

CURRICULUM VITAE

Ray William Hilborn

Date of Birth

December 31, 1947

Education

B.A. (Biology) Grinnell College, Grinnell, Iowa (1969)

Ph.D. Department of Zoology, University of British Columbia (1974)

Employment History

1987-present	Professor, School of Aquatic and Fishery Sciences, University of Washington.
1985-1987	Senior Fisheries Scientist, Tuna and Billfish Program, South Pacific Commission, Noumea, New Caledonia
1980-1985	Adjunct Associate Professor, Institute of Animal Resource Ecology, University of British Columbia.
1975-1980	Policy Analyst, Departments of Environment and Fisheries, Government of Canada. Concurrently Honorary Lecturer, Institute of Animal Resource Ecology, University of British Columbia.
1974-1975	Research Scholar. International Institute for Applied Systems Analysis, Laxenburg, Austria.

Major Professional Activities

2013-2014	Member Blue Ribbon Panel, World Bank Global Partnership for Oceans
1999-present	Member Editorial Board, Fish and Fisheries.
1993-present	Member Editorial Board, Reviews in Fish Biology and Fisheries
2007-present	Member Senior Advisory Council, Natural Resource Modeling.
1999-2014	Member Independent Advisory Panel, Commission for Conservation of Southern Bluefin Tuna
2010-present	Guest Editor for Proceedings of the National Academy of Sciences
2006 – 2013	Member Board of Reviewing Editors, Science Magazine
2002 - 2013	Associate Editor, Canadian Journal of Fisheries and Aquatic Sciences
2011-2013	External Advisory Board, National Socio-Environmental Synthesis Center (NSF synthesis center), University of Maryland.

2011-2012	Chair, NOAA and DFO sponsored Independent Scientific Review of impacts of chinook salmon fisheries on southern resident killer whales.
2003 – 2010	Member Editorial Board, New Zealand Journal of Marine and Freshwater Research
1993-2007	Member Editorial Board, Natural Resource Modeling.
2002 – 2003	Chair, National Academy of Sciences/National Research Council Committee on Cooperative Research in the National Marine Fisheries Service
2002 - 2004	Member Scientific Advisory Board for Presidents Commission on Ocean Policy
1999-2001	Member Ocean Studies Board, National Research Council
1996-2000	Member International Committee for recovery of the vaquita (<i>Phocoena sinus</i>)
1997-1998	Member National Academy of Sciences Panel on status of New England groundfish stocks.
1996-1997	Member National Academy of Sciences Panel on Fisheries Stock Assessment Methods

Honors and Awards

2012	American Fisheries Society Carl Sullivan Conservation Award to the Alaska Salmon Research Program of the University of Washington. I am the lead Principal Investigator of this program since 1997.
2011	Ecological Society of America Sustainability Science Award for 2009 paper “Rebuilding Global Fisheries”
2010	Elected Fellow of American Academy of Arts and Sciences
2010	Elected Member of Washington State Academy of Sciences
2009	American Institute of Fisheries Research Biologists Outstanding Achievement Award
2006	Volvo Environmental Prize (shared with Carl Walters and Daniel Pauly)
2005	Elected Fellow of Royal Society of Canada
2005	Recipient of American Fisheries Society 2005 National Award of Excellence
2005	Recipient of Western Division, American Fisheries Society, Award of Excellence
2001-2008	Richard C. and Lois M. Worthington Professor of Fisheries Management
1997	College of Ocean and Fisheries Sciences Distinguished Research Award
1988-1991	H. Mason Keeler Professor of Recreational Fisheries Management.

- 1985 Stevenson Memorial Lecture, Canadian Conference for Fisheries Research.
- 1976 Wildlife Society award for best paper in fisheries science. (Adaptive management of renewable resources with C. Walters).
- 1972-1974 National Research Council Canada. Graduate Fellowship.

