

TIMOTHY O. RANDHIR

*Professor and Graduate Program Director
Department of Environmental Conservation
University of Massachusetts*

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Faculty Profile: <http://eco.umass.edu/people/faculty/randhir-timothy-o/>

Web-based Decision Support: <http://aqua1.eco.umass.edu/>

UMass-Yoro Sustainability Project: <http://aqua1.eco.umass.edu/eco/>

Watershed Information Site: <http://www.ecowaters.com/wis/>

 https://www.researchgate.net/profile/Timothy_Randhir

 <http://www.researcherid.com/rid/A-7145-2009>;

 http://scholar.google.com/citations?user=3_JsdOIAAAAJ&hl=en

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EXPERTISE

Watershed science, water quality, ecohydrology, climatic change, systems ecology, complex systems modeling, nonpoint source pollution, ecological economics, simulation and optimization, GIS, spatial analysis, complex systems, Institutional economics, multicriteria decision making, natural resources policy, agricultural economics, land use, international trade and development, bioenergy, common pool resources, policy design, and environmental sciences.

EDUCATION

Ph.D. (1995) Department of Agricultural Economics, Purdue Univ., West Lafayette, IN

Thesis: “Agriculture and water quality: Modeling NPS pollution under geographic state dynamics and biophysical simulation” – awarded “Outstanding Ph.D. Thesis” by the department of agricultural economics.

Keywords: Watershed systems, natural resources conservation policy, regional planning, water resources protection, spatial dynamic programming, watershed management, ecosystem modeling, Geographic Information Systems (GIS), multi-attribute decision-making, and nonpoint source pollution.

M.S. (1988) Dept. of Ag. Economics, Tamil Nadu Ag. University, India

B. S. (1982) Agricultural Sciences, Annamalai University, India.

PROFESSIONAL EXPERIENCE

Sept 2015 – Current: Professor and Graduate Program Director

Sept 2007 – Aug 2015: Associate Professor (Tenured in 2007)

Sept 1997 – Oct 2007: Assistant Professor

Dept. of Environmental Conservation, Univ. of Massachusetts, Amherst, MA 01003
 Tenure track position started in September 2002.

Faculty Affiliations:

Intercampus Graduate School in Marine Sciences and Technology
 UMass Extension
 Adjunct, UMass Department of Resource Economics
 Adjunct, Springfield Technical Community College

Appointment: *Research, Teaching, and Service*

- Research areas: spatial optimization, natural resource economics, watershed science, hydrology, nonpoint source pollution, biodiversity, urbanization, community science, sustainable development, GIS, multi-criteria decision making, ecological economics, global warming, incentive design, common pool resources, information technology, and systems modeling.
- Teaching: Watershed Science & Management, Watershed Management (Online), Ecological Economics and Sustainability, Ecosystem Modeling and Simulation, Advanced Watershed Management, Water Resources Management & Policy, Water Resources, Blue Gold and World Water Wars.
 Developed and coordinating the Professional Masters Program in Watershed Management offered by the department.
- Grant generation while at UMass (Total: \$1,937K (43% as a PI)):
PI: \$380K (MA EOEA), \$30K (WCS), \$93K (BHE), \$50K (USDA-MAES-Hatch), \$16K (USDA-MAES-Hatch-multistate), \$90K (USDA-MAES-Hatch-multistate), \$50K (USDA-MAES-Hatch), \$98K (USDA-FS), \$15K (FRG/UMass), \$5K (USDA-FS), \$12K (BRC)
Co-PI: \$202K (USDA/NIFA); \$338K (MA DEP), \$80K (USDA-CSREES), \$86K (USDA-SARE), \$170K (MA DAR), \$212K (USDA-SARE), \$10K (MA DOE).
- Service: Training and outreach to agencies and communities throughout the Commonwealth of Massachusetts and New England, MA Director of SNE Chapter of SWCS, Editor of two environmental journals, developed participatory planning methods for landscape resources, involvement in national and international professional activities, Provost's Task Force on graduate admissions, UMass Faculty Senate Computer & Electronic Communications Committee, Ombuds Academic Honesty Board and chair of the department computer committee.

Jan 96 - Aug 97: Natural Resource Economist (Post-Doctoral position)

Dept. of Agricultural Economics, Purdue University.

- Post doctoral investigator and modeler in a \$2 million USDA-CSREES project (SDSS-Spatial Decision Support System) of Purdue Univ., Texas A&M Univ., and Univ. of Illinois.
- The project develops a spatial, participatory, multi-objective, dynamic optimization system to develop cost-effective and efficient soil and water conservation decisions.
- Other research conducted: global warming, international agricultural trade, watershed economics and policy, ecosystem-based planning and policies, conservation issues in developing economies, water quality policies, and management of common property resources

Aug 91 - Dec 95 Graduate Research Assistant

Dept. of Agricultural Economics, Purdue University.

Completed two research projects (for USGS and USDA) and a Ph.D. thesis.

Jan 89 - July 91 Assistant Professor

Dept. of Agricultural Economics, Tamil Nadu Agricultural University.
Teaching (40%), Research (40%), and Extension (20%).

Taught one undergraduate course and completed several projects on water allocation, village economics, cropping systems, and farm management as a Principal Investigator.

Professional Memberships

Soil and Water Conservation Society (SWCS)
American Geophysical Union (AGU)
American Association for Advancement of Science (AAAS)
American Water Resource Association (AWRA)
International Society for Ecological Economics (ISEE)
International Association for the Study of Common Property Resources
American Agricultural Economists Association (AAEA)
Northeastern Agricultural and Resource Economists Association (NAREA)
American Economic Association (AEA)

International Collaborations

Istanbul University, Turkey; University of Sao Paulo, Brazil; Federal University of Sao Carlos, Sorocaba, Brazil; Military University of Colombia, Bogota, Colombia; National University of Colombia, Bogota, Colombia; Cankiri Karatekin University, Cankiri, Turkey; Tamil Nadu Agriculture University, Coimbatore, India; Bharathiar University, Coimbatore, India; National Academy of Ag. Research Management, Hyderabad, India; Indian Council of Agricultural research, New Delhi, India; Wildlife Conservation Society, Kampala, Uganda; Suleyman Dimerel University, Isparta, Turkey; University of Bergen, Norway; Islamic Azad University, Maybod, Iran; University of Tehran, Iran; Tarbiat Mo-dares University, Iran; University of Botswana, Botswana; Victoria University, Australia; Islamic Azad University, Maybod, Iran; University of Tehran, Iran; University of South China, Hengyang, China; East China Normal University, Shanghai, China; Yunnan Academy of Economics, Kunming, China; Zhejiang Agricultural & Forestry University in China; Nanjing Forestry University, China.

AWARDS AND HONORS:

Awards:

Public Engagement Project Fellow (2018) University of Massachusetts
Innovate@ Fellow (2017) University of Massachusetts
TIDE Ambassador (2017-18) University of Massachusetts
Faculty Fellow (2017-18) Kahn Institute, Smith College on Destroy Then Restore: Transforming our Lands and Waters
Sustainability Curriculum Initiative Fellow (2014) University of Massachusetts
Lilly Teaching Fellow (2003-04), University of Massachusetts.
Chancellor's Award for Outstanding Community Service (1999), University of Massachusetts
Service Learning Fellow in Teaching (1998-99) awarded by Provost's Special Committee
Berg Fellow (1997) of the Soil and Water Conservation Society.
Outstanding Ph.D. Thesis Award (1995), Purdue University, Dept. of Ag. Economics.

Nominated for Distinguished Teacher Award (UMass, 2004, 2008, and 2011), Nominated for Best Reviewer (SWCS, 1997) and Nominated by Department for Outstanding Ph.D. Thesis (National competition of the American Agricultural Economics Association, 1995).

Merit Scholarship:

National Merit Scholar, India (1982).

Merit Scholar, Tamil Nadu Ag. Univ., India (1986);

Medals: Pachaiyappa's Gold Medalist, India (1980).

Academic Honors:

Outstanding Ph.D. Thesis (1995) and nominated for AAEEA Competition (1995).

Honor rank in MS. Program (1988)

Honor rank in BS. Program (1986)

Rotary award for first rank in Secondary School Leaving Examination (1980).

Training:

Computational Hydraulics INC. course on “Stormwater Modeling with SWMM, PCSWMM, and GIS” Feb 21-23, 2000.

NCAR Fellowship to participate in “An Institute of the Economics of the Climatic Resource” 5-7 June 1995, National Center for Atmospheric Research, Boulder Colorado.

RESEARCH

Grants:

(* indicate grants while at UMass- Listed chronologically).

1995-1997. **USDA:** “Spatial Decision Support System.” \$2 million. Investigators: J.G.Lee, B.Engel, and S. Lovejoy. Participated in writing the proposal as a Ph.D. student. I was later appointed as an investigator and modeler in this multi-institutional, and multi-disciplinary project (Jan 1995 to Oct. 1997).

1998-1999: ***EOEA/ Commonwealth of Massachusetts.** "Watershed Initiative - UMASS-EOEA Contract" \$387,000. Principal Investigator (PI): T. O. Randhir, Asst. Professor, Dept. of Natural Resources Conservation. Managed a team of more than 15 under-graduates, 5 graduate research assistants, and one professional staff. Effectively managed the budget of 10 different sub-projects (Jan 98-Dec 99).

