**STEVEN A. GRAY**

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*Education\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

# 2010 Rutgers University PhD Ecology and Evolution

2006 Texas State University MS Geography and Planning

2002 University of Texas at Austin BA Anthropology

*Positions \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

2023-present Michigan State University, *Professor*

Department of Community Sustainability

2025-present Johns Hopkins University, Whiting School of Engineering, *Research Scientist*

2019-2024 Collective Intelligence Unit IT University of Copenhagen, *Associate Fellow*

2020-2024 U.S. National Institute of Standards and Technology, *Research Scientist (IPA)*

2018-2023 Michigan State University, *Associate Professor*

Department of Community Sustainability

2015-2018 Michigan State University, *Assistant Professor*

Department of Community Sustainability

2013-2015 University of Massachusetts, Boston, *Assistant Professor*

School for the Environment (tenure track)

2011-2014 Leibniz Institute of Freshwater Ecology and Inland Fisheries, *Visiting Scientist*

IGB Fellowship, Berlin Germany

2011-2013 University of Hawaii, *Assistant Professor*

Department of Natural Resources and Environmental Management (tenure track)

Head, Socio-economic Division, Water Resources Research Center

2010-2011 Rutgers University/Cary Institute of Ecosystem Studies, *Postdoctoral Researcher*

*External Grant and Fellowships* (>6 million in external funding as PI or co-PI)\_\_\_\_\_\_\_\_\_\_\_\_\_

2025-2026 **National Institute of Standards and Technology** MSE $223,486

Using AI to increase public participation in federal decision-making:

Harnessing NLP to summarize the Federal Register and social media **(delayed)**

2023-2025 **NOAA** Adaptation Science$299,827

*Collaborative Modeling the Benefits, Consequences, and Trade-offs*

*of Mangroves and Seawalls for Coastal Communities* (co-PI with Scyphers, Hughes, Shepard, and Harlan)

**Completed**

2021-2024 **NSF** Improving Undergraduate STEM Education $500,000

*Integrating Perspective-taking, Systems Thinking, and Model-based*

*Reasoning for Complex Problem-Solving* (PI with co-PIs Jordan,

Franz, Peterson) MSU budget $372,888

2021-2024 **DARPA** Department of Defense $230,000

MIMESIS: *Multi-Informed Models Emerging from Social Investigations and Semiotics*. (academic PI with government contractor Two Six Labs) (<https://www.twosixlabs.com/>) total budget $10,000,000)

2020-2024 **FFAR** Foundations for Food and Agriculture Resources (USDA) $100,000

*Identifying leverage points for the emergency food system in rust-belt*

*cities at a time of the COVID-19 crisis* (PI with co-PIs L. Schmitt-Olabisi, Wentworth and Aminpour)

2018-2024 **FFAR** Foundations for Food and Agriculture Resources (USDA) $1,000,000

*Identifying leverage points for transformation in urban food systems*

*through participatory modeling* (PI with co-PIs L. Schmitt-Olabisi, J. Hodbod)

2019-2020 **NSF** Research Coordination Network (RCN) $50,000

*Challenges to and opportunities for resilience in rapidly developing urban corridors* **(**co-PI with J. Bammer, K. Faust, A. Ganguly, and P. Bixler)

2017-2019 **NSF** Improving Undergraduate STEM Education $299,956

*Assessing systems thinking learning progressions in STEM fields*

*through semi-quantitative cognitive mapping software*

(PI with E. Sterling, R. Jordan, A. Luz)

2016-2018 **National Academy of Sciences** Gulf Research Program $407,113

*Collaborative modeling with Fuzzy Cognitive Maps:*

*A novel approach to achieving safety* *culture*

(co-PI with A. Jetter, S. Scyphers)

2016-2018 **NOAA** Saltonstall-Kennedy Grant Program $240,859

*Engaging commercial, recreational, and subsistence fishers to*

*improve management of Striped Bass fisheries in New England*

(co-PI with S. Scyphers, J. Grabowski)

2016 **Community Foundation of Greater Flint** *Community-based* $16,000

*modeling of the Flint Water* Crisis (PI)

2015-2018 **NSF Socio-Environmental Synthesis Center (SESYNC)**  $86,000

*Public participation and participatory modeling for action-oriented*

*outcomes* (PI with A. Voinov)

2015-2017 **NOAA** Saltonstall-Kennedy Grant $298,950

*Predicting the social impacts of climate change on fisheries*

(co-PI with S. Scyphers)

2014-2016 **BLM Joint Fire Science Program** $181,093

*Policy Scenarios for fire-adapted communities: understanding*

*stakeholder risk-perceptions* (co-PI with A. Jetter, L. Ellsworth)

2014-2016 **NSF (Belmont Forum)** Food Security & Climate Change $299,894

*Sustainable management of agro-ecological resources for*

*tribal societies* (co-PI with C. Chan-Halbrendt, B. Sipes, T. Idol)

2014-2016 **NOAA** University of Hawaii Sea Grant $56,000

*Forecasting climate change impacts on coastal ecosystem services*

*in Hawaii through integration of ecological and social models*

(PI with C. Lepczyck)

2013-2014 **USGS** Water Resources Research Institute Programs $28,000

*Forecasting**climate change impacts on watershed-based ecosystem*

*services in Hawaii* (PI with A. Fares, C. Lepczyk)

2012-2016 **NSF** Cyberlearning $1,206,384

*Sustaining ecological community thru cit sci & online collaboration*

(co-PI with R. Jordan, C. Hmelo-Silver, A. Crall, G. Newman)

2012-2014 **USDA** *Mental Modeler:* *Developing a software tool to support* $40,000

*community-based decision-making* (PI with L. Cox)

2012-2014 **Leibniz-Institute of Freshwater Ecology and Inland Fisheries** $18,000

*Understanding the relationship between natural resource*

*decision-maker mental models and sustainable natural resource*

*management in freshwater recreational fisheries* (PI with R. Arlinghaus)

2011-2012 **NOAA** Cooperative Research, Conservation Engineering $299,999

*Evaluation of broad and fine scale models of butterfish biomass*

*applied to by-catch reduction in the longfin inshore squid fishery*

*in the Mid-Atlantic Bight* (co-PI with J. Kohut)

2010-2012 **NOAA** Cooperative Research, Conservation Engineering $217,089

*Integrating habitat models and stakeholder knowledge into commercial*

*fishing to reduce by-catch* (co-PI with J. Kohut)

2008 **NSF** Office of International Science and Engineering $10,500

*Improving the management of data-poor fisheries: Evaluating risk and uncertainty in fisheries management in Australia and the United States*

(PI with J. Scandol)

2007-2009 **NOAA** National Estuarine Research Reserve Social Science Fellow $30,000

*What do recreational fishermen need to know? Recommendations that*

*foster ecosystem-based management* (PI)

2007 **U.S. EPA** NNEMS Research Fellow, Region 2 New York City, NY $16,140

*Implementing sustainable programs in NYC area schools: Fostering environmental stewardship in school-aged children* (PI)

2005 **U.S. EPA** NNEMS Research Fellow, Radiation and & Indoor $9,500

Environments National Laboratory *Determining sustainable*

*environmental management programs through community outreach* (PI)

*Software Packages\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Gray, S. Mental Modeler: A fuzzy cognitive mapping software for systems thinking, scenario

analysis and participatory research. Lead developer, <http://www.mentalmodeler.org/>

R Jordan and S. Gray, EcoModeler: A classification and ontological system for organizing

thinking about complex systems. Co-lead developer

*Books\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Gray, S. Paolisso, M, Jordan, R.C and S. Gray (Eds) (2017) *Environmental Modeling with*

*Stakeholders: Theory, Methods and Applications.* Springer Publishing, New York City.

*Peer Reviewed Journal Articles \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

(co-author: graduate student/postdoc, \*undergraduate, 1community partner, ϯK-12 student/teacher) [Google Scholar Profile](https://scholar.google.com/citations?user=I2U6L1IAAAAJ&hl=en) (Total Citations: 7957, H Index: 44, i10 Index: 88)

**Currently in Review or Revision**

Knox, C., S. Gray, M., Zahree, R. Wallace1, C. Wentworth, and L.S. Olabisi. (in revision).

Utilizing participatory modeling and leverage points perspective to evaluate interventions to address racial inequities in food systems. *Agriculture and Human Values.*

M. Zareei, S.A. Gray, C.B. Knox, R Sadler, L., Schmitt-Oabisi, C. Wentworth, and J. Helgeson.

(in review) Measuring what matters: Monitoring community-identified values in local food systems. *Ecology and Society.*

Fisher, M, L. K Nelson, T. Francis, P. S Levin, J. F. Samhouri, C. Harvey4, L. Dee, K.

