



Cover

Image of Coronavirus
[Source: <https://www.webmd.com/lung/coronavirus>]

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*Monthly E-Newsletter from
Zoological Survey of India*



Amidst the country-wide lockdown to contain the pandemic COVID – 19, I present the April 2020 issue of E-News to the readers. To cope with the advisories of Union Government issued in time to time, ZSI also functioning with limited officials at office while rest are work from home. In certain places accessing the ZSI offices by officials are restricted because of their locality fall either in containment or red zones and hence the day to day scientific activities including faunistic surveys have been drastically affected. However, I am glad to note that, in spite of the crisis caused by Coronavirus, ZSI could perform considerable extent during the lockdown period by identifying 2207 specimens comprising 439 species from Protozoa to Mammalia.

Besides, 7 new species have been described from fish, dragonfly, damselflies, wasp and mayfly, while 5 species of mayfly and one species of true fly were reported as new addition to Indian fauna by the scientists. In addition, 40 DNA sequences of moths, frogs and termites were submitted to GenBank. Furthermore, 13 papers have been published during the month in different journals, of which most of them are under SCI journals. It is noteworthy to state that like rest of the Government departments, all the employees of ZSI also generously contributed their one day salary to the tune of Rs. 10,89,246/- to PM-CARES fund to fight against COVID-19. In addition, ZSI also taken initiatives to develop a model of a 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. At this instance, I appreciate the officers and staff of ZSI for their scientific progress during the lockdown period and assure that the ZSI fraternity join its hand with the society to contain the deadly virus spread and resumption of normalcy in the country for human wellbeing.

Jai Hind.

Dr. KAILASH CHANDRA

Director

May 5, 2020
Kolkata

ZSI

E-NEWS

HEADQUARTERS KOLKATA

Brahminy Kite
Haliastur indus
(Boddaert, 1783)



Different sections of the ZSI Headquarters identified 165 species from 692 faunal specimens belonging to Ciliata, Testate Amoebae, Collembola, Nematoda, Trematoda, Diptera, Hymenoptera, Hemiptera, Odonata, Orthoptera, Crustacea and Pisces. A new species of catfish, *Glyptothorax kailashi* Singh & Mitra, 2020 was described from the Tuipui River near Champhai (Kaladan River drainage), Mizoram, North-East India. The Dipteran fly *Dasyrphus albostrigatus* Fallen, 1817) has been reported as a new record to India. As a part of proposed Catalogue of Indian spiders, the families Atypidae, Barychelidae, Deinopidae and Salticidae have been compiled. Annual Report of ZSI 2018-19 has been published and uploaded in www.zsi.gov.in for public viewing. Thirty eight chapters for the book entitled, 'Biodiversity Profile of East Kolkata Wetlands - A Warrior of Urban Impurity' have been edited and finalized for printing. Thirteen papers for the forthcoming issue of *Records of Zoological Survey of India* have been edited for publication. Comment on the Government of Kerala proposal to import the seeds of Milkfish *Chanos chanos* (Forsk. 1775) has been offered to the Union Ministry of Fisheries, Animal Husbandry and Dairying. Dr. Kailash Chandra, Director, ZSI chaired the meetings on 28th to 30th April 2020 at ZSI Headquarters to scrutinize the proposals of Annual Programme of Research 2020-21 submitted by the Scientists of ZSI. Six scientific papers have been reviewed by the Scientists for different journals while one Ph.D. thesis on Tunas in Indian EEZ has been adjudicated for University of Madras. All the details pertaining to scientific and administrative matters sought by administrative Ministry during lockdown period have been provided.



Jungle cat at Tarakeswar, Hooghly

NORTH EASTERN REGIONAL CENTRE, SHILLONG, MEGHALAYA

Pareas monticola



Sphenomorphus indicus

Altogether 73 specimens comprising Coleoptera, Dermaptera and Reptilia were collected during the month. A total of 37 species have been identified under 182 specimens which include 10 species of Coleopterans, 14 species of Pisces, 6 species of Amphibians and 7 species of Reptiles.

