

Water Quality Section Member Publications

2024

- Childress, E. S., D. E. Demarest, J. E. B. Wofford, N. P. Hitt, and B. H. Letcher. 2024. Strong variation in brook trout trends across geology, elevation, and stream size in Shenandoah National Park. *Transactions of the American Fisheries Society* 153:250–263.
- Jager, H. I., K. Manning, J. N. Welch, F. Corsi, A. Miara, H. S. Yoon, R. A. McManamay, S. Kao, P. C. Kusnierz, S. Gangrade. Indicators of thermal alteration in US waters reveal patterns of climate risk at the energy-water nexus. *Ecological Indicators* 159(2024):111755.
- Kusnierz, P. C., K. A. Bouwens, and A. L. Ransom. 2024. Predicting the likelihood of gas bubble trauma in fishes exposed to elevated total dissolved gas in the lower Clark Fork River, Idaho. *Transactions of the American Fisheries Society* 153(1):39–54.
- Ruaro, R., E. A. Gubiani, and R. M. Hughes. 2024. Omernik's ecoregion framework: a legacy for understanding regional patterns in attainable resource quality. *Environmental Management* 73:354–364.

2023

- Asarian, J.E., C. Robinson, and L. Genzoli. 2023. Modeling seasonal effects of river flow on water temperatures in an agriculturally dominated California River. *Water Resources Research* 59(3):e2022WR032915.
- Callisto, M., D. M. Castro, M. S. Linares, L. K. Carvalho, J. E. Barbosa, and R. M. Hughes. 2023. Which metrics drive macroinvertebrate drift in neotropical sky island streams?. *Water Biology and Security* 2(1):100077.
- Costa, E. C. S., M. S. Linares, G. W. A. Carvalho, P. P Gomes, R. M. Hughes, and M. Callisto. 2023. Human pressures degrade the ecological condition of the upper Graipu River. *Revista Brasileira de Recursos Hídricos* 28:e38.
- Eilers, J., R. Miller, D. Loomis, and A. Vogel. 2023. Effects of cyprinid removal and reintroduction: Diamond Lake, Oregon. *Lake and Reservoir Management* 39(2):156–173.
- Eilers, J., K. Vache, and R. Grost. 2023. Mechanical removal of minnows (*Gila bicolor*) to improve water quality in a hydropower impoundment, Lemolo Lake, Oregon, USA. *Hydrobiology* 2(3):475–490.
- Eilers, J., C. Davis, D. Vander Meer, and K. Vache. 2022. Spring peak flows control abundance of *Cladophora* in a Hydropower-Impacted River. *River Research and Applications*. DOI: 38(10):1746–1756.
- Flitcroft, R., L. Whitman, J. White, R. Wallick, L. Stratton Garvin, C. Smith, R. Plotnikoff, M. Mulvey, T. Kock, K. Jones, P. Gruendike, C. Gombert, G. Giannico, A. Dutterer, D. Brown, H. Barrett, B. Bangs, and R.M. Hughes. 2023. Science to support conservation action in a large river system: the Willamette River, Oregon, USA. *Water Biology and Security*:100203.
- Golgher, A., M. Callisto, and R. Hughes. 2023. Improved Ecosystem Services and Environmental Gentrification after Rehabilitating Brazilian Urban Streams. *Sustainability* 15(4):3731.
- Hughes, R. M., M. Callisto, D. A. DellaSala, M. Feio, T. Ferreira, J. R. Karr, N. Kleynhans, J. H. Michael Jr., R. Ruaro, R. L. Vadas Jr., and C. O. Yoder. 2023. Global concerns related to water biology and security: a commentary on passive scientific writing. *Water Biology and Security*:100191
- Hughes, R. M., R. C. Gardner, P. D. Shirey, S. M. P. Sulliván, S. A. R. Colvin, and D. B.