Marshall, S. Mller, S. Moore, M. Barnes, C. Cha, J. Cinner, S A Gray, A. Punt, C. Ridings, and F. W Simon (in revision) Exploring intended outcomes and trade-offs of climate adaptation with qualitative network models. *Ecology and Society*

Kenney, M. (plus 150 co-authors, formally of the US National Climate Assessment 6). What a

robust, evidence-based US climate assessment needs (in review) *Earth’s Future.*

Lepczyk, C., S. Gray, R. Christoffel, and R. Jordan. (in review) Still strange bedfellows after all

these years: Why are social and natural sciences still so difficult to integrate in

conservation science? *Conservation Biology.*

Revay, P., P Giabelenlli, and S. Gray. Connecting modeling requirements and the choice of

activation functions in Fuzzy Cognitive Map simulations. (in revision). *Neural Computing and Applications.*

Cholewicki, J., P. W. Hodges, J. Popovich., P. Aminpour, S., Gray, A.S. Lee, A. Breen, S.

Brumagne, J van Dieën, L. R. Van Dillen, T. E. Dreisinger, M. Ferreira, S. Z. George, C. M. Goertz, J. Hartvigsen, J. A. Hides, D. Hoy, G. N. Kawchuk, B. W. Koes, R. Kothe, H. M. Langevin, D. Lee, J. C. Lotz, G. Moseley, H. Prather, N. Reeves,S. Sahrmann, R. Smeets, L. S. Stone, J. Vlaeyen, PhD 27 ; J. C. Wang and S. Weiser (in review) A meta-model of low back pain to examine collective expert knowledge of the effects of treatments and their mechanisms. *European Spine Journal*

**2025**

Von Hagen, L., S. Gray, B. Schulte, M. Githiru, H. Kiute, and C. Lepczyk (2025).

Participatory modeling across Kenyan villages facilitates insight into the complexity of human-elephant interactions. *Oryx.* 59 (1), 40-49.

Prasky, E. G.,M, Drymon, J. Mitchell, G. Jackson, S. Scyphers, S. Gray, G. Casselberry, L.

Griffin, A. Danylchuk. (in press) Towards building a shared vision: Using Fuzzy Cognitive Mapping to co-produce a shared understanding of depredation in recreational fisheries. *Fisheries.*

Zareei, M., S.A. Gray, R. Sadler, L. Schmitt-Olabisi, C. Knox and J. Helgeson. (in press)

Community-informed decisions for equitable, cost-effective, and inclusive disaster resilience planning (Co-DECIDR): A modeling approach. *Socio-Environmental Systems Modeling*.

**2024**

Wentworth, C., M. Torres Arroyo, R. Cavalcanti Lembi, B. Feingold, D. Freedman, S. Gray, J.

Hodbod, R. Jablonski, K. Janda-Thomte, P. Lemoine, A. Nielsen, X. Romeiko, D. Salvo, L. Schmitt Olabisi, A. van den Berg, and O. Yamoah (2024). Community-engagement in participatory urban food systems modeling: Examples from five U.S. cities. *Environmental Science and Policy.* 152, 103645.

Brugnone, N., N. Benkler, P. Revay, R. Myhre, S. Friedman, S. Schmer-Galunder,

S. Gray, and J. Gentile. From ‘Ought’ to ‘Is’: A comparison of unsupervised methods for

values-informed wisdom of crowds. (2024). *Journal of Computational Social Science*. 7 (2), 1327-1377

Nagel, B., E. Anggraini, N. Buhari, S. Gray, S. Partelow, and A. Schlüter (2024). Mental

models of aquaculture governance in Indonesia. *Sustainability Science.* 1-21.

**2023**

Knox, C.B., S. Gray, M., Zareei, N. Brugnone, P. Aminpour, R. Wallace, J. Hodbod, and C.

Wentworth. (2023). Modeling complex problems by harnessing the collective intelligence of local experts: New approaches in Fuzzy Cognitive Mapping. *Collective Intelligence.* 2(4).

Jordan, R.C., S. Gray, A. Boyse-Peacor, A. Sorensen, C. Frantz, J. Jaurenig, P. Brehm, M. Rumi

Shammin, and J. Petersen. Promoting systems thinking through perspective taking when using an online modeling tool. *Frontiers in Education* 8.

Lalani, B., S. Gray, and T. Mitra-Ganguli (2023). Systems thinking in an era of climate change:

Does cognitive neuroscience hold the key to improving environmental decision making? A perspective on Climate-Smart Agriculture. *Frontiers in Integrative Neuroscience* 17, 1145744.

Jordan, R., A.E. Sorensen, and S. Gray (2023) What undergraduate students know and what they

want to learn about in climate change education. *PLOS Sustainability and Transformation* 2 (4).

Jordan, R.C., S. Gray, and AE Sorensen (2023). Systems thinking tools to address SDG #4.

*Frontiers in Sustainable Cities 5*.

Olabisi, L.S., C Wentworth, K. Key, RV. Wallace1, M. McNall, J. Hodbod, and S.A. Gray

(2023) Defining success in community-university partnerships: lessons learned from Flint *Journal of Responsible Innovation*, 1-23.

**2022**

Aminpour, P. S. Gray, M. Beck, K. Furman, I. Tsakiri, R. Gittman, J. Grabowski, J. Helgeson, L.

Josephs, M. Ruth, and S. Scyphers. (2022) Urbanized knowledge syndrome: Lower knowledge diversity and systems thinking in urban coastal residents. *Urban Sustainability.* 2 (1), 1-10.

Murphy, R., J. Grabowski, S., Gray and S. Scyphers. (2022) Diversity in motivations and

behavioral response to regulations in the Striped Bass commercial fishery. *Fisheries.* (1), 10-17.

Jordan, R., A. Sorenson, and S. Gray. (2022) Participatory modeling in support of citizen

science. *Forests.* 13 (4), 567.

**2021**

Aminpor, P, S. Gray, A. Singer, S. Scyphers, A. Jetter, R. C. Jordan, R. Murphy, and J. H.

Grabowski. (2021) The diversity bonus in pooling local knowledge about complex problems. *Proceedings of the National Academies of Sciences*. 118 (5).

Levin, P., S. Gray, C. Mollimon and A Stier. (2021). Perception and conflict in conservation:

The Rashomon Effect. *BioScience.* (1) 64-72.

Schwerner, H., P., Aminpour, S. Funk S. Gray, C. Reza\*, and C. Mollimon (2021). Modeling

Social-ecological knowledge diversity. (2021) *Conservation Science and Practice* 3 (5), e396.

Hedelin, B, S., Gray, S. Woehlke, T. BenDor, A. Singer, R.C. Jordan, P. Giabbanelli , P. Glynn,

K. Jenni, A Jetter, N. Kolagani, B. Laursen, K. Leong, L. Schmitt Olabisi, E. Sterling, and M. Zellner (2021). What’s left before participatory modeling can fully support real-world environmental planning processes: A case study review. *Environmental Modeling and Software.* 143. 105073.

Lalani, B., P. Aminpour, S. Gray, M. Williams, L. Büchi, J. Haggar, P. Grabowski, J. Dambiro.

(2021) Mapping farmer perceptions, conservation agriculture practices and on-farm

measurements: the role of systems thinking in the process of adoption. *Agricultural Systems.* 191, 103171.

Betley, E., E Sterling, S Akabas, S Gray, A Sorensen, R Jordan, and C Eustice. (2021) Modeling

links between corn production and beef production in the United States: A systems thinking exercise using Mental Modeler. *Lessons in Conservation*. 11, 26-32.

Furman, K. S., Aminpour, P., Gray, and S. Scyphers. (2021). Mental models for assessing social-

ecological systems following disasters: a case study contextualizing natural and built shorelines after Hurricane Irma. *Marine Policy* 125, 104334.

Jablonski, B., J. Casnovsky, J. Clark, R. Cleary, B. Feingold, D. Freeman, S. A. Gray, X.

Romeiko, L. Schmitt Olabisi, A. van den Berg, C. Walsh, and C. Wentworth. Emergency food provision for children and families during the COVID-19 pandemic: Examples from five U.S. cities. (2021). *Applied Economic Perspectives and Policy*. 43 (1), 169-184.

Mamiit, R, S. Gray, J. Yanigida. (2021) Characterizing farm-level social relations’ influence on

sustainable food production. *Journal of Rural Studies*. 86, 566-577.

