

## Curriculum Vitae

Ian J. Stewart

International Pacific Halibut Commission

2320 West Commodore Way, Suite 300, Seattle, WA 98199 (206)552-7667; e-mail: Ian@iphc.int

### **Education:**

- Doctor of Philosophy (2006), Master of Science (2001), School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. Bachelor of Arts (1996), Dartmouth College, Hanover, NH.

### **Experience:**

- Quantitative Scientist, International Pacific Halibut Commission, 2012-present.
- Research Fisheries Biologist, Fishery Resource Analysis and Monitoring Division, National Marine Fisheries Service, Northwest Fisheries Science Center, 2004-2012.
- Teaching Assistant (2001-2003), Field Research Technician (1996-1999), School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA
- Biologist, Simpson Timber Company, Shelton, WA, 1996-1999

### **Publications:**

- Stewart, I.J., and A.C. Hicks. 2018. Inter-annual stability from ensemble modelling. *Canadian Journal of Fisheries and Aquatic Sciences*. 75: 2109-2113.
- Monnahan, C.C., and I.J. Stewart. 2018. The effect of hook spacing on longline catch rates: implications for catch rate standardization. *Fisheries Research*. 198: 150-158.
- Stewart, I.J., and C.C. Monnahan. 2017. Implications of process error in selectivity for approaches to weighting compositional data in fisheries stock assessments. *Fisheries Research*. 192: 126-134.
- Stewart, I.J., and S.J.D. Martell. 2015. Reconciling stock assessment paradigms to better inform fisheries management. *ICES Journal of Marine Science*. 72(8): 2187-2196.
- Martell, S., Stewart, I., and Sullivan, J. 2015. Implications of bycatch, discards, and size limits on reference points in the Pacific halibut fishery. *In Fisheries bycatch: Global issues and creative solutions*. G.H. Kruse, H.C. An, J. DiCosimo, C.A. Eischens, G. Gislason, S., D.N. McBride, C.S. Rose and C.E. Siddon. *Eds.* Alaska Sea Grant, University of Alaska Fairbanks.
- Stewart, I.J., and O.S. Hamel. 2014. Bootstrapping of sample sizes for length- or age-composition data used in stock assessments. *Canadian Journal of Fisheries and Aquatic Sciences* 71: 581-588.
- Stewart, I.J., and S.J.D. Martell. 2014. A historical review of selectivity approaches and retrospective patterns in the Pacific halibut stock assessment. *Fisheries Research*. 158: 40-49.
- Martell, S.J.D., and I.J. Stewart. 2014. Towards defining good practices for modeling time-varying selectivity. *Fisheries Research*. 158: 84-95.
- Thorson, J.T., I.G. Taylor, I.J. Stewart, and A.E. Punt. 2014. Rigorous meta-analysis of life history correlations by simultaneously analyzing multiple population dynamics models. *Ecological Applications* 24(2): 315-326.
- Ralston, S.J., and I.J. Stewart. 2013. Bifurcated distributions of pelagic juvenile rockfish on the U.S. west coast in 2005 and 2006. *CalCOFI Reports* 54: 1-12.
- Thorson, J.T., I.J. Stewart, I.G. Taylor, and A.E. Punt. 2013. Using a recruitment-linked multispecies stock assessment model to estimate common trends in recruitment for US West Coast groundfishes. *Marine Ecology Progress Series* 483: 245-256.
- Doherty, D.T., R. Hilborn, A.E. Punt and I.J. Stewart. 2013. Modeling co-occurring groundfish species: a simulation study on the effects of the spatial scale for setting management targets. *Canadian Journal of Fisheries and Aquatic Sciences*. 70: 49-56.
- Thorson, J.T., M.E. Clarke, I.J. Stewart and A.E. Punt. 2012. The implications of spatially varying catchability on bottom trawl surveys of fish abundance, and a proposed solution involving *in situ* underwater vehicles. *Canadian Journal of Fisheries and Aquatic Sciences*. 70: 294-306.

