



## Details of ATBC 2023 Workshops

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**\*\*\* Please note the maximum number of participants for each workshop below. The participation will be assigned to the registrants on a first-come, first-served basis. Also, take note of the paid workshops for which you will be charged separately from the conference registration fee. The mode of payment will be communicated later.\*\*\***

# **PW-1:** Bioacoustics tools and techniques for conservation and ecology (Full Day: 10:00 AM - 04:30 PM) **Maximum participation limit: 20**

# **PW-2:** Multiplying scientific impact through the media (10:00 AM - 01:00 PM) **Maximum participation limit: 25**

# **PW-3:** Move Eco in R (Full Day: 10:00 AM - 04:30 PM) [Paid workshop. Sign-up Fee: For Indian citizens \$20, for other nationals \$25 ] **Maximum participation limit: 35** {*The workshop organizers of this workshop are pleased to commit the waiver of three applicants' (in-person & lower-income countries; not applicable for the students from WII, Dehradun) workshop registration fees (reimbursement) based on their applications. The applicants may submit a reasonable request to this Google form link: <https://forms.gle/u9TAD5eohxTsnwic6> }*

# **PW-4:** Working at night with mammals: what is never considered and how to improve research output (10:00 AM - 01:00 PM) **Maximum participation limit: 15**

# **PW-5:** Can graduate students ground the helicopters? Practical considerations for safe, robust, and locally responsive research (02:00 PM - 04:30 PM) **Maximum participation limit: 50**

# **PW-6:** Integrating Art and Science (02:00 PM - 04:30 PM) **Maximum participation limit: 30**

# **PW-7:** Using passive acoustic monitoring for conservation and wildlife management (Full Day: 10:00 AM - 04:30 PM) **Maximum participation limit: 20**

# ATBC DEI Workshop & Representation of scientists in the media (02:00 PM - 04:30 PM) **Maximum participation limit: 50**

# **W-1:** Photo Slam – come join us and learn how to improve your photography to communicate **Maximum participation limit: 50**

# **W-2:** Create and implement engaging online learning modules, based on your own tropical biology research **Maximum participation limit: 30**

# **W-3:** Meet the Biotropica Editorial Board: an Informal Information Session **Maximum participation limit: 50 or more**

# **W-4:** A sneak peek into the advancements for understanding species-habitat relationship in unmarked animals **Maximum participation limit: 30**

# **Lunch Break Workshop:** Cascoland Lab & Kitchen **Maximum participation limit: 50 or more**

# **W-5:** Ready, Set, Publish: An Overview of the Paper Publication Process **Maximum participation limit: 50 or more**

# **W-6:** Improving Collaboration with Local Partners: Finding Common Ground While Stepping Away from Helicopter Science **Maximum participation limit: 50**

# **W-7:** Botanical Bootcamp: Essential skills from fieldwork to data analysis **Maximum participation limit: 30**

# **W-8:** Fundraising 101: Navigating Grants and Funding Opportunities for Early Career Scientists. **Maximum participation limit: 75**

# **W-9:** The diverse values of nature: why should ecologists care? **Maximum participation limit: 30**

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# Day 1 - 2nd July 2023; Pre-conference Workshops

## PW-1: Bioacoustics tools and techniques for conservation and ecology

**Organizers:** Robin Vijayan (IISER Tirupati), Vijay Ramesh (IISER Tirupati, Cornell University), Chiti Arvind (IISER Tirupati), Isha Bopardikar (IISER Tirupati, Cornell University)

**Description:** The field of bioacoustics is growing rapidly. The applications of this research field are varied - it can be used to understand the behaviour of species, the responses of species to various environmental factors, and, more recently, in detecting the presence of species itself. The methods and tools of the trade vary depending on the objectives of the research. Hand-held recorders are used to answer questions relating to species' behaviour. In contrast, automated recorders can be used for long-term deployments to answer a range of questions, including behaviour and detection of threatened taxa.