1998-1999 ***Board of Higher Education.** “Three Communities Connected by a River and Frameworks: Linking Science and Technology to Schools (\$20,000). PI:Randhir, Co-PI: Burbank (Sept 1998 to Aug 1999).

1999-2000 ***Board of Higher Education.** “Three Communities Connected by a River: Sustainable Communities through State Curriculum” (\$25,000) PI: Randhir, Co-PI: Burbank; (Sept 1999 to Aug 2000).

1999-2000. ***USDA/CSREES.** “Watershed-based Education to Protect Water Resources and Ecosystems” \$80,000. PI: Jackson, CoPI: Randhir (Jan 98-Dec 99).

2000 - 2001. ***MA Board of Higher Education.** 2000-2001. "Three Communities Connected by a River: Sustainable Communities through State Curriculum Frameworks." \$48,000; PI: Randhir, Co-PI: Burbank. (Sept 2000 to Aug 2001).

2002-2007. ***USDA-Hatch (MAES).** Integrated Watershed Management to Protect Water Quality and Ecological Integrity.” \$50,000 PI: Randhir. (Sept 2002 to Aug 2007).

2003-2005. ***USDA/Forest Service:** “Distance-Education in Forestry” \$98,000, PI: Randhir (Aug 2003-June 2005); Co-PIs: McComb and Loomis;

- 2003-2004. ***USDA/Forest Service**. “Urban Forestry Watershed Modeling” \$5,000, PI: Randhir (Aug 2003-June 2004).
- 2004-2005 ***USDA-Hatch (MAES)**. “Environmental and Economic Impacts of Nutrient Management on Dairy Forage Systems” \$16,000. PI: Randhir; CoPI: Herbert (Sept 2004 to Aug 2005).
- 2005-2010. **USDA-Hatch (MAES). Multi-state (NE-132)**: “Whole Farm Dairy and Beef Systems to Protect Environmental Quality” \$90,000 PI: Randhir; CoPI: Herbert (Sept 2005 to Aug 2010).
- 2006-2007 ***Faculty research grant/ Healy endowment grant, UMass**, “Decision Making under Environmental Uncertainty: An Experimental Investigation”, (\$15K) PI: T. Randhir. Sept 2006 to Aug 2007.
- 2006-2008. ***USDA-SARE**: “Effective Cover Crop Seeding dates for Nutrient Recovery” \$85,953 PI: Herbert; Co-PI: A.M. Hashemi and T. Randhir (July 2006 to June 2008).
- 2007-2008. ***Mass DOE**. Economic Evaluation of Switchgrass for Biofuel. \$10K PI: Herbert; Co-PI: R. Probst, and T. Randhir. (May 2007 to April 2008).
- 2007-2010. ***USDA-SARE**. Assessing Pasture Species, Varieties, Blends. \$212K. PI: Herbert; CoPI: T. Randhir and others.
- 2007-2009. ***Mass DAR -Ag. Innovation Center**. Integrating Pasture Management on Dairy and Livestock Farms. \$170K. PI: Herbert; CoPI: T. Randhir and others.
- 2008-2010. **Wildlife Conservation Society**. Graduate student training - Nampindo. \$30K, PI: Randhir
- 2009-2014- *USDA-Hatch (MAES). “Protecting water security in watershed systems: Uncertainty in decision making” \$10K, PI: Randhir
- 2011-2012- *Blackstone River Coalition (MA) “Compilation of nutrient loading and GIS modeling in the Upper Blackstone Watershed” \$10K, PI: Randhir, CoPI: Paula Rees.
- 2012-2015 *Mass DEP “Minimizing Nonpoint Source Pollution from Two Horse Facilities through BMPs” \$338K, PI: Hashemi, CoPI: S. Herbert, T. Randhir
- 2013-2015 USDA-NIFA “Conference on Climate Uncertainty and Agricultural Water Security” \$202K. PI: Rees, Co-PI: S. Herbert, C. Nicholson, T. Randhir.
- 2015-2017 MassDEP “Reducing Non-Point Source Pollution from Two Equine Facilities through Implementation, Remediation, and Education of Selected Best Management Practices” \$253K PI: Hashemi, CoPI: S. Herbert, T. Randhir.
- 2017 UMass Provost Office Climate Change Resilience, Environmental Justice, and Ecosystem Services (CREE), under Western Mass Sustainable Equity and Engagement Network (SEEN), \$9K. PI: Randhir
- Minor Grants: Influence of Risk on Input Use in South India, 1990 (TNAU University Grant); Deforestation and Agricultural Productivity in India, 1991(TNAU University Grant); Contribution of the University to State Development, 1991(TNAU University Grant); Conjunctive use of Irrigation Water for Crop Production in P.A. River Irrigation System, 1990 (Indian Council of Agricultural Research Grant).

Publications:

(†indicates Prof. Randhir’s graduate student; *indicates visiting scholar’s research done at Prof. Randhir’s lab)

SUMMARY: *Refereed Journal Articles (72); Refereed full papers in proceedings (4); Books (1); Book Chapters (5); Peer-reviewed selected/ conference papers (77); Non-refereed conference papers (4); Other publications (11); and several in development or in review.*

Books

Randhir, T.O. 2006. ***Watershed Management: Issues and Approaches***. International Water Association Publishing, London, UK. (168 Pages)

Refereed Journal Articles:

1. Mello*, K. D., R. A. Valente, T. O. Randhir, C.A. Vettorazzi. 2018. Impacts of tropical forest cover on water quality in agricultural watersheds in southeastern Brazil. Accepted. *Ecological Indicators*. 93: 1293-1301. <https://doi.org/10.1016/j.ecolind.2018.06.030>
2. Mello*, K. D., R. A. Valente, T. O. Randhir, A.C.A.D. Santos, C.A. Vettorazzi. 2018. Effects of land use and land cover on water quality of low-order streams in Southeastern Brazil: Watershed versus riparian zone, *CATENA*, 167: 130–138. <https://doi.org/10.1016/j.catena.2018.04.027>
3. Quinonez†, A.L.C., T. K. Fuller., T.O. Randhir. 2018. A review of otter distribution modeling: Approach, scale, and metrics. IUCN Otter Species Group Bulletin. 35(2): 97-127. http://www.otterspecialist-group.org/Bulletin/Volume35/Quinonez_et_al_2018.html
4. Randhir, T.O., P. Mozumder*, and N. Halim. 2018. Decision-making under Surprise and Uncertainty: Arsenic Contamination of Water Supplies. *Journal of Hydrology*. 560: 424-433. <https://doi.org/10.1016/j.jhydrol.2018.03.030>
5. Zhang*, C., T.O. Randhir, and Y. Zhang. 2018. Theory and practice of enterprise carbon assets management from the perspective of Low Carbon Transformation. *Carbon Management*. 9(1): 87-94. [DOI: 10.1080/17583004.2018.1426329](https://doi.org/10.1080/17583004.2018.1426329)
6. Jamali, A.A., T. O. Randhir, and J. Nosrati. 2018. Water resources planning for subsurface dam sites using Boolean and fuzzy logic in arid watersheds. *ASCE's Journal of Water Resources Planning and Management*. 144(8): 1-9. [https://ascelibrary.org/doi/full/10.1061/\(ASCE\)WR.1943-5452.0000947](https://ascelibrary.org/doi/full/10.1061/(ASCE)WR.1943-5452.0000947)
7. Rajaiei*, F., A.E. Sari, A. Salmanmahiny, T. O. Randhir, M. Delavar, R.D. Behrooz, A. M. Bavani. 2018. Simulating long-term effect of Hyrcanian forest loss on phosphorus loading at the sub-watershed level. *Journal of Arid Land*. 10(3): 457-469. <https://doi.org/10.1007/s40333-018-0012-3>
8. Jamali, A.A., S. Zarekia, and T.O. Randhir. 2018. Risk assessment of sand dune disaster in relation to geomorphic properties and vulnerability in the Suduq-Yazd Erg. *Applied Ecology and Environmental Research* 16(1): 579-590. http://dx.doi.org/10.15666/aecer/1601_579590
9. Mello*, K. D., and T.O. Randhir. 2017. Diagnosis of water crises in the metropolitan area of São Paulo: Policy opportunities for sustainability, *Urban Water Journal*. 15(1):53-60. <https://doi.org/10.1080/1573062X.2017.1395895>
10. Mello*, K.D., T. O. Randhir, R. A. Valente, and C. A. Vettorazzi. 2017. Riparian restoration for protecting water quality in tropical agricultural watersheds, *Ecological Engineering*. 108:514-524. <https://doi.org/10.1016/j.ecoleng.2017.06.049>
11. Randhir, T.O., E. Wright†, and J. Ahern. 2017. Modeling Suburban Phosphorus Runoff and BMPs: Downscaling from watershed systems to site-specific scales, *ASCE's JI. of Sustainable Water in the Built Environment*, 3(4): 1-12. <http://doi:10.1061/JSWBAY.0000829>
12. Talib†, A. and T.O. Randhir. 2017. Climate change and land use impacts on hydrologic processes of watershed systems, *Jl. of Water and Climate Change*. 8(3): 363-374. <http://DOI:10.2166/wcc.2017.064>
13. Han*, L. T.O. Randhir, M. Huang. 2017. Design and assessment of stream–wetland systems for nutrient removal in an urban watershed of China, *Water, Air, & Soil Pollution*. 228:139. <http://doi:10.1007/s11270-017-3312-x>
14. Pamukcu*, P., N. Erdem, Y. Serengil, and T.O. Randhir. 2016. Ecohydrologic modelling of water resources and land use for watershed conservation, *Ecological Informatics*, 36: 31-41. <http://dx.doi.org/10.1016/j.ecoinf.2016.09.005>
15. Dudula†, J. and T. O. Randhir. 2016. Modeling the influence of Climate Change on Watershed Systems: Adaptation through Targeted Practices. *Journal of Hydrology*.

