



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Alaska Fisheries Science Center
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Alaska Fisheries Science Center
7600 Sand Point Way NE
Seattle, WA 98115

May 13, 2018

Dave Witherell, Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Dear Dave:

The Alaska Fisheries Science Center offers Dr. Cody Szuwalski for your consideration to serve on the NPFMC Bering Sea Crab Plan Team. Dr. Szuwalski has strong quantitative skills and knowledge of crab life history, spatial modeling, snow crab stock assessment, fish and shellfish population dynamics. His recent authorship of the Bering Sea snow crab SAFE chapter, and his impressive suite of publications on climate ready fisheries management, trophic cascades, spatial models and next generation stock assessment techniques will provide useful expertise and practical experience to the Bering Sea Crab Plan Team. Cody's technical acumen when coupled with his experience working on crab stock assessment will make Cody a valuable asset to the Plan Team. His CV is enclosed for your consideration.

We appreciate the opportunity to provide scientists in support of the NPFMC plan teams.

Sincerely,

Doug DeMaster

Douglas P. DeMaster, Director, AFSC, NOAA Fisheries

Cc: F/AKC2 Ron Felthoven
F/AKC2 Sandra Lowe

Attachments



Cody Szuwalski

Curriculum vitae (as of 5/11/2018)

Phone: 785-979-4453

Email: c.s.szuwalski@gmail.com

EDUCATION

- 2014 Ph.D. School of Aquatic and Fishery Sciences (SAFS), University of Washington.
- 2006 M.A. Ecology and Evolutionary Biology (Aquatic Ecology), University of Kansas.
- 2004 Capital University of Economics and Business (首都经济贸易大学), Beijing, China.
- 2001 B.Sc. Environmental Science, University of Kansas.

PROFESSIONAL EXPERIENCE

- 2018-present NOAA, Alaska Fishery Science Center, Research fishery biologist
- 2017-2018 University of California, Santa Barbara, Research faculty (Associate)
- 2015-2017 University of California, Santa Barbara, Research faculty (Assistant)
- 2014-2015 University of California, Santa Barbara, Fishery scientist
- 2013-2017 NOAA, Alaska Fishery Science Center, Stock assessment contractor

PUBLICATIONS

Refereed journal articles (n= 30)

- 2017 Wilson, J.R. et al., **Szuwalski, C.S.** Adaptive co-management to achieve ‘climate-ready’ fisheries management. *Conservation Letters*.
- 2017 **Szuwalski, C.S.**, et al. Reducing retrospective patterns in stock assessments and impacts on management performance. *ICES Journal of Marine Science*.
- 2017 **Szuwalski, C.S.**, Thorson, J.T. Global fishery dynamics are poorly predicted by classical models. *Fish and Fisheries*.
- 2017 Hilborn, R. et al., **Szuwalski, C.S.** When does fishing forage fish impact their predators? *Fisheries Research*. 191: 211-221.
- 2017 **Szuwalski, C.S.**, et al. High fisheries catches through trophic cascades in China. *Proceedings of the National Academy of Sciences*. 114(4): 717-721.
- 2017 Burgess, M. et al. **Szuwalski, C.S.** Describing ecosystem contexts with single-species models: A theoretical synthesis for fisheries. *Fish and Fisheries*. 18(2): 264-284.
- 2017 Lester, S. et al. **Szuwalski, C.S.** Impacts of TURFs and marine reserves on fisheries and conservation goals: theory, empirical evidence, and modeling. *Bulletin of Marine Science*. 93(1): 173-198.
- 2016 Thorson, J.T. et al., **Szuwalski, C.S.** Joint dynamic species distribution models: a tool for community ordination and spatiotemporal monitoring. *Global Ecology and Biogeography*. 25(9): 1144-1158.
- 2016 Liu, O. et al., **Szuwalski, C.S.** An evaluation of harvest control methods for fishery management. *Reviews in Fisheries Science and Aquaculture*. 24(3): 244-263.
- 2016 Costello, C., et al. **Szuwalski, C.S.** Global fishery prospects under contrasting management regimes. *Proceedings of the National Academy of Sciences*. 113(18): 5125-5129.
- 2016 **Szuwalski, C.S.** Changing fisheries productivity and food security. *Proceedings of the National Academy of Sciences*. 113(13): E1773-1774.
- 2016 Campbell, S.W., **Szuwalski, C.S.**, et al. Challenges to reintroduction of a captive population of Topeka Shiner (*Notropis topeka*) into form habitats in Kansas. *Transactions of the Kansas Academy of Science*. 119(1): 83-92.
- 2016 **Szuwalski, C.S.**, et al. A stock assessment for the spiny lobster around the Galapagos Islands. *Fisheries Research*. 177: 82-94.
- 2016 **Szuwalski, C.S.** and Hollowed, A.B. Climate change and non-stationary processes in fisheries management. *ICES*. 73(5): 1297-1305.

