**Current Position**

Lead Ecosystem Ecologist, Puget Sound Institute, University of Washington Tacoma (2012-­‐present)

Managing Director, Ocean Modeling Forum (2014-present)

**Previous Positions**

National Research Council Postdoctoral Researcher, Northwest Fisheries Science Center, NOAA, Seattle, WA (2009-­‐2012). Advisor: Phil Levin

**Education**

B.A. in Political Science with Honors and a Minor in English, University of California, Berkeley (1989-­‐1992)

B.S. in Wildlife Science with Honors and a Minor in Quantitative Science, University of Washington (1999-­‐2002)

Ph.D. in Zoology and Urban Ecology, University of Washington (2002-­‐2009).

**Current Awards**

**Funding Source Dates Principal Investigator Amount**

Washington Sea Grant 2/20-1/23 Francis $277,878

Packard Foundation – OMF4 1/19-4/22 Punt\* $500,000

Lenfest Ocean Program 11/17-3/22 Punt\* $583,000

Puget Sound Institute 10/17 – 9/21 Baker $4,400,000

Packard Foundation – OMF3 3/19-6/21 Punt\* $250,000

\* Acting PI or Co-PI **TOTAL: $1,610,878 (excluding PSI)**

**Previous**

WA Dept of Fish and Wildlife 1/18 – 4/21 Francis $140,130

Salmon Recovery Funding Board 1/17 – 1/20 Francis $165,448

WA Dept of Fish and Wildlife 1/18-12/20 Francis $198,000

WA Dept of Fish and Wildlife 11/17-3/19 Francis $135,240

SeaDoc Society 1/17-7/18 Francis $86,000

Packard Foundation 7/15–7/17 Punt\* $247,500

Washington Sea Grant 2/16–1/18 Essington $172,458

Packard Foundation 7/17-10/17 Punt\* $49,853

Packard Foundation 1/17–6/17 Punt\* $36,887

WA Dept of Fish and Wildlife 10/14– 9/16 Francis $238,234

Pew Charitable Trusts 5/16 – 5/17 Punt\* $67,986

Vulcan Inc 2016 Baker\* $30,000

Environmental Protection Agency 1/16 – 9/16 Baker $60,000

Packard 2013-2015 Punt $236,898

Pew Charitable Trusts 2015 Punt\* $43,637

\* TBF wrote and was acting PI or Co-PI

**Peer-Reviewed Publications**

Francis, T.B., Sullaway, G.H., Feist, B.E., Shelton, A.O., Chui, E., Daley, C., Frick, K.E., Tolimieri, N., Williams, G.D. and Samhouri, J.F. 2022. Equivocal associations between small-scale shoreline restoration and subtidal fishes in an urban estuary. Restor Ecol e13652. <https://doi.org/10.1111/rec.13652>

Hammond P.S., Francis T.B., Heinemann D., Long K.J., Moore J.E., Punt A.E., Reeves R.R., Sepulveda M., Sigurgsson G.M., Siple M.C., Vokingsson G., Wade P.R., Williams R. and Zerbini A.N. 2021. Estimating the Abundance of Marine Mammal Populations. Front. Mar. Sci. 8:735770. doi: 10.3389/fmars.2021.735770

Moore J.E., Heinemann D., Francis T.B., Hammond P.S., Long K.J., Punt A.E., Reeves R.R., Sepulveda M., Sigurgsson G.M., Siple M.C., Vikingsson G.A., Wade P.R., Williams R. and Zerbini A.N. 2021. Estimating Bycatch Mortality for Marine Mammals: Concepts and Best Practices. Front. Mar. Sci. 8:752356. doi: 10.3389/fmars.2021.752356

Wade P.R., Long K.J., Francis T.B., Punt A.E., Hammond P.S., Heinemann D., Moore J.E., Reeves R.R., Sepulveda M., Sullaway G., Sigurgsson G.M., Siple M.C., Vikingsson G.A., Williams R. and Zerbini A.N. 2021. Best Practices for Assessing and Managing Bycatch of Marine Mammals. Front. Mar. Sci. 8:757330. doi: 10.3389/fmars.2021.757330

