

Birbal Sahni Institute of Palaeosciences
Monthly Summary of Research Activities
(January 2025)

1. Area of Focus

The institute carries out research on fundamental as well as applied aspects of Palaeosciences that includes Evolutionary history of biota, Paleoclimate, studies of past civilization, Human history and contemporary Climate Change issues, following an integrated and multi-disciplinary approach.

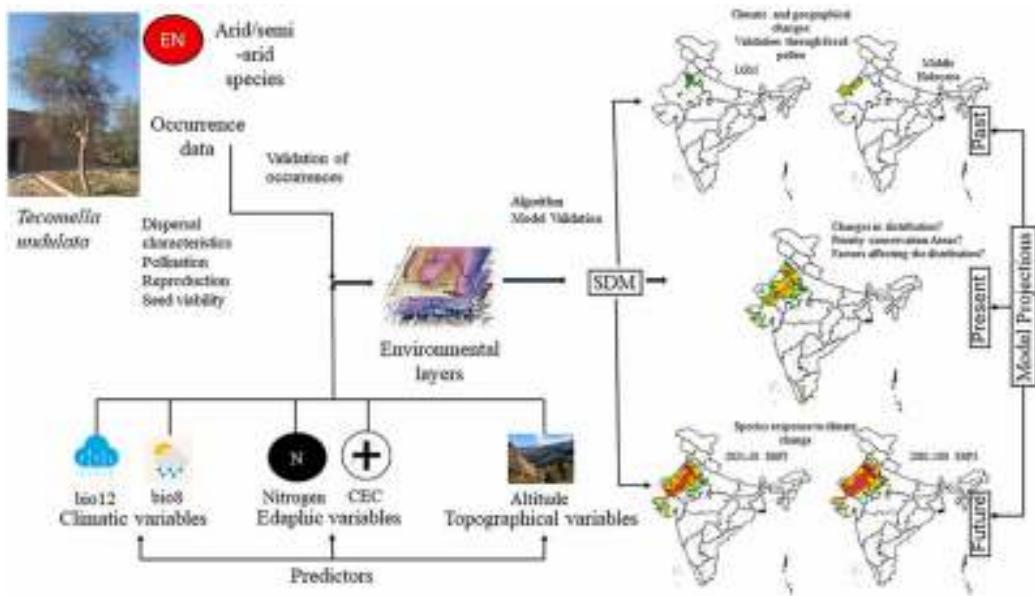
Key research activities under following objectives:

- Understanding origin and evolution of life through time and space.
- Understanding climate change in recent and deep geological times.
- Understanding past civilization and human history.
- Application of Palaeosciences in exploration of fossil fuel and coal industry.

1. Important Highlights of Major Research Activity

a. Key Scientific Findings of the Month (Jan 2025)

The dryland ecosystems are fragile and have recently been subjected to paradigm shifts by climate change. To analyse this, we selected *Tecomella undulata*, an endangered arid land tree that adapts to the harsh climates of drylands. We collected 111 extant occurrence records of the species and utilised 16 environmental variables. The study identified that bio12, bio8, altitude, total nitrogen, CEC, and bio15 are the factors that significantly influence the distribution range and modelled species distribution ranges from LGM to 2100 using the Species Distribution Model. The model showed a decreased distribution from the past and predicts an increased distribution for the future. The reduced temperature and increased bio12 acted as limiting factors in the past, while the increase in bio15 and bio8 will act as enhancing factors for the future because of the warming effect due to climate change. The results predict that future climatic conditions will favour the species' distribution. Therefore, the factors which might limit the species distribution will be anthropogenic, genetic, or pest-related, which was beyond the scope of our study and needs to be identified urgently to conserve the species. The study identified priority conservation areas where environmental factors suit the species. Still, most fall outside the current conservation sites, necessitating more regional conservation sites (Thampan et al 2025).



b. 11th B S Venkatchala Memorial Lecture (06th Jan 2025)

BSIP celebrated the 92nd birth anniversary of Dr. B S Venkatchala, Former Director BSIP by organizing 11th B S Venkatchala Memorial Lecture on 06th Jan 2025 at its campus. The prestigious memorial lecture was delivered by renowned former BSIP scientist, Dr Chandra Mohan Nautiyal on the topic “Isotopes, Planets and Life” in the institute auditorium. BSIP Director, Prof Mahesh Thakkar honoured the chief guest with bouquet, shawl and memento. The lecture was well received and attended by all scientists, technical officers and research scholars.

c. World Hindi Day Celebrations (10th Jan 2025)

BSIP celebrated World Hindi Day 2025 by organizing a invited lecture at its institute campus on 10 Jan 2025. The invited lecture is delivered by Prof. Hemanshu Sen, Department of Hindi and Modern Languages, Lucknow University on the topic “वैश्विक भाषा के रूप में हिंदी: स्थिरि एवं संभावनाएँ”. The lecture was attended by all scientific, technical, administrative staff including research scholars.

d. Workshop on “Anti-corruption and Vigilance matters” (13th Jan 2025)

