Dr. Bharat Parthasarathy

Humboldt fellow (University of Hamburg)
Former SERB NPDF fellow (IISc, Bangalore)
Personal website: bharatparthasarathy.org
Email: bharatparthasarathy11@gmail.com
X (formerly Twitter): @BharatParthasa3

OVERVIEW

I am an experienced biologist with an interdisciplinary skill set. I have extensive experience in designing and conducting scientific experiments, both in the lab and field, and have a proven track record of publishing research articles and securing grants from national and international agencies. I am proficient in advanced molecular and cellular biology techniques, statistical data analysis, mathematical modeling, social network analysis, and programming languages such as Python, R, SPSS, and NetLogo. Additionally, I have invented a novel, self-calibrating electronic device for measuring spider web vibrations in field settings. I also have one semester of teaching experience at the undergraduate and postgraduate levels.

POSTDOCTORAL RESEARCH AND TEACHING EXPERIENCE

Since 15th Feb 2024: Independent Postdoctoral Fellow, Centre for Excellence in Mathematical Biology, Sri Sathya Sai Institute of Higher Learning, Puttaparthi, India

July 2023- November 2023: Assistant Professor, Research Faculty, St. Joseph's University, Bengaluru, India

Feb 2021- April 2023: Postdoctoral Research Fellow at the University of Hamburg, Hamburg, Germany

July 2019- Jan 2021: Postdoctoral Research Fellow at the Indian Institute of Science (IISc), Bengaluru, India

Oct 2018- June 2019: Postdoctoral Research Assistant at the Indian Institute of Science Education and Research Trivandrum (IISER TVM), Thiruvananthapuram, India

EDUCATION

2012- 2018: Ph.D. from the Indian Institute of Science Education and Research Trivandrum, Thiruvananthapuram, India
Title of thesis: Collective Behaviour of the Inbred Social Spider, *Stegodyphus sarasinorum*
Date of Award of PhD degree: July 2019

2008- 2010: M.Sc. in Biological Sciences (specialization: genetics) from the University of Cologne, Cologne, Germany
Title of thesis: Cell Biology of Irgm1 upon *Listeria monocytogenes* Infection

2005- 2006: Honours in Biotechnology of Plants from St. Joseph's College of Arts and Science, Bengaluru, India

2004- 2007: B.Sc. (triple major in Microbiology, Chemistry and Botany) from St. Joseph's College of Arts and Science, Bengaluru, India

RESEARCH AND CORPORATE EXPERIENCE

2011: Project Assistant at the Evolutionary and Organismal Biology Unit, Jawaharlal Nehru Centre of Advanced Scientific Research, Bengaluru, India

2007- 2008: Associate in Learning Services, Accenture PVT LTD., Bengaluru, India

RESEARCH FELLOWSHIPS AND AWARDS

2021- 2023: Alexander von Humboldt postdoctoral fellowship

2020- 2021: SERB NPDF postdoctoral fellowship from the Department of Science and Technology (DST), Government of India

2019: Department of Biotechnology (DBT) postdoctoral fellowship from the Government of India (declined to take up SERB NPDF)

2019: Best poster award from the Indian Society of Evolutionary Biologists

2015: Student's Research Grant from the American Arachnological Society, USA

2011: CSIR-UGC Lectureship (**All India Rank: 28** in Life Sciences) from the Government of India

EXPERIMENTAL SKILLS

Molecular and cell biological techniques such as flow cytometry, fluorescent microscopy, FISH, PCR and qPCR, gateway cloning, protein purification, western blotting, mammalian and insect cell culture. Established a novel method to determine primary sex ratios of spider embryos using flow cytometry (manuscript in preparation). Skilled in performing **long-term ecological field studies**. Extensive experience in designing **laboratory experiments**. Invented a new device for measuring spider web vibrations in field settings (provisional utility patent filed).

ANALYTICAL, PROGRAMMING AND PROJECT MANAGEMENT SKILLS

Statistical **big-data analyses** including multilevel modelling, social network analyses, agent-based simulations/mathematical models, **Python, R, SPSS, NetLogo**. Demonstrated history in successfully completing various government-funded research projects in time. Extensive experience in mentoring students, research assistants, technical assistants, interns and collaborators from **diverse cultural backgrounds and geographical boundaries**.

INVITED TALKS AND LECTURES

2025 (upcoming): Social Evolution in Spiders, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India

2023: Collective Behaviour of an Indian Social Spider, Sri Sathya Sai Institute of Higher Learning, Puttaparthi, India

2021: Task Participation in a Spider Society, Aarhus University, Aarhus, Denmark

2020: Behavioural Ecology and Evolution Lectures (4 lectures for the public and students) at the Jawaharlal Nehru Planetarium, Bengaluru, India

2019: Collective Behaviour of an Indian Social Spider, National Centre for Biological Sciences (NCBS), Bengaluru, India

2019: Social Evolution in Spiders, St. Joseph's College of Arts and Science, Bengaluru, India

2015: Dispersal in an Inbreeding Social Spider, IISER– National University of Singapore International Conference, Thiruvananthapuram, India

PUBLICATIONS IN PEER-REVIEWED SCI- EXPANDED INDEXED JOURNALS

(*****) denotes corresponding author. (**+**) denotes equal contribution

Google scholar ID: https://scholar.google.com/citations?user=rqMNISwAAAAJ&hl=en

1. **Parthasarathy B***, Shaikh NY+, Sai Abhinai V+, Varun Sai V+, Sai Krishna MV+ and Dasu KKV (2024). Extended Phenotype Can Influence Collective Behaviour and Survival in a Social Spider. Biorxiv. https://doi.org/10.1101/2024.09.12.612246.
   Scholarly contribution: Research conceptualization, performing experiments, data acquisition, data analyses, student supervision and writing the manuscript

