

ZSI enews



सत्यमेव जयते



Ministry of Environment,
Forest and Climate Change



आज़ादी का
अमृत महोत्सव

From the Director's Desk



I am glad to present the December 2021 issue of the E News to the readers. During the month ZSI conducted surveys in the protected areas and different ecosystems of Meghalaya, Odisha, Arunachal Pradesh, Andhra Pradesh, Telangana, Andaman and Nicobar Islands, Kerala, Karnataka, Maharashtra, Gujarat, Rajasthan, Haryana, Delhi, Uttar Pradesh, Himachal Pradesh, Bihar, Jharkhand and West Bengal. The number of specimens identified is 18252 comprising 1218 species and it includes 12 newly described species and 16 newly reported species to India. In addition, 75 species of arthropods, nematodes and mites have been newly augmented to the National Zoological Collections. Under the task of barcoding the faunal resources of our country, 119 DNA barcodes were generated and uploaded in NCBI/BOLD. Over 154 olive ridley turtles have been tagged from Odisha coast to understand their migratory pattern for effective conservation. The research findings of ZSI are published regularly, however, the present month witnessed with 16 papers of which most of them are in SCI journals. ZSI join its hand with Government of Meghalaya towards the declaration of Living Root Bridges under UNESCO World Heritage site by strengthening the proposal with inputs of biodiversity and ecosystem services of these biological bridges.

Happy New Year 2022 wishes.

Jai Hind

Dr. DHRITI BANERJEE
Director
January 6, 2022
Kolkata

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Cover photo: Malabar Pit
Viper *Craspedocephalus
malabaricus* (Jerdon, 1854)

HEADQUARTERS, KOLKATA



Director, ZSI and scientists with Hon. Chief Minister of Meghalaya Sh. Conrad K Sangma

Expedition to Living Root Bridges of Meghalaya has been organized with the participation of 10 scientists of ZSI during 14th to 20th December 2021 to explore the faunal diversity for providing a supporting data towards the recognition of these bridges as UNESCO World Heritage site. Besides, major surveys such as faunal diversity in Golden Quadrilateral Highway covering 13 States of the country for 35 days, protected areas of West Bengal from 5th to 15th December 2021, Pondicherry State from 05.12.2021 to 18.12.2021 have been conducted. Altogether 7962 specimens comprising 768 species of fauna under Protozoa to Mammalia were identified and registered as National Zoological Collections. Among them 6 species viz. two Coleoptera species *Nepaloserica cheemaensis* Bhunia, Gupta, Chandra &

Ahrens, 2021 and *Maladera reyaensis* Bhunia, Gupta, Chandra & Ahrens, 2021, three Hemiptera, *Metrocoris issaci* Jehamalar & Dash, 2021, *Metrocoris josephi* Jehamalar & Dash, 2021 and *Metrocoris latus* Jehamalar & Dash, 2021 and one decapod species *Neorhynchoplax devroyi* Mitra & PKL Ng, 2021 are newly described while 10 species six species of Bryozoa, and four species of Hymenoptera are new addition to India. Fifty six species under different faunal groups including soil mites; insects of Hemiptera, Hymenoptera, Trichoptera, Lepidoptera, Coleoptera; mollusc, crustacean and nematodes were augmented to National Zoological Collections. A total of 35 DNA barcodes have been generated for 5 species of Thrips and uploaded in NCBI.



Eight identification and advisory services have been provided which includes confiscated material sent by law enforcing agencies. Answers for Lok/Rajya Sabha starred/unstarred questions such as Ecological and economic loss due to invasive species, Loss of biodiversity due to environmental pollution and Biodiversity Hotspot in North East Region have been sent to the administrative Ministry. Further, comments on import of corals to India by a private firm submitted to Wildlife Crime Control

Bureau; inputs for the chapter 'Trade and Sustainable Management of Marine Biological Resources and Aquaculture' for upcoming meeting Bilateral Working group on Sustainability under the India - UK ETP provided to MoEFCC, and comments on import of live animal Yellow-bellied slider *Trachemys scripta scripta* from United Arab Emirates (UAE) to India submitted to MoEFCC. In addition, PBRs of four Gram Panchayats were evaluated and reports

Prize distribution for Hindi competition by Director, ZSI, Kolkata.

submitted to West Bengal Biodiversity Board. Apart from this Instruction note has been provided to M/s. Sri City Pvt. Ltd., Andhra Pradesh to conserve water bodies inside Sri City in order to protect the water birds especially Fulvous Whistling Ducks while expanding their project. This was in consequent upon the approval of EIA report submitted by ZSI by Expert Appraisal Committee of MoEFCC.

NORTH EASTERN REGIONAL CENTRE, SHILLONG, MEGHALAYA

Faunistic survey to the Living Root Bridge Cultural Landscape in Meghalaya conducted between 14th to 20th December, 2021. Scientists of the centre identified 277 specimens containing 59 species (Pisces - 22 spp., Reptilia - 04 spp., Amphibia - 07 spp., Crustacea - 03 spp., Hemiptera -15 spp., Dermaptera - 05 spp., Mammalia - 03 spp.). Advisory service rendered to Centre for Ecological Sciences, IISC, Bangalore.



Grey Count, *Tanaecia lepidea*
(Butler, 1868)



Living Root Bridge at Tyrpa
Mawloah, Meghalaya

WESTERN REGIONAL CENTRE, PUNE, MAHARASHTRA

Visit of Director, ZSI in iron ore mine at Bellary, Karnataka

Field surveys conducted to Paradeep, Odisha from 5th to 6th December 2021; Ballary, Karnataka from 20th to 27th December 2021 and Amrabad Tiger Reserve &

Kawal Tiger Reserve, Telangana from 20th to 30th December, 2021. Scientists of the centre have identified 1227 specimens containing 147 species belonging to various groups of insects and other vertebrates and

invertebrates. A new species of ground beetle was discovered from Tamil Nadu, India. Identification of the confiscated specimens of reptiles and birds was done for the Forest Range Officer, Karveer,

