2010 International Year of Biodiversity

ANIMAL DISCOVERIES 2009

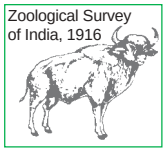
New species and new records

सत्यमेव जयते

Government of India
Ministry of Environment and Forests
Zoological Survey of India
5th June, 2010

जहाँ है हरियाली ।
वहाँ है खुशहाली ।।

ZOOLOGICAL SURVEY OF INDIA
1916



Zoological Survey of India (ZSI), established in 1916, serves the nation by providing scientific basis for conservation and sustainable utlization of animal diversity through survey inventory, documentation, taxonomic research and creating environmental awareness.

Since its inception in 1916, the scientists of ZSI have discovered 4507 new species, subspecies and varities.

During 2009, the scientists of ZSI have discovered 55 new species (including 3 subspecies) and 46 new records as follows :

New to Science from India :

- 1 Aves
- 5 Amphibians
- 1 Pisces
- 2 Mites
- 37 Insects
- 2 Centepedes
- 1 Leech
- 4 Nematodes
- 2 Trematodes

New records from India :

- 1 Pisces
- 12 Insects
- 9 Mites
- 24 Corals

Animal Discoveries 2009

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जयराम रमेश
JAIRAM RAMESH

सत्यमेव जयते

राज्य मंत्री (स्वतंत्र प्रभार)
पर्यावरण एवं वन
भारत सरकार
नई दिल्ली-110003
MINISTER OF STATE (INDEPENDENT CHARGE)
ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA
NEW DELHI - 110 003

May 19, 2010

MESSAGE

For centuries, the naming and classification of living organisms into groups has been an integral part of the study of nature. Biological classification is in a continual state of flux. As our knowledge of organisms expands, we gain a better understanding of the similarities and differences among various groups of organisms.

Taxonomy has been recognized by Convention on Biological Diversity (CBD) as being fundamental to implementation of various provisions of CBD at national level. This science of discovering, describing and naming individual species of biota has gained significant impetus during the post-CBD era.

Zoological Survey of India (ZSI), established in 1916 as a premier research organization of our country, has contributed immensely towards exploration and taxonomic studies of the faunal diversity of our country.

Rigorous and persistent efforts of ZSI and a number of other organizations have resulted in discovery of many new animal species and new distribution records during these years. The initiative to publish the compilation of the new discoveries and records has become a ready reference for not only researchers and academician but also for policy makers and other stakeholders.

Release of this third edition of "Animal Discoveries" has special significance during the year 2010, which has been declared as International Year of Biodiversity.

I commend the sincere efforts of team of scientists of ZSI and all other organizations whose constant efforts have kept the Indian taxonomy still alive.

Jairam Ramesh

(Jairam Ramesh)

PREFACE

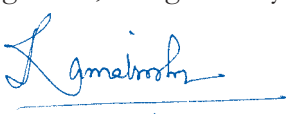
Biological diversity and its conservation is a subject that has received considerable attention all over the world. India being a mega diversity country, investigations into species diversity always is complicated by the facts of ecosystem as well as habitat diversities/complexities. We have made marked improvement and success in unraveling the rich biodiversity of the nation. Yet it remains far from complete; considerable extent of ecosystem areas still remains under explored, or may be even unexplored, for their biodiversity wealth, the animal diversity in particular.

The animal wealth of our nation is very amazing. The scientific studies on the species diversity of animals, their distribution and other interrelationships to each other offer wide and varied topics or subjects enabling us to deal with ever increasing variety of research projects. Govt. of India has rightly realized the ambience of biodiversity richness of the nation. The Zoological Survey of India (ZSI) since its inception on 1st July, 1916, with its network of 16 Regional Centres established during various Plan periods, has been assigned with the mandatory action plans and programmes for the exploration cum scientific documentation of the faunal resources of the country.

In recent years, Zoological Survey of India as a collateral programme to its prime function of faunal monitoring/inventorying works has focused on the impact of climate change and its anticipated negative impact on biodiversity. The significance of monitoring the faunal resources of various ecosystems in different biogeographic regions of India is ever increasing, because in the prevailing conjectures, the population out breaks of many disease vectors and agricultural pests are expected; new invasive alien species may colonize our ecosystems and many endemic and rare native fauna may dwindle and face extinction.

As part of its augmented effort on ecosystem exploration cum documentation of animal wealth of the country, the Survey has brought to light numerous discoveries of animal species new to science and also new records of distribution for the country. The present publication: "Animal Discoveries 2009—New Species and New Records" is a valuable contribution from ZSI.

I take this opportunity to convey my sincere thanks to Sri Jairam Ramesh, the Honorable Minister of Environment and Forests, Government of India, to Sri Vijai Sharma, the Secretary to the Government of India, Sri M.F. Farooqui, Additional Secretary and to Sri A.K Goyal Joint Secretary, Ministry of Environment and Forests for their interest, support and encouragement. Besides, the sincere efforts and team work of the researchers of this institution, including the help and support rendered by my colleagues and other collaborating agencies, are gratefully acknowledged.



(Dr. Ramakrishna)
Director
Zoological Survey of India

2nd June 2010
Place : Kolkata

ESTIMATED FAUNAL DIVERSITY IN INDIA

In the light of Biodiversity Convention, India holds a unique position with the priority of conservation of natural resources and sustainable development. India is very rich in terms of biological diversity due to its unique biogeographical location, diversified climatic conditions and enormous ecodiversity and geodiversity. In fact, within only about 2% of world's total land surface, India is known to have over 7.45% of the species of animals that the world holds and this percentage accounts nearly for 91,484 species so far known, of which insects alone include 61,220 species. It is estimated that through further survey and inventorisation, about two times that number of species still remains to be discovered in India alone.

Table-1. Estimated Faunal Diversity in India (updated, January 2009)

Taxonomic group	No. of species		% in India
	World	India	
PROTISTA (Protozoa)	**31250**	**2577**	**8.24**
ANIMALIA			
Mesozoa	71	10	14.08
Porifera	4562	500	10.70
Cnidaria	9916	866	8.73
Ctenophora	100	12	12.00
Platyhelminthes	17500	1624	9.28
Rotifera	2500	330	13.20
Gastrotricha	3000	100	3.33
Kinorhyncha	100	10	10.00
Nematoda	30011	2866	9.55
Acanthocephala	800	229	28.62
Sipuncula	145	35	24.14
Mollusca	66535	5072	7.62
Echiura	127	43	33.86
Annelida	12700	841	6.61
Onychophora	100	1	1.00
Arthropoda	**998904**	**71323**	**7.14**
Crustacea	35536	2936	8.26
Insecta	867365	61220	7.05
Arachnida	73440	5829	7.90
Pycnogonida	600	17	2.83
Chilopoda	3000	100	3.33
Diplopoda	7500	162	2.16
Symphyla	120	4	3.33
Merostomata	4	2	50.00
Phoronida	11	3	27.27
Bryozoa (Ectoprocta)	4000	200	5.00
Entoprocta	60	10	16.66
Brachiopoda	300	3	1.00
Chaetognatha	111	30	27.02
Tardigrada	514	30	5.83
Echinodermata	6223	765	12.29
Hemichordata	120	12	10.00
Chordata	**48463**	**5045**	**10.41**
Protochordata	2106	119	5.65
Pisces	21723	2548	11.72
Amphibia	5162	289	5.60
Reptilia	5817	460	7.91
Aves	9026	1232	13.66
Mammalia	4629	397	8.58
Total (Animalia)	**1195534**	**88907**	**7.43**
Grand Total (Protista+Animalia)	**1226784**	**91484**	**7.45**

ONE NEW DISCOVERY OF AVES

AVES

Family : PODARGIDAE

Genus : ***Batrachostomus***

Class Aves of the phylum Chordata includes the fascinating warm blooded vertebrates creatures which are known as birds. They are characterize by the presence of feathers which serve many purposes like insulating the body and contributing to the flying apparatus of wing and tail.

1. *Batrachostomus moniliger roonwali*

Locality : Jog Falls, Shimoga District, Karnataka, India.

Journal : *Rec. zool. Surv. India,* **109**(2) : 79-85.

Year : 2009.

Described by : B.B. Dutta.

FIVE NEW DISCOVERIES OF AMPHIBIA

AMPHIBIA
Order : GYMNOPHIONA
Family : ICHTHYOPHIIDAE
Genus : ***Ichthyophis***

Caecilians or limbless amphibians fall under the order Gymnophiona of the class Amphibia. The mostly fossorial and tropical Ichthyophiidae and its sister taxa Uraeotyphlidae are the only caecilian families restricted to Asia. They are believed to have been dispersed from India to South East Asia. Ichthyophid taxonomy is not adequately established to enable a confident specific identification mostly because of their external similarity. Morphological caecilian systematics, especially at low levels, has been dogged by a paucity of obvious external characters and a lack of understanding of their variabilities.

2. *Ichthyophis alfredii*

Locality : Nokrek Biosphere Reserve, East Garo Hills, Meghalaya, India.

Journal : *Rec. zool. Surv. India, Occasional Paper No.,* **309** : 1-56.

Year : 2009.

Described by : R. Mathew and N. Sen.

3. *Ichthyophis daribokensis*

Locality : Nokrek Biosphere Reserve, East Garo Hills, Meghalaya, India.

Journal : *Rec. zool. Surv. India, Occasional Paper No.,* **309** : 1-56.

Year : 2009.

Described by : R. Mathew and N. Sen.

4. *Ichthyophis nokrekensis*

Locality : Nokrek Biosphere Reserve, East Garo Hills, Meghalaya, India.

Journal : *Rec. zool. Surv. India, Occasional Paper No.,* **309** : 1-56.

Year : 2009.

Described by : R. Mathew and N. Sen.

Order : ANURA
Family : DICROGLOSSIDAE
Genus : ***Minervarya***

Big-sized frogs have almost all been described from India in the last 150 years. It is the small-sized ones which have escaped the notice of herpetologists. In the last decade since 2000, many small-sized frogs have been described but mainly from the Western Ghats and North-eastern India. The Gangetic plains and especially the State of West Bengal was considered already well-explored as the British started faunistic surveys from here and later established the Asiatic Society, Indian Museum and ZSI in Calcutta to keep whatever they got. Therefore it came as a pleasant surprise when after a long gap of about 100 years; a new species of forest-dwelling frog was discovered from Northern West Bengal. This 3 cm species had long been overlooked as it is very ephemeral, emerging out from under the leaf-litter and calling only when small rain-pools form on the forest-floor for only 6 weeks in June-July. They seem to arrive from nowhere giving rise to their generic name *Minervarya* after Minerva, daughter of Zeus (Greek god of Earth), from whose head she literally sprang out. As this species is restricted only to deep forests and known so far only from Chilapata Forest Range in Jalpaiguri district, the species has been named after *Chilapata*, hence *Minervarya chilapata* (Chilapata being a noun in apposition).

5. *Minervarya chilapata*

Locality : Chilapata Reserve Forest, Jalpaiguri district,West Bengal, India.

Journal : *Zootaxa*., **2209** : 43-56.

Year : 2009.

Described by : A. Ohler, K. Deuti, S. Grosjean, S. Paul, A.K. Ayyaswamy, M.F. Ahmed and S.K. Dutta.

Family : MEGOPHRYIDAE

Genus : ***Leptobrachium***

The genus *Leptobrachium* Tschudi was established in the year 1838 with *hasseltii* as the type. Subsequently 11 more species were added from South East Asia. Presently there are 16 species in the genus from World. The distribution pattern of the genus shows that it is basically an Indo-Malayan genus. Colouration of the eye in the genus *Leptobrachium* is considered as an important taxonomic character and might also play a role in behaviour, especially in intraspecific relationships. The genus *Leptobrachium* is not common in occurrence. The description of *L. nokrekensis* is of great importance from taxonomic and biodiversity view point.

6. *Leptobrachium nokrekensis*

Locality : Didari Kchibama, Nokrek Biosphere Reserve, East Garo Hills District, Meghalaya, India.

Journal : *Rec. zool. Surv. India,* **109**(3) : 91-108.

Year : 2009.

Described by : R. Mathew and N. Sen.

ONE NEW DISCOVERY OF PISCES

PISCES

Family : BALITORIDAE

Genus : ***Aborichthys***

A new species *Aborichthys rosammai* is described from North-East India. Other known species under the genus are *kempi, elongatus, garoensis* and *tikaderi*. The genus is so far restricted to North East India with only *A. kempi* having its distribution in Myanmar also. From biodiversity and geographic distribution point of view, the description of this new species is of great importance. North East India, being one of the biodiversity hotspots, many more species are yet to be described.

7. Aborichthys rosammai

Locality :Pabomukh, Subansiri River, Dhemaji District, Assam, India.

Journal : *Rec. zool. Surv. India,* **109**(2) : 13-20.

Year : 2009.

Described by : N. Sen.

TWO NEW DISCOVERIES OF MITES

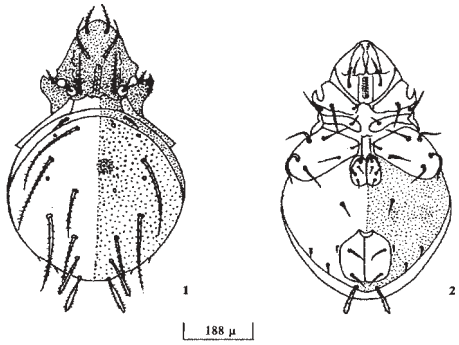
ARTHROPODA
ARACHNIDA : ACARINA : ORIBATIDA
Family : OPPIDAE
Genus : ***Aeroppia***

Subgenus : *Paraeroppia* subgen. nov.

This soil inhabiting mites (Acarina) belongs to the family Oppiidae, the members of which play a major role in humification of organic matters further leads to increase soil fertility. It is also reported that the species of this genus rarely act as vector of helminthes to domestic animals. Addition of new subgenus and species to this rarely found genus is considered to be an unique discovery.

8. *Aeroppia (Paraeroppia) indiana*

Locality : Pulcharri, Sabrum, Tripura, India.
Journal : *Rec. zool. Surv. India,* **109**(3) : 5-9.
Year : 2009.
Described by : A.K. Sanyal.



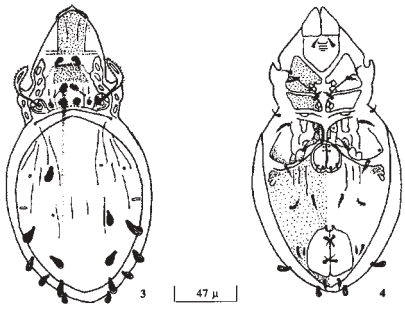
Figs. 1-2. *Aeroppia* (*Paraeroppia*) *indiana*, adult female : 1. Dorsum; 2. Venter.

Genus : ***Striatoppia***

The genus *Striatoppia* is of rare occurrence in Indian soil. The new taxa is the third species so far known from India. This group of mites actively takes part in soil formation through decomposition of organic matter. They are also reported as vector of helminthes to domestic animals.

9. *Striatoppia asiaticus*

Locality : Dhuptali, Udaipur, Tripura, India.
Journal : *Rec. zool. Surv. India,* **109**(3) : 5-9.
Year : 2009.
Described by : A.K. Sanyal.



Figs. 1-2. *Striatoppia asiaticus*, adult female : 1. Dorsum; 2. Venter.