Murphy, R, B. Harris, N. Wolf, A. Kroska, and S.A. Gray. **Using mental models to quantify**

**linear and non-linear relationships in complex fishery systems** *Marine Policy.* 125, 104334.

Aminpor, P., H. Schwerner, and S. Gray. (2021) The relationship between social identity and

cognitive diversity in environmental stakeholders. *PLoS One.* 86, 566-577.

Jordan, R.C., A. Sorenson, and S.A. Gray (2021) Citizen Science, experts and expertise. *Current*

*World Environment* 16 (2), 378.

**2020**

Aminpor, P., S. Gray, A. Jetter, J. Introne, and R. Arlinghaus. (2020) The wisdom of stakeholder

crowds in complex social-ecological systems. *Nature Sustainability*. 3(13), 191-199.

Gray, S., Aminpor, P., C. Reza\*, S. Scyphers, J. Grabowski, R. Murphy Jr., A. Jetter, and R.C.

Jordan. (2020) Harnessing collective intelligence for conservation. *Frontiers in Ecology and the* *Environment.* 18 (8), 456-472.

Barnhagen, C., P. Howard, and S. Gray. (2020) A bird’s eye view: Fruit grower interest in

adoption of raptor nest boxes. *Agroecology and Sustainable Food Systems*. (10), 1384-

1393.

Barnhagen, C., P. Howard and S. Gray. (2020) Farmer mental models of biological pest control:

Associations with adoption of conservation practices in blueberry and cherry orchards. *Frontiers in Sustainable Food Systems.* 4(54).

Aminpor, P., S. Gray, A. Singer, A. L. Castro, A, Ramlan, and N. Chicoworee, (2020)

Perspectives of scholars on the nature of sustainability: a survey study *Sustainability in Higher Education* 21(1), 34-53.

**2019 and Prior**

Gray, S., E., Sterling, C. Wei, S. Akabas, A. Singer, P. Giabbanelli, R. Jordan, J. Hodbod. and P.

Norris. (2019). Assessing (social-ecological) systems thinking using concept mapping techniques. *Sustainability* 11 (20), 5753.

Gray, S., B. O'Dwyer, C. O'Mahony, J. Gault, and S. A. Gray. (2019) Caught by the fuzz: Using

FCM to prevent coastal adaptation stakeholders from fleeing the scene. *Marine Policy*. 109, 103: 688.

Murphy, R., J. Grabowski, S., Gray and S. Scyphers. (2019) Angler attitudes explain disparate

behavioral reactions to fishery Regulations. *Fisheries*. 44(10).

Sterling, E., M. Zellner, K. Leong, K. Jenni, S., R. Jordan, T. BenDor, A. Jetter, L.

Schmitt-Olabisi, M. Paolisso, K. Hubacek, P. Bommel, G. Bammer and S. Gray. (2019) Try, try again: Lessons learned from success and failure in participatory modeling. *Elementa*.

Cholewicki, J., JM Popovich Jr, P Aminpour, SA Gray, AS Lee, PW Hodges. (2019).

Development of a collaborative model of low back pain: report from the 2017 NASS consensus meeting. *The Spine Journal* 19 (6), 1029-1040.

Hodges, P., J. Cholewicki, J. Popovic, A. Lee, P.Aminpour, and S. Gray. Building a

collaborative model of Sacro-iliac joint dysfunction to understand the diverse perspective of experts. (2019) *PM&R Journal: The Journal of Injury, Function and Rehabilitation*. 11. 11-23.

Metzger, A., S. Gray, E. Douglas, N. Haigh, and P. Kirshen. (2019) Categorizing and

clustering knowledge in Fuzzy Cognitive Maps. *International Journal of System of*

*Systems Engineering* 9 (3), 235-256.

Gray, S., Measuring systems thinking. (2018) *Nature Sustainability*. 1(3) 388-389.

Gray, S., A. Voinov, M. Paolisso, R.C. Jordan, T. BenDor, P. Glynn, B. Hedelin, K. Hubacek

J. Introne, 1N. Kolagani, B. Laursen, C. Prell, L. Schmitt-Olabisi, A. Singer, E. Sterling, and M. Zellner. Purpose, Processes, Partnerships, and Products: 4Ps to advance participatory socio-environmental modeling. (2018) *Ecological Applications.* 28(1). 46-61.

Voinov, A., K. Jenni, S. Gray, N. Kolagani, P. Glynn, P. Bommel, C. Prell, M. Zellner, M.

Paolisso, R.C. Jordan, E. Sterling, L.Schmitt Olabisi, P. Giabbanelli, Z. Sun, C. Le Page, S. Elsawah, T. K. BenDor, K. Hubacek, B. K. Laursen, A. Jetter, L. Basco Carrera, A. Singer, L. Young, J. Brunacini, and A. Smajgl. (2018) Tools and methods in participatory modeling: selecting the right tool for the job. *Environmental Modeling and Software*. 109: 232-255.

Huang, J., C. Hmelo-Silver, R.C. Jordan, S. Gray, T. Frensley, and G. Newman, Scientific

discourse of citizen scientists: Models as a boundary object for collaborative problem-solving. (2018) *Computers in Human Behavior*. 87: 480-492.

Jordan, R.C., A. Sorensen, S. Gray, D. Ebert-May, R. Shwom, C. Isenhour. J. Meta Robinson,

and M. Nucci. Using authentic science in climate change education. (2018) *Applied Environmental Education and Communication* 1(32).

Jordan, R.C., A. Crall, C. Hmelo-Silver, S. Gray, G. Newman. (2018) Developing model-

building as a scientific practice in collaborative citizen science. *Natural Sciences Education* 47(1).

Jordan, R.C., S. Gray, A. Voinov, A. Jetter, L. Schmitt-Olabisi, K. Hubacek, M. Zellner, P.

Glynn, B. Hedelin, P. Bommel, T. BenDor, K. Jenni, E. Sterling, L. Basco-Carrera, K. Leong, N. Kolagani, A. Singer, P. Giabbanelli, and B. Laursen (2018). 12 Questions for the participatory modeling community. *Earth’s Future*. 6 (8), 1046-1057.

Gray, S., R. C. Jordan, A. Crall, G. Newman, C. Hmelo-Silver, J. Huang, W. Novak, D. Mellor,

T. Frensley, M. Prysby, and A. Singer. (2017) Combining participatory modelling and citizen science to support volunteer conservation action. *Biological Conservation.* 208, 76-86.

Stier, A., J. Samhouri, S. Gray, R. Martone, R., M. Mach., B., Halpern, C. Kappel, C.

Scarborough, and P. Levin. (2017). Integrating expert opinion into food web conservation and management. *Conservation Letters* 10(1), 67–76.

Gray, S., A. Singer, L. Schmitt-Olabisi, J. Introne, and J. Handerson.\* (2017) Identifying the

causes, consequences, and solutions to the Flint Water Crisis through collaborative modeling. *Environmental Justice.* 10 (5), 154-161.

Singer, A., S. Gray, 1A. Sadler, L. Schmitt Olabisi, K. Metta, 1R. Wallace, M. Lopez, J.

Introne, M. Gorman\*, and J. Henderson.\* (2017) Translating community narratives into semi-quantitative models to understand the dynamics of socio-environmental crises. *Environmental Modeling and Software*. 97, 46-55.

Sterling E., C. Filardi, J. Newell, S. Albert, D. Alvira, N. Bergamini, E. Betley, M. Blair, D.

Boseto, K. Burrows, N. Bynum, S. Caillon, J.E. Caselle, J. Claudet, G. Cullman, R. Dacks, P. B. Eyzaguirre, N. Gazit, S. Gray, J. Herrera, P. Kenilorea, K. Kinney, N. Kurashima, S. Macey, S. Mauli, J. McCarter, H. McMillen, P. Pascua, P. Pikacha, A. Porzecanski, P. de Robert, M. Salpeteur, A. Sigouin, M. Sirikolo, M. H. Stege, K. Stege, T. Ticktin, A. Toomey, R. Vave, A. Wali, P. West, K. B. Winter, and S. Jupiter. (2017) Biocultural approaches to sustainability indicators: bridging local and global scales to foster human adaptive capacity and ecological resilience. *Nature: Ecology and Evolution.* 1, 1978-1806.

Frensley, T., A. Crall, M. Stern, R.C. Jordan, S.A. Gray, M. Prysby, G. Newman, and C. Hmelo-

Silver. (2017) Bridging the benefits of online and community supported citizen science: A

case study on motivation and retention with volunteers. *Citizen Science: Theory and Practice* (2), 1-14.

McGreavy, B., G. Newman, M. Chandler, M. Clyde, M. Haklay, H. Ballard, S. Gray, R.

