction 1999-2000

13. References

Outside of NOAA Fisheries

Dr. James Wilen - Professor Emeritus, UC Davis Agricultural and Resource Economics
email: wilen@primal.ucdavis.edu

Dr. Lee Anderson - Professor Emeritus, University of Delaware School of Marine Science and Policy email: lgafish@udel.edu

Dr. Ray Hilborn - Professor, University of Washington School of Aquatic and Fisheries Sciences
email: rayh@uw.edu or hilbornr@gmail.com

Dr. Ragnar Arnason - Professor Emeritus, University of Iceland Faculty of Economics
email: ragnara@hi.is

Within NOAA Fisheries

Dr. Eric Thunberg - Economist, NOAA Fisheries Office of Science and Technology
email: eric.thunberg@noaa.gov

Dr. Ron Felthoven - Director, AFSC Resource Ecology and Fisheries Management (also and economist) ron.felthoven@noaa.gov