

Catherine E. Murphy

Adjunct Assistant Professor, Tulane Dept. of River-Coastal Science and Engineering
Research Ecologist, U. S. Army Engineer Research and Development Center

cmurphy14@tulane.edu

School of Science & Engineering

catherine.e.murphy@usace.army.mil

601-634-3246

Education

Ph.D., Wildlife & Fisheries Science, Louisiana State University, 2017;

M. Applied Statistics, Louisiana State University, 2014;

B.S., Biology, University of Texas at Dallas, 1998.

Biography

I am a quantitative ecologist with the Environmental Laboratory at the U. S. Army Engineer Research and Development Center in Vicksburg, Mississippi. My career with the Corps of Engineers began in the 1990's as a student contractor, a position that provided mentoring and technical training in fisheries-related ecological research and field data collection, as well as an immersive introduction to our civil works and water resources missions. After earning a B.S. in Biology from the University of Texas at Dallas, I gained valuable experience assessing aquatic impacts from navigation and flood control projects on the Arkansas and White Rivers, Grand Prairie region of Arkansas, Yazoo River Basin tributary streams, and San Antonio River, among others. Additionally, our team devoted a large portion of its research efforts to the life history and conservation of the endangered pallid sturgeon (*Scaphirhynchus albus*) throughout the Lower Mississippi River, culminating in a comprehensive conservation plan and a non-jeopardy biological opinion from the U. S. Fish and Wildlife Service in 2013.

I left ERDC to pursue a Master of Applied Statistics and Ph.D. in Wildlife and Fisheries Science at Louisiana State University. My research at the School of Renewable Natural Resources focused primarily on evaluation of habitat impairment in low-gradient, coastal plain streams. While there, however, I was privileged to assist with projects throughout the state, including the Atchafalaya Basin and the lower Pearl River.

My recent work and current research interests back at ERDC include: freshwater habitat restoration assessment using empirical models, river-floodplain connectivity and ecological services within the Lower Mississippi River batture, and management of invasive Asian carps and other aquatic nuisance species. Support from the Mississippi River Geomorphology and Potamology program at the USACE Mississippi Valley Division has provided the opportunity for interdisciplinary collaboration with many enthusiastic and dedicated river scientists and engineers. Thus, I am grateful that my education and professional development continue daily.

Selected Publications

- Biedenharn, D. S., K. J. Killgore, C. D. Little, Jr., C. E. Murphy, and B. A. Kleiss. 2018. Attributes of the Lower Mississippi River Batture. MRG&P Technical Note No. 4. Vicksburg, MS: U.S. Army Engineer Research and Development Center. <http://dx.doi.org/10.21079/11681/26582>
- Hoover, J. J. and C. E. Murphy. 2018. Maximum swim speed of migrating Sea Lamprey (*Petromyzon marinus*): reanalysis of data from a prior study. ERDC/TN ANSRP-18-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center. <http://el.erd.usace.army.mil/ansrp/ansrp.html>
- Oliver, A. J. M., C. E. Murphy, C. D. Little, Jr., and K. J. Killgore. 2016. Measuring Connectivity of Floodplain Waterbodies to the Lower Mississippi River. MRG&P Tech Note No. 1. Vicksburg, MS: U.S. Army Engineer Research and Development Center. <http://hdl.handle.net/11681/20368>
- Bonvillain, C. P., D. A. Rutherford, W. E. Kelso, and C. E. Murphy. 2013. Biotic and abiotic influences on population characteristics of *Procambarus clarkii* in the Atchafalaya River Basin, Louisiana. *Freshwater Crayfish*. 19(2), 125-136.
- Kaller, M.D., C.E. Murphy, W.E. Kelso, and M.R. Stead. 2013. Basins for fish and ecoregions for macroinvertebrates: Different spatial scales are needed to assess Louisiana wadeable streams. *Transactions of the American Fisheries Society*. 142(3), 767-782.
- Killgore, K. J., L. E. Miranda, C. E. Murphy, D. M. Wolff, J. J. Hoover, T. M. Keevin, S. T. Maynard and M. A. Cornish. 2011. Fish entrainment rates through towboat propellers in the Upper Mississippi and Illinois Rivers. *Transactions of the American Fisheries Society*, 140(3), 570-581.
- Garvey, J. E., E. J. Heist, R. C. Brooks, D. P. Herzog, R. A. Hrabik, K. J. Killgore, J. J. Hoover, and C. E. Murphy. 2009. Current status of the pallid sturgeon in the Middle Mississippi River: habitat, movement and demographics. St. Louis District, U. S. Army Corps of Engineers. <http://fishdata.siu.edu/pallid>
- Hoover, J. J., K. A. Boysen, C. E. Murphy, and S. G. George. 2009. Morphological Variation in Juvenile Paddlefish. Pages 157-171 in C. P. Paukert and G. D. Scholten, editors. *Paddlefish management, propagation, and conservation in the 21st century: building from 20 years of research and management*. American Fisheries Society, Symposium 66, Bethesda, Maryland.
- Hernandez-Divers, S. J., S. S. Boone, J. J. Hoover, K. A. Boysen, K. J. Killgore, C. E. Murphy, S. G. George, and A. C. Camus. 2008. Field endoscopy for identifying gender, reproductive stage and gonadal anomalies in free-ranging sturgeon (*Scaphirhynchus*) from the Lower Mississippi River. *Journal of Applied Ichthyology*. 25(0), 68-74.
- Killgore, K. J., J. J. Hoover, J. P. Kirk, S. G. George, B. R. Lewis, and C. E. Murphy. 2007. Age and growth of pallid sturgeon in the free-flowing Mississippi River. *Journal of Applied Ichthyology*. 23(4), 452-456.
- Killgore, K. J., J. J. Hoover, S. G. George, B. R. Lewis, C. E. Murphy, and W. E. Lancaster. 2007. Distribution, relative abundance, and movements of pallid sturgeon in the free-flowing Mississippi River. *Journal of Applied Ichthyology*. 23(4), 476-483.

