

GERALD R. URQUHART

(2018)

ADDRESS

Lyman Briggs College
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SCHOLARLY INTERESTS

Environmental Impacts of Globalization and Global Change
Inclusive Learning in the STEM Disciplines
Tropical Wildlife and Forest Ecology
Biodiversity Conservation
Paleoecology and Archaeology
Experiential Learning/Study Abroad

ACADEMIC POSITIONS

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| 2017-present | Lyman Briggs College , Michigan State University, East Lansing, MI.
<i>Associate Professor of Biology (75% appointment)</i> |
| 2017-present | Department of Fisheries and Wildlife , Michigan State University, East Lansing, MI. <i>Associate Professor (25% appointment)</i> |
| 2011-2017 | Lyman Briggs College , Michigan State University, East Lansing, MI.
<i>Assistant Professor of Biology (75% appointment)</i> |
| 2011-2017 | Department of Fisheries and Wildlife , Michigan State University, East Lansing, MI. <i>Assistant Professor (25% appointment)</i> |
| 1999-2011 | Lyman Briggs College (formerly Lyman Briggs School of Science) , Michigan State University, East Lansing, MI
<i>Visiting Assistant Professor of Biology (2003-2011)</i>
<i>Visiting Assistant Professor of Computer Science (1999-2003)</i> |
| 2007-present | Center for Global Change and Earth Observations , Michigan State University, East Lansing, MI. <i>Adjunct Faculty</i> |
| 1998-1999 | Basic Science and Remote Sensing Initiative , Michigan State University, East Lansing, MI. <i>Post-doctoral Research Associate</i> |
| 1997-1998 | Smithsonian Tropical Research Institute , Panama City, Panama.
<i>Post-doctoral Fellow</i> |

- 1997-1998 **Center for Great Lakes and Aquatic Sciences**, University of Michigan, Ann Arbor, MI. *Visiting Research Fellow*
- 1997 **Organization for Tropical Studies**, Costa Rica.
Course Instructor, Tropical Biodiversity and Conservation

EDUCATION

- 1998 Ph.D. **The University of Michigan**, Ann Arbor, MI
Department of Biology, Field: Tropical Ecology
Dissertation: *Disturbance and Regeneration of Swamp Forests in Nicaragua: Evidence from Ecology and Paleoecology*
Advisor: John Vandermeer. Committee: Beverly Rathcke, Ivette Perfecto, and Earl Werner
- 1992 M.S. **The University of Michigan**, Ann Arbor, MI
Department of Biology, Field: Ecology
- 1991 **Organization for Tropical Studies**, Costa Rica
Tropical Managed Ecosystems Field Course
- 1990 B.S. **Lyman Briggs School, Michigan State University**, East Lansing, MI
Zoology (Honors)
- 1989 **University of Michigan Biological Station**, Pellston, MI
Naturalist-Ecologist Training Program

SYNERGISTIC ACTIVITIES

Rethinking Dams in the Brazilian Amazon. Hydropower in the Brazilian Amazon has great potential for improving the human condition, but simultaneously poses great threat to the environment in areas where it is developed. In an interdisciplinary team, led by Emilio Moran, we are working to explore alternatives to dams. Funded by NSF INFEWS program, 2016-present.

Environmental Impacts of Nicaragua's Interoceanic Canal. I am part of a team of scientists working to illuminate the potential impacts of the Nicaraguan Interoceanic Canal proposed for development in the next five years. My previous work in Nicaragua provides baseline data in the canal path for potential biodiversity loss and protection of endangered mammals. 2014-present.

Globalization and the Connection of Remote Communities: Environmental Effects. Focusing on the coupling of natural and human systems in remote communities with high biodiversity along Nicaragua's Mosquito Coast, an interdisciplinary team is investigating the economic, social, and environmental impacts of globalization and the synergies between them. Funded by NSF Award ID 0815966 to D. B. Kramer et al., 2008-2014, \$1,057,121.

Creating Inclusive-Multicultural Learning Environments in STEM Disciplines. Underrepresented students face multiple barriers that inhibit their success, especially those with lower levels of high-school science and math preparation entering STEM disciplines. This project focuses on creating pathways to success for students entering STEM disciplines with low math scores. 2007-present, Funded by MSU Creating Inclusive Excellence Grant to Urquhart et al., \$22,000 (2008-9), \$17,000 (2009-10).

Detecting Maize in Native American Diets. The adoption of maize agriculture represents a significant transition for Native American cultures. We analyze carbon isotope ratios ($\delta^{13}\text{C}$) in simulated cooking experiments to understand the viability of using isotopes from carbonized residues in Native American ceramics to reconstruct maize histories. We have also explored impacts of radiocarbon depletion from aquatic environments. 2005-present.

Virtual Rainforest Project. Michigan State University. I designed and developed The Virtual Rainforest, an interactive, educational online site for students and teachers. The site has been widely used in K-16 classrooms, with over 200 classrooms employing it to date. In 2011-2, we completed a full revision of the site with the addition of video footage (>100,000 views to date) and increased factual content. www.msu.edu/user/urquhart/rainforest. 1997-present.

