

ANIRBAN ROY

Doctoral Scholar

Ashoka Trust for Research in Ecology and the Environment, PO Royal Enclave, Srirampura, Jakkur,
Bengaluru, Karnataka 560064, India

Fulbright Nehru Doctoral Research fellow (*Envt. Sciences: Climate changes*) 2021-22

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• RESEARCH EXPERIENCES/PROJECTS/INTERNSHIPS

Oct–June 21/22 *Fulbright visiting fellow* at **University of Minnesota Twin Cities, St. Paul's, USA**

- To empower economically marginal forest landowners with access to *carbon markets* through translational, engaged research and apply the implications in the Indian context.
- To study the prairie-deciduous forest ecotone in the northern Minnesota for their potential roles in carbon markets, participate in outreach programs and learn nuances of carbon mensuration practices.

April–June 2019 *Summer Research Intern* at **Université de Rennes 1, Rennes, France**

- Analysis of the effect of evolutionary distances between host (oak) trees and neighbours on the phenotypes of colonizers (caterpillars), thereby deducing the concept of *Island Biogeography*.
- Characterisation of the oak leaves phenologically, biochemically and morphologically; reared more than 500 phytophagous caterpillars.

Jan–March 2019 *Summer Research Intern (M.Sc. Dissertation)* at **Birbal Sahni Institute of Palaeosciences, Lucknow, India**

- Reconstruction of palaeoecology and palaeoclimatic conditions of the late Palaeozoic *Gondwana* sediments of the Wardha Basin, MH–IN.
- Learnt the systematics of the Late Palaeozoic spores and pollen and their implications to recreate the geological past.

May–July 2018 *Summer Research Intern* at **Wildlife Institute of India, Dehradun, India**

- Studied the impacts of large herbivore Grazing and Altitudinal transition on Herbaceous communities in different topographic regimes of *Western Himalayas*.
- Analysis of the plant community assemblages, community composition, diversity metrics and herbaceous dynamics of *Tungnath* and *Shokhrakh* alpine meadows of Kedarnath Wildlife Sanctuary, UK–IN.

Aug–Dec 2017 *Semester Research Project* at **KJ Somaiya College of Science & Commerce (Affiliated to University of Mumbai), Mumbai, India**

- Explored the flora -medicine continuum and respondents' stochasticity among the inhabitants of two tribal predominant districts, *Ratnagiri* and *Palghar*, of Maharashtra.
- Developed Ethnobotanical inventories and performed Computational analysis to study the human relationships with the indigenous flora through the lens of Medicinal Botany.

June–Dec 2016 *Undergraduate Research Project on Ecotoxicology* at **Regional Institute of Education (NCERT), Bhubaneswar, India**

- The study dealt with *Polypedates maculatus* tadpoles exposed to varied concentrations of Cadmium that revealed eccentric changes in behavior and high index of mortality.
- Reared the study species for 6 months, studied the morpho -physiological parameters throughout the metamorphosis and prepared reports for publication.

Aug–Sept 2016 *Undergraduate Research Project on Child Psychology* at **Regional Institute of Education (NCERT), Bhubaneswar, India**

- Investigated the Drawing Skills and Mental Images of Secondary Students on Human Digestive System through Hand Drawing.
- Designed different teaching aids to enable the students with the opportunity to *touch and see* the human digestive system to create a better learning.

May–Dec 2015 *Investigatory Project on Child Learning* at **Regional Institute of Education (NCERT), Bhubaneswar, India**

- Multiple child-psychological studies were conducted through tools like concept inventories and likert rating scales to explore misconceptions, learning gaps and expectations of secondary students from different social backgrounds.

• **TEACHING EXPERIENCE**

Aug–Oct 2016 *Teacher Intern* at **Kendriya Vidyalaya No. 1, Bhubaneswar, India**

- Taught Biology to students of Class XI and XII; Taught Science to students of Class IX and X; Conducted practical and theoretical classes.
- Bestowed the role of I/C Class Teacher for Class X; Developed question papers for different assessments as part of their curriculum.

