Hao Ye

Contact Information	Wildlife Ecology and Conservation University of Florida 110 Newins-Ziegler Hall PO Box 110430 Gainesville FL 32611-0430 USA	E-mail: hao.ye@weecology.org WWW: https://haoye.us GitHub: https://github.com/ha0ye
Google Scholar	http://scholar.google.com/citations?user=8hToXlwAAAAJ&hl=en	

Interests Time Series, Stability / Resilience, Forecasting, Dynamic Systems, Causal Inference

Education

2015, Ph.D., Oceanography, University of California, San Diego

2011, M.S., Oceanography, University of California, San Diego

2007, M.A., Psychology, University of California, San Diego

2006, B.S., Computer Science, California Institute of Technology

Employment

University of Florida
Postdoctoral Associate 2017 - present

University of California, San Diego
Postdoctoral Scholar 2015 - 2017

Publications

2018, Pennekamp, F., Iles, A., Garland, J., Brennan, G,, Brose, U., Gaedke, Ursula, J., Ute, K., P., Matthews, B., Munch, S., Novak, M., Palamara, G. M., Rall, B., Rosenbaum, B., Tabi, A., Ward, C., Williams, R., **Ye, H.**, and O. Petchey. The intrinsic predictability of ecological time series and its potential to guide forecasting. *Ecological Monographs*. [*in press*]

2018, Sugihara, G., Criddle, K.R., McQuown, M., Giron-Nava, A., Deyle, E., James, C., Lee, A., Pao, G., Saberski, E., **Ye, H.**. Comprehensive incentives for reducing Chinook salmon bycatch in the Bering Sea walleye Pollock fishery: Individual tradable encounter credits. *Regional Studies in Marine Science* **22**: 70-81.

2018, Deyle, E., Schueller, A., **Ye, H.**, Pao, G. M., and G. Sugihara. Ecosystem-based forecasts of recruitment in two menhaden species. *Fish and Fisheries* **19**: 769-781.

2018, Ushio, M., Hsieh, C.H., Masuda, R., Deyle, E., **Ye, H.**, Chang, C.W., Sugihara, G., and M. Kondoh. Fluctuating interaction network and time-varying stability of a natural fish community. *Nature* **554**: 360-363.

2017, Giron-Nava, A., James, C., Johnson, A., Dannecker, D., Kolody, B., Lee, A., Nagarkar, M., Pao, G., **Ye, H.**, Johns, D.G., and G. Sugihara. Quantitative

argument for long-term ecological monitoring. *Marine Ecology Progress Series* **572**: 269-274.

2017, McGowan, J.A.*, Deyle, E.R.*, **Ye, H.***, Carter, M.L., Perretti, C.T., Seger, K.D., de Verneil, A., and G. Sugihara*. Prediction of coastal algal blooms in Southern California. *Ecology* **98**: 1419-1433. (* = co-first authors)

2017, Storch, L.S., Glaser, S.M., **Ye, H.**, and A.A. Rosenberg. Stock assessment and end-to-end ecosystem models alter dynamics of fisheries data. *PLOS ONE* **12**: e0171644.

2016, **Ye, H.**, and G. Sugihara. Information leverage in interconnected ecosystems: Overcoming the curse of dimensionality. *Science* **353**: 922-925.

2015, **Ye, H.**, Deyle, E.R., Gilarranz, L.J., and G. Sugihara. Distinguishing time-delayed causal interactions using convergent cross mapping. *Scientific Reports* **5**: 14750.

2015, van Nes E.H., Scheffer, M., Brovkin, V., Lenton, T.M., **Ye, H.**, Deyle, E., and G. Sugihara. Causal feedbacks in climate change. *Nature Climate Change* **5**: 445-448.

2015, Clark, A.T., **Ye, H.**, Isbell, F., Deyle, E.R., Cowles, J., Tilman, D., and G. Sugihara. Spatial 'convergent cross mapping' to detect causal relationships from short time-series. *Ecology* **96**: 1174-1181.

2015, **Ye, H.**, Sugihara, G., Hsieh, C.H., Glaser, S.M., Grant, S.C.H., Richards, L.J., Schnute, J.T., and R.J. Beamish. Equation-free mechanistic ecosystem forecasting using empirical dynamic modeling. *Proceedings of the National Academy of Sciences* **112**: E1569-E1576.

2014, Liu, H., Fogarty, M.J., Hare, J.A., Hsieh, C.H., Glaser, S.M., **Ye, H.**, Deyle, E., and G. Sugihara. Modeling dynamic interactions and coherence between marine zooplankton and fishes linked to environmental variability. *Journal of Marine Systems* **131**: 120-129.

