

Birbal Sahni Institute of Palaeosciences
Monthly summary on Research Activities
(April, 2022)

1. Areas 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.

2. Important Highlights of Major Research Programmes

a) Key Scientific Findings of the Month (April 2022)

- Kunti-Banar valley preserves evidence of Central Himalaya's oldest glacier advance. Three prominent glacier advances extending back to MIS-4 have been identified. Glacier advances during MLW phases are coupled with Northern Hemisphere cooling.
- March–July stream flow was reconstructed for Karnali River Basin since 1628 CE. Tree growth in its catchment was sensitive to moisture availability and its stream flow variability is mainly linked with ENSO and PDO.
- First report of source-specific terpenoid biomarkers from Bikaner-Nagaur Basin, western India. A significant chemotaxonomic marker for *Araucariasis* also reported which provide clues to conifer elements (Podocarpaceae and Araucariaceae) in the Indian Paleogene rainforests.

b) Webinar on “Mangroves and disaster risk reduction” (March 25, 2022)

BSIP and National Institute of Disaster Management, New Delhi jointly organized a Webinar on “Mangroves and disaster risk reduction” on 25th March 2022. The Webinar was convened by Dr. Shilpa Pandey, Scientist-D, BSIP, Lucknow. The speakers for the webinar were Dr. Sanjay Deshmukh, Professor of Life Sciences, former Vice Chancellor, University of Mumbai, Dr. R. Ramasubramanian, Director, Coastal systems research, M.S. Swaminathan Research Foundation, Chennai and Dr. Rachna Chandra, Associate Professor, Sri Sri University Cuttack. The talks raised awareness for conservation and management of the mangrove ecosystems. The one day webinar was attended by 234 participants from various research institutes and universities across the country.

c) Hindi Official language Inspection meeting (March 25, 2022)

An online meeting was conducted by a three member DST committee on March 25, 2022, led by Kamakhya Narayan Singh with the members of RajbhashaKaryanvyanSamiti of BSIP to see the progress of implementation of Hindi as the official language in the institute. The meeting was attended by Registrar, BSIP, Dr. Anju Saxena, Scientist-E, BSIP and other members of the Committee. Emphasis was given to increase the work in Hindi language.

d) Palaeobotanical Society Lecture (March 29, 2022)

Professor Shreerup Goswami, Department of Geology, Utkal University delivered the Palaeobotanical Society Lecture on 29th March, 2022 (Online). The title of the lecture was “Let us have a virtual ramble to Glossopteris floral forest”. The Scientific Staff Members, Research Associates, Research Scholars of BSIP attended the Palaeobotanical Society lecture through online platform.

e) Floral tribute to Institute Founder, Late (Prof.) Birbal Sahni (April 10, 2022).

Floral tributes were offered to Late Prof. Birbal Sahni on his Samadhi at the Institute premises on 10th April, 2022 by scientific, technical and administrative staff of the institute.

f) Friday lecture series talks

S.No.	Speaker	Title of the talk	Date
1.	Dr. Debarati Nag, BSRA, BSIP	Climate variability inferred from the lake deposits in Ladakh region of NW Trans Himalayan range since LGM	April 8, 2022
2.	Dr. Saurabh Gautam, BSRA, BSIP	Permian–Triassic palynofloral transition in Sohagpur Coalfield, South Rewa Gondwana Basin, Madhya Pradesh, India	April 22, 2022

Scientists, Research Associates, Research Scholars and Project staff members of the institute attended the lectures of the Friday Lecture series.

g) Outreach Activity by BSIP to UchyaMadhyamikVidyalaya, Majhlaul, Begusarai Bihar (5th April 2022)

BSIP scientists carried out an outreach activity to UchyaMadhyamikVidyalaya, Majhlaul in Begusarai region to increase awareness and infuse interest in students about Earth Science studies. They were apprised about Birbal Sahni institute and its glorious history. They were encouraged and motivated to inculcate scientific practices for sustainable future.

List of Research Publications (April, 2022)

