

# Dr. Katherine Irving

Scientist

Biology Department

Southern California Coastal Water Research Project

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## Education

Doctorate (Natural Sciences), Leibniz Institute of Freshwater Ecology and Inland Fisheries  
Department of Ecosystem Research, Berlin, Germany & Freie Universitaet, Department of Biology  
Chemistry and Pharmacy, Berlin, Germany, 2019.

M.Sc., freshwater and marine ecology with distinction, 2015.

B.Sc., (Hons) marine biology, 2008.

## Professional Experience

Scientist, Southern California Coastal Water Research Project, Costa Mesa, CA, 2019-present

PhD Candidate, Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB), Berlin,  
2015-2019

Science Divemaster, Operation Wallacea, Tela, Honduras, 2014

Microplastic Research Intern, Archipelagos Institute of Marine Conservation, Samos, Greece,  
2013

Assistant Ecologist, Hesketh Ecology, Cumbria, UK, 2013

## Professional Societies and Certifications

Society for Freshwater Science - Early Career Committee, Headwaters Leadership Academy

International Society for Limnology

# Selected Presentations and Conference Proceedings

Irving, K. 2023. Ecohydrology and Beyond: species modeling to inform water resource management. Department of Integrated Biology, Oregon State University, Corvallis, OR.

Irving, K., R. D. Mazor, K. Taniguchi-Quan. 2023. Flow-ecology in modified streams. California Aquatic Bioassessment Workgroup Meeting and California Society for Freshwater Science Meeting, at SCCWRP, Costa Mesa, CA.

Irving, K., C. Torrens. 2023. Dissolving barriers to unleash the power of predictive ecological models for practical management applications. Society of Freshwater Science Annual Meeting. Brisbane, Australia.

Irving, K. 2022. Vulnerability of Arroyo Toad to hydrologic change. Annual meeting of the California Bioassessment Workgroup. Sacramento, CA.

Irving, K., Taniguchi-Quan, K., Stein, E., Rogers, J., and Mazor, R.D. 2022. Hybrid species distribution models inform flow management in a world of water scarcity. Joint Aquatic Sciences Meeting. Grand Rapids, MI.

Irving, K., Taniguchi-Quan, K., Stein, E., Rogers, J., and Mazor, R.D. 2022. Hybrid species distribution models inform flow management in a world of water scarcity. 36<sup>th</sup> congress of the International Society of Limnology. Berlin, Germany.

Irving K, K. Taniguchi-Quan, A. Aprahamian, C. Rivers, G. Sharp, R.D. Mazor, S. Theroux, R. Peek, E.D. Stein. 2021. Application of flow ecology analysis to inform prioritization for stream restoration and management actions. 28th Annual California Aquatic Bioassessment Workgroup Meeting & 9th Annual California Chapter Society for Freshwater Science Meeting (virtual)

Irving K, K. Taniguchi-Quan, A. Aprahamian, C. Rivers, G. Sharp, R.D. Mazor, S. Theroux, R. Peek, E.D. Stein. 2021. Establishing flow targets for management: decision process sensitivity, a challenge for implementation. Symposium for Freshwater Sciences (virtual)

# Journal Articles

Sytsma, A., D. Philippus, J.M. Wolfand, K. Irving, K.T. Taniguchi-Quan, E.D. Stein, T.S. Hogue. 2024. Channel restoration in urbanized systems: Guiding design using ecological flow targets and future management scenarios. *Journal of the American Water Resources Association* DOI:10.1111/1752-1688.13232.

Wolfand, J.M., K.T. Taniguchi-Quan, R. Abdi, E. Gallo, K. Irving, D. Philippus, J.B. Rogers, E.D. Stein, T.S. Hogue. 2022. Balancing water reuse and ecological support goals in an effluent dominated river. *Journal of Hydrology X* 15:100124.

Taniguchi-Quan, K.T., K. Irving, E.D. Stein, A. Poresky, R.A. Wildman Jr., A. Aprahamian, C. Rivers, G. Sharp, S.M. Yarnell, J.R. Feldman. 2022. Developing Ecological Flow Needs in a Highly Altered Region: Application of California Environmental Flows Framework in Southern California, USA. *Frontiers in Environmental Science* 10:787631.

Irving, K., K.T. Taniguchi-Quan, A. Aprahamian, C. Rivers, G. Sharp, R.D. Mazor, S. Theroux, A. Holt, R. Peek, E.D. Stein. 2022. Application of Flow-Ecology Analysis to Inform Prioritization for Stream Restoration and Management Actions. *Frontiers in Environmental Science* 9:787462.

Abdi, R., A. Rust, J.M. Wolfand, K.T. Taniguchi-Quan, K. Irving, D. Philippus, E.D. Stein, T.S. Hogue. 2022. Thermal Suitability of the Los Angeles River for Cold Water Resident and Migrating Fish Under Physical Restoration Alternatives. *Frontiers in Environmental Science* 9:749085.

Peek, R., K. Irving, S.M. Yarnell, R. Lusardi, E.D. Stein, R.D. Mazor. 2022. Identifying Functional Flow Linkages Between Stream Alteration and Biological Stream Condition Indices Across California. *Frontiers in Environmental Science* 9:790667.