RESEARCH

RESEARCH INTERESTS

Alternatives to Hydropower in the Amazon Basin
Environmental and Economic Impacts of Globalization for Remote Communities
Environmental and Social Impacts of the Proposed Interoceanic Canal in Nicaragua
Paleodietary Isotope Levels and the Detection of Maize in Native American Diets
Paleoecology of the Neotropics: Prehistoric Hurricanes and Their Impacts
Restoration Ecology of Tropical Swamp Forests

PEER REVIEWED AND REFEREED PUBLICATIONS

Kramer, D. B., K. Stevens, S. Sistla, N. Williams, A. Roddy and G. R. Urquhart. 2017. Coastal livelihood transitions under globalization with implications for trans-ecosystem interactions. *PLoS One*, 18 pp, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0186683>

Huete-Pérez, J. A., M. Ortega-Hegg, G. R. Urquhart, A. P. Covich, K. Vammen, B. E. Rittmann, J. C. Miranda, S. Espinoza-Corriols, A. Acevedo, M. L. Acosta, J. P. Gómez, M. T. Brett, M. Hanemann, A. Harer, J. Incer-Barquero, F. J. Joyce, J. W. Lauer, J. M. Maes, M. B. Tomson, A. Meyer, S. Montengero-Guillén, W. L. Whitlow, J. L. Schnoor, and P. J. J. Alvarez. 2016. Critical Uncertainties and Gaps in the Environmental- and Social-Impact Assessment of the Proposed Interoceanic Canal through Nicaragua. *BioScience*. doi: 10.1093/biosci/biw064

Jordan, C. A., C. Schank, G. R. Urquhart, and A. J. Dans. 2016. Terrestrial Mammal Occupancy in the Context of Widespread Forest Loss and a Proposed Interoceanic Canal in Nicaragua's Decreasingly Remote Southern Caribbean Coast. *PLoS One* 15 pp. DOI:10.1371/journal.pone.0151372

Weiss, P., T. G. Aw, G. R. Urquhart, M. Ruiz Galeano, and J. B. Rose. 2016. Well water quality in rural Nicaragua using a low-cost bacterial test and microbial source tracking. *Journal of Water and Health* 14 (2) 199-207; DOI: 10.2166/wh.2015.075

Lawrence, J. P., C. A. Jordan, and G. R. Urquhart. *In press*. A new northernmost recorded observation of *Dendrobates auratus* in Nicaragua. *Herpetological Review*.

Huete-Pérez, J. A., P. J. J. Alvarez, J. L. Schnoor, B. E. Rittmann, A. Clayton, M. L. Acosta, C. E. de Mattos Bicudo, M. T. Kalin Arroyo, M. T. Brett, V. M. Campos, H. Chaimovich, A.

- Covich, B. E. Jimenez-Cisneros, L. D. Lacerda, J. M. Maes, J. C. Miranda, S. Montenegro Guillen, M. Ortega Hegg, G. Urquhart, K. Vammen, and L. Zambrano Gonzalez. 2015. Scientists Raise Alarms About Fast Tracking of Transoceanic Canal through Nicaragua. *Environmental Science & Technology* 49: 3989–3996.
- Upton, A. J., W. A. Lovis, and G. R. Urquhart. 2015. An empirical test of shell tempering as an alkaline agent in the nixtamalization process. *Journal of Archaeological Science* 62: 39-44.
- Stevens, K., B. Irwin, D. Kramer, and G. Urquhart. 2014. Impact of increasing market access on a tropical small-scale fishery. *Marine Policy* 50:46–52.
- Álvarez, P. J., J. Schnoor, B. Jiménez, V. Campos K. Wim Olesen, B. Rittmann, M. T. K. Arroyo, L. Drude De Lacerda, L. Zambrano, M. Brett, C. Bicudo, G. Urquhart, M. Ortega Hegg, A. Clayton, K. Vammen, H. Chaimovich, J. M. Maes, J. Miranda, M. L. Acosta, and J. A. Huete-Pérez. Nicaragua's proposed interoceanic canal: Many more questions than answers. (English version). Se requiere un análisis exhaustivo del costo-beneficio del proyecto del Canal (Spanish version). *Envio* 32 (393): 21-27. Available online at: <http://www.envio.org.ni/articulo/4947>.
- Jordan, C. A., and G. R. Urquhart. 2013. Baird's tapirs *Tapirus bairdii* in Nicaragua. *Tapir Conservation* 22: 14-21.
- Jordan, C. A., G. R. Urquhart, and D. B. Kramer. 2013. On using mental model interviews to improve camera trapping: adapting research to Costeño environmental knowledge. *Conservation and Society* 11(2): 159-175.
- McCright, A. M., B. W. O'Shea, R. D. Sweeder, G. R. Urquhart, and A. K. Zeleke. 2013. Promoting interdisciplinarity through climate change education. *Nature Climate Change* 3: 713-716.
- Hart, J. P., W. A. Lovis, G. R. Urquhart, and E. A. Reber. 2013. Modeling freshwater reservoir offsets on radiocarbon-dated charred cooking residues. *American Antiquity* 78(3): 536–552.
- Luckie, D. B., J. J. Smith, K. S. Cheruvelil, C. Fata-Hartley, C. A. Murphy and G. R. Urquhart. 2013. The “anti-cookbook laboratory”: converting “canned” introductory biology laboratories to multi-week independent investigations. *Proceedings of the Association for Biology Laboratory Education* 34: 196-213.
- Sarikas, C., and G. R. Urquhart. 2012. Survival of *Dipteryx oleifera* (Fabaceae) trees after Hurricane Ida in Nicaragua. *Journal of Tropical Ecology* 28: 327-329.
- Stevens, K., L Campbell, G. Urquhart, D. Kramer and J. Qi. 2011. Examining complexities of forest cover change during armed conflict on Nicaragua's Atlantic Coast. *Biodiversity and Conservation* 20: 2597–2613.
- Lovis, W. A., G. R. Urquhart, M. E. Raviele, and J. P. Hart. 2011. Hardwood ash nixtamalization may lead to false negatives for the presence of maize by depleting bulk $\delta^{13}\text{C}$ in carbonized residues. *Journal of Archaeological Science* 38(10): 2726-2730.
- McConnell, W. J., J. D. A. Millington, N. J. Rio, M. Alberti, H. Asbjornsen, L. A. Baker, N. Brozovic, L. E. Drinkwater, S. A. Drzyzga, J. Fragoso, D. S. Holland, C. A. Jantz, T. A. Kohler, H. D. G. Maschner, M. Monticino, G. Podesta, R. G. Pontius, C. L. Redman, D. Sailor, G. R. Urquhart, and J. Liu. 2011. Research on Coupled Human and Natural Systems

