

# Akanksha Rathore

Postdoc at Max Planck Institute of Animal Behavior  
& Centre for Advanced Studies of Collective  
Behavior, Konstanz

Research Interests: Animal Behavior, Data Science for Ecological  
Studies, Technology for Wildlife & Conservation, Sexual Selection,  
Prey-Predator Dynamics, Movement Ecology.

## Professional Experience

### Max Planck Institute of Animal Behavior, Konstanz — *Postdoctoral researcher*

Oct 2021 - present

- Project lead on a collaborative team project examining the collective mating displays in animals using state-of-the-art aerial videography and visual animal tracking methods.
- We employ a "collective behaviour and spatial ecology approach" to study the evolutionary processes related to sexual selection and the evolution of mating systems.
- It's an interdisciplinary project spanning fundamental ecology, field biology, computer vision, and theoretical modelling.
- Outreach activities are a vital component: drone training to local guides and forest staff, collaborations with art institutes in Germany and engagement of local artists to convey science.

### Indian Institute of Science, Bangalore — *Ph.D. scholar*

July 2015 - June 2021

Thesis Advisors:

Dr. Vishweshia Guttal

Dr Kavita Isvaran

- Design and execution of field-based experiments and field data collection using aerial imagery techniques (UAVs)
- Developed a neural network-based software to track animals in the videos collected on complex backgrounds
- Movement data, time-series and social network analysis to study collective behaviour
- Thesis, grant and manuscript writing, presentations at international conferences
- Teaching, mentoring and workshops
- Thesis: <https://etd.iisc.ac.in/handle/2005/5171>

### Nature Conservation Foundation, Bengaluru — *Research Associate*

June 2014 - July 2015

- Worked as an intern and research associate with the Eastern Himalaya Program.
- Deployed GPS tags, tracked radio frequencies, and collected movement and acceleration data of bird flights.
- Analysed the data and disseminate results in the form of talks and publications.
- Long-term monitoring - tree phenology data collection and analysis



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## Education

### Ph.D., Ecological Sciences

2015-2021

Indian Institute of Science, Bengaluru

### B.Tech., Information Technology

2008-2012

Malviya National Institute of Technology, Jaipur

## Awards & Fellowships

- CRG-CASCB joint grant by the Department for the Ecology of Animal Societies at the University of Konstanz / Max Planck Institute of Animal Behavior and the Centre for the Advanced Study of Collective Behaviour, University of Konstanz.
- Zukunftskolleg research visit fellowship, University of Konstanz August 2019.
- Travel grant for invited talk in Gordon Research Seminar by Gordon Research Organization, Italy March 2019.
- Travel grant for participating in Winter School on Quantitative Systems Biology from Pratiksha Trust Scholarships-ICTS December 2018.
- Student Researcher on the UK-India Education and Research Initiative 2018–2020.
- Student Researcher on the Commonwealth Science Conference Follow-on Grant 2015.
- Research fellowship by MHRD, Govt. of India 2015–2020
- All India Rank 07 (GATE, India) 2015

## Teaching experience

- **Time-series analysis for animal movement studies - EAS, Max Planck Institute of Animal Behavior, Konstanz**  
Oct 2022
- **Image processing for animal census and movement studies — SCCS Bangalore**  
Oct 2019
- **Theoretical and Mathematical Ecology — Indian Institute of Science, Bangalore**  
July 2018 - Dec 2018
- **Mathematics refresher for ecology students — Indian Institute of Science, Bangalore**  
Jan 2018
- **End-to-end data management for ecologists and wildlife conservationists — Freelance workshop**  
Dec 2016

## SAP Labs India Pvt Ltd — Software Engineer

July 2012 - May 2014  
(1 year 10 months)

## Centre for Development of Telematics — Intern

May 2011 - July 2011  
(3 months)

