



Dr. Rahul Marathe Ph.D

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Areas of interest and expertise

Entomology, Parasitology, Environment science, Wildlife conservation

I am a passionate entomologist dedicated to exploring the insect world, have a keen interest in understanding these tiny creatures that inhabit our planet. Through years of fieldwork and research, my expertise lies in entomological consultancy, beneficial insects, insect inspired technology, and taxonomy. I engage in outreach activities, educating the public about the significance of insects and inspiring the next generation of entomologists. My journey as an entomologist embodies curiosity, dedication, and a profound appreciation for the insect world. As I continue to explore the depths of entomology, my work serves as a reminder of the incredible diversity and importance of insects in our ecosystems.

Since 2016, I have done pioneering research on "plastic-eating larvae," a groundbreaking discovery with immense potential for tackling plastic pollution. I was able to generate essential baseline data, laying the foundation for future advancements in plastic degradation. Additionally, I have spearheaded some pathbreaking projects such as converting hazardous paint waste and canteen waste into fertilizer grade non-agriculture manure using Black Soldier Flies at automotive industry (Bajaj Auto) and Indian Army. I am also providing biosolutions using insects at Indian Naval Aviation, Indian Airforce, Indian Coast Guard airbases and Civil airports within India, for reducing bird strikes. My ongoing projects include projects with the DRDO, Ministry of Defence, where I use insects for different purposes. With a passion for entomology and a commitment to sustainability, I continue to lead the way in finding eco-friendly solutions to complex problems using Insects.

Education

- Ph. D in Zoology, University of Pune, India 2009
- M.Sc. (Entomology), University of Pune, India, 1999
- B. Sc (Zoology), University of Pune, India, 1997

Employment

- **Founder and Director (Dec 2023 till date), Mitrakida Foundation for Insect Research and Conservation, Pune, India**

To create awareness about insects for their conservation, I routinely deliver public lectures for insect popularization to sensitize people. I also write articles on insects in newspapers as well as on social media, conduct insect education programs in schools (urban and rural), courses, workshops, and camps for school kids.

- **Founder and Director (September 2019 till date), Mitrakida Biosolutions Private Limited, Pune, India**

I undertake Entomology related specialized projects from individual to institutional level clients. I am engaged in specific projects with Defence. In addition, I provide entomological investigation services for farms and various types of industries. I also carry out insect surveys and tree risk assessment with reference to insect infestations.

- **Head and Study Director (Jan 2018 – Aug 2019), ROSS Life science Pvt Ltd, Pune, India**

As Head and Study Director, I have handled many audits of GLP, NABL, ISO, CIB-RC etc. I have done planning and execution of many entomological projects for both national and international clients. I have conducted many agricultural studies for new product development and on and off shelf product studies for household, medically important, veterinary insecticides/pesticides. I have successfully completed these projects with my team by building network across scientific disciplines in stipulated time frame.

- **Founder and Proprietor (Jan 2016 – Dec 2017) at MITRAKIDA, Pune, India**

With my own rearing facility for beneficial insects, I gave consultancy to the agricultural practitioners and farmers for agriculture pest management. Under the proprietary I have developed technologies for rearing of beneficial insects. I have developed economic ways for *Corcyra* egg production, Tricocard production, mealy bug culture, etc. Apart from routine work, I have delivered more than 50 public talks introducing the concept of using beneficial insects for farming practices.

- **Head Entomology and Sr. Manager Technical services (June 2013 – Dec 2015), ROSS Life science Pvt Ltd, Pune, India**

As Head Entomology and Senior Technical Manager, I was involved in getting certifications and audits for NABL, ISO, CIB-RC etc.

- **Chief Coordinator – Environment Management Division (Sept 2011 – June 2013) KICONS Limited formerly Kirloskar Consultants Limited, Pune, India**

As a Chief coordinator, I led team of 10 environmental scientists and worked for more than 60 different Environment Clearance, Ecology, Restoration projects at State and Central Government and private owned projects. The key aspects of my responsibilities include planning, technical support, and execution on the scientific front for the progress of the project. Some of the important projects are given below.