Francis, T.B., K.C. Abbott, K. Cuddington, G. Gellner, A. Hastings, Y.-C. Lai, A. Morozov, S. Petrovski and M.L. Zeeman. 2021. Management implications of long transients in ecological systems. Nature Ecology and Evolution. https://doi.org/10.1038/s41559-020-01365-0

Essington, T.E., E.J. Ward, T.B. Francis, C. Greene, L. Kuehne and D. Lowry. 2021. Historical reconstruction of the Puget Sound (USA) groundfish community. Marine Ecology Progress Series 657: 173-189. <https://doi.org/10.3354/meps13547>

Punt, A.E., M.C. Siple, T.B. Francis, P. S. Hammond, D. Heinemann, K. J. Long, J. E. Moore, R. R. Reeves, M. Sepulveda, G. M. Sigurdsson, G. Vikingsson, P. R. Wade, R. Williams and A. N. Zerbini. 2020. Can we manage marine mammal bycatch effectively in low-data environments? Journal of Applied Ecology. <https://doi.org/10.1111/1365-2664.13816>

Harvey, C. J., J. L. Fisher, J. F. Samhouri, G. D. Williams, T. B. Francis, K. C. Jacobson, Y. L. deReynier, M. E. Hunsicker and N. Garfield. 2020. The importance of long-term ecological time series for integrated ecosystem assessment and ecosystem-based management. Progress in Oceanography 188. <https://doi.org/10.1016/j.pocean.2020.102418>

Punt, A.E., M. Sepulveda, M.C. Siple, J.E. Moore, T. B. Francis, P. S. Hammond, D. Heinemann, K. J. Long, J. E. Moore, R. R. Reeves, M. Sepulveda, G. M. Sigurdsson, G. Vikingsson, P. R. Wade, R. Williams and A. N. Zerbini. 2020. Assessing pinniped bycatch mortality with uncertainty in abundance and post-release mortality: A case study from Chile. Fisheries Research 235. <https://doi.org/10.1016/j.fishres.2020.105816>

Punt, A. E., M. Siple, G. M. Sigurdsson, G. Vikingsson, T. B. Francis, S. M. Granquist, P. S. Hammond, D. Heinemann, K. J. Long, J. E. Moore, R. R. Reeves, M. Sepulveda, P. R. Wade, R. Williams and A. N. Zerbini. 2020. Evaluating management strategies for marine mammal populations: an example for multiple species and multiple fishing sectors in Iceland. Canadian Journal of Fisheries and Aquatic Sciences **77**(8): 1316-1331.

Punt, A.E., M.C. Siple, T.B. Francis, P. S. Hammond, D. Heinemann, K. J. Long, J. E. Moore, R. R. Reeves, M. Sepulveda, G. M. Sigurdsson, G. Vikingsson, P. R. Wade, R. Williams and A. N. Zerbini. 2020. Robustness of potential biological removal to monitoring, environmental, and management uncertainties. ICES Journal of Marine Science, fsaa096. <https://doi.org/10.1093/icesjms/fsaa096>

Okamoto, D. K., M. R. Poe, T. B. Francis, A. E. Punt, P. S. Levin, A. O. Shelton, D. R. Armitage, J. S. Cleary, S. C. Dressell, R. Jones, H. Kitka, L. C. Lee, A. D. MacCall, J. A. McIsaac, S. Reifenstuhl, J. J. Silver, J. O. Schmidt, T. F. Thornton, R. Voss, and J. Woodruff. 2019. Attending to spatial social–ecological sensitivities to improve trade-off analysis in natural resource management. Fish and Fisheries **0:1-12**.

