

# Sean Charles Anderson

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## Education

- 2011–13 Ph.D. Candidate, Simon Fraser University, Burnaby, Canada Supervisors:  
Dr. Nicholas K. Dulvy and Dr. Andrew B. Cooper  
Canadian Fulbright Scholar to the University of Washington in 2012–13
- 2010 M.Sc. Biology, Dalhousie University, Halifax, Canada  
Thesis title: Trends, drivers, and ecosystem effects of expanding global invertebrate fisheries. Supervisor: Dr. Heike K. Lotze. ([PDF](#))  
Canadian [Governor General's Academic Gold Medal](#) for the top-ranked Master's Natural Sciences and Engineering thesis at Dalhousie University in 2010
- 2004–07 B.Sc. (Hons.) Environmental Science, Dalhousie University, Halifax, Canada  
Thesis title: How sustainable are emerging low-trophic level fisheries on the Scotian Shelf? Supervisors: Dr. Heike K. Lotze and Dr. Ransom A. Myers. ([PDF](#))  
First Class Honours & Environmental Programmes Honour Society Medal
- 2001–03 B.Sc. Candidate (Hons.) Kinesiology, University of Waterloo, Waterloo, Canada Transferred to Dalhousie University in 2004.

## Publications

- 2013 O'Regan, S.M., W.J. Palen, **S.C. Anderson**. Climate warming mediates negative impacts of rapid pond drying for three amphibian species. In press at Ecology. <http://doi.org/10.1890/13-0916.1>.
- 2013 Artelle K.A., **S.C. Anderson**, A.B. Cooper, Paul C. Paquet, J.D. Reynolds, C.T. Darimont. Confronting uncertainty in wildlife management: performance of grizzly bear management in British Columbia, Canada. PLOS ONE. 8(11): e78041. <http://doi.org/10.1371/journal.pone.0078041>
- 2013 Favaro, B., D.C. Braun, **Earth2Ocean Research Derby**. The 'Research Derby': A pressure cooker for creative collaborative science. Ideas in Ecology and Evolution. 6: 40-46. <http://doi.org/10.4033/iee.2013.6.9.n>

- 2013     **Anderson, S.C.**, A.B. Cooper, N.K. Dulvy. Ecological prophets: Quantifying metapopulation portfolio effects. *Methods in Ecology and Evolution*. 4(10): 971-981. <http://doi.org/10.1111/2041-210X.12093>. (PDF, [ecofolio R package](#), [Supporting Information](#))
- 2012     Phillis, C.C.\*, S.M. O'Regan\*, S.J. Green\*, J.E.B. Bruce\*, **S.C. Anderson**, J.N. Linton, Earth2Ocean Research Derby, B. Favaro. Multiple pathways to conservation success. *Conservation Letters*. 6(2): 98-106. <http://doi.org/10.1111/j.1755-263X.2012.00294.x>. (PDF) (\*Authors contributed equally, listed in reverse alphabetical order)
- 2012     Harnik, P.G., H.K. Lotze, **S.C. Anderson**, Z.V. Finkel, S. Finnegan, D.R. Lindberg, L.H. Liow, R. Lockwood, C.R. McClain, J.L. McGuire, A. O'Dea, J.M. Pandolfi, C. Simpson, D.P. Tittensor. Extinctions in ancient and modern seas. *Trends in Ecology and Evolution*. 27(11): 608-617. <http://doi.org/10.1016/j.tree.2012.07.010>. (PDF)
- 2012     **Anderson, S.C.**, T.A. Branch, D. Ricard, H.K. Lotze. Assessing global marine fishery status with a revised dynamic catch-based method and stock-assessment reference points. *ICES Journal of Marine Science*. 69(8): 1491-1500. <http://doi.org/10.1093/icesjms/fss105>. (PDF)
- 2011     **Anderson, S.C.**, B.G. Farmer, F. Ferretti, A.L.S. Houde, and J.A. Hutchings. Correlates of vertebrate extinction risk in Canada. *BioScience*. 61(7): 538-549. <http://doi.org/10.1525/bio.2011.61.7.8>. (PDF)
- 2011     **Anderson, S.C.**, J. Mills Flemming, R. Watson, H.K. Lotze. Serial exploitation of global sea cucumber fisheries. *Fish and Fisheries*. 12(3): 317-339. <http://doi.org/10.1111/j.1467-2979.2010.00397.x>. (PDF) [Featured in Science](#) on January 14 2011.
- 2011     Boudreau, S.A., **S.C. Anderson**, B. Worm. Top-down interactions and temperature control of snow crab abundance in the northwest Atlantic. *Marine Ecology Progress Series*. 429: 169-183. <http://doi.org/10.3354/meps09081>.
- 2011     **Anderson, S.C.**, J. Mills Flemming, R. Watson, H.K. Lotze. Rapid global expansion of invertebrate fisheries: trends, drivers, and ecosystem effects. *PLOS ONE*. 6(3): e14735. <http://doi.org/10.1371/journal.pone.0014735>
- 2008     **Anderson, S.C.**, H.K. Lotze, and N.L. Shackell. Evaluating the knowledge base for expanding low-trophic-level fisheries in Atlantic Canada. *Canadian Journal of Fisheries and Aquatic Sciences*. 65(12): 2553-2571. <http://doi.org/10.1139/F08-156>. (PDF) Eighth most-read CJFAS article in 2008.