1. Rapid Environment Impact Assessment (REIA) for collecting, compiling, and assessing environment for Kirloskar Ferrous Industries Ltd, India.
2. Rapid EIA-EMP project for Neyveli Lignite Corporation Ltd, India.
3. CRZ Clearance and Environmental Clearance from Ministry of Environment and Forest for extension of Palm Beach Marg at Ghansoli Node for City and Industrial Development Corporation of Maharashtra Limited (CIDCO), India
4. Environmental Impact Assessment (EIA) Study for Khargone Thermal Power Project, National Thermal Power Corporation, India.
5. EIA Studies for coal-based power project for Videocon Industries LTD, India. Environmental Consultancy services for coal-based power plant for Shree Renuka Energy Limited, Karnataka, India.
6. River development and lake development projects, Comprehensive Transportation Study (CTS) for the Pune Metropolitan region (PMR) under Pune Municipal Corporation, India.

- **Manager – Technical Services (June 2009 - Sept 2011), ROSS Life science Pvt Ltd, Pune, India**

Worked as lab leader for a team of 4 entomologists, for an insectary development project. The key aspects of my responsibilities were creating a state of art insect rearing facility / referral entomological center. I was in-charge of entomological studies with focus on household insecticide studies for national and international clients. I was internal auditor and have handled audits for NABL, ISO/IEC 17025

- **Research Student (Nov 2008 - May 2009), Central Research Station BAIF, Pune, India**

As a PhD research student at Bharatiya Agro Industries Foundation (BAIF), I completed my Ph. D work which was beneficial for animal husbandry with reference to the domestic animals for ectoparasite management. (Publications in publications section).

- **Principal Scientific Officer (Sept 2007 - Sept 2008) at Naik Environment Research Institute Ltd. NERIL, Pune, India**

I worked as Head of Research & Development and Head of Environment wing for a team of 12 environmental officers on various Environmental Impact Assessment projects of state Government and central government, as given below.

1. EIA studies on Yamuna-Rajasthan Interlink canal, India.
2. Rajasthan-Sabarmati Interlink canal, India.
3. Bhakra Main Line- Hansi Branch - Butana Branch - Multipurpose Link Channel Project, India
4. Comprehensive Catchment Area Treatment Plan for Sutlej River Basin in Himachal Pradesh, India.
5. Comprehensive Catchment Area Treatment Plan for Beas River Basin in Himachal Pradesh, India.

- **Lecturer in Zoology (Under Grad) and Biodiversity (Post Grad) (July 2001 - July 2007) at Abasaheb Garware College, Pune, India and at Sinhgad College of Science, Pune, India**

- **Field Biologist and Naturalist (Sept 2001 - July 2003), PUGMARKS, Pune, India**
As young field biologist and naturalist, I led camps in forests of India to educate campers especially with a focus on entomology.

- **Junior Research Fellow (DST, Govt of India) (July 1999 - Sept 2001) at Dept. of Microbiology, Abasaheb Garware College, Pune, India**

As a young research fellow, I did extensive field work for wildlife health project in Tadoba Andhari Tiger Reserve, Maharashtra, India. The project involved data collection, analysis, and preservation of collected fecal samples and postmortems of domestic and wild animals in the forest areas. (special permission from state government for two years)

Other work related to Ecology and Environment

- Survey of vegetation for the area proposed for mining in Junnagad, Gujarat, India, for Gujarat Ambuja Cements Ltd on behalf of Pugmarks, Pune, India
- Team member for an exclusive Integrated Restoration Project of Gujarat Ambuja Cements Ltd. Limestone Quarries. This project gained second ranking in world under Sustainable Aggregates, UK assessment.2006
- Successful completion of entomology surveys for various agencies like Oxford Golf Club, Pune, Faunal survey of Pandhari, Ukkadgaon forest areas of Barshi, Maharashtra, India under World Wild Fund (WWF) – Pune Division, India.

