Connor L. Brown

Connor.Brown@KU.edu | 409-434-8520
0000-0002-9680-8930 | ConnorB.github.io

Research Interests

Stream ecosystem ecology and biogeochemistry; carbon cycling, ecosystem metabolism, and oxygen dynamics in non-perennial streams; hydrologic, land use, and global change effects on aquatic ecosystem function.

Education

Ph.D., Geology 2021–Present
University of Kansas, Lawrence, Kansas

M.Sc., Biology 2019–2022
Sam Houston State University, Huntsville, Texas
Thesis: Ecosystem Metabolism of Coastal Texas Streams Across Precipitation Regimes and Land Use Gradients

B.Sc., Natural Resources Management 2016–2018
Texas Tech University, Lubbock, Texas
Concentration: Aquatic and Fisheries Biology
Minor: Geographic Information Science and Technology

Research Experience

Graduate Research Assistant 2021–Present
Kansas Geological Survey, University of Kansas
Leading dissertation research on how streamflow intermittency controls ecosystem metabolism, dissolved oxygen dynamics, and carbon cycling in non-perennial streams. As part of the NSF EPSCoR-funded AIMS (Aquatic Intermittency effects on Microbiomes in Streams) project, an interdisciplinary team spanning hydrology, biogeochemistry, microbiology, and community ecology across 3 ecoregions (Great Plains, Mountain West, and Southeast Forest), designed and deployed high-frequency water-quality sensor networks. Co-designed and implemented a reach-scale experimental drying and rewetting study at Konza Prairie Biological Station, integrating continuous sensor data with water-quality, dissolved-gas, and macroinvertebrate community sampling.

Graduate Research Assistant 2019–2021
Department of Biological Sciences, Sam Houston State University
Estimated stream ecosystem metabolism (daily gross primary production, ecosystem respiration, and gas exchange) from high-frequency time-series data in R, and applied structural equation modeling to link precipitation and land-use gradients to stream metabolism for the NSF-funded TERRG (Thresholds in Ecosystem Responses to Rainfall Gradients) project. Managed field data collection,

processed water samples for dissolved organic carbon and nutrient analysis, and collected fish and macroinvertebrate community data.

Graduate Research Assistant 2019
Texas Research Institute for Environmental Studies, Sam Houston State University
Collected invertebrate and habitat data for a Texas Military Department-funded survey; identified and curated terrestrial and aquatic invertebrate specimens.

Undergraduate Researcher 2016–2018
Department of Natural Resources Management, Texas Tech University
Designed and led an independent study of macroinvertebrate assemblage structure on the lower Pecos River, deploying Hester-Dendy samplers, collecting habitat measurements, and identifying macroinvertebrates. The work resulted in a peer-reviewed publication and two conference presentations.

Undergraduate Internship 2016
Department of Natural Resources Management, Texas Tech University
Supported graduate field and lab research, including transect setup, fish and macroinvertebrate collection, water sampling, habitat measurements, invertebrate identification, and environmental DNA extraction.

Teaching Experience

Teaching Assistant, Field Ecology Fall 2024, Fall 2025
Environmental Studies Program, University of Kansas
Assisted with a field-based course introducing research methods in environmental science, including data collection and analysis across lake, stream, wetland, and prairie ecosystems. Supported lab sections covering ecosystem sampling, aquatic invertebrate identification, GIS, and introductory R, and helped students with data analysis and interpretation assignments.

Teaching Assistant, Senior Capstone Spring 2025, Spring 2026
Environmental Studies Program, University of Kansas
Supported semester-long, interdisciplinary capstone research projects in which student teams partnered with campus and community stakeholders on real-world environmental issues. Assisted with project management and professional communication workshops, met with student groups to advise on research progress, and supported final written reports and oral presentations.

Teaching Assistant, General Ecology Spring 2019, Fall 2019
Department of Biological Sciences, Sam Houston State University
Led laboratory and field sections for an upper-division course covering organismal, population, community, and ecosystem ecology. Guided students through field-based application of ecological principles, lab exercises, and data collection and interpretation.

Teaching Assistant, Environmental Science Fall 2019

Department of Biological Sciences, Sam Houston State University

Led lab sections for an introductory, non-majors course on contemporary environmental issues, including air, water, and soil pollution, biodiversity, climate change, agriculture, population growth, and energy. Assisted students with lab activities and core environmental science concepts.