## Manuscripts in review

- 2013 Farmer, R.G., M.L. Leonard, J.E. Mills Flemming, S.C. Anderson. Observer aging and long-term avian survey data quality In revision for Ecology and Evolution.
- 2013 Johnson, K.F., C.C. Monnahan, C. McGilliard, K. Vert-pre, A. Whitten, **S.C. Anderson**, K. Ono, R. Licandeo, F. Hurtado-Ferro, J. Valero, M. Muradian, C. Szuwalski, C. Cunningham, A. Punt. Time-varying natural mortality in fisheries stock assessment models: identifying a default approach. In revision for ICES Journal of Marine Science.
- 2013 Ono, K., R. Licandeo, M. Muradian, C. Cunningham. **S.C. Anderson**, F. Hurtado-Ferro, K.F. Johnson, C. McGilliard, C.C. Monnahan, C. Szuwalski, J. Valero, K. Vert-pre, A. Whitten, and A. Punt. The importance of length and age composition data in statistical catch-at-age models for marine species. In revision for ICES Journal of Marine Science.

## Awards and scholarships

- 2014 Garfield Weston Foundation / BC Packers Ltd. Graduate Fellowship in Marine Sciences
- 2014 Graduate Fellowship, Simon Fraser University
- 2012–13 [Canadian Fulbright Scholar award](#) to the University of Washington in 2012–13
- 2011 Canadian [Governor General's Academic Gold Medal](#) for the top-ranked Master's Natural Sciences and Engineering thesis at Dalhousie University in 2010
- 2011–14 Provost Prize of Distinction, Simon Fraser University
- 2011–14 Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship (Doctoral)
- 2007–10 Faculty Research Grant Scholarship, Dalhousie University
- 2007–09 Graduate Studies Scholarship, Dalhousie University
- 2007 Environmental Programmes Honour Society Medal, Dalhousie University
- 2001–03 Academic All-Canadian, University of Waterloo
- 2001–02 Dean's Entrance Scholarship, University of Waterloo

## Invited talks and conference presentations

- 2013     **Anderson, S.C.**, A.B. Cooper, N.K. Dulvy. False prophets: The challenges of quantifying ecological portfolios ([slides](#)), Quantitative Seminar, School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA, United States.
  
- 2012     **Anderson, S.C.**, A.B. Cooper, N.K. Dulvy. False prophets: The ecological portfolio effect overestimates the benefit of diversity. Branch Lab, School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA, United States.
  
- 2012     **Anderson, S.C.**, A.B. Cooper, N.K. Dulvy. Metapopulation dynamics and the generality of the ecological portfolio effect. Les Ecologistes Departmental Seminar, Simon Fraser University, Burnaby, BC, Canada.
  
- 2010     **Anderson, S.C.** The rise of invertebrates, the fall of sea cucumbers, and the risk of maturing late. Earth2Ocean Research Group, Simon Fraser University, Burnaby, BC, Canada.
  
- 2009     **Anderson, S.C.**, J. Mills Flemming, R. Watson, H.K. Lotze. Ecosystem impacts of the global expansion of invertebrate fisheries. International Oceans Past II Conference *Multidisciplinary Perspectives on the History and Future of Marine Animal Populations*. Vancouver, BC, Canada.
  
- 2009     **Anderson, S.C.**, J. Mills Flemming, R. Watson, H.K. Lotze. Global invertebrate fisheries: trends and consequences. NCEAS (National Center for Ecological Analysis and Synthesis) Working Group *Finding Common Ground in Marine Conservation and Management*. Santa Barbara, CA, USA.
  
- 2009     **Anderson, S.C.**, H.K. Lotze, N.L. Shackell. Evaluating the knowledge base for expanding low-trophic level fisheries in Atlantic Canada. Harvest Fisheries Seminar Series. Bedford Institute of Oceanography, Fisheries and Oceans, Dartmouth, NS, Canada.
  
- 2008     **Anderson, S.C.**, H.K. Lotze, N.L. Shackell. Evaluating the knowledge base for expanding low-trophic level fisheries in Atlantic Canada. Departmental Seminar, Biology Department, Dalhousie University, Canada.

