

CURRICULUM VITAE

Rajendra Mohan Panda | M.Phil. | Ph.D.

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Rajendra is an ecologist and modelling specialist with decade-old of research experience in the fields of ecology, remote sensing, earth system studies, agriculture, and soil science. He has a PhD from the Indian Institute of Technology Kharagpur (IIT KGP) and served in Postdoctoral positions at the IIT KGP, University of Georgia (UGA), and Mississippi State University (MSU) for more than four years. His broad research experience includes biodiversity, climate change predictions, invasion risk assessments, gradient pattern analyses, modelling spatiotemporal ecological phenomena, and interactive mapping and visualization, with competencies in large-data analytics, multivariate statistics), species distribution modelling, machine learning (Bayesian and non-Bayesian), development of R-Shiny Apps, spatial modelling, and interpretation. He is good at technical writing, English communication, and collaborative research. He has proficiencies in R, ArcGIS and STAN, and working knowledge in MATLAB. Rajendra has published more than fifteen peer-reviewed journal articles (two of which received media attention), eight chapters, a book, six GitHub repositories and two R-Shiny Apps. Rajendra has experience in mentoring and teaching Master and PhD students. He is a Co-PI of the project awarded by *Global Development Seed Grant* by MSU for 2023. He has volunteered reviewing for 19 journals and is a member of Editorial Board member of an international journal.

Education and Research Positions

PhD, IIT KGP, School of Water Resources (SWR), 2018

- *Postdoctoral Associate*, MSU, Geosystems Research Institute, 2021-present
- *Postdoctoral Associate*, UGA, Dept of Crop and Soil Sciences, 2020-2021
- *Research Associate*, IIT KGP, Centre for Oceans, Rivers, Atmosphere and Land Sciences (CORAL), 2019–2020
- *Sr. Project Officer*, IIT KGP, CORAL, 2018– 2019
- *Graduate Research and Teaching Assistant*, IIT KGP, SWR, 2017–2018
- *Research Fellow*, IIT KGP, SWR, 2012–2017

Research Experience

- *Plant Ecology* – Diversity and distribution studies; species-environment interactions; gradient pattern analysis; climate change predictions; invasion risk assessments; modeling spatiotemporal ecological phenomena
- *Animal Ecology* – Foraging behavior, movement ecology, population dynamics, human-animal interactions, and conservation and management of blackbucks (*Antilope cervicapra*); foraging behavior of Hanuman langur (*Presbytes entellus*); diversity and distribution *chiropterans of Eastern Ghats*
- *Marine Ecology* – Assessing impacts of sea water acidification on oyster population; Development of machine learning algorithms for water quality estimation and mapping

- *Soil Science* – Estimation and classification of soil temperature; Development of algorithms for interactive mapping and visualization through R-Shiny Apps
- *Agriculture* – Application of the Bayesian statistics in Gully widening; Characterization of soil organic matter across ecoregions of Mississippi state
- Remote sensing – Satellite data analysis and interpretation; Modeling Hyperspectral data through machine learning applications

Skills

- Software (R proficiency, ArcGIS, MATLAB, QGIS, Python (basics))
- Statistical analysis (spatial and temporal)
- Statistical modeling (Bayesian & Non-Bayesian)
- Species distribution modeling
- Machine learning Applications
- Web-based map development in R-Shiny Apps
- Large-data analytics
- Data Interpretation skills
- Work independently and in team environment
- Teaching and mentoring Masters' and Ph.D. students
- Collaborating capabilities
- Grant writing abilities
- Project management
- Technical writing abilities

Awards/Distinctions

- *Travel grant* for ASA, SSSA and CSA Conference at Baltimore, MD (6-9 Nov 2022)
- *Evaluator*, Undergraduate Research Symposium at MSU (2nd Aug 2022)
- *Judge*, Spring 2022 Undergraduate Research Symposium for Biological Sciences and Engineering, MSU (14th April 2022)
- *Postdoctoral Fellowship*, Geosystems Research Institute, MSU (2021-present)
- *Travel Grant* for Postdoctoral Fellowship, UGA, USA (Nov 2020)
- *Postdoctoral Fellowship*, Dept. of Crop and Soil Sciences, UGA, USA (2020-2021)
- *Teaching Assistantship*, Ministry of Education, Govt. of India (2017-2018)
- *International travel grant for presenting research at CEST conference at Rhodes Island, Greece (Aug-Sept 2017)*
- *Graduate Fellowship*, Ministry of Education (MoE), Govt. of India (2015-2017)
- *3rd Prize* in Poster Presentation at *International conference on biodiversity and climate change* (BDCC-2018)
- *Graduate Aptitude Test in Engineering (GATE)*, MoE, Govt. of India