Morozov, A., K. Abbott, K. Cuddington, T. Francis, G. Gellner, A. Hastings, Y.-C. Lai, S. Petrovskii, K. Scranton, and M. L. Zeeman. 2019. Long transients in ecology: Theory and applications. Physics of Life Reviews. doi: 10.1016/j.plrev.2019.09.004

Armitage, DR, Okamoto, DK, Silver, JJ, Francis, TB, Levin, PS, Punt, AE, Davies, IP, Cleary, JS, Dressel, SC, Jones, RR, Kitka, H, Lee, LC, MacCall, AD, McIsaac, JA, Poe, MR, Reifenstuhl, S, Shelton, AE, Schmidt, JO, Thornton, TF, Voss, R, and Woodruff, J. 2019. Integrating Governance and Quantitative Evaluation of Resource Management Strategies to Improve Social and Ecological Outcomes. BioScience. doi:10.1093/biosci/biz059

Francis, TB, Levin PS, Punt AE, Kaplan IC, Varney A, and Norman K. 2018. Linking knowledge to action in ocean ecosystem management: The Ocean Modeling Forum. *Elem Sci Anth* 6: 83. https://doi.org/10.1525/elementa.338

Voss R, Quaas MF, Schmidt JO, Stoeven MT, Francis TB, Levin PS, Armitage DR, Cleary JS, Jones RR, Lee LC, Okamoto DK, Silver JJ, Thornton TF, Dressel SC, MacCall AD, Punt AE (2018) Quantifying the benefits of spatial fisheries management – An ecological-economic optimization approach. *Ecological Modelling* 385:165-172.

Ljungström, G. Francis, TB, Mangel, M. and Jørgensen. C. Parent-offspring conflict over reproductive timing: Ecological dynamics far away and at other times may explain spawning variability in Pacific herring. *ICES Journal of Marine Science* fsy106, <https://doi.org/10.1093/icesjms/fsy106>

Hastings, A., Abbott, KC, Cuddington, K., Francis, TB, Gellner, G. Lai, Y-C., Morozov, A., Petrovskii, S., Scranton, K., and Zeeman, ML. 2018. Transient phenomena in ecology. *Science* 361:990*.* ***DOI:****10.1126/science.aat6412*

MacCall, A., Francis, TB, Punt, AE, Siple MC, Armitage, DR, Cleary, JS, Davies, IP, Dressel, SC, Jones, RR, Kitka, H, Lee, LC, Levin, PS, McIsaac, JA, Okamoto, DK, Poe, MR, Reifenstuhl, S, Schmidt, JO, Shelton, AE Silver, JJ, Thornton, TF, Voss, R, and Woodruff, J. 2018. A heuristic model of learned migration behavior exhibits distinctive spatial and reproductive dynamics. *ICES Journal of Marine Science* **10.1093/icesjms/fsy091**

Punt, AE, Okamoto, DK, MacCall, AD, Shelton, AE, Armitage, DR, Cleary, JS, Davies, IP, Dressel, SC, Francis, TB, Levin, PS, Jones, RR, Kitka, H, Lee, LC, McIsaac, JA, Poe, MR, Reifenstuhl, S, Silver, JJ, Schmidt, JO, Thornton, TF, Voss, R, and Woodruff, J. 2018. When are estimates of spawning stock biomass for small pelagic fishes improved by taking spatial structure into account? *Fisheries Research* 206: 65-78.

Kaplan, IC, Francis, TB, Punt, AE, Koeh, LE, Curchitser, E, Hurtado-Ferro, F, Johnson, KF, Lluch-Cota, SE, Sydeman, WJ, Essington, TE, Taylor, N, Holsman, K, MacCall, AD, and Levin, PS. 2018. A multi-model approach to understanding the role of Pacific sardine in the California Current food web. *Marine Ecological Progress Series* https://doi.org/10.3354/meps12504

Siple, MC, Shelton, AO, Francis, TB, Lowry, D, Lindquist, AP and Essington, TE. 2017. Contributions of adult mortality to declines of Puget Sound Pacific herring, *ICES Journal of Marine Science* <https://doi.org/10.1093/icesjms/fsx094>

Carter, J.L, Schindler, D.E., and T.B. Francis. 2017. Effects of climate change on zooplankton community interactions in an Alaskan lake. *Climate Change Reponses 4:3. https://doi.org/10.1186/s40665-017-0031-x.*

Shelton, AO, Francis, TB, Feist, BE, Williams, GD, Lindquist, A, and Levin, PS. 2017. Forty years of seagrass population stability and resilience in an urbanizing estuary. *Journal of Ecology* 105: 458-470.