- 2015 Kell, L., Nash, R. Dickey-Collas, M. Mosquera, I., **Szuwalski**, C.S. Is spawning stock biomass a robust proxy for reproductive potential? *Fish and Fisheries*. 17(3): 596-616.
- 2015 **Szuwalski**, C.S. and Hilborn, R. Environment drives forage fish productivity. *Proceedings of the National Academy of Sciences*. 112(26), E3314-3315.
- 2015 **Szuwalski**, C.S. Biases in biomass and selection of bin size in size-structure stock assessment methods. *Fisheries Research*. 180: 169-176.
- 2015 **Szuwalski**, C.S. and Punt, A.E. Can single species assessments capture dynamics of spatially structured populations? Snow crab in the eastern Bering Sea as a case study. *Fisheries Research*. 164: 135-142.
- 2015 Johnson, K. F., **Szuwalski**, C.S. et al. Time-varying natural mortality in fisheries stock assessment models: Identifying a default approach. *ICES Journal of Marine Science*. 72(1): 137-150.
- 2015 Ono, K et al., **Szuwalski**, C.S., et al. Data quality and performance of stock assessment methods. *ICES Journal of Marine Science*. 72(1): 31-43.
- 2015 Hurtado-Ferro, F., **Szuwalski**, C.S., et al. Looking in the rearview mirror: reflections on bias and retrospective patterns from a fisheries assessment simulation study. *ICES Journal of Marine Science*. 72(1): 99-110.
- 2014 **Szuwalski**, C.S., Vert-Pre, K.A., Punt, A.E, Hilborn, R. Branch, T. Examining common assumptions about recruitment: a meta-analysis of world-wide recruitment dynamics. *Fish and Fisheries*. 16(4): 633-648.
- 2014 Punt, A.E., **Szuwalski**, C.S. and Stockhausen, W. An Evaluation of Stock-Recruitment Proxies and Environmental Change Points for Implementing the US Sustainable Fisheries Act. *Fisheries Research*. 157: 28-40.
- 2014 Punt, A.E., A'Mar, T., Bond, N., Butterworth, D.S., DeMoor, C., Haltuch, M.A., Hollowed, A.B., and **Szuwalski**, C.S. Management under climate and environmental uncertainty: Control rules and performance simulation. *ICES Journal of Marine Science*. 71(8): 2208-2220.
- 2014 Anderson, S.C., et al., **Szuwalski**, C.S. ss3sim: Fisheries stock assessment simulation testing with stock synthesis. R package.
- 2013 **Szuwalski**, C.S. and Punt, A.E. Regime shifts and recruitment dynamics of snow crab recruitment (*Chionoecetes opilio*) in the eastern Bering Sea. *Fisheries Oceanography*. 22(5): 345-354.
- 2013 **Szuwalski**, C.S. Production is a poor metric for identifying regimes in marine stocks. *Proceedings of the National Academy of Science*. 110(16): E1436.
- 2012 **Szuwalski**, C.S. and Punt, A.E. Fisheries management for regime-based systems: a management strategy evaluation of the snow crab fishery in the eastern Bering Sea. *ICES Journal of Marine Science*. 70(5): 955-967.
- 2012 **Szuwalski**, C.S. and Punt, A.E. Identifying research priorities under uncertainty: the estimation ability of the stock assessment method for the eastern Bering Sea snow crab. *Fisheries Research*. 134-136: 82-94.
- 2012 Punt, A.E. and **Szuwalski**, C.S. How well can F_{MSY} and B_{MSY} for Alaska crab stocks be estimated using empirical measures of surplus production? *Fisheries Research*. 134-136: 113-124.