Scarpino, R. Hauptfeld, and J. Gallo. (2017) The power of place in citizen science. *Maine Policy Review* 26(2) 94 -95.

Santo, A., K. Guillozet, M.G., Sorice, T., Baird, S., Gray, and J. Donlan. (2017) Examining

private landowners' knowledge systems of an invasive species. *Human Ecology.* 1-14.

Giabbanelli, P., S. Gray, and P. Aminpour. (2017) Combining fuzzy cognitive maps with agent-

based modeling: frameworks and pitfalls of a powerful hybrid modeling approach to understand human-environment interactions *Environmental Modeling and Software.* 95:320-325.

Newman, G, B. McGreavy, M. Clyde, M. Chandler, M. Haklay, H. Ballard, S. Gray, D.

Mellor, and J. Gallo. (2017) Leveraging the power of place in citizen science for effective conservation decision making. *Biological Conservation* 208, 55-64

Jordan, R.C., S. Gray, C. Hmelo-Silver, A. Sorensen, and G. Newman. (2017) Modeling with a

conceptual representation: Is it necessary? Does it work? *Frontiers in Education*. 4,7.

Htun, H., S. Gray, C. Lepczyk, A. Titmus, andK. Adams. (2016) Combining watershed

models and knowledge-based models to predict local-scale impacts of climate change on engendered wildlife. *Environmental Modeling and Software.* 84:440-457.

Li., O. S. Gray and S. Sutton. (2016) Mapping recreational fishers' informal learning of fisheries

science using a fuzzy cognitive mapping approach to mental modeling. *Fisheries Management and Ecology.* 23(4), 315–329.

Douglas, E., S. Wheeler, D. Smith, I. Overton, S, Gray, N, Crossman, and T, Doody. (2016)

Using mental-modelling to explore how irrigators in the Murray-Darling Basin make water-use decisions. *Journal of Hydrology: Regional Studies.* 6, 1-12.

Punawai, N., S.A. Gray, C. Severance, and C. Lepczyk. (2016) Mapping ocean currents through

human observations: Insights from Hilo Bay, Hawai'i. *Human Ecology.* 1-10.

Jordan, R.C., A.M. Crall, S. Gray, S. La Deau, A. Sorenson, C. Hmelo-Silver, G. Newman,

and D.T. Mellor. (2016) Studying citizen science, adaptive management, and learning feedback as a mechanism for improving conservation. *Conservation Biology.* 30(3), 487-495

Gray, S., S. Gray, J. L. De Kok, A. E. R. Helfgott, B. O'Dwyer, R. Jordan, and A. Nyaki1.

(2015) Using fuzzy cognitive mapping as a participatory approach to analyze change, preferred states, and perceived resilience of social-ecological systems. *Ecology and Society* 20(2): 11.

Gray, S., A. McFall, J. Hilsberg, R. Arlinghaus. (2015) The impact of specialization and target

species choice on the structure of mental models about fish population dynamics. *Journal of Outdoor Recreation and Tourism*. 12:1-13.

Henly-Shepard, S., S. Gray, and L. Cox. (2015) Facilitating community adaptation through

participatory modeling and social learning. *Environmental Science and Policy.* 45:109-122.

Jordan, R.C., W. Brooks, J. Delisi, S. Gray, and A. Berkowitz. (2015) Ecology nature of

science: shared discussions and practices among ecologists and high school teachers. *Ecosphere*. 6(11): 1-17.

Barnes-Mauthe, M. S. Gray, S. Arita, J. Lynham, and P. Leung. (2015) What determines social

network capital in a social-ecological system? *Environmental Management.* 55:392-410.

Jordan, R., A Crall, S. Gray, T Phillips, and D Mellor. (2015) Citizen science as a distinct field of

inquiry. *BioScience* 65 (2), 208-211.

Hmelo-Silver, C., L. Liu, S. Gray, and R. Jordan. (2015) Using representational tools to learn

about complex systems. *Journal of Research in Science Teaching*

***\*Cover Article for January 2015***

Mellor, D., W. Brooks, S, Gray, and RC Jordan. (2015) Troubled transitions into college and the

effects of a small intervention course. *Journal of College Student Retention: Research, Theory & Practice.* 17 (1), 44-63.

Halbrendt, J., S. Gray, T. Radovich, S. Crow, and A. Kimura. (2014)Differences in farmer and

expert beliefs about the perceived impacts of conservation agriculture. *Global Environmental Change* 28: 50-62.

1Nayaki, A., S. Gray, C. Lepczyk, J. Skibins, and D. Rentsch. (2014) Understanding the hidden

drivers and local-scale dynamics of the bushmeat trade through participatory modeling *Conservation Biology* 28(5) 1403-1414.

Pleasant, M, S. Gray, C. Lepcyzk, A. Fernandez\*, N. Hunter\*, and D. Ford\* (2014) Managing

cultural ecosystem services: Local management yields large-scale benefits. *Ecosystem Services.* 8: 141-147.

Halbrendt, J., S. Gray, T. Radovich, A. Kimura, B. Reed, and B. Tammang. (2014)

Implications of conservation agriculture for men's and women's workloads among marginalized farmers in the Central Middle Hills of Nepal. *Mountain Research and Development.* 34(3) 214-222.

Punawai, N., L. Canale, M. Haws, J. Potemra, and S. Gray. (2014) Development of a

GIS-based tool for aquaculture siting. *International Journal of Geo-Information.* 3:800-816.

Nicosiaϯ K, S. Daaramϯ, B. Edelmanϯ, L. Gedrichϯ, E. Heϯ, S. McNeillyϯ, V. Shenoϯ, A.

Velagapudiϯ, W. Wuϯ ,L. Zhangϯ, A. Barvaliaϯ, V. Bokkaϯ, B. Chanϯ, J. Chiuϯ, S. Dhulipallaϯ, V. Hernandezϯ, J. Jeonϯ, P. Kanukolluϯ, P. Kravetsϯ, A. Manthaϯ, C. Mirandaϯ,V. Nigamϯ, M. Patelϯ, S. Praveenϯ,T. Sangϯ, S. Upadhyayϯ, T. Varmaϯ, C. Xuϯ, B. Yalamanchiϯ, M. Zharovaϯ, A. Zhengϯ ,R. Vermaϯ, J. Vasslides1, J. Manderson, R.C. Jordan, and S. Gray. (2014) Determining the willingness to pay for ecosystem service restoration in a degraded coastal watershed: A ninth grade investigation. *Ecological Economics*. 104: 145–151.

Gray, S., A. Gagnon, S. Gray, C. Mahony, D. Muir, and M. Falaleeva (2014) Are local coastal

managers detecting the problem? Assessing stakeholder perception of climate vulnerability using Fuzzy Cognitive Mapping. *Ocean and Coastal Management.* 94:74-89*.*

Jordan, R.C., W. Brooks, S. Gray, J. Delisi, and A. Berkowitz. (2013) Rising to the challenge of

‘broader impacts’ *Frontiers in Ecology and the Environment* 11(5) 234-235.

Barnes-Mauthe, M., S. Arita, S. D. Allen, S. Gray and P. Leung. (2013) The influence of   
 ethnic diversity on social network structure in a common-pool resource system:

Implications for collaborative management. *Ecology and Society* 18 (1): 23

Sinha, S., S. Gray, C. Hmelo-Silver, R. Jordan, C. Eberbach, A. Goel, and S. Rugabar

(2013) Conceptual representations for transfer A case study tracing back and looking forward. *Frontlines in Learning Research* 1(1) 3-24.

Jordan, R.C., C. Hmelo-Silver, L. Liu, and S. Gray. (2013) Using a complex system ontology

to foster ecosystem learning. *Applied Environmental Education and Communication* 12(1) 55-64.

Jordan, R.C., J. DeLisi, W. Brooks, S. Gray, A. Alvarado, and A. Berkowitz. (2013) A

collaborative model of science teacher professional development. *International Journal of*

*Modern Education Forum* 2(2) 31-41.

Jordan, R.C., S. Gray, W. Brooks, C. Hemlo-Silver, and S. Honwad. (2013) Process-based

thinking in ecological science. *Natural Sciences Education* 42(1): 68-74.

Gray, S., A. Chan\*, D. Clark\* and R.C. Jordan. (2012) Modeling the integration of stakeholder

knowledge in social-ecological system decision-making: Benefits and limitations to knowledge diversity. *Ecological Modeling* 229,88-96.

Gray, S., R. Shwom, R. C. Jordan. (2012) Understanding factors that influence stakeholder trust

of natural resource science and institutions *Environmental Management* 49, 663-674.

Gray, S., K. Nicosiaϯ, and R. Jordan. (2012) Lessons learned from citizen science in the

classroom. Democracy and Education, 21(1) 14.

Palarama, L., J. Manderson, J. Kohut, M. Oliver, S. Gray, and J. Goff. (2012) Improving habitat

models by incorporating pelagic measurements by coastal ocean observatories. *Marine Ecology Progress Series* 447, 15-30.

Jordan, R.C., S. Gray, D. Howe, W. Brooks, and J. Ehrenfeld. (2011) Knowledge gain and

behavior change in citizen-science programs. *Conservation Biology.* (25) 1148-1154.

Vattam, S., A. Goel, S. Rugaber, C. Hmelo-Silver, R. Jordan, S. Gray, and S. Sinha. (2011)

Understanding complex natural systems by articulating Structure-Behavior-Function models. *Educational Technology and Society* 14(1) 66-81. (IF: 1.32)

Gray, S.,M. Ives, J. P. Scandol, and R.C. Jordan. (2010) Categorizing the risks in fisheries

management. *Fisheries Management and Ecology.* 17(6) 501-512. (IF: 1.76)

Gray, S.and R.C. Jordan. (2010) Ecosystem-based angling: Incorporating recreational fishermen

into ecosystem-based management. *Human Dimensions of Wildlife.* 15(4) 233-246.

Jordan, R.C., S. Gray, C. Hmelo-Silver, M. Demeter, and L. Lui. (2009) An assessment of

students' understanding of ecosystem concepts: Conflating ecological systems and cycles. *Applied Environmental Education and Communication.* 8(1) 40-48.

Jordan, R.C., S. Gray, and R. Golan-Duncan. (2008) Teachers and scholarship: Self-definition of

teachers in the scientific enterprise. *Education and Society,* 26(3) 33-44.

*Peer Reviewed Book Chapters, Proceedings, Technical Reports and Other Publications\_\_\_\_\_\_\_*

Knox, C., S. Gray, K., Furman, A. Jetter. (2024). Creating an FCM with participants in an

interview or workshop setting. In *Fuzzy Cognitive Maps: Best Practices and Modern Methods*. Eds P. Gialbbanelli. Springer Publishing. New York.

Giabbanelli, P., C. Knox, K., Furman, S Gray, and A. Jetter (2024). Defining and Using Fuzzy

Cognitive Mapping (2024). In *Fuzzy Cognitive Maps: Best Practices and Modern Methods* Eds P. Giabbanelli. Springer Publishing. New York.

Drymon, M., A. Osowski, A. Jargowsky, M. Ajemian, A. Collins, B. Fluech, S. Gray, J. Lively,

and S. Scyphers (2022). *Co-Producing a shared characterization of depredation in the Gulf of Mexico reef fish fishery: Comprehensive Report* (Mississippi State University)

Kininmonth, S., S. Gray, and K. Kok. Expert-based Modeling.  *A Guide to Navigating*

*Methods for Studying Social-Ecological Systems*. Eds: Biggs, R., A. de Vos, R Prieser, M. Schluter, H. Clements, and K. Maciejewski. 231-334.

Metzger, A., S. Gray, A. Jetter, and E. Papageorgiou. Typologies and Tradeoffs: A

standardized approach to creating participatory Fuzzy Cognitive Maps In. (2020) *Innovations in Collaborative Modeling,* Eds: McNall, M. and L. Schmitt-Olabisi, Michigan State University Press.

Crall, A., D. Mellor, S. Gray and G. Newman. (2020) Collecting high quality data: begin with

the end in mind. In *Citizen Science for Practitioners*. Eds: Lepczyk, C. University of California Press.

Jordan, R.C., Sorenson, A. and S. Gray (2020) Undertaking program evaluation. In *Citizen*

*Science for Practitioners*. Eds: Lepczyk, C. University of California Press.

Lavin, E.A., P. Giabbanelli, A.Stefanik, S. Gray, R. Arlinghaus, (2018) Should we simulate

mental models to assess whether they agree? In Proceedings of the 2018 Spring Simulation Multi-Conference, Annual Simulation Symposium (SpringSim-ANSS)

Gray, S.A. and S. Scyphers. (2017) Innovations in Collaborative Science: Advancing citizen

science, crowdsourcing and participatory modeling to understand and manage marine social-ecological systems. In Levin, PS and M. Poe Editors. *Conservation in the Anthropocene Ocean: Interdisciplinary Science in Support of Nature and People*. Elsevier, San Diego

Gray, S. A., M. Paolisso, R, Jordan, and S. Gray. (2017) Introduction to Environmental

Modeling with Stakeholders*. Environmental Modeling with Stakeholders: Theory, methods and applications.* Springer Publishing, New York City

Singer, A., A. Jetter, L. Ellsworth, S. Gray, P. Zhang, and O. Lariarchi, (2017) Policy

Scenarios for Fire-Adapted Communities: Understanding Stakeholder Risk Perceptions in Ashland, Oregon. BLM Report

Gray, S., A. Sadler1, R. Brown, S. Alison, L. Schmitt-Olabisi, M. Lopez, J. Henderson\*, M,,

Gorman\*, R. Wallace1, and M. Kaplowitz. (2016). Voices of Flint: Flint resident perceptions about the causes, consequences, and solutions to the Flint Water Crisis. Community Foundation of Greater Flint Report

Gray, S., S. Gray, and E. Zanre, (2014) Fuzzy Cognitive Maps as representations of mental

models and group beliefs: theoretical and technical issues. In *Fuzzy Cognitive maps for Applied Sciences and Engineering –From fundamentals to extensions and learning algorithms* Ed: Elpiniki I. Papageorgiou. Springer Publishing. pp 29-48.

Gray, S., D. Mellor, D, RC Jordan, and G. Newman. (2014) Modeling with citizen scientists.

*Proceedings of the International Environmental Modelling and Software Society*

*(iEMSs)* 7th Intl. Congress on Env. Modelling and Software, San Diego, CA, USA, Daniel P. Ames, Nigel W.T. Quinn and Andrea E. Rizzoli (Eds.)  
<http://www.iemss.org/society/index.php/iemss-2014-proceedings>

Gray, S. S. Gray, L. Cox, and S. Henly-Shepard. (2013) Mental modeler: A fuzzy-logic

cognitive mapping modeling tool for adaptive environmental management. *Proceedings of the 46th International Conference on Complex Systems*. 963-973

Kohut, J. Palarama, L., Bochenek, E., Jenson, O., Manderson, J. Oliver, M., Gray, S., and C.

Roebuck1 (2012) Using ocean observing systems and local ecological knowledge to nowcast butterfish bycatch events in the Mid-Atlantic Bight longfin squid fishery. *Oceans*, 1-6

Jordan, R.C., J. Ehrenfeld, S. Gray, W. Brooks and C.E. Hmelo-Silver. (2012) Cognitive

considerations in citizen science. Eds: R. Bonnie J. Dickenson. In *Citizen Science:*

*Public Participation in Environmental Research*. Cornell University Press

Gray, S**.** and L. L. Gray. (2011) LEED Standards. In: *Green Energy Considerations. Green*

*Society: Towards a Sustainable Future*. Eds. D. Mulvaney and P. Robbins.SAGE Publishing. Thousand Oaks, CA. pp 277-283

Sinha, S., S. Gray, C. Hmelo-Silver, R. Jordan, S. Honwad, (2010) Appropriating

conceptual representations: A case of transfer among middle school science teachers *Proceedings of the 9th International Conference of the Learning Sciences*.(1) 834-841

Gray, S. **(**2010) Are robots and satellites the future of fisheries management? *Fisheries.* 35(1) 48.

McCay, B.J., C.F. Creed, and S. Gray. (2009) Fish or Cut Bait: How to participate in the

FisheriesManagement System, 3rd revised edition. Fort Hancock, NJ: New Jersey Marine Sciences Consortium. (12pp)

Gray, S. M. Ives, J. Scandol, and R. Jordan. (2009) Classifying the risk in fisheries management

in Australia and the U.S. Atlantic coast. In: *Scandol JP, Ives MC and Lockett MM*

*Development of national guidelines to improve the application of risk-based methods in the scope, implementation and interpretation of stock assessments for data-poor species.* Finalreport to the Fisheries Research & Development Corporation for Project No. 2007/016.3Industry & Investment NSW Final Report Series No. 115. Cronulla Fisheries Research Centreof Excellence, NSW, Australia pp 164-179.