- (CHANS): Approach, Challenges and Strategies. *Bulletin of the Ecological Society of America* 92: 218-228.
- Urquhart, G. R., and S. Postupalsky. 2011. Red-shouldered Hawk (*Buteo lineatus*). In A.T. Chartier, J.J. Baldy, and J.M. Brenneman, editors. *The Second Michigan Breeding Bird Atlas*. Kalamazoo Nature Center. Kalamazoo, Michigan, USA.
www.mibirdatlas.org/Portals/12/MBA2010/RSHAaccount.pdf
- Urquhart, G. R. 2011. Northern Harrier (*Circus cyaneus*). In A.T. Chartier, J.J. Baldy, and J.M. Brenneman, editors. *The Second Michigan Breeding Bird Atlas*. Kalamazoo Nature Center. Kalamazoo, Michigan, USA. www.mibirdatlas.org/Portals/12/MBA2010/NOHAaccount.pdf
- Urquhart, G.R. 2011. Sharp-shinned Hawk (*Accipiter striatus*). In A.T. Chartier, J.J. Baldy, and J.M. Brenneman, editors. *The Second Michigan Breeding Bird Atlas*. Kalamazoo Nature Center. Kalamazoo, Michigan, USA.
www.mibirdatlas.org/Portals/12/MBA2010/SSHAaccount.pdf
- Urquhart, G. R. 2011. Broad-winged Hawk (*Buteo platypterus*). In A.T. Chartier, J.J. Baldy, and J.M. Brenneman, editors. *The Second Michigan Breeding Bird Atlas*. Kalamazoo Nature Center. Kalamazoo, Michigan, USA.
www.mibirdatlas.org/Portals/12/MBA2010/BWHAaccount.pdf
- Urquhart, G. R. 2010. Sources, sinks and drains in double-breeding bird species. *Proceedings of the National Academy of Sciences* 107 (5): E15.
- Jordan, C. A., K.J. Stevens, G.R. Urquhart, D.B. Kramer, and K. Roe. 2010. A new record of Baird's tapir *Tapirus bairdii* in Nicaragua and potential implications. *Tapir Conservation* 19:11-15.
- Urquhart, G. R. 2009. Paleoecological hurricane disturbance and forest regeneration in Nicaragua. *Quaternary International* 195: 88-97.
- Kramer, D. B., G. Urquhart, and K. Schmitt. 2009. Globalization and the connection of remote communities: A review of household effects and their biodiversity implications. *Ecological Economics* 68: 2897-2909.
- Hart, J. P., G. R. Urquhart, R. S. Feranec, and W. A. Lovis. 2009. Nonlinear Relationship Between Bulk $\delta^{13}\text{C}$ and Percent Maize in Carbonized Cooking Residues and the Potential of False Negatives in Detecting Maize. *Journal of Archaeological Science* 36:2206-2212.
- Hart, J. P., W. A. Lovis, J. K. Schulenberg, and G. R. Urquhart. 2007. Paleodietary Implications from Stable Carbon Isotope Analysis of Experimental Cooking Residues. *Journal of Archaeological Science* 34 804-813.
- Petrucha, M.E. and G. R. Urquhart. 2007. First Nesting of Double Crested Cormorants in Roscommon County. *Michigan Birds and Natural History* 15.
- Heidemann, M. and G. R. Urquhart. 2005. A Can of Bull? Do Energy Drinks Really Provide a Source of Energy? *Journal of College Science Teaching* 35 (October): 40-44.
- Heidemann, M. and G. R. Urquhart. 2005. A Can of Bull? Do Energy Drinks Really Provide a Source of Energy? *National Center for Case Study Teaching in Science*.
http://www.sciencecases.org/energy_drinks/energy_drinks.asp

- Urquhart, G. R. 2004. Flood-tolerance and flood-escape mechanisms for seeds and seedlings of common swamp trees of Central America. *Tropical Ecology* 45: 197-208.
- Petrucha, M.E. and G. R. Urquhart. 2000. Kirtland's Warbler Migration Sighting in Bay Co. *Michigan Birds and Natural History* 7: 205-206.
- Urquhart, G. R. 1999. Paleoecological persistence of *Raphia taedigera* swamps in Nicaragua. *Biotropica* 31: 565-569.
- Urquhart, G. R. 1998. Population and Poverty: A Response to Blair. *Bulletin of the Ecological Society of America* 79: 347-8.
- Urquhart, G. R. 1997. Paleoecological evidence of *Raphia* in the pre-Columbian Neotropics. *Journal of Tropical Ecology* 13: 793-802.
- Urquhart, G. R. 1997. Paleoecology of the Laguna Negra swamp near Bluefields, Nicaragua. *Tierra* 2 (3): 14-16.
- Urquhart, G. R., and M. E. Petrucha. 1996. A mute Grasshopper Sparrow (*Ammodramus savannarum*) on territory in Michigan. *Michigan Birds and Natural History* 3: 57.
- Urquhart, G. R., and M. G. Hohmann. 1995. Successful nesting of juvenal plumaged Cooper's Hawks (*Accipiter cooperi*) in Michigan. *Michigan Birds and Natural History* 2: 85-6.

TECHNICAL REPORTS

- Vammen, K., J. Huete-Perez, M. Brett, and G. R. Urquhart. 2014. *Limnologists Warn of Impacts of an Interoceanic Canal Across Lake Nicaragua*. International Society of Limnology.
- Walker, R., W. Salas, G. Urquhart, M. Keller, D. Skole, and M. Pedlowski. 1999. Secondary Vegetation: Ecological, Social, and Remote Sensing Issues. NASA Largescale Biosphere Ecosphere in Amazonia Report
- Urquhart, G. R., D. L. Skole, W. H. Chomentowski, and C. P. Barber. 1998. Tropical Deforestation. *NASA Facts Sheet* (FS-1998-11-120-GSFC).