WESTERN REGIONAL CENTRE, PUNE, MAHARASHTRA

Scientists of the Centre identified 7 species of Coleopterans and 3 species of Amphibians from 56 and 11 specimens respectively. Two mt 16s DNA sequences of northeast frog *Megophrys periosa*, ten mt COI DNA sequences of moth genus *Olepa* and 28 mt COI DNA sequences of termites from Western Ghats were submitted to GenBank. Requisite information on the distribution of *Chamaeleo zeylanicus* has been provided to Forest department, Nashik on request. In addition, spider specimens for M.Sc. student of Ahmednagar College, Ahmednagar, Maharashtra and gall midges (Diptera: Cecidomyiidae) to M.Sc. Agriculture Entomology student of Kerala Agricultural University, Vellanikkara, Thrissur, Kerala have been rendered.



Polypedates maculatus J.E.Gray 1830

CENTRAL ZONE REGIONAL CENTRE, JABALPUR, MADHYA PRADESH

A total of 54 specimens belonging to 18 species were identified during the month. They are 7 species of Moths, one species of Scorpion, 5 species of Amphibians and 5 species of Reptiles from Sanjay, Panna & Fossil National Parks of Madhya Pradesh.

Urva edwardsi Geoffroy
Saint-Hilaire 1818



DESERT REGIONAL CENTRE, JODHPUR, RAJASTHAN

*Terpsiphone
paradisi*
Linnaeus 1758
Female



*Psilopogon
zeylanicus*
Gmelin
1788

Nineteen faunal species under 185 specimens viz, 4 species of Fishes, 6 species of Hymenoperans, 5 species of Lepidopterans, 3 species of Coleopterans, one species of Hemipteran insects were identified from National Zoological Collections and digitized. A manuscript entitled 'First record of *Phalaropus lobatus* (Linnaeus, 1758) Red Necked Phalarope (Charadriiformes: Scolopacidae) From Narayan Sarovar Wildlife Sanctuary, Gujarat' and final technical report of the research programme *Studies on Faunal Diversity of Narayan Sarovar Wildlife Sanctuary, Gujarat* have been submitted to ZSI headquarters. Further, three manuscripts have been reviewed for in-house journal *Records of Zoological Survey of India* by the Scientists of the Centre.

NORTHERN REGIONAL CENTRE, DEHRADUN, UTTARAKHAND



Peacock Pansy,
Junonia almana
(Linnaeus, 1758)



Indian Peafowl,
Pavo cristatus
Linnaeus, 1758

Scientists of the Centre identified 8 species of Odonata and 15 species of Lepidoptera collected from selected six Bird Sanctuaries of Uttar Pradesh. Four manuscripts viz. 'Fauna of Ropar Wetland, Punjab', 'Fauna of Sonanadi Wildlife Sanctuary, Uttarakhand', 'Fauna of Valley of Flower, Uttarakhand' and 'Fauna of Samaspur Bird Sanctuary, Uttar Pradesh' have been revised while manuscripts on 'Odonata and Lepidoptera of Bird Sanctuaries of Uttar Pradesh and Odonata of Agroecosystem of Haryana and Punjab' were submitted to journals for consideration of publication. In addition, manuscripts on 'Nematoda of Bird Sanctuaries of Uttar Pradesh and Agroecosystem of Haryana and Punjab', 'Aves and Mammals of Bird Sanctuaries of Uttar Pradesh and Agroecosystem of Haryana and Punjab', 'Pisces of Bird Sanctuaries of Uttar Pradesh', 'Overview of Agroecosystem of Haryana and Punjab' and 'Annelida of Bird Sanctuaries of Uttar Pradesh and Agroecosystem of Haryana and Punjab' were also prepared and submitted by the Scientists of the Centre.

GANGETIC PLAINS REGIONAL CENTRE, PATNA, BIHAR

Brahminy Myna
Sturnus pagodarum
Gmelin 1789



Cattle Egret
Bubucus ibis
Linnaeus_1758

The manuscripts entitled, 'Birds in and around the Gidhhi Lake: an ideal bird watching site in Nalanda, Bihar' and 'Moths of (Lepidoptera of Uttar Pradesh)' shi have been prepared and submitted for publication in suitable journals. Annual Report of the Centre and the externally funded DST project have also been prepared and submitted to ZSI Headquarters and DST respectively.