Professional Training

- Digital Tools to move from precision to decision agriculture at GRI (11 Nov 2022)
- Workshop on Data mining from NASA websites, Baltimore, MD (8 Nov 2022)
- Climate Change Concept NC CASC TEAM (19 – 20 April 2022)
- Grant writing Workshop, MSU (5 April 2022)
- Acing Interview Workshop, MSU (7 April 2022)
- ARS Webinar on Species Occupancy Modeling (4 April 2022)
- ESRI training for Spatial Data Science: The New Frontiers in Analytics (24 Nov – 8 Dec 2021)
- GACRC Sapelo2 for *Python* and *R*, UGA (May 2021)

- GACRC Sapelo2 *Cluster Training*, UGA (10 -11 April 2021)
- Earth Observation data for forest and agriculture carbon modeling, IIT KGP (18–22 Feb 2019)
- LULC changes and their impacts on climate, IIT KGP (29 Oct–2 Nov 2018)
- Mathematical Morphology in Geosciences, Indian Statistical Institute, Bangalore, India (24 March–8 April 2015)
- Geo-statistics in Ecological Modelling, IIT KGP (24 Nov–5 Dec 2014)
- Introduction to GIS & Applications, National Remote Sensing Centre, Hyderabad, India (4-28 March 2013)

Society Memberships

- Ecological Society of America
- American Geophysical Union)

Professional Association Activities

- National Foundation Day Meeting, The Mill, Starkville (21 Nov 2022)
- American Association for Agriculture – India Chapter, Baltimore (7 Nov 2022)

Current Outreach Activities

- *Co-PI*, Global Development Seed Grant award - 2023
- *Committee Member*, Master student's Research committee
- *Mentor*, one Master and three PhD students

Volunteering Activities

- *Editorial Board member*, *Frontiers in Forests and Global Change*
- Reviewed more than 25 articles in 16 journals
- Volunteer Reviewer, *Ecologies*

Publications

Published peer-reviewed journal articles

- Ramamoorthy P, Samiappan S, Wubben MJ, Brooks JP, Shrestha A, **Panda RM**, Reddy KR, Bheemanahalli R (2022) Hyperspectral Reflectance and Machine Learning Approaches for the Detection of Drought and Root-Knot Nematode Infestation in Cotton. *Remote Sensing* 14(16): 4021 (<https://www.mdpi.com/2072-4292/14/16/4021>)
- Das P, **Panda RM**, Dash P, Jana A, Jana A, Ray D, ... & Kolluru V (2022) Multi-Decadal Mapping and Climate Modelling Indicates Eastward Rubber Plantation Expansion in India. *Sustainability* 14(13): 7923 (<https://www.mdpi.com/2071-1050/14/13/7923>)
- Veera SNS, **Panda RM**, Behera MD, Goel S, Roy PS, Barik SK (2020) Prediction of upslope movement of *Rhododendron arboretum* in Western Himalaya. *Tropical Ecology* 60: 518 – 524 (<https://link.springer.com/article/10.1007%2Fs42965-020-00057-x>)
- Behera MD, Roy PS, Mahanand S, **Panda RM**, Padhi S (2020) Angiospermic plant dispersal profile of India – A maiden analysis. *Environmental Monitoring and Assessment* 191 (800): 14 (<https://link.springer.com/article/10.1007/s10661-019-7703-x>)
- **Panda RM**, Behera MD, Roy PS, Ramachandran R (2020) On the relationships between plant species richness and the environment: A case study in the Eastern Ghats, India. *Environmental Monitoring and Assessment* 191 (784): 10 (<https://link.springer.com/article/10.1007/s10661-019-7686-7>)