Jan–Feb 2016 *Pre -Service Teacher Trainee* at **Rural, Tribal and Urban-type schools**

- Four weeks teacher's training through multicultural placements to develop understanding of students from different socio-economic and intellectual backgrounds.
- Subjects Taught: English, Science and Mathematics to the secondary students (Class VI to VIII). Boards: CBSE and Odisha State Board

June–Dec 2015 *Microteacher* at **RIE (NCERT), Bhubaneswar, India**

- Developed lesson plans for Science (Physics, Chemistry, Biology) from Class VI to X (CBSE) and delivered the lessons to fellow peers.

• **EDUCATION**

1. 2019–2024 **Ph.D. (Conservation Science and Sustainability Studies, *pursuing*)**, Ashoka Trust for Research in Ecology and the Environment (registered at Manipal Academy of Higher Education), KA-IN: **Finished requisite doctoral coursework**
2. 2017–2019 **M.Sc. (Botany/Plant sciences)**, University of Mumbai, MH-IN: **83.6%**
3. 2013–2017 Integrated **B.Sc.B.Ed. (Biological sciences)**, Regional Institute of Education (NCERT) Bhubaneswar (degree from Utkal University), OD-IN: **78.4%**
4. 2013 **Class XII, CBSE (PCMB)**, Kendriya Vidyalaya No. 1, Ishapore, WB-IN: **85.3%**
5. 2011 **Class X, CBSE**, Kendriya Vidyalaya No. 1, Ishapore, WB-IN: **9.8 CGPA**

• **RESEARCH INTERESTS**

- Climate Change Sciences, Landscape Ecology, Restoration Ecology & Social Sciences
- Paleobotany and Palynology
- Science Pedagogy, Child Psychology and Cognition

• **RESEARCH GRANTS (FUND-RAISING)/ SCHOLARSHIPS**

- 2023 *Oureach Grant*: Reconciling ecological restoration and livelihood sustenance: Creating awareness regarding ecologically sound and socially beneficial forest restoration practices among CFR villagers: 1,00,000 INR, **Fulbright Alumni Award**
- 2023-24 *Doctoral Fieldwork Grant*: Attaining 'Appropriate Restoration'– Analyzing reforestation & afforestation efforts through the lens of ecological and community-need drivers: 6000 Pounds, **1st Rufford Small Grant**
- 2022–25 *Research Grant*: Planning and monitoring agroforestry intervention sites for ecological, social, and carbon benefits in districts of Andhra Pradesh, Madhya Pradesh, and Uttarakhand (India): 16233 USD, **SayTrees– Bengaluru**

- 2020–22 *Research Grant*: Estimation of current and prediction of long-term carbon sequestration in the biomass of Miyawaki pocket forests around Bengaluru (India): 8560 USD, **SayTrees– Bengaluru**
- 2019-23 *Doctoral Fellowship*: Equivalent to UGC-JRF, **ATREE– Bengaluru**
- 2019 *Principal’s Fund for Higher Studies*: Merit-based scholarship for higher studies, **KJ Somaiya College of Science & Commerce (Affiliated to University of Mumbai), Mumbai**
- 2018 *Smt. Sakarbai K. Somaiya Memorial Scholarship*: Research-based scholarship, **KJ Somaiya College of Science & Commerce (Affiliated to University of Mumbai), Mumbai**
- 2013–2017 *NCERT Scholarship*: Merit-based scholarship for undergraduate studies, **Ministry of Education, India) at RIE (NCERT) Bhubaneswar**
- **NOTABLE CO-SCHOLASTIC ACHIEVEMENTS & POSITIONS**

2018 *SYMBIOTEK - Intercollegiate Research Meet*: Awarded with the ‘Best Poster in Ecology’ and first position in Debate, **Department of Bioscience and Bioengineering, IIT-B, Mumbai**

2016 *Central Teacher’s Eligibility Test (CTET)* Merit-based scholarship for undergraduate studies, **Ministry of Education, India at RIE (NCERT) Bhubaneswar**

2016–2017 *Odisha’s State Champion in English Debate*: Chancellor’s Gold Medal in English Debate, **Utkal University, Bhubaneswar**