1. **Ali, S.N., Singh, P., Arora, P., Bisht, P., Morthekai, P.** (2022). Luminescence dating of late pleistocene glacial and glacio-fluvial sediments in the Central Himalaya, India. *Quaternary Science Review* 284(2):107464. DOI: 10.1016/j.quascirev.2022.107464(**Impact factor: 4.112**).
2. Gaire, N., Zaw, Z., Bräuning, A., Sharma, B., Dhakal, Y.R., Timilsena, R., **Shah, S.K., Bhujju, D.R., Fan, Z.** (2022). Increasing extreme events in the central Himalaya revealed from a tree-ring based multi-century streamflow reconstruction of Karnali River Basin. *Journal of Hydrology*. DOI: 10.1016/j.jhydrol.2022.127801(**Impact factor: 5.722**).
3. **Srivastava, J., Manoj, M.C., Manjunata, B.R., Veeran, Y., Jose, J., Balakrishna, K., Kumar, A.N., Ahmed, A.** (2022). Delineation of terrestrial and marine productivity in the Southwestern Continental margin of India. *Journal of Asian Earth Science* 230(4):105203. DOI: 10.1016/j.jseaes.2022.105203. (**Impact factor: 3.449**).
4. **Bansal, M., Mishra, S., Prasad, V.** (2022). Biogeographic and evolutionary history of Crotonoideae based on pollen evidence from Indian Late Cretaceous and Paleogene sediments. *Biotropica*. DOI: 10.1111/btp.13091. (**Impact factor: 2.508**).
5. **Singh, V., Misra, K.G., Yadav, R., Yadava, A.K., Vishwakarma, S., Maurya, R.S.** (2022). High-elevation tree-ring record of 263-year summer temperature for a cold-arid region in the western Himalaya, India. *Dendrochronologia* 73(3-4):125956. DOI: 10.1016/j.dendro.2022.125956. (**Impact factor: 2.691**).
6. Bhan, A., Boruah, A., Maurya, D.S., Rai, S.K., Goswami, L., **Singh, V.K.** (2022). Mineralogy, Organic Richness and Macerated Microbial Studies of the Rohtasgarh Shales in the Vindhyan Basin, India: Implications for Gas Generation Potential. *Journal of the Geological Society of India* 98(4):567–575. DOI: 10.1007/s12594-022-2015-0. (**Impact factor: 1.459**).
7. **Chetia, R., Mathews, R.P., Singh, P.K., Sharma, A.** (2022). Conifer-mixed tropical rainforest in the Indian Paleogene: New evidences from terpenoid signatures. *Palaeogeography Palaeoclimatology Palaeoecology* 596. DOI: 10.1016/j.palaeo.2022.110980(**Impact factor: 3.318**).
8. Chinthala, B.D., Griebinger, J., **Ranhotra, P.S., Tomar, N., Singh, C.P., Bräuning, A.** (2022). Tree-Ring Oxygen Isotope Variations in Subalpine Firs from the Western Himalaya Capture Spring Season Temperature Signals. *Forests* 13(3), 437. DOI: 10.3390/f13030437. (**Impact factor: 2.634**).
9. **Murthy, S., Uhl, D., Jasper, A., Sarate, O.P., Mishra, D.P.** (2022). New Evidence for Palaeo-wildfire in the Early Permian (Artinskian) of Gondwana from Wardha Valley

Coalfield, India. Journal of the Geological Society of India 98, 395–401. DOI: 10.1007/s12594-022-1991-4. (**Impact factor: 1.459**).

10. **Mishra, A.K.**, Arun Deo Singh, A.D., **Prasad, V.** (2022). Santonian-Campanian dinoflagellate cyst biostratigraphy and paleoenvironment of the Krishna-Godavari Basin, India. Island Arc. DOI: 10.1111/iar.12443. (**Impact factor: 1.558**).
11. **Kavali, P.S.**, Roy, A., Di Pasquo, M., **Gurumurthy, G.P.**, Sharma, G., Kumar, A. (2022). Upper Pennsylvanian Age of the Lower Talchir Formation in the Wardha Basin, Central India, Based on Guide Palynomorphs Present in Radiometrically dated Palynozonations in South America, Africa, and Australia. *Ameghiniana*, 59(2). DOI: 10.5710/1851-8044-59.2.177 (**Impact factor: 1.653**).
12. Adhikari, P., **Bhatia, H.**, Khatri, D.B., **Srivastava, G.**, Uhl, D., Mehrotra, R.C., Paudyal, K.N. (2022). Plant fossils from the middle Siwalik of eastern Nepal and their climatic and phytogeographic significance. *Palaeobiodiversity and Palaeoenvironments*. DOI: 10.1007/s12549-022-00523-5 (**Impact factor: 1.406**).
13. **Mandal, S.**, Choudhury, T.R., Das, A., Sarkar, S., Banerjee, S. (2022). Shallow marine glauconitization during the Proterozoic in response to intrabasinal tectonics: A study from the Proterozoic Lower Bhandar Sandstone, Central India. *Precambrian Research* 372. DOI: 10.1016/j.precamres.2022.106596 (**Impact factor: 4.725**).
14. **Saxena, A.**, Khan, M.M., Raychowdhury, N., Singh, K.J. (2022). Early Permian macrofloral diversity in Indian Gondwana: Evidence from Talchir Formation of Singrauli coalfield, Son–Mahanadi valley basin, central India. *Journal of Earth System Science* volume 131. DOI: 10.1007/s12040-021-01805-w. (**Impact factor: 1.371**).
15. Gupta, G., Deval, R., **Rai, N.**, Nizamuddin, S., Upadhyay, S., Pasupuleti, N., Tony Ng, H.K., Singh, P.K., Rao, V.R. (2022). Genome-wide association study for suicide in high-risk isolated historical population from North East India. *Journal of Affective Disorders Reports*. DOI: 10.1016/j.jadr.2022.100327.
16. **Thomte, L.**, Bhagbati, A.K., **Shah, S.K.** (2022). Soil moisture-based winter-spring drought variability over West Karbi Anglong region, Assam, Northeast India using tree-rings of *Pinus kesiya*. *Environmental Challenges*. DOI: 10.1016/j.envc.2022.100512.

Photographs showing important highlights of major programs/research activities organized during April, 2022:

