

Sarah Gaichas

RESEARCH FISHERY BIOLOGIST ZP-IV

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Educational History

University of Washington

PHD Seattle, WA

2000 - 2006

College of William and Mary, School of Marine Science

M.S. Gloucester Point, VA

1994 - 1997

Swarthmore College

B.A. Swarthmore, PA

1986 - 1991

Professional History

Research Fishery Biologist NOAA/NMFS Northeast Fisheries Sci. Center, Woods Hole, MA

Ecosystem Assessment, MSE September 2011 – present

Contribute to integrated ecosystem assessments and management strategy evaluations (MSEs) for the Northeast U.S. continental shelf by analyzing research survey, fishery, oceanographic, and economic data, and by developing and testing multispecies assessment models and ecosystem indicators. Conduct research on ecosystem based management reference points balancing multiple objectives. Chair National and Northeast MSE working groups to build capacity and coordinate work plans. Lead editor, State of the Ecosystem reports. Provide results in peer-reviewed literature and to the New England and Mid-Atlantic Fishery Management Councils.

Research Fishery Biologist NOAA/NMFS Alaska Fisheries Science Center, Seattle, WA

Ecosystem Modeling June 2006 – September 2011

Established an ecosystem context for fishery management through analysis of food web, fishery, and research survey data combined with ecosystem modeling. Evaluated the cumulative effects of fishing, climate change, and other factors on the marine ecosystem and species within it. Conducted independent research on ecosystem level indicators and thresholds and provided results in peer-reviewed literature and to the North Pacific Fishery Management Council. Participated in research surveys at sea.

Stock Assessment November 1998 – June 2006

Assessed the condition of commercially exploited fish stocks through analysis of fishery and research survey data combined with population dynamics modeling. Evaluated the effects of fishing on non-target species and the marine ecosystem. Conducted Ph.D. research. Attended 2001 Complex Systems Summer School, Santa Fe Institute, Santa Fe NM. Participated in research surveys at sea.

Stock assessments: 1999 Gulf of Alaska (GOA) and 2000 – 2004 Bering Sea Aleutian Islands (BSAI) “Other species” (all species of skates, sharks, sculpins, octopi, and squids), 2000-2005 BSAI squids, 2005 BSAI skates, 2003-2005 GOA skates, 2000-2005 GOA Thornyheads, and 2006 GOA squids.

Observer Program March 1997 – October 1999

Conducted statistical analyses of fishery observer data, evaluated present and proposed data collection methods through directed research, and examined uses of observer data in multiple applications.

Awards

- End-year performance bonuses each year, 2006-2020.
- Individual cash award for State of the Ecosystem reporting, August 2020.
- Individual cash award for Acting Branch Chief performance, July 2017.
- ICES/MYFISH symposium Targets and Limits for Long Term Fisheries Management Most Inspiring Paper, October 2015.

- Department of Commerce “Cash-In-A-Flash” award, December 2011.
- Department of Commerce Special Act Award: Alaska Fisheries Science Center Employee of the Year, 2010.
- Department of Commerce Special Act Award for service on North Pacific Council Gulf of Alaska Plan Team and for ecosystem research contributions, July 2005.
- Department of Commerce Special Act Award for innovations in nontarget species management and ecosystem modeling, 2004.
- National Association of Environmental Professionals Award for Environmental Excellence in NEPA for assistance with the Steller Seal Lion Protection Measures SEIS, June 2003.
- Mote International Symposium on Confronting Trade-offs in the Ecosystem Approach to Fisheries Management Young Investigator Award, November 2002.
- Department of Commerce Special Act Award for service as the Nontarget and Prohibited Species Team Leader in the development of the Draft Programmatic SEIS for groundfish fisheries in Alaska, September 2000.
- Department of Commerce “Cash-In-A-Flash” awards, March and June 1998.
- College of William and Mary William J. Hargis Jr. Fellowship Award and Dean’s Fellowship. April, 1995.

Publications

PAPERS PUBLISHED IN PEER-REVIEWED JOURNALS

Bastille, K., S. Hardison, L. deWitt, J. Brown, J. Samhour, S. Gaichas, S. Lucey, K. Kearney, B. Best, S. Cross, S. Large, and E. Spooner (2021). “Improving the IEA Approach Using Principles of Open Data Science.” In: *Coastal Management* 49.1, pp. 72-89. DOI: 10.1080/08920753.2021.1846155.

DePiper, G., S. Gaichas, B. Muffley, G. Ardini, J. Brust, J. Coakley, K. Dancy, G. W. Elliott, D. C. Leaning, D. Lipton, J. McNamee, C. Perretti, K. Rootes-Murdy, and M. J. Wilberg (2021). “Learning by doing: collaborative conceptual modelling as a path forward in ecosystem-based management.” In: *ICES Journal of Marine Science*. DOI: 10.1093/icesjms/fsab054.