2016, 2017 *Champion of Champions: Student of the Year (2016 and 2017)*: Received the award twice for academic, co-scholastic and literary accomplishments., **RIE (NCERT) Bhubaneswar**

2016–2017 *Student Representative*: Headed the Institute’s cultural and literary committee(s), **RIE (NCERT) Bhubaneswar**
 - **PEER-REVIEWED PUBLICATIONS**
published
 1. Mohapatra, Animesh Kumar & **Roy, Anirban**. (2018). Exploring drawing skills and mental images of secondary students on Human Digestive System through hand drawing. *Journal of Indian Education*, 44 (2): 94–107.
 2. **Roy, Anirban** & Janbandhu, Supriya. (2020). An ethnobotanical analysis on flora-medicine continuum among the tribal inhabitants of Ratnagiri and Palghar district, Maharashtra, India. *Ethnobotany Research and Applications*, 20 (43): 1-23. DOI: 10.32859/era.20.43.1-23
 3. Di Pasquo, M., Kavali, P.S., Dino, R., Shivanna, M., Pedãrao, E. & **Roy, A.** (2021). *Faunipollenites* Bharadwaj 1962 and *Protohaploxypinus* Samoilovich 1953 emend. Morbey 1975: Morphologic comparison of oxidized and nonoxidized specimens from India and Brazil, and its taxonomic importance. *Anais da Academia Brasileira de Ciências*, 93 (1): e20190094. DOI: 10.1590/0001-3765202120190094
 4. Ojha, Srikant, **Roy, Anirban** & Mohapatra, Animesh Kumar (2021). Chronic Toxicity of Cadmium to *Polypedates maculatus* (Gray, 1830) tadpoles revealed delayed metamorphosis and augmentation of tumours. *Environmental Chemistry and Ecotoxicology*, 3 (2021): 133-141. DOI: 10.1016/j.eneco.2021.03.002
 5. Kavali, P.S., **Roy, A.**, Di Pasquo, M., Gurusurthy, G.P., Sharma, G. & Kumar, A. (2021). New age of the lower Talchir formation in the Wardha Basin, Central India, based on guide palynomorphs present in radiometrically-dated palynozonations in South America. Africa and Australia. *Ameghiniana*, 58 (4), 318-344. DOI: 10.5710/AMGH.29.03.2021.3423
 6. **Roy, Anirban** & Singh, Sushmita. (2021). Investigating the learning gaps of senior -secondary children through original biological images: What really lacks? *Voice of Teacher and Teacher Educators*, X (I), 177-190
 7. **Roy, Anirban** & Fleischman, Forrest (2022). The evolution of forest restoration in India: The journey from pre-colonial to India’s 75th year of Independence. *Land Degradation and Development*, 1-14. DOI: 10.1002/ldr.4258
 8. **Roy, Anirban** & Mohapatra, Animesh Kumar (2022). Pre-service trainee teachers’ experiences on computer-mediated learning during the COVID-19 pandemic revealed the need of revamping online pedagogy in India. *The Online Journal of Distance Education and e-Learning*, 10 (2): 261-276.

9. **Roy, Anirban** & Mohapatra, Animesh Kumar (2022). A gender-based investigation of senior secondary students' misconceptions about plant reproduction through concept inventory. *Interdisciplinary Journal of Environmental and Science Education*, 18 (4), e2287. DOI: 10.21601/ijese/12089.
10. Haridas, Sneha & **Roy, Anirban** (2022). Ecologists' experiences on 'Work from Home' during the COVID-19 Pandemic. *Journal of Human Ecology*, 80 (1-3): 32-47. DOI: 10.31901/24566608.2022/80.1-3.3345
11. Lahiri, Sutirtha, **Roy, Anirban**, & Fleischman, Forrest (2023). Grassland conservation and restoration in India: A governance crisis. *Restoration Ecology*, e13858. DOI: 10.1111/rec.13858

in review

1. **Roy, Anirban** & Mohapatra, Animesh Kumar (NA). A cross-sectional study to explore the students' expectations and motivations to attend senior secondary school education in India: What matters to them? *Indian Education Review*
2. Chandnani, Nikhil & **Roy, Anirban** (NA). A case study on multi-crop Vertical Hydroponics: An approach to sustainable farming in Indian urban scenario. *Journal of Tropical Agriculture*
3. **Roy, Anirban** & Bhan, Manan (NA). Exploring design principles for effective and equitable forest carbon markets (FCMs) in India. *Forest Policy & Economics*
4. **Roy, Anirban** & Chatterjee, Nirmalya (NA). What happens after planting? Assessing canopy structure, vegetation cover index, and vegetation distribution of two Miyawaki forest stands in Bengaluru urban district, India. *Environmental Monitoring and Assessment*