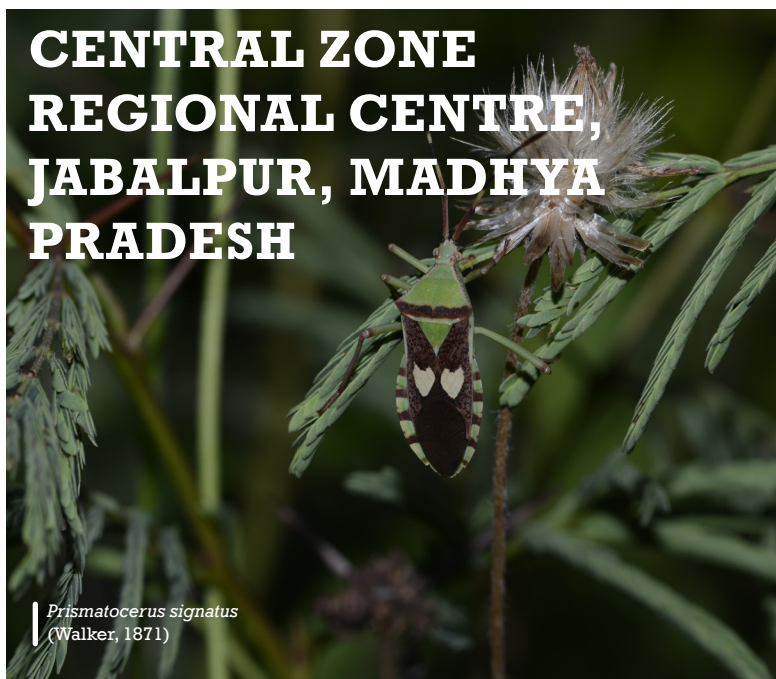


Kolhapur district, Maharashtra. Advisory services were rendered on the preparation of the management plan for the Chinnar Wildlife Sanctuary, Munnar Wildlife Division, Idukki district, Kerala. 15 DNA barcodes (mt 16s rRNA) generated for 10 species of amphibians were submitted to the GenBank.



Iron ore mine

CENTRAL ZONE REGIONAL CENTRE, JABALPUR, MADHYA PRADESH



Pristocercus signatus
(Walker, 1871)



Spilostethus hospes
(Fabricius, 1794)

Scientists of the centre identified and registered 361 specimens comprising 73 species (Lepidoptera - 43 spp., Hemiptera - 17 spp., Scorpions - 06 spp., Amphibia - 05 spp. and Reptilia - 02 spp.) belonging to 48 genera in 28 families. Identification service rendered for 3 species of Hemiptera to Kumaun University Nainital, Uttarakhand.

DESERT REGIONAL CENTRE, JODHPUR, RAJASTHAN

*Danaus
chrysippus*
Linnaeus
1758



Vanellus indicus
(Boddaert, 1783)



Surveys conducted to Jingkieng Jri Living Root Bridge Cultural Landscapes of Meghalaya from 14th to 20th December 2021 in connection with “Community and Science Based Conservation Research and Development” and a local survey conducted to Todgarh WLS, Ajmer, Pali & Rajsamand, Rajasthan on 22nd December, 2021. Altogether 463 examples (Insects- 380 exs, Gastropoda- 43 exs and Pisces-40 exs) containing 57 species identified. Out of 11 selected wildlife sanctuaries of Gujarat state under the research programme, “Assessment of faunal diversity of some selected Wildlife Sanctuaries of Gujarat”, fauna of Rampara Wildlife Sanctuary, Rajkot has been worked out. 5 species of Amphibian and 23 species of Reptilian have been documented from the sanctuary.



Students of Dolphin
PG Institute

NORTHERN REGIONAL CENTRE, DEHRADUN, UTTARAKHAND

Indian white-eye,
Zosterops palpebrosus
(Temminck, 1824)

Scientists of the centre conducted faunal survey to three conservation reserves i.e. Rakh Sarai Amanat Khan, Ranjit Sagar and Beas River of Punjab from 21st to 29th December, 2021. A total of 782 specimens examined and identified 59 species (5 sp. of Protozoa; 14 sp. of Phthiraptera; 23 sp. of Lepidoptera; 05 sp. of Annelida; 09 sp. of Pisces and 03 sp. of Amphibia). Two DNA barcodes generated for one species of Hymenoptera. One Ph.D. thesis evaluated for Kumaun University, Uttarakhand and one paper reviewed for *Indian Journal of Entomology* by the scientist of the Centre. Batchelor and Master degree students of Dolphin PG Institute of Biomedical & Natural Sciences, Dehradun visited the Centre on 16th December, 2021.

SOUTHERN REGIONAL CENTRE, CHENNAI, TAMIL NADU

The scientists of the centre identified and registered 762 specimens into 142 species of various faunal groups viz. Zooplankton, Lepidoptera, Odonata, Hemiptera, Blattodea, Psocoptera, Mollusca, Pisces, and Reptiles. Three new species of Mayfly *Choroterpes (Choroterpes) andamanensis* Vasanth, Subramanian & Selvakumar, 2021, *Edmundsula meghamalaiensis* Vasanth, Subramanian & Selvakumar, 2021 and *Megaglena agasthiya* Vasanth, Subramanian & Selvakumar, 2021 were discovered from Andaman and Nicobar Islands, Kerala and Tamil Nadu and also a psocid species, *Psococerastis sinensis* Thornton, 1960 recorded for the first time from Andaman and Nicobar Islands and Kerala.



Barsine rufumdefecta Singh
Kirti 2016

GANGETIC PLAINS REGIONAL CENTRE, PATNA, BIHAR

Scientists have identified 1138 examples under 34 species. Eight species have been augmented to National Zoological Collection. Reviewed manuscripts for *Records of Zoological Survey of India*, and *Zootaxa*.

Lyssa zampa
Butler 1869



HIGH ALTITUDE REGIONAL CENTRE, SOLAN, HIMACHAL PRADESH

Kashmir Birch Mouse, *Sicista concolor* Buchner, 1892



A survey was undertaken to districts of Kullu and Mandi, Himachal Pradesh from 24th November to 05th December 2021. Scientists have identified 342 specimens containing 55 species (52 species of insects and 03 species of Vertebrate). Scientists have reviewed 03 research papers and 01 manuscript.

Indian Pond Heron
Ardeola grayii
(Sykes, 1832)



MARINE BIOLOGY REGIONAL CENTRE, CHENNAI, TAMIL NADU

Two surveys were conducted, one to study the taxonomy and distribution of benthic foraminifera of the Gulf of Mannar and another to study testate amoebae in moss samples from Agasthyamalai Biosphere Reserve (Kerala part) and collections comprise 118 moss samples from various biotopes, 28 samples of foraminifera, 121 specimens of molluscs, four specimens of fishes, and three specimens of Echinodermata. Two local surveys were also organised to collect fish specimens from the landing sites at Pulicat lake and Kasimedu fishing harbour, from where 140 specimens were collected. Scientists of the centre have identified 36 species (82 exs.) of moss inhabiting testate amoebae, 13 species (30 exs.) of marine nematodes, 07 species (257 exs.) of molluscs, 06 species (14 exs.) of echinoderms, and 06 species (31 exs.) of orthoptera. Two requests for identification connected to wildlife crimes were disposed of this month. Scientists of this centre delivered lectures at two online workshops.