Friedland, K. D., E. T. Methratta, A. B. Gill, S. K. Gaichas, T. H. Curtis, E. M. Adams, J. L. Morano, D. P. Crear, M. C. McManus, and D. C. Brady (2021). “Resource Occurrence and Productivity in Existing and Proposed Wind Energy Lease Areas on the Northeast US Shelf.” In: *Frontiers in Marine Science* 8. DOI: 10.3389/fmars.2021.629230.

Lucey, S. M., K. Y. Aydin, S. K. Gaichas, S. X. Cadrin, G. Fay, M. J. Fogarty, and A. Punt (2021). “Evaluating fishery management strategies using an ecosystem model as an operating model.” In: *Fisheries Research* 234, p. 105780. DOI: 10.1016/j.fishres.2020.105780.

Muffley, B., S. Gaichas, G. DePiper, R. Seagraves, and S. Lucey (2021). “There Is no I in EAFM Adapting Integrated Ecosystem Assessment for Mid-Atlantic Fisheries Management.” In: *Coastal Management* 49.1, pp. 90-106. DOI: 10.1080/08920753.2021.1846156.

Reum, J. C. P., H. Townsend, S. Gaichas, S. Sagarese, I. C. Kaplan, and A. Grüss (2021). “It’s Not the Destination, It’s the Journey: Multispecies Model Ensembles for Ecosystem Approaches to Fisheries Management.” In: *Frontiers in Marine Science* 8. DOI: 10.3389/fmars.2021.631839.

Link, J. S., G. Huse, S. Gaichas, and A. R. Marshak (2020). “Changing how we approach fisheries: A first attempt at an operational framework for ecosystem approaches to fisheries management.” In: *Fish and Fisheries* 21.2, pp. 393-434. DOI: 10.1111/faf.12438.

Lucey, S. M., S. K. Gaichas, and K. Y. Aydin (2020). “Conducting reproducible ecosystem modeling using the open source mass balance model Rpath.” In: *Ecological Modelling* 427, p. 109057. DOI: 10.1016/j.ecolmodel.2020.109057.

Weiskopf, S. R., M. A. Rubenstein, L. G. Crozier, S. Gaichas, R. Griffis, J. E. Halofsky, K. J. W. Hyde, T. L. Morelli, J. T. Morissette, R. C. Muñoz, A. J. Pershing, D. L. Peterson, R. Poudel, M. D. Staudinger, A. E. Sutton-Grier, L. Thompson, J. Vose, J. F. Weltzin, and K. P. Whyte (2020). “Climate change effects on biodiversity, ecosystems, ecosystem services, and natural resource management in the United States.” In: *Science of The Total Environment*, p. 137782. DOI: 10.1016/j.scitotenv.2020.137782.

Goethel, D. R., S. M. Lucey, A. M. Berger, S. K. Gaichas, M. A. Karp, P. D. Lynch, and J. F. Walter (2019). “Recent advances in management strategy evaluation: introduction to the special issue “Under pressure: addressing fisheries challenges with Management Strategy Evaluation”.” In: *Canadian Journal of Fisheries and Aquatic Sciences* 76.10, pp. 1689-1696. DOI: 10.1139/cjfas-2019-0084.

- Karp, M. A., J. O. Peterson, P. D. Lynch, R. B. Griffis, C. F. Adams, W. S. Arnold, L. A. K. Barnett, Y. deReynier, J. DiCosimo, K. H. Fenske, S. K. Gaichas, A. Hollowed, K. Holsman, M. Karnauskas, D. Kobayashi, A. Leising, J. P. Manderson, M. McClure, W. E. Morrison, E. Schnettler, A. Thompson, J. T. Thorson, J. F. Walter, A. J. Yau, R. D. Methot, and J. S. Link (2019). "Accounting for shifting distributions and changing productivity in the development of scientific advice for fishery management." In: *ICES Journal of Marine Science* 76.5, pp. 1305-1315. DOI: 10.1093/icesjms/fsz048.
- Townsend, H., C. J. Harvey, Y. deReynier, D. Davis, S. G. Zador, S. Gaichas, M. Weijerman, E. L. Hazen, and I. C. Kaplan (2019). "Progress on Implementing Ecosystem-Based Fisheries Management in the United States Through the Use of Ecosystem Models and Analysis." In: *Frontiers in Marine Science* 6. DOI: 10.3389/fmars.2019.00641.
- Deroba, J. J., S. K. Gaichas, M. Lee, R. G. Feeney, D. V. Boelke, and B. J. Irwin (2018). "The dream and the reality: meeting decision-making time frames while incorporating ecosystem and economic models into management strategy evaluation." In: *Canadian Journal of Fisheries and Aquatic Sciences*. DOI: 10.1139/cjfas-2018-0128.
- Feeney, R. G., D. V. Boelke, J. J. Deroba, S. K. Gaichas, B. J. Irwin, and M. Lee (2018). "Integrating Management Strategy Evaluation into fisheries management: advancing best practices for stakeholder inclusion based on an MSE for Northeast U.S. Atlantic herring." In: *Canadian Journal of Fisheries and Aquatic Sciences*. DOI: 10.1139/cjfas-2018-0125.
- Gaichas, S. K., G. S. DePiper, R. J. Seagraves, B. W. Muffley, M. Sabo, L. L. Colburn, and A. L. Loftus (2018). "Implementing Ecosystem Approaches to Fishery Management: Risk Assessment in the US Mid-Atlantic." In: *Frontiers in Marine Science* 5. DOI: 10.3389/fmars.2018.00442.
- Goethel, D. R., S. M. Lucey, A. M. Berger, S. K. Gaichas, M. A. Karp, P. D. Lynch, J. F. Walter III, J. J. Deroba, S. K. Miller, and M. J. Wilberg (2018). "Closing the Feedback Loop: On Stakeholder Participation in Management Strategy Evaluation." In: *Canadian Journal of Fisheries and Aquatic Sciences*. DOI: 10.1139/cjfas-2018-0162.
- Lipton, D., M. A. Rubenstein, S. R. Weiskopf, S. L. Carter, J. Peterson, L. Crozier, M. Fogarty, S. Gaichas, K. J. W. Hyde, T. L. Morelli, J. Morissette, H. Moustahfid, R. Munoz, R. Poudel, M. D. Staudinger, C. Stock, L. Thompson, R. S. Waples, and J. F. Weltzin (2018). *Ecosystems, Ecosystem Services, and Biodiversity*. Other Government Series. U.S. Global Change Research Program, p. 268321. DOI: 10.7930/NCA4.2018.CH7.
- Olsen, E., I. C. Kaplan, C. Ainsworth, G. Fay, S. Gaichas, R. Gamble, R. Girardin, C. H. Eide, T. F. Ihde, H. N. Morzaria-Luna, K. F. Johnson, M. Savina-Rolland, H. Townsend, M. Weijerman, E. A. Fulton, and J. S. Link (2018). "Ocean Futures Under Ocean Acidification, Marine Protection, and Changing Fishing Pressures Explored Using a Worldwide Suite of Ecosystem Models." In: *Frontiers in Marine Science* 5. DOI: 10.3389/fmars.2018.00064.
- DePiper, G. S., S. K. Gaichas, S. M. Lucey, P. Pinto da Silva, M. R. Anderson, H. Breeze, A. Bundy, P. M. Clay, G. Fay, R. J. Gamble, R. S. Gregory, P. S. Fratantoni, C. L. Johnson, M. Koen-Alonso, K. M. Kleisner, J. Olson, C. T. Perretti, P. Pepin, F. Phelan, V. S. Saba, L. A. Smith, J. C. Tam, N. D. Templeman, and R. P. Wildermuth (2017). "Operationalizing integrated ecosystem assessments within a multidisciplinary team: lessons learned from a worked example." In: *ICES Journal of Marine Science* 74.8, pp. 2076-2086. DOI: 10.1093/icesjms/fsx038.
- Gaichas, S. K., M. Fogarty, G. Fay, R. Gamble, S. Lucey, and L. Smith (2017). "Combining stock, multispecies, and ecosystem level fishery objectives within an operational management procedure: simulations to start the conversation." In: *ICES Journal of Marine Science* 74.2, pp. 552-565. DOI: 10.1093/icesjms/fsw119.
- Holsman, K., J. Samhuri, G. Cook, E. Hazen, E. Olsen, M. Dillard, S. Kasperski, S. Gaichas, C. R. Kelble, M. Fogarty, and K. Andrews (2017). "An ecosystem-based approach to marine risk assessment." In: *Ecosystem Health and Sustainability* 3.1, p. e01256. DOI: 10.1002/ehs2.1256.
- Tommasi, D., C. A. Stock, A. J. Hobday, R. Methot, I. C. Kaplan, J. P. Eveson, K. Holsman, T. J. Miller, S. Gaichas, M. Gehlen, A. Pershing, G. A. Vecchi, R. Msadek, T. Delworth, C. M. Eakin, M. A. Haltuch, R. Séférian, C. M. Spillman, J. R. Hartog, S. Siedlecki, J. F. Samhuri, B. Muhling, R. G. Asch, M. L. Pinsky, V. S. Saba, S. B. Kapnick, C. F. Gaitan, R. R. Rykaczewski, M. A. Alexander, Y. Xue, K. V. Pegion, P. Lynch, M. R. Payne, T. Kristiansen, P. Lehodey, and F. E. Werner (2017). "Managing living marine resources in a dynamic environment: The role of seasonal to decadal climate forecasts." In: *Progress in Oceanography* 152, pp. 15-49. DOI: 10.1016/j.pocean.2016.12.011.
- Wildermuth, R. P., G. Fay, and S. Gaichas (2017). "Structural uncertainty in qualitative models for ecosystem-based management of Georges Bank." In: *Canadian Journal of Fisheries and Aquatic Sciences* 75.10, pp. 1635-1643. DOI: 10.1139/cjfas-2017-0149.