Books and Monographs

- Hilborn, R. with U. Hilborn 2012. *Overfishing: what everyone needs to know*. Oxford University Press. 150 p.
- Grafton, R. Q., Hilborn, R., Squires, D., Tait, M., and Williams, M. (eds.). 2010. *Handbook of marine fisheries conservation and management*. Oxford University Press, Oxford. p. 770.
- Punt, A. and R. Hilborn. 2002. *Bayesian stock assessment methods in fisheries*. FAO Computerized Information Series (Fisheries) No. 12. 56 p.
- Hilborn, R. and M. Mangel. 1997. *The Ecological Detective: confronting models with data*. Princeton University Press, Princeton, N.J. 315 pps.
- Punt, A.E. and R. Hilborn. 1996. *Biomass dynamics models*. FAO Computerized Information Series (Fisheries). No. 10. Rome, FAO. 62p.
- Hilborn, R. and C. J. Walters. 1992. *Quantitative Fisheries Stock Assessment: Choice, Dynamics and Uncertainty*. Chapman and Hall, New York. 570 p. Also available in Russian.
- Bazykin, A., P. Bunnell, W.C. Clark, G.C. Gallopin, J. Gross, R. Hilborn, C.S. Holling, D.D. Jones, R.M. Peterman, J.E. Rabinovich, J.H. Steele, and C.J. Walters. 1978. *Adaptive Environmental Assessment and Management*. John Wiley and Sons, New York. 375 pps.

Publications in refereed journals

- Schindler, D. E., and Hilborn, R. 2015. Prediction, precaution, and policy under global change. *Science*. 347: 953-954.
- Harmon, B., R. Hilborn, and T. Quinn. 2015. Infection by the cestode parasite *Schistocephalus* sp. and effects on diet, body condition and survival of sculpins *Cottus aleuticus* and *Cottus cognatus*. *Journal of Fish Biology*. 86: 1621-1629
- Hilborn, R. 2014. Introduction to marine managed areas. *Advances in Marine Biology* 69:1-13.
- Griffiths, J. R., Schindler, D. E., Armstrong, J. B., Scheuerell, M. D., Whited, D. C., Clark, R. A., Hilborn, R., Holt, C. A., Lindley, S. T., and Stanford, J. A. 2014. Performance of salmon fishery portfolios across western North America. *J. Appl. Ecol.* 51: 1554-1563.
- McGilliard, C. R., Punt, A. E., Methot Jr, R. D., Hilborn, R., and Jacobson, L. 2014. Accounting for marine reserves using spatial stock assessments. *Can. J. Fish. Aquat. Sci.* 72: 1-19.

- Hughes, K. M., M. J. Kaiser, S. Jennings, R. A. McConnaughey, R. Pitcher, R. Hilborn, R. O. Amoroso, J. Collie, J. G. Hiddink, and A. M. Parma. 2014. Investigating the effects of mobile bottom fishing on benthic biota: a systematic review protocol. *Environmental Evidence* 3:23.
- Baker, M. R., D. E. Schindler, T. E. Essington, and R. Hilborn. 2014. Accounting for escape mortality in fisheries: implications for stock productivity and optimal management. *Ecological Applications* 24:55-70.
- Bentley, K. T., D. E. Schindler, T. J. Cline, J. B. Armstrong, D. Macias, L. R. Ciepiela, and R. Hilborn. 2014. Predator avoidance during reproduction: diel movements by spawning sockeye salmon between stream and lake habitats. *Journal of Animal Ecology* 83:1478-1489
- DeAlessi, M., J. M. Sullivan, and R. Hilborn. 2014. The legal, regulatory, and institutional evolution of fishing cooperatives in Alaska and the West Coast of the United States. *Marine Policy* 43: 217-225
- Hilborn, R., D. J. Hively, O. P. Jensen, and T. A. Branch. 2014. The dynamics of fish populations at low abundance and prospects for rebuilding and recovery. *ICES Journal of Marine Science*, doi: 10.1093/icesjms/fsu035
- Hilborn, R., and D. Ovando. 2014. Reflections on the success of traditional fisheries management. *Ices Journal of Marine Science* 71:1040-1046.
- Little, A., C. Needle, R. Hilborn, and D. Holland. 2014. Real-time spatial management approaches to reduce bycatch and discards: experiences from Europe and the United States. *Fish and fisheries DOI: 10.1111/faf.12080*.
- Melnychuk, M. C., J. A. Banobi, and R. Hilborn. 2014. The adaptive capacity of fishery management systems for confronting climate change impacts on marine populations. *Reviews in Fish Biology and Fisheries* 24:561-575.
- Peterson, D. A., R. Hilborn, and L. Hauser. 2014. Local adaptation limits lifetime reproductive success of dispersers in a wild salmon metapopulation. *Nature Communications* 5. doi:10.1038/ncomms4696
- Quinn, T. P., C. J. Cunningham, J. Randall, and R. Hilborn. 2014. Can intense predation by bears exert a compensatory effect on recruitment in a Pacific salmon population? *Oecologia* 175: 445-456.
- Rassweiler, A., C. Costello, R. Hilborn, and D. A. Siegel. 2014. Integrating scientific guidance into marine spatial planning. *Proceedings Of The Royal Society B-Biological Sciences* 281.
- Szuwalski, C. S., K. A. Vert-Pre, A. E. Punt, T. A. Branch, and R. Hilborn. 2014. Examining common assumptions about recruitment: a meta-analysis of recruitment dynamics for worldwide marine fisheries. *Fish and fisheries. DOI: 10.1111/faf.12083*
- Thorson, J. T., O. P. Jensen, and R. Hilborn. 2014. Probability of stochastic depletion: an easily interpreted diagnostic for stock assessment modelling and fisheries management. *ICES Journal of Marine Science: doi: 10.1093/icesjms/fsu127*.