Punt, AE, MacCall, AD, Essington, TE, Francis, TB, Hurtado-Ferro, F, Johnson, KF, Kaplan, IC, Koehn, LE, Levin, PS and Sydeman, WJ. 2016. Exploring the implications of the harvest control rule for Pacific sardine, accounting for predator dynamics: A MICE model. *Ecol. Mod.* 337: 79-95.

Levin, PS, Francis, TB and NG Taylor. 2016. Thirty-two essential questions for understanding the social–ecological system of forage fish: the case of Pacific Herring. *Ecosystem Health and Sustainability* 2(4): e01213. doi:10.1002/ehs2.1213.

Siple, MC and TB Francis. Population diversity in herring of Puget Sound, WA. *Oecologia.*

Shelton OE, Francis, TB, Williams, GW, Feist, B, Stick, K and PS Levin. 2014. Habitat limitation and spatial variation in Pacific herring egg survival. *Marine Ecology Progress Series* 514: 231-245.

Francis TB, Wolkovich, EM, Scheuerell, MD, Katz, SL, Holmes, EE, Hampton, SE. 2014. Shifting Regimes and Changing Interactions in the Lake Washington, U.S.A., Plankton Community from 1962–1994. *PLoS ONE* 9(10): e110363. doi:10.1371/journal.pone.0110363.

Carey, MP, Levin, PS, Townsend, H.T., Minello, T.J., Sutton, G.R., Francis, T.B., Harvey, C.J, Toft, J.E., Arkema, K.K, Burke, J.L., Kim, C., Guerry, A., Plummer, M., Spiridonov, G. and M. Ruckelshaus. 2013. Characterizing coastal food webs with qualitative links to bridge the gap between the theory and practice of ecosystem based management. *ICES J. of Mar. Sci.* doi:10.1093/icesjms/fst012.

Francis, TB, M.D. Scheuerell, R.D. Brodeur, P.S. Levin, J.J., Ruzicka, N. Tolimieri and W.T. Peterson. 2012. Climate shifts the interaction web of a marine plankton community. *Global Change Biology* 18: 2498-­‐2508. doi: 10.1111/j.1365-­‐2486.2012.02702.x.

Schindler, D.E., J.L. Carter, T.B. Francis, et al. 2012. Mysis in the Okanagan Lake food web: a time-­‐series analysis of interaction strengths in an invaded plankton community. *Aquatic Ecology* 46: 215-­‐227.

Francis, T.B., D.E. Schindler, G.W. Holtgrieve, E.R. Larson, M.D. Scheuerell, B.X. Semmens and E.J. Ward. 2011. Habitat structure determines resource use by zooplankton in temperate lakes. *Ecology Letters* 14(4): 364-­‐372.

Francis, T.B., C.J. Harvey and P.S. Levin. 2011. The perils and promise of futures analysis in marine ecosystem-­‐based management. *Marine Policy* 35:675-­‐681.

Francis, T.B. and Kaplan, I.C. APPENDIX C: Predators and Prey of Sablefish, Pacific Hake, Bocaccio, and Canary Rockfish, in Levin, P. S., F. B. Schwing. (Eds.) 2011. Technical background for an integrated ecosystem assessment of the California Current: Groundfish, salmon, green sturgeon, and ecosystem health. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-­‐ NWFSC-­‐109, 330 p.

Harvey, C. J., KK. Bartz, J. Davies, T.B. Francis, T.P. Good, A.D. Guerry, B. Hanson, K.K. Holsman, J. Miller, M.L. Plummer, J.C.P. Reum, L.D. Rhodes, C.A. Rice, J.F. Samhouri, G.D. Williams, N. Yoder, P.S. Levin and M.H. Ruckelshaus. 2010. A mass-­‐balance model for evaluating food web structure and community-­‐scale indicators in the Central Basin of Puget Sound. NOAA Technical Memorandum NMFS-­‐NWFSC-­‐106.

Levin, P.S., T.B. Francis, et al. 2010. Understanding future and desired system states, Chapter 1A in Puget Sound Science Update, Puget Sound Partnership, 144 p.

Francis, T.B. and D.E. Schindler. 2009. Shoreline urbanization reduces terrestrial insect subsidies to fishes in North American lakes. *Oikos* 118(12): 1872-­‐1882.