- Panel judge for “Vasundhara Film festival” “B+ve Green Pune” Conference held in Pune, India.
- Consultant for development of an enclosed Butterfly Garden in Hinjewadi Tech Park, Pune India, and an open butterfly park in a society Rolling Hills, Pune India.

Trainings/Conferences

As a Senior Facilitator in pest management industry, I have advised leading organizations like

- Pest Management Association, Pune, India
- SealedAir, Bengaluru, India
- ITC hotel managers, Gurgaon, India.

I have designed Zoology syllabus for First Year Biotechnology stream under “Two-day workshop on ‘B.Sc. syllabus in Biotechnology’ organized by Department of Biotechnology Modern College, Ganeshkhind, Pune, (Sept 2004).

Presented research papers in

- National Conference on Life Science with special reference to Environmental Biotechnology & Biodiversity UGC & Shivaji University, 2010
- “International conference on Environment and Humanity” at Sri Lanka, 2012.

Publications:

Book:

A field guide, “Mammals of Maharashtra” published by NGO “Nature Walk”, Pune, India. This was prepared to impart knowledge of mammals amongst education seekers.

Research Papers:

1. Nilesh Rane, Rahul Marathe and H. V. Ghate, 1999. First record of *Cassida flavoguttata* speath, (coleoptera: chrysomelidae: cassidinae) from Satara, Maharashtra. Journal of Bombay Natural History Society, Vol 96(1), April 1999.
2. Swietojska Jolanta, Hemant V. Ghate and Rahul Marathe, 2001. *Notosacantha chandrapurensis* n. sp. from India’. (Coleoptera: Chrysomelidae: Cassidinae) ‘Genus’ Vol. 12(4): 489-492 Wroclaw, 28 XII.
3. H.V. Ghate, Sachin Ranade, Rajpreet Kaur, Rahul Marathe, 2001. First record of *Histiasula bruneriana sassure* (insecta: mantodea) from Pune, Maharashtra. Journal of Bombay Natural History Society, Vol 98 (3).
4. H.V. Ghate, Sachin Ranade, Abhay Soman, Rajpreet Kaur, Rahul Marathe and T.K. Mukherjee, 2001. Rediscription of *Amorphoscalis annulicornis* stal (insecta: mantodea) from Pune, Maharashtra. Journal of Bombay Natural History Society, Vol 98 (3).

5. Rahul R Marathe, Shantanu S Goel, Sachin P Ranade, Maithili M Jog, Milind G Watve, 2002. Patterns in abundance and diversity of faecally dispersed parasites of tiger in Tadoba National Park, central India. *Bio Med Central Ecology*, 2:6 Article URL <http://www.biomedcentral.com/1472-6785/2/6> ISSN 1472-6785.
6. Maithili M Jog, Rahul R Marathe, Shantanu S Goel, Sachin P Ranade, Krushnamegh K Kunte, and Milind G Watve, 2003. *Sarcocystis* infection in chital (*Axis axis*) and dhole (*Cuon alpinus*) in two Indian protected areas. *Zoo's Print Journal* 18 (10): 1220-1222.
7. Rahul Marathe, 2004. Unusual bonds (Readers' space). *Hornbill* Jan – Mar 2004, pg. 18 (Short - communication)
8. Maithili M Jog, Rahul R Marathe, Shantanu S Goel, Sachin P Ranade, Krushnamegh K Kunte, and Milind G Watve, 2005. *Sarcocystosis* of chital (*Axis axis*) and dhole (*Cuon alpinus*): Ecology of a mammalian prey-predator-parasite system in Peninsular India. *Journal of Tropical Ecology* 21 (4), pp. 479-482.
9. Marathe R.R, Jadhav M.D, Gore Suneeti, Joshi Sonali, Thatte Vidya and Rathod L. R, 2011. Utilization of *Drynaria quercifolia* (L.) J. Smith as a Mosquito repellent. *Science Research Reporter* 1(3): 159-163, ISSN: 2249-7846 (Online)
10. Marathe R.R., Patil V.C., Muley S.M, Singh Krishna Kumar, Gokhale Suresh, 2011. Study the Effect of Plant Extract on Endoparasite, *International Journal of Pharmaceutical Applications*. Vol 2, Issue 4, 2011, pp 253-257. ISSN 0976-2639
11. M.D. Jadhav, R.R. Marathe, L.R. Rathod and S.M. Muley, (2012). Siddha tel (fatty oil preparation) the novel source of tick repellent, *Bionano Frontier*, special issue – 9, pp-287-290. ISSN 0974-0678
12. R.R. Marathe, M.D. Jadhav and L.R. Rathod, 2012. Eco friendly Activity of *Drynaria quercifolia* against Bacterial and fungal species. *BIONANO FRONTIER*, special issue – 9, pp-200-201. ISSN 0974-0678
13. Rahul Marathe, 2013. IPM-Cockroach Control. PMA Conference, Igatpuri, India.
14. Das B.P., Deobhankar K., Pohekar K.N., Marathe R., Husain S.A., and Jambulingam P, 2016. Laboratory bioassay of *Chilodonella uncinata*, an entomopathogenic protozoan, against mosquito larvae, *Journal of Mosquito Research*, 6(10): 1-10 (doi: 10.5376/jmr.2016.06.0010)
15. Taxonomical contribution in discovering a new species of insect *Chiridopsis nigropunctata*. n.sp. 'Genus' Vol. 10 (1): 103-108 Wroclaw, 31 III (1999)