- **BOOK CHAPTERS**

book in preparation **Roy, Anirban** (2023). Plantation forests, Biodiversity & Economy in *Biodiversity and Bioeconomy*, Elsevier Publications.

- **POPULAR SCIENCE ARTICLES**

1. Mohapatra, Animesh Kumar & **Roy, Anirban**. (2015). Capuchin Monkeys: The New World Primates. *Science Horizon (Odisha Bigyan Academy)*, 2: 11–16
2. Mohapatra, Animesh Kumar & **Roy, Anirban**. (2015). Platypus: The Animal of Confusions. *Science Horizon (Odisha Bigyan Academy)*, 3: 17–24
3. Mohapatra, Animesh Kumar & **Roy, Anirban**. (2015). Novel Therapy for River blindness and filariasis (Nobel Prize for Physiology or Medicine - 2015; Part I). *Science Horizon (Odisha Bigyan Academy)*, 11: 7–16
4. Mohapatra, Animesh Kumar & **Roy, Anirban**. (2016). Novel Therapy for Malaria (Nobel Prize for Physiology or Medicine - 2015; Part II). *Science Horizon (Odisha Bigyan Academy)*, 6: 23–27
5. Goswami, Manasi & **Roy, Anirban**. (2016). The Secret of Electric Jolt of Electric Fishes. *Science Reporter (CSIR)*, 53 (05): 38–40
6. **Roy, Anirban**. (2017). Accidental Discoveries in Medical Science. *Dream 2047 (Vigyan Prasar)*, 19 (08): 25–28
7. Goswami, Manasi & **Roy, Anirban**. (2017). How do they know where they are flying? *Science Reporter (CSIR)*, 54 (07): 31–32
8. Mohapatra, Animesh Kumar & **Roy, Anirban**. (2017). Opah: The World's First Warm -Blooded Fish. *Science Horizon (Odisha Bigyan Academy)*, 2 (5): 30–35
9. Mohapatra, Animesh Kumar & **Roy, Anirban**. (2017). Prof. Obaid Siddiqui, the Legendary Molecular Biologist. *Science Horizon (Odisha Bigyan Academy)*, 2 (12): 67–70
10. **Roy, Anirban**. (2018). How the Geckos climb the wall. *Dream 2047 (Vigyan Prasar)*, 20(10): 27–28
11. **Roy, Anirban** & Ojha, Srikant. (2018). To draw or not to draw. *Science Reporter (CSIR)*, 55 (01): 26–27
12. **Roy, Anirban** (2020). The Unnoticed Mystery behind what we commonly see! *Journal of Advanced Scientific Education and Research*, 1: 12-14

- **PAPER PRESENTATIONS/ CONFERENCES/ SYMPOSIUMS**

- Delivered an oral presentation on “Investigating the performance of trees in cities: Assessing ecological appropriateness of Miyawaki pocket forests in Bengaluru, India” at 8TH ANNUAL FLARE MEET-

ING, **University of Notre Dame Rome Global Gateway, Rome, Italy (Received scholarship from FLARE secretariat)**