This workshop will expose participants to some basics of bioacoustics - the theory and largely hands-on modules on how to work with such data. We will demonstrate various recording gear, including low-cost phone-based methods to professional research gear, across hand-held and automated recorders.

While this workshop cannot be comprehensive, it will be sufficient to provide aspiring bioacoustics researchers with exposure to the ideas and the tools. Participants should know that this workshop is designed to be a basic, introduction to bioacoustics.

The workshop organisers are experienced with these research topics and have research publications. This is also an internationally collaborative workshop with people from Cornell University and IISER Tirupati

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## PW-2: Multiplying scientific impact through the media

**Organizers - Sandhya Sekar (Mongabay), Sahana Ghosh (Mongabay), S. Gopikrishna Warriar (Mongabay)**

**Description:** The systematic and nuanced communication of science to a larger audience outside academia is gaining momentum in India. Such outreach has multiple benefits: providing evidence for the public to make informed decisions, science gaining a place in policy level discussions and aiding collaborations between disparate fields and places of scientific study. With climate change and associated risks, the significance of such communication assumes greater importance. The current climate crisis is effectively a biodiversity crisis. However, this linkage is lost in public and policy-level discussions. The ATBC would be an excellent forum to

motivate practising scientists and young researchers to communicate their experiences, and engage with the media for more effective dissemination.

What we plan in this workshop: 1) work with scientists so that they can engage with media more effectively and 2) discuss the tools scientists can use to talk about their own work as they pursue academic goals.

This workshop would be conducted by three of us from Mongabay-India: S. Gopikrishna Warriar, managing editor, who has more than 35 years of experience in environmental journalism and communications; Sandhya Sekar, programme manager, who has transitioned from academia to journalism; and Sahana Ghosh, contributing editor, who is one among the most effective science journalists in the country today.

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### PW-3: Move Eco in R

**Organizers - Supratim Dutta (Wildlife Institute of India), Nilanjan Chatterjee (University of Minnesota), Ritesh Vishwakarma (Wildlife Institute of India)**

**Description:** Movement is the fundamental ecological attribute of free-ranging animals. Recent technical developments in satellite tags enable data collected at a very fine-scale and detailed behavioural insights of animal movement. This opens up multiple questions to understand the role of movement for a better understanding of species ecology. Based on these recent developments, movement ecology has become a fundamental branch in ecology, conservation, and management. ‘R’ is an open-source statistical platform widely used in ecological research that enables users to analyze, model, and visualize complex movement patterns. The ‘Movement Ecology Analysis in R’ workshop aims to provide a comprehensive overview of the principles of movement ecology and how to use R to analyze and visualize movement data by applying advanced tools and methods.

The workshop will focus on data procurement, pre-processing, analysis, validation, and visualization using R.

Data processing – how to prepare data from radio-tags for analysis, address the issues of outliers and missing location

Trajectory-based analysis – primarily focusing on summary statistics of trajectory, exploratory analysis, step lengths, turning angle, displacement, dispersal, speed, and temporal activity.

Visualization – Prepare visualizations of the animal trajectory and other track statistics.

Home range analysis - Minimum Convex Polygon (MCP), Kernel Density Estimator (KDE), Autocorrelated Kernel Density Estimator (aKDE), and Brownian Bridge Movement Model (BBMM).

Individual interaction - Spatial and dynamic interactions deal with the home range based interaction between individuals.

Advanced Modelling - Advanced behavioural modeling would cover the different behavioural phases of the animal utilization distribution estimation based on Hidden Markov chains.

Habitat selection – The analysis would be carried out at two levels, home-range level (Resource selection function) and individual steps level (Step-selection function).

