

JUSTIN ANDREW JOHNSON

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Applied Economics
University of Minnesota
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EDUCATION

Ph.D.	Department of Applied Economics, University of Minnesota	2009-2014
B.A.	St. Olaf College	2001-2005

POSITIONS

Assistant Professor	Department of Applied Economics, University of Minnesota	2020-present
Lead scientist and co-director	The Natural Capital Project, Institute on the Environment, University of Minnesota	2019-2020
Senior scientist	The Natural Capital Project, Institute on the Environment, University of Minnesota	2016-2019
Research scientist	The Natural Capital Project, Institute on the Environment, University of Minnesota	2015-2016
Post-doctoral research fellow	The Natural Capital Project, Institute on the Environment, University of Minnesota	2014-2015
Visiting lecturer	St. Olaf College	2012-2013

SELECTED PEER-REVIEWED PUBLICATIONS

- Johnson, J. A.**, Baldos, U., Hertel, T., Liu, J., Nootenboom, C., Polasky, S., and Roxburgh, T. (2020). Global Futures: modelling the global economic impacts of environmental change to support policy-making. *World Wildlife Fund Technical Paper*. <https://www.wwf.org.uk/globalfutures>
- Pereira, H. M., Rosa, I. M., Martins, I. S., Kim, H., Leadley, P., Popp, A., ... **Johnson, J. A.**, ... & Baisero, D. (2020). Global trends in biodiversity and ecosystem services from 1900 to 2050. *bioRxiv (Preprint)*.
- Suh, S., **Johnson, J. A.**, Tambjerg, L., Sim, S., Broeckx-Smith, S., Reyes, W., & Chaplin-Kramer, R. (2020). Closing yield gap is crucial to avoid potential surge in global carbon emissions. *Global Environmental Change*, 63, 102100.
- Mandle, L., Shields-Estrada, A., Chaplin-Kramer, R., Mitchell, M. G., Bremer, L. L., Gourevitch, J. D., **Johnson, J. A.**, ... & Sonter, L. J. (2020). Increasing decision relevance of ecosystem service science. *Nature Sustainability*, 1-9.
- Johnson, J. A.**, Jones, S., Wood, S., Chaplin-Kramer, R., Hawthorne, P., Mulligan, M., Pennington, D., DeClerck, F. (2019). Mapping Ecosystem Services to Human Well-being: a toolkit to support integrated landscape management for the SDGs. *Ecological Applications*.
- Chaplin-Kramer, R., Sharp, R. P., Weil, C., Bennett, E. M., Pascual, U., Arkema, K. **Johnson, J. A.**, ... & Hamann, M. (2019). Global modeling of nature's contributions to people. *Science*, 366(6462), 255-258.
- Oakleaf, J. R., Kennedy, C. M., Baruch-Mordo, S., Gerber, J. S., West, P. C., **Johnson, J. A.**, & Kiesecker, J. (2019). Mapping global development potential for renewable energy, fossil fuels, mining and agriculture sectors. *Scientific Data*, 6(1), 101.
- Smith, W. K., Nelson, E., **Johnson, J. A.**, Polasky, S., Milder, J. C., Gerber, J. S., ... & Arbutnot, M. (2019). Voluntary sustainability standards could significantly reduce detrimental impacts of global agriculture. *Proceedings of the National Academy of Sciences*, 116(6), 2130-2137.
- Keeler, B. L., Hamel, P., McPhearson, T., Hamann, M. H., Donahue, M. L., Prado, K. A. M., ... **Johnson, J. A.**, ... & Guerry, A. D. (2019). Social-ecological and technological factors moderate the value of urban nature. *Nature Sustainability*, 2(1), 29.
- Boyd, J. W., Bagstad, K. J., Ingram, J. C., Shapiro, C. D., Adkins, J. E., Casey, C. F., ... **Johnson, J. A.**, ... & Hass, J. L. (2018). The Natural Capital Accounting Opportunity: Let's Really Do the Numbers. *BioScience*, 68(12), 940-943.
- Kim, H., Rosa, I., Alkemade, R., Leadley, P., Hurtt, G., Popp, A., ... **Johnson, J. A.**, ... & Caton, E. (2018). A protocol for an intercomparison of biodiversity and ecosystem services models using harmonized land-use and climate scenarios. *Geoscientific Model Development*, 11(11), 4537-4562.

- Wood, S. L., Jones, S. K., **Johnson, J. A.**, Brauman, K. A., Chaplin-Kramer, R., Fremier, A., ... & Mulligan, M. (2018). Distilling the role of ecosystem services in the Sustainable Development Goals. *Ecosystem services*, 29, 70-82.
- Sonter, L. J., **Johnson, J. A.**, Nicholson, C. C., Richardson, L. L., Watson, K. B., & Ricketts, T. H. (2017). Multi-site interactions: Understanding the offsite impacts of land use change on the use and supply of ecosystem services. *Ecosystem Services*, 23, 158-164.
- Johnson, J. A.**, Runge, C. F., Senauer, B., & Polasky, S. (2016). Global Food Demand and Carbon-Preserving Cropland Expansion under Varying Levels of Intensification. *Land Economics*, 92(4), 579-592.
- Carlson, K., Gerber, J., Mueller, N., Herrero, M., MacDonald, G., Brauman, K., Havlik, P., O'Connell, C., **Johnson, J.A.**, Saatchi, S., West, P. (2016, in press). Greenhouse gas emissions intensity of global croplands. *Nature Climate Change*.
- Vogl, A. L., Denny-Frank, P. J., Wolny, S., **Johnson, J. A.**, Hamel, P., Narain, U., & Vaidya, A. (2016). Managing forest ecosystem services for hydropower production. *Environmental Science & Policy*, 61, 221-229.
- Polasky, S., Bryant, B., Hawthorne, P., **Johnson, J. A.**, Keeler, B., & Pennington, D. (2015). Inclusive wealth as a metric of sustainable development. *Annual Review of Environment and Resources*, 40, 445-466.
- Chaplin-Kramer, R., Sharp, R.P., Mandel, L., Sim, S., **Johnson, J. A.**, Butnar, I., i Canals, L.M., Eichelberger, B.A., Ramler, I., Mueller, C. and McLachlan, N. (2015). Spatial patterns of agricultural expansion determine impacts on biodiversity and carbon storage. *Proceedings of the National Academy of Sciences*, 112(24), 7402-7407.
- Johnson, J. A.**, Runge, C. F., Senauer, B., Foley, J., & Polasky, S. (2014). Global agriculture and carbon trade-offs. *Proceedings of the National Academy of Sciences*, 111(34), 12342-12347.
- Runge, C. F., & **Johnson, J. A.** (2014). *Are we in this together? Risk bearing and collective action*. Journal of Natural Resources Policy Research, 6(1), 71-76.
- Runge, C. F., Sheehan, J. J., Senauer, B., Foley, J., Gerber, J., **Johnson, J. A.**, ... & Runge, C. P. (2012). Assessing the comparative productivity advantage of bioenergy feedstocks at different latitudes. *Environmental Research Letters*, 7(4), 045906.
- Runge, C. F., **Johnson, J. A.** & Runge, C. P. (2011). Better milk than cola: soft drink taxes and substitution effects. *Choices*, 26(3), 3.

TEACHING EXPERIENCE

Instructor	<i>Conservation Biology</i> . Co-taught course with Prof. Joseph Bump. Emphasized use of economic theory and models to inform conservation biology policy and analysis.	2017
Instructor	<i>Institute on the Environment, University of Minnesota</i> . Created and taught a short-course, "Python Programming and Big-Data for Sustainability Science." In process of proposing a semester-long version for the next academic year.	2016
Guest lecturer	<i>Applied Economics, University of Minnesota</i> . Lectured in several classes for professors C.F. Runge and S. Polasky, including for Ph.D. level "Welfare Economics" and master's level "Conservation Economics."	2015-present
Visiting lecturer	<i>St. Olaf College</i> . Successfully proposed and taught a new course, "Economics of Climate Change." Developed unique curriculum, including online materials and participatory "climate negotiations." Taught "Principles of Economics." See justinandrewjohnson.com/teaching for details and student evaluations.	2012-2013
Teaching assistant	<i>Applied Economics, University of Minnesota</i> . Developed class material and lectured weekly for "Managerial Economics" and "Principles of Microeconomics."	2012-2013

RESEARCH FUNDING AND GRANT SUBMISSIONS

- "Using Computable General Equilibrium Models to Support Optimal Conservation Planning." 2019-2020. Lead PI on successful grant for \$350,000 from the World Bank.
- "Networking Global to Local Analyses to Inform Sustainable Investments in Land and Water Resources." 2020-2024. National Science Foundation AccelNet proposal for \$2,000,000. Submitted.
- "Human Wellbeing, Global Ecosystem Services Modeling and Economic Analysis: New convergence methodology to assess sustainability." 2020-2023. National Science Foundation Convergence proposal for \$1,000,000. Submitted.
- "What is the Value of Ecosystem Services to Macroeconomic Performance?" 2019-2021. Lead PI on a submission for \$145,000 to the UK Treasury and the Dasgupta Review on Biodiversity and Ecosystem Services.
- "WWF Nature Futures, Phase 3: Extending methods to model the impact of ecosystem services on economic indicators." 2019-2020. Lead PI on successful grant for \$160,000 from WWF-UK.
- "Improving Dow-DuPont's Nature Scorecard." 2019. Lead PI on successful grant for \$59,000 from The Nature Conservancy and Dow-DuPont.

- “Enhancing Carbon Modeling to identify spatial configuration effects and temporal dynamics.” 2019-2020. Lead PI on successful grant for \$198,000 from Unilever Corporation.
- “WWF Nature Futures, Phase 2: Preliminary modeling on the impact of ecosystem services on economic indicators.” 2018-2019. Lead PI on successful grant for \$90,000 from WWF-UK.
- “Environmental Health and Human Health of Peri-Urban Systems.” Co-PI on grant to Wellcome Trust. Rejected.
- “Strength and Attribution of Edge Effects in Forest Carbon Storage Detected Through Integration of Remote-Sensing and Social Data Synthesis.” Rejected but resubmitted as successful grant to Unilever.
- “Spatial concentration of global crop production and risks to global food security.” Co-PI on submission to the National Science Foundation. Rejected but now in revision.
- “Assessing the Business Case for Supporting Commodity Standards,” 2015. Co-PI on successful \$50,000 research support grant.
- “Efficiency of U.S. Land-Use Patterns in Providing Ecosystem Services,” 2015. Co-PI on USDA NIFA grant. Initial submission rejected with requested revisions. Currently revising for the next funding cycle.
- “Targeting agricultural innovation and ecosystem service management in the Northern Volta,” 2014. Co-lead of the “Future Scenario Analysis” work package in the proposal. \$1.9 million USD.
- “Incorporating ecosystem services into the sustainable development goals,” 2014) \$80,000 USD funding from Science for Nature and People (SNAP).

WORKING PAPERS AND PAPERS IN PREPARATION

- Johnson, J. A., (in prep). *Food for Nature Payments: Global cost-efficiency optimization of payments for ecosystem services.*
- Johnson, J. A., (in prep). *Spatial interactions on rival public goods: agent-based, microeconomic simulation of fuelwood gathering in Tanzania.*
- Runge, C.F., Polasky, S., Coggins, J., and Justin, J. A. (in prep). *Retrospect and Prospect: rational behavior with variable time preference.*

SELECTED REPORTS, PROFESSIONAL PUBLICATIONS AND ACADEMIC PRESENTATIONS

- Johnson, J., Baldos, U. L., Hertel, T., & Polasky, S. (2019). Assessing the Economic Impacts of Ecosystem Services within the GTAP Framework.
- Johnson, J. A. (2019). Globally Harmonized Carbon Storage Data. *bioRxiv*, 727750.
- Roxburgh, T., Hertel, T., Polasky, S., Johnson, J., Baldos, U. L., & Nootenboom, C. (2019). 2019 United Nations General Assembly: World Leaders Must Act Now to Restore Nature for A Secure Economic Future.
- Liu, L., Johnson, J., Alvarado-Quesada, I., Anderson, C., Brauman, K. A., Dennedy-Frank, P. J., ... & Chaplin-Kramer, R. (2019, December). Advancing the use of Earth Observations in ecosystem service modeling for natural capital accounting in Costa Rica. In AGU Fall Meeting 2019. AGU.
- Rogers, Martha H., Thomas Polzin, and Justin Johnson (2019). Science-Based Ecosystem Service Tools to Support Corporate Decision-Making. Invited presentation at Ecological Society of America, Louisville.
- Boundaogo, M., Brauman, K., Chaplin-Kramer, R., Daré, W., DeClerck, F. A., Fremier, A., ... & Luedeling, E. (2016). Report on the main activities undertaken and preliminary findings emerging from research on the CGIAR Targeting Agricultural Innovations and Ecosystem Services in the northern Volta basin (TAI) project.
- Jones, S., Wood, S., Johnson, J. A. and Fabrice DeClerck, (2015). Making Ecosystems Count in the Sustainable Development Goals. *Biodiversity, CGIAR, Rome.*
- Johnson, J. A. Resilience profiles for GRP target regions, (2015). *Conservation International working paper, submitted to Rockefeller Foundation.*
- Johnson, J. A., Sood, A. and Giordano, M. (2012). Modeling Food Demand with Changing Income Elasticity and Trade Barriers. *International Water Management Institute (IWMI), Sri Lanka. Staff paper, used in updates to WATERSIM model.*
- Johnson, J. A., (2011). Estimating the Impact of Climate Change in Borneo. *World Wildlife Fund, U.S. and Indonesia, staff paper. Washington, D.C.*
- Runge, C. F. and Johnson, J. A., (2010). Rivers of Gold: Where Does Corn Flow and Does it Make Sense. Conference paper, presented at *Corn Belts: Iowa and International Agriculture*, Grinnell College.

HONORS AND AWARDS

- University of Minnesota Graduate School Fellowship. Three years full funding plus stipend.
- University of Minnesota Department of Applied Economics. Two years full funding plus stipend.
- Fulbright Scholar at Tsinghua University, Beijing
- Center for International Food and Agricultural Policy (CIFAP) Travel Grant to Sri Lanka

NON-ACADEMIC PROFESSIONAL EXPERIENCE

Minnesota AIDS Project	Web Communications Coordinator	2006-2009
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BOARD SERVICE AND VOLUNTEER WORK

Natural Capital Project	Many volunteer roles, including software designer	2010-present
Applied Economics Graduate Students Club	Technology Coordinator	2011-2012
M Flats Condominium Association	Owners Board	2010-2012
Children's Art Initiative	Board of Advisers	2006-2007
Young Non-Profit Professional Network	Board of Directors	2006-2009