- Stewart, I.J., A. Hicks, I. Taylor, J.T. Thorson, C. Wetzel and S. Kupschus. 2012. A comparison of stock assessment uncertainty estimates using maximum likelihood and Bayesian methods implemented with the same model framework. *Fisheries Research*. 142: 37-46.
- Thorson, J.T., I.J. Stewart, and A.E. Punt. 2012. Development and application of an agent-based model to evaluate methods for estimating stock abundance for shoaling fishes such as Pacific rockfish (*Sebastes* spp.). *ICES Journal of Marine Science*. 69(4): 635-647.
- Keller, A. A., J. R. Wallace, B.H. Horness, O. S. Hamel, I. J. Stewart. 2012. Variations in Eastern North Pacific demersal fish biomass based on the U.S. West Coast groundfish bottom trawl survey (2003–2010). *Fishery Bulletin*. 110: 205-222.
- Getsiv-Clemons, J.E.R. W.W. Wakefield, C.E. Whitmire, I.J. Stewart. 2012. Identifying potential habitats from multibeam echosounder imagery to estimate abundance of groundfish: a case study at Heceta Bank, OR, USA. *In* P.T. Harris and E.K. Baker, *Seafloor Geomorphology as Benthic Habitat: GeoHAB Atlas of Seafloor Geomorphic Features and Benthic Habitats*, Elsevier Inc., p. 570-586.
- Hilborn, R., I.J. Stewart, T.A. Branch, and O.P. Jensen. 2011. Conservation of diversity and food security in the California Current bottom trawl fishery. *Conservation Biology*. 26: 257-266.
- Thorson, J.T., I.J. Stewart, and A.E. Punt. 2011. Accounting for fish shoals in single- and multi-species survey data using mixture distribution models. *Canadian Journal of Fisheries and Aquatic Sciences* 68: 1681-1693.
- Harms, J.H., J.R. Wallace, and I.J. Stewart. 2010. A fishery-independent estimate of recent population trend for an overfished U.S. west coast groundfish species, Bocaccio rockfish (*Sebastes paucispinis*). *Fisheries Research* 106: 298-309.
- Stewart, I.J., A. Keller, E.L. Fruh, V. Simon, and B.H. Horness. 2010. Throwing In The Towel: When Do Adverse Conditions Dictate A Weather Day During A Bottom Trawl Survey? *Fisheries Research* 102(1-2):130-140.
- Stewart, I.J., and K.R. Piner. 2007. Simulation of the estimation of ageing bias inside an integrated assessment of canary rockfish using age estimates from a bomb radiocarbon study. *Marine and Freshwater Research* 58:905-913.
- Stewart, I.J. 2007. Defining plausible migration rates based on historical tagging data: a Bayesian mark-recapture model applied to English sole (*Parophrys vetulus*). *Fishery Bulletin* 105:470-484.
- Helser, T.E., I.J. Stewart and H.-L. Lai. 2007. A Bayesian hierarchical meta-analysis of the genus *Sebastes* in the eastern Pacific ocean. *Canadian Journal of Fisheries and Aquatic Science* 64: 470-485.
- Quinn, T.P., I.J. Stewart and C.P. Boatright. 2006. Experimental evidence of homing to site of incubation by mature sockeye salmon (*Oncorhynchus nerka*). *Animal Behaviour* 72: 941-949.
- Minte-Vera, C.V., T.A. Branch, I.J. Stewart, and M.W. Dorn. 2005. Practical application of meta-analysis results: avoiding the double use of data. *Canadian Journal of Fisheries and Aquatic Sciences* 62:925-929.
- Stewart, I.J., S.M. Carlson, C.P. Boatright, G.B. Buck, and T.P. Quinn. 2004. Site fidelity of spawning sockeye salmon (*Oncorhynchus nerka* W.) in the presence and absence of olfactory cues. *Ecology of Freshwater Fish* 13:104-110.
- Stewart, I.J., T.P. Quinn, and P. Bentzen. 2003. Evidence for fine-scale natal homing among island beach spawning sockeye salmon, *Oncorhynchus nerka*. *Environmental Biology of Fishes* 67:77-85.
- Stewart, I.J., R. Hilborn, and T.P. Quinn. 2003. Coherence of observed adult sockeye salmon abundance within and among spawning habitats in the Kvichak River watershed. *Alaska Fishery Research Bulletin* 10(1):28-41.