Gray, S., C. E. Hmelo-Silver, L. Liu, R.C. Jordan, and H. Jeong. (2008) Learning with

ecosystem. models. *Proceedings of the 8th International Conference of the Learning Sciences* (1) 289-296.

Gray, S. (2009) William D. Ruckelshaus. Ed: George Cevasco. In *The Modern American*

*Environmentalist*. Johns Hopkins University Press. Baltimore MD. Pp 448-452.

Gray, S**.,** R.C. Jordan, and D. V. Howe. (2008) Oceanic Changes. *The Encyclopedia of Global*

*Warming and Climate Change*. Ed: S. George Philander. Sage Publications.

Jordan, R.C., S. Gray and D.V. Howe. (2008) Atlantic Ocean. *The Encyclopedia of Global*

*Warming and Climate Change*. Ed: S. George Philander. Sage Publications.

Hmelo-Silver, C. R. C. Jordan, L. Lui, S. Gray**,** M. Demeter, S. Rugaber, S.Varrtam, and A.

Goel. (2008) Focusing on function: Thinking below the surface of complex natural systems *Science Scope*, 31: 27-35

Jordan, R.C., S. Gray, M. Demeter, L. Lui, and C. Hmelo-Silver. (2008) Quick fix: Don’t forget

behavior in systems thinking! *American Biology Teacher*. 70: 329-330.

*Presentations\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

2025 (invited) Tandem Global Conference on Corporate Sustainability

2025 (invited) Smithsonian Institute, funded by Blue Ocean Convergence

2024 (invited) Gund Institute for the Environment, University of Vermont, Burlington Vermont

2024 (invited) Stockholm Resilience Center, Stockholm, Sweden

2024 (invited) University of Leeds, Leeds, United Kingdom

2024 (invited) Leibniz Centre for Tropical Marine Research, Bremen, Germany

2024 (invited) The Smithsonian Environmental Research Center, Edgewater, Maryland

2023 (invited) University of Southern Alabama, led three-day workshop on Participatory Modeling, Mobile, Alabama

2023 (invited) The Society for Personality and Social Psychology, Collective Intelligence and Knowledge Integration working group (lead Harvard Business School)

2023 (invited) Pan-African Mosquito Control Association, Annual Conference, led a three-day workshop for practitioners for malaria management, Kigali, Rwanda

2022 (invited) Resource for the Future (RFF), “Social Science for Solar Geoengineering” Panel Discussant, Washington D.C.

2022 American Association of Geography Annual Meeting. “Harnessing Collective

Intelligence for Conservation” New York, NY.

2021 (invited) Gene Convene (FNIH), Fuzzy Cognitive Maps to Conceptualize Complex

Problems

2021 (invited) University of Twente, HABITABLE project, Dept of Environmental Modeling

2020 (invited) Oberlin College and Conservatory, Oberlin, Ohio

2020 National Council for Science and the Environment. “Participatory Modeling in Environmental Decision-making.” Washington D.C. (session co-organizer)

2019 (invited) Ohio State University. School for the Environment, Columbus OH

2019 (organizer and co-lead) Collaborative Modeling Field School, Detroit MI

2019 (invited) Copenhagen Business School, Collective Intelligence Unit, Copenhagen

2019 (invited) Leibniz Institute of Agricultural Development in Transition Economies, Halle

2019 (invited) Leibniz Institute of Freshwater Ecology and Inland Fisheries, Berlin

2019 (invited) University of Texas at Austin, Department of Civil Engineering, Austin, TX

2018 (invited) Texas State University, Department of Geography Distinguished Lecture Series,

“Harnessing collective intelligence for complex environmental decision-making“, San Marcos, TX

2018 International Environmental Modeling and Software Society (IEMSS) Annual

Meeting, Fort Collins CO (co-author to student papers\*)

(a) Participatory Modeling 2.0: Interfaces, Tools and Methods

(b) Participatory Modeling 2.0: New Tools (Workshop Organizer)

(c) Making Models Meaningful (Workshop Organizer)

(d) Harnessing Wisdom of the Crowd for Complex Systems Modeling\*

(e) Modeler Decision-making: Why choose what model?\*

(f) A Review of Participatory Modeling Research\*

2018 (keynote) University of Texas, Texas Water Research Network (TWRN) Annual

Conference, “The collaborative modeling toolbox” Austin, TX

2017 (invited) NASS Annual Meeting, “Collaborative modeling for health sciences” Orlando

2017 (organizer) Resilience 2017. “Looking inside the Participatory Modeling Toolbox”

Symposium/Interactive Session. Stockholm, Sweden

2017 (invited) University of Hawaii, “Modeling social-ecological systems with Fuzzy Cognitive

Mapping” (invited for FCM workshop and research talk) Honolulu, HI

2017 (keynote) Columbia University. Teaching and Learning about Food Systems Conference

(invited plenary presentation, panel discussion, and workshop) New York

2017 Citizen Science 2017, Tools for Conservation-based Citizen science, Minneapolis

2017 Michigan State University, Conference on Teaching and Learning. Measuring

Systems Thinking with Mental Modeler, East Lansing, MI

2017 (invited) Autonomous National University of Mexico, Applied Mathematics and Systems

Research Institute, (invited for FCM workshop and research talk) Mexico City

2016 American Geophysical Union, “4Ps to improve collaborative socio-environmental modeling” San Francisco CA (presentation and invited panel discussion)

2016 (invited) Stanford University and University of Minnesota (Natural Capital Project)  
“Collaborative modeling to understand social-ecological systems”

2016 (keynote) The Ohio State University School of Social Work- Research Conference 2016 “Participatory modeling for wicked problems” Columbus OH

2016 (invited) Northern Illinois University, Department of Computer Science, “Crowdsourcing

platforms to understand wicked problems: is the crowd wise?” Dekalb, IL

2016 Innovations in Collaborative Modeling 2016. East Lansing, MI

(a) “The Participatory Modeling Toolbox” (invited plenary panel)

(b) “Review of FCM Typologies for Collaborative Modeling” (co-author)

(c) "4 Ps for Participatory Modeling” (co-author)

(d) "An introduction to Mental Modeler" (90 minute workshop)

(e) “Collaborative modeling of wildfire” (co-author)

2016 (invited) MSU Extension Community and Natural Resources Development Association Annual Conference, “Systems thinking tools for extension and outreach”

2016 (organizer) International Congress on Environmental Modeling Society, “Participatory

Modeling Workshop” (with A. Voinov and N. Kolagani) Toulouse. France

2015 (invited) Conference on Conservation Science, “Modeling social-ecological systems” (training workshop), New York, NY

2015 ICES, “How the sausage is made: when public/science partnerships decrease trust of science”, Copenhagen, Denmark

2015 International Congress for Conservation Biology, "Collaborative modeling for conservation" Montpellier, France

2015 Western Economic Association International. "Probability of adoption: Using mental models of farm dynamics and perception of environmental change to understand farming practices in rural India" Honolulu, HI

2015 (invited) Socio-Environmental Synthesis Center. "Mental Modeler: An overview for measuring learning about social-ecological systems" Annapolis, MD

2015 Collaborative Modeling 2015. East Lansing, MI

(a) "Using FCM to measure change, resilience and preferred states of socio-ecological systems"

(b) "Linking products, people, and process in participatory modeling" (Invited plenary panel discussion)

(c) "An introduction to Mental Modeler" (90 minute workshop)

(d) "Flood models that matter: integrating FCM and ABM" (co-author)

2015 (invited) Michigan State University. Department of Community Sustainability. "A cognitive approach to understanding human-environment interactions" East Lansing, MI

2015 (invited) Auburn University. School of Forestry and Wildlife Science. "Using mental models to understand human-wildlife interactions" Auburn, AL

2015 Citizen Science 2015, San Jose, CA

(a) "Modeling with citizen scientists: Using community-based modeling tools to develop citizen-science projects resulting in resource management outcomes"

(b) "How the sausage is made: When public participation in science leads to decreased trust of scientific assessment"

(c) "Determining the Willingness to Pay for Ecosystem Service Restoration: A High-School Citizen Science Project" (co-author)

(d) "The Challenges with Training Outdoor Enthusiasts" Online (co-author)

(e) "Citizen Science Learning and Epistemology in Socio-Ecologically Oriented Projects" (co-author)

2014 (invited) University of Nebraska. Water Resources Research Institute/Department of Natural Resources: “Using mental models to understand human-environment interactions” Lincoln, NE

2014 Japan Society for International Development “Cognitive considerations in conservation agriculture” Osaka, Japan (part of our Belmont Forum Symposium)

2014 Human Ecology, "A FCM-based software for measuring perceptions of the environment" Bar Harbor, ME

2014 International Symposium on Society and Resource Management, “Using mental models to understand conservation related attitudes and policy preferences: an empirical study of anglers and stocking” Hanover, Germany

2014 International Congress on Environmental Modelling and Software (iEMSs) San Diego, CA

(a) “Predicting local scale climate change impacts on endangered birds by integrating watershed models and expert knowledge-based models for decision-support”.