- 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, and individual fishing quotas. *Canadian Journal of Fisheries and Aquatic Sciences* 70:1792-1804.
- Hall, S. J., R. Hilborn, N. L. Andrew, and E. H. Allison. 2013. Innovations in capture fisheries are an imperative for nutrition security in the developing world. *Proceedings of the National Academy of Sciences of the United States of America* 110:8393-8398.
- Hilborn, R. 2013. Environmental cost of conservation victories. *Proceedings of the National Academy of Sciences of the United States of America* 110:9187-9187.
- Magnusson, A., A. E. Punt, and R. Hilborn. 2013. Measuring uncertainty in fisheries stock assessment: the delta method, bootstrap, and MCMC. *Fish and fisheries* 14:325-342.
- Creel, S., M. S. Becker, S. M. Durant, J. M'Soka, W. Matandiko, A. J. Dickman, D. Christianson, E. Droge, T. Mweetwa, N. Pettorelli, E. Rosenblatt, P. Schuette, R. Woodroffe, S. Bashir, R. C. Beudels-Jamar, S. Blake, M. Borner, C. Breitenmoser, F. Broekhuis, G. Cozzi, T. R. B. Davenport, J. Deutsch, L. Dollar, S. Dolrenry, I. Douglas-Hamilton, E. Fitzherbert, C. Foley, L. Hazzah, P. Henschel, R. Hilborn, J. G. C. Hopcraft, D. Ikanda, A. Jacobson, B. Joubert, D. Joubert, M. S. Kelly, L. Lichtenfeld, G. M. Mace, J. Milanzi, N. Mitchell, M. Msuha, R. Muir, J. Nyahongo, S. Pimm, G. Purchase, C. Schenck, C. Sillero-Zubiri, A. R. E. Sinclair, A. N. Songorwa, M. Stanley-Price, C. A. Tehou, C. Trout, J. Wall, G. Wittemyer, and A. Zimmermann. 2013. Conserving large populations of lions - the argument for fences has holes. *Ecology Letters* 16:1413-+.
- Sinclair, A. R. E., K. L. Metzger, J. M. Fryxell, C. Packer, A. E. Byrom, M. E. Craft, K. Hampson, T. Lembo, S. M. Durant, G. J. Forrester, J. Bukombe, J. McHetto, J. Dempewolf, R. Hilborn, S. Cleaveland, A. Nkwabi, A. Mosser, and S. A. R. Mduma. 2013. Asynchronous food-web pathways could buffer the response of Serengeti predators to El Nino Southern Oscillation. *Ecology* 94:1123-1130.
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- Branch TA, Hively DJ, and Hilborn R. 2013. Is the ocean food provision index biased? *Nature* 495:E5-E6
- Hilborn, R. 2013. Ocean and dam influences on salmon survival. *Proceedings of the National Academy of Sciences of the United States of America* 110:6618-6619.
- Melnichuk, M. C., J. A. Banobi, and R. Hilborn. 2013. Effects of Management Tactics on Meeting Conservation Objectives for Western North American Groundfish Fisheries. *PLOS One* 8 (2) DOI: 10.1371/journal.pone.0056684.