- <http://doi:10.1016/j.jhydrol.2016.07.020>
16. Talib[†], A. and T.O. Randhir. 2016. Managing Emerging Contaminants in Watersheds: Need for Comprehensive, Systems-Based Strategies, *Sustainability of Water Quality and Ecology*, <http://doi:10.1016/j.swaqe.2016.05.002>
 17. Randhir, T.O. 2016. Globalization impacts on local commons: multiscale strategies for socioeconomic and ecological resilience. *Int. Journal of Commons*. 10(1). <http://DOI:10.18352/ijc.517>
 18. Talib[†], A. and T.O. Randhir. 2016. Managing emerging contaminants: Status, impacts, and watershed-wide strategies. *Exposure and Health*. 8(1), 143-158. <http://DOI:10.1007/s12403-015-0192-4>
 19. Ekness[†], P. and T.O. Randhir. 2015. Effect of climate and land cover changes on watershed runoff: A multivariate assessment for stormwater management, *Jl. of Geophysical Research: Biogeosciences*. 120(9):1785-1796. <http://DOI:10.1002/2015JG002981>
 20. Mozumder*, P., T.O. Randhir, W.F. Vásquez, M. Jerath. 2015. Risk Perceptions and Adaptation to Climate Variability: Survey Evidence from Maple Syrup Farmers, *Int. Jl. of Ecological Economics and Statistics* 36(4):1-17.
 21. Pusparini[†], W., P.R. Sievert, T.K. Fuller, T. O. Randhir, and N. Andayani. 2015. Rhinos in the Parks: An Island-Wide Survey of the Last Wild Population of the Sumatran Rhinoceros, *PLoS ONE*. 10(10). DOI: 10.1371/journal.pone.0136643.
 22. Naing[†], H., T.K. Fuller, P.R. Sievert, T.O. Randhir, A.J. Lynam, S.H.T. Po, M. Maung, A.J. Lynam, S. Htun, W. N. Thaw, and T. Myint. Assessing large mammal and bird richness from camera-trap records in the Hukaung Valley of Northern Myanmar, *Raffles Bulletin of Zoology* 63: 376-388.
 23. Zhang*, C., and T.O. Randhir. 2015. Comparative analysis of accounting principles in trading carbon emissions for alternative mechanism design, *Jl. of Env. Accounting and Management*, 3(1): 1-11.
 24. Randhir, T.O. and S. Raposah[†]. 2014. Urbanization and watershed sustainability: Collaborative simulation modeling of alternative landscape states, *Journal of Hydrology*. 519: 1526-1536.
 25. Sekar[†], I. and T.O. Randhir. 2014. Spatial Risk Assessment of Farming on Wetland Habitats in Watershed System. *Water, Air, & Soil Pollution*. 225. DOI 10.1007/s11270-014-2116-5
 26. Randhir, T.O. 2014. Resilience of watershed systems to climate change. *Jl. of Earth Science and Climatic Change*, 5:6. <http://dx.doi.org/10.4172/2157-7617.1000e109>
 27. Oluka*, S., A. L. Steigen, T.O. Randhir. 2014. Managing coliform contamination and chlorine by-products in urban water supply system in Uganda, *Sustainability of Water Quality and Ecology*, <http://dx.doi.org/10.1016/j.swaqe.2014.04.001>.
 28. Randhir, T.O. and P. Ekness[†], 2013. Water quality change and habitat potential in riparian ecosystems. *Ecohydrology and Hydrobiology*, DOI: 10.1016/j.ecohyd.2013.09.001
 29. Erol*, A. and T.O. Randhir. 2013. Watershed ecosystem modeling of land-use impacts on water quality, *Ecological Modeling*. DOI: 10.1016/j.ecolmodel.2013.09.005.
 30. Randhir, T.O., and A. Erol*. 2013. Emerging Threats to Forests: Resilience and Strategies at System Scale," *American Journal of Plant Sciences*, 4(3A):739-748. doi: 10.4236/ajps.2013.43A093
 31. Randhir, T.O. 2012. Water for Life and Ecosystem Sustainability. *Jl. of Earth Science and Climatic Change*, 3(1): 1-2.
 32. Erol*, A., and T.O. Randhir. 2012. Climatic Change Impacts on the Ecohydrology of Mediterranean Watersheds. *Climatic Change*, 114(2): 319-341. DOI 10.1007/s10584-012-0406-8.
 33. Sekar[†], I., K. McGarigal, J. Finn, R. Ryan, and T.O. Randhir. 2012. Dynamic simulation modeling to evaluate best management practices in integrated farming systems, *Indian Journal of Soil Conservation*, 40(2): 166-172.

34. Flugman, E., P. Mozumder, and T.O. Randhir. 2012. Facilitating Adaptation to Global Climate Change: Perspective from Experts and Decision Makers serving the Florida Keys. *Climatic Change*, 112(3-4): 1015-1035.
35. Randhir, T.O., P. Ekness[†], O. Tsvetkova[†]. 2012. Climatic change impacts on watershed hydrologic dynamics: A systems approach to adaptation. *Environmental Research Journal*. 6(3): 213-230.
36. Randhir, T.O. 2011. Towards sustainability of the earth system. *Jl. of Earth Science and Climatic Change*, 2(2): 1-2.
37. Randhir, T.O., P. Ekness[†], and T. Stevens. 2011. Economic Value of Riparian Ecosystems: An Attribute-based Conjoint Analysis. *Int. Journal of Hydrology Science and Technology*, 1 (3/4): 176-190.
38. Randhir, T.O., and O. Tsvetkova[†]. 2011. Spatiotemporal dynamics of landscape pattern and hydrologic process in watershed systems. *Journal of Hydrology*, 404:1-12. DOI: 10.1016/j.jhydrol.2011.03.019
39. Farsad, A., T.O. Randhir, S.J. Herbert, and M. Hashemi, 2011. Spatial Modeling of Critical Planting Date for Winter Rye Cover Crop to Enhance Nutrient Recovery. *Agronomy Journal*, 103:1252-1257.
40. Schoenberg[†], K., and T.O. Randhir. 2010. "Prioritization of watershed habitat for neotropical migratory birds." *International Journal of Biodiversity Conservation*, 2(9): 250-262.
41. Mozumder, P., E. Flugman, T.O. Randhir 2010. Adaptation Behavior in the face of Global Climate Change: Survey Responses from Experts and Decision Makers Serving the Florida Keys, *Ocean & Coastal Management*, 54(1): 37-44. DOI: 10.1016/j.ocecoaman.2010.10.009.
42. Randhir, T.O., and D.M. Shriver[†] 2009, Multiattribute optimization of restoration options: Designing incentives for watershed management, *Water Resources Research*, 45, W03405, doi:10.1029/2008WR007169.
43. Randhir, T.O. and D.M Shriver[†], 2009, Deliberative valuation without prices: A multiattribute prioritization for watershed ecosystem management, *Ecological Economics*, doi:10.1016/j.ecolecon.2009.07.008.
44. Randhir, T.O., and P. Ekness[†], 2009. "Urbanization effects on watershed habitat potential: A multivariate assessment of thresholds and interactions." *Ecohydrology* 2(1): 88-101. DOI 10.1002/eco.43.
45. Randhir, T.O., and O. Tsvetkova[†], 2009. "Watershed-scale tradeoffs in water quantity and quality attributes for conservation policy" *Water, Soil and Air Pollution*. 201(1-4): 347-363. DOI 10.1007/s11270-008-9949-8.
46. Randhir, T.O., and A.G. Hawes[†], 2009. "Watershed land use and aquatic ecosystem response: Ecohydrologic approach to conservation policy" *Journal of Hydrology*, 364: 182-199. doi:10.1016/j.jhydrol.2008.10.017.
47. Sekar[†], I. and T.O. Randhir. 2009. Arsenic Contamination in Water Resources: Mitigation and Policy Options. *Water Policy*, 11: 67-78. doi: 10.2166/wp.2009.005
48. Sekar[†], I, K. McGarigal, J.T. Finn, R.Ryan, and T.O. Randhir. 2009. "Water quality response to economic development: Quantifying environmental Kuznets curve." *Indian Journal of Ag. Economics*. 64(1):73-88.
49. Marshall[†], E., and T.O. Randhir. 2008. "Spatial Modeling of Land Cover Change and Watershed Response using Markovian Cellular Automata and Simulation" *Water Resources Research*. 44, W04423, doi:10.1029/2006WR005514.
50. Marshall[†], E., and T.O. Randhir. 2008. Effect of Climate Change on Watershed Processes: A Regional Analysis. *Climatic Change*. DOI: 10.1007/s10584-007-9389-2
51. Sekar[†], I., and T.O. Randhir. 2007. Policies for Sustaining Groundwater Resources. *Water International* (Journal of International Water Resources Association). 32(5): 697-709.
52. Ekness[†], P., and T.O. Randhir. 2007. Watershed-scale Influence of Spatial Dimensions and Landuse Disturbance on Habitat Potential: An Ecohydrologic Approach to Policy. *Journal of American Water Resources Association (JAWRA)*, December, 43(6): 1468-1482.