BSIP organized one Day Workshop on “Anti-Corruption and Vigilance Matters” on 13th Jan 2025 at its institute campus. Shri Rajiv Verma, Consultant and Ex-Director, Central Vigilance Commission, was the keynote speaker who delivered a thought-provoking lecture on “Anti-Corruption and Vigilance Matters”. The workshop focused on key issues such as promoting transparency, accountability, addressing corruption risks, and building robust vigilance mechanisms within organizations. It was designed to enhance awareness and foster a culture of integrity and compliance.

e. 2nd Vikram Discussion 2025

BSIP EPEG group participated in the 2nd Vikram Discussions 2025 organized at PRL, Ahmadabad on 2nd Jan 2025. BSIP EPEG team was led by Director BSIP who delivered lecture on the knowledge contained in ancient Indian scriptures such as the Vedas. He also discussed the geomorphological similarities between the western Kachchh region as an analogue site and the surfaces of the Moon and Mars. Dr. Anupam Sharma, Dr. Kamlesh Kumar, Dr. Sunil Kumar Shukla, and Dr. Amritpal Singh Chaddha, members of the group, also actively participated and presented their work.

f. Pre-Thesis Open Colloquium (17 Jan 2025)

Mr. Brijesh Kumar, PhD student under supervision of Dr. Pawan Gowil Scientist-E, presented his pre-PhD presentation in the institute auditorium for evaluation of his thesis and award of PhD degree under the aegis of AcSIR. The talk was attended by Director BSIP and all scientific staff.

g. Outreach Activities and Conferences

1. The MSc students and faculty of Rakiya Balika Inter College, Bilgram, Hardoi, visited the BSIP Museum and laboratories, exploring fossils and interacting with scientists on 08 Jan, 2025.
2. The faculty and Students of the Botany department, Cooch Behar Panchanan Barma University, Cooch Behar, West Bengal, visited the research laboratories and museum of BSIP on 08 Jan, 2025.
3. Graduate and undergraduate students of Zoology and Botany from the Department of Science, Maharishi University, Lucknow, participate in an insightful educational visit to the BSIP Museum and Laboratories on 29th January 2025.
4. BSIP organized an outstation outreach activity at Rajkiya Uchh Madhyamik Vidyalaya, Sonari Barmer on 21.01.2025 led by Dr Anupam Sharma and his team on the sidelines of geological fieldwork in Barmer Basin.

h. Quarterly Hindi Workshop (30 Dec 2024)

डॉ अंजू सक्सेना, विज्ञानी ई द्वारा दिनांक ३०/१२/२४ को हिंदी कार्यशाला के दौरान 'स्पीति घाटी, एक ऊंची हिमालय पर्वत शृंखला, जहां कभी समुद्र था: प्राकृतिक जीवाश्म संग्रहालय की उत्पत्ति एवं उसके महत्व' विषय पर एक रोचक व्याख्यान प्रस्तुत किया.

i. Republic Day Celebrations (26 Jan 2025)

BSIP celebrated 76th Republic Day at its campus in the august presence of Prof Mahesh G Thakkar, Director BSIP and Scientists and entire institute staff. Dr. Adrita Choudhuri, Sandhya Singh recited poems and Rimpy Setia performed an Assamese folk dance on the occasion of Republic Day. The event was attended by all the staff of the institute.

List of Research Publications (Jan 2025)

Original Articles/Reviews/Book Chapters

1. Thampan J., Srivastava J., Saraf P. N., Samal P., 2025. Habitat distribution modelling to identify areas of high conservation value under climate change for an endangered arid land tree *Tecomella undulata*. *Journal of Arid Environments*, 227, 105317. <https://doi.org/10.1016/j.jaridenv.2025.105317>
2. Piyal Halder, Matsyendra Kumar Shukla, Kamlesh Kumar, Anupam Sharma*. 2025. Understanding the mechanism of shallow crustal fluid-rock interaction in the Deccan Trap basement rocks and its significance in the Koyna-Warna Seismogenic region, Western India. *Physics and Chemistry of the Earth, Parts A/B/C.* 138, 103870. <https://doi.org/10.1016/j.pce.2025.103870>
3. Halder, P., Shukla, M.K., Kumar, K., Sharma, A*. 2025. Assessing the Influence of Clay Minerals on Landslides in the Lesser Himalayas. In: Rastogi, B.K., Kothiyari, G.C., Luirei, K. (eds) *Natural Hazards and Risk Mitigation*. Springer Transactions in Civil and Environmental Engineering. Springer Nature, Singapore. https://doi.org/10.1007/978-981-97-7658-0_4
4. PIYAL, H., ANUPAM, S*, MATSYENDRA, K.S. and KAMLESH, K. (2024), Decoding Subsurface Secondary Mineralisation and its Impact on Cohesive Strength: An Outcome of the Deep Scientific Drilling Program in the Koyna–Warna Seismogenic Region, Western India. *Acta Geologica Sinica* - English Edition, 98: 44-50. <https://onlinelibrary.wiley.com/doi/epdf/10.1111/1755-6724.15236>
5. Vaish, S., Basumatary, S. K., Arya, A. K., & Kumar, A. (2024). A preliminary study on the depositional pattern of fungal spore in relation to the different vegetation types from Pobitora Wildlife Sanctuary and its implications to the palaeoherbivory and palaeoecology analysis. *Journal of the Palaeontological Society of India*, 69(2), 155-166. <https://doi.org/10.1177/05529360241299984>

Photographs showing important highlights of major programs/research activities organized during January 2025:

