

Sarah Gaichas

RESEARCH FISHERY BIOLOGIST ZP-IV

NOAA NMFS Northeast Fisheries Science Center 166 Water Street, Woods Hole, MA 02543

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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

Analyzed food web, fishery, and research survey data and developed ecosystem models to evaluate the cumulative effects of fishing, climate change, and other factors on the marine ecosystem.

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.

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

AFSC Employee of the Year 2010

VIMS

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.

- 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. Morisette, 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. Morisette, 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.

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- 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.
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- 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.
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marine ecosystems: Synchronies, differences, and commonalities.” In: *Progress in Oceanography*. Comparative Marine Ecosystem Structure and Function: Descriptors and Characteristics 81.1, pp. 29-46. DOI: 10.1016/j.pocean.2009.04.004.

Megrey, B. A., J. A. Hare, W. T. Stockhausen, A. Dommasnes, H. Gjøsæter, W. Overholtz, S. Gaichas, G. Skaret, J. Falk-Petersen, J. S. Link, and K. D. Friedland (2009). “A cross-ecosystem comparison of spatial and temporal patterns of covariation in the recruitment of functionally analogous fish stocks.” In: *Progress in Oceanography*. Comparative Marine Ecosystem Structure and Function: Descriptors and Characteristics 81.1, pp. 63-92. DOI: 10.1016/j.pocean.2009.04.006.

Gaichas, S. (2008). “A context for ecosystem-based fishery management: Developing concepts of ecosystems and sustainability.” In: *Marine Policy* 32, pp. 393-401.

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.

Aydin, K. Y., 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. Department of Commerce, NOAA Tech. Memo. NMFS-AFSC-178, p. 298.

Gburski, C. M., S. K. Gaichas, and D. K. Kimura (2007). “Age and growth of big skate (*Raja binoculata*) and longnose skate (*R. rhina*) in the Gulf of Alaska.” In: *Environmental Biology of Fishes* 80.2-3, pp. 337-349. DOI: 10.1007/s10641-007-9231-8.

Gaichas, S. (2006). “Development and application of ecosystem models to support fishery sustainability: A case study for the Gulf of Alaska - ProQuest.” Seattle, WA.

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

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

BOOKS

REPORTS

State of the Ecosystem

Risk assessments

ICES WGSAM

ICES WGNARS

Ecosystem Considerations (AK)

Stock assessments (AK)

OTHERS

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

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.

PROFESSIONAL SOCIETIES

AFS AIFRB

EDITORIAL POSITIONS

MEMBERSHIP ON PANELS

ADVISORY SERVICES

All the Council stuff

ICES WKs

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

ICES/PICES 2022 Small Pelagics

WFC 2021 Climate and Ecosystem section of Horn of Plenty

AFS 2018 ecosystem emergent properties Atlantic City

AFS 2017 MSE Tampa

TEACHING AND MENTORING

Adjunct professor *University of Massachusetts, Dartmouth*

One current UMassD PhD student committee (April 2021 Exam)

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

One current UNH PhD student committee

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