The workshop will include both lectures and hands-on applications in R. Depending on the interest and skill set of participants; we can cover additional topics. Participants are encouraged to bring their own telemetry dataset. This workshop is ideal for ecologists, wildlife managers, and researchers, who want to gain a better understanding of animal movement and how to analyze movement data in R. By the end of the workshop, participants will have the skills and knowledge to conduct independent movement ecology research and contribute to the growing field of movement ecology.

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## PW-4: Working at night with mammals: what is never considered and how to improve research output

**Organizers - Priscillia Miard (Universiti Malaysia Sabah)**

**Description:** Working at night is a challenge that technology has improved over the past decades allowing us to gain a better insight into the ecology and behaviour of nocturnal mammals. However, our understanding of the night is always growing, and basic rules are often ignored by many in research from methodological approaches and result bias. This introductory workshop will show you how you can improve your nocturnal mammal detection (including bats) and follows as well as improving animal welfare standard during night surveys. This knowledge does not only apply to research but also to practical conservation efforts. Ecotourism promoting night activities such as night walk, car spotting or even animal watching are harmful for wildlife.

During this workshop you will be provided with a theoretical and practical overview of recent advances to study nocturnal mammals from five years of research in Malaysia but also based on ten years of nocturnal mammal research worldwide. Firstly, we will provide a hands-on introduction to nocturnal mammal biology and why it is important to consider it when doing

research. We will then discuss how current research planning and methods impacts animal welfare and how we can mitigate this. We will look how study design can also affect the results of your research and how certain bias can make your entire research results incorrect. This knowledge will then be applied to improving conservation effort by promoting guidelines for nocturnal mammal watching and nocturnal mammal activities in general.

Different technologies exist to study nocturnal mammals such as red light, thermal imaging, camera trapping and sound recorder. We will give an overview of each of them and details about their usefulness, project cost savings, streamlined survey planning, increased survey capacity (without extra surveyors!) and improved health & safety conditions.

This will be followed by a practical night training to test the different equipment and experience its effects on wildlife.

At the end of the workshop, participants will know: (i) How to properly identify challenges to their study subject; (ii) How to adapt their research method to reduce bias; (iii) What technology is more suited to their goals; and (iv) How promoting improved guidelines for nocturnal mammal watching activities increase conservation outputs.

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## PW-5: Can graduate students ground the helicopters? Practical considerations for safe, robust, and locally responsive research

**Organizers - Karen Kainer (University of Florida), Claudia Garnica-Díaz (University of Florida), Jonathan Dain (University of Florida)**

**Description:** Research conducted by graduate students generates a considerable portion of new knowledge that fuels tropical biology and conservation. These key early-career actors are well positioned to pave new ways to conduct science that balances the needs of rigorous data collection with the wishes and (sometimes) demands of local partners.

This two-hour workshop seeks to bring together veteran and less experienced graduate students to share practical considerations and strategies for field research that is safe, robust, and seeks to be responsive to local realities. This discussion-based workshop will address the following objectives:

Discuss ways to acknowledge and integrate research status as an outsider;

Explore strategies to facilitate personal safety;

Illuminate ways to exchange knowledge, show appreciation, and potentially generate local benefits, while recognizing significant limitations;

Provide additional information/literature to deepen understanding of this topic.

The workshop focuses on the roles and interests of graduate students in addressing the highly critical concept of Helicopter or Parachute Science. The premise is that graduate students are keenly interested in doing science that is equitable and fair yet also are very concerned with generating solid research that advances their career goals. Building on previous work, we seek to create a space where these dual challenges of rigorous science and local relevance and benefits can be openly discussed. We hope to uncover lessons learned by veteran graduate students, discuss practical alternative approaches to Helicopter Science, and generate a sense of common purpose with possible paths forward.

Preliminarily, the workshop will be carried out in four stages: 1) A brief opener and welcome, where the concept of helicopter or parachute science will be briefly introduced; 2) Small group work: Students will be divided into veteran (those who carried out fieldwork and are reflecting on their experience) and less experienced (those planning to do fieldwork) groups to allow more intimate discussion of concerns and questions related to the first three objectives; 3) Plenary: Sharing of small group perceptions with veteran students responding to less experienced student concerns; 4) Wrap up and closure.

