

## Personal Details

**Mansi Mungee** (*she/her*)

Research Fellow in Insect Ecology  
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University of Leeds, United Kingdom

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**personal profile:** <https://www.mansim-ecoblog.com/>

## Academic Degrees

2019

**Ph.D. (Ecology)**

Indian Institute of Science Education & Research (IISER)

Dr. Homi Bhabha Road, Pashan

Pune – 411008

Maharashtra (INDIA)

**Thesis Title:** Elevational diversity profiles of hawkmoths (Lepidoptera: Sphingidae) and birds (Aves): A comparative analysis in the eastern Himalayas

2011

**M.Sc. (Biological Science)**

Narsee Monjee Institute of Management Sciences (NMIMS)

V. L, Pherozeshah Mehta Rd, Vile Parle

Mumbai – 400056

Maharashtra (INDIA)

**Dissertation Title:** Heavy metal tolerance in bacterial colonies of e-waste dumping site in Bangalore city

2007

**B.Sc. (Microbiology)**

University of Pune,

Ganeshkhind Rd, Ganeshkhind, Pune, Maharashtra

411007 – Pune

Maharashtra (INDIA)

## Other Education & Training

2021

**Biological Feature Extraction from Radar-derived Variables**

June 2021 – Present

Collaborative project with Dr. Ryan Neely III

National Centre for Atmospheric Science

Leeds, UK

2018

**Machine Learning, Segmentation & Convolutional Neural Networks**

October, 2019 - Present

Collaborative venture with 6-Degrees IT Services Pvt. Ltd.

<https://www.6degreesit.com/>

9/2 Manorama Ganj, Street No 5

Indore, MP, 452001

Tel: +91-9755099218

2014

**Molecular phylogenetics & Bioinformatics**

October 28 – November 5, 2014

**Course convener:** Prof. Praveen Karanth

karanth@ces.iisc.ernet.in

<http://ces.iisc.ernet.in/prave>

Centre for Ecological Sciences

Indian Institute of Science

Bangalore 560012, India

91-80-22933105

fax: 91-80-23601428

2013

### **GIS and remote sensing using QGIS**

February 15 – February 21, 2013

**Course convener:** Dr. Ravinder Singh Bhalla

bhalla@feralindia.org

<https://www.feralindia.org/user/75>

Foundation For Ecological Research, Advocacy and Learning (FERAL)

170/3 Morattandi

Auroville Post - 605101

Tamil Nadu (INDIA)

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### **Language Skills**

Native: Hindi

Others: English

Common European Framework of Reference for Languages Self-assessment grid -

EN:

- Listening: C1
- Reading: C1
- Spoken interaction: B2
- Spoken production: B1
- Writing: C1

### **Current Employment**

June 2021 – Present

#### **Research Fellow in Insect Ecology**

School of Geography, Faculty of Environment

University of Leeds,

Leeds, LS2 9JT, United Kingdom

+44 (0)113 34 35326, [env-pgr@leeds.ac.uk](mailto:env-pgr@leeds.ac.uk)

#### **Project Title: Drivers and Repurcussions of UK Insect Declines (DRUID)**

DRUID is a large collaborative project between the University of Leeds, Centre for Ecology & Hydrology (UKCEH), University of Reading and Rothamsted Research, funded through the NERC Insect Declines Highlights Topic. DRUID seeks to provide a step change in evidence on recent insect population and community trends for the UK. It will bring together the widest possible set of standardised monitoring data with two contrasting sets of more spatially comprehensive data: modelled occupancy and abundance estimates from species records in biodiversity databases, and novel biomass, abundance and morphodiversity estimates from post-processed radar data. Using these data, DRUID will assess the drivers of change in terrestrial and aquatic insect populations and communities and fully quantify the links between these populations and natural capital. My main duties include:

- Designing, planning and conducting a novel programme of investigation.
- Generating independent and original research ideas and quantitative analysis of insect biodiversity and functional trait spatial and temporal datasets, with the aim of evaluating the evidence (or not) of general, cross-taxon insect declines in the UK, and the drivers and consequences of any such declines;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals, and by presentation at national and international meetings;
- Working independently and as part of a larger inter-disciplinary team of researchers, both internally and externally to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Evaluating methods and techniques used and results obtained by other researchers and relating such evaluations to your own research

### Previous Employment

January, 2019 – May, 2021 **Research Associate**  
 Wildlife Institute of India (WII)  
 P.O.Box#18 Chandrabani Road  
 Dehradun – 248001  
 Uttarakhand (INDIA)

**Project Title: Designing a comprehensive Human-Wildlife Conflict Management Strategy plan for the alpine and sub-alpine regions of the Uttarakhand Himalayas.**

- Leading a team of 8 junior research fellows and developing a landscape specific management plan for the alpine landscapes of Uttarakhand to be implemented by the state forest department.
- Developing the first comprehensive human-wildlife conflict management strategy for the alpine and sub-alpine regions of Uttarakhand, for forest managers.
- Organised eight landscape-level stakeholder participatory workshops which included local community based organisations, forest department, district administration, scientists and NGOs. Coordinated and compiled inter-agency data spanning 18 National agencies and two distinct landscapes of the Indian Himalayan Region
- Handled aspects related to project administration, supervision of the junior research fellows, organisation of events such as landscape-level workshops, training workshops, PRA exercises, and coordinating with the forest department at state and landscape levels.
- Collated data across multiple agencies, multiple data types and assessed the ongoing government schemes to perform a comprehensive biodiversity and socio-economic profiling of the project landscapes

### Research Skills & Proficiency

- **R programming language:** Advanced (spatial, phylogenetic, ecological)
- **Python programming language:** Intermediate
- **Linux/Unix OS:** Advanced
- **Machine Learning & Artificial Intelligence:** Intermediate
  - **Feature extractions** (Hu moments, Elliptic Fourier Descriptors, Radial Distance Functions, Local Binary Patterns)
  - **Heirarchical Classifications** (Stacked Denoising Autoencoder, general auto-encoder, Linear Discriminant Analysis, Kernel Discriminate Analysis)

- **Automated learning** (Convolutional Neural Networks)
- **Entomological Radar Processing:** Beginner
  - JASMIN Interface, CEDA datasets
- **Statistical Modelling:** Intermediate (Univariate & Multivariate analyses, Generalised Additive/Linear/Dissimilarity Modelling, Linear Discriminatory Analyses, Matrix algebra, etc.)
- **Spatial Analyses:** Geographically Weighted Regression, Least Cost Analysis, handling and analysing raster data, LULC, Spatially autoregressive models, etc.
- **Ecological Analyses:**
  - **Species Abundance distributions** (Broken Stick, Log Normal, Log Series, Zero-sum Multinomial, etc.)
  - **Taxonomic, Functional and Phylogenetic alpha, beta and gamma diversities** (Rao's Quadratic framework, Vileger's Indices, Legendre's Indices, Chao's Indices, Mouillot's probability distributions, Jackknife indices, Dissimilarity Matrices, Ordination & Clustering, Faith's phylogenetic diversity, Nearest Neighbour distances, etc)
  - **Handling, curating/cleaning large ecological data-sets**
  - **Theoretical ecology:** Community assembly, functional & phylogenetic ecology, ecogeographical rules (Bergmann's rule, Allen's rule, Rapoport's rule, etc.)

## Research Output

- **Munsee, M.** and Athreya, R.\*, 2020. Rapid photogrammetry of morphological traits of free ranging moths. *Ecological Entomology*, <https://doi.org/10.1111/een.12907>
- **Munsee, M.\*** and Athreya, R., 2020. Intraspecific trait variability and community assembly in hawkmoths (Lepidoptera: Sphingidae) across an elevational gradient in the eastern Himalayas, India. *Ecology & Evolution*, <https://onlinelibrary.wiley.com/doi/10.1002/ece3.7054>
- Sathyakumar, S.\*, **Munsee, M.**, Pal, R., 2020. Biogeography of the Mountain Ranges of South Asia. In: Goldstein, M.I., DellaSala, D.A. (Eds.), *Encyclopedia of the World's Biomes*, vol. 1. Elsevier, pp. 543–554. ISBN: 9780128160961
- **Munsee, M.\***, Pandit, R. and Athreya, R., 2021. Taxonomic scale dependency of Bergmann's patterns: a cross-scale comparison of hawkmoths and birds along a tropical elevational gradient. *Journal of Tropical Ecology*, pp.1-11.
- **Munsee, M.\***, Pandit, R. and Athreya, R., 2021. Munsee, M. and Athreya, R., 2019. Functional randomness despite high taxonomic turnover across an elevational gradient in a global biodiversity hotspot: A case study of hawkmoths and birds. *BioRxiv*, p.867770.
- Maitra A., **Munsee M.**, Pandit R., Athreya R.\*, 2021 Testing a theoretical framework for species abundance profiles: Evidence for Abundant Centre Hypothesis from a Bird Community in the Eastern Himalayas ( In the process of review; manuscript available upon request)
- **Munsee M.\*** and Athreya R., 2021 Taxonomic and spatial-scale dependency of alpha diversity patterns: A comparative analysis of hawkmoths and birds along an east Himalayan elevational gradient (In preparation)