- Hilborn, R. and T. A. Branch. 2013. Does Catch Reflect Abundance? No, it is misleading. *Nature* 494:303-306.
- Dougherty, D. T., R. Hilborn, A. E. Punt, and I. J. Stewart. 2013. Modeling co-occurring species: a simulation study on the effects of spatial scale for setting management targets. *Canadian Journal of Fisheries and Aquatic Sciences* 70:49-56.
- Simmons, R. K., T. P. Quinn, L. W. Seeb, D. E. Schindler, and R. Hilborn. 2013. Summer emigration and resource acquisition within a shared nursery lake by sockeye salmon (*Oncorhynchus nerka*) from historically discrete rearing environments. *Canadian Journal of Fisheries and Aquatic Sciences* 70:57-63.
- Vert-pre, K. A., R. O. Amoroso, O. P. Jensen, and R. Hilborn. 2013. Frequency and intensity of productivity regime shifts in marine fish stocks. *Proceedings of the National Academy of Sciences of the United States of America* 110:1779-1784.
- Costello, C., D. Ovando, R. Hilborn, S. D. Gaines, O. Deschenes, and S. E. Lester. 2012. Status and Solutions for the World's Unassessed Fisheries. *Science* 338: 517-520
- Hilborn, R. 2012. The role of science in MPA establishment in California: a personal perspective. *Environmental Conservation*. 39: 3 195-198
- Grafton, Q. R., T. Kompas, T. N. Che, L. Chu, and R. Hilborn. 2012. BMEY as a fisheries management target. *Fish and Fisheries* 13:303-312.
- Gutiérrez NL, Valencia SR, Branch TA, Agnew DJ, Baum JK, Hilborn R. et al. 2012. Eco-Label Conveys Reliable Information on Fish Stock Health to Seafood Consumers. *PLoS ONE* 7(8): e43765. doi:10.1371/journal.pone.0043765
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- Sethi, S. A., M. Dalton, and R. Hilborn. 2012. Managing harvest risk with catch-pooling cooperatives. *Ices Journal of Marine Science* 69:1038-1044.
- Hilborn, R. 2012. The environmental costs of food production (Abstract). *Journal of Shellfish Research*. 31: 296-296.
- Pess, G. R., Hilborn, R., Kloehn, K., and Quinn, T. P. 2012. The influence of population dynamics and environmental conditions on pink salmon (*Oncorhynchus gorbuscha*) recolonization after barrier removal in the Fraser River, British Columbia, Canada. *Canadian Journal of Fisheries and Aquatic Sciences* 69: 970-982.
- Hilborn, R., Stewart, I. J., Branch, T. A., and Jensen, O. P. 2012. Defining trade-offs among conservation of species diversity abundances, profitability, and food security in the California Current bottom-trawl fishery. *Conservation Biology*. 26: 257-266.
- Buhle, E. R., Feist, B. E., and Hilborn, R. 2012. Population dynamics and control of invasive *Spartina alterniflora*: inference and forecasting under uncertainty. *Ecological Applications* 22: 880-893.