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## PW-6: Integrating Art and Science

### **Organizers - Patricia Sampaio (University of Florida)**

**Description:** Science and art are linked in diverse and interesting ways that are often overlooked. Although these fields are usually treated as separate and unrelated, current thought recognizes the interconnectedness of these disciplines (i.e., Sci-art, STEAM = Science, Technology, Engineering, Art, Mathematics). Visual art has been used for centuries if not millennia to understand the natural world and the interconnectedness of organisms and environments. Creativity is arguably one of the most important traits of successful scientists and we argue that scientific and artistic creativity feed into one another in very positive ways. Art informs science and science informs art.

The broad goals of our workshop are to make ATBC participants more aware of the beneficial connections between science and art and to teach participants basic art-related skills, techniques, and practices they can adapt to inform their scientific studies (and *vice versa*). We will offer up a “sampler plate” of different perspectives for integrating art and tropical ecology. We propose to offer brief background information and then focus on nature and field journaling.

Through this workshop, we aim to teach other budding scientist-artists to harness their inherent creativity to inform their work and improve communication among tropical scientists, non-scientists, and conservation-focused institutions, aligning very well with the mission of ATBC. Moreover, sketching significantly improves our capacity to observe, understand and analyze the natural world. We will train participants to use diverse techniques that they can apply to their time at this conference and beyond.

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## PW-7: Using passive acoustic monitoring for conservation and wildlife management

**Organizers - Carly Batist (Rainforest Connection), Marconi Campos-Cerqueira (Rainforest Connection)**

**Description:** The objectives of this workshop are to:

Introduce participants to passive acoustic monitoring (PAM) and its conservation use cases

Discuss the tradeoffs to consider when developing a PAM project and its sampling design

Present options for PAM data collection and analysis, with accompanying hands-on demos

The rapid decline of fauna worldwide requires creative solutions to improve biodiversity monitoring. Passive acoustic monitoring (PAM) has greatly improved our ability to survey biodiversity efficiently across time and space. PAM utilizes automated recording devices that can remotely record species-specific sounds at large spatial and temporal scales. These sound detections can then be used to estimate species presence, distribution, and occupancy. PAM can also be used to detect anthropogenic noise and survey for sounds indicative of illegal activity (gunshots, chainsaws). PAM is a powerful tool because it is non-invasive, cost- and labor-efficient & able to generate long-term data at scale that can be repeatedly analyzed.

### *Hardware/Data Collection*

Acoustic monitoring has been revolutionized with the recent advent of new technologies such as miniaturized and affordable hardware (e.g., Audiomoths) which significantly lower the barrier to entry. During this workshop, we will discuss the different considerations you should take into account when deciding what technology, sampling design, and analysis to use. For the hands-on part of this section, we will walk participants through the configuration and deployment of Audiomoths (devices provided by presenters for the purposes of this workshop).

### *Software/Data Analysis*

The recent development of user-friendly software that incorporates machine learning and cloud computing has become a vital step in the PAM pipeline. During this workshop, we will guide participants through accessible and intuitive workflows for analyzing data from autonomous recorders using Arbimon. This free, web-based platform offers a comprehensive set of eco-acoustic analytical tools through an intuitive no-code interface. We will walk participants through a variety of workflows using a sample dataset (or participants can use their own data).



These workflows will cover how to annotate spectrograms, automate species detection and identification, and holistically analyze soundscapes. We will also explain how sound detections can be used in post-hoc ecological analyses (e.g., occupancy models, SDMs).

Approximate Schedule:

Introductions (15-minutes)

Presentation: Intro to PAM (20-min.)

Demo/hands-on practice: hardware (40-min)

Audiomoth configuration, deployment

Q&A/break (15-min)

Presentation: Analyzing PAM data (15-min.)