Irving, K., S.C. Jähnig, M. Kuemmerlen. 2021. Disentangling the effect of climatic and hydrological predictor variables on benthic macroinvertebrate distributions from predictive models. *Hydrobiologia* 2021:1-20.

Abdi, R., J.B. Rogers, A. Rust, J.M. Wolfand, D. Philippus, K.T. Taniguchi-Quan, K. Irving, E.D. Stein, T.S. Hogue. 2021. Simulating the thermal impact of substrate temperature on ecological restoration in shallow urban rivers. *Journal of Environmental Management* DOI:10.1016/j.jenvman.2021.112560.

Stein, E.D., E.M. Gee, J.B. Adams, K. Irving, L.V. Niekerk. 2021. Advancing the Science of Environmental Flow Management for Protection of Temporarily Closed Estuaries and Coastal Lagoons. *Water* DOI:10.3390/w13050595.

Larsen, S., L. Comte, A.F. Filipe, M.-J. Fortin, C. Jacquet, R. Ryser, P.A. Tedesco, P.A., U. Brose, T.

Erős, X. Giam, K. Irving, A. Ruhi, S. Sharma, J.D. Olden. 2021. The geography of metapopulation synchrony in dendritic river networks. *Ecology Letters* 24:791-801.  
<https://doi.org/10.1111/ele.13699>

Comte, L., J. Carvajal-Quintero, P.A. Tedesco et al. 2020. RivFishTIME: A global database of fish time-series to study global change ecology in riverine systems. *Global Ecology and Biogeography* 00:1-13. <https://doi.org/10.1111/geb.13210>

Erős, T., L. Comte, A.F. Filipe, A. Ruhi, P.A. Tedesco, U. Brose, M.-J. Fortin, X. Giam, K. Irving, C. Jacquet, S. Larsen, S. Sharma, J.D. Olden. 2020. Effects of nonnative species on the stability of riverine fish communities. *Ecography* 43:1156-1166. <https://doi.org/10.1111/ecog.04985>

Irving, K., S.C. Jähnig, M. Kuemmerlen. 2020. Identifying and applying an optimum set of environmental variables in species distribution models. *Inland Waters* 10(1):11-28.  
<https://doi.org/10.1080/20442041.2019.1653111>

Irving, K. 2019. Improvement of Global Change Projections for Benthic Macroinvertebrates. Doctoral Thesis. Freie Universität Berlin, Germany.

Irving, K., M. Kuemmerlen, J. Kiesel et al. 2018. A high-resolution streamflow and hydrological metrics dataset for ecological modeling using a regression model. *Scientific Data* 5:180224.  
<https://doi.org/10.1038/sdata.2018.224>

Kakouei, K., J. Kiesel, S. Domisch, K.S. Irving, S.C. Jähnig, J. Kail. 2018. Projected effects of climate change-induced flow alterations on stream macroinvertebrate abundances. *Ecology and Evolution* 8:3393-3409. <https://doi.org/10.1002/ece3.3907>

Irving, K., A. Miliou, M. Vasic, N. Sainz, L. Anderson, W. Weatherhead. 2014. Preliminary assessment of microplastic fibre content in Aegean Sea epipelagic fish. Proceedings of the 5th environmental conference of Macedonia. March 2014, Thessaloniki (p. 61).

## Technical Reports

Taniguchi-Quan, K.T., K. Irving, R. Darling, D. Kim, H. McMillan, E.D. Stein. 2023. Risk-Decision Framework for Evaluating Vulnerability of Streams to Hydrologic Alteration. Technical Report 1322. Southern California Coastal Water Research Project. Costa Mesa, CA.

Taniguchi-Quan, K.T., K. Irving, R.A. Wildman Jr., A. Poresky, J.R. Feldman, E.D. Stein, A. Aprahamian, C. Rivers, G. Sharp. 2022. Evaluation of Hydrologic Alteration to Inform Flow Management Decisions in South Orange County Coastal Watersheds. Technical Report 1245. Southern California Coastal Water Research Project. Costa Mesa, CA.

Sutula, M., J. Butcher, M. Schmidt, C. Boschen, R.D. Mazor, D.J. Gillett, K.T. Taniguchi-Quan, K. Irving, D. Shultz. 2022. Science Supporting Decisions on Biostimulatory Targets and Management of Eutrophication in the Main Stem of the Santa Margarita River Watershed. Technical Report 1185. Southern California Coastal Water Research Project. Costa Mesa, CA.

Stein, E.D., K.T. Taniguchi-Quan, J. Wolfand, E. Gallo, K. Irving, D. Philippus, R. Abdi, V. Hennon, A. Tinoco, P. Mohammadi, A. Rust, T.S. Hogue. 2021. Process and Decision Support Tools for Evaluating Flow Management Targets to Support Aquatic Life and Recreational Beneficial Uses of the Los Angeles River: Los Angeles River Environmental Flows Project. Technical Report 1196. Southern California Coastal Water Research Project. Costa Mesa, CA.

Stein, E.D., J. Wolfand, R. Abdi, K. Irving, V. Hennon, K.T. Taniguchi-Quan, D. Philippus, A. Tinoco, A. Rust, E. Gallo, C. Bell, T.S. Hogue. 2021. Assessment of Aquatic Life Use Needs for the Los Angeles River. Technical Report 1154. Southern California Coastal Water Research Project. Costa Mesa, CA.