**Documents:**

- Stewart, I., and Hicks, A. 2019. Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2018. IPHC-2019-AM095-09. 26 p.
- Stewart, I., and Webster, R. 2019. Overview of data sources for the Pacific halibut stock assessment, harvest policy, and related analyses. IPHC-2019-AM095-08. 76 p.
- Stewart, I., and Hicks, A. 2018. Evaluation of the IPHC's 32" minimum size limit. IPHC-2018-AM094-14. 44 p.
- Stewart, I., Hicks, A., Webster, R., and Wilson, D. 2018. Summary of the data, stock assessment, and harvest decision table for Pacific halibut (*Hippoglossus stenolepis*) at the end of 2017. IPHC-2018-AM094-08. 16 p.
- Stewart, I., and Hicks, A. 2018. Assessment of the Pacific halibut (*Hippoglossus stenolepis*) stock at the end of 2017. IPHC-2018-AM094-10. 25 p.
- Stewart, I., and Webster, R. 2018. Overview of data sources for the Pacific halibut stock assessment, harvest strategy policy, and related analyses. IPHC-2018-AM094-09. 83 p.
- Stewart, I. 2018. Final Pacific halibut catch tables for 2018. IPHC-2018-AM094-11 Rev\_1. 21 p.
- Hicks, A., and Stewart, I. 2018. IPHC Management Strategy Evaluation (MSE): Update. IPHC-2018-AM094-12. 33 p.
- Hicks, A.C., and Stewart, I.J. 2017. 4.5 An investigation of the current IPHC harvest policy and potential for improvement. IPHC Report of Assessment and Research Activities 2016. p. 421-438.
- Webster, R.A., and Stewart, I.J. 2017. 4.3 Setline survey-based apportionment estimates. IPHC Report of Assessment and Research Activities 2016. p. 395-402.
- Stewart, I.J., and Hicks, A.C. 2017. 4.2 Assessment of the Pacific halibut stock at the end of 2016. IPHC Report of Assessment and Research Activities 2016. p. 365-394.
- Stewart, I.J. 2017. 4.4 Regulatory area harvest policy calculations and catch tables. IPHC Report of Assessment and Research Activities 2016. p. 403-420.
- Stewart, I.J. 2017. 4.1 Overview of data sources for the Pacific halibut stock assessment and related analyses. IPHC Report of Assessment and Research Activities 2016. p. 279-364.
- Loher, T., Dykstra, C.L.K., Thomas M., Erikson, L.M., and Stewart, I.J. 2017. 2.9 Voluntary at-sea marking of Pacific halibut in the targeted longline fleet. IPHC Report of Assessment and Research Activities 2016. P. 110-121.
- Leaman, B.M., and Stewart, I.J. 2017. 2.12 Research basis for estimated discard mortality rates used for Pacific halibut in longline and trawl fisheries. IPHC Report of Assessment and Research Activities 2016. p. 133-172.
- Goen, J., Erikson, L.M., and Stewart, I.J. 2017. 2.2 Incidental mortality of Pacific halibut in the directed commercial halibut fishery (Wastage). IPHC Report of Assessment and Research Activities 2016. p. 41-49.
- Stewart, I.J., Monnahan, C.C., and Martell, S. 2016. Assessment of the Pacific halibut stock at the end of 2015. IPHC Report of Assessment and Research Activities 2015. p. 188-209.
- Stewart, I.J., and Monnahan, C.C. 2016. Overview of data sources for the Pacific halibut stock assessment and related analyses. IPHC Report of Assessment and Research Activities 2015. p. 99-187.
- Stewart, I.J., and Martell, S.J.D. 2016. Appendix: Development of the 2015 stock assessment. IPHC Report of Assessment and Research Activities 2015. p. A1-A146.
- Stewart, I.J. 2016. Regulatory area harvest policy calculations and catch tables. IPHC Report of Assessment and Research Activities 2015. p. 220-237.
- Martell, S.J.D., Leaman, B., Stewart, I.J., Keith, S.W., Joseph, C., Keizer, A., and Culver, M. 2016. Developments in management strategy evaluation / management strategy evaluation board. IPHC Report of Assessment and Research Activities 2015. p. 286-312.

