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Introduction

The Animal Taxonomy Summit 2026, organized to mark the 111th Foundation Day of the Zoological Survey of India (ZSI), is a significant event in the realm of taxonomy, systematics, ecology, animal behavior, and conservation of biological diversity. The importance of current taxonomic tools such as molecular approaches like DNA barcoding and bioinformatics is stressed at this summit since these modern approaches increase the precision and speed of identification and classification of species. Such approaches play an important role in bridging the gaps in documentation of biological diversity because not many species have yet been discovered in the world. This summit attempts to bring together notable scientists, academicians, and researchers from all over the globe to share their views regarding recent developments in taxonomy and other related topics on animals. One of the aims of the conference is to explore the issues that exist in taxonomy, along with the developments made in this field, that are necessary for conserving the biodiversity and environment. Taxonomy helps us understand the components of biodiversity, which is important for making sound decisions about the conservation and sustainable usage of biological diversity. The conference encourages interdisciplinary research by combining subjects like ecology, genetics, and conservation biology. An interdisciplinary approach is essential for taking a holistic approach to deal with climate change, habitat destruction, and other threats to the biodiversity of the planet.

An abstract book is extremely important in making any international workshop more efficient and successful. It provides information about all of the research presentations in detail and covers all aspects such as findings, methods, and conclusions. Consequently, it becomes easier for participants to comprehend what the workshop entails and plan ahead in accordance with the information in order to focus on sessions that suit their professional interests. Moreover, the abstract book makes networking possible since the contributors of researches are highlighted, allowing for finding partners and starting important discussions. This can lead to the establishment of new collaborations and exchange of information and ideas necessary for further development of science. The use of documentation in such scenarios is advantageous in that it helps the researchers refer back to the information in the future, enables them to follow the progress being made in various fields of study, and keeps them abreast with the changes and developments in the same field of study. Documentation ensures that whatever information is provided in the workshop

becomes accessible to many more individuals apart from the workshop attendees. For young researchers and students, the document serves as a learning tool in many ways. For instance, it helps them learn about how to communicate effectively in a professional context.

In the Animal Taxonomy Summit 2026, a total number of 113 abstracts have been selected on three different thrust areas. The numbers were specifically 39 abstracts on Thrust Area-1: Taxonomy, 35 abstracts on Thrust Area -2: Systematics, and 39 abstracts on Thrust Area -3: Faunal Diversity and Conservation. According to the editorial board decision, all these 113 abstracts will be presented in the poster presentation of ATS 2026. The topics that these abstracts cover are varied, ranging from conventional taxonomy to molecular systematics, cryptic species and their recognition, to integrative approaches in the recording of biodiversity, moder day zoological studies to paleozoological studies. Thus, the present compilation reflects the vibrancy of taxonomic studies being conducted not only in India but also beyond, reaffirming the continuing commitment of the Zoological Survey of India for exploring, documenting, and conserving the country's fauna.

Poster Presentations



Uncovering Hidden Diversity: Two New Deep-Sea Zeiform Fishes from the Southwest Coast of India

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Abstract

Deep-sea ichthyofaunal diversity in Indian waters remains inadequately explored, with many taxa likely overlooked or misidentified. Recent integrated taxonomic revisions of the order Zeiformes have revealed hidden diversity within the Indian Ocean. During recent investigations of deep-sea ichthyofauna along the southwest coast of India, several zeiform specimens were collected. An integrated taxonomic approach combining morphology and molecular analyses revealed that specimens previously identified as *Zenopsis conchifer* and *Cyttopsis rosea* from Indian waters do not correspond to these nominal species, but instead represent two undescribed taxa, herein referred to as *Zenopsis* sp. nov. and *Cyttopsis* sp. nov. *Zenopsis* sp. nov. is distinguished from its congeners by a combination of characters including greater head length (40.6–42.2% SL), greater snout length (20.5–21.2% SL), smaller caudal peduncle depth (3.7–4.0% SL), shorter upper jaw length (13.3–13.5% SL), dorsal-fin rays X–XI, 26–27, and fewer dorsal bucklers (3+5), and further differs genetically by 3.0–7.3% K2P distance based on COI sequences. *Cyttopsis* sp. nov., differs from its congeners in having greater snout length (29.4–30.7% SL), greater postorbital length (7.5–12.5% SL), greater prepectoral length (45.1–50.6% SL), shorter lower jaw length (14.1–15.6% SL), and a smaller distance between pelvic-fin bases (7.3–9.1% SL), and shows 4.3–11.6% K2P genetic divergence in COI sequences from other congeners. The recognition of these two new species highlights the presence of cryptic diversity in the deep-sea fauna of India and underscores the need for further integrative taxonomic studies.

Key words: Zeiformes, deep-sea fishes, integrative taxonomy, new species, *Zenopsis*

Taxonomic Revision of the Genus *Diplommatina* Benson, 1849 (Gastropoda: Caenogastropoda: Diplommatinidae) of India, with Descriptions of Nine New Species from Northeast Indian region

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Abstract

The genus *Diplommatina* Benson, 1849 is one of the most diverse groups of terrestrial microsnails in the family Diplommatinidae, widely distributed across South and Southeast Asia. Despite this high diversity, Indian representatives, particularly from Northeast India (NEI), remain poorly understood due to limited taxonomic revisions. This study presents a comprehensive taxonomic revision of *Diplommatina* species from India, with a particular focus on NEI, a region at the confluence of the Himalaya and Indo-Burma biodiversity hotspots. Extensive field sampling was conducted between 2018 and 2022 across multiple states, using standardised soil and leaf-litter collection and sorting methods. Specimens were examined under a stereomicroscope, and detailed shell morphometrics were analysed to assess diagnostic characters. The study redescribes known Indian species and reports nine new species from NEI based on shell morphology. Significant variation was observed in shell size, sculpture patterns, aperture structure, and columellar dentition. An identification key is provided to support species-level classification. The results highlight NEI as a major centre of *Diplommatina* diversity and endemism, likely driven by complex terrain and climatic heterogeneity. This work addresses long-standing taxonomic gaps and establishes a baseline for future integrative studies and the conservation of microsnail diversity in the region.

Keywords: Taxonomy, Himalaya, Shell morphology, Land snail, Micro snail

On the Glyptosternine Fishes from Tirap River with the Description of New Species of *Exostoma*

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Abstract

The Glyptosternine catfishes (family Sisoridae) represent a specialised group of hill-stream fishes adapted to fast-flowing riverine systems of the Eastern Himalaya. Arunachal Pradesh, a biodiversity hotspot within this region, harbours a rich yet insufficiently explored diversity of Glyptosternine taxa. The present study documents the diversity of three Glyptosternine fishes from the Turung River, Bramaputra drainage of the Tirap District, with particular emphasis on the taxonomic assessment of the genus *Exostoma* and *Creteuchiloglanis*. Specimens were analysed using detailed morphometric and meristic approaches following Ng and Vidthayanon (2014). Molecular identification is carried out in the present work using *coxI* gene of the mtDNA. The study resulted in the identification and description of a new species of *Exostoma*, distinguishable from its congeners by a unique combination of characters including pectoral pelvic distance, length of anal fin base, pectoral fin length, dorsal adipose distance, snout length, eye diameter and adhesive apparatus morphology. Comparative analysis with closely related species confirms its distinct taxonomic status. The discovery highlights the underexplored ichthyofaunal diversity of the region and emphasises the need for integrative taxonomic studies combining morphology and molecular work.

Keywords : Glyptosterninae, Sisorid catfishes, Taxonomy, Tirap River

Integrative Taxonomy Reveals *Gymnura* sp. nov. (Batoidea: Gymnuridae), A New Butterfly Ray from the Gulf of Mannar, India

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Abstract

Butterfly rays of the family Gymnuridae represent a taxonomically understudied group of batoids. At present, 14 valid species of the genus *Gymnura* are recognised worldwide, and recent taxonomic and molecular studies indicate that additional diversity remains to be described. In Indian waters, three species are currently considered valid; however, a molecularly distinct lineage exists within the *Gymnura poecilura* species complex. Based on surveys conducted in the Gulf of Mannar, specimens of this lineage were collected and examined. Integrated morphological and molecular analyses confirm that these specimens represent a new species of *Gymnura*, herein described as *Gymnura* sp. nov. The new species differs from its congeners in possessing a combination of characters, including greater body length (53.9–56.5% DW); snout longer (preorbital 10.1–10.3% DW, postorbital 10.9–11.4% DW, prenasal 7.8–8.2% DW); anterior interspiracular width greater (12.8–13.4% DW); prebranchial length greater (16.2–18.6% DW for PRB1 and 15.7–17.1% DW for PRB2); pelvic-fin base longer (5.2–6.2% DW); and cloaca-to-spine origin distance shorter (6.0–6.6% DW). Molecular analyses based on the mitochondrial COI gene further support the distinctiveness of the new species, with phylogenetic reconstruction recovering it as a well-supported, distinct clade, clearly separated from *Gymnura poecilura* and forming a sister relationship with *Gymnura zonura*, and showing genetic divergence of 10.3–25.9% (K2P) from other congeners.

Keywords : *Gymnura* sp. nov., Gymnuridae, *Gymnura*, Indian Ocean, integrative taxonomy

Discovery of A New Species of *Willowsia* (Collembola: Entomobryidae) from Arunachal Pradesh, India

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Abstract

Collembola or ‘Springtails’ are among the most abundant wingless soil micro-arthropods and play a crucial role in the restoration of soil structure and fertility. These minute hexapods have colonized all continents and inhabit a wide range of ecological niches. The genus *Willowsia*, belonging to the subfamily Willowskiinae within the family Entomobryidae, is one of the most species-rich genera of the group and is predominantly distributed in the Old World, with only a few exceptions. To date, 46 species of *Willowsia* have been described globally, of which six are recorded from India. The genus is characterized by the presence of 8+8 eyes, acuminate body scales with diverse rib patterns, a dens lacking scales and spines, and a bidentate mucro. The new species, *Willowsia* sp. nov., was collected from a pine forest in Kitpi Village, Tawang, Arunachal Pradesh, India. It is distinguished from closely related species—*Willowsia christianseni* Chang & Ma, 2018; *Willowsia guangxiensis* Shi & Chen, 2004 and *Willowsia shiae* Pan, Zhang & Chen, 2006—by its unique blue pigment patches, chaetotaxy and the number of spines in the trochanteral organ. Additionally, spine-like structures are observed near the sutural chaetae of the head in the new species. Studies indicate that the highest diversity of *Willowsia* occurs in temperate and subtropical regions of Asia. The discovery of this novel species from Arunachal Pradesh not only reinforces this pattern but also highlights the region as a potential hotspot of undocumented Collembola diversity.

Keywords : Soil Arthropods, New Species, *Willowsia*, Eastern Himalayas, Chaetotaxy

A New Freshwater Crab *Ghatiana* sp. nov. (Decapoda: Brachyura: Gecarcinucidae) from Karnataka, India

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Abstract

Freshwater crab genus, *Ghatiana* Pati & Sharma, 2014 is now represented by 14 species. This genus is endemic in Western Ghats of India. Attempts have been taken here to describing a new species of the said genus, *Ghatiana* sp. nov. with proper description and illustration of the type specimens. Type specimens were collected from laterite rock of Mavinkaru, Udupi district, Karnataka. Specimens were preserved in 70% Alcohol, after examination and determination of species, and the designated type specimens were kept in the repository of Zoological Survey of India, Kolkata as a National Zoological Collections. *Ghatiana* sp. nov. can be diagnosed by a combination of morphological characters; a distinctly broader carapace, carapace width 1.6 times than carapace length, carapace is 0.7 times higher than carapace length, anterolateral margin strongly convex, legs are relatively long, length of third ambulatory leg is 2.7 times longer than carapace length. *Ghatiana* karnataka sp. nov. exhibits many other unique morphological features and distinct coloration in life. This new species can be distinguished from its closely related congeners, by carapace morphology, the relative size of the eyes, the shape of the male first gonopod, and the size of the female vulvae, and also by the live coloration. The discovery of *Ghatiana* sp. nov. suggests more faunistic exploration needed along the Western Ghat Eco region of India, out of the 15 species of genus *Ghatiana*, 8 are being reported from Karnataka state.

Keywords : Diversity, New species, Western Ghats, Latrate Rock, Fresh Water

Hidden in Bycatch: Integrative Taxonomy Reveals A New Species of *Oplopomus* (Gobiidae) from the Bay of Bengal

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Abstract

A new species of goby of the genus *Oplopomus* is described from Bay of Bengal, northeastern Indian Ocean, along the east coast of India. The description is based on 44 specimens collected from the bycatch of commercial trawl operations at depths of 30-70 m and landed at the Kasimedu fish landing centre during 2022-2023. The new species *Oplopomus* n. sp is distinguished from its congeners, *Oplopomus caninoides*, *Oplopomus diacanthus* and *Oplopomus oplopomus*, based on a combination of characters; which include the presence of two well developed preopercular spine; 26-27 lateral line scales; 8-9 transverse scales rows; preopercle and opercle partially scaled, predorsal scales 8-9, body depth 17.78 % of standard length. Caudal fin bearing six distinct curved brown lines, caudal fin membranes exhibit three longitudinal bead like structure from the base to the distal margin, cheek with two thick lines of longitudinal sensory papillae. Molecular analysis further supports its distinctiveness, showing genetic similarities of 89% with *O. caninoides* and 90% with *O. oplopomus*, indicating notable divergence. Ecologically, occurrence of the species in trawl bycatch suggests its association with deeper benthic habitats. The discovery highlights the underexplored biodiversity of the Bay of Bengal and emphasizes the importance of continued taxonomic and ecological assessments in the region.

Keywords : *Oplopomus*, Bay of Bengal, India, new species, Northeastern Indian ocean

***Echinorhinus* sp. nov., A New Species of Bramble Shark from the Southwestern Coast of India (Echinorhiniformes: Echinorhinidae)**

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Abstract

A new species of bramble shark, *Echinorhinus* sp. nov., is described from specimens collected off Kollam, southwestern coast of India. Specimens from Indian waters previously identified as *Echinorhinus brucus* are herein recognized as a distinct taxon based on morphological and molecular evidence. The new species differs from *E. brucus* by having a relatively longer precaudal region, shorter head, greater interspace between the orbit and third gill slit, increased prebranchial length, and a more pronounced dorsal-caudal space. It further differs from *E. cookei*, a Pacific species absent from the Indian Ocean, in dermal denticle morphology and body proportions. Molecular analyses based on the mitochondrial COI gene further support the distinctiveness of the new species, with phylogenetic reconstruction recovering it as a well-supported, distinct clade clearly separated from *E. brucus* and *E. cookei*, and showing genetic divergence of 3.5-4.3% (K2P).

Keywords : Chondrichthyes, Echinorhinidae, Integrated taxonomy, New species, Indian Ocean

A New Species of the Rare Freshwater Crab Genus *Globitelphusa* from Nagaland, India with Morphological and Molecular Evidence

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Abstract

Freshwater crab genus, *Globitelphusa* was designated by Alcock (1909), with description of three species: *Globitelphusa bakeri* (type species), *Globitelphusa pistorica* and *Globitelphusa cylindrus*. Later, Bott (1969) added one more species *Globitelphusa planifrons* (Burger, 1894) in that genus. Members of this genus are distinct within the family Gecarcinucidae by their highly convex carapace, the absence of a flagellum on the exopod of the third maxilliped, an anterolateral carapace margin without teeth and indistinct epigastric and postorbital crests with poorly defined carapace regions. All three original species were described from Assam and the Naga Hills of the former British Indian territory. Surprisingly, no additional records have been reported since then. During recent surveys in Nagaland, live specimens were collected from lateritic soils of the bank of a narrow rivulet of Medziphima district and upon examination were found to represent a new species along with a comparative account with the other congeners. Specimens were preserved in 70% Alcohol, after examination and determination of species and the designated type specimens were kept in the repository of ZSI, Kolkata and NIST, Kohima as a part of National Zoological Collections. Here we describe a fourth species of this genus, *Globitelphusa* sp. nov. providing detailed morphology, illustrations and molecular data for the type specimens. *Globitelphusa* sp. nov. distinctly differs from *G. pistorica* (Alcock, 1909) by having a smooth lateral side wall of carapace. It differs from the *G. bakeri* (Alcock, 1909) in possessing distinct epigastric crista. From *G. cylindrus* (Alcock, 1909), the new species is distinct by having a relatively wider carapace and more elongated, prominent postorbital cristae. In *G. planifrons* (Burger, 1894), carapace is relatively more square-shaped than *Globitelphusa* sp. nov.. The discovery of *Globitelphusa* sp. nov. suggests more faunistic exploration needed for North East India, in respect to Freshwater crab diversity.

Keywords : Freshwater crabs, New species, *Globitelphusa*, Gecarcinucidae, Naga Hills

A New Species of *Ephoron* Williamson, 1802 (Ephemeroptera: Polymitarciidae) from the River Cauvery, Karnataka, India

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Abstract

The pale burrower mayfly genus *Ephoron* (Polymitarciidae) is distributed worldwide. In India, three species of the genus were described based on adults alone. In this study, a new species *Ephoron kanagae* sp. nov., of the genus is described from the River Kavery, Karnataka state, India. The described new species is differentiated from all other known species of the genus *Ephoron* by the following combination of characters: (ii) Mandibular tusks straight, apices curved inwards, mandibular tusks with 30–37 tubercles, tubercles shorter in size; (iii) right mandible with large triangular shaped spine between outer and inner incisors (or base of the outer incisor). Distribution, diagnostic characters and the habitat ecology of the described species are provided.

Keywords : Mayfly, new species, Ephoroninae, River Cauvery, Karnataka

Two New Species of Rice-field Crab of the Genus *Oziotelphusa* Muller, 1887 (Decapoda: Brachyura: Gecarcinucidae) from Eastern India

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Abstract

Gecarcinucid genus *Oziotelphusa* Müller, 1887, are generally called as rice field crabs and are widely distributed along the low lying areas of Sri Lanka and peninsular India. Nine species of *Oziotelphusa* are known so far from India. Most of the species of this genus was explored from Andhra Pradesh, Tamil Nadu and Kerala, the Eastern Indian states like Bihar, Odisha and West Bengal are still less explored, a recent study reveals two new species of this genus, *Oziotelphusa* sp. nov. from Bihar and *Oziotelphusa* sp. nov. from West Bengal. Both the new species is distinguished from its congeners by several morphological characters such as male pleonal and G1 characters, anterolateral carapace margin, epistomal median tooth, and female gonopore. Live specimens were collected from deep nest hole under the clayey soils of a paddy-field nearby Mandar hills, of Banka district, Bihar and a low paddy-field surrounded by Sal forest near Jhargram of West Bengal. Critical examination was found those specimens as two new species in each respective area. All the collected specimens were preserved in 70% Alcohol, after examination and determination of species and the designated type specimens were kept in the repository of ZSI, Kolkata. The new species have to describe with detailed morphology, illustrations and molecular data for the type specimens in the full paper, a detail comparisons would be discussed to distinguished these two new species from the other congeners. The discovery of *Oziotelphusa* sp. nov. and *Oziotelphusa* sp. nov. is clearly showcase the need of faunistic exploration of these area. As these crabs are highly consumed by local people a conservation measure should be taken to save these bio indicator species.

Keywords : New Species, Paddy field crab, Eastern India, Diversity, Exploration

***Siphamia* sp. nov, A New Species of Cardinal Fish (Teleostei: Apogonidae) from the South-Western Bay of Bengal, India**

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Abstract

A new species of small cardinalfish, *Siphamia bengalensis* sp nov., is herein described and illustrated based on two specimens obtained from trawl bycatch landing at depths of approximately 25-35 m at the Kasimedu fish landing centre, Chennai, India, along the Bay of Bengal. The new species closely resembles *S. tubifer* and *S. fuscolineata* in possessing a distinct black longitudinal stripe along the body. But upon detailed morphological examination and comparative analyses clearly distinguish it from *S. tubifer* by several diagnostic characters, including fewer tubed lateral line scales (7-11 vs 20-24 in *S. tubifer*); fewer preopercular edge serrations (18-26 vs 23-35 in *S. tubifer*); greater body depth in SL (3.1(3.2) vs 2.3-2.7 in *S. tubifer*), and a comparatively longer pelvic fin length in SL (5.4 vs 4.2-4.7 in *S. tubifer*). Although *S. fuscolineata* also possesses a black body stripe, the new species is readily differentiated by its narrower stripe, in contrast to the broader and more prominent stripe observed in *S. fuscolineata*. In fresh, the colour of the body is silvery grey and the bases of all fins are light orange. The anterior head is covered with numerous small black dots of variable sizes.

Keywords : Cardinal fish, New species, *Siphamia*, Bay of Bengal, India

First Confirm Record of the Genus *Svistella* (Gorochov, 1987) (Orthoptera: Gryllidae) from India, through Morphological and Molecular Identification

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Abstract

The present study reports first confirm record of genus *Svistella* (Gorochov, 1987) from India, based on the collection from West Kameng district of Arunachal Pradesh, India. The specimens were identified through morphological characters followed by molecular sequencing of the mitochondrial cytochrome c oxidase subunit I (COI) gene for accurate identification at species level. A dataset of COI sequence was assembled comprising newly generated and publicly available sequences from NCBI for the genus *Svistella* (Gorochov, 1987) to evaluate the genetic distances amongst the species. The analysis revealed an overall mean distance of 11?tween the species of this genus. The first Indian record of genus, *Svistella malu* (He, 2021) showed minimal genetic divergence (0.79%) when compared with conspecific sequences from China. Furthermore, the phylogenetic analysis showed that the Indian and Chinese *Svistella malu* (He, 2021) sequences are closely related with very low genetic divergence, and phylogenetically distinct from other species in the genus. The Indian *Svistella malu* (He, 2021) sequences clustered together with Chinese conspecifics, therefore confirming their identity as a member of same species and indicating low genetic divergence, while all species remained clearly distinct. This molecular analysis showed that the specimen is closely related to other cognates in the same family and serves as a validation of the identified specimen. The integrative taxonomy approach provides an effective framework for identification of species in areas with a high biodiversity but lack of study particularly in the Himalayas, where new undocumented diversity of Orthoptera is likely to be found.

Key words : Cricket, Taxonomy, new record, DNA Barcoding, Phylogenetics

First Record of *Mesocoelium monodi* Dollfus, 1929 (Platyhelminthes: Trematoda: Mesocoeliidae) from India

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Abstract

The present study reports *Mesocoelium monodi* Dollfus, 1929 for the first time from India. The present specimen is housed in the National Zoological Collections of the Platyhelminthes Section, Zoological Survey of India. The specimens were recovered from the intestine of *Duttaphrynus melanostictus* (Schneider, 1799) collected from Alaboi, Kamrup, Assam. Earlier, nine species of *Mesocoelium* Odhner, 1910 had been reported from India: *M. asymmetrovitellarius* Kumari & Verma, 1993, *M. burdwanense* Mukherjee, 1968, *M. melanostictii* Rao, 1989, *M. melanostictusi* Singh & Prasad, 1984, *M. mithilae* Kanth & Srivastava, 1989, *M. monas* (Rudolphi, 1819) Teixeira de Freitas, 1958, *M. sociale* (Lühe, 1901) Odhner, 1910, *M. thapari* Gupta & Jahan, 1978 and *M. varunae* Baugh, 1957. The species *M. monodi* was reported mainly from African countries, including Cameroon, Ghana, Democratic Republic of the Congo, Nigeria, Benin, Burkina Faso and Togo, along with an additional report from Louisiana, USA. The present finding therefore extends the known distribution of the species to the Indian subcontinent. The present specimens of *Mesocoelium* are compared with the original description and other published literatures of *M. monodi*. This record adds to the known diversity of amphibian trematodes in India and highlights the importance of National zoological collections in faunistic studies.

Keywords : Platyhelminthes, Trematoda, Mesocoelium, India, New Record

New Record of *Rapana bezoar* (Linnaeus, 1767) (Gastropoda: Muricidae) from Indian Coast

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Abstract

The present study reports the first record of the marine gastropod *Rapana bezoar* (Linnaeus, 1767) from the Indian coast. Known primarily from the Indo-West Pacific region, the species occurrence in Indian waters expands its known range westward. Morphological analysis was done through analysis of shell and with specimens in the established literature including relevant taxonomic characters. Morphological identification, habitat characterization, and possible ecological implications of its presence are discussed.

Keywords : Distribution, Bay of Bengal, India

Redescription of *Forcipula quadrispinosa* (Dohrn, 1863) (Dermaptera: Labiduridae: Labidurinae) from Gangetic West Bengal, India with Reference to Male Genitalia and A Key to the Indian species

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Abstract

Forcipula quadrispinosa (Dohrn, 1863) (Dermaptera: Labiduridae: Labidurinae) is re-described and illustrated based on the material collected from Kestopur, North 24 Parganas district of Gangetic West Bengal, India. New characters are included, variations are confirmed, and illustrations of male morphometric measurements and the detailed structure of male genitalia are provided to facilitate easy species detection. The new identifying characters like presence of a black elongated spot on the basal half of tibia, hind tarsi with first segment are slightly shorter than the combined length of second and third tarsal segments, prominent dorsal temporal pit beside both eyes and male genitalia with undulating curvature of inner and outer margins of parameres with apical tip blunt, are added. An updated checklist of Indian species of the genus *Forcipula* Bolivar, 1897 with its distributions and the identification key of species known from India are also prepared. The Dermaptera of the world comprises of about 2000 species, of which 286 species belonging to 73 genera and 9 families are known from India. Bolivar (1897) established *Forcipula* as a genus of family Labiduridae Verhoeff, 1902 and subfamily Labidurinae Burr, 1909. Although the taxonomy of Dermaptera is unstable and unsettled, the genus *Forcipula* is represented by 27 species globally. Srivastava (2003) reported 12 species of *Forcipula* known from India, of which 5 are reported from West Bengal. *Forcipula quadrispinosa* (Dohrn, 1863) have some morphological similarities with *Forcipula indica* Brindle, 1966. So, we add detailed comparisons of forceps structure, unique colour of legs, antennal segments, pronotum and proper description of male genitalia to distinguish their taxonomic identity. To include newly observed characters and confirm morphological variations in *Forcipula quadrispinosa*, we undertook a re-description of the species. This study helps resolve misidentifications, distinguish closely related species, address taxonomic ambiguities, and enhance its utility for global research.

Keywords : Taxonomy, Earwigs, Morphometric Analysis, Taxonomic Revision, Comparative morphology

A Comprehensive Taxonomic Review of Indian *Diapromorpha* Lacordaire, 1848 (Coleoptera: Chrysomelidae: Cryptocephalinae: Clytrini)

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Abstract

The genus *Diapromorpha* Lacordaire, 1848 (Chrysomelidae: Cryptocephalinae: Clytrini) represents a morphologically distinct yet taxonomically understudied lineage of leaf beetles in the Oriental region. In India, its diversity and species boundaries have remained poorly resolved due to scattered records and limited diagnostic treatment. This study presents a comprehensive taxonomic review of *Diapromorpha* in India, based on critical examination of specimens housed in the National Zoological Collection (Coleoptera Section) of the Zoological Survey of India, Kolkata. Seven species are recognized as valid: *Diapromorpha balteata* Lacordaire, 1848; *D. capitata* Jacoby, 1908; *D. dejeanii dejeanii* Lacordaire, 1848; *D. indica* Jacoby, 1903; *D. pallens* Fabricius, 1787; *D. pinguis* Lacordaire, 1848; and *D. turcica turcica* Fabricius, 1801. Diagnostic characters are redefined, and detailed morphological assessments, including male genitalia, are provided alongside updated distributional data. An identification key, distribution maps, and habitus images are included to support accurate and reproducible species identification. This review provides the first consolidated and critically evaluated account of *Diapromorpha* in India, resolving taxonomic inconsistencies and stabilizing species concepts within the genus. By establishing a robust taxonomic framework, the study not only enhances the understanding of Clytrini diversity in the region but also lays a foundation for future systematic, phylogenetic, and conservation-oriented research. The results further emphasize the hidden diversity of Indian leaf beetles and the urgent need for intensified taxonomic exploration in the Oriental biodiversity hotspot.

Keywords : Cryptocephalinae, Taxonomy, Leaf Beetles, Revision, Morphology

Taxonomic Reassessment of the Genus *Miochira* Lacordaire, 1848 (Coleoptera: Chrysomelidae: Cryptocephalinae: Clytrini) from India

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Abstract

The genus *Miochira* Lacordaire, 1848 is a taxonomically important group of leaf beetles (Chrysomelidae: Cryptocephalinae: Clytrini) distributed primarily in the Oriental region, yet its diversity in India remains inadequately understood due to limited records and insufficiently detailed original descriptions. Earlier studies reported only two species from India, while subsequent global contributions expanded the known diversity of the genus without adequately resolving its Indian representation. The present study provides a focused taxonomic reassessment of *Miochira* in India based on detailed morphological examination, with particular emphasis on diagnostic characters and male genitalia. Three species are confirmed as valid: *Miochira gracilis* Lacordaire, 1848, *M. lefevrei occipitalis* (Jacoby, 1897), and *M. signaticolis signaticolis* (Kollar & Redtenbacher, 1844). Revised diagnostic features, detailed morphological descriptions, and updated distributional data are presented. An identification key is also provided to facilitate accurate and reliable species identification. By consolidating previously scattered information and refining species boundaries, this study establishes an essential baseline for future systematic, biogeographic, and biodiversity research on Clytrini beetles in India. It further highlights the need for continued taxonomic exploration of underrepresented leaf beetle groups in the Oriental region.

Keywords : Taxonomy, Indian fauna, Chrysomelidae, Clytrini, Leaf beetles

First Record of *Tanychlamys perplana* (Godwin-Austen, 1883) from North-East India, with An Updated Checklist of the Genus *Tanychlamys* in Arunachal Pradesh

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Abstract

Terrestrial snails play an ecological role in nutrient cycling, decomposition, regulation of fungi and algae populations, etc. *Tanychlamys perplana* (Godwin-Austen, 1883), a terrestrial snail, belonging to the family Ariophantidae, is recorded from Arunachal Pradesh, North-East India, denoting the first report of its occurrence, hence expanding the geographical range distribution of the species. The present study is based on specimens collected from the Zoological Survey of India. Morphological features and taxonomic identification were made using taxonomic literature and comparing with previously identified specimens available in the National Zoological Collections. Some of the distinguishing features of this species include: dextral, thin, smooth, shiny, fragile shell; flattened body whorls; non-elevated spire in the same plane as body whorls; distinguishing it from other congeners. With this contribution, the total number of species of the genus *Tanychlamys* known from Arunachal Pradesh will rise, highlighting the importance of the area as a centre for terrestrial molluscan diversity.

Keywords : Terrestrial Mollusca, Gastropoda, Ariophantidae, North-East Region

First Report of Range Extension of *Siccia spotoptera* (Singh & Kirti, 2016) (Lepidoptera: Erebiidae: Arctiinae) Beyond Its Type Locality

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Abstract

The genus *Siccia* (Walker, 1854) represents a diverse group of lichen moths found throughout tropical and subtropical regions. These moths are ecologically tied to habitats rich in lichens. As members of the Erebiidae family one of the largest families within Lepidoptera with 26368 species they play a vital role as both herbivores and a food source for higher trophic levels. Furthermore, *Siccia* species are regarded as reliable bioindicators due to their sensitivity to air pollution and environmental changes. Globally, the genus *Siccia* contains approximately 205 described species, with 17 extant species in India. The classification of this group has evolved significantly over time. Many species now belonging to *Siccia* were previously categorized under the genus *Aemene*. Recent taxonomic work, specifically by Volynkin (2023), has streamlined this classification. By analyzing morphological and genitalic evidence, synonymized *Aemene*, *Parasiccia*, and *Hyposiccia* under the single genus *Siccia*. The present study reports a range extension of *Siccia spotoptera* (Singh & Kirti, 2016), originally described based on female genitalia from Karnataka, India. During our recent field surveys, we collected several specimens; notably, all individuals were female. Comparison of the female genitalia confirmed that these specimens are conspecific with the original type material. This record extends the known distribution of *Siccia spotoptera* into the southern Western Ghats of Kerala. Such a finding suggests a broader distribution than previously thought and indicates habitat continuity between the states of Karnataka and Kerala. Ultimately, this research underscores the necessity of continued faunal surveys. Such data is critical for mapping species biogeography and strengthening biodiversity conservation efforts within the ecologically sensitive Western Ghats.

Key words : Lichen moths, Microlepidoptera, female genitalia, new distribution record, Lithosiini

Westward Range Extension of *Eumantispā tibetana* Yang, 1988 (Neuroptera: Mantispidae) into the Indian Western Himalayas Supported by Morphological and DNA Barcode Evidence

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Abstract

Eumantispā tibetana Yang, 1988 is reported for the first time from Himachal Pradesh in the Western Himalayas, India, specifically from the Great Himalayan National Park (GHNP), Sainj, Kullu district. This record represents a significant westward range extension from its previously known distribution in Arunachal Pradesh, Eastern Himalaya, India. Preliminary identification was done based on diagnostic thoracic coloration and subsequently confirmed through detailed morphological and morphometric examination, which includes the presence of more than four radial cells in the wings and a broadly yellow anterior region of the prothorax.

In India, three species of the genus *Eumantispā* have been reported; however, no DNA barcode data was previously available. The present study thus provides the first DNA barcode record for *Eumantispā tibetana*. A dataset was prepared using COI sequences, comprising newly generated sequences along with publicly available data, including eight species representing six genera from Asia. Genetic divergence analysis revealed low intraspecific variation (1–2%) in *Eumantispā tibetana* and comparatively high interspecific divergence (8–12%), supporting clear and reliable species delimitation within the studied taxa. The newly generated sequences of *E. tibetana* formed a well-supported and distinct clade, indicating its clear genetic identity. Phylogenetic analysis further revealed that *E. tibetana* shares the closest affinity with *Eumantispā harmandi* (Navás, 1909), while maintaining sufficient genetic divergence to confirm its taxonomic distinctness. The absence of prior molecular data for *E. tibetana* underscores the significance of this study in addressing an important knowledge gap, and suggest that *E. tibetana* may be more widely distributed across high-altitude regions of the Indian Himalayan range.

Keywords : *Eumantispā tibetana*, DNA barcoding, Phylogenetic analysis, Range extension, Species delimitation

DNA Barcoding and Phylogenetic Analysis of Legume Pest *Riptortus linearis* Fabricius, 1775 (Hemiptera: Alydidae) from the Indian Himalayan Region

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Abstract

Recognized as a substantial threat to Indian agriculture, *Riptortus linearis* (Fabricius, 1775) (Hemiptera: Alydidae) is a pod-sucking pest that primarily feeds on legumes like pigeon pea, black gram, and soybean which are important cash crops of India. Globally, this genus exhibits a diversity of 25 species, while in India, this genus exhibits three species which are widely distributed all over the country. Despite reports on the pest status of *R. linearis*, DNA barcode studies remain limited and understudied. For the present study, specimens were collected from Arunachal Pradesh and taxonomic study was undertaken for morphological identification. It also assesses the COI gene in molecular identification and phylogenetic analysis and aims to document the DNA barcode data for *R. linearis* from the Indian Himalayan region and report the first barcode from Eastern Himalayas. Phylogenetic studies were performed using existing barcode sequences available from Western India, Punjab to ascertain their phylogenetic position from its Eastern counterpart. Maximum-Likelihood (ML) phylogenetic analysis delineated two distinct regional lineages and the Eastern and Western sequences show a genetic distance of 2.21%. Consequently, this divergence underscores the importance of accounting for significant regional genetic variation when utilizing molecular markers to study and identify this species. Furthermore, this study discusses the current status of genetic data availability and identifies that more data is required for comprehensive research. It also addresses the presence of unsubstantiated data submitted to Genbank for the species and assesses its potential value for upcoming studies.

Keywords : Agricultural pest, First barcode, Arunachal Pradesh, *Riptortus linearis*, Eastern Himalayas

Insights into the Genetic Diversity of Genus *Ceriagrion* (Selys, 1876) (Odonata: Zygoptera: Coenagrionidae) from India with First Barcode Record of *Ceriagrion fallax* (Ris, 1914)

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Abstract

Ceriagrion fallax (Ris, 1914) “Black tailed Marsh Dart” (Odonata; Zygoptera; Coenagrionidae) is an important species and plays a vital role in wetland ecosystem. There are ten species under this genus recorded from India till date. Despite the occurrence of *Ceriagrion fallax* (Ris, 1914) across Indian landscapes, the taxonomic assessment has relied solely on morphological characters, and no DNA barcode data of this species reported from India so far. In the current study, DNA barcoding of Mitochondrial cytochrome oxidase subunit 1 (COI) has been done for *Ceriagrion fallax* (Ris, 1914) collected from Arunachal Pradesh, India. The identity of species was confirmed through morphological examination of genital and anal appendages along with COI sequences match with NCBI and BOLD database. The genetic distance and phylogenetic analysis were done for the genus using all publicly available COI sequences in NCBI across different countries. Genetic analysis within genus for *Ceriagrion* (Selys, 1876) results 10.945% divergence (K2P) which indicates high level of genetic divergence. *Ceriagrion fallax* (Ris, 1914) shows closest affinity with *Ceriagrion azureum* (Selys, 1891) while the *Ceriagrion tenellum* (de Villers, 1789) is most distant with mean genetic distance of 0.07427 and 0.15805 respectively. The phylogeny based analysis reveal well distinct clades that corresponded to different species of genus *Ceriagrion* (Selys, 1876). Each species of the genus formed a separate monophyletic cluster and the newly generated Indian sequence of *Ceriagrion fallax* (Ris, 1914) clustered closely with its other congeners from Bhutan. This current study provides an idea of phylogenetic clustering of the genus *Ceriagrion* (Selys, 1876) with all its species reported from India and demonstrates the utility of integrated morphological and molecular taxonomy in resolving species boundary and provides better understanding for biodiversity conservation and management planning.

Keywords : Ceriagrion, Molecular phylogeny, New Barcode, COI, Genetic distance

Molecular Characterization of *Eutropis macularia* Blyth (1853), from Manipur, India

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Abstract

Skinks are the diurnal lizards, grouped under the family Scincidae. Among these, Asian species are assigned under the genus *Eutropis*. According to the reptile database, 19 species are found in the Indian subcontinent. A Herpetological survey has been carried out in and around Manipur University campus during the year 2025-26. During this four individuals of *Eutropis* sp. have been collected. They possess separated supranasals, dorsal scales with 5-7 strong keels, earhole smaller than lateral scales with 4-5 indistinctive lobules, without palm or sole pads. Molecular characterization of the species has been carried out using two molecular markers: COI mtDNA and 16S rDNA. Phylogenetic trees are also constructed by using MEGAX software. Maximum supported clade is shown with specimens from India, Malaysia, China, Myanmar (JQ767957, MG935765, MT608791, AY159078). Morphometric data, molecular characters, information about their localities along with GPS records are also provided.

Keywords : Bronze grass Skink, Scincids, Mabuya, DNA Sequencing

Phylogenetic Mapping of the Different Groups of *Garra* Hamilton, 1822 (Teleostei: Cyprinidae) Through mtDNA Characterization

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Abstract

The genus *Garra* Hamilton, 1822 of the subfamily Labeoninae is a highly diversified group of species. It exhibits great variations on its snout morphology. Based on it, Nebeshwar and Viswanath, 2017, categorised the genus into five groups, namely, “smooth snout”, “transverse lobe”, “proboscis and transverse lobe”, “a pair of rostral flaps” and “a pair of rostral lobes” groups. The term “incipient proboscis” used to describe some species of *Garra* without well-developed proboscis, creates ambiguity in species identification. Following the methodologies of Kottelat (2001; 2020) and Nebeshwar and Vishwanath (2013; 2017) some specimens collected from Brahmaputra drainages of Nagaland have been morphologically identified. Further molecular characterization of the identified species has been done using *coxI* gene marker of the mtDNA. The generated *coxI* nucleotide gene sequences of the studied specimens were used to construct a maximum likelihood phylogeny tree along with other reference *coxI* nucleotide gene sequences from NCBI GenBank. The resulting phylogeny tree illustrated that different clades were formed, correlating with those groups of Nebeshwar and Vishwanath, 2017. And some species included in the incipient proboscis group resulted in forming a clade with either the smooth snout group or the transverse lobe group. Therefore, this study gives additional data on the genetic makeup to the five groups of Nebeshwar and Vishwanath, 2017 for correct characterization of the genus.

Keywords : *G. birostris*, Eastern Himalayan, Northeast India, incipient proboscis, DNA sequencing

Assessing the Efficacy of DNA Barcoding for Lepidopteran Identification in the Indian Himalayan Region: A Preliminary Study

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Abstract

DNA barcoding based on the mitochondrial cytochrome c oxidase subunit I (COI) gene has emerged as a reliable molecular tool for animal identification. The present study evaluated its efficacy in addressing taxonomic challenges in the biodiversity-rich Indian Himalayan Region (IHR). A total of 244 Lepidopteran specimens were collected across two biogeographically distinct zones of which 92 from the Western Himalaya (Himachal Pradesh) and 152 from the Eastern Himalaya (Arunachal Pradesh). All specimens were photographed and curated for morphological documentation, and genomic DNA was extracted from hind legs using a cost-effective alkaline lysis protocol. COI barcodes were generated using high-throughput UMI-based Oxford Nanopore sequencing. The resulting sequences were queried against the NCBI GenBank and the Barcode of Life Data System (BOLD) using a 99% similarity threshold for species-level identification. Of the 244 specimens, all were resolved to family level (17 families), 167 to genus level (88 genera), and 68 to species level (44 species), corresponding to resolution rates of 100%, 68.4%, and 27.9%, respectively. Cross-referencing with existing IHR-specific barcode records in the NCBI and BOLD databases revealed 38 genera and 28 species not previously documented for the region, representing potential new barcode records for the IHR. Collectively, these findings demonstrate the value of COI barcoding as a rapid biodiversity assessment tool and highlight the urgent need for expanded, geographically comprehensive barcode reference libraries for the Himalayan fauna.

Keywords : Lepidoptera, Indian Himalayan Region, Cytochrome c oxidase I, DNA barcoding, Molecular taxonomy

Rapid Detection of Syrphid Flies (Diptera: Syrphidae) Through DNA Barcoding in Eastern Himalayas from Chug Valley, Arunachal Pradesh, India

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Abstract

The Eastern Himalayas, a globally recognized biodiversity hotspot, remain underexplored with respect to dipteran diversity, particularly hoverflies. Syrphid flies are vital in high-altitude Himalayan ecosystems as key pollinators and natural pest controllers, supporting both biodiversity and ecosystem stability under extreme conditions. The present study employs an integrative taxonomic approach combining morphological characterization and DNA barcoding to facilitate rapid detection and accurate identification of syrphid flies from Chug Valley, Arunachal Pradesh, India. Extensive field surveys resulted in the documentation of five species: *Phytomia* (*Phytomia*) *zonata* (Fabricius, 1787), *Episyrphus* (*Episyrphus*) *balteatus* (De Geer, 1776), *Eristalis* (*Eristalis*) *tenax* (Linnaeus, 1758), *Eristalinus* (*Eristalodes*) *paria* (Bigot, 1880), and *Asarkina* (*Asarkina*) *ericetorum* (Fabricius, 1781), along with two additional morphospecies, *Syrphus* sp. and *Chrysotoxum* sp. Although these species are known to science, this study provides their first DNA barcode records from India. Generated sequences were analyzed alongside publicly available datasets to assess genetic divergence. Phylogenetic relationships were reconstructed using standard tree-building methods, supporting species identities and revealing patterns of genetic affinity within the group. The integration of molecular and morphological data highlights the effectiveness of DNA barcoding in resolving taxonomic ambiguities and uncovering cryptic diversity. This study contributes to strengthening the reference barcode library for Indian Syrphidae and underscores the importance of integrative approaches for rapid and accurate detection of species diversity, strengthening long-term monitoring and conservation efforts by revealing cryptic taxa and tracking ecological changes in the Indian Himalayas.

Keywords : Cytochrome c oxidase subunit I, Diptera, Genetic diversity, Himalaya, Hoverflies

Integrated Taxonomic Assessment of A *Botia* Species from Tirap River, Arunachal Pradesh Using Molecular Approaches and Its Relation with Other with other Congeners from Northeast India

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Abstract

Loaches belonging to the family Cobitidae are high-demand fish species of both ornamental and edible value, yet many are increasingly threatened with extinction. Taxonomic identification within this group remains challenging due to significant morphological variability and overlap among closely related species. Most recent report include 8-10 valid species, among those *B. rostrata*, *B. dario*, *B. histrionica*, *B. lohachata* are distributed widely in Northeast India. The present study aims to determine the taxonomic status of a *Botia* species collected from the Tirap River, Changlang district, Arunachal Pradesh, India, using an integrative taxonomic approach along with revision of other congeners. Specimens were examined based on general body form, morphometric measurements and meristic counts followed standard protocols of Hubbs and Lagner, 1958. The studied specimen exhibited distinguishing characteristics which show variation from several congeners. Genomic DNA was isolated from fin and muscle tissue using the phenol-chloroform extraction method (Sambrook et al.). Mitochondrial cytochrome oxidase subunit I (COI) gene analysis revealed approximately 90-91% sequence similarity with available *Botia* sequences in the NCBI database, indicating substantial genetic divergence. The combined morphological and molecular evidence suggests that *Botia* population from the Tirap represents a distinct evolutionary lineage and may potentially correspond to an undescribed species. It highlights the rich yet undescribed ichthyofaunal diversity of northeastern India and underscores the importance of integrative taxonomy in resolving species boundaries within Cobitidae. Relation with its congeners from Northeast India is also discussed.

Keywords : *Botia*, Integrative Taxonomy, Congeners, Genetic divergence, Evolutionary lineage

Fishes of the Genus *Garra* Hamilton, 1822 (Teleostei: Cyprinidae) from the Tirap River of Arunachal Pradesh

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Abstract

Arunachal Pradesh is a part of the Eastern Himalayan biodiversity hotspot drained by networks of Brahmaputra drainage that support a high diversity of specialised rheophilic fishes. The Tirap district is, however, least explored due to its terrain topography. Recent surveys in Charju, Tirap and Barap rivers of the Tirap district resulted in documenting three species of the genus *Garra*. Counts and measurements follow Kottelat, 2001 and Nebeshwar and Vishwanath, 2013. Terminology of lips and associated structure follows Kottelat 2020. The species were identified as *Garra magnidiscus* and *Garra naganensis* aff. of the smooth snout group, and *Garra birostris* of the species with proboscis and transverse lobe. Morphological analysis of the studied specimens further reveals distinct snout variations: *Garra magnidiscus* is distinguished by a U-shaped head, presence of tubercles on the tip of snout and lacking a proboscis; *Garra birostris* possesses a prominent bilobed proboscis with tri-to tetracuspoid tubercles; *Garra naganensis* aff. exhibits a smooth snout and lacks tubercles. Molecular characterisation of the three species was carried out using *coxI* nucleotide gene sequence to support the morphological identity, and are discussed here in.

Keywords : DNA sequencing, Northeast India, Labeoninae, Snout morphology

Study on the Fish Species Diversity of Genus *Barilius* Hamilton, 1822 and *Opsarius* McClelland, 1839 (Actinopterygii: Cypriniformes: Cyprinidae) in the Northeast India with Redescription of Some Species

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Abstract

The eight sister states of Northeast India have been recorded as a high diversity of aquatic freshwater fish species regions. The genus *Barilius* and *Opsarius* are commonly referred to as hill trout or barils. Commonly the fishes of *Barilius* and *Opsarius* possess moderately elongated and compressed body, silvery body with dark blue or bluish green bars or spots, pointed head with tubercles, superior large eyes, thin and simple lips, forked caudal fins and sublaterally placed lateral line. The species of *Opsarius* is characteristic in having a deep compressed body, parallel rows of tubercles on the lower jaw, lack barbels whereas *Barilius* species are distinguished in having a slender compressed body, irregularly arranged smaller and less developed tubercles on the lower jaw, presence of 1 to 2 pairs of barbels. Currently, a total of two species of *Barilius* are recorded and a total of twenty species of *Opsarius* have been recorded across the six major river drainage system of northeast India. The measurements and counts follow the standard methods of Hubbs & Lagler, 1958 and Tejavej, 2010. Moreover, the molecular studies of *Barilius* sp. follows Sambrook et. al. 1989. A key to the species both genus *Barilius* and *Opsarius* are provided.

Keywords : *Barilius*, *Opsarium*, taxonomy, north-east regions, India

Barcolens: A Browser-Based Tool for Genetic Distance Analysis in DNA Barcoding Studies

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Abstract

DNA barcoding has emerged as a powerful approach for species identification and biodiversity assessment, yet accessible computational tools for standardized distance analysis remain limited for non-specialist users. Here we present BarcoLens, a lightweight, browser-native web application for comprehensive genetic distance computation from DNA barcode datasets. BarcoLens accepts standard FASTA-formatted sequences and performs pairwise distance estimation using the Kimura 2-Parameter (K2P) substitution model, computing within-species, within-genus, between-species, and between-genus distances with descriptive statistics. Critically, the tool incorporates a nearest neighbour analysis module that identifies the closest heterospecific match for each sequence and species and quantifies the barcode gap - the difference between maximum intraspecific divergence and nearest interspecific distance - flagging species as either “Clear” or “Overlap” to assess barcoding efficacy. All results are exportable as CSV files compatible with downstream analyses. Requiring no installation, server infrastructure, or programming expertise, BarcoLens runs entirely within the user’s browser, ensuring data privacy and broad accessibility. BarcoLens is freely available at <https://github.com/Avvypaks2>. This tool is designed to support taxonomists, ecologists, and conservation biologists in rapidly evaluating the reliability of DNA barcodes for species delimitation across diverse organismal groups.

Keywords : Barcode data analysis, Genetic diversity, Barcode gap, Genetic distance analysis, Species delimitation

Resolving Taxonomic Ambiguity between *Bombus haemorrhoidalis* and *Bombus albopleuralis* (Hymenoptera: Apidae) from Western Himalaya

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Abstract

The present study resolves the taxonomic ambiguity between *Bombus haemorrhoidalis* and *Bombus albopleuralis* from the Western Himalaya using key morphological characters. Both species are long-tongued, ecologically similar bumblebees inhabiting forest edges and grasslands, often leading to misidentification. Diagnostic differences were established based on caste-specific traits. Females of *B. albopleuralis* exhibit a densely punctured clypeus and a matt oculo-ocellar area with microridges, whereas *B. haemorrhoidalis* is characterized by a black thoracic dorsum without a pale median line and a yellow first tergite. Male genitalia further distinguish the species, with a bifurcated gonostylus in *B. albopleuralis* and a nearly square gonostylus in *B. haemorrhoidalis*. Size variation also supports separation, with *B. haemorrhoidalis* being larger. These consistent morphological differences provide reliable identification criteria, aiding accurate taxonomy and improving understanding of bumblebee diversity in the Western Himalaya.

Keywords : *Bombus haemorrhoidalis*, *Bombus albopleuralis*, taxonomic ambiguity, Megabombus, Orientalibombus

Range Extension of *Laubuka parafasciata* (Teleostei: Cyprinidae) to the Karnaphuli River Basin, Mizoram, Northeast India

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Abstract

Laubuka parafasciata was originally described from the Sala River, a tributary of the Kaladan River basin in Mizoram, Northeast India. Although adjacent, the Kaladan and Karnaphuli river basins constitute distinct drainage systems separated by watershed divides, with limited but notable ichthyofaunal overlap between them. The present study documents the occurrence of *L. parafasciata* from additional localities and reassesses its distributional range, including its first confirmed record from the Karnaphuli River basin. Specimens were collected from three rivers in Mizoram, namely the Mar, Tuipawl and the main channel of the Karnaphuli River, using standard sampling methods. Identification was based on detailed morpho-meristic and molecular analyses (using mitochondrial cytochrome oxidase 1) following original descriptions and relevant taxonomic keys. The examined specimens conform to the diagnostic features of *L. parafasciata*, particularly the presence of a dark-brown midlateral stripe extending from the posterior margin of the orbit to the middle of the caudal-fin base, and COI sequence similarity. Minor variations were observed in certain morphometric and meristic characters between populations from the Karnaphuli and Kaladan basins, which may be attributed to intraspecific variability or environmental influences. Notably, the occurrence of *L. parafasciata* in the Karnaphuli River basin represents a significant extension of its known distribution across adjacent but hydrologically distinct drainage systems of the Kaladan and Karnaphuli river basins. These findings provide additional insights into the distribution of the species and highlight the need for further ichthyological exploration in the Karnaphuli basin to better understand regional fish diversity and biogeographic patterns.

Keywords : Cyprinidae, drainage system, Indo-Burma biodiversity hotspot, mitochondrial DNA, new record

***Fromundus pseudopacus* Lis, 1994 (Hemiptera: Cydnidae): A New Addition to the Burrower Bug Fauna of India**

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Abstract

The present study reports the first record of *Fromundus pseudopacus* Lis, 1994, from India, based on specimens collected from the Mandi district in Himachal Pradesh. Following this discovery, four species of the genus *Fromundus* Distant, 1901 are now documented in the country. A detailed morphological description and illustrations of the specimens of *F. pseudopacus* from India are provided, with particular emphasis on external morphological features and male genitalia.

Key words : First record, Geotomini, Himachal Pradesh, Male genitalia, Taxonomy

Exploring Diverse Habitus of *Abscondita perplexa* (Walker, 1858) (Lampyridae) in India; A New Key to the Morphological Identification

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Abstract

There are 2500 firefly species in more than 100 genera identified worldwide, of which 70 are known to be found in India. A pale yellow species with dark apical apices, *Abscondita perplexa* (Walker, 1858) is a widely distributed species across Asia. Four male morphs, viz., AP1, AP2, AP3, and AP4, were recorded from six Indian states in four habitats, i.e., wetlands, paddy fields, shrubs, and forest land. The *A. perplexa* is widely distributed in most undisturbed habitats where humidity ranges from 60 -95% with coolness in the environment. There were no previous morphs of *A. perplexa* recorded, which is crucial in checking identification biases. Here, we recorded the morphological differences in the male habitus of *A. perplexa* to better identify the species. We collected 15 specimens of each morph and preserved them in 70% ethanol for species identification. Measurements and dissection were performed under the Leica microscope. All four morphs exhibit identical dorsal colouration (pale yellow elytra, pronotum, and mesoscutellum with black apical tips) with no variations in aedeagus, terminal abdominal tergites, or flash patterns. The ventrites (V4 and V5) of all morphs differ solely by the presence of black dots on either side of V5 (AP1), dark brown-to-black colouration on V4 (AP2), dark markings on V5, lateral markings on V4 (AP3), and the absence of black spots on V5 (AP4). The existing taxonomic keys for the genus *Abscondita* can be refined and accurately delineated through DNA-level characterisation, which presumably aids in the conservation of the species.

Key words : *Abscondita perplexa*, firefly, India, morphs, taxonomy

First Records of Triphorid Micro-Gastropods from the Gulf of Mannar, India

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Abstract

This study presents three micro-gastropod species of the family Triphoridae newly recorded from the Gulf of Mannar, located along the southeast coast of India: *Mastonia vulpina* (Hinds, 1843), *Litharium bilineatum* (Kosuge, 1962), and *Triphora albina* Thiele 1930. Specimens were obtained from intertidal and shallow subtidal zones and identified using shell morphological characters. The occurrence of these species in Indian waters represents a notable extension of their known range. The results reveal the hidden diversity of micro-molluscs in the region and indicate strong biogeographic connections with the Indo-Pacific fauna. Further detailed taxonomic work is essential to better document this understudied group.

Keywords : Gulf of Mannar, India, Micro gastropods, Triphoridae, Taxonomy

Studies on the External Male Genitalia of Some Species of True Dung Beetles (Coleoptera: Scarabaeidae: Coprini)

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Abstract

Tribe Coprini under family Scarabaeidae comprises wide variety of true dung beetles. It constitutes around 927 species in the world. Globally, *Heliocopris* includes 58 species, while *Copris* and *Catharsius* constitutes 287 and 107 species respectively. They are considered as bioindicators of environmental change and as a model system for the functioning of ecosystem. Identification of the true dung beetles can be done on the basis of morphological parameters, However, identification within this group can be challenging because traditional characters often exhibit high degree of modification within the same species due to differential growth rate. At the same time different species among the group shows structural similarity. As a result, these parameters may not always be reliable standard for precise identification. In such cases the analysis of male genitalia proves to be a crucial base for the confirmation and accurate identification of species. The specimens present in the national repository of Zoological survey of India, WRC, Pune were carefully studied in the laboratory under the Leica S9i stereozoom microscope. The morphology and genitalia of the specimens were observed by following standard Coleopterological techniques. The aim of the study was to identify the species based on morphological characters and external male genitalia characters. Male genitalia structure is an important tool for identification of species and understanding evolutionary relationships. The male genitalia of scarab beetles primarily consist of aedeagus which includes parameres, phallobase and spiculum gastrale attached externally. Observations revealed that genus *Heliocopris* displays resilient, strongly sclerotised parameres while *Copris* exhibits delicate structures. Genus *Catharsius* shows variation in the structure of aedeagus. The present study confirms and highlights the identification of *Heliocopris midas* (Fabricius, 1775), *Copris repertus* Walker 1858, *Catharsius molossus* (Linnaeus, 1758), *Catharsius sagax* (Quenstedt, 1806) and *Catharsius pithecus* (Fabricius, 1775), through external genitalia structures.

Key words : *Heliocopris*, *Copris*, *Catharsius*, Coprophagous, Aedeagus

A New Species Record of the Earth-Boring Beetle (Coleoptera, Bolboceratidae, Bolboceratinae) from India

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Abstract

The family Scarabaeidae comprises of Leparosticti and Pleurosticti beetles. Leparosticti are dung beetles that feeds on fibrous material of dung, rotten fruits, fungi carrion, etc. Whereas, Pleurosticti are phytophagous, causing severe losses to the majority of economic crops. They play a vital role and provide various ecosystem services like, nutrient recycling, organic matter decomposition, mitigation of greenhouse gases. *Bolboceras* Kirby, 1819 are commonly known as Earth-boring dung beetles. They belong to the family Bolboceratidae. Members of this genus are usually fossorial insects with strong and compact legs adapted for digging. Approximately 20 species of *Bolboceras* have been reported from Oriental region and 12 species from India.

In this study, the scarab beetle deposited at the Zoological Survey of India, Western Regional Centre, Pune, Maharashtra were examined. Identification was based on their external morphology and male genitalia. The aedeagus was carefully dissected and immersed in KOH solution and observed under Leica EZ 4HD stereomicroscope. Morphological comparison was made, and the genitalia were studied and confirmed using standard literature. The specimen is identified as *Bolboceras mimicans* Krikken, 2013. The Earlier record of this species is from Myanmar, (Burma). The present study reports *Bolboceras mimicans* Krikken, 2013 as a new record for India. These records extend their known geographic range and contribute to filling the important gaps in knowledge regarding the distribution of Bolboceratinae in the Indian subcontinent.

Key words : Earth borers, Scarabaeidae, *Bolboceras*, new record, Oriental region

Unveiling the First Records of *Onitis excavatus* and *Onitis falcatus* (Coleoptera: Scarabaeidae: Onitini) from Goa, India

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Abstract

Dung beetles belonging to the family Scarabaeidae (subfamily Scarabaeinae) form an important part of terrestrial ecosystems. Their presence plays an important role in dung decomposition, nutrient recycling, and improving soil aeration. In addition, their role helps suppress parasites, thereby contributing to overall environmental health. Yet, even with these important ecological roles, the information of their diversity and geographical range across the Indian subcontinent is extremely restricted. This gap in knowledge is particularly evident in biodiversity-rich regions such as the Western Ghats, where insect fauna is still insufficiently explored and documented. The genus *Onitis* Fabricius, 1798, which comes under the tribe Onitini, is a diverse group of dung beetles with approximately 178 species identified throughout the world. While these beetles are more common in the Afrotropical region, only about 20 species have so far been recorded from India. Even though *Onitis* species are highly capable of rapidly decomposing dung, their distribution within India is not yet fully understood, with several regions lacking detailed records. This study presents the first records of *Onitis excavatus* (Arrow, 1931) and *Onitis falcatus* (Wulfen, 1786) from South Goa, India. Following standard taxonomic procedures, the specimens examined in this study were obtained from the National Repository of the Zoological Survey of India (ZSI), Western Regional Centre (WRC), Pune. The material was carefully examined, and specimens belonging to the genus *Onitis* were sorted for further analysis. Due to morphological similarity between *Onitis* species, specimens were dissected and identification was confirmed by studying the male genitalia. The existence of *O. excavatus* and *O. falcatus* in South Goa gives a significant expansion of their known geographical range within India, especially in the Western Ghats region of Goa, an underrepresented region in dung beetle studies. This study highlights the importance of continued faunal surveys and taxonomic research in underexplored regions.

Keywords : Dung beetles, Taxonomy, Distribution, Scarabaeinae, Western Ghats



**THRUST AREA 2:
SYSTEMATICS**



Adaptation to Hypogean Environm Ent: An Ultra-Structural Study of Gills of Blind Loach *Schistura larketensis*

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Abstract

Subterranean adaptations are the evolutionary modifications that enable organisms to thrive in the unique, challenging conditions of cave environments. From enhanced sensory systems to specialized morphologies and physiologies, cave-dwelling species exhibit a remarkable range of adaptations driven by the perpetual darkness and resource limitations of their habitats. The degree of change is often correlates with the level of association of the species to cave. In the consistently dark conditions of cave environments, the development of enhanced non-visual sensory systems is critical for the survival of cave-dwelling fish species. Therefore the present investigation was carried out to study the ultrastructures of gills and barbells of troglomorphic *Schistura larketensis* using Scanning Electron Microscope. In *S. larketensis* barbells have elongated, rectangular keratinized epidermal cells with irregularly arranged micro-ridges. The maxillary barbells exhibit dense and uniform distribution of Type II TBs. Both the outer and inner rostral barbells exhibit dense and uniform distribution of Type III TBs. Type I TBs are also prominent in both the outer and inner rostral barbells. Type II TBs possesses numerous microvilli. Surface morphology of gills of *S. larketensis* consists of typical epithelial cell (pavement cell). Pavement cells exhibited either surface microvilli or microridges, which are randomly distributed on both the primary and secondary lamellae. Elongated repetitive microridges displaying a maze-like appearance have also been found. Apart from the pavement cells mucus cells are prevalent in both the lamellae. “Flat” and “undulate” areas can be found along any given lamella, although there is a tendency for the marginal region to become progressively flat at the base of each lamella.

Keywords : Adaptations, Gills, Ultrastructural, Subterranean, *Schistura larketensis*

Diversity and Evolutionary Dynamics of Mesozoic Ammonites: Implications for Taxonomy and Paleobiogeography

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Abstract

Ammonites, an extinct group of marine cephalopods belonging to the subclass Ammonoidea, represent one of the most diverse and evolutionarily dynamic lineages of the Mesozoic Era. Spanning from the Triassic to their extinction at the end of the Cretaceous, ammonites exhibit remarkable morphological disparity in shell ornamentation, coiling geometry and suture complexity. This study synthesizes taxonomic and morphological data from representative Mesozoic ammonite assemblages to evaluate patterns of diversity, evolutionary radiation and extinction across major stratigraphic intervals. The analysis highlights significant diversification events during the Early Jurassic and Late Cretaceous, driven by ecological opportunism and niche partitioning in marine environments. Morphological complexities such as increased suture structure and heteromorphic coiling are interpreted as adaptive responses to predation pressure and hydrostatic constraints. Additionally, provincialism in ammonite fauna reveal strong paleobiogeographic structuring influenced by plate tectonics, sea-level fluctuations and climatic gradients. Taxonomically, the study underscores the importance of integrating classical morphological criteria with emerging quantitative approaches, including morphometric and morphospace analyses, to resolve phylogenetic relationships and reduce systematic ambiguities. The observed patterns of iterative evolution and convergent morphologies further complicate traditional classification schemes, necessitating a reassessment of diagnostic characters used in ammonite taxonomy. This work contributes to a refined understanding of ammonite diversity and its evolutionary drivers, emphasizing their continued relevance as biostratigraphic markers and indicators of paleoenvironmental change. These study emphasizes the importance of an integrative taxonomic framework combining paleobiology, stratigraphy and quantitative methods for better interpretation of evolutionary history.

Keywords: Biostratigraphy, Morphospace analysis, Shell ornamentation, Extinction patterns, Phylogenetic relationships

Importance of Fossil Evidences in Deciphering Marine Palaeoenvironment

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Abstract

Marine palaeoenvironmental analysis has traditionally relied on taxonomic uniformitarianism for so long, yet this method presents significant pitfalls due to the evolution of organismal ecology over time. To address the constraints of depending exclusively on “nearest living relatives,” this review promotes a comprehensive, interdisciplinary framework that amalgamates palaeontological data with sophisticated geochemical and sedimentological methodologies. Researchers can better identify specific environmental controls and avoid misinterpreting ancient depositional environments by combining different types of evidence. This study emphasizes the necessity of utilizing independent isotopic and geochemical indicators—such as biomarkers from solvent-soluble organic matter; oxygen and carbon isotope ratios from mineralized skeletons—to reliably reconstruct parameters like paleotemperature, salinity and oxygenation. Complex environmental variables like substrate consistency, nutrient levels and water depth demand multi-proxy approaches to accurately decouple. Here we have highlighted the importance of geochemical signatures such as pyritization or carbon/sulphur ratios for any low-oxygen-based or low-diversity benthic community. Similarly, analyzing ichnofabrics and in-situ coral reef zonation is critical for understanding the bathymetry and physical energy dynamics. Ultimately, synthesizing paleontology, geochemistry and sedimentology maximizes the utility of fossil records, yielding robust reconstructions of ancient marine systems and sequence stratigraphy for better understanding of paleoenvironments.

Keywords : Marine environment, Paleodiversity, Ecology, Geochemistry

Trophic Plasticity and Niche Partitioning of 11 Myctophids from the Eastern Arabian Sea: Evidence from Gut Content Analysis

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Abstract

Myctophids are key members of mesopelagic ecosystems and constitute a major part of the oceanic biomass. They connect zooplankton and higher predators and play an important role in the carbon flux. Despite their biomass and ecological significance in the Arabian Sea, information on the diets of myctophids is limited. This study analysed the stomach contents of 11 myctophid species to understand their feeding habits. Most myctophid species had half-filled or one-quarter-filled stomachs, indicating moderate feeding intensity. Gut content analysis identified crustaceans, such as squids, copepods, euphausiids, and shrimps, as the main prey. The study identified four distinct feeding groups (i) euphausiid and shrimp feeders, viz *Bolinichthys longipes*, *Ceratoscopelus warmingii*, *Diaphus arabicus*, *Diaphus garmani* and *Symbolophorus evermanni*, *Diaphus jenseni* (ii) copepod feeders, viz *Diaphus perspicillatus* and (iii) mixed-diet opportunists, viz *Benthosema fibulatum*, *Lampanyctus turneri* and (iv) Squid and shrimp feeders, viz *Diaphus coeruleus* and *Diaphus watasei*. These findings show trophic flexibility and the division of niche space in the mesopelagic region of the Arabian Sea, reducing competition and allowing coexistence in mesopelagic habitats. This study on myctophid diet composition and feeding habits in multiple co-occurring species from the eastern Arabian Sea helps understand how energy flows from zooplankton to midwater fishes like myctophids through the oceanic food web. This study gives the baseline information on how zooplanktons can trigger a cascading effect that influences midwater communities and change the flow of energy to top predators.

Keywords : Lanternfish, Feeding Habits, Mesopelagic, Diet, Habitat

Behavioural Shifts in Ants and their Implications for Fig Reproductive Ecology

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Abstract

Ants often interact with fig wasps, influencing the dynamics of the fig–fig wasp mutualism. This study examined fig species in North Kerala, assessing how ant species identity, fig sex (male versus female), and prey type (pollinators versus non-pollinators) influence interaction outcomes in two fig species: *Ficus hispida* (dioecious) and *Ficus religiosa* (monoecious). Field observations recorded interaction types—Attack, Capture, or No Interaction—across various ant species. These included *Anoplolepis gracilipes*, *Oecophylla smaragdina*, *Tetramorium simillimum*, *Paratrechina longicornis*, and *Technomyrmex bicolor* in *F. religiosa*; *Anoplolepis gracilipes*, *Crematogaster wroughtonii*, *Oecophylla smaragdina*, *Myrmicaria brunnea*, and *Tetramorium simillimum* in *F. hispida* (male); and *Anoplolepis gracilipes*, *Crematogaster aberrans*, *Oecophylla smaragdina*, and *Tetramorium simillimum* in *F. hispida* (female). Binomial generalized linear models showed strong effects of ant species and fig sex on attack likelihood. On *F. religiosa*, interaction patterns varied with ant species and prey type. For non-pollinators, interactions were mainly Attack, with proportions near 1.0 and little evidence of Capture or No Interaction. Pollinator interactions were more varied, with Attack proportions from about 0.4 to 1.0. Less aggressive species had lower Attack rates (~0.25–0.6) and higher Capture and No Interaction rates. Capture could reach ~0.75, and No Interaction accounted for ~0.6–0.75 in some cases. In *Ficus hispida*, interaction profiles varied clearly by ant species and fig sex. On female figs, several ants showed high Attack proportions towards pollinators, often near 0.75–1.0, while others showed mixed responses, with Capture or No Interaction up to 0.25–0.40. On male figs, Attack proportions were usually lower (often 0.5), with No Interaction and Capture together making up a larger share (~0.5–1.0) in many species. Overall, ant behavior varied greatly depending on the context. Pollinators faced higher capture rates and fewer direct attacks compared to non-pollinators, suggesting that interactions facilitated by ants add variability but do not always destabilize the mutualism between fig-fig wasps.

Keywords : Ant-fig interactions, predatory behaviour, trophic interactions, fig species, Ant community

Bio-Accumulation of Agricultural Runoff in Endangered *Monopterus albus*: A Pathological Study of Organ Health in Purne's Paddy-cum-Fishery Ecosystem

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Abstract

The wetlands and paddy-cum-fishery systems of Purne District, Bihar, serve as a critical habitat for the endangered mud eel, *Monopterus albus*. In the Seemanchal region, intensive agricultural practices have led to an increased influx of chemical fertilizers and organophosphate pesticides into these aquatic niches. This study investigates the physiological and pathological toll of such runoff on this high-value endangered species. A deep analytical approach was adopted, involving the collection of *M. albus* specimens from the "Chaur" lands and floodplains of Purne during peak agricultural cycles. The research employed histopathological examination to analyze cellular alterations in vital organs, specifically focusing on the liver, gills, and kidneys, which act as primary sites for detoxification and respiration. The analysis reveals alarming evidence of bio-accumulation. Pathological observations include hepatic necrosis, vacuolation of hepatocytes, and significant structural damage to the branchial lamellae in the gills. Furthermore, the study identifies a direct correlation between high pesticide concentrations in the water and the degradation of the species' immune response. Given the lipid-rich profile of *M. albus*, the bio-accumulation of lipophilic toxins presents a severe threat of bio-magnification within the local food chain. This research highlights a critical ecological crisis in North Bihar's wetlands. The findings suggest that without immediate intervention in agricultural runoff management and the promotion of sustainable aquaculture, *Monopterus albus* faces a high risk of localized extinction. The study provides a scientific baseline for implementing species-specific conservation protocols and regulating chemical usage in paddy-cum-fishery ecosystems.

Keywords : Endangered Ichthyofauna, *Monopterus albus*, Bio-accumulation, Histopathology, Purne Wetlands

Interaction of Histeridae Beetles with Decomposition Ecosystems and Their Predatory Behaviour

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Abstract

Histerid beetles (Coleoptera: Histeridae) are important components of carrion ecosystems and play a significant role in decomposition-related food webs. The present study examined the ecological association, successional occurrence, and behavioral responses of Histeridae on decomposing carcasses. Beetle abundance was evaluated in relation to decomposition stage, maggot presence, carcass identity, and environmental variables including pH, temperature, and humidity. A multilevel generalized structural equation modeling framework was applied to assess species-specific responses, while SIMPER and indicator species analyses were used to evaluate community turnover and stage associations. Biotic interactions and carcass-level heterogeneity strongly influenced Histeridae assemblages. Maggot presence emerged as a major positive predictor for several species, indicating a close ecological link between histerid beetles and larval activity on carcasses. Some taxa showed clear mid-successional peaks during active and advanced decay, while others were more broadly distributed or weakly associated with decomposition stages. Non-linear responses to abiotic variables were also detected, particularly for pH, temperature, and humidity, suggesting that histerid occurrence is shaped by complex ecological gradients rather than simple linear patterns. Community turnover was driven by a limited number of high-impact taxa, and indicator analysis identified species with strong stage-specific value during active, advanced, and remaining stages. Overall, the study demonstrates that Histeridae are not merely passive decomposers but active ecological participants in carrion communities, with species-specific responses to microclimate, resource condition, and maggot activity. These findings improve understanding of their ecological role, predatory behaviour, and successional dynamics, and provide a useful framework for future studies on decomposition ecology, biodiversity, and forensic entomology.

Keywords : Histeridae, Carrion ecology, Successional pattern, Biodiversity, Ecology

Assessment of Breeding Ecology of the Indian Skimmer in Prayagraj, Uttar Pradesh

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Abstract

The Indian Skimmer is a threatened riverine bird dependent on dynamic sandbar habitats of large river systems in the Indian subcontinent. The present study examines its breeding ecology and reproductive success along the Ganga and Yamuna rivers in Prayagraj UP during two breeding seasons (2023 and 2025). Field surveys were conducted between February to June, documenting breeding behaviour and reproductive success. A total of 233 nests were recorded in 2023 and 48 nests in 2025. Breeding activity in 2025 was delayed by 3-4 weeks relative to 2023. Apparent hatching success declined from 75% in 2023 to 52% in 2025, while chick survival decreased sharply from 18.2% to 8%. Nesting occurred on exposed sandbars characterized by sparse vegetation, low disturbance often shared with other riverine bird such as Little Terns and River Lapwings. Flooding, predation by feral dogs, and trampling by livestock were the primary causes of nest failure. Increased anthropogenic pressures, including fishing, sand mining, sandbar cultivation, and human activity were observed to negatively affect breeding outcomes. The findings indicate a shift in breeding phenology and reduced reproductive success, highlighting the vulnerability of the species to habitat alteration and the need for targeted conservation measures.

Keywords : Indian Skimmer, Breeding ecology, Reproductive success, Sandbar, Nesting

Exploring Community Perception of Landscape Degradation and Climate Change: Insights from Nanda Devi Biosphere Reserve, Western Himalaya

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Abstract

The Himalayan region is currently facing escalating effects of landscape degradation and climate change. Local communities observe intangible changes such as reduced snowfall, erratic monsoons, and shifting cropping patterns, often before scientific instruments confirm trends. Thus, the generation of human knowledge on natural issues offers critical insights for adaptive resilience. The present study aimed to assess the local community perception of landscape degradation and climate change in the Joshimath region of Nanda Devi Biosphere Reserve, Uttarakhand. A total of 340 respondents were randomly selected from 25 villages for interviews using a structured questionnaire. A total of 37% of respondents demonstrated awareness of the phenomenon, whereas 33% lacked such awareness. The remaining 30% did not perceive any significant environmental changes. Major shifts in land-use patterns have been attributed to the expansion of agriculture (90%), followed by population expansion (83%) and industrial development (80%). Similarly, the key drivers of climate change have been identified as deforestation (77%), industrialization (73%), and exploitation of natural resources (63%). Prominent signs of land degradation included declines in soil fertility (82%), vegetation cover (77%), and water stress (76%). Additionally, notable pressures of climate change were reflected through erratic rainfall (85%), rising temperature (79%), and increased glacier melt (71%). Effective strategies to address both issues include the management of degraded habitats (95%), promotion of agro-forestry (92%), forest conservation (71%), development of green infrastructure (75%), and early preparedness measures (89%). The results of the present study provide a robust tool and valuable insights inferred from local communities for identifying early signals of natural alterations to adopt timely interventions, informed decision-making, and the development and implementation of appropriate conservation and management strategies.

Keywords : Land Use Changes, Forest Loss, Ecosystem Vulnerability, Environmental Challenges, Local Knowledge Systems

Heterogeneity and Distributional Expansion of Planthoppers (Hemiptera : Auchenorrhyncha) in the Forests of Dooars & Darjeeling, West Bengal, India

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Abstract

Auchenorrhyncha, a suborder within the insect order Hemiptera, encompasses sapsucking groups such as Cicadoidea, Membracoidea, and Fulgoroidea characterized by small and often inconspicuous antennae, which, when elongated, appear slender and filamentous or consist of two segments. Consequent to the surveys conducted in various habitats and adjacent areas of the National Parks and Wildlife Sanctuaries in Dooars and Darjeeling, West Bengal during 1992 to 2009, we did record 47 species of planthoppers distributed across 37 genera belonging to 11 families within three (3) superfamilies. Among these, the Infraorder Cicadomorpha accounts for 32 species, which includes 22 species from the superfamily Cicadoidea and 10 species from the superfamily Membracoidea. In contrast, the Infraorder Fulgoromorpha comprises 15 species from the superfamily Fulgoroidea. Of the 47 species documented, five (5) are endemic to India, 15 were recorded for the first time in the country, two (2) were noted for the first time in the state, and nearly 36% and 11% of the reported species are new to the Alipurduar and Darjeeling district/s of West Bengal respectively. The family Cicadidae was the most prevalent, with 12 species across 11 genera, while Cercopidae was represented by only six (6) species but had highest number of individuals (47). Buxa Tiger Reserve exhibited the greatest species heterogeneity, with a total of 43 species and 147 individuals, followed by Gorumara National Park. An analysis of their zoogeographical distribution indicates that the fauna, while primarily Oriental, also includes Palearctic (40%), Nearctic (13%), Australian and Ethiopian (4%), and Neotropical (2%) elements. The majority of sightings occurred during the premonsoon season, followed by the monsoon and post-monsoon seasons.

Keywords : Auchenorrhyncha, Heterogeneity, Distribution, Protected areas, West Bengal

Diversity of Predator-Prey Associations at Cave Entrances

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Abstract

Caves represent unique microhabitats that support a wide range of faunal diversity. Cave entrances serve as ecotones between subterranean and epigeal ecosystems, providing unique microclimatic and structural conditions that play a crucial role in determining the distribution of fauna. This study was conducted in caves located in Satara, Maharashtra and examines the ecological role of cave entrances, particularly laterite caves and rock-cut caves. Methodology includes the morphology of cave entrances, the presence of ledges or platforms, crevices, and other microhabitats. Predator-prey observations were recorded using the visual-searching method. In this study, lizards and spiders were recorded as predators of moths. Foraging success of predators was indirectly assessed by the presence of their excreta, remains of moths in the form of wings, and other parts of their bodies. For identification, moth wings were collected, sorted and adhered to an A4-sized white sheet and various moth species were recorded. This study investigates how two predominant cave-type entrances influence the diversity and distribution of moths and their predators during the hot season, periods of aestivation, and other life-cycle stages. This study underscores the importance of cave entrance ecology in conservation planning and highlights the need for integrated landscape-cave management.

Keywords : Cave entrance, Microhabitat, Predator-Prey, Conservation, Ecotone

Diversity and Distribution of Ant Transportation Networks Encountered in North 24 Parganas, West Bengal, India

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Abstract

One of the most remarkable instances of transport networks is the system of trails created and utilized by various ant species. Ants venture out from a central nest to forage for food, establishing a network of trails that extend to nearby food sources and return to colony. Throughout the duration of the survey (September 2021 - June 2022 & August 2023 to July 2024) trails of nine different ant species were observed across the various study sites in North 24 Parganas, West Bengal. The trails established by the ant species between their nests and food sources function as two-way pathways where outgoing and incoming workers frequently encounter and interact with one another. In many species, these trails are chemically marked with pheromones that provide orientation cues for the ants to navigate. Other species depend on their vision and utilize landmarks as navigational aids. Presence of five myrmecomorphic species belonging to the genera *Myrmaplata*, *Myrmarachne* (Salticidae), and *Myrmecotypus* (Corinidae) were observed alongside various ant species, suggesting their role as Batesian mimics. Additionally, certain opportunistic species from the genera *Camponotus*, *Diacamma*, *Pseudoneoponera*, *Tetraoponera*, and *Tetramorium* were noted to follow foraging trails in search of sustenance. Conversely, four ant-mimicking species from distinct groups, including the peleciniid wasp (*Pelecinius* sp.), Asian ant mantis (*Odontomantis planiceps* Giglio-Tos), stilt-legged flies (*Grammicomyia* sp.), and ant-mimicking mirids (*Perenotus* sp.), primarily depend on the shared food resources encountered along these trails. The phenomenon of mimicry is widely acknowledged for providing numerous fascinating instances that facilitate the investigation of speciation, coexistence, and coevolution processes. This communication addresses the diversity and nesting habitats of ants, along with their distribution and the orientation of trails in their natural environment.

Keywords : Ant trail, Opportunistic species, Batesian mimicry

Fruit Consumption and the Mechanism of Seed Dispersal by Bonnet Macaques of Fragmented Forest and Urban Landscapes of Salem District, Tamil Nadu

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Abstract

Seed dispersal by mammals is a critical ecological process that shapes plant diversity and drives forest regeneration mostly in tropical region. Bonnet macaques (*Macaca radiata*), which are endemic to southern India, serve as significant seed dispersers; however, their ecological role within fragmented landscapes remains insufficiently explored. This study assessed the seed dispersal effectiveness of bonnet macaques across forest fragments and peri-urban temple habitats in Salem district, Tamil Nadu, from January to December 2025. The study population comprised adult males, adult females and sub-adults with 53.8% of observations recorded in temple habitats and 46.2% in forest habitats. The influence of habitat, age, and sex on seed handling and dispersal efficiency for both cultivated and native plant species was examined. Results indicated that adult macaques dispersed more seeds than subadults. In fragmented forests, macaques primarily consumed fruits from nine plant species, and dispersed the seeds. Conversely, the peri-urban group consumed fruits of eight plant species and dispersed the seeds. In the forest fragments the macaques consumed more small sized fruits on the same tree. On the other hand, larger fruits were carried away and consumed ex situ by the macaques during their movement. However in the peri-urban temple site the macaques spent more time near the foraging tree rather than moving. In addition the macaques employed two distinct seed-handling methods, with a significant difference observed between forest fragment and peri-urban groups. Forest macaques dispersed a greater diversity of plant species and transported seeds over longer distances (500 meters or more) compared to peri-urban macaques, which relied more heavily on human-provisioned foods. Although urban macaques exhibited shorter dispersal ranges (under the tree or less than 10 meters), they contributed to local plant recruitment and regeneration. These findings demonstrate that bonnet macaques continue to fulfil essential ecological functions.

Keywords : Bonnet macaques, Seed dispersal, Forest fragment, Urban landscape

Crinoids and Their Ectosymbionts from the High Turbidity Impacted Reefs of the Gulf of Kachchh, India

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Abstract

Crinoids are the hosts of more diverse associated organisms than any other group of the phylum Echinodermata. The present study documented two species of Crinoids, namely *Comanthus wahlbergii* (Müller, 1843) and *Tropiometra carinata* (Lamarck, 1816), from surveys conducted between 2024 and 2026 in the Gulf of Kachchh. There are three phyla of ectosymbionts associated with Crinoids: Crustacea, Annelida, and Echinodermata. Paradyte crinoidicola (Potts, 1910), a scale worm (Annelida: Polychaeta), was associated with a crinoid. Brittle star *Ophiomaza cacaotica* Lyman, 1871 (Echinodermata: Ophiuroidea) with the host *C. wahlbergii* was documented as the first host reported for the brittle star in the region. A squid lobster, *Allogalatea elegans* (Adams, 1847) (Crustacea: Galatheidae), was reported from both species of the crinoids. Tiny shrimp from *Pontoniopsis* sp. was reported as an epibiont with *C. wahlbergii*. All four epibionts are associated with *C. wahlbergii* as a basibiont. The greater number of associated fauna may directly imply that the hosts, *C. wahlbergii*, with more arms (> 20), their complex, comp-like, modified oral and genital pinnules, and very bright colouration, support symbionts with more surface area, better camouflage for hiding and thriving, and a closer association with the host. Marine organisms hardly find substrata to perch themselves on to avoid being washed off by high water currents. Finding and thriving alongside the host organism is a great strategy in the evolutionary process and in opportunistic environmental conditions. The Gulf of Kachchh is less explored than other major coral reef regions of India, mainly due to its extreme oceanographic conditions, like strong water currents and high turbidity. More crinoids and their symbionts remain to be exposed from the understudied unique reef of India.

Keywords : *Comanthus wahlbergii*, Crinoids, Ebionts, Symbiosis, The Gulf of Kachchh

Comparative Zooplankton Community Dynamics Across the Andaman Archipelago: A Taxonomic and Environmental Perspective

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Abstract

Archipelagic systems at oceanic crossroads serve as critical natural laboratories for understanding how distinctive hydrographic regimes shape pelagic biodiversity. The Andaman Islands, situated between the Bay of Bengal and the Andaman Sea, mark a vital biogeographical divide influenced by contrasting environmental drivers, including riverine discharge and basin-scale circulation. This study provides a comprehensive taxonomic and functional evaluation of zooplankton communities across the western (Bay of Bengal-influenced) and eastern (Andaman Sea-influenced) flanks of the archipelago. Zooplankton samples were collected during the FORV Sagar Sampada cruises (SS 411 & SS 412) in December 2024 using a 200 μm mesh bongo net. The results reveal a significant shift in community composition between the two flanks (PERMANOVA: $p = 0.018$). The western flank was characterized by higher dissolved oxygen levels (4.20 ml/L) and an assemblage dominated by productive-water taxa, including the calanoid copepod *Labidocera euchaeta*, *Sapphirina* sp., and predatory chaetognaths such as *Flaccisagitta enflata*. In contrast, the eastern flank exhibited higher salinity (32.42 psu) and was dominated by *Oncaea venusta*, cladocerans, and *Farranula gibula* species typically associated with more oceanic and stratified Andaman Sea waters. SIMPER analysis confirmed that these specific taxa accounted for approximately 45% of the observed dissimilarity. While canonical correspondence analysis (CCA) indicated that salinity, temperature, and dissolved oxygen explained only a small portion of the variation ($p = 0.667$), specific groups, such as Cyclopoida and Appendicularia, showed positive alignments with salinity gradients. These findings underscore the role of the Andaman-Nicobar Ridge System as a transition zone where overlapping species pools from the Indian and Pacific Oceans meet, yet remain structured by regional hydrographic signatures.

Key words : Zooplankton Taxonomy, Andaman Sea, Community Structure, Hydrography, Bay of Bengal

First Documentation of Mycophagous Insects Feeding on *Plasmopara viticola* Spores and Molecular Identification of *Parthenolecanium persicae* in Kashmiri Vineyards

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Abstract

The current study reports the first documentation of fungus-feeding insects consuming spores of *Plasmopara viticola*, the causal agent of grape downy mildew, from vineyards of Kashmir, India, and confirms the molecular identity of the peach lecanium scale, *Parthenolecanium persicae*, infesting grapevines in the region. Field and laboratory observations revealed two mycophagous species: an unidentified thrips (Thysanoptera: Phlaeothripidae: Idolothripinae) (adults and nymphs) and *Corticaria* spp. beetles (Coleoptera: Latridiidae), both feeding directly on fungal spores. Morphological characters of both thrips and beetles were observed, Thrips exhibited an elongated dark body, 8-segmented antennae (yellow segments III–VI and base of VII), tergite IX with short setae (S1, S2) and long anal setae. *Corticaria* adults showed finely punctate setose elytra, narrow straight aedeagus, pronotum with fine lateral teeth, and toothless male front tibiae. Incidence of both fungus feeders synchronized with downy mildew from SMW 34 (20–26 August) to SMW 41 (8–14 October) across Sahebi, Hussaini, and Thompson Seedless varieties. Populations were recorded on leaves with >50% spore coverage, Peak populations at SMW 37 reached 7.57 thrips adults/vine in Thompson Seedless, while *Corticaria* spp. peaked at 4.85 adults/vine in Sahebi. Standardized no-choice feeding bioassays (n=10 with initial spore-covered area 25.0 ± 1.2 mm²) demonstrated high feeding efficiency, with adult thrips clearing 38–40% of spore covered area, beetles 28–30%, and nymphs 24–24.8% within 24 hours. Time-course observations (6–48 h) showed sustained clearance with high survival rates (88–95%). Molecular identification confirmed *P. persicae* with 100% similarity and strong phylogenetic support, with protein validation indicating 94.9% residues in favored regions. The findings highlight the importance of these mycophagous insects as potential natural biological suppressors of grape downy mildew in future biocontrol studies. It also strengthens pest diagnostics by confirming the identity of *Parthenolecanium persicae*, supporting improved integrated pest management strategies in viticulture.

Keywords : *Plasmopara viticola*, Mycophagous insects, Phlaeothripidae, *Corticaria* spp., Peach lecanium scale

Intraspecific Variation and Allometric Scaling of Genitalic Morphology in *Cretonotos transiens* (Lepidoptera: Erebiidae: Arctiinae)

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Abstract

The taxonomic delimitation of Lepidoptera has historically relied upon genitalic morphology as a stable diagnostic framework. However, the degree of intraspecific variation and its relationship to overall body size remains insufficiently quantified in many Arctiine taxa. This study provides a morphometric assessment of *Cretonotos transiens* (Lepidoptera: Erebiidae: Arctiinae) based on a series of 16 male specimens collected from the Nagaland region of Northeast India. Utilizing high-resolution digital imaging via a stereo microscope and image analysis software, nine morphometric variables were recorded, focusing on the 8th abdominal sclerites and primary genitalic structures, specifically the phallus and valva. To examine patterns of intraspecific variation, log-log regression analyses were performed using the diameter of the 8th abdominal segment as a proxy for body size. The results demonstrate a divergence in morphological scaling: while the 8th tergum and sternite exhibit significant positive allometry ($p < 0.05$), indicating strong size-dependent variation, genitalic structures display comparatively reduced size dependence. The phallus shows a weak and non-significant scaling relationship ($r = 0.3862$, $p = 0.0637$), whereas valva length exhibits an almost negligible relationship with body size ($r = 0.0140$, $p = 0.9237$). These findings suggest that, within this species, genitalic morphology is relatively conserved compared to non-genitalic traits, supporting the view that such structures are less influenced by overall body size. This study highlights the importance of incorporating allometric analyses into taxonomic frameworks to better account for intraspecific variation and reduce potential misinterpretation of size-dependent morphological traits.

Keywords : Arctiinae, Intraspecific Variation, Allometry, Taxonomic reliability, Morphometrics

Ecological Interactions Between Coralline Algae and Associated Benthic Communities in the Reef Ecosystems of the Gulf of Kachchh, Western India

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Abstract

Coralline algae, including crustose coralline algae (CCA) and articulated forms, are key habitat-forming organisms that support diverse benthic assemblages in reef ecosystems. This study examines the ecological associations between coralline algae and benthic communities across distinct reef zones in the Gulf of Kachchh, a macrotidal reef system characterized by high environmental variability. Field surveys were conducted across 24 geo-referenced reef sites to quantify CCA cover, benthic composition, and associated faunal and floral assemblages. Coralline algal substrates supported dense and taxonomically diverse macrofaunal communities, including crustaceans (amphipods and peracarids), molluscs (chitons and gastropods), polychaetes (syllids and eunicids), echinoderms (brittle stars and Two-toned urchin-Salmacis bicolor), and cryptofaunal taxa such as xanthid crabs and caridean shrimps. Meiofaunal components, particularly copepods and diatoms, were abundant within coralline matrices. Associated flora comprised epiphytic and fleshy macroalgae such as Sargassum, Enteromorpha, and Gigartina, contributing to structurally complex microhabitats. Statistical analyses revealed significant positive relationships between CCA cover and faunal abundance, indicating that substrate complexity is a primary driver of biodiversity. Additionally, CCA facilitated coral recruitment through biochemical settlement cues, while also serving as substrates for macroalgal colonization and sites of bioerosion by boring organisms. These findings highlight the role of coralline algae as ecosystem engineers that regulate benthic community structure and enhance reef resilience in marginal reef systems. The study provides important ecological insights into coralline algal assemblages in Indian reefs and underscores their significance for conservation and management.

Key words : Crustose coralline algae (CCA), Benthic assemblages, Reef zonation, Reef resilience, Gulf of Kachchh

Acoustic Signal-Based Species Delimitation of Cicadas (Hemiptera: Cicadidae) from the Western Ghats of Central Kerala

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Abstract

Cicadas (Hemiptera: Cicadidae) are among the most acoustically distinctive insect groups, with species-specific calling songs functioning as primary mechanisms for mate recognition and reproductive isolation. These acoustic traits render cicadas particularly valuable for taxonomic resolution, especially in ecologically complex and species-rich landscapes such as the Western Ghats. In addition, their conspicuous acoustic activity contributes substantially to the soundscape and offers potential for ecological monitoring. The present study examines the utility of computational bioacoustics approaches for the delineation and characterization of cicada species inhabiting forested regions of Central Kerala. Field recordings were obtained opportunistically using Tascam DR-05X linear PCM recorders at a sampling rate of 44.1 kHz and 16-bit resolution. The collected audio data were subsequently analysed through Python-based signal processing routines executed in a Jupyter Notebook environment. Quantitative assessment of cicada calls was carried out through the extraction of multiple temporal and spectral parameters, including call duration, pulse (syllable) rate, inter-call interval, fundamental frequency, peak frequency, bandwidth, harmonic components, amplitude modulation, frequency modulation, and spectral entropy. The resulting dataset indicates clear interspecific differentiation in both temporal structuring and spectral composition of acoustic signals. In particular, frequency-related attributes and modulation patterns consistently contributed to effective discrimination among sympatric taxa. Overall, the study demonstrates that computational analysis of acoustic signals provides a reliable and non-invasive framework for species delimitation in cicadas. The approach further supports the development of standardized acoustic datasets, which may serve as a foundation for regional reference libraries and facilitate future taxonomic, ecological, and biodiversity assessments in the Western Ghats.

Key words : Bioacoustics, Cicadidae, Western ghats, Acoustic signals, Signal processing

Microstructural and Molecular Insights of *Caliris pallida* (Insecta : Mantodea)

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Abstract

Praying mantids (order Mantodea) are among the most fascinating predatory insects in terrestrial ecosystems, known for their role as natural regulators of insect populations. Their success as predators is closely linked to a wide range of behavioural and morphological adaptations shaped by their habitat and lifestyle. In this study, we explore the morphology and fine-scale structural features of the praying mantis *Caliris pallida* using scanning electron microscopy (SEM). Specimens were collected from Palode Reserved Forest, Thiruvananthapuram, Kerala, India, during a field survey conducted in January 2025. Individuals were hand-collected and identified using standard taxonomic keys and available literature. Detailed morphological observations were carried out using a Zeiss Stemi 305 stereomicroscope, while molecular identification was supported through mitochondrial cytochrome c oxidase subunit I (COI) gene sequencing. The generated sequence was submitted to the NCBI database and assigned an accession number. SEM analysis provided a closer look at the microstructural adaptations, particularly in the antennae and raptorial forelegs. A diverse range of sensilla was observed on the antennae, suggesting specialized sensory functions. The foreleg spines and apical claw showed distinct structural patterns that appear to enhance prey capture and handling. Overall, this study highlights how structural specializations in *Caliris pallida* are closely linked to its predatory lifestyle, offering valuable insights into the functional morphology of mantids.

Keywords : Caliris, SEM, Femur, Tibia, Antenna

First Report of *Thrips orientalis* (Bagnall, 1915) on *Gladiolus grandiflorus* in the Regions of Kashmir: Morphological and Taxonomic Characterization with Insights into Damage Symptoms

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Abstract

Gladiolus (*Gladiolus grandiflorus*) is a commercially important ornamental crop valued for its vibrant floral spikes and premium status in the cut flower industry; however, its productivity is frequently constrained by infestations of sucking pests, particularly thrips, which impair plant vigor and affect floral quality. Despite its economic importance, there remains a lack of detailed taxonomic characterization of thrips species associated with gladiolus in many production systems. The present study was conducted at SKUAST-K, Shalimar, Kashmir in 2024-25 and reports the first occurrence of *Thrips orientalis* (Bagnall, 1915) infesting *Gladiolus grandiflorus* in the regions of Kashmir. Specimens were collected from infested fields and subjected to detailed morphological characterization using standard taxonomic keys, focusing on antennal segmentation, sensoria pattern, wing venation, setal arrangement, and abdominal chaetotaxy by slide preparation. The species identity was further confirmed by taxonomic experts at the National Bureau of Agricultural Insect Resources. Infestation symptoms included epidermal cell laceration, chlorophyll disruption resulting in silver streaks, necrosis, and reduced photosynthetic efficiency, along with floral deformation and discoloration at advanced stages. Accurate identification of the species provides a scientific basis for targeted monitoring and the development of sustainable pest management strategies.

Keywords : *Thrips orientalis*, Chaetotaxy, morphological characterization, *Gladiolus grandiflorus*, floral deformation

Utilization of Nesting Resources and Habitat Preference of Lesser Adjutant Stork (*Leptoptilos javanicus*) in Nagaon, Assam, India

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Abstract

The Lesser Adjutant stork (*Leptoptilos javanicus*) is the third largest stork belonging to the family Ciconiidae and genus *Leptoptilos*. It is among the rarest storks categorised as Near Threatened according to the IUCN Red List of Threatened Species 2024, which is widely distributed throughout the Brahmaputra and Barak valleys of Assam. This investigation was conducted to examine the nesting locations, resource utilisation, and habitat preferences of the Lesser Adjutant Stork in Nagaon, Assam, India, over two breeding seasons (2024 and 2025). The study areas were surveyed monthly between 2024 and 2025 at regular intervals. A Nikon Coolpix p900 camera, 10×50 Zenith binoculars for proper identification of the storks were used. During this period, 145 chicks were reared in 59 nests in 2024, and 134 chicks were reared in 50 nests in 2025. A total of six different nesting locations were studied, and five different nesting trees were observed. 4 nesting sites were located near highways, and 2 in and around the village area. The storks mainly selected Blackboard tree, Mango, Arjun, Red silk cotton and Tamarind tree, but mostly preferred Blackboard and Red silk cotton tree for nesting. The storks mainly used sticks, twigs and fresh leaves as nesting materials from Chebulic Myrobalan, Blackboard, Potka Siris, Sacred Fig, Mango, Kadamba, Black Siris and Champak tree. However, twigs of the Potka Siris were mostly preferred. Different threat factors were also observed, such as habitat destruction, human disturbance near nesting habitats, and river and wetland pollution, which might affect the stork population in the core nesting locations. The current study will provide baseline data on nesting ecology and habitat preferences for analysis and enhancing conservation planning for the Lesser Adjutant stork in Nagaon district of Assam, India.

Keywords : *Leptoptilos javanicus*, Nagaon, Nesting resources, Habitat preference, Nesting tree

Decoding the Variations and Similarities in the Caudal Skeleton Complex among Selected Species of *Pethia* (Teleostei: Cyprinidae) Endemic to Northeast India

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Abstract

The Caudal Skeleton Complex (CSC) in teleost fishes is a highly conserved yet morphologically plastic structure that reflects both phylogenetic lineage and adaptive responses to local environments. Among the small cyprinids of the genus *Pethia*, which inhabit diverse lotic and lentic ecosystems across the Indo-Burma biodiversity hotspot, osteological data remains fragmented despite their ecological and ornamental significance. This study aims to provide a comprehensive comparative analysis of the caudal fin support system in three selected species of *Pethia*, *P. shalynius*, *P. ticto*, and *P. dibrugarhensis*—endemic to Northeast India, to identify diagnostic osteological markers and structural variations. Representative specimens were subjected to a modified double-staining technique (Alizarin Red S for bone and Alcian Blue for cartilage) to visualize the skeletal framework. Detailed examination focused on the configuration of the urostyle, the number and orientation of hypurals, the morphology of the parhypural, and the presence or absence of uroneurals and epurals. Preliminary findings reveal a high degree of conservatism in the basic caudal architecture, particularly in the fusion patterns of the hypural plates. However, significant inter-specific variations were observed in the shape and relative length of the neural and haemal spines of the preural vertebrae, as well as the degree of ossification in the hypurapophysis. These subtle differences in the caudal scaffold suggest varying degrees of mechanical efficiency, likely reflecting the specific hydrological regimes of their native habitats—from the high-altitude hill streams of Meghalaya to the alluvial plains of the Brahmaputra drainage. This comparative osteological framework not only enhances the current taxonomic understanding of the genus *Pethia* but also provides a baseline for future ecomorphological and evolutionary studies regarding the diversification of small barbs in the Eastern Himalayan region.

Keywords : *Pethia*, Osteology, Caudal Skeleton, Northeast India, Cyprinidae

Ecological Pressures During Cenozoic Era Leading to Cognitive Milestones in Hominin Evolution and Subsequent Changes in Pre-Frontal Cortex (PFC): A Critical Review

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Abstract

Human evolution began during the Pliocene epoch of the Cenozoic era. African fossil records from 6.5 to 7.4 million years ago highlights the divergence between humans and chimpanzees. This review examines the significance and impact of ecological pressures in hominin evolution. Australopithecines, *Homo habilis*, *Homo erectus*, *Homo sapiens*, and *Homo sapiens sapiens* have been analyzed to identify the key drivers of cognitive milestones. Evolution, beginning with tool use and bipedalism in Australopithecines have progressed significantly over time. The most noteworthy development in this process is the evolution of brain. A relative brain size (EQ) of 5.8 in *Homo sapiens* reflects the development of a larger brain capable of enhanced neural processing, complex substructures and intricate circuits supporting advanced cognition. Conserved genomic sequences regulating neural development have also been identified. The prefrontal cortex (PFC) governs executive functions in cognitive behavior. Its function involve housekeeping genes such as GAPDH, ACTN, TUBB, HPRT1, and UBC, along with genetically imprinted genes on chromosomes 7, 11, 14, 15, 19, and 20, which influence memory, learning, social cognition, and behavioral regulation. Mutations in human-specific evolutionary genes and PFC dominant genes including OXTR, FOXP2, SRGAP2C, CNTNAP2, SLC6A4, COMT, DRD2/4, BDNF have enhanced executive cognition. Integrative evolutionary genomics with comparative transcriptomics (RNA-seq) across primates and archaic humans identifies mutations, dN/dS ratios, and selective sweeps. CRISPR models and brain organoids tested these genes, linking variants to PFC expansion and improved cognition. Changes improved memory, planning, emotional regulation, neuronal plasticity, behavioral flexibility, learning, enhanced synaptic plasticity and neoteny. *Homo sapiens* developed cooperation, alliance formation, and reputation tracking. Increased motivation, exploration and reward-driven behavior also emerged. Speech, language and symbolic communication reflect evolutionary changes associated with genes such as FOXP2 and CNTNAP2. This review highlights new directions for understanding PFC function under modern social and environmental stressors.

Keywords : Hominin Evolution, Pre Frontal Cortex (PFC), Cognitive Milestones,, Evolutionary Genomics, CRISPR.

Chronic Entanglement Injury Caused by Abandoned Fishing Gear in the Quagga Catshark *Halaelurus quagga* from the Arabian Sea

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Abstract

Abandoned, lost or otherwise discarded fishing gear (ALDFG) is a major contributor to marine plastic pollution and poses severe risks to marine fauna through entanglement and chronic injury. Although entanglement of marine megafauna has been widely documented, detailed studies on sharks, particularly those addressing internal tissue damage, remain scarce. Here, we report a case of prolonged entanglement in an adult female quagga catshark, *Halaelurus quagga*, caught from the Arabian Sea, off the south-west coast of India. External examination, radiography, histopathology and polymer characterization of the entangling gear were conducted. The shark exhibited severe constriction near the gill and pectoral region, epithelial overgrowth over the embedded monofilament net, permanent skeletal deformation, and extensive degeneration of dermal and muscular tissues. FTIR confirmed the gear as nylon, and SEM-EDX revealed advanced surface degradation and heavy metal deposition. This study provides rare histopathological evidence of chronic injury caused by ALDFG in sharks and highlights the long-term sublethal impacts of plastic entanglement on elasmobranch health and survival.

Keywords : ALDFG, Marine plastic pollution, Catshark, Epithelial overgrowth, Skeletal deformity

Seasonal Diversity and Distribution of Collembola in Relation to Soil Edaphic Factors in Protected Areas of Kachchh District, Gujarat, India

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Abstract

Collembola (springtails) are key components of soil mesofauna that contribute significantly to litter decomposition, nutrient cycling, and maintenance of soil structure. Due to their high sensitivity to environmental conditions and soil physicochemical properties, they are widely recognized as reliable bioindicators of soil health. The present study investigates the seasonal diversity, distribution patterns, and relationship between Collembola communities and soil edaphic factors in selected protected areas of Kachchh district, Gujarat, India. Seasonal surveys were conducted across three major climatic phases—pre-monsoon, monsoon, and post-monsoon. Soil samples were collected from multiple locations and processed for edaphic factor analysis. Specimens were identified taxonomically, and biodiversity indices such as Shannon–Wiener and Simpson indices were used to evaluate species diversity. Simultaneously, soil physicochemical parameters including pH, electrical conductivity, organic carbon, nitrogen, phosphorus, potassium, and micronutrients (Fe, Mn, Zn) were analyzed using standard laboratory methods. Preliminary analyses revealed considerable spatial and seasonal variation in Collembola abundance and diversity across the protected habitats. Diversity indices indicated heterogeneous species distribution among sampling locations, suggesting strong habitat-specific patterns. Principal Component Analysis (PCA) demonstrated clear associations between species composition and soil nutrient gradients, indicating that variables such as organic carbon, nitrogen, and micronutrient availability significantly influence community structure. The findings highlight the importance of edaphic factors in shaping Collembola diversity within semi-arid protected ecosystems. This study provides baseline data on soil mesofaunal diversity along with the relationship of soil edaphic factors in the Kachchh region, Gujarat.

Keywords : Collembola, soil edaphic factors, seasonal diversity, Kachchh

Species Assemblage and Seasonal Variation of Flatfishes (Order Pleuronectiformes) Along the Odisha Coast, India

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Abstract

The present study provides a systematic assessment of species composition and seasonal variation of flatfishes (Order Pleuronectiformes) along the Odisha coast, India, based on collections made during 2024. Flatfishes are dorsoventrally compressed, asymmetrical benthic fishes distributed across continental shelves of tropical, temperate, and polar regions. They form ecologically and commercially important components of marine fisheries but are increasingly threatened by anthropogenic pressures such as bottom trawling, habitat degradation, and overexploitation. Despite their importance, comprehensive information on their diversity and seasonal occurrence in Indian waters remains limited. For the present study, specimens were collected from four major fish landing centres and fishing harbours along the Odisha coast across three seasons: winter (November–February), summer (March–May), and monsoon (June–October). All specimens were photographed fresh, preserved, and identified using standard taxonomic keys and relevant literature. A total of 264 specimens representing 18 species, seven genera, and five families were recorded. Cynoglossidae was the dominant family, present in all seasons, while Bothidae and Psettodidae were the least represented, occurring in only one season. *Cynoglossus arel* was the most abundant species year-round, followed by *Cynoglossus lida*. Seasonal exclusivity was observed for several species: *Synaptura albomaculata*, *Aesopia cornuta*, and *Pseudorhombus triocellatus* in monsoon; *Engyprosopon grandisquama* in summer; and *Psettodes erumei* in winter. Specimen abundance peaked in summer, whereas species richness, diversity, and evenness were highest during the monsoon (Shannon $H' = 1.912$; Simpson $1-D = 0.7596$). Dominance was highest in winter ($D = 0.6258$), indicating assemblages dominated by fewer species, possibly due to environmental variation and fishing pressure. This study establishes baseline data on flatfish diversity and seasonal dynamics along the Odisha coast, supporting future research on spatiotemporal variation, stock assessment, and conservation in Indian waters.

Keywords : Flatfishes, Pleuronectiformes, Seasonal variation, Species diversity, Odisha coast

Ephemeral Resource Patch Dynamics in Sour Rot-Infected Grape Bunches: Multitrophic Insect Community Structure and Succession in Kashmir Valley Vineyards, India

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Abstract

Sour rot-infected grape bunches represent classical ephemeral resource patches. ERP dynamics were investigated across three grape varieties (Sahebi, Hussaini, and Thompson Seedless) at Srinagar and Ganderbal, Kashmir, during 2024–2025. The multitrophic insect assemblage comprised *Carpophilus dimidiatus* (Fabricius), *Carpophilus hemipterus* (Linnaeus) (Coleoptera: Nitidulidae), predatory *Atheta* spp. Thomson (Coleoptera: Staphylinidae), drosophilid larvae (Diptera: Drosophilidae), and the endoparasitoid *Trichopria* spp. (Hymenoptera: Diapriidae). All taxa were morphologically identified using standard dichotomous keys based on diagnostic characters including antennal and elytral features in Nitidulidae, body segmentation and tarsal formula in Staphylinidae, cephalopharyngeal skeleton and posterior spiracle morphology in drosophilid larvae, and hymenopteran wing venation with antennal segmentation for parasitoid confirmation. Drosophilid larvae functioned as primary ERP colonisers, first detected at SMW 29, four weeks ahead of *Carpophilus* adults (SMW 33), and persisting for 13 weeks, the longest patch duration among all taxa. Peak larval incidence reached 95% with high exploitation efficiency (0.738–0.779) and low variability (CV 24–27%), indicating sustained resource utilisation. *Carpophilus* beetles exhibited rapid build-up and peaked at SMW 35–36, with *C. dimidiatus* reaching 5.57 adults per bunch and *C. hemipterus* upto 5.14. Predatory *Atheta* spp. and parasitoid *Trichopria* spp. appeared from SMW 37 onward. A consistent 4–5 week succession lag between Drosophilid peaks and predator/parasitoid maxima confirmed trophic structuring. Significant positive correlations between drosophilid incidence and *Carpophilid* abundance (r up to 0.798*) indicated co-exploitation, while strong negative correlations with *Atheta* spp. (r up to -0.989^{**}) demonstrated predator-prey temporal anti-phase dynamics, likely amplified by the small sample size ($n = 4$). Extending the sampling window would yield more robust estimates. The ERP lifecycle spanned 15 weeks (SMW 29–44). These findings strongly support ERP succession theory, demonstrating clear temporal niche partitioning, trophic linkage, and resource-driven community assembly, providing the first morphologically validated multitrophic ERP characterisation from Indian vineyards.

Keywords : Ephemeral Resource Patch (ERP), Sour rot, Multitrophic interactions, Morphological identification, Grapevine ecosystem

Speciation in Action: On Assortative Mating in Red and Black Morpho-Variants of *Myrmaplata plataleoides*

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Abstract

The *Oecophylla smaragdina*-mimicking red and *Camponotus compressus*-mimicking black morpho-variants of *Myrmaplata plataleoides* exhibit considerable morphological and behavioural differences, with molecular evidence suggesting some degree of evolutionary divergence as well. Nevertheless, they are recognized as a single species due to the pronounced similarity in the reproductive structures of both males and females across the two morpho-variants. In the present study, ex situ behavioural observations reveal existence of assortative mating in red and black morpho-variants of *Myrmaplata plataleoides*. Gas Chromatography-Mass Spectroscopy based chemical profiling reveals significant differences in the surface chemical profile of red and black morpho-variants. It explains the reason behind existence of assortative mating leading to reproductive isolation among morpho-variants. Due to significant differences and restricted gene flow among these morpho-variants, it has been proposed that the black morpho-variant may eventually evolve into a new species.

Keywords : Adaptive radiation, Chemical ecology, Magic trait, Myrmecomorphy, Reproductive isolation

***Halimeda* sp. As A Microhabitat for Free-Living Marine Nematodes**

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Abstract

Cross-kingdom symbioses, such as lichens that unite fungi and algae, powerfully shape ecosystems by enhancing nutrient cycling and habitat creation. These intimate partnerships extend to subtler realms within the animal kingdom. For instance, symbiotic dinoflagellates reside within reef sponges, supplying photosynthetic energy to the sponges in exchange for protection and nutrients. Free-living meiofaunal nematodes are small benthic animals living in sediment interstices, retained on 1000 µm – 63 µm sieves, linking primary production to higher trophic levels via grazing on microbes and detritus. *Halimeda* sp., a calcifying green alga (Chlorophyta), forms jointed, aragonite-rich thalli in tropical reefs, while biogenous ooze contains >30% skeletal remains of foraminifera, diatoms, and other organisms on deep seafloors, accumulating slowly to archive paleoclimatic and productivity records. Interestingly enough, there is an association between these two organisms. Delicate, vermiform, free-living meiofaunal nematodes exist within the thalli of the alga. Meiofaunal densities surge in *Halimeda* sp. versus bare sediments, sustaining biodiversity through grazing, bioturbation, and trophic linkages. *Halimeda* sp. shelters meiofauna in calcified fronds, reducing predation in reef habitats, as meiofauna graze epiphytes and biofilms, accelerating thallus decomposition and nutrient release. The current paper aims to understand the diversity of this microecosystem. The Minicoy lagoon benthos were sampled for seaweed and were found to have a diverse range of meiobenthos, out of which the free-living nematodes were isolated and identified.

Key words : *Halimeda* sp., Free-living Meiofaunal Nematodes, Minicoy, Diversity, Microhabitat

Seasonal Variance of *Culex pipiens* Population in Gorakhpur: A One-Year Study

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Abstract

Mosquito-borne diseases remain a major public health challenge in northern India, with *Culex pipiens* serving as an important vector for many pathogens. Knowledge of the seasonal dynamics of this species is critical for effective vector control strategies. This study was conducted over a one-year period (January 2025–December 2025) in Gorakhpur, Uttar Pradesh, to assess fluctuations in *Culex pipiens* population density across different seasons. Standard larval and adult mosquito surveillance techniques were employed at multiple urban and peri-urban sites. Results revealed seasonal variation, with peak abundance observed during the monsoon months (July–September), coinciding with increased rainfall and availability of breeding habitats. A secondary rise was noted during the post-monsoon period, while winter months showed a significant decline in population density. Statistical analysis confirmed strong correlations between mosquito prevalence and environmental factors such as temperature, humidity, and rainfall. The findings highlight the importance of seasonally targeted interventions, particularly during monsoon and post-monsoon periods, to reduce vector density and associated disease transmission risks. This study provides baseline data for Gorakhpur that can inform integrated vector management programs and strengthen public health preparedness against mosquito-borne diseases.

Keywords : *Culex*, Seasonal Variance, Gorakhpur

Seasonal Variation in Body Morphometrics of *Culex pipiens* in Burdwan, West Bengal

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Abstract

Culex pipiens is one of the most widespread mosquito species in India and a principal vector of several arboviruses and filarial parasites like *Wuchereria bancrofti*. Understanding how its body size and morphological traits vary across seasons is necessary, as morphometrics are closely linked with survival capacity, feeding behaviour, flight ability, and vector competence. This highlights the seasonal variation in key body morphometric parameters of *Culex pipiens* populations in Burdwan, West Bengal. Adult female mosquitoes were collected from peri-urban and semi-rural sites across three seasons namely pre-monsoon, monsoon, and post-monsoon. Standard morphometric measurements including wing length, proboscis length, antennal ratio, and body length were observed. Climatic conditions like temperature, relative humidity, and rainfall were also recorded. Results show a significant increase in body size and wing length during the post-monsoon period. Monsoon collections showed reduced wing and body lengths. Statistical analyses indicate strong correlations between morphometric traits and seasonal environmental variables. The study highlights that seasonal environmental conditions play a decisive role in shaping the physical characteristics of *Culex pipiens* populations.

Keywords : *Culex*, West bengal, Traits, Morphometrics

Cranial Osteology of *Craspedocephalus gramineus* (Shaw, 1802) (Reptilia: Serpentes: Viperidae) with Notes on Its Sexual Dimorphism

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Abstract

The present study provides a detailed account of the cranial osteology of *Craspedocephalus gramineus* (Bamboo Pit Viper), with particular emphasis on sex-based morphological variation. Comprehensive osteological examination was conducted on both male and female specimens to document structural organization, bone morphology, and articulatory relationships within the skull. Comparative analysis revealed subtle but consistent differences between the sexes. In addition to cranial skeletal characteristics, eye size was measured to assess sexual dimorphism in orbital-associated morphology. Quantitative observations indicate a measurable difference in eye size between males and females, contributing further evidence of sexual dimorphism in this species. The findings enhance current knowledge of cranial anatomy in *C. gramineus* and provide baseline morphological data valuable for taxonomy, functional morphology, and future comparative studies within Viperidae.

Keywords : Eastern Ghats, India, Principal Component Analysis, Pit viper, Skull morphology

Cause-Specific Mortality and Sex-Biased Stranding Patterns of Olive Ridley Sea Turtles Along the Chennai–Chengalpattu Coast, Tamil Nadu, India

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Abstract

The Chennai and Chengalpattu coast of Tamil Nadu supports seasonal movement and nesting activity of Olive Ridley sea turtles, *Lepidochelys olivacea* (Eschscholtz, 1829). However, recent observations indicate increasing strandings of dead individuals along this coastline. In the present study, stranded turtles were documented across selected coastal villages during the peak turtle season from November 2025 to February 2026 using a standardised Visual Encounter Survey (VES) method. The total number of dead Olive Ridley turtles were recorded, and causes of mortality were assessed based on visible indicators such as net entanglement, fishing-related injuries, and boat strikes. Sex of the stranded turtles was identified using external features, mainly tail length. The findings revealed that fisheries-related interactions were a major contributor to mortality. A higher number of females were observed among the dead turtles during the nesting season. Statistical analysis using the Chi-square test indicated female-biased mortality. As adult females are responsible for nesting and egg production, increased mortality among them may reduce nesting activity and hatchling output, potentially affecting future population stability. The present study highlights the need for targeted conservation measures to reduce human-induced mortality of Olive Ridley turtles along the Chennai–Chengalpattu coast.

Keywords : Olive Ridley sea turtle, Strandings, Cause-specific mortality, Female-biased mortality, Chennai–Chengalpattu coast

Faunal Ecology of Eastern India's Granite Outcrops

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Abstract

Granite outcrop formations in Eastern India represent ancient, climatically stable micro-refugia embedded within a broader matrix of Sal-dominated forests. In the Santhal Pargana uplands of Jharkhand, the largest and most ecologically complex outcrops—including Ranbhiyaar Hill, Thengimo Hill, Rajapathar, and Kathikund—remain scientifically undocumented despite their distinctive geomorphology and potential for harbouring micro-endemic fauna. This study provides the first integrative faunal assessment from these outcrop systems, focusing on their taxonomic composition, microhabitat associations, and ecological processes. The primary objective was to characterise faunal assemblages across diverse rock-based microhabitats such as deep crevice networks, shaded overhangs, monsoon-fed ephemeral pools, runoff channels, humus-filled fissures, lichen–algae crust zones, and slope-base leaf pockets. Field methodologies included stratified microhabitat surveys, timed visual encounter protocols, continuous behavioural observations, and opportunistic photographic documentation spanning monsoon and postmonsoon seasons. Results reveal distinct microhabitat-linked faunal communities: amphibians utilising granite depressions for predator-shielded breeding, geckonids and skinks exhibiting strict crevice fidelity and temperature-buffered activity cycles, invertebrates forming specialised assemblages within humus pockets, and small mammals using boulder cavities as movement corridors. Several species demonstrate micro-adaptations such as substrate-matching colouration, seasonal activity peaks, and niche compression during dry months. Comparative analysis shows clear ecological separation between outcrop-associated fauna and adjacent Sal forest communities, indicating potential micro-endemism and undocumented distributional extensions. This study establishes the first baseline faunal dataset from the major granite hill complexes of Santhal Pargana and underscores their importance as evolutionarily significant, taxonomically underexplored landscapes. The findings highlight the urgent need to incorporate outcrop ecosystems into regional biodiversity assessments and future taxonomic surveys in Eastern India.

Keywords : Granite Outcrops, Microhabitat Ecology, Faunal Assemblages, Santhal Pargana, Microrefugia



**THRUST AREA 3:
FAUNAL DIVERSITY AND
CONSERVATION**



Machine Learning–Driven Probabilistic Mapping integrated Oxford Nanopore–Enabled DNA Barcoding for Comprehensive Species Richness Assessment in the Indian Himalayan Region

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Abstract

Comprehensive assessment of species richness in the Indian Himalayan Region (IHR) is often limited by sampling biases, taxonomic gaps, and the lack of integration between molecular and predictive analytical approaches. This study presents the deployment of an integrated framework combining machine learning–driven probabilistic mapping with Oxford Nanopore–based DNA barcoding/ metabarcoding to enable robust estimation of faunal diversity across sampled landscapes. Leveraging specimen-derived occurrence data and high-throughput sequencing outputs, the pipeline unifies molecular biodiversity assessment into a scalable and reproducible system. Georeferenced barcode datasets generated from Nanopore sequencing were processed through an automated pipeline incorporating database management, preprocessing, and feature engineering. A Random Forest classifier was trained to estimate genus-level occurrence probabilities using latitudes and longitudes of collection from the Indian Himalayan region. Concurrently, species richness patterns were quantified by integrating molecular taxonomic resolution with spatial modeling outputs. The integrated deployment demonstrates that coupling real-time DNA barcoding/ metabarcoding workflows with machine learning–based probabilistic mapping significantly enhances the detection and prediction of biodiversity patterns. The approach enables rapid biodiversity assessment, improves taxonomic coverage, and effectively addresses sampling bias by extending inference into under sampled regions. Supported by an API-enabled architecture and interactive visualization interface, the framework provides dynamic exploration of species richness and distribution patterns. Overall, this integrative methodology establishes a powerful tool for biodiversity informatics, facilitating rapid faunal diversity assessment, supporting conservation prioritization, and advancing large-scale ecological monitoring in the IHR.

Key words : Species Conservation Planning, DNA Barcoding, Machine Learning Integration, Oxford Nanopore sequencing, Richness Assessment

Hydrology and Aqua-Faunal Diversity in Inland Waters of Northern Karnataka

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Abstract

Hydrological parameters in any aquatic ecosystems are seldom static; their boundaries are always subjected to change and seasonal fluctuations attributed to carrying capacity of the waterbodies and intervention of commercio-domestic anthropocentric activities. Tungabhadra reservoir located at coordinates 76° 21' 10" E and 15° 15' 19" N and Alamatti reservoir, 75° 88' 63" E and 16° 33' 10" N were assessed between (2011-12 and 2019-20). 21 hydrological parameters were compared with a decade values. The results showed wide range of fluctuation in EC (38 to 342.50), increased BOD from 2.25 to 4.46 mg/l, high DO of 7.5mg/l, sulphates 25 to 65mg/l, less concentration of Nitrates from 2.00-3.05 mg/l, Calcium 17.5-43 mg/l, Magnesium 5.15-22.5 mg/l, relatively high levels of Iron (1.63-3.90 mg/l), high levels of Fluoride (0.4-1.2 mg/l), wide range of Carbon dioxide (1.38-38 mg/l), alkaline pH from 7.5-8.58 and total hardness from 48-96.25±2. Four phytoplankton groups; Desmidaceae, Bacillariophyceae, Chlorophyceae, and Cyanophyceae while, five zooplankton groups; Protozoa, Rotifera, Cladocera, Ostracoda and Copepoda were enumerated at genus level. Altogether 112 fish species from 24 families were reported. Fifty-seven from Cyprinidae family, ten from Bagridae, five from Danionidae, four each from Ailiidae, Cobitidae and Gobiidae families, three each from Siluridae and Channidae, two each from Ambassidae, Balitoridae, Cariidae, Cichlidae, Mastacembellidae, and Sisoridae families and one each from Anguillidae, Apochelidae, Belonidae, Cupeidae, Horabagridae, Nemacheilidae, Notopteridae, Osphronemidae, Pangassidae and Xenocyprididae families respectively. The IUCN conservation status showed 6 Endangered (EN), 12 Vulnerable (VU), 5 Near Threatened (NT), 76 Least Concerned (LC) and 13 Data Deficient (DD). Continuous monitoring and adopting new strategies in increasing the fish yield is the need of the hour.

Keywords : Tungabhadra, Alamatti, Reservoir, Hydrology, Ichthyofauna

New Distributional Record of *Bombus haemorrhoidalis* Smith, 1852 (Hymenoptera: Apidae) from Union Territory of Jammu & Kashmir-India

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Abstract

The present study reports a new distributional record of the bumblebee *Bombus haemorrhoidalis* from the Kashmir valley during the period 2024-25. Field Surveys conducted during the flowering season revealed the presence of this species at previously unreported locations. Specimens were collected using standard entomological methods and identified based on the morphological characters. The occurrence of *B. haemorrhoidalis* highlights its ecological significance in pollination networks of the western Himalaya. The record contributes to the existing knowledge of bumblebee diversity and distribution in the region and emphasizes the need for the further systematic surveys and conservation strategies. The manuscripts provides detailed photographic illustrations, diagnostic morphological characters and updated information on its distributional status.

Keywords : *Bombus haemorrhoidalis*, Kashmir Valley, Distribution record, Pollination ecology, Western Himalaya

Spatiotemporal Variation and Diversity Trends of Heronry Birds in Wetlands of Malappuram District, Kerala, India

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Abstract

Heronries are critical nesting habitats for colonial waterbirds in tropical wetlands. This study evaluates species composition, breeding behaviour, and temporal variation of heronry birds in the wetlands of Malappuram district, Kerala, over a three-year period (2023–2025), encompassing three breeding seasons. Data were collected from 28 observation sites (H1–H28), documenting 12 species of breeding waterbirds, including herons, egrets, cormorants, storks and ibises. Species abundance, diversity indices and interannual variation were analysed. Little Cormorant (*Microcarbo niger*), Pond Heron (*Ardeola grayii*) and Black-crowned Night Heron (*Nycticorax nycticorax*) were consistently dominant across all years, whereas Purple Heron (*Ardea purpurea*) showed a low but stable breeding presence. Species richness remained constant ($S = 12$), indicating a stable species pool. However, diversity indices improved over time, with Simpson's dominance index declining from 0.15 to 0.12 and the Shannon–Wiener index increasing from 2.10 (2022–2023) to 2.25 (2024–2025), suggesting increased evenness and reduced dominance. Significant variation in species abundance among sites and years ($p < 0.05$; ANOVA) indicates habitat heterogeneity and ongoing ecological changes within the wetland system. The observed increase in Purple Heron populations suggests improving habitat conditions and highlights the ecological importance of these wetlands as breeding grounds. The study underscores the need for targeted conservation measures and long-term monitoring to ensure the sustainability of heronry bird communities in Malappuram district.

Keywords : Heronry, Colonial waterbirds, Species diversity, Temporal dynamics, Wetland ecology

New Distributional Record of Bumblebees (Hymenoptera: Apidae) in Kedarnath Wildlife Sanctuary and Adjoining Areas, Uttarakhand-India

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Abstract

The study aimed to assess the species richness and altitudinal distribution of bumblebees within Kedarnath Wildlife Sanctuary (KWS) and its adjoining areas, encompassing Rudraprayag, Tungnath, Chopta and Deoria Tal in Uttarakhand, India. Field surveys were conducted during July–August 2021 across KWS and its adjoining areas, covering an altitudinal gradient encompassing three major habitat types: alpine meadows, temperate forests and subalpine shrublands. A total of nine species of bumblebee were recorded *Bombus albopleurialis*; *B. asiaticus*; *B. festivus*; *B. flavescens*; *B. jacobsoni*; *B. keriensis*; *B. lepidus*; *B. rufofasciatus* and *B. tunicatus*. Collectively, these findings establish KWS as a significant refuge for bumblebee diversity across varying altitudinal ranges in the Western Himalaya and provide essential baseline data for understanding pollinator responses to climatic variability and habitat gradients. The results further underscore the urgent need for long-term monitoring and targeted conservation strategies to protect these key pollinators under changing environmental conditions. Detailed taxonomic description, distribution patterns and photographs were provided.

Keywords : Bumblebee, diversity, pollinators, Kedarnath Wildlife Sanctuary, Uttarakhand

Deciphering the Distribution Pattern of *Tabanus* (Diptera: Tabanidae) in the Central Himalayan Biogeographic Landscape of West Bengal to Elucidate Potential Trypanosomiasis Hotspots

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Abstract

Horse flies of the genus *Tabanus* Linnaeus, 1758 (Diptera: Tabanidae) are significant mechanical vectors of various livestock pathogens, including trypanosomiasis. The northern districts of West Bengal form part of the Central Himalayan biogeographic region. This zone has a high livestock density, which is increasing. Thus, despite the epidemiological significance of this area, detailed information on the distribution patterns and zone-specific abundance of *Tabanus* species remains limited. The present study aims to assess the distribution patterns of previously recorded and newly sampled *Tabanus* species to identify areas potentially vulnerable to future 'Surra' outbreaks. Sampling was carried out during peak tabanid activity in June and July of 2023 and 2024 across 33 cattle-shed-associated sites distributed along three altitudinal gradients (<1000>2000 m). Specimens were collected using malaise traps and hand-picking. Species distribution maps were prepared in ArcMap 10.8, and key abiotic factors, such as altitude, mean annual precipitation, and mean annual temperature, were derived from Sentinel-2 DEM, CHIRPS, and the CRU data hub, respectively. A total of 14 *Tabanus* species were recorded during this study, predominantly in low-, mid-, and high-elevation sampling sites where the mean annual temperature is above 22°C and the mean annual rainfall is above 2400 mm. *Tabanus striatus* was the most abundant and widely distributed species, occurring at 13 sites, but was absent from high-elevation zones. Several species showed strong altitudinal segregation, with *T. albofasciatus*, *T. birmanicus*, and *T. fuscomaculatus* restricted to high elevations; *T. megalops* and *T. orientis* linked to mid elevations; and no species restricted to low elevations. These findings provide the first zone-specific distributional assessment of *Tabanus* in this area, revealing possible trypanosomiasis-risk regions that will aid future livestock disease surveillance.

Keywords : Horse flies, Livestock, Spatial distribution, Surra disease, Vector surveillance

A Preliminary Assessment of DNA Barcoding Efficacy for Rapid Identification of Dipteran Insects in the Eastern and Western Himalayan Region of India

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Abstract

Exploration of insect diversity and classification remains a major challenge in biodiversity-rich regions like the Indian Himalayan Region (IHR) due to limited taxonomic expertise and the immense faunal diversity. DNA barcoding has emerged as a robust molecular approach to complement classical taxonomy and facilitate rapid biodiversity assessment. The current study evaluated the effectiveness of mitochondrial cytochrome c oxidase subunit I (COI) DNA barcoding for the identification of Dipteran insects collected from Eastern Himalayas (Arunachal Pradesh) and Western Himalayas (Himachal Pradesh) of India. All specimens were photographed and vouchered prior to molecular analysis, and a hind leg was excised from each individual for genomic DNA extraction. High-throughput Oxford Nanopore-based sequencing generated 143 high-quality barcode sequences, including 79 from Eastern Himalayas and 64 from Western Himalayas. Sequence identification was performed using databases like the NCBI and the BOLD employing a 99% similarity threshold. Molecular identification revealed specimens across multiple taxonomic levels, achieving 100% family-level, 60.83% genus-level, and 38.46% species-level resolution. Among the analysed specimens, a total of 20 families, 34 genera, and 17 species were uniquely identified through similarity search match in both BOLD and NCBI, of which 12 families, 22 genera, and 11 species represent potential new regional barcode records for the IHR as per the existing barcode database. These results demonstrate the efficiency of DNA barcoding for rapid taxonomic placement when comprehensive morphological identification is constrained. The study highlights the role of molecular taxonomy in overcoming taxonomic impediments and supporting biodiversity exploration across the IHR. Efforts are ongoing to incorporate the metabarcoding approaches using Oxford Nanopore sequencing to strengthen large-scale biodiversity monitoring frameworks in India.

Keywords : Diptera, Cytochrome c oxidase I gene, DNA barcoding, Molecular taxonomy, Indian Himalayan Region

Comparative Analysis of Coral Recruitment on Electrified and Non-Electrified Metal Substrata in the Gulf of Kachchh Marine National Park, Gujarat

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Abstract

Biorock technology is the latest coral reef conservation method, which uses low-voltage direct electric currents to stimulate calcium carbonate accretion on metal structures. These structures act as natural coral reef substrata for coral settlement and other sessile organisms, thereby enhancing the physiological resilience of coral reef ecosystem. The present study investigates the efficacy of Biorock reef on the settlement density and post-settlement survival of scleractinian coral recruits, compared to non-electrified artificial metal substrates and natural reef habitats in Mithapur and Arambhada offshore reef sites in the Marine National Park, Gulf of Kachchh, and Gujarat. Between 2020 and 2025, post-larval coral settlement data was assessed using the visual census method. Enhanced coral settlement is driven by the calcified substratum and crustose coralline algae (CCA), which facilitate larval attachment. Among the electrified biorock reefs and non-electrified control metal structures deployed in 2020, the first observation of new coral recruitment occurred at the Mithapur Biorock reef in October 2022, where a single recruit was recorded: a *Cyphastrea* sp. measuring less than 0.5 cm. In November 2025, coral recruitment of *Dipsastraea* sp. was observed at the Arambhada Biorock reef. Notably, while no coral recruitment was recorded on the non-electrified metal structures throughout the study period, natural reef recruitment rates measured 0.20 ± 0.003 and 0.15 ± 0.008 in the Arambhada and Mithapur sites, respectively. Results show a mean density of 0.34 ± 0.03 recruits/m² at the Mithapur biorock reef and 0.37 ± 0.07 recruits/m² at the Arambhada Biorock reef. Biorock reefs support more coral recruitments than natural reefs and other metal structures. Most new settlements on Biorocks observed after September every year, indicating the spawning period is somewhat during monsoon seasons (July-Sept) in the Gulf of Kachchh region. Biorock structures boost coral recruitment and growth, but challenges like algal competition, sedimentation, and predation must be addressed to ensure long-term reef restoration success.

Keywords : Biorock, Coral recruitment, Succession, Gulf of Kachchh, Resilience

Spider (Arachnida: Araneae) Diversity and Guild Composition in Sacred Groves of Dharmapuri District, Tamil Nadu, India

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Abstract

Sacred groves are traditional community-protected habitats that act as important repositories of biodiversity and genetic resources. The sacred groves of the Dharmapuri district, Tamil Nadu, support diverse floral and faunal communities, including spiders. The spiders in the sacred grove act as important insect pest suppressors and are prey for other carnivores, such as lizards and birds. Here, we documented the diversity of spiders and their guild composition in two sacred groves (Muthaiyan temple and Hanuman temple Sacred grove) in the Dharmapuri district, Tamil Nadu. A total of 40 spider species, belonging to 28 genera and 16 families, were recorded. Among them, 6 spider species were endemic to India. Of the 16 families of spiders, Lycosidae (15%) was the most dominant, followed by Oxyopidae (12%), Araneidae, and Thomisidae (10%), collectively accounting for 37% of the total recorded diversity. Further, based on the previous reports, spider families were classified into seven feeding guild types, of which ground hunters (31%) were the dominant guild, followed by orb web weavers (21%), stalkers (18%), ambushers (15%), and foliage runners (9%). The findings highlight the ecological importance of sacred groves as reservoirs of spider diversity, emphasising the need for further intensive surveys and conservation efforts in this relatively unexplored region.

Keywords : Spider diversity, Araneae, Guilds, Sacred Grove, Dharmapuri

Walking Between Worlds: Integrative Taxonomy Uncovers Hidden Lineages and Evolutionary Transitions in Sundarbans Mudskippers

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Abstract

Mudskippers (Oxudercinae) epitomize the evolutionary shift from aquatic to amphibious life, yet their taxonomy remains obscured due to their morphological convergence and phenotypic plasticity. The present study with an integrative taxonomic approach combining traditional and mitochondrial gene COI and 16S rRNA barcoding taxonomy to assess mudskipper diversity along the Indian Sundarbans. Sampling was carried out along the selected sampling station in three zones of Sundarbans from January 2023 to December 2024 and 2484 specimens were collected. Morpho meristic measurements were done following Murdy (1989) and Larson and Murdy (2001). The diversity of fishes was calculated by using diversity indices such as species Margalef species Richness Index (R), Pielou's Evenness Index (E), Shannon-Wiener Index (H') and Simpson's diversity Index (D). A total of eight species belonging to five genera were recorded during the study period. Two mitochondrial COI gene and 16S rRNA gene amplification were done and phylogenetic analysis revealed the presence of cryptic lineages within nominal species, suggesting underestimation of regional diversity. The study also revealed unrecognized cryptic lineages within nominal taxa, indicating that mudskipper diversity in the Sundarbans is significantly underestimated. Integrative taxonomy reveals the presence of distinct evolutionary lineages shaped by alteration in habitats and tidal gradients, reflecting adaptive responses to the amphibious niche. The study highlighted that the application of molecular and morphological taxonomy approach could unravel the hidden diversity of poorly studied group in Indian waters.

Keywords : Mudskipper, DNA barcoding, Sundarbans, Cryptic, Evolutionary lineages

Spatial Structuring of Freshwater Fish Diversity along Elevation Gradients in the Agasthyamala Biosphere Reserve, Western Ghats

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Abstract

The Agasthyamala Biosphere Reserve (ABR), a critical biodiversity hotspot within the southern Western Ghats, offers a unique landscape for examining the drivers of freshwater fish diversity across steep environmental gradients. This study quantifies spatial patterns of ichthyofaunal diversity across four river basins (Neyyar, Karamana, Vamanapuram, and Kallada) using a multi-scale comparative framework. A total of 60 species (40 genera, 20 families, 10 orders) were documented through systematic surveys, with assemblages dominated by Cyprinidae (42% of total richness). Species richness varied significantly among basins (α -diversity), with Kallada exhibiting the highest richness ($S = 37$), followed by Neyyar and Vamanapuram ($S = 35$ each), and Karamana ($S = 22$). Beta diversity analysis indicated substantial species turnover among river systems, reflecting basin-specific ecological structuring. Elevation emerged as a strong determinant of assemblage composition, with a marked decline in α -diversity along the altitudinal gradient. Species richness peaked at lower elevations (40–300 m; $S = 46$), declined at mid-elevations (300–1000 m; $S = 20$), and was extremely limited above 1000 m ($S = 3$), with *Garra hughii* as the only species recorded beyond 1200 m. This pattern suggests strong environmental filtering and niche specialisation in high-altitude habitats. The ABR supports high levels of endemism (20 Western Ghats endemics; 8 Kerala endemics) and includes multiple threatened taxa (1 Critically Endangered, 6 Endangered, 4 Vulnerable), emphasising its global conservation significance. The observed patterns indicate that both dispersal limitation and elevation-driven habitat constraints structure freshwater fish assemblages in tropical mountain river systems. Our findings provide quantitative evidence for the role of altitudinal gradients in shaping biodiversity patterns and highlight the vulnerability of high-elevation freshwater ecosystems under ongoing climate change and anthropogenic pressures. These results underscore the need for basin-scale conservation planning integrating elevation-sensitive management strategies to safeguard endemic ichthyofauna in the Western Ghats.

Keywords : Hillstream fish, Alpha diversity, Endemism, Freshwater ecology, Conservation biogeography

Cartilaginous Fishes as Marine Living Resources: Diversity and Conservation Status in The Indian EEZ

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Abstract

Cartilaginous fishes (sharks, rays, and chimaeras) are a significant yet vulnerable part of marine biodiversity and fisheries resources in the Indian Exclusive Economic Zone (EEZ). In India, they contribute approximately 5% of demersal fish landings and are predominantly captured as incidental bycatch in commercial trawl fisheries. Due to life-history traits such as slow growth, late maturity, and low fecundity, chondrichthyans are highly susceptible to overexploitation, with nearly one-third of species globally threatened. A survey conducted between May 2024 and December 2025 at major landing centers on the southwest and east coasts of India recorded 38 species of chondrichthyans from the commercial fish landings. Of these, 16 species are listed as threatened and 6 as near threatened on the IUCN red list, highlighting the conservation concern for this group. Although several species are valued as food fish in both domestic and international markets, much of the non-commercial bycatch is used in the production of fish meal and animal feed. This practice has increased the market value of low-quality fish, resulting in the retention of low-value bycatch during trawling operations. Considering the life-history traits, ecological vulnerability, and declining populations, sharks, rays, and chimaeras demand stronger management and improved monitoring of existing conservation measures. This requires enhancing awareness among fishing and coastal communities, promoting effective fisheries governance, and ensuring compliance with regulations. Furthermore, a better understanding of catch composition, species biology, and stock structure is essential to reduce bycatch and promote sustainable fishing practices.

Keywords : Chondrichthyans, Bycatch, Threatened species, Demersal fishery, Trawling

First Record of *Microhyla taraiensis* Khatiwada *et al.*, 2017 from India

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Abstract

Microhyla taraiensis were collected from a single habitat in Nayagram (22003'22N, 87009'07E) in Jhargram District West Bengal. This is first record and description of *M. taraiensis* from India. Previously it was reported only from its type locality in Nepal (Khatiwada *et al.*, 2017).

Key words : Microhyla, India, First record, Microhyla taraiensis

Expanding the Known Diversity of Himalayan White Grubs (Coleoptera: Scarabaeidae: Melolonthinae): New Records from India

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Abstract

The Himalayan region represents one of the world's most important biodiversity hotspots, yet its insect fauna remains insufficiently explored. In this context, the present study reports *Asophrops rudolfpetrovitzi* Keith, 2007 and *Exolontha bhutanensis* (Frey, 1975) as new records for India, based on specimens collected from Jammu & Kashmir, Sikkim, and Arunachal Pradesh. *Asophrops rudolfpetrovitzi*, previously known only from Pakistan, is herein recorded from Jammu & Kashmir, representing a significant extension of its distribution into the northwestern Himalaya. Similarly, *Exolontha bhutanensis*, originally described from Bhutan, is newly recorded from Arunachal Pradesh and Sikkim, extending its distribution across the eastern Himalayan region of India. These new distributional records substantially expand the known biogeographic ranges of both species and reinforce the Himalaya as a reservoir of undocumented scarabaeid diversity. Detailed redescrptions are provided, highlighting key diagnostic morphological characters to ensure accurate identification. The study is further supported by high-quality illustrations of the habitus and male genitalia, facilitating future comparative and systematic investigations. From a conservation perspective, the discovery of previously unrecorded taxa in these regions underscores the critical need for continued faunal exploration and taxonomic assessment in fragile Himalayan ecosystems, which are increasingly threatened by habitat degradation and climate change. The present findings provide essential baseline data for biodiversity assessment, biogeographic inference, and conservation prioritization of scarabaeid beetles in India.

Keywords : Biodiversity Hotspots, Himalaya, Taxonomy, Distribution

Diversity and Host Plant Associations of Moths in Agroecosystems of Dhamtari District, Chhattisgarh

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Abstract

The agroforestry system supports rich insect diversity by providing a wide range of host plants and structurally complex habitats. The present study documents the host plant associations of 82 moth species belonging to 12 families recorded from agroforestry habitats of Dhamtari district of Chhattisgarh, India. Host plant data were documented through field observations and by using standard literature sources. The study area comprises a variety of crops, including cereals, pulses, a variety of vegetables and fruits, along with wild herbs, shrubs and trees, which all serve as host plants for a wide range of moth species. The results indicate that several moth species utilize both cultivated and non-cultivated plants, reflecting their ecological adaptability and emphasizing the role of agroforestry systems in supporting biodiversity. Knowledge of host plant associations aids in understanding species-specific feeding patterns. Species feeding on weeds may contribute in natural weeds regulation, while knowledge of alternate host plants of moth species can be used in developing trap crop strategies to manage pest species affecting economically important crops. This study represents first comprehensive checklist of moth host plant associations from the agroforestry systems of Chhattisgarh, thereby filling a significant regional knowledge gap. The finding emphasizes the importance of agroforestry systems in biodiversity conservation and sustainable and ecology based pest management practices.

Key words : Lepidoptera, Moth, Host plants, Agroecosystems, Central India

Faunistic Assessment of Aquatic Bugs in Kinnerasani Wildlife Sanctuary, Telangana

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Abstract

The present study provides important baseline information on the diversity and faunal composition of aquatic and semi-aquatic Hemiptera in the Kinnerasani Wildlife Sanctuary, located in the Eastern Ghats of India. Extensive field surveys were carried out across multiple freshwater habitats, including streams, ponds, waterfalls, path holes, rock pools etc. between 2022 and 2025. The survey resulted in documentation of 41 species belonging to 22 genera and 12 families. Among these, family Nepidae showed highest species richness, represented by nine species across three genera, followed by Gerridae and Notonectidae, with eight and six species distributed among seven and two genera respectively. In contrast, families such as Corixidae and Hydrometridae were each represented by a single species. Seven endemic taxa were recorded from the study area, namely *Diplonychus molestus*, *Diplonychus rusticus*, *Sigara kempfi*, *Enithares fusca*, *Heleocoris bengalensis bengalensis*, *Heleocoris indicus*, and *Amemboa kumari*. These insects play a significant ecological role in freshwater ecosystems and serve as valuable bioindicators of habitat quality. However, anthropogenic pressures such as habitat degradation, deforestation, urbanization, and water pollution were observed to negatively affect aquatic habitats within the sanctuary. The findings underscore the need for effective conservation and habitat management strategies to safeguard freshwater biodiversity in the region.

Keywords : Taxonomy, Diversity, Aquatic and Semi-aquatic Hemiptera, Distribution, Protected area

Study on Zooplankton Biodiversity in Two Selected Temple Ponds of Raipur City, Chhattisgarh

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Abstract

Chhattisgarh is known for its ponds and temples and most of the temples are surrounded by temple pond from where, the water is being used for temple rituals purpose. However very few ecological studies have been done on these ponds. The main aim of the study is to investigate the diversity of zooplankton species in two selected temple ponds of Gudiary region, Raipur city, Chhattisgarh. Water samples collected for one year with three different seasons. Site I is surrounded by fence and restricted to fishing, while site II is accessible for fishing and used by local people for daily needs like washing, bathing, fishing etc. Water samples were collected on seasonal basis that is monsoon, winter and summer. This results revealed that total 48 zooplankton species were identified in both sites which belongs to 28 genera including groups Protozoans (23) species, Rotifers (20) species, Copepods (3) species, Rhizopoda (2) species. Shannon diversity index also calculated for one year, in site I $H' = 2.984$ and in site II $H' = 2.836$. During observations *Euglena* species were more abundant at site I as compared to site II during the summer, although a greater variety of *Euglena* species was found at site II. In site I, the maximum presence of *Paramecium* sp. and *Coleps* sp. was observed during the summer months and Rotifers were dominated in all seasons. However, activities related to the temple, such as waste disposal and offerings, along with other human interventions and high diversification of *Euglena* species are contributing to increased pollution in the pond. This highlights the need for regular monitoring, wastewater treatment, and community-level conservation initiatives to preserve ecological integrity and protect freshwater ecosystems.

Keywords : Zooplankton species, Temple Ponds, Seasonal changes, Pollution status, Diversity index

Species Diversity and Stock Structure of Genus *Priacanthus* (Family: Priacanthidae) from Indian EEZ Using an Integrated Approach

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Abstract

This present study provides a comprehensive assessment of the distribution, diversity and stock structure of the genus *Priacanthus* within the Indian Exclusive Economic Zone (EEZ). Integrating classical taxonomy with molecular tools, sampling was conducted across major landing centres on the East Coast, West Coast and Andaman waters. Among the five recorded species; *P. hamrur*, *P. blochii*, *P. sagittarius*, *P. tayenus*, and *P. prolixus*, *P. prolixus* was found to be the most dominant and widely distributed. Notably, *P. hamrur* was restricted to Andaman waters, being absent from peninsular regions. Phylogenetic analysis using the partial cytochrome oxidase subunit I (COI) gene (~540bp) confirmed the monophyletic nature of these species with low intraspecific divergence (0–0.4%). A detailed stock identification of *P. prolixus* (n=121) was performed using morphometrics, micro-CT imaging and molecular analysis. Micro-CT imaging with Lugol's Iodine allowed for high-resolution visualization of the three otolith pairs (lapillus, sagittae and astericus). Principal Component Analysis (PCA) and Canonical Discriminant Analysis (CDA) of body morphometrics and sagittal otolith shapes revealed significant regional variations, achieving classification accuracies of 80.2% and 74.4% respectively. These morphological differences were mirrored by genetic data; haplotype analysis identified six distinct haplotypes organized into two major clusters. The Maximum Likelihood tree revealed a significant phylogeographic break, clearly separating populations into Arabian Sea (West Coast) and Bay of Bengal (East Coast) clusters. The congruence between morphological differentiation, otolith shape variability and haplotype distribution strongly suggests the existence of two distinct ecological and genetic stocks of *P. prolixus*. These findings highlight the necessity of managing the East and West coast populations as separate units to ensure the localized conservation and sustainable management of these marine resources.

Keywords : *Priacanthus*, Morphology, Otolith, Cytochrome Oxidase subunit, Stock structure

Mitochondrial DNA Resources for Marine Mammals from Indian Waters: Implications for Species Diversity and Phylogeny

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Abstract

Marine mammals are apex predators and play a crucial role in nutrient cycling, carbon sequestration, and significantly influence trophic dynamics. The Indian seas host a diverse range of marine mammals, including baleen whales, toothed whales, dolphins, porpoises, and dugongs. Because morphological examinations during fishery interactions, sightings, and strandings fail to resolve inter- and intra-specific variations, the development of robust genomic datasets from the Indian Ocean is essential to resolve phylogenetic ambiguities within this important group of species. In this context, mitochondrial genomic data, commonly used for species identification and phylogenetic inference, were generated from tissue samples obtained from stranded specimens across the Indian waters. Out of 86 tissue samples collected (2019- 2024), mitochondrial barcodes were successfully generated for 64 specimens. A total of 112 barcodes were obtained, comprising 50 16SrRNA sequences, 25 COI sequences, and 37 control region (CR) sequences. Phylogenetic analysis revealed nine species, of which six belong to Odontoceti (*Kogia breviceps*, *K. sima*, *Neophocaena phocaenoides*, *Sousa plumbea*, *Stenella longirostris*, and *Tursiops aduncus*) and three to Mysticeti (*Balaenoptera edeni*, *B. musculus*, and *B. physalus*). Genetic diversity indices were calculated for the species and marker with sufficient sample sizes. For *N. phocaenoides*, CR sequences (n=10) showed low nucleotide diversity ($\pi=0.00098$), with three haplotypes (h=3) and haplotype diversity (hd=0.600). For 16SrRNA sequences (n=14), nucleotide diversity was $\pi=0.00222$, with six haplotypes (h=6) and haplotype diversity (hd=0.780). For *S. plumbea*, CR sequences (n=16) exhibited higher nucleotide diversity ($\pi=0.00618$), with eight haplotypes (h=8) and high haplotype diversity (hd=0.892). For 16SrRNA sequences (n=24), nucleotide diversity was $\pi=0.00317$, with eight haplotypes (h=8) and moderate haplotype diversity (hd=0.699). The sequence dataset provides a valuable genetic reference for future taxonomic, population, and conservation studies and serves as a baseline for monitoring marine mammal biodiversity using state-of-the-art approaches, such as environmental DNA analysis.

Keywords : Marine mammals, Indian Ocean, Mitochondrial data, Molecular Systematics, Genetic diversity

Diversity and Ecological Characteristics of Sea Anemones at Narara Reef in the Gulf of Kachchh Marine National Park and Sanctuary

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Abstract

Sea anemones are diverse and ecologically significant members of the class Hexacorallia (phylum Cnidaria; subphylum Anthozoa) that play important roles in ecosystem functioning and serve as indicators of overall ecosystem quality in various coastal habitats. The Gulf of Kachchh (GoK), which experiences large tidal amplitudes that open extensive intertidal reef areas during low tides, generating strong currents that create high turbidity and unique intertidal habitats, is the least studied for these species. In this context, the present study aimed to document the diversity of sea anemones in the intertidal zone of Narara reef in the GoK, along with ecological characteristics such as substrate preferences, associated invertebrates, and physicochemical parameters. Surveys were conducted in two different locations at the Narara reef during 2024 and 2025, reef area were assessed by employing 5 Belt Transects of (50m x 4m) covering 1000m² of area at each location (English et al, 1997). A total of 19 species of sea anemones, belonging to 9 genera and 7 families, were recorded a first for this study area. The family Stichodactylidae was the most dominant (32%), followed by Actiniidae (21%), Phymanthidae (16%), Aiptasiidea (11%) and Cerianthidae (10%), whereas the families Thalassianthidae and Heteranthide were the least encountered (5%). Sea anemone diversity and substrate preferences were shown to correlate. Phymanthidae, Thalassianthidae and Stichodactylidae dominantly prefers soft sandy substrate whereas Actinidae, Aiptasidae and Heteranthidae prefers rock crevices. Cerianthidea, only family prefers rock, soft sandy and rubbles. The findings show that habitat-specific patterns of sea anemone exist in this high-energy intertidal zone. The study highlights the need to preserve intertidal habitats from damaging alterations and, as a result, to protect the fragile habitat ecology of sea anemone species. The study also recommends continuous monitoring to detect changes in community patterns of sea anemone species due to local and climatic stressors.

Keywords : Sea Anemone, Substrate Preference, Associated Invertebrates, Physicochemical Parameters, Gulf of Kachchh

Species Diversity in the Genus *Perionyx* Perrier, 1872 (Oligochaeta: Megascolecidae) Reveals Sikkim as a Natural Hub within Indian Organic Farming Systems

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Abstract

The earthworm genus *Perionyx* Perrier, 1872 (Megascolecidae) is a distinctive group native to the Indian subcontinent and Southeast Asia, with the Eastern Himalayas representing a key center of diversification. Several species, including *P. excavatus* and *P. ceylanensis*, are recognized as efficient “ecosystem engineers” due to their role in vermicomposting and enhancement of soil organic carbon, thereby supporting sustainable agriculture. Field surveys conducted across Sikkim revealed considerable diversity within the genus *Perionyx*, including specimens exhibiting unique morphological and anatomical traits. A comprehensive taxonomic investigation was undertaken using diagnostic external characters such as body size, segmentation, clitellum, and reproductive pore arrangement, along with internal features including the gizzard, spermathecae, and intestinal configuration. These findings highlight the region’s potential to harbor endemic earthworm species with significant functional roles in organic farming systems and underscore the need for systematic exploration of Himalayan ecosystems to document hidden biodiversity and harness its applications for sustainable agriculture.

Keywords : Clitellum, Endemic earthworm species, Male field, Morpho-anatomical characters, Penial setae

Conserving Traditional Knowledge for Biodiversity Conservation: Need of the Hour

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Abstract

Traditional knowledge, developed over generations through close interaction with nature, plays a vital role in biodiversity conservation. However, rapid urbanization, industrialization, and cultural shifts are leading to the erosion of this invaluable knowledge system. The present study aims to emphasize the urgent need to conserve traditional ecological knowledge (TEK) for sustainable biodiversity management. The key objectives include documenting indigenous practices related to biodiversity conservation, evaluating their ecological significance, and integrating them with modern conservation strategies. The methodology involves a multidisciplinary approach combining ethnobiological surveys, participatory rural appraisal (PRA), structured interviews with local communities, and field observations in biodiversity-rich regions. Secondary data from literature, government reports, and conservation databases were also analyzed to validate traditional practices. The study focuses on practices such as sacred groves protection, traditional agroforestry systems, use of medicinal plants, seasonal harvesting patterns, and community-based conservation ethics. Observations reveal that traditional knowledge systems contribute significantly to the conservation of flora and fauna by promoting sustainable resource use, habitat protection, and ecological balance. Indigenous communities demonstrate deep ecological understanding, including species-specific conservation, climate adaptation strategies, and preservation of genetic diversity. However, this knowledge is increasingly threatened by modernization, lack of documentation, and reduced intergenerational transmission. The outcomes of the study highlight the need for systematic documentation, policy support, and integration of traditional knowledge with scientific conservation frameworks. Strengthening community participation, promoting awareness, and incorporating TEK into education and conservation programs are essential steps. The study concludes that conserving traditional knowledge is not only crucial for biodiversity preservation but also for achieving long-term ecological sustainability and resilience.

Keywords: Traditional knowledge, Modernization, Climate Adaptation Strategies, Ecological Sustainability, Community-Based Conservation Ethics

Seasonal Dynamics of Avian Communities in Rajgir Wildlife Sanctuary, Bihar, India

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Abstract

Avian communities are highly sensitive to seasonal environmental fluctuations, making them reliable indicators of ecosystem dynamics and habitat quality. Assessing seasonal variation in bird diversity is therefore essential for understanding community structure and informing conservation strategies. The present study examines the seasonal dynamics of avian communities in Rajgir Wildlife Sanctuary (WLS), Nalanda district, Bihar, India. Systematic field surveys were conducted from January to December 2023 across diverse habitat types within the sanctuary. A total of 3,805 individual birds representing 89 species, 77 genera, 46 families, and 14 orders were recorded. The order Passeriformes dominated the assemblage across all seasons, contributing the highest species and genera richness. Seasonal patterns revealed moderate variation in species richness, with winter recording the highest richness (66 species), followed by summer (59 species) and monsoon (59 species). This trend may be attributed to the influx of seasonal migrants and improved detectability during winter months. Despite variation in species richness, statistical analyses indicated no significant seasonal differences in overall bird abundance. Diversity indices further demonstrated high and stable community diversity, with the Shannon–Wiener index peaking during winter ($H' = 3.381$), while Simpson's index remained consistently high across seasons. Prominent families such as Muscicapidae, Phylloscopidae, Columbidae, Accipitridae, and Ardeidae were well represented throughout the study period, indicating their ecological adaptability across seasonal gradients. Multiseasonal assessment of avian assemblages highlights the role of habitat heterogeneity and climatic variability in shaping community composition. The findings underscore the ecological significance of Rajgir WLS as a key habitat supporting diverse avian communities in eastern India. Furthermore, the study emphasizes the importance of long-term, multi-season monitoring to detect temporal shifts in community structure and to guide evidence-based conservation and management strategies under changing environmental conditions.

Keywords : Avian diversity, Seasonal Dynamics, Community Structure, Rajgir Wildlife Sanctuary, Biodiversity conservation.

Spider Diversity (Arachnida: Araneae) in Different Plantations of Kamrup (Rural) District, Assam, India

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Abstract

An investigation was carried out to document the spider diversity in different plantations of Kamrup (Rural) district of Assam for a period of one year from December, 2024 to December, 2025. A total of 38 species of spiders belonging to 8 families and 22 genera were recorded from the study. The most dominant family recorded was Araneidae Clerck, 1757 with 17 species followed by Salticidae (Blackwall, 1841) with 7 species. Among all the species, Argiope pulchella Thorell, 1881 and Phintella vittata (C.L. Koch, 1846) were the most encountered species. Guild structure analysis of the reported spiders revealed six functional groups viz., orb-web builders, ground runners, sheet-web builders, stalkers, foliage hunters and ambushers. It is concluded that the vegetation structure is mostly influence the diversity of spiders in different plantations.

Keywords : Plantations, Diversity, Agro-Ecosystem, Guilds, Habitat

Baseline Biodiversity Assessment of Macrobenthic Communities in the Subarnarekha and Budhabalanga Estuaries, Northern Odisha, East Coast of India

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Abstract

This study investigates macrobenthic communities in the Subarnarekha and Budhabalanga estuaries, aiming to establish baseline data critical for future biodiversity assessments in the largely uncharted northern Odisha region. Given the rising economic activities, including port development and prawn aquaculture, there is an urgent need to evaluate their potential impacts on marine benthic organisms, which serve as key indicators of environmental change within soft-sediment ecosystems. A one-time sampling event was conducted during the premonsoon season 2024 using a GPS-fixed grid method across predetermined locations in both estuaries. The study identified six phyla, 34 families, and 51 macrobenthic species, categorized into 45 genera, with Mollusca being the dominant Phylum. The Subarnarekha estuary featured significant bivalve populations, including the venerid *Meretrix meretrix* (Linnaeus, 1758) and Mytilid *Brachidontes undulatus* (Dunker, 1857). In contrast, the Budhabalanga estuary was predominantly characterized by the venerid *Timoclea imbricata* (G.B.Sowerby II, 1853) and the echinoderm holothurian *Acaudina molpadioides* (Semper, 1867). Evaluating biodiversity through comprehensive indices indicated that Subarnarekha estuary exhibited higher species richness (Margalef index = 5.49), despite a lower Shannon-Wiener index ($H' = 2.16$) compared to Budhabalanga estuary ($H' = 2.62$). Notably, the discovery of the arcid bivalve *Trisidos tortuosa* (Linnaeus, 1758) in both the estuaries represents a first record of the genus for the Odisha coast. This baseline data is a vital contribution to future environmental monitoring and conservation initiatives in the area.

Keywords : Macrobenthic communities, biodiversity, Estuaries, Odisha, *Trisidos tortuosa*

Macrobenthos Guild Structure and Ecosystem Health in the Subarnarekha Estuary, India: A Preliminary Assessment

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Abstract

Estuarine macrobenthic communities exhibit considerable ecological responses to environmental gradients; however, the trophic functional organization of these communities in tropical systems remains underexplored. This study investigates the Subarnarekha estuary located in coastal Odisha, India, with the objective of evaluating the distribution of macrobenthic feeding guilds. Furthermore, it aims to identify the environmental conditions that influence this distribution, thereby addressing a significant gap in the existing literature. Samples of water, sediment, and macrobenthos were collected from eight stations along the marine-to-riverine gradient during the pre-monsoon season. Canonical correspondence analysis was employed to examine the environmental drivers of guild distribution, while cluster analysis and non-metric multidimensional scaling (nMDS) were utilized to assess spatial community structure. The functional diversity evenness index (jFD) was calculated to evaluate ecosystem health. A total of 1,017 macrobenthic individuals were identified, categorized into six feeding guilds: suspension feeders (80.63%), carnivores (8.95%), deposit feeders (7.08%), omnivores (1.47%), herbivores (0.98%), and scavengers (0.88%). Two distinct assemblages were identified through Bray-Curtis cluster analysis and nMDS: Group I (Meretrix-Brachiodontes community), dominated by suspension feeders, and Group II (Matuta-Charybdis community), characterized by a lower diversity of mostly carnivores. Key environmental determinants of guild distribution included salinity, silt-clay fraction, and nutrient concentrations. The jFD scores indicated poor trophic condition at most sampling stations, revealing a disconnect between numerical abundance and functional health. This study establishes a pre-monsoon trophic baseline for the Subarnarekha estuary and provides essential reference points for effective management strategies to mitigate upcoming anthropogenic pressures, particularly those arising from aquaculture.

Keywords : Feeding Guild, Benthos, Estuary, Odisha, Ecosystem

Taxonomic Composition and Diversity of Cladocera in Ramsar Wetlands of Uttar Pradesh, India

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Abstract

The present investigation comprehensively assessed the taxonomic composition and diversity of Cladocera in nine Ramsar designated wetlands of Uttar Pradesh. A total of 27 species were recorded, belonging to 21 genera, 6 families and 2 orders. Among these, the family Chydoridae constituted approximately 55% of species. Significantly, 23 species were documented for the first time from the state of Uttar Pradesh. Among the recorded species, *Diaphanosoma excisum*, *Ceriodaphnia cornuta* and *Chydorus sphaericus* were most frequently occurred from the wetlands. The density of cladocera was high in Sarsai Nawar wetland 129.75 ± 139.25 Ind/L, primarily due to pronounced dominance of *Macrothrix triserialis*. Whereas low density was observed in Sandi Bird Sanctuary (25.33 ± 7.54). Shannon's diversity index (H') clearly revealed the highest diversity in Sandi Bird sanctuary ($H' = 1.97 \pm 0.13$), whereas the lowest diversity was observed in Sur Sarovar Wetland ($H' = 0.54 \pm 0.1$). The dominance was exceptionally high in Sur Sarovar wetland ($92.65 \pm 10.40\%$), mainly contributed by *Daphnia pulex* and *Ceriodaphnia cornuta*. Physio-chemical parameters and biological parameters were compared using multivariate techniques. Pearson's correlation and principal component analysis shows elevated total dissolved solids; ions indicate that Sur Sarovar wetland is eutrophicated. Similarly, Sandi Bird Sanctuary, Haiderpur wetland, and Bhakira Bird Sanctuary predominantly exhibited mesotrophic conditions, while Parvati Arga wetland was identified as being intermediate between eutrophic and mesotrophic conditions. The changes in the trophic status could be due the enrichment of nutrient and pollution through surrounding agricultural runoffs and inlet channels carries the industrial effluents. Theses environmental changes substantially alter both physical and chemical characteristics of wetlands and adversely affecting aquatic life and overall ecosystem health. Therefore, regular wetland biomonitoring is crucial for better conservation and management of the ecosystem.

Keywords : Cladocera, Diversity, Water quality, Bioindicators, Eutrophication

Deep-Sea Anguilliformes of Indian EEZ: Taxonomy, Diversity and Distribution

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Abstract

The order Anguilliformes, also known as true eels, is the most diverse, comprising 1,065 species across 157 valid genera and 16 families. Eels are found throughout freshwater lakes, rivers, estuaries, and oceans worldwide, inhabiting depths from shallow inshore waters to 5,440 metres. Research on the Order Anguilliformes in Indian waters is increasing, with several new species described and new records added in recent years. However, studies on deep-sea eels remain limited. This study is based on both archived and recently collected specimens from 29 designated sampling locations surveyed during 19 cruises between 2010–17 and 2024, at depths ranging from 200 to 1345 m, onboard FORV Sagar Sampada and collections from deep-sea trawl landings along the west coast of India. Currently, 161 species, belonging to 12 families and 56 genera, are documented in Indian waters. Of these, the present work reports 49 species belonging to 9 families from depths down to 200 m within the Indian EEZ. Among the nine families, Congridae is the most diverse, with 22 species, followed by Ophichthidae (9 species), Synphobranchidae, and Nettastomatidae (each with 4 species). Accurate taxonomy is vital for effective biodiversity conservation, particularly of deep-sea ecosystems that remain largely unexplored. By providing data on species occurrence and distribution, this work enhances taxonomic knowledge and supports the conservation of deep-sea biodiversity, ecosystem monitoring, and the sustainable management of marine resources in Indian waters.

Keywords : Eels, Taxonomy, Deep-Sea, Biodiversity, Conservation

Seasonal Structuring of Butterfly Communities in Rajgir Wildlife Sanctuary, Bihar, India

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Abstract

Butterflies are sensitive indicators of environmental change due to their strong dependence on habitat structure, host plants, and climatic conditions. Analysing seasonal dynamics of butterfly communities provides critical insights into ecosystem functioning and biodiversity patterns. The present study investigates seasonal variation in butterfly community structure in Rajgir Wildlife Sanctuary (WLS), Nalanda district, Bihar, India. Systematic field surveys were conducted throughout 2023 using 150 transects distributed across major habitat types, including forest interiors, forest edges, scrublands, and open habitats. A total of 19,021 individuals representing 94 species and 63 genera were recorded, encompassing all five major butterfly families reported from the Indian subcontinent. This extensive dataset enabled a robust assessment of seasonal changes in species richness, abundance, and community composition. Quantitative analyses incorporating diversity indices, species accumulation curves, rank-abundance models, non-metric multidimensional scaling (NMDS), and indicator value analysis were employed to evaluate community structure and seasonal turnover. The results demonstrate pronounced seasonal structuring of butterfly assemblages, with distinct shifts in species composition and relative abundance across seasons. Diversity patterns indicate that seasonal variation is driven by changes in resource availability, habitat heterogeneity, and climatic conditions. Indicator species analysis identified season-specific taxa, highlighting their potential utility in long-term biodiversity monitoring. The findings clearly establish that butterfly communities in Rajgir WLS are temporally dynamic and structured by both local habitat characteristics and broader climatic regimes. The study highlights the importance of multi-seasonal assessments in capturing true biodiversity patterns and identifies critical periods of community change. These results provide a scientific basis for incorporating butterflies as bioindicators in ecosystem monitoring and for designing season-specific conservation strategies in tropical dry deciduous forest landscapes.

Keywords : seasonal dynamics, community structure, indicator species, biodiversity monitoring, biodiversity monitoring, Butterfly diversity

Some New Distributional Records of Elaterid Beetles (Coleoptera, Elateridae) from Maharashtra, India

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Abstract

The family Elateridae, are one of the most diverse lineages of order Coleoptera. Commonly the beetles of this family are known as click beetles, and their larvae as wireworms. Members of this family are characterized by a unique clicking mechanism that make them to produce a sudden snapping sound and leap into the air when overturned. This adaptation serves both defensive and evolutionary functions. Globally, there are 11,000 described species. In India, the documented diversity is nearly 835 species. Identification of the beetles was based on external morphology and male, female genitalia by referring to standard literature. The distributional records were also verified from standard literature. This study shows that both *Compsolacon sinensis* (Candèze, 1857) and *Compsolacon triticumunis* (Vats & Kashyap, 1992) occur in regions where they were previously unrecorded. These specimens were collected from Jalgaon, Maharashtra. These records extend their known geographic range of both species. Before this study in India, the species *C. sinensis* is recorded from West Bengal, and species *C. triticumunis* is recorded from Himachal Pradesh, Uttarakhand, Uttar Pradesh. Wireworms are economically important and reported as pests in many agricultural important filed crops. Damage caused by wireworms may result in significant yield loss, especially in regions with high agricultural activity. These wireworms are recognized as important ground pest. They burrow into the roots and tubers of essential crops like sugarcane, wheat, maize, and groundnut. Their damage is reported from 10 to 30% in some of the tuberous crops. This research aids in providing a clearer understanding of the regional occurrence of click beetles. As wire worms are pest on many agricultural important crops, such findings are important for analysis of pest risk. It also helps in developing a biogeographic framework for effective conservation and agricultural management in India.

Keywords : Wireworm, Elaterinae, Agrypninae, pest, male genitalia

A Fascinating Glimpse of Urban Avifaunal Diversity in A Heritage-Rich Environment of North Kolkata, West Bengal, India

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Abstract

A systematic field investigation was conducted over a two-year period (January 2024 –December 2025) to assess avian diversity within the Scottish Church College campus and playground, Kolkata, employing the standardized point-count method. The study recorded a total of 35 bird species belonging to 11 orders and 24 families, with the assemblage predominantly composed of resident species. The order Passeriformes was found to be the most dominant, indicating the suitability of the habitat for small perching and insectivorous birds. Species diversity and community structure were evaluated using the Shannon–Wiener and Simpson diversity indices, which yielded values of 3.101 and 0.943, respectively. These indices suggest a moderately high level of species diversity and an even distribution of individuals across taxa, reflecting a relatively stable avian community. The presence of multiple feeding guilds, including insectivorous, frugivorous, granivorous, and omnivorous species, further indicates the availability of diverse ecological resources within the study area. Habitat heterogeneity, particularly the presence of varied vegetation, plays a critical role in sustaining avifaunal diversity by providing foraging, nesting, and roosting opportunities. The findings highlight the ecological significance of small urban green spaces and emphasize their role in supporting and conserving avian diversity within densely urbanized environments.

Keywords : Avifauna, Urban ecology, Diversity indices, Habitat heterogeneity

Soil and Leaf Litter Ants (Hymenoptera: Formicidae) of Kolli Hills, Part of Eastern Ghats with New Distribution Records from Tamil Nadu, India

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Abstract

The Kolli Hills, part of the Eastern Ghats, host remarkable biodiversity; however, several biological groups and their microhabitats remain poorly explored. The recent survey on soil and leaf-litter ant diversity has provided a comprehensive species list, new distribution records, and insights into their biology. Ant samples were collected using various methods, including pitfall traps, beat-sheet sampling, Winkler extractors, insect aspirators, the Tropical Soil Biology and Fertility (TSBF) method, and hand-picking collections. These methods were used to target ants found in soil and leaf litter. Previous checklists reported 184 ant species across 51 genera from Tamil Nadu (Bharti et al., 2016); In this study reveals from Kolli hills 54 species from 7 subfamilies and 32 genera were collected. This includes new distribution records of 11 species for Tamil Nadu and their range extensions within India. The genus *Acropyga* Roger, 1862, is reported from Tamil Nadu for the first time. Myrmicinae dominated with 21 species across 11 genera (38.9%), followed by Formicinae (14 species, 8 genera; 25.9%), Ponerinae (9 species, 7 genera; 16.7%), Pseudomyrmecinae (4 species, 1 genus; 7.4%), Dolichoderinae (3 species, 2 genera; 5.6%), Dorylinae (2 species, 2 genera; 3.7%), and Amblyoponinae (1 species, 1 genus; 1.9%). Exotic species recorded include *Anoplolepis gracilipes* (Smith, F., 1857), *Paratrechina longicornis* (Latreille, 1802), *Solenopsis geminata* (Fabricius, 1804), *Tetramorium bicarinatum* (Nylander, 1846), and *Anochetus sedilloti* Emery, 1884. These results indicate that site characteristics promote diversity of soil and leaf-litter ants, as well as species composition within the same environment. These findings underscore the ecological richness and ant diversity of the region. This review synthesizes current knowledge of Eastern Ghats ants from a systematic (morphological) perspective, synthesizing all supraspecific taxa described up to date, highlighting critical genera, unresolved problems, and future research directions.

Keywords : New distribution, Formicidae, Ant diversity, Morphology, Exotic species

New Distributional Record of *Schistura nagaensis* (Menon, 1987) (Teleostei: Nemacheilidae) from the Burhi Gandak River, Middle Ganga Basin, India, with An Updated Checklist of Indian Schistura

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Abstract

Schistura nagaensis (Menon, 1987), a nemacheilid loach originally described from the Brahmaputra River basin in northeastern India, is reported for the first time from the Burhi Gandak River, a left-bank tributary of the middle Ganga basin in North Bihar. Identification of examined specimens relied on key morphological traits: 13–17 dark vertical body bars (darker dorsally, fading ventrally without abdominal extension), complete lateral line (69–85 pores), dorsal fin with I–II unbranched and 6½ branched rays, forked caudal fin with equal lobes, absent suborbital flap, and embedded scales. Morphometric and meristic data align closely with Menon's original description and later accounts. This record marks a major westward range extension into the Ganga basin. An updated checklist of Indian Schistura's highlights current diversity and distribution trends.

Keywords : *Schistura nagaensis*, New record, Burhi gandak river, Nemachilidae, North Bihar

Silent Invaders: A Collection of Parasitic Isopods from Commercially Valuable Marine Fishes from Southeast Coast, India

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Abstract

The current study investigated the random collection of the parasitic isopods belonging to the Cymothoidae family in commercially important marine fishes, viz., the sample was collected from the four seasons, such as post-monsoon (maximum isopod), summer (isopod absent), the southwest monsoon (minimum isopod), and the northeast monsoon (isopod present). The hosts, such as *Strongylura leiurus* Bleeker, 1850 (Belonidae); *Hemiramphus far* Forsskål, 1775 (Hemiramphidae); *Selar crumenophthalmus* Bloch, 1793 (Carangidae); *Sardinella gibbosa* Bleeker, 1849; *Sardinella longiceps* Valenciennes, 1847; *Amblygaster clupeioides* Bleeker, 1849; and *Sardinella fimbriata* (Valenciennes, 1847) (Dorsomatidae); *Dussumieria acuta* Valenciennes, 1847 (Dussumieriidae); *Ilisha melastoma* Bloch & Schneider, 1801 (Pristigasteridae); *Eubleekeria splendens* Cuvier, 1829 (Leiognathidae); *Rastrelliger kanagurta* Cuvier, 1816 (Scombridae); and *Nemipterus japonicus* Bloch, 1791 (Nemipteridae), were collected from Palaverkadu, Kasimedu, Pattinapakkam, Rameswaram, Pamban, Thondi, Devipattinam, Karaikal, and Kanniyakumari, Southeast Coast, India. It was found that 12 fish species belonging to 9 families were infested by 16 species of Cymothoid isopods. The species *Mothocya plagulophora* is the most prevalent and *Nerocila sigani*, the least prevalent of the parasitic isopods found on the host of marine fishes.

Key words : Parasitic isopoda, Cymothoidae, Commercial fishes, Fish health, Host–parasite interaction

Occurrence of *Hylarana indica* (Anura: Ranidae) in the Eastern Ghats: A Notable Range Extension of An Endemic Western Ghats species

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Abstract

The Indian Golden-backed Frog, *Hylarana indica* earlier considered as narrow endemic to central Western Ghats region of Karnataka and Kerala. The present study extends the distribution of *H. indica* to the Amrabad Tiger Reserve, part of Central Eastern Ghats, Telangana. An integrative taxonomic approach has been taken forward with morphometric as well as molecular phylogeny to confirm the identity. Phylogenetic analysis was done with the comparison of the populations of Westerns Ghats specimens to the present specimens from Eastern Ghats, where it showed a low genetic divergence of 0.2-0.5%, indicates a strong genetic similarity between the two populations of *H. indica*. This range extension emphasizes the need for further herpeto-faunal surveys in the underexplored landscapes of the Eastern Ghats.

Keywords : Indian Golden-backed Frog, Range extension, Eastern Ghats, Telangana, India

Five New Marine Sponge Records from the Andaman Islands

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Abstract

The Andaman Islands form part of India's Andaman and Nicobar Union Territory, situated between the Bay of Bengal and the Andaman Sea. The current study reports five new distributional records of marine sponges from surveys across North, Middle, and South Andaman, adding to the last comprehensive checklist, which documented 43 species in North Andaman by Pereira and Raghunathan in 2018. A checklist of all species documented in the Andaman and Nicobar Islands has been populated in the current study. The new poriferan records for the region are not mere checklist additions but indicators of research gaps in porifera exploration and documentation. These findings highlight the need for continual monitoring of these umbrella ecosystem engineers, which are vital to reef-forming zones. Key stressors, such as ocean acidification, rising sea temperatures, and sedimentation from coastal development, are threatening sponge populations and the coral reef ecosystems they support. Updated checklists, published periodically, not only help the scientific community keep tabs on ecosystems but also evaluate their health using indicator species.

Keywords : Porifera, Demospongiae, Marine sponge checklist, Distributional records, Andaman Islands

Current Status of Soft Corals in the Gulf of Mannar - A Review

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Abstract

Soft coral diversity in the Indian subcontinent has always been a complex topic. The restrictions set by the Wildlife Protection Act (WPA) on animal collection have further complicated research in this area. A recent paper by Ghosh et al., (2023) provides an overview of the status of soft corals in India. Several claims of soft coral occurrences in India have been questioned or outright refuted in the publication. The current study conducts a comprehensive literature review to elucidate the biodiversity of soft corals in the Gulf of Mannar and compares it with that reported by Ghosh et al. (2023) to establish baseline data. Known as the “Biologists’ Paradise,” the Gulf of Mannar is located in Tamil Nadu and contains a wide range of organisms, from protozoa to mammals. Since the publication of Ghosh et al., (2023), it has become essential to evaluate the current and widely accepted diversity of soft corals in the Gulf of Mannar in order to establish an up-to-date baseline for this group of organisms. Soft corals belong to the Schedule 1 category of the Indian Wildlife Protection laws, which gives them the highest level of protection. This makes it illegal to conduct scientific research on these animals. Given the uncertain status of soft corals, researchers and policymakers face the challenge of accurately assessing their distribution and diversity, which creates a logistical conundrum that can be resolved only by convening the scientific community and policymakers at the same table and aiming for consensus.

Keywords : Gulf of Mannar, Soft Corals, Gorgonids, Octocroallia, Checklist

Novel Records of Free-Living Marine Nematodes to India from the Andamans and Lakshadweep Islands

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Abstract

Free-living marine meiofaunal nematodes are microscopic roundworms, measuring between 32 and 1000 μm , that inhabit the interstitial spaces of marine sediments. They make up a significant portion of the meiofauna and play essential roles in nutrient cycling, organic matter decomposition, and sediment stability. Despite their ecological importance and a global total of 6,708 described species, only 9.8% of these species have been reported in Indian waters. This figure is surprisingly low for a country renowned for its rich marine biodiversity across various ecosystems, including coral reefs, mangroves, seagrass meadows, estuaries, and extensive coastlines. This discrepancy suggests inadequate sampling rather than limited biodiversity. There is a pressing need for systematic exploration of meiofauna in India's diverse marine habitats, particularly in its oceanic islands. The current study aims to address this research gap by conducting extensive sampling across previously unsampled or sparsely explored islands in the Andaman and Lakshadweep archipelagos, including Havelock, the Ross and Smith Isthmus, and Minicoy. Sediment samples were collected using hand-held corers, followed by decantation and the isolation of nematodes. Specimens were identified based on detailed morphological characteristics. This study reports ten new records of free-living marine nematodes for India: six from the Lakshadweep Archipelago and four from the Andaman Islands. These findings significantly expand our knowledge of marine nematode diversity in Indian waters and highlight the effectiveness of targeted sampling across geographically distinct ecosystems within the subcontinent. By enhancing the national inventory, this work contributes to a better understanding of India's meiofaunal biodiversity and lays the groundwork for future biogeographic and ecological investigations.

Keywords : Marine meiofauna, Free-living nematodes, Lakshadweep Archipelago, Andaman Islands, New records for India

People's Perception of The Nilgiri Marten (*Martes gwatkinsii*) (Mammalia: Carnivora: Mustelidae) in the Selected Forest Ranges of Nilgiri Division, Tamil Nadu

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Abstract

The mammalian fauna of Western Ghats includes 133 species representing 110 orders and 31 families of class Mammalia, which is about 31% of the total Indian mammalian fauna. Nilgiri marten is “the rarest and least known species of the true martens of the genus *Martes*”. Nilgiri marten plays major roles in forest ecosystems, such as the regulation of prey populations and seed dispersal and also serves as indicators of a healthy forest. Current proximate threats faced by small carnivores in the Western Ghats include habitat fragmentation, habitat loss and hunting. The conservation status of several species, particularly the Western Ghats endemics, remains poorly known. The present study was carried out on the occurrences of Nilgiri marten in the selected forest ranges in the Nilgiris Forest Division, Tamil Nadu, with the objectives: to understand people's perception of Nilgiri marten, to estimate the occupancy index of Nilgiri marten, and to suggest suitable management recommendations for the long-term conservation of Nilgiri marten. Two sets of questionnaires were prepared for this study; namely, “Precise and Closed” and the other one was “Broad and Open-ended”. The questionnaire was carried out in 30 forest beats of five forest ranges in Nilgiris Forest Division. A total of 122 respondents participated in the questionnaire survey. The study reveals that most of the peoples don't have any idea of the Nilgiri marten and its importance, and the occupancy of the species is limited to the lower elevated location only. Higher elevations of the Nilgiris part are mostly degraded, fragmented, and invaded by Invasive alien species, which may cause a major impact on these kinds of small mammals. Field surveys about the species occurrence, status and their ecological requirements are urgently required to conserve the species in the Western Ghats of Tamil Nadu.

Keywords : Nilgiri marten, Western Ghats, Nilgiris, Fragmentation

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