53. Shriver[†], D., and T.O. Randhir. 2006. Integrating Stakeholder Values with Multiple Attributes to Quantify Watershed Performance. *Water Resources Research*. 42 (8): 1-15. doi:10.1029/ 2005WR004413.
54. Matteo[†], M., T.O. Randhir, and D. Bloniarz. 2006 "Watershed-scale Impacts of Forest Buffers on Water Quality and Runoff in Urbanizing Environment" *Journal of Water Resources Planning and Management*. May. 132(3): 144-152.
55. Sekar[†], I., and T.O. Randhir. 2006. Spatial Assessment of Conjunctive Water Harvesting Potential in Watershed Systems. *Journal of Hydrology*. 334(1-2):39-52. Doi:10.1016/j.jhydrol.2006.09.024:1-14.
56. Low[†], S., and T.O. Randhir. 2005. "Watershed Management, Structural Characteristics, Information Processing, and Cooperative Strategies in Conservation Organizations." *Journal of Soil and Water Conservation*. 60(6): 281-287.
57. Randhir, T.O. 2005. Managing Ecosystems in the Presence of Habitat Interactions and Market Imperfections in a Dynamic Setting. *International Journal of Ecological Economics and Statistics*. 3(5): 21-41.
58. Randhir, T.O., and C. Genge. 2005. "Watershed-based Institutional Approach to Develop Clean Water Resources." *Journal of American Water Resources Association*. 41(2): 413-424.
59. Randhir, T.O. 2003. Watershed-scale Effects of Urbanization on Sediment Export: Assessment and Policy. *Water Resources Research*. 39(6): 1-13. doi:10.1029/ 2002WR001913.
60. Randhir, T.O., R. O'Conner, P. Penner, D. Goodwin. 2001. "A Watershed-Based Land Prioritization Model to Protect Water Quality." *Forest Ecology and Management*. 143: 47-56.
61. Randhir, T. O., J. G. Lee, and B. Engel. 2000. "Multiple Criteria Dynamic Spatial Optimization to Manage Water Quality at a Watershed Scale." *Transactions of the American Society of Agricultural Engineers*. 43(2): 291-299.
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2. Cheng, C., and T.O. Randhir. A Sustainability Evaluation and Modeling Tool for Landscape Scenario Planning. ***Fábos International Conference on Landscape and Greenway Planning***, Budapest, Hungary, July 8-11, 2010.
3. Ekness[†], P. T.O. Randhir, E. Marshall[†], D. Shriver[†]. 2003 Increasing Stream Health in Diverse Sections of an Urban River. ***AWRA International Congress on Watershed Management for Water Supply Systems***. June 29 – July 2, New York.
4. Randhir, T. O. 1999. "Interactive Community Decision Modeling: Public Involvement in Watershed Policy Research." In Kendy, E. Science into Policy: Water in the Public Realm. ***American Water Resources Association***.

Book Chapters:

1. Randhir, T.O., and A.G. Hawes[†]. 2010. Ecology and Poverty in Watershed Management. Invited chapter, DeClerck, F., J.C. Ingram, and C.R. Del Rio. ***Integrating Ecology into Poverty Alleviation and International Development Efforts: a practical guide***. Springer Verlag Publication.
2. Randhir, T.O., P. Ekness[†], and O. Tsvetkova[†]. 2010. Climatic change impacts on hydrologic dynamics of watershed systems. In Jeremy C. Vaughn. ***Watershed: Management, Restoration, and Environmental Impact***. Nova Science Publishers, USA.
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2. De Mello, Kaline*, T. O. Randhir, R. de Oliveira Aversa Valenta, and C. A. Vettorazzi, 2015 Impacts of Forest Cover on Water Quality in Agricultural Watersheds of São Paulo, Brazil, 2015 AWRA Annual Water Resources Conference. Nov 16-19, Denver, CO.
3. Galindo[†], L., and T. O. Randhir, 2015. Local governance of common pool resources in developing countries. Biannual Conference of the ***Canada and United States Societies for Ecological Economics***, October 1-4, 2015. Vancouver, Canada.

4. Pamukçu*, Pınar, T. O. Randhir, Yusuf Serengil, 2015. A Hydrological Evaluation of Forest Fragmentation along Urban-Rural Transition using SWAT Model, *IUFRO* Research Group 7.01 “Impacts of Air Pollution and Climate Change on Forest Ecosystems” - “Global Challenges of Air Pollution and Climate Change to Forests”, Nice, France; 06/2015.
5. Caiping*, Z. T.O. Randhir. 2015. Carbon Performance Evaluation Method from Resource Value Flow Analysis Perspective, 2015 *International Conference on Energy and Environment Engineering* (EI), 2015,4.
6. Roy, A.H., S.F. Jane, J.T. Finn, P.D. Hazelton, T.O. Randhir, and T.A. Richards. 2015. Linking stream-flow, habitat, and biotic integrity in the Sudbury River, Sudbury, Assabet, and Concord Wild and Scenic River Stewardship Council, United States.
7. Roy, A.H., S. F. Jane, J.T. Finn, P. D. Hazelton, T. O. Randhir, and T. A. Richards. 2015. Linkages between stream flow, habitat, and biotic assemblages in an urbanized large river, Annual Meeting of the *Society for Freshwater Science*, 17-21 May 2015, Milwaukee, WI.
8. Jane, S.F., J.T. Finn, T.O. Randhir, A.H. Roy, 2015. Linkages between flow, habitat, and biotic integrity: a case study of the urbanized Sudbury River, The 39th Annual Meeting of the *New England Association of Environmental Biologists*, March 18 - 20, 2015, Bartlett, NH.
9. Randhir, T.O. 2014. Integrated ecohydrologic research for watershed resilience to land use and climate change. Key note address at *Watershed Management conference* held at Cankiri Karatekin University Turkey. September 10 to 12.
10. Zhang*, L., and T.O. Randhir. 2014. *UCOWR-NIWR-CUAHSI Conference*, Water Systems, Science, and Society Under Global Change, Medford, Massachusetts, 18th-20th June 2014
11. Zhang*, L., and T.O. Randhir. 2014. Urban Green Rainwater Infrastructure in Growing Metropolitan Region of China, *Conference on Green Infrastructure and Water Management* in Growing Metropolitan Areas, Tampa, Florida, 14 – 16 January 2014.
12. Talib†, A and Randhir. 2014. Land Use Land Cover Impacts on Water Quantity and Quality in Watershed Systems, Lombard, Illinois, 27-30 July 2014.
13. Tsvetkova†, O., and T.O. Randhir. 2014. Modeling climatic and hydrologic uncertainty, 2014 *Northeastern Natural History Conference*, Springfield, Massachusetts, 7 - 9 April 2014.
14. Sabogal†, J. and T.O. Randhir. 2014. Hydroelectric Facilities Environmental Cost and Benefits on Water Cycle, Social Systems and Ecosystems, *UCOWR-NIWR-CUAHSI Conference*, Water Systems, Science, and Society Under Global Change, Medford, Massachusetts, 18th-20th June 2014
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20. Talib†, A and Randhir. 2014. Climate Change Impacts on Water Resources, *Northeast Natural History Conference (NENHC)*, Springfield, Massachusetts, 7-9 April 2014.