- Debata S, **Panda RM**, Palita SK (2019) Chiropteran diversity and the key determinants of their distribution in Eastern Ghats, India. *Biodiversity and Conservation* 28: 2385 - 2404 (<https://doi.org/10.1007/s10531-019-01715-w>)
- Sharma N, Behera MD, Das AP, **Panda RM** (2019) Plant richness pattern in an elevation gradient in the Eastern Himalaya. *Biodiversity and Conservation* 28: 2085 - 2104 (<https://doi.org/10.1007/s10531-019-01699-7>)
- **Panda RM**, Behera MD (2019) Assessing harmony in distribution patterns of plant invasions: a case study of two invasive alien species in India. *Biodiversity and Conservation* 28: 2245 - 2258 (<https://doi.org/10.1007/s10531-018-1640-9>)
- **Panda RM**, Behera MD, Roy PS (2018) Assessing distributions of two invasive species of contrasting habits in future climate. *Journal of environmental management* 213: 478 - 488 (<https://doi.org/10.1016/j.jenvman.2017.12.053>)
- Behera MD, Gupta AK, Barik SK, Das P, **Panda RM** (2018) Satellite remote sensing as a monitoring tool for land and water resources development activities: Utilization of free data in an Indian tropical site. *Journal of Environmental Monitoring and Assessment* 190(7): 401 (<https://doi.org/10.1007/s10661-018-6770-8>)
- **Panda RM**, Behera MD, Roy PS, Biradar C (2017) Energy determines broad pattern plant distribution in western Himalaya. *Ecology and Evolution* 7 (24): 10850-10860 (<https://doi.org/10.1002/ece3.3569>)
- Behera MD, Roy PS, **Panda RM** (2016) Plant diversity pattern across India's longest longitudinal extent *Current Science* 111(7): 1220-1225 (<https://doi.org/10.18520/cs%2Fv111%2Fi7%2F1220-1225>)

Journal articles (In preparation)

- **Panda RM**, Levi M (...) Mapping soil temperature for contiguous US over past 150 years (Advanced stage)
- **Panda RM**, Czarnecki J, Hu J, Jones K (...) Characterizing soil fertility across ecoregions of the Mississippi state (Advanced stage)
- Kamala B, **Panda RM**, Sara B, Allesandro M (...) Impact of water treatment on melon productivity (Advanced stage)
- **Panda RM**, Wells R, Czarnecki J, Garret S, Natasha et al. (...) Estimation of gully widening applying Bayesian modelling approaches
- **Panda RM**, Dash P (...) Machine learning approach to estimate sea water acidification in Gulf of Mexico
- Omar M, **Panda RM**, Dash P (...) Quantifying water quality to assess impacts of acidification on oyster population of the Gulf of Mexico
- Lamae T, **Panda RM**, Nazanin M, Brian S, Czarnecki J (...) Impacts of soil chemistry and climate on Soyabean yield
- Muduli P, **Panda RM**, Das B, Mishra DR (2022) Net primary productivity and its correlation to physicochemical and biological properties of the Chilika lake

Conference Publications

- **Panda RM**, Behera MD, Roy PS (2017) Investigating the influence of environmental heterogeneity on plant species richness pattern of Eastern Himalaya. Dim 1: 54-58, *In proceedings of 15th International Conference on Environmental Science and Technology (CEST)*, Rhodes Island, Greece (https://cest.gnest.org/sites/default/files/presentation_file_list/cest2017_00876_oral_paper.pdf)

Abstracts/posters

- ASA, CSSA, and SSSA International Annual Meeting in Baltimore, MD, USA (6-9, 2022). Title: “Data Mining Soil Testing Laboratory Datasets to Characterize Trends in Soil Fertility” (poster)
- Mississippi Academy of Science meeting on Mar 31, 2022 Title: “Hyperspectral Reflectance and Physiological Techniques for Diagnosing Plant Health Status of Cotton Under Drought and Root-Knot Nematode”
- 101st American Meteorological Society Annual Meeting (10-14 January 2021), New Orleans, USA. Abstract Title: “Applying *rNewhall* for dynamic soil survey interpretations of soil moisture” (poster)
- 3rd National Geo-research Scholars meet (NGRSM 2019), Wadia Institute of Himalayan Geology, Dehra Dun, India. Abstract Title: “Water-energy theory in plant life-forms varies at regional scales” (Oral)
- 2nd International Conference on Biodiversity and Climate Change (BDCC-2018), Indian Institute of Technology Kharagpur, India. Abstract Title: “Assessing impacts of climate disparities on the east and west Himalayan dichotomy” (Poster)
- 15th International Conference on Science and Technology (CEST-2017), Rhodes Island, Greece. Abstract Title: “Investigating the influence of environmental heterogeneity on plant species richness pattern of the Eastern Himalaya” (Oral)
- 4th Indian Biodiversity Congress (IBC - 2017), Pondicherry University, India. Abstract Title: “Is Temperature Seasonality along with Precipitation of the Driest Quarter dictating plant distribution pattern in Western Himalaya?” (Oral)
- Tropical Ecology Congress (TECJNU - 2014), Jawahar Nehru University, New Delhi, India. Abstract Title: “Does future belong to use less invasive species?” (Poster)
- International Conference on Conserving Biodiversity for Sustainable Development (INCCBD - 2013), National Institute Technology, Rourkela, India. Abstract Title: “Species distribution responses to environmental gradients in the Himalayan hotspot” (Oral)