FIELD GUIDES

- Jordan, C. A. and G. R. Urquhart. 2012. *Vida Silvestre de la Costa Caribe Nicaragüense*. Universidad de las Regiones Autonomas de la Costa Caribe de Nicaragua. 64 pp.
- Simons, A., C. A. Jordan, and G. R. Urquhart. 2012. *Nikaragua Kûs Waupasa Tânira Daiwan Wail Nani Rayaka Ba* (Wildlife of the Atlantic Coast of Nicaragua in Miskitu language), Universidad de las Regiones Autónomas de la Costa Caribe de Nicaragua. 64 pp.
- Jordan, C. A. and G. R. Urquhart. 2011. *Wildlife of the Atlantic Coast of Nicaragua*. Universidad de las Regiones Autónomas de la Costa Caribe de Nicaragua. 64 pp.
- Vandermeer, J., I. Granzow-de la Cerda, G. R. Urquhart, M. Castrillo, and M. A. Mallona. 1994. *Common Trees and Arborescent Palms of the Atlantic Coast of Nicaragua*. Managua: Centro de Investigación y Documentación de la Costa Atlántica. 2nd ed. 114 pp., in Spanish and English.

Vandermeer, J., I. Granzow-de la Cerda, G. R. Urquhart, and M. A. Mallona. 1992. *Common Trees and Arborescent Palms of the Atlantic Coast of Nicaragua*. Managua: Centro de Investigación y Documentación de la Costa Atlántica. 54 pp., in Spanish and English.

OTHER PUBLICATIONS

Urquhart, G. R. 2015. Rain Forests. *World Book Encyclopedia*, Chicago, Illinois, USA.

Vammen, K. et al. (65 s. Limnologists Warn of Impacts of an Interoceanic Canal Across Lake Nicaragua. *Bulletin of the International Society of Limnology* ignees). 2015

Will, T. and G. R. Urquhart. 1993. Observaciones de las aves de la sexta expedición. *Los Bosques de la Costa Atlántica Cuatro Años despues de Huracán Joan: Informe de la Sexta Expedición*. Managua: Centro de Investigación y Documentación de la Costa Atlántica.

Urquhart, G. R. 1989. *The Birder's Handbook: A Field Guide to the Natural History of North American Birds*, book review. *Jack Pine Warbler* 67: 48.

GRANTS

- 2017-20 E. F. Moran, D. W. Hyndman, M. C. Lopez, N. J. Moore, N. H. Mueller, G. R. Urquhart, B. Fekete, A. Cak, D. Lu, and Y. Pokhrel. Rethinking Dams: Innovative Hydropower Solutions to Achieve Sustainable Food and Energy Production and Sustainable Communities. NSF Innovations at the Nexus of Food, Energy and Water Systems (INFEWS), \$2,648,490.
- 2017-21 Foster, E. F., L. Weatherspoon, B. Roth, J. Lucas, K. Millenbah, G. R. Urquhart, L. Schumacher, G. Ording, and J. Siegford. Careers in Food, Energy, and the Environment - an Interdisciplinary Approach. NSF S-STEM, \$999,983.
- 2015-17 C. A. Jordan and G. R. Urquhart. Baird's Tapir Nicaragua Conservation Initiative. Disney Worldwide Conservation Fund. 10-15-16 to 12-31-18, amount \$25,000.
- 2015-18 C. A. Jordan, A. J. Dans, and G. R. Urquhart. Nicaragua Tapir Project – Indio Maiz. Part of \$600,000 Segre Foundation grant to World Tapir Conservation Program. 10-15-15 to 12-31-18, Nicaragua Tapir Project amount \$120,000. <http://www.fondationsegre.org/fondation-segre-world-tapir-conservation-program/>
- 2015-17 C. A. Jordan and G. R. Urquhart. Baird's Tapir Nicaragua Conservation Initiative. Disney Worldwide Conservation Fund. 10-15-15 to 12-31-17, amount \$25,000.
- 2015-17 G. R. Urquhart, J. Goett, M. A. Lopez, L. Medina, and D. B. Kramer. Nicaragua's Grand Canal: Social, Economic, and Environmental Impacts. Michigan State University WaterCube Fund. 5-1-15 to 4-30-17, \$80,000.
- 2014-16 Sistla, S. and D. B. Kramer (PIs), G. R. Urquhart, K. Stevens, and N. Williams (senior personnel). Playing dominoes with tipping points? Exploring the linkages