- Martell, S., Stewart, I., and Wor, C. 2016. Exploring index-based PSC limits for Pacific halibut. IPHC Report of Assessment and Research Activities 2015. P. 238-285.
- Webster, R.A., and Stewart, I.J. 2016. Setline survey-based apportionment estimates. IPHC Report of Assessment and Research Activities 2015. p. 210-219.
- Gilroy, H.L., and Stewart, I.J. 2016. Incidental mortality of halibut in the commercial halibut fishery (wastage). IPHC Report of Assessment and Research Activities 2015. p. 47-55.
- Stewart, I.J., and Martell, S. 2015. Assessment of the Pacific halibut stock at the end of 2014. IPHC Report of Assessment and Research Activities 2014. p. 161-180.
- Stewart, I.J. 2015. Regulatory area harvest policy calculations and catch tables. IPHC Report of Assessment and Research Activities 2014. p. 195-212.
- Webster, R.A., Stewart, I.J., Leaman, B.M., Sadorus, L.L., Henry, E., and Dykstra, C.L. 2015. Setline survey expansion and complementary data sources. IPHC Report of Assessment and Research Activities 2014. p. 587-602.
- Stewart, I.J., Leaman, B.M., and Martell, S.J.D. 2015. Accounting for and managing all Pacific halibut removals, IPHC Report of Assessment and Research Activities 2014. p. 221-266.
- Stewart, I.J. 2015. Overview of data sources for the Pacific halibut stock assessment and related analyses. IPHC Report of Assessment and Research Activities 2014. p. 87-160.
- Sadorus, L.L., Stewart, I.J., and Kong, T. 2015. Juvenile halibut distribution and abundance in the Bering Sea and Gulf of Alaska. IPHC Report of Assessment and Research Activities 2014. p. 367-404.
- Monnahan, C.C., and Stewart, I.J. 2015. Evaluation of commercial logbook records: 1991-2013. IPHC Report of Assessment and Research Activities 2014. p. 213-220.
- Martell, S.J.D., Leaman, B.M., Keith, S.W., and Stewart, I.J. 2015. Developments in Management Strategy Evaluation/Management Strategy Advisory Board. IPHC Report of Assessment and Research Activities 2014. p. 277-298.
- Martell, S., Leaman, B., and Stewart, I. 2015. Developments in the Management Strategy Evaluation Process, fisheries objectives, and implications for harvest policy and decision making. IPHC Report of Assessment and Research Activities 2014. p. 239-260.
- Martell, S., Leaman, B., and Stewart, I. 2015. Recent developments in the IPHC Management Strategy Evaluation process and size-limit implications. IPHC Report of Assessment and Research Activities 2014. p. 299-312.
- Gilroy, H.L., and Stewart, I.J. 2015. Incidental mortality of halibut in the commercial halibut fishery (wastage). IPHC Report of Assessment and Research Activities 2014. p. 47-54.
- Forsberg, J.E., and Stewart, I.J. 2015. Re-ageing of archived otoliths from the 1920s to the 1990s. IPHC Report of Assessment and Research Activities 2014. p. 405-428.
- Keith, S., Kong, T., Sadorus, L., Stewart, I., and Williams, G. 2014. The Pacific Halibut: Biology, Fishery, and Management. IPHC Tech. Rep. No. 59. 60 p.
- Stewart, I.J. 2014. Overview of the data sources for the Pacific halibut stock assessment and related analyses. IPHC Report of Assessment and Research Activities 2013. p. 95-168.
- Stewart, I.J., and S. Martell. 2014. Assessment of the Pacific halibut stock at the end of 2013. IPHC Report of Assessment and Research Activities 2013. p. 169-196.
- Martell, S., B.M. Leaman, and I.J. Stewart. 2014. Developments in the Management Strategy Evaluation Process, fisheries objectives, and implications for harvest policy and decision making. IPHC Report of Assessment and Research Activities 2013. p. 239-260.
- Webster, R.A. and I.J. Stewart. 2014. Apportionment and regulatory area harvest calculations. IPHC Report of Assessment and Research Activities 2013. p. 197-216.
- Gilroy, H.L. and I.J. Stewart. 2014. Incidental mortality of halibut in the commercial halibut fishery (Wastage). IPHC Report of Assessment and Research Activities 2013. p. 49-56.