Mills, A., T.B. Francis, V. Shandas, K. Whittaker, and J.K. Graybill. 2008. Using best available science to protect critical areas in Washington state: challenges and barriers to planners. *Urban Ecosystems* 11(4).

Francis, T.B., D.E. Schindler, J.M. Fox, E. Seminet-­‐Reneau. 2007. Effects of urbanization on the dynamics of organic sediments in temperate lakes. *Ecosystems* 10: 1057-­‐1068.

Francis, T.B. and D.E. Schindler. 2006. Degradation of littoral habitats by residential development: woody debris in lakes of the Pacific Northwest and Midwest, United States. *Ambio* 35: 274-­‐280

Francis, T.B., D.E. Schindler and J.W. Moore. 2006. Aquatic insects play a minor role in dispersing salmon-­‐derived nutrients into riparian forests in southwestern Alaska. *Canadian Journal of Fisheries and Aquatic Sciences* 63: 2543-­‐2552.

Francis, T.B. “Eurasian watermilfoil” in Boersma, P. D., S. E. Reichard, and A. N. Van Buren (eds.). *Invasive Species in the Pacific Northwest*. Seattle and London: University of Washington Press, 2006.

Francis, T.B., K.A. Whittaker, V. Shandas, A. Mills and J.K. Graybill. 2005. Incorporating science into the environmental policy process: A case study from Washington State. *Ecology and Society* 10(1): 35.

Schindler, D.E., M.D. Scheuerell, J.W. Moore, S.M. Gende, T.B. Francis and W.J.Palen. 2003. Pacific salmon and the ecology of coastal ecosystems. *Frontiers in Ecology and the Environment* 1(1): 31-­‐37.

*In Review*

*In Prep*

Francis, T.B., AO Shelton, PS Levin, GD Williams. The role of egg predation by seabirds in Puget Sound herring population dynamics. *Estuaries and Coasts.*

Francis, T.B. and H. Moran. Environmental drivers of shifting spawn timing in Puget Sound herring. *CJFAS*

Francis, T.B. Evaluating major factors influencing Salish Sea herring abundance and distribution: a qualitative food-­‐web analysis. *Coastal Management.*

**White Papers and Reports**

Assessment and Management of Pacific Herring in the Salish Sea: Conserving and Recovering a Culturally Significant and Ecologically Critical Component of the Food Web. 2018. The Salish Sea Pacific Herring Assessment and Management Strategy Team (Co-Chair TB Francis). Prepared for the SeaDoc Society.

Puget Sound Shoreline Armoring Implementation Strategy State of Knowledge Report. 2018. Prepared for the Puget Sound Partnership (59 pages)

Puget Sound Toxics in Fish Implementation Strategy Starter Package. 2017. Prepared for the Puget Sound Partnership (86 pages)

Puget Sound Marine and Nearshore Grant Program Synthesis. 2017. Prepared for Washington Department of Fish and Wildlife with Kinney, A. and Rice, J. Parts I-IV. (184 pages)

Cherry Point Herring Technical Committee, Research Priorities. 2015-2016. (5 pages)

Puget Sound Institute’s Study Panel on Ecosystem-based Management of Forage Fish in Puget Sound. Workshop Report and Proposed Work Plan. 2013. (22 pages)

**Teaching and Mentoring (\* = won teaching award)**

Instructor

Urban Ecology (Enviro 220) Univ. Washington – 2004

Guest lecturer

Univ of Waterloo, Graduate Seminar in Interdisciplinary Studies. March 2018.

UW SEFS, Undergraduate Conservation Seminar. January 2018.