- between anthropogenically-driven shifts in marine and terrestrial biodiversity and ecosystem services in a rapidly globalizing coastal region within the Mesoamerica Biodiversity Hotspot. Funded by SESYNC as a travel award (five workshops).
- 2013-14 G. R. Urquhart and C. A. Jordan. Baird's Tapir Nicaragua Conservation Initiative. Disney Worldwide Conservation Fund. 10-15-13 to 12-31-14, amount \$25,000.
- 2012-13 G. R. Urquhart and C. A. Jordan. Baird's Tapir Nicaragua Conservation Initiative. Disney Worldwide Conservation Fund. 10-15-12 to 12-31-13, amount \$25,000.
- 2008-14 D. B. Kramer and G. R. Urquhart (co-lead PIs), with A. McCright, A. Allen and J. Qi. The Connection of Remote Communities: Environmental Effects. NSF Coupled Human and Natural Systems Program. Award ID 0815966, period 9-1-08 to 8-31-13, amount \$1,057,121.
- 2011-13 J. J. Smith, PI, M. Heidemann, co-PI. Senior Personnel: G. R. Urquhart (LBC), C. Murphy (LBC) and B. Williams (ZOL). NSF-TUES (Proposal # 1043876), Integrative Case Studies in Evolution Education. 3-1-11 to 2-28-13, amount \$199,797.
- 2010 G. R. Urquhart and D. B. Kramer. Bringing the International Back to Campus: Video Vignettes in Classroom Teaching. MSU Internationalizing the Student Experience Program. \$15,000.
- 2008-10 G. R. Urquhart, M. Davis, and J. Golding. Making "The Lyman Briggs Experience" Inclusive: Eliminating Underteaching and Increasing Successes for ALL Students. Creating Inclusive Excellence, MSU Office for Inclusion and Intercultural Initiatives. \$22,000 (2008-9), \$17,000 (2009-10).
- 2007-8 G. R. Urquhart and D. B. Kramer. The Connection and Disconnection of Communities: A Natural Experiment to Study the Environmental Effects of Increased Socio-Economic Integration of a Trans-Isthmian Highway in Nicaragua. Strategic Partnerships Grant, MSU Center for Latin American and Caribbean Studies. \$5,000. International Development Research Initiation Grants, MSU Center for Advanced Studies in International Development. \$2,000, MSU Science Technology, Environment and Public Policy Specialization, \$1,000.
- 2004 International Studies Research Grant, Michigan State University. \$3000.
- 2000, 2003 Rainforests and Reality in Nicaragua. Study Abroad Development Grant, Michigan State University. \$2400, Tropical Biodiversity and Conservation in Panama. Study Abroad Development Grant, Michigan State University. \$3000.
- 1997 P. Colinvaux and G. R. Urquhart. Smithsonian Scholarly Studies Program, \$68,000. The Quaternary environmental history of Nicaragua: Reconnaissance phase.
- 1997 T. C. Moore, T. C. Johnson, G. R. Urquhart, P. Colinvaux, and N. Wattrus. National Science Foundation (NSF-SGER), \$38,000. Exploration of the sediments of Lake Nicaragua.

INVITED LECTURES

- Impacts of Global Change on Mammalian Diversity in Nicaragua's Rainforests.* 2016. Western Michigan University Biology Department, January 27, 2016.
- Impacts of the Grand Canal on Biodiversity in Nicaragua,* Gerald Urquhart, Invited Presentation at the Second International Workshop on the Interoceanic Canal through Nicaragua, Managua, Nicaragua, November 19, 2015. Workshop organized by the Nicaraguan Academy of Sciences.
- Social, Economic, and Environmental Impacts of Nicaragua's Grand Canal.* With Jennifer Goett and Daniel Kramer. Center for Latin American and Caribbean Studies Workshop, April 17, 2015.
- Impacts of Globalization on Wildlife in Nicaragua's Rainforests.* Calvin College, Biology Seminar Series, October 25, 2014.
- Impactos de Globalización en la Vida Silvestre de Nicaragua* (Impacts of Globalization on the Wildlife of Nicaragua) - University of Central America, Managua, Nicaragua. July 14, 2014.
- Diversity in the rainforest and in the classroom: Why both are important for our future.* Plenary Speaker, KBS K-12 Partnership Workshop. June 25, 2014.
- Impacts of Globalization on Wildlife in Nicaragua's Rainforests.* Synthesis Centre for Biodiversity Sciences – sDiv, Leipzig, Germany. June 17, 2014.
- Deforestation and Biodiversity Loss: Evidence and Theory.* MSU College of Law Symposium: Journal of Animal and Natural Resource Law's Spring Symposium 2014 Deforestation and Biodiversity Loss in a Climate Change Context, MSU College of Law. March 28, 2014.
- Wildlife Distribution and Conservation on the Caribbean Coast.* Ministry for Natural Resources and the Environment (MARENA), Nicaragua, February 2013.
- Globalization and the Connection of Remote Communities: Environmental Impacts.* Urquhart, G. R., and D. B. Kramer. Sichuan University, Chengdu, China. October 2012.
- Wildlife and Protected Areas on the Caribbean Coast.* Ministry for Natural Resources and the Environment (MARENA) Biodiversity Division, Nicaragua, January 2011.
- Globalization and Remote Communities in Nicaragua* Center for the Advanced Study of International Development Research Forum, MSU. D. B. Kramer and G. R. Urquhart. 2009.
- Globalization and Remote Communities in Nicaragua.* Center for Latin American and Caribbean Studies Charla Series. D. B. Kramer and G. R. Urquhart. 2009.
- Phylogeny and Conservation of Dendrobates pumilio.* Midwest Dendrobatid Group, Keynote Address, Semi-annual Meeting, East Lansing, MI . 2008.
- Globalization and Natural Resource Use in Remote Communities of Nicaragua.* Department of Fisheries and Wildlife Seminar Series, MSU. April 2008.
- Effective Teaching in Study Abroad.* The World is Not Flat: Teaching and Learning for the 21st Century Workshop, MSU. 2008.

Ni Un Paso Atras? Nicaragua in the 21st Century. Center for Latin American and Caribbean Studies, MSU, 2004.

Tropical Biodiversity and Its Origins. Lyman Briggs School, Michigan State University. 2002.

Present and past disturbance and regeneration of swamp forests in Nicaragua. Smithsonian Tropical Research Institute. 1997.

CONFERENCE PRESENTATIONS

Urquhart, G. R., C. A. Jordan, C. J. Schank, and A. Dans. Impacts of Nicaraguan Interoceanic Canal Project on Terrestrial Mammals in the Mesoamerican Biological Corridor. North American Conference on Conservation Biology, Madison, Wisconsin, July 2016.

Urquhart, G. R. 2016. Ecological, Social, and Political Dynamics along Nicaragua's Caribbean Coast. Science with a Passion and a Moral Compass Symposium, Ann Arbor, Michigan, May 2016.

Urquhart, G. R., C. A. Jordan, and D. B. Kramer. 2013. Influence of human activity on the distribution of mammals in rainforests on the Caribbean coast of Nicaragua. Ecological Society of America Annual Meeting, August 2013.