ANDAMAN AND NICOBAR REGIONAL CENTRE, PORT BLAIR

Local surveys were conducted to South Andaman i.e., Mount Harriet, Kadakachang, Lohabarrack Wildlife Sanctuary, Ograbraj, Ferrargunj, Chidiyatapu Biological Park, Shoalbay 19, Kalatang, Bimblytan, and Calicut during 11th, 12th, 18th, 19th, 23rd, 24th, 25th, 26th, 27th and 28th December 2021 to assess the terrestrial faunal diversity; North Bay, Rutland Island and Fish landing centre at Junglighat, South Andaman during 7th, 8th, 9th, 10th, 11th, 14th and 15th December 2021 to assess the marine faunal diversity. A total of 377 species have been identified which include Rhodophyta (Sea weed) - 1 sp., Fishes - 42 spp., Echinodermata - 9 spp., Mollusca - 44 spp., Cnidaria - 29 spp., Porifera - 2 spp. from the marine environment and Orthoptera - 1 sp., Hemiptera - 2 spp., Coleoptera - 1 sp., Odonata - 1 sp., Lepidoptera - 89 spp., Amphibia - 7 spp., Birds - 121 spp., Decapoda - 1 sp., Reptiles - 25 spp., Hymenoptera - 2 spp. from the terrestrial environment. Identified 10 specimens of sea cucumber for the Department of Environment & Forests, Andaman & Nicobar Islands.

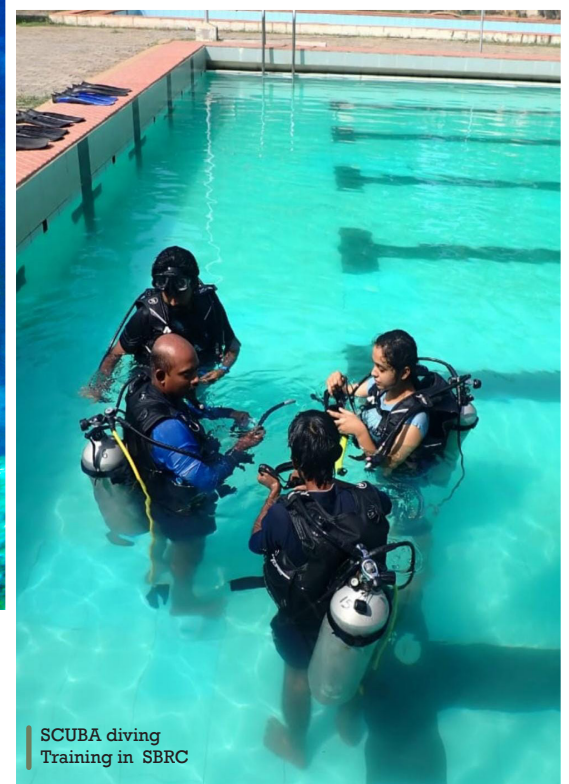
Andaman Stork billed Kingfisher *Pelargopsis capensis osmastonii* Baker 1934

Phyllospongia foliascens Pallas 1766



SUNDERBAN REGIONAL CENTRE, CANNING, WEST BENGAL

Emperor Angelfish *Pomacanthus imperator* (Bloch, 1787)



Two days local surveys conducted in Sunderbans and three days survey to Gulf of Mannar coast. A total of 895 examples were collected of which 102 examples were from Sunderbans and 793 exs were from Gulf of Mannar. During the month, 1552 examples (56 spp.) were identified and 150 examples were digitized.

SCUBA diving
Training in SBRC

FRESHWATER BIOLOGY REGIONAL CENTRE, HYDERABAD, TELANGANA

An extensive faunal survey was undertaken to Amrabad and Kawal Tiger Reserves from 18th to 31st December 2021. The scientists, staff and research scholars of the centre examined 1246 specimens from Subarnapur, district, Odisha; Rangareddy, Nagarkurnool, Telangana; West Singhbhum, Jharkhand; Guntur, Visakhapatnam, Krishna, West Godavari and East Godavari districts, Andhra Pradesh; (Rollapadu Wildlife Sanctuary; Palkot Wildlife Sanctuary, Amrabad and Kawal Tiger Reserves) and identified 14 species of Aquatic Coleoptera from 61 exs., 8 species of aquatic Hemiptera from 30 exs., 3 species of Ostracoda from 68 exs., 2 species of Branchiopoda from 34 exs., 37 species of Mollusca from 605 exs., 1 species of Decapoda from 4 exs., and 38 species of fishes from 444 exs. Thirteen DNA barcodes were submitted to NCBI and BOLD.

Nilgai (*Boselaphus tragocamelus* Pallas, 1766)



Survey Team to Amrabad
Tiger Reserve-Telangana



WESTERN GHAT REGIONAL CENTRE, KOZHIKODE, KERALA



Survey at Mookambika
WLS, Karnataka

A survey conducted to Agasthyamalai Biosphere Reserve, Kerala during the period 1.12.2021 to 10.12.2021 and various faunal groups were collected.



Papilio liomedon
Moore 1874

One more survey conducted to Mookambika Wildlife Sanctuary, Karnataka from 15.12.2021 to 24.12.2021. Scientists have identified 272 exs (12 Scolopendromorpha, 08 Lepidoptera, 08 Mantodea, 179 Hymenoptera, 06 Araneae and 59 Coleoptera) containing 68 species. Reviewed a manuscript on Hymenoptera for the Journal of Insect Biodiversity and identified one species of wasp for Ashoka University, Sonipat, Haryana based on photographs. 04 species of Mantids and 01 species of Tormidae sent to Rajiv Gandhi Centre for Biotechnology for doing DNA Barcoding. Sequences of 05 species of Mantids are uploaded in NCBI Database.

ESTUARINE BIOLOGY REGIONAL CENTRE, GOPALPUR-ON-SEA, ODISHA

A survey to Dhamra estuary was carried out from 26th to 31st December 2021. Scientists of the centre have identified 436 specimens consisting of 107 species which include Isopods, crabs and fishes. Dr. Dhriti Banerjee, Director Zoological Survey of India had presided the inaugural session of an integrated Marine Conservation and Sea Turtle Biology Internship programme conducted in collaboration with Western Regional Centre on 3rd December, 2021. Total 154 turtles were tagged under sea turtle tagging



Participants of training programme

programme. A 48 ft female Baleen whale, stranded dead was recorded on 10th, December, 2021 at Naba beach, tissue samples for the DNA analysis was collected on the spot. One group of bar headed Geese were recorded at the Humma Salt pan, few of them were with tags. One DNA barcode was uploaded in the NCBI database.



Tagging of Sea turtles
in Rushikulya river

Itanagar Wild Life
Sanctuary

ARUNACHAL PRADESH REGIONAL CENTRE, ITANAGAR



*Polypedates
teraiensis* (Dubios)



Scientists conducted 3 local surveys and collected 130 examples under 7 faunal groups (8 Diplopoda, 28 Lepidoptera, 31 Orthoptera, 4 Odonata, 1 Anisoptera, 37 Mollusca and 21 Pisces). Scientists and staff have identified 47 species of 387 examples [(Diplopoda (55 exs.), Lepidoptera (46 exs.), Orthoptera (29 exs.), Coleoptera (1 ex.), Arachnida (4 exs.), Mollusca (118 exs.), Decapda (116 exs.) and Amphibia (18 exs.)].