21. Zhang*, L., and T.O. Randhir. 2014. Conservation Strategies for Climate Change Adaptation in Yunnan Province of China, 69th **Annual Conference**, Lombard, IL, 27-30 July, 2014.
22. Erol*, A and T.O. Randhir. 2012. Effects of Land Use on Nutrient Loading in Lake Egirdir Watershed. IUFRO WG 7.01.08 Conference: Forest-Water Interactions with respect to Air Pollution and Climate Change, Kahramanmaras-Turkey 2012.
23. Randhir, T.O., and P. Coffin. 2012. Blackstone River Watershed: water quality. South New England **Soil and Water Conservation Society** Summer conference, Grafton, MA. August 9, 2013.
24. Randhir, T.O. 2012, Climatic Change and Socioeconomic systems – **Symposium** presentation. Aug 8, 2012. Tamil Nadu Agricultural University, Coimbatore, India.
25. Randhir, T.O. 2012. Climatic Change impacts on Socioeconomic systems – Keynote address, **National Symposium** presentation. Aug 16, 2012. Bharathiar University, Coimbatore, India.
26. Randhir, T.O. 2012. Climatic Change and SES systems – Symposium presentation. Aug 16, 2012. **Madras Institute of Development Studies**, Chennai, India.
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29. Tofflin[†], K., and T.O. Randhir. 2012. Conservation of Mangrove ecosystems: Global assessment of climatic impacts, Paper presented at 2012 **Soil and Water Conservation Society** Annual Meeting, Fort Worth, TX, July 22-25.
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31. Galindo[†], L., and T.O. Randhir. 2012. Adaptive management of ecosystem services in Orinoco Watershed: A regional Assessment, Paper presented at 2012 **Soil and Water Conservation Society** Annual Meeting, Fort Worth, TX, July 22-25.
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35. Randhir, T.O. and O. Tsvetkova[†]. 2011. Soil and water conservation under climatic stress in selected watersheds in Russia, Paper presented at 2011 **Soil and Water Conservation Society** Annual Meeting, Washington, DC., July 18-19.
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42. Mazzarino[†], M., and T.O. Randhir. 2008. Hydrologic Effects of Climate Change in a Tropical, Glaciated Watershed in Peru. **American Water Resources Association** Proceeding. 2008 at New Orleans, LA.
43. Sekar[†], I., and T.O. Randhir. 2008. Efficiency of Small-Scale, Storage Networks in India, **American Water Resources Association** Proceeding. 2008 at New Orleans, LA.
44. Randhir, T.O. 2008. "Effect of Climate Change in New England" in session "Adapting to Climate Change", **Southern New England American Planning Association** Conference, September 5, Providence, RI.
45. Randhir, T.O. 2008. "Effect of climate change in Connecticut River Watershed." Workshop on "Climate Change in the Northeast: Preparing for the Future Workshop", **U.S. Fish and Wildlife Service, National Park Service, U.S. Geological Survey, and Minerals Management Service, U.S. Department of Agriculture's Forest Service, Department of Commerce's National Oceanic and Atmospheric Administration, Six New England states and New York, Workshop** – Regional Workshop CD proceedings. June 3 to 5, at Amherst, MA.
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47. Hawes[†], A., and T.O. Randhir. 2007. Effects of Watershed Land Use on Aquatic Ecosystems. **Soil and Water Conservation Society**. Annual Conference, July 21 to 25 at Tampa, FL.
48. Ekness[†], P., and T.O. Randhir. 2007. Economic value of riparian ecosystem attributes in an urban setting **Soil and Water Conservation Society**, Annual Conference, July 21 to 25 at Tampa, FL.
49. Tsvetkova[†], O. and T.O. Randhir Predicting 2007. Land Use Change and Water Quality Impacts. **Soil and Water Conservation Society**. Annual Conference, July 21 to 25 at Tampa, FL.
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51. Marshall[†], E., and T.O. Randhir. 2004. Mitigation of Climate Change Impacts on Water Balance at Varying Scales. **American Water Resources Association Proceeding**. 2004.
52. Ekness[†], P., and T.O. Randhir. 2004. Interaction between Riparian Systems and Stream Water Quality. **American Water Resources Association Proceeding**. 2004.
53. Brouillette-Jacobson[†], D., and T.O. Randhir. 2004. Sustainable Use of Water Supplies in Cape Code: Modeling and Policy Implications. **American Water Resources Association Proceeding**. 2004.
54. Ekness[†], P., and T.O. Randhir. 2003. Landuse Effects and Habitat Functions of Riparian Ecosystems. **American Water Resources Association Proceeding**. 2003.
55. Marshall[†], E. and T.O. Randhir. 2003. Impact of Global Warming on Water Quality in the Connecticut River Watershed. **American Water Resources Association Proceeding**. 2003.

56. Shriver[†], D. T.O. Randhir, and E. Marshall[†], 2003. Watershed Classification for Prioritizing Habitat Restoration. *AWRA International Congress* on Watershed Management for Water Supply Systems. June 29 – July 2, New York.
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60. Randhir, T.O. 2001. "Coastal Watershed Conservation to protect Narragansett Bay." *Journal of Soil and Water Conservation*.
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62. Randhir, T.O. 2001. "Protecting Potential Water Supplies in Coastal watershed: The Case of Taunton Watershed." *Journal of Soil and Water Conservation*.
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65. Randhir, T.O., E. Keeler[†], and K. Norwood[†]. 2000. Watershed Imperviousness as an Indicator of Water Quality." *Journal of Soil and Water Conservation*.
66. Randhir, T. O., and D. Goodwin. 1998. "Assessing Land Use Changes at a Watershed Level Using GIS." *Journal of Soil and Water Conservation*, 52(2): 169.
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Non- refereed Conference Papers:

1. Randhir, T.O., J. G. Lee, B. A. Engel, H. Manguerra, J. Frankenberger, and A. Spacie. 1997. "Ecosystem-based Least-Cost Planning in watersheds: A Spatial Optimization Approach." paper presented at SWCS conference on "Investigating Ecosystem Dynamics at a Watershed Level." at Athens Georgia, April 13-16.
2. Randhir, T.O, J. G. Lee, B. Engel, and S. Lovejoy. 1997. "Improving Water Quality through Watershed Planning: A Spatial Optimization Model." Paper presented the ESEI Environmental Symposium, Purdue University, West Lafayette, IN 47907.
3. Randhir, T. O., and J. G. Lee. 1994. "Combining Economic and Biophysical Models in Farming Systems Research." Paper presented at Workshop on "Applied Research and Education in Sustainable Agriculture: What Have We Learned?" April 11-12, Indianapolis, Indiana, USA.
4. Lee, J. G., T. O. Randhir, and S. B. Lovejoy. 1993. "Nitrate and Pesticide Levels in Indiana Rural Domestic Wells." Paper presented at First Purdue University Environmental workshop, Aug. 20, Purdue Univ., West Lafayette, IN, USA.

Other Technical Publications:

1. Jane, S. F., A. H. Roy, P. D. Hazelton, T. A. Richards, J. T. Finn, and T. O. Randhir. 2016. Establishing links between streamflow and ecological integrity in the Sudbury River. U.S. Department of Interior, Fish and Wildlife Service, Cooperator Science Series FWS/CSS-122-2016, Washington, D.C.
2. Randhir, T.O. 2004. (Ed.) Watershed Conservation 2004 Proceedings, Sept. 17th University of Massachusetts, Amherst. 2004.
3. Randhir, T.O. 2002. (Ed.) Watershed Conservation 2002 Proceedings, Sept. 20th University of Massachusetts, Amherst. 2002.
4. Randhir, T.O. 2000. (Ed.) Watershed Conservation 2000 Proceedings. June 2. University of Massachusetts. 2000.
5. Randhir, T.O., 2000. Sustainable Watershed Planning in Blackstone River Watershed. Technical Report to EOEAWatershed Initiative. 2000.
6. Randhir, T.O. 1999. Ware River Watershed Land Acquisition Model. Technical Report to MDC. 1999.
7. Randhir, T. O., and J. G. Lee. 1993. "Hybrid Criterion Optimization under Dynamic Simulation of Non point Source Pollution." Technical report, Fiscal year 1992-1993. Indiana Water Resources Research Center. Purdue University. West Lafayette, IN, USA. (1993): 1-16.
8. Randhir, T. O., J. G. Lee, and Ronald Lacewell. 1994. "Effect of Agricultural Practices on Surface Water Quality." Technical Report of Research Project funded by United States Geological Survey.

9. Randhir, T. O. 1991. "Influence of Risk on Farm Decisions concerning Input Use in Tankfed Zone of Chengaianna District, South India." Staff Report. No.R1. Agecon.364. Department of Ag. Econ., Tamil Nadu Ag. Univ., Coimbatore, India.
10. Ramasamy, C., and T. O. Randhir. 1991. "Agricultural Growth in Tamil Nadu- Contribution by Tamil Nadu Ag. Univ.," Staff Report, Tamil Nadu Ag. Univ., Coimbatore. India.
11. Randhir, T. O., R. Venkataraman, and N. Ajjan. 1989. Farm Management: Practical Manual (Under graduate Teaching Manual of AGECE 402).

Current/ Recent Research projects:

- Climatic change and ecosystem services (Orinoco watershed, Colombia)
- Mobile Crop Decision Support Systems (MA, NE regional, and National)
- Water-Energy optimization over space and time (Columbia, regional, and global)
- Climate change and Mediterranean watersheds (Turkey)
- Sustainability under climate and land use change (Narrangasett Bay Watersheds)
- Climate change, land use, and ecosystem services (Albertine Rift, Africa)
- Adaptation to climatic change (Keywest Florida, USA)
- Water resources, sustainability, and climate change (Continental US)
- Glacial processes and watershed impacts (Ganges, India)
- Water conservation and policy in MA communities (Massachusetts, USA)
- Wetland ecology (Amherst, USA)
- Tiger poaching behavior (India)
- Invasive species modeling (Northeast USA)
- Modeling contaminant flows under climate change (SuAsCo Watershed, USA)
- Coliform contamination and chlorine by-products (Uganda)
- Impact of climatic change uncertainty on watershed systems (Connecticut Watershed, USA)
- Climatic impacts on storm water (Charles River watershed, USA)
- Institutional solutions to water resources (Honduras)
- Urbanization in Watersheds (Blackstone Watershed)
- Urban Modeling of Pervious cover (Mill River Watershed, Springfield)
- Watershed impacts of animal feed operations (Middle Connecticut Watershed)
- Internet-based, watershed information site for Watershed Communities (Comprehensive site for watershed information)
- Watershed education (website with resources for teaching)

Working papers:

Submitted:

1. **Randhir, T.O.**, K. Toffling[†], and C. Griffin. (Submitted). Impacts of climate change and variability on growth potential of mangrove species: A global assessment, *Climatic Change*.
2. Mozumder, P. and **T.O. Randhir**. (Submitted). Decision-making under Surprise and Uncertainty: Arsenic Contamination of Water Supplies. *Water Resources Research*.
3. **Randhir, T.O.** (Submitted) Modeling multi-attribute impacts on watershed sediment export: A global assessment for conservation policy, *Earth Surface Processes and Landforms*.
4. **Randhir, T.O.**, E. Wright[†], and Jack Ahern. (Submitted). Reducing Suburban Phosphorus Runoff using Green Infrastructure: Downscaling from watershed systems to site-specific scales. *Water Resources Research*.