Book chapters (peer-reviewed; n = 2)

- 2016 **Szuwalski**, C.S. Punt, A.E. Fisheries management for regime-based recruitment: a management strategy evaluation for the fishery for snow crab in the eastern Bering Sea (Chapter in "Management science in fisheries: a practical introduction to simulation-based methods").
- 2016 Dowling, N. et al. **Szuwalski**, C.S. FishPath: A decision support system for assessing and managing data- and capacity-limited fisheries. (Chapter in "Assessing and Managing Data-Limited Fish Stocks").

Stock assessments and white papers (peer reviewed, but not published in journals; n=8)

- 2018 **Szuwalski, C.S.** Bimodality in management quantities and additional growth data in the assessment for snow crab in the eastern Bering Sea.
- 2017 **Szuwalski, C.S., Turnock, B.J.** An assessment for the eastern Bering Sea snow crab.
- 2017 Turnock, B.J. and **Szuwalski, C.S.** An assessment for the Pribilof Island red king crab. (npfmc.org)
- 2017 **Szuwalski, C.S., Turnock, B.J.** Estimating survey selectivity, growth, and natural mortality in the assessment for eastern Bering Sea snow crab. (npfmc.org)
- 2016 **Szuwalski, C.S., Turnock, B.J.** An assessment for the eastern Bering Sea snow crab. (npfmc.org)
- 2016 Turnock, B.J. and **Szuwalski, C.S.** An assessment for the Pribilof Island red king crab. (npfmc.org)
- 2015 **Szuwalski, C.S., Foy, R, J., Turnock, B.J.** An assessment for the Pribilof Island red king crab. (npfmc.org)
- 2014 **Szuwalski, C.S., Foy, R, J., Turnock, B.J.** An assessment for the Pribilof Island red king crab. (npfmc.org)

Manuscripts in submission

- 2017 Li, W.W. and **Szuwalski, C.S.** Spatial distribution of Pacific blue shark and hypotheses about stock structure
- 2017 **Szuwalski, C.S.** et al. Global forage fish recruitment dynamics: time-variation, potentially spurious relationships, and implications for management
- 2017 Gao,J. et al. **Szuwalski, C.S.** Historical dynamics of the demersal fish community in the East and South China Seas

AWARDS AND HONORS

- 2013 UW School of Aquatic and Fishery Science Faculty Merit Award
- 2012 National Marine Fisheries Service/SeaGrant Joint Graduate Fellowship in Population Dynamics
- 2004 Foreign Language Area Studies grant used to study Chinese in Beijing
- 2004 Outstanding Teaching Assistant, University of Kansas

GRANTS

- 2017 Funder: NOAA, Stock Assessment Analytical Methods
Project: Development and application of a size-structured spatiotemporal model for invertebrates: individual growth, size-transitions, and natural and fishing mortality
Dates: 9/2017-9/2019
Funding: \$177,981 (Co-PI)
- 2016 Funder: The Packard Foundation
Project: Capacity building in China through collaborative marine research
Dates: 10/2016-11/2018
Funding: \$500,000 (PI)
- 2016 Funder: The North Pacific Research Board
Project: Spatial modelling of eastern Bering Sea Snow crab under climate change
Dates: 9/2016-8/2017
Funding: \$90,000 (subaward)
- 2016 Funder: The Pacific States Research Council
Project: Eastern Bering Sea Snow Crab Assessment
Dates: 4/2016-9/2016
Funding: \$60,000 (PI)
- 2015 Funder: National Atmospheric and Oceanic Administration, Stock Assessment Methods
Project: "Fixing" retrospective biases in stock assessment and implications for management
Dates: 7/2015-6/2016

- Funding: \$98,830 (PI)
2012 Funder: National Marine Fisheries Service Population Dynamics Sea Grant Fellowship
Project: An evaluation of the stock assessment method for eastern Bering Sea snow crab incorporating spatial heterogeneity in fishing pressure, recruitment processes, and distribution of spawning biomass
Dates: 6/2012-6/2014
Funding: \$77,015 (funded my dissertation)