- **Mungee M.\***, Pandit R., and Athreya R., 2021, Unevenness in species abundance distributions along a tropical elevational gradients – Consistency of patterns or processes? (In preparation)
- **Mungee M.\***, Pandit R., and Athreya R., 2021, Unevenness in species abundance distributions along a tropical elevational gradients – Consistency of patterns or processes? (In preparation)
- **Mungee M.** , Barthwal D., Rao Y. , S. Sathyakumar\*, 2021 Understanding the drivers and community perceptions of human wildlife conflict in high altitude villages: A comparative assessment between the Kumaon and Garhwal Himalaya of Uttarakhand (In preparation)

### Research Supervision

<b>2019 - 2021</b>	Senior Project Biologist (Wildlife Institute of India)
<b>2014</b>	Teaching Assistant (One semester - Ecology-1)
<b>2013</b>	Teaching Assistant (One semester - Evolution)

### Awards and Honors

- **Marie Skłodowska–Curie Postdoctoral Seal of Excellence** - 2021
- Recipient of the **Sundance Film Festival Grant (2020)** of 35,000 USD to make a documentary on my PhD research on hawkmoths of Eaglenest. Trailer available upon request.
- Recipient of the **International Travel Grant by the British Ecological Society** (2019)
- Recipient of the **Best poster prize at the British Ecological Society Annual Meeting**, Belfast, Northern Ireland, December 2019

### Other key academic merits

- Patterns in diversity of Sphingidae (Lepidoptera) along an elevational gradient in Arunachal Pradesh; Mungee M., Athreya R., **Young Ecologists Talk and Interact (YETI)**, 2013
- Bergmann's pattern at different taxonomic scales: A comparison of ectothermic hawkmoths and endothermic birds across an east Himalayan elevational gradient, Mungee M., Athreya R., **British Ecological Society Annual Meeting Belfast**, 2019
- Species abundance profiles: A shift in dominance with elevation, Mungee M., Athreya R., **India-Behaviour Ecology and Evolution (IBEE)**, 2016
- Conservation of the Gangotri-Govind Landscape: Participatory workshop for local stakeholders Uttarkashi (Uttarakhand) February, 2019 (**Speaker & Organiser**)
- Conservation of the Darma-Byans Landscape: Participatory workshop for local stakeholders Dharchula (Uttarakhand), January, 2019 (**Speaker & Organiser**)

## **Scientific and societal impact**

- The novel method developed during my PhD for obtaining morphological traits of free-flying moths obviates the necessity of collecting specimens, and the subsequent large expenditure on their processing and maintenance when it is not essential. The equipment and material necessary are all consumer-level, off-the-shelf items which makes the procedure accessible to researchers all across the world, and yet provides measurements accurate to a few percent for tens of thousands of individuals. It would make the collection of basic trait data feasible for a large number of insect individuals at minimal cost in multi-epoch and/or multi-location investigations like impact of climate change on faunal populations, ecosystem stability, and functional trait-based community assembly.
- With the help of two independent film-makers, I am documenting the principal research outcomes of my doctoral work for public outreach. We shot a trailer in October-2019 and used that to raise funds for a larger documentary that revolves around my PhD research on hawkmoths, with special emphasis on the role of local community in preserving the forests that supports the diversity. By effectively communicating the research outputs, my field site was recently designated one of the 7 sites under the Government of India's most ambitious ecological programme to date – Long-Term Observatory for Ecological Monitoring.