Popular Science articles:

1. Nisargayan magazine (NatureWalk publishers), October 2006. 'ताडोबातील आठवणी'.
2. Chhatra Prabodhan, 2009. 'निसर्ग पहा फिरून'.
3. Chhatra Prabodhan, April 2009. 'वन वणवा'.
4. Chhatra Prabodhan, 2011. 'काटेझरीचा शिवा'.
5. Chaitreya Vasantik magazine, April 2013. 'अरण्ययात्रा', एक अनुभव'.
6. Sakal Today, 3 November 2016. 'किड्यांशी मैत्री' माणसांच्या मदतीला
7. Vanarai magazine, December 2017. 'A1 की A2? निर्णय तुमचा !
8. Vanarai magazine, 2018. "'शोध वाटा"', प्लास्टिक खाणारी अळी "
9. The Bridge Chronicle, 10 June 2019. "Timely intervention needed to protect fireflies in Maharashtra"
<http://www.sakaltimes.com/pune/'timely-intervention-needed-protect-fireflies-maharashtra'%C2%A0-36360>
10. Nisargasevak magazine, April 2022. 'उपद्रवी कीटक'.
11. Maharashtra Times, 23 July 2023 - 'पतंगांयन'.
12. Maharashtra Times, 9 October 2023 - 'भुंगेच्यांचे मनोरंजक विश्व'.
13. Maharashtra Times, 24 January 2024 - 'किड्यांचे अपरिचित विश्व' पूर्वार्ध
14. Maharashtra Times, 25 January 2024 - 'टोळधाडीचा आश्चर्यकारक प्रवास' उत्तरार्ध
15. Maharashtra Times, 12 February 2024 - 'पंख नसलेले कीटक' पूर्वार्ध
16. Lokmat, 20 February 2024 - 'डासांच्या मनोऱ्यांचे रहस्य नेमके काय आहे ?'
17. Maharashtra Times, 6 March 2024 - 'कीटकांचे अनोखे विश्व' उत्तरार्ध
18. Maharashtra Times, 21 March 2024 - 'गुणगुणणाऱ्या गुणकारी माशा'
19. Maharashtra Times, 29 May 2024 - 'डंख मारणारे कीटक'.
20. Maharashtra Times, 24 June 2024 - 'काजवे एकजैविक किमया'.
21. Maharashtra Times, 24 June 2024 - 'विश्व पतंगांचे'.
22. Maharashtra Times, 25 July 2024 - 'कीटक डंखाचे वेदनामापन'.
23. Anandtarang magazine - कीटक विश्वातील दिवाळी

Work covered by leading newspapers:

1. Hindustan Times, 4 Dec 2017. 'Good bugs bred to keep plants; crops pest free.'
2. Pune Mirror, 22 May 2017. 'Can this insect eat the city's plastic away?'
3. The Better India, 30 August 2018. 'Pune Man May Have Found Solution to Trash Troubles: Caterpillars That Munch Plastic!'