SOUTHERN REGIONAL CENTRE, CHENNAI, TAMIL NADU

Scientists of the Centre discovered three new species of damselflies from the Western Ghats and one new species of dragonfly from the Andaman Islands and manuscripts upon their discovery have been prepared and submitted for publication. Revised and updated checklist of South Asia Odonata was submitted and accepted in the journal *Zootaxa*. One genus *Baetiella* under Ephemeroptera reported as new record to India with a description of a new species *Baetiella subansiri* Vasanth, Selvakumar & Subramanian, 2020. In addition, five Ephemeropteran insects, *Baetiella armata* Braasch, 1983; *Baetiella ausobskyi* Braasch, 1983; *Baetiella imanishii* Braasch, 1983 *Baetiella marginata* Braasch, 1983; *Baetiella spathae* Shi & Tong, 2015 reported from Arunachal Pradesh were new record to India. Scientists of the Centre reviewed the manuscripts for *Records of Zoological Survey of India, Journal of Threatened Taxa and Zootaxa*.

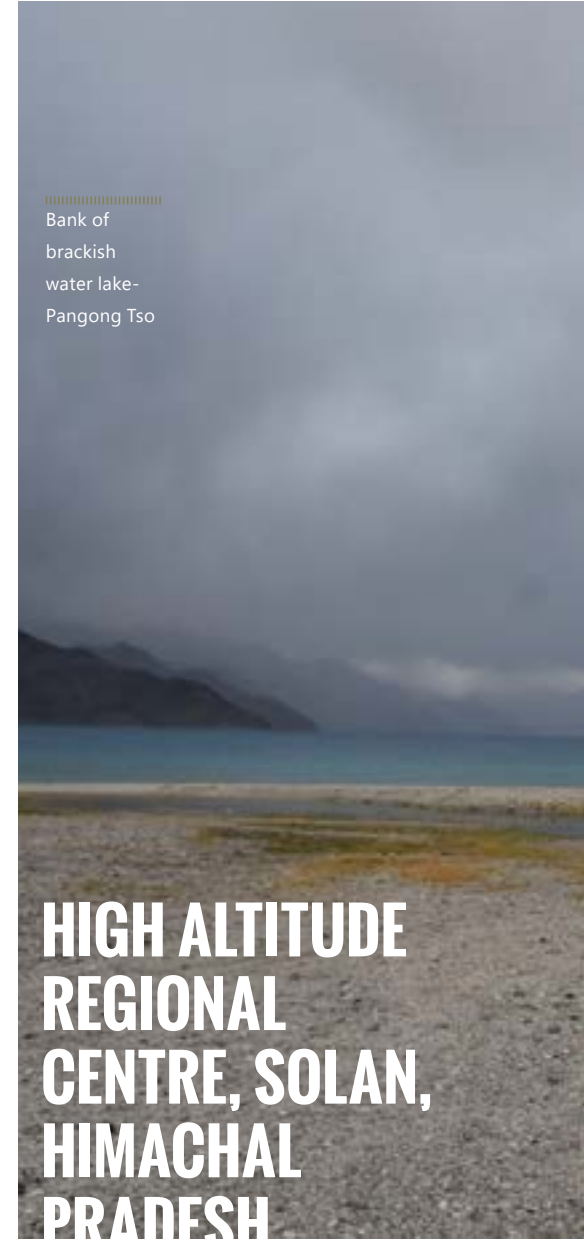


Pseudozizeeria maha in
grassland of Sirmour, HP

Faunistic identification of the Centre include 24 species of Lepidoptera from Sukhna Eco-sensitive Zone, UT of Ladakh and Grasslands of Himachal Pradesh; 06 species of Ephemeroptera, Trichoptera and Plecoptera from North-West Himalaya; 06 species of Orthoptera from UT of Ladakh and Himachal Pradesh out of 102 specimens. The book chapters on Reptiles (15 species) and Amphibia (07 species) for the document

on Bird Sanctuaries of Uttar Pradesh have been prepared. Two research papers on Taxonomy of genera *Pareronia* and *Pseudomegachile* were prepared and submitted for publication. Besides, two research papers on Lepidoptera for different national journals have been reviewed while evaluating Ph. D. thesis for National University by the Scientists.

