

Dragonflies & Damselflies

of Orissa and Eastern India

Manoj V. Nair



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Dedicated to Kallu, a damsel who shall always fly in my heart.

FOREWORD

The forms of life on earth are intriguingly interconnected and interdependent with each other in complex ways. This complexity of life, conveniently termed as biodiversity encapsulates the interactions of life from molecules to biogeographic realms to the whole biosphere. The ebb and flow of life on earth depend on interactions of biological and physical world in space and time. Many of the life forms in this web of life constantly remind us of long evolutionary journey of life on earth. They remained unchanged morphologically in its evolutionary history and bring memories of the past from deep within. Probably, because of this, many such organisms are part of our folklore and culture. One such group of organisms are odonates or popularly known as dragonflies and damselflies. They evolved about 250 million years ago during Devonian period and largely remained unchanged morphologically.

Dragonflies and damselflies complete their life cycle in wetlands and its riparian landscape. Species are highly habitat specific in larval and adult stages. They are predators for a large number of aquatic and terrestrial invertebrates and also form prey to many species. They are sensitive to the changes in habitat quality and reliably indicate ecosystem health. This makes them an important group of organisms in environmental monitoring.

Dragonflies and damselflies of the Indian sub region (India, Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh and Myanmar) are well documented with over 600 species. Regional checklists are available for many areas. However, detailed ecology and habitat preferences of many species are poorly documented. Hitherto, most of the published literature on odonates of the region remained inaccessible to conservation managers, naturalists and students due to technical jargon and lack of good quality illustrations or photographs.

The eastern India, is one of the globally rich areas of odonates. The forest streams and rivers of the region are habitat for many endemics and habitat specialists. *Dragonflies and Damselflies of Orissa and Eastern India* by my friend Manoj is a major contribution to the Indian Odonatology, especially to the eastern India. The organisation of the book and photographs bring new dimension to field study of Odonata. I am sure that this will be an asset to conservation managers, field naturalists and students in understanding and monitoring wetland ecosystem health. The book will also encourage the next generation of Odonatologists to study and document larval and adult ecology of lesser known species.

Dr. K. A. Subramanian

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PREFACE

Orissa has diverse landscape, encompassing unspoilt coastlines, unique mangrove patches, vast brackish lake and large tracts of forests. This mixture of habitat types has made the state an extremely rich repository of biodiversity. An extensive Protected Area (PA) Network which contains 2 Tiger Reserves, 2 National Parks and 18 Wildlife Sanctuaries (comprising 5.28% of the state's geographical area), ensures that this natural heritage is effectively conserved for posterity. The state has also been a pioneer in conducting long-term research on a variety of fauna ranging from Olive Ridley turtles of Gahirmatha to Tigers of Similipal. The emphasis has largely been on charismatic mammalian, avian and reptilian species. Of late, biodiversity conservation in toto, has been brought into prominence, in which the focus is on conserving the entire spectrum of life on earth. This has necessitated documentation and research on hitherto little known faunal groups like insects.

This publication titled 'Dragonflies and Damselflies of Orissa and Eastern India' being released on the occasion of the celebration of the International Day for Biological Diversity on 22nd May 2011, is an attempt to bridge the information gap on this little-studied group. Odonates are not only important parts of the food-chain but are also excellent indicator species of water and habitat quality. Meticulous documentation of this fascinating order of insects is the first of its kind for the state

and is worthy of commendation. Special care has been taken to present technical aspects of species identification in an easy manner which will make the subject interesting for common reader. It is also worth mentioning that this book is profusely illustrated with about 250 colour photographs, covering 101 species (about 90 % of all known species from this region).

I am sure that this publication by the Wildlife Organisation will be of much use for academicians, field researchers, wildlife managers, school and college students and eco-tourists. It will also spread much-needed awareness among the common people about biodiversity conservation.

I highly appreciate the hard work and meticulous field study of Shri Manoj V. Nair, IFS, Divisional Forest Officer, Hirakud (Wildlife) Division, Sambalpur, which has resulted in publication of this valuable document. I wish Shri Nair further success in his endeavours.



22nd May, 2011

(PRIYANATH PADHI)

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Memory, like the flight of certain dragonflies, is often erratic. Hence, though I've attempted to thank everyone who helped me along the course of preparing this book, some omissions might have happened. To those, and all the rest who are mentioned below, I say thank you, in the deepest sense of the word. My heartfelt thanks to :

Sri Priyanath Padhi, Principal Chief Conservator of Forests (Wildlife) for mooted the idea of this book, and encouraging me to do it in time. Sri. S.S.Srivastava, Chief Conservator of Forests (Wildlife) for supporting my interest in wildlife research. Sri. Sudarshan Panda, Director Nandankanan Biological Park for his inputs and Sri S.Mahapatra, Dy.Director for handling all the procedural requirements for this publication.

My dear friend Dr K.A. Subramanian, for his Foreword . It was his excellent Field Guide to the Dragonflies of India that popularized odonates among naturalists in India; I've depended a lot on it during the preparation of this book – thanks Subbu !

David Raju for many fruitful discussions on odonates. Drs Jafer Palot, R.Babu and Arun Kumar for helping me find relevant literature. Fellow ode lovers P.Jeganathan, Kiran C.G., Arun C.G. and Toms Augustine for support.

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All those who contributed their valuable photographs (list given in the credits page).

This book would not have been possible but for Satyanarayan Mishra, who helped me with formatting, type-setting, overall design and numerous field trips at Nandankanan.

G.Rajesh, for being a cherished friend, always at hand for any eventuality. Rajesh Kallaje, for his photographs and uncomplicated view of life.

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1. About this book and how to use it

This book is a result of about four years of fairly intensive field work within three protected areas – Similipal in northern, Nandankanan in central and Debrigarh in western Orissa. In addition, several visits were also paid to other PAs like Kuldiha, Bhitarkanika, Chandaka, Chilika and Satkosia; *ad libitum* collections were also done during the course of the author's travels, both for official and personal reasons throughout the state. Thus, only the southern areas of the state were left to be surveyed, a gap which was addressed to an extent by having access to numerous odonate photographs taken by Dr. Pratyush Mahapatra and his team, during their extensive surveys in South Orissa, especially places like Karlapat, Niyamgiri, Mahendragiri, Deomali etc. Further, the author could also examine photographs taken by several naturalists from across the state, whose names are mentioned in the 'Acknowledgements' section. Thus, the coverage is fairly comprehensive and includes almost all species that one is likely to come across within the state, and elsewhere in the Central and Eastern Indian region (Andhra Pradesh, Chattisgarh, Jharkhand and southern W. Bengal). A total of 101 species have been described (which constitutes about 90 % of all species found in peninsular India, excluding the Western Ghat endemics). A few odonates whose genus is confirmed but exact species identity is being worked out (some of which are possibly new to science), are also included to facilitate their study by interested readers.

Now, a brief account regarding using this guide.

The **Introduction** section gives a brief overview of Odonates, their basic taxonomy, ecology, behaviour and conservation, supplemented by figures and photographs. Beginners are requested to devote some time to this section and familiarise themselves with the basics. The target audience being school & college students, naturalists and common people, the

treatment has been made as non-technical as possible. Thus, the **Species description** is given for both male and female. It is general in nature avoiding difficult taxonomic terms. Any such term if used is explained in the **Glossary**. The species description follows a uniform pattern, with text on one page and photographs on the facing sheet. As far as possible, images of both male and female are included, with certain diagnostic pointers highlighted as insets within the main plate in case of certain species. '**Behaviour**' section contains information available in literature, but also draws substantially from the author's own observations. '**Distribution**' section gives the distribution within the state, followed by that in India and then the world. '**Status**' refers to a rough idea of how easy it is to see a given species in field and is an approximate index of its abundance; it is entirely a result of the authors own subjective assessment and not an estimate of population density. Hence it is open to revision as more studies are carried out. An '**Easy to spot at**' section is included only for uncommon and rare species, for the benefit of people interested in visiting the places to see them. '**Remarks**' gives any additional information of significance. The **Month Bar** at the bottom has 12 months, with those highlighted in red being the peak flight period and those in pink being the secondary flight period. The **Size Bar** gives a visual representation of the actual size of the abdomen in field. The **Check-list** is an up-to-date compilation of all published literature on Odonates of the state supplemented by the authors data. The **Reference** section cites all important works consulted while the **Suggested Reading** section gives a list of must-read books for the enthusiast; a list of informative web-sites are also provided. **Index** for both common and scientific names helps easy reference.

Despite best efforts, minor errors regarding species identification and description might have crept in. The author would be most grateful for any corrections or suggestions, which can be sent to his e-mail account. Finally he hopes that this book will instil a sense of curiosity about these fascinating but little-known group of insects among the younger readers of the state. If this in turn will spur on some of them to conserve a neighbouring wetland, even if it be a tiny roadside '*pokhari*', this book would have served its purpose.

2.

A Gentle Introduction to Dragonflies & Damselflies

Most of us would have noticed certain eye-catching insects with bulbous eyes, long slender colourful tails and two pairs of large veined wings, often flying around like helicopters or at times perched near paddy fields, ponds, lakes or even in our own gardens or backyards. These delightful creatures, which go by their vernacular Oriya names 'Kanki', 'Phiringi', 'Phirphiri' or 'Patpania' are nothing but Dragonflies and Damselflies, scientifically known as Odonates, sometimes shortened to just 'Odes' in popular literature. They need no introduction as every boy or girl would have caught one at play, either to tie pieces of string to its tail and then make it fly like a kite or to make the hapless creature pick up tiny pebbles !

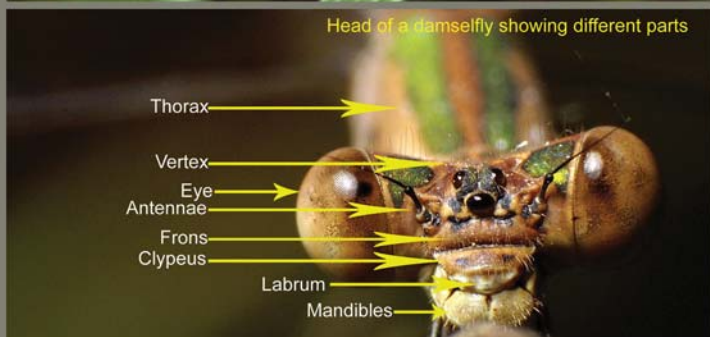
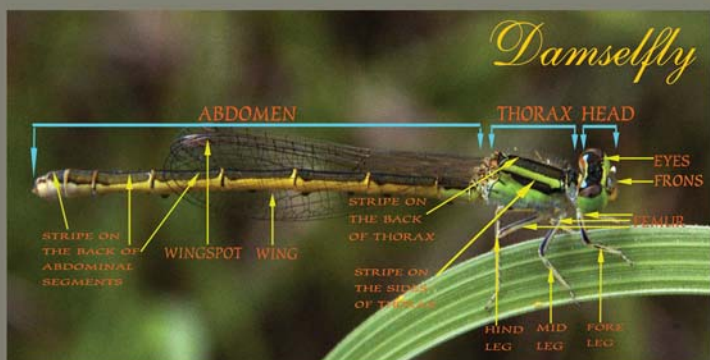
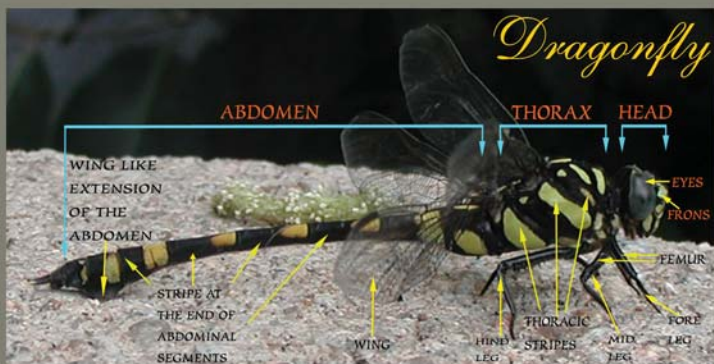
Among the most ancient order of insects, and possibly the first to master the art of flying, Odonates first made their appearance during the Carboniferous era, about 250 million years ago. About 6,000 species are known worldwide of which India has 500 odd.

The body of an Odonate is basically divided into three parts –

1. a head which has biting mouthparts, large well developed compound eyes capable of excellent omnidirectional vision;
2. a thorax consisting of anterior prothorax bearing the front pair of legs, and a fused synthorax bearing the remaining two pairs of legs plus a pair of wings;
3. a long thin abdomen consisting of 10 segments. In males, the underside of the 2nd segment bears a complex secondary copulatory organ while the 10th segment in both sexes is tipped by structures called anal appendages. The finer details of wing venation and anal appendages are important for taxonomical analysis, serving to differentiate one species from the other.

Based on their body structure, Odonata are divided into three groups, *viz.* damselflies (Zygoptera), relict dragonflies (Anisozygoptera) and dragonflies (Anisoptera).

Body Parts of Dragonflies and Damselflies



Source : K.A. Subramanian, 2009.

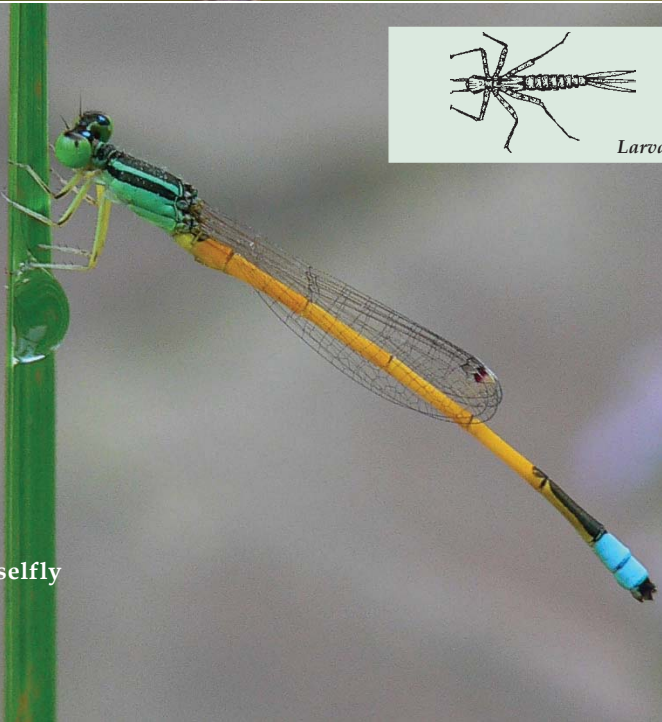
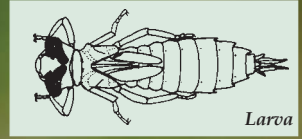
Anisozygoptera is a relict sub-order, with two species – one in Japan *Epiophlebia superstes* and the other from the high Himalaya, *E. laidlawi*, which also happens to be a Schedule I species, the only odonate to be legally protected in our country under the Wildlife Protection Act, 1972. Though Dragonflies and Damselflies differ in some aspects (Table 1), their ecological requirements and life histories are quite similar.

Table 1: Broad differences between dragonflies and damselflies.

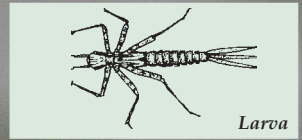
Dragonfly Adult	Damselfly Adult
<ul style="list-style-type: none"> ● Robust insects with stouter abdomen. ● Fore wings and hind wings unequal in size; hind wings broader at the base than fore wings. ● Hind wings broad at base. ● While perched, wings kept open and spread out on both sides of thorax. ● Strong agile fliers, often flying fast and high. 	<ul style="list-style-type: none"> ● Delicate insects with slimly built abdomen. ● Fore wings and hind wings approximately of the same size and shape. ● Wings narrow at the base. ● While perched, wings usually held closed together, folded over abdomen. ● Comparatively weak fliers, flying close to the ground or water.
Dragonfly Larva	Damselfly Larva
<ul style="list-style-type: none"> ● Stout, robust body. ● Gills not visible externally. 	<ul style="list-style-type: none"> ● Slender fragile body ● Three gills at the end of the body visible externally



Dragonfly

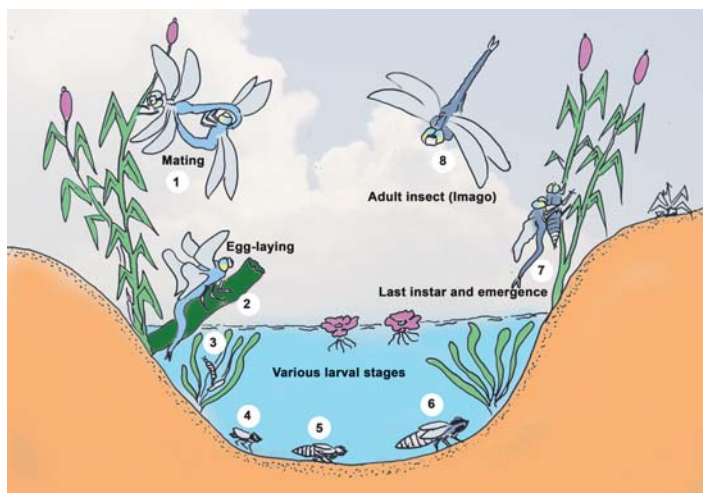


Damselfly



LIFE CYCLE

Odonates have a very interesting and complex life-history with 3 stages : egg, larva and adult, of which the egg and larval stage are aquatic and the adult stage terrestrial. Thus the free-flying dragonfly or damselfly that we see around constitutes only one brief stage of its life; the other, often much longer part, is played out underwater, away from the eyes of us humans.



The life cycle of a dragonfly

AQUATIC STAGE

In most damselflies and some of the dragonflies (mainly Aeshnids), the eggs are elongated and are directly inserted into water plant tissues or submerged debris/mud, a mode of oviposition termed as endophytic. In case of most dragonflies, the eggs are round and are deposited directly over water (exophytic), either by dipping the abdomen in flight or by perching on logs or rocks. Freshly laid eggs are creamy white, gradually becoming darker with time. Eggs are laid in successive batches: a damselfly lays about 100-400 eggs, and dragonflies usually about several hundreds to thousands per

batch. Eggs hatch in 5-40 days in the tropics. Eggs of temperate species may over-winter and hatch in about 80-230 days. In many stream-dwelling dragonflies the eggs have a gelatinous substance which expands and becomes adhesive on contact with water. This helps the egg from being carried away far from its habitat by water currents. The egg hatches into a prolarva which in a few minutes develops into a true larva. The freshly emerged larva undergoes a series of developmental stages, anywhere from 9-15, each of which is called an instar. Odonate larvae are carnivorous, have healthy appetites and play crucial roles as highly effective predators in aquatic ecosystems. They have retractable jaws which can be thrown out to catch unsuspecting prey like mayfly nymphs, larvae of aquatic insects like midges, fish fingerlings, tadpoles or anything manageable which moves. Damselfly larvae are mostly long and slender with three long respiratory gills attached to the posterior, while dragonfly larvae are stouter and have respiratory gills inside their rectal chambers, thus virtually breathing through their anus ! This mechanism also enables them to propel themselves forward by expelling water out with pressure.

Once the wing pads are fully formed and the larvae becomes mature, it crawls out of the waterbody, climbing an emergent plant or exposed rock. Mostly, emergence happens during early morning. There, its larval skin splits along the back and the adult emerges out, wrinkled



and soft, in a process lasting about an hour or so, after which the body becomes hard and wings stiff. The larval case left behind, called exuvia, can often be seen attached to plant stems, rocks or fallen logs near water, and can be used for identifying species.

TERRESTRIAL STAGE

The newly emerged adult which is dull and colourless with crumpled glazy wings and curled thick abdomen is generally found near water. Almost immediately, the abdomen elongates and grows thinner and the wings expand as body fluid gets pumped into the veins. Within 10 minutes to an hour, the process is complete. After a further half hour to several hours, the body hardens and darkens and flight becomes possible.

The insect remains relatively soft for another day or so, a stage called the 'teneral', where sustained flight is not easy. Once the wings become fully hard and dry, it flies actively away into nearby areas



Freshly emerged dragonfly

till it becomes an adult or 'imago'. Sexual maturity is achieved in about one to four weeks time. In a few species, maturation period serves as a resting stage and lasts about 8-9 months. Like the larva, adult odonates are carnivorous and excellent aerial predators, capturing their prey (midges, small moths, mosquitoes, flies or even other odonates) in flight using their spiny legs. Their large multi-faceted eyes give them an almost 360° vision, aiding detection of prey. An added advantage is their unsurpassed capabilities of flight, driven by powerful



Common Clubtail showing uncoupled wings

muscles of the thorax which propel the fore and hindwings. Unlike moths, butterflies, wasps and bees, these are uncoupled – they are unattached to each other and can beat independently. This gives odonates the



Spider preying on dragonfly



Cannibalism

capability for extreme maneuverability, including sharp twists, turns and even flying backwards. However, odonates also have their predators which primarily consist of birds like Bee-eaters, Drongos etc., Frogs, Fishes, Spiders, Insects like Robber fly as also other cannibalistic odonates. They are also prone to infestation by ectoparasites like mites.

BEHAVIOUR

Once they become mature, male odonates return to areas in the vicinity of water and establish a territory, whose area depends generally on the size of the species. Often it is a few square metres as in the case of small *Agriocnemis* damselflies or long areas of shoreline as in the case of large Gomphids. Some are 'Perchers', preferring to sit and wait for their prey and females, while others



Copula

are 'Cruisers' or 'Patrollers', choosing to patrol their territory in sustained back and forth flight. Males actively chase away intruders and use a variety of visual cues and behavioural signals,

most prominent of which is 'wing-flashing', adopted by certain damselflies.

The females mostly spend their time away from water, foraging among vegetation, till they mature. Then they

arrive at waterbodies, advertising their readiness to mate by characteristic postures. Males respond, with competing males often fighting over a single female. She allows the victorious male to seize her by the occiput (in dragonflies) or by the prothorax (in damselflies) with its legs first and then the specialised anal appendages, both getting attached together like lock and key. This stage is called 'tandem position' or 'copula', which is followed by 'Sperm transfer' and then the 'Wheel position', during which the male transfers his sperms to the storage sacs in the female, who uses these to later fertilise the eggs as they are laid. In most dragonflies, the female breaks contact and lays eggs (often guarded by the male hovering nearby), while in most damselflies, the female lays eggs while still attached to the male.

Odonates also exhibit interesting thermoregulatory behaviour in response to the ambient temperature.



During cold mornings, they shiver their wings rapidly to raise the body temperature while during hot noon, they can be seen dipping their abdomen in water in flight. Many species have an interesting habit of perching with body and abdomen vertical to the ground to minimise the area of body surface directly exposed to the sun, in a characterisitic 'obelisk' pose. Behavioural studies on Indian odonates are scanty and this is one aspect which offers immense scope for those interested.

HABITAT SPECIFICITY & FLIGHT PERIODICITY

As explained earlier, odonates are inextricably linked to waterbodies of various kinds. Some species prefer standing waterbodies like reservoirs, lakes, backwaters, ponds or even seasonal rain water puddles while others prefer running water like rivers, rivulets, hill streams etc. The former tend to be widespread generalist species while the latter tend to be habitat specialists, with narrower distribution limits. Even within a habitat, there exists fine micro-habitat specificity for foraging, egg-laying etc., aspects which are very poorly known for Indian species.

Many species have a yearlong flight period, which essentially means that breeding, egg-laying and emergence happens year-round (with some peaks) with adults being seen throughout the year. Such species are called multivoltine. Similarly, those with two major flight periods and a single flight period are called Bivoltine and Univoltine respectively. Most univoltine species tend to be rare, habitat-specific and prone to habitat modification.

MIGRATION

Despite their tiny size, certain odonates also indulge in migratory flight. They range from large strong fliers like some Aeschnids (eg. *Hemianax epiphiger*) to tiny Ceonagrionids like the Pygmy Dartlet which have managed to colonise even oceanic islands, having been borne on strong sea winds. However, the most celebrated example among migratory odonates is *Pantala flavescens* commonly called the Wandering



Various types of Odonate habitats

Glider or Globe Skimmer because of their long flights. In fact, a recent study has found that this species is known to have the longest insect migration route recorded so far, spanning between India and Africa with stopovers in the Maldives and the Seychelle islands.

USEFULNESS OF ODONATES

Being supreme predators both during their adult and larval stages, odonates play crucial role in ecosystem functioning and serve to keep other insects including those harmful to humans (like mosquitos, blood-sucking flies, etc.) under control. In the urban areas of Thailand, larvae of the container breeding dragonfly, Granite Ghost (*Bradinopyga geminata*), which is also found commonly in our country, was successfully used to control *Aedes* mosquito, an important vector of the Dengue and Chikungunya fever. Though not quantified precisely, the number of crop pests like aphids, plant hoppers etc., which are predated upon by odonates must be enormous. Thus odonates play a valuable role in the biological control of agricultural pests.

Apart from functioning as predators in the ecosystem, their value as indicators of habitat quality has also been widely appreciated in recent times. Anecdotal observations suggest that some odonates are so habitat specific that even minor changes can lead to their disappearance. Recent studies in the W. Ghats have indicated that change in landuse patterns leads to change in odonate community structure. Broadly speaking, presence of Gomphids, Macromids, most Calopterygids, Chlorocyphids and Euphaeids indicate pure unpolluted waters and good habitat quality in general while that of generalist Libellulids, especially species like *Brachythemis contaminata* indicate presence of polluted waters and deteriorating habitats. Within Orissa, species like *Gomphidia* sp., *Heliogomphus promelas*, *Microgomphus torquatus*, *Dysphaea ethela*, *Caconura* sp., *Onycothemis testacea*, *Zygonyx iris* etc. have been noticed to indicate undisturbed habitats with very good water and forest quality.

ODONATES IN CULTURE AND FOLKLORE

Being easily observable and common insects, odonates have found mention in the culture and folklore of almost all civilizations. While they were objects of superstition and feared in parts of Europe, cultures of the Oriental region consider them as symbols of renewed growth and harmony. In America, a superstition was that dragonflies were capable of stitching the mouths, and sometimes the eyes and ears, of lying children, scolding women and cursing men. To the Chinese, they are an emblem of summer – but also a symbol of feebleness and instability. In Japan, they are revered and respected, being symbolic of happiness, strength, courage and success. To the Japanese, the dragonfly (Tombo) is an important cultural symbol and was believed to be the spirit of the rice plant and a harbinger of rich harvests. Akitsushima, which means Dragonfly Island, is an alternative name for Japan. In India, almost all regions have allusions to dragonflies. In the North, they are considered as messengers of rain, while in parts of Kerala, flocks of *Pantala flavescens* which emerge after rains is called 'Onathumbi' symbolising the splendour of the Onam festival. In Orissa too, there are folksongs which celebrate the beauty of dragonflies.

SOME FREQUENTLY ASKED QUESTIONS (FAQs)

1. **Can odonates bite or sting with their tail-tips ?** No, though they have biting mouthparts, no odonate pursues and bites humans. They do not have stings on their tail-tips; what appears so, are actually anal appendages used for mating.
2. **Are Odonates poisonous ?** No, they do not possess a poison gland and any kind of venom.
3. **Do they suck nectar from flowers ?** No, odonates lack sucking or piercing mouthparts. They are carnivorous, feeding largely on other insects.
4. **Is it true that they live only for a day ?** No. On an average, an adult dragonfly lives for 1-2 months and a damselfly lives for less than a month. However, in temperate areas, larval stages can last up to five years !
5. **Are they protected by law ?** As of now, no. One species though, is protected federally, being included in Schedule I of Wildlife Protection Act, 1972.

3. Odonate Research in Orissa

Orissa with its extremely diverse landscape, ranging from mountain ranges to mangrove forests is truly a ode watcher's paradise. It falls primarily within the Deccan Peninsula biogeographic zone but also has the Coastal Plains within its limits. Both have numerous and diverse odonate habitats, each with their own attendant odonate communities. Most of these, except for those in the southern region lie within an extensive Protected Area Network which contains 2 Tiger Reserves, 1 National Park and 18 Wildlife Sanctuaries, comprising 5.28% of the state's geographical area. Thus, by and large, the entire spectrum of odonate diversity in Orissa have a safe haven in these protected areas. As far as outside PA situation is concerned, the economy of the state still continues to be mostly rural and agrarian. Despite biotic pressures and industrialization, the pollution load in freshwater habitats are comparatively less. However, threats do exist, mainly deforestation, disappearance of wetlands and marshes, intensive aquaculture as also the increasing use of pesticides in paddy fields and homesteads. The urgent need of the hour is to document the odonate diversity in each of the representative habitat types, and establish baseline data for future comparison.

Odonate research in Orissa can be traced back all the way to the early 1900s when E.F. Laidlaw wrote about the odonates of Chilika lake (Laidlaw,1915). Subsequently, the dragonflies of Barkuda island was studied by the celebrated odonatologist F.C. Fraser in 1922. Post-independence, several collections were made in different parts of the state as part of expeditions undertaken periodically by Zoological Survey of India, the results of which were compiled in the State Fauna Series, in which 58 species were recorded (Srivastava & Das, 1987). Sporadic ZSI collections have also been carried out in Angul, Bolangir, Cuttack, Dhenkanal, Ganjam, Kalahandi, Keonjhar, Khurda, Koraput, Mayurbhanj, Sambalpur, Sundergarh and Puri, the details of which can be found in Mitra,

2002. Some of the recent studies include Sethy & Siddiqui, 2007, which recorded 16 species within Similipal Biosphere Reserve and Das *et al.*, 2010, which reported 31 species within Baripada Forest Division. The author has been studying the odonate fauna of the Similipal landscape in Mayurbhanj district intensively from mid 2006 till date, and has recorded 92 species. This includes several new records and range extensions for the state and peninsular India. Further, taxonomic description is under progress for some species, which are possibly new to science.

However, it has to be concluded that the state has unfortunately not received the due attention it requires, in terms of odonate research. Extensive potential areas still remain unexplored and await serious researchers. Hill streams of the E.Ghat ranges in Koraput and Malkangiri districts rank high in the list. Even relatively accessible places like Mangalajodi wetlands near Chilika lake need more intensive surveys. Interestingly, the Obscure Bambootail, *Indoneura obscura* (genus now changed to *Caconeura*), possibly the only species endemic to the Eastern Ghats, was described from its type locality, Koraput at an altitude of 2000 ft. Nothing further is known regarding this species, after its description in 1933. Similarly, no further information is available on the Insular Dartlet *Enallagma insula*, a species possibly endemic to the state, described from a single female collected from Chilika lake in 1920s (Fraser, 1923). Hence, systematic studies in the afore-mentioned sites are sure to yield interesting species, some even new to science.



Odonate collections in insect boxes

4.

**SPECIES DESCRIPTIONS :
DRAGONFLIES**

FAMILY GOMPHIDAE



Gomphids or Clubtails are medium or large-sized dragonflies which can be easily identified by eyes which are well separated and conspicuous black and yellow colouration. The family derives its name from the last abdominal segments which are bulbous, dilated or club-shaped in many of its members. They have characteristic anal appendages which help in separating different genera. Gomphids inhabit a wide variety of aquatic habitats, but most require flowing water like rivers and hill streams in forested habitat. Out of 90 species found in our country, 27 have been recorded from peninsular India. 9 species have been recorded in Orissa.

COMMON CLUBTAIL

Ictinogomphus rapax

	Abdomen	Wing	Wing Spot	Eye
Male	52 mm	40 mm	Black	Bluish grey
Female	50 mm	42-44 mm	Black	Bluish grey

Male : Large black and yellow dragonfly identified by its bold colouration, laterally projecting wing-like extensions on the 8th abdominal segment and widespread nature.

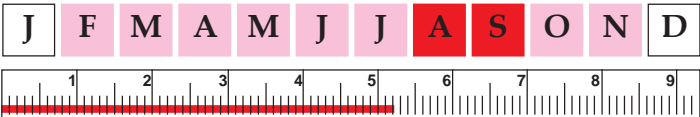
Female : Very similar but has stouter abdomen and more extensive yellow markings.

Habitat : Almost all types of wetlands including edges of ponds, lakes, reservoirs and sluggish canals/ rivers, except hill streams along dense forests.

Behaviour : Males easily seen on tips of branches over water, with a peculiar ability to perch even at the very tip of a reed. Makes patrolling flights along shoreline territories, chasing away intruding conspecifics aggressively, returning to a favourite perch. Readily comes to erected artificial perches. Obelisks in hot weather. Females rarely seen. Breeds mostly in standing water; pairing takes place on the wing. Numerous during post-monsoon months.

Distribution : All districts of the state. Throughout India except Northeast; Entire Oriental region.

Status : Common





DECCAN BOWTAIL

Macrogomphus annulatus

	Abdomen	Wing	Wing Spot	Eye
Male	53 mm	30 mm	Brownish black	Bottle green
Female	53 mm	32 mm	Similar	Similar

Male : A large black and yellow dragonfly told apart by bottle green eyes, long bow-shaped tail with characteristically elongated 9th abdominal segment.

Female : Similar to male but more extensive yellow colouration, with the 9th abdominal segment longer but the 10th segment shorter than male.

Habitat : Found along densely weeded lakes and edges of rivers in the plains.

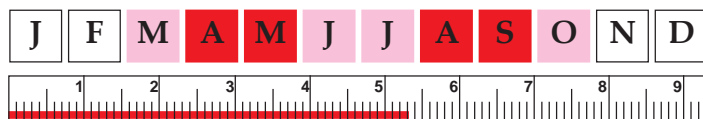
Behaviour : Males can be seen perched between tall reeds and grasses, almost never conspicuously at the tip like *I.rapax*. Females more elusive. Sometimes enters houses at night. Breeds in weedy ponds.

Distribution : Mayurbhanj, Khurda. In peninsular India.

Easy to spot at : Kanjia lake

Status : Uncommon

Remarks : New record for the state.





COMMON HOOKTAIL

Paragomphus lineatus

	Abdomen	Wing	Wing Spot	Eye
Male	32-37 mm	24-27 mm	Pale reddish brown	Bluish gery
Female	31-36 mm	24-27 mm	Similar but paler	Pale Bluish

Male : Medium-sized yellow and black dragonfly identified by the lateral expansions of 8th and 9th abdominal segments and diagnostic hook-shaped superior anal appendages.

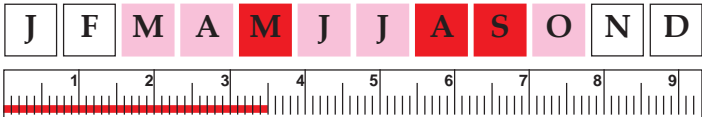
Female : Similar but duller in colour lacking lateral expansions to abdomen and the hooked tip.

Habitat : Lakes, reservoir-edges, ponds and river-sides.

Behaviour : Perches low, often on bare earth, damp sand or on rocks. Obelisks during hot weather.

Distribution : Dhenkanal, Koraput,Phulbani, Mayurbhanj. Throughout India.

Status : Common





T-MARKED RIVER CLUBTAIL

Gomphidia T-nigrum

	Abdomen	Wing	Wing Spot	Eye
Male	53 mm	38 mm	Yellow boarder with Black	Bluish grey
Female	53 mm	43 mm	Similar	Similar

Description : Male is a large black and yellow dragonfly with slender bow-shaped tail, blue eyes and diagnostic black 'T-shaped' mark on the upper side of the frons. Female is similar to male but with short anal appendages. Inhabits fast flowing rivulets flowing through dense forests. Males have large territories which they patrol, with fast flight along regular beats. Perches on tips of overhanging branches or mid-stream logs. Found in Northern India.

Easy to spot at : Palpala river, STR. **Status:** Rare.

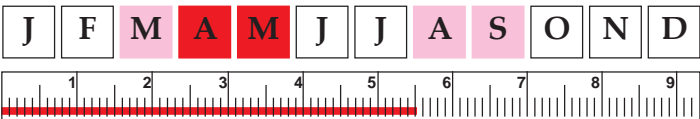
Remarks : New record for the state.

WILLIAMSON'S RIVER CLUBTAIL

Gomphidia williamsoni

	Abdomen	Wing	Wing Spot	Eye
Male	54 mm	43 mm	Blackish brown	Bottle Green
Female	54 mm	45 mm	Similar	Similar

Description : This species is very similar to the previous one, distinguished in the field by the bottle green eyes and differently marked thorax. Known from the W.Ghats, the behaviour is similar to *G.T-nigrum*. New record for the state. Very rare.





INDIAN LYRETAIL

Heliogomphus promelas

	Abdomen	Wing	Wing Spot	Eye
Male	42 mm	32 mm	Blackish brown	Bottle Green
Female	39-42 mm	35-38 mm	Similar	Similar

Male : Large black and yellow dragonfly with bottle green eyes, and diagnostic lyre-shaped superior anal appendages.

Female : Very similar to male but slight differences in abdominal patterns and differently shaped anal appendages.

Habitat : Clear fast-flowing hill streams in dense forest.

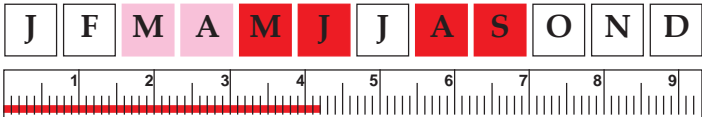
Behaviour : Males can be seen patrolling stretches of hill streams, perching for brief spells in between on fallen logs or sandy shores. Females almost never seen, comes to water only for ovipositing.

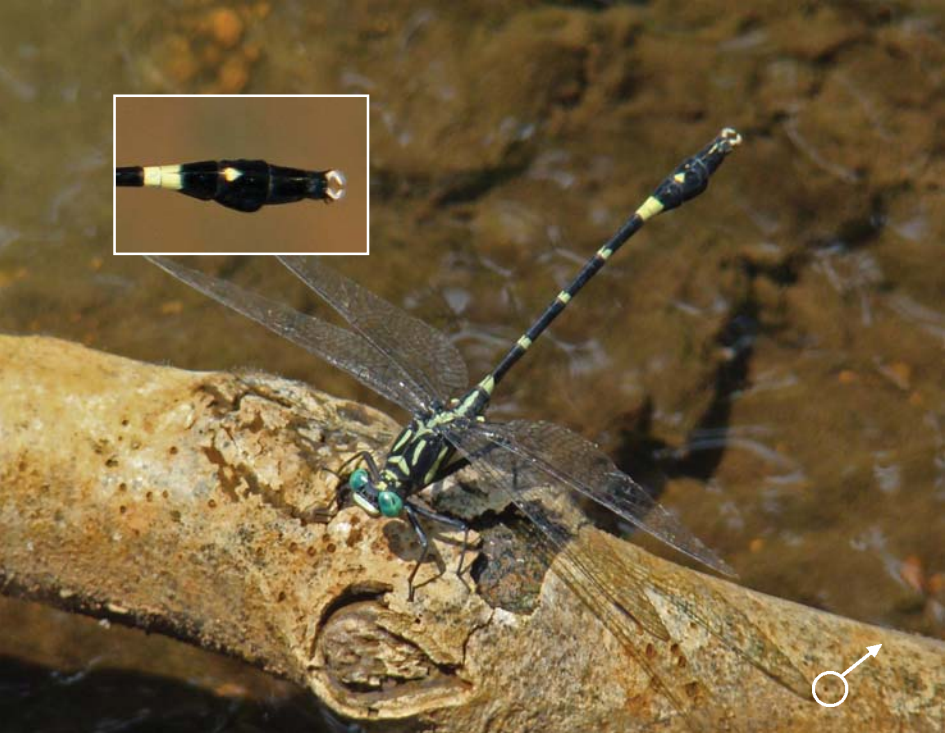
Distribution : W.Ghats.

Easy to spot at : W.Deo river, STR.

Status : Rare.

Remarks : New record for the state.





GIANT GREEN CLUBTAIL

Megalogomphus sp

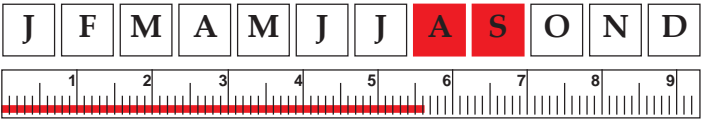
	Abdomen	Wing	Wing Spot	Eye
Male	53-56 mm	42-43 mm	Black	Yellowish Green
Female	52 mm	46 mm	Similar	Similar

Description : Very large fluorescent green dragonfly with greenish yellow eyes and broad black-ringed tail, with characteristic anal appendages typical of the genus.

Habitat & Behaviour : Males can be seen perching on shrubs, and exposed twigs overhanging water, like canals flowing through open cultivated areas.

Distribution : Two records, one in Keonjhar and the other in Mayurbhanj district.

Remarks : This is a new record of the genus in the state; further taxonomic investigation is required to establish the specific identity.





PYGMY CLUBTAIL

Microgomphus sp.

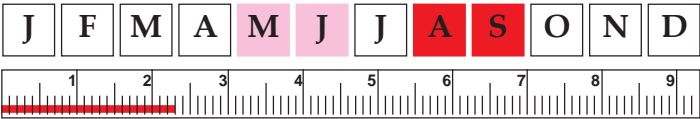
	Abdomen	Wing	Wing Spot	Eye
Male	22-24 mm	21 mm	Pale brown	Bottle Green
Female	27 mm	23 mm	Similar	Similar

Description : Small black and yellow dragonfly with slender abdomen ending in a bulging black tip; characteristically shaped anal appendages typical of the genus.

Habitat & Behaviour : Found along edges of hill streams and rivulets in forests. Males perch squat on rocks or moist sand, sometimes on sunspots in shady stretches.

Distribution : Only from Similipal hills, Mayurbhanj till date.

Remarks : This is a new record of the genus in the state. Though most characteristics match with *M. torquatus*, there are differences in anal appendages and thoracic markings. Hence, further taxonomic investigation is required to establish the specific identity.





FAMILY AESHNIDAE



Aeshnids or Darners are medium or large-sized dragonflies which can be told apart by eyes which meet and fuse all along their margins dorsally, abdomen which is often longer than the wings and characteristic long anal appendages. The body colours are often green, blue or brown which is non-metallic. Aeshnids are found in a wide variety of habitats, but seem to prefer standing waterbodies or those with very less flow. Out of 42 species found in our country, 8 are known from peninsular India. 7 species have been recorded in Orissa.

RUSTY DARNER

Anaciaeschna jaspidea

	Abdomen	Wing	Wing Spot	Eye
Male	43-48 mm	41-46 mm	Bright ochreous	Bluish grey pale yellow
Female	53 mm	43 mm	Similar	Similar

Male : A large reddish-brown dragonfly with two greenish yellowish stripes on the sides of the thorax, transparent wings with a pale amber-yellow tint.

Female : Similar to male but with wings tinted a deeper amber-yellow or brownish in older specimens.

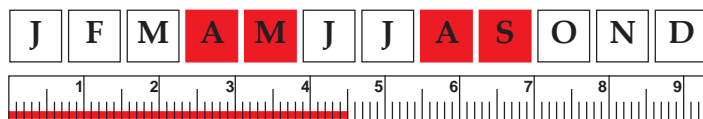
Habitat : Found from the plains to the hills.

Behaviour : Crepuscular in habit; flies actively during dusk. Stays within dense vegetation during day, 'hanging' from bamboo or shrubbery.

Distribution : Similipal. All over India and Oriental region.

Status : Uncommon.

Remarks : New record for Orissa.





BLUE-TAILED GREEN DARNER

Anax guttatus

	Abdomen	Wing	Wing Spot	Eye
Male	56-62 mm	50-54 mm	Reddish	Blue with yellow and black behind
Female	53 mm	43 mm	Similar	Similar

Male : Very large green dragonfly with turquoise blue on 2nd abdominal segment, orange markings on abdomen and large amber yellow patch on hindwing.

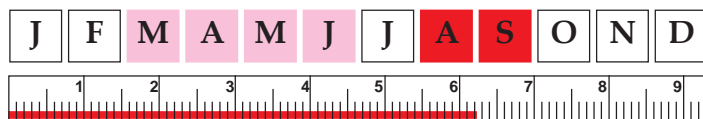
Female : Similar but lacks amber wing patch with four square blue patches on second abdominal segment.

Habitat : Near marshes, weedy ponds and grassy banks of reservoirs.

Behaviour : Largely diurnal; adults can be seen in strong swift flight, skimming low over ponds, river banks and marshes, turning abruptly to catch an insect in flight, the blue base to abdomen showing up prominently like a beacon. Rarely found except in flight; 'hangs' to twigs and branches in waterside vegetation; comes to light at night during rainy season.

Distribution : Keonjhar, Chilika and Mayurbhanj. Throughout India. Oriental region.

Status : Relatively common.



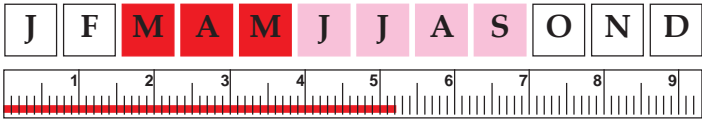


BLUE DARNER

Anax immaculifrons

	Abdomen	Wing	Wing Spot	Eye
Male	52-55 mm	55 mm	Reddish brown	Sapphire blue
Female	56 mm	58-60 mm	Reddish brown	Greenish

- Male** : Very large bluish green dragonfly with black striped thorax and bright sapphire blue eyes.
- Female** : Similar, but with eyes greenish and colours of thorax and abdomen duller.
- Habitat** : Slow-flowing hill streams and check-dams in forest areas, mostly in mid-elevation hills.
- Behaviour** : Male patrols actively along its beat, periodically hovering to catch emerging insects; sometimes several seen together along the same stream. Female less seen, mostly while ovipositing in submerged plants or debris among stagnant water or sluggish shores.
- Distribution** : Bargarh, Sambalpur and Mayurbhanj. Throughout India and Oriental region.
- Status** : Locally Common.
- Remarks** : New record for Orissa.





BROWN DARNER

Gynacantha dravida

	Abdomen	Wing	Wing Spot	Eye
Male	50-58 mm	43-50 mm	Reddish brown	Olivaceous
Female	48-55 mm	44-50 mm	Similar	Similar

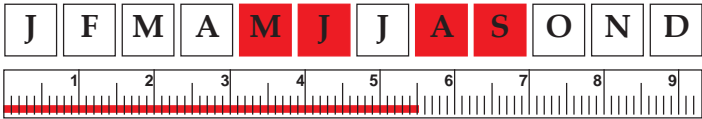
Description : Male is a very large olivaceous brown dragonfly with slender black-marked olive brown tail and diagnostic broad black ‘T’ shaped mark on frons. Female is similar but with duller markings. Lives around marshes, swamps, weedy ponds. Crepuscular, comes to light at night. Distributed throughout India; Oriental region. New record for Orissa from Mayurbhanj.

EMPEROR DARNER

Anax imperator

	Abdomen	Wing	Wing Spot	Eye
Male	54-56 mm	46-50 mm	Bright ochreous	Bluish green
Female	50-52 mm	49-52 mm	Similar	Similar

Description : Male is a very large bluish green dragonfly with pale blue abdomen marked with jagged mid-dorsal black stripe and costal margin of wings bright yellow. Female is similar to male but with shorter, stouter abdomen and evenly yellow-tinted wings. Inhabits marshy areas, lake edges, mainly in higher elevations. Found in Europe to C.Asia and parts of Africa. Only record is from Mayurbhanj (ZSI).





Dr. Ulrich Roder

PARAKEET DARNER

Gynacantha bayadera

	Abdomen	Wing	Wing Spot	Eye
Male	46 mm	44 mm	Bright olive	Green
Female	45 mm	43-45 mm	Similar	Similar

Male : Large slender dragonfly with abdomen constricted at the 3rd segment and coloured a uniform parakeet green, sometimes turning olivaceous.

Female : Similar but end segments of abdomen reddish brown.

Habitat : Overgrown and weedy ponds and lakes. Plains and mid-elevations.

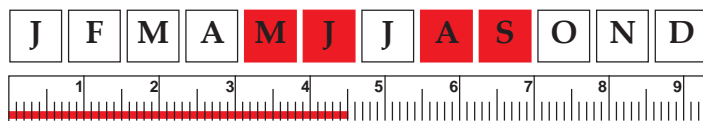
Behaviour : Crepuscular, often attracted to lights. Sometimes seen hawking for prey, rapidly flying along regular circuits, almost skimming the ground above forest paths, early at dawn. Roosts during day by 'hanging' from twigs inside shady vegetation.

Distribution : Mayurbhanj, Khurda, Bargarh, Sambalpur. All over India and Oriental region

Easy to spot at : Kahadar, Debrigarh WLS.

Status : Locally common.

Remarks : New record for Orissa.





VAGRANT DARNER

Hemianax epiphiger

	Abdomen	Wing	Wing Spot	Eye
Male	42 mm	44 mm	Bright ochreous	Olivaceous, paling below
Female	40 mm	46 mm	Similar	Similar

Male : Fairly large olive brown dragonfly with bright ochreous abdomen marked with azure-blue, red and brown. Amber yellow patch on hindwing.

Female : Very similar to male.

Habitat : Shallow weedy ponds and marshes.

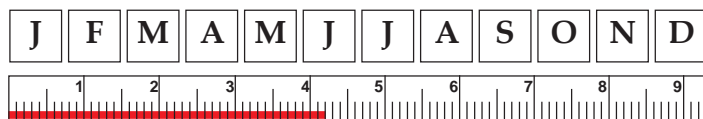
Behaviour : Shows marked migratory tendencies; associates with other Aeschnids like *Anax parthenope*. Breeds in marshes and ponds.

Distribution : Cuttack, Gopalpur. Most parts of India, especially the West Coast. S.Europe, parts of Africa and N.Asia

Status : Undetermined.

Remarks : Also called Vagrant Emperor.

Two records by ZSI. Flight period in Orissa not known.





FAMILY LIBELLULIDAE



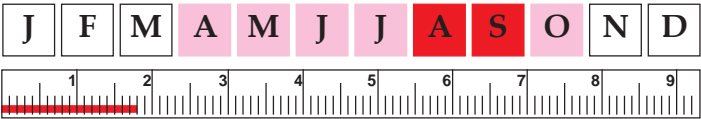
Libellulids or Skimmers which come in all sizes from small to large and almost all colours, are the most heterogenous and species-rich family among dragonflies. The eyes are more or less broadly joined on top. The habitat choice also varies hugely and encompasses almost all forms of wetlands from garden ponds, marshes, lakes, rivers and even seasonal rainwater puddles. Out of the 95 species found within Indian limits, 50 have been recorded from the peninsular region. 45 species have been recorded from Orissa.

TRUMPET TAIL

Acisoma panorpoides

	Abdomen	Wing	Wing Spot	Eye
Male	15-18 mm	16-21 mm	Pale yellow	Blue
Female	15-18 mm	17-22 mm	Pale yellow	Greenish

- Male** : Small blue dragonfly with characteristically bulging abdomen, resembling a trumpet.
- Female** : Similar to male but blue replaced with greenish yellow.
- Habitat** : Edges of weedy lakes, ponds and marshes.
- Behaviour** : Flies weakly and low, often perching in exposed aquatic vegetation and water hyacinth leaves. Never found away from water.
- Distribution** : Bolangir, Cuttack, Khurda, Mayurbhanj, Puri. Widely distributed throughout Oriental region.
- Status** : Common.





SCARLET MARSH HAWK

Aethriamanta brevipennis

	Abdomen	Wing	Wing Spot	Eye
Male	17-20 mm	23-26 mm	Blackish brown	Dark reddish brown
Female	16 mm	23 mm	Greyish white	Similar

Male : Small dragonfly with black thorax and broad scarlet abdomen.

Female : Same shape as male but golden olive with black bands on abdomen.

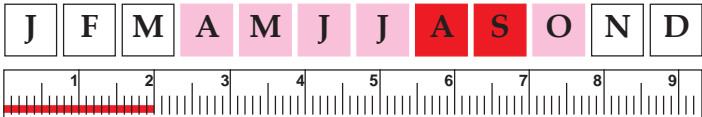
Habitat : Overgrown weedy lakes and ponds.

Behaviour : Male has favourite perches and can be often seen obelisking. Females and sometimes males too can be seen away from water. Though many field guides describe them as shy and difficult to approach, in Orissa they allow very close proximity. Have colonised urban areas, where they frequent lily ponds and show a liking for perching on wires or cloth lines.

Distribution : Cuttack, Khurda, Sambalpur, Mayurbhanj. W.Ghats, N.E India and parts of SE Asia.

Easy to spot at : Kanjia lake.

Status : Locally common





RUFOUS-BACKED MARSH HAWK

Brachydiplax chalybea

	Abdomen	Wing	Wing Spot	Eye
Male	21-25 mm	26-30 mm	Yellow with black border	Deep brown & pale yellow
Female	12-30 mm	27-29 mm	Similar	Similar

Male : Medium sized dragonfly with chestnut sides to thorax and bluish white abdomen with brown base to transparent wings.

Female : Similar to male in size but abdomen is ochreous in colour with amber tint to wing bases.

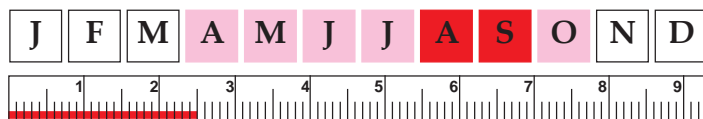
Habitat : Marshes, ponds, lakes and edges of slow-flowing rivers.

Behaviour : Male always found perching near water; occasionally hovers. Female also seen a bit away from water.

Distribution : Cuttack, Khurda, Mayurbhanj.
W.Ghats, NE India and parts of SE Asia.

Easily seen at : Kanjia lake.

Status : Common.





LITTLE BLUE MARSH HAWK

Brachydiplax sbrina

	Abdomen	Wing	Wing Spot	Eye
Male	20-24 mm	25-28 mm	Yellow with black border	Coffee brown & pale yellow
Female	16-22 mm	22-26 mm	Similar	Grey paling below

Male : Small dragonfly with blackish thorax and pruinosed abdomen with black tip.

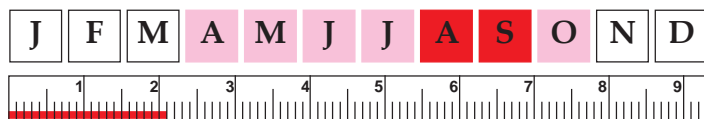
Female : Similar to male in size but yellow thorax with black markings.

Habitat : Marshes, ponds and sluggish rivers.

Behaviour : Very similar to the earlier species. Males can be seen perching on grass blades or other vegetation near weedy ponds. Often hovers while flying.

Distribution : Cuttack, Chilika, Khurda, Mayurbhanj, Sambalpur. Peninsular and E.India; parts of SE Asia.

Status : Locally common.





EMERALD-FLANKED MARSH HAWK

Brachydiplax farinosa

	Abdomen	Wing	Wing Spot	Eye
Male	18-19 mm	22-25 mm	Greyish yellow	Blackish brown
Female	17-18 mm	22-26 mm	Similar	Similar

Male : Small greyish blue dragonfly with metallic green thorax (sometimes pruinosed in adults) and black tipped abdomen. Juvenile males are black and pale yellow and lack the ashy colouration. Very similar to *B.sobrina*, but smaller and darker in colour.

Female : Different from male; pale yellow marked with metallic black stripes.

Habitat : Marshes, swamps, weedy ponds and edges of paddy fields.

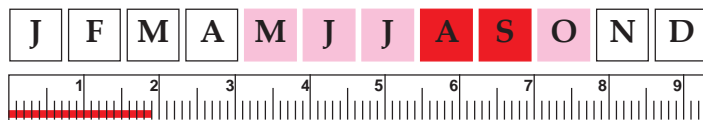
Behaviour : Though similar to the next species, the markedly smaller size and emerald sides to thorax immediately tells it apart; males are very localised and found in the same puddle day after day. Females are found away from water in nearby scrub jungle and cultivation.

Distribution : Mayurbhanj. Primarily Eastern and NE India; parts of SE Asia.

Easy to see at : Ranibandh, Mayurbhanj.

Status : Uncommon.

Remarks : New record for Orissa.





DITCH JEWEL

Brachythemis contaminata

	Abdomen	Wing	Wing Spot	Eye
Male	18-21 mm	20-23 mm	Rusty brown	Pale brown & bluish grey
Female	18-20 mm	22-25 mm	Yellowish	Pale yellow

Male : Small dragonfly with reddish abdomen and broad basal orange patch on wings.

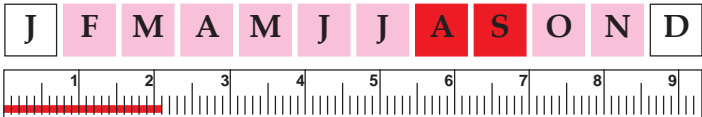
Female : Similar to male but with brown abdomen with black broken dorsal stripes and narrow yellow base to wings.

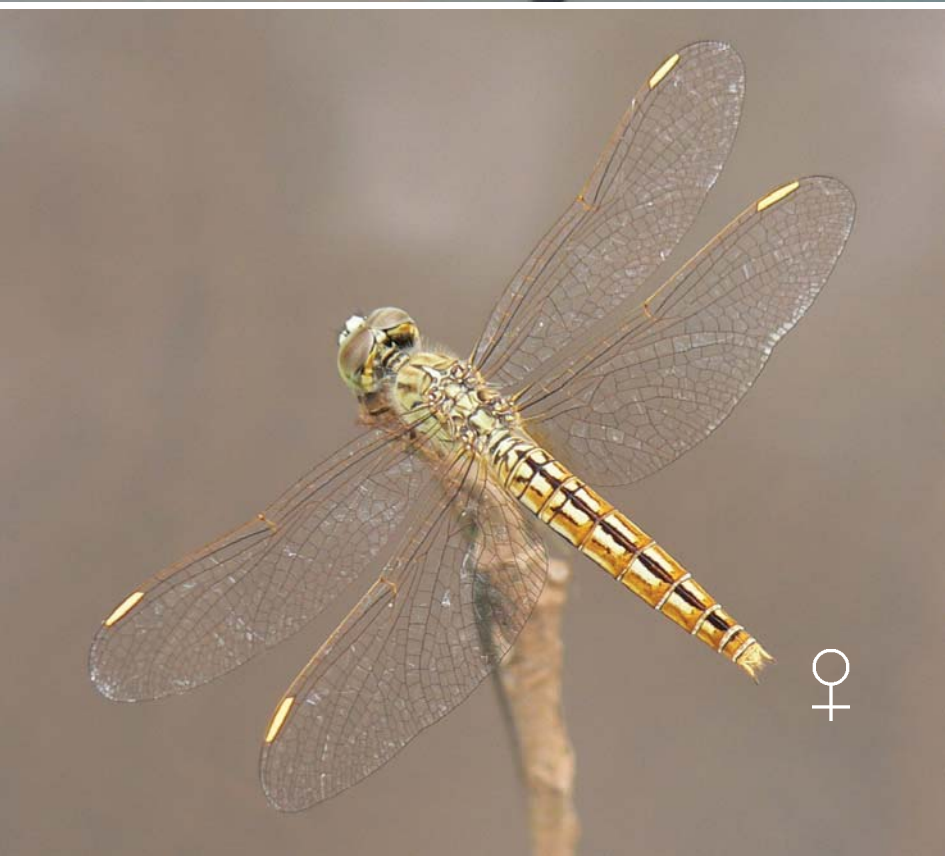
Habitat : Any kind of standing or sluggishly flowing waterbody including polluted drains and ditches.

Behaviour : Flies and perches close to the ground or on emergent weeds.

Distribution : Widespread. Specifically recorded from Bolangir, Chilika, Keonjhar, Mayurbhanj, Sundergarh. All over India and Oriental region.

Status : Common.





GRANITE GHOST

Bradinopyga geminata

	Abdomen	Wing	Wing Spot	Eye
Male	26-29 mm	33-36 mm	Black with white on both side	Brown above Greyish below
Female	26-29 mm	32-36 mm	Similar	Similar

Male : Medium-sized greyish dragonfly with cryptic black and white markings.

Female : Very similar to male but with slightly stouter abdomen.

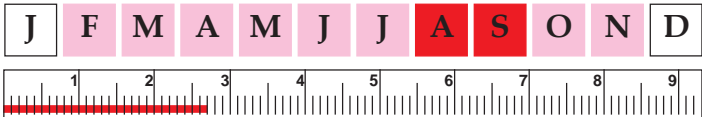
Habitat : Rocky gorges/pools or urban tanks or wells.

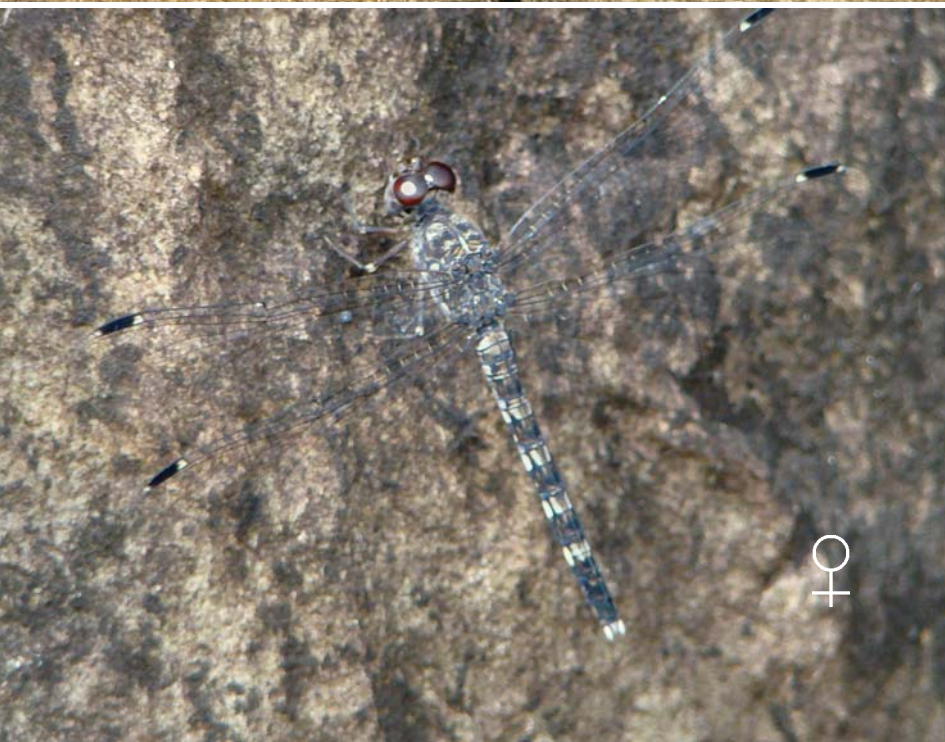
Behaviour : Perches on granite walls, rocky overhangs etc. where its oblitative colouration makes it difficult to spot. Breeds even in urban environments in overhead tanks and ornamental fish ponds.

Distribution : Widespread. Specifically recorded from Bargarh, Bolangir, Puri, Khurda, Sambalpur, Mayurbhanj. Throughout India and the Oriental region.

Easily seen at : Ramtirtha, Jashipur.

Status : Common.



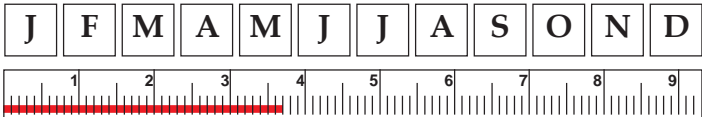


GIANT FOREST SKIMMER

Camacinia gigantea

	Abdomen	Wing	Wing Spot	Eye
Male	32-37 mm	45-53 mm	Reddish brown	Dark Reddish brown
Female	32-35 mm	47-55 mm	Similar	Pale Red

- Male** : Large rusty brown dragonfly with broad dark brown wings, transparent on outer one-third till tip.
- Female** : Similar but duller coloured and pale brown wing patch.
- Habitat** : Swampy areas and shallow reedy stagnant waterbodies near forests.
- Behaviour** : Males seen in sustained flight or perched on exposed twigs. Females seen less often and stays within the confines of the reeds, coming to water only for oviposition.
- Distribution** : Mayurbhanj. North, Central and NE India. Elsewhere in parts of SE Asia.
- Status** : Very rare.
- Remarks** : Single record from Jamuna, Similipal. Flight period not known. New record for Orissa.





EMERALD-BANDED SKIMMER

Cratilla lineata

	Abdomen	Wing	Wing Spot	Eye
Male	30-32 mm	35-38 mm	Yellowish white	Dark Reddish brown
Female	31-32 mm	37-41 mm	Similar	Similar

Male : Medium-sized cream yellow dragonfly with green thoracic stripes and narrow stripes on abdomen.

Female : Similar but dull coloured.

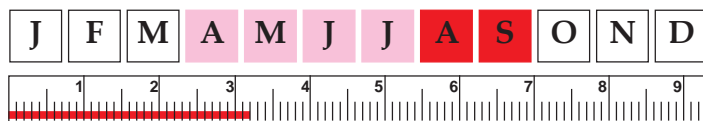
Habitat : Forests in plains.

Behaviour : Males are found perched near seasonal puddles inside forests or along paths inside woodlands. Females often seen away from water, but always inside forests.

Distribution : Ganjam, Khurda, Mayurbhanj. Wetter parts of India. Entire Oriental region.

Easy to spot at : UBK, Similipal.

Status : Uncommon.





RUDDY MARSH SKIMMER

Crocothemis servilia

	Abdomen	Wing	Wing Spot	Eye
Male	24-25 mm	27-38 mm	Dark brown white	Brown above olivaceous below
Female	25-32 mm	31-37 mm	Similar	Paler

Male : Medium sized blood red dragonfly with a thin black line along the mid-dorsal abdomen.

Female : Similar but yellowish brown, with broader black line.

Habitat : Ponds, ditches, irrigation canals, lake and river edges. Also paddy fields.

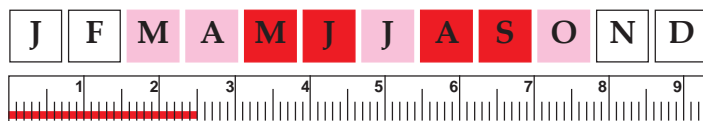
Behaviour : Males can be seen perching along their habitats on exposed perches; females seen more away from water and low near ground.

Distribution : Widespread in all districts. Throughout India. Oriental and Australian region.

Status : Common.



Immature Male





BLACK-TIPPED GROUND SKIMMER

Diplacodes nebulosa

	Abdomen	Wing	Wing Spot	Eye
Male	15-17 mm	17-19 mm	Black	Coffee brown greyish yellow
Female	14-15 mm	18 mm	Similar	Reddish brown

Male : Small greyish black dragonfly with black tipped transparent wings. Subadult male similar to female, but with black-tipped wing.

Female : Small with black stripes on yellowish cream body, with entirely transparent wings.

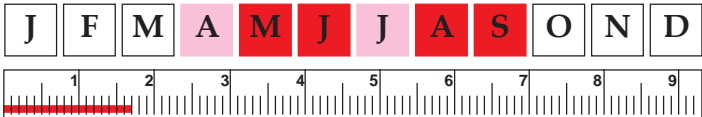
Habitat : Weedy swamps and ponds.

Behaviour : Always found near water, often settled on aquatic vegetation close to water or grass blades close to ground.

Distribution : Angul, Bolangir, Dhenkanal, Khurda, Mayurbhanj. Widely but patchily distributed in India. Oriental and Australian regions

Easy to spot at : Kanjia lake.

Status : Uncommon.





GROUND SKIMMER

Diplacodes trivialis

	Abdomen	Wing	Wing Spot	Eye
Male	19-22 mm	22-23 mm	Dark grey or Black	Reddish brown & pale bluish
Female	18-20 mm	22-24 mm	Similar	Paler

Male : Small bluish dragonfly with black markings on thorax and abdomen in adult; Similar to females.

Female : Yellowish green ground colour marked with black in sub-adults

Habitat : Wide array of wetlands, open fields and urban gardens.

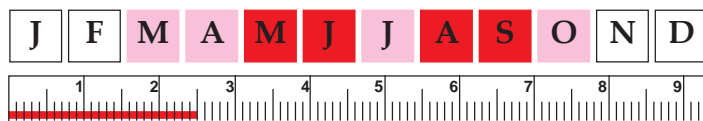
Behaviour : Always found close to the ground as the name suggests; seen along pathways, meadows, playgrounds or even homesteads; can be seen well away from water.

Distribution : Widespread in all districts. Throughtout India. Oriental region and Pacific areas.

Status : Very common.



Copula





AMBER-WINGED MARSH GLIDER

Hydrobasileus croceus

	Abdomen	Wing	Wing Spot	Eye
Male	29-33 mm	40-42 mm	Rusty Brown	Reddish brown & yellowish
Female	28-34 mm	42-48 mm	Similar	Similar

Male : Large brownish dragonfly with reddish amber hued wings with a characteristic 'W' shaped patch on lower margin of hindwings.

Female : Similar but with stouter abdomen.

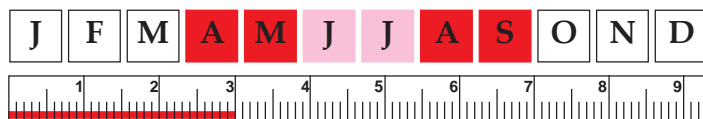
Habitat : Weedy ponds, lake edges, marshes.

Behaviour : Can be seen in soaring flight above its habitat, sometimes in swarms, often in the company of Trotters Tramea sp. 'Hangs' from twigs inside dense shrubbery.

Distribution : Chilika, Mayurbhanj, Sambalpur, Khurda. Patchily but widely distributed in India and SE Asia.

Easy to spot at : Kanjia lake.

Status : Uncommon.





BLUE HAWKLET

Hylaeothemis c.f. indica

	Abdomen	Wing	Wing Spot	Eye
Male	23-32 mm	28-32 mm	Dark reddish	Violetish black
Female	24-26 mm	29-33 mm	Similar	Grey

Male : Small blue and black dragonfly with blue eyes; sub-adult males resemble females.

Female : Size and patterns like male but blue replaced by yellow, and stouter abdomen with laterally expanded tips.

Habitat : Seepages, edges of slow-flowing hill streams, always in dense forests.

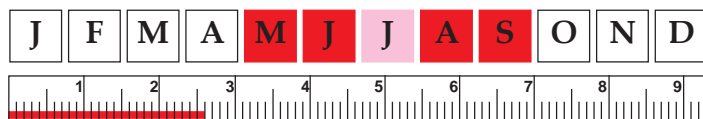
Behaviour : Males can be seen perching on low vegetation close to water. Female sometimes seen away from water.

Distribution : Kotgarh, Similipal. Restricted to W.Ghats and parts of E.Ghats.

Easy to spot at : Jenabil, STR.

Status : Uncommon.

Remarks : Further studies are required to ascertain whether this species is actually *H.indica*, *H.gardeneri* or a new species altogether.





ESTUARINE SKIMMER

Macrodiplax cora

	Abdomen	Wing	Wing Spot	Eye
Male	22-25 mm	30-32 mm	Rusty brown	Reddish brown pale yellow
Female	24-25 mm	32 mm	Brown	Reddish brown

Male : Medium-sized golden brown dragonfly with black bars on reddish yellow abdomen.

Female : Similar, but reddish tinge on abdomen absent.

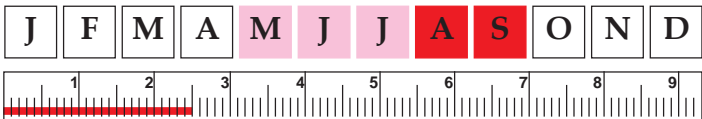
Habitat : Mostly along coasts, lagoons, estuaries and brackish waters along the East coast; also wanders inland during post-monsoons.

Behaviour : Males can be seen perched on twigs near water, sometimes chasing away intruders. Females more retiring. Though predominantly a coastal species, can be sometimes seen far inland during post-monsoon period.

Distribution : Chilika, Puri, Mayurbhanj. Mostly coastal areas of India. Coasts of Africa, Oceania, Australia and S.Asia.

Easy to spot at : Chilika lake.

Status : Uncommon.





ASIATIC BLOODTAIL

Lathrecista asiatica

	Abdomen	Wing	Wing Spot	Eye
Male	27-32 mm	33-37 mm	Reddish brown	Browna bove & bluish grey below
Female	27-32 mm	34-36 mm	Similar	Similar

Male : Medium-sized dragonfly with ashy black thorax and thin blood red abdomen. Sub-adult males have brownish thorax with yellowish stripes laterally.

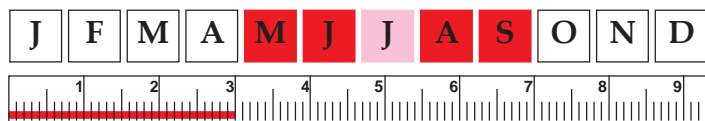
Female : Similar but abdomen is stouter, brown with mid-dorsal yellowish stripe and black lateral stripes.

Habitat : Near puddles, ponds and check-dams in well-wooded areas and forests.

Behaviour : Males seen perching, sometimes quite high up; females seldom seen.

Distribution : Bolangir, Bargarh, Sambalpur, Khurda, Mayurbhanj. Entire Indian and Oriental region.

Status : Relatively common.





FULVOUS FOREST SKIMMER

Neurothemis fulvia

	Abdomen	Wing	Wing Spot	Eye
Male	21-26 mm	27-32 mm	Dark Reddish brown	Reddish brown above Golden brown below
Female	20-24 mm	26-32 mm	Yellowish brown	Pale brown

Male : Medium-sized dragonfly with rust coloured body and rusty red wings with transparent edges.

Female : Polymorphic. Most are similar to male, but with much paler colouration on body and wings.

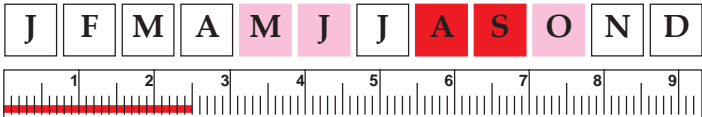
Habitat : Open patches, tree-fall gaps and marshes within or at the edges of moist forest areas.

Behaviour : Perches with their typical ‘drop-winged’ manner on vegetation; sometimes found gregariously.

Distribution : Khurda, Mayurbhanj. Wetter parts of India. Oriental region.

Easy to spot at : Palpala, STR

Status : Locally common.





RUDDY MEADOW SKIMMER

Neurothemis intermedia

	Abdomen	Wing	Wing Spot	Eye
Male	22-24 mm	24-27 mm	Bright Reddish brown	Reddish brown above Yellowish brown below
Female	21-24 mm	25-28 mm	Similar	Paler

Male : Medium sized brownish dragonfly with a broad amber patch at base of hindwings.

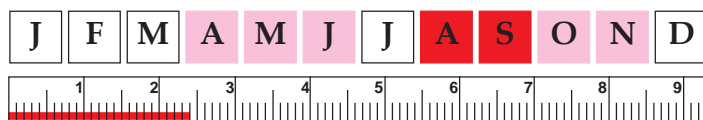
Female : Similar but lateral lines on abdomen more clear.

Habitat : Grassland-forest edges, meadows or open patches inside forests.

Behaviour : Can be seen perched low or at medium height, often inside dry forests, away from water.

Distribution : Widespread in most districts. Throughout India and E.Asia.

Status : Locally Common.





PIED PADDY SKIMMER

Neurothemis tullia

	Abdomen	Wing	Wing Spot	Eye
Male	16-20 mm	19-23 mm	Dull brown	Pale brown above Olivaceous below
Female	16-19 mm	20-23 mm	Similar	Paler

Male : Medium sized pied dragonfly, unmistakable with black and white wings.

Female : Distinct from male; much paler patterns.

Habitat : Wetland edges, weedy marshes and paddyfields.

Behaviour : Perches low near wetlands; weakly flutters away to a nearby perch on being disturbed.

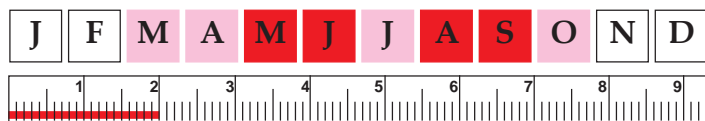
Distribution : Widespread in most districts. Oriental region.

Easy to spot at : Kanjia lake.

Status : Locally common.



Immature Male





STELLATE RIVER HAWK

Onychothemis testacea

	Abdomen	Wing	Wing Spot	Eye
Male	34-36 mm	40-42 mm	Black	Emerald Green
Female	36 mm	42-44 mm	Not known	Not known

Male : Large black and yellow dragonfly with stout abdomen.

Female : Similar to male.

Habitat : Edges of hill streams and rivulets flowing through shady dense forests.

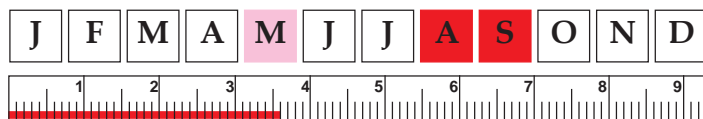
Behaviour : Males perch on twigs overhanging water, aggressively chasing away other dragonflies.

Distribution : W.Ghats, NE India and Sri Lanka.

Easy to spot at : Satnalia nallah, STR.

Status : Very rare.

Remarks : New record for the state. Only recorded from one hill-stream in Pithabata, STR.





BLUE-TAILED FOREST HAWK

Orthetrum triangulare

	Abdomen	Wing	Wing Spot	Eye
Male	29-33 mm	37-41 mm	Black	Dark blue
Female	29-32 mm	37 mm	Brownish black	Brown

Male : Medium sized robust dragonfly with black thorax, blackish triangular patch at the base of hindwing and black-tipped broad blue tail.

Female : Very different; olivaceous green thorax with lateral yellow stripes and wing-base tinted with yellow.

Habitat : Along edges of streams, trickles and seepages in the hills.

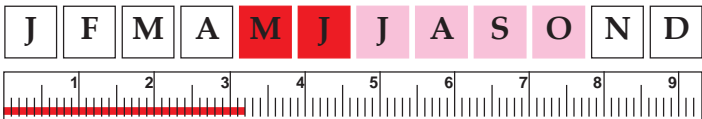
Behaviour : Very sedentary; found day after day at the same perch, has a liking for sunlit spots in otherwise shady environs.

Distribution : Mayurbhanj. Himalayas, W.Ghats and NE India; Oriental region.

Easy to spot at : Tarinibilla, STR.

Status : Rare.

Remarks : New record for the state.





BLUE MARSH HAWK

Orthetrum glaucum

	Abdomen	Wing	Wing Spot	Eye
Male	29-35 mm	33-40 mm	Dark reddish brown	Dark green capped with reddish brown
Female	28-32 mm	32-37 mm	Light brown	Paler

Male : Medium sized dragonfly with greyish black thorax and blue tail

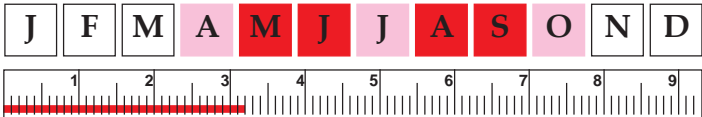
Female : Very different from male, with olivaceous thorax and reddish brown abdomen with a greenish yellow mid-dorsal stripe on thorax.

Habitat : Marshes and swamps inside or at the edge of forests.

Behaviour : Perch close to ground or at medium height; males have favourite perches and small territories and are readily seen while females are reclusive.

Distribution : Ganjam, Mayurbhanj, Sambalpur. Wetter areas of India. Oriental region.

Status : Locally common.





TRICOLOURED MARSH HAWK

Orthetrum luzonicum

	Abdomen	Wing	Wing Spot	Eye
Male	28-30 mm	30-32 mm	Yellowish	Bluish green with brownish spots
Female	28-32 mm	30-32 mm	Similar	Brownish

Male : Medium sized dragonfly with olivaceous thorax marked with brown and yellow and slender blue abdomen. Aged males develop pale blue pruinescence, appearing blue throughout.

Female : Very different; brownish green with yellowish marks on thorax and black lateral lines on thin yellowish abdomen.

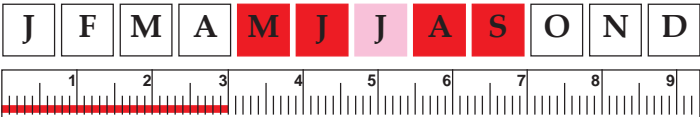
Habitat : Marshes, swamps and edges of wetlands in well-wooded areas, particularly in mid-elevations.

Behaviour : Seen perching low, often on herbage and even short grass.

Distribution : Bolangir, Kotgarh, Mayurbhanj. Throughout wetter parts of India. Parts of SE Asia.

Easy to spot at : Jamuna meadow, STR.

Status : Locally common.





CRIMSON-TAILED MARSH HAWK

Orthetrum pruinsum

	Abdomen	Wing	Wing Spot	Eye
Male	28-31 mm	32-36 mm	Reddish brown	Black and bluish grey
Female	30 mm	37 mm	Similar	Greyish brown

Male : Medium sized dragonfly with reddish brown thorax and pinkish red abdomen; aged individuals have dull purplish thorax due to pruinescence.

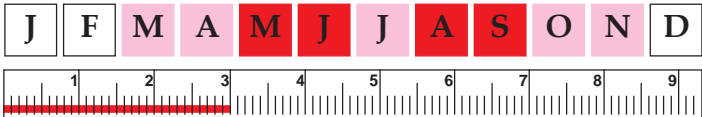
Female : Very different; dull ochre brown thorax with lateral brown stripes.

Habitat : Most kinds of standing and flowing water bodies in the plains.

Behaviour : Males easily spotted due to their colour; allows close approach.

Distribution : Widespread almost in all districts, Throughout India; Oriental region.

Status : Common.





GREEN MARSH HAWK

Orthetrum sabina

	Abdomen	Wing	Wing Spot	Eye
Male	30-36 mm	30-36 mm	Black with reddish brown	Green mottled with black
Female	32-35 mm	31-35 mm	Similar	Similar

Male : Medium sized greenish yellow dragonfly with black bold stripes on thorax and pied abdomen.

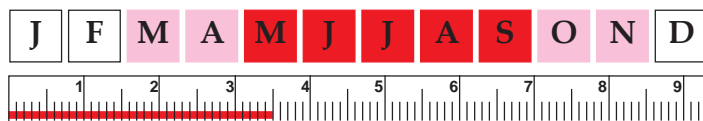
Female : Very similar to male, but thinner tip to abdomen.

Habitat : All types of waterbodies from plains to hills.

Behaviour : One of the most common and readily seen species, even away from water in gardens; Perches for long time on branches, twigs, rocks or ground. Voracious predator, taking a range of insects and odonates (including conspecifics). Frequently enters houses at night. Large swarms seen in summer, near stagnant rocky pools in rivers.

Distribution : Widespread in almost all districts. Throughout India. Ethiopian, Australian and Oriental regions.

Status : Very common.



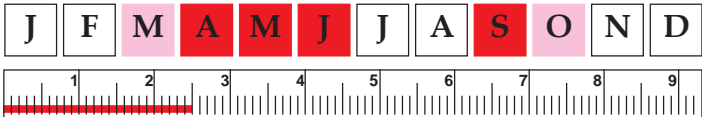


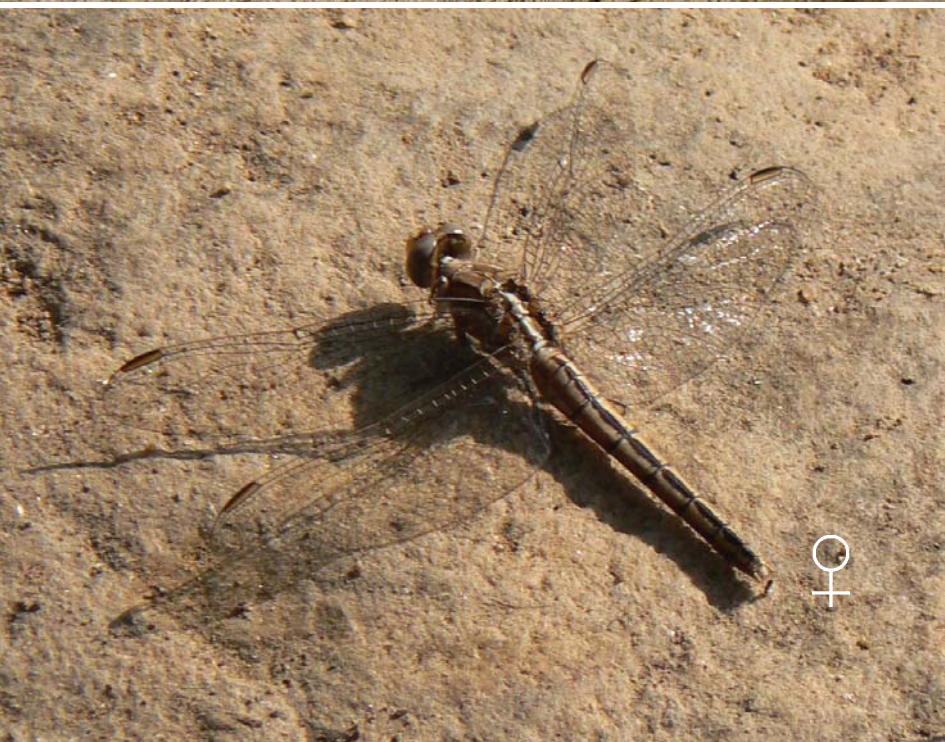
TAENIOLATE MARSH HAWK

Orthetrum taeniolatum

	Abdomen	Wing	Wing Spot	Eye
Male	22-25 mm	25-27 mm	Ochreous	Greyish blue
Female	24 mm	28 mm	Similar	Pale brown

- Male** : Small to medium sized pale blue dragonfly with very slender pale blue abdomen.
- Female** : Very different; brownish thorax with olivaceous and blackish brown stripes; olive tinged yellow with a black mid-dorsal line.
- Habitat** : Sandy and rocky beds of rivers and streams in dry regions. Drying pools in large rivers.
- Behaviour** : Perches on sand or on rocks, sometimes squat on the surface, with a slight curve to the abdomen. Becomes common just before the rains.
- Distribution** : Bargarh, Sambalpur. All over W. and C.India; Mediterranean and Middle East.
- Easy to spot at** : Debrigarh WLS.
- Status** : Locally common.
- Remarks** : New record for Orissa.





BLUE-TAILED YELLOW SKIMMER

Palpopleura sexmaculata

	Abdomen	Wing	Wing Spot	Eye
Male	14-16 mm	15-21 mm	Black & White	Bluish grey with brown cap
Female	13-14 mm	18-21 mm	Similar	Olive brown

Male : Small yellowish dragonfly with unmistakeable broad blue abdomen.

Female : Similar in shape but very differently coloured; yellowish brown thorax and black-streaked yellowish abdomen.

Habitat : Swamps and marshes at forest edges.

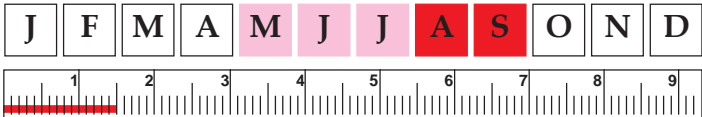
Behaviour : Found in small colonies, perched on reeds with a characteristic dropwinged posture. Males can fly swiftly to chase away conspecifics which stray into their territory. Females have a peculiar slow flight with the tip of the striped broad abdomen curled in, very reminiscent of a wasp or bee. Sometimes colonises roadside ditches.

Distribution : Mayurbhanj. Wetter parts of the Indian subcontinent. Oriental region.

Easy to spot at : Jamuna marsh, STR.

Status : Locally common.

Remarks : New record for Orissa. The North-eastern sub-species *P. sexmaculata otomaculata* has been recorded from Similipal.





P. sexmaculata otomaculata



WANDERING GLIDER

Pantala flavescens

	Abdomen	Wing	Wing Spot	Eye
Male	29-35 mm	38-40 mm	Bright reddish brown	Reddish brown bluish onside
Female	30-33 mm	39-41 mm	Reddish brown	Similar

Male : Medium sized dragonfly with rusty thorax, reddish yellow abdomen marked with black, golden yellow patch on base of hindwings and narrow apical brown spot at the hind border of wings.

Female : Very similar to male; wings lack apical brown patches and abdomen lacks the reddish wash.

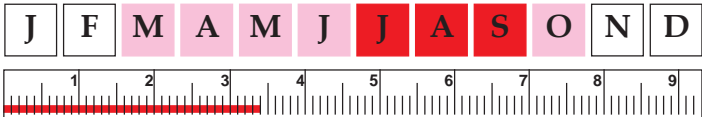
Habitat : Found in almost all habitats, except inside dense forests.

Behaviour : Very conspicuous dragonflies, seen in swarms over paddyfields, playgrounds or open areas. Flies tirelessly with typical sailing flight, hawking for midges occasionally. Roosts in shrubs, sometimes gregariously. Highly migratory, recent studies have indicated that this species has the longest recorded migration among insects.

Distribution : Widespread in all districts. Throughout India. Entire tropical areas globally.

Status : Very common.

Remarks : Also called Globe Skimmer.





YELLOW-TAILED ASHY SKIMMER

Potamarcha congener

	Abdomen	Wing	Wing Spot	Eye
Male	29-32 mm	33-35 mm	Dark reddish brown	Reddish brown bluish grey
Female	29-31 mm	33-37 mm	Brown	Pale brown

Male : Medium sized dragonfly with bluish black thorax and tail having bright yellow paired streaks. Juvenile resembles females, but lacks lateral expansions to abdomen.

Female : Very different; brown and yellow thorax with yellow and black tail having lateral expansions at tip; brownish wing-tip.

Habitat : Marshes, weedy ponds, edges of slow-flowing rivers.

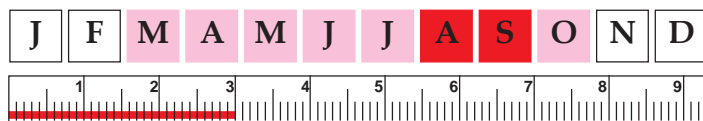
Behaviour : One of the few dragonflies where the females are seen more easily than the males. While males are confined to their perches near water, females can be seen almost everywhere, often away from water, perching on wires, clotheslines or fences.

Distribution : Widespread in all districts. Throughout India; Oriental region.

Status : Common.



Immature male





♂



♀

RUFOUS MARSH GLIDER

Rhodothemis rufa

	Abdomen	Wing	Wing Spot	Eye
Male	25-29 mm	32-37 mm	Light ochreous	Reddish brown & scarlet red
Female	25-29 mm	32-37 mm	Similar	Paler

Male : Large red dragonfly with transparent wings.

Female : Similar to male in size but is brownish with a yellowish stripe running along the mid-dorsal thorax to the 4th segment of abdomen.

Habitat : Marshes, weedy ponds, lakes and edges of slow-flowing rivers.

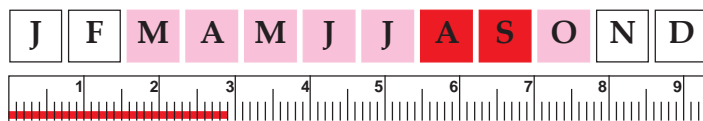
Behaviour : Males perch on waterside vegetation and chases away conspecifics.

Distribution : Mayurbhanj, Khurda. W.Ghats, E.India. Parts of S.E. Asia and Australia.

Easy to spot at : Kanjia Lake.

Status : Uncommon.

Remarks : New record for Orissa.





COMMON PICTURE WING

Rhyothemis variegata

	Abdomen	Wing	Wing Spot	Eye
Male	23-25 mm	33-36 mm	Black	Black reddish brown
Female	20-22 mm	28-37 mm	Similar	Similar

Male : Medium sized dragonfly with golden wings, variegated with black and yellow patches, giving it the appearance of a butterfly.

Female : Similar to male but lacks golden tint to wings which has more extensive black markings.

Habitat : Marshes, weedy ponds and lakes.

Behaviour : Mostly seen near or above water fluttering around like a butterfly or sailing high in swarms; weak flier which occasionally perches on exposed twigs, vegetation etc. Occasionally ventures into open fields or cultivation.

Distribution : Widespread in all districts. All over India. Throughout Oriental region.

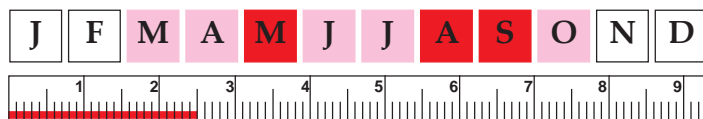
Status : Very common.

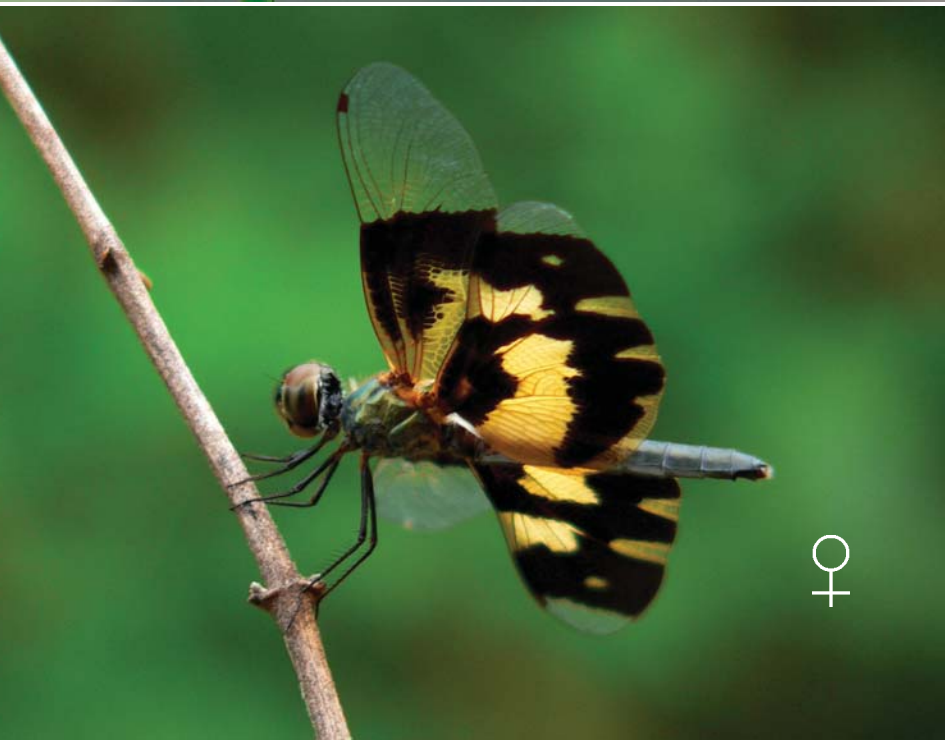


Male in flight



Female in flight



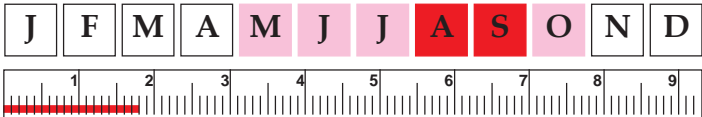


PIGMY SKIMMER

Tetrathemis platyptera

	Abdomen	Wing	Wing Spot	Eye
Male	15-18 mm	18-21 mm	Black	Emerald green
Female	14-16 mm	19-24 mm	Black	Emerald green

- Male** : Small black and yellow dragonfly with a broad amber coloured hindwing patch.
- Female** : Same as male but with hind wing patch a deeper amber colour.
- Habitat** : Found in plains, near cultivations and edges of woods. Wells, pools, ponds and small water bodies.
- Behaviour** : Always found near water, mostly perched on exposed twigs. Female lays eggs on overhanging branches or twigs, from where they get washed down into the water during rains.
- Distribution** : Mayurbhanj. Throughout India in wetter areas. Oriental region.
- Easy to spot at** : Pithabata, STR.
- Status** : Locally common.
- Remarks** : New record for Orissa.





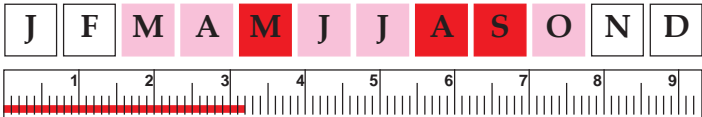
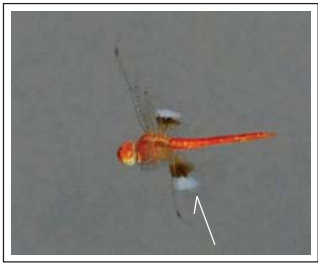
Rajesh Kallaje

CORAL-TAILED CLOUD WING

Tholymis tillarga

	Abdomen	Wing	Wing Spot	Eye
Male	28-33 mm	33-37 mm	Reddish brown	Reddish olive with brown cap
Female	27-31 mm	31-37 mm	Similar	Paler

- Male** : Medium sized coral red dragonfly with tapering tail and diagnostic brown and bluish-white hindwing patch.
- Female** : Similar, but duller coloured, with only a hint of brown on wings minus the bluish-white patch.
- Habitat** : All kinds of standing waterbodies; prefers weedy ponds and lakes.
- Behaviour** : Crepuscular; in fading twilight, males fly about close to the water, extremely swift and erratic, their whitish wing-patch showing up even in the gathering gloom. Both sexes roosts during day, hanging to some twig amongst shady undergrowth, often in loose colonies and sometimes in the company of Brown Dusk Hawks and Parakeet Darners.
- Distribution** : Widespread in all districts. Throughout India; Oriental, Australian, Ethiopian regions & Oceanic islands
- Status** : Common.





RED MARSH TROTTER

Tramea basilaris

	Abdomen	Wing	Wing Spot	Eye
Male	30-35 mm	40-44 mm	Bright ochreous	Dark reddish brown
Female	32-36 mm	38-45 mm	Dull yellow	Reddish brown

Male : Medium sized red dragonfly with diagnostic dark brown and yellow patch at the base of hind wings.

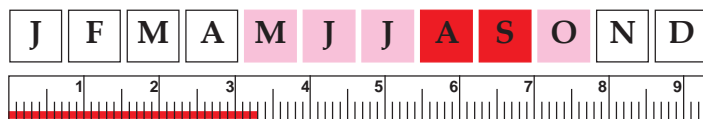
Female : Similar to male but brick red replaced by brownish yellow, and wing patches smaller.

Habitat : Lakes, marshes, ponds and edges of rivers.

Behaviour : Individuals are seen in tireless soaring flight, sometimes in conspecific groups or in mixed groups of other soaring dragonflies like *Pantala* and *Hydrobasileus*. Also perches on exposed twigs, brushwood fences around cultivation and paddy fields etc, with the abdomen held downwards to balance itself in case of a stiff wind.

Distribution : Widespread in all districts; specifically recorded from Angul, Keonjhar, Bolangir, Sambalpur, Gopalpur, Mayurbhanj, Bargarh. Throughout India; Oriental region.

Status : Common.





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BLACK MARSH TROTTER

Tramea limbata

	Abdomen	Wing	Wing Spot	Eye
Male	33-35 mm	44-46 mm	Dark brown	Dark brown above olive below
Female	32 mm	43-46 mm	Brown	Similar

Male : Medium sized brick red dragonfly with a diagnostic black patch on the base of hindwings.

Female : Similar to male but black markings on abdomen more extensive.

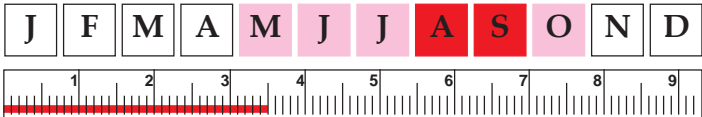
Habitat : Similar to the previous species; also more in forested areas.

Behaviour : Similar to previous species; Pairs in copula can sometimes be seen perched on exposed twigs; once a pair in copula, observed to fly low above a forest check-dam, where the female repeatedly dipped her abdomen in the water, ovipositing among water weeds.

Distribution : Widespread in all districts. Throughout India, Oriental region.

Status : Locally common.

Remarks : New record for Orissa.





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CRIMSON MARSH GLIDER

Trithemis aurora

	Abdomen	Wing	Wing Spot	Eye
Male	21-29 mm	24-34 mm	Dark reddish brown	Crimson above brown on side
Female	19-27 mm	24 mm	Reddish brown	Pale brown

Male : Medium sized dragonfly with wing veins enfumed with pinkish red and bright crimson tail.

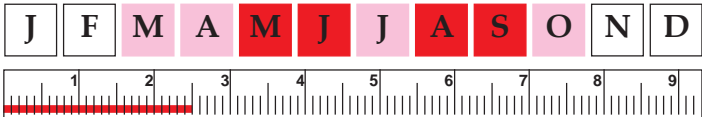
Female : Very different; olive brown thorax and brownish yellow abdomen with black lateral stripes.

Habitat : All kinds of standing and flowing water bodies; seems to prefer slow flowing streams

Behaviour : Males among the most beautiful and eye-catching of dragonflies, with their crimson colour, habit of perching on exposed twigs, and characteristic ‘drop-winged’ posture. Often seen obelisking during hot weather. Females less common.

Distribution : Widespread in all districts; specifically from Sundergarh, Bargarh, Sambalpur and Mayurbhanj. Throughout India; Oriental region.

Status : Common.





BLACK STREAM GLIDER

Trithemis festiva

	Abdomen	Wing	Wing Spot	Eye
Male	21-28 mm	26-32 mm	Black	Dark brown above bluish grey on side
Female	21-24 mm	29 mm	Similar	Brown

Male : Medium sized black dragonfly with black abdomen having fine yellowish streaks, both appearing purplish or deep blue at certain angles due to pruinescence. Brown patch at base of hindwing.

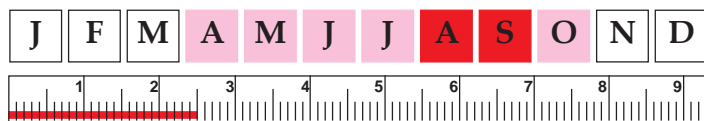
Female : Very different; olive brown thorax and yellowish abdomen, the latter with medial, lateral and ventral black stripes. Has dark-brown tips to transparent wings.

Habitat : Near all types of flowing waters including irrigation canals.

Behaviour : Males perch on their favourite twigs or rocks, chasing away intruders from their small territory; characteristic 'drop-winged' posture; obelisks vertically during hot noons;

Distribution : Widespread in all districts wherever suitable habitats occur. Specifically from Tikarpara and Koraput. Throughout India; Oriental region.

Status : Common





Immature male

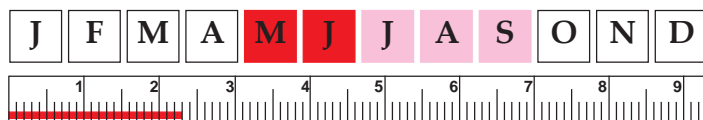


SCARLET ROCK GLIDER

Trithemis kirbyi

	Abdomen	Wing	Wing Spot	Eye
Male	22-24 mm	24-27 mm	Black	Bright red light bluish grey
Female	23 mm	26-30 mm	Black	Light red

Description : Male is a medium sized scarlet dragonfly with a broad reddish amber patch on the base of transparent wings. Female is similar to male, but duller. Inhabits streams and rivers which are rocky. Prefers dry arid areas and bouldery riverbeds. Distributed in peninsular India. Rarely seen at Mahanadi bed near Sambalpur.

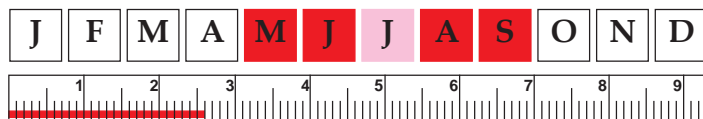


BLACK MARSH SKIMMER

Indothemis carnatica

	Abdomen	Wing	Wing Spot	Eye
Male	25-26 mm	28-31 mm	Bright ochreous	Violaceous above paling below
Female	24 mm	29 mm	Yellowish	Greyish

Description : Male is a medium sized blackish brown dragonfly with violetish black abdomen with contrasting pale yellow anal appendages. Female very different; Greenish yellow thorax and abdomen marked with brown and black. Inhabits weedy lakes and ponds. H i g h l y localised; Confined to peninsular India. Uncommon. New record for Orissa from Nandankanan.





LONG-LEGGED MARSH GLIDER

Trithemis pallidinervis

	Abdomen	Wing	Wing Spot	Eye
Male	28-32 mm	30-36 mm	Black with white ends	Reddish brown bluish grey
Female	26-28 mm	30-32 mm	Similar	Similar

Male : Medium sized dragonfly, easily identified in the field by its very long legs and the habit of perching on the tips of twigs near water, the wings held half open angled upwards.

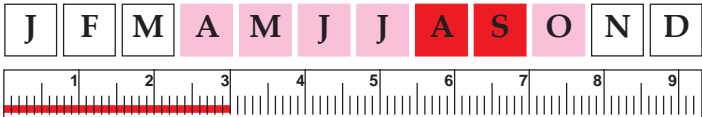
Female : Similar to male; has stouter abdomen with slightly different pattern.

Habitat : Most wetlands which have weedy growth; prefers standing waters.

Behaviour : One of the most readily seen dragonflies due to its high-perching habit and high-winged posture, poised at the tip of swaying reeds with deft turns of upturned wings, as if glued to its perch by its long legs.

Distribution : Widespread in all districts. Throughout India; Oriental region.

Status : Common.





GREATER CRIMSON GLIDER

Urothemis signata

	Abdomen	Wing	Wing Spot	Eye
Male	27-28 mm	34-37 mm	Ochreous and pale yellowish	Blood red above, bluish grey beneath
Female	25-27 mm	34-36 mm	Similar	Brownish red

Male : Large red dragonfly with amber wingbase and black patches at the tip of abdomen.

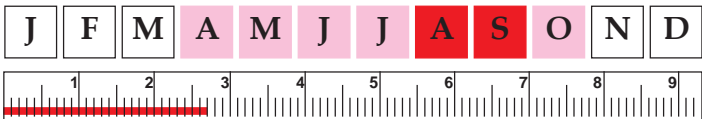
Female : Rusty brown with black-striped body.

Habitat : Marshes, Weedy ponds and lakes as also paddy fields near them; urban ponds and tanks.

Behaviour : Males often perche on exposed twigs bordering water and chase away intruders. Females venture far afield. This species has managed to colonise urban waterbodies and park ponds. Allows close approach.

Distribution : Widely distributed in almost all districts.

Status : Common.





IRIDISCENT STREAM GLIDER

Zygonyx iris

	Abdomen	Wing	Wing Spot	Eye
Male	40-42 mm	46-48 mm	Black	Black with yellow markings
Female	40-43 mm	47-49 mm	Black	Similar

Male : Large metallic black dragonfly with yellow patch on abdomen.

Female : Similar to male but with more prominent lateral and dorsal yellow stripes.

Habitat : Rivulets and Hill streams in forests.

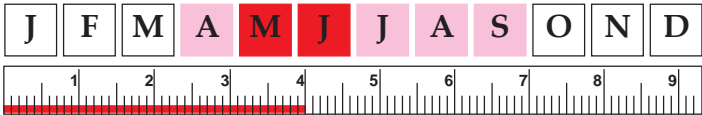
Behaviour : Tirelessly flies back and forth across a beat along a hill stream rarely perching. Hovers at times over rapids. Sometimes, pairs in tandem can be seen flying above torrents, the female dipping her abdomen periodically to lay eggs.

Distribution : Mayurbhanj. W.Ghats and N.E. India. Parts of S.E. Asia.

Easy to spot at : Palpala, Similipal.

Status : Rare.

Remarks : New record for Orissa. Excellent indicator of pure fast-flowing water and general habitat quality.





TORRENT GLIDER

Zygonyx torrida

	Abdomen	Wing	Wing Spot	Eye
Male	37-39 mm	44-46 mm	Black	Olive
Female	42 mm	48-50 mm	Similar	Similar

Male : Medium sized black and yellow dragonfly with dark metallic green thorax and black abdomen marked with bright yellow paired spots.

Female : Very similar to male but larger and more robust.

Habitat : Edges of fast flowing hill streams in foothills.

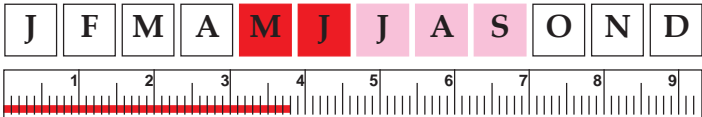
Behaviour : Adults can be seen in rapid and tireless flight, above streams in spate, periodically descending low to hawk midges over foaming rapids; occasionally perches in ‘hanging’ posture on stream-side vegetation.

Distribution : Peninsular India; parts of Africa and the Mediterranean.

Easy to spot at : Kanjipani, Keonjhar.

Status : Very rare.

Remarks : Only two records from Keonjhar; New record for Orissa.





Pratyush Mohapatra

BROWN DUSK HAWK

Zygomma petiolatum

	Abdomen	Wing	Wing Spot	Eye
Male	37-43 mm	32-35 mm	Blackish	Emerald Green
Female	37-42 mm	32-38 mm	Blackish	Dull green

Male : Large brown dragonfly with extremely thin abdomen and brown-tipped wings.

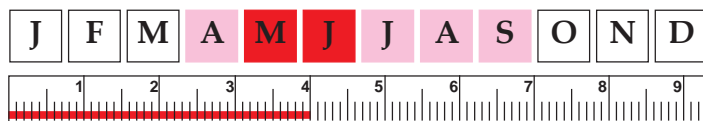
Female : Similar to male but with slightly stouter abdomen.

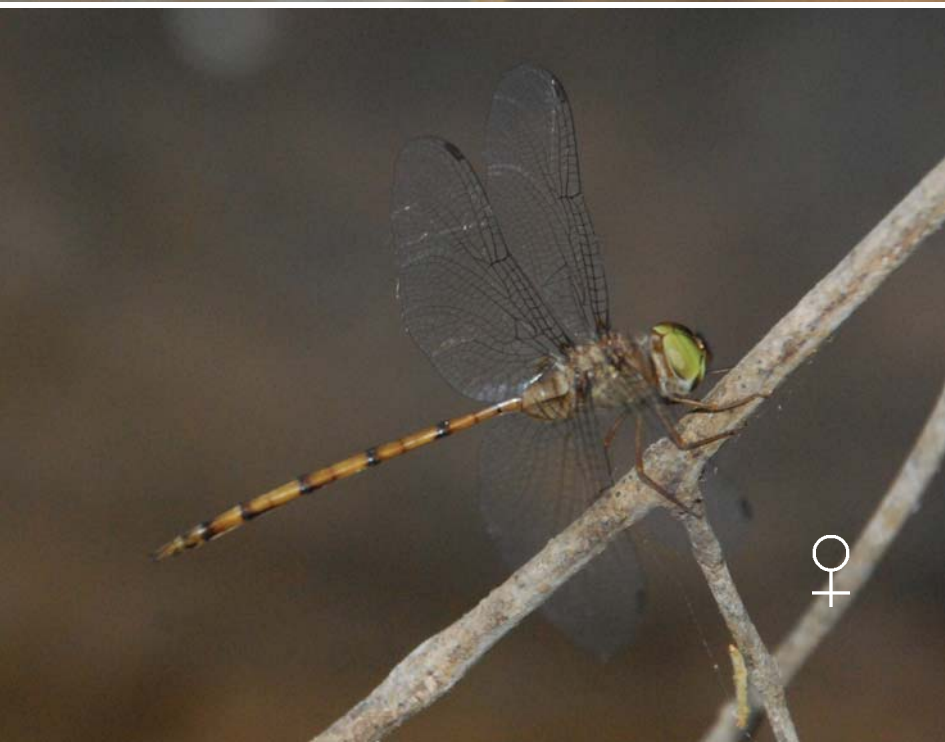
Habitat : Along ponds, marshes and slow-flowing rivers.

Behaviour : Largely crepuscular, but also active during overcast days, in extremely rapid flight low over waterbodies, hawking midges. Roosts gregariously at times in tangled vegetation amidst shady nallah beds or rocky overhangs. Often gets attracted to lights at night during early summer showers. Enters verandahs at dusks to hawk mosquitoes.

Distribution : Widespread in all districts; specifically from Barkuda island, Debrigarh, Mayurbhanj. Throughout India and Burma.

Status : Common.





COMMON TORRENT HAWK

Epophthalmia vittata

	Abdomen	Wing	Wing Spot	Eye
Male	50-57 mm	48-52 mm	Blackish brown	Bluish Green
Female	56-60 mm	50-51 mm		

Male : Large brown dragonfly with yellowish stripes on abdomen, with transparent wings having slightly enfumed edges.

Female : Similar to male, but with wings having amber tint along costal and cubital areas.

Habitat : Found in the plains; can be termed a 'lacustrine' species prefering large reservoirs, lakes, ponds and check-dams.

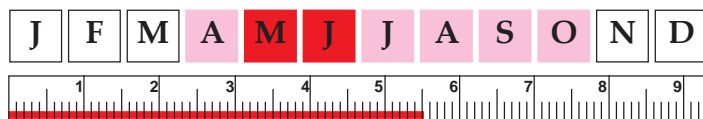
Behaviour : Soars tirelessly during daytime high up, occasionally in small swarms; fast flier; descends low at times during hot noontime to dip body in flight and take off again; careful scans along shady waterside vegetation will reveal individuals 'hanging' from the underside of climbers, bamboo sprigs.

Distribution : Khurda, Bargarh, Sambalpur, Mayurbhanj. Widely distributed in peninsular India.

Easy to spot at : Edges of Hirakud reservoir in summer.

Status : Uncommon.

Remarks : New record for Orissa.





TORRENT HAWK

Macromia sp.

	Abdomen	Wing	Wing Spot	Eye
Male	39 mm	33 mm	Black	Green
Female	Unknown	Unknown	Unknown	Unknown

Description : Medium-sized black and yellow dragonfly, resembling a gomphid, but with large confluent eyes, green in colour.

Habitat : Fast-flowing hill streams in dense forests;

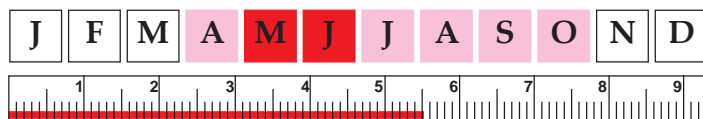
Behaviour : Very rarely seen; patrols along watercourses tirelessly; early mornings during late summer is a good time to search for emerging individuals basking in streamside vegetation, particularly near small cascades. Has a 'hanging' perching habit unlike Gomphids, which it superficially resembles.

Distribution : Mayurbhanj. Members of the genus is found Peninsular & NE India.

Easy to spot at : Hills streams of South Similipal.

Status : Rare.

Remarks : The genus is a new record for Orissa. Taxonomic examination to determine the species is in progress.





SPECIES DESCRIPTIONS : DAMSELFLIES

**FAMILY
CALOPTERYGIDAE**



Calopterygids or Glories are large damselflies which are characterised by their broad rounded hindwings and iridescent colours of abdomen and thorax. The abdomen is always longer than the hindwing. Males generally have dark tinted wings while females have wings of lighter shades. They are found in streams in forested landscapes. Out of the 10 species found within Indian limits, 3 have been recorded from the peninsular region. All 3 species have been recorded from Orissa.

STREAM GLORY

Neurobasis chinensis

	Abdomen	Hindwing	Wing Spot	Eye
Male	45-50 mm	32-38 mm	Absent	Blackish brown & bluish white
Female	44-50 mm	36-40 mm	Absent in fore & creamy white in hindwing	Brownish yellowish white

Male : An unmistakable large damselfly with metallic green body, clear forewings and iridescent blue/green hindwings.

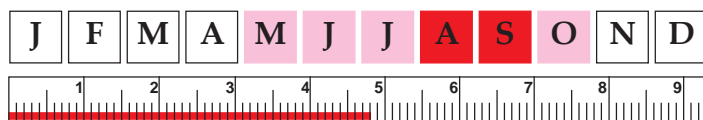
Female : Similarly sized as male but has brown-tinted wings with conspicuous creamy yellow patches in the middle of the wings and whitish pseudopterostigma in the hind wings.

Habitat : Hill streams and rivulets in forest areas.

Behaviour : Perches on stream-side foliage, mid-stream rocks or fallen logs; seen regularly spaced out in defended territories. Males have a spectacular display, where the iridescent hind wings are flashed while fluttering inches above water or immediately after perching. Female lays eggs in submerged vegetation, often among root masses, sometimes submerging herself fully for minutes on end.

Distribution : Bolangir, Kotgarh, Mayurbhanj. Throughout Indian and the Oriental region.

Status: : Locally common





BLACK-TIPPED FOREST GLORY

Vestalis apicalis

	Abdomen	Hindwing	Wing Spot	Eye
Male	49-55 mm	36-39 mm	Absent	Blackish brown & yellowish white
Female	46-50 mm	38-40 mm	Absent	Similar

Male : Large damselfly with dark metallic green body and hyaline wings with black tip.

Female : Similar to male, but duller and less metallic body; wings lack the black tip and hence can be confused with *V.gracilis*.

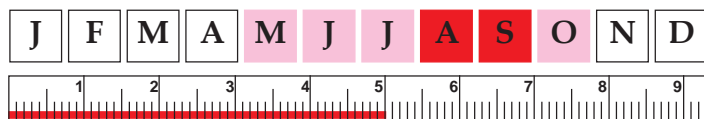
Habitat : Found along streams and rivulets in forests.

Behaviour : Occurs in forested areas, frequenting edges of rivulets or streams; often found gregariously, sometimes together with *V.gracilis* along shady forest glades or paths. Can be seen foraging even at dusk.

Distribution : Mayurbhanj. Wetter areas of India. Oriental region.

Status : Locally common.

Remarks : New record for Orissa.





CLEAR-WINGED FOREST GLORY

Vestalis gracilis

	Abdomen	Hindwing	Wing Spot	Eye
Male	45-46 mm	34-38 mm	Absent	Dark brown greenish yellow
Female	43-50 mm	36-39 mm	Absent	Similar

Male : Large damselfly with iridescent green body and hyaline wings.

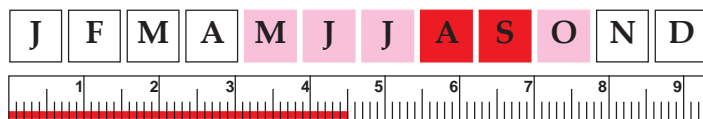
Female : Similar to male but duller.

Habitat : Edges of rivulets and streams in dense forests.

Behaviour : Occurs in groups along shady forest paths, sometimes in association with *V.apicalis*. Has a slow fluttering flight. During post-monsoons, ventures into well-wooded village groves and homesteads adjoining forests.

Distribution : Kotgarh, Mayurbhanj. Throughout wetter areas of India. Oriental region.

Status : Locally Common.





FAMILY CHLOROCYPHIDAE



Chlorocyphids or Stream Jewels are medium-sized damselflies characterised by large prominent eyes and a conspicuously projecting 'nose'. Wings are longer than the abdomen. Sexual dimorphism is quite pronounced with males being showy, having colourful metallic patches on wings while females are soberly coloured and have transparent wings. They live in streams flowing through forests. Out of the 20 species found within Indian limits, 3 have been recorded from the peninsular region. 2 species have been recorded from Orissa.

RIVER HELIODOR

Libellago lineata

	Abdomen	Hindwing	Wing Spot	Eye
Male	14-16 mm	15-18 mm	Absent in FW; black in HW	Dark brown above, and grey below
Female	13-17 mm	17-20 mm	Creamy white	Brown above, and grey below

Male : Small black and yellow damselfly with wings longer than abdomen and black-tipped hyaline wings.

Female : Similar to male but duller body, stouter abdomen and hyaline wings with creamy white wing spots.

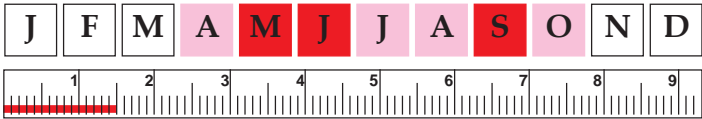
Habitat : Edges of rivers, rivulets and hill streams in well-wooded landscapes.

Behaviour : Perches on exposed twigs along water or fallen logs. Males indulge in frequent ‘dog-fighting’, where opposing males hover and lunge, facing each other in co-ordinated flight.

Distribution : Mayurbhanj. Wetter areas of India. Entire Oriental Region

Status : Locally Common.

Remarks : New record for Orissa.





STREAM RUBY

Rhinocypha bisignata

	Abdomen	Hindwing	Wing Spot	Eye
Male	20 mm	24-26 mm	Black	Blackish brown
Female	16 mm	22 mm	Black	Brown black bluish grey

Male : Small black and red damselfly with red coloured iridescent streaks on wings, which are longer than abdomen.

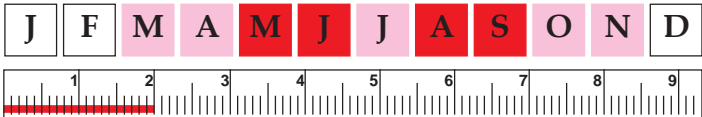
Female : Similar to male but markings more yellowish than reddish and yellow-tinted transparent wings.

Habitat : Hill streams.

Behaviour : Occurs in small groups; males perch on stream-side twigs, fallen logs or mid-stream rocks, flying occasionally to reveal their glistening wing patches. Females lay their eggs in submerged logs, sometimes many together at the same spot.

Distribution : Bolangir, Kotgarh, Mayurbhanj. Suitable habitats of peninsular India.

Status : Locally common.





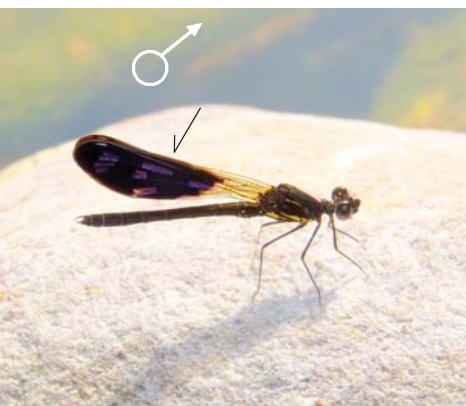
BLACK EMPEROR

Rhinocypha quadrimaculata

	Abdomen	Hindwing	Wing Spot	Eye
Male	25 mm	27 mm	Black with white edge	Black
Female	21 mm	31 mm	Black with yellowish edge	Brownish black fading to bluishgrey

Description: Medium sized black damselfly with pinkish triangular mid-thoracic patch and wings which are transparent on the basal one third, and the rest glossy black with violet