- Zador, S. G., S. K. Gaichas, S. Kasperski, C. L. Ward, R. E. Blake, N. C. Ban, A. Himes-Cornell, and J. Z. Koehn (2017). "Linking ecosystem processes to communities of practice through commercially fished species in the Gulf of Alaska." In: *ICES Journal of Marine Science* 74.7, pp. 2024-2033. DOI: 10.1093/icesjms/fsx054.
- Gaichas, S. K., R. J. Seagraves, J. M. Coakley, G. S. DePiper, V. G. Guida, J. A. Hare, P. J. Rago, and M. J. Wilberg (2016). "A Framework for Incorporating Species, Fleet, Habitat, and Climate Interactions into Fishery Management." In: *Frontiers in Marine Science* 3. DOI: 10.3389/fmars.2016.00105.
- Olsen, E., G. Fay, S. Gaichas, R. Gamble, S. Lucey, and J. S. Link (2016). "Ecosystem Model Skill Assessment. Yes We Can!" In: *PLOS ONE* 11.1. Ed. by C. N. Bianchi, p. e0146467. DOI: 10.1371/journal.pone.0146467.
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- Zador, S. G., K. K. Holsman, K. Y. Aydin, and S. K. Gaichas (2016). "Ecosystem considerations in Alaska: the value of qualitative assessments." In: *ICES Journal of Marine Science: Journal du Conseil*, p. fsw144. DOI: 10.1093/icesjms/fsw144.
- Gaichas, S., K. Aydin, and R. C. Francis (2015). "Wasp waist or beer belly? Modeling food web structure and energetic control in Alaskan marine ecosystems, with implications for fishing and environmental forcing." In: *Progress in Oceanography* 138, Part A, pp. 1-17. DOI: 10.1016/j.pocean.2015.09.010.
- Smith, L., R. Gamble, S. Gaichas, and J. Link (2015). "Simulations to evaluate management trade-offs among marine mammal consumption needs, commercial fishing fleets and finfish biomass." In: *Marine Ecology Progress Series* 523, pp. 215-232. DOI: 10.3354/meps11129.
- Gaichas, S. K., J. S. Link, and J. A. Hare (2014). "A risk-based approach to evaluating northeast US fish community vulnerability to climate change." In: *ICES Journal of Marine Science* 71.8, pp. 2323-2342. DOI: 10.1093/icesjms/fsu048.
- Ruzicka, J. J., J. H. Steele, T. Ballerini, S. K. Gaichas, and D. G. Ainley (2013). "Dividing up the pie: Whales, fish, and humans as competitors." In: *Progress in Oceanography* 116, pp. 207-219. DOI: 10.1016/j.pocean.2013.07.009.
- Ruzicka, J., J. Steele, S. Gaichas, T. Ballerini, D. Gifford, R. Brodeur, and E. Hofmann (2013). "Analysis of Energy Flow in US GLOBEC Ecosystems Using End-to-End Models." In: *Oceanography* 26.4, pp. 82-97. DOI: 10.5670/oceanog.2013.77.
- Fu, C., S. Gaichas, J. Link, A. Bundy, J. Boldt, A. Cook, R. Gamble, K. Rong Utne, H. Liu, and K. Friedland (2012). "Relative importance of fisheries, trophodynamic and environmental drivers in a series of marine ecosystems." In: *Marine Ecology Progress Series* 459, pp. 169-184. DOI: 10.3354/meps09805.
- Gaichas, S. K., G. Odell, K. Y. Aydin, and R. C. Francis (2012). "Beyond the defaults: functional response parameter space and ecosystem-level fishing thresholds in dynamic food web model simulations." In: *Canadian Journal of Fisheries and Aquatic Sciences* 69, pp. 2077-2094. DOI: 10.1139/F2012-099.
- Gaichas, S., A. Bundy, T. Miller, E. Moksness, and K. Stergiou (2012). "What drives marine fisheries production?" In: *Marine Ecology Progress Series* 459, pp. 159-163. DOI: 10.3354/meps09841.
- Gaichas, S., R. Gamble, M. J. Fogarty, H. Benoit, T. Essington, C. Fu, M. Koen-Alonso, and J. Link (2012). "Assembly Rules for Aggregate-Species Production Models: Simulations in Support of Management Strategy Evaluation." In: *Marine Ecology Progress Series* 459, pp. 275-292.
- Link, J., S. Gaichas, T. Miller, T. Essington, A. Bundy, J. Boldt, K. Drinkwater, and E. Moksness (2012). "Synthesizing Lessons Learned from Comparing Fisheries Production in 13 Northern Hemisphere Ecosystems: Emergent Fundamental Features." In: *Marine Ecology Progress Series* 459, pp. 293-302.
- Link, J., T. Ihde, C. Harvey, S. Gaichas, J. Field, J. Brodziak, H. Townsend, and R. Peterman (2012). "Dealing with uncertainty in ecosystem models: The paradox of use for living marine resource management." In: *Progress in Oceanography* 102, pp. 102-114. DOI: 10.1016/j.pocean.2012.03.008.
- Moksness, E., J. Link, K. Drinkwater, and S. Gaichas (2012). "Bernard Megrey: pioneer of Comparative Marine Ecosystem analyses." In: *Marine Ecology Progress Series* 459, pp. 165-167. DOI: 10.3354/meps09582.
- Pranovi, F., J. Link, C. Fu, A. Cook, H. Liu, S. Gaichas, K. Friedland, K. Rong Utne, and H. Benoît (2012). "Trophic-level determinants of biomass accumulation in marine ecosystems." In: *Marine Ecology Progress Series* 459, pp. 185-201. DOI: 10.3354/meps09738.