(b) “Modeling with citizen scientists”

2014 Resilience 2014: Session Chair/Organizer “Fuzzy-logic Cognitive Mapping as a tool to understand change and transformation in social-ecological systems” Montpellier, France

(a) “What is FCM?”

(b) “A FCM software tool for research and planning”

(c) “Case study: Coastal sustainability from the waterfront view of homeowners” (Steven Scyphers, lead author)

2014 (keynote) NOAA Ecosystem Modeling Workshop “Mixed models/mixed messages” Seattle, WA.

2014 Citizen Cyber-Science Summit, “Modeling with citizen scientists.” London

2013 Hawaii Conservation Congress. “Coupling watershed modeling and knowledge-based modeling to understand climate change impacts on endangered birds on Kauai. Honolulu, HI

2013 University of Massachusetts, School for the Environment, “Using mental models to understand human-environment interactions.” Boston, MA

2013 US Fish and Wildlife. Decision-support software for federal natural resource management agencies. (webinar)

2013 International Symposia on Society and Resource Management. “A fuzzy-logic

based software tool for resource management.” Estes Park, CO

2013 (invited) Colorado State University, Department of Human Dimensions, “Mental models as

a human dimension” Fort Collins, CO

2013 Hawaii International Conference on Complex Systems, “Mental Modeler: A

participatory fuzzy-logic cognitive mapping software for adaptive environmental

management, Maui, HI

2012 Human Dimensions of Fisheries and Wildlife, Breckenridge CO

(a) “Understanding factors that influence stakeholder trust of natural resource science and institutions”

(b) “The influence of specialization and target species choice on anglers' mental models of fish ecology”

(c) “Mental Modeler: Incorporating individual and group stakeholder understanding into natural resource decision-making through a fuzzy-logic cognitive mapping software tool”

(d) “Comparing the structure and function of mental models of fishery scientists and angling experts related to pike (Esox lucius) ecology and management”

2012 Ecological Society of America annual meeting in Portland OR

(a) “Examining the relationship between ecosystem service characteristics and their management: A case study of Hawaii’s watersheds and coasts”

(b) “Why and how should high school students learn about the ecology-nature of science?”

(c) “Lessons from implementing a model-based pedagogy in the K12 classroom”

2012 (invited) Leibniz Institute for Freshwater Ecology and Inland Fisheries: “Toward

Collaborative Conservation: Integrating social science, natural science and participation in US fisheries management.” Berlin Germany

2012 (invited) University of Massachusetts, Environment, Earth, and Ocean Sciences

Department, Boston, MA “Managing the social-ecological ocean”

2011 (invited) University College Cork, Department of Geography, Cork, Ireland

“Integrating social and natural science to develop natural resource policy”

2011 (invited) University of Hawaii, Department of Natural Resources and Environmental

Management, Manoa, HI, “What are the human dimensions of natural resources”

2011 (invited) State University of New York, Environmental Science and Forestry, Syracuse,

NY, Department of Environmental Studies “Developing methods for integrating stakeholder knowledge in participatory management”

2011 American Educational Research Association, New Orleans, LA “Understanding

learning as an outcome of modeling”

2011 (invited) Saint Peters College, Department of Biology, Jersey City, NJ

“Managing marine fisheries as a social-ecological system”

2011 Resilience 2011: Resilience, Innovation, and Sustainability, Tempe, AZ

“Integrating stakeholder knowledge into social-ecological decision-making”

2011 (invited) International Council for the Exploration of the Seas (ICES) Halifax, NS

“Integrating social datasets into an ecosystem assessment for the North Atlantic”

2011 (invited) University of Illinois, Department of Natural Resources and Environmental

Science, Urbana, IL, “Managing marine fisheries as a social-ecological system”

2011 (invited) Science and Policy Advisory Panel for the Barnegat Bay Partnership, Tom’s River, NJ, “Developing an integrated social-ecological assessment model for

Barnegat Bay”

2010 (invited) American Geophysical Union, San Francisco, CA, “Structure, Behavior, Function

as a conceptual framework for teaching and learning about complexity in ecosystems”

2010 (invited) Ecosystem Planning Committee, Mid-Atlantic Fisheries Management Council,

Norfolk, VA, “What makes some parts of the ocean sticky to fish? Ocean observing for marine habitat science and ecosystem management”

2010 (invited) Colby College Department of Environmental Studies, Waterville, ME

“Integrating natural and social science to develop marine policy”

2010 Human Dimensions of Fisheries and Wildlife, Estes Park, CO, “Benefits and limitations to knowledge diversity in social-ecological decision-making”

2010 (invited) NOAA NMFS Howard Marine Laboratory, Sandy Hook, NJ “Integrating

stakeholder knowledge into the management of marine fisheries”

2009 (invited) NOAA Office of Ocean and Coastal Management, Washington D.C.

“Characterizing recreational anglers and as a component of social-ecological

systems: friend or foe to conservation?”

2009 Mid-Atlantic American Fisheries Society, New Jersey “Developing ecological

indicators for fisheries management using IOOS defined habitat characteristics in

the mid-Atlantic Bight” (winner, best student presentation)

2009 Ecological Society of America Annual Meeting, Albuquerque, NM “Combining fuzzy logic cognitive mapping & resilience theory to understand coupled social-ecological system dynamics: a case study of the summer flounder fishery” poster

2009 Ecological Society of America Annual Meeting Albuquerque, NM “Assessment methods for interdisciplinary ecological dissertation research” (workshop)

2009 Mid-Atlantic Fisheries Management Council meeting New York City,

“Developing ecological indicators for fisheries management using IOOS defined habitat characteristics in the mid-Atlantic Bight”

2009 Society for Conservation Biology International Marine Conservation Congress.

Washington D.C “Identifying the risks in fisheries management”

2009 American Educational Research Association (AERA) Annual Meeting. San Diego, CA, “Modeling practices as function of task structure”

2008 (invited) National Estuarine Research Reserve Systems (NERRS) Annual Meeting,

Monterrey, CA “How can social science help the NOAA NERRS: Implications

for ecosystem-based management”

2008 North American Association of Environmental Educators Annual Research

Symposium. Wichita, KS “A characterization of ecology and ecosystem understanding: a call for targeted instruction”

2008 NJ Biology Teachers’ Association at the New Jersey Science Teacher's

Convention. Somerset, NJ, “Thinking below the surface: using aquaria to teach about systems”

2008 Proceedings of the International Conference of the Learning Sciences: Utrecht, the Netherlands, “Learning with ecosystem models: A tale of two classrooms”

2008 National Science Teacher Association National Conference Boston, MA “Representational tools to support learning about complex systems”

2008 American Educational Research Association (AERA) Annual Meeting, New York, NY, “An integrated framework for bridging diverse analytical tools for understanding technology-mediated learning about complex natural systems”

2007 (invited) Rutgers Marine Field Station, NOAA Review, Tuckerton, NJ, “Developing costal

training programs built around recreational fishermen for the Jacques Cousteau NERR”

2005 (invited) U.S. EPA National Radiation and Indoor Environment Laboratory, Las Vegas,

NV, “Sustainable environmental management programs through community outreach and web communication”

*Teaching Experience\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

2024 Michigan State University, CSUS 802, *Research Methods* (graduate)

2019 - 2025 Michigan State University, ISB 202: *Ecology and Society*

2022 Michigan State University, CSUS 820: *Social-ecological Resilience* (graduate)

2021 Michigan State University, CSUS 834: *Survey Research Methods* (graduate)

2018 Michigan State University, CSUS 802: *Research Methods* (graduate)

Michigan State University, CSUS 834: *Survey Research Methods* (graduate)

2017 Michigan State University, CSUS 802: *Research Methods* (graduate)

Michigan State University, CSUS 890: Special Topics: *Modeling Social-ecological Systems with Fuzzy Cognitive Maps* (graduate)

Michigan State University, CSUS 834: *Survey Research Methods* (graduate)