Publications

1. Flynn, S. M., Hale, R., Seybold, E., Plont, S., Busch, M., Sommerville, A., **Brown, C. L.**, & Burgin, A. J. (2026). Network connectivity and local hydrology drive DOM composition in a non-perennial stream. *Journal of Geophysical Research: Biogeosciences*. doi:10.1029/2025JG009568
2. Frazier, C. F., **Brown, C. L.**, Hamersky, M., Coole, T., Campobasso, M., Thomas, C., & Harris, T. D. (2025). Spatiotemporal variation of ecosystem metabolism in a eutrophic, polymictic reservoir: Water column stability begets metabolism stability. *Inland Waters*. doi:10.1080/20442041.2025.2602550
3. Plont, S., Peterson, D. M., Smith, C. R., Bond, C. T., Tchamba, A. L. K., Wolford, M. A., Zarek, K., Speir, S. L., Jones, C. N., Benstead, J. P., Busch, M. H., Hale, R. L., **Brown, C. L.**, Seybold, E. C., Shogren, A. J., Kuehn, K. A., You, Y., Jackson, C. R., Burgin, A. J., & Atkinson, C. L. (2025). Hydrologic, biogeochemical, microbial, and macroinvertebrate responses to network expansion, contraction, and disconnection across headwater stream networks with distinct physiography in Alabama, USA. *Earth System Science Data Discussions*. doi:10.5194/essd-2025-559
4. Groff, C. M., Kinard, S. K., Hogan, J. D., Whiles, M. R., Ulseth, A. J., Strickland, B. A., Carvallo, F., Jenkins, V., Solis, A. T., Groff, D. A., Frazier, C., **Brown, C. L.**, & Patrick, C. J. (2025). Precipitation regime drives key alterations in subtropical stream fish community assembly and functional trait distribution across a major rainfall gradient. *Journal of Freshwater Ecology*. doi:10.1080/02705060.2025.2486262
5. **Brown, C. L.**, Delaune, K. D., & Pease, A. A. (2024). Benthic macroinvertebrate assemblage structure in salinized reaches of the lower Pecos River, Texas. *The Southwestern Naturalist*. doi:10.1894/0038-4909-68.3.212
6. Delaune, K. D., Pease, A. A., Patiño, R., **Brown, C. L.**, & Barnes, M. A. (2024). Gulf killifish (*Fundulus grandis*) in the Pecos River: Unique life history traits in a nonnative, inland population. *The Southwestern Naturalist*. doi:10.1894/0038-4909-68.1.1
7. **Brown, C. L.**, Frazier, C. F., Patrick, C. J., & Ulseth, A. J. (in preparation). Ecosystem metabolism of coastal Texas streams across precipitation regimes and land use gradients. *Ecosystems*.

