



ZSI e-NEWS

The Monthly Electronic Newsletter of Zoological Survey of India

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December 2013

ZSI in the 98th years of Service to the Nation (1916 to 2013)

From the Director's desk

Like most of you, I was also thinking of celebrating and inviting the new year with great fervour but all of a sudden I got engulfed in a gloom after receiving the sad news of Prof. T.C. Nerendran's untimely demise. I hope that many of you will definitely know Prof. Narednran's contribution to insect taxonomy in general and taxonomy of parasitic wasps in particular. Considered as one of the best entomologists the country has ever produced, his loss is more to ZSI than to me personally. He was a member of our Research Advisory and Monitoring Committee (RAMC) as well as Chairman of PAC - South Zone, besides guiding many of his students in universities across India. Many of his past students are with ZSI as scientists and researchers. His discovery of more than 1000 new species of insects and publication of 350 plus research papers have earned him many prestigious awards including the Janaki Ammal Taxonomy Award besides being recognised as a member of many scientific associations within and outside India. His enviable track record of scientific excellence will require exemplary hard work and dedication by anyone to replicate in India. I pray to almighty that his revered soul may rest in peace and also send my heartfelt condolences to his bereaved family members and his scientific fraternity.

Dr. K. Venkataraman
Director, Zoological Survey of India, Kolkata

Back issues of *ZSI e-NEWS*
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Headquarters, Kolkata

Extensive field surveys have been undertaken in the States of Maharashtra, Chhattisgarh, Arunachal Pradesh and West Bengal.

During the month, scientists of HQ have identified 28 species of Protozoa, 50 species of Hermatypic corals, 5 species of Platyhelminthes, 9 species each of Earthworms and Leeches, 5 species of Collembola, 10 species of Coleoptera, 5 species of Lepidoptera, 6 species of Hymenoptera, 2 species of Orthoptera, 23 species of Hemiptera, 11 species of Crustacea, 30 species of Fishes and 2 species of Mammals from the States of Himachal Pradesh, Maharashtra, Andhra Pradesh, Assam, Karnataka, Kerala, Meghalaya, Gujarat, Tamil Nadu, Tripura, Uttarakhand, Odisha, Chhattisgarh, Uttar Pradesh, West Bengal, and Andaman and Nicobar Islands.

Cnidarian (hermatypic coral) *Lobophyllia* belonging to family Mussidae and Order Scleractinia from the earlier Kachchh surveys which is a new generic record to Kachchh reefs.

The species/subspecies *Antodynerus flavescens flavescens* (Fabricius, 1775) has been recorded newly from Andhra Pradesh, Assam, Chhattisgarh, Delhi, Gujarat, Kerala, Manipur, Pondicherry and Tamil Nadu. The species *Antodynerus limbatus* (de Saussure, 1852) has been recorded for the first time from Arunachal Pradesh, Assam, Delhi, Himachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Nagaland and Tripura.

Three paratypes of *Schistura phamhringi* sp. nov. deposited to NZC by Prof. Waikhom Vishwanath of Manipur University.

Identification and advisory services have been rendered on 29 lots of specimens received from different institutions and organizations. In addition to that, identification and advisory services have also been rendered to one research scholar Mrs. Santeshwari, Department of Entomology and Zoology, Varanasi on a total 20 exs. of collembola

belonging to 5 species under 5 genera and 4 families; Ms. Meenakshi Chib, Asst. Professor, Department of Zoology, University of Jammu on the identification of two species of freshwater crabs and report sent accordingly. Seven ladies hair clips of Chinese origin having bird feather on them have been received from The Deputy Commissioner of Customs (Prev.), Office of the Commissioner of Customs Preventive, New Delhi for identification. Report for the same as prepared by the Bird section of HQ office has been sent on 23 December, 2013. Dr. Gaurav Sharma, Scientist-C and Officer-in-Charge of Mammal & Osteology Section has identified the seized material received from the Deputy Field Director, Buxa Tiger Reserve (East), Alipurduar court, West Bengal and identified it as Tusk belongs to Asiatic Elephant *Elephas maximus* Linnaeus, 1758, and another seized material received from the D.F.O., Wildlife Division (III) Cooch Behar, West Bengal and identified it the osteological articles belonging to Leopard *Panthera pardus* (Linnaeus, 1758).

Thesis entitled "Biological Diversity of Cerambycid beetles infesting forest plants in Andaman and Nicobar Islands" received from Vishva Bharti, Shantiniketan was reviewed by Dr Kailash Chandra, Scientist-F and report sent on 23 December, 2013.

Shri S.S. Mohanty, Additional Secretary & Financial Advisor, MoEF, New Delhi, visited different Section and divisions of ZSI on 11 December, 2013. Dr. S.P.S Kushwaha, Group Director, P.P.E.G, & Head, Forestry & Ecology Dept. Indian Institute of Remote Sensing, ISRO, Dehradun, visited the different Section on 13 December, 2013. Dr. Kushwaha also gave a power-point presentation on 'Biodiversity Monitoring and Assessment in India' to the scientist of ZSI.

Mr. M. Aaron Owen, Ph.D. Scholar from City University of New York- Queens College, New York working on fellowship at Wildlife

Institute of India has visited the Mammal & Osteology Section for study of the Javan Mongoose *Herpestes javanicus* specimens on 12 December, 2013.

On behalf of the Director, ZSI, Dr. K.A. Subramanian, Scientist-C has represented Programme Steering Committee (PSC) meeting of the National Biodiversity Authority (NBA) on 11 December, 2013 at MoEF, New Delhi. Dr. G. P. Mandal, Scientist-C, has attended the '10th National Symposium on Soil Biology and Ecology' held at GKVK, Bangalore from 19-21 December, 2013 and presented two research papers. Dr. Gaurav Sharma, Scientist-C & Officer-in-Charge of Mammal & Osteology Section has attended meeting on celebration of Taxonomy Congress to be held from 10-12 March, 2014 at New Delhi under Chairmanship of Director, ZSI on 10 December, 2013. Smt. Ava Sar, Assistant Zoologist presented a paper on "New records of soil associated rove beetles (Coleoptera: Staphylinidae: Paederinae) from Uttar Pradesh, India, in a National Seminar at Coimbatore from 19-21 December, 2013.

Drs. Kailash Chandra, Scientist-F and Additional Director, Gopinathan Maheswara, Scientist-C and Basudev Thripathy, Scientist-C have attended the 27th Regional Council Meeting (JCM) held at Marine Aquarium-cum-Research Centre, Zoological Survey of India, Digha on 9 December, 2013 under the Chairmanship of Director, Zoological Survey of India.

Dr. K. Venkataraman, Director, ZSI Chaired the 27th Regional Council Meeting (JCM) held at Marine Aquarium-cum-Research Centre, ZSI, Digha on 9 December, 2013. Dr. K. Venkataraman, Director, along with Dr. Viswanath D. Hegde, Scientist-C has attended the 6th meeting of the Advisory Committee for Ecosystem Research Programme held from 1-3 December, 2013 at MoEF, New Delhi. Dr. Venkataraman also attended the Re-union meeting of ZSI Ex-Employees on 6th December, 2013 at ZSI, Headquarters and also presided over the function. Dr.

Venkataraman, also held a meeting with Shri S. S. Mohanty, Additional Secretary and Financial Advisor, Ministry of Environment and Forests (MoEF), New Delhi on 11 December, 2013 at ZSI, Headquarters and gave a presentation on the overall activities including budget of ZSI. Dr. K. Venkataraman, also attended the executive meeting of Zoological Society, Kolkata on 20 December, 2013.