Michigan State University, CSUS 200: *Introduction to Sustainability*

2016 Michigan State University, CSUS 200: *Introduction to Sustainability*

2015 University of Massachusetts, EEOS 604: *Coasts and Communities* (graduate cornerstone II)

2014 University of Massachusetts, EEOS 603: *Coasts and Communities* (graduate cornerstone I);

University of Massachusetts, EEOS 122: *Introduction to Environmental Policy*

University of Massachusetts, EEOS 476: *Capstone*

University of Massachusetts, EEOS 699: *People and Protected Areas*

2012-2013 University of Hawaii, Capacity Building Grant Awarded ($50,000 as PI) Creating Virtual Calculus: Distance Learning for NREM 203: *Applied Calculus*

2012 University of Hawaii, *Applied Calculus* *for the Life and Social Sciences*

University of Hawaii, *Environmental and Natural Resource Policy*

2010-2011 Rutgers University, *Portal to Academic Student Success (PASS)*

2008-2009 Rutgers University, *Politics of Environmental Issues (teaching assistant)*

*Service and Working Groups \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_*

**Editorial Board**

Editorial Board, Socio-ecological Systems Modeling (founding board member, 2017)

Guest Editor, Mathematical Modelling and Complex Systems in Agroecology for *Frontiers in Sustainability Food Systems*

**Proposal Review Panels**

NSF Dynamics of Integrated Socio-environmental Systems (DISES) invited review panel (multiple years)

NSF Coupled Natural and Human Systems (CNHS) invited review panel (multiple years)

NOAA, Collaborative Research Catalyst Grants (multiple years)

Swiss National Science Foundation (ad hoc)

NSF Risk and Decision, invited panel review (ad hoc, multiple times)

National Academies of Science (NAS), Healthy Ecosystems, invited panel review

NSF Research Traineeship (NRT), invited panel review

EU European Research Council (ERC), Consolidator Grants, invited review panel

NOAA NERR Collaborative Science, invited review panel (multiple years)

**Working Groups and Science Advisory Panels**

Fifth National Climate Assessment (NCA) 2024-2026, Chapter Author, *Decision and Management Science*

First National Nature Assessment (NNA) 2024-2026, Chapter Author, *Nature and Cultural Heritage*

Lenfest Ocean Program, Integrating the Functional Importance of Biodiversity in Management of US Marine Ecosystems, Working group lead (2023-2025), Led by Smithsonian Institute. NOAA, and The University of Southern Alabama

Collective Intelligence 2023 (Boston and Copenhagen) Advisory Board

Collective Intelligence 2020 (Boston and Copenhagen) Advisory Board

Ocean Modeling Forum (The Nature Conservancy and University of Washington)

NSF National Ecological Synthesis Center (NCEAS) workshop participant, Biocultural indicators for resilience

NSF Socio-Environmental Synthesis Center (SESYNC) workshop PI, Participatory modeling of action-oriented outcomes

NSF Socio-Environmental Synthesis Center (SESYNC) workshop participant, Teaching about socio-environmental systems

NSF National Evolutionary Synthesis Center (NaESCent) workshop participant, Anthropogenic Sensory Stimuli as Drivers of Evolution: A conceptual synthesis and roadmap for an integrated citizen-science research network

NSF Socio-Environmental Synthesis Center (SESYNC) workshop participant, Climate Social Science Literacy

NOAA National Ecosystem Modeling working group member

International Council for the Exploration of the Seas (ICES) Social Science Advisory Panel

**Journal Reviewer** *Nature: Sustainability, Nature: Ecology and Evolution, Science Advances (AAAS), Neurocomputing*, *Biological Conservation*, *Ecological Engineering,* *Ecological Modeling*, *Frontiers in Ecology and the Environment*, *Ecology and Society,* *Environmental Management, Environmental Modeling and Software, Land Use Policy, Sustainability,* ***Annals of Fuzzy Mathematics and Informatics,*** *PLoS One, Tropical Ecology, Journal of Agricultural Extension and Rural Development, Environmental Education Research*

*Advising \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****\_\_\_\_\_\_***

**Postdocs**

2020 Payam Aminpor, lead user researcher UXR, Thermos Scientific

2019-2023 Chelsea Wentworth, assistant professor, MSU

**Graduate (Chair)**

2025 Abbie Ording (MSU, MS)

2025 Max Toloff (MSU, MS)

2018-2024 Mahdi Zahreei (MSU, PhD) assistant research professor, MSU

2019-2024 Carissa Knox, (University of Michigan, PhD). postdoc USDA/U of Vermont

2022-2023 Nathan Brugonee (MSU, PhD), computational social scientist, TwoSix Labs

2016-2020 Payam Aminpor, (MSU, PhD), postdoc Johns Hopkins University, NIST

2017-2020 Laura Young, (MSU, MS), assistant director office of sustainability, MSU

2015-2019 Allison Singer, (MSU, PhD), assistant professor, Northern Arizona University

2014-2018 Alexander Metzger, (UMass, PhD), environmental consultant, Boston

2012-2015 Noelani Puniwai, (UHawaii, PhD), assistant professor, University of Hawaii  
2011-2014 Jackie Halbrendt, (UHawaii, PhD), postdoc, Wageningen University

2012-2014 Molly Miller, (UHawaii, MS), PhD student, University of Maine

2011-2013 Angela Nyaki, (UHawaii MS), reserve manager, Tanzania National Parks

2011-2013 Mary Younkin, (UHawaii, MS), research scientist, The Nature Conservancy

**Graduate (Committee)**

2017-2021 Chris Henderson (MSU, PhD)

2017-2020 Chris Bargenhaden (MSU, PhD)

2015-2020 Bethany Laursen (MSU, PhD)

2017-2020 Kyle Metta (MSU, PhD)

2016-2018 Emily Koryto (MSU, MS)

2016-2018 Natalia Ocampo Dias (MSU, MS)

2016-2018 John Olwande, (MSU, PhD)

2012-2017 Hla Htun, (UHawaii, PhD

2015-2016 Zak Mertz (UMass, MS)

2014 Jennifer Ly (UMass, MS)

2011-2016 Rusyan Jill-Mamitt (UHawaii, PhD)

2013-2014 Vijaylaxsmi Kesavan, UMass, MS)

2011-2013 Sarah Henly-Shepard (UHawaii, PhD)

2011-2012 Michele Barnes (UHawaii, MS, PhD)

2011-2012 Kara Miller (UHawaii, MS)

2011-2012 Cheryl Lohr (UHawaii, PhD)

**Undergraduate (Supervised research)**

2019-2021 Grace Newland (MSU, CSUS)

2016-2018 Raisa Lenau, (MSU, AFRE) Krogers Sustainability Office

2015-2018 Maddie Gorman (MSU, CSUS) State of Michigan

2015-2018 Caite Reza (MSU, Zoology) USGS. MS student UC Santa Barbara

2015-2018 Degen Gemarowski, (MSU, Plant Science)

2015-2017 Jane Henderon (MSU/U of San Diego) PhD student at UC Berkley

2014-2017 Rachel Robers-Toler, (UMass, SFE) environmental consultant

2014-2015 Emily True, (UMass, SFE) MS student at Duke University

2014-2015 Alexander Berry, (UMass, SFE)

2014-2015 Faynshteyn, Nickolas, (UMass, SFE) MS student at Northeastern University

2012-2013 Nate Hunter, (UHawaii, NREM)  
2011-2013 Anthea Fernandez, (UHawaii, Biology) Ernst and Young

2011-2012 Derek Ford, (UHawaii, NREM)

2010-2011 Alicia Raeburn, (Rutgers Marine Science and Policy) NRDC

2010-2011 Kathryn Gardella, (Rutgers Human Ecology) MS student at UMiami

2010-2011 Samantha Paeswak, (Rutgers Marine Science and Education)

2009-2010 Amanda Gettlefinger, (Rutgers Environmental Policy) PS&S Consulting

2009-2010 Dan Clark, Rutgers Ecology, MS, Purdue, PhD student Rutgers

2009-2010 Alex Chan, Rutgers Mathematics and Biology (medical school 2010)

*Awards \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

2024 MSU Ronald Wilson Endowed Teaching Award

2018 MSU TEDx speaker (1 of 10 speakers selected out of 120+ speakers)

2016 Elinor Ostrom Young Scholar Award (International) nominee

2013 Leibniz-Institute of Freshwater Ecology and Inland Fisheries Fellowship

2013 Mentor of the Year, University of Hawaii, NREM Graduate Student Organization

2010 Rutgers University Research Award

($1000 prize, 1 of 6 students awarded from university-wide competition)

2009 American Fisheries Society Student Writing Award

2009 American Fisheries Society (Mid-Atlantic) Best Student Presentation

2008 Australian Academy of Sciences EAPSI Recipient

2006 U.S. EPA STEP Program (3 month award)

2005 U.S. EPA Environmental Scholar Award, Radiation National Laboratory