<https://www.thebetterindia.com/157657/pune-man-dr-raahul-marathe-plastic-solution-caterpillars/>

4. The Indian Express, 6 January 2020. 'Insects that eat plastic, secrete manure and kill pests — solutions to manmade problems, says entomologist'
<https://indianexpress.com/article/cities/pune/pesticide-free-environments-and-plastic-eating-insects-raahul-marathe-workshop-6201508/>
5. The Bridge Chronicle, 29 January 2020. 'Don't shun insects while composting'.
<https://www.sakaltimes.com/pune/%E2%80%98don%E2%80%99t-shun-insects-while-composting%E2%80%99-45763>

Insect popularization talks to spread awareness about insects.

I have delivered more than 100 open forum Lectures on topics like Insects, Mammals, Ecology, Wildlife, Global Warming and Renewable Energy sources. Some of them are listed below.

- 1) 'Insect-plant interaction', Aranyawak, Pune, India. 2007.
- 2) 'Invasive Insects', Vanbhavan, Pune, India. 6 October 2016.
- 3) 'Culturing of useful insects', S.P. College, Pune, India. 20 January 2017.
- 4) 'Learning From Insects', TEDx talk, Hinduja college, Mumbai. 30 January 2019.
https://www.ted.com/talks/dr_raahul_marathe_learning_through_insects_daily?utm_campaign=tedsread&utm_medium=referral&utm_source=tedcomshare
- 5) 'Entomology: Shaping the Future', Poornam Ecovision Foundation. 23 December 2020.
- 6) Dr Milind Watve's group meeting, Pune, India. 11 August 2021
- 7) 'Insects: Unexplored Gems of Biodiversity', IISER-Pune science activity center, Pune, India. 15th Oct 2023
<https://www.youtube.com/watch?v=Kzj9cTXhT0c>
- 8) 'World of Insects', Sane guruji vidyamandir, Jaitapur, India. 11 July 2023
- 9) 'World of Insects', Vision school, Pune, India. 23 August 2023
- 10) 'World of Insects', Tukaram Pundalik Shetye Junior College, Lanja, India. 29 August 2023
- 11) 'World of Insects', Nutan Vidyamandir, Oni, India. 29 August 2023
- 12) 'World of Insects', Philipsian's Coffee Katta, Pune, India. 19 November 2023
- 13) 'Master Builders of the Insect World: Exploring the Nesting Abilities of Social Insects', ISOLA Maharashtra chapter, Pune, India. 25 November 2023
- 14) 'Insects of Maharashtra', S.K.S.V. Arts, Commerce and Science College, Lanja, India. 29 January 2024
- 15) 'Insects of Maharashtra', ASP Science College, Devrukh, India. 29 January 2024 (2 talks)
- 16) "Incredible world of insects" at ARAI, Kothrud, Pune August 2024
- 17) Jungle Belles Webinar, Pune, India. 28 September 2024
- 18) Swayam talks, Pune, India. 06 October 2024

“Insectales” – Public talks on insects, Pune, India

‘Insect Tales’ is a talk series specially designed for creating awareness about the importance of insects in nature. These well-researched and scientifically sound lectures are created to introduce common people to the wonderful world of these tiny creatures.

