

NATHAN P. LEMOINE

Assistant Professor | Marquette University

» » » EDUCATION

2015	Ph.D. – Biology	Florida International University Miami, FL
2010	M.Sc. – Marine Sciences	Dauphin Island Sea Lab Mobile, AL
2006	B.Sc. - Biology	University of Richmond Richmond, VA

» » » APPOINTMENTS

2019 – present	Assistant Professor	Department of Biological Sciences Marquette University
2019 – present	Adjunct Curator	Department of Zoology Milwaukee Public Museum
2016 – 2017	Adjunct Faculty	Department of Ecology and Evolutionary Biology University of Colorado
2015–2019	Research Scientist	Department of Biology Colorado State University
2014	Visiting Scientist	NIMBioS University of Tennessee
2013 – 2014	Pre-Doctoral Fellow	Smithsonian Environmental Research Center
2010 – 2013	Presidential Fellow	Florida International University
2007 – 2010	Graduate Research Fellow	Dauphin Island Sea Lab

» » » GRANTS AND AWARDS

(Received: \$1,297,069; Pending: \$272,428)

Current

2018	NSF DEB Ecosystems	\$884,979
	» <i>Predicting the effects of extreme drought on insect herbivore control of grassland ecosystem function</i>	

Pending

2020	NSF DEB Ecosystems	\$272,428
	» <i>Ecological legacy effects of megacarcasses in African savanna ecosystems</i>	

Previous

2015	USDA NIFA-AFRI Postdoctoral Fellowship	\$149,704
	» <i>Predicting effects of increased climate variability on consumer regulation of ecosystem function in US rangelands</i>	
2015	NIMBioS Postdoctoral Fellowship	\$107,000
	» <i>A new statistical framework for assessing community assembly mechanisms. (Offered but declined)</i>	
2014	FIU Dissertation Year Fellowship	\$16,600
2014	FIU Dissertation Evidence Acquisition Grant	\$8,300
2013	SERC Graduate Fellowship	\$15,500
	» <i>Will global change disrupt trophic transfer in marsh ecosystems?</i>	
2013	NSF Doctoral Dissertation Improvement Grant	\$15,294
	» <i>Assessing the effects of climate change on biotic interactions structuring herbivore communities</i>	
2010	FIU Presidential Fellowship	\$75,000
2007	USA Graduate Research Fellowship	\$32,000
2007	DISL Exxon-Mobile Research Fellowship	\$2,000
2006	UR Student Travel Grant	\$1,000
2005	UR Robert F. Smart Research Fellowship	\$4,000
2005	UR Research Grant	\$500



PUBLICATIONS

(Published: 40, First Author: 22, In Press: 0)

In Review Hoffman, A.M., T.W. Ocheltree, M.D. Smith, **N.P. Lemoine**. Metabolome and physiology reveal distinct nitrogen addition effects on dominant species in a semi-arid grassland. **Oecologia** † undergraduate author

- In Revision **Lemoine, N.P.** Unifying ecosystem resistance, resilience, recovery and lag effects from extreme stress events into a single statistical framework. **Oikos**
- 2020 Zaspel, J.M., J.M. Allen, C.D. Tyrrell, **N.P. Lemoine**, L.M. Jacobus, C. Kleim, J. Goodwin, J.M. Bates. Human health, interagency coordination, and the need for biodiversity data. **BioScience** doi:10.1093/biosci/biaa065
- 2020 Rice, M.M., R.L. Maher, A.M.S. Correa, H.V. Moeller, **N.P. Lemoine**, A.A. Shantz, D.E. Burkepile, N.J. Silbiger. Macroborer presence promotes parrotfish corallivory, particularly under increased nutrient output. **Coral Reefs** 39:409-418
- 2019 **Lemoine, N.P.** Moving beyond flat priors: how and why to choose informative priors in Bayesian analyses. **Oikos** 128:912-928 **Editor's Choice Forum Article**
- 2019 **Lemoine, N.P.** Considering the effects of temperature \times nutrient interactions on the thermal response curve of carrying capacity. **Ecology** 100:e02599 **Faculty of 1000 recommendation**
- 2019 **Lemoine, N.P.** and M.D. Smith. Drought and herbivores modify nutrient cycling in the semi-arid shortgrass steppe. **Plant Ecology** 220:227-239
- 2019 Komatsu, K.J., M.L. Avolio, **N.P. Lemoine**, F. Isbell, E. Grman, G.R. Houseman, S.E. Koerner, D.S. Johnson, K.R. Wilcox, and 67 others. Global change effects on plant communities are magnified by time and the number of global change factors imposed. **Proceedings of the National Academy of Sciences USA** 116:17867-17873
- 2019 Hoffman, A.M., H. Perretta[†], **N.P. Lemoine**, M.D. Smith. Blue grama grass genotype affects palatability and preference by semi-arid steppe grasshoppers. **Acta Oecologia** 96:43-48
- 2018 **Lemoine, N.P.**, R.J. Griffin-Nolan, A.D. Lock[†], A.K. Knapp. Drought timing, not previous exposure to drought, determines sensitivity of two shortgrass species to water stress. **Oecologia** 188:965-975
- 2018 Craven, D., N. Eisenhaur, W. Pearse, Y. Hautier, C. Roscher, F. Isbell, M. Bahn, C. Beierkuhnlein, G. Boehnisch, N. Buchmann, C. Byun, J. Catford, B. Cerabolini, H. Cornelissen, J. Craine, E. de Luca, A. Ebeling, J. Griin, A. Hector, J. Hines, A. Jentsch, J. Kattge, J. Kreyling, V. Lanta, **N.P. Lemoine**, S. Meyer, V. Minden, V. Onipchenko, H. Polley, P. Reich, J. van Ruijven, B. Schamp, M.D. Smith, N. Soudzilovkaia, D. Tilman, A. Weigelt, B. Wilsey, P. Manning. Multiple facets of biodiversity drive the diversity-stability relationship. **Nature Ecology and Evolution** 2:1579-1587
- 2018 Knapp, A.K., C.J. Carroll, R.J. Griffin-Nolan, I. Slette, F. Chaves, L. Baur, A. Felton, J. Gray, A. Hoffman, **N.P. Lemoine**, W. Mao, A. Post, M.D. Smith. A reality check for climate change experiments: do they reflect the real world? **Ecology** 99:2145-2151
- 2018 Koerner, S.E., M.D. Smith, D.E. Burkepile, N. Hanan, M.L. Avolio, S.L. Collins, A.K. Knapp, **N.P. Lemoine**, E.J. Forrester, S. Eby, D.I. Thompson, and 71 others. Change in dominance determines herbivore effects on plant biodiversity. **Nature Ecology and Evolution** 2:1925-1932

- 2018 Rehm, E.M., M.B. Balsat[†], **N.P. Lemoine**, J.A. Savidge. Spatial dynamics of habitat use informs reintroduction efforts in the presence of an invasive predator. **Journal of Applied Ecology** 55:1790-1798
- 2018 Stuart-Haentjens, E., H.J. De Boeck, **N.P. Lemoine**, P. Mänd, G. Kröel-Dulay, I.K. Schmidt, A. Jentsch, A. Stampfli, W.R.L. Anderegg, M. Bahn, J. Kreyling, T. Wohlgemuth, F. Lloret, A. Classen, C. Gough, M.D. Smith. Precipitation as a predictor of production resistance and resilience to extreme drought. **Science of the Total Environment** 636:360-366
- 2017 **Lemoine, N.P.** Predation risk reverses the potential effects of warming on plant-herbivore interactions by altering the relative strengths of trait- and density-mediated interactions. **The American Naturalist** 190:337-349
- 2017 **Lemoine, N.P.**, J.D. Dietrich, M.D. Smith. Climatic and environmental constraints on three aspects of flowering in three dominant tallgrass species. **Functional Ecology** 31:1894-1902 **Haldane Prize nominee**
- 2017 **Lemoine, N.P.**, D. Doublet[†], J-P. Salminen, D.E. Burkepile, J.D. Parker. Responses of plant phenology, growth, defense, and reproduction to interactive effects of warming and insect herbivory. **Ecology** 98:1817-1828
- 2017 **Lemoine, N.P.**, D.E. Burkepile, J.D. Parker. Insect herbivores increase mortality and reduce tree seedling growth of some species in temperate forest canopy gaps. **PeerJ** 5:e3102
- 2017 Burkepile, D.E., R.W.S. Fynn, D.I. Thompson, **N.P. Lemoine**, S.E. Koerner, S. Eby, N. Hagenah, K.R. Wilcox, S.L. Collins, K.P. Kirkman, A.K. Knapp, M.D. Smith. Herbivore size matters for productivity-richness relationships in African savannas. **Journal of Ecology** 105:674-686
- 2017 Rode, M.[†], **N.P. Lemoine**, M.D. Smith. Prospective evidence for independent nitrogen and phosphorus limitation of grasshopper (*Chorthippus curtipennis*) growth in a tallgrass prairie. **PLoS One** 12:e0177754 **Corresponding author**
- 2017 Wilcox, K.R., Z. Shi, L.A. Gherardi, **N.P. Lemoine**, S.E. Koerner, D.L. Hoover, E. Bork, K.M. Byrne, J. Cahill Jr., S.L. Collins, S. Evans, A.K. Gilgen, P. Holub, L. Jiang, A.K. Knapp, L. Yahdjian, D. LeCain, J. Liang, P. Garcia-Palacios, J. Penuelas, W.T. Pockman, M.D. Smith, S.R. White, K. Zhu, Y. Luo. Asymmetric responses of primary productivity to climate extremes: a synthesis of grassland precipitation manipulation experiments. **Global Change Biology** 23:4376-4386
- 2016 **Lemoine, N.P.**, D.E. Burkepile, J.D. Parker. Quantifying differences between native and introduced species. **Trends in Ecology and Evolution** 31(5):372-381
- 2016 **Lemoine, N.P.**, J. Sheffield, J.S. Dukes, A.K. Knapp, M.D. Smith. The Terrestrial Precipitation Analysis (TPA) web tool: a resource for characterizing long-term precipitation regimes and extremes. **Methods in Ecology and Evolution** 7:1396-1401 **Included in BES/ESA virtual issue - Extreme events, ecosystem resilience and human well-being**