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- Hilborn, R. 2012. The evolution of quantitative marine fisheries management 1985-2010. *Natural Resource Modeling*. 25: 122-144.
- Jensen, O. P., Branch, T. A., and Hilborn, R. 2012. Marine fisheries as ecological experiments. *Theoretical Ecology* 5: 3-22.
- Chauvenet, A. L. M., Durant, S. M., Hilborn, R., and Pettorelli, N. 2011. Unintended Consequences of Conservation Actions: Managing Disease in Complex Ecosystems. *PLOS One*. 6: e28671. doi:10.1371/journal.pone.0028671
- Krkosek, M., Connors, B. M., Morton, A., Lewis, M. A., Dill, L. M., and Hilborn, R. 2011. Effects of parasites from salmon farms on productivity of wild salmon. *Proceedings of the National Academy of Sciences of the United States of America*. 108: 14700-14704.
- Lin, J. E., Hilborn, R., Quinn, T. P., and Hauser, L. 2011. Self-sustaining populations, population sinks or aggregates of strays: chum (*Oncorhynchus keta*) and Chinook salmon (*Oncorhynchus tshawytscha*) in the Wood River system, Alaska. *Molecular Ecology*. doi: 10.1111/j.1365-294X.2011.05334.x.
- Durant, S. M., Craft, M.E., Hilborn, R., Bashir, S., Hando, J., Thomas, L. 2011. Long-term trends in carnivore abundance using distance sampling in Serengeti National Park, Tanzania. *J. Appl. Ecol.* doi: 10.1111/j.1365-2664.2011.02042.x.
- McGilliard, C. R., Punt, A. E., and Hilborn, R. 2011. Spatial structure induced by marine reserves shapes population responses to catastrophes in mathematical models. *Ecological Applications* 21: 1399-1409.
- Krkosek, M., Connors, B. M., Ford, H., Peacock, S., Mages, P., Ford, J. S., Morton, A., Volpe, J. P., Hilborn, R., Dill, L. M., and Lewis, M. A. 2011. Fish farms, parasites, and predators: implications for salmon population dynamics. *Ecological Applications*. 21: 897-914.
- Cowan, J. H., Grimes, C. B., Patterson, W. F., Walters, C. J., Jones, A. C., Lindberg, W. J., Sheehy, D. J., Pine, W. E., Powers, J. E., Campbell, M. D., Lindeman, K. C., Diamond, S. L., Hilborn, R., Gibson, H. T., and Rose, K. A. 2011. Red snapper management in the Gulf of Mexico: science- or faith-based? *Reviews in Fish Biology and Fisheries*. 21: 187-204.
- Krkosek, M., Hilborn, R., Peterman, R. M., and Quinn, T. P. 2011. Cycles, stochasticity and density dependence in pink salmon population dynamics. *Proceedings Of The Royal Society B-Biological Sciences*. 278: 2060-2068.
- Branch, T. A., Jensen, O. P., Ricard, D., Ye, Y., and Hilborn, R. 2011. Contrasting Global Trends in Marine Fishery Status Obtained from Catches and from Stock Assessments. *Conservation Biology*. 25: 777-786.
- Gutierrez, N. L., Hilborn, R., and Defeo, O. 2011. Leadership, social capital and incentives promote successful fisheries. *Nature*. 470: 386-389.
- Hilborn, R. 2011. Future directions in ecosystem based fisheries management: A personal perspective. *Fisheries Research* 108: 235-239.

- Banobi, J. A., Branch, T. A., and Hilborn, R. 2011. Do rebuttals affect future science? *Ecosphere* 2: 1-11.
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- Krkošek, M., and Hilborn, R. 2011. Sea lice (*Lepeophtheirus salmonis*) infestations and the productivity of pink salmon (*Oncorhynchus gorbuscha*) in the Broughton Archipelago, British Columbia, Canada. *Canadian Journal of Fisheries and Aquatic Sciences* 68: 17-29.
- McGilliard, C. R., Hilborn, R., MacCall, A., Punt, A. E., and Field, J. C. 2011. Can information from marine protected areas be used to inform control-rule based management of small-scale, data-poor stocks? *ICES J. Mar. Sci.* 68: 201-211.
- Hilborn, R., and Cowan, J. H. 2010. Marine stewardship: high bar for seafood. *Nature*. 467: 531-531.
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- Doctor, K. K., Hilborn, R., and T., Q. 2010. Spatial and temporal patterns of upriver migration by sockeye salmon populations in the Wood River system, Bristol Bay, Alaska. *Transactions of the American Fisheries Society*. 139: 80-91.
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- Hilborn, R. 2011. Let us eat fish. *New York Times Op-Ed*. 14 April 2011.
- Hilborn, R. 2011. Concept of "fishing down food webs" shown to be a myth. *Pacific Fishing* January 2011 pps 10,12.
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Major Research Funding