## Publications

1. **Rathore A.**, Isvaran K., Guttal V. (2022). Lekking as collective behaviour. (Accepted). *Philosophical Transactions B. doi* - <https://doi.org/0.1098/rstb.2022.0066>
  2. **Rathore A.**, Sharma A., Sharma N., Torney C., Guttal V. (2020). Multi-Object Tracking in Heterogeneous environments (MOTHe) for animal space-use studies. *bioRxiv doi-https://doi.org/10.1101/2020.01.10.899989* (In revision at *PeerJ*)
  3. Naniwadekar R., **Rathore A.**, Shukla U., Datta A. (2020). Patterns of roost site use by Asian hornbills and implications for seed dispersal. *Biotropica* doi- <https://doi.org/10.1111/btp.13039>
  4. Naniwadekar R., **Rathore A.**, Shukla U., Chaplod S., Datta A. (2019). How far do Asian forest hornbills disperse seeds: the role of season, sex and species. *Acta Oecologica*. 101 (103482)
  5. Naniwadekar, R., Chaplod, S., Datta, A., **Rathore, A.**, Sridhar, H. (2019). Large frugivores matter: Insights from network and seed dispersal effectiveness approaches. *Journal of Animal Ecology*. 88(8):1250-1262
  6. Shukla, U., Naniwadekar, R., **Rathore, A.**, Datta, A. (2018). Variability in gut passage times of Asian hornbills for large-seeded tree species. *Sarawak Museum Journal*. 79 (100). Dryad Dataset doi- <https://doi.org/10.5061/dryad.5br2q79>
- **Rathore A.**, Vadavalli B. D., Jadhav V., Isvaran K., Torney C., Guttal V. Leadership and information transfer in groups escaping a (simulated) threat in the wild. (Ready to be submitted)

## Talks and Conferences

- **CASCB Seminar Series**, University of Konstanz: (*Invited speaker*) - Oct 2022
- **GRC on Predator-Prey interactions**, Lucca: (*Invited speaker*) - Oct 2022
- **ASAB 2019**: New Frontiers in the Study of Animal Behaviour, Konstanz (Poster presentation) - Aug 2019
- **GRC on Movement Ecology of Animals**, Lucca: (*Invited speaker* and poster presentation) - Mar 2019
- **Understanding Behaviour**, IISER, Kolkata: (Poster presentation) - Jan 2019
- **Quantitative Systems Biology**: Winter school on AI and learning, Trieste (Participant) - Nov 2018
- Round table discussion on **AI for all** organized by Tandem Research Technology, Goa: (*Invited speaker*) - Oct 2018
- **Mathematical Models in Ecology and Evolution**, London (Poster presentation) - Jul 2017
- **Movement Ecology Conference**, London (Participant) Jul 2017
- **Scientific Writing workshop**, CES, IISc, Bangalore (Participant) - Jan 2017
- **Student Conference on Conservation Science**, Bangalore: (Presenter) - Oct 2019

## Mentoring

- **Master's thesis**: 3 students
- **Training in field skills & data collection using drones** : 6 students (Bachelor's)
- **Image processing & machine learning techniques**: 5 students (Bachelor's)
- **Behavioural ecology and data analysis**:- 3 students (Bachelor's)

## Reviewer for journal articles:

Royal Society Proc. B\*, Phil. Trans. of R. Soc.\*  
(\*Assisted my advisor for the review)

## Technical Skills

- Computer Programming: R, Python, C, MySQL, ABAP
- Softwares: Matlab, GIS, Earth Engine
- End-to-end data analysis
- Data visualisation
- Agent-based modelling
- Time-series analysis
- Social Network Analysis
- Pattern Analysis
- Computer Vision and Machine Learning
- Image and Video processing
- Statistics - regression & model fitting

## Field Biology

- Animal tagging & telemetry
- EU licensed drone pilot
- Phenology surveys
- Behavioural observations - focal sampling, nest watches, time-activity budgets
- Canopy climbing
- Animal handling - birds, turtle, snakes
- Communication with forest department and local communities
- Setting-up & running field site independently
- Field-work experience in the dense rain-forests of NE India and arid grasslands of western India

## Interpersonal

- Lived in: India, Germany, UK
- Fluent in: Hindi, English, Rajasthani (Marwari)
- Basic Knowledge: Punjabi, Gujarati, German

## Portfolio

- Personal website: [akanksharathore.com](http://akanksharathore.com)
- LinkedIn profile: <https://www.linkedin.com/in/akanksha-rathore-76a7818b>
- Blog: <https://nanavritti.wordpress.com/>
- Media coverage: <https://theinterviewportal.com/2022/06/04/wildlife-ecologist-interview-3/>