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Professional Preparation

SUNY-College of Env. Sci. and Forestry	Fisheries Biology	Ph.D.	1993
SUNY-College of Env. Sci. and Forestry	Aquatic Entomology	M.S.	1989
Longwood University	Biology	B.S.	1985

Appointments

2021 – present Water Quality Investigations Chief, NJWSC
2011 – 2020 Ecological Water Science Lead, National Water Census / WAUSP Program
2003 – 2011 Biologist, U.S. Geological Survey, New Jersey Water Science Center
1995 – 2003 Aquatic Biologist, U.S. Geological Survey, New Jersey Water Science Center.
1994 – 1995 Postdoctoral Research Associate, USF&WS, Cortland, NY.
1993 – 1994 Visiting Instructor, SUNY College of Env. Sci. and For., Syracuse, New York
1992 – 1993 Research Fellow, SUNY College of Env. Sci. and For., Syracuse, New York
1989 – 1992 Sea Grant Scholar, SUNY College of Env. Sci. and For., Syracuse, New York

Brief Narrative

Jonathan Kennen is currently the Chief of the NJWSC Water Quality Investigations Program (QWIP). As part of this supervisory appointment Jonathan is engaged in human capital management responsibilities including staffing and recruitment, employee development, performance management, and employee conduct as per established laws and guidelines. In this context, Jonathan has been highly involved in hydrologic, hydraulic, and biological research designed to promote broader scientific understanding. Prior to his appointment as QWIP Chief, Jonathan has conducted and coordinated a highly diverse range of research to address the informational needs of the USGS, its partners, state agencies and NGOs. His research is centered on two primary areas: 1) ecological flow requirements of aquatic systems, and 2) effects of anthropogenic activities on aquatic ecosystem structure and function. Most recently, Dr. Kennen was the Lead Scientist for the Ecological Water Science component of the National Water Census (NWC) / Water Availability and Use Science Program. The NWC is a Congressionally Mandated USGS initiative evaluating national water availability and use which focuses on the development of novel water accounting tools, assessment of hydrology and water availability at the basin, regional, and national scales, and strives to understand how the quantity, timing and quality of streamflow processes sustains freshwater systems and the human livelihoods that depend on them. Prior to this Jonathan was the Lead Scientist for the National Water Quality Assessment Program's New England Mid-Atlantic Major River Basin studies. This position involved annual budgeting fund disbursement for 10-15 NAWQA scientists in support of ongoing NAWQA initiatives. Dr. Kennen's ongoing research activities focus on assessing ecological trends, evaluating the effects of hydrologic modification on stream assemblages, modeling flow-ecology response relations, and understanding the long-term effects of climate change on aquatic ecosystems. He is a co-developer of the U.S. Geological

Survey's Hydroecological Integrity Assessment (HIT) Process which implements a set of tools for setting environmental-flow standards and comparing past and proposed streamflow alterations and is a coauthor of the Ecological Limits of Hydrologic Alteration (ELOHA) paper. As part of the NWC, Jonathan provided leadership and oversight of the scientific and technical direction of EcoFlow science to ensure outcomes that met stakeholder needs while developing sound and transferable science that aligns with the goals of the Water Mission Area. Ongoing work includes classifying rivers and streams into distinctive flow regime types, supporting the development of a user-driven and web-available tools for stakeholders, and the development of flow-ecology response models at basin, regional, and national levels. Jonathan also represents the Survey on a number of multi-agency technical advisory committees addressing complex hydroecological and natural resource issues and currently serves as a member of the New Jersey Water Resource Research Institute Advisory Council and the New Jersey Department of Environmental Protection's Science Advisory Board. He was also a member of the Senior Advisory Group to the Delaware River Watershed Initiative to assist in the disbursement of funds as part of the Delaware Watershed Research Fund (DWRF).