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Gaichas, S., G. Skaret, J. Falk-Petersen, J. S. Link, W. Overholtz, B. A. Megrey, H. Gjøsæter, W. T. Stockhausen, A. Dommasnes, K. D. Friedland, and K. Aydin (2009). "A comparison of community and trophic structure in five marine ecosystems based on energy budgets and system metrics." In: *Progress in Oceanography* 81.1-4, pp. 47-62. DOI: 10.1016/j.pocean.2009.04.005.

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Gaichas, S. K. and R. C. Francis (2008). "Network models for ecosystem-based fishery analysis: A review of concepts and application to the Gulf of Alaska marine food web." In: *Canadian Journal of Fisheries and Aquatic Sciences* 65, pp. 1965-1982.

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Spies, I. B., S. Gaichas, D. E. Stevenson, J. W. Orr, and M. F. Canino (2006). "DNA-based identification of Alaska skates (*Amblyraja*, *Bathyraja* and *Raja*: Rajidae) using cytochrome c oxidase subunit I (col) variation." In: *Journal of Fish Biology* 69.sb, pp. 283-292. DOI: 10.1111/j.1095-8649.2006.01286.x.

Barbeaux, S. J., S. Gaichas, J. N. Ianelli, and M. W. Dorn (2005). "Evaluation of Biological Sampling Protocols for At-Sea Groundfish Observers in Alaska." In: *Alaska Fishery Research Bulletin* 11.2, p. 25.

Karp, W. A., C. S. Rose, J. R. Gauvin, S. K. Gaichas, M. W. Dorn, and G. D. Stauffer (2001). "Government-Industry Cooperative Fisheries Research in the North Pacific under the MSFCMA." In: *Marine Fisheries Review* 63.1, pp. 40-46.

Dorn, M. W., S. K. Gaichas, S. M. Fitzgerald, and S. A. Bibb (1999). "Measuring Total Catch at Sea: Use of a Motion-Compensated Flow Scale to Evaluate Observer Volumetric Methods." In: *North American Journal of Fisheries Management* 19.4, pp. 999-1016. DOI: 10.1577/1548-8675(1999)019<0999:MTCASU>2.0.CO;2.

Gaichas, S. (1997). "Age And Growth Of Spanish Mackerel, *Scomberomorus Maculatus*, In The Chesapeake Bay Region." In: *Master's Thesis*. DOI: 10.25773/V5-TWBW-6T04.

PAPERS SUBMITTED TO PEER-REVIEWED JOURNALS

Staudinger, M., Lynch, A., Gaichas, S., Fox, M., Gibson-Reinemer, D., Langan, J., Teffer, A., Thackeray, S., and Winfield, I. Accepted April 2021. How does climate change affect emergent properties of aquatic ecosystems? *Fisheries*.

Kaplan, I.C., S.K. Gaichas, C.C. Stawitz, P.D. Lynch, K.N. Marshall, J.J. Deroba, M. Masi, J.K.T. Brodziak, K.Y. Aydin, K. Holsman, H. Townsend, D. Tommasi, J.A. Smith, S. Koenigstein, M. Weijerman and J. Link. Management Strategy Evaluation: Allowing the Light on the Hill to Illuminate More than One Species. Original Research, *Front. Mar. Sci. - Marine Fisheries, Aquaculture and Living Resources*.

OTHER PAPERS (NON PEER-REVIEWED JOURNALS, BOOK CHAPTERS, SYMPOSIUM VOLUMES)

Gaichas, S.K., C. Reiss, and M. Koen-Alonso. 2014. Ecosystem Based Management in high latitude ecosystems. Chapter 10, p. 277-324 in *The Sea, Volume 16: Marine Ecosystem Based Management*. Harvard U. Press.

BOOKS

REPORTS

Northeast Fisheries Science Center State of the Ecosystem Reports; lead editor for Mid-Atlantic 2017-2021, lead editor for New England 2017-2020, supporting editor for New England 2021.