PRESENTATIONS

- 2018 Zhejiang Marine Research Institute. Zhoushan, China. Managing marine resources. (Invited: in Chinese)
2018 Qingdao National Marine Science Laboratory Annual Meeting. Qingdao, China. Marine resource management. (invited: in Chinese)
2017 PICES Annual meeting. Vladivostok, Russia. Managing modified ecosystems. (Invited plenary)
2017 Crab Plan Team Meeting. Seattle, WA. An assessment for eastern Bering Sea snow crab.
2017 Wakefield symposium. Anchorage, AK. Tools for evaluating management strategies under climate change. (Invited)
2017 Crab Plan Team Meeting, Juneau, AK. Estimating survey selectivity, growth, and natural mortality in the assessment for snow crab in the eastern Bering Sea.
2016 Shanghai Ocean University, Shanghai, China. “Managing under uncertainty: assessments, evaluation, and outcomes” (Invited: in Chinese)
2016 Zhejiang Ocean University, Zhoushan, China. “Managing under uncertainty: assessments, evaluation, and outcomes” (Invited: in Chinese)
2016 Crab Plan Team Meeting, Seattle, WA. “Assessment for the east Bering Sea snow crab.”
2016 Crab Plan Team Meeting, Anchorage, AK. “Assessment for the Pribilof Island red king crab.”
2016 Confucius Institute presents: “The Environment: Issues and strategies in China and the US”. Santa Barbara, CA. “Engineered ecosystems: trade-offs in fisheries management reform in China”. (invited)
2016 State Ocean Administration. Beijing, China. “Managing ocean resources: spatial tools and tradeoffs”. (invited: in Chinese)
2016 East China Sea Fisheries Research Institute. Shanghai, China. “Engineering the East China Sea”. (invited)
2015 Northwest Fisheries Science Center (NOAA): Monster Jams. Seattle, WA. “Engineered ecosystems: trade-offs in fisheries management reform in China”. (invited)
2015 Roundtable on Strengthening International Partnerships for Sustainable Fisheries and Coastal Conservation in China. Shanghai, China. “Impacts of management reform in China.”
2015 Roundtable on Strengthening International Partnerships for Sustainable Fisheries and Coastal Conservation in China. Qingdao, China. “Impacts of management reform in China.”
2015 PICES Climate Change and Fisheries. Sao Paulo, Brazil. “Setting management targets under a changing climate.”
2015 Crab Plan Team Meeting, Juneau, AK. “Assessment for the Pribilof Island red king crab.”
2015 Yantai Institute of Coastal Resources, Yantai, China. “Stock assessment and tradeoff analysis.” (invited; in Chinese)
2015 Zhejiang Marine Fisheries Research Institution, Zhoushan, China. “Stock assessment and cost/benefit analysis.” (invited; in Chinese)
2015 East China Sea Research Institute, Shanghai, China. “Assessment of marine resources.” (invited; in Chinese)
2015 NCEAS, Santa Barbara, CA. “Fisheries sandbox: A simulation framework for cost/benefit analysis in data-poor fisheries.”
2015 NCEAS, Santa Barbara, CA. “Chinese fisheries: seeing through the haze.”
2014 Crab Plan Team Meeting, Juneau, AK. “Assessment for the Pribilof Island red king crab.”