2014, Glaser, S.M., **Ye, H.**, and G. Sugihara. A nonlinear, low data requirement model for producing spatially-explicit fishery forecasts. *Fisheries Oceanography* **23**: 45-53.

2014, Glaser, S.M., Fogarty, M.J., Liu, H., Altman, I., Hsieh, C.H., Kaufman, L., MacCall, A.D., Rosenberg, A.A., **Ye, H.**, and G. Sugihara. Complex dynamics may limit prediction in marine fisheries. *Fish and Fisheries* **15**: 616-633.

2013, Deyle, E., Fogarty, M., Hsieh, C.H., Kaufman, L., MacCall, A., Munch, S., Perretti, C., **Ye, H.**, and G. Sugihara. Predicting climate effects on Pacific sardine. *Proceedings of the National Academy of Sciences* **110**: 6430-6435.

2012, Sugihara, G., May, R., **Ye, H.**, Hsieh, C.H., Deyle, E., Fogarty, M., and S. Munch. Detecting causality in complex ecosystems. *Science* **338**: 496-500.

2011, Glaser, S.M., **Ye, H.**, Maunder, M.N., MacCall, A.D., Fogarty, M.J., and G. Sugihara. Detecting and forecasting complex nonlinear dynamics in spatially-structured catch-per-unit-effort time series for North Pacific albacore.

Canadian Journal of Fisheries and Aquatic Sciences **68**: 400-412.

2009, Kilcik, A., Anderson, C.N.K., Rozelot, J.P., **Ye, H.**, Sugihara, G. and A. Ozguc. Nonlinear prediction of solar cycle 24. *The Astrophysical Journal* **693**: 1173-1177.

2006, Changizi, M.A., Zhang, Q., **Ye, H.** and S. Shimojo. The structures of letters and symbols throughout human history are selected to match those found in objects in natural scenes. *The American Naturalist* **167**: E117-139.

Manuscripts

Chang, C.W., **Ye, H.**, Deyle, E.R., Miki, T., Souissi, S., Anneville, O., Adrian, R., Chiang, Y.R., Ichise, S., Kumagai, M., Matsuzaki, S.S., Shiah, F.K., Wu, J.T., Hsieh, C.H., and G. Sugihara. Long-term warming weakens the stabilizing effects of biodiversity in aquatic ecosystems. *Nature*. [in review]

Ye, H., Clark, A.T., Deyle, E.R., and G. Sugihara. rEDM: An R package for empirical dynamic modeling and convergent cross mapping. *Journal of Statistical Software*. [submitted]

Christensen, E.M., Yenni, G.M., **Ye, H.**, Simonis, J.L., Bledsoe, E.K., Diaz, R., Taylor, S.D., White, E.P., and S.K.M. Ernest. portalr: an R package for summarizing and using the Portal Project Data *Journal of Open Source Software*. [submitted]

Other Works

2018, Tsonis, A.A., Deyle, E.R., **Ye, H.**, and G. Sugihara. Convergent Cross Mapping: Theory and an Example. In: Tsonis A. (eds) *Advances in Nonlinear Geosciences*: 587-600. Springer, Cham.

2017, Sugihara, G., Deyle, E.R., and **H. Ye.** Reply to Baskerville and Cobey: Misconceptions about causation with synchrony and seasonal drivers *Proceedings of the National Academy of Sciences* **114**: E2272-E2274.

2015, **Ye, H.**, Sugihara, G., Deyle, E.R., May, R.M., Swanson, K., and A.A. Tsonis. Reply to Luo et al.: Robustness of causal effects of galactic cosmic rays on interannual variation in global temperature. *Proceedings of the National Academy of Sciences* **112**: E4640-4641.

2015, **Ye, H.**, Deyle, E.R., and G. Sugihara. Predicting the future in a nonlinear world. *CalCOFI Reports* **56**: 88-91.

2011, Sugihara, G., Beddington, J., Hsieh, C.H., Deyle, E., Fogarty, M., Glaser, S.M., Hewitt, R., Hollowed, A., May, R.M., Munch, S.B., Perretti, C., Rosenberg, A.A., Sandin, S., and **H. Ye** Are exploited fish populations stable? *Proceedings of the National Academy of Sciences* **108**: E1224-E1225.

2009, Sugihara, G. and **H. Ye** Cooperative network dynamics. *Nature* **458**: 979-980.