Slate, J.E. and G. R. Urquhart. 2013. Paleolimnology of Diatoms and Pollen in Lake Miraflor, Nicaragua. Presented at the North American Diatom Symposium, Bar Harbor, Maine, August 2013.

Jordan, C. A., G. R. Urquhart, and A. Simons. 2013. Distribution and conservation of Baird's tapir (*Tapirus bairdii*) in Nicaragua. Association for Tropical Biology and Conservation meeting, San Jose, Costa Rica, June 2013.

Raviele, M.E., W.A. Lovis, G.R. Urquhart and J.P. Hart. "The Effects of Alkali Processing on Maize Detectability in Carbonized Food Residues." Invited paper at the session "Chemical Residue Analysis in Archaeology: Method Development and Residue Diagenesis", 76th Annual Meeting of the Society for American Archaeology, Sacramento, CA. 31 March 2011.

Urquhart, G. R. and D. B. Kramer. 2010. Globalization and the Connection of Remote Communities: Evolving Trends in Natural and Human Systems. NSF CNH PI Meeting, American Association of Geographers Annual Meeting, April 2010.

Lovis, W. A., G. R. Urquhart, M. E. Raviele, and J. P. Hart. "The Affects of Alkali Processing on Maize Detectability in Carbonized Food Residues." Paper presented at the 56th Annual Meeting of the Midwest Archaeological Conference, Inc., Indiana University, Bloomington, IN. 21-24 October 2010.

Lovis, W. A., G. R. Urquhart, M. E. Raviele, and J. P. Hart. "Alkali Processing of Maize and Resultant $\delta^{13}\text{C}$ Values on Systematic Experimental Carbonized Residue C3 Food Mixes." Invited paper presented at the 75th Annual Meeting of the Society for American Archaeology, St. Louis, MO. April 2010.

- Urquhart, G. R. and D. B. Kramer. 2009. Globalization and the Connection of Remote Communities: Impacts on Coupled Natural and Human Systems. NSF CNH PI Meeting, U.S. International Association of Landscape Ecologists Annual Meeting, Snowbird, UT, April 2009.
- Urquhart, G. R. and D. B. Kramer. 2008. The connection of remote communities: conservation implications. Society for Conservation Biology, Chattanooga, Tennessee, July 2008.
- Lovis, W. A., J. P. Hart, G.R. Urquhart, J. Schulenberg. "Paleodietary Information from Stable Carbon Isotope Analysis of Experimental Cooking Residues". Presented at the 71st Annual Meeting of the Society for American Archaeology, San Juan, PR. April 27, 2006.
- Friend, J., G. R. Urquhart, and T. Cregg. 2005. Challenges Abound: Facilitating Meaningful Study Abroad Experiences for Premedical/dental Undergraduates. Council on International Education and Exchange Annual Meeting, Miami, Florida.
- Urquhart, G. R. 2000. Prehistoric hurricane disturbance and forest regeneration in Nicaragua. Ecological Society of America Annual Meeting, Snowbird, Utah.
- Urquhart, G. R. 1996. Regeneration of hurricane and fire damaged swamp forests in Nicaragua. U.S. Department of Energy Global Change Conference, Oak Ridge, Tennessee.
- Urquhart, G. R. 1996. Holocene record of a Nicaraguan coastal swamp. Tenth International Palynological Conference (IPC), Houston, Texas.
- Urquhart, G. R. 1995. Natural dispersal of *Raphia* Across the Atlantic Ocean: Paleopalynological evidence of *Raphia taedigera* Maur. (Arecaceae/Palmae) in the pre-Columbian Neotropics. Association for Tropical Biology/ AIBS Annual Meeting, San Diego, California.

WORKSHOPS CREATED AND LED

Creating Pathways to Success in STEM for Students with Low Math Scores. 2010.

Designed a one-day workshop focusing on curricular and course revisions to enhance success and retention of underrepresented students. The Teaching Academy, New Mexico State University, Las Cruces, New Mexico.

Palynological Research Techniques, 2007.

Three-day workshop on extracting and analyzing pollen from sediments. Center for Aquatic Research (CIRA), National Autonomous University of Nicaragua (UNAN), Managua, Nicaragua

Techniques of Restoration of Tropical Forests, 1993.

Four day workshop and five day field experience on restoring agricultural lands on the Caribbean Coast of Nicaragua. Center for Research and Documentation of the Atlantic Coast of Nicaragua, Bluefields, Nicaragua

TEACHING

COURSES TAUGHT

Introduction to Quantitative Science and Research, LB 155, MSU Fall 2009-present
Co-Instructor. I developed this course along with Dr. Maxine Davis (chemist) to improve the knowledge and confidence for first-year science students with enter the residential Lyman Briggs College science curriculum with low math scores. The course is part of a broader program for improving retention of underrepresented students.

Organismal Biology LB 144, MSU Fall 2003-present
Instructor. I teach an inquiry based/active learning introductory biology course covering Ecology, Evolution, Development, and Genetics. Lecture is an active learning environment combining approximately 50 minutes of lecture and 30 minutes of discussion and activities. Labs are broken into three 5-week streams in which students design independent research in Ecology, Genetics, and Comparative Biology. Enrollment: 90 to 140 students.

Statistics for Ecologists, STT 224, MSU Spring 2016
Instructor. I teach the introductory statistics course for the Department of the Fisheries and Wildlife, with an enrollment of FW, Forestry, and Zoology majors. The course combines lectures with heavy content from natural resource disciplines with laboratory assignments that focus on the structure of data and data analysis. Enrollment: 108 students.

Biology in the Galapagos and Amazonia Summer 2015, 2016
Instructor, Three Week Study Abroad. Co-taught with Chuck Elzinga.

Field Techniques in Fisheries and Wildlife, FW 238, MSU Summer 2012, 2014
Instructor.