UW Tacoma Environmental Science: May 2017

UW Tacoma Environmental Science: May 2015

UW Water Seminar (Undergraduate): Fall 2015

UW Water Seminar (Undergraduate): Fall 2014

UW Limnology (Undergraduate): Fall 2011

Teaching Assistant

Limnology (FSH 473) Univ. Washington (2 years)\*

Limnology Lab (FSH 474) Univ. Washington (2 years)\*

Supervising/Advising

Alex Sweetser, Research Assistant, Puget Sound Institute (Dec 2018-March 2019)

Genoa Sullaway, Research Assistant, Univ of WA (Jan 2018-present)

Aimee Kinney, Research Scientist, Puget Sound Institute (2015-present)

Bryan Huebner, GIS Technician, Puget Sound Institute (2014-2015)

Chiara Robertson, Research Assistant, Puget Sound Institute (2014)

Shannon Hennessey, Research Assistant, Puget Sound Institute (2014-2015)

Hiram Moran, Undergraduate Intern, Puget Sound Institute (2013-2014)
Alex Lowe, Undergraduate Technician, Univ of WA (2005-2006)
Casey Ruff, Undergraduate Technician, Univ of WA (2005-2007)
Elizabeth Seminet, Undergraduate Technician, Univ of WA (2004-2006)
Justin Fox, Undergraduate Technician, Univ of WA (2004-2005)

*Graduate Student Advisory Committees*

Margaret Siple, UW School of Aquatic and Fishery Sciences (2014-2017, Ph.D degree; Advisor: Tim Essington)

**Group Memberships**

Member, 500 Women Scientists (Seattle)

Member, Northwest Straits Commission Science Advisory Board. Quarterly meetings. Annual conference.

Chair, Puget Sound Environmental Monitoring Program Modeling Working Group. Quarterly Working Group Lead meeting, Semi-annual Working Group meetings.

Editor, Encyclopedia of Puget Sound, Ecosystem-based Management Section. Annual editorial board meetings. Ongoing material curation and editing.

Puget Sound Ecosystem Monitoring Program, Forage Fish and Food Webs**.** Quarterly meetings.

Vashon-Maury Aquatic Reserve Science Advisory Board

**Working Groups, Study Panels, and other Synergistic Activities**

Chair, San Juan Island Pacific Herring Recovery workshop. December 2018.

Co-Chair, Ocean Modeling Forum Marine Mammal Bycatch Working Group. 2018-2020. Four workshops, webinar, four final reports.

Co-Chair, Salish Sea Herring Assessment and Management Team. 2018. Two workshops, two meetings, final technical report.

Member, Boundary Spanning and Cultural Context, Pew Charitable Trusts. 2018.

Facilitator, Pew Marine Fellows Annual Workshop. 2018.

Core Team Member, Puget Sound Shoreline Armoring Implementation Strategy. 2017-2018. Six workshops, three meetings, final State of Knowledge and strategy report.

Co-Chair, Ocean Modeling Forum Pacific Herring Working Group. 2016-2017. Five workshops, final technical report.

Puget Sound Eelgrass Recovery Strategy Technical Team. 2014-2015. Three workshops and a final recovery strategy report.

Salish Sea Ecosystem Conference (2014, 2016) Steering Committee member

Puget Sound Institute Study Panel: Ecosystem-based Management of Puget Sound Forage Fish. Friday Harbor, San Juan Island, WA. August 2013. (Organizer)

Puget Sound Institute/Puget Sound Partnership State of the Science Panel: “Ocean Health Index Downscaling to Puget Sound,” Tacoma, WA. March 2013. (Organizer)

King County Water and Land Resources Division. 2007. Shoreline Technical Appendix. (Reviewer)

**Scholarly and Professional Activities**

*Editor:*

PeerJ

*Reviewer:*

Canadian J of Fisheries and Aquatic Sciences Ecology of Freshwater Fish

Global Change Biology Ecosystems Ecological Applications Hydrobiologia Ecology J of Applied Ecology Ecology Letters Oikos

Conservation Letters Ecology & Evolution

MEPS Ecological Research

PLoS ONE Science

New York Sea Grant National Science Foundation

Facets

**Presentations *(\* = invited)***

\*Science Policy Modeling Forum. Puget Sound Partnership Science Panel retreat. April 2019.

\*Linking Science to Decisions. Bevan Series on Sustainable Seafood/Centennial Anniversary of the School of Fisheries. University of Washington. April 2019.

\*Next steps for ecosystem modeling in Puget Sound. Puget Sound Partnership Science Panel retreat. December 2018.

\*Fostering the use of models in Puget Sound recovery planning. Puget Sound Partnership Science Panel meeting. October 2018.

