

Matthew I. Pyne

Assistant Professor

Department of Biology
Lamar University
PO Box 10037
Beaumont, TX 77710

Work Phone: (409) 880-7458
Cell Phone: (409) 937-4899
Email: mattpyne@hotmail.com

Professional Appointments:

2014 – Present Assistant professor, Department of Biology, Lamar University,
Beaumont, Texas

Education:

2014 **Doctor of Philosophy** in Ecology, Colorado State University

Dissertation Title: The distribution of lotic insect traits in relation to reference conditions and projected climate change in the western United States

2006 **Master of Science** in Integrative Biology, Brigham Young University

Thesis Title: Prediction of local biological characteristics in streams: a comparison of landscape classifications

2003 **Bachelor of Science** in Wildlife and Range Resources, Brigham Young University

Research Experience:

- Assistant Professor, Lamar University, 2014–present
 - Surveyed *Rangia* clam populations along the Neches River, TX, in relation to salinity gradients.
 - Experimentally manipulated water temperatures to measure how aquatic insects may respond to climate change.
 - Developed statistical models to determine which hydrological variables best differentiate California stream types.
 - Predicted the distribution of pitcher plants in the Big Thicket Preserve using GIS modeling.
- Ph.D. Graduate Student, Colorado State University, 2006–2014
 - Developed Bayesian hierarchical regression models to describe the distribution of lotic insect traits due to changes in the stream environment.
 - Predicted the future distribution of aquatic insect taxa in western U.S. streams from climate change scenarios using general linear models and thermal/flow tolerances.

- Performed multivariate statistical techniques (e.g., RDA, CART, multinomial regression) exploring the relationship between aquatic insect traits and environmental gradients.
- Collected the flatworm *Polycelis* in and around Rocky Mountain National Park, Colorado, for a genetics study.
- Estimated demographic parameters for the bison population at Badlands National Park, South Dakota, part of a collaborative effort with statistics and mathematics graduate students.
- M.S. Graduate Student, Brigham Young University, 2003–2006
 - Validated a stream classification system developed by the USDA Forest Service.
 - Led a 4-person team collecting algal, macroinvertebrate, and brook trout samples from 69 field sites over a 10-week period.
 - Coordinated and supervised preparation of trout otoliths and sorting of macroinvertebrate samples.
 - Analyzed ~1500 trout otoliths and identified ~69,000 macroinvertebrates to genus.
 - Performed multivariate statistical analyses.
- Biological Technician, USDA Forest Service, Shrub Sciences Laboratory, 2001–2004.
 - Collected wood cores and other wood samples, collected site data, and analyzed wood samples in the laboratory for a southern Utah and eastern Nevada fire history study.
 - Assisted in site preparation, treatment application, and data collection for a study on how changing fire regimes and increased cheatgrass fuel loads affect sagebrush steppe and pinyon-juniper ecosystems.
 - Assisted in collection of data in and maintenance of the USDA Forest Service Desert Experimental Range, Utah.

Peer-Reviewed Publications:

1. Christensen, A. B., K. O. Radivojevich, and **M. I. Pyne**. 2017. Effects of CO₂, pH and temperature on respiration and regeneration in the burrowing brittle stars *Hemipholis cordifera* and *Microphiopholis gracillima*. *Journal of Experimental Marine Biology and Ecology* 495: 13-23 (DOI: 10.1016/j.jembe.2017.05.012)
2. **Pyne, M. I.**, D. M. Carlisle, C. P. Konrad, and E. D. Stein. 2017. Classification of California streams using combined deductive and inductive approaches: setting the foundation for analysis of hydrologic alteration. *Ecohydrology*: e1802 (DOI: 10.1002/eco.1802)
3. **Pyne, M. I.**, and N. L. Poff. 2017. Vulnerability of stream community composition and function to projected thermal warming and hydrologic change across ecoregions in the western United States. *Global Change Biology* 23 (1): 77-93 (DOI: 10.1111/gcb.13437)