Honors and Awards

2015, SIO - E.A. Frieman Director's Prize

2014, SIO - E.W. Fager Memorial Award

2010, World Conference on Natural Resource Modeling - Student Award

Grants

2017, co-authored proposal, NSF DEB 1655203 - $407,000 (PI: George Sugihara)

2017, co-authored proposal, NSF ABI 1660584 - $658,634 (PI: George Sugihara)

2014, co-authored proposal, Lenfest Ocean Program 00028335 - $337,100 (PI: George Sugihara)

2014, co-authored proposal, US DOD SERDP 15 RC-2509 - $817,046 (PI: George Sugihara)

2010, NSF - Graduate Research Fellowship

Invited Talks

2018, Data-driven Modeling of Ecological Dynamics. *UNL School of Natural Resources*, October 31, Lincoln, NE.

2018, Dynamic Indicators of Ecosystem Resilience. *ESA Annual Meeting Symposium "From Theory to Application: Addressing Outstanding Challenges to Operationalizing Resilience"*, August 5-10, New Orleans, LA.

2017, Data-driven modeling of biological systems. *UFL Biocomplexity Engineering Group Seminar*, December 5, Gainesville, FL.

2017, Data-driven Modeling of Biological Systems. *Institute for Systems Biology*, November 20, Seattle, WA.

2017, Data-driven Modeling of Biological Systems. *Cary Institute*, October 20, Millbrook, NY.

2017, Data-driven Modeling of Biological Systems. *University of Zurich Symposium on Ecological Modeling*, March 13, Zurich, Switzerland.

2017, Open Science: Challenges and opportunities for research in the digital age. *SIO Ecology Seminar*, February 15, La Jolla, CA.

2017, Data-driven Modeling of Complex Biological Systems. *University of Vermont Complex Systems Center*, January 23, Burlington, VT.

2016, Understanding Biological Systems with Empirical Dynamic Modeling. *Lenfest Ocean Program*, December 20, Washington, DC.

2016, Addressing nonlinearity in biological systems. *UCSC/SWFSC Ecology Seminar*, June 14, Santa Cruz, CA.

2016, Understanding nonlinearity in complex natural systems. *SIO Institutional Seminar Series*, March 30, La Jolla, CA.

2015, Information leverage in complex systems. *International workshop on development and application of empirical dynamic modeling for forecasting nonlinear systems*, September 16-18, Taipei, Taiwan.

2014, Predicting the future in a nonlinear world. *California Cooperative Oceanic Fisheries Investigations (CalCOFI) Conference*, December 8-10, La Jolla, CA.

2014, rEDM: an R package for empirical dynamic modeling. *SIO/NOAA Quantitative Ecology Seminar*, March 3, La Jolla, CA.

2011, Using state space reconstruction models to understand the ecology of Fraser River sockeye salmon (*Oncorhynchus nerka*). *Marine Biology Seminar, Institute of Oceanography, National Taiwan University*, November 9, Taipei, Taiwan.

Symposia and Workshops

2018, Nonlinear Dynamics Workshop. *NOAA National Marine Fisheries Service*, November 13-15, Santa Cruz, CA.

2018, Ecological Knowledge and Predictions: Integrating Across Networks and National Observatories. (Early Career Invitee) *NSF OISE*, February 19-21, Tucson, AZ.

2017, sPred 2 - Synthesizing Predictability Research of Ecological Dynamics. (Working Group Participant) *German Centre for Integrative Biodiversity Research*, October 23-27, Leipzig, Germany.

2017, Empirical Dynamic Modeling for Fisheries Prediction and Management. (Symposium Chair) *AFS Annual Meeting*, August 20-24, Tampa, FL.

2017, Open Science and Reproducible Research. (Panel Participant) *Research Bazaar Arizona*, March 31-April 1, Tucson, AZ.

2017 Working Open Workshop. (Participant) *Mozilla Science Lab*, March 10-11, Montréal, Canada.

2015, A Hands-on Tutorial in Empirical Dynamic Modeling and Convergent Cross Mapping. (Workshop Organizer) *ESA Annual Meeting*, August 9-14, Baltimore, MD.

2012, Nonlinear Time Series Workshop (Session Organizer) *Scripps Institution of Oceanography / NOAA National Marine Fisheries Service*, April 17-19, La Jolla, CA.

Talks

2016, Complexity and Nonlinearity in Biological Systems. *14th Experimental Chaos and Complexity Conference*, May 16-19, Banff, Canada.

2015, Forecasting Fraser River sockeye salmon (*Oncorhynchus nerka*): a comparison of model-free and model-specific approaches. *Nonlinear Time Series Modeling Workshop, CIMAS, University of Miami*, March 19-20, Miami, Florida.