5. **Randhir, T.O.**, K. Klosterman[†], and E. Brabac. (Submitted) Influence of landscape factors on stream base flows and their implications for watershed policy, *Landscape and Urban Planning*.
6. Mozumder, P., **T. O. Randhir**; W. F. Vásquez; M. Jerath. (Submitted) Risk Perceptions and Adaptation to Climate Variability: Survey Evidence from Maple Syrup Farmers" *Ecological Economics*.
7. Sekar[†], I., and **T.O. Randhir**. (Submitted) Resource Use Efficiency and Productivity in Wheat Production Environments in the Indo-Gangetic Plain of India. *NJAS - Wageningen Journal of Life Sciences*
8. Pamukcu^{*†}, P., N. Erdem; Y. Serengil; **T.O. Randhir**. (Submitted) Assessment of hydrologic risk and land suitability in Riva Creek watershed of Turkey. *Landscape Research*
9. Pusparini[†], W., P.R. Sievert, T.K. Fuller, **T.O. Randhir**, and N. Andayani. (Submitted) Rhinos in the parks: occurrence and abundance indices of the last wild populations of Sumatran rhinoceroses, *PLOS One*

Working papers:

- Randhir, T.O., and D. Shriver. "Nutrient dynamics related to Manure application in large watershed systems: Spatial and temporal transfers" targeted to *Water Resources Research*.
- Randhir, T.O. Global sediment discharge in watersheds – anthropogenic and climatic impacts, Targeted to *Nature*.
- Randhir T.O., and O. Tsvetkova. Modeling spatial and Temporal dynamics in watershed systems. Targeted to *Water Resources Research*.
- Randhir, T.O. "Sustainable Development in Watershed Ecosystems." Targeted to *Journal of Environmental Economics and Management*. (First Draft)
- Randhir, T.O. "Managing Global Commons: Strategies for Mitigating Externalities" Targeted to *Science*.
- Randhir, T.O. and J. lee. "Incentive Design to Protect Water Quality." Targeted to *American Journal of Agricultural Economics* (Second Draft Stage)
- Randhir, T.O. "Group decision theory in watershed planning." Targeted to *Water Resources Research*.
- Randhir, T.O. "Mitigating Hurricane Damage through Watershed Conservation." Targeted to *Environmental and Development Economics*.
- Ekness, and Randhir, Sustaining ecohydrologic processes at a continental scale using multiscale assessments, Targeted to *Water Resources Research*.
- Ekness and Randhir, Watershed vulnerability to climatic change: national assessment of hydrologic impacts. Targeted to *Climatic Change*.
- Randhir and Ekness, National Water Sustainable Policy to protect ecosystem services under climatic stress. Targeted to *Journal of the American Water Resources Association*
- Ekness and Randhir, Influence of landscape pattern on watershed ecohydrology. Targeted to *Ecohydrology*.
- Randhir and Ekness, Effect of landuse change on stream ecohydrology. Targeted to *Journal of Hydrology*.
- Ekness and Randhir, Coastal watershed response to climate and land use change. Targeted to *Water Resources Research*.
- Randhir and Ekness, Quantification of watershed - coastal ocean linkages for conservation Targeted to *Ecological Applications*
- Tsvetkova and Randhir, Climatic and hydrologic Uncertainty in watershed systems, Targeted to *Water Resources Research*
- Randhir and Tsvetkova, Adaptation to climatic uncertainty, Targeted to *Climatic Change*
- Tsvetkova and Randhir, Hydrology and climatic impacts in Volga watershed, *Journal of Hydrology*
- Tsvetkova and Randhir, Spatial and temporal uncertainty in climatic predictions, Targeted to *Ecological Modeling*

Randhir and Tsvetkova, spatio-temporal dynamics in hydrologic under climatic stress in watersheds, Targeted to Water Research.

Nampindo and Randhir, Modeling ecosystem services in Congo Basin, Targeted to Ecological Applications

Randhir and Nampindo, Common pool resource use and management in sub-Saharan ecosystems, Targeted to Ecological Economics

Randhir and Nampindo, Biodiversity and climatic adaptation in Albertine Rift, Targeted to Climatic change.

Books

*Randhir, T.O. (In Preparation) *Watershed Science and Management*. (In contract). Springer-Verlag.

TEACHING EXPERIENCE

G – Graduate ; UG – Undergraduate (* courses taught at UMass)

(URL: <http://www.ecowaters.com/wscourse/>)

1. *(G/UG) NRC 577 Ecosystem Modeling and Simulation (Fall session of Odd years). Approximately 25 students per semester.
2. *(G/UG) NRC 596 Water Resources Management and Policy (Fall session Even years) Approximately 15 students per semester.
3. *(G) NRC 578 Watershed Science and Management (Spring session - all years). Approximately 20 students per semester.

Recipient of Service Learning fellowship (1998) awarded by Provost's special committee

This graduate-level course is interdisciplinary and combines theory and practice of watershed science. The main focus is to develop skills in using scientific techniques, computers, field methods, and the Internet to solve environmental problems.

4. *(G) ECO678 Advanced Watershed Science (Spring of Even years) – interdisciplinary, topical course – 10 students.
6. *(G) ECO675 Ecological Economics and Sustainability (Spring of Odd years) – 10 students.
7. *(UG) UNIVRSITY197NRC1 Water Resources (Fall - 2011) – 15 students.
8. *(UG) HONORS 391D Blue Gold and World water wars (Spring and Fall) – 28 students/year.
7. *(G/UG) W&FCON 597S Coastal Watersheds: Issues and Problem Solving (Spring 2001). One time offering with more than 25 Students.
Focused on combining science and technology into watershed education offered as off-campus, field-based course.
6. *(G/UG) W&FCON, FOREST 597O Watershed Science and Management Online. (Spring). Enrolment 20 Students per semester.
Unique offering as a distance education through multimedia, distributed projects, and threaded discussions.
7. (UG) Economics of Farm management (AGEC 401), TNAU, 1988-91.

Others: Invited lectures in Environment and Society (NRC 100), New Student Orientation lectures (2011); Sustainability RAP (2010,2011); Mass Envirothon (2011); Resource Policy (AGEC 616), 1996; Concentration coordinator for professional master's program in watershed management (Also designed the program), Invited lectures in Ecosystem Management at UMASS; Linear Programming (AGEC 601 lab), 1991.

Graduate Advisory Committee:**Chair:**Current:

1. Quinonez (2020 PhD) Watershed ecohydrology
2. J. Aguilar (2018 PhD) Energy and environmental policy
3. M. Siri. (MS 2019) Remote Sensing of Carbon flux in Sub-Saharan Africa
4. C. Paulding (MS 2019) Species Modeling under Climate influence
5. C. Lunch (MS 2018) Stream crossing and people perceptions
6. M. Roberts (MS 2018) Institutions and water commons

Graduates:

1. L. Galindo (2018 PhD) Landscape and watershed ecosystem services;
2. S. Nampindo (2014 PhD) Climate change impact on water resources and biodiversity, ecosystem services; - Beinecke Scholar from Uganda
3. P. Ekness (2013 PhD) Watershed ecosystem dynamics;
4. O. Tsvetskova (2013 PhD) Uncertainty in climatic change impacts on watershed systems;
5. I. Sekar (2007 PhD) Agriculture and water quality;
6. I. Cherkas (MS 2018) Resilience in coastal watersheds
7. J. Norvanchig (MS 2018) Integrated water resource modeling in Mongolia- Fulbright Scholar from Mongolia
8. H. Mamba (MS 2018) Rhinoceros conservation in South African countries- Fulbright Scholar from Swaziland
9. S. Chauhan (MS 2018) Machine learning for watershed hydrologic time series
10. J. Pellegrino (MS 2018) Urban watershed environmental services and justice
11. A. Quinonez (MS 2017) Neotropical otter habitat -Fulbright Scholar from Honduras
12. J. Baker (MS 2017) Climate change influence on nutrients
13. Tallib (MS 2015) Watershed modeling and climate change – Fulbright Scholar from Pakistan
14. N. Bush (MS 2015) Modeling invasive species;
15. R. Sripal (MS 2014) Tiger conservation and poaching;
16. J. Dudula (MS 2014) Climate change and stormwater;
17. E. Ross (MS 2014): Sustaining Narragansett Bay Watershed System;
18. K. Collins (MS 2013) Instream habitat and landscape changes;
19. J. Hart (MS 2013) Water use policy;
20. K. Toffling (MS 2012) Climatic change impacts on Mangroves;
21. O. Tsvetskova (MS 2007) Spatio-temporal Modeling;
22. Hawes (Smith) (MS 2007) Sediment and aquatic Impacts;
23. E. Marshall (MS 2005) – Global Warming and Watershed Modeling;
24. P. Ekness (MS 2005) – Riparian systems;
25. Debbie Shriver (MS 2004) – Watershed Classification;
26. K. Davis (Schoenberg) (MS 2002) – Neotropical bird habitat;
27. M. Matteo (MS 2002) – urban watersheds;
28. S. Lowe (MS 2001) - Biodiversity in watershed planning;
29. E. Keeler (MS 2000) – urbanization and water quality;