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- Winters. 2023. Waters of the United States: an urgent call for action by fisheries and aquatic science professionals. *Fisheries* 48:465-468.
- Hughes, R. M., A. T. Herlihy, R. Comeleo, D. V. Peck, R. M. Mitchell, and S. G. Paulsen. 2023. Patterns in and predictors of stream and river macroinvertebrate genera and fish species richness across the conterminous USA. *Knowledge and Management of Aquatic Ecosystems* 424:19.
- Hughes, R. M., P. S. Pompeu, M. Callisto, K. Chen, L. Juen, and B. F. Terra. 2023. Tropical and subtropical streams: a synthesis. *Water Biology and Security*:100188.
- Kusnierz, P. C., J. Leiman, and H. I. Jager. 2023. Addressing coldwater temperature impairment in a changing climate. *Fisheries* 48(8):324–330.
- Linares, M. S., D. R. Macedo, M. Callisto, R. M. Hughes, and D. M. P. Castro. 2023. The past is never dead: legacy effects alter the structure of benthic macroinvertebrate assemblages. *Limnetica* 42(1):55–67.
- Makki, T., H. Mostafavi, A. A. Matkan, R. Valavi, R. M. Hughes, S. Shadloo, H. Aghighi, A. Abdoli, A. Teimori, S. Eagderi, and B.W. Coad. 2023. Predicting climate change impacts on riverine fish species diversity in a biodiversity hotspot region. *Scientific Reports* 13(1):14347.
- Moi, D. A., M. B. Gómez, M. Burwood, G. Tesitore, G. Q. Romero, R. P. Mormul, P. Kratine, J. García-Girón, J. Heino, L. Juen, T. S. Michelin, L. F. A. Montag, G. M. Cruz, R. M. Hughes, and F. T. de Mello. 2023. Human land-uses homogenize stream assemblages and reduce animal biomass production. *Journal of Animal Ecology* 92(6):1176–1189.
- Patiño R., V. G. Christensen, J. L. Graham, J. S. Rogosch, and B. H. Rosen. Toxic algae in inland waters of the Conterminous United States—a review and synthesis. *Water* 2023 15(15):2808.
- Qu, X., J. D. Olden, W. Xia, H. Liu, Z. Xie, R. M. Hughes, and Y. Chen. 2023. Hydrology and water quality shape macroinvertebrate patterns and facilitate non-native species dispersals in an inter-basin water transfer system. *Journal of Environmental Management* 329:117111.
- Salvador, G. N., R. M. Hughes, F. Vieira, R. Ligeiro, and L. F. A. Montag. 2023. Mine tailings storage dams modify upstream headwater fish assemblages. *Water Biology and Security* 2023:100136
- 2022**
- Corsi, C. E., M. P. Corsi, K. E. Wallen, K. A. Bouwens, P. C. Kusnierz, K. E. Shaw, N. E. Hall, J. S. Maroney, and J. S. Williams. 2022. From fragments to connections to restoration: A case history of emergent sociocultural services in the Clark Fork River and Lake Pend Oreille fishery. *Aquatic Ecosystem Health and Management* 25(1):6–15.
- Feio, M. J., R. M. Hughes, S. R. Q. Serra, S. J. Nichols, M. Callisto, D. R. Macedo, J. Harding, A. G. Yates, O. N. Odume, M. J. Baek, N. Mercado-Silva, K. Nakamura, Y. Jae, K. Chen, I. Campbell, R. T. Martins, F. O. Arimoro, B. J. Kefford, N. Moya, R. Devi, U. N. Keke, M. Lintermans, C. B. M. Alves, W. Monk, T. Mori, P. S. Pompeu, W. Robinson, D. N. Shah, and M. Sueyoshi. 2022. Fish and macroinvertebrate assemblages reveal extensive degradation of the world’s rivers. *Global Change Biology* 29(2):355–374.
- Herlihy, A. T., R. M. Hughes, and W. J. Gerth. 2022. Longitudinal patterns in riverine ecology within and among seven Pacific Northwest rivers: Implications for river research, monitoring and management. *River Research and Applications* 38(3):548–560.
- Jager, H. I., N. A. Griffiths, C. H. Hansen, A. W. King, P. G. Matson, D. Singh, and R. M. Pilla.