Making Models Matter: the Ocean Modeling Forum. International Marine Conservation Congress Annual Meeting. Kuching, Malaysia. July 2018.

\*Making Science Matter: Linking knowledge to decisions in aquatic sciences. School of Aquatic and Fishery Sciences Departmental Seminar. April 2018.

Key factors influencing change in Pacific herring populations: a qualitative network model approach. Salish Sea Ecosystem Conference 2018. Seattle, WA.

Using multiple models to inform decision making: the Ocean Modeling Forum. Coastal and Estuarine Restoration Federation. 2017. Providence, Rhode Island.

From objectives to actions: technical support for ecosystem management planning. Session at Coastal and Estuarine Restoration Federation. 2017. Providence, Rhode Island.

Traditional knowledge and social benefits in Pacific herring management: an Ocean Modeling Forum case study. International Congress of Conservation Biology, July 2017.

\*Vashon Island Herring: A foundational species. Vashon Ed Talks, Vashon Island Nature Center, May 2017

\*The Ecology of Forage Fish in the Salish Sea. Vashon-Maury Island Audubon Society lecture, May 2017

\*Incorporating traditional knowledge and human dimensions into Pacific herring management. International Congress on Exploration of the Sea IEA Working Groups, Lisbon, Portugal, April 2017.

\*Nearshore PSEMP Working Group, March 2017

\*PSEMP Steering Committee, November 2016.

A multi-model approach to incorporating traditional knowledge and human dimensions into Pacific herring management: the Ocean Modeling Forum. International Congress on Exploration of the Sea Annual Science Conference, Riga, Latvia, September 2016.

\*Turning Models into Action: The Ocean Modeling Forum. International Marine Conservation Congress, St. John’s, Newfoundland, August 2016

Integrating traditional and local ecological knowledge into the quantitative assessment of forage fish populations and ecosystems. International Marine Conservation Congress, St. John’s, Newfoundland, August 2016

\* Another tool in the toolbox: Models of Intermediate Complexity for Ecosystems
(MICE Models) Northwest Fisheries Science Center Ecosystem Program Review, July 2016

\*Monster Jam Seminar, NWFSC, April 2016.

Improving the use of models in ocean ecosystem-based management: The Ocean Modeling Forum. Coastal and Estuarine Research Federation. November 2015.

A multi-model approach to assessing the ecosystem impacts of Pacific sardine. ICES Annual Science Conference, September 2015.

The role of egg predation in Pacific herring population dynamics in Puget Sound, WA. American Fisheries Society, August 2015.

\*Does shoreline development impact herring in Puget Sound? Water Seminar, University of Washington, April 2015.

\*What limits Pacific herring recovery in Puget Sound? Environmental Sciences Seminar, UW Tacoma, April 2015.

\*A shot of Puget Sound herring research with an Encyclopedia of Puget Sound chaser. EcoLunch, UW SAFS. March 2015.

\* Exploring Regime Shifts. Urban Ecology Lab, University of Washington. January 2015.

\*Pacific herring “recovery”: identifying causes of decline of an indicator species. Marine Resources Commission Annual Meeting. Port Townsend, WA. December 2014.

\*The ecology of forage fish in Puget Sound. Cherry Point Aquatic Reserve Citizen Stewardship meeting. Bellingham, WA. October 2014.

After the indicator: The road to recovery for Puget Sound herring. International Marine Conservation Congress. Glasgow, Scotland. August 2014.

Can we have our herring and eat our salmon, too? A qualitative approach to modeling trade-offs in Puget Sound. Joint Aquatic Sciences Meeting, Portland, OR, August 2014.

\*Can we have our herring and eat our salmon, too? A qualitative approach to modeling trade-offs in Puget Sound. Salish Sea Ecosystem Conference, April 2014, Seattle, WA 2014.

\*Forage fish and the Puget Sound Food Web. A “Science Café” presentation, Tacoma, WA. May 2014.

\*Forage fish in Puget Sound: Status, Importance and Recovery. A presentation to the Washington State House Environment Committee, Olympia, WA. March 2014.