Member of Advisory committee:

1. Jayash Paudel (2019 PhD – Resource Economics) Climate change and Ag. water quality
2. Mikaela A. Laverty, (2015 PhD Civil and Env. Engg) Lake Modeling.
3. Brian Yellen (2015 PhD Geosciences) – Sediment transport
4. Cortni Borgerson (2015 PhD Anthropology) Primate ecology;
5. Malik Marjan (2014 PhD ECo) Wildlife migrations;
6. Dan Clark (2013 Ph.D. Eco) Seagull management for Water quality
7. Sadeghpour (2014 PhD Plant Sciences) Cover crop systems;
8. Supagit Vinitpornswan (2012 PhD ECo) Tiger Ecology;
9. Ali Farzad (2010 PhD Plant Sciences) Cover cropping;
10. Dave Timmins (2010 PhD, Res. Econ) Bioenergy economics;
11. Alex Manda (2009 PhD. Geosciences) – Hydrostructural domains,
12. Wulan Pusparini (2014 MS ECO): Sumatran Rhino Conservation
13. Hla Naing (2014 MS ECO): Indonesian tiger conservation
14. Maureen Pollock (2012 MS LARP): Climate Adaptation
15. Colleen Samson (2011 MS) surface and groundwater monitoring;
16. Emily Wright (2011 MS LARP) Phosphorus loading in Landscape planning;
17. Kimberley Klosterman (MS 2011 LARP) Baseflows and impervious cover;
18. Sarah Raposa (2011 M LARPS) sustainable city planning;
19. Dennis Luken (2009 MS ECo) – Stream crossing;

20. Jenny Allen (2006 MS) – Coastal Coliform Contamination,
21. Jim Dedes (2005 Ph.D. UMass-Boston) – Watershed metrics;
22. Joseph Ogradowczyk (2004 Ph.D) – Nonmarket valuation;
23. Mike Lewis (2003 MS) – Stream Daylighting;
24. Bruce Bayne (2002 MS)- Wetlands;
25. Matt Donzella (2002 MS) – Forest Watersheds;
26. JeanMarie Skalka (2001 MS)- Wetlands;
27. Mike Stoltzfuz (2001 MS) – Wetlands;
28. D. Corlett (2001 MS) – Riparian Modeling;
29. Kristy Norwood (1999 MS) – GIS.

Students Services:

First Year Research Experience program (research experience for two students a year)

Advising Faculty for several undergraduate and graduate students (approximately 30 students per year in Environmental Science and NRC majors).

Faculty advisor to UMass Chapter of Soil and Water Conservation

Staff mentor for a first generation and low-income student under HORIZONS Student Support Program of Purdue University (1996).

Visiting Scholars

1. Xiaoping Sun – 2017 –PhD student, Nanjing Forest University, Nanjing, China. sponsored by China Scholarship Council
2. Meijuan Liu – 2017 – Professor (Full), Zhejiang A&F University, Zhejiang, China. Research scholarship by China Scholarship Council
3. Basit Ali 2017 – Scholar, PMAS-Arid Agriculture University, Rawalpindi, Pakistan – sponsored by Higher Education Commission, Pakistan (HEC)

4. Lale Caliskan 2016 – PhD Scholar, Ankara University, Ankara, Turkey; sponsored by TUBITAK Scholarship
 5. Li Han 2016 – PhD Scholar, East China Normal University, Shanghai, China. sponsored by China Scholarship Council
 6. Kaline de Mello 2015 – PhD Scholar, University of Sao Paulo, Brazil.
 7. Roberta Oliveira Aversa Valante 2015, Faculty, University of Sao Paulo, Brazil.
 8. Le Zhang 2014, Faculty, Yunnan Academy of Economics, China.
 9. Pinar Pamukcu 2014– Scholar, University of Isatanbul, Turkey. sponsored by TUBITAK Scholarship
 10. Caiping Zhang 2014 – Faculty, University of South China, China. – sponsored by China Scholarship Council
 11. Eshika Manchanda 2014, Scholar, Amity University, India.
 12. Richa Sharma 2014, Scholar, Amity University, India.
 13. Ayten Erol 2013– Faculty, Suleyman Demirel University, Turkey – sponsored by TUBITAK Scholarship
 14. Kalybek Abdykadyrov 2012 –Kyrgyz State Technical University, Bishkek, The Kyrgyz Republic. - Fulbright Faculty scholar
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SERVICE

Academic Service:

- 2015-current Graduate Program Director, Department of Env. Conservation.
- 2013-2014 ACE-Joint task force on Internationalization (JTFI) of UMass
- 2013-2014 Chair of subcommittee in Community Engagement of JTFI, UMass
- 2009-current: Undergraduate Concentration Coordinator (NRC- Water Resources)
- 2009-current: Graduate Concentration Coordinator (Eco-Water, wetlands, and watersheds)
- 2003-Current: Faculty Senate Computer & Electronic Communications Committee
- 2002 – 2003: Interim Scientific Director, Water Resources Research Center, UMass
- 2002 - Provost's Task Force on Graduate Admissions to achieve diversity, UMass
- 2000 – Current: Academic Honesty Board, Ombuds Office, UMass
- 2000 – 2008: Chair, Computer committee, Dept. of Natural Resources Conservation.
- 1999 - Chair, Ad-hoc outreach-planning committee, Dept. of Natural Res. Conservation.
- 2002 – 2006: Member - Minority recruitment committee, Website committee.

Scholarly Review/Professional Activity:

Editor:

- 2009-Current: Executive Editor – Journal of Earth Science and Climate Change
- 2004- Current: Honors Editor-in-Chief, International Journal of Ecological Economics and Statistics
- 2016- Editorial Board – Journal of Environmental Research and Technology
- 2013-2015 Editor – Journal of Computational Environmental Sciences
- 2010 – Guest Editor – Northeast Naturalist

Reviews:

- 2017 – National Academy of Sciences – GULF projects
- 2016–2018 AAAS- American Assoc. of Advancement of Science Expert Panel for EPscor NSF project.

2016 - USEPA - Climate Change Effects on Water Quality
 2016 – USEPA – ICLUS model review
 2013: National Science Foundation (NSF) Coastal SEES – Proposal review
 2013 – USDOJ expert review on an environmental ruling in Texas
 2015-Current – Advisory Board Anatolian J. of Forest Research
 2013: USEPA expert review on national “Watershed modeling report”
 2013: AAAS- American Assoc. of Advancement of Science Expert Panel for EPscor NSF.
 2012-Current: Expert advisor to several research projects on water and climate in Turkey funded by TUBITAK (NSF counterpart in the country).
 2009-current – Bharathiar University (India) external examiner for PhD (one review per year)
 2008, 2009, 2010 – Tahoe Science Consortium- Peer Review
 2010 – National Science Foundation (NSF) and Regional Climate Prediction using Earth System Models (EaSM) – Proposal review
 2010 – International Foundation for Science (IFS) Peer review.
 2002-2003 UMASS Water Resources Research Center – Chair of Review Panel
 2003 USEPA-STAR – Review Panel member
 2000, 2002, 2004 USDA-National Research Initiative - Review Panel Member
 2002 The Netherlands Foundation for Advancement of Tropical Research (WOTRO) – Scholarly Review Panel
 2000- Current: American Water Resources Association Tech. Committees: Hydrology & Watershed Management Committee, International Committee, and Policy Committee.
 2003- Current reviewer of Water Resources Research
 2000 – Current: reviewer of the Journal of Hydrology
 1999 – Current: reviewer for the Transactions of American Society of Agricultural Engineers
 1998- Current: MA State Technical Advisory Committee of NRCS-USDA.
 1997 – Current: reviewer for Agricultural and Resource Economics Review (2 per year)
 1995- Current: reviewer of the J. of Soil and Water Conservation. (2 manuscripts/year)
 1996- Current: reviewer for The Journal of the American Water Resources Association, formerly Water Resources Bulletin. (5 to 6 manuscripts every year)
 1999- Current: reviewer for American Journal of Agricultural Economics.
 1997- Current: Member of Professional Activity Committee of American Ag. Econ. Assoc.
 1998- Current: Member of the International Committee of the American Ag. Econ. Assoc.
 1996: American Water Resources Association - Professional Technical Committees:
 (i) Water Policy; (ii) Geographic Information Systems and (iii) International Issues.
 1989: Three-member Expert Panel appointed by Vice Chancellor, T.N.A. Univ. to study the "Contribution of the University to State Development."
 1997: Panelist in Berg Colloquium on “The Role of Groups and Organizations in the Policy Making Process” at SWCS 97 Meeting, Toronto.
 Invited panelist for Berg Forum on “National Natural Resource Conservation Issues” (Jan-Feb, 1998) held at Washington, DC.