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2022. Getting lost tracking the carbon footprint of hydropower. *Renewable and Sustainable Energy Reviews* 162:112408.
- Jager, H. I., M. R. Hilliard, M. H. Langholtz, R. A. Efroymson, C. C. Brandt, S. S. Nair, and J. A. Kreig. 2022. Ecosystem service benefits to water users from perennial biomass production. *Science of the Total Environment* 834:155255.
- Kaufmann, P. R., R. M. Hughes, S. G. Paulsen, D. V. Peck, C. W. Seeliger, M. Weber, and R. M. Mitchell. 2022. Physical habitat in conterminous US streams and rivers, part 1: Geoclimatic controls and anthropogenic alteration. *Ecological Indicators* 141:109046.
- Kaufmann, P. R., R. M. Hughes, S. G. Paulsen, D. V. Peck, C. Seeliger, T. Kincaid, and R. M. Mitchell. 2022. Physical habitat in conterminous US streams and rivers, part 2: Quantitative assessment of condition. *Ecological Indicators* 141:109047.
- Linares, M. S., D. R. Macedo, M. Callisto, R. M. Hughes, and D. M. P. Castro. 2023. The past is never dead: legacy effects alter the structure of benthic macroinvertebrate assemblages. *Limnetica* 42(1).
- Malone, E. W., J. S. Perkin, W. Keith Gibbs, M. Padgett, M. Kulp, and S. E. Moore. 2022. High and dry in days gone by: Life-history theory predicts Appalachian mountain stream fish assemblage transformation during historical drought. *Ecology of Freshwater Fish* 31(1):29–44.
- Mostafavi, H., A. Teimori, and R. M. Hughes. 2022. Habitat and river riparian assessment in the Hyrcanian Forest Ecoregion in Iran: providing basic information for river management and rehabilitation. *Environmental Monitoring and Assessment* 194(11):793.
- Salvador, G. N., L. F. de A. Montag, R. M. Hughes, S. M. Almeida, B. S. Prudente, T. C. Pessali, T. A. Barroso, M. V. Cianciaruso, R. L. B. Santos, L. Juen, and M. B. Carlucci. 2022. Influences of multiple anthropogenic disturbances, coupled with a tailings dam rupture, on spatiotemporal variation of fish assemblages in a tropical river. *Freshwater Biology* 67(10): 1708–1724.
- Storch, A. J., H. A. Schaller, C. E. Petrosky, R. L. Vadas Jr, B. J. Clemens, G. Sprague, N. Mercado-Silva, B. Roper, M. J. Parsley, and E. Bowles. 2022. A review of potential conservation and fisheries benefits of breaching four dams in the Lower Snake River (Washington, USA). *Water Biology and Security*:100030.
- Vadas, R. L., Jr., R. M. Hughes, O. Bello-Gonzales, M. Callisto, D. Carvalho, K. Chen, P. E. Davies, M. T. Ferreira, P. Fierro, J. S. Harding, C. J. Kleynhans, D. R. Macedo, N. Mercado-Silva, N. Moya, S. J. Nichols, P. S. Pompeu, R. Ruaro, R. J. Stevenson, B. F. Terra, C. Thirion, D. Ticiani, and C. O. Yoder. 2022. Assemblage-based biomonitoring of freshwater ecosystem health via multimetric indices: a critical review and suggestions for improving their applicability. *Water Biology and Security*:100054.
- Vera, I., B. Wicke, P. Lamers, A. Cowie, A. Repo, B. Heukels, C. Zumpf, D. Styles, E. Parish, and F. Cherubini. 2022. Land use for bioenergy: Synergies and trade-offs between sustainable development goals. *Renewable and Sustainable Energy Reviews* 161:112409.

2021

- Alvarenga, L. R., P. S. Pompeu, C. G. Leal, R. M. Hughes, D. C. Fagundes, and R. P. Leitão. 2021. Land-use changes affect the functional structure of stream fish assemblages in the Brazilian Savanna. *Neotropical Ichthyology* 19.
- Azevedo-Santos, V. M., M. S. Arcifa, M. F. Brito, A. A. Agostinho, R. M. Hughes, J. R. Vitule, D. Simberloff, J. D. Olden, and F. M. Pelicice. 2021. Negative impacts of mining on