MARINE AQUARIUM AND REGIONAL CENTRE, DIGHA, WEST BENGAL



Triacanthus biaculeatus
(Bloch, 1786)



Boddart's goggle-eyed
goby, *Boleophthalmus
boddarti* (Pallas, 1770)

Field surveys were conducted at Chilka and adjacent areas during 06th–15th December 2021, Petuaghat & fish landing center on 3rd & 19th December 2021, West Bengal and adjacent areas (09 days i.e., 20th–28th December 2021 and West Bengal & Odisha (07 days i.e., 01st, 06th, 09th, 17th, 26th, 27th & 28th December 2021) and collected samples of Mollusca, fish, amphipod, crab, shrimp, stomatopod, hermit crab, earthworm, polychaete, seahorse, squids, octopus, starfish, seapen, sea anemone and sponges. Scientists of the centre identified 483 specimens of 81 species belonging to 350 ex. of Mollusca (37 spp.), 119 ex. of fishes (40 spp.), 06 ex of Cnidaria (02 spp.), 05 ex. of Echinodermata (01 sp.) and 03 ex. of Arthropoda (01 sp.). Evaluated one Ph.D. thesis for Department of Marine Microbiology, Annamalai University, Tamil Nadu and rendered identification services to Department of Zoology, Berhampur University, Odisha by identifying 08 photos of Polychaete.

NEW DISCOVERIES AND NEW RECORDS

NEW SPECIES



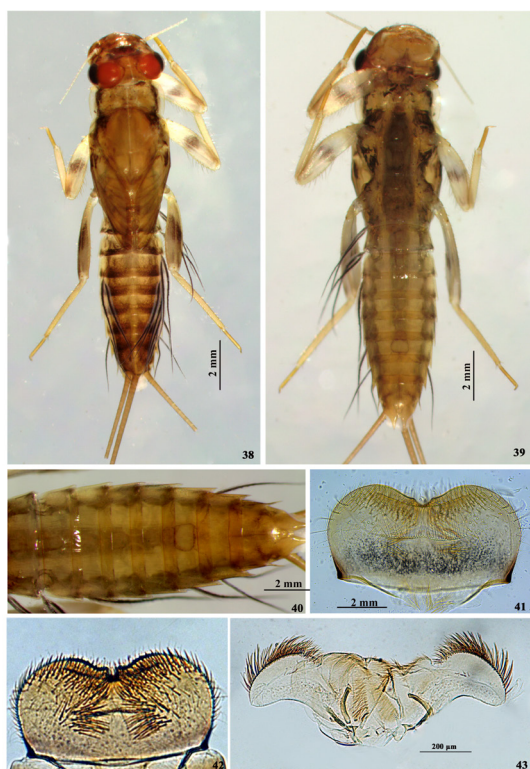
Chlaenius (Lissauchenius) venkataramani Vasantha kumar & Kirschenhofer, 2021



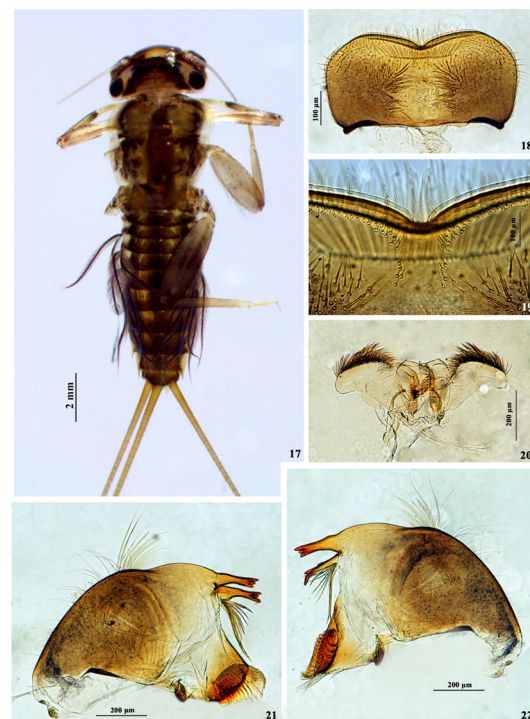
Renocila trillesi Aneesh, Nashad, Bijukumar, Bineesh & Hatha, 2021



Heydenia kashmirensis Sureshan & Khandey

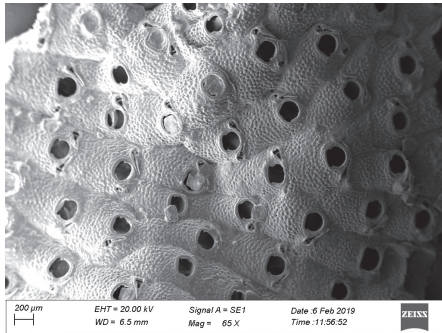


Megaglena agasthiya Vasanth, Subramanian & Selvakumar, 2021

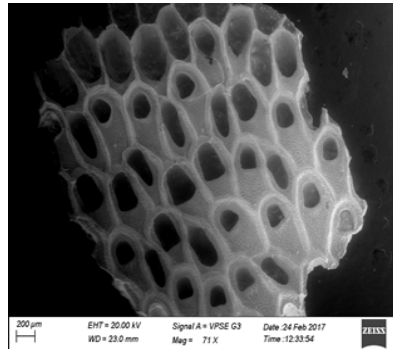


Edmundsula meghamalaiensis Vasanth, Subramanian & Selvakumar, 2021

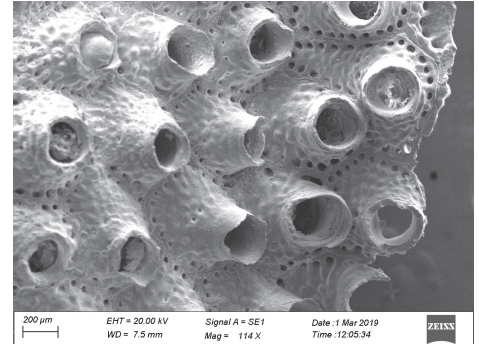
NEW RECORD



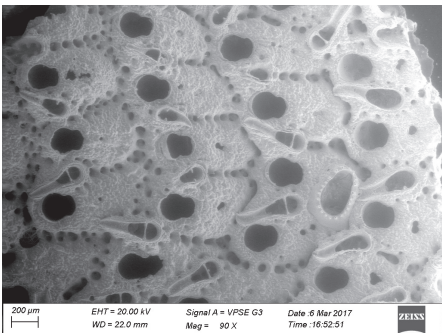
Hippopodina iririkiensis
(Tilbrook, 1999)