THIRTY SEVEN NEW DISCOVERIES OF INSECTS

INSECTA : DIPTERA
Family : CECIDOMYIIDAE
Genus : ***Camptomyia***

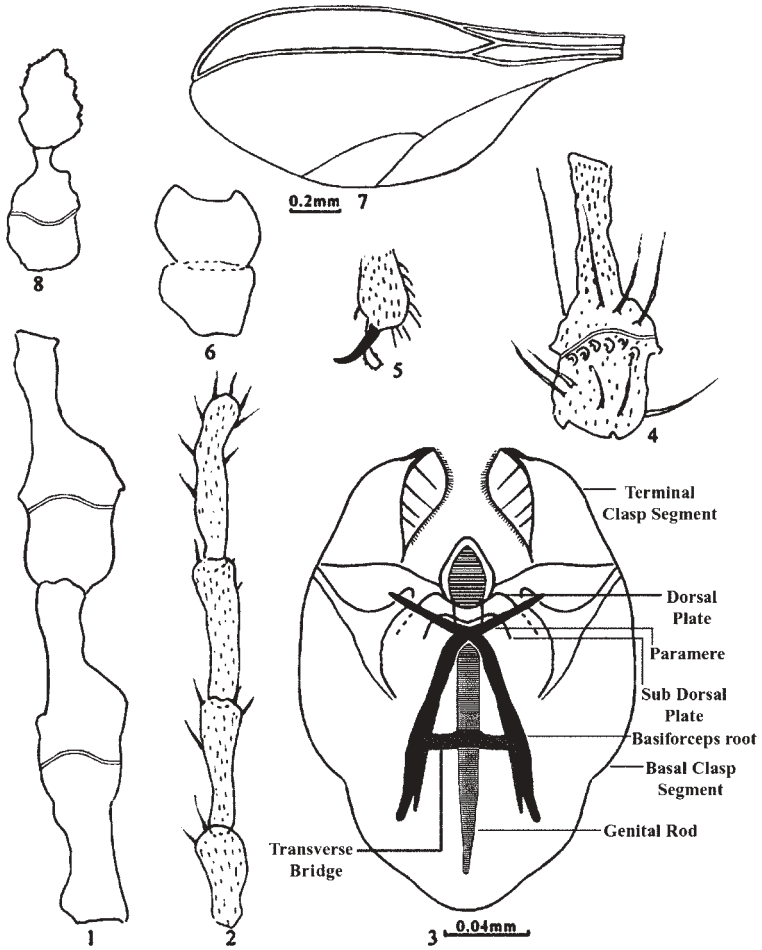
10. *Camptomyia ratleshwarae*

Locality : Ratnagiri Forest, Nanded District, Maharashtra, India.

Journal : *Rec. zool. Surv. India,* **109** (3) : 85-89.

Year : 2009.

Described by : K.A.A. Najam, M.S. Siddique, V.D. Deshpande and R.M. Sharma.



Figs. 1-8. *Camptomyia ratneshwarae*; 1. Third and fourth antennal segments, 2. Palpus, 3. Genitalia, 4. Fifth antennal segment, 5. Claw, 6. Scape and pedicel, 7. Wing, 8. Penultimate and terminal segments.

INSECTA : COLEOPTERA
Family : DISCOLOMIDAE
Genus : ***Aphanocephalus***

11. *Aphanocephalus punctipennis*

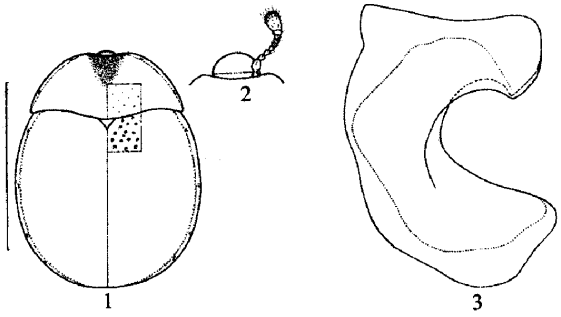
The discolomids are often broadly ovate, ventrally flattened rather slow-moving minute beetles living primarily in humid forest areas. They have cryptic habits and inhabit subcorticolous habitats and leaf litter. They feed on fungal fruiting bodies and often take shorter flights. Their reliance on fungus for food and short flights help growing mycal beds and that offers suitable niches to many other animals. They have therefore, a constructive role in the building up of a habitat condition. Most of the suitable habitats in India are often found to be inhabitated by the discolomids. Good explorations in humid forest areas would yield many more curious forms.

Locality : Wimberligunj and Chatham Saw Mill, South Andaman, Andaman Islands, India.

Journal : *Entomon,* **33**(4) : 241-251.

Year : 2008.

Described by : T.K. Pal.



Figs. 1-3. *Aphanocephalus punctipennis*; 1. Dorsal view (scale 1 mm); 2. Exposed part of head and antenna; 3. Aedeagus, lateral view.

12. *Aphanocephalus shompen*

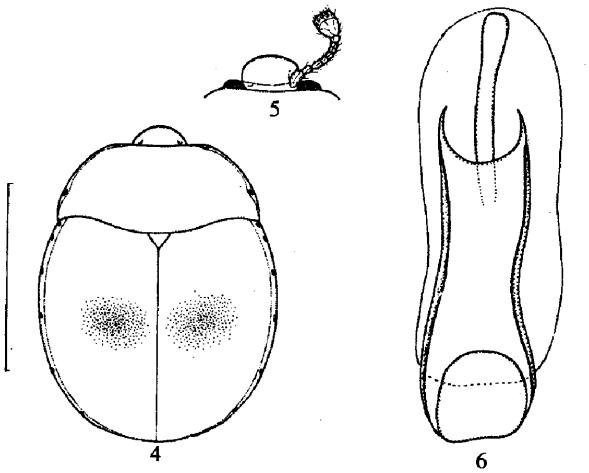
The discolomids are found in the north-eastern states of India, Myanmar, Indonesia through Andaman & Nicobar islands. The speciation also occurred in different islands, and it is well apparent from the characters of this species which show some resemblances with one species from Mizoram, India (*Aphanocephalus mizoramica*).

Locality : Sital Pahar and Campbell Bay, Great Nicobar, Nicobar Islands, India.

Journal : *Entomon,* **33**(4) : 241-251.

Year : 2008.

Described by : T.K. Pal.



Figs. 4-6. *Aphanocephalus shompen*; 1. Dorsal view (scale 1 mm); 2. Exposed part of head and antenna; 3. Aedeagus, lateral view.

Family : EROTYLIDAE
Genus : ***Spondotriplax***

13. *Spondotriplax tungus*

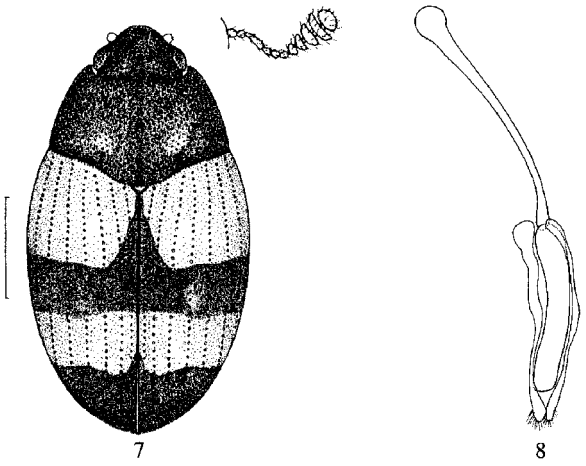
The erotylids are moderately large, often brightly coloured, mycophagus beetles. Their immatures feed within the larger fruiting bodies of mushrooms and bracket fungi but adult often feed on the surface of the fruiting bodies. They are often predated by small birds and other insectivorous animals. The erotylids flourish well in undisturbed moist forests and felled timbers that allow various fungi to grow luxuriantly. The presence of erotylids in an area indicates condition of the habitat. Andaman & Nicobar group islands still have undisturbed zones which contain erotylid beetles. This species was found from the humid forest of Great Nicobar island.

Locality : Sital Pahar, Great Nicobar, Nicobar Islands, India.

Journal : *Entomon,* **33**(4) : 241-251.

Year : 2008.

Described by : T.K. Pal.



Figs. 7-8. *Spondotriplax tungus*; 7. Dorsal view, right antenna shown separately (scale 1 mm); 8. Aedeagus, dorsal view (slightly tilted leftwards)

Family : PROPALTICIDAE
Genus : ***Propalticus***

14. *Propalticus jarawa*

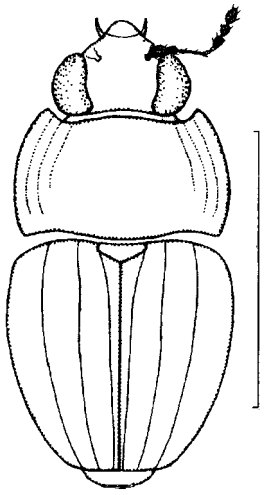
The propalticids are minute, broadly ovate, strongly flattened setose beetles that comprise a small family from the tropical and subtropical parts of the world. Their body structures correspond with their habitat in the narrow space beneath barks of trees. They are rarely encountered in forest areas. The occurrence of *P. jarawa* in Andaman islands points out to the availability of many more curious beetle forms in the forests of this island groups.

Locality : Port Balir, Chatham, South Andaman, Andaman Islands, India.

Journal : *Entomon,* **33**(4) : 241-251.

Year : 2008.

Described by : T.K. Pal.



Propalticus jarawa; Dorsal view (scale 1 mm).

Family : BOTHRIDERIDAE
Genus : ***Pseudobothrideres***

15. *Pseudobothrideres abbreviatus*

The bothriderines are small, elongate, subcylindrical beetles inhabit mostly dead and fungus infested trees beneath bark. They are primarily predators on wood inhabiting larvae of various insects and beetles. They have partial role in suppressing the damage caused by many wood boring insects. The discovery of this species from Great Nicobar islands shows the potential of this insular part as home of many interesting beetle forms of humid forests.

Locality : Campbell Bay, Nicobar Islands, India.

Journal : *Entomon,* **34**(2) : 83-87.

Year : 2009.

Described by : T.K. Pal and P.K. Basak.

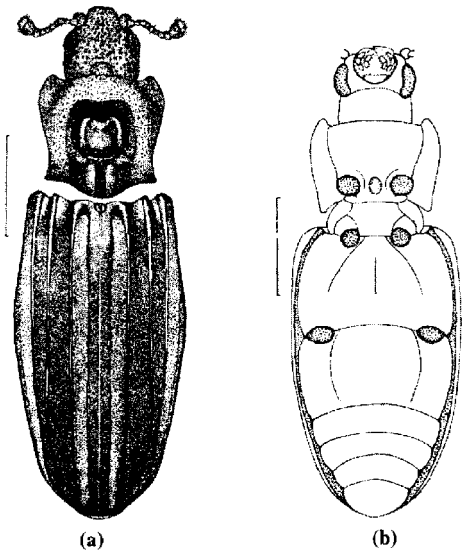


Fig. *Pseudobothrideres abbreviatus*; a. Dorsal view, b. ventral view.

Family : SCOLYTIDAE
Genus : ***Scolytoplatysus***

Scolytid-beetles, commonly known as bark and ambrosia beetles, belongs to the family Scolytidae, Coleoptera. These beetles are fairly known as pests of forest plants, predatominantly found in the temperate regions. These beetles are very much fascinating insects due to their sub social behavior, conceal mode of life in wood and wood products.

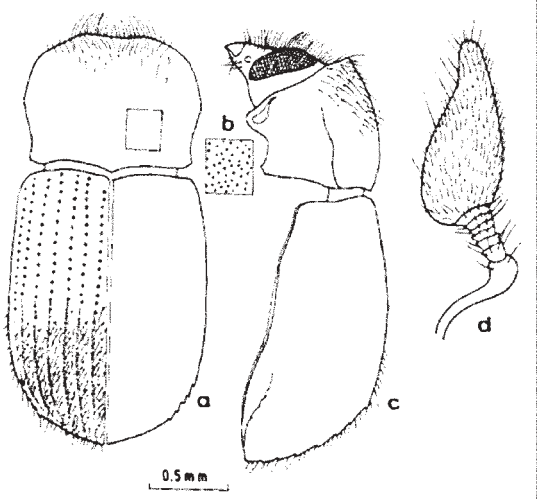
16. *Scolytoplatysus gardneri*

Locality : Lepchajagat (1846 m), Darjiling District, West Bengal, India.

Book : *Fauna of India and the adujacent countries,* : pp. 87-89.

Year : 2009.

Described by : P.K. Maiti and Nivedita Saha.



Figs. a-d. *Scolytoplatypus gardneri*, Male : a. Pronotum and elytra in dorsal view, b. enlarged portion of pronotum, c. head, pronotum and elytra in lateral view, d. antenna.

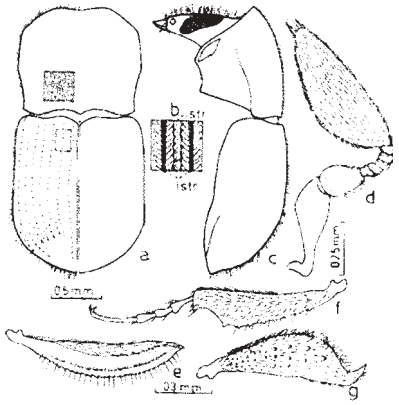
17. *Scolytoplatysus lopchuensis*

Locality : Lopchu (1500 m), Darjiling District, West Bengal, India.

Book : *Fauna of India and the adujacent countries,* : 90-92.

Year : 2009.

Described by : P.K. Maiti and Nivedita Saha.



Figs. a-g. *Scolytoplatypus lopchuensis*, Male : a. Pronotum and elytra in dorsal view, b. enlarged portion of elytral disc (str=Stria, i, str=interstria); c. head, pronotum and elytra in lateral view, d. antenna, e. mesotibia showing cavity, f. protibia. Female : g. protibia.

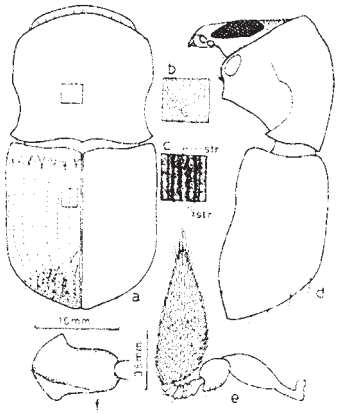
18. *Scolytoplatysus samsinghensis*

Locality : Samsing (540 m), Darjiling District, West Bengal, India.

Book : *Fauna of India and the adujacent countries,* : 101-103.

Year : 2009.

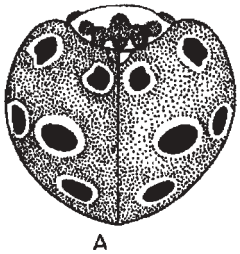
Described by : P.K. Maiti and Nivedita Saha.



Figs. a-f. *Scolytoplatypus samsinghensis*, Male : a. Pronotum and elytra in dorsal view, b. enlarged portion of pronotum c. enlarged portion of elytral disc (str=Stria, i, str=interstria); Female : d. head pronotum and elytra in lateral view, e. antenna, f. profemur.

Family : COCCINELLIDAE
Genus : ***Henosepilachna***

Coccinellid beetles are generally found in agricultural and in forest areas. They are popularly known as 'Lady Bird Beetles'. They are phytophagus in habits. They profusely feed on cultivated plants of family Solanaceae, Cucurbitaceae and Papillionaceae.



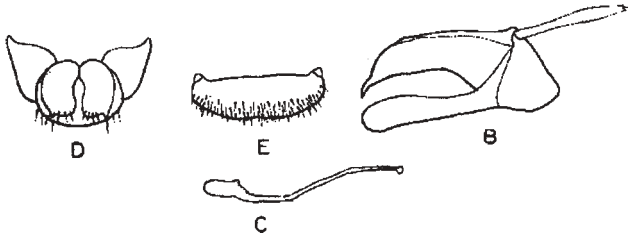
19. *Henosepilachna chamolika*

Locality : Goaldam, Chamoli Dist., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18** (2) : 283-301.

Year : 2010.

Described by : S.K. Chakraborty.



Figs. A-E. *Menosepilachna chamolika*, A. Showing the outline and spot pattern, B. Male genitallia without sipho, C. Sipho, D. Female genitallia, E. Subgenital palte.

INSECTA : HYMENOPTERA
Family : ENCYRTIDAE
Genus : ***Trechnites***

The cosmopolitan genus *Trechnites* includes 22 species of which five have been reported from India. Species of *Trechnites* attack nymphs of Psyllidae (Homoptera : Psylloidea). These insects are essential in maintaining the pest populations under check in their natural habitats, and are therefore, extensively used in the classical biological control programmes against pest species all over the world.