Community Service:

2015-2017- Academic Director/ fellowship coordinator of “Professional Fellows Program- Environmental Sustainability” for a total of 90 international professionals from Peru, Mexico, and Uruguay. Collaboration with ITD, South Amherst and sponsored by the US State Department.
 2015-current – Vice President and board member of the Southern New England Chapter of Soil and Water Conservation Society.

2011-2015 Massachusetts Director and Board member of Southern New England Chapter of Soil and Water Conservation Society.

2010 (Sept-Oct): Director of “The Institute of Energy and Environment” to 21 international student leaders from 6 countries. Collaborated with ITD, South Amherst and sponsored by the US State Department.

2004-2007: Board member of the Massachusetts Watershed Coalition, Leominster, MA.

Extension and Outreach Experience:

(* indicates outreach while at UMass).

- * Web decision support – <http://aqua1.eco.umass.edu/>
- *Collaboration in long-term water monitoring research in Turkey (Istanbul University)
- *Research Collaboration with two major universities in Turkey (Istanbul University and Suleyman Demiril University)
- *Collaborating with scientists two major universities in Colombia (National University of Colombia and Military University of Colombia).
- *Collaborating with scientists two major universities in India (Tamil Nadu Agricultural University and Bharathiar University).
- * Provided intense training in Energy and Environmental issues (Sept – Oct 2010) to 21 international students from France, Brazil, Indonesia, Russia, Germany, and India in collaboration with ITD, Amherst. Sponsored by the US State Department.
- * Provided short training in 2008 on water resources management to International policy makers from Eurasia as a part of U.S. Department of Commerce’s Special American Business Internship Training (SABIT) program - Water Resources Management for Central Asia, Western Eurasia, and the Caucasus. Participants were from Armenia, Georgia, Tajikistan, Turkmenistan, Kazakhstan, Kyrgyzstan, Moldova, Ukraine, and Uzbekistan.
- *Provide watershed information through web: <http://www.ecowaters.com/WIS/> and <http://www.ecowaters.com/wscourse/>.
- *Serve on a faculty role in the Natural Resources and Environmental Conservation (NREC) Program of the UMass Extension and worked with extension personnel in various outreach activities.
- *Organizer of Watershed Conservation Annual Conference that attracts agencies, universities, and citizens through New England States. Four conferences were conducted (Total of 480 attendees) participated from throughout the New England region.
- *Conducted several workshops on water quality and watersheds to farmers, K-12 teachers, community leaders, watershed team leaders, and high school students.
- *Directed the Water Resources Research Center, The Environmental Institute during 2002.
- *Developed outreach targeting for urbanizing areas through modeling and sustainable planning.
- *Conducted watershed-based environmental extension and outreach in several watersheds throughout Massachusetts.
- *Conducted training in watershed management to Mayors and Professionals from Honduras (areas affected by Hurricane Mitch) in collaboration with ITD, Amherst.
- *Conducted training in watershed management to Mayors and environmental scientists from Columbia in collaboration with ITD, Amherst.
- *Developed programs to connect student learning through community service (service learning and watershed internships) to watersheds in the New England region.

- Developed web-based applications to assist farmers, regional planners, local and federal decision makers in least-cost water quality and pollution management
- Participated (presented in two sessions) in a Midwest Extension Workshop in Indianapolis, IN (1995).
- Participated in farmer adoption campaign programs in developing countries.
- Participated in farm-level surveys to identify collect data on local problems in resource use.

Invited Talks:

- 2012, Of Water, Wars, and Climate (Fall Orientation lecture), UMass Amherst
- 2012, Storm water (lecture for Envirothon participants), UMass Amherst
- 2012, Phosphorus Modeling in Blackstone River Watershed – November 16 Blackstone Summit, Uxbridge, MA.
- 2012, Adaptation to Climatic Change: Systems, Resilience, and Decision Making, Keynote Address to Conference on “Toward a new climate agreement 2012-2020 or Death of Kyoto protocol” May 23, 2012 at National University of Colombia, Bogota, Colombia.
- 2012, Covercrop decision support systems- Center for Ag – Board of Overseers University of Massachusetts, Amherst, MA.
- 2012, Climatic Change and Socioeconomic systems – Symposium presentation. Aug 8, 2012. Tamil Nadu Agricultural University, Coimbatore, India.
- 2012, Climatic Change impacts on Socioeconomic systems – Keynote address at National Symposium presentation. Aug 16, 2012. Bharathiar University, Coimbatore, India.
- 2012, Climatic Change and SES systems – Symposium presentation. Aug 16, 2012. Madras Institute of Development Studies, Chennai, India

COMPUTING EXPERTISE

Web Applications: <http://aqua1.eco.umass.edu/>; <http://r1nas.eco.umass.edu/>; and <http://www.ecowaters.com/wis/>).

Operating Systems: Windows, UNIX, Solaris

Optimization: GAMS

General Equilibrium Modeling: GEMPACK/GTAP, MPS-GE

Econometrics/ statistics: S-PLUS, SYSTAT, SAS, LIMDEP, STATA, SHAZAM, R

GIS: GRASS, ARCGIS

Simulation: STELLA, Anylogic, SIMILE, EPIC, GWLF, AGNPS, SWMM, SWAT, BASINS.

Mathematical: Mathematica, Matlab, Mathcad

Internet: Java, ASP, JSP, Web server administration, Frontpage

Programming: Java, C++

Mobile programming: Android SDK, iOS XCode.

SUMMARY STATEMENT OF INTEREST AND PROFESSIONAL GOALS

Research philosophy: "A systems-approach through using trans-disciplinary perspective." Natural resources and ecosystems form the natural capital of a society. Ecosystem dynamics, economic markets and institutions play a key role in management of these vital resources. The interaction between human and natural systems is often a complex process that includes biophysical, ecological, economic and cultural dimensions. To develop an appropriate approach, it is essential to understand the system in a four-dimensional, space-time continuum. Natural resources change in quality and quantity over geographic space and temporal space and depend on the feedback from economic and ecological processes. The use of mathematical models that involve calculus of variation and optimum control theory can improve modeling of these processes. Another important dimension is group decision-making involving multi-objective optimization and simulation. Advancements in social choice theory and institutional mechanisms design, ecosystem theories, general equilibrium theory, mechanism design of market and non-market instruments, and spatial and temporal control theory can be used to address such complex problems. For example, the spatial dynamic optimization (Ph.D. work) framework is an integrated approach to address problems that are related water quality, production, resource management, forest and wildlife management, location of firms, and ecosystem management. Quantitative techniques that involve a combinatorial use of mathematical programming, process simulation, Geographic Information Systems (GIS), and econometrics are also critical elements of successful research.

Teaching philosophy: "Enrich students with skills and knowledge to achieve excellence through pluralistic pedagogy." Teaching methods need to aim at enhancing creative and comprehensive learning. A community service learning approach (students involving in community problems) is a key to teaching success. Given the heterogeneity of a student body with respect to knowledge, learning abilities, personalities, and skills, teaching should aim at improving individual skills, while increasing the knowledge level of the entire group. This can be accomplished by using a careful mix of individual training, feedback mechanism, and interactive group discussions. Creative experiments in economic, social, and ecological systems, debates, role-playing, case studies and in-class projects are some examples of effective teaching methods. Multimedia tools, the Internet, topic research, reading assignments, discussion open houses, group projects, and critique of research and policies are other effective tools to train students in decision-making. Such teaching methods will also enable students to understand the underlying theory and principles, while developing practical skills in problem solving. Instead of traditional unidirectional flow of knowledge, it is essential to follow a pluralistic pedagogy (bi-directional teaching and learning) that includes learning about students' educational requirements.

Service Philosophy: "Service through innovative technologies and participatory training" Final end point of research and teaching efforts is to benefit the society. Working with grass-root level decision-makers is critical to respond to the needs of the public. There exists excellent scope in the use of virtual (Internet and computer based) and direct means (field contacts) to gather information and to disseminate improved approaches to problem solving at local, national, and international levels. A demand-driven, individual-based, and incentive-driven approach is essential to transfer knowledge and technology to address problems facing the public and communities. My philosophy is to involve public or clients of research earlier in the process, in problem definition, modeling, and analysis, rather than involving at the final stage of a program. Professional enhancement through national and international interaction is also important. While research (R), teaching (T), and service (S) are usually compartmentalized as individual tasks, an effective approach is to integrate these three areas through student research ($R \leftrightarrow T$), community service learning ($T \leftrightarrow S$), and community-participated research ($R \leftrightarrow S$). An application of this integrated strategy can complement each other toward a win-win outcome in all the three areas. My academic objective is to achieve professional excellence through superior research, excellence in teaching, and outstanding public service.