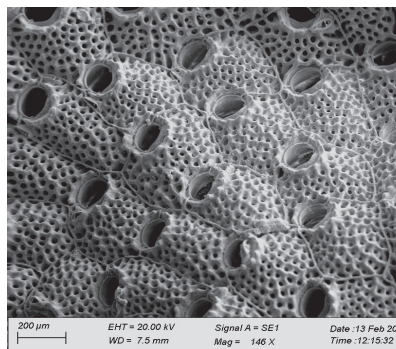
Smittipora harmeriana



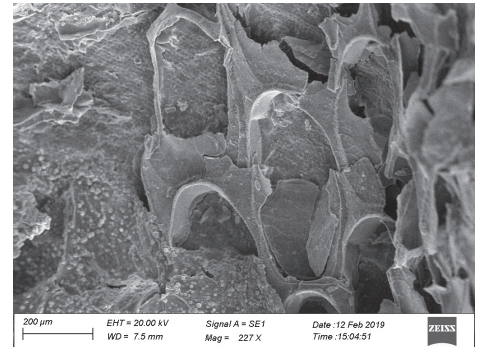
Drepanophora indica (Hayward, 1988)



Poricella robusta (Hinck 1884)



Calypthotheca hastingsae



Tarsocryptus laboriosa (Tilbrook, 2006)

PUBLICATIONS

PAPERS

1. Amarasinghe, T., Ganesh, S.R., Mirza, Z.A., Campbell, P.D., Pauwels, O.S.G., Patel, H., Karunarathna, S., Deuti, K., Ineich, I., Hallermann, J., Abinawanto, A. & Supriatna, J. 2021. The delusion of stripes: A century old mystery of five-lined sun skinks (Reptilia: Scincidae: Eutropis) of Peninsular India elucidated. *Zoologischer Anzeiger*, 296: 71-90.
2. Aneesh, P.T., Nashad, M., Bijukumar, A., Bineesh, K. & Hatha, A.A.M. 2021. Review of the global distribution and hosts of the fish parasitic isopod genus *Renocila* Miers, 1880 (Crustacea: Cymothoidae) with the description of a new species from Andaman Islands, India. *Journal of Natural History*. <https://doi.org/10.1080/00222933>.
3. Bhunia, D., Gupta, D., Ahrens, D. & Chandra, K. 2021. New species and New records Sericini of India (Coleoptera: Scarabaeidae: Melolonthinae). *Zootaxa*, 5081 (4): 594–600.
4. Eyarin Jhamalar & Swetapadma Dash. 2021. Three new species of *Metrocoris* Mayr, 1865 (Heteroptera: Gerridae) from India and establishment of species groups. *Zootaxa* 5082 (4): 341–356.
5. Khanday, A.L., Sureshan, P.M., Maqbool, A. & Li, Y. 2021. *Heydenia kashmirensis* (Pteromalidae), a new species from Kashmir, India. *Ann. Zool. Fennici* 59: 71-77.
6. Mitra, S. & Ng, P.K.L. 2021. A new species of *Neorhynchoplax* Holthuis, 1968 (Brachyura, Hymenosomatidae) from West Bengal, India. *Crustaceana*, 94 (11-12): 1345-1357.

7. Palot, M.J. and Santhosh, K. 2021. Record clutch size for an Indian Cobra *Naja naja* (Linnaeus, 1758). *Reptiles & Amphibians*, 28(3): 494.
.....
8. Ranjana Bhaskar, Agnita Sharon, & Chandika R. G. 2021. "The phylogenetic relationship of crocodilian families using mitochondrial markers and mitochondrial genome" *Cobra*, 15(1): 1-18.
.....
9. Sanjay, M.S., Venkatraman, C., Louis, S., Shrinivaasu, S. & Yogesh Kumar, J.S. 2021. New distributional records of Indo-Pacific Bryozoans from East and West Coast of India. *Indian Journal of Geo Marine Sciences* 50 (09): 714-722.
.....
10. Sardar, S., Kasperek, M., Rameshkumar, A. & Kazmi, S.I. 2021. Four species of anthidiine bees (Apoidea: Megachilidae) new to India. *The Canadian Entomologist*, 1-10. Doi: 10.4039/tce.2021.55.
.....
11. Sreeraj, C. R. & Sen, A. 2021. Report of a Pacific water mangrove goby fish, *Wuhanlinigobius polylepis* (Wu & Ni, 1985) from Indian Sunderban. *Fish Taxa* 22:13-15.
.....
12. Talmale, S., Sidhu, A.K. & Saikia, U. 2021. New record of Kashmir Birch Mouse *Sicista concolor leathemi* (Thomas, 1893) (Rodentia: Sminthidae) in the Indian Himalaya. *Journal of Threatened Taxa* 13(14): 20295-20298.
.....
13. Temjenmongla & Pegu T. 2021. First record of *Asiomorpha coarctata* (De Saussure, 1860) (Diplopoda) from Arunachal Pradesh, North East India. *International Journal of Fauna and Biological Studies*. 8(6): 35-38.
.....
14. Tyagi, K., Tyagi, I., Patidar, A., & Singha, D., Ziemba, A. K., Banerjee, D., Kumar, V. 2021. Gut Microbial Composition in Developmental Stages of Gall Inducing Thrips *Gynaikothrips uzeli* and Associated Plant Pathogenesis, *Saudi Journal of Biological Sciences*, <https://doi.org/10.1016/j.sjbs.2021.11.029>.
.....
15. Vasanth, M., Subramanian, K. A., Selvakumar, C., Kubendran, T., & Sivaramakrishnan, K. G. 2021. Three new species of Atalophlebiinae (Ephemeroptera: Leptophlebiidae) of India, with a new record of the genus *Megaglana* Peters and Edmunds, 1970. *Zootaxa*, 5076(1), 56-70. <https://doi.org/10.11646/zootaxa.5076.1.7>.
.....
16. Vasanthakumar, D. and Kirschenhofer, E. 2021. Description of a new species of *Chlaenius Bonelli*, 1810 (Coleoptera: Carabidae) from India. *Zeitschrift der Arbeitsgemeinschaft Österreichischer Entomologen*, 73: 37-41.
.....

