



Sebastian Heilpern

Assistant Professor of Earth System Science

 Curriculum Vitae available Online

Bio

BIO

Sebastian is an ecologist and sustainability scientist studying the causes of biodiversity change and its consequences for ecosystems and human well-being, with a particular emphasis on aquatic ecosystems. In linking causes to consequences, his research also seeks to identify opportunities to align biodiversity conservation with societal objectives around public health, food systems, and renewable energy. His research integrates field work, data science and synthesis, and spans scales from local and regional studies in tropical river basins such as the Amazon to global analyses. Prior to joining Stanford, he was an Eric & Wendy Schmidt AI in Science Postdoctoral Fellow at Cornell University.

ACADEMIC APPOINTMENTS

- Assistant Professor, Earth System Science

PROFESSIONAL EDUCATION

- PhD, Columbia University , Ecology, Evolution & Environmental Biology (2020)
- MS, University of Chicago , Ecology & Evolution (2015)
- BS, Cornell University , Biological Sciences (2011)

LINKS

- Lab Website: <https://biodiversity.stanford.edu/>

Publications

PUBLICATIONS

- **Global importance of Amazonian freshwaters** *FRONTIERS IN ECOLOGY AND THE ENVIRONMENT*
Jenkins, C. N., Athayde, S., Beveridge, C. F., Correa, S. B., Espinoza, J., Heilpern, S. A., Herrera-R, G. A., Victoria-Lacy, L., Olivas, P., Oliveira, A., Piland, N. C., Utsunomiya, R., Anderson, et al
2025
- **A baseline for assessing the ecological integrity of Western Amazon rivers** *COMMUNICATIONS EARTH & ENVIRONMENT*
Anderson, E. P., Encalada, A. C., Couto, T. B. A., Beveridge, C. F., Herrera-R, G. A., Heilpern, S. A., Almeida, R. M., Canas-Alva, C., Correa, S. B., de Souza, L. S., Duponchelle, F., Garcia-Davila, C., Goulding, et al
2025; 6 (1)
- **Interdependencies between Indigenous peoples, local communities, and freshwater systems in a changing Amazon** *CONSERVATION BIOLOGY*
Athayde, S., Utsunomiya, R., Victoria-Lacy, L., Beveridge, C., Jenkins, C. N., Laufer, J., Heilpern, S., Olivas, P., Anderson, E. P.
2025; 39 (3): e70034

- **Leveraging biodiversity to maximize nutrition and resilience of global fisheries** *NATURE SUSTAINABILITY*
Heilpern, S. A., Simon, F. W., Sethi, S. A., Fiorella, K. J., Flecker, A. S., Gomes, C., McIntyre, P. B.
2025; 8 (7)
- **Climate-Driven Deoxygenation of Lakes Alters the Nutrient-Toxin Profile of a Food Fish** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Jane, S. F., Heilpern, S. A., Brenna, J., Detmer, T. M., Driscoll, C. T., Eagles-Smith, C. A., Giri, S., Glahn, R. P., Jirka, K. J., Kim, J., Montesdeoca, M. R., Olson, C. I., Park, et al
2025; 59 (19): 9486-9496
- **Dietary species richness for healthy people and ecosystems: Dietary diversity** *NATURE FOOD*
Heilpern, S. A.
2025; 6 (6): 531-532
- **Towards sustainable aquaculture in the Amazon** *NATURE SUSTAINABILITY*
Pacheco, F. S., Heilpern, S. A., Dileo, C., Almeida, R. M., Sethi, S. A., Miranda, M., Ray, N., Barros, N. O., Cavali, J., Costa, C., Doria, C. R., Fan, J., Fiorella, et al
2025; 8 (3): 234-244
- **Accessible, low-mercury, and nutritious fishes provide win-wins for conservation and public health** *ONE EARTH*
Heilpern, S. A., Flecker, A. S., Lopez-Casas, S., McIntyre, P. B., Moya, L., Sethi, S., Fiorella, K. J.
2025; 8 (1)
- **Constraint-aware Pareto Optimization for Tree-Structured Networks: Addressing Decarbonization Targets with Hydropower Expansion**
Grimson, M., Qu, Z., Mao, Y., Ferber, A. M., Pacheco, F., Heilpern, S., Angarita, H., Flecker, A., Gomes, C. P.
edited by Shah, J., Kolter, Z., Walsh, T.
ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2025: 28015-28023
- **Expanding Connected Components from Alternative Terminals: Global Optimization for Freshwater Fishes Under the UN's 30x30 Conservation Goal**
Mao, Y., Qu, Z., Miqueleiz, I., Ferber, A., Wolf, S., Grimson, M., Heilpern, S., Pacheco, F. S., Flecker, A. S., McIntyre, P. B., Gomes, C. P.
edited by Kwok, J.
ASSOC COMPUTATIONAL LINGUISTICS-ACL.2025: 9808-9817
- **Translating science into actions to conserve Amazonian freshwaters** *CONSERVATION SCIENCE AND PRACTICE*
Couto, T. B. A., Jenkins, C. N., Beveridge, C. F., Heilpern, S. A., Herrera-R, G. A., Piland, N. C., Leal, C., Zuanon, J., Doria, C. R. C., Montoya, M., Varese, M., Correa, S. B., Goulding, et al
2024; 6 (11)
- **Commercially traded fish portfolios mask household utilization of biodiversity in wild food systems** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Fiorella, K. J., Bageant, E. R., Thilsted, S. H., Heilpern, S. A.
2024; 121 (30): e2403691121
- **The Andes-Amazon-Atlantic pathway: A foundational hydroclimate system for social-ecological system sustainability** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Beveridge, C. F., Espinoza, J., Athayde, S., Correa, S., Couto, T. B. A., Heilpern, S. A., Jenkins, C. N., Piland, N. C., Utsunomiya, R., Wongchuig, S., Anderson, E. P.
2024; 121 (22): e2306229121
- **Strategies for Compressing the Pareto Frontier: Application to Strategic Planning of Hydropower in the Amazon Basin**
Qu, Z., Grimson, M., Mao, Y., Heilpern, S., Miqueleiz, I., Pacheco, F., Flecker, A., Gomes, C. P.
edited by Dilkina, B.
SPRINGER INTERNATIONAL PUBLISHING AG.2024: 141-157
- **Complex, diverse and changing agribusiness and livelihood systems in the Amazon** *ACTA AMAZONICA*
Costa, F., Assad, E. D., Bebbington, D., Brondizio, E. S., Fearnside, P. M., Garrett, R., Hecht, S., Heilpern, S., Mcgrath, D., Oliveira, G., Pereira, H., Schmink, M.
2024; 54
- **Amazonia in motion: Changing politics, development strategies, peoples, landscapes and livelihoods** *ACTA AMAZONICA*