- 2014 Center for Advancement of Population Assessment Methodology, San Diego, CA. "Bias in estimates of biomass and selection of bin size in length-based assessment methods."
- 2014 American Fisheries Society, Quebec, Canada. "Predictability and recruitment dynamics for world-wide marine fisheries." (invited)
- 2013 PICES Annual Meeting. Nanaimo, Canada. "Examining common assumptions about recruitment using the RAM Legacy Stock Assessment Database."
- 2013 PICES Annual Meeting. Nanaimo, Canada. "Setting biological reference points under climate change."
- 2013 Program on Climate Change, UW Summer Institute. Friday Harbor, WA. "Ecosystem changes influence fish productivity."
- 2013 World Conference on Stock Assessment Methods. Boston, MA. "Examining common assumptions about recruitment using the RAM Legacy Stock Assessment Database."
- 2013 World Conference on Stock Assessment Methods. Boston, MA. "A spatial assessment for eastern Bering Sea snow crab."
- 2013 UW quantitative seminar. Seattle, WA. "Spawning biomass, environment and recruitment: Synchronies and implications for target biomasses."
- 2013 Alaska Marine Science Symposium. Anchorage, AK. "Climate, recruitment and fisheries management: a management strategy evaluation for the eastern Bering Sea snow crab."
- 2012 Crab Symposium for the fishing industry. (invited) Seattle, WA. "Alternative modeling and management strategies under uncertainty in climate."
- 2012 PICES 2nd International Symposium on Climate Change. Yeosu, Korea. "Reaching management goals under a changing climate."
- 2012 ICES 'Oceans of Change' Early career scientist conference. Palma de Mallorca, Spain. "Snow crab recruitment in the EBS: regime shifts and oscillating control".
- 2012 Alaska Fisheries Science Center (invited). Seattle, WA. "Identification and management of systems with regime based recruitment."
- 2012 North Pacific Marine Fisheries Council, Science and Statistical Committee. (invited) Seattle, WA. "Recruitment regimes and B_{MSY} proxies."
- 2012 West Coast Groundfish Conference. Seattle, WA. "Changing recruitment regimes and specification of B_{MSY} proxies."
- 2011 University of Washington Graduate Student Symposium. Seattle, WA. "Snow crab recruitment in the EBS: regime shifts and oscillating control".
- 2010 Snow crab symposium and workshop. (invited) Seattle, WA. "Estimation ability of the stock assessment method used for snow crab in the eastern Bering Sea."
- 2010 Alaska Marine Science Symposium, Anchorage, AK. "Estimation ability of the stock assessment method used for snow crab in the eastern Bering Sea."
- 2010 National Stock Assessment Workshop, St. Petersburg, FL. "Incorporating environmental indices into the stock assessment for snow crab in the eastern Bering Sea."
- 2009 Alaska Marine Science Symposium, Anchorage, AK. "Incorporating environmental indices into the stock assessment for snow crab in the eastern Bering Sea."

TEACHING EXPERIENCE

- 2002-2006 University of Kansas, Teaching assistant: Introduction to biology, Microbial and organismal biology, Organismal biology
- 2006 MCAT Biology teacher
- 2016 UCSB: Stock assessment short course

BENCH AND FIELDWORK

- 2009-2014 University of Washington, Research Assistant.
- 2013 University of Washington, mid-water trawls on Lake Washington.
- 2012 Northwest Fishery Science Center, snorkel surveys on the Cedar River.

2009 Washington State Department of Fish and Wildlife, Biological technician II.
2009 University of Washington Hatchery, Hatchery technician.
2006-2008 Identigen, Statistical analyst and high throughput genotyping laboratory technician.
2003-2006 University of Kansas, Research Assistant. Fish reproductive behavior in mesocosms
2001-2002 Streamlink, Environmental educator

SERVICE

Reviewer

Journals: Proceedings for the National Academy of Sciences, Fish and Fisheries, Ecology, Marine Ecology Progress Series, Fisheries Research, Deep Sea Research II, Journal of Marine Systems, Fisheries Oceanography, Canadian Journal of Aquatic and Fishery Science, ICES Journal of Marine Science, PLoS ONE

Proposals: SeaGrant Population Dynamics Fellowship, Graduate Women in Science
Fishery management plans: Pacific herring (via CA Ocean Science Trust)

Working groups

Science for Nature and People, National Center for Ecological Analysis and Synthesis, Data-poor fisheries management. 2014-2016

Science for Nature and People, National Center for Ecological Analysis and Synthesis, Measuring the status of fisheries and factors leading to success. 2014-2016.

Students advised

Owen Liu – PhD student 2015-current, UCSB

Li Weiwen – PhD student, 2014-2017, Shanghai Ocean University

Patricia Faundez Baez – PhD student, 2017-current

Wang Rui – PhD student, 2017-current, Shanghai Ocean University

MISCELLANEOUS

Computer languages

ADMB (C++)

R

FORTRAN

Visual Basic

Foreign languages

Mandarin Chinese