2. **Parthasarathy B***[+], Dumke M[+], Herberstein M and Schneider JM (2023). Male Cooperation Improves Their Own and Kin- Group Productivity in a Group- Foraging Spider. **Scientific Reports** 13: 366. https://doi.org/10.1038/s41598-022-27282-9
   Scholarly contribution: result interpretation and writing the manuscript

3. **Parthasarathy B***, Bouchard M and Schneider JM. Extended Phenotypes Can Underlie Trade-offs: A case of Social Spiders (2022). **The Science of Nature** 109: 51. https://doi.org/10.1007/s00114-022-01826-5
   Scholarly contribution: research conceptualization, designing experiments, data analyses, result interpretation and writing the manuscript

4. **Parthasarathy B***, Müller M, Bilde T and Schneider JM (2022): Hunger State and not Personality Determines Task Participation in a Spider Society. **Animal Behaviour** 190: 143-152. https://doi.org/10.1016/j.anbehav.2022.06.002
   Scholarly contribution: research conceptualization, designing experiments (with PI), data analyses, result interpretation and writing the manuscript

5. **Parthasarathy B***, Wright J and Somanathan H (2021): Long-Term Behavioural Syndrome in Subadult Indian Social Spiders but Not Over the Short-Term or in Juveniles. **Ethology** 127: 1064-1073. https://doi.org/10.1111/eth.13229
   Scholarly contribution: research conceptualization, data analyses, result interpretation and writing the manuscript

6. **Parthasarathy B*** and Somanathan H (2020). When and Why Do Sit and Wait Social Spiders Disperse? Invited Review. **Israel Journal of Ecology and Evolution**. 66: 15-25. https:// 10.1163/22244662-20191068
   Scholarly contribution: lead role in writing and integrating current knowledge in the review

7. **Parthasarathy B** and Somanathan H* (2019): Behavioural Responses Vary with Prey Species in the Social Spider *Stegodyphus sarasinorum*. **Behavioral Ecology** 30: 938-947. https://doi.org/10.1093/beheco/arz032
   Scholarly contribution: research conceptualization, designing and performing experiments, data analyses, result interpretation and writing the manuscript

8. **Parthasarathy B**, Joshi CH, Kalyadan SS and Somanathan H* (2019): Early Ontogenic Emergence of Personality and its Long Term Persistence in a Social Spider. **Behavioral Ecology and Sociobiology** 73: 35. https://doi.org/10.1007/s00265-019-2645-4
   Scholarly contribution: research co-conceptualization (with PI), designing experiments, performing experiments (with co-authors), data analyses, result interpretation and writing the manuscript

9. **Parthasarathy B** and Somanathan H* (2018): Body Condition and Food Shapes Group Dispersal but not Solitary Dispersal in a Social Spider. **Behavioral Ecology** 29: 619-627. https://doi.org/10.1093/beheco/ary013
   Scholarly contribution: research conceptualization, designing and performing the experiments and field study, data analyses, result interpretation and writing the manuscript

10. **Parthasarathy B*** and Somanathan H (2018): A Method for Accurately Estimating Social Spider Numbers Without Colony Damage. **Journal of Arachnology** 46: 373-375. https://doi.org/10.1636/JoA-S-17-075.1
    Scholarly contribution: research method conceptualization, designing experiments, data analyses, result interpretation and writing the manuscript

CONFERENCE TALKS, POSTERS AND WORKSHOPS

2025: Talk at the International Conference of Behaviour, Kolkata, India

2022: Talk at the European Congress of Arachnology, Greifswald, Germany

2021: Talk at the Zoological Colloquium, Hamburg, Germany

2019: Poster Presentation in ISEB1: Celebrating Ecology and Evolution in India, JNCASR, India

2019: Poster Presentation in the Symposium on Collective Behaviour, IISC, Bengaluru

2016: Poster Presentation at International Society of Behavioural Ecology (ISBE), Exeter, the UK

2015: Statistical Workshop on R, IISER TVM, India

2013: Poster Presentation (by nomination, School of Biology, IISER TVM) at EMBO-India Bioscience Young Scientist Networking International Conference, Bangalore, India

2013: Statistical Workshop on Jackknifing, Bootstrapping and Monte-Carlo methods in CMC Vellore, India

2013: Workshop on R and Certification as Programmer in R from IIITM-K, Trivandrum, India

2012: Molecular Phylogeny Workshop in IISC, Bangalore, India

2006: Poster Presentation at Biovistas National Conference, Bangalore, India

PEER REVIEW

Total research articles reviewed: 7

Journals: Biology Letters, Animal Behaviour, Animal Cognition, Ethology, Journal of Ethology, Ecology and Evolution and Journal of Arachnology.

STUDENT MENTORING EXPERIENCE

Number of Master theses supervised: 6

Number of BTA (German technician‟s degree) projects supervised: 5

Number of internship projects supervised: 11

TEACHING EXPERIENCE

Courses taught in 2023 (one full semester) at St. Joseph‟s University, Bengaluru:

1. Research Design and Methodology (30 theory hours) for II-year postgraduate students.
2. Conducted training in Bio-statistics using R (45 practical hours) for II-year postgraduate students.
3. Evolution of Chordates (30 theory hours) for undergraduate students.
4. Economic Zoology (15 theory hours) for undergraduate students.

2020: Behavioural Ecology and Evolution „BIOREAP‟ Lectures (4 lectures for the public and undergraduate students) at the Jawaharlal Nehru Planetarium, Bangalore, India

2013: 3 lectures as a teaching Assistant for the advanced course “Neurobiology” for integrated Master students at IISER TVM, India

2013: 4 lectures as a teaching Assistant for the advanced course “Ecology and Evolution” for integrated Master students at IISER TVM, India