Cover
Drawing by Master Tanuj Samaddar, Class X, S.E.R.S. Public School, Hyderabad during International Day of Biological Diversity 2020 celebrated at ZSI-FBRC, Hyderabad

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ZSI E-NEWS

Besides Covid-19, during May 2020 the country is also facing a challenge on food security being caused by swarming of desert Locusts across north and central India while the state of West Bengal is recuperating out of recently struck super cyclone Amphan which left behind huge loss of biodiversity, human lives and properties. The ZSI made a rapid survey to assess ground scenario of these two major natural disasters to account the damages caused to the biodiversity and livelihood especially in Rajasthan, Madhya Pradesh and Maharashtra for Locusts outbreak and in Sunderbans for cyclonic impact and the compilation of data is under progress. Also May 2020 has witnessed severe bleaching of corals to the extent of 40-60% at Kavaratti Island, Lakshadweep due to rise in sea surface temperature. The regular works of ZSI is gradually gaining momentum during the lockdown phase and made a progress with staggered strength of incumbents. I am glad to note that 3796 specimens comprising 635 species have been identified right from Protozoa to Mammalia. Significant progress has been made for 13 new species description involving four species of moths, two species of dragonflies, three species of damselflies one species each of wasp and beetle and two species of lizards. Further, two species of marine fishes have been reported as new to India and five species of bats found to be first record to Manipur state and an amphibian was first record to Arunachal Pradesh whereas, a wasp species recorded as new to Kerala. Scientists of ZSI published 28 papers in different reputed journals of which most of them in SCI category during the month. In order to strengthen the capacity building and collaborative works, the ZSI signed a MoU with Vellore Institute of Technology (VIT) for biotechnology research. Duly maintaining social distance as per the advisories of the Government of India, International Day of Biological Diversity – 2020 was celebrated in ZSI headquarters and few of the Regional Centres with letter and spirit to spread the message of 'our solutions are in nature'. I appreciate the Officers and Staff of ZSI for making noteworthy progress in terms of surveys, new species description and publication despite prevailing unconducive environment due to Coronavirus pandemic.
Jai Hind.

Dr. KAILASH CHANDRA
Director
June 2, 2020
Kolkata

HEADQUARTERS, KOLKATA

Dysdercus koenigii Fabricius

One hundred and eighty-three species from 1363 specimens under different faunal groups viz. Protozoa, Nematoda, Acari, Collembola, Trematoda, Isoptera, Diptera, Hymenoptera, Orthoptera, Lepidoptera, Coleoptera, Zooplankton, Echinodermata, Pisces and Mammals were identified. Four species of moths *Mitochrista adelfika* Volynkin, N. Singh, Černý, Kirti & Datta, 2020; *M. stenovalva* Volynkin, N. Singh, Černý, Kirti & Datta, 2020; *M. lavides* Volynkin, Černý & N. Singh, 2020 and *M. konta* Volynkin, Černý & N. Singh, 2020, a species of long horned beetle of the genus *Sarmydus* and a catfish, *Glyptothorax distichus* Kosygin Singh & Gurumayum, 2020 have been described as new species. In addition, the lectotype for *Lyclene obliquilinea* Swinhoe, 1901 under Lepidoptera has been designated. The fishes *Parabathymyrus macrophthalmus* Kamohara 1938 and *Pseudorhombus diplospilus* Norman 1926 were reported as new record to India while *Hemiramphus lutkei* Valenciennes, 1847 found to be new to Odisha coast. Three confiscated wildlife material have been identified for law enforcing agencies and bugs specimens identified for University of Kashmir on request. The documents on *Threatened Vertebrates of Indian Himalayan Region and Status of the Avifauna of Bird Sanctuaries of India* have been finalized. The requisite details pertaining to the implementation of Sustainable Development Goal (SDG 15.8) have been provided to the administrative Ministry. Scientists reviewed three manuscripts for different SCI journals and adjudicated the Ph.D. thesis for Bharathidhasan University. Dr. Kailash Chandra, Director, ZSI chaired the meeting to review the annual programme of research proposals on 19th to 21st May 2020 and delivered the inaugural address on the celebration of International Day for Biological Diversity organized at ZSI headquarters on 22nd May 2020. Dr. Mukesh Takur made a detailed presentation on recombinant vaccine to counter SARS-CoV-2 using immuno-informatics approaches as well as traced the entry of Coronavirus in India through Neutrality tests and Coalescent Bayesian Skyline plot analysis while Dr. C. Raghunathan delivered a brief address on different protocols under the Convention on Biological Diversity and its implementation on the occasion.

NORTH EASTERN REGIONAL CENTRE, SHILLONG, MEGHALAYA

Catapiesteus sp.

Forty-five specimens comprising Coleoptera and Dermaptera have been collected. Thirty-six species belonging to six groups viz. Coleoptera, Crustacea - crab, Pisces, Amphibia, Reptilia and Mammalia were identified from 204 specimens. Besides, 15 species of amphibians from 31 specimens have also been identified for other departments on request. Five species of bats *(Rhinolophus sinicus, R. yunanensis, Kerivoula picta, Myotis muricola and Miniopterus magnater)* were found new record to Manipur State. A detailed information on the bat diversity of Meghalaya State to the Chief Wildlife Warden, Government of Meghalaya has been provided on request. A popular article on *'Bats are not to be blamed for Covid-19'* published in Assamese daily *Amar Asom* with the objective of sensitizing people regarding ecological values of bats. Scientists of the Centre reviewed three manuscripts for SCI journals.