2014	Packard Foundation to produce an estimate of the global status of fisheries \$32,000
2013-2014	FAO to evaluate Asian trawl fisheries. \$65,000
2013-2014	FAO for evaluating the status of fisheries. \$80,000
2014	Walton Family Foundation Institutional and Legal Dimensions of fisheries management \$109,000
2014	Walton Family foundation to develop data bases on fisheries management and success.
2013-2015	Pollock Conservation Cooperative Research Center for study of design of fisheries management systems (\$300,000) Co PI with G. Knapp, C. Anderson.
2013-2015	AYK Salmon Sustainability Fund for study of AYK Chinook Salmon \$314,000
2012-2015	Packard Foundation for study of impacts of bottom trawling. \$225,000
2012-2015	Walton Family Foundation for study of impacts of bottom trawling. \$225,000
2012-2014	Kingfisher Foundation Analysis of fishing cooperatives \$150,000
2011-2015	Delta Science Council for analysis of Chinook salmon in Sacramento River. \$695,000
2011-2015	NSF (Coupled Natural Human Systems) \$1,500,000 (I am co-PI, D. Schindler lead PI)

2011-2013	Walton Family Foundation for analysis of fishing cooperatives \$200,000
2012-2013	Environmental Defense for analysis of fishing cooperatives \$100,000
2010-2012	Moore Foundation for analysis of portfolio effect and salmon productivity across a range of watersheds \$596,876. (D. Schindler lead P.I.)
2010-2012	NOAA/CAMEO Post doc funding \$166,909
2009-2013	Bristol Bay Regional Seafood development agency for analysis of foregone harvest \$350,000
2011-2013	Walton Family Foundation funding for Impacts of Fishing. \$200,000
2010-2012	NSF funding \$496,569 for Comparative Analysis of Marine Ecosystems.
2009-2010	Pacific Salmon Commission \$117,757 for evaluation of statistical model of Pacific coast Chinook stocks.
2008-2013	Moore Foundation for salmon research. \$3.6 million years. (with D. Schindler and T. Quinn)
1999-present	Bristol Bay Salmon Processors for salmon research in Bristol Bay, Alaska. Average \$130k per year.
2005-2007	NOAA funding for development of SHIRAZ model to evaluate habitat impacts on salmon \$200k
2005-2007	Pew Institute for Ocean Sciences for research on dynamics of small populations. \$250k over 2 years.
2005-2008	Moore Foundation for salmon research. \$2.3 million over 3 years. (With D. Schindler and T. Quinn)
2002-2006	NOAA funding for graduate student support in marine fish population dynamics \$255,000
2004-2009	NSF funding for "Biocomplexity and fisheries sustainability" \$2.0 Million. I am the lead P.I.
2004-2006	SeaGrant funding for spatial dynamics of geoducks in Puget Sound. With David Armstrong. \$150k over 3 years.
2003-2007	NSF Biocomplexity funding Award 0308440 for study of spatial structure in fish recruitment. Dave Siegel U.C. Santa Barbara lead P.I. my portion \$315,607
1996-2007	New Zealand Seafood Industry Council funding of stock assessment in New Zealand Fisheries \$67,000-\$125,000 per year.
2003-2006	NOAA/SeaGrant funding for graduate fellowship for Eric Ward in fisheries stock assessment. \$37k per year for 3 years.
2002	NMFS funding for post-doc on salmon habitat modelling. \$50k
2002-2003	Alaska Department of Fish and Game funding for grad student support on prediction of salmon run timing. \$30k

