

Attempt to unravel the ‘tangled bank’: a new-normal global meeting*

The lecture workshop featured various topics on ‘Celebrate Biodiversity’ – this year’s World Environment Day. The virtual workshop was conducted using two platforms; Zoom® for speakers and moderators, which was live-streamed to the YouTube®. Participants viewed the sessions and interacted with the speakers through the YouTube live chat option. This approach enabled us to accommodate a large number of participants.

There had been 1425 registered participants in this workshop. While the vast majority were from various states of India, there were 45 international participants hailing from Germany, Canada, US, UK, Spain, Portugal, UAE, Uruguay, Chile, the Philippines, Australia and New Zealand. Workshop registration was enabled through Google forms. One of the questions that the registration form asked was ‘highest qualification’, for which 45.5% of the participants answered masters, 23.8% answered bachelors, and 22.4% answered PhD. In addition, as the talks were archived on YouTube, viewers continue to watch these talks.

We used Certify-em®, a free add-on for Google forms, for the automatic generation of participation certificates. This approach seems helpful when the number of participants are very large as in this conference, because otherwise a considerable time and effort would have been spent on the generation of certificates manually. This method works regardless of the number of participants; the only limit being 1500 certificates per day for Google G Suite users. As details of registered participants were provided at the workshop webpage, issued certificates were digitally validated (by making sure

that the name in certificate appeared on the webpage) to prevent misuse.

The title of the workshop ‘tangled bank’ was chosen as a legacy to its reference in Charles Darwin’s *The Origin of Species*. As the term was originally used by Darwin to refer to the interconnectedness of various living beings, the workshop featured several immersive interactive talks by experts across all domains of biodiversity with an emphasis on the interconnected nature of living beings. Majority of the time was spent on two-way synchronous interactions to make the sessions more immersive and real-time. Each session had 20 minutes of presentation, followed by 40 minutes of discussions where questions asked by participants were discussed. The talks featured in this workshop were the following in the order of appearance: Bacterial diversity by Deepa Agashe, Indian songbirds by Manjari Jain, Mangroves by Martin Zimmer, Frogs by K. V. Gururaja, Animal Diversity by Kailash Chandra, Snakes by Varad Giri, Himalayan Rhododendrons by Ashiho A. Mao, Wild Himalayan bamboos by Paramjit Singh, Freshwater molluscs by Aravind Madhyasta, Freshwater Diatoms by Karthick Balasubramanian, Dragonflies and damselflies by K. A. Subramanian, Endemic fishes of Western Ghats by Rajeev Raghavan, Biodiversity laws by Tarun Arora, Dogs in the Urban ecosystem by Anindita Bhadra, and Biodiversity by R. K. Kohli.

The talks and interactions featured not only technical information but also philosophy, interconnectedness, spirituality, conservation, policy, folklore, citizen science, and biodiversity-documenting apps, making it the only one of its kind. Speakers on the chosen group of organisms provided not only a thorough introduction of its biology and species commonly found in India, but also its larger ecological position and its microbiome. The wildlife microbiome itself is an emerging discipline with research on

several topics virtually nonexistent; for instance, the microbiome of bats. The microbiome of wildlife is of crucial relevance in the wake of COVID-19 as this and other emerging infectious diseases are indeed the results of spillover events – wherein normal flora of microbes residing in and on the wildlife gets introduced to the human being due to biodiversity encroachment and wildlife trade.

Despite India being wealthy in terms of biodiversity with four biodiversity hotspots, biodiversity documentation in the country is still in infancy. Additionally, documentation of the wildlife microbiome is missing. The speakers emphasized the need to foster citizen science for biodiversity documentation, which is nonexistent except for a few well-known groups, including frogs, flowering plants, butterflies, and birds. Integrating citizen science for biodiversity documentation not only helps to get things done with reduced costs but also helps to sensitize the public on a greater appreciation of biodiversity in general and the importance of its conservation in particular. The conference also highlighted the importance of integrating culture and spirituality in biodiversity conservation, with several speakers citing the example of Kerala and North-East India’s sacred groves. Speakers also highlighted the need to communicate biodiversity characterization to the public in regional languages. Knowing to identify the species not only help everyone to stay safe (for example, while foraging which fruits are safe to eat, or identifying venomous snakes) but also help us to conserve the rare species.

*A report of the lecture workshop entitled ‘tangled bank’, organized in connection with UN World Environment Day jointly by the Central University of Punjab, Bathinda, and INYAS (Indian National Young Academy of Science, New Delhi). The workshop was held on virtual mode from 31 May to 5 June 2020.

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