CHRISTINE C. STAWITZ

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EDUCATION

Ph.D., University of Washington   **September 2011- August 2017**
Quantitative Ecology and Resource Management
Dissertation: Understanding the effects of growth and size-at-age variation on the dynamics of fish populations.
Advisor: Dr. Timothy E. Essington, School of Aquatic and Fisheries Sciences

B.Sc. (with distinction), University of Virginia   **September 2004 – May 2008**
Systems Engineering, Minor in Computer Science
Thesis: Monitoring and data analysis of residential energy consumption in ecoMOD, a sustainable, modular, low-cost housing design.
Advisor: Dr. P. Paxton Marshall, School of Engineering and Applied Science

RELEVANT WORK AND RESEARCH EXPERIENCE

National Assessment Modeling Team Lead, **NOAA Fisheries**   **February 2021 – present**
- Agency-wide coordination of stock assessment best practices in computing and modeling
- Developing new systems for reproducible, ecosystem-integrated assessments
- Conducting and publishing research on best practices for fisheries stock assessment models

Stock Assessment Modeler**, ECS Federal in support of NOAA Fisheries**   **October 2018 – January 2021**
- Developing new population models for fisheries stock assessments
- Agency-wide coordination of stock assessment best practices in computing and modeling
- Improving usability, documentation, and UI for R and C++-based fisheries population modeling tools
- Conducting and publishing research on best practices for fisheries stock assessment models

Postdoctoral Research Associate, **University of Washington/NOAA Fisheries**   **September 2017 – August 2018**
- Predicting impacts of climate change on snow crab, *Chionoecetes opilio*, using individual-based model
- Integrating experimental results with output of regional ocean model in a bioenergetics framework

Graduate Research Assistant, **University of Washington**   **June 2012 – August 2017**
- Detecting patterns in somatic growth variation of marine fish using Bayesian state-space models
- Simulation analyses to determine the impact of somatic growth variation on fish productivity
- Explored feasibility of using size-structured models in data-limited systems

Program Manager*,* **Microsoft Corporation**   **August 2008 – August 2011**
- Managed design and development lifecycle on the Windows 8 product team including:
  - Designed user interface of Windows features, including copy engine dialog and common controls
  - Coordinated and led team of developers, testers, and designers to develop Windows features
  - Wrote internal specifications and external-facing API documentation for common controls

Database and Development Intern, **Donor Town Square, Inc.**   **June 2006 – January 2007**
- Designed, developed, and maintained SQL database structures and ASP.NET website

Database Team Intern, **Capital IQ, Inc., Division of Standard & Poor's**   **May 2005 – August 2005**
- Worked with database team to design and develop SQL database structures and internal web tools using Visual Basic and HTML

AWARDS

Microsoft AI for Earth Grant, $10,000 equivalent compute time   April 2020

PUBLICATIONS

Kaplan, I. Gaichas, S., **Stawitz, C.C.,** et al. Management Strategy Evaluation: Allowing the Light on the Hill to Illuminate More than One Species. Frontiers in Marine Science special issue: Using Ecological Models to Support and Shape Environmental Policy Decisions. *In press*.

Gruss, A., Thorson J. **Stawitz, C.C**., et al. 2021. Synthesis of interannual variability in spatial demographic processes supports the strong influence of cold-pool extent on eastern Bering Sea walleye pollock (Gadus chalcogrammus). Progress in Oceanography. 194, 102569.

O'Leary, C.A., **Stawitz, C.C.,** and J.A. Nye. 2019. Detecting somatic growth trends for summer flounder (*Paralichthys dentatus*) using a state-space approach. Canadian Journal of Fisheries and Aquatic Sciences 77(5), 917-930.

Stawitz, C.C., Haltuch, M.A., and Johnson, K.F. 2019. How does growth misspecification impact management advice from an integrated stock assessment model? Fisheries Research. 213: 12-21.

Stawitz, C.C. and Essington, T.E. 2019. Somatic growth contributes to population variation in marine fishes. Journal of Animal Ecology. 88(2):315 – 329.

Hayes, A.L., Heery, E.C., Maroon, E., McLaskey, A.K. and **Stawitz, C.C.** 2018. The role of scientific expertise in local adaptation to projected sea level rise. Environmental Science and Policy. 87:55-63.

Moriarty, P.E., Hodgson, E.E., Froehlich, H.E., Hennessey, S.M., Marshall, K.N., Oken, K.L., Siple, M.C., Koehn, L.E., Pierce, B.D., and **Stawitz, C.C.** 2018. The need for validation of ecological indices. Ecological Indicators. 84:546-552.

Stawitz, C.C., Siple, M.C., Lee, Q., Munsch, S.H. 2017. Financial and ecological implications of global seafood mislabeling. Conservation Letters. 10(6): 681-689.

Stawitz, C.C., Hurtado-Ferro, F., Kuriyama, P.T., Trochta, J.T., Johnson, K.F., Haltuch, M.A., Hamel, O.S. Stock Assessment Update: Status of the U.S. petrale sole resource in 2014. 2015. Pacific Fishery Management Council, Portland, OR.

Monnahan, C.C., Ono, K., Anderson, S.C., Rudd, M.B., Hicks, A.C., Hurtado-Ferro, F., Johnson, K.F., Kuriyama, P.T., Licandeo, R.R., **Stawitz, C.C.,** Taylor, I.G., Valero, J.L. 2016. The effect of length bin structures on growth estimation in integrated age-structured stock assessments. Fisheries Research. 180: 103-112.

Kuriyama, P.T., Ono, K., Hurtado-Ferro, F., Hicks, A.C., Taylor, I.G., Licandeo, R.R., Johnson, K.F., Anderson, S.C., Monnahan, C.C., Rudd, M.B., **Stawitz, C.C.**, Valero, J.L. 2016. An empirical weight-at-age approach reduces estimation bias compared to modeling parametric growth in integrated, statistical stock assessment models when growth is time varying. Fisheries Research. 180: 119-127.

Stawitz, C.C., Essington, T.E., Branch, T.A., Haltuch, M.A., Hollowed, A.B., Spencer, P.D. 2015. A state-space approach for measuring growth variation and application to North Pacific groundfish. Canadian Journal of Fisheries and Aquatic Sciences. 72(**9**): 1316-1328.

Essington, T.E., Moriarty, P.E., Froehlich, H.E., Hodgson, E.E., Koehn, L.E., Oken, K.L., Siple, M.C., **Stawitz, C.C.** 2015. Fishing amplifies forage fish population collapses. Proceedings of the National Academy of Sciences. 112 (**21**): 6648-6652.

Select Presentations

Stawitz, C.C. Shared software development strategies facilitate implementation of Ecosystem-Based Fisheries Management. NOAA Fisheries Northwest Fisheries Science Center, Monster Jam. September 2020. *Invited*.

Stawitz, C.C. and Supernaw. M. The Metapopulation Assessment System. NOAA Fisheries Library Seminar. July 2020. *Invited.*

Stawitz, C.C. Invited keynote speaker at CAPAM "the creation of frameworks for the next generation of general stock assessment models." November 2019. Declined due to maternity leave.

Stawitz, C.C. Detecting changes in somatic growth from observational data: it's complicated. June 2019. International Pacific Halibut Commission. *Invited.*

Stawitz, C.C., Essington, T.E., Thorson, J.T., Spencer, P.D., Hollowed, A.B., and Haltuch, M.A. Detecting climate signals in noisy data. SAFS Centennial Bevan Symposium. April 18th 2019. *Invited.*

Stawitz, C.C. The life changing magic of tidying your code. UW School of Aquatic and Fishery Sciences' Quantitative Seminar. April 12th, 2019.

Stawitz, C.C., Stockhausen, W.T., Szuwalski, C.S., Foy, R.J, Punt, A.E. "Forecasting the effects of climate change on Alaskan snow crab (*Chionoecetes opilio*)." 4th Effects of Climate Change on the World's Ocean's Symposium, Washington, D.C. USA. June 2nd 2018. *Invited.*

Stawitz, C.C., Haltuch, M.A. "How does growth variability affect estimation of management quantities in fisheries stock assessments, and can growth changes be detected?" ICES/PICES Early Career Scientist Meeting, Busan, ROK. May 31st, 2017. *Invited.*

Stawitz, C.C., Essington, T.E. "The relative importance of somatic growth and recruitment to population production." NMFS-Sea Grant Population Dynamics Fellows Meeting, Santa Cruz, CA. June 28th, 2016

Stawitz, C.C., Hurtado-Ferro, F., Kuriyama, P.T., Trochta, J.T., Johnson, K.F., Haltuch, M.A., Hamel, O.S. "Stock assessment update: status of the U.S. petrale sole resource in 2014." Pacific Fishery Management Council Science and Statistical Committee Meeting. Spokane, WA. June 10th, 2015.