- Stewart, I.J., B.M. Leaman, S. Martell and R.A. Webster. 2013. Assessment of the Pacific halibut stock at the end of 2012. IPHC Report of Assessment and Research Activities 2012. p. 93-186.
- Stewart, I.J., S. Martell, R.A. Webster, R. Forrest, J. Ianelli, and B.M. Leaman. 2013. Assessment review team meeting, October 24-26, 2012. IPHC Report of Assessment and Research Activities 2012. p. 239-266.
- Webster, R.A. and I.J. Stewart. 2013. Apportionment and regulatory area harvest calculations. IPHC Report of Assessment and Research Activities 2012. p. 187-206.
- Leaman, B.M., I.J. Stewart, R.A. Webster and H.L. Gilroy. 2013. IPHC Staff harvest advice and regulatory proposals: 2013. 2013 IPHC Annual Meeting Handout. p. 114-130.
- Martell, S., I.J. Stewart and B.M. Leaman. 2013. Optimal harvest rates for Pacific halibut. IPHC Report of Assessment and Research Activities 2012. p. 207-238.
- Gilroy, H.L. and I.J. Stewart. 2013. Incidental mortality of halibut in the commercial halibut fishery (Wastage). IPHC Report of Assessment and Research Activities 2012. p. 53-60.
- Stewart, I.J., R.E. Forrest, N. Taylor, C. Grandin, A.C. Hicks, and S.J.D. Martell. 2012. Status of the Pacific hake (whiting) stock in U.S. and Canadian Waters in 2012. Document submitted to the Joint U.S.-Canada treaty for Pacific hake/whiting process. 194 p.
- Stewart, I.J., J.T. Thorson, and C. Wetzel. 2011. Status of the U.S. sablefish resource in 2011. *In* Status of the Pacific Coast Groundfish Fishery through 2011, Stock Assessment and Fishery Evaluation: Stock Assessments, STAR Panel Reports, and Rebuilding Analyses. Pacific Fishery Management Council, Portland, Oregon. 442 p.
- Stewart, I.J., R.E. Forrest, C. Grandin, O.S. Hamel, A.C. Hicks, S.J.D. Martell, and I.G. Taylor. 2011. Status of the Pacific hake (whiting) stock in U.S. and Canadian Waters in 2011. *In* Status of the Pacific Coast Groundfish Fishery through 2011, Stock Assessment and Fishery Evaluation: Stock Assessments, STAR Panel Reports, and Rebuilding Analyses. Pacific Fishery Management Council, Portland, Oregon. 217 p.
- Stewart, I.J. and O.S. Hamel. 2010. Stock Assessment of Pacific Hake, *Merluccius productus*, (a.k.a. Whiting) in U.S. and Canadian Waters in 2010. Pacific Fishery Management Council. Portland, Oregon. 290 p.
- Stewart, I.J., J.R. Wallace, and C. McGilliard. 2009. Status of the U.S. yelloweye rockfish resource in 2009. *In* Status of the Pacific Coast Groundfish Fishery through 2009, Stock Assessment and Fishery Evaluation: Stock Assessments, STAR Panel Reports, and Rebuilding Analyses. Pacific Fishery Management Council, Portland, Oregon, 435 p.
- Stewart, I.J. 2009. Status of the U.S. canary rockfish resource in 2009 (Update of 2007 assessment model). *In* Status of the Pacific Coast Groundfish Fishery through 2009, Stock Assessment and Fishery Evaluation: Stock Assessments, STAR Panel Reports, and Rebuilding Analyses. Pacific Fishery Management Council, Portland, Oregon, 115 p. + Appendices.
- Stewart, I.J. 2009. Rebuilding analysis for yelloweye rockfish based on the 2009 stock Assessment. *In* Status of the Pacific Coast Groundfish Fishery through 2009, Stock Assessment and Fishery Evaluation: Stock Assessments, STAR Panel Reports, and Rebuilding Analyses. Pacific Fishery Management Council, Portland, Oregon, 96 p.
- Stewart, I.J. 2009. Rebuilding Analysis for Canary Rockfish Based on the 2009 Updated Stock Assessment. *In* Status of the Pacific Coast Groundfish Fishery through 2009, Stock Assessment and Fishery Evaluation: Stock Assessments, STAR Panel Reports, and Rebuilding Analyses. Pacific Fishery Management Council, Portland, Oregon, 53 p.
- Hastie, J., Stewart, I.J. and O.S. Hamel. 2009. Distribution of Pacific hake (*Merluccius productus*) relative to the Tribal Usual and Accustomed fishing grounds off the State of Washington. Background document for the NOAA-NWR. 31 p.