Demo's/hands-on practice: software

Arbimon platform (10-min)

Pattern matching (35-min.)

Event detection & clustering analysis (40-min.)

Convolutional neural networks (CNN; 30-min.)

Insights (20-min.)

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## ATBC DEI Workshop & Representation of scientists in the media

**Organizers - Vinita Gowda (IISER Bhopal), Sandhya Sekar (Mongabay) & Others**

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## Day 2 - 3rd July 2023; Parallel Workshops

W-1: Photo Slam – come join us and learn how to improve your photography to communicate

**Organizers - Biplang Yadok (Nigerian Montane Forest Project ), Dibyadeep Chatterjee (National Authority, CAMPA, Ministry of Environment Forests and Climate Chang), Upamanyu Chakraborty (Turtle Survival Alliance, India), Pia Parolin (Université Côte d'Azur)**

**Description:** Photography is an important part of our work as scientists. We use photographs for documenting our research and field work, for teaching purposes and to enhance our presentations at conferences. Photographs allow us to easily make a point when advocating for a good cause. We like to share interesting images of our work with our research groups and partners in other

countries as well as network with people interested in photography. We also take photos when we travel to different countries, and maybe do some artwork that we print and display on walls.

However, it is difficult to receive feedback on photos and to learn and grow as photographers. Getting a constructive feedback from experienced photographers is often necessary for developing photography skills among people with less experience. This is because experienced photographers can easily point out the flaws in any given photograph and provide suggestions on how to take better photographs in future.

This session is aimed at presenting photos of members who want to show their shots and receive feedback. In a friendly open photo slam, we will show the photos in a room during lunch break and talk about what the picture communicates, the good things about the photo, and tips on how to improve the displayed image. The aim is to be respectful and to learn all together from the (anonymous) photos we see (the names need not to be displayed).

The idea is to help improve your photography, so that you are aware of some simple things like composition, lighting, how to make strong photographs and how to improve your skills as a science communicator. This workshop also aims to create network of people interested in photography within ATBC.

I have a keen interest in photography, and I will be leading the session with Mr. Upamanyu Chakraborty, Project Officer, Turtle Survival Alliance, India, who is an experienced photographer. His photos have been displayed in highly recognised magazines such as 'Sanctuary Asia', and 'Niche' by British Ecological Society. He has been a photographer for the past eight years and has the capacity to advise colleagues about taking high quality photos in order to communicate strong conservation messages.

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## W-2: Create and implement engaging online learning modules, based on your own tropical biology research

**Organizers - Ann Russell (Iowa State University), Balasubramanian D, Surya Maharjan (Tribhuvan University)**

**Description:** Despite the importance of tropical biology in the undergraduate curriculum, many biology curricula and textbooks worldwide provide students with limited exposure to biology and conservation in tropical and global contexts. Agile, easily accessible online open educational resources (OERs) that immerse learners in real-world research in tropical ecosystems are thus urgently needed, especially in the context of providing undergraduates with transformative educational experiences.

This workshop will provide an overview of a new platform available for tropical biologists to author innovative online modules, on a multi-lingual platform. A new network for facilitating Online Content for Experiential Learning of Tropical Systems (OCELOTS) is bringing together a diverse community of tropical biology researchers and experts in active-learning pedagogy, interactive data tools, multimedia content creation, and the Ecological Society of America's 4DEE (Four-Dimensional Ecological Education) framework. Our common goal is to create research-based modules in tropical biology and conservation, hosted on a user-friendly, open-source and open-access platform: Gala.

In this lunchtime workshop, we will introduce participants to a process that enables tropical biologists with no prior programming experience to turn their field-based research into engaging multimedia-enhanced online modules. The Gala platform has various features that enable authors to embed multilingual content, data learning tools, and novel uses of interactive media into their research-based modules.