MEETINGS ATTENDED

1. Dr. Dhriti Banerjee, Director, ZSI along with Scientists of the Regional Centres attended the National Convention on Community and Science-based conservation, research and Development of Jingkieng Jri: Living Root Bridge Cultural Landscapes of Meghalaya-Towards UNESCO World Heritage Site nomination organised by Meghalaya Basin Development Agency, Government of Meghalaya on 21st December 2021.
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2. Dr. Dhriti Banerjee, Director addressed in the valedictory session on PG Diploma in Integrative Animal Taxonomy (PGDIAT-2021) on 1st December, 2021 at ZSI HQ, Kolkata.
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3. Dr. Dhriti Banerjee, Director addressed "Integrated Marine Conservation and Sea Turtle Biology Internship" organized by Estuarine Biology Regional Centre, ZSI, on 3rd December, 2021 at EBRC, Gopalpur-on-Sea, Ganjam.
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4. Dr. Dhriti Banerjee, Director held meeting with IIT Jodhpur on Collaborative Projects with the concept note on "The Faunal Diversity of Thar Ecoregions for sustainable Solutions" and the execution and implementation consensus (MoU) between ZSI & IIT Jodhpur on December 6, 2021.
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5. Dr. Dhriti Banerjee, Director attended the 10th Meeting of the Steering Committee (SC) on R&D Scheme, MoEFCC for conservation & Development and presented a project proposal on 7th December, 2021 via Video Conferencing to consider eight new R&D proposals. She also attended TNAU-Golden Jubilee International Conference, "Global Perspectives in Crop Protection for Food Security" (GPCP-2021), organized by TNAU-Centre for Plant Protection Studies (CPPS) from 8th to 10th December, 2021 at Tamil Nadu Agriculture University, Coimbatore, and delivered a talk on "Insect Biodiversity and Bio-Security (Taxonomy & Molecular Diversity) of Insects" on 8th December, 2021.
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6. Dr. Dhriti Banerjee, Director inaugurated 44th National Conference on "Recent Trends in Animal Behavior" & Annual Meeting of Ethological Society of India (Virtual) as a Chief Guest organized by St. Joseph's College (Autonomous), Bengaluru in association with the Ethological Society of India (ESI) on 23rd December, 2021.
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7. Dr. C. Raghunathan attended the West Bengal State Biodiversity Board meeting on 6th December 2021 to discuss the evaluation of PBRs.
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8. Dr. C. Sivaperuman, Scientist-E has attended meeting of the Heads of all affiliated institutions with Vice Chancellor, Pondicherry University on 28th December

- 2021 at Department of Ocean Studies and Marine Biology, Pondicherry University, Port Blair campus.
9. Dr. Deepa Jaiswal, Scientist-E attended "15th Inter agency Coordination Meeting on Wildlife Crimes" conducted by WCCB, Southern Zone at Aranya Bhavan, Hyderabad on 8th December 2021.
 10. Dr. Rajkumar Rajan, Scientist-E attended the State Level Steering Committee meeting on Conservation & management of Mangroves and Coral Reefs 2021-22, on 3 & 17 December 2021 at the office of Principal Chief Conservator of Forests, Chennai-15.
 11. Dr. Jasmine P. and Dr. Santosh Kumar conducted and attended the Taxa Coordinator Meeting for NZC data validation for developing the Geo-spatial portal of ZSI on 14th December 2021.
 12. Dr. Jasmine P. conducted and attended the meeting collaborative project between ZSI and IIT Jodhpur on 6th December, for projects on Thar designs on faunal diversity.
 13. Dr. Pratyush P. Mohapatra, Scientist-D attended a preparatory meeting with GFRI, Govt. of Gujarat on developing a project proposal on Snake research in Gujarat.
 14. Dr. Pratyush P. Mohapatra, Scientist-D attended meeting and provided inputs as a lead author on 18th December 2021 for finalization of "Guidelines for Human-Snake Conflict Mitigation in India" prepared by MoEFCC and (GIZ) GmbH Indo-German Biodiversity Programme.
 15. Dr. Anjum N. Rizvi, Scientist-E, attended online training from 20th-24th December, 2021 on "Science Technology & Emerging Trends in Governance" organized by IIPA & sponsored by DST.
 16. Dr. D.S. Suman, Scientist-D has participated in "National Convention on Living Root Bridge Cultural Landscapes of Meghalaya" organized by Meghalaya Basin Management Agency, Government of Meghalaya on 20th December 2021.
 17. Dr. Sandeep Kushwaha and Sri Maharanidin attended 9th half-yearly meeting on "Nagar Rajbhasaa Karyanvyan Samiti" kramank 02, Jabalpur dated 23rd December 2021.
 18. Dr. Souvik Sen, Scientist-D attended the discussion meeting on Collaborative Projects between ZSI & IIT Jodhpur through Video Conferencing on 6th December 2021.
 19. Dr. Souvik Sen, Scientist-D attended the meeting to discuss NCAVES Pilot report by IISc for the state of Karnataka through Video Conferencing on 28th December 2021 hosted by MOEF&CC.
 20. Dr. Sandeep Kushwaha, Assistant Zoologist attended Two days Online Training Programme on "Statistical Tools and Techniques" from 29th to 30th November, 2021 organized by Institute of Secretariat Training and Management (ISTM), Department of Personnel and Training, under the Ministry of Personnel, Public Grievances and Pensions, Government of India.
 21. Dr. Gopal Sharma, Scientist E attended the Paryavaran Panchayat in Ranchi, Jharkhand organized by Yugantar Bharti and Nature Foundation on 19.12.2021.
 22. Dr. Narender Sharma, Scientist-E, attended meeting of the State Research Advisory Committee on 22nd Dec., 2021 at the office of PCCF (WL & BD), Government of Arunachal Pradesh to finalize the research proposals received across the country.
 23. Dr. Narender Sharma, Scientist-E and Dr. SD Gurumayum, Scientist-E attended two days training workshop on "Climate change vulnerability mapping risk assessment and climatic action plan for all sectoral department" on 20th -21st December, 2021 at PCCF Office Complex Itanagar organized by Department of Environment, Forests & Climate Change, Government of Arunachal Pradesh.
 24. Dr. M.J. Palot, Scientist-B attended the online meeting for the preparation of working plan for the Aralam Wildlife Sanctuary, Kannur district, Kerala on 1st December 2021.
 25. Dr. Basudev Tripathy, Scientist-E & Officer-in-Charge attended meeting with Gujarat State Forest Department for proposal on Snake Research Institute, on 16th December 2021.
 26. Dr. Basudev Tripathy Scientist-E & Officer-in-Charge attended meeting to discuss NCAVES Pilot report by IISc for the state of Karnataka, organized by MoEFCC on 28th December 2021.
 27. Dr. Indu Sharma & Dr. P. S. Bhatnagar, Scientist-E attended the celebration of the 7th Convocation at IIT Jodhpur as guest of honour on 19th December, 2021 in the presence of Hon'ble Minister of Education, Govt. of India, Sh. Dharmendra Pradhan, Secretary, Dept. of Biotechnology, Chairman, Board of Biotechnology, Govt. of India.
 28. Dr. R. H. Raina Scientist- D attended National Convention on Community and Science Based Conservation Research and Development of Jingkieng Jri Living Root Bridge Cultural Landscapes of Meghalaya at State Convention Centre, Shilong on 21st December, 2021.