- Hamel, O.S. and I.J. Stewart. 2009. Stock Assessment of Pacific Hake, *Merluccius productus*, (a.k.a. Whiting) in U.S. and Canadian Waters in 2009. *In* Status of the Pacific Coast Groundfish Fishery through 2009, Stock Assessment and Fishery Evaluation: Stock Assessments, STAR Panel Reports, and Rebuilding Analyses. Pacific Fishery Management Council, Portland, Oregon, 246 p.
- Helser, T.E., I.J. Stewart, and O.S. Hamel. 2008. Stock Assessment of Pacific Hake (Whiting) in U.S. and Canadian Waters in 2008. *In* Status of the Pacific Coast Groundfish Fishery through 2008; Stock Assessment and Fishery Evaluation. Pacific Fisheries Management Council. Portland, Oregon, 128 p.
- Helser, T.E., I.J. Stewart, C.E. Whitmire, and B.H. Horness. 2007. Model-based estimates of abundance for 11 species from the NMFS slope surveys. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-82.
- Stewart, I.J. 2007. Rebuilding analysis for canary rockfish based on the 2007 stock assessment. *In* Status of the Pacific Coast Groundfish Fishery through 2007; Stock Assessment and Fishery Evaluation. Pacific Fisheries Management Council. Portland, Oregon, 47 p.
- Stewart, I.J. 2007. Status of the canary rockfish resource in 2007. *In* Status of the Pacific Coast Groundfish Fishery through 2007; Stock Assessment and Fishery Evaluation. Pacific Fisheries Management Council. Portland, Oregon, 362 p.
- Stewart, I.J. 2007. Updated U.S. English sole stock assessment: status of the resource in 2007. *In* Status of the Pacific Coast Groundfish Fishery through 2007; Stock Assessment and Fishery Evaluation. Pacific Fisheries Management Council. Portland, Oregon, 213 p.
- Helser, T., I.J. Stewart, G. Fleischer, and S. Martell. 2006. Stock Assessment of Pacific Hake (Whiting) in U.S. and Canadian Waters in 2006. *In* Volume 7: Status of the Pacific Coast Groundfish Fishery Through 2005, Stock Assessment and Fishery Evaluation Portland, OR: Pacific Fishery Management Council.
- Methot, R. and I.J. Stewart. 2006. Status of the U.S. canary rockfish resource in 2005. *In* Volume 6: Status of the Pacific Coast Groundfish Fishery Through 2005, Stock Assessment and Fishery Evaluation: Stock Assessments and Rebuilding Analyses Portland, OR: Pacific Fishery Management Council.
- Stewart, I.J. 2006. Stock assessment with an evaluation of structural uncertainty, and model performance applied to English sole. Ph.D. Dissertation, University of Washington, School of Aquatic and Fishery Sciences. 284 p.
- Stewart, I.J. 2005. Status of the U.S. English sole resource in 2005. Pacific Fishery Management Council, 2005 Stock assessment and STAR panel reports. 221 p.
- Helser, T.E., H.-L. Lai and I.J. Stewart. 2004. A Bayesian hierarchical meta-analysis of growth for the genus *Sebastes* in the eastern Pacific ocean. ICES CM 2004/K:21 Conference Proceedings.
- Hamel, O.S., I.J. Stewart and A.E. Punt. 2003. Status and future prospects for the Pacific ocean perch resource in waters off Washington and Oregon as assessed in 2003. *In* Volume I: Status of the Pacific Coast Groundfish Fishery through 2003; Stock Assessment and Fishery Evaluation. Pacific Fisheries Management Council. Portland, Oregon. 124 p.
- Punt, A.E., O.S. Hamel and I.J. Stewart. 2003. Rebuilding analysis for Pacific ocean perch for 2003. *In* Volume I: Status of the Pacific Coast Groundfish Fishery through 2003; Stock Assessment and Fishery Evaluation. Pacific Fisheries Management Council. Portland, Oregon. 27 p.
- Stewart, I.J. 2001. Population structure and patterns of historical abundance of sockeye salmon in the Kvichak River system, Bristol Bay, Alaska. M.S. Thesis. University of Washington. 56 p.