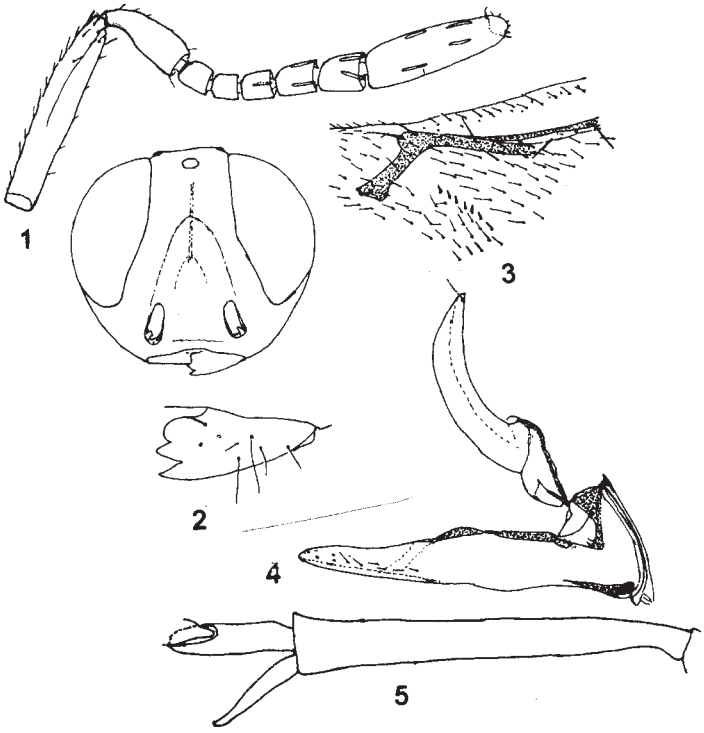
20. *Trechnites silvestris*

Locality : Jamneri Reserve Forest, Jalgaon District, Maharashtra, India.

Journal : *Rec. zool. Surv. India,* **109**(3) : 109-114.

Year : 2009.

Described by : S.I. Kazmi and M. Hayat.



Figs. 1-5. *Trechnites silvestris*, Female : 1. antenna, 2. head frontal, with mandible enlarged, 3. distal veins of fore wing, 4. ovipositor, right half, 5. mid tibia, basitarsus and spur.

Family : EURYTOMIDAE
Genus : ***Philolema***

21. *Philolema nadia*

This eurytomid species parasitic on spider egg sacs. It belongs to the *Desantisca* species group of the genus *Philolema* Cameron in which all species are parasitic on spider eggs. This is the third species belonging to *Desantisca* species group from India. This species is reported from Nadia district of West Bengal.

Locality : Bahadurpur, Nadia District, West Bengal, India.

Journal : *Rec. zool. Surv. India,* **109**(4) : 11-14.

Year : 2009.

Described by : T.C. Narendran, P. Girish Kumar and S. Talukdar.

Family : PTEROMALIDAE

Genus : ***Panstenon***

22. *Panstenon bengalense*

This new species is reported from Sunderbans Biosphere Reserve. This is the only described species of the genus *Panstenon* Walker from India. This new species comes close to *Panstenon lankaensis* Sureshan but differs from it in many characters.

Locality : Bagabadpur, Sunderbans Biosphere Reserve, West Bengal, India.

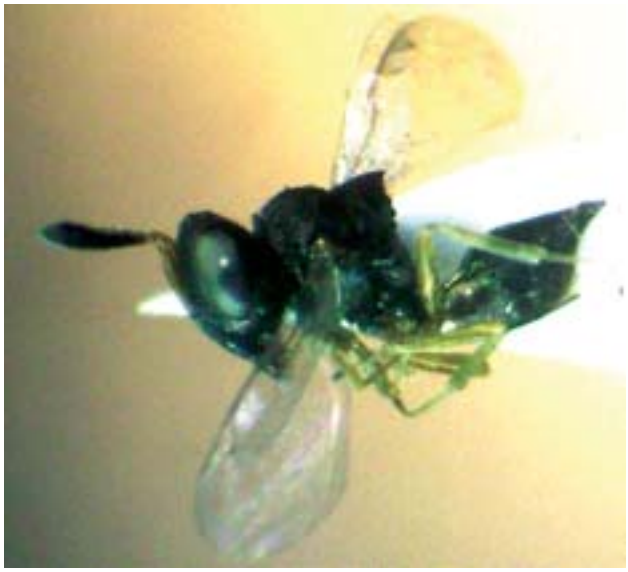
Journal : *J. Environ. Sociobiol.,* **6** (2) : 123-130.

Year : 2009.

Described by : T.C. Narendran and P. Girish Kumar.

Genus : ***Psilocera***

23. *Psilocera neoclavicornis*



This new species is reported from Sunderbans Biosphere Reserve. The genus *Psilocera* Walker is represented by four species from India. This is the fifth species from India. This new species comes close to *Psilocera clavicornis* (Ashmead) but differs from it in many characters.

Locality : Bagabadpur, Sunderbans Biosphere Reserve, West Bengal, India.

Journal : *J. Environ. Sociobiol.,* **6** (2) : 123-130.

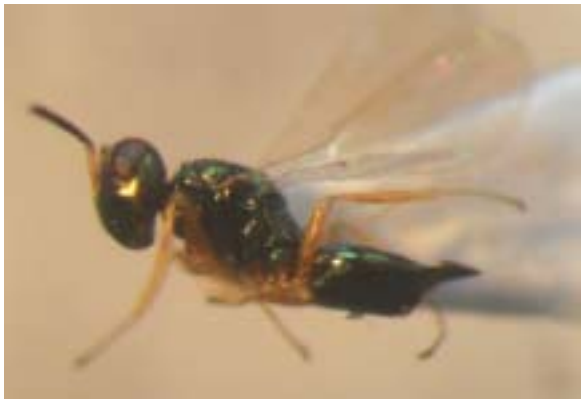
Year : 2009.

Described by : T.C. Narendran and P. Girish Kumar.

Genus : ***Pteromalus***

24. *Pteromalus sunderbanicus*

This new species is reported from Sunderbans Biosphere Reserve. The genus *Pteromalus* Swederus is represented by six species from India. This is the seventh species from India. This new species comes close to *Pteromalus puparum* (Linnaeus) in general appearance.



Locality : Bagabadpur, Sunderbans Biosphere Reserve, West Bengal, India.

Journal : *J. Environ. Sociobiol.,* **6** (2) : 123-130.

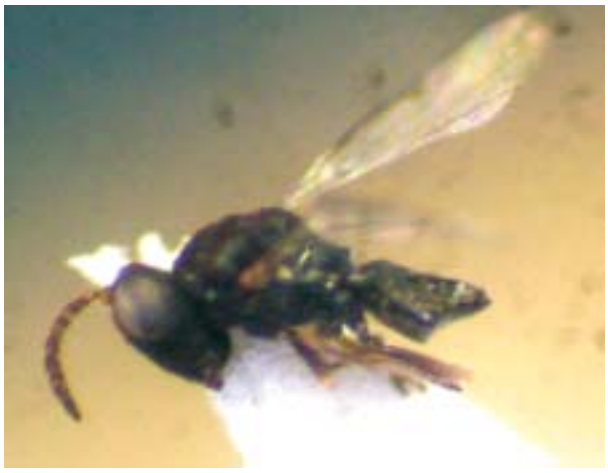
Year : 2009.

Described by : T.C. Narendran and P. Girish Kumar.

Genus : ***Epipteromalus***

25. *Epipteromalus bengalensis*

A very rare species of Pteromalidae (Insecta : Hymenoptera) described from West Bengal, India. This is the second described species under the genus *Epipteromalus* which was previously known only from Illinois, USA. The genus has been rediscovered from the old world (Oriental Region) after a gap of about 105 years since its description from North America in 1904. The discovery of the genus from India and description of a new species after a long time gap is very interesting which indicates the occurrence of many other rare faunal elements in India waiting for discovery. The species is parasitic on the spider eggs there by having a negatively economic important role in terrestrial ecosystems.



Locality : Nadia, West Bengal, India.

Journal : *Biosystematica,* **3**(1) : 5-9.

Year : 2009.

Described by : P.M. Sureshan and S. Talukdar.

Family : TORYMIDAE
Genus : ***Palachia***

The genus *Palachia* Boucek is distributed in Palaearctic, Afrotropical and Oriental Regions of the world. The members of this genus are parasitic on mantid ootheca.

26. *Palachia frontopuncta*

Locality : Anu Kalan, Hamirpur, Himachal Pradesh, India.

Journal : *Rec. zool. Surv. India,* **109**(2) : 1-12.

Year : 2009.

Described by : T.C. Narendran and A. Peter.

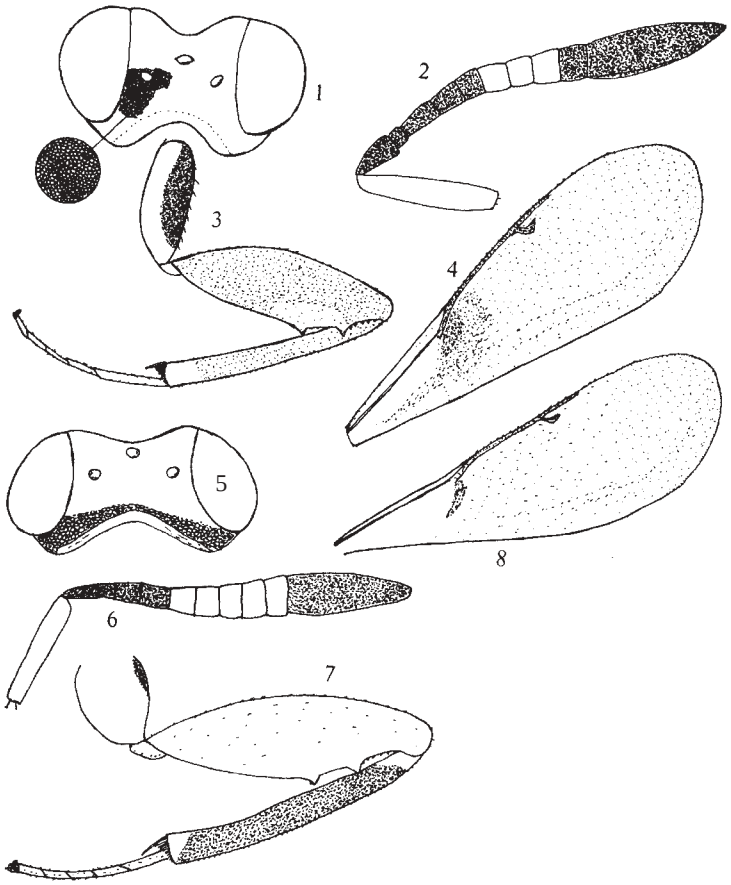
27. *Palachia neorobusta*

Locality : Imami Purva, Lakhimpur, Uttar Pradesh, India.

Journal : *Rec. zool. Surv. India,* **109**(2) : 1-12.

Year : 2009.

Described by : T.C. Narendran and A. Peter.



Figs. 1-4. *Palachia frontopuncta*; Female : 1. Head - Dorsal view; 2. Antenna; 3. Hind leg; 4. Forewing.
Figs. 5-8. *Palachia neorobusta*; Female : 5. Head - dorsal view; 6. Antenna; 7. Hind leg; 8. Forewing.

Genus : ***Palmon***

The Genus *Palmon* Dalman is a widely distributed genus. It has long been considered a synonym of *Podagrion*. The members of this genus are parasitic on mantid ootheca.

28. *Palmon kottiyooricus*

Locality : Kottiyoor, Kannur District, Kerala, India.

Journal : *Rec. zool. Surv. India,* **109** (2) : 1-12.

Year : 2009.

Described by : T.C. Narendran and A. Peter.

Family : EULOPHIDAE
Genus : ***Kostjurixia***

The genus *Kostjurixia* Narendran shows resemblance to genera such as *Kostjukovius* Graham, *Tamarixia* Mercet, *Aceratoneuromyia* Girault and *Oomyzus* Rondani. Only two species are reported under this genus till date including this species.

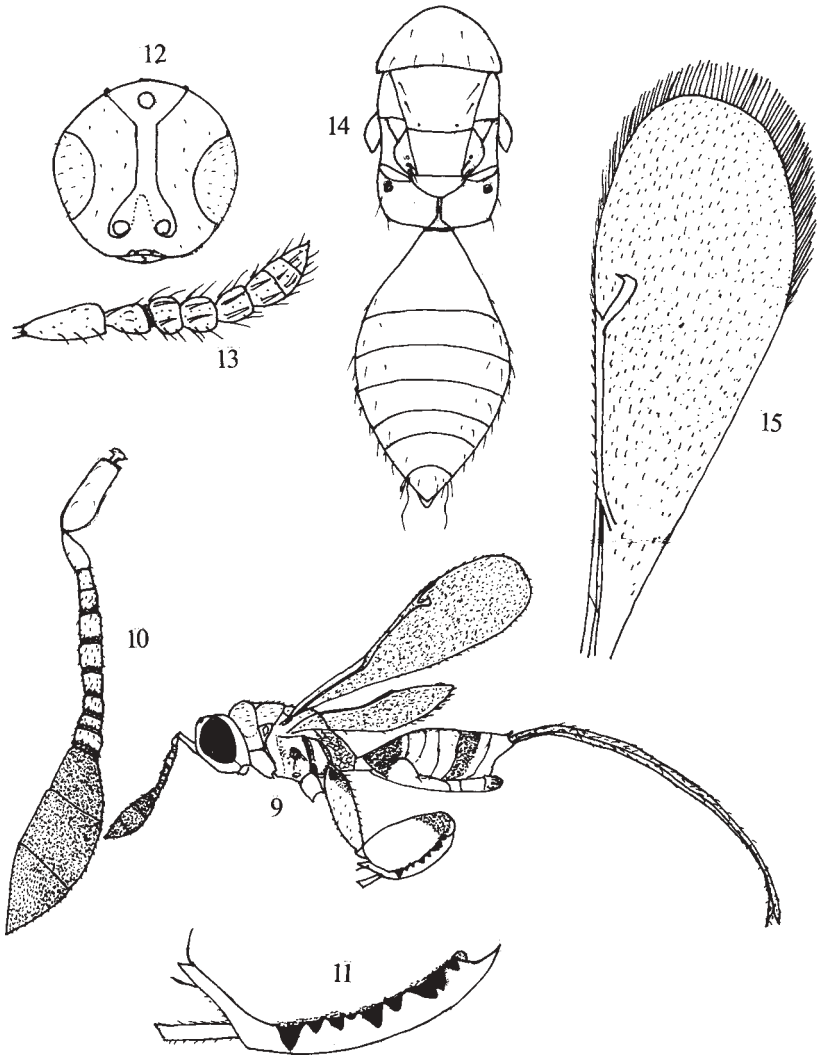
29. *Kostjurixia laharaensis*

Locality : Laharo, Mandi, Himachal Pradesh, India.

Journal : *Rec. zool. Surv. India,* **109**(2) : 1-12.

Year : 2009.

Described by : T.C. Narendran and A. Peter.

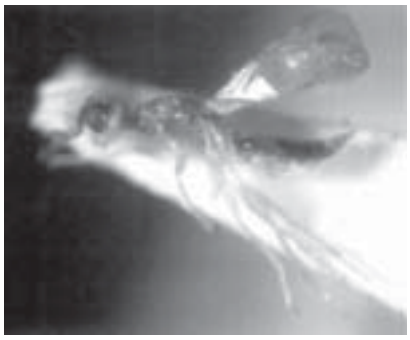


Figs. 9-11. *Palmon kottiyooricus*; Female : 9. Body profile; 10. Antenna; 11. Teeth of hind femur.

Figs. 12-15. *Kostjurixia laharaensis*; Female : 12. Head : front view; 13. Antenna; 14. Mesosoma and metasoma dorsal view; 15. Forewing.

Genus : ***Elachertus***

30. *Elachertus piperis*



Pepper (*Piper nigrum* Linn.) (Piperaceae), known as the king of spices is indigenous to India. Among the various pests which attack pepper, *Liothrips karnyi* is important as it deforms and damages the leaves by making marginal galls. Both the adults and larvae feed on the leaves and cause marginal folded galls.