29. Dr. P. Girish Kumar, Scientist-C, acted as Member (External) to assess the progress of work done by a research scholar of CMFRI, Calicut for up gradation of her JRF to SRF on 13.12.2021 through an online meeting.
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30. Dr. P. Girish Kumar, Scientist-C, participated in the site visit of LTEO project along with Prof. Raman Sukumar, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru on 23.12.2021 to Periya forest of Wayanad and Kottiyoor forest of Kannur district.
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TRAININGS/ WEBINAR ORGANISED

1. Estuarine Biology Regional Centre, Gopalpur-on-Sea, Odisha convened program on "Integrated Marine Conservation and Sea Turtle Biology Internship" on 3rd December, 2021.
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2. ANRC, Port Blair, organised two days training workshop sponsored by RT Division, Ministry of Environment, Forest and Climate Change, Government of India on 7-8; 9-10 December 2021 - Coastal & Marine Biodiversity of Island Ecosystems to personnel of Other services.
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3. ANRC, Port Blair, have organised organised two weeks training workshop on Bird identification and basic Ornithology for M.Sc./Ph.D. Students (25 trainees) during 13-26th December 2021, sponsored by Science Engineering Research Board (SERB), Department of Science and Technology, Government of India under the Accelerate Vigyan.
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4. ANRC, Port Blair, organised one month certificate course on Bird identification and basic Ornithology from 13th December 2021 under the Green Skill Development Programme, Ministry of Environment, Forest and Climate Change, Government of India.
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5. Northern Regional Centre, Dehradun, provided hands on training on "Faunal diversity of India" to 42 students of B.Sc., M.Sc. Zoology and M.Sc. Biotechnology of Dolphin PG Institute of Biomedical & Natural Sciences, Dehradun on 16th December, 2021.
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6. Dr. D.S. Suman has provided Field based orientation training to members of Meghalaya Basin Management Agency and villagers on collection of mosquitoes using larval ladle and adult traps during the Living Root bridge survey from 15-20th December 2021.
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7. Supriya Nandy Scientist -C, Prehistoric Zoology Section, has given a hands on demonstration on collection, restoration and curation of zooarcheological collections (excavated vertebrate animal remains) to students of Dept. Of Anthropology, Bidhannagar College, Salt Lake, Kolkata, on 1st December 2021.
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8. Dr. S. Sambath, Scientist-E trained a team of 35 students from Government College, Panagar (MP) about collection and preservation of zoological specimens on 20.12.2021.
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9. ZSI, HQ participated and put up a stall at Konnagar Book Fair from 10th to 19th December, 2021. One Diaroma along with animal exhibits and ZSI publications were exhibited in the exhibition.
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LECTURES DELIVERED

1. Dr. Dhriti Banerjee, Director delivered a keynote lecture in a workshop entitled "Restoring Ecosystems in India: Climate Change Perspective and Prospects" organized by Department of Environment Science, University of Calcutta on 9th December, 2021.
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2. Dr. Dhriti Banerjee, Director delivered a lecture to a two days' workshop conducted by ANRC, ZSI on Bird Identification & Basic Ornithology under the Accelerate Vigyan, Science Engineering & Research Board (SERB), Department of Science and Technology, GoI and a Certificate Course on Bird Identification & Basic Ornithology; Parataxonomy including preparation of People's Biodiversity Register (PBR) under the Green Development Programme (GSDP), MoEFCC, GoI.
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3. Dr. C. Sivaperuman, Scientist-E has delivered a talk on the overview of Antarctica to the trainees of the Academic Staff College, Madurai Kamaraj University, Tamil Nadu on 20th December 2021. He also delivered lectures on different aspects of Bird identification in the ongoing training of Bird Identification and Basic Ornithology.
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4. Dr B. Sinha, Sci- E delivered a lecture entitled "Living Root Bridges: a faunal perspective" in Shuthim village on 17th December 2021 during the preparatory filed visit to Living Root Bridges areas.
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5. Dr. Gaurav Sharma, Scientist-E delivered lecture on topic entitled "Faunal diversity of India" to 42 students of B.Sc., M.Sc. Zoology and M.Sc. Biotechnology of Dolphin PG Institute of Biomedical & Natural Sciences, Dehradun in the Conference Hall of ZSI, NRC, Dehradun on 16th December, 2021.
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6. Dr. Anil Kumar, Scientist-E delivered invited talk on the topic entitled "Avifauna of Himalayas with special reference to endemic, endangered and threatened birds and their habitats" to the participants of certificate course on the 'Bird identification and basic Ornithology' organized by ZSI, ANRC, Port Blair through virtual mode on 21 December, 2021.
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7. Dr. Devanshu Gupta, Scientist-D delivered a lecture on "Beetle Diversity of India: Taxonomy, Gap Areas and Future Aspects", in a webinar "Taxonomical Approaches towards Conservation of Animal Biodiversity" organized by Department of Zoology, Kishori Raman P.G. College on 15.12.2021 through video conferencing.
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8. Dr. D.S. Suman, Scientist-D delivered Keynote lecture in "International Conference on Sustainability: Life on Earth 2021 (ICS-LOE 2021)" organized by Lovely Professional University, Punjab on 17th December 2021.
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9. Dr. K. A. Subramanian delivered a lecture on Biodiversity and Conservation of Aquatic Insects at Deva Matha College, Kuruvilangad on 04.12.2021. Dr. K. A. Subramanian, Scientist-E delivered a lecture on Biodiversity of the Western Ghats and Conservation Challenges for Post and Undergraduate College Teachers, University of Madras on 04.12.2021 and to PSG College of Arts and Science, Coimbatore on 05.12.2021. Dr. K. A. Subramanian conducted a Ph. D public Viva- voice to the Dept. of Zoology, Madras Christian College, Tambaram, Chennai on 13. 12. 2021 and to the Dept. of Zoology, Calicut University on 17. 12. 2021.
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10. Dr. K.P. Dinesh, Scientist-D delivered an online lecture on "Amphibians as the ecological Indicators: Diversity and conservation status in India" for the higher education teachers of Odisha state organized by the Zoology Department, Savitribai Phule Pune University, Pune on 9th December 2021.
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11. Dr. Pratyush P. Mohapatra, Scientist-D delivered an invited talk on "Studies on Faunal diversity of Similipal: Scopes and prospects" in IDP-OHEPEE supported National Seminar on "Similipal: Communities, Biodiversity & Conservation" on 20-21 December 2021 in MSCB University, Baripada, jointly organized by Centre for Similipal Studies, MSCB University and Similipal Tiger Reserve, Forest Department, Govt of Odisha.
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12. Dr. S.S. Talmale, Scientist-B delivered an invited lecture on "Insect taxonomy and its economic importance" in the one-day online workshop for UG & PG students organized by the Department of Zoology, Poojya Sane Guruji Vidya Prasarak Mandal's Arts, Science and Commerce College, Shahada, Nandurbar district, Maharashtra on 11th December 2021.
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13. Dr. Sandeep Kushwaha, Assistant Zoologist attended 'International web conference on emerging sustainability trends in Agriculture, Rural & Environmental Development' and presented an invited lecture on "Faunal Diversity of Prayagraj" on December, 19-20, 2021 organized by Society of Biological Sciences and Rural Development at Prayagraj, UP.
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14. Sh B. Saikia, Sr. Zool. Asstt., delivered a lecture on Animal Diversity for the visiting students of Mariam Ajmal Women's College, Hojai, Assam on 15th December, 2021.
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Storyline

