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Education

Ph.D. Natural Resource Economics, West Virginia University

M.S. Applied Sociology, University of Texas at Dallas

M.Sc. Economics, Quaid-i-Azam University

B.A. Economics, University of Sindh

Academic Positions

Rutgers University, School of Environmental and Biological Sciences

Assistant Research Professor, January 2020–Present.

Post-doctoral Associate, 2015–2019.

West Virginia University, Davis College of Agriculture, Natural Resources and Design

Research Assistant, 2008–2014.

Teaching

Rutgers University, Dept. of Agricultural, Food, and Resource Economics at Rutgers SEBS

Introduction to Environmental Valuation: Spring 2020-current

Economics of Futures Markets: Spring 2020-current

Business Decision Computer Tools: Spring 2020-current

Independent Study in Agricultural Economics: Spring 2022

Rutgers University, Dept. of Ecology, Evolution, and Natural Resources

Short course for graduate students on Agent-based Model Implementation: Spring 2017

West Virginia University, Davis College of Agriculture, Natural Resources and Design

Foundations of Applied GIS: Spring 2013

Introduction to GIS Natural Sciences: Fall 2012

Sustainable Living: Fall 2010

Intro Agri and Agribusiness Economics: Spring 2009

Principles of Microeconomics: Fall 2008

Publications

1. Arbab, N.N, J. Grabosky, & Richard Leopold (2022). Economic Assessment of Urban Ash Tree Management Options in New Jersey. *Sustainability*. 2022; 14(4):2172.
2. Paulin, Joseph, Nazia Arbab, Brian J Schilling (2022). White-Tailed Deer and the Costs to Farmers' Livelihoods: A Case Study of New Jersey Stories. *Rutgers New Jersey Agricultural Experiment Station (NJAES), Rutgers Cooperative Extension (RCE)*.
3. Ligmann-Zielinska, A., [et al, including N. Arbab. (2020). 'One Size Does Not Fit All': A Roadmap of Purpose-Driven Mixed-Method Pathways for Sensitivity Analysis of Agent-Based Models. *Journal of Artificial Societies and Social Simulation* 23 (1) 6.
4. Arbab, N.N, J. Quispe and J.M Hartman, J. Grabosky (2019). Implications of Different DEMs on Watershed Runoffs Estimations. *Journal of Water Resource & Protection* 11, 448-467.
5. Giri, S, N. Arbab and R. Lathrop (2019). Assessing the potential impacts of climate and land use change on water fluxes and sediment transport in a loosely coupled system. *Journal of Hydrology* 577, 123955.
6. Giri, S, N. Arbab and R. Lathrop (2018). Water security assessment of current and future scenarios through an integrated modeling framework in the Neshanic River Watershed. *Journal of Hydrology* 563, 1025-1041.
7. Arbab, N.N, A.R Collins and J.F Conley (2016). Projections of Watershed Pollutant Loads Using a Spatially Explicit, Agent-Based Land Use Conversion Model: A Case Study of Berkeley County, West Virginia. *Applied Spatial Analysis and Policy* 9, 1-35.
8. Assisted Professor Llyod J. Dumas with the preparation of the report entitled, "Seeds of Opportunity: Climate Change Challenges and Solutions." Published at *Civil Society Institute, Massachusetts*. April 2006.
9. Arbab, N.N,& J. Grabosky (2022). GIS-based Multicriteria Analysis for Land Use and Forest Planning in New Jersey. Technical report in progress for *Rutgers New Jersey Agricultural Experiment Station (NJAES), Rutgers Cooperative Extension (RCE)*.

Scientific Tools

Arbab, N. "Spatially Explicit Forest Ecological Assessment (SEFEA) Decision Support Tool to Aid in Forest Management and Land Use Planning: New Jersey as a Model."

Arbab, N. "The Emerald Ash Borer (EAB) Risk Model to Predict EAB Dispersal Risk in New Jersey." The model was developed for New Jersey Department of Agriculture to inform 2017 EAB trapping Survey. Summer 2017.

Grants & Awards

Principal Investigator "Spatially Explicit Forest Ecological Assessment (SEFEA) Decision Support Tool to Aid in Forest Management and Land Use Planning: New Jersey as a Model." United States Department of Agriculture, National Institute of Food and Agriculture (USDA-NIFA), McIntire-Stennis Forestry Research Program.

Agent-Based Modeling 17 Symposium. "Professional Enhancement Award." April 2017, San Diego, CA.

Conference Presentations

Arbab, N. 2022." Economic Considerations of Soil Health Practices. Talk in " Symposium in Soil Health Connections", Rutgers University, New Brunswick , New Jersey. March 15.

Arbab, N. & J. Grabosky. 2021." Multi-criteria Decision Analysis for Spatial Forest Assessment. A Case Study of Highlands, New Jersey." Poster presentation in "Climate Bridge Conference", Rutgers University, Piscataway, New Jersey. October 14-15.

Arbab, N. & J. Grabosky. 2020." Economic Assessment of Urban Ash Tree Management in New Jersey." Presented in " From Metropolis to Wilderness: Foresters Rooted in Conservation", National Convention, Society of American Foresters, October 29-31.