## Contract employment

- 2013     Co-developed a set of global fisheries-status maps based on the RAM Legacy Stock Assessment Database for Dr. Ray Hilborn.

- 2011–13 Database management, data analysis, and visualization for the project *Global Shark Abundance Baselines* (Hopkins Marine Station, Stanford University, CA, United States) with F. Micheli, F. Ferretti, N.K. Dulvy, H.K. Lotze, and B. Worm.
- 2010 Assessment of Arctic surfclam on Banquereau Bank using industry collected data for Clearwater Seafoods, Bedford, NS, Canada.
- 2010 Modelling length-frequency distribution changes of Atlantic halibut for NAFO Divisions 4VWX5Z and 3NOP for Dr. K. Trzcinski, Population Ecology Division, Bedford Institute of Oceanography, Fisheries and Oceans, Dartmouth, NS, Canada.

## Working groups and workshops

- 2011–13 NESCent (National Evolutionary Synthesis Center, Durham, NC) Working Group *Determinants of Extinction in Ancient and Modern Seas* led by Paul Harnik, Seth Finnegan, and Rowan Lockwood. ([URL](#))
- 2010 Atlantic Halibut Assessment Science Peer Review Meeting, Fisheries and Oceans, Dartmouth, NS, Canada.
- 2007–09 NCEAS (National Center for Ecological Analysis and Synthesis, Santa Barbara, CA) Distributed Graduate Seminar, in association with the Working Group *Finding Common Ground in Marine Conservation and Management* led by Ray Hilborn and Boris Worm. ([URL](#))
- 2008 Workshop on Canadian Science and Management Strategies for Sea Cucumber (*Cucumaria frondosa*), Fisheries and Oceans, Dartmouth, NS, Canada (work presented *in absentia*).
- 2007 Workshop on Canadian Science and Management Strategies for Atlantic Hagfish, Fisheries and Oceans, Dartmouth, NS, Canada. ([URL](#))

## Selected courses and training

- Present Proficient in statistical analyses and data management using R, WinBUGS, JAGS, Sweave, knitr, LaTeX, Perl, PostgreSQL, Git.
- 2013 Quantitative Modelling in Ecosystem Based Management, R. Hilborn, School of Aquatic and Fishery Sciences, University of Washington (audited).
- 2013 Applied Time Series Analysis; E. Holmes, M. Scheuerell, and E. Ward; School of Aquatic and Fishery Sciences; University of Washington (audited).
- 2012 Numerical Computing for the Natural Resources, Dr. A.E. Punt, School of Aquatic and Fishery Sciences, University of Washington (audited).

- 2012 Risk Assessment and Decision Analysis for Management of Natural Resources, Dr. R.M. Peterman, School of Resource and Environmental Management, Simon Fraser University.
- 2011 Presenting Data and Information, Edward Tufte, Seattle, WA, United States.
- 2009 Technical Expertise in Stock Assessment: Model Fitting and Interpretation by Dr. C. Needle, chair of the International Council for the Exploration of the Sea working group on methods of fish stock assessment, Dalhousie University.
- 2008 Data Analysis, Dr. J. Mills Flemming, Department of Mathematics & Statistics, Dalhousie University (audited).

## Teaching

- 2013 Instructor for BISC-888-1: Data Wrangling and Visualization in R, a graduate-level course at Simon Fraser University, Burnaby, BC, Canada. Co-developed curriculum and developed lectures, exercises, notes, and assignments for three of six classes. <https://github.com/seananderson/datawranglR> (see classes 03, 04, 05)
- 2012 Introduction to ggplot2. ([notes](#), [slides](#)) Lecture for FISH 507H: Beautiful Graphics in R, School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA, United States
- 2012 Workshop on the R package plyr. ([notes](#), [slides](#), [examples](#)) Branch Lab, School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA, United States
- 2011 Multipanel plotting in R with base graphics. ([notes](#), [slides](#)). Earth2Ocean Research Group, Simon Fraser University, Burnaby, BC, Canada.
- 2011 A brief introduction to R. ([notes](#), [workshop code](#)). Earth2Ocean Research Group, Simon Fraser University, Burnaby, BC, Canada.
- 2011 Workshop on the R package plyr ([notes](#), [slides](#)). Earth2Ocean Research Group, Simon Fraser University, Burnaby, BC, Canada.
- 2007–08 Teaching Assistant, Organismal Biology and Ecology, Dalhousie University, two semesters (BIOL 1021).
- 2007–08 Teaching Assistant, Marine Mammology, Dalhousie University (BIOL 4060).

## **Reviews**

Reviewer for Ecology, Conservation Biology, Fish and Fisheries, International Journal of Tropical Biology and Conservation, Journal of Environmental Management, Aquatic Conservation