Publications

- Jasmine P., Lubna A. K., Mills, C.E., Ghielani, H., and Marzouki, M.A. (2013). *Timoides agassizii* Bigelow, 1904, little-known hydromedusa (Cnidaria), appears briefly in large numbers off Oman, March 2011, with additional notes about species of the Genus *Timoides*. *Zootaxa* 3746(2): 372-382.
- Hazra, A.K., and Mandal, G.P. (2013) Soil Fauna for the soil fertility. *Bionotes* 15(4): 113-115.
- Hassan, M. E., and Biswas, B. (2013) Record on some Stink bugs (Hemiptera: Pentatomidae) from Maharashtra, *Proceedings of NCIDS, A.M.U., Aligarh*: 20-28.
- Biswas, B., Hassan, M. E., and Mukherjee, P. (2013) On an Account of Assassin Bugs (Hemiptera: Heteroptera: Reduviidae) of Maharashtra, *Proceedings of NCIDS, A.M.U., Aligarh*: 11-16.
- Das, K.S.A., Subramanian, K.A., Emiliyamma, K.G., Palot, M.J., and Nishadh, K.A. (2013). Range extension and larval habitat of *Lyriothemis tricolor* Ris, 1919 (Odonata: Anisoptera: Libellulidae) from southern Western Ghats, India. *Journal of Threatened Taxa* 5(17): 5237-5346.
- Gupta, S.K., and Chandra, K. (2013) Annotated list of Orthopteran Insect Pests in India. *Bionotes* 15(4): 117-122.
- Girish Kumar, P., and Carpenter, J.M. (2013). A taxonomic review of the genus *Antodynurus* de Saussure, 1855 (Hymenoptera: Vespidae: Eumeninae) from

the Indian subcontinent. *Zootaxa* 3731(2): 267-278.

- Chandra, K. and Kushwaha, S. (2013) New records of Cassidinae (Coleoptera: Chrysomelidae) from Madhya Pradesh. *Natl. Wrkshp. Biomol.Parasit. Res. Sust.*, 3-5 Dec. 2013: p.47.
- Mandal, G.P., and K.K.Suman. (2013) Studies on Diversity of Soil Micro-Arthropods Fauna in Sajnekhali Wild Life Sanctuary, Sundarbans, West Bengal.

Abstract published in 10th National Symposium on Soil Biology and Ecology at GKV, Bangalore from 19- 21 December, 2013. Pp. 57.

- Hazra, A.K. and G.P. Mandal. (2013) The Biodiversity and Colonization of Collembola At Nayachar Island, West Bengal. Abstract published in 10th National Symposium on Soil Biology and Ecology at GKV, Bangalore from 19 - 21st December, 2013.pp. 60.



Shri. S. S. Mohanty, Additional Secretary and Financial Advisor, MoEF, New Delhi visited HQ, ZSI.



Shri. S. S. Mohanty interested with staff of ZSI during his visit to ZSI HQ.



Shri. S.S. Mohanty, visited various Sections of ZSI during his trip to HQ office.

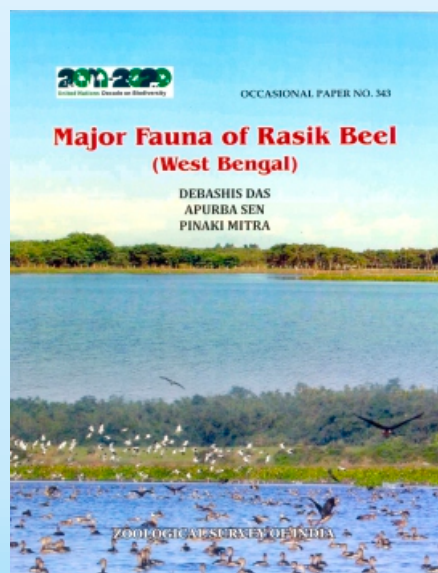
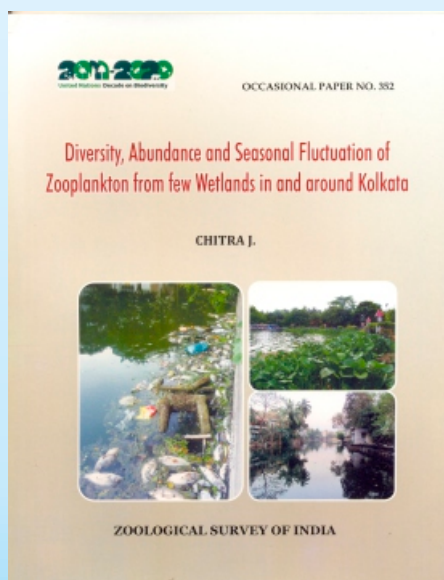
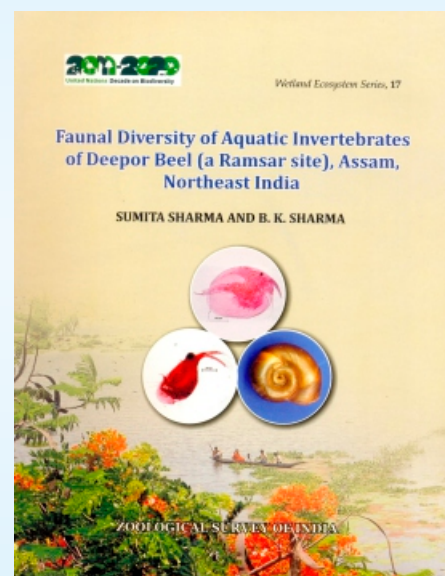
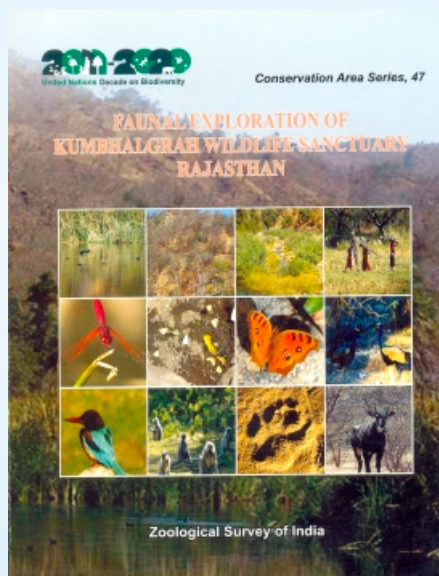
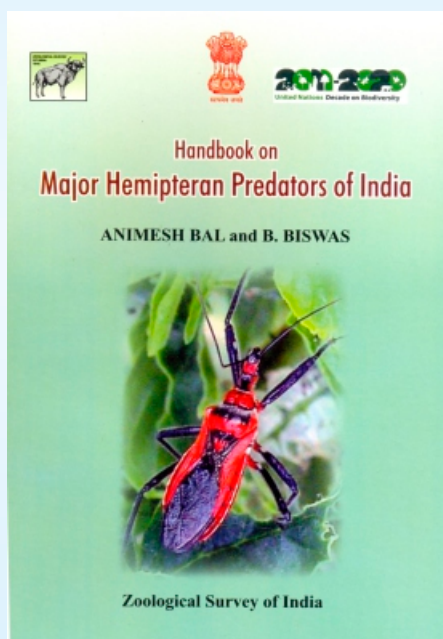


Dr. S.P.S. Kushwaha, Group Director, P.P.E.G., & Head, Forestry & Ecology Dept. Indian Institute of Remote Sensing, ISRO, Dehradun, visited ZSI on 13 December, 2013.



Director, ZSI along with staff during sports day celebrations organised by the Recreation Club of ZSI.

Publications of ZSI:



Andaman & Nicobar Regional Centre, Port Blair

Marine faunistic surveys have been conducted in the Landfall Island, Trilby Island, Table Delgarno Island, Table Exelsior Island and Lauki Island in North Andaman from 14-20 December, 2013 and Rutland Island on 5 December, 2013 while 13 days of local survey has been conducted for the terrestrial fauna of South Andaman during different dates.

A total of 400 species includes, 159 species of scleractinian corals, 10 species of gorgonians, 7 species of polyclads, 4 species of sea anemones, 8 species of opisthobranchs, 34 species of echinoderms, 50 species of gastropods, 5 species of crabs, 2 species of shrimps, 2 species of lobsters, 3 species of ascidian, 40 species of fishes and one species of turtle were identified from marine habitat while, 10 species of insects, 14 species of butterflies, 2 species of amphibians, 2 species of lizards, 1 species of snake and 47 species of birds have been identified/observed from the terrestrial environment. Among the identified species, a total of 139 specimens comprised of 70 specimens of corals, 50 specimens of molluscs, 2 specimens of dipterans, 2 specimens of dragonflies and 15 specimens of butterflies have been registered in the National Zoological Collections of ZSI.