- 2016 **Lemoine, N.P.**, A. Hoffman, A. Felton, L. Baur, F. Chaves, J. Gray, Q. Yu, M.D. Smith. Underappreciated problems of low statistical power in ecological field studies. **Ecology** 97:2554-2561
- 2016 **Lemoine, N.P.**, A.A. Shantz. Increased temperature causes protein-limitation by reducing nitrogen digestion efficiency in the ectothermic herbivore *Spodoptera exigua* (Lepidoptera: Noctuidae). **Physiological Entomology** 41:143-151
- 2016 Burkepile, D.E., D.I. Thompson, R.W.S. Fynn, S.E. Koerner, S. Eby, N. Govender, N. Hagenah, **N.P. Lemoine**, K.J. Matchett, K.R. Wilcox, S.L. Collins, K.P. Kirkman, A.K. Knapp, M.D. Smith. Fire frequency drives habitat selection by a diverse herbivore guild impacting top-down control of plant communities in an African savanna. **Oikos** 125:1636-1646
- 2016 Hamerlinck, G., **N.P. Lemoine**, G.R. Hood, K.C. Abbott, A.A. Forbes. Meek women with powerful daughters: effects of novel host environments and small trait differences on parasitoid wasp competition. **Oikos** 125:1516-1527
- 2016 Shantz, A.A., **N.P. Lemoine**, D.E. Burkepile. Nutrient loading alters the performance of key nutrient exchange mutualisms. **Ecology Letters** 19(1):20-28 **Faculty of 1000 recommendation, George Mercer Award nominee**
- 2016 Zaneveld, J.R., D.E. Burkepile, A.A. Shantz, C.E. Pritchard, R. McMinds, J. Payet, R. Welsh, A. Simoes-Correa, **N.P. Lemoine**, S. Rosales, C. Fuchs[†], J. Maynard, R. Vega-Thurber. Overfishing and nutrient pollution interact with temperature to disrupt coral reefs down to microbial scales. **Nature Communications** 7:11833
- 2015 **Lemoine, N.P.**, J. Shue, B. Verrico[†], D. Erickson, W.J. Kress, J.D. Parker. Phylogenetic relatedness and leaf functional traits, not introduced status, influence community assembly. **Ecology** 96(10):2605-2612
- 2015 **Lemoine, N.P.** Climate change may alter monarch spring migration and summer breeding ground distributions. **PLoS One** 10:e0118614
- 2015 **Lemoine, N.P.**, J. Capdevielle[†], J.D. Parker. Effects of *in situ* climate warming on larval monarch (*Danaus plexippus*) development. **PeerJ** 3:e1293
- 2014 **Lemoine, N.P.**, S.T. Giery, D.E. Burkepile. Differing consumer stoichiometric constraints across ecosystems. **Oecologia** 174:1367-1376
- 2014 **Lemoine, N.P.**, D.E. Burkepile, J.D. Parker. Variable effects of temperature on insect herbivory. **PeerJ** 2:e376 **Featured Article**
- 2014 Cook-Patton, S.C, L. Maynard[†], **N.P. Lemoine**, J. Shue, J.D. Parker. Cascading effects of a highly specialized beech-aphid-fungus interaction on forest regeneration. **PeerJ** 2:e442
- 2013 **Lemoine, N.P.**, W.A. Drews[†], D.E. Burkepile, J.D. Parker. Temperature alters feeding behavior of a generalist herbivore. **Oikos** 122:1669-1678
- 2013 Burkepile, D.E., J. Allgeier, A. Shantz, C.E. Pritchard, **N.P. Lemoine**, L. Bhatti, C.A. Layman. Carnivorous fishes as vectors of nutrients on coral reefs: the role of nutrient supply in facilitating seaweed abundance. **Scientific Reports** 3:1493