Cnemaspis zacharyi Cyriac *et al.*, 2020

WESTERN REGIONAL CENTRE, PUNE, MAHARASHTRA

Twenty-three species belonging to Coleoptera (3 sp.), Amphibia (7 sp,) and Reptilia (13) were identified from 53 specimens. *Cnemaspis chengodumalaensis* Cyriac, Palot, Deuty & Umesh, 2020 (Reptilia: Squamata: Gekkonidae) from Chengodumala, Kozhikode district, Kerala and *Cnemaspis zacharyi* Cyriac, Palot, Deuty & Umesh, 2020 (Reptilia: Squamata: Gekkonidae) from Lakkidi, Wayanad district, Kerala have been described as new species while *Nanorana conaensis* (Amphibia: Anura: Dicroglossidae) has been reported for the first time from Arunachal Pradesh. The Centre updated NCBI submission for the release of two GenBank sequences MK695682.1 and MK695683.1.

Cnemaspis chengodumalaensis Cyriac *et al.*, 2020

Hipposideros lankadiva Kelaart 1850

CENTRAL ZONE REGIONAL CENTRE, JABALPUR, MADHYA PRADESH

Sixty four species under different faunal groups viz. Moths (20 sp,), Butterflies (10 sp.), Molluscs (9 sp.), Scorpions (4 sp.), Solifugae (1 sp.), Amphibians (4 sp.) and Reptiles (7 sp.) were identified from Sidhi, Guna, Hoshangabad, Jabalpur districts of Madhya Pradesh and Chhattisgarh. A manuscript on 'Species Diversity of Family Crambidae (Moth) in Veerangana Durgavati Wildlife Sanctuary, Damoh, Madhya Pradesh' has been accepted for publication while, 'A novel and diminutive *Hemiphyllodactylus* Bleeker, 1860 (Squamata: Gekkonidae) from a sacred grove in Odisha, eastern India' communicated for consideration of publication.

Common Cerulean *Jamides celeno* Cramer 1775

DESERT REGIONAL CENTRE, JODHPUR, RAJASTHAN

Survey has been conducted to assess the population structure of recent attack of locust swarm in Phalodi region of Jodhpur district, Rajasthan during 27th and 28th May 2020. Collected 72 specimens of locusts and 3 specimens of hymenopterans, identified 1 species of reptile, 16 species of birds and 04 species of mammals in the field

Locust Swarm in Phalodi region of Jodhpur district

Celebration of International Day for Biological Diversity

and documented the landscapes and various habitats on digital format with coordinates. Besides, 11 species of Pisces, 6 species of Coleoptera, 9 species of Hymenoptera and 3 species of Lepidoptera have been identified from 246 specimens. The officers and staff of the Centre took pledge on the occasion of Anti-Terrorism Day on 21st May, 2020 and celebrated the International Day for Biological Diversity on 22nd May 2020. Scientists reviewed two manuscripts for different journals

NORTHERN REGIONAL CENTRE, DEHRADUN, UTTARAKHAND

Scientists of the Centre identified 4 species of Odonata, 7 species of Lepidoptera, 7 species of Nematoda and 2 species of Protozoa collected from different ecosystems of Uttarakhand and Uttar Pradesh. Two manuscripts *viz.* 'Fauna of Agroecosystem of Punjab and Haryana' and 'Fauna of Bird Sanctuaries of Uttar Pradesh' have been submitted for publication. Information on 'Glossaries of animals (Mammals, Birds, Reptiles, Fishes, Amphibians and Butterflies) of Kalsi Forest Division and Dehradun Forest Division' has been updated based on the documents received from Forest Department. Identification report on 10 species of Lepidoptera has been provided to Department of Zoology, H.N.B. Garhwal University, Uttarakhand. A manuscript on discovery of new species of Leech accepted for publication. Celebrated 'International Day for Biological Diversity' by maintenance of cleanliness in Nature Trail at ZSI-NRC campus and Officer-in-Charge delivered lecture on conservation of biodiversity to the Scientists and Staff by maintaining social distance on 22nd May 2020.

Sarus Crane *Antigone antigone* Linnaeus 1758

SOUTHERN REGIONAL CENTRE, CHENNAI, TAMIL NADU

Scientist of the Centre discovered a new species of dragonfly *Orthetrum anadamanicum* Bedjanič, Kalkman and Subramanian, 2020 (Insecta: Anisoptera: Libellulidae) from the Andaman Islands. A species of dragonfly *Camacinia harterti* Karsch, 1890 (Insecta: Anisoptera: Libellulidae) was reported after a gap of 115 years from Namdapha Tiger Reserve Arunachal Pradesh. Furthermore, described three new species of damselfly from the Western Ghats and submitted a manuscript. Scientists of the Centre reviewed manuscripts for different SCI journals.

Orthetrum anadamanicum Bedjanič *et al.*, 2020

Camacinia harterti Karsch, 1890

Plain Prinia *Prinia inornata* Sykes 1832

Gracupica contracontra Linnaeus 1758

GANGETIC PLAINS REGIONAL CENTRE, PATNA, BIHAR

Field visit to the Dolphin habitat at the Ganga & Punpun river confluence has been undertaken to observe the dolphin movement in clean water of Ganga during the lockdown period. A manuscript representing first record of genus *Pocellanola* (Lepidoptera: Nolidae) and a new species has been submitted for publication. An updated checklist of family Drepanidae (Lepiodoptera: Drepanoidea) from India has been published.

Pieris rapae from Guptax, Leh

HIGH ALTITUDE REGIONAL CENTRE, SOLAN, HIMACHAL PRADESH

A pair of Green Bee eater from Jammu

The Centre identified 227 specimens comprising 26 species of Lepidoptera from Sukhna Eco-sensitive zone, Kalatop WLS and Grasslands of Himachal Pradesh; 09 species of Ephemeroptera, Trichoptera and Plecoptera from Upper Shimla (HP) and Ladakh; 02 species of Orthoptera from cold desert of Spiti valley, Himachal Pradesh; and 04 species of Amphibia from Himachal Pradesh. Three species of Lepidoptera from Chail WLS (HP) have been photographed and digitized.