We will demonstrate how to author a module on the Gala platform and showcase examples of existing OCELOTS modules. Participants are encouraged to bring their own ideas for new modules and will receive feedback as they initiate the process of creating their own research-based module. OCELOTS participants will also share their experiences in implementing these modules in their courses. We will provide information about our upcoming workshops for creating new modules and adopting existing modules into courses. Through this workshop, we aim to empower tropical biologists to translate their research into online teaching resources for undergraduate students. The goal is also to broaden participation in this new OCELOTS network, to bring together researchers from Africa, Asia, and Latin America, so that we can learn from each other how to refine the process of module creation. Through this participatory process, we aim to increase access to appropriate instructional material, to broaden international involvement of tropical researchers, and to engage participants in this new OCELOTS network early on, to allow for true co-construction of knowledge that moves us forward in creating, adapting and adopting these modules in tropical biology and conservation.

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### [W-3: Meet the Biotropica Editorial Board: An Informal Information Session](#)

**Organizers - Patricia Sampaio (University of Florida), Emilio Bruna (University of Florida)**

**Description:** Biotropica invites anyone interested to come and meet our Editorial Board. This is an informal meeting where participants can ask questions about the editorial process such as how to get started submitting your first manuscript, what goes on “behind the scenes” of the

publication process, how to get started with editorial service, and how to deal with editorial decisions. The Biotropica Editor-in-Chief, Associate Editors, and Subject Editors will be on hand to provide diverse perspectives on these topics. The session is held over a lunch period and participants can come and go as they please.

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## W-4: A sneak peek into the advancements for understanding species-habitat relationship in unmarked animals

**Organizers - Meghna Bandyopadhyay (Wildlife Institute of India)**

**Description:** Species habitat relationships are an intrinsic part of a species ecology. Especially in a tropical country where there are drastic changes in season and growing anthropogenic pressure, the effect of which on wildlife is still being explored. Particularly when it comes to studying the unmarked species in wild, then the scope for understanding their relationship to the habitat becomes limited. This is because of less exploration of the methods and tools to sample these unmarked species. This workshop will be aiming to provide insights on understanding species-habitat relationships based on the effects of anthropogenic disturbances on carnivores.

With the rapidly changing habitat conditions due to anthropogenic disturbances, the distribution and adaptation of the native wild animals is also changing. Mesocarnivores in this case are the best model species to understand the extent of disturbances as they are sensitive to small scale changes. Also mesocarnivores being more elusive have been least studied and explored. In this session, mesocarnivores' relationship patterns to habitat will be explored using field methods like camera trapping and robust analytical methods like GLMM, GAM with some insights to N-mixture modeling for abundance.

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## Day 3 - 4th July 2023; Parallel Workshops

### Lunch Break Workshops: Cascoland Lab & Kitchen

**Organizers: Roel Schoenmaker**

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### W-5: Ready, Set, Publish: An Overview of the Paper Publication Process

**Organizers - Patricia Sampaio (University of Florida), Emilio Bruna (University of Florida)**

**Description:** Have you finished your field work and are curious about what comes next? Are you a first-time author and nervous about writing and submitting your first manuscript? Please join us for this seminar to demystify the writing and publication process with Dr. Jennifer Powers, the Editor-in-Chief Biotropica (ATBC). I will discuss how to write a strong manuscript, how to choose a journal to submit to, what happens once you submit your manuscript to a journal, best practices in publication ethics, and how to proceed once you have received your first decision. All are welcomed to attend this seminar, especially first-time authors.