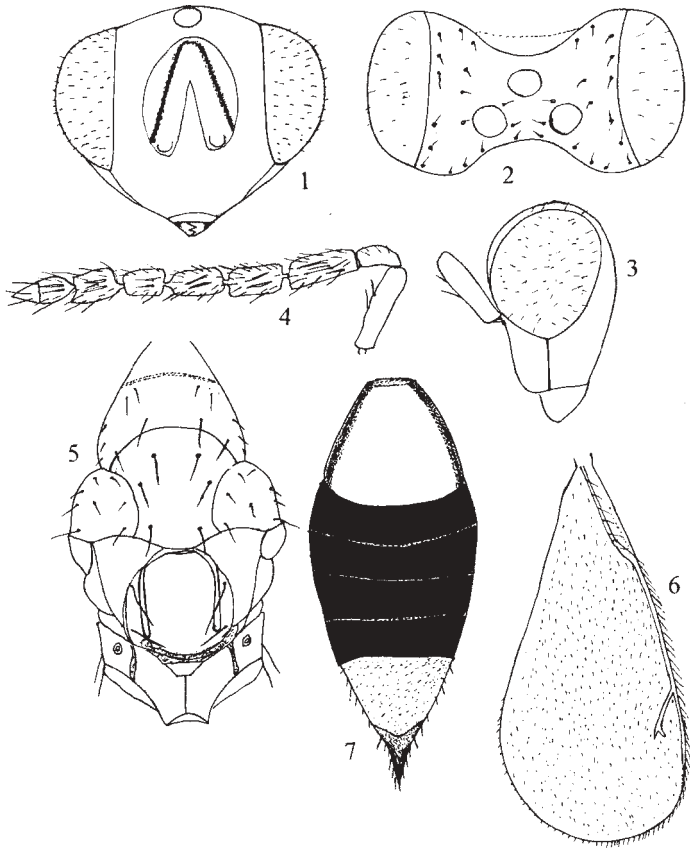
This new species of eulophid parasitoid which emerged from thrip gall. This species is a natural enemy of *L. Karnyi* and may be useful as a biological control agent.

Locality : Kuzhalmannam, Palakkad Dist., Kerala, India.

Journal : *Oriental Insects*, **43** : 45-48.

Year : 2009.

Described by : T.C. Narendran and K. Bindu.



Figs. 1-7. *Elachertus piperis*; Female : 1. Head front view; 2. Head dorsal view; 3. Head profile, 4. Antenna; 5. Mesosoma dorsal view; 6. Fore wing; 7. Metasoma, dorsal view.

Family : TORYMIDAE
Genus : ***Megastigmus***

31. *Megastigmus kashmiricus*

A rare species of Torymidae (Insecta : Hymenoptera) endemic to the Ladakh region of Jammu & Kashmir. It is one of the eight *Megastigmus* species known from the Oriental region and the species is economically important as the pests of wild rose *Rosa webbiana* in which they are breeding. The wasps are phytophagous and their larvae feed on the seeds of the rose plant. Wild rose plants are common in the Ladakh region of Kashmir which support many other insect fauna which are the main pollinators in the crop fields. *Megastigmus* species are mainly seed eaters affecting the growth of many ornamental plants, Figs, Pines, Eucalyptus, etc.

Locality : Ladakh, Jammu & Kashmir, India.

Journal : *J. Threatened Taxa,* **1**(5) : 305-308.

Year : 2009.

Described by **:** P.M. Sureshan.

Family : EUPELMIDAE
Genus : ***Anastatus***

Most species of *Anastatus* are primary endoparsitoids of a wide variety of insect eggs of Blattaria, Homoptera, Hemiptera, Neuroptera, Mantodea, Orthoptera and Phasmidae. Some species are known to be hyper-parasitoids of the eggs of Lepidoptera, larvae of Coleoptera and puparia of Diptera. A few species have been used in biological control programmes against insect pests.

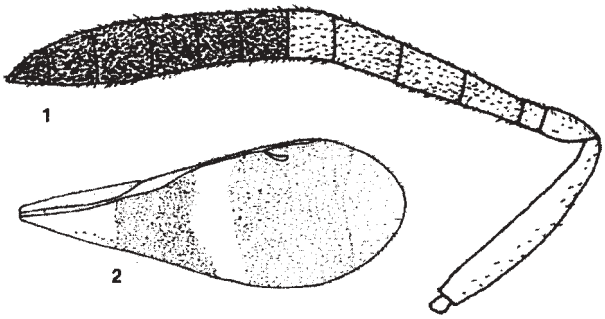
32. *Anastatus (A.) absonus*

Locality : Shasthamkottai, Kollam Dist., Kerala, India.

Journal : *J. Threatened Taxa,* **1** (2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 1-2. *Anastatus absonus*; Female
1. Antenna; 2. Forewing.

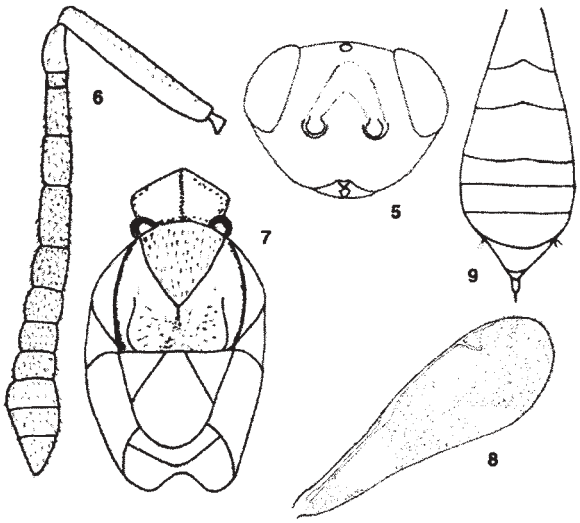
33. *Anastatus (A.) alaredactus*

Locality : Agricultural University, Thrissur Dist, Kerala, India.

Journal : *J. Threatened Taxa,* **1** (2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 5-9. *Anastatus alaredactus;* Female : 5. Head front view; 6. Antenna; 7. Mesosoma dorsal view; 8. Forewing; 9. Metasoma dorsal view.

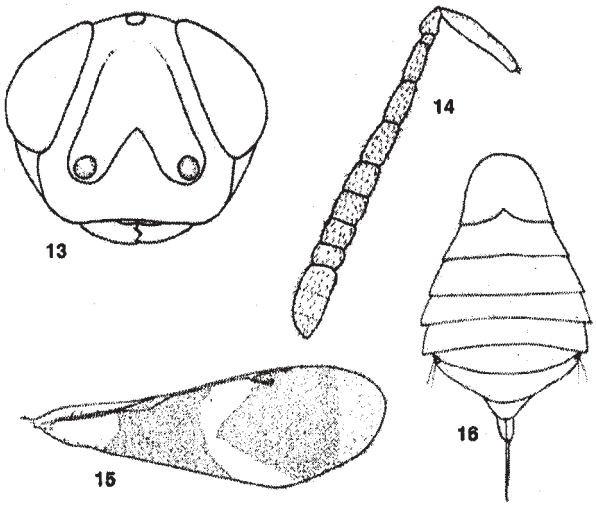
34. *Anastatus (A.) cuspidiatus*

Locality : Malampuzha, Palakkad Dist., Kerala, India.

Journal : *J. Threatened Taxa,* **1**(2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 13-16. *Anastatus cuspidiatus*; Female : 13. Head front view; 14. Antenna; 15. Forewing; 16. Metasoma dorsal view.

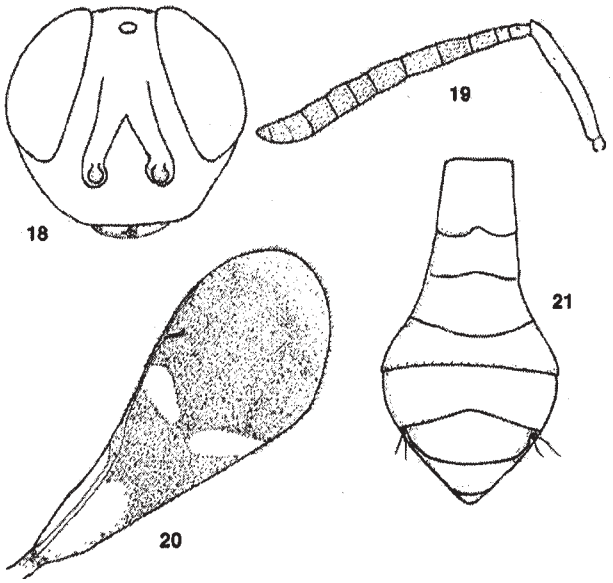
35. *Anastatus (A.) donius*

Locality : Malampuzha, Palakkad Dist., Kerala, India.

Journal : *J. Threatened Taxa,* **1**(2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 18-21. *Anastatus donius*; Female : 18. Head front view; 19. Antenna; 20. Forewing; 21. Metasoma dorsal view.

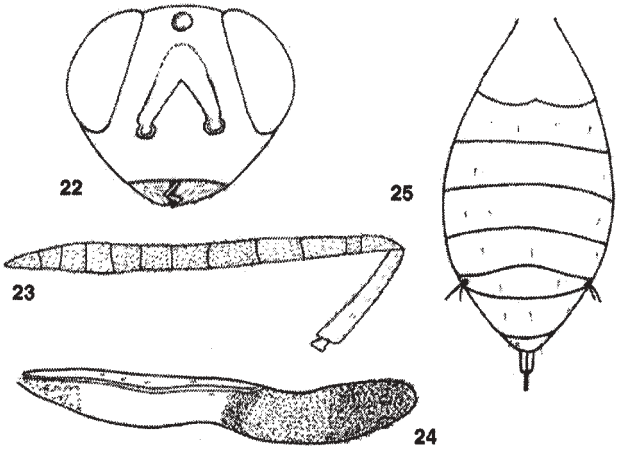
36. *Anastatus (A.) hayati*

Locality : Calicut University Campus, Malappuram Dist., Kerala, India.

Journal : *J. Threatened Taxa,* **1**(2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 22-25. *Anastatus hayati*; Female : 22. Head front view; 23. Antenna; 24. Forewing; 25. Metasoma dorsal view.

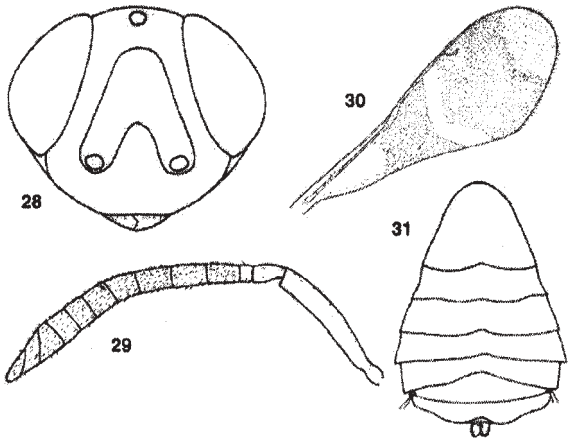
37. *Anastatus (A.) latheefi*

Locality : Chollanki, Kottanada, Andhra Pradesh, India.

Journal : *J. Threatened Taxa,* **1**(2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 28-31. *Anastatus latheefi*; Female : 28. Head front view; 29. Antenna; 30. Forewing; 31. Metasoma dorsal view.

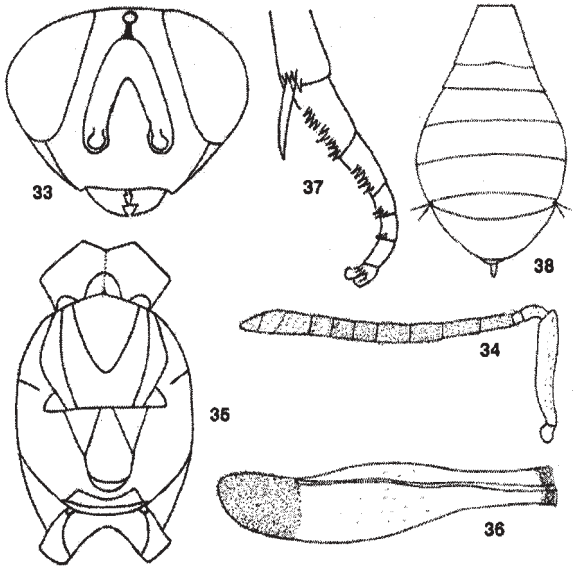
38. *Anastatus (A.) libratus*

Locality : Calicut University Campus, Malappuram Dist., Kerala, India.

Journal : *J. Threatened Taxa,* **1**(2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 33-38. *Anastatus libratus*; Female : 33. Head front view; 34. Antenna; 35. Mesosoma dorsal view; 36. Forewing; 37. Apex of mid tibia and mid tarsi; 38. Metasoma dorsal view.

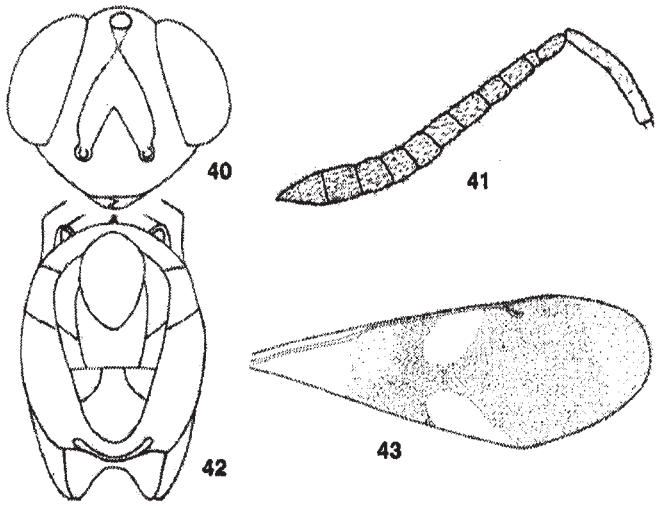
39. *Anastatus (A.) mohanae*

Locality : Lakavalli, Sukhalhetti, Karnataka, India.

Journal : *J. Threatened Taxa,* **1** (2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 40-43. *Anastatus mohanae*; Female : 40 - Head anterior view; 41 - Antenna; 42 - Mesosoma dorsal view; 43 - Forewing.

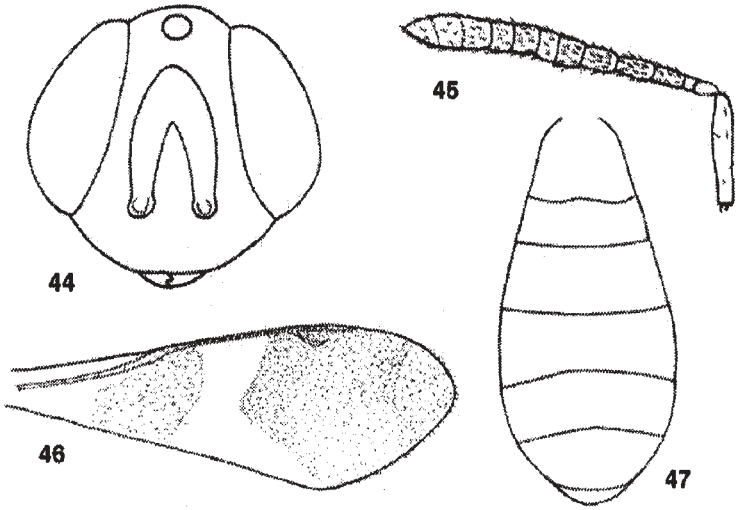
40. *Anastatus (A.) ochirasis*

Locality : Calicut University Campus, Malappuram Dist., Kerala, India.

Journal : *J. Threatened Taxa,* **1** (2) : 72-96.

Year : 2009.

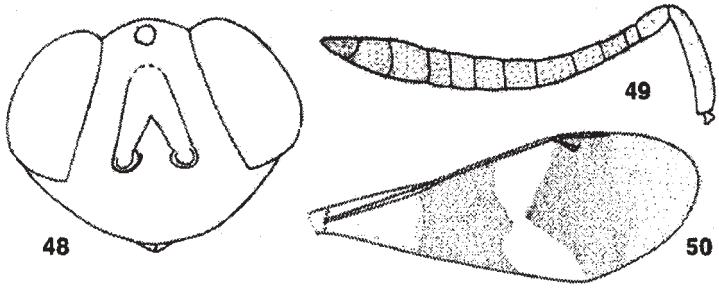
Described by : T.C. Narendran.