MARINE BIOLOGY REGIONAL CENTRE, CHENNAI, TAMIL NADU

Severe and extensive coral bleaching witnessed in Lakshadweep reefs during May 2020 was investigated systematically to assess the extent of bleaching. The Kavarattti atoll in Lakshadweep was surveyed at different depths ranging from 5 to 25 m in 18 stations for this purpose from 2nd – 14th May 2020. The preliminary analyses of data from the first phase of the sampling showed the bleaching cover

Antennarian or Frog fish exhibited in aquarium

Coral bleaching in Minicoy Island, Lakhsadweep

to be about 60 -70 % of the total live coral cover in the lagoon and about 30 - 45 % in the outer reef. From the National Zoological Collections, a total of 139 examples of fauna belonging to 44 species, covering sponges, hard corals, molluscs and pisces were identified.

ANDAMAN AND NICOBAR REGIONAL CENTRE, PORT BLAIR

Olive backed Sunbird *Cinnyris jugularis andamanicus* Hume 1873

Nicobar Pigeon *Caloenas nicobarica* Linnaeus 1758

Survey has been conducted to Narcondam Island Wildlife Sanctuary from 1st – 24th May 2020 to assess the population dynamics of Narcondam Hornbill and its associated faunal diversity. A total of 359 species were identified comprised of 83 species of Scleractinian corals, 87 species of Molluscs, 17 species of echinoderms, 2 species of sea anemones, 10 species of fishes, 2 species of Bryozoa, 3 species of Halobates from the marine environment and 39 species of Lepidoptera, 4 species of Odonata, 44 species of Arachnida, 68 species of birds from terrestrial environment. A total of 354 specimens comprised of 132 molluscs, 30 echinoderms, 31 corals, 10 fishes, 3 bryozoans, 3 sea anemones, 71 lepidopterans, 70 arachnids and 4 odonates were registered in National Zoological Collection. Metadata for 200 registered specimens have been prepared. Submitted report on the Coral Reef Monitoring in connection with the Blue Flag Certification of Radha Nagar Beach, Swaraj Dweep to Deputy Commissioner, South Andaman and Divisional Forest Officer, Havelock Forest Division. Conducted Doctoral Committee Meeting for the research scholars of ANRC/ZSI on 26th May 2020.

SUNDERBAN REGIONAL CENTRE, CANNING, WEST BENGAL

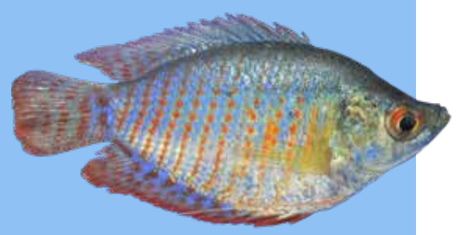
After the Cyclone “Amphan” devastation in West Bengal, a local survey has been carried out in the Canning Region on 20th May 2020, to understand the impact of the cyclone. Identified two examples of snake specimens under one genera belonging to one family from (Family: Colubridae) *Xenochrophis piscator* (Schneider1799), which were collected from local survey at Canning. The manuscripts, Note on the occurrence of *Epinephelus radiates* (Day, 1868), (Serranidae) from Tamil Nadu; First report of four non-native bryozoans from India; Balancing livelihood enhancement and ecosystem conservation in seaweed farmed areas have been submitted for publication while reviewing a paper for SCI journal.

Damaged boats due to cyclone Amphan

FRESHWATER BIOLOGY REGIONAL CENTRE, HYDERABAD, TELANGANA

Nandus nandu Hamilton 1822

During the month, Scientists of the Centre examined 543 specimens from Visakhapatnam and East Godavari districts, Andhra Pradesh; Kandaman and Ganjam districts, Odisha; Adilabad and Mancherial districts, Telangana; Amrabad and Kawal Tiger Reserves, Telangana. Four species of prawns from 185 exs., 9 species of aquatic insects from 65 exs., 22 species of butterflies from 23 exs., 9 species of ostracoda from 112 exs., 21 species of fishes from 96 exs. from Godavari River; 4 species of fishes from 62 exs. have been identified and 87 specimens digitized. Four research papers reviewed for peer reviewed journal. Five sequences of Malacostraca group has been submitted to NCBI and BOLD. On the occasion of International Day for Biological Diversity, online drawing & painting competition on theme "Our Solutions are in Nature" organised and participants were given e-certificates.



Trichogaster fasciata Bloch & Schneider 1801

Ampulex sadiyae Anagha Girish Kumar

WESTERN GHATS REGIONAL CENTRE, KOZHIKODE, KERALA

Nilgiri Tahr

Scientists of the centre identified 03 species of Centipedes (Chilopoda: Scolopendromorpha), 1 species of preying mantid (Insecta: Mantodea), 5 species of spiders (Arachnida: Araneae) and 7 species of wasps (Hymenoptera: Pteromalidae & Vespidae). A new species of cockroach wasp, namely, *Ampulex sadiyae* Anagha & Girish Kumar (Hymenoptera: Ampulicidae) has been discovered. A rare preying mantid *Hestiasula castetsi* (Bolivar, 1897) (Insecta: Mantodea: Hymenopodidae) is reported for the first time from Kerala based on the description of unique male. Two species of cockroach wasps (Hymenoptera: Ampulicidae) namely *Ampulex ceylonica* Krombein, 1979 and *Ampulex dissector* (Thunberg, 1822) are reported for the first time from Kerala State. Scientists reviewed three research manuscripts for different journals. Photographic images of five spiders and two wasp species received from different institutes/NGOs have been identified and report submitted.