Professional Membership

- Society for Freshwater Science
- Sigma Xi
- American Fisheries Society
- American Institute of Fishery Research Biologists

Professional Service

- 2002-present, Member of Advisory Council of the New Jersey Water Resources Research Institute.
- 2010-present, Member of New Jersey Science Advisory Board (Ecological Processes Sub-Committee).
- 2003-present, Member of New Jersey IBI Technical Advisory Committee.
- 2011-2020, Ecological Water Science Lead, USGS National Water Census / Water SMART Program
- 2016-2018, Member of the USGS Water Availability and Use Science Programs Leadership Team
- 2009-2014, Lead Scientist for the National Water Quality Assessment Program’s New England Mid-Atlantic Major River Basin studies.
- 1995-2009, Lead Biologist, USGS National Water Quality Assessment Program’s Long-Island and New Jersey study.
- 2016-2018, Guest Editor of the journal Freshwater Biology for a Special Issue on “Evaluating and Managing Environmental Water Regimes in a Water-scarce and Uncertain Future”
- 2009, Co-Organized Symposium for 2009 North American Benthological Society Annual Meeting, "Developing flow-ecology response relations to support regional streamflow management", Grand Rapids, Michigan.
- 2007, Co-developer of the USGS Hydroecological Integrity Assessment (HIT) Process which implements a set of tools for setting environmental-flow standards, and comparing past and proposed streamflow alterations.

- 2005, Member of Organizing Committee for USGS Workshop "Linking hydrological change and ecological response in streams and rivers of the eastern United States", Herndon, Virginia.
- 2005-2009, Member of Technical Advisory Committee for USGS Thrust Program—Water Availability for Ecological Needs project.
- 2003-2006, Dissertation Committee for Robert Hamilton IV, Rutgers University, New Brunswick, NJ. Major Professor: Joan G. Ehrenfeld.
- 2002-2008, Member of New Jersey Wetlands Research Advisory Group.
- 2000-2009 Ad-hoc member of Scientific Advisory Council for the New Jersey Pinelands Commission.
- 1996-present, Member of the Interagency Macroinvertebrate Biomonitoring Workgroup.
- Referee for various journals including: Society for Freshwater Science, Ecohydrology, Freshwater Biology, Ecological Modelling, North American Journal of Fisheries Management, Transactions of the American Fisheries Society, and American Water Resources Association.

Selected Relevant Publications

1. Qian, S.S., **Kennen, J.G.,** May, J.C., Freeman, M.C., and Cuffney, T. F. 2021. Evaluating the impact of watershed development and climate change on stream ecosystems: A Bayesian network modeling approach. Water Research, Volume 205, 15 October 2021, 117685. (https://www.sciencedirect.com/science/article/pii/S0043135421008800?via%3Dihub)
2. Caldwell, Peter V.; **Kennen, Jonathan G**.; Hain, Ernie F.; Nelson, Stacy A.C.; Sun, Ge; McNulty, Steve G. 2020. Hydrologic modeling for flow-ecology science in the Southeastern United States and Puerto Rico. e-Gen. Tech. Rep. SRS-246. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 77 p.
3. **Kennen, J. G.,** Stein, E. D., & Webb, J. A. 2018. Evaluating and managing environmental water regimes in a water-scarce and uncertain future. Freshwater Biology, 63:733–737 **(**https://doi.org/10.1111/fwb.13104**).**
4. Cuffney, T. C., & **Kennen, J. G.** 2018. Potential pitfalls of aggregating aquatic invertebrate data from multiple agency sources: Implications for detecting aquatic assemblage change across alteration gradients. Freshwater Biology, 63:738-751 (https://doi.org/10.1111/fwb.13031).
5. Hain, E. F., **Kennen, J. G.,** Caldwell, P. V., Nelson, S. A. C., Sun, G., & McNulty, S. G. 2018. Using regional scale flow-ecology modeling to identify catchments where fish assemblages are most vulnerable to changes in water availability. Freshwater Biology, 63:928–945 (https://doi.org/10.1111/fwb.13048).
6. Arthington, A. H., **Kennen, J. G.,** Stein, E. D., & Webb, J. A. 2018. Recent advances in environmental flows science and water management – innovation in the Anthropocene. Freshwater Biology, 63:1022–1034 (https://doi.org/10.1111/fwb.13108)
7. Caldwell, P.V, **Kennen, J.G.,** Sun, G., Kiang, J.E., Butcher, J.B., Eddy, M.C., Hay, L.E., LaFontaine, J.H., Haine, E.F., Nelson, S.A.C., and McNulty, S.G. 2015. A Comparison of Hydrologic Models for Water Supply and Environmental Flow Studies in the Southeastern U.S. Ecohydrology v. 8, p. 1525–1546 (http://dx.doi.org/10.1002/eco.1602).