- 2013 Giery, S.T., **N.P. Lemoine**, C.M. Hammerschlag-Peyer, R. Abbey-Lee, C.A. Layman. Bidirectional trophic linkages couple a canopy and understory foodweb. **Functional Ecology** 27(6):1436-1441
- 2013 Parker, J.D, M.E. Torchin, R.A. Hufbauer, **N.P. Lemoine**, C. Alba, D.M. Blumenthal, O. Bossdorf, J.E. Byers, A.M. Dunn, R.W. Heckman, M. Hejda, V. Jarosik, A. Kanarek, L.B. Martin, S.E. Perkins, P. Pysek, K. Schierenbeck, C. Schloeder, R. van Klinken, K.J. Vaughn, W. Williams, L. Wolfe. Do invasive species perform better in their new ranges? **Ecology** 94(5):985-994 **Faculty of 1000 recommendation**
- 2012 **Lemoine, N.P** and D.E. Burkepile. Temperature-induced mismatches between metabolism and consumption reduce consumer fitness. **Ecology** 93(11):2483-2489
- 2012 **Lemoine, N.P.** and J.F. Valentine. Structurally complex habitats provided by *Acropora palmata* alter ecosystem processes on a patch reef in the Florida Keys National Marine Sanctuary. **Coral Reefs** 31(3):779-786
- 2007 **Lemoine N.P.†**, N. Buell†, A.L. Hill, M.S. Hill. Assessing the utility of sponge microbial symbiont communities as models to study global climate change: a case study with *Halichondria bowerbanki*. In: Custdio, M. R., G. Lbo-Hajdu, E. Hajdu, and G. Muricy (eds.). Porifera Research: Biodiversity, Innovation, and Sustainability, Srie Livros 28. Museu Nacional, Rio de Janeiro. pp:419-425

» » » TEACHING

2020 – present	BIOL 3400 - Ecology	Marquette University
2019	BIOL 8931 - Biometry	Marquette University
2018	ECOL 592 - Ecological modeling and forecasting of drought impacts	Colorado State University
2016 – 2017	EBIO 4410/5410 - Biometry	University of Colorado
2016	ECOL 592 - Principles of Data Visualization Using R and ggplot2	Colorado State University
2016	Ecology 600 - Community Ecology	Colorado State University
2015	Introduction to Bayesian Data Analyses Workshop	Colorado State University
2014 – 2015	Introduction to R for Ecologists Workshop	Florida International University
2012 – 2014	Data Management and Introduction to Statistics	Smithsonian Environmental Research Center

2011	Biology 1011L: General Biology II Lab	Florida International University
2011	Biological Oceanography 3043L: Marine Biology and Oceanography Lab	Florida International University
2010	Biology 3043L: Ecology Lab	Florida International University

» » » ADVISEES

2018 – 2019	Morgan Crump	Colorado State University Honors Thesis Committee Member
2018 – 2019	Cassandra Brown	Colorado State University Honors Thesis Committee Member
2017 – 2018	Madison Rode	Colorado State University Honors Thesis Committee Chair

» » » PRESENTATIONS

2020	University of Massachusetts, Boston	Boston, MA
2019	Brigham Young University	Provo, UT
2019	Washington State University	Pullman, WA
2018	Marquette University	Milwaukee, WI
2018	University of Maryland	College Park, MD
2018	San Diego State University	San Diego, CA
2018	Harvard University	Cambridge, MA
2018	North Carolina State University	Raleigh, NC
2017	Utah State University	Logan, UT
2017	University of Texas	Austin, TX