ESTUARINE BIOLOGY REGIONAL CENTRE, GOPALPUR, ODISHA

A total 293 specimens belonging to 62 species were identified which includes 61 fishes , 90 molluscs, 30 crabs, 4 merostomes, 48 insects, 43 ticks and 13 lice. A fish *Parabathymyrus macrophthalmus*, Kamohara, 1938 as well as its genus was reported for the first time from Indian waters while *Hemiramphus lutkei* Valenciennes, 1847 reported as new record to Odisha State.

Hemiramphus lutkei Valenciennes 1847

Parabathymyrus macrophthalmus Kamohara 1938

ARUNACHAL PRADESH REGIONAL CENTRE, ITANAGAR

Trichotria tetractis

Channa gachua & *Channa pomanensis* in laboratory

Total 26 species from 32 examples of Rhopalocera were identified from Ganga Lake, Itanagar Wildlife Sanctuary. Six insect orders i.e., Orthoptera (07 examples), Odonata (02 examples), Hemiptera (25 examples), Lepidoptera (86 exampes), Coleoptera (90 examples) and Hymenoptera (11 examples) were collected from ZSI campus. In addition, 15 species of Rotifera from 45 examples were identified from Yazali & Pange, L. Subansiri, Mebo, East Siang and Shergaon, West Kameng while 5 species of fishes out of 50 specimens identified from different water bodies.

Doclea muricata
Herbst, 1788

MARINE AQUARIUM AND REGIONAL CENTRE, DIGHA, WEST BENGAL

Sixty four species under 329 samples including 242 examples of Mollusca (40 sp.), 11 examples of Echinodermata (5 sp.), 42 examples of Arthropoda (9 sp.), 17 examples of Polychaeta (1 sp.), 15 examples of Chordata (9 sp.) and 1 Reptile have been identified. Three species of molluscs were identified for EBRC-ZSI. Scientists reviewed two papers for different journals and project proposals submitted under DST-SERB. An online advisory service rendered to the Principal of GD Goenka Toddler House, Guwahati, Assam on Marine Fauna (Fishes) in the Marine Aquarium, ZSI, Digha in connection to their project work to the students for observance of Biodiversity.

Leucosia anatum Herbst, 1783

PUBLICATIONS

PAPERS

1. Ahmad, A., Gupta, N. and Saxena. A.K., 2020. Occurrence of *Heterodoxus spiniger* (Insecta: Phthiraptera: Amblycera: Boopidae) on the dogs of Odisha. *Int. J. Adv. Res.* 8(04), 435-438.

2. Anagha, S. and Girish Kumar, P., 2019. A taxonomic study of the genus *Ampulex* Jurine (Hymenoptera: Ampulicidae) from India with the description of one new species from Kerala. *Devagiri Journal of Science,* 5(1): 1-16.

3. Bag, P., Raha, S. and Deuti, K. 2020. First record of Allapalli forest skink, *Eutropis allapallensis* (Schmidt, 1926) from West Bengal State, India. *Rec Zool Surv India*., 120(1): 97-98.

4. Bahuguna, A., 2020. *Vanyajeev apraadh bhi ek karan. Yadhawat* 16-31 May 2020, ISSN 2350-0409 :84-85.

5. Bedjanič, M., Kalkman, V.J. and Subramanian, K. A., 2020. A new species of *Orthetrum* Newman, 1833 (Odonata: Libellulidae) from the Andaman Islands, India. *Zootaxa* 4779 (1): 091–100. https://doi.org/10.11646/zootaxa.4779.1.6

6. Bhaskar Saikia, B. Sinha, K. P. Dinesh and M. Thakur. 2020. Description of *Nanorana conaensis* (Fei and Huang, 1981) (Amphibia: Anura: Dicroglossidae) reported from Arunachal Pradesh, India. *Records of the Zoological Survey of India,* 120(1): 49-54.

7. Caleb, T.D. and Acharya, S.2020. Jumping spiders of the genus *Phintelloides* from India, with the description of a new species (Araneae: Salticidae: Chrysillini). *Revue Suisse de Zoologie*, 127(1):95-100

8. Chandra, K., Saha, P. C., Biswas, B. Hassan, M. E., Praveen, K., Kushwaha, S. and Mukherjee, P., 2020. An account of Heteropteran Bugs collected by Light Trap in and around Dum Dum (Kolkata), West Bengal, *Rec. zool. Surv. India:* 120 (1): 65-83.

9. Chatterjee P., K. Mondal, Basudev Tripathy and K. Chandra. 2020. First photographic evidence of *Panthera tigris* from Neora Valley National Park, Central Himalayas, India. *Rec. zool. Surv. India,* Vol. 120(1): 89-91, 2020. DOI: 10.26515/rzsi/v120/i1/2020/14403

10. Deuti, K. and Bag, P., 2020. First photographic record of Reeve's Ground Skink (*Scincella reevesii* Gray, 1838) (Reptilia: Sauria: Scincidae) from India. *Rec Zool Surv India.,* 120(1): 93-94.

11. Gokulakrishnan. G., Sivaperuman, C and Laxminarayana, B. 2019. First Records of Leucistic House Sparrows (*Passer domesticus*) In the Andaman and Nicobar Islands, India. *Intern. Stud. Sparrows.* 43: 12-14.

12. Joshi, R., Singh, N., László, G.M. and Ahmad, J., 2020. An updated Checklist of Superfamily Drepanoidea (Lepidoptera) from India. *Rec. Zool. Surv. India,* 120 (1): 1-24.

13. Kirti, J. S., Kaur, M., Sidhu, A. K. and Singh, N. 2020. Taxonomic Study of the Genus *Prioneris* Hubner (Lepidoptera: Pieridae) from India. *Journal of Entomology and Zoology Studies* 8(3): 707-713.

14. Kodeeswaran P., Praveenraj J., Jayakumar N. and Mishra S.S., 2020. First report of *Pseudorhombus diplospilus* (Pleuronectiformes: Paralichthyidae) from East Coast of India. *Rec. zool. Surv. India,* 120(1): 85-88. DOI: 10.26515/rzsi/v120/i1/2020/144892

15. Kosygin, L., Singh, P. and Gurumayum, S.D., 2020. *Glyptothorax distichus,* a new species of catfish (Teleostei: Sisoridae) from Mizoram, north-eastern India. *Records of the Zoological Survey of India,* 120(1): 25-32.

16. Majumder, A., Drumont, A., Bouyer, T. and Chandra, K. 2020. Notes on the genus *Sarmydus* Pascoe, 1867 (Cerambycidae: Prioninae: Anacolini) from India with description of a new species. *Zootaxa,* 4780(3): 543-553

17. Marimuthu N., Wilson, J.J. and Kumaraguru , A.K. 2020. Tracking decadal changes in Palk Bay coral community structure: A multivariate approach. *J Coast Conserv.* (Springer): 24: 32. https://doi.org/10.1007/s11852-020-00752-w

18. Mohanty, S.R., J. K. Seth, A. Mohapatra and S. S. Mishra, 2020. Note on occurrence of Lutke's halfbeak *Hemiramphus lutkei* Valenciennes, 1847 (Beloniformes: Hemiramphidae), along Odisha Coast. *Journal of Fisheries.* http://journal.bdfish.org/index.php/fisheries/article/view/JFish20237.

19. Pande G. S., Pawar N. B. and Patil S. R. 2019. Spider Fauna of some localities in and around Ahmednagar City and its Medical

importance. *Haya: The Saudi Journal of Life Sciences* (Open Access) Journal homepage: http://scholarsmepub.com/haya/

20. Payra, A., Subramanyan, K. A., Chandra, K. and Tripathy, B. 2020. A first record of *Camacinia harterti* Karsch, 1890 (Odonata: Libellulidae) from Arunachal Pradesh, India 12(8): 15922–15926. https://doi.org/10.11609/jott.465312815922-15926

21. Ray, D., A. Mohapatra, D. Smith and S.S. Mishra, 2020. First evidential report of Genus *Parabathymyrus* Kamohara, 1938 (Anguilliformes: Congridae) Eastern Indian Ocean. *Records of Zool. Surv. India* 120 (1): 55 – 58.

22. Saikia, B, Sinha, B, Dinesh, K.P. and Thakur, M., 2020. Description of Nanorana conaensis (Fei and Huang, 1981) (Amphibia: Anura: Dicroglossidae) reported from Arunachal Pradesh, India. *Rec. zool. Surv. India,* 120 (1): 49-54

23. Saikia, U., Ngaomei, G. & Meetei, A. B., 2020. Some noteworthy bats (Mammalia: Chiroptera) record from Manipur State, Northeast India, *Rec. zool. Surv.* India, 120(1): 41-48.

24. Shantanu, K., K. Tyagi, M. Kamlakannan, Kumar, V., Venkataraman, C., Sivaperuman, C. and Chandra, K. 2020. Molecular investigation of non-volant endemic mammals through mitochondrial cytochrome b gene from Andaman and Nicobar archipelago. Mitochondrial DNA Part B, 5:2, 1447-1452.

25. Sreekumar, S. and Dinesh, K. P. 2020. Amphibians of Agro-Climatic Zones of Maharashtra with updated checklist for the state. *Records of the Zoological Survey of India,* 120(1): 33-40.

26. Sureshan, P. M., Chatterjee, P. and Mukherjee, T. K., 2020 First report of *Hestiasula castetsi* (Bolivar, 1897) from Kerala, India with description of unique male specimens (Mantodea: Hymenopodidae: Acromantinae). *Rec. zool. Surv. India,* 120(1): 59-63

27. Vivek Philip Cyriac, Muahamed Jafer Palot, Kaushik Deuty and Umesh, P. 2020. A preliminary 16s rRNA phylogeny of the Indian *Cnemaspis* Strauch, 1887 (Squamata: Gekkonidae) with the description of two new cryptic species from the *C. wynadensis* clade. *Vertebrate Zoology.* Vol. 70 (2): 171-193

28. Volynkin, A.V., Singh, N., Černý, K., Kirti, J.S. and Datta, H.S. (2020) Revision of the *Miltochrista obliquilinea* species-group, with descriptions of four new species (Lepidoptera, Erebidae, Arctiinae, Lithosiini). *Zootaxa*, 4780 (3): 448–470

CONFERENCE/ SYMPOSIUM/ WORKSHOP/ TRAINING/ MEETING ATTENDED

1. Dr. Kailash Chandra, Director, ZSI attended Webinar on Forest Certification organised by Network for Certification and Conservation of Forests (NCCF) on 19th May 2020; and online Meeting for the Long Term Ecological Observatories (LTEO) project under the ongoing central sector scheme of Climate Change Action Plan, the Ministry of Environment, Forest and Climate Change (MoEFCC) on Saturday, May 02, 2020 from 3 to 6 pm.

2. Dr. V. D. Hegde, Scientist - E attended the 15th meeting of the governing body of the Meghalaya Zoo Project Implementation Society held at Sylvan House, Lower Lachumiere, Shillong on 01 May, 2020.

3. Dr. Gaurav Sharma, Scientist-E delivered invited lecture on 'Faunal Diversity & their Conservation in India' on Webinar Series Virtual Meeting for 'Celebration of International Day for Biological Diversity' organized by Indian Institute of Soil and Water Conservation (ICAR), Dehradun in collaboration with ZSI, NRC, Dehradun on 22nd May 2020. He also participated in lectures on 'Ecology of Himalayan Brown Bear and areas of Conservation importance in Himachal Pradesh' and 'Decoding the Draft EIA Notification 2020' organized by different organizations in different dates during the month.

4. Dr. A. K. Sidhu, Scientist-E attended webinar on biology, rearing and conservation of butterflies, USA on 26.05.2020

5. Dr. Deepa Jaiswal, Scientist-E attended online meeting with Member Secretary, Telangana State Biodiversity Board, Hyderabad on 22nd May 2020 on the occasion of International Day for Biological Diversity. She also attended an online session with Dr. M. Karuthapandi, Scientist-C on the topic 'Freshwater Biodiversity of India and Conservation" delivered by Dr. Subramanian, SRC, Chennai on 12th May 2020.

6. Dr. K. A. Subramanian, Scientist-E participated and delivered online lectures on *"Freshwater Biodiversity of India and Conservation"* organized by Kottayam Nature Society on 12th May and *"Natural History of Palghat Gap"* organized by Natural History Society Palakkad on 17th May 2020.

7. Dr. C. Sivaperuman, Scientist-E attended meeting under the Chairmanship of the Deputy Commissioner, South Andaman in connection with the Blue Flag Certification of Radhanagar Beach, Swaraj Dweep on 28th May 2020

8. Dr. M.E. Hassan, Scientist-E attended "Freshwater Biodiversity of India and conservation" organized by Kottayam Society of Nature, Kerala delivered by Dr. Subramanian, SRC, Chennai on 12th May 2020

9. Dr. S. Balakrishnan, Scientist – D gave an interview on sea foam from Digha coast on 16th May 2020 for a television channel, Zee 24.

10. Dr. Yogesh Kumar, Scientist - D has attended 6 webinars on different topics related to conservation of marine organisms held on different dates during the months organized by different forum.

11. Dr, N. Marimuthu, Scientist-D attended Webinar on COVID19, Friend or Foe to Coral Reefs Conservation on 16.05.2020, conducted by Universiti Malaysia Terengganu, Malaysia and World Dugong Day on 28.05.2020, conducted by NCF, Bengaluru.

12. Dr. K.P. Dinesh, Scientist-D conducted a webinar on 'DNA Barcoding and Phylogenetics' for the 24 M.Sc. Zoology students of Veerashiva College, Bellary on Zoom meeting (Meeting ID; 5734495869) on 16 May, 2020

13. Dr. S. D. Gurumayum, Scientist-D attended virtual National Seminar on "Role of biodiversity during Covid-19" on 22nd May 2020 at 11 am organized by Zoology Department, PG Government College for Girls, Sector-42, Chandigarh on International Day of Biological diversity, 2020.

14. Dr. Bineesh, K.K. Scientist-D, participated in the three day video conference in the workshop of IUCN South East Asia Red List of Endemic Sharks and Rays during 22nd, 26th, 28th May 2020.

15. Dr. Temjenmongla, Scientist-C attended and presented a webinar talk on 'International Day for Biological Diversity' which was organized by G.B. Pant National Institute of Himalayan Environment, Itanagar, Arunachal Pradesh on 22nd May, 2020.

16. Dr. T. Kubendran, Scientist-C attended three webinars on various scientific topics from Kerala and Tamil Nadu. He also acted as resource persons and delivered two lectures in webinar on "Writing a Research Proposal and funding opportunities in India – An overview" and "Challenges and Opportunities in Research" in Department of Botany, Nirmala College for Women (Autonomous), Coimbatore, Tamil Nadu on 23.05.2020 & 24.05.2020.

17. Dr. Chitra, Scientist-C participated in Webinars on mosquitoes control, SPSS tool and freshwater biodiversity of India organized by different institutions in different dates during May 2020.

18. Dr. Muhamed Jafer Palot, Scientist-B participated in the webinar seminar on "Mangrove conservation" on 22nd May 2020 organized by Wild Trust of India & Kannur Kandal Project on the occasion of International Biodiversity Day 2020.

19. Shri. Sreejith S. Kumar attended the "The Wild Side" webinar series conducted by Young Naturalists Kerala, Dragonfly South Asia Regional Talk Series (in Malayalam & Marathi), International Webinar on Biotechnological Perspectives and Recent Advancements in Bio and Nanomaterials conducted by different organizations in different dates during May 2020.

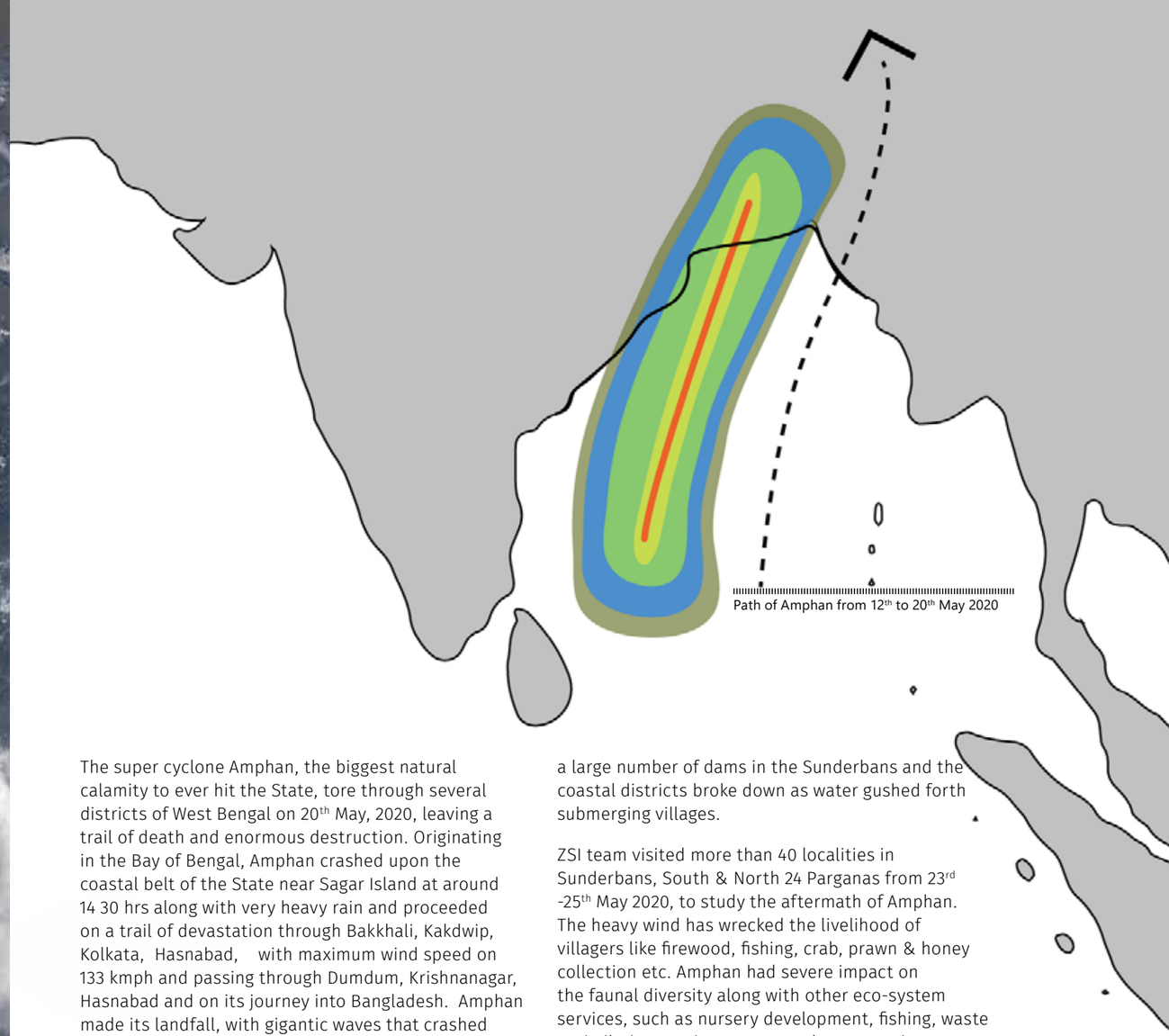
SUPERANNUATION

1. Mr. Phakir Chandra Saren, Scientist-B, Wildlife Section of ZSI Headquarters superannuated 31st May 2020.

2. Smt. Lakshmi Srinivasan, superannuated as Senior Stenographer on 31st May 2020 at ZSI-SRC, Chennai after dedicated service to ZSI for 36 years

SUPER CYCLONE AMPHAN

The first tropical cyclone of the year 2020 originated from a low-pressure area persisting 300 km east of Colombo, Sri Lanka, on 13th May 2020, the low pressure developed over the south-eastern Bay of Bengal about 1020 km to the south east of Visakhapatnam in the state of Andhra Pradesh. It formed as super cyclonic storm on 16th May 2020. Amphan underwent rapid intensification and became an extremely severe cyclonic storm within 12 hrs. Amphan was the strongest cyclone ever recorded in the Bay of Bengal, surpassing the 1999 Odisha super cyclone at 260 kmph. Amphan passed through coast of Andhra Pradesh and Odisha before making landfall at West Bengal-Bangladesh coast between Digha (West Bengal) and Hatiya Islands (Bangladesh) across Sunderbans near Latitude 21.65 N & Longitude 88.3 E between 15:30 & 17:30 hrs with a wind speed of 155-165 gusting to 185kmph. The width of its wall cloud was 120 km, and the diameter of the eye was about 40 km.



The super cyclone Amphan, the biggest natural calamity to ever hit the State, tore through several districts of West Bengal on 20th May, 2020, leaving a trail of death and enormous destruction. Originating in the Bay of Bengal, Amphan crashed upon the coastal belt of the State near Sagar Island at around 14 30 hrs along with very heavy rain and proceeded on a trail of devastation through Bakkhali, Kakdwip, Kolkata, Hasnabad, with maximum wind speed on 133 kmph and passing through Dumdum, Krishnanagar, Hasnabad and on its journey into Bangladesh. Amphan made its landfall, with gigantic waves that crashed upon the coastline at Digha in Purbo Medinipur and a large number of dams in the Sunderbans and the coastal districts broke down as water gushed forth submerging villages.

ZSI team visited more than 40 localities in Sunderbans, South & North 24 Parganas from 23rd -25th May 2020, to study the aftermath of Amphan. The heavy wind has wrecked the livelihood of villagers like firewood, fishing, crab, prawn & honey collection etc. Amphan had severe impact on the faunal diversity along with other eco-system services, such as nursery development, fishing, waste assimilation services, gene-pool conservation etc. Besides these Betel leaves or *paan*, the area's major cash crop was ruined. Saline water contaminated the ponds, there was intrusion of salt water in some islands like, Jyotirampur, Chandipur, Kumirmari, Hasnabad, and other southern tips, which was thrown up by the super cyclone, the paddy fields are submerged, which makes it unfit for agriculture for few years.

The district. of South 24 Parganas laid a trail of disaster, wreaked havoc on islands and several trees uprooted on its path, there was loss of biodiversity, several birds were killed, their nests destroyed, there was habitat loss and loss of host plants for birds. Intrusion of salt water in some islands of Sunderbans. Villagers from Chottomollakhali, Sunderbans, have reported that they had thrown the carcass of many birds like Common Myna, Pied starling, Spotted Owlet, Crow, Sparrow, and there were relatively few sightings of birds immediately after Amphan.

In Sunderbans houses destroyed in almost all islands, excepting those with cemented structures. Several plants & trees were uprooted, resulting in loss of pollinators' diversity. Tourism is affected because of wreckage of tourist boats. The various ecosystems affected are Mangrove, island, grasslands, agriculture, forest, sand dune, and wetlands, terrestrial & aquatic ecosystem. The aftermath study revealed that the faunal sightings were meagre, insects like Beetles, Butterflies, Grasshoppers, Dragon flies, were hardly spotted compared to normal situations. Birds were not sighted as usual, very few found like Pond Heron, Common Kingfisher, Little Egrets, Rose ring parakeets, Pied sterling, Little egret, Bee eater, Black headed oriole, Coppersmith barbet, White breasted water hen, Black capped kingfisher, Jungle Myna, and Spotted Dove etc. Besides the host plants/ trees for insects, birds and reptiles were destroyed. The tidal waves rose very high, the wind pressure was so severe that the salt water hit the trees even one kilometre inside the islands. The leaves of trees & plants were turned yellow, withered and sported a lifeless look. There was huge agricultural loss due to Amphan. Although the paddy is harvested, due to intrusion of salt water, destruction of banana plantation and damage to vegetable crops, has led to loss in sustainable development to the farmers and villagers. In totality, Amphan has caused huge loss in biodiversity, ecosystem services, livelihood, tourism, agriculture, and social living of villagers in Sunderbans.

D. Suresh Chand
C. Raghunathan
Kailash Chandra

ZSI is undertaking detailed studies to assess the impact of Amphan on biodiversity profile of Sunderbans

AMPHAN

AP

LOCUST PLAGUE

Locusts and grasshoppers have three successive developmental stages: egg, nymph and adult. The nymph (or hopper) stage can be further divided into growth stages called instars. The eggs are almost always laid in the ground; after hatching, the nymphs develop into instars separate by moults and finally become immature adults after development (the last moult). Locusts aren't dangerous as long as they are individual or small isolated groups of insects, in what is called the "solitary phase". When their population grows to large numbers – the subsequent crowding induces behavioural changes and transformation from the "solitary" to "gregarious" phase – that they start forming swarms. A single swarm contains up to 40-80 million adults in one square km and these can cover a distance up to 150 km in one day. The above large-scale breeding and swarm formation, however, takes place only when conditions turn very favorable in their natural habitat.

India is currently facing outbursts of the desert locust attack in Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, Punjab, Haryana and Uttar Pradesh states. Experts have warned of enormous crop losses if the swarms are not stopped by June when the monsoons will lead to a new season of sowing of kharif crops. The last big invasion in India was in 2010. The country has witnessed 13 locust plagues between 1964 and 1997. There were no major swarms or breeding reported from 2010 to 2018 according to the Locust Warning Organization (LWO), Jodhpur. But in 2019, Gujarat and Rajasthan reported to have a significant outpouring in locust infestations. Nearly 3.5 lakh hectares of cumin, rapseed and mustard were spoiled. Official sources then said that it was the worst attack since 1993. This was partly due to an unusually long monsoon and also because pest-control operations were inadequate; therefore, nascent populations of the locust had not been wiped out.

The main locust breeding areas located in the Yemen, Oman, Southern Iran, Horn of Africa, Pakistan's Baluchistan and Khyber Pakhtunkhwa provinces recorded extensive rains in March-April, 2020. This led to large-scale breeding and unusual rise in the population of the locust, an outcome of bizarrely heavy rains in the region.

Locusts arrived first in Rajasthan during the first fortnight of April, 2020. The Union Agriculture Ministry's Locust Warning Organization then observed "low-density I & II instar gregarious/ transient hoppers" at Jaisalmer and Suratgarh in Rajasthan and Fazilka in Punjab touching the Indo-Pakistan border. Afterward, there has been influx of swarms from the main spring-breeding areas. Swarms have come not only to western Rajasthan, but also moved to the eastern parts of the state and even Madhya Pradesh and Maharashtra. Probably, much of this movement, it seems, was aided by the

Locust infested regions as on 27th May 2020

strong westerly winds from Cyclone Amphan in the Bay of Bengal.

It is noteworthy to mention that current swarms are all of "immature locusts". These are locusts that ravenously feed on vegetation, but have not yet laid eggs. Once they start breeding, the swarm movement will stop or slow down. Similarly, the breeding will happen mainly in Rajasthan. So far, the swarms haven't caused much harm, since the rabi crop has already been reaped and farmers are yet to start kharif sowings. But, presently locust swarms in Rajasthan, Punjab, Haryana and Madhya Pradesh are threatening major damage to standing cotton crops and vegetables. About 90,000 hectares in 20 districts of Rajasthan have already been impacted by the locust swarms. These pests have ruined cotton crops spread over 700 hectares of land in Bikaner district of Rajasthan, alone. While the insects have spread across at least four states, Rajasthan has certainly been the most affected one. In fact, the Locusts Warning Organization (LWO) has already carried out spraying of pesticide over 21,675 hectares of land in Rajasthan. Besides, 12 districts of Madhya Pradesh are affected by the swarms. In the coming days, the attack could possibly spread out further, and many states like Uttar Pradesh, Telangana, Chhattisgarh, and Odisha have already started issuing warnings with respect to the strength of the attacks.

Scientists of Desert Regional Centre, ZSI, Jodhpur have surveyed locust infested area in Phalodi region of Jodhpur on 27th and 28th May, 2020 to assess population structure of the swarms. There is need for detailed studies to be carried out on male-female ratio of the invasive population, their morphological and anatomical data including behavioral pattern of swarm and impact on other faunal groups. Assessment is to be made on use of control mechanism to be adopted and its impact on ecosystem including effect of pesticides on food chain and food web etc.

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