- Hecht, S., Schmink, M., Abers, R., Assad, E., Bebbington, D., Brondizio, E., Costa, F., Calisto, A., Fearnside, P., Garrett, R., Heilpern, S., Mcgrath, D., Oliveira, et al
2024; 54
- **A synthesis of the diversity of freshwater fish migrations in the Amazon basin** *FISH AND FISHERIES*
Herrera-R, G. A., Heilpern, S. A., Couto, T. B. A., Victoria-Lacy, L., Duponchelle, F., Correa, S. B., Farah-Perez, A., Lopez-Casas, S., Canas-Alva, C. M., Doria, C. R. C., Anderson, E. P.
2024; 25 (1): 114-133
 - **Nutritional challenges of substituting farmed animals for wild fish in human diets** *ENVIRONMENTAL RESEARCH LETTERS*
Heilpern, S. A., Almeida, R. M., Fiorella, K. J., Flecker, A. S., Williams, D., McIntyre, P. B.
2023; 18 (11)
 - **Species trait diversity sustains multiple dietary nutrients supplied by freshwater fisheries** *ECOLOGY LETTERS*
Heilpern, S. A., Herrera-R, G. A., Fiorella, K. J., Moya, L., Flecker, A. S., McIntyre, P. B.
2023; 26 (11): 1887-1897
 - **Biodiversity underpins fisheries resilience to exploitation in the Amazon river basin** *PROCEEDINGS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES*
Heilpern, S. A., Sethi, S. A., Barthem, R. B., Batista, V., Doria, C. R. C., Duponchelle, F., Vasquez, A., Goulding, M., Isaac, V., Naeem, S., Flecker, A. S.
2022; 289 (1976): 20220726
 - **Strategic planning of hydropower development: balancing benefits and socioenvironmental costs** *CURRENT OPINION IN ENVIRONMENTAL SUSTAINABILITY*
Almeida, R. M., Schmitt, R. J. P., Castelletti, A., Flecker, A. S., Harou, J. J., Heilpern, S. A., Kittner, N., Kondolf, G., Opperman, J. J., Shi, Q., Gomes, C. P., McIntyre, P. B.
2022; 56
 - **Reducing adverse impacts of Amazon hydropower expansion.** *Science (New York, N.Y.)*
Flecker, A. S., Shi, Q., Almeida, R. M., Angarita, H., Gomes-Selman, J. M., Garcia-Villacorta, R., Sethi, S. A., Thomas, S. A., Poff, N. L., Forsberg, B. R., Heilpern, S. A., Hamilton, S. K., Abad, et al
2022; 375 (6582): 753-760
 - **Contemporary aquaculture: implications for human nutrition** *CURRENT OPINION IN BIOTECHNOLOGY*
Fiorella, K. J., Okronipa, H., Baker, K., Heilpern, S.
2021; 70: 83-90
 - **Declining diversity of wild-caught species puts dietary nutrient supplies at risk** *SCIENCE ADVANCES*
Heilpern, S. A., DeFries, R., Fiorella, K., Flecker, A., Sethi, S. A., Uriarte, M., Naeem, S.
2021; 7 (22)
 - **Trophic complexity alters the diversity-multifunctionality relationship in experimental grassland mesocosms** *ECOLOGY AND EVOLUTION*
Anujan, K., Heilpern, S. A., Prager, C. M., Weeks, B. C., Naeem, S.
2021; 11 (11): 6471-6479
 - **Substitution of inland fisheries with aquaculture and chicken undermines human nutrition in the Peruvian Amazon** *NATURE FOOD*
Heilpern, S. A., Fiorella, K., Canas, C., Flecker, A. S., Moya, L., Naeem, S., Sethi, S. A., Uriarte, M., DeFries, R.
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 - **Salinity tolerance of non-native suckermouth armoured catfish (Loricariidae: Pterygoplichthys) in south-eastern Mexico: implications for invasion and dispersal** *AQUATIC CONSERVATION-MARINE AND FRESHWATER ECOSYSTEMS*
Capps, K. A., Nico, L. G., Mendoza-Carranza, M., Arevalo-Frias, W., Ropicki, A. J., Heilpern, S. A., Rodiles-Hernandez, R.
2011; 21 (6): 528-540