



Fall 2021

Welcome!

I hope everyone is doing well out there. As I start my term as President of the Water Quality Section I want to thank Past President Jetta Jager and the previous Past President Andrew Todd for their efforts in supporting the section and getting me set in the right direction. I would also like to welcome President-Elect Jonathan Leiman. My hope is that the section, its website, and newsletter will be useful resources for you all. I'm also interested to hear your thoughts on what this section can be and encourage you to reach out with your ideas. The Water Quality Section, along with the Habitat Section are sponsoring a symposium at the upcoming annual meeting: "Planning for Coldwater Fisheries Resources: Modeling and Managing Temperature Impairments." I am hopeful that you will find it useful.

- Paul Kusnierz

## Election News



As previously mentioned, Jonathan Leiman (photo) is the new President-Elect of the section. Jonathan works for the Maryland Department of the Environment and has been active in AFS since 2011. Please welcome him in his new role. The other result from the election is that the new bylaws were

accepted. The bylaws can be found on the website at:

<https://waterquality.fisheries.org/bylaws/>. As part of the bylaws, the new position of Communications Officer has been created. We will be looking to fill that position in the future. If you are interested, please feel free to reach out to any of the current officers.

## What do our elections tell us about the American Fisheries Society?

Ever wonder where our AFS leaders come from and their work experience? See page 3 at the link below for insight into the demographics of candidates for AFS leadership.

<https://drive.google.com/file/d/1bIXuEZdTFOLfULsmDoLzUOYVEDGh41-j/view>.

## Fish and Wildlife Biology Majors: An Untapped Resource Pool for Water Professionals?

Much of the knowledge gained when earning a Fish and Wildlife (or related biology) degree also applies to water quality. While you may have gone to school to become a fisheries biologist, could your career be as a water professional?

[https://www.wichita.edu/academics/fairmount\\_college\\_of\\_liberal\\_arts\\_and\\_sciences/hugowall/efc/EFC-Blog/blog-posts/blog-post-fish-and-wildlife-biology-majors-1.php](https://www.wichita.edu/academics/fairmount_college_of_liberal_arts_and_sciences/hugowall/efc/EFC-Blog/blog-posts/blog-post-fish-and-wildlife-biology-majors-1.php)

## Harmful Algal Bloom Research Initiative



The Ohio Sea Grant has released 2021 results for the state's Harmful Algal Bloom Research initiative

<https://ohioseagrant.osu.edu/news/2021/83uf9/habri-report-2021>). This initiative is seeking solutions for harmful algal blooms and consists of more than 80 science teams trying to fill knowledge gaps on the topic.

## Environmental Impacts from Nutrient Loading



Every lake is a unique ecosystem. There is no magical cure for lake problems. This is why it is essential to understand the

causes of problems as well as the effects. Analyzing specific problems and increasing the understanding of aquatic systems can formulate a balanced restoration and management program for lakes.

Algae blooms caused by excessive nutrients in the water can trigger a chain of natural events that can result in fish kills, especially in hot, overcast weather. The control of nutrients to manipulate algae growth is a strategy for managing fisheries, water clarity and wildlife populations. Waterway management programs are designed to slow down the aging process of waterbodies and to help prolong the peak period of desirable water quality, clarity and nutrient balance.

Organic nutrients are compounds essential to the life of a plant. In water management, these are substances that contain phosphorous and nitrogen (materials found in fertilizers). As nutrient levels rise in lake water, so do the levels of algae and aquatic weed growth, often causing severe problems.

When nutrient loading has created algae and undesirable aquatic weed growth, four common remedies may be utilized: mechanical harvesting, lake drawdowns, herbicide control, and biological agent control.

Ideally, aquatic plant management should consist of a combination of methods that work harmoniously with each other, and with the environment.

If you want to learn more about waterway management, please contact [info@allstatemanagement.com](mailto:info@allstatemanagement.com) or 954-382-9766.

- Steve Weinsier

## Scientists hope to bring endangered freshwater mussels back from the brink

Biologists are studying water quality, mussel populations, and mussel propagation techniques in an effort to restore freshwater mussels.