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- Neotropical freshwater fishes. *Neotropical Ichthyology* 19.
- Bradley, P. M., M. A. Kulp, B. J. Huffman, K. M. Romanok, K. L. Smalling, S. E. Breitmeyer, J. M. Clark, and C. A. Journey. 2021. Reconnaissance of cumulative risk of pesticides and pharmaceuticals in Great Smoky Mountains National Park streams. *Science of The Total Environment* 781:146711.
- Callisto, M., R. L. Massara, M. S. Linares, and R. M. Hughes. 2021. Benthic macroinvertebrate assemblages detect the consequences of a stochastic sewage spill in an urban stream: a case study of a south American environmental challenge. *Limnology*. <https://doi.org/10.1007/s10201-021-00680-0>.
- Feio, M. J., R. M. Hughes, M. Callisto, S. J. Nichols, O. N. Odume, B. R. Quintella, M. Kuemmerlen, F. C. Aguiar, S. F. Almeida, and P. Alonso-EguíaLis. 2021. The biological assessment and rehabilitation of the world's rivers: An overview. *Water* 13(3):371.
- Fierro, P., R. M. Hughes, and C. Valdovinos. 2021. Temporal Variability of Macroinvertebrate Assemblages in a Mediterranean Coastal Stream: Implications for Bioassessment. *Neotropical Entomology* 50(6):873–885.
- Hughes, R. M., A. T. Herlihy, and D. V. Peck. 2021. Sampling efforts for estimating fish species richness in western USA river sites. *Limnologica* 87:125859.
- Hughes, R. M., and R. L. Vadas. 2021. Agricultural effects on streams and rivers: a western USA focus. *Water* 13(14):1901.
- Jager, H. I., R. A. Efroymsen, and R. A. McManamay. 2021. Renewable energy and biological conservation in a changing world. *Biological Conservation* 263:109354.
- Jager, H. I., J. W. Long, R. L. Malison, B. P. Murphy, A. Rust, L. G. Silva, R. Sollmann, Z. L. Steel, M. D. Bowen, and J. B. Dunham. 2021. Resilience of terrestrial and aquatic fauna to historical and future wildfire regimes in western North America. *Ecology and Evolution* 11(18):12259–12284.
- Kreig, J. A., E. Parish, and H. I. Jager. 2021. Growing grasses in unprofitable areas of US Midwest croplands could increase species richness. *Biological Conservation* 261:109289.
- Langholtz, M., B. H. Davison, H. I. Jager, L. Eaton, L. M. Baskaran, M. Davis, and C. C. Brandt. 2021. Increased nitrogen use efficiency in crop production can provide economic and environmental benefits. *Science of The Total Environment* 758:143602.
- Lomnický, G. A., R. M. Hughes, D. V. Peck, and P. L. Ringold. 2021. Correspondence between a recreational fishery index and ecological condition for USA streams and rivers. *Fisheries Research* 233:105749.
- Martins, I., D. R. Macedo, R. M. Hughes, and M. Callisto. 2021. Major risks to aquatic biotic condition in a Neotropical Savanna River basin. *River Research and Applications* 37(6):858–868.
- Martins, R. T., J. Brito, K. Dias-Silva, C. G. Leal, R. P. Leitao, V. C. Oliveira, J. M. Oliveira-Júnior, S. F. Ferraz, F. R. de Paula, and F. O. Roque. 2021. Low forest-loss thresholds threaten Amazonian fish and macroinvertebrate assemblage integrity. *Ecological Indicators* 127:107773.
- McManamay, R. A., C. R. Vernon, and H. I. Jager. 2021. Global biodiversity implications of alternative electrification strategies under the shared socioeconomic pathways. *Biological Conservation* 260:109234.
- Merovich, G. T., N. P. Hitt, E. R. Merriam, and J. W. Jones. 2021. Response of aquatic life to coal mining in Appalachia. *Appalachia's Coal-Mined Landscapes*:245–285.
- Neal, J. W., J. E. Claussen, M. R. Douglas, E. T. Spencer, E. Tracy, H. Blasius, T. Mackey, C. J.

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- Hall, P. C. Kusnierz, and M. E. Douglas. 2021. Best Practices for Communicating Climate Science for Fisheries Professionals. *Fisheries* 46(9):445–448.
- Pompeu, P. S., D. R. de Carvalho, C. G. Leal, R. P. Leitão, C. B. M. Alves, D. F. Braga, M. A. Castro, N. T. Junqueira, and R. M. Hughes. 2021. Sampling efforts for determining fish species richness in megadiverse tropical regions. *Environmental Biology of Fishes* 104(11):1487–1499.
- Silva, L. F., D. M. Castro, L. Juen, M. Callisto, R. M. Hughes, and M. G. Hermes. 2021. A matter of suborder: are Zygoptera and Anisoptera larvae influenced by riparian vegetation in Neotropical Savanna streams? *Hydrobiologia* 848(19):4433–4443.
- Tsang, Y., D. M. Infante, L. Wang, D. Krueger, and D. Wiefelrich. 2021. Conserving stream fishes with changing climate: Assessing fish responses to changes in habitat over a large region. *Science of the Total Environment* 755:142503.

2020

- Herlihy, A. T., J. C. Sifneos, R. M. Hughes, D. V. Peck, and R. M. Mitchell. 2020. The relation of lotic fish and benthic macroinvertebrate condition indices to environmental factors across the conterminous USA. *Ecological Indicators* 112:105958.
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- Kusnierz, P. C., H. I. Jager, and A. S. Todd. 2020. A call for collaboration among water quality and fisheries professionals. *Fisheries* 45(3):157–162.

2019

- McManamay, R. A., and H. Jager. 2019. Stream Biomes of the World. Oak Ridge National Lab.(ORNL), Oak Ridge, TN (United States).

2016

- Chen, Y., A. S. Todd, M. H. Murphy, and G. Lomnický. 2016. Anticipated water quality changes in response to climate change and potential consequences for inland fishes. *Fisheries* 41(7):413–416.