2015, Apparent regime shifts or nonlinear state-dependence? Environmental drivers of Fraser River sockeye salmon recruitment. *ASLO Aquatic Sciences Meeting*, February 22-27, Granada, Spain.

2013, Exploring dynamic connectivity using state-space reconstruction: Examples from the California Current, Georges Bank, and Fraser River sockeye salmon. *ASLO Aquatic Sciences Meeting*, February 17-22, New Orleans, LA.

2012, Dynamic connectivity in the California current and Gulf of Maine: Identifying ecosystem interactions using chaotic time series analysis. *ASLO Summer*

Meeting, July 8-13, Otsu, Japan.

2012, Using state space reconstruction models to understand the ecology of Fraser river sockeye salmon (*Oncorhynchus nerka*). *Nonlinear Time Series Workshop, SIO/NOAA*, April 17-19, La Jolla, CA.

2011, Identifying spatial structure in North Pacific Albacore tuna (*Thunnus alalunga*) using chaotic time series analysis. *ASLO Aquatic Sciences Meeting*, February 13-18, San Juan, Puerto Rico.

2010, Comprehensive incentives for reducing Chinook salmon bycatch in the Bering sea pollock fleet: individual tradable encounter credits. *Resource Modeling Association World Conference on Natural Resource Modeling*, June 16-19, Helsinki, Finland.

2010, Using nonlinear forecasting to identify environmental covariates of returns of Fraser river sockeye salmon (*Oncorhynchus nerka*). *ASLO Ocean Sciences Meeting*, February 22-26, Portland, OR.

2009, Reducing Chinook salmon bycatch with market-based incentives: individual tradable encounter credits (ITEC). *North Pacific Fishery Management Council*, February 2, Seattle, WA.

Software Packages

`rEDM` https://github.com/ha0ye/rEDM
Creator and *Maintainer*

`portalR` https://github.com/weecology/portalr
Contributor

Teaching Experience

University of Florida

Instructor Git - Software Carpentry Workshop (August 15-16 2018)
University of Florida Informatics Institute

Instructor R, **`dplyr`**, **`ggplot`** - Data Carpentry Workshop (June 25-26 2018)
University of Florida Informatics Institute

Attendee Software Carpentry Instructor Training (March 5-6 2018)
University of Florida Informatics Institute

Helper R, Git - Software Carpentry Workshop (January 22-23 2018)
University of Florida Informatics Institute

University of California, San Diego

Lead Instructor Reproducible Research in Ocean Biosciences (Spring 2017)
https://github.com/Open-Data-Science-at-SIO/RRROBOTS

Helper The Unix Shell - Software Carpentry Workshop (May 23 2017)
UCSD Library

Lead Instructor Intro. to Data Visualization (Winter 2017)
https://github.com/Open-Data-Science-at-SIO/Intro-Data-Viz-Winter-2017

Attendee Teaching + Learning at the College Level (Winter 2017)

UCSD Teaching + Learning Commons

Teaching Assistant — Psych 60 (Fall 2006, Summer 2007, Summer 2008)
Psych 102 (Winter 2008), Psych 138 (Spring 2008)

San Diego Math Circle
Volunteer Instructor — {*various classes*} (September 2006 - present)

California Institute of Technology
Teaching Assistant — CS 1 (Fall 2003, Fall 2004, Fall 2005)

Professional Activities

Methods in Ecology and Evolution
Associate Editor — November 2018 - present

Am. Nat., Ecology, Ecosphere, Mar. Eco. Prog. Ser., Mar. Mammal Sci., Methods Eco. Evol., Nat. Comm., Oikos, PLOS One, PNAS, Science, Sci. Rep.
Reviewer

UF Carpentry Club
Board Member — 2018 - present

Mozilla Open Leadership Training Series
Mentor — Fall 2018, Spring 2018
Participant — Spring 2017

SIO Open Data Science
Co-founder and organizer — 2016 - 2017
https://open-data-science-at-sio.github.io

Expanding Your Horizons San Diego
Workshop co-creator and Presenter — 2017
https://github.com/Open-Data-Science-at-SIO/EYH-workshop-2017

SIO R-Users Group
Co-founder and organizer — 2010 - 2015

San Diego ARML (American Regions Math League) Teams
Coach — 2007 - 2016

National Ocean Sciences Bowl
Competition Official and Question Reviewer — 2008-2014, 2016-2018

Grassroots Diversity Action Working Group at SIO
Volunteer Tutor — 2010 - 2012

The Preuss School UCSD Oceanography Club
Mentor (Oceanography Club, Middle School Math Club — 2006 - 2008