Arbab, N. & J. Grabosky. 2019." The Spatially Explicit Forest Ecological Assessment (SEFEA) Decision Support Tool." Poster presented at Rutgers Climate Symposium, Piscataway, New Jersey November 20.

Arbab, N. & J. Hartman. 2019. "Impact of scale variation on watershed runoff concentrations in the Raritan River Watershed." Poster presented at Resilience and the Raritan Conference and Awards Ceremony, Piscataway, New Jersey June 7.

Giri, S., N. Arbab & R. Lathrop. 2019. "Assessing the Potential Impacts of Climate and Land Use Change on Water Fluxes and Sediment Transport in a Coupled Natural and Human System." Poster presented at Resilience and the Raritan Conference and Awards Ceremony, Piscataway, New Jersey June 7.

Giri, S., N. Arbab & R. Lathrop. 2018. "Water Security Assessment of Current and Future Scenarios through an Integrated Modeling Framework." Poster presented at Micro to Macro: The Future of the Raritan Conference and Awards Ceremony, New Brunswick, New Jersey June 8.

Arbab, N., J. Quispe & J. Hartman. 2017. "Effects of Digital Elevation Model (DEM) Variation on Water Quality Model Results." Poster presented at Ecological Society of America, Portland, Oregon, August 6-11.

Arbab, N., J. Brown, K. Fenn & J. Lockwood. 2017. "An Agent-Based Model of Land Use and Biodiversity: A Case Study of Morris County, New Jersey." Poster presented at the Postdoctoral Research Symposium, New Brunswick, NJ, April 28.

Arbab, N., J. Brown, K. Fenn & J. Lockwood. 2017. "Impacts of Land Use Conversions on Bird Biodiversity near Protected Areas in New Jersey." Poster presented at the Agent Based Modeling Symposium, San Diego, CA, April 20-22.

Arbab, N., J. Conley & J. Grabosky. 2016."Projections of Emerald Ash Borer Dispersal Risk in New Jersey ." Poster presented at the Annual Conference of Computational Social Science Society of America (CSSSA). Santa Fe, NM, November 16-20.

Arbab, N. and J.Lockwood. 2016."Species Responses to Habitat Edges in Northern New Jersey." Poster presented for the Mid-Atlantic Chapter of the Urban and Regional Information Systems Association (MAC URISA) Conference, Atlantic City, NJ, October 12-14.

Arbab, N. and J.Grabosky. 2016."Socio-Ecological Impacts of Emerald Ash Borer in New Jersey." Paper presented at the International Society for Ecological Modelling Global Conference, Towson, MD, May 8-12.

Arbab, N., 2015."Spatial Analysis of Emerald Ash Borer (EAB) Spread in New Jersey." Poster presented at the Rutgers Regional Climate Symposium, New Brunswick, NJ, November 20.

Arbab, N. and A.R Collins. 2014."Spatial Logistic Methods for Spatially Explicit Neighborhood Externalities." Paper presented at the Northeast Agricultural and Resource Economics Association (NAREA). Morgantown, WV, June 1-3.

Arbab, N. and A.R Collins. 2013."Land Use Change and Spatial Externalities in Berkeley County, WV: A Spatially Explicit Agent-based Model." Poster presented at the Annual Conference of Computational Social Science Society of America (CSSSA). Santa Fe, NM, August 22-25.

Arbab, N. and A.R Collins. 2013. "Patterns of Residential Development and Water Quality in Opequon Creek Watershed, Berkeley County, WV." Paper presented at the NYC Computational Economics and Complexity Workshop session at Eastern Economic Association (EEA) Annual Meeting. New York City, NY, May 9-11.

Arbab, N. and A.R Collins. 2012. "Agents' Heterogeneity and its Role in Changing Land Use Patterns: An Agent Based Model of Potomac River Basin." Poster presented at the Agricultural and Applied Economics Association (AAEA) Annual Meeting. Seattle, WA, August 12-14.

Arbab, N., A.R Collins and M.P. Strager. 2012. "An Agent Based Approach for linking Land-use and Water Quality in Opequon Creek Watershed." Paper presented at the Southern Regional Science Association (SRSA) Annual Meeting. Charlotte, NC, March 21-25.

Arbab, N. and A.R Collins. 2011. "Decision Making and Land Use Change in Netlogo: An Agent Based Simulation of the Potomac River Basin." Poster presented at the Annual North American Meetings of the Regional Science Association International (RSAI). Miami, FL, November 9-12.

Invited Seminars

Arbab, N. 2021. "Agent-Based Modeling for Ecological Systems." Department of Human Ecology, Rutgers University, New Brunswick, NJ, November 23.

Arbab, N. 2019. "Economics and Management of Protected Areas." Department of Agricultural, Food and Resource Economics, Rutgers University, New Brunswick, NJ, December 2.

Arbab, N. 2017."Emerald Ash Borer Dispersal and Assessment of Urban Ash Tree Management Options in New Jersey." Fall Seminar, Department of Agricultural, Food and Resource Economics, Rutgers University, New Brunswick, NJ, December 13.