4. Terry, R.G., **M. I. Pyne**, J. A. Bartel, and R. P. Adams. 2016. A molecular biogeography of the New World cypresses (*Callitropsis*, *Hesperocyparis*; Cupressaceae). *Plant Systematics and Evolution* 302 (7): 921-942
5. Auerbach, D. A., N. L. Poff, R. R. McShane, D. M. Merritt, **M. I. Pyne**, and T. Wilding. 2012. Streams past and future: fluvial responses to rapid environmental change in the context of historical variation. Pages 232-245 in J. A. Wiens, G. D. Hayward, H. D. Safford, and C. Giffen, editors. *Historical Environmental Variation in Conservation and Natural Resource Management*. John Wiley & Sons, Ltd., Hoboken, New Jersey.
6. Buhnerkempe, M. G., N. Burch, S. Hamilton, K. M. Byrne, E. Childers, K. A. Holfelder, L. N. McManus, **M. I. Pyne**, G. Schroeder, and P. F. Doherty. 2011. The utility of transient sensitivity for wildlife management and conservation: Bison as a case study. *Biological Conservation* 144:1808-1815.
7. Poff, N. L., **M. I. Pyne**, B. P. Bledsoe, C. C. Cuhacyan, and D. M. Carlisle. 2010. Developing linkages between species traits and multiscaled environmental variation to explore vulnerability of stream benthic communities to climate change. *Journal of the North American Benthological Society* 29:1441-1458.
8. **Pyne, M. I.**, K. M. Byrne, K. A. Holfelder, L. Mcmanus, M. Buhnerkempe, N. Burch, E. Childers, S. Hamilton, G. Schroeder, and P. F. Doherty. 2010. Survival and breeding transitions for a reintroduced bison population: a multistate approach. *Journal of Wildlife Management* 74:1463-1471.
9. Webb, C. T., J. A. Hoeting, G. M. Ames, **M. I. Pyne**, and N. L. Poff. 2010. A hierarchical and dynamic framework to advance traits-based theory and prediction in ecology. *Ecology Letters* 13: 267-283.
10. **Pyne, M. I.**, R. B. Rader, and W. F. Christensen. 2007. Predicting local biological characteristics in streams: a comparison of landscape classifications. *Freshwater Biology* 52:1302-1321.

Non Peer-Reviewed Publications:

1. **Pyne, M. I.** In Press. Digitization, data extraction, and archiving of environmental and biological data from the Big Thicket National Preserve. Research Report for Cooperative Agreement P12AC51051, U.S. Department of Interior, National Park Service.
2. Stein, E.D., R.D. Mazor, A. Sengupta, K. McCune, B. Bledsoe, S. Adams, S. Eberhart, **M. Pyne**, P. Ode and A. Rehn. 2017. Development of Recommended Flow Targets to Support Biological Integrity Based on Regional Flow-ecology Relationships for Benthic Macroinvertebrates in Southern California Streams. Technical Report 974. Southern California Coastal Water Research Project. Costa Mesa, CA.

Invited Talks/Presentations:

1. **Pyne, M.I.** 2016. A review and evaluation of trait-flow relationships in stream ecosystems. Annual Meeting of the Society for Freshwater Science, Sacramento, California. Oral Presentation.

Volunteered Presentations:

1. Brown, J.E., L.E. Huff, E.W. Beadle, G.L. Polansky, A.B. Christensen, and **M.I. Pyne**. 2016. The Impact of the Salt Water Barrier on *Rangia cuneata* Clam Size and Distribution in the Lower Neches River. 4th Annual Texas STEM Conference. Poster Presentation.
2. Brown, J.E., and **M.I. Pyne**. 2016. Thermal tolerance in a warm-water Cheumatopsyche caddisfly. Annual Meeting of the Society for Freshwater Science, Sacramento, California. Poster Presentation.
3. **Pyne, M.I.**, N.L. Poff. 2015. Modeling the response of climate-sensitive, aquatic insect traits to multiple environmental factors in the western United States using a Bayesian path model. Annual Meeting of the Society for Freshwater Science, Milwaukee, Wisconsin. Oral Presentation.
4. Hammonds, E.A., R.M. Quraishi, U.N. Quraishi, and **M.I. Pyne**. 2015. Prediction of potential pitcher plant (*Sarracenia alata*) distribution in the Big Thicket National Preserve using a geographic information system. 2nd Annual Undergraduate Research Exposition, Lamar University. Poster Presentation.
5. **Pyne, M.I.**, N.L. Poff. 2014. Vulnerabilities of Stream Insect Communities to Temperature and Hydrologic Change from Global Warming. 1st Joint Aquatic Sciences Meeting, Portland, Oregon. Oral Presentation.
6. **Pyne, M.I.**, N.L. Poff. 2014. Environmental Limits and Climate Change: Thermal and Hydrology Tolerances of Stream Insects in the Western United States Projecting changes in benthic community structure to climate change: a traits-based model. 20th Front Range Student Ecology Symposium, Colorado State University, Fort Collins, Colorado. Oral Presentation.
7. **Pyne, M.I.**, N.L. Poff. 2012. Projecting changes in benthic community structure to climate change: a traits-based model. 60th Annual Meeting of the Society for Freshwater Science, Louisville, Kentucky. Oral Presentation.
8. **Pyne, M.I.**, N.L. Poff. 2010. Testing a priori concepts of environmental-trait relationships. 58th Annual Meeting of the North American Benthological Society, Santa Fe, New Mexico. Oral Presentation.
9. **Pyne, M.I.**, N.L. Poff, B.P. Bledsoe, C.C. Cuhacyan, D. Carlisle. 2010. Developing linkages between species traits and multi-scaled environmental variation in streams to assess ability to detect benthic community responses to climate change. 16th Annual Front Range Student Ecology Symposium, Colorado State University, Fort Collins, Colorado. Oral Presentation.

10. **Pyne, M.I.**, N.L. Poff, J.A. Hoeting, and D. Johnson. 2009. Application of a Bayesian hierarchical regression model to explain multiple trait distributions of lotic insects across environmental gradients. 57th Annual Meeting of the North American Benthological Society, Grand Rapids, Michigan. Oral Presentation.
11. **Pyne, M.I.**, H. Tan. 2009. Use of Bayesian hierarchical regression model to predict species trait distributions of aquatic insects in streams. 15th Annual Front Range Student Ecology Symposium, Colorado State University, Fort Collins, Colorado. Oral Presentation.
12. **Pyne, M.I.**, N.L. Poff, B.B. Bledsoe, and A.T. Herlihy. 2008. Estimation of taxa abundances using a Bayesian Belief Network. 56th Annual Meeting of the North American Benthological Society, Salt Lake City, Utah. Poster Presentation.
13. **Pyne, M.I.**, N.L. Poff, B.B. Bledsoe, and A.T. Herlihy. 2007. Traits versus taxonomy: community composition along environmental gradients in streams. 55th Annual Meeting of the North American Benthological Society, Columbia, South Carolina. Poster Presentation.
14. **Pyne, M.I.**, R.B. Rader, and D. Winters. 2005. Testing differences in the biological community of streams using watershed classifications. 90th Annual Meeting of the Ecological Society of America, Montreal, Quebec, Canada. Oral Presentation.

Grants, Fellowships, Scholarships:

- **Pyne, M.I.** “Population Survey of American Alligators within the Big Thicket National Preserve” Big Thicket Association Thicket of Diversity project, \$12,480
- Christensen, A., **M.I. Pyne**. “The effects of the permanent salt water barrier on the brackish water clam, *Rangia cuneata*, in the lower Neches River.” Center for the Advances in Water and Air Quality, Lamar University, \$25,000 (2016-2017).
- **Pyne, M.I.** “Digitization, data extraction, and archiving of environmental and biological data from the Big Thicket National Preserve”, National Park Service, \$5,000 (2015-2016).
- **Pyne, M.I.** “Thermal tolerances of aquatic insects across a temperature gradient in a stream: implications for climate change”, Lamar University, \$5,000 (2015-2016).
- Edward and Phyllis Reed Fellowship, Colorado State University, \$16,900; 2011
- Edward and Phyllis Reed Fellowship, Colorado State University, \$18,000; 2010
- Edward and Phyllis Reed Fellowship, Colorado State University, \$11,100; 2009
- PRIMES Fellowship, Colorado State University, \$30,000; 2008
- Edward and Phyllis Reed Fellowship, Colorado State University, \$7500; 2007
- Colorado State Graduate Fellowship, Colorado State University, \$800; 2006
- Vernon J. Tipton Family Scholarship, Brigham Young University, \$1000; 2005
- Julia Greenwell Scholarship, Brigham Young University, \$1773; 2004
- Frank and Helen Rist Scholarship, Brigham Young University, \$1530; 2002
- J. Willard Marriott Scholarship, Brigham Young University, \$3060; 2001

- Norris-Hill-Maddock Scholarship, Brigham Young University, \$2940; 2000
- Biology and Agriculture Scholarship, Brigham Young University, \$1250; 2000

Teaching Experience:

- *Instructor* – Aquatic Entomology, Lamar University, Spring 2016-2017
- *Instructor* – Anatomy and Physiology I, Lamar University, Spring 2016-2017
- *Instructor* – Graduate Seminar, Lamar University, Fall 2015-2017
- *Instructor* – Limnology, Lamar University, Spring 2015-2017
- *Instructor* – Ecology, Lamar University, Fall 2014-2017
- *Teaching Assistant* – Invertebrate Biology, Colorado State University, 2012-2013
- *Teaching Assistant* – Biology of Organisms: Animals and Plants, Colorado State University, 2012.
- *Teaching Assistant* – Limnology, Colorado State University, 2006 & 2010.
- *Teaching Assistant* – Stream Ecology, Colorado State University, 2009.
- *Teaching Assistant* – Animal Biology Laboratory, Colorado State University, 2006 & 2009.
- *Teaching Assistant* – Animal Diversity, Brigham Young University, 2003 & 2005.
- *Teaching Assistant* – Introduction to Biology, Brigham Young University, 2004.
- *Guest Lecturer* – Sustainable Watersheds, Colorado State University, 2013.
- *Guest Lecturer* – Stream Ecology Lab, Colorado State University, 2011.
- *Guest Lecturer* – Stream Ecology, Colorado State University, 2007 -2013.
- *Guest Lecturer* – Limnology, Colorado State University, 2008 & 2010.
- *Guest Lecturer* – Introductory Biology, Colorado State University, 2007 & 2008.
- *Guest Lecturer* – Stream and Wetland Ecology, Brigham Young University, 2005.
- *Guest Lecturer* – General Ecology, Brigham Young University, 2005.
- *Guest Lecturer* – Community Ecology, Brigham Young University, 2004.

Professional Affiliations:

Ecological Society of America (since 2004)
 Society for Freshwater Science (since 2006)
 National Association of Biology Teachers (since 2013)
 Southeast Texas Clean Air and Water, Inc. (since 2014)

Computer Skills:

ESRI ArcGIS
 R Statistical Program
 Microsoft Office (Excel, Word, Access, PowerPoint)

References:

- Dr. Paul F. Nicoletto
 Recently retired (December 2017) chair of Department of Biology

P.O. Box 10037
Lamar University
Beaumont, TX 77710
Phone: 409-679-2717
Email: pfn1911@hotmail.com

- Dr. N. LeRoy Poff
Ph.D advisor
Department of Biology
1878 Campus Delivery
Colorado State University
Fort Collins, Colorado 80523-1878
Phone: 970-491-2079
Email: nleroy.poff@colostate.edu
- Dr. Janice Moore
Department of Biology
Colorado State University
Fort Collins, Colorado, 80523-1878
Phone: 970-491-6764
Email: janice.moore@colostate.edu
- Dr. Russell Rader
Master's Degree advisor
173 WIDB
Department of Biology
Brigham Young University
Provo, Utah 84602
Phone: 801-422-9159
Email: russell_rader@byu.edu