2002-2004	NMFS Stock Assessment Improvement Program funding for grad student support. \$70k per year
2002-2005	NSF LTREB funding for Alaska Salmon studies. \$35k per year. Jointly with Tom Quinn and Daniel Schindler.
2001-2003	NSF funding for field station infrastructure, \$200k for new laboratory and classroom at Porcupine Island Alaska field station. Tom Quinn lead P.I.
2002-2005	NOAA/SeaGrant funding for graduate fellowship for Melissa Haltuch in fisheries stock assessment. \$37k per year for 3 years.
2001-2003	Institute of Marine Research, Iceland funding for research on Icelandic cod and age structured models \$16k per year.
2001-2004	NOAA/SeaGrant funding for graduate fellowship for Ian Stewart in fisheries stock assessment. \$37k per year for 3 years.
2000-2001	NOAA funding for study of salmon run timing. \$70k.
2000	NMFS funding for Research Faculty position in groundfish assessment. \$120k
1999-present	Bristol Bay Salmon Processors for salmon research in Bristol Bay, Alaska. Average \$200k per year.
1998-2009	NOAA funding for salmon research at Chignik Lakes, Alaska \$30k per year.
1998-2002	Funding of PNCRS research on salmon survival (Sea Grant and NOAA joint funding) Multi PI program, my portion \$35,000 per year.
1998-present	Chignik Regional Aquaculture Association funding for salmon research at Chignik Lakes, Alaska. \$45k-\$10k per year.
1998-2003	Alaska Department of Fish and Game funding for operation of Pt. Moller test fishery. \$30k per year.
1996-1997	National Marine Fisheries Service funding for analysis of interaction between habitat, ocean conditions and harvest in chinook salmon. \$49,000
1997-1998	Washington Sea Grant: modeling the interaction between habitat, harvest, ocean conditions and hatcheries. \$32,000
1995	Gift of \$100,000 as part of Consent Decree between Reynolds Aluminum and Washington Public Interest Research Group for research on Columbia River Chinook Salmon.
1990-1996	New Zealand Fishing Industry Board. with Prof. Ellen Pikitch "Analysis of New Zealand TAC setting policies." \$100,000-\$150,000 per year.
1993-1995	Washington Sea Grant. "Hatcheries: what works and what doesn't." \$100,800
1993-1994	National Marine Fisheries Service funding for Bayesian risk analysis of Snake River Fall Chinook. \$35,000

- 1989-1993 Bonneville Power Administration. "Analysis of historical patterns of survival among Columbia River salmonids". \$450,000.
- 1991-1993 Washington Sea Grant. "Salmon management using coded-wire-tags." \$96,000
- 1990 International Pacific Halibut Commission. "Analysis of IPHC transboundary tagging experiments, part II." \$54,105. With J.R. Skalski.
- 1990 Provosts fund for Interdisciplinary research. "In search of sustainable development." \$15,000. With Kai Lee and Gardner Brown.
- 1988 International Pacific Halibut Commission. "Analysis of IPHC transboundary tagging experiments". \$40,315. With J.R. Skalski.
- 1988 Bonneville Power Administration. "Flow requirements for the Hanford reach, relative to the number of chinook salmon spawners". \$23,357. With D. E. Rogers.
- 1988 Northwest Indian Fisheries Commission. Statistical procedures for comparing results of coded wire tag releases. \$10,000.
- 1989-1991 Washington Sea Grant. Managing Adaptively: early experience in Western North America. \$144,000. With Kai N. Lee and Janice E. Carpenter.
- 1987-1990 Vice Provost for Computing University of Washington. \$177,731 for microcomputer teaching lab for Colleges of Forest Resources and College of Fisheries and Ocean Sciences. Proposal written by Dr. Gordon Swartzman and myself.
- 1975-1985 National Sciences and Engineering Research Council of Canada operating grants in Population Biology (\$6000-\$12,000 per year).
- 1980-1985 Department of Fisheries and Oceans. Contract support for Cooperative Fisheries Research Unit (\$60,000-\$110,000 per year). With C.J. Walters.
- 1985-1987 3 year Strategic Grant from National Sciences and Engineering Research Council (\$90,000 per year) for "Adaptive management of fisheries resources." With C.J. Walters and D. Ludwig.
- 1978 B.C. Science Council. (\$24,000). Behavior of B.C. purse seine fleet.
- 1978 Canadian National Sportsman's Fund (\$12,000). A study of B.C. salmon purse seine vessels.