Arbab, N. 2017."Spatial analysis of land use/land cover change in the Raritan River Watershed." Fall Seminar, Marine Sciences Building, Rutgers University, New Brunswick, NJ, November 9.

Arbab, N. 2017."Assessing the forest vulnerability in Raritan River Basin." Fall Symposium, Center for Resilient Landscapes, Rutgers University, New Brunswick, NJ, September 12.

Arbab, N. 2016. "Modeling Social-Ecological Disturbances." Fall Symposium, Center for Resilient Landscapes, Rutgers University, New Brunswick, NJ, October 6.

Arbab, N. 2015. "Socio-Ecological Simulation Modeling of Governance and Ecological Processes." New York City Urban Field Station, USDA, Forest Service (FS), New York City, NY, November 18.

Arbab, N. 2015. "Agent-based modeling application to assess Emerald Ash Borer Dispersal in New Jersey ."Center for Resilient Landscapes, Rutgers University, New Brunswick, NJ, August 4.

Arbab, N. 2015. "Panel Discussion on Interconnectedness: Human-Nature-Connectivity." Fairmont State University, Fairmont, WV, May 5.

Journal Reviewer

1. Sustainability
2. SAGE Open
3. European Journal of Soil Science
4. Journal of Environmental Management
5. Water Resources Management
6. Land Degradation & Development
7. International Journal of Ambient Energy
8. Open Geosciences
9. Journal of Water Resource and Protection

Editorial Activities

Editorial Board Member, Data in Brief

Article Editor, SAGE Open Journal.

Professional Activities & Services

Technical Contributor, Ecosystems chapter of the Fifth National Climate Assessment (NCA5), U.S. Global Change Research Program, Current

Committee Member, Structure and Governance Committee, School of Environmental and Biological Sciences, Rutgers University, New Brunswick, NJ, Fall 2020-current

Organizer and Presenter, Stakeholder Workshop "The Spatially Explicit Forest Ecological Assessment (SEFEA) Decision Support Tool."Rutgers University, New Brunswick, NJ, October 1st, 2020.

Organizer and Presenter, Stakeholder meeting "The Spatially Explicit Forest Ecological Assessment (SEFEA) Decision Support Tool." New Jersey Highlands Council, Chester, NJ, September 20, 2019.

Co-investigator, Case Study Farmer Interviews on White-Tailed Deer Damage to Agricultural Crops in New Jersey, Rutgers New Jersey Agricultural Experiment Station (NJAES), Rutgers Cooperative Extension (RCE). Current

Organizer, Short Training Course on "Agent-based Model Implementation." Rutgers University, New Brunswick, NJ, Spring, 2017.

Project Participant. "The evolving distribution of relative humidity conditional upon daily maximum temperature in a warming climate." Statistics in Earth Science Course, Rutgers University. Fall 2018.

Fellow, New York City Urban Field Station, USDA, Forest Service (FS), 2015-2017

Member, New Jersey Emerald Ash Borer Task Force, USDA Animal and Plant Health Inspection Service (APHIS). 2015-2017

Earth Team Volunteer, USDA, Natural Resources Conservation Service. 2015.

Discussant, Southern Regional Science Association (SRSA) Annual Meeting. Charlotte, NC, March 21-25, 2012

Affiliations

International Union of Forest Research Organizations (IUFRO)

Mid-Atlantic Chapter of the Urban and Regional Information Systems Association

The Computational Social Science Society of the Americas

Northeast Agricultural and Resource Economics Association

Mentoring & Advising

Mentor in Professional Internship Network (SPIN), School of Environmental and Biological Sciences, Rutgers University, January 2022-current.

Thesis Committee Member, Rutgers University, Department of Agricultural, Food, and Resource Economics (DAFRE) student John Borrmann for Master Thesis on "The Impacts of the Highlands Water Protection and Planning Act on the Supply of New Residential Housing Construction", Current

Mentored Rutgers University, Department of Landscape Architecture student in research project on Oak Leaf Biomass in Liberty State Park, New Jersey, Fall 2018 - Spring 2019

Mentored Rutgers' student for the project on Species Richness and Diversity in an Urban Brownfield in New Jersey. The student submitted the report and presented her work for Research Experiences for Undergraduate Research Summer Program in Molecular Biophysics, Princeton University, Summer 2018

Skills, Modeling & Software

Agent-based Modeling (ABM), Multiple Regression, Machine Learning algorithms. Proficiency in C language, C++, C#, E-views, Java, Mathematica, MATLAB, Minitab, NetLogo, PostgreSQL, Python, R, RePast, SAS, S-Plus, SPSS, STATA, TerrSet, ArcGIS, QGIS, ArcGIS extension of Soil and Water Assessment tool (ArcSWAT).

Contributing acknowledgments

Rutgers White-Tailed Deer (*Odocoileus virginianus*) Population Density Survey using sUAS Infrared: Hutcheson Memorial Forest Center and surrounding landscapes of Franklin and Hillsborough Townships - November 2019 and March 2020

Yuan, J, Stein, M, Kopp, R. 2019." The evolving distribution of relative humidity conditional upon daily maximum temperature in a warming climate, Earth and Space Science Open Archive.

Last updated: June 7, 2022