Restoration Ecology, FW 443, MSU 2010-2011
Instructor.

Introduction to Science, Technology, Environment and Public Policy, LB/FW/MC 181, MSU Fall 2009, 2017
Co-Instructor.

Tropical Biology PB/ENT/ZOL 485, MSU 2006-2008
Instructor (2008), Co-instructor (2006-7).

Globalization and Science Senior Seminar LBS 492, MSU Fall 2006
Instructor.

Science, Technology, Culture and Globalization MC/LBS 492, MSU Spring 2005
Instructor

Rainforests and Reality in Nicaragua LBS 290/ 493, MSU Spring 2004-present
Instructor. I developed and teach a short-term study abroad program in Nicaragua. The course is a one-week intensive look at tropical ecosystems, conservation, and poverty issues. Teaching focuses on context-based conservation approaches and is designed to be a springboard for further international study. Co-taught with Kent Workman (2004), Daniel Kramer (2006-7), Aaron McCright (2008), Maxine Davis (2009-14).

Tropical Biodiversity and Conservation in Panama LBS 493, MSU Summer 2002-2007.
Instructor. Co-taught with Chuck Elzinga, Aaron McCright, Mark Borrello and Jim Smith.

Field Biology for High School Teachers NSC 850/855, MSU Summer of 2002, 2004
Co-Instructor. Co-taught with Chuck Elzinga.

Computers for Scientists, LBS 126, MSU Fall 1999-Spring 2004
Instructor.

Tropical Biodiversity and Conservation, Organization for Tropical Studies Summer 1997
Co-Coordinator.

GUEST LECTURES

ESP 800/891: Introduction to Environmental Science and Policy. Interdisciplinary Research in Coupled Natural and Human Systems. 2011-2015.

Introduction to Science, Technology, and Public Policy MC/LBC/FW 181. 2012, 2015.

Tropical Biology (ZOL/PLB/ENT 485). Human Dimensions of Tropical Biology. 2009, 2010, 2011, 2013, 2014, 2015.

Introduction to Quantitative Science and Research (LB 155). Fundamentals of Organismal Biology, 2012. Three Lectures: Ecological Interactions, Food Webs and Endangered Species, and Population Growth. One Laboratory: Data Analysis in Ecology. 2010.

Global Issues in Fisheries and Wildlife Resources (FW/MC 481). Globalization and the Environment in Nicaragua. 2009.

Tropical Biology (ZOL/PLB/ENT 485). Evolution and Maintenance of Biodiversity in the Tropics. 2004, 2005.

PEDAGOGICAL TRAINING AND WORKSHOPS

- 2011 Moving from Effective Teaching to the Scholarship of Teaching and Learning. Facilitator: Karl Smith; Design and Implementation of Active and Cooperative Learning. Facilitator: Karl Smith; Students Speak: Students with Multiple Marginalized Identities. Writing Quality Multiple-Choice Items to Test More than Recall. Facilitator: Kathy Doig. Impact of Low Math Performance on the Future of STEM Education. Experiential Approaches for Critical Thinking in the Context of Teaching Sustainability. Facilitator: Susan Santone. Life Cycle Analysis and Integrated Critical Thinking. Facilitator: Susan Santone. Metacognitive Strategies to Foster Students' Disciplinary Thinking and Writing Skills. Facilitator: Deborah Meizlish. Process Oriented Guided Inquiry Learning (POGIL). Led by Cheryl Bailey and Patricia B. Ahrens. MSU F&OD.
- 2010 What is Quality Interdisciplinary Teaching and Learning? The Theory and Practice of Educating at the Crossroads. Led by Veronica Boix Mansilla. MSU F&OD

- 2008 Collaborating to Create Engaging Global and Multicultural Learning Environments MSU Faculty Development Spring Institute, 3 day workshop by Christa Olson & Brian Bridges.
- 2006 Transforming Your Curriculum: Creating An Inclusive Learning Environment MSU Faculty Development Spring Institute, 3 day workshop, coordinated by Mathew Ouellett and Christine Stanley.
- 2005 Case Studies in Science Teaching MSU Faculty Development, 5 day workshop, coordinated by Kip Herreid.
- 2004 Curriculum Integration and Study Abroad University of Minnesota, 4 day workshop.
- 1999 Foundations of Cooperative Learning MSU Faculty Development, 5 day workshop coordinated by Karl Smith.

GRADUATE AND UNDERGRADUATE COMMITTEES

- Lauren Phillips, M.S. student, Department of Fisheries and Wildlife, Traditional Ecological Knowledge and the Coexistence with Wild Felids in Indigenous Communities, Michigan State University. Committee Chair, 2013-present.
- Joel Betts, M.S. student, Department of Fisheries and Wildlife, Thesis topic TBD, Michigan State University. Committee Chair, 2016-present.
- Shylene Mata, Ph.D. student, Department of Fisheries and Wildlife, Dissertation topic TBD, Michigan State University. Committee Member, 2011-present.
- Arthur Muneza, M.S. Department of Fisheries and Wildlife. Committee Member. 2013-2015.
- Christopher Jordan, Ph.D. student, Fisheries and Wildlife, Local Ecological Knowledge and Wildlife Conservation in Tropical Rainforests, Michigan State University. Committee Co-Chair with Kramer, 2009-2014.
- Kara Stevens, Ph.D. student, Department of Fisheries and Wildlife, Fisheries and Fisherman Networks on Nicaragua's Caribbean Coast, Michigan State University. Committee Co-Chair with Kramer, 2009-2013.
- Diana Guzmán Colón, M.S. student, Department of Fisheries and Wildlife, Populations of Mongoose in Puerto Rico, 2011-2013. Defended thesis August 2013.
- Esther Morales, M.S. student, Department of Fisheries and Wildlife, Short-term impact of black mangrove restoration on avian biodiversity and breeding ecology along the northern boundary of Jobos Bay National Estuarine Research Reserve, 2011-2012. Defended thesis December 2012.
- Justin (JP) Lawrence, M.S., Department of Fisheries and Wildlife, Conservation of Poison Dart Frogs in the Bocas del Toro Region of Panama, Michigan State University. Committee Co-Chair with K. Millenbah, 2008-2011.
- Kristen Schmitt, M.S., Department of Fisheries and Wildlife, Environmental Impacts of Road Development in Nicaragua, Fisheries and Wildlife, Michigan State University. Committee Member, 2006-2009. Defended thesis March 2009.