Salish Sea Ecosystem Conference (2014) Forage Fish and Food Web Session. (Organizer)

Population diversity in Puget Sound herring: Is there a “portfolio effect”? Annual Ecological Society of America meeting, Minneapolis, MN, August 2013.

Qualitative food-web modeling to support ecosystem-based fisheries management: A case study of California Current groundfish. Annual Ecological Society of America meeting, Portland, Oregon, August 2012.

Big problems, little data: Qualitative modeling of the forage fish food web in Puget Sound, USA. 2012. ICES/PICES FACT Forage Fish Conference, Nantes, France.

\*Forage fish of Puget Sound. 2012. University of Washington Water Seminar, Seattle, WA.

Qualitative food-­‐web modeling to support ecosystem-­‐based fisheries management: A case study of California Current groundfish. 2012. Ecological Society of America, Portland, OR.

Qualitative modeling of groundfish food-­‐webs. Western Society of Naturalists meeting, Vancouver, WA. November 2011.

Analysis of OR coast zooplankton interactions and stability using multivariate autoregressive (MAR) models with a moving window. American Society of Limnology and Oceanography Aquatic Sciences meeting, Santa Fe, NM. February 2011.

Analysis of Oregon coast zooplankton interactions using multivariate autoregressive (MAR) models. American Society of Limnology and Oceanography Ocean Sciences meeting, Portland, OR. February 2010.

Shoreline urbanization reduces terrestrial insect subsidies to fishes in North American lakes. Ecological Society of America, Albuquerque, NM. August 2009.

\*Modeling community interactions in the California Current. NOAA Northwest

Fisheries Science Center. Newport, OR. July 2009.

\*Effects of shoreline urbanization on aquatic-­‐terrestrial coupling in lakes. 2009. National

Lakes Management Conference. Chicago, IL.

\*Lakes on the edge: Consequences of shoreline urbanization in the Pacific Northwest. University of Washington Water Center’s 18th Annual Review of Research. Seattle, WA. April 2008.

Terrestrial insect subsidies to fish populations weakened with lakeshore development in the Pacific Northwest. American Society of Limnology and Oceanography, Santa Fe, NM. February 2007.

Terrestrial insect subsidies to fish populations weakened with lakeshore development in the Pacific Northwest. North American Benthological Society. Anchorage, AK. August 2006.

\*Alteration of benthic habitats in the Pacific Northwest: Effects of lakeshore development and consequences for invertebrate production. Washington Lake Protection Associate. Spokane, WA. September 2005.

Alteration of benthic habitats in the Pacific Northwest: Effects of lakeshore development and consequences for invertebrate production. American Society of Limnology and Oceanography, Salt Lake City, UT. February 2005.

Emerging aquatic insects transport salmon nutrients to riparian forests. Alaska

Salmon Program Research Symposium. Seattle, WA. December 2004.

Consequences of lakeshore development for littoral habitats in the Pacific Northwest: The role of large wood in lakes. Ecological Society of America, Portland, OR. August 2004.

\*Distribution and function of coarse woody debris in Pacific Northwest lakes. Littoral Habitat Workshop, Trout Lake Research Station, Wisconsin. September 2003.

Consequences of lakeshore development for littoral habitats in the Pacific Northwest. Ecological Society of America, Savannah, GA. August 2003.

The role of coarse woody debris in lakeshore dynamics. Urban Ecology Conference, Berlin, Germany. July 2003.

\*Consequences of lakeshore development for littoral habitats in the Pacific Northwest. Washington Lake Protection Association annual meeting. September 2003.

\*Consequences of lakeshore development for littoral habitats in the Pacific Northwest. American Society of Limnology and Oceanography, Salt Lake City, UT. February 2003.

Flying insects disperse salmon nutrients into streamside forests. Mary Gates

Undergraduate Research Symposium. May 2002.

**Non-scientific Professional Activities**

Props Master, *The Nutcracker* and *Alice in Wonderland*, Vashon Center for the Arts. 2017-2018.

Producer and Staff Member, Annex Theater, Seattle, WA (1996-1999)

Founder and Board Member, Westside Original Works, Los Angeles, CA (1992-1994)

Assistant to the Producers, *Robin Hood: Men in Tights*, Hollywood, CA (1992-1994)