Expedition to Jingkien Jri: Living Root Bridge Cultural Landscape of Meghalaya



Community-Led Landscape Management Project, Meghalaya Basin Management Agency, Government of Meghalaya organised a preparatory field visit of ZSI Scientists to assess Community and Science-based Conservation, Research and Development

of Jingkien Jri: Living Root Bridge Cultural Landscape of Meghalaya and a National Convention on 22nd December 2021 at State Convention Centre, Shillong. The Honorable Chief Minister of Meghalaya, Conrad K. Sangma emphasised that the Living Root Bridges are symbiotic relationship between human and

nature and now there is need to adopt a balanced approach between economy and ecology, and voted for tag of UNESCO World Heritage Site. The Principal Scientific Advisor to Govt. of India, Prof. K. Vijay Raghavan, community people and Living Root Bridges co-operative societies were among the

participants. Dr. Dhriti Banerjee, Director, ZSI highlighted importance of faunal diversity to meet criteria IX and X of UNESCO and preparing health cards for Living Root Bridges.

The Living Root Bridges (LRB) of Meghalaya highlights socio-cultural links

between people and nature. A team of ZSI Scientists visited East Khashi Hill, Meghalaya for assessment of faunal diversity in the Living Root Bridge sites from 14th to 20th December 2021. Dr. Dhriti Banerjee, Director, ZSI (Team Leader) planned execution of the Living Root

Bridge survey and Dr. Bikarmjit Sinha, Scientist E, North Eastern Regional Centre, ZSI served as Field Coordinator, the team of ZSI Scientists was comprised of Dr. Rifat Raina, Scientist D, DRC; Dr. Anil Kumar Dubey, Scientist D, ANRC, Port Blair; Dr. Devi Shankar Suman, Scientist D, HQ, Kolkata, Dr. Manpreet Singh Pandhar, Scientist C, HQ, Kolkata; Dr. T. Kubendran, HARC, Solan; Dr. Rahul Joshi, Scientist C, GPRC, Patna; Dr. Uttam Saikia, Scientist C and Dr. Dhimas from NERC, Shillong.

The team documented 83 fauna (6 mammals, 5 aquatic, 72 terrestrial) from the 11 Living Root Bridges (Wah Sohot, Umyingoh, Kutsiej, Iap-Paka, Tyrpa Mawloh, Jri Lyntang, Mawsiang Oyrdi, Wah Mynrieng Rit, Wah Salang, Wah Rithang, Nohwet). Six species of mammals were reported for the first time from two bridges. A fruit bat *Macroglossus sobrinus* K Anderson was found with seeds in spit and seemed to be a potential seed disperser which need further investigation. Entomofaunal diversity includes eight orders (2 Aquatic, 6 Terrestrial) within the radius of 200 mtr of Living Root Bridges assessed. *Aedes albopictus*, a vector of viral diseases identified and stone holes in Living Root Bridge streams were found containing mosquito larvae. Among pollinators, a bumble bee, *Bombus haemorrhoidalis* Smith and five *Aphis* bee were observed in the surroundings of *Ficus* tree. The possible role

of these species in *Ficus* pollination needs to be assessed. The sap-sucking insects include two *Ficus* feeding whiteflies from Living Root Bridge trees and one *Phyrorhoridae*. A Living Root Bridge site, Nohwet, a famous tourist destination, was observed having more diversity of butterflies, dragonflies and aquatic insects than other Living Root Bridges. No infestation of *Isoptera* (termites) observed in any of the root bridge. Spider webs were visible on tree trunk. Additionally, six possible new species are likely to be described from LRB survey. The terrestrial insects include insect orders, *Blattodea* 1, *Coleoptera* (1), aquatic beetles (6 ex.), *Diptera* (7, 17 ex.), mosquitoes 4 (38 ex.); *Hemiptera* (6), Aquatic bugs (3, 20 ex.), *Aleyrodidae* (2 species on LRB *Ficus* tree); *Hymenoptera* 15: Bumble bee 1 (7 ex.), *Apidae* 5 sp. (8 ex.), *Ichneumonidae* 9 (1 possible new); *Lepidoptera* 18 (11 sp. of butterflies; 7 species sp. of moths, 18 ex.); *Odonata* 7 (4 dragonfly, 3 damselfly); *Arachnida* 2. Collection towards LRBs includes 16 species (*Aleyrodidae* 10, *Elateridae* 1, *Mutillidae* 1, *Oedemeridae* 1) and 3 mosses.

Aquatic insect taxa *Ephemeroptera*, *Plecoptera* and *Trichoptera* (EPT) significantly contribute to wetland food chain, particularly in lotic habitats, and functioning of the bio-geo-chemical cycle. Larvae and

adults prey on micro invertebrates, leaf litters and remnants of vertebrate. They are recognized as biological indicator for wetland ecosystem function and water quality. Living Root Bridge survey revealed presence of five species (35 examples) of *Ephemeroptera* belonging to three genera in three families): *Epeorus* (*Epeorus*) *aculeatus* (Braasch, 1990); *Epeorus* (*Epeorus*) *bifurcatus* Braasch & Soldán, 1979; *Baetis simplex* (Kapur & Kripalani, 1961); *Choroperpes* (*Dilatognathus*) *nigella* Kang & Yang, 1994; *Choroperpes* (*Choroperpes*) *kaegies* (Selvakumar et al., 2017) and two species of *Trichoptera*. Biological Monitoring Working Party (BMWP), USA determined scores for aquatic taxa are generally used to access the health of the water bodies. Further explorations, integrative taxonomy, larval and adult assemblage using modern molecular techniques, phylogeography, effects of habitat fragmentation, climate changes and anthropogenic activities on aquatic insects are required.

Anil Kumar Dubey
ZSI, Port Blair

OBITUARY

Dr. Asoke Kumar Das, former Joint Director of Zoological Survey of India, passed away on 25th December 2021. As an expert in the field of Protozoa he has trained many scientists and contributed several publications to Protozoology. He was instrumental in setting up the Andaman Nicobar Regional Centre and served as the first officer in Charge in that station. Dr. Das has co authored the first consolidated documents on the fauna of Andaman: Glimpses of Andaman and Nicobar Islands and Sea shores of Andaman and Nicobar Islands. Later he served as the Head of Office in ZSI, Kolkata. We extend our heartfelt condolences to the family members of the departed soul.



Dr. Asoke Kumar Das