Figs. 44-47. *Anastatus ochirasis*; Female : 44. Head front view; 45. Antenna; 46. Forewing; 47. Metasoma dorsal view.

41. *Anastatus (A.) operosus*

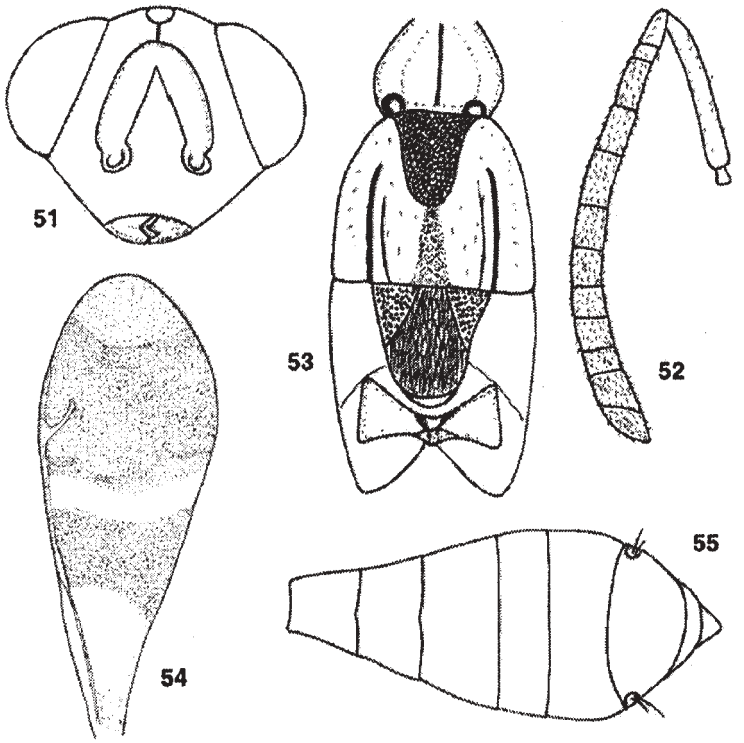
Locality : Calicut University Campus, Malappuram Dist., Kerala, India.
Journal : *J. Threatened Taxa,* **1** (2) : 72-96.
Year : 2009.
Described by : T.C. Narendran.



Figs. 48-50. *Anastatus operosus*; Female : 48 - Head anterior view; 49 - Antenna; 50 - Forewing.

42. *Anastatus (A.) phaeonotus*

Locality : Onattukara, Kayamkulam, Alapuzha Dist., Kerala, India.
Journal : *J. Threatened Taxa,* **1** (2) : 72-96.
Year : 2009.
Described by : T.C. Narendran.



Figs. 51-55. *Anastatus phaeonotus*; Female : 51 - Head front view; 52 - Antenna; 53. Mesosoma dorsal view; 54. Forewing; 55. Metasoma dorsal view.

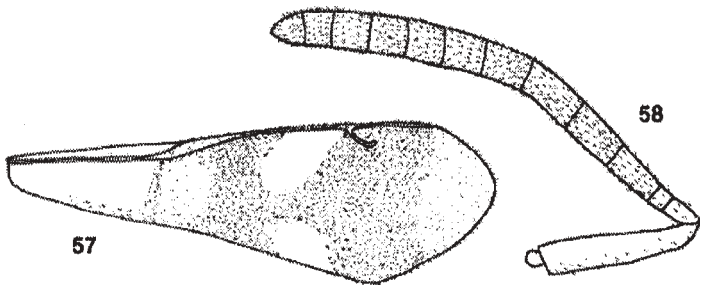
43. *Anastatus (A.) quilonicus*

Locality : Shasthamkottai, Kollam Dist., Kerala, India.

Journal : *J. Threatened Taxa,* **1** (2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 57-58. *Anastatus quilonicus*; Female : 57 - Antenna; 58 - Forewing

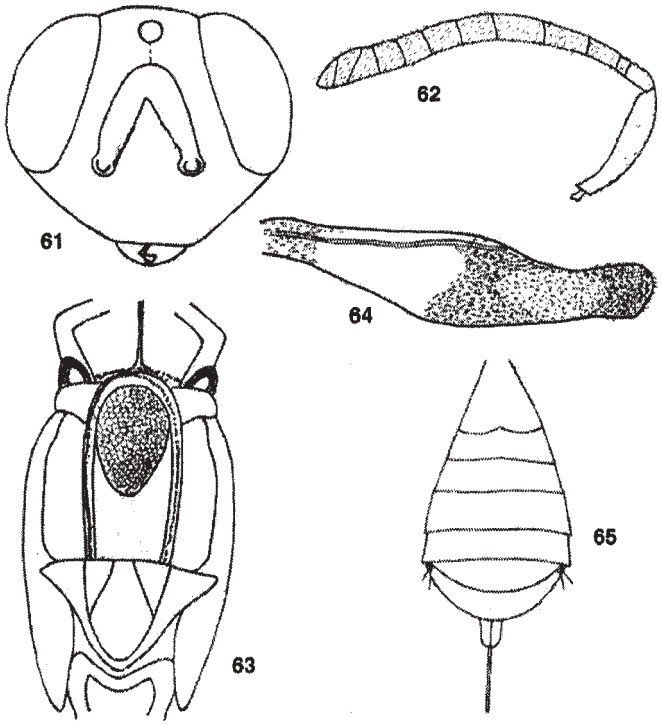
44. *Anastatus (A.) rufopostumus*

Locality : Thrissur, Kerala, India.

Journal : *J. Threatened Taxa,* **1** (2) : 72-96.

Year : 2009.

Described by : T.C. Narendran.



Figs. 61-65. *Anastatus rufopostumus*; Female : 61. Head front view; 62. Antenna; 63. Mesosoma dorsal view; 64. Forewing; 65. Metasoma dorsal view.

Family : BETHYLIDAE
Genus : ***Goniozus***

Goniozus is a cosmopolitan genus of Bethylidae with the potential of being a biological control agent against various lepidopteran pests. They are primary external parasitoids of Lepidoptera larvae. *Goniozus* is the most speciose genus of the subfamily Bethylinae.

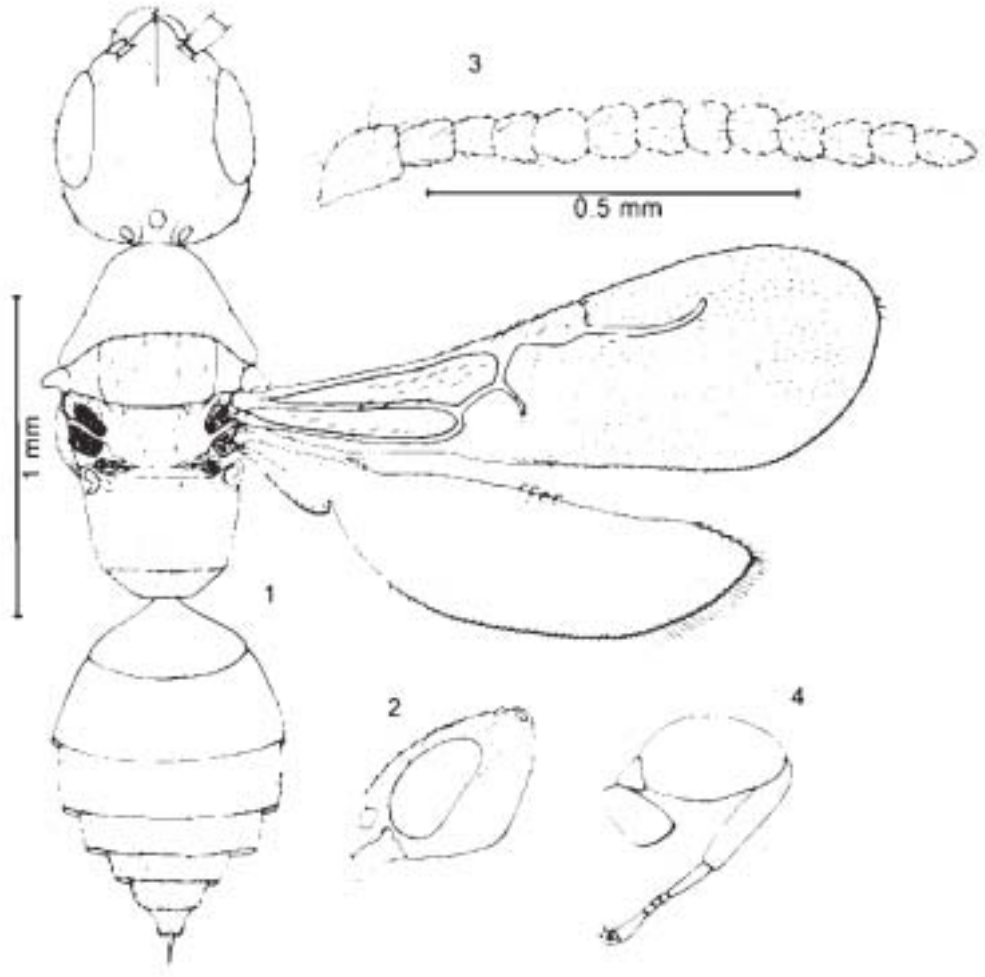
45. *Goniozus armigerae*

Locality : Solan, Himachal Pradesh, India.

Journal : *J. Ent. Res. Soc.,* **11**(1) : 37-45

Year : 2009.

Described by : S. Santhosh and T.C. Narendran.



Figs. 1-4. *Goniozus armigerae* Santhosh and Narendran sp. n.; Female. 1. body in dorsal view; 2. head in lateral view; 3. antenna; 4. foreleg.

INSECTA : EPHEMEROPTERA
Family : BAETIDAE
Genus : ***Symbiocloeon***

46. *Symbiocloeon madhyasthai*

The associations of baetid mayfly nymphs with freshwater clams (mussels) may be regarded as one of commensalism, beneficial to the insect, neutral for the molluscs, although in view of the internal lodgment of the nymph among the fimbriated lamellae of the gills, the mayfly might well be regarded as an inquiline. *S. madhyasthai* is disjunctly distributed from its conspecific *S. heardi*. It was found in between the gill folds of the host *Pseudomulleria dalyi* . This bivalve is typically found in the rocky areas of the river, generally inaccessible during monsoon months. *P. dalyi* is included in the red data book as an endangered species. It is the only cemented bivalve in the freshwater rivers, particularly at higher elevations (>300 m) in India. The current status of *P. dalyi* indicates that the newly described mayfly, *S. madhyasthai* sp. nov., may also be threatened along with its host.

Locality : Tunga River, Mandagadde, Theerthahalli taluk, Shimoga district, Karnataka, India.

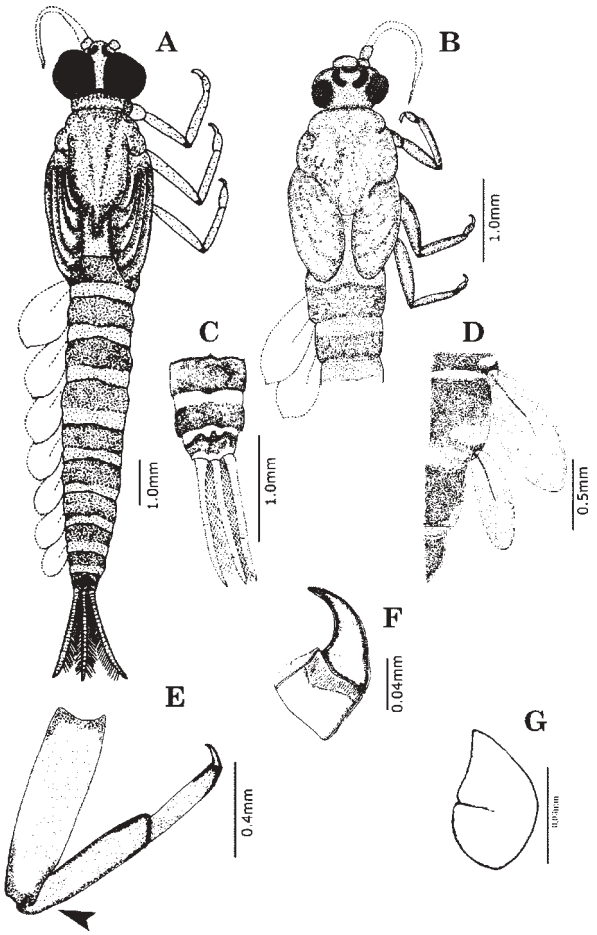
Journal : *Oriental Insects,* **43** : 71-76.

Year : 2009.

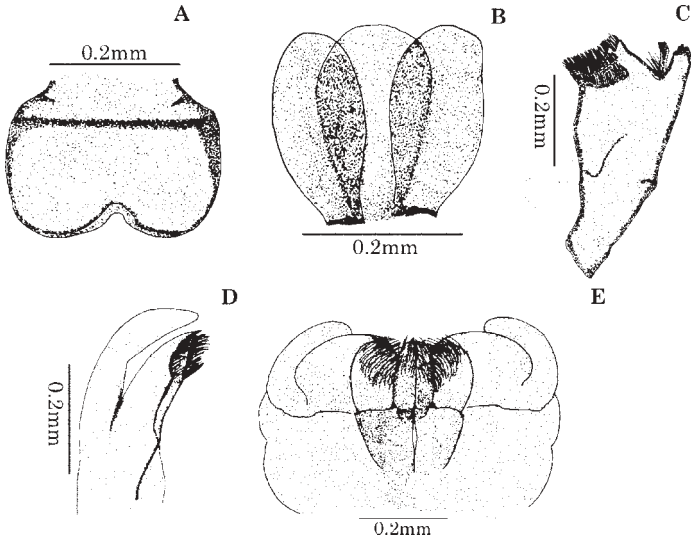
Described by : K.A. Subramanian and K.G. Sivaramakrishnan.

Figs. 1. A-H. *Symbiocloeon madhaysthai* sp. nov. : A. holotype, male nymph, dorsal view; B. holotype, male nymph, lateral view; C1 - holotype, male head and thorax, arrow pointing the extended blunt process of thorax; C2 - paratype, female head and thorax; D. holotype, male head; E. paratype, female head; F. paratype, female legs; G. holotype, male gills; H. holotype, male abdominal segments, caudal filaments, cerci, arrow points to "bird in flight" pattern of 10 abdominal segment.

Note : 1A, 1B and 1C composite images.



Figs. 2. A-G. *Symbiocloeon madhaysthai* sp. nov. A - holotype, male nymph, dorsal view; B - paratype, female nymph, dorsal view; C - holotype, male abdominal segments, caudal filaments, cerci, arrow points to "bird in flight" pattern of 10 abdominal segment; D - holotype, male gills; E - leg, arrow points to the notch at the apices of femora; F - tarsal claw; G - paraproct.



Figs. 3. A-E. *Symbiocloeon madhaysthai* sp. nov. A - labrum; B- hypopharynx; C - mandible; D - maxilla; E - labium.

TWO NEW DISCOVERIES OF CENTIPEDES

CHILOPODA : SCOLOPENDROMORPHA
Family : SCOLOPENDRIDAE
Genus : ***Otostigmus***

Centipedes are an amazing group of animals, taxonomically considered to be part of the Myriapods along with the Millipedes (Diplopoda), Symphyla and Pauropoda. Despite the fact that no centipede shows a real danger for human beings, the bite of a large centipede such as a *Scolopendra,* however, can be painful to an adult and dangerous to a small child. All Centipedes are primarily nocturnal and are shy of the light. All Centipedes are also primarily carnivorous. The larger *Scolopendra* may take small vertebrates including Mammals, Birds and Reptiles. Though some species are easily kept in captivity, their basic carnivorous lifestyle can lead them to cannibalism, if many are kept together. The Centipedes are the animals of economic importance, which is not quite appreciated despite the fact that these animals are poisonous and their bite is dangerous.

47. *Otostigmus politus quadrispinosus*

Locality : Sitlakhet Road, Distt. Almora, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series* **18** : 209-241.

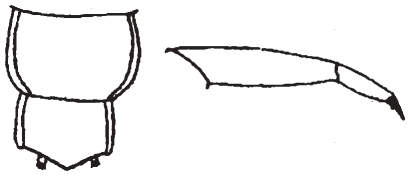
Year : 2010.

Described by : Vinod Khanna.

Cephalic Plate with antennae and Ist Tergal segment

Head, Ventral with coxosternum

Endsternite with coxopleura



20th and 21st tergal Segment

Genus : ***Rhysida***

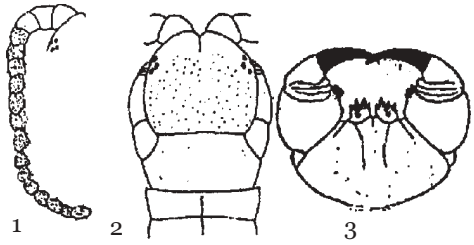
48. *Rhysida longipes punctata*

Locality : Banbasa, Distt. Nainital, Uttarakhand, India.

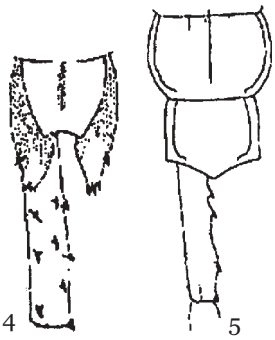
Book : *Fauna of Uttarakhand*, *State Fauna Series* **18** : 209-241.

Year : 2010.

Described by : Vinod Khanna.



1 2 3



4 5

1. Tarsal spurs; 2. Cephalic Plate with Ist and IInd Tergal Segment; 3.Coxosternum; 4. Endsternite with Coxopleura; 5. 20th and 21st tergal segment with endleg prefemur dorsal

ONE NEW DISCOVERY OF ANNELIDA

ANNELIDA
HIRUDINEA
Family : HAEMADIPSIDAE
Genus : ***Haemadipsa***

Though leeches are harmful, they create considerable human interests. A large variety of animals preys upon leeches and their egg-cases. Fishes, ducks, snakes and some other birds and animals get a considerable portion of food from them. Leeches destroy a large number of worms, insect larvae of which some effects human interests. The use of leeches in medical practice is a very ancient process. Hirudin extract is also employed as a hemolytic agent.

49. *Haemadipsa anaigundiensis*

Locality : Anaigundishola, Pollachi, Coimbatore District, Tamil Nadu, India.

Journal : *Rec. zool. Surv. India,* **109**(3) : 27-31.

Year : 2009.

Described by : C.K. Mandal.

FOUR NEW DISCOVERIES OF NEMATODES

NEMATODA
DORYLAIMIDA
Family : QUDSIANEMATIDAE
Genus : ***Discolaimus***

50. *Discolaimus dhanachandi*

This species belongs to an outstanding genus *Discolaimus* of the order Dorylaimida because of their broadly expanded disc-like lip region and predaceous nature. This species can be used as a useful predator for controlling different plant parasitic nematodes. It performs a valuable role in biological control of phytophagous and other harmful nematodes of different plants, those play a vector role in transmitting so many soil-born bacterial, fungal

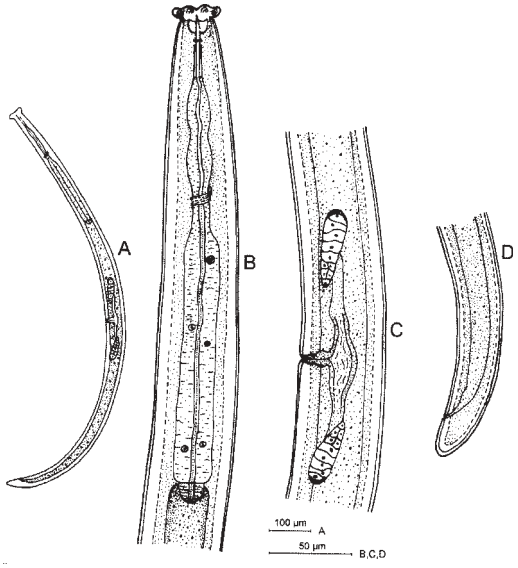
as well as viral pathogens to their hosts. It can regulate microbial biomass and nitrogen mineralization by killing and feeding on different nematodes and other microorganisms of the soil.

Locality : Laro, Sabang, West Medinipur District, West Bengal, India.

Journal : *Proc. zool. Soc.,* **62**(1) : 67-73.

Year : 2009.

Described by : V.V. Gantait, T. Bhattacharya and A. Chatterjee.



Figs. A-D. *Discolaimus dhanachandi*; A. entire female; B. neck region of female; C. vulva with gonads; D. posterior portion of female.

Family : DORYLAIMIDAE
Genus : ***Dorylaimus***

51. *Dorylaimus neominimus*

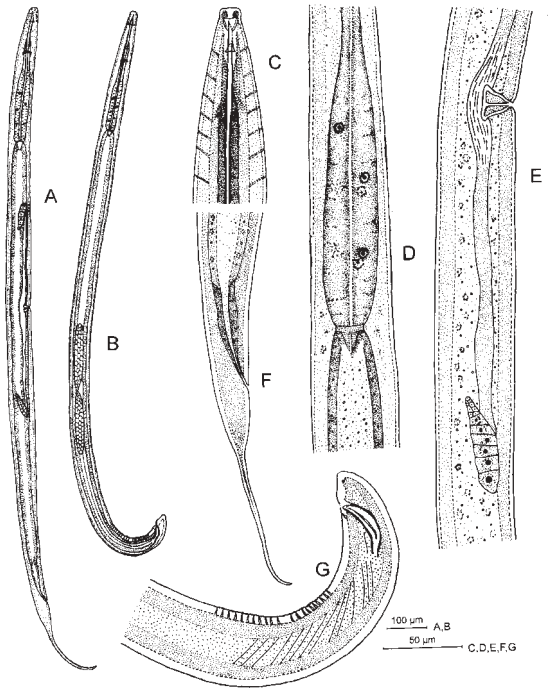
This species is characterized by having the smallest body of all the nominal species (about 30) of the genus. This species feed on bacteria, fungi, algae, etc. and play an important role in controlling soil nutrient cycling. It possibly plays a significant role in the ecosystem inhabits and undoubtly has a major role in maintaining the natural ecological balance. It may be used as bio indicators of sustainability for soil. This species can also be used in measuring the impact of various perturbations on soil ecosystems, such as pollution, organic enrichment and physical disturbance.

Locality : Kashimpur, Daspur, West Medinipur District, West Bengal, India.

Journal : *Int. J. Nematology,* **19**(2) : 173-176.

Year : 2009.

Described by : V.V. Gantait, T. Bhattacharya and A. Chatterjee.



Figs. A-G. *Dorylaimus neominimus*; A. entire female; B. entire Male; C. Anterior region; D. Exposed part of pharynx; E. Female genital system; F. Female posterior region; G. Male posterior region.

Family : TYLENCHOLAIMIDAE
Genus : ***Rostrulium***

The new species is a plant parasitic species. The genus *Rostrulium* is reported first time from India and only two species have been described so far.

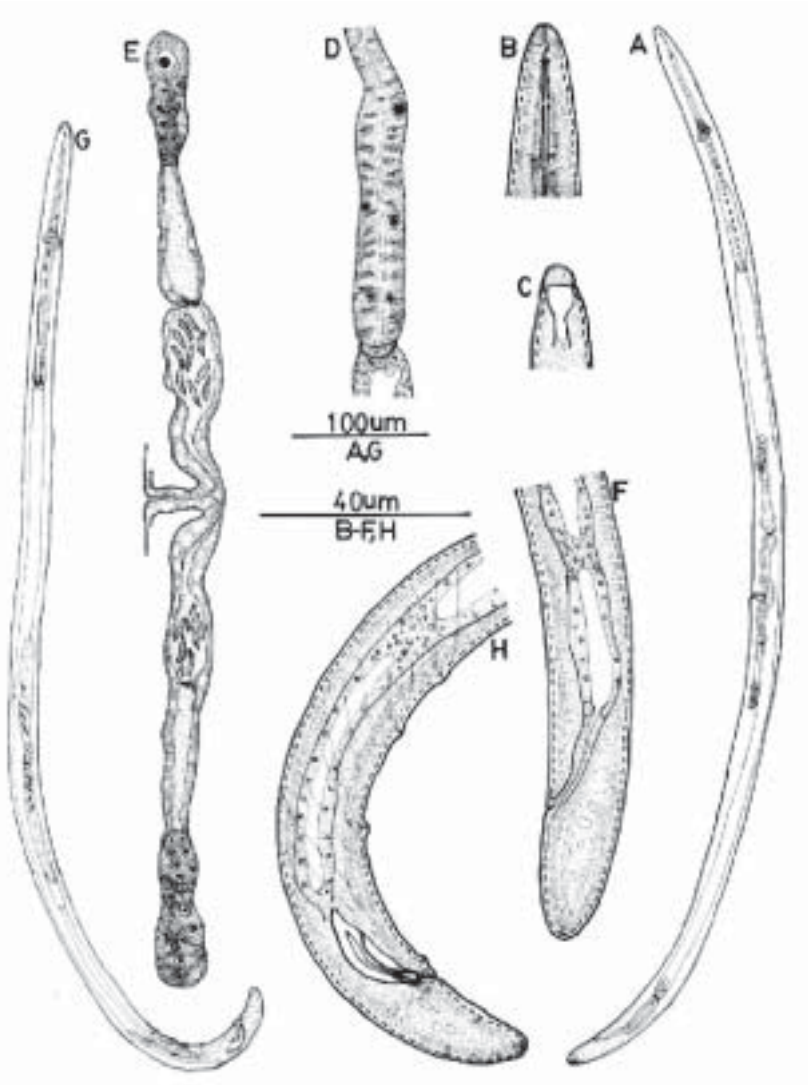
52. *Rostrulium siddiqii*

Locality : Balotra, Barmer district, Rajasthan, India.

Journal : *Biosystematica,* **1**(2) : 25-32.

Year : 2008.

Described by : Padma Bohra and Razia Sultana.



Figs. 1. *Rostrulium siddiquii*; A. Entire female; B. Anterior end; C. Amphid; D. Expanded part of pharynx E. Female reproductive system; F. Posterior end of female G. Entire male; H. Posterior end of male

RHABDITIDA
Family : RHABDITIDAE
Genus : ***Poikilolaimus***

The members of the genus possess usually a loose cuticle and show a world-wide distribution with *P. oxycercus* as the cosmopolitan species. The genus *Poikilolaimus* is bacteriophagous in nature. Like other bacterivorous rhabditids, the species of *Poikilolaimus* have been collected from terrestrial or freshwater substrata. All the species are strictly oviparous and amphimictic with male female ratio 1 : 1 except *P. regenfussi* that often lacks males and shows a fairly large number of intra-uterine eggs undergoing segmentation. An instance of intersexuality has also been reported in *P. oxycercus*.

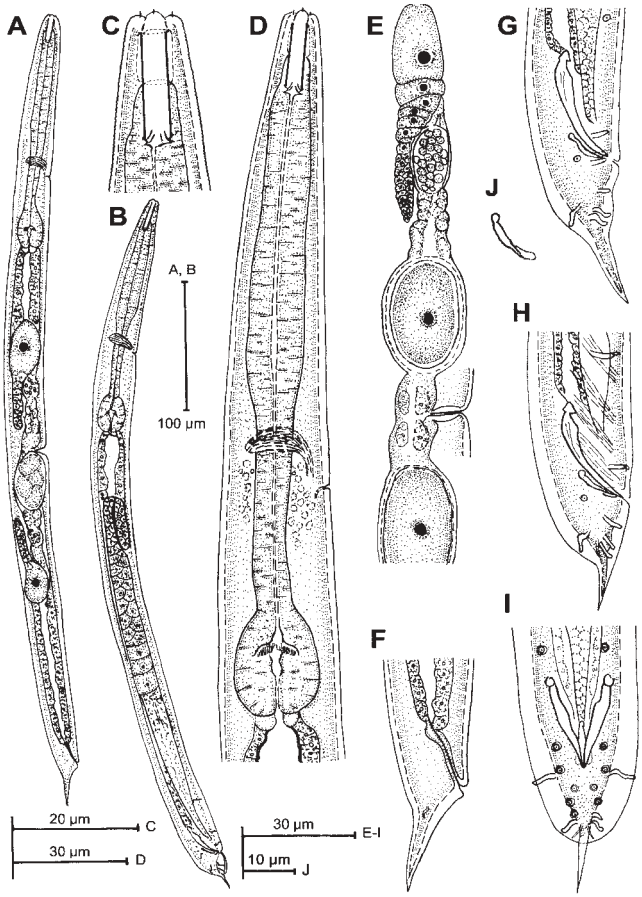
53. *Poikilolaimus istvani*

Locality : Cheerat, Aligarh, Uttar Pradesh, India.

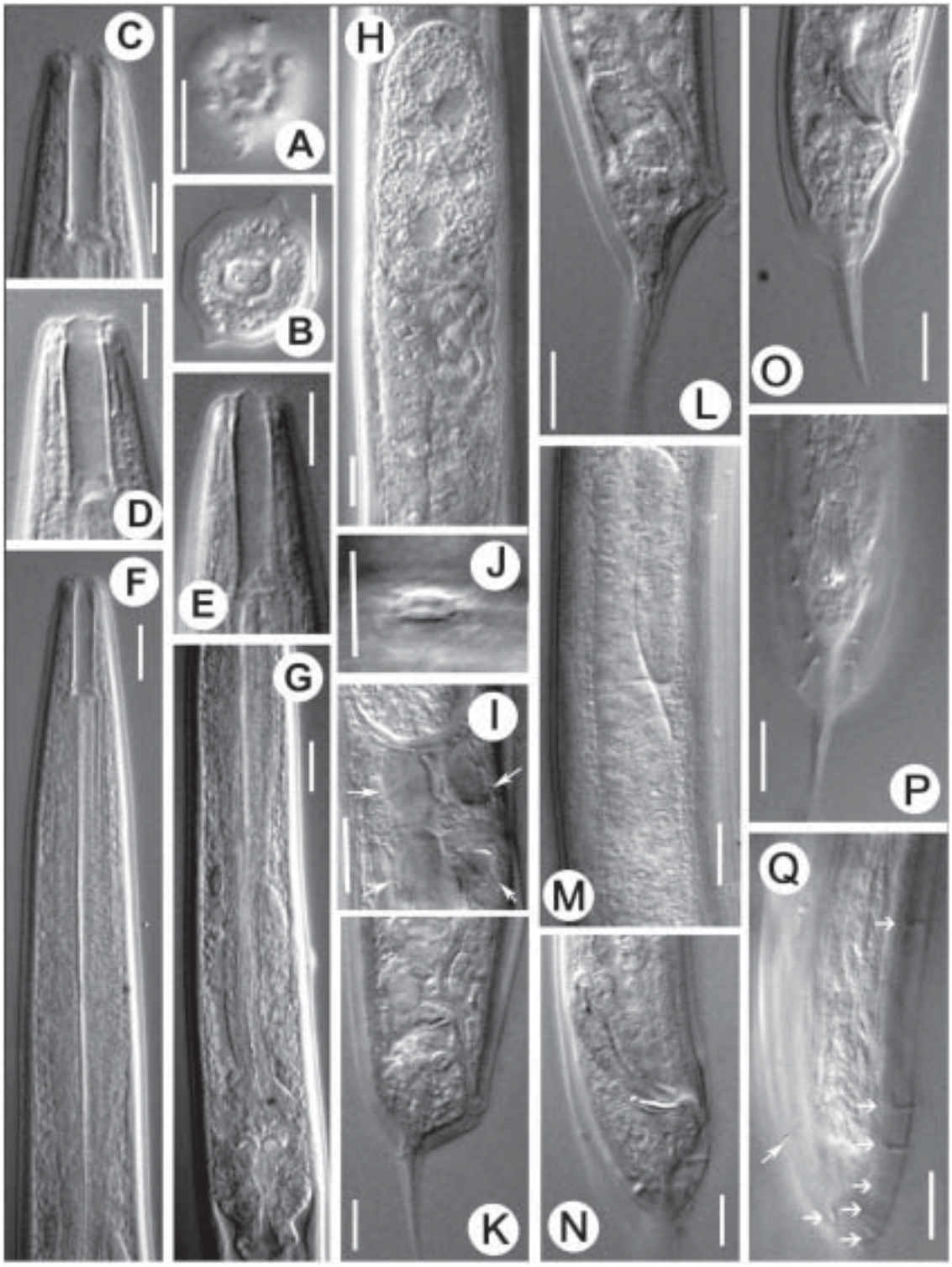
Journal : *J. Nematode Morphol. Syst.*, **12** (1): 27-40.

Year : 2009.

Described by : Q. Tahseen, A. Hussain, R. Sultana and R. Khan.



Figs. A-J *Poikilolaimus istvani* **:** A. Entire female (intestine removed in posterior gonad region); B. Entire male; C. Anterior region; D. Pharyngeal region; E. Female reproductive system (anterior branch); F. Female tail region; G, H. Maletail region (each lateral); I. Male tail region (ventral); J. Gubernaculum with lateral extension.



Figs. A-Q. *Poikilolaimus istvani* : A. *En face* view; B. Cross section through metastegostom; C-E. Anterior region; F. Anterior pharyngeal region; G. Posterior pharyngeal region; H. Female reproductive system (anterior branch); I. Vulval region (lateral) (arrows indicate vaginal glands); J. Vulval region (ventral); K, L. Female tail region (lateral); M. Reflexed part of testis (from right); N, O, Q. Male tail region (lateral) (arrows indicate genital papillae); P. Male tail region (ventral). (Scale bar = 10 ìm).

TWO NEW DISCOVERIES OF TREMATODES

PLATYHELMINTHES
TREMATODA : DIGENEA
Family : PLAGIORCHIIDAE
Genus : ***Spinometra***

54. *Spinometra dehradunensis*

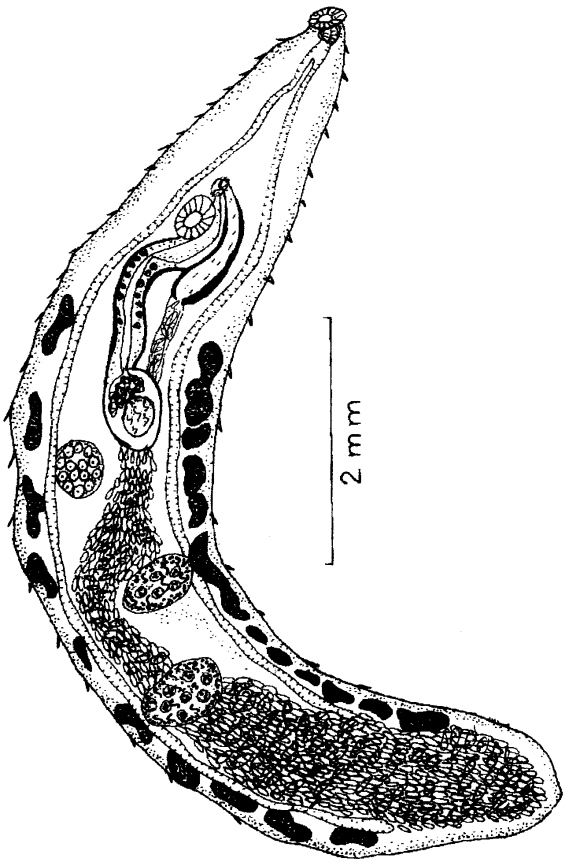
Mehra, 1931, created the genus *Spinometra* with the type species *S. kachugae,* subsequently *S. gangetica* Mehra and *S. gigantica* Dwivedi were added to this genus. The present species differs from all and was recovered from *Kachuga kachuga* turtle and named as *S. dehradunensis,* after the place of occurrence of the species.

Locality : Dehradun, Uttarakhand, India.

Journal : *Indian J. Helminth.,* (N.S.), **26** : 7-11.

Year : 2009.

Described by : Shuvajit Chakrabarti and Anindita Ghosh.



Spinometra dehradunensis (Entire worm).

Family : ECHINOSTOMATIDAE
Genus : ***Paryphostomum***

55. *Paryphostomum ghoshi*

Dietz, 1909, erected the genus *Paryphostomum* with the type species *P. radiatum,* subsequently *P. bubulcusi* Agrwal, *P. giganticum* Rai and Agrwal, *P. horai* Baugh, *P. novum* Verma, *P. pentalobum* Verma and *P. testitrifolium* Gogate were added to this genus. The present species differs from all and was recovered from *Gallus gallus domesticus,* Domestic fowl and named as *P. ghoshi* after the name of R. K. Ghosh, Trematodologist and former Deputy Director of Zoological Survey of India.

Locality : Kundghat, West Bengal, India.

Journal : *Indian J. Helminth.,* (N.S.), **27** : 9-14.

Year : 2010.

Described by : Shuvajit Chakrabarti and Anindita Ghosh.

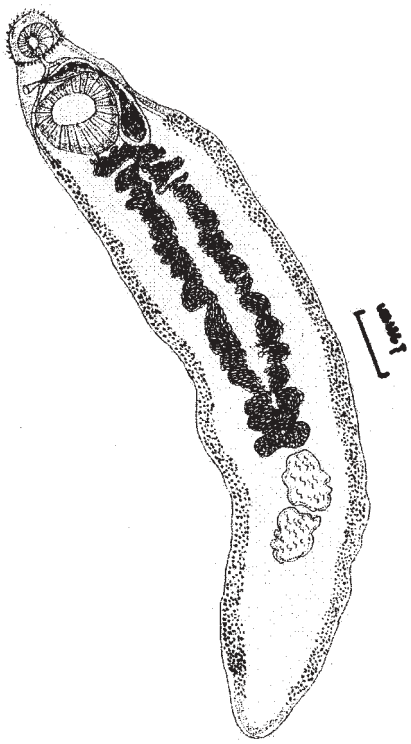
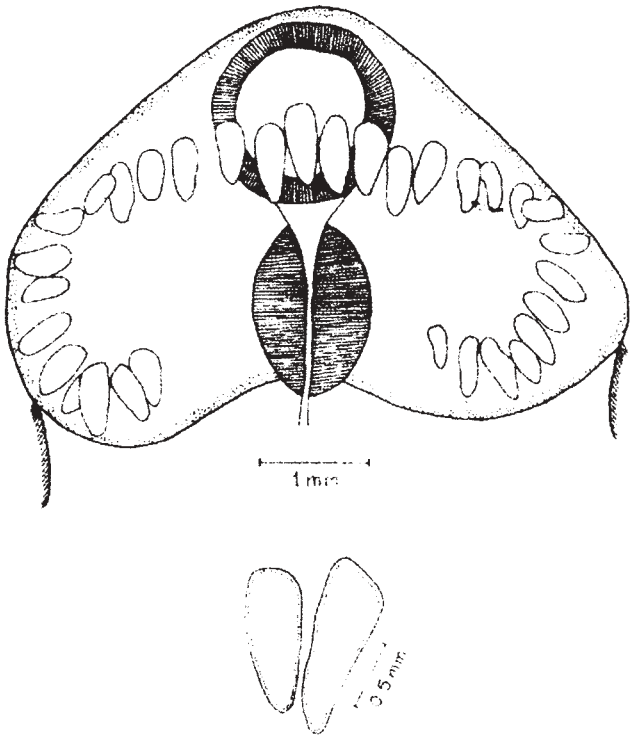


Fig. 1. *Paryphstomum ghoshi* (Entire worm)



Figs. a-b. Head collar region of *P. ghoshi* with 32 collar spines; b. Eggs of *P. ghoshi.*

NEW RECORDS FROM INDIA

PISCES

Family : POLYNEMIDAE

Genus : ***Filimanus***

The Splendid threadfin, *Filimanus perplexa* Feltes, has been recently recorded from Nicobar group of Islands, India. It was earlier known only from Sumatra, Java, Bali, Indonesia and Thailand. The distribution of this species in the Andaman Sea was known by a single specimen from Phuket, Thailand. This report extends its distributional range westward to the Nicobar Islands, India. It is obvious that a species originated in the 'Centre of Evolution' (Philippines-Indonesia region) usually spread towards periphery and colonize. From zoogeographical point of view the Andaman-Nicobar ridge is in continuation with Indonesian plate and so, most of the species occur in Indonesian waters are likely to available in Andaman and Nicobar region and *F. perplexa* adds to such an example (as also an earlier record of *Lutjanus bouton* (Lacepede) from Nicobar Island). This report is supportive to the concept that the Biodiversity of Nicobar Islands is similar to Indonesian waters due to its similarity and continuity of zoogeographical condition. Like *Polydactylus sexfilis* (Valenciennes), this species is also known to inhabit shallow waters of lagoons and near reef areas in the vicinity of oceanic islands and so, both the species are found only in Nicobar Islands in Indian waters. Although small in size (maximum 16 cm in standard length), it is an addition to the group of threadfin fishes, one of the important food-fish groups, esteemed as a delicacy in India. This discovery also rectified an age old taxonomic misconception of wrongly naming it as *Polynemus melanochir* by several authors, including in Indian waters.

1. *Filimanus perplexa* Feltes

Locality : Campbell Bay, Great Nicobar Islands, India.

Journal : *Rec. zool. Surv. India,* **109**(4) : 53-55.

Year : 2009.

Recorded by : S.S. Mishra and R.P. Barman.

Previous distribution : Sumatra, Java, Bali, Indonesia and Thailand.

Filimanus perplexa Feltes from Great Nicobar Island

ACARI : ORIBATEI

Family : OPPIIDAE

Genus : ***Brachioppiella***

2. *Brachioppiella periculosa* Hammer

Locality : Khatiyar village, Ranichori, Tehri Garwal Dist, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : Chile.

Family : SCUTOVERTICIDAE

Genus : ***Scutovertex***

3. *Scutovertex laminipes* Hammer

Locality : Chamoli and Tehri Garhwal Dists, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : Peru.

Family : PHENOPELOPIDAE

Genus : ***Peloptulus***

4. *Peloptulus foveolatus* Hammer

Locality : Mana village, Badrinath, Chamoli Dist., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : Peru.

Family : ACHIPTERIIDAE
Genus : ***Plakoribates***

5. *Plakoribates scutatus* Hammer

Locality : Gopeswar, Chamoli Dist, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : Indonesia.

Family : PUNCTORIBATIDAE
Genus : ***Pelopsis***

6. *Pelopsis* sp.

Locality : Mana village, Badrinath, Chamoli Dist, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : Peru.

Remarks : This genus is reported for the first time from India. Only one specimen was collected which could not be identified up to species level.

Family : LIEBSTABIIDAE
Genus : ***Reductobates***

7. *Reductobates latiohumeralis* Hammer

Locality : Kathgudam village, Haldwani Dist, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : Tahiti.

Remarks : This genus is reported for the first time from India.

Family : HERMANNIELLIDAE
Genus : ***Hermanniella***

8. *Hermanniella* sp.

Locality : Gopeswar, Chamoli Dist, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : USA.

Remarks : This genus is reported for the first time from India. Only one specimen was collected which could not be identified up to species level.

Family : ASTEGISTIDAE
Genus : ***Cultroribula***

9. *Cultroribula* sp.

Locality : Almora and Pithoragarh Dists, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : USA.

Remarks : This genus is reported for the first time from India. Only one specimen was collected which could not be identified up to species level.

Family : LIACARIDAE
Genus : ***Birsteinius***

10. *Birsteinius* sp.

Locality : Chaubatia, Almora Dist., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-3) : 289-307.

Year : 2010.

Recorded by : A.K. Sanyal.

Previous distribution : Europe.

Remarks : This genus is reported for the first time from India. Only one specimen was collected which could not be identified up to species level.

ARTHROPODA
INSECTA : COLEOPTERA
Family : COCCINELLIDAE
Genus : ***Egius***

Coccinellid beetles are generally found in agricultural and in forest areas. They are popularly known as 'Lady Bird Beetles'. They are either carnivorous or phytophagus in habits.

11. *Egius* sp.

Locality : Kainchi, Nainital Dist., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(2) : 283-301.

Year : 2010.

Reported by : S.K. Chakraborty.

Previous distribution : Cuba.

Remarks : This genus is reported for the first time from India. Only one specimen was collected which could not be identified up to species level.

Genus : ***Illeis***

12. *Illeis confusa confusa* Timberlake

Locality : Nainital, Tehri Garhwal and Uttarkashi Dists., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(2) : 283-301.

Year : 2010.

Reported by : S.K. Chakraborty.

Previous distribution : China.

Genus : ***Epilachna***

13. *Epilachna expansa* (Dieke)

Locality : Kausani, Bageswar Dist., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(2) : 283-301.

Year : 2010.

Reported by : S.K. Chakraborty.

Previous distribution : China.

14. *Epilachna monsuna* Bielawski

Locality : Almora, Chamoli and Rudraprayag Dists., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(2) : 283-301.

Year : 2010.

Reported by : S.K. Chakraborty.

Previous distribution : Bhutan.

Family : STAPHYLINIDAE
Genus : ***Paederus***

The members of the Staphylinidae are commonly known as Rove Beetle and is one of the largest family of the superfamily Staphylinoidea. The members of the subfamily Paederinae can be easily distinguished by its head being more or less constricted behind. They are usually found in the habitat like damp vegetable, debries, truks of decaying trees, damp leaves, amongst fallen leaves, in the paddy fields etc.

15. *Paederus sharpi* Cameron

Locality : Uttarkhashi, Nainital and Rudraprayag Dists., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(2) : 335-359.

Year : 2010.

Reported by : P. Mukhopadhyay and A. Sar.

Previous distribution : Bangladesh.

16. *Paederus coxalis* Fauv.

Locality : Nainital Dist., Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(2) : 335-359.

Year : 2010.

Reported by : P. Mukhopadhyay and A. Sar.

Previous distribution : Myanmar.

Genus : ***Cryptobium***

17. *Cryptobium ceylanense* Kr.

Locality : Kumaon, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(2) : 335-359.

Year : 2010.

Reported by : P. Mukhopadhyay and A. Sar.

Previous distribution : Sri Lanka.

Family : BOTHRIDERIDAE
Genus : ***Erotylathris***

18. *Erotylathris philippinensis* Heinze

This genus and species is the first record from India.

Locality : Campbell Bay, Nicobar Islands, India.

Journal : *Entomon,* **34** (2) : 83-87.

Year : 2009.

Recorded by : T.K. Pal and P.K. Basak.

Previous distribution : Indonesia, Malaysia and Philippines.

INSECTA : LEPIDOPTERA
Family : LYCAENIDAE
Genus : ***Tarucus***

This species belonging to genus *Tarucus* Moore. Previously it was reported from Abbotabad (India) now in Pakistan. The larvae of this species feed in *Zizyphus* sp. This species is sibling to another species *Tarucus venosus* Moore.

19. *Tarucus hazara* Evans

Locality : Dehradun, Uttarakhand, India.

Book : *Fauna of Uttarakhand*, *State Fauna Series,* **18**(Part-2) : 531-552.

Year : 2010.

Recorded by : Avtar Kaur Sidhu and Narender Sharma.

Previous distribution : Abbottabad, Pakistan.

INSECTA : HYMENOPTERA
Family : TORYMIDAE
Genus : ***Podagrion***

20. *Podagrion charybdis* Fernando

A rare species of Torymidae (Insecta : Hymenoptera) originally described from Sri Lanka in 1957. It is rediscovered from India (Orissa) after a gap of about 52 years by reporting its biology for the first time. The species were collected as parasites emerged from the ootheca of a Praying mantid (Insecta : Mantodea). The species shows about 89% of parasitism in the ootheca of praying mantids. Since Praying mantids are economically important group of insects, the parasite has a negative role in the terrestrial ecosystem.

Locality : Idupur, Dhumata village, Kendrapara District, Orissa, India.

Journal : *J. Threatened Taxa*, **1**(4) : 234-235.

Year : 2009.

Recorded by : P.M. Sureshan.

Previous distribution : Sri Lanka.

Family : VESPIDAE
Genus : ***Vespa***

21. *Vespa soror* du Buysson

This is a very large hornet with a large head fully yellow in colour. Head is strongly widened and well developed behind the eyes. Mandibles are large and powerful. They are predatory in habits.

Locality : Daporijo (Upper Subansiri District), Likabali (West Siang District), Itanagar (Papumpare District), Arunachal Pradesh, India.

Journal : *Rec. zool. Surv. India,* **109**(4) : 111-112.

Year : 2009.

Recorded by : P. Girish Kumar and G. Srinivasan.

Previous distribution : China, Laos, Myanmar, Thailand and Vietnam.

Family : CHALCIDIDAE
Genus : ***Antrocephalus***

22. *Antrocephalus validicornis* (Holmgren)

Locality : Dwarikapur, Sunderbans Biosphere Reserve, West Bengal, India.

Journal : *Rec. zool. Surv. India,* **109**(1) : 89-96.

Year : 2009.

Recorded by : T.C. Narendran and P. Girish Kumar.

Previous distibution : Indonesia, Malaysia and Philippines.

CNIDARIA
ANTHOZOA : SCLERACTINIA
Family : FAVIIDAE
Genus : ***Favia***

Hard corals are very useful to human kind. They provide both direct (extractive and non-extractive uses) and indirect uses. Calcium carbonate produced by corals is used and being used as building material in many developing countries. Fragments of calcium carbonate accumulate as sediments on the sheltered, low energy side of reefs. There they foster the growth of mangrove forests and seagrass beds which in turn assist shore line protection and produce ecosystem goods in the form of seafood products. Coral reefs built by hard corals in collaboration with other calcium secreting plants and animals act as treasure houses. Whatever available in the coral reef areas is useful to the human kind in one way or other. They act as : 1. Nature's natural sanctuaries of Biological diversity; 2. Breeding and nursery grounds for many shell and fin fishes; 3. Provide food and fishery to mankind; 4. Tourism; 5. Shore protection. In addition to the above uses some bioactive substances are being extracted from the corals as well as their associates as drugs for human usage. The skeleton of hard corals is being tried as alternative material for bone grafting. Coral reefs contribute black coral and red coral for jewellery and stony corals and shells for ornamentation purposes. Rate of coral growth depends on favourable climate, hence corals are now being used as indicators of climate change in the past.

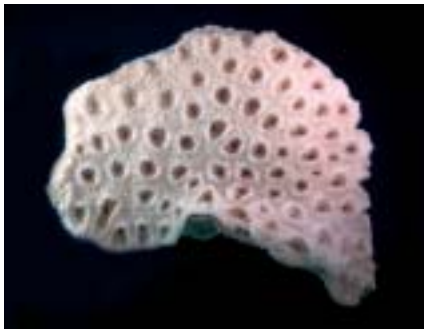
23. *Favia lacuna* Veron, Turak and De Vantier

Locality : Gulf of Kachchh, India.

Book : *Handbook on Hard Corals of Gulf of Kachchh* : 1-114.

Year : 2009.

Recorded by : Ch. Satyanarayana and Ramakrishna.



Genus : ***Barabattoia***

Colonies are massive and small in size. Usually brown, cream or green in colour. Rare and found on shallow reef environments away from wave action. It is distributed from Sri Lanka to Central Pacific. This genus is reported for first time from Indian waters.

24. *Barabattoia amicorum* (Milne Edwards and Haime)

Locality : Gulf of Kachchh, India.

Book : *Handbook on Hard Corals of Gulf of Kachchh* : 1-114.

Year : 2009.

Recorded by : Ch. Satyanarayana and Ramakrishna.

Family : DENDROPHYLLIDAE
Genus : ***Turbinaria***

Colour yellowish brown or greenish brown. This species not so common. It is recorded on reef flat regions in Gulf of Kachchh. Previously it is recorded from Red sea to Aldabra Islands and widely distributed in the tropical Indo-Pacific from South East India and all of Western Australia in the Indian Ocean to Kyushu, Marshal, Phoenix, Tubuai, Tonga, New Caledonia Islands and around Australia in the Pacific Ocean.

25. *Turbinaria frondens* (Dana)

Locality : Gulf of Kachchh, India.

Book : *Handbook on Hard Corals of Gulf of Kachchh* : 1-114.

Year : 2009.

Recorded by : Ch. Satyanarayana and Ramakrishna.

Family : ACROPORIDAE
Genus : ***Montipora***

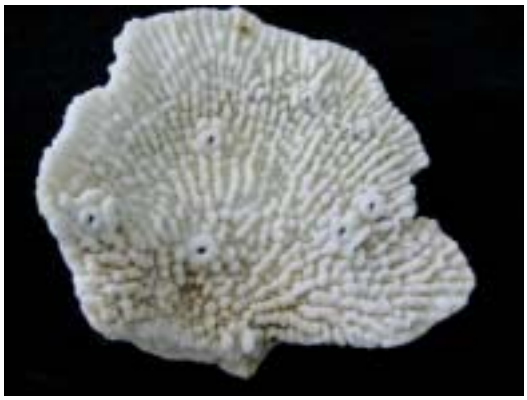
26. *Montipora danae* (Milne Edwards & Haime)

Locality : Aves Island, North Andaman, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.



Previous distribution : American Samoa, Australia, British Indian Ocean Territory, Cocos (Keeling) Islands, Djibouti, Egypt, Fiji, French Polynesia, Guam, Indonesia, Israel, Japan, Jordan, Madagascar, Malaysia, Maldives, Marshall Islands, Mauritius, Mozambique, New Caledonia, Palau, Papua New Guinea, Philippines, Samoa, Saudi Arabia, Seychelles, Solomon Islands, South Africa, Sudan, Taiwan, Province of China, Tonga, United States Minor Outlying Islands, Vanuatu and Viet Nam.

27. *Montipora crassituberculata* Bernard

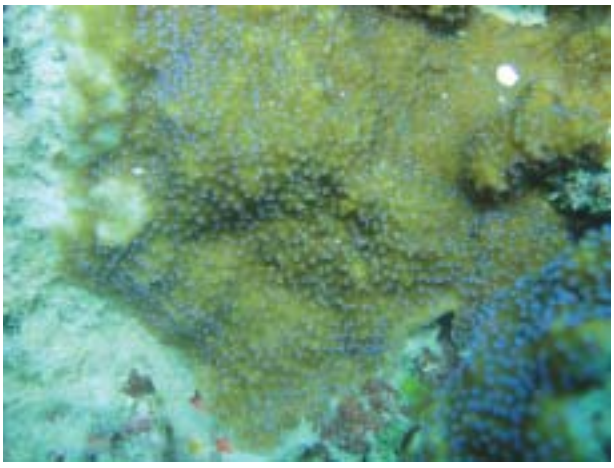
Locality : Car Nicobar Island, Nicobar, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : China, Indonesia, Malaysia and Australia.



Genus : ***Acropora***

28. *Acropora awi* (Wallace & Wolstoneholme)

Locality : Jolly Buoy Island, South Andaman, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Japan, East China Sea and Australia.

29. *Acropora fastigata* (Nemenzo)

Locality : Sister Island, Little Andaman, India.

Journal : *Bulletin of Environmental Science*, **28** (1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Eastern Australia, Japan, Philippines and Indonesia.

30. *Acropora striata* (Verrill)

Locality : Outram Island, Ritchie's Archipelago, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Japan, Australia, Mozambique and Central & West Pacific.

31. *Acropora subulata* (Dana)

Locality : Wilson Island, Ritchie's Archipelago, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Red Sea, China, Japan and Western & Central Pacific and Indian Ocean.

32. *Acropora insignis* Nemenzo

Locality : Car Nicobar Island, Nicobar, India.

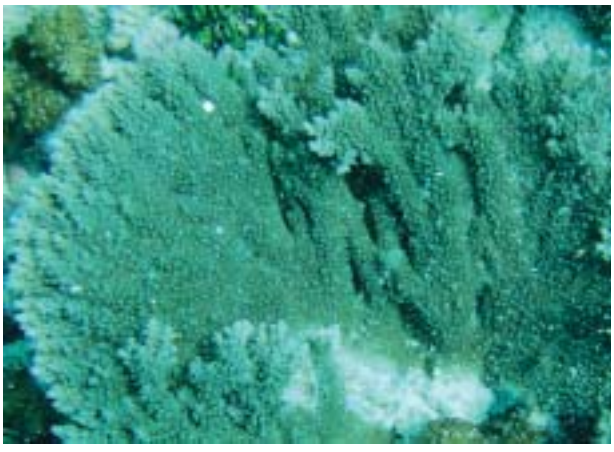
Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Australia, Fiji, Indonesia, Japan, Madagascar, Papua New Guinea, Philippines, Solomon Islands, Vanuatu and Viet Nam.

33. *Acropora minuta* (Veron)



Locality : Car Nicobar Island, Nicobar, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

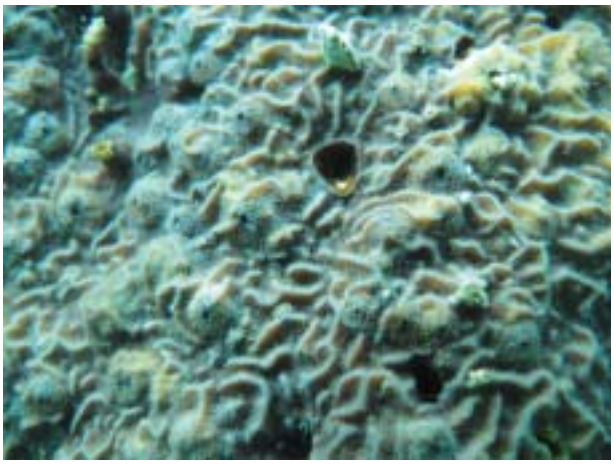
Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Northwest & Central Pacific and Indian Ocean.

Family : AGARICIIDAE
Genus : ***Leptoseris***

34. *Leptoseris cucullata* (Ellis & Solander)



Locality : Sister Island, Little Andaman, India.

Journal : *Bulletin of Environmental Science*, **28** (1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Western Atlantic, Florida to Colombia, Bahamas and Caribbean.

Family : FUNGIIDAE
Genus : ***Fungia***

35. *Fungia scabra* (Doderlein)

Locality : Wilson Island, Ritchie's Archipelago, India.

Journal : *Bulletin of Environmental Science*, **28** (1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Southern Japan, East China Sea, Eastern Australia, Philippines and Indonesia.

36. *Fungia taiwanensis* Hoeksema & Dai

Locality : Aves Island, North Andaman, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Philippines, China, Malaysia and Indonesia.

Genus : ***Favia***

37. *Favia lizardensis* Veron and Pichon

Locality : Car Nicobar Island, Nicobar, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Red Sea, North-eastern Somalia and Indonesia.

Genus : ***Favites***

38. *Favites spinosa* (Klunzinger)

Locality : Car Nicobar Island, Nicobar, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Red Sea, eastern Africa and Indonesia.

Genus : ***Platygyra***

39. *Platygyra crosslandi* (Mathhai)

Locality : Smith Island, North Andaman, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Madagascar, Mauritius and United Republic of Tanzania.

40. *Platygyra ryukyuensis* (Yabe & Sugiyama)

Locality : Aves Island, North Andaman, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Australia, Indonesia, Japan, Madagascar, Malaysia, Papua New Guinea, Philippines, Seychelles, Solomon Islands, Taiwan, Province of China, Vanuatu and Viet Nam.

Genus : ***Montastrea***

41. *Montastrea salebrosa* (Nemenzo)

Locality : Havelock Island, Ritchie's Archipelago, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

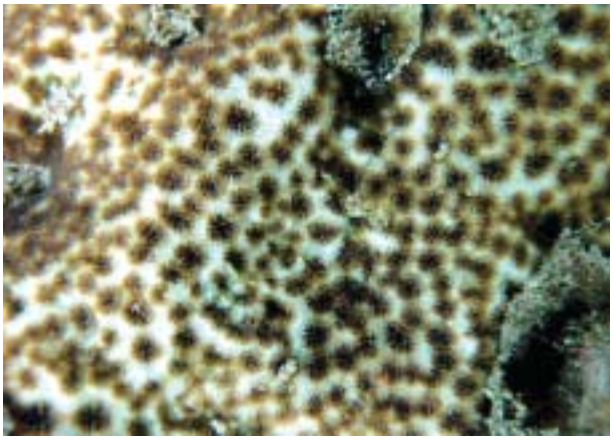
Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Japan, East China Sea and Fiji.

Genus : ***Leptastrea***

42. *Leptastrea aequalis* (Veron)



Locality : Aves Island, North Andaman, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

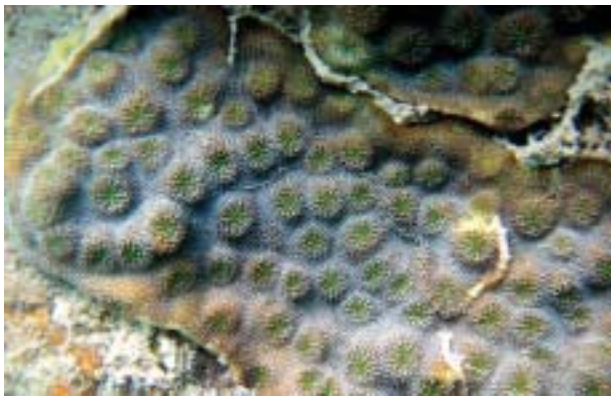
Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Madagascar, Australia, Thailand, Myanmar and Indonesia.

Genus : ***Echinopora***

43. *Echinopora pacificus* (Veron)



Locality : Outram Island, Ritchie's Archipelago, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

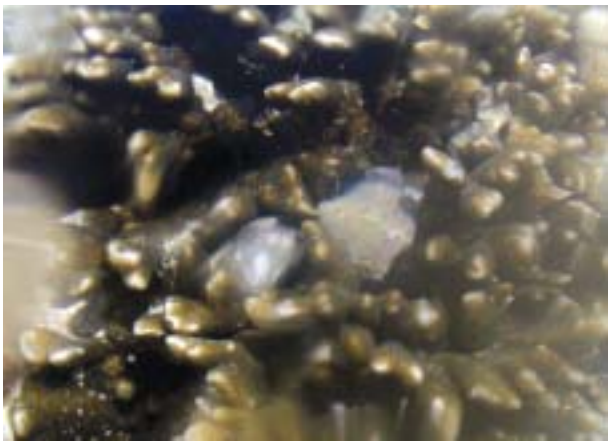
Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Vietnam, Japan, Australia, Fiji and Phoenix Island.

Family : PORITIDAE
Genus : ***Porites***

44. *Porites heronensis* (Veron)



Locality : Smith Island, North Andaman, India.

Journal : *Bulletin of Environmental Science*, **28** (1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Southwest Pacific and Australia.

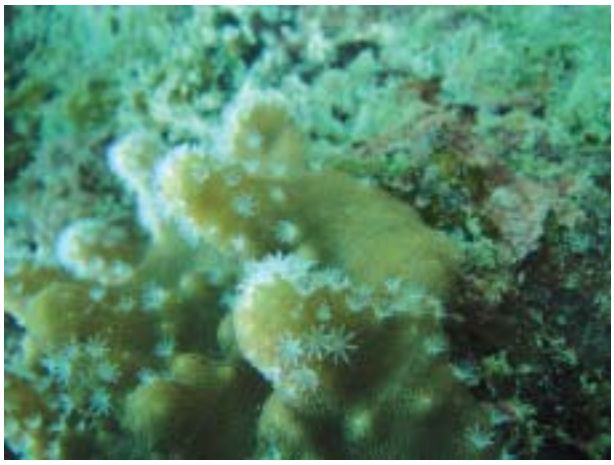
45. *Porties porites* (Pallas)

Locality : Car Nicobar Island, Nicobar, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.



Previous distribution : Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cape Verde, Cayman Islands, Colombia, Cuba, Dominica, Dominican Republic, Guadeloupe, Honduras, Jamaica, Martinique, Mexico, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, Saint Lucia, Turks and Caicos Islands, United States of America, United States Virgin Islands and Venezuela (Bolivarian Republic).

Family : MUSSIDAE
Genus : ***Symphyllia***

46. *Symphyllia hassi* Pillai and Scheer

Locality : Car Nicobar Island, Nicobar, India.

Journal : *Bulletin of Environmental Science*, **28**(1) : 23-36.

Year : 2010.

Recorded by : V. Madhan Chakkravarthy, S. Kumaralingam, Koushik Saudhukhan, C. Raghunathan and Ramakrishna.

Previous distribution : Philippines and Australia.

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