**Software:**

- Developed open-source plotting and diagnostic software for stock assessment modeling: r4ss. <https://github.com/r4ss/r4ss>, <https://cran.r-project.org/>

- Extensive testing and development support for Stock Synthesis (Richard Methot, NWFSC), 2004-2012.

### **Workshops and Reviews:**

- 2018. Reviewer. Canadian Science Advisory Secretariat Regional Peer Review Meeting Assessment of British Columbia Pacific Cod for Areas 3CD, and 5ABCD in 2018. 10-11 October, Nanaimo, Canada.
- 2018. Invited Plenary speaker. NOAA Fisheries National Stock Assessment Workshop. 22-24 May 2018, Irvine, California.
- 2017. Invited Plenary speaker. American Fisheries Society - Alaska Chapter. 21-24 March, Fairbanks, Alaska.
- 2016. Invited keynote. NOAA SIS POC Workshop. 1-3 June, Seattle, Washington.
- 2016. Invited participant. NOAA Southwest Fisheries Science Center & Pacific Fishery Management Council workshop on Coastal Pelagic Species (CPS) assessments. 2-5 May, La Jolla, California.
- 2015. Co-presented a 5-day stock assessment workshop for ISMAR (Ponza, Italy) and other European scientists on: Stock Synthesis modeling software, R code for plotting, output and model diagnostics, as well as other stock assessment related topics.
- 2015. Review Panel member. National Marine Fisheries Service Stock Assessment Review (STAR) Panel Review for widow rockfish and kelp greenling. 27-31 July, Newport, Oregon.
- 2015. Invited speaker. The Fisheries Leadership and Sustainability Forum, East Coast Forum. 7-8 May, 2015, Beaufort, North Carolina.
- 2014. Review panel member. National Marine Fisheries Service Northwest Fisheries Science Center Stock assessment Programmatic Review. 10-13 June, Seattle, Washington.
- 2014. Invited participant. Albacore working group model subgroup meeting. 14-18 April, La Jolla, California.
- 2013. Review Panel member. National Marine Fisheries Service Stock Assessment Review (STAR) Panel Review for darkblotched rockfish and petrale sole. 13-17 May, Seattle, Washington.
- 2013. Center for the Advancement of Population Assessment Methodology (CAPAM) Workshop on Selectivity: theory, estimation, and application in fishery stock assessment models. 12-14 March, La Jolla, California.
- 2012. Lead organizer/instructor for workshop on conducting stock assessments using Stock Synthesis. University of Washington. 31 July-2 August, Seattle, Washington.
- 2012. Review panel member. 2012 Hoki (*Macruronus magellanicus*) stock assessment review. 4-8 June, Viña del Mar, Chile.
- 2012. NOAA Workshop on Application of Non-Linear Time Series Analysis. 17-19 April, La Jolla, California.
- 2011. Assessing vulnerability of west coast fisheries to a changing climate. 25-26 May, Seattle, Washington.
- 2011. Comparative Assessment of Visual Survey Tools Workshop, 22-23 February, Moss Landing, California.
- 2010. Review panel member. Review of yelloweye rockfish stock assessment for inside waters. Center for Science Advice Pacific, Groundfish Standing Committee, Fisheries and Oceans Canada. Pacific Regional Advisory Meeting.
- 2008. Review panel member. PSARC Recovery Potential Assessment, Fisheries and Oceans Canada. Bocaccio rockfish stock assessment review.