8. **Kennen, J.G.,** Riskin, M.L., and Charles, E.G. 2014. Effects of streamflow reductions on aquatic macroinvertebrates: linking groundwater withdrawals and assemblage response in southern New Jersey streams, USA, Hydrological Sciences Journal v. 59, p. 545-561 (http://dx.doi.org/10.1080/02626667.2013.877139).
9. Waite, I.R., **Kennen, J.G.,** May, J.T., Brown, L.T., Cuffney, T.F., Jones, K.A., and Orlando, J.A. 2014. Stream Macroinvertebrate Response Models for Bioassessment Metrics: Addressing the Issue of Spatial Scale, PLoS ONE 9 (3): e90944 (http://dx.doi.org/10.1371/journal.pone.0090944).
10. Archfield S.A., **Kennen, J.G.,** Carlisle, D.M, Wolock, D.M., Kiang, J.E., and Eng, K., 2013, An objective and parsimonious approach for classifying natural flow regimes at a continental scale. River Research and Applications v. 30, p. 1166–1183 (http://dx.doi.org/10.1002/rra.2710).
11. **Kennen, J.G.,** Riskin, M.L., Reilly, P.A., and Colarullo, S.J., 2013, Method to support Total Maximum Daily Load development using hydrologic alteration as a surrogate to address aquatic life impairment in New Jersey streams: U.S. Geological Survey Scientific Investigations Report 2013–5089, 86 p (http://pubs.usgs.gov/sir/2013/5089/pdf/sir2013-5089.pdf).
12. **Kennen, J.G.,** Murray, K.R., and Beaulieu, K.M., 2010. Determining hydrologic factors that influence stream macroinvertebrate assemblages in the northeastern U.S. Ecohydrology v. 3, p. 88–106 (http://dx.doi.org/10.1002/eco.99).
13. Poff, N.L., Richter, B.D., Arthington, A.H., Bunn, S.E., Naiman, R.J., Kendy, E., Acreman, M., Apse, C., Bledsoe, B.P., Freeman, M.C., Henriksen, J.A., Jacobson, R.B., **Kennen, J.G.,** Meritt, D.M., O'Keeffe, J., Olden, J.D., Rogers, K.H., Tharme, R.E., and Warner, A.T. 2010, The Ecological Limits of Hydrologic Alteration (ELOHA): A New Framework for Developing Regional Environmental Flow Standards: Freshwater Biology v. 55, p. 147–170 (http://dx.doi.org/10.1111/j.1365-2427.2009.02204.x).

Collaborators & Other Affiliations
Steph Kroll, Scott Haag, Christopher Sales, Ron MacGillavry Academy of Natural Sciences, Drexel
Amy Shallcross, Delaware River Basin Commission
Kelly Malony, USGS Ecosystem Mission Area, Kearneysville, West Virginia
Angela H. Arthington, Australian Rivers Institute, Griffith University, Queensland, Australia
J. Angus Webb, The University of Melbourne, Victoria, Australia
Eric Stein, Principal Scientist - Biology Department, S. Ca. Coastal Water Research Project
Marjorie Kaplan, Associate Director, Rutgers Climate Institute, Rutgers University
Zeyuan Qiu, New Jersey Institute of Technology, Newark, New Jersey
Colin Apse, Freshwater Conservation Advisor, The Nature Conservancy
Chris Obropta, Department of Environmental Sciences, Rutgers University
Mary Freeman, USGS, Patuxent Wildlife Research Center
Allison H. Roy, USGS Massachusetts Cooperative Fish and Wildlife Research Unit
Shannon Brewer, USGS Alabama Cooperative Fish and Wildlife Research Unit
Tom Cuffney, USGS, South Atlantic Water Science Center
Pete Caldwell, USDA, Coweeta Hydrologic Lab, Center for Forest Watershed Science
Stacy Nelson, NC State University, Dept. of Forestry and Environmental Resources

Graduate Advisors and Postdoctoral Sponsors
Neil H. Ringler at SUNY-College of Environmental Science and Forestry