2017	Smithsonian Environmental Research Center	Edgewater, MD
2017	Ecological Society of America	Portland, OR
2017	University of Saskatchewan	Saskatoon, Canada
2017	University of British Columbia	Vancouver, Canada
2016	International Joint Project Meeting	Erguna, China
2015	Colorado State University	Fort Collins, CO
2015	Colorado State University	Fort Collins, CO
2013	Entomological Society of America	Austin, TX

» » » MEDIA AND PRESS COVERAGE

2018	Science News: As temperatures rise, so do insects' appetites for corn, rice and wheat https://www.sciencenews.org/article/temperatures-insects-appetites-crop-damage-global-warming
2017	Statistical Modeling, Causal Inference, and Social Science: Type M errors in the wild – really the wild! http://andrewgelman.com/2017/09/16/type-m-errors-wild-really-wild/
2017	Uncommon Ground: Noisy data and small samples are a bad combination http://darwin.eeb.uconn.edu/uncommon-ground/blog/2016/09/23/noisy-data-and-small-samples-are-a-bad-combination/
2017	Smithsonian Shorelines: Scientists turn up the heat on herbivores and their food https://sercblog.si.edu/?p=8368
2016	The EEB & Flow: The problematic effect of small effects http://evol-eco.blogspot.ca/2016/09/the-problematic-effect-of-small-effects.html
2016	Colorado State University - SOURCE: Are invaders 'different'? Nope, says CSU biologist http://source.colostate.edu/are-invaders-different-nope-says-csu-biologist/
2015	Smithsonian Science News: Warming temperatures may mean more monarch generations in some areas of North America http://smithsonianscience.si.edu/2015/08/warming-temperatures-may-mean-more-monarch-generations-in-some-areas-of-north-america/

2014 **PeerJ: Interview with an Author**
<http://blog.peerj.com/post/85650418408/interview-with-an-author-nathan-lemoine>

» » » PROFESSIONAL SERVICE

2019 – present **Terrestrial Parasite Tracker** Research Advisory Board

2017 – 2019 **Drought-Net** Steering Committee Member

Peer Review

Reviewer for the following journals: Acta Physiologiae Plantarum (1), Annals of Applied Biology (1), Biological Invasions (6), Biology Letters (1), BMC Ecology (1), Ecography (2), Ecology (10), Ecoscience (1), Ecosphere (1), Ecology Letters (5), Frontiers in Ecology and Evolution (3), Functional Ecology (5), Global Change Biology (1), Journal of Animal Ecology (2), Journal of Applied Ecology (1), Journal of Biogeography (1), Journal of Ecology (4), Journal of Plant Ecology (1), Journal of Thermal Biology (1), Methods in Ecology and Evolution (1), NeoBiota (1), New Phytologist (3), Oecologia (4), Oikos (8), PeerJ (3), Plant Ecology (2), PLoS One (3), Proceedings of the Royal Society - B (1), Restoration Ecology (1)

NSF Ad Hoc Reviewer (1)

Invited Working Groups

2016 **LTER Community Responses to Resource Experiments: Communities to Ecosystems** Participant

2015 – 2016 **Grazing Consortium** Participant

2015 – 2016 **LTER Community Responses to Resource Experiments** Participant

2015 – 2016 **iDiv Evolution of Stability** Participant

Undergraduate Researchers

2020 **Richard Dempsey** Marquette University

2018 – 2019 **Cassandra Brown** Marquette University

2018 – 2019 **Morgan Crump** Colorado State University

2017 – 2018 **Abigail Lathrop-Melting** Colorado State University

2017 – 2018 **Sam Rollman** Colorado State University

2015 – 2018 **Abigail Lock[†]** Colorado State University

2016 – 2018 **Madison Rode[†]** Colorado State University

2017	Holly Perretta[†]	Colorado State University
2015 – 2017	Megan Coyle	Colorado State University
2016 – 2017	Tarun Multhineni	Colorado State University
2016 – 2017	Kiloaulani Kaawa-Gonzalez	Colorado State University
2016	Jeremy Tabke	Colorado State University
2015	Erica Duda	Colorado State University
2015	Brianna Magbual	Colorado State University
2014	Megan Palmer	Smithsonian Environmental Research Center
2014	Jillian Capdevielle[†]	Smithsonian Environmental Research Center
2014	Dejeanne Doublet[†]	Smithsonian Environmental Research Center
2013	Lauren Maynard[†]	Smithsonian Environmental Research Center
2012	Willem Drews[†]	Smithsonian Environmental Research Center
2012	Brittany Verrico[†]	Smithsonian Environmental Research Center
2011	Joseph Barger	Florida International University
2011	Amaury Marquez	Florida International University