- Killgore, K. J., J. J. Hoover, C. E. Murphy, K. D. Parrish, D. R. Johnson, and K. F. Myers. 2007. Restoration of Delta Streams: A case history and conceptual model. EMRRP Technical Notes Collection (ERDC TN-EMRRP-ER-08). Vicksburg, MS: U.S. Army Engineer Research and Development Center. <http://el.erd.c.usace.army.mil/elpubs/pdf/er08.pdf>
- Murphy, C. E., J. J. Hoover, S. G. George, and K. J. Killgore. 2007. Morphometric variation among river sturgeons (*Scaphirhynchus* spp.) of the middle and lower Mississippi River. Journal of Applied Ichthyology. 23(4), 313-323.
- Murphy, C. E., J. J. Hoover, S. G. George, B. R. Lewis, and K. J. Killgore. 2007. Types and occurrence of morphological anomalies in *Scaphirhynchus* spp. of the middle and lower Mississippi River. Journal of Applied Ichthyology. 23(4), 354-358.
- Varble, K. A., J. J. Hoover, S. G. George, C. E. Murphy, and K. J. Killgore. 2007. Floodplain wetlands as nurseries for silver carp, *Hypophthalmichthys molitrix*: A conceptual model for use in managing local populations. ANSRP Technical Notes Collection (ERDC/TN ANSRP-07-4). Vicksburg, MS: U.S. Army Engineer Research and Development Center. <http://el.erd.c.usace.army.mil/elpubs/pdf/ansrp07-4.pdf>
- Killgore, K. J., C. E. Murphy, J. J. Hoover, and J. McLean. 2005. Aquatic Habitat Evaluation Procedures. Appendix C, Part 4 in Arkansas River Navigation Study Final Environmental Impact Statement, U.S. Army Corps of Engineers, Little Rock and Tulsa Districts. <http://www.swl.usace.army.mil/projmgmt/ArkNavFinalEIS.htm>
- Hoover, J.J., K.J. Killgore, C.E. Murphy. 2004. Habitat Evaluation Procedure for San Antonio River, Texas: Baseline Conditions. U.S. Army Engineer Research and Development Center. Waterways Experiment Station, Vicksburg, MS.
- Killgore, K. J., C. E. Murphy, D. Wolff, T. M. Keevin. 2004. Evaluation of towboat propeller-induced mortality of juvenile and adult fishes in the Upper Mississippi River system. Upper Mississippi River - Illinois Waterway Navigation Feasibility Study Environmental Report 56. Report prepared for the U.S. Army Corps of Engineers, Rock Island, St. Louis and St. Paul Districts. <http://www2.mvr.usace.army.mil/UMRS/NESP/Documents/ENV56.pdf>

Courses Taught

RCSE 6810 – River and Stream Restoration
RCSE 6840 – Methods in River Sampling

Research Interests

Assessment of freshwater habitat restoration; large river-floodplain connectivity; evaluation of habitat impairment in low-gradient, warm-water streams; life history and conservation of endangered sturgeons; management of aquatic nuisance species.