Besides, three species of scleractinian corals *Acropora acuminata* (Verrill, 1864), *Acropora meridian* Nemenzo, 1971 and *Anacropora spinosa* Rehberg, 1892; three species of polyclads *Pseudoceros stimpsoni* Newman & Cannon 1998, *Prosthiostomum trilineatum* Yeri & Kaburaki 1920 and *Phirkoceros fritillus* Newman & Cannon, 1996 are new records to India while, a fish *Himantura granulata* (MacLeay, 1883) is new to Andaman and Nicobar Islands. Two books entitled 'Littoral Faunal Diversity of Great Nicobar Island', and 'Diversity of Reef Associated Macrofauna of Rutland Island' have been submitted to ZSI HQ for publication. As requested by the Wildlife Warden, Gulf of Mannar, a proposal on 'Status survey of coral reefs in Gulf of

Mannar Biosphere Reserve' has been submitted. REIA study proposal entitled 'Studies on the biotic components of proposed extension of existing jetty, construction of wet basin, LST loading ramp and jetty augmentation for Indian Navy at Haddo, Port Blair' has been submitted to the Indian Navy, Ministry of Defence on request.

Dr. C. Raghunathan, Scientist-C & Officer-in-Charge has served as a member in the selection committee for the recruitment of Net Mender in Fishery Survey of India, Port Blair on 1-2 December, 2013. Dr. C. Sivaperuman, Scientist-C has delivered a lecture on 'Wildlife census technique' at Forest Training School, Wimberligunj, South Andaman on 2 December, 2013, 'Bird census techniques' in Navy Office, Port Blair on 19 December, 2013 and he also attended a training course on 'Role of scientists in natural resources and environment management' at Indian Institute of Forest Management, Bhopal, Madhya Pradesh during 9-13 December, 2013. Mr. P.T. Rajan, Senior Zoological Assistant has delivered a lecture on 'Faunal diversity of Andaman and Nicobar Islands' on 3 December, 2013 at Forest Training School, Wimberligunj, South Andaman.

Publications

- Mondal, T., Raghunathan, C., and Venkataraman, K. (2013) Phenotypic plasticity of *Cycloseries somervillei* (Scleractinia: Fungiidae) in Andaman and Nicobar Islands. *Indian Journal of Geo-Marine Sciences* 42(5): 611-616.
- Sivaperuman, C. and Baqri, Q.H. (2013) Faunal ecology and conservation of the Great Indian Desert. In: Faunal Heritage of Rajasthan, India: Conservation and Management of Vertebrates (Eds.) Sharma, B.K., Kulshreshtha Seema, Rahmani, A.R., Springer International Publishing, Switzerland, p.113-133.



Coral *Acropora cerealis* Dana, 1846



Coral *Pocillopora eydouxi* Milne Edwards & Haime, 1860



Lobster *Panulirus versicolor* Latreille, 1804



Opisthobranch *Chromodoris elisabethina*



Polyclad *Pseudoceros stimpsoni*



Reef fish *Pomacanthus annularis* Bloch, 1787



Reef fish *Pterocaesio tile* Cuvier, 1830



Reef fish *Pterois antennata* Bloch, 1787

Western Ghat Regional Centre, Kozhikode (Calicut)

During the month, the descriptions of 7 new species of Hymenoptera viz., *Miscogasteriella bijoyii* (Pteromalidae), *Conostigmus neotubifer* (Ceraphronidae), *Metapelma periyaricum*, *Metapelma kokkaricum*, *Calosota idukkiensis*, *Calosota iochroma* and *Tetrastichus demonaxi* (Eupelmidae), one new record of a Sri Lankan processional termite species, *Hospitalitermes monoceros* and one range extension of Odonata species, *Lyriothemis tricolor* published by the scientists of the Centre. In addition to the above species, scientists of the Centre have identified 13 species of Pteromalidae (Hymenoptera), 4 species of Platygastriidae (Hymenoptera), 9 species of Odonata, 4 species of Butterflies and 2 species of Reptilia. The Centre has received 5 species of marine fishes including one Neotype, from the researchers of National Bureau of Fish Genetic Resources Centre (NBFGR), Cochin. During the month, 07 papers have been published. 06 identification and advisory services have been rendered. Dr. P.M. Sureshan, Scientist-C and Dr. Muhamed Jafer Palot, Asstt. Zoologist, have attended the training on "Science communication through print media" conducted by National Institution of Science Communication and Information Resources NISCAIR, New Delhi from 16-20 December, 2013. Dr. P.M. Sureshan, Scientist-C, has delivered a talk on the 'Role and functions of ZSI and environmental problems in India'; Dr. K. Rajmohana, Scientist-C, has delivered a lecture on the Biodiversity and Climate Change; K.G. Emiliyamma, Scientist-C, has delivered a talk on 'Diversity of Dragonflies and Damselflies of Kerala' and Dr. Md. Jafer Palot, Asstt. Zoologist, has delivered a talk on "Mangrove biodiversity of Kerala" to the students of Special Project for Gifted students at our Centre on 27 December, 2013 organized by Department of General Education, Govt. of Kerala. Dr. V. S. Vijayan, Ex. Director of SACON and member of Gadgil Committee

also addressed the students of the above programme during his visit to the Centre on 27 December, 2013.

K.G. Emiliyamma, Scientist-C, has delivered a lecture on the "Importance of Western Ghats" to the Kairali Swayam Sahaya Sangham annual meeting at Kadalundi on 29 December, 2013. Dr. Md. Jafer Palot, Asstt. Zoologist, has delivered a lecture on the 'Importance of Kottooli Wetlands' at the nature camp organized by Providence Women's College, Calicut on 24 December, 2013 at Sarovaram Biopark, Calicut. Dr. K. Rajmohana, Scientist-C, functioned as an examiner for Ph.D Course work examination-2013, at Department of Zoology, University of Calicut on 18 December, 2013. Dr. P. M. Sureshan, Scientist-C, has supervised the research project of two researchers of the Centre and Dr. K. Rajmohana, Sci.C, supervised the research projects of four researchers for their doctoral degree.

The Centre has participated in an All India Exhibition organized by the Payyoli Grama Panchayat at Payyoli, Kozhikode and set up a stall of exhibits on 18-24 December, 2013. The Centre also has participated in the joint Hindi Competitions-2013, organized by TOLIC, on 16 December, 2013 and won prizes for Hindi elocution and Hindi Patriotic song. In connection with the sighting of 'Comet ISON' a sky watch programme was conducted at the Centre on 4 December, 2013, in collaboration with Regional Science Centre and Planetarium, Calicut. During the month, 511 visitors paid their visits to the museum.

Publications

- Sureshan, P.M., and Nikhil, K. (2013) Taxonomic studies on *Miscogasteriella* Girault from India with the description of a new species from southern western Ghats, Kerala (Hymenoptera: Chalcidoidea: Pteromalidae) *Journal of Entomological Research* 37 (3): 273-276.

- Sureshan, P.M. (2013) Indian biodiversity: status, threats and conservation. In Ghosh, S.M. *et al.*, Biodiversity conservation challenges and prospects. Proceedings of National seminar on Biodiversity conservation held at Govt. College, Kasaragod, Kerala pp.1-14.
- Bijoy, C., Rajmohana, K., and Kumar, R. (2013) First report of the genus *Conostigmus* Dahlbom (Hymenoptera: Ceraphronoidea: Megaspilidae) from India with description of a new species. *Biodiversity Data Journal* 1: e991. doi: 10.3897/BDJ.1.e991.
- Amina, P., Rajmohana, K., Bijoy, C., Radhakrishnan, C., and Saha, N. (2013) First record of the Srilankan processionary termite, *Hospitalitermes monoceros* (Konig) (Termitidae: Nasutitermitinae) from India. *Halteres*. Volume (4): 48-52.
- Narendran T.C., Rajmohana, K., Peter, A., & Bijoy, C. (2013). Taxonomic studies on some Chalcidoidea (Hymenoptera) associated with Xylophagous beetle *Demonax decorus* Gahan (Coleoptera: Cerambycidae) from Kerala (India) with descriptions of five new species. *Samagra*. (9): 3-22.
- Das, K.S.A., Subramanian, K.A., Emiliyamma, K.G., Palot, M.J. and Nishadh, K.A. (2013) Range extension and larval habitat of *Lyriothemis tricolor* Ris, 1919 (Odonata: Anisoptera: Libellulidae) from Southern Western Ghats, India. *J. Threatened Taxa*: 5(17): 5237-5246.
- Palot, M.J. (2013) Uragngal: Analikal (Reptiles: Vipers) Koodu- An environmental Magazine in Malayalam. 1(8): 44-45.



Dr. V.S. Vijayan, Ex. Director, SACON and Member Gadgil Committee addressing students at the Centre.



K.G. Emiliyamma, Sci.C address the students in an interaction programme at the Centre.



A view of the ZSI stall at the Exhibition organized at Payyoli, Kozhikode.



Herbertia indica (Howard): Hymenoptera : Pteromalidae



Metapelma kokkaricum sp.nov. (Hymenoptera : Eupelmidae)



Metapelma periyaricum sp.nov. (Hymenoptera: Eupelmidae)



Hospitalitermes monoceros (Insecta : Isoptera)

Estuarine Biology Regional Centre, Gopalpur-on-Sea

During the month, three local surveys have been conducted one each at Subhadra River Estuary, Rishikulya Estuary and Bahuda Estuary on 4th, 7th, and 17th December, 2013, respectively. A total of 411 specimens have been collected pertaining to different groups of aquatic insects. Seven species of molluscs under 5 genera and 5 families have been identified from 61 examples collected from Himachal Pradesh. A local survey has been conducted at Subadhra Estuary, Ganjam, Odisha on 20 December, 2013 and 232

specimens belongs to crab, aquatic insects and mollusks have been collected. Six mollusca species belong to 3 Families have been found from 12 examples collected from Kalipali station, Subadhra estuary. Nine mollusca species under 6 Families have been studied from 30 examples collected from Jageswar station, Bharuch, Narmada estuary. Fifteen museum specimens have been digitized and their metadata entered. About 30 visitors have visited the National Zoological Collections kept at the Centre.



Survey team at Subhadra Estuary



Collection of benthos fauna with different gears



Mollusca Bed at Narayanpur, Subhadra Estuary



Larvae and Adult of specimen of Chironomidae



Ceryle rudis



*Ocyrceros
birostris*

Sunderbans Regional Centre, Canning

During the month, scientists of the Centre have identified 19 specimens of insects and registered, which include 12 examples of

Orthoptera, 05 examples of Odonata, and 02 examples of Lepidoptera.

Northern Regional Centre, Dehradun

One general faunistic survey has been undertaken to Sultanpur Bird Sanctuary & National Park, Haryana and representative fauna collected, besides observing 75 species of birds and 4 species of mammals. Faunal identification during the month includes: 3 species amphibia, 4 species of acridoidea, 12 species of soil nematodes from Punjab; 7 species of soil nematodes from Haryana; 6 species of soil nematodes from Govind WLS (Uttarakhand) and 15 species of soil nematodes from Dehradun.

DNA was extracted by Phenol-Chloroform method (Sambrook & Russel, 2001) from 5 samples of 2 species of Lycaenid family namely, *Chaetoprocta odata* (Hewitson) and

Euaspa milionia (Hewitson) whereas, 700bp Amplicon of COI gene using Universal primers obtained from 5 samples of three species of Lycaenidae butterflies and 12SrRNA gene (500 bp) amplification obtained in duplicate for *Felis chaus* (Screber), Jungle cat and Asian Golden Cat *Pardofelis temminckii* (Vigors & Horsfield) from old skins.

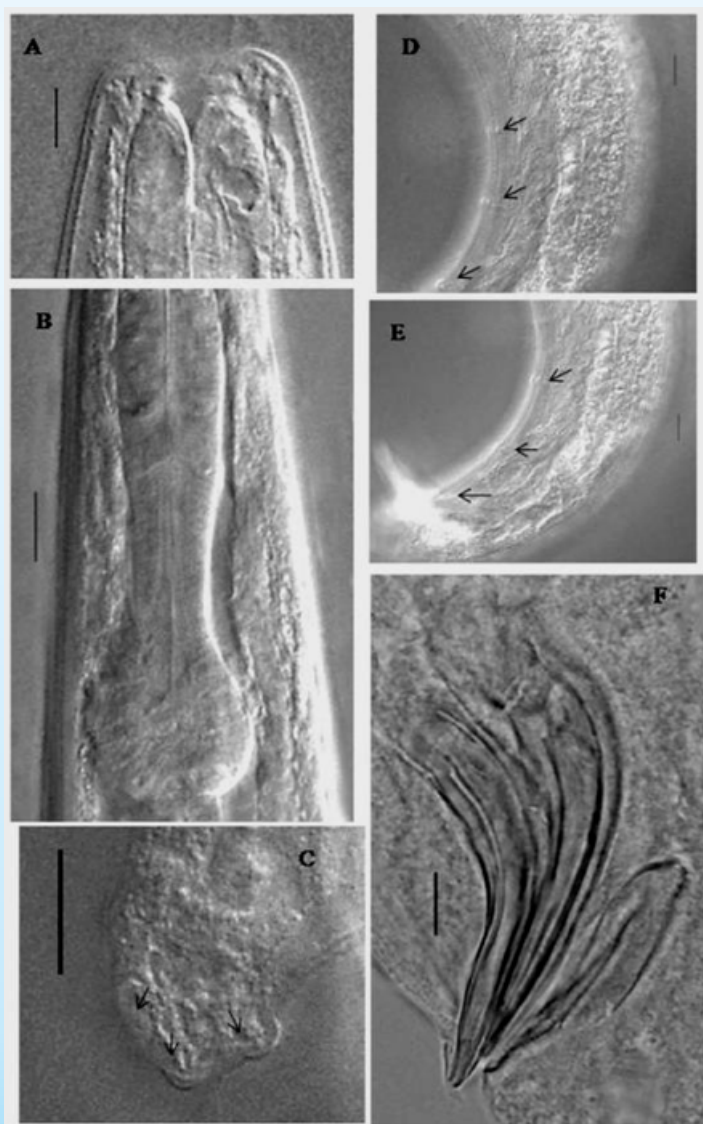
Cross Sections have been prepared from PGH of Jungle cat *Felis chaus* (Screber), and Asian Golden cat *Pardofelis temminckii* (Vigors & Horsfield) (all dorsal, ventral, head and tail) and 425 permanent slides have been prepared for nematodes collected from Punjab, Sultanpur NP, Dehradun and Govind WLS surveys, for morphological studies.

During the month, we have registered 3 species of Amphibia, 4 species of Acridoidea and 29 species of soil nematodes. Ten database entries of nematodes have been made in invertebrate datasheet. Digitization of 30 amphibia species and 60 images have been undertaken during the month and their metadata entered accordingly.

Dr. P.C.Tak, Scientist-D, Dr A. N. Rizvi, Scientist-C, Dr Archana Bahuguna Scientist-C, have been invited as experts to attend a brain-storming session on "Ecosystem Services" during 8th Uttarakhand State Science & Technology Congress (USSTC) 2013 on 26 December, 2013. Dr. Vinita Sharma, Scientist-C has attended the 8th Uttarakhand State Science & Technology Congress from 26-28 December, 2013 held at Doon University, Dehradun. Fifteen students visited the museum and library of NRC in December 2013.

Entomopathogenic nematode new to science published:

Male *Steinernema dharanaii* Kulkarni *et al* 2012. A. Anterior region. B. Pharynx. C. Posterior region. D & E. Preanal papillae. F. Spicules and gubernaculums. Scale bar: 10µm.



Publications

- Bahuguna, A. (2013) Geographic distribution, New record of *Fejervarya pierrei*, Pierre's cricket frog, India, Kalesar National Park & Wildlife Sanctuary Haryana. *Herpetological review* 44(4): 620.
- Bahuguna, A., and Radhakrishnan, C. (2013) Trichotaxonomy of Travancore Flying Squirrel, *Petinomys fuscocapillus* (Jerdon) (Mammalia: Rodentia: Sciuridae) and comparative study with other Indian species of Flying squirrels. *Biosystematica* 7(1): 33-42.
- Kulkarni, N., Rizvi, A.N., Kumar, V., Paunekar, S. and Mishra, V.K. (2012) Morphological and molecular characterization of *Steinernema dharanaii* sp. n. (Nematoda: Steinernematidae), an entomopathogenic nematode from India. *Indian Journal of Tropical Biodiversity* 20(2):107-116.
- Rizvi, A. N. and Srivastava, S. (2013) Diversity and Abundance of Bacterivore and Fungivore nematodes in Mango Orchards of Dehradun (Uttarakhand), India. *Trends in Biosciences* 6(6): 850-853.
- Sharma, V. (2013) A Preliminary Study on Nematodes In Govind Wildlife Sanctuary, Uttarkashi, Uttarakhand, India. *Ann. For.*, 21(1): 92-94.

Marine Aquarium & Regional Centre, Digha

During this month, around 126 examples of live marine ornamental exhibits have been collected for exhibition in aquarium galleries and the aquarium received an average of about 1200 tourists per day, but around 4000 tourists visited our aquarium on 25 December 2013. A survey tour to collect ornamental fauna of East coast of India has been carried out in along Andhra coast and 222 specimens have been. In total, 10 nematode specimens and 134 fish specimens have been identified. The identified specimens include, two fishes from family Scorpaenidae i.e. *Parascorpaena aurita* and *Neomerinthe rotunda* which are first records from Indian Coast. The 27th Regional Council Meeting (RCM) was held at MARC, ZSI, Digha on 9 December, 2013 and the meeting was presided by Dr. K.

Venkataraman, Director Zoological Survey of India. Students from Guruchran College, Silchar, Assam have visited the Marine Aquarium and museum of this Centre on 21 December, 2013.



Students from Guruchran college, Silchar, Assam at MARC, ZSI, Digha



Neomerinthe rotunda Chen, 1981



Parascorpaena aurita (Ruppell, 1838)



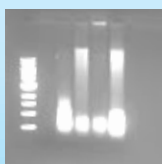
27th Regional Council meeting at MARC, ZSI, Digha



Freshwater Biology Regional Centre, Hyderabad

Scientists of the centre conducted one local survey to Shameerpet Lake, Medak Dist., A.P. and collected 114 examples of aquatic insects and 221 examples of other invertebrates; and one survey to Gobind Sagar Reservoir, H.P. for 10 days from 4-13 December, 2013 and collected 48 lots comprising zooplankton, invertebrates and aquatic insects. Examined 188 examples of freshwater faunal collections like molluscs: *Lamellidens marginalis*, *Parreysia pachysoma*, *Pila globosa*, *Bellamya bengalensis* f. *annandalei*, *Bellamya bengalensis* f. *colairenis*, *Melanoides peddamunigalensis*, *Melanoides tuberculata*; Ostracods: *Cypris subglobosa*, *Standesia elongate*, *Chrissia* sp., *Stenocypris* sp., *Hemicypris* sp., *Heterocypris* sp., *Plesiocypridopsis dispar*, *Candonocypris* sp.; Cladocerans: *Pseudosida bidentata*, *Diaphanosoma sarsi*, *Diaphanosoma excism*, *Ceriodaphnia cornuta*, *Macrothrix spinosa*, *Moina brachiata* and Rotifers: *Brachionus calyciflorus*, *Brachionus diversicornis*, *Lecane papuana* and *Keratella tropica*.

As part of the molecular taxonomy studies, the DNA Barcode laboratory of the Centre has isolated DNA from 4 aquatic insects

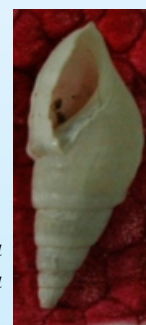


Lane 1: *Diplonychus rusticus*
Lane 2: *Laccotrephus griseus*
Lane 3: *Ranatra elongate*
Lane 4: *Cybister tripunctatus*

As part of the digitisation of the freshwater fauna, 47 specimens have been digitized pertaining to 19 species of Molluscs viz. *Angulyagra microchaetophora*, *Bellamya crassa*, *Bellamya dissimilis*, *Bellamya bengalensis*, *Bellamya bengalensis* f. *typica*, *Bellamya bengalensis* f. *annandalei*, *Bellamya bengalensis* f. *eburnea*, *Digoniostoma cerameopoma*, *Gyraulus labiatus*, *Gyraulus convexiusculus*, *Indoplanorbis exustus*, *Lamellidens marginalis*, *Parreysia favidens*, *Parreysia favidens* Var. *deltae*, *Melanoides peddamunigalensis*, *Lymnea (pseudosuccinea) acuminata*, *Pila globosa*, *Tarebia granifera* and *Tarebia lineate*.



Lymnea
(*pseudosuccinea*)
acuminata



Tarebia
granifera



Gyraulus
convexiusculus



Lymnaea
(*pseudosuccinea*)
acuminata



Sampling at Gobindsagar Reservoir



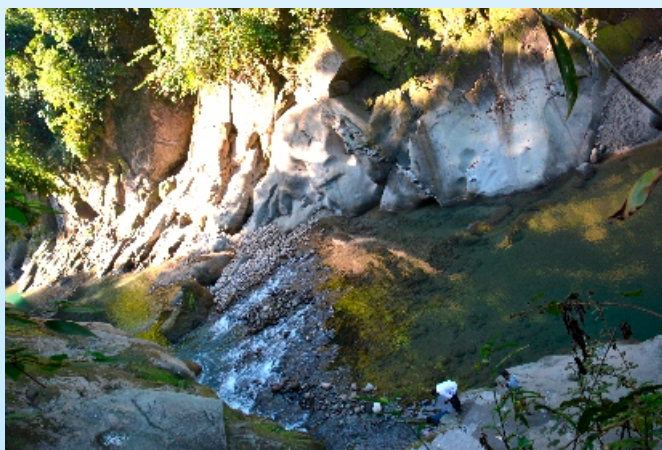
Sampling at Shameerpet Lake, A.P.

Arunachal Pradesh Regional Centre, Itanagar

During the month, a survey tour to West Siang district has been from 16-25 December, 2013 and collected 16 water samples for zooplankton studies. The team also collected around 850 examples of fish, 15 examples of amphibians and sighted about a dozen avian species and 3 species of mammals. Altogether, around 118 exs. of invertebrates have also been collected including 48 moths, 26 butterflies, 24 grasshoppers, 11 dragonflies, 3 damselflies, 6 hymenopterans and about 50 examples of aquatic insects. A local survey has been undertaken in Chimpu River and vicinity around Itanagar and 17 number of insects collected 10 exs. of butterflies, 2 exs. of

Noctuidae Moths, and 2 exs. of Damselflies and 3 exs. of spiders.

Nearly 115 examples of previously collected fishes have been studied and identified as belonging to 13 species under 9 families. Six species of butterflies have also been identified during the month. All the newly identified species have been given registration nos. and computerized. Twenty-nine identified old invertebrate specimens have been photographed and digitized during the month. A three-member team led by Dr. Jtirem Gogoi, Assistant Professor, Department of Zoology, Rajiv Gandhi University, Itanagar visited the Centre during the month.



Sampling at Akashi Ganga, Likabali, West Siang district



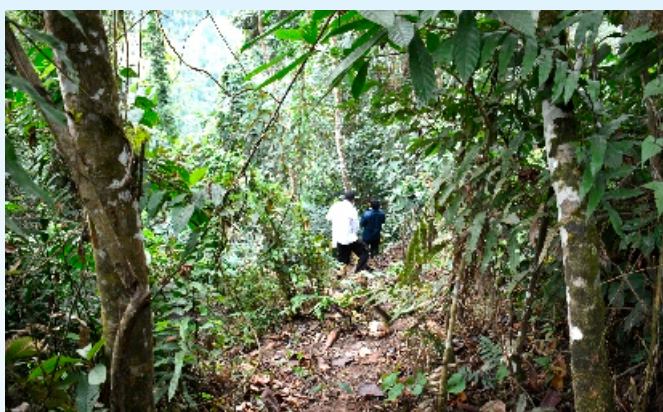
Lipum, the traditional way of fishing by Adi tribe



The survey team and local fisherman after use of Lipum in Kidi River, Basar, West Siang



Survey team getting ready for collection in Siji River



Sampling on Along-Boleng road



Plankton sampling in Siyom River, Along

Central Zone Regional Centre, Jabalpur

During the month, one field survey has been conducted from Ghatigaon Wildlife sanctuary district Gwalior, Madhya Pradesh. Scientists of the Centre have identified and registered 16 species of moths (Lepidoptera), 21 species of Odonata and 5 species of Hemiptera from Madhya Pradesh. Identification and advisory services have been rendered to Dr. Varsha Zade, Associate Professor, Department of Zoology, Govt. Vidarbha Institute of Science & Humanities, Amravati, Maharashtra for identification of mammalian bones isolated

from pellets of owl and have been identified into 2 species under 3 genera. The identification report has been sent to the respective college.

Mr. Sandeep Kushwaha, Sr. Zoological Assistant has attended a national workshop on Bio-molecular Parasitology and Resource Sustainability, being organized by the Parasitology Laboratory, Department of Zoology, University of Allahabad, Uttar Pradesh from 3-5 December, 2013.

Moths of Ghatigaon Wildlife sanctuary, Madhya Pradesh identified from recent field survey



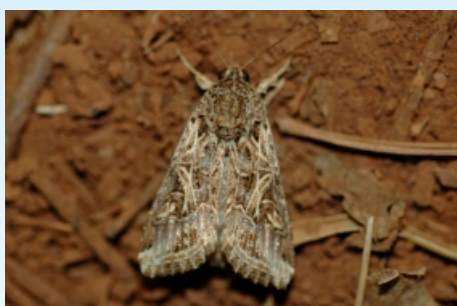
Hyposidra talaca Walker, 1860



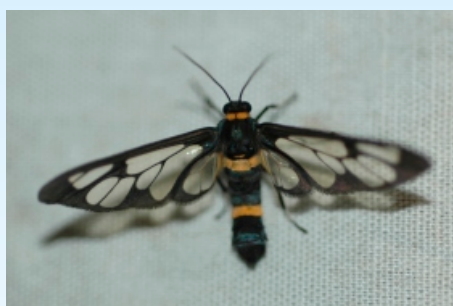
Timandra mundissima Walker, 1861



Ophiusa triphaenoides Walker, 1858



Spodoptera litura Fabricius, 1775



Syntomoides imaon Cramer, 1779



Orvasca subnotata Walker, 1865



Nausinoe perspectata Fabricius, 1775



Palpita vitrealis Rossi, 1794



Taragama siva Lef.

Marine Biology Regional Centre, Chennai

During the month, two extensive field surveys have been undertaken, one along the estuaries in various coastal zones of Tamil Nadu and another in mangroves of Bhitarkanika, Odisha. Representative samples have collected. Scientists of this Centre also identified eight species of Protozoans, ten species of Nematodes, three species of Bryozoans, six species of Arthropoda, eighteen species of Mollusca, two species of Echinoderms and seventeen species of Pisces out of the materials collected from Palkbay and Gulf of Mannar Biosphere Reserve. Sixty-

four species have been digitized and their metadata compiled. Drs. C. Venkatraman and Rajkumar Rajan, have supervised the research projects of SRF's of the Centre. During the month, around 1259 tourists have visited the marine aquarium and museum.

Publications

- Bindu. L. (2013) Records of some foraminifera from sea grasses of Palk Bay, Tamil Nadu. *Bionotes* 15(4):128-129.
- Sivaleela, G. (2013) A check list of meiofauna of Tamil Nadu Coast. *Bionotes* 15(4): 106-110.

*Centriscus scutatus**Siganus canaliculatus**Paraupeneus indicus**Valenciennnea wardi*

Gangetic Plains Regional Centre, Patna

Scientists of the Centre have identified the following molluscs during December 2013 such as *Digoniostoma pulchella*, *Bellamya bengalensis*, *Brotia costula*, *Melanoides tuberculatus*, *Thiara scabra*, *Thiara lineate*, *Lymnaea acuminata*, *Radix ovalis*, *Indoplanorbis exustus*, *Lamellidens mainwaringi*, *Radiatula caerulea*, *Radiatula lima*, *Radiatula occata* and *Parreysia faavidens*.

We have also identified 08 species of Noctuidae such as *Parallelia stuposa* (Fabricius), *Earias luteolaria* Hampson, *Earias chromataria* Walker, *Anomis leucolopha* Prout, *Simplicia bimarginata* Walker, *Digama hearseyana* Moore, *Digama insulana* Felder and *Ercheia cyllaria* Cramer. Dr Navneet Singh, Scientist-C of the Centre has guided Mr. Abhinav Saxena, JRF of Department of Zoology & Environmental Sciences, Punjabi University, Patiala for identification of his Geometrid collections. He was on visit from 18 December, 2013 to 10 January, 2014 to

GPRC, Patna.

Publications

- Singh, N., and Singh, J. (2013) New record of a genus and four species of family Arctiidae (Lepidoptera) from India. *Rec. Zool. Surv. India*: 113 (1).
- Kirti, J.S., Joshi, R., and Singh, N. (2013) Diversity of Lithosiin moths (Lepidoptera: Erebiidae: Arctiinae) from India. *Proceedings of the National conference on Insect Diversity and systematics: Special emphasis on molecular approaches held from October 28-30, 2013 in the Department of Zoology, Aligarh Muslim University, Aligarh*. Pp: 33-66.
- Kumar, R., Nesemann, H., Sharma, G., Tseng, Li-C., Prabhakar, A.K., and Roy, S.P. (2013) Community structure of macrobenthic invertebrates in the river Ganga in Bihar, India. *Aquatic ecosystem Health & Management* 16(4): 385-394.

Western Regional Centre, Pune

In December 2013, a total of 359 examples comprising of 5 species of Araneae, 10 species of Coleoptera, 2 species of Collembola, 3 species of Hymenoptera, 17 species of Lepidoptera, 12 species of Odonata, and 17 species of Pisces have been identified. Identification and advisory services have been rendered to Dr. S.M. Kumbar, Assistant Professor, Department of Zoology, A.C.S. College, Palus, on fishes and to Mr. M.M. Deshmukh, N.E.S. Science College, Nanded, Maharashtra. Besides, two surveys in the northern Western Ghats have been conducted for the collection of endemic freshwater fishes, Collembola, and general fauna beside one local tour to Kasarsai Dam in Pune district.

Dr. P.S. Bhatnagar, Scientist-C and Officer-in-Charge has attended an international conference on 'Biosciences with special reference to Environmental Issues' and also the 23rd Annual Session of the Academy of

Environmental Biology at the Department of Zoology, Shivaji University, Kolhapur and delivered an invited talk and chaired one session.

Publications

- Katwate, U., Paingankar, M., Jadhav, S. and Dahanukar, N. (2013) Phylogenetic position and osteology of *Pethia setnai* (Chhapgar & Sane, 1992), an endemic barb (Teleostei: Cyprinidae) of the Western Ghats, India, with notes on its distribution and threats. *Journal of Threatened Taxa* 5(17): 5214–5227.
- Patil, S.R. (2013) A Preliminary Study of Molluscan Fauna of Singhori Wildlife Sanctuary, Raisen, Madhya Pradesh, India. *Indian Forester* 139(10): 932–935.
- Patil, S.R., Sambath, S. and Bhandari, R. (2013) Preliminary Investigation on Spiders (Arachnida: Araneae) in Rani Veerangana Durgawati Wildlife Sanctuary, Damoh, Madhya Pradesh, India. *Indian Forester* 139(10): 943–946.

*Centriscus scutatus**Siganus canaliculatus**Paraupeneus indicus**Valenciennesa wardi*

Desert Regional Centre, Jodhpur

During the month, we have identified and registered 2 species of ants and 10 species of fish from the jurisdiction area. Eight species of ants also have been identified from Pinjore, Haryana. We have digitized 10 specimens from NZC for RFD. Dr. Sanjeev Kumar, Scientist-C and Officer-in-charge has conducted a 4th survey of the research programme on Exploration of Vertebrate Diversity of Chambal River in Rajasthan State from 13-24 December, 2013. Eighteen locations have been surveyed during the survey of entire Chambal River side of Rajasthan. Dr. Sanjeev Kumar, also has identified and recorded 3 species of amphibians, 14 species of reptiles, 144 species of aves and 13 mammalian species during aforementioned survey. Besides, 21 examples of fishes have also been collected. Dr. Sanjeev Kumar, also had delivered a lecture on fauna of Rajasthan and Gujarat to 79 students of class XII & XI (Biology) of Central Academy Senior Secondary School, CHB, Jodhpur on

10th & 11th December, 2013 at the Centre. Dr. H.S. Banyal, Scientist-C has provided scientific information on the fauna displayed in the museum of the Centre to 300 students of St. Anne's school, Jodhpur on 04 December, 2013 and to 49 students of XI and XII of Central Academy, CHB, Senior Secondary School, Jodhpur on 10 and 11 December, 2013. Dr. Sanjeev Kumar, has organized a quarterly workshop on Official Language Hindi on 31 December, 2013; all the officers and staff members have participated in the workshop.

Publications

- Kumar, S. (2013) Aves. Faunal Exploration of Kumbhalgarh Wildlife Sanctuary, Rajasthan. *Conservation Area Series* 47: 73-85 (Publ: Director, ZSI, Kolkata).
- Kumar, S. (2013) Mammals. Faunal exploration of Kumbhalgarh Wildlife Sanctuary, Rajasthan. *Conservation Area Series* 47: 87-101. (Publ: Director, ZSI, Kolkata).



Quarterly workshop on Official Language Hindi organized on 31st December, 2013 at the centre



School students visited the museum of the centre on 10th & 11th December, 2013

High Altitude Regional Centre, Solan

For December 2013, faunistic identification from the Centre includes 01 species of Amphibia (out of 02 examples), 02 species of earthworms (out of 13 examples) from the Cold Desert of Spiti Valley, Lahaul & Spiti (HP); 22 species of butterflies (out of 26 examples), 02 species of Pisces (out of 02 examples) from Kalatop Khajjiar WLS, Chamba (HP); 03 species of Orthoptera (out of 8 examples), 02 species of earthworms (out of 07 examples), 02 species of Pisces (out of 08 examples) from Chail WLS, Solan (HP) and 03 species of Pisces (out of 14 examples) from Haryana. Photographs of fauna and habitats from Ladakh, Spiti, Kalatop, Churdhar, Simbalwara, and Pangi representing various protected areas, remote areas and Trans-Himalaya ecosystems have been edited, sorted out and sent for development of LED frames for HARC, Museum and rough proof is under correction.

A survey has been conducted to Chail Wildlife Sanctuary on 17 December, 2013 and 57 examples of different animal groups have been collected. Forty-five examples from Kalatop and Churdhar WLS have been registered and digitized in data base. Officer-

in-Charge has attended the Himachal Pradesh Wildlife Board meeting Chaired by Honorable Chief Minister of Himachal Pradesh, Sri Vir Bhadara Singh at Shimla on 05 December, 2013 as a nominated member of The Director, ZSI. A scientist of the Centre has submitted an abstract at an international conference of Entomology to be held at Punjabi University, Patiala from 21-23 February, 2014.

Publications

- Kumar, C., Sidhu, A.K. and Rose, H.A. (2013) Status and Taxonomic notes on the rare butterfly, *Apharitis lilacinus* (Moore) (Lepidoptera: Lycaenidae :Theclinae) from Indian Himalayas. *Ann Entomol.* 31(1): 9-13.
- Biradar, M. D., Suresh, B., Siddaraju, M., Paliwal, R., Giraddi, R.S., Gai, P.B. (2013) Genetic diversity of earthworms from Western Ghats of Karnataka (India) using RAPD based molecular markers. *Biochem. Cell. Arch.*, 13(2): 237-242.
- Saini, K and Thakur, S.K. (2013) Synonyms of family Acrididae: Orthoptera (Insecta) of Himachal Pradesh. *J. ent. Res.*, 37(3): 285-287.



Danio rerio (Hamilton)



Parnassius jaquemontii

North Eastern Regional Centre, Shillong

During the month, 103 examples of aquatic and semi-aquatic Hemiptera from the backlog collections have been studied and identified. They have been identified as 11 species such as *Ptilomera* (*Ptilomera*) *laticaudata* (Hardwicke), *Metrocoris nigrofasciatus* Distant, *Hydrometra greeni* Kirkaldy, *Rhagovelia* (*Rhagovelia*) *ceylanica* Lundblad, *Montonepa erutus* (Montandon), *Laccotrephes ruber* (Linn.), *Ochterus marginatus marginatus* (Latreille), *Cymatia apparens* (Distant), *Sigara kemp* (Hutchinson), *Micronecta* (*Unguinecta*) *waltoniana* (Hutchinson) and *Diplonychus rusticus* (Fabricius).

During the month, 211 specimens of identified fishes belonging to 9 species have been photographed and their data digitized. The details of available Types species of fish from North East India deposited in different National and International Museums, Universities and Institutions have also been compiled.

During the month, one manuscript on the

Reptilian and Amphibian fauna of Loktak Lake and Keibul Lamjao National Park and its adjoining areas, Manipur has been revised and submitted for publication. The final report on the taxonomic and ecological studies on the earthworms (Annelida: Oligochaeta) of West Khasi Hills district of Meghalaya is being compiled. Editing of the documentary on the mass migration of earthworms in Mawlyngot area, Meghalaya is in progress.

Physical verifications of wet and dry preserved zoological collections in the Centre are being initiated by the scientific staff of the centre. In the library, 150 entries of books from the old register have been computerized and 100 books have been provided with accession numbers.

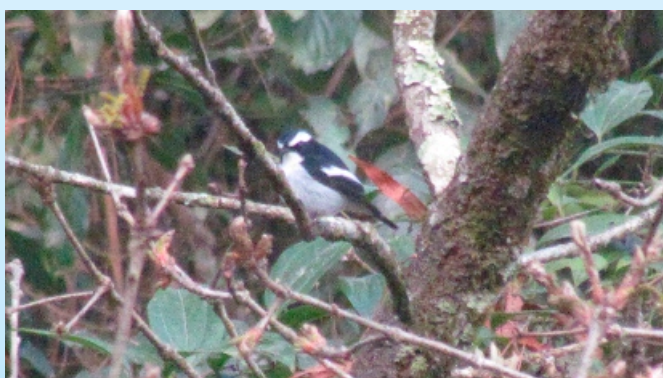
Smt. I.J. Kharkongor, Scientist-C has attended the Town Language Implementation Committee meeting (TOLIC) at the office of the Director General, Assam Rifles, Shillong on 12 December, 2013.



Collared Black-Headed Snake *Sibynophis collaris*



Chestnut-tailed Starling *Sturnia m. malabarica*



Little Pied Flycatcher *Ficedula westermanni*



Dr. (Miss) N. Sen, Scientist-C (fourth from Right with a bouquet) with the officials of NERC/ZSI, Shillong on her superannuation from service on 31.12.2013.

Southern Regional Centre, Chennai

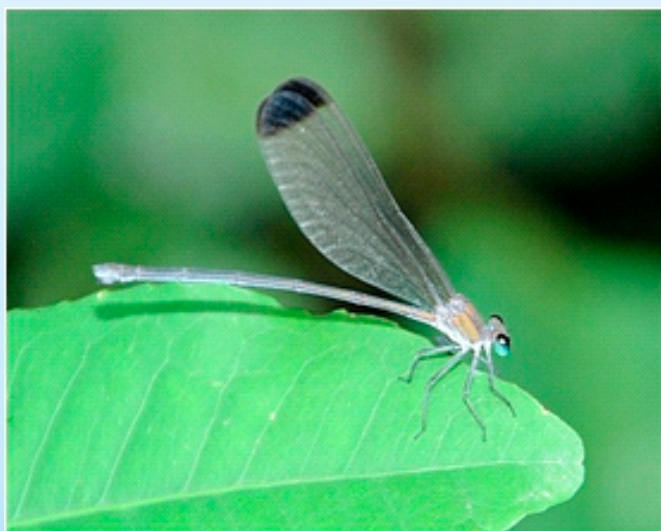
During the month, a combined survey tour has been undertaken to Travancore region of Kerala, Kalakkad-Mundanthurai Tiger Reserve and Nilgiri district of Tamil Nadu from 17 December, 2013 to 3 January 2014. A collection of 379 examples belonging to different faunal groups and 4 lots of zooplankton samples from Travancore region have been collected. Dr. R. Babu, Scientist-C identified 13 specimens of Odonata belonging to 8 species, 5 genera, 1 order under 1 family from the earlier survey of Javadi Hills, Tamil Nadu deposited in the National Zoological Collections of Southern Regional Centre. In addition to this, he also registered 13 specimens of Coleoptera belonging to 2 species, under 2 genera, 1 order and 1 family. Dr. R. Aengals, Scientist-C has identified 7 reptile specimens into 3 species under 3 genera belonging to 2 families, collected from the Western Ghats and Villupuram Surveys of Tamil Nadu.

Dr. R. Venkatesan, Scientist-C has identified 90 examples from the existing collections of NZC-SRC Chennai into 6 species under 3 genera of 3 families of freshwater gastropods. Shri. D. Prabakar, Assistant Zoologist has

identified 28 examples of grasshoppers into 7 species under 7 genera, 5 sub-families and 2 families which had been collected by Dr. R. Aengals, Scientist-C during the faunistic survey to Eastern Ghats of Tamil Nadu. Dr. V. M. Sathish Kumar, Assistant Zoologist has processed the DNA samples from the collections made from Pallikaranai wetland, Tamil Nadu. Dr. R. Babu, Scientist-C has identified around 48 Odonata photographs taken by two M.Sc. Zoology students of St. Queen Mary's College, Chennai and also identified two Odonata photographs received from Dr. Richard, Madras Christian College, Chennai. Shri. D. Prabakar, Assistant Zoologist has identified 8 species under 8 genera 6 subfamilies, 2 families from Orthoptera specimens received from Ms. D. Nithya and Ms. Saranya, 2nd year M. Sc. Students of the Department of Zoology, Queen Mary's college, Chennai on 23 December, 2013.

Publications

- Babu, R. (2013) New Zygoptera records from Jharkhand State, India. *Notulae Odonatologicae* 8(2): 18-21.
- Some photographs of Odonates and birds recorded during the survey tour to Western Ghats of Tamil Nadu.



Vestalis apicalis Selys



Orthetrum triangulare (Selys)



Copulating pair of Red Pierrot, *Talicada nyseus* (Gurein)



A flock of Painted Storks *Mycteria leucocephala* (Pennant)

ANIMAL OF THE MONTH

Terek Sandpiper *Tringa cinerea*

The Terek Sandpiper *Tringa cinerea* is the only sandpiper with an upturned bill. It is a stocky wader with grey-brown upperparts and short yellow-orange legs. In flight, a white trailing edge to wings and grey rump and tail can be easily seen. It breeds in East Asia and migrates along the eastern coast of the continent and seen along intertidal mudflats, mudbanks of mangrove creeks, estuaries and coastal lagoons. It arrives in India early October and leaves by mid-April. Considered widespread and locally common on coasts of India, where it is seen in scattered groups when feeding and often gathers in small flocks. An active feeder, it often runs from one place to other in search of fleeing insect on seashore but also seen probing its prey by inserting its up-curved bill mud and shallow water in search of worms and zooplanktons.



Text by K. Deuti, Photo by G. Maheswaran, HQ office, ZSI, Kolkata

According to BirdLife International the wintering population of this species may have got affected especially in southern India due to DDT poisoning.

OUT OF THE BOX**Global temperatures to rise 4 degrees by 2100**

<http://timesofindia.indiatimes.com/home/environment/global-warming/Global-temperatures-to-rise-4-degrees-by-2100/articleshow/28232719.cms>

Army road threatens Neora Valley wildlife

<http://timesofindia.indiatimes.com/city/kolkata/Army-road-threatens-Neora-Valley-wildlife/articleshow/28301052.cms>

Dogs poop in line with the Earth's magnetic field

<http://timesofindia.indiatimes.com/home/science/Dogs-poop-in-line-with-the-Earths-magnetic-field/articleshow/28341079.cms>

Region near Indo-Tibetan border to be declared Fossil National Park

<http://www.thehindu.com/sci-tech/energy-and-environment/region-near-indotibetan-border-to-be-declared-fossil-national-park/article5542264.ece?homepage=true>

Island animals are indeed tame

<http://www.thehindu.com/sci-tech/science/island-animals-are-indeed-tame/article5570439.ece?ref=sliderNews>

OBITUARY**Prof. T. C. Narendran (1944-2013)**

Prof. Thekke Curuppathe Narendran was born on 24 February, 1944 at Thrissur in Kerala to Ramanuja Menon and Swarnam. At a very young age, while in school, he had developed a fascination for the diversity of the living world. Throughout his carrier, he had a brilliant academic record. After securing first rank at university level in his M.Sc. in 1967 from the School of Entomology of St. Jhon's College, Agra University, he started research on the reproductive biochemistry of insects. Later, he started studying parasitic Hymenoptera and obtained his Ph.D. in 1975 from Calicut University. Then he joined the Calicut University's Zoology department and since then he had served in various capacities up to his retirement. After his retirement, he continued his research in the same university as Professor Emeritus up to 2010. During the last three years, he worked as a coordinator of the



All India Coordinated Project on Taxonomy and Capacity Building (Hymenoptera) (AICOPTAX) of the Ministry of Environment & Forests at the Zoological Survey of India's

Kozhikode unit. He was also a member of the Research Advisory and Monitoring Committee of Zoological Survey of India. He worked as a Chairman of Programme Advisory Committee (South Zone) of ZSI.

The renowned Indian entomologist, Prof. M. S. Mani had a profound influence on Narendran during his formative years. Narendran had been keeping in close touch with most of the famous Chalcidologists of the World. During his early years, he was trained by Dr. Z. Bouček, of CAB International, London, who is considered the 'Father of modern Chalcidology'. Prof. Narendran meanwhile had collaborated with many of the internationally reputed taxonomists such as J. S. Noyes (UK), E. E. Grissell (USA), D. Kovac (Germany), Tezcan (Turkey), H. Lotfalizadeh (Iran), Acterberg (Netherlands), K. Konishi (Japan), etc. As a visiting scientist, he had worked in some of the renowned museums of the world like the British Museum of Natural History, London, U. S. National Museum of Natural History, Washington and many others. The UGC offered him a fellowship in 1992 to pursue research at the Hungarian Museum of Natural History, Budapest. Many agencies like the U. S. Department of Agriculture, Washington D. C. (under PL 480 scheme), the Indian Ministries of Science & Technology, and Environment & Forests, UGC, ICAR and others extended financial support to him in his research. Several Indian and overseas academic and research institutions had sought for his advisory and consultative services related to many research programmes and projects on systematics and biology of parasitic Hymenoptera.

Narendran's contributions to the advancement of our knowledge on insects have been substantial. His monographs on the biosystematics of some of the families of Chalcidoidea such as Chalcididae, Eurytomidae, Torymidae, Ormyridae and

Eulophidae are considered masterpieces. He had described about 1,043 new species of insects representing about 1.7% of the total insect fauna reported from India. He had published about 380 research papers and 10 books and some of his manuscripts are still in press.

Narendran has inspired two generations of students. More than 30 students were awarded Ph. D. and many got their M. Phil degrees under his supervision. His contributions to science had been recognized by many academic bodies. He was a Fellow of the Indian Academy of Sciences, the Indian Academy of Entomology, Association for the Advancement of Entomology, Zoological Society of India, Royal Entomological Society, London, Environmental Society, India and Ethological Society of India. He was also a member of the editorial boards of several scientific journals, including some foreign ones. Many taxonomists honoured him by naming many species after him. In recognition of his outstanding contributions to the science of insect systematics Ministry of Environment & Forests, Govt. of India awarded him the prestigious E. K. Janaki Ammal National Award for Taxonomy in 2004. He was also the recipient of Swadeshi Shastrapuraskaram in 2008. He was nominated by the Ministry of Environment & Forests, as a member of Research Advisory and Monitoring Committee (RAMC) for Centre for Ecological Sciences, Indian Institute of Science, Bangalore in 2006. He was a member of the committee for collaborative research of National Biodiversity Authority in 2006. He was a member of research coordination committee of Central Silk Board, Govt. of India. Prof. T. C. Narendran died on the morning of 31 December, 2013 after a heart attack at Kozhikode, Kerala at the age of 69.

P. Girish Kumar
Zoological Survey of India, Kolkata