Published Datasets

1. Busch, M., Belskis, A., **Brown, C. L.**, Flynn, S., Cook, S., Allen, D., & Burgin, A. (2026). AIMS Great Plains, macroinvertebrate sequences (AIMS_GP_MACR). *HydroShare*. doi:10.4211/hs.8929cd9d067b4f98858d364d7593d6fc
2. **Brown, C. L.**, Kraft, M., Hale, R., & Godsey, S. (2026). AIMS Johnston Draw continuous stage and discharge at watershed outlet data (AIMS_MW_JDR_DISC). *HydroShare*. doi:10.4211/hs.7aebc54cb05649ceb4b508d5bab07784
3. **Brown, C. L.**, Kraft, M., Hale, R., & Godsey, S. (2026). AIMS Gibson Jack Creek continuous stage and discharge at watershed outlet data (AIMS_MW_GBJ_DISC). *HydroShare*. doi:10.4211/hs.26e4f8fc7f05466d9f6581dc643c3dcc
4. **Brown, C. L.**, Bilbrey, E., Lanfear, R., Godsey, S., & Hale, R. (2026). AIMS Johnston Draw continuous water quality at watershed outlet data (AIMS_MW_JDR_EXOS). *HydroShare*. doi:10.4211/hs.36fe56f8ae95404cb70addf6cfc9a3b0
5. **Brown, C. L.**, Lanfear, R., Bilbrey, E., Godsey, S., & Hale, R. (2026). AIMS Gibson Jack Creek continuous water quality at watershed outlet data (AIMS_MW_GBJ_EXOS). *HydroShare*. doi:10.4211/hs.069d859c54bb4f2bb10a9672c7889205
6. **Brown, C. L.**, & Seybold, E. (2026). Youngmeyer Ranch (KS) continuous discharge at watershed outlet data (AIMS_GP_YMR_approach1_DISC). *HydroShare*. doi:10.4211/hs.532d080f56114afd8ec2bf538a5253e9
7. **Brown, C. L.**, & Seybold, E. (2026). Shane Creek (Konza Prairie) continuous discharge at watershed outlet data (AIMS_GP_SHN_approach1_DISC). *HydroShare*. doi:10.4211/hs.a5bc472a8f3546fca9267f580f4eb216
8. **Brown, C. L.**, & Seybold, E. (2026). Kings Creek (Konza Prairie) continuous discharge at watershed outlet data (AIMS_GP_KNZ_approach1_DISC). *HydroShare*. doi:10.4211/hs.c5352c83797143778b13064d147b728a
9. **Brown, C. L.**, Flynn, S., Burgin, A., & Seybold, E. (2026). AIMS continuous water quality at Shane Creek outlet (AIMS_SHN_approach1_EXOS). *HydroShare*.
10. **Brown, C. L.**, Zipper, S., & Busch, M. (2026). Youngmeyer Ranch, KS environmental data (AIMS_GP_YMR). *HydroShare*. doi:10.4211/hs.d499a6e70f6a4ab3af42e922027e1448
11. **Brown, C. L.**, Utzman, C., Flynn, S., & Busch, M. (2026). Shane Creek (Konza Prairie) experiment stream temperature, intermittency, and conductivity data (AIMS_GP_SHN_approach4_STIC). *HydroShare*. doi:10.4211/hs.c10e6eb12d6042709daa3fb93838ec00
12. **Brown, C. L.**, Flynn, S., Burgin, A., & Seybold, E. (2025). AIMS continuous water quality at King's Creek outlet (AIMS_KNZ_approach1_EXOS_V1.0). *HydroShare*.
13. **Brown, C. L.**, Flynn, S., Utzman, C., Busch, M., Sommerville, A., Wilhelm, J., Layman, T., Dorantes, C., Zeglin, L., Seybold, E., & Burgin, A. (2025). Shane Creek, field data (AIMS_GP_SHN_YSIS). *HydroShare*.