[https://www.columbiamissourian.com/news/state\\_news/scientists-hope-to-bring-endangered-freshwater-mussels-back-from-the-brink/article\\_d89ce10a-4af3-11eb-9419-834983a69e73.html](https://www.columbiamissourian.com/news/state_news/scientists-hope-to-bring-endangered-freshwater-mussels-back-from-the-brink/article_d89ce10a-4af3-11eb-9419-834983a69e73.html)

## Recent Member Publications

Alvarenga, L.R.P., P.S. Pompeu, C.G. Leal, R.M. Hughes, and R.P. Leitao. *In Press*. Land-use changes affect the functional structure of stream ichthyofauna in the Brazilian Savanna. *Neotropical Ichthyology*.

Azevedo-Santos, V.M., M.S. Arcifa, M.F.G. Brito, A.A. Agostinho, R.M. Hughes, J.R.S. Vitule, D.S. Simberloff, J.D. Olden, and F.M. Pelicice. *In Press*. Negative impacts of mining on Neotropical freshwater fishes. *Neotropical Ichthyology*.

Callisto, M., R.L. Massara, M.S. Linares, and R.M. Hughes. *In Press*. 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*.

Fierro, P., R.M. Hughes, and C. Valdovinos. 2021. Temporal variability of macroinvertebrate assemblages in a Mediterranean coastal stream: implications for bioassessments. *Neotropical Entomology*. [Doi.org/10.1007/s13744-021-00900-3](https://doi.org/10.1007/s13744-021-00900-3).

Jager, H.I., J.W. Long, R.L. Malison, B.P. Murphy, A. Rust, L.G.M Silva, R. Sollmann, Z.L. Steel, M.D. Bowen, J.B. Dunham, J.L. Ebersole, and R.L. Flitcroft. 2021. Resilience of terrestrial and aquatic fauna to historical and future wildfire regimes in western North America. *Ecology and Evolution*, 11(18),12259-12284, [doi.org/10.1002/ece3.8026](https://doi.org/10.1002/ece3.8026). *This paper came out of a 2019 joint AFS-TWS Symposium in Reno sponsored by the WQ Section.*

McManamay, R.A., C.R. Vernon, and H.I. Jager. 2021. Global biodiversity implications of land requirements for alternative electrification

strategies under the shared socioeconomic pathways. *Biological Conservation*, 260, 109234. 10.1016/j.biocon.2021.109234.

Neal, J.W., J.E. Claussen, M.R. Douglas, E.T. Spencer, E. Tracy, H. Blasius, T. Mackey, C.J. Hall, P.C. Kusnierz, M.E. Douglas, and S. Bonar. 2021. Best Practices for Communicating Climate Science for Fisheries Professionals. *Fisheries* 46:445–448.

Silva, L.F.R., D.M.P. de 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* 848:4433–4444.

## **Obituary for Larry Brown, 2001-2003 WQS President**



**Dr. Larry Richard Brown**  
**March 12, 1956 - February 10, 2021**

Larry Brown was a kind, generous, and thoughtful man who lived an exemplary life, devoted to his family and to nature conservation. He was born in San Gabriel, California, and met his wife Lisa as an undergraduate student at UC Irvine while playing pool at the student union. Living in Davis, California, they raised two children, Arwen and Ian, and became enthusiastic grandparents to their three grandchildren, Evander, Kaylee, and Fiona.

Larry was a renowned research scientist who was recently acknowledged by a Stanford study as among the world's top 2% of scientists in his field. Larry's research career started at UC Davis where he obtained a Ph.D. in Ecology

in 1988 and continued as a postdoctoral researcher, working closely with eminent California fish biologist, Dr. Peter Moyle. At UC Davis, Larry headed a five-year project studying the effects of invasive species on the native fishes of the Eel River in Northern California, especially salmon and steelhead. One of the products of this research was discovering that Coho Salmon were in severe decline in all California coastal streams. He was the lead author on the detailed paper on this finding, which led to Coho being listed as a threatened species and to conservation actions to recover it. Larry served as the 2001-2003 President of the AFS Water Quality Section and was Senior Editor of the 2005 AFS book, *Effects of Urbanization on Stream Ecosystems*, which was sponsored by the WQS. Larry also made time to serve as 2001-2002 President of the AFS California-Nevada Chapter and to organize various conferences and symposia.