- 2008. Prepared and presented an introductory 4-day stock assessment workshop for the NOAA NEFSC (Woods Hole, MA) focusing on: conversion of existing models (ASAP, VPA) to SS2 modeling software, R code for plotting, output and model diagnostics, as well as many stock assessment related topics. Included a 1-hour seminar for general audience on preliminary results of an analysis of the effects of adverse weather conditions on bottom trawl survey catches.
- 2007. Prepared and presented a comprehensive 5-day stock assessment workshop for CSIRO (Australian Fisheries, Hobart, Tasmania) showcasing NWFSC research products including: SS2 modeling software, National Fisheries Toolbox user interface, R code for plotting, output and model diagnostics, as well as many other stock assessment related topics.
- 2005. Review panel member, National Marine Fisheries Service Southeast Data, Assessment and Review (SEDAR) 8.
- 2005. ICES Study Group on Age-Length Structured Models. March 14-16, Copenhagen, Denmark.

**Academic service:**

- Affiliate Associate Professor, University of Washington, School of Aquatic and Fishery Sciences. 2012-present.

*Student committees:*

- Grant Adams (PhD, ongoing), University of Washington.
- Cole Monnahan (PhD, 2017), University of Washington.
- Chantel Wetzel (PhD, 2017), University of Washington.
- James Thorson (PhD, 2011), University of Washington. Also served as NOAA mentor for the NOAA/National Sea Grant Fellowship in Population Dynamics.
- Brian Ritchie (MS, ongoing), Alaska Pacific University
- Melissa Muradian (MS, 2015), University of Washington.
- Chantell Wetzel (MS, 2011), University of Washington.
- Dawn Dougherty (MS, 2009), University of Washington.

**Professional service:**

- North Pacific Fishery Management Council Bering Sea Fishery Ecosystem Plan Team member, 2017-present.
- North Pacific Fishery Management Council Scientific and Statistical Committee, 2016-present.
- NOAA Untrawlable Habitat Strategic Initiative team member, 2013-present.
- Gulf of Alaska Plan Team member, North Pacific Fishery Management Council, 2012-2016.
- NOAA National Assessment Methods Working Group, 2007-2012.
- Steering Committee member, 2012 Western Groundfish Conference.
- Steering Committee member, NOAA-NMFS National Stock Assessment Workshop 11, 2010.
- Five-Year Performance Review for Professor David Armstrong, Director of the School of Aquatic & Fishery Sciences. Prepared for: Dean Arthur Nowell, College of Ocean and Fishery Sciences, University of Washington. 2004.