- 1) ‘Beetles’, Indradhanushya environment and citizenship center, 14 September 2023
- 2) ‘Grasshoppers and Crickets’, Indradhanushya environment and citizenship center, 26 October 2023
- 3) ‘Beyond the Buzz: The Lesser-known Insects’, Sevasadan English medium school, 25 November 2023
- 4) ‘The Busy World of Flies’, Sevasadan English medium school, 23 December 2023
- 5) ‘The Sting Operation: Ants, Bees and Wasps’, Sevasadan English medium school, 20 January 2024
- 6) ‘Chirps, Saps and Hops: From Cicadas to planthoppers’, Sevasadan English medium school, 24 February 2024
- 7) ‘The Lice Business’, Sevasadan English medium school, 23 March 2024
- 8) ‘Ephemeral Elegance: Mayflies and more’, Sevasadan English medium school, 20 April 2024
- 9) ‘Fireflies: The Twilight Saga’, Sevasadan English medium school, 25 May 2024
- 10) ‘Flight and Finesse: Predatory Insects in the Air’, Sevasadan English medium school, 22 June 2024
- 11) ‘Predators and Pretenders: Mantis and Phasmids’, Sevasadan English medium school, 13 July 2024
- 12) ‘Rainbow on Wings: Butterflies’, Sevasadan English medium school, 10 August 2024

Fireflies Awareness lectures:

- 1) ‘Celebrating the Science and Wonder of Fireflies’, Pabe ghat, Pune, India. 11 June 2023

National Moth Week lectures and moth awareness camps:

- 1) ‘Unfolding the Moth World’, Indradhanushya environment and citizenship center, Pune, India. 27 July 2023
- 2) ‘पतंगांच्या विश्वात’ (Into the World of Moths), Savali agro-tourism, Oni, India. 29 August 2023
- 3) ‘Unfolding the Moth World’, Gappangan agro-tourism center, Pune, India. 2-3 September 2023
- 4) ‘Unfolding the Moth World’, Sevasadan English medium school, 20 July 2024

- 5) 'Unfolding the Moth World', Dept of Zoology, Gogate Jogalekar College, Ratnagiri, India. 25 July 2024
- 6) 'Unfolding the Moth World', Remand Home, Ratnagiri. Organized by Sky and Earth, India. 25 July 2024

Wildlife week lectures:

- 1) 'Insects – Unexplored Gems of Biodiversity', Indradhanushya environment and citizenship center, Pune, India. 5 October 2023
- 2) Insect Documentary Screening – “Jave Kitakanchya Desha”, produced by Mitrakida Foundation, Sevasadan English medium school, Pune, India. 5 October 2024
- 3) Insect Documentary Screening – “Jave Kitakanchya Desha”, produced by Mitrakida Foundation, Ferguson College, Pune, India. 8 October 2024

Scientific course on insects for school children:

- 1) Six-month introductory course – ‘World of Insects’ conducted at Millennium National School, Pune, India. Age group - 6th – 10th standard students. September 2022-March 2023
- 2) Three-months online introductory course – ‘Insect Insights’ for 6th standard student. December 2023-February 2024

Insect walks:

- 1) Conducted at Empress Botanical Garden, Pune, India. Organized by Rupa Rahul Bajaj Centre for Environment and Art, Pune, India. 16 July 2023
- 2) Conducted at ARAI hill, Pune, India. Organized by Mid Earth Wildlife & Adventure Holidays, Mumbai, India. 30 July 2023
- 3) Conducted at Mhatoba hill, Pune, India. Organized by Mitrakida Foundation, Pune, India. 30 June 2024
- 4) Conducted at Empress Botanical Garden, Pune, India. Organized by Rupa Rahul Bajaj Centre for Environment and Art, Pune, India. 29 September 2024
- 5) Conducted at Bhamburda Vana Vihar, Pune India. Organized by Institute of Bioinformatics and Biotechnology, Savitribai Phule Pune University. 20 Oct 2024

Insect Workshops for students:

- 1) 'Decoding the Bugs' A two-day workshop to explore the world of insects, Pune, India.
Batch 1 - 18-19 April 2023
Batch 2 - 16-17 May 2023
Batch 3 - 10-11 June 2023