- 2021 State of the Ecosystem: Mid-Atlantic; <https://apps-nefsc.fisheries.noaa.gov/rcb/publications/SOE-MAFMC-2021-508-Final.pdf>
- 2021 State of the Ecosystem: New England; <https://apps-nefsc.fisheries.noaa.gov/rcb/publications/SOE-MAFMC-2021-508-Final.pdf>
- 2020 State of the Ecosystem: Mid-Atlantic; <https://doi.org/10.25923/1f8j-d564>
- 2020 State of the Ecosystem: New England; <https://doi.org/10.25923/4tdk-eg57>
- 2019 State of the Ecosystem: Mid-Atlantic; https://www.mafmc.org/s/Tab09_State-of-the-Ecosystem-Report-2019-04.pdf
- 2019 State of the Ecosystem: New England; https://s3.amazonaws.com/nefmc.org/11_SOE-NEFMC-2019.pdf
- 2018 State of the Ecosystem: Mid-Atlantic; https://www.mafmc.org/s/Tab04_State-of-the-Ecosystem-Apr2018.pdf
- 2018 State of the Ecosystem: New England; https://s3.amazonaws.com/nefmc.org/2_Ecosystem-Status-Report-2018.pdf
- 2017 State of the Ecosystem: Mid-Atlantic; https://www.mafmc.org/s/Tab02_2017-04_State-of-the-Ecosystem-Report-2017.pdf
- 2017 State of the Ecosystem: New England; https://s3.amazonaws.com/nefmc.org/2_2016-State-of-the-Ecosystem-Report-2017.pdf

ICES. 2021. Working Group on Multispecies Assessment Methods (WGSAM; outputs from 2020 meeting). ICES Scientific Reports. 3:10. 231 pp. <https://doi.org/10.17895/ices.pub.7695>

ICES. 2021. Workshop of Fisheries Management Reference Points in a Changing Environment(WKRPChange, outputs from 2020 meeting). ICES Scientific Reports. 3:6. 39 pp. <https://doi.org/10.17895/ices.pub.7660>

ICES. 2019. Working Group on Multispecies Assessment Methods (WGSAM). ICES Scientific Reports.1:91. 320 pp. <http://doi.org/10.17895/ices.pub.5758>

ICES. 2018. Report of the Working Group on Multispecies Assessment Methods (WGSAM), 15–19 October 2018, Paris, France. ICES CM 2018/HAPISG:20. 89 pp.

1-2 other NEMoW reports

Link, J.S., D. Mason, T. Lederhouse, S. Gaichas, T. Hartley, J. Ianelli, R. Methot, C. Stock, C. Stow, and H. Townsend. 2015. Report from the Joint OAR-NMFS Modeling Uncertainty Workshop. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-F/SPO-153, 31 p.

Lucey, S. and S. Gaichas. 2015. Fish Communities. Section in Fogarty, M. (ed.), Ecosystem Status Report for the Northeast Large Marine Ecosystem <http://www.nefsc.noaa.gov/ecosys/ecosystem-status-report/fish-communities.html> Northeast Fisheries Science Center 2015. Figures for Ecosystem Status Report (Executive Summary). <http://www.nefsc.noaa.gov/ecosys/ecosystem-status-report/>

Link, J. S., T.F. Ihde, H. Townsend, K. Osgood, M. Schirripa, D. Kobayashi, S. Gaichas, J. Field, P. Levin, K. Aydin, G. Watters, and C. Harvey (editors). 2010. Report of the 2nd National Ecosystem Modeling Workshop (NEMoW II): Bridging The Credibility Gap – Dealing With Uncertainty In Ecosystem Models. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-102, 72 p.

Conners, M.E., J. Cahalan, S. Gaichas, W.A. Karp, T. Loomis, and J. Watson. 2009. Sampling for estimation of catch composition in Bering Sea trawl fisheries. NOAA Tech. Memo. NMFS-AFSC-199, 42 p.

Aydin, K., S. Gaichas, I. Ortiz, D. Kinzey, and N. Friday. 2007. A comparison of the Bering Sea, Gulf of Alaska, and Aleutian Islands large marine ecosystems through food web modeling. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-178, 298 p.

Gaichas, S.K., and J.C. Field, 2003. Comparative modeling approaches for exploited marine ecosystems in the North Pacific: what are these models good for? In Mace, P.M. (ed.), Proceedings of the seventh NMFS National Stock Assessment Workshop, (Re)building Sustainable Fisheries and Marine Ecosystems. NOAA Tech. Memo NMFS-F/SPO-62.

OTHERS (FISHERY MANAGEMENT COUNCIL DOCUMENTS)

2020-2021: Lead author, State of the Ecosystem Request tracking memo for the Mid-Atlantic and New England Fishery Management Councils

2017-2021: Lead author, Mid-Atlantic Fishery Management Council Ecosystem Approach to Fisheries Management Risk assessments

December 2019: Mid-Atlantic Fishery Management Council Ecosystem Approach to Fisheries Management Conceptual model

April 2016: Contributor to Mid-Atlantic Fishery Management Council Ecosystem Approach to Fisheries Management Guidance Document (1st Draft). http://www.mafmc.org/s/Tab05_EAFM.pdf

February 2016: Lead author for A Framework for Incorporating Species, Fleet, Habitat, and Climate Interactions into Fishery Management: A DRAFT White Paper to Inform the Mid-Atlantic Fishery Management Council. http://www.mafmc.org/s/02_DRAFTInteractionsWhitePaper_bbdraft.pdf

April 2015: Contributor/Editor for Climate Change and Variability: A White Paper to Inform the Mid-Atlantic Fishery Management Council on the Impact of Climate Change on Fishery Science and Management. http://www.mafmc.org/s/Climate-Change-and-VariabilityWhite-Paper_BBook_second_draft_final.pdf