In 1991, Larry joined the US Geological Survey (USGS) as a study unit biologist for the National Water-Quality Assessment (NAWQA) Project, an association that lasted the rest of his career. Larry led data collection and analysis efforts in all three California study units and reported results in numerous publications on stream fishes, invertebrates, and general stream ecology in California and the nation. Together with his UC Davis publications, this established Larry as one of a small group of experts on California stream fish ecology.

One of Larry's first USGS projects was to examine contaminant effects on algae, invertebrates, and fish in the lower San Joaquin River. This work demonstrated the severity of the pollution problems in the river and provided essential information needed for on-going rehabilitation of the river. That research was expanded to many other California rivers (and elsewhere) and then, starting in 1997, the California Bay-Delta, an area rife with controversy. Typical of Larry, he began his research involvement with an important paper asking: "Will tidal wetland restoration enhance populations of native fishes?" Published in 2003, this paper is required reading for anyone involved in rehabilitating fish in the San Francisco Estuary.

As his USGS career unfolded, Larry's research scope broadened to include many topics in aquatic ecology, but he maintained a strong focus on estuarine ecology of the Bay-Delta, particularly the ecology of endangered species, the expected effects of climate change, and the effects of land use, wildfires, and altered hydrology on stream ecology in California and elsewhere. Nationally, Larry was a key contributor to both the NAWQA Cycle 2 (2001-2012) study of the ecology of urbanized streams, and the Cycle 3 study (2012-2021) of regional stream quality assessments. At the USGS California Water Science Center, Larry became the go-to technical specialist and team leader for studies relating to aquatic biology and ecology, developing multiple groundbreaking studies and collaborating with many scientists in California and across the nation, producing more than 100 publications. He was a sought-after reviewer of ecological components of USGS and other research and monitoring programs, a frequent conference speaker, and a productive participant in various expert panels, review teams, and work groups. For his contributions to the USGS, Larry received the Department of the Interior's 2018 Meritorious Service Award.

Over two decades, Larry was very active in the Interagency Ecological Program for the San Francisco Estuary (IEP). He was a long-time member and leader of several IEP groups, including the Science Management Team, Management, Analysis, and Synthesis Team, and the Climate Change Project Work Team. The IEP community relied heavily on Larry's unique ability to lead data analysis and synthesis efforts, including IEP work with the National Center for Analysis and Synthesis in Santa Barbara, California, on the causes of the "Pelagic Organism Decline" in the Bay-Delta. He also participated in many events and work teams sponsored by the Delta (formerly CALFED) Science Program, including authoring portions of the "State of Bay-Delta Science" reports and papers and organizing and co-chairing several biennial Bay-Delta Science Conferences. A number of these efforts are ongoing, and Larry's leadership will be sorely missed. For his contributions to Bay-Delta

science, Larry received the prestigious Brown-Nichols Science Award in 2021.

Impressive as Larry's accomplishments are, the first thing that comes to mind when Larry's name is mentioned amongst his colleagues is his winning smile, unwavering collegiality, and dedication to scientific excellence. Many of his colleagues describe him as 'a rock' because you could always count on him. He was always willing, with a genuine smile and a good dose of wry humor, to discuss wacky ideas, review draft manuscripts, offer suggestions for addressing research questions, and mentor junior colleagues, student assistants, graduate students at Sacramento State, and anyone else who needed positive and insightful feedback. He was, above all, a kind person with a positive attitude towards life who made life better for all who knew him.

Larry is survived by his wife, children, grandchildren, and mother. The family asks that memorial donations be made to the Nature Conservancy or an ecological charity of your choice.

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## In Closing

To wrap up this issue I want to remind folks about the annual American Fisheries Society Meeting in Baltimore, Maryland (and virtual!), November 6–10. The section business meeting is on Monday, November 6 at 3 pm local time (<https://waterquality.fisheries.org/annual-business-meeting/>). I hope you are able to attend either in person or virtually and find it a worthwhile event. I also want to remind you that the section has both a webpage (<https://waterquality.fisheries.org/>) and a Facebook Page ([www.facebook.com/AFS-Water-Quality-Section-369954383031160/](http://www.facebook.com/AFS-Water-Quality-Section-369954383031160/)). Please visit them from time to time to stay up to date on recent water quality and fish news. Also, please feel free to reach out to me with suggestions for how these sites and the newsletter can be most useful for you.

Thank you, and take care,

Paul Kusnierz  
President, Water Quality Section, AFS  
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