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## W-6: Improving Collaboration with Local Partners: Finding Common Ground While Stepping Away from Helicopter Science

**Organizers - Sumita Chatterjee (Independent professional), Vinita Gowda (IISER Bhopal), Claudia Garnica-Díaz, Louis Santiago, Priyanka Hari Haran, Lucia Lohman**

**Description:** Conservation often lauds itself as a “value-driven” field; and though we may feel united in caring for this planet we call home, are we actually able to articulate specifically what those values are? Moreover, who is to say that we globally carry the exact same values when it comes to conservation, and are we, as agents of our field, upholding ourselves to what conservation requires of us? When we meet with our international collaborators, we are often met with cultural differences which can feel difficult when under the pressures of the research industry. This divide can be made worse with the power dynamics that come with researchers from higher-income/more privileged settings carrying out work in lower-income/resource-poor settings with little to no involvement of local communities or researchers. How are we expected to reconcile our differences if we do not give each other the space to do so? In this workshop, our goal is to provide such a space to not only find common ground with each other but to also bring our attention to our differences so that we can be mindful of them as we step away from such power imbalances in research and, together, move towards true collaboration. Our objectives include:

Understanding what helicopter or parachute science is, and the factors that are feeding into it.

Articulating what our individual values are within conservation and exploring how they compare with our peers.

Articulating what diversity means to us as individuals along with its characteristics and exploring how they compare with our peers.

Schedule:

Lecture (20 minutes): Defining helicopter or parachute science and the proposed principles to improve international collaborations.

Breakout guided session (40 minutes): The group will be divided into different regions (i.e., global north and global south) discussing three questions: (1) What are your values in conservation?, (2) What are the characteristics that make up diversity for you? What are the groups of people are lacking representation in tropical ecology in your region? and (3) Do you feel that tropical ecology and conservation is safe space for all genders?

Mixed groups session (40 minutes): Combining groups to discuss the same questions, will allow finding a common ground to improve collaboration with local partners.

Final remarks (20 minutes): Participants will be asked: What measures can ATBC take to improve inclusion and dispersal of science in the tropics and opportunities in your region?

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## **Day 4 - 5th July 2023; Parallel Workshops**

[Lunch Break Workshops: Cascoland Lab & Kitchen](#)

**Organizers: Roel Schoenmaker**

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## **Day 5 - 6th July 2023; Parallel Workshops**

[Lunch Break Workshops: Cascoland Lab & Kitchen](#)

**Organizers: Roel Schoenmaker**

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## W-7: Botanical Bootcamp: Essential skills from fieldwork to data analysis

**Organizer - Saket Shrotri (IISER Bhopal), Vinita Gowda (IISER Bhopal), Sukhraj Kaur (IISER Bhopal), Ritu Yadav (IISER Bhopal)**

**Description:** Botany, the fascinating branch of biology, not only unlocks the secrets of the plant world around us but also plays a pivotal role in agriculture, forestry and horticulture. With the growing concerns of climate change and urbanisation, there is a critical need for people with botanical expertise to be involved in policy making and addressing the detrimental impacts on natural habitats and ecosystems. The lack of fundamental botany courses at the institutes of national importance has limited the learning opportunities for Indian students. The prevalence of pandemic-led distant learning has further widened this knowledge gap, putting the development of field-based botanical skills among young students at risk. Here, we propose a plant-focussed workshop, which is divided into two modules: fieldwork and data analysis.

The first module will focus on techniques in the field, where the participants will learn how to identify plants using taxonomic keys, collect, press and preserve specimens for later studies. It will comprise of:

Documenting and monitoring plant traits: Usage of taxonomic key to identify plants, followed by phenology (vegetative, budding, flowering, and fruiting phenophase) survey. We will also demonstrate how to dissect flowers and basic photography skills to capture good floral dissection.

Plant reproductive and ecology: Pollination ecology techniques such as pollinator observation/identification, hand-pollination, and bagging, etc.

Collection of plant specimens: Herbarium and molecular grade leaf tissues samples.

The second part of the workshop will focus on data analysis and interpretation using R software tool on the data collected earlier, where participants will learn:

Data entry and calculation of basic descriptive stats.

Introduction to basic statistical tests and identifying which tests to use.

Hands-on training of comparing datasets and interpreting the significant difference.

Building of plant-pollinator interaction networks.

Coding morphological traits onto a phylogenetic tree.

Although this workshop is suitable for researchers and professionals in botany, ecology, environmental science, and agriculture, the workshop is intended for students who are interested in plants but have no prior formal background or training.

The workshop will be organised by the graduate students of IISER Bhopal running the Botanical Society of America (BSA) Student Chapter in India, who have extensive knowledge of botanical skills and fieldwork techniques.

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## W-8: Fundraising 101: Navigating Grants and Funding Opportunities for Early Career Scientists

**Organizers - Jill Spear (National Geographic Society), Barbara Martinez (National Geographic Society)**

**Description:** All scientific research or conservation projects, especially those involving fieldwork in the tropics, require money to fund their activities. In an increasingly competitive funding landscape where grant funds can be limited, it is essential for early career individuals to know how to raise funds for their research or conservation projects. The goal of this session is to familiarize participants with grants and funding opportunities available to them as early-career scientists and conservationists. As a result of attending this session, participants will leave with a better understanding of how to best position themselves and their work for funding through traditional grant resources. This workshop is intended for participants with minimal fundraising experience.

During this interactive session with National Geographic Society staff and Explorers, participants will obtain guidance on understanding the landscape of global funders and creating a project fundraising strategy. Participants will receive information from the presenters about grant opportunities with the National Geographic Society and elsewhere, as well as tips for writing competitive grant proposals, and the space to discuss challenges and opportunities the participants have encountered in their fundraising journey. A panel of National Geographic Explorers will share their insights and personal experiences preparing grant applications, managing donors, and providing useful tips for fundraising success.

The workshop will feature one overarching presentation, broken into three sections: fundraising strategy, drafting a strong grant/funding proposal, and a panel of National Geographic Explorers who can speak to their experience fundraising.



The section on fundraising strategy will focus on how individuals can prepare for fundraising and identify potential donors. This will include a brief overview of a representative sample of grant funders, especially those who have a history of funding early career scientists.

The section focusing on drafting a strong funding proposal will go over basic tips and tools for writing a competitive grant application. This includes an overview of concise writing, how to frame a strong proposal, and strategies for success both during the application phase and after receiving an award. Information about National Geographic Society grant opportunities will be included.

The third section of this workshop will feature a panel of National Geographic Explorers who will share their insights and personal experiences preparing grant applications, managing donors and providing useful tips for fundraising success. They will also answer participant questions and provide first hand experience in successful fundraising.

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## W-9: The diverse values of nature: why should ecologists care?

**Organizers - Patricia Balvanera (Universidad Nacional Autonoma de Mexico)**

**Description:** The way nature is valued is both a key driver of the current biodiversity crisis and an opportunity to address it. This is the main message emerging from the Values Assessment (VA) of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), involving 90 scientists from 50 countries over 4 years.

In this workshop we will share the main results of the IPBES VA and will reflect on the role of ecologists (and scientists in general) in addressing the biodiversity crisis.

The IPBES VA has developed a novel typology of the diverse values of nature to guide decisions and assessed current valuation efforts and tools. It has shown the limited uptake of valuation into decisions and the opportunities to address this gap, including the institutional changes needed. It has shown the importance of shifting away from predominant values that currently over-emphasize short term and individual material gains and rather nurturing sustainability-aligned values across society. The results are summarized into four values-based leverage points that can be activated to catalyze the transformative changes needed towards sustainable and just futures.

We will reflect, based on the field work experience of each of the participants, on how ecologists (and scientist in general) could play a key role in these transformative changes. We will draw an analogy with the values-centered leverage points to discuss how to recognize and weave the diverse types of knowledges and values about nature across social-ecological contexts. We will

discuss what challenges remain for the transformation of academic institutions to better incorporate this diversity into research, teaching, and action. We will explore what shifts in personal and collective values of scientists and science are entailed.