December 2014: Contributor to Managing Forage Fishes in the Mid-Atlantic Region: A White Paper to Inform the Mid-Atlantic Fishery Management Council. http://www.mafmc.org/s/3_ForageWhitePaper_Nov2014_draft3-2.pdf

November 2010: Lead author, Bering Sea Ecosystem Assessment, and Ecosystem Considerations SAFE co-editor: <http://access.afsc.noaa.gov/reem/ecoweb/Eco2010.pdf>

October 2010: GOA Crab Protection Closures Environmental Assessment, contributed ecosystem effects analysis in section 4: http://www.fakr.noaa.gov/npfmc/current_issues/bycatch/GOAcrap.pdf

September 2010: Ecosystem Considerations SAFE editor (while S. Zador was on leave): ftp://ftp.afsc.noaa.gov/afsc/public/Plan_Team/ecosystem.pdf

November 2009: Ecosystem Assessment coauthor: <http://www.afsc.noaa.gov/refm/docs/2009/ecosystem.pdf>

September 2008: Arctic Fishery Management Plan Environmental Analysis; contributed Arctic Ecosystem Description, Chapter 8, Section 1: http://www.fakr.noaa.gov/analyses/arctic/ArcticFMP_EA1108.pdf

December 2007: Aleutian Islands Fishery Ecosystem Plan; Ecosystem Plan Team member, contributed food web analyses: http://www.fakr.noaa.gov/npfmc/current_issues/ecosystem/AIFEPbrochure1207.pdf

1999-2006: Stock assessment reports (see below) contributed to North Pacific Fishery Management Council Stock Assessment and Fishery Evaluation Report https://archive.fisheries.noaa.gov/afsc/REFM/stocks/Historic_Assess.htm

Presentations

Speaker, moderator, and symposium organizer at regional to international professional meetings (AFS, ASLO, Conservation Biology, ESA, GLOBEC, IMCC, World Fisheries Congress) 1995-present. Invited speaker for public lecture series, teacher workshops, and university courses and departmental seminars.

TALKS PRESENTED AT PROFESSIONAL MEETINGS

Invited: * 2021 AFS - connecting the dots climate informed management symposium - ecological forecasting symposium

OMG too many

POSTERS PRESENTED AT PROFESSIONAL MEETINGS

Fewer

OTHER SEMINARS/PRESENTATIONS

Fishery Management Councils: SOE

Fishery Management Councils Management strategy evaluation stakeholder workshops

Marine Resource Education Program

Maine Fishermen's Forum

OneNOAA EBFM series

AFSC Groundfish series

NEFSC seminar series

UMass seminar series

IMR/NOAA bilateral meetings

Invited * Using ecosystem info in management for DFO Ecosystem WG * MSE and DMDU for Ecosystem WG NOAA SAB

Funded research

Internal grants International fellowship COCA

Professional Affiliations/Activities/Service

- Mid-Atlantic FMC Scientific and Statistical Committee, (2014-present); determining Allowable Biological Catch (ABC) advice for fishery management and other scientific support.
- Member and past co-chair of the ICES Working Group on North Atlantic Regional Seas; developing ecosystem indicators and integrated ecosystem assessments for Canadian and U.S. waters.
- Co-Chair of the ICES Working Group on Multispecies Assessment Methods: reviewing and contributing to multispecies and ecosystem modeling progress across ICES regions.
- Advisory partner in the European Commission's PANDORA project (2018-2022), which is designing toolsets for new dynamic ocean resource assessments and exploitation.