Conference Presentations

1. **Brown, C. L.**, Seybold, E. C., Plont, S., Hale, R. L., Benstead, J. P., & Burgin, A. J. (2026). Effects of drying frequency and duration on ecosystem metabolism in non-perennial streams. *Society for Freshwater Science*, Spokane, WA.
2. **Brown, C. L.**, Busch, M. H., Plont, S., Benstead, J. P., Burgin, A. J., Hale, R. L., & Seybold, E. C. (2025). Hydrologic controls on oxygen regimes in non-perennial streams. *Great Plains Limnology*, Manhattan, KS.
3. **Brown, C. L.**, Busch, M. H., Plont, S., Benstead, J. P., Burgin, A. J., Hale, R. L., & Seybold, E. C. (2025). Hydrologic controls on oxygen regimes in non-perennial streams. *Society for Freshwater Science*, San Juan, PR.
4. **Brown, C. L.**, Plont, S., Burgin, A. J., & Seybold, E. C. (2024). The oxygen regimes of non-perennial streams. *The Water Science Conference*, Saint Paul, MN.
5. **Brown, C. L.**, Burgin, A. J., & Seybold, E. C. (2023). Flow variability drives changes in the oxygen regime of a non-perennial prairie stream. *Kansas Governor's Water Conference*, Manhattan, KS.
6. **Brown, C. L.**, Wheeler, C. T., Speir, S. L., Allen, D. C., Benstead, J. P., Burgin, A. J., Hale, R. L., & Seybold, E. C. (2022). Duration of drying controls the magnitude and recovery of ecosystem metabolism in U.S. intermittent streams. *Kansas Governor's Water Conference*, Manhattan, KS.
7. **Brown, C. L.**, Wheeler, C. T., Speir, S. L., Allen, D. C., Benstead, J. P., Burgin, A. J., Hale, R. L., & Seybold, E. C. (2022). Characterizing metabolism dynamics in U.S. intermittent streams. *Joint Aquatic Sciences Meeting*, Grand Rapids, MI.
8. **Brown, C. L.**, Carvallo, F., Frazier, C., Groff, C. M., Jenkins, V., Kinard, S. K., Solis, A. T., Strickland, B. A., Hogan, J. D., Patrick, C. J., Whiles, M. R., Vander Zanden, H., & Ulseth, A. J. (2021). Ecosystem metabolism of coastal Texas streams across precipitation and land use gradients. *Society for Freshwater Science*, Virtual.
9. **Brown, C. L.**, Patrick, C. J., Hogan, J. D., Reese, B., Whiles, M. R., Vander Zanden, H., Carvallo, F., Frazier, C., Groff, C. M., Jenkins, V., Kinard, S. K., Solis, A. T., & Ulseth, A. J. (2020). Exploring the impact of land use on primary production biomass across Texas coastal streams. *ASLO–SFS 2020 Joint Summer Meeting (meeting cancelled)*.
10. **Brown, C. L.**, Delaune, K. D., & Pease, A. A. (2018). Spatial and temporal variation in benthic macroinvertebrate assemblage structure in salinized reaches of the Pecos River. *Desert Fishes Council*, Death Valley, CA.
11. **Brown, C. L.**, Delaune, K. D., & Pease, A. A. (2018). Macroinvertebrate community structure on the lower Pecos River. *Southwestern Association of Naturalists*, San Marcos, TX.

Software

preMetabolizer Author & maintainer

A utility package for streamMetabolizer

Tools for preparing environmental time series before fitting stream metabolism models. The package includes helpers for downloading meteorological and elevation data, aligning irregular observations, converting units, and calculating light, pressure, dissolved gas, and water property inputs for streamMetabolizer.

flowcam Author & maintainer

Download and animate USGS stream-gage camera images

A tidy interface to the USGS National Imagery Management System (NIMS) API: discover stream-gage cameras across the US, list and download their images, and assemble them into animated GIFs or MP4 videos.

streamDAG Contributor

Analytical methods for stream DAGs

Indices and tools for analyzing directed acyclic graphs (DAGs), particularly DAG representations of intermittent (non-perennial) stream networks. Introduced in Aho et al. (2023), Non-perennial stream networks as directed acyclic graphs: The R-package streamDAG. *Environmental Modelling & Software*. doi:10.1016/j.envsoft.2023.105775

Student Mentoring

- Alexi Sommerville — Lab Technician, Master's Student, University of Kansas (2024–2026)
- Claudia Dorantes — Undergraduate, Lab Technician, University of Kansas (2024–2026)
- Taylor Layman — Undergraduate, Lab Technician, University of Kansas (2024–2026)
- Kari Snelding — Master's Student, University of Kansas (2022–2023)
- Marlyn Hernandez — Undergraduate, Sam Houston State University (2021)
- Naomi Smith-Wade — Undergraduate, Sam Houston State University (2020–2021)
- Dani Gray — Undergraduate, Sam Houston State University (2019–2021)

Service & Committees

- Kansas Geological Survey — Diversity, Equity, and Inclusion Committee (2023–2024)
- Society for Freshwater Science — Diversity, Equity, and Inclusion Committee (2021)
- Biological Sciences Graduate Student Organization, Treasurer (2019–2020)
- Texas Tech Gay-Straight Alliance (2016–2018)
- Circle K International, Texas A&M–Corpus Christi, President (2014–2016)

Journal Reviews

- *Limnology and Oceanography Letters*
- *Environmental Research Letters*
- *Hydrology and Earth System Sciences*

Professional Memberships

- Society for Freshwater Science (2018–Present)
- Desert Fishes Council (2018–Present)
- Southwestern Association of Naturalists (2017–Present)

Research Funding

- **Brown, C. L.** (2017). Center for Active Learning and Undergraduate Research Engagement, Texas Tech University ($1,000).

Certifications

- GeoApps Certification, Esri (2018)
- SSI Advanced SCUBA Certification (2009)