Book

- **Panda RM** (2022) *Plant Ecology of Indian Himalaya*. Springer, Cham., Switzerland AG 172 Pages (<https://link.springer.com/book/10.1007/978-3-031-13347-3>)

Book Chapters

- **Panda RM**, Daya Sagar BS (2022) Data Acquisition. In: “Encyclopedia of Mathematical Geosciences” (eds. BS Daya Sagar, Q Cheng, J McKinley, F Agterberg), Springer (https://doi.org/10.1007/978-3-030-26050-7_73-1)
- **Panda RM**, Daya Sagar BS (2022) Database Management System, In “Encyclopedia of Mathematical Geosciences” (eds. BS Daya Sagar, Q Cheng, J McKinley, F Agterberg), Springer (https://doi.org/10.1007/978-3-030-26050-7_80-1)
- Samiappan S, **Panda RM**, Daya Sagar BS (2022) Z-Transform, In “Encyclopedia of Mathematical Geosciences” (eds. BS Daya Sagar, Q Cheng, J McKinley, F Agterberg), Springer (https://doi.org/10.1007/978-3-030-26050-7_355-1)
- **Panda RM**, Daya Sagar BS (2022) Decision Tree, In “Encyclopedia of Mathematical Geosciences” (eds. BS Daya Sagar, Q Cheng, J McKinley, F Agterberg), Springer (https://doi.org/10.1007/978-3-030-26050-7_81-2)

News & Media Reports

- Climate change, land-use change may enhance plant species loss in the Eastern Ghats by Mongabay-India (26 February 2020) (<https://india.mongabay.com/2020/02/climate-change-land-use-change-may-enhance-plant-species-loss-in-the-eastern-ghats/>)
- These flowers are likely to climb up the Himalayas as temperature rises (2nd July 2020) by Mongabay-India (<https://india.mongabay.com/2020/07/the-flowers-likely-to-climb-up-the-himalayas-as-temperature-rises/>)
- Seed funding helps international partnerships grow for MSU faculty (<https://www.msstate.edu/newsroom/article/2023/04/seed-funding-helps-international-partnerships-grow-msu-faculty>)

GitHub Repositories

- [Interactive-Soil-Temperature-Mapping](#)
- [Soil-Temperature-Classification--Raster-Example](#)
- [Digital Soil Moisture Mapping](#)
- [RedRiver_DigitalSoilMap](#)
- [Interactive-Ecological-Analysis](#)
- [Bias-Correction-and-Evaluation-in-Maxent](#)

R-Shiny Apps

- http://rajendrampanda.shinyapps.io/intecoanal?_ga=2.166815738.516962665.1620446225-276375194.1617292276
- https://rajendrampanda.shinyapps.io/intmapviz/?_ga=2.261322701.1737646636.1620602954-276375194.1617292276

Journal Reviews

- Biodiversity and Conservation (IF: 3.097)
- Environmental Monitoring and Assessment (IF: 2.273)
- Frontiers in Plant Science (IF: 4.407)
- Journal of Environmental Management (IF: 8.61)
- Journal of Photogrammetry and Remote Sensing (IF: 7.319)
- South African Journal of Botany (IF: 1.504)
- Tropical Ecology (IF: 0.462)
- Journal of Tropical Ecology (IF: 1.7)
- Biological Invasions (IF: 3.7)
- Ecology and Evolution (IF: 2.34)
- Acta Ecologica Sinica (IF: 1.11)
- Climate Change Ecology (IF: NA)
- Plants (IF: 4.658)
- Frontiers in Forest and Global Change (IF: 4.332)
- Remote Sensing (IF: 4.509)
- Forests (IF: 2.453)
- Agroforestry Systems (IF: 2.24)
- Diversity (IF: 3.031)
- Current Agriculture Research Journal (IF: 0.366)