- Advisory partner in the European Commission's MYFISH project (2012-2015), which defined alternative approaches to Maximum Sustainable Yield including ecological, social, and economic dimensions.
- External reviewer for the Canada Maritimes Region Ecosystem Research Initiative (March 2012).
- Guest lecturer: Woods Hole Partnership in Education Program (PEP), June 2015; Worcester Polytechnic Institute Research Experience for Undergraduates in Applied Mathematics, June 2014; WHOI Fisheries Oceanography Course, April 2014, Rutgers Ecology and Evolution Dept. Seminar, March 2013, SMAST Fisheries Oceanography Dept. Seminar, February 2012.
- Member of the Aleutian Islands Fishery Ecosystem Plan Team (2007-2011) and the Gulf of Alaska Fishery Management Plan Team (2000-2011) for North Pacific Fishery Management Council. Co-authored the Aleutian Islands Fishery Ecosystem Plan (2007) and regularly co-authored the Stock Assessment and Fishery Evaluation introduction and summary for the Gulf of Alaska. Authored Ecosystem Description and contributed analyses for management alternatives for the Arctic Fishery Management Plan (2009).
- Co-organizer of the Bering Sea Ecosystem Synthesis Team (2010), a multi-disciplinary group charged with identifying important ecosystem indicators for fishery management and writing an eastern Bering Sea ecosystem assessment for the North Pacific Fishery Management Council.
- Invited participant in PICES FUTURE workshop on Ecosystem Indicators, April 2011 in Honolulu, HI.
- Co-organizer of the Comparative Analysis of Marine Ecosystem Organization (CAMEO) Stock Production Modeling Workshop II in Woods Hole, MA, May 2011. Presented results at the International Marine Conservation Congress in Victoria BC (May 15, 2011) at the Ecosystem Studies of Subarctic Seas Open Science Meeting (May 24, 2011), and at the World Fisheries Congress in Edinburgh, Scotland (May 2012).
- Participant in three CAMEO workshops in 2010: Role of predator-prey interactions in marine ecosystem organization in Corvallis, OR, March 2010; End to end modeling workshop in Woods Hole, MA, April 2010; and Stock production model fitting workshop in Woods Hole MA, May 2010.
- Co-PI on modeling portion of the North Pacific Research Board's GOA Integrated Ecosystem Research Plan.
- Investigator with 22 others on the interdisciplinary "Collaborative Research: GLOBEC Pan-Regional Synthesis: End-to-end Energy Budgets in US-GLOBEC Regions" project comparing four marine ecosystems in the Southern Ocean, in the Pacific off Alaska and the U.S. West Coast, and in the Atlantic off the U.S East Coast (2008-2011).
- Invited participant in Asia-Pacific Economic Cooperation International workshop on developing a network for deep sea research in Lima, Peru (2007). Presented information on North Pacific ecosystems, fisheries, and management, and helped develop a preliminary framework for an information-sharing network.
- Invited participant in Society for Conservation Biology symposium on ecosystem consequences of fishing in Port Elizabeth, South Africa (2007) and coauthor on a related review publication.
- Participant in the Marine Ecosystems of Norway and the U.S. (MENU) workshop in Bergen, Norway (2007). Compared energy budget models and trophic network attributes for five high-latitude marine ecosystems, presented results at 2007 ICES and PICES meetings, and collaborated on three publications.
- Regular participant in Alaska Fisheries Science Center scientific education and outreach activities, including Pacific Science Center programs, Minorities in Marine Science Undergraduate Program presentations, elementary, secondary, and college educator workshops, internship application review and placement.

PROFESSIONAL SOCIETIES

AFS AIFRB

EDITORIAL POSITIONS

MEMBERSHIP ON PANELS

Invited review panelist, Atlantic States Marine Fisheries Commission Atlantic Menhaden stock assessment and ecological reference points, November 2019.

Chaired Baltic Sea multispecies model key run reviews for ICES WGSAM, October 2019.

Invited review panelist, South African Assessment review, November 2018. MSE-based management procedures for 4 species were reviewed over the course of a week by an international panel. (Also invited for 2019 panel, but declined due to conflicts).

ADVISORY SERVICES

All the Council stuff

ICES WKs

WORKSHOPS ORGANIZED/CHAIRLED; SESSIONS ORGANIZED/CHAIRLED AT PROFESSIONAL MEETINGS

ICES/PICES 2022 Small Pelagics symposium co-convener

WFC 2021 Climate and Ecosystem section of Horn of Plenty symposium co-convener

2019 National Ecosystem Modeling Workshop (NEMoW) steering committee member; unable to attend due to conflict with MAFMC EAFM Conceptual Model presentation in December – Developed NEFSC overview presentation (presented by Scott Large) – Developed atlantisom tool demonstration (presented by Christine Stawitz)

AFS 2018 ecosystem emergent properties symposium co-convener Atlantic City

AFS 2017 MSE symposium co-convener Tampa

- Symposium Co-organizer: “Multispecies models (including humans!)—where have we been and where do we need to go?” 2015 American Fisheries Society annual meeting.

“What Influences Fisheries Production? Comparing the Effects of Environmental, Fishing, and Food Web Forcing Across Large Marine Ecosystems” 2011 American Fisheries Society annual meeting.

“Bridging the gap between fisheries and marine conservation to advance ecosystem-based management,” Society for Conservation Biology’s International Marine Conservation Conference (IMCC) 2009.

“Ecosystem modeling applications in fishery management” 2007 American Fisheries Society annual meeting.

TEACHING AND MENTORING

Adjunct professor *University of Massachusetts, Dartmouth*

One current College of William and Mary (Virginia Institute of Marine Science) PhD student committee

One current UNH PhD student committee

2021 (Exam) PhD student committee at the University of Massachusetts, Dartmouth

2020 External examiner for a PhD student at University of Iceland

2019 (Exam) PhD student committee at the University of Massachusetts, Dartmouth

2019 External examiner for a PhD student at Dalhousie University

2016 External examiner for a PhD student at the University of Cape Town

2016 (Exam) PhD student committee at the University of Washington

2015 (Exam) PhD student committee at Oregon State University

WPI REU program Invited speaker for college courses

Agency Service

COMMITTEES

National MSE WG Chair

MAFMC SSC (here or advisory?)

OTHER

Other relevant information

March 2020 - present: considerable time was needed for dependent care (elementary age kids and elder care). I often used the excused absence for dependent care.

References