- Delivered an oral presentation on “An Investigation of Senior Secondary Students’ Expectations of School Education: What really matters to them?” at INTERNATIONAL CONFERENCE ON EDUCATION IN THE 21ST CENTURY, **RIE (NCERT) Bhubaneswar, India**
- Delivered a talk on “How Plants interact with each other” at 4TH SOTM ASIA INTERNATIONAL CONFERENCE, **Krishibid Institution, Dhaka, Bangladesh (Travel scholarship received from State of the Map Asia 2019 Working Group)**
- Delivered an oral presentation on “Plant-Herbivore interaction in Tungnath valleys, Western Himalayas, India” at 6TH INTL. CONFERENCE ON PLANTS AND ENVIRONMENTAL POLLUTION, **CSRI -NBRI, Lucknow, India (Travel scholarship received from IUBS, Paris)**
- Presented a poster on “Biodiversity and endemic plants of tribal predominant districts of Maharashtra” at INTERNATIONAL INDIA SCIENCE FESTIVAL, **IIT-M and Anna University, Chennai, India**
- Presented a poster on “Ethnobotanical assessment of medicinal plants in Ratnagiri and Palghar districts of Maharashtra” at CURRENT TRENDS IN HERBAL DRUG DISCOVERY AND ETHNOPHARMACOLOGY, **VESCOP, Mumbai, India**
- Delivered an oral presentation on “Exploring Drawing Skills and Mental Images of Secondary Students on Human Digestive System through Hand Drawing” at NATIONAL SEMINAR ON SCIENCE EDUCATION, **RIE (NCERT) Ajmer, India**
- Presented a poster on “Exposure of *Polypedates maculatus* (Gray, 1830) tadpoles to Cadmium reveals delayed metamorphosis and development of tumours” AVISHKAR (INTERCOLLEGIATE RESEARCH MEET AT STATE LEVEL (MAHARASHTRA), **University of Mumbai, Mumbai, India**
- Delivered an oral presentation on “Exploring the Creative Mental Representation of the Secondary Grade Children about Scientific Concepts employing Bi -linguistic Approach of Prefixes and Suffixes” at LANGUAGE ACROSS CURRICULUM IN MULTI-LINGUISTIC CONTEXT, **RIE (NCERT) Mysuru, India**
- Delivered an oral presentation on “Exploring the Basic misconceptions in Biological Science learning of Secondary Grade Children”. at NATIONAL CONFERENCE ON SCIENCE EDUCATION, **RIE (NCERT) Bhubaneswar, India**

• REVIEWER & ACADEMIC/RESEARCH RESPONSIBILITIES

- Peer Reviewer
 - * Ecological Engineering (Elsevier publications)
 - * Ecological Indicators (Elsevier publications)
 - * Environmental Conservation (Cambridge University Press)
 - * Journal of Turkish Science Education (Bursa Uludağ University, Turkey)
 - * Action in Teacher Education (Taylor & Francis publications)
- Board of Authors
 - * Guidelines for Carbon-Neutral Universities: Map your carbon footprints, published by **Global youth for Environment & Sustainability**, website: gy4es.org@gmail.com
- Outreach Events
 - * Led an awareness-outreach event '**Nature walk in the Miyawaki's**' for employees from Dell Technologies, India; organized by the SayTrees Environmental NGO (Bengaluru) at Miyawaki pocket forests in the IRIDM Campus, Bengaluru.
 - * Led an awareness-outreach event '**Miyawaki plantation site visit**' for employees from London Stock Exchange Group (LSEG), India; organized by the SayTrees Environmental NGO (Bengaluru) at Miyawaki pocket forests in the ASC Centre, Bengaluru.

• MEMBERSHIP(S)

- DELEGATE FROM INDIA at **Global Youth Climate Pact**, Centre Edgar Morin-Ecole des Hautes Etudes en Sciences Sociales -EHESS, National Center for Scientific Research, France.

• COMPUTATIONAL/LABORATORY SKILLS

- Wet Lab Techniques: Maceration, Electrophoresis, Spectrophotometry, Chromatography, PCR, Phase Contrast Microscopy
- Animal Models: Tadpoles and Caterpillars
- Socio-ecological field Techniques: Crowdsourcing, Quadrat/Transect methods, Focussed Group Discussions, Household surveys & Interviews, Palynological (Geological) techniques
- Software competencies:
 - * Programming/scripting: STELLA, PAST, R, L^AT_EX
 - * Earth-science modeling tools: GIS, GOOGLE EARTH
 - * General purpose software: MS OFFICE, PHOTOSHOP
- REFERENCES
On request