Stawitz, C.C., Essington, T.E., Branch, T.A., Haltuch, M.A., Hollowed, A.B., Mantua, N. Spencer, P. "A state-space approach for measuring growth variation and application to North Pacific groundfish." Ecological Society of America Annual Meeting. Sacramento, CA. August 13th, 2014.

Teaching and Tutoring Experience

Git and Github Training, NOAA Fisheries   **May 2020, July 2020, November 2020**
- Prepared and led interactive tutorial on GitHub use to students and postdoctoral researchers

Invited Speaker, Introduction to drake workflows, R-Ladies Seattle   **June 2018**

- Prepared and led workshop on using the R package drake for optimized project development workflows

Invited participant, R unconference 2018, Microsoft Reactor, Seattle   **May 2018**
- Developed roomba R package to tidy deeply-nested lists; created Shiny app and documentation

Lecturer, GitHub Tutorial, University of Washington   **June 2016, January 2017**
- Prepared and led interactive tutorial on GitHub use to students and postdoctoral researchers

Guest Lecturer, Advanced Marine Biology, University of Washington   **October 2014**
- Prepared and led fish life history lecture: "Growth and Body Size in Fishes" lecture and discussion

Guest Lecturer, Super-Advanced R, University of Washington   **Spring 2014**
- Prepared and led "Underpinnings of R" lecture and lab, covering core computer science topics such as scoping, typing, rounding error, and regular expressions in the R programming language.

Guest Lecturer, Analysis of Ecological Data, University of Washington   **April 2016, Spring 2013**
- Lectures on statistics including: mixed effect models, analysis of covariance, nonlinear regression

Computing Assistant, Analysis of Ecological Data, University of Washington   **Spring 2013**
- Prepared and led R labs on generalized linear models, mixed effect models, analysis of variance & covariance, nonlinear regression

Drop-In Tutor, Statistics Tutor and Study Center, UW, Seattle, WA   **January – June 2014**
- Tutored undergraduate students on statistics and probability coursework

MEMBERSHIPS AND REVIEWS

Working Groups:
ICES/PICES WGGRAFY (Working Group on Impacts of Warming on Growth Rates and Fisheries Yields) ToR 1 Co-Lead
ADMB/TMB Foundation

Panels: NMFS/Sea Grant Population Dynamics Fellowship Panel Reviewer, 2019

Journals refereed: Fisheries Research, Conservation Letters, Global Change Biology, Reviews in Fish Biology and Fisheries, Canadian Journal of Fisheries and Aquatic Sciences, ICES Journal of Marine Science, Frontiers in Marine Science, PeerJ, Ecological Applications, Fish and Fisheries

TECHNICAL SKILLS

Software development: Co-author of the nmfspalette, atlantisom, RMAS, roomba, ss3sim, and r4ss R packages
Programming language proficiency: R, Java, Stock Synthesis 3, SQL, HTML, ADMB, Visual Basic, C++, JavaScript

OUTREACH & SERVICE

FINS Diversity and Equity Forum Leader   **September 2015 – January 2017**
- Lead workshops and develop training materials to promote diversity and equity in the UW community

Washington Trails Association Volunteer   **August 2009 – present**
- Built and maintained hiking trails in Washington state

Ocean Inquiry Project Volunteer, Seattle, WA   **August 2014 – August 2016**
- Teaching high school students about marine science and oceanography via cruises and scientific dives

NOAA Fisheries Groundfish Trawl Survey Volunteer, Newport, OR   **May 2015 – June 2015**
- Participated in sea safety and biology training; sampled groundfish on 11-day cruise

UW Graduate and Professional Student Senator, Seattle, WA   **September 2012 - September 2014**
- Represented QERM student interests and concerns to the graduate student government

Orca Bowl: Science Judge, Seattle, WA   **February 2013**

- Served as science judge in event for high school students to learn and compete in marine science trivia

Seattle Aquarium Volunteer, Seattle, WA   **January 2011 - December 2013**
- Teaching marine biology and ecology to aquarium visitors; animal husbandry