Ileana Velasquez, Licenciado Thesis, Description and Analysis of Pollen Grains in Nicaragua, 1999. University of Central America, Managua. Advisor, 1997-1999.

AWARDS

AWARDS, FELLOWSHIPS, AND HONORS

- 2014-5 Academy for Global Engagement Fellowship, Michigan State University
- 2014 Excellence in Diversity Award, Office of Inclusion and Intercultural Initiatives, Michigan State University
- 2005 Outstanding Service to Study Abroad Award, International Studies and Programs, Michigan State University.
- 2004 Outstanding Faculty Award, MSU Center for Latin American and Caribbean Studies, Michigan State University.
- 2000 Best Website Design Award from National Audubon Society for www.projectpuffin.org
- 1997-1998 Smithsonian Tropical Research Institute Postdoctoral Fellowship.
- 1992-1997 U.S. Department of Energy Graduate Fellowship for Global Change.
- 1995-1996 Smithsonian Tropical Research Institute Short Term Graduate Fellowship.
- 1995 Newcombe Fellowship in Plant Biology.
- 1993 Sokol International Summer Research Fellowship in the Sciences, \$5000.
- 1989 Naturalist Ecologist Training Program Fellowship, \$3000.

SERVICE

ACADEMIC AND PROFESSIONAL SERVICE

University Level Service

Center for Latin American and Caribbean Studies Advisory Committee, Chair, 2016-present, Member 2006-2010.

University Committee on Curriculum. LBC Representative. 2012-present.

Subcommittee A Chair, 2014-5

Full Committee Chair, 2015-present

MSU Fly Fishing Club, 2017-present

Faculty Advisor

Diversity in Study Abroad Committee, 2012-2016.

Faculty Learning Community, Proven Practices for Success for Students of Color. Co-facilitator. 2011-2014.

Presenter, Grandparents University, "Rainforests in the Future," 2011-2014.

Faculty Presenter, Inside MSU Recruiting Visits, 2013-2015.
Students As Collaborative Partners In Development Task Force, 2008-2009.
Study Abroad Task Force, International Studies and Programs, 2007-2008.
Curriculum Integration Project, Office of Study Abroad, 2006-2008.
Internationalizing the Student Experience Committee, Provost's Office, 2006-2007.
Steering Committee, Science, Technology, Environment and Public Policy Specialization, STEPPS, 2006-2009.
Parent Orientation Program, Study Abroad Speaker, 2002-2003.
University Pre-Orientation Faculty Recruiter, MSU, 2000, 2002.

College/Unit Level Service

Educational Policy Committee, Lyman Briggs College, Member 2001-2003, 2006-2009, 2013-2014; Chair 2002-2003, 2007-2008.
Awards Committee, Lyman Briggs School, Chair 2003-2007.
Undergraduate Research Conference Committee, Center for Latin American and Caribbean Studies, 2003-present.
Coordinator of Lyman Briggs School Seminar Series, 2001-2002.
Academic Orientation Advisor, Michigan State University, 1999-2002.
Environmental Sciences Major Reform Group, Lyman Briggs School. Co-chair, 2000-2003.

COMMUNITY SERVICE AND ACTIVITIES

President, Lyman Briggs Alumni Association, 2002-2006; Vice President 2000-2002.
Coach for Youth Sports: Tackle Football, Basketball, and Baseball, 2004-2014.
Assembly speaker on tropical rainforests, Resurrection School, 2013, St. Gerard School (2006-7), Rivendell Youth Center (1997-2003), Thomas Jefferson Middle School (1997), Abbot Nursery School (2003) and St. Thomas Aquinas Elementary School (1998).
Coordinator and fundraiser, La Union School, Nicaragua, 1995-1999.
Coordinator of clothing donation program, La Union Cooperative, Nicaragua, 1994-2006.
Amazon Tour Guide/Scholar, International Journeys, 1993-1995.
Camp counselor, Lansing Montessori Schools, Camp Innisfree, 1989-1995.
Florida Everglades Guide Assistant, Uncommon Adventures Outdoor Travel, 1989-1991.
Life member, Michigan Audubon Society.

PROFESSIONAL ASSOCIATIONS

CHANS-Net (www.chans-net.org), 2008-present
Association for Tropical Biology, 1993-present
Ecological Society of America, 1991-2006, 2013-2015

Society for Conservation Biology, 2006-present
Society for Ecological Restoration, 2011-2013
MSU Center for Latin American and Caribbean Studies, Core Faculty, 2002-present
MSU Center for the Advanced Study of International Development, Core Faculty, 2006-present.
American Association of Stratigraphic Palynologists, 1995-2002
Michigan Field Ornithologist and Bird Banders Association, 1994-2004

FOREIGN LANGUAGES

Spanish: Fluent speaking and comprehension, excellent reading and writing abilities

COMPUTER LANGUAGES

HTML Coding, Graphics, Visual Basic, and JavaScript Programming

WEBSITES DESIGNED

Virtual Rainforest: <http://www.msu.edu/user/urquhart/rainforest> - Included in Eisenhower National Clearinghouse for Education best teaching tools for K-12 education
Project Puffin: <http://www.projectpuffin.org> - winner of National Audubon Society's Best Website for 2000 Award
Personal Web Page: <http://www.msu.edu/user/urquhart>