Bank of
brackish
water lake-
Pangong Tso



HIGH ALTITUDE REGIONAL CENTRE, SOLAN, HIMACHAL PRADESH

Herd of blue sheep in
arabaki



MARINE BIOLOGY REGIONAL CENTRE, CHENNAI, TAMIL NADU

Evaluation of the progress of the Long-Term monitoring programme of coral reefs in Lakshadweep, preparation of pictorial handbook on Testate Amoebae of India, Updating database on Scleractinian diversity in India and World, finalization of a coffee table book on Restoration of coral reefs in Gulf of Kachchh Marine National Park, and preparation of a book chapter on Marine Sponges of Lakshadweep, manuscripts on Diversity of Meiofauna - West coast of India and Mantodia Faunal diversity of Adyar Park, Chennai have been undertaken by the Scientists of the Centre. Besides 11 species of scleractinian corals have been identified.

PCCF
(Wildlife),
Gujarat
Shyamal
Tikadar
enjoying
diving at ZSI
biorock site



Fish
aggregation
at Mithapur
Biorock site



Coral
Goniopora
at Mithapur
Biorock site

ANDAMAN AND NICOBAR REGIONAL CENTRE, PORT BLAIR

Boiga wallachi
Das 1998



Malayan box Turtle *Cuora*
amboinensis
Richein Daudin 1801

One survey conducted to Narcondam Island Wildlife Sanctuary from 1st - 30th April 2020 to assess the population dynamics, breeding behaviour of Narcondam Hornbill. The matters pertaining to the preparation of Coffee Table Book on Mahatma Gandhi Marine National Park; Preliminary Estimate of the proposed facilities of the National Coral Reef Research Institute; Bird Hazard Studies in Naval Airports in Andaman; Social Networking of Penguins in Antarctica have been facilitated with the officials concerned. Annual Report of the Centre has been prepared and submitted to ZSI headquarters.

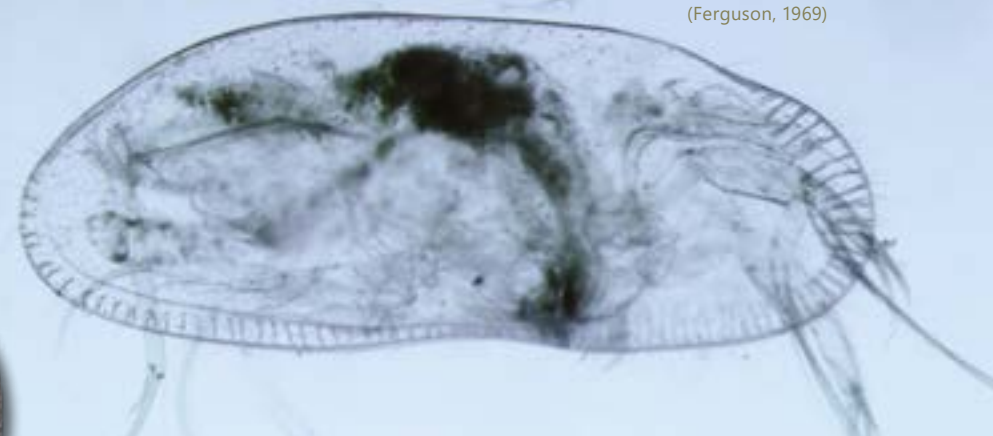
SUNDERBAN REGIONAL CENTRE, CANNING, WEST BENGAL

Indian wolf snake
Lycodon aulicus (Linnaeus, 1758)

Identified three reptile specimens as *Lycodon aulicus* (Linnaeus, 1758) under the Family: Colubridae and *Hemidactylus frenatus* Dum. Bibr., 1836 under the Family: Gekkonidae collected from Sanjay pally, Canning. A manuscript on 'First record of four mangrove associated gobiid fishes from Pichavaram, Tamil Nadu, India' has been prepared and submitted for publication.

FRESHWATER BIOLOGY REGIONAL CENTRE, HYDERABAD, TELANGANA

Stenocypris hislopi
(Ferguson, 1969)



Cyclestheria hislopi
Baird, 1859

During the month, scientists of the Centre examined 369 specimens from East Godavari district, Andhra Pradesh; Bhawanipatana district, Odisha; Rangareddy, Mahboobnagar, Adilabad and Mancherial districts, Telangana; Salem and Dharmapuri districts Tamil Nadu. Four species of Prawns, 2 species of Crabs, 4 species of Ostracoda and 8 species of fishes have been identified during the month. As a part of the digitization of the National Zoological Collections, 21 specimens were digitized. Five research papers reviewed for peer reviewed journals.

Psellonus planus
Simon



ESTUARINE BIOLOGY REGIONAL CENTRE, GOPALPUR, ODISHA

During this month a total of 72 specimens belonging to 26 species were identified which includes 19 species of Fishes, 02 species of Prawns and 05 species of Lice. Till 19th April 2020 all the staffs worked from home for report and manuscripts preparation of completed projects and attended routine administrative duties.

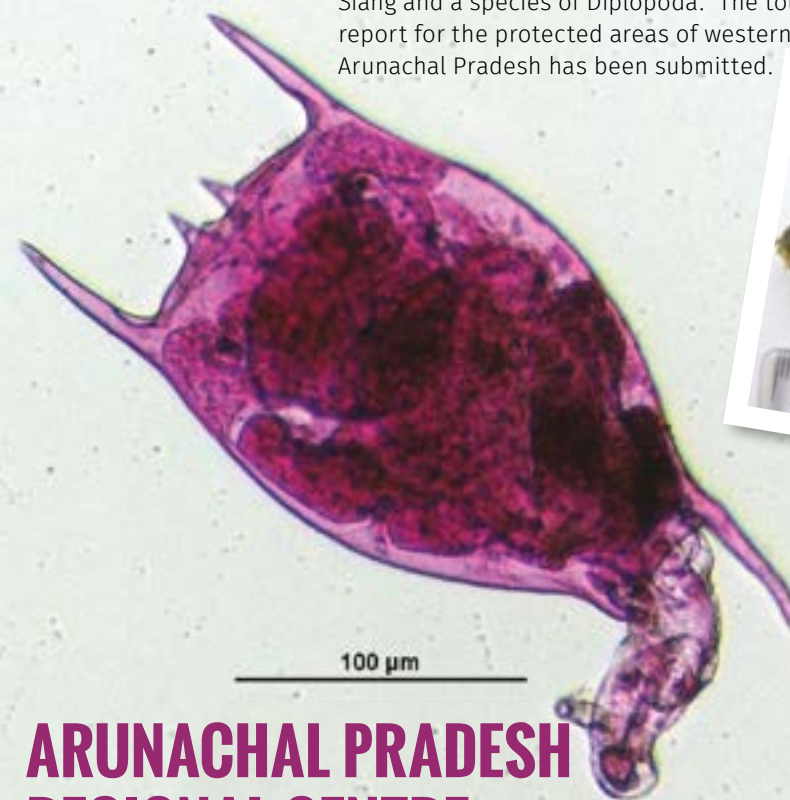
WESTERN GHATS REGIONAL CENTRE, KOZHIKODE, KERALA

Scientists of the Centre identified 2 species of Centipedes, 17 species of spiders and 15 species of wasps from Kanyakumari Wildlife Sanctuary, Tamil Nadu. Among them 11 species of spiders and 4 species of wasps are recorded for the first time from the sanctuary. A new species of spider wasp, namely, *Machaerotherix salticidus* Binoy, Girish Kumar & Anju, 2020, (Hymenoptera: Pompilidae) is described and published. The genus *Machaerotherix* Haupt was reported as a new record to India. Identified 2 species of Hymenoptera (Pteromalidae) for University of Kashmir, Srinagar, and 5 species of wasps and 11 species of spiders for Little Flower College, Guruvayoor, Kerala on request. Three manuscripts dealing with Hymenoptera have been reviewed for different journals. Annual Report of the Centre for the year 2019-20 has been prepared and submitted to ZSI Headquarters.

Strigoplus
netravati,
Tikader



Brachionus
diversicornis



ARUNACHAL PRADESH REGIONAL CENTRE, ITANAGAR

Scientists of the Centre identified 47 specimens comprising 14 species of Rhopalocera from Ganga Lake, Itanagar Wildlife Sanctuary, 11 species of Rotifera from Raga, L. Subansiri and Pasighat, E. Siang and a species of Diplopoda. The tour report for the protected areas of western Arunachal Pradesh has been submitted.



Aborichthys
kailashi
Shangningam,
Kosygin, Sinha
& Gurumayum
2019

MARINE AQUARIUM AND REGIONAL CENTRE, DIGHA, WEST BENGAL

A total of 381 specimens comprising 28 species of Molluscs and each one species under Echinoderm, Arthropod and Brachiopoda were identified. Twenty four water samples were collected from the inbuilt marine aquarium tanks and physico-chemical parameters were analyzed during lockdown period. Six manuscripts have been reviewed for different journals while evaluating two Ph.D. thesis for Bharathidasan University, Tiruchirappalli, Tamil Nadu. The online advisory services provided to graduate students of Zoology Honors from Hooghly Women's College, Pipulpati, Hooghly, West Bengal on Marine Fauna Conservation and a role of MARC upon it for their project work.

Takifugu oblongus Bloch 1786



Albunea groeningi
Boyko 2002



PUBLICATIONS

BOOK

Chandra, K, Raghunathan, C., Rizvi, A.N., Hassan, M. E. and Gupta. D. 2020. Annual Report 2018-19, 244pp. (Published by the Director, Zool. Surv. India, Kolkata)

PAPERS

1. Thakur, M., Singh, A., Joshi, B.D., Ghosh, A., Singh, S.K., Singh, N., Sharma, L.K, Chandra, K. (2020). How did SARS-CoV-19 spread in India from Italy, Iran and China? Genetic surveillance of early cases and virus demography. bioRxiv. doi: <https://doi.org/10.1101/2020.04.26.062406>
2. Yogesh Kumar, Christopher B. Boyko, G. Arun, S. Geetha and C. Raghunathan, 2020. A new distribution record of *Albunea groeningi* (Crustacea: Anomura: Decapoda: Albuneidae) from Digha coast, West Bengal, India. *Zootaxa*, 4766 (4): 588-592.
3. Binoy, C., Anju, K., Girish Kumar, P. and Thejass, P. (2020). Range extension and a new species to Spider Wasp *Machaerothrix* Haupt (Hymenoptera: Pompilidae) from India with reports on its host association and nesting behavior. *Zootaxa*, 4766(1): 192-200.
4. Prakash S and Marimuthu N. 2020. Notes on some crinoid associated decapod crustaceans (Crustacea: Decapoda) of Lakshadweep Archipelago, Central Indian Ocean. *Zootaxa*. 4766(1): 86-100.
5. Sajjan S.K. Barna Páll-Gergely, Basudev Tripathy, P. Chatterjee, K. Chandra & K. Sivakumar. 2020. Redescription and ecological niche of a land snail *Dicharax strangulatus* (L. Pfeiffer, 1846) in the Himalaya (Gastropoda: Cyclophoroidea: Alycaeidae). *Journal of Conchology* (2020), Vol.43, No.5 521
6. Kosygin, L., Singh, P. & Mitra, S. 2020. *Glyptothorax kailashi*, a new species of catfish (Teleostei: Sisoridae) from Mizoram, India. *Ichthyological Exploration of Freshwaters*. DOI: <http://doi.org/10.23788/IEF-1126>
7. Sengupta, J., Naskar, A., Maity, A., Parui, P., Homchaudhuri, S., & Banerjee, D. (2020). A new record of the hoverfly genus *Dasysyrphus* Enderlein, 1938 (Insecta: Diptera: Syrphidae) from India. *Journal of Threatened Taxa*, 12(4):15503-15506. DOI: 10.11609/jott.4330.12.4.15503-15506
8. Vasanth, M., Selvakumar, C., Subramanian, K.A., Sivaramakrishnan, K.G. and Bikramjit, S (2020). New record of the genus *Baetiella* Uéno, 1931 (Ephemeroptera: Baetidae) from India with description of a new species and new records for five species. *Zootaxa* 4763 (4): 563-578.
9. Samrat Chakraborty, Souvik Barik, Ranjana Saha, Ajanta Dey, Kaushik Deuti, C. Venkatraman, Subhendu Mazumdar & Goutam Kumar Saha (2020): Camera-trap records of fishing cat (*Prionailurus viverrinus*) from East Medinipur (West Bengal, India), and notes on threats to this population, *Écoscience*, DOI: 10.1080/11956860.2020.1752500
10. Mrinal Kumar Das & Ranjana Bhaskar.2020. Length-weight relationship of five finfish species from Chennai coast, India. *International Journal of Fisheries and Aquatic Studies* 2020; 8(2): 150-152.
11. Gokulakrishnan, G., C. Sivaperuman and S.R. Chandramouli 2020. Further records of a poorly-known insular endemic skink *Lipinia macrotympanum* (Stoliczka, 1873) (Squamata: Scincidae). *Bonn Zoological Bulletin* 69 (1): 117-122.
12. Akhilesh, K.V., Chellappan, A., Bineesh, K.K., Ganga, U. and Pillai, N.G.K. 2020. Demographics of a heavily exploited deep water shark *Echinorhinus* cf. *brucus* (Bonnaterre, 1788) from the south-eastern Arabian Sea. *Indian Journal of Fisheries* 67(1): 8-15.cccccc
13. Shangningam, B., Kosygin L, Sinha, B. & Gurumayum, S.D.. 2020. *Aborichthys kailashi* and *A. pangensis* (Cypriniformes: Nemacheilidae), two new species from Arunachal Pradesh, India. *Ichthyological Exploration of Freshwaters* 29 (4): 361-370

BOOK CHAPTERS

Santhanam, P., S. Ananth, S. Dinesh Kumar, P. Raju, M. Kaviyaran, M. Divya, N. Krishnaveni, S. Balakrishnan, N. Manickam, T. Veeramani, T. Muralisankar and P. Perumal (2020). Culture of Different live fish food organisms. In: Fish Nutrition and Its Relevance to Human Health (First Edition. Ed. A.S. Ninawe., J.R. Dhanze., R. Dhanze., S.T. Indulkar) Narendra Publishing House, Delhi, India. 331-365. ISBN: 978-93-89235-142.

CONFERENCE/ SYMPOSIUM/ WORKSHOP/ TRAINING/ MEETING ATTENDED

1. Dr. Gaurav Sharma, Scientist-E participated in online video presentation of “Dragonfly South Asia Virtual Meeting 2020” through www.streamyard.com/ facebook group organized by Society of Odonate Studies and South Asian Council of Odonatology” at 5:30pm to 6:30pm during 23 to 29 April, 2020.
2. Dr. K. A. Subramanian, Scientists-E participated and delivered an online lecture on “Biogeography of Odonata of South Asia” during online Facebook lecture series conducted by Dragonfly South Asia, Society of Odonata Studies and South Asian Council for Odonata studies on 26th April 2020.
3. Dr. Bineesh, K.K., Scientist – D, participated four day video conference in the workshop of IUCN South East Asia Red List of Endemic Sharks and Rays during 15th, 22nd 29th and 30th April 2020.
4. Dr. C.R. Sreeraj attended Virtual Training programme on “Writing a Research Paper based on Meta-analysis” through Video Conferencing on April 17. 2020 conducted by Dr. P. Krishnan, Principal Scientist, NAARM, Hyderabad

SUPERANNUATION

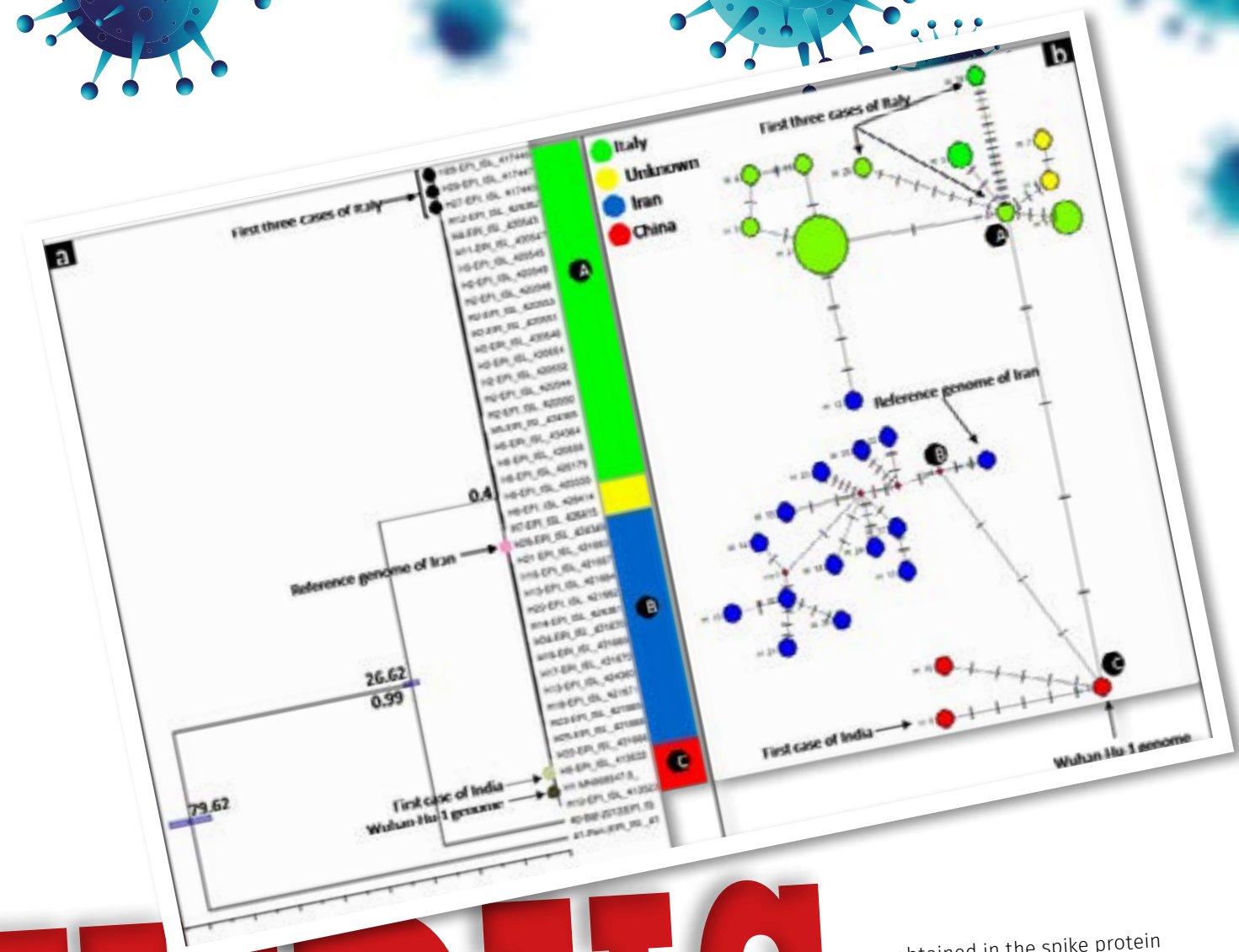
Mr. Arindam Roy Chowdhury, Office Superintendent, Stores Section, ZSI Headquarters superannuated on 30th April 2020.

SARS-CoV-2 pandemic caused worldwide 187,705 human deaths (up to 25th April 2020), drastically devastating all sectors of human life from crashing down the global economy to increased public anxiety and psychological burden on the government, and healthcare professionals.

IN INDIA ZSI TRACING THE EARLY ENTRY AND SPREAD OF

CORONAVIRUS

In India, Honorable Prime Minister, Shri Narendra Modi declared initially a three-week nationwide lockdown starting midnight, Tuesday on 25th March 2020 which got further extended twice, explaining that it was the only way of breaking the Covid-19 infection cycle. While the entire country is experiencing a severe havoc caused by coronavirus, ZSI - Scientists analyzed genomes of 35 early Coronavirus cases of India available up to 21st April 2020 using phylogenetics, and crackdown to manifest that early introduction of SARS-Cov-19 in India, was from China, Italy and Iran. The Neutrality tests and Coalescent Bayesian Skyline plot analysis suggested that the virus had rapid population expansion after the outbreak and demonstrated a present steady growth in India. The nucleotide substitutions (dN /dS ratio), in the structural genes, validated that the SARS-CoV-2 is closely relative to Bat coronavirus, and seven unique non-synonymous mutations



obtained in the spike protein depicted preferential adaptive selection. The study provides pragmatic assignment of the early cases reported from India and plead for sequencing more genomes to facilitate identification of newly emerged mutants, genetic evolution and disease transmission caused by coronavirus. A preprint of the study available on BIORXIV authored by

(<https://www.biorxiv.org/10.1101/2020.04.26.062406v1>) for free access to the public domain.

Thakur, M.,
Singh, A.,
Joshi, B.D.,
Ghosh, A.,
Singh, S.K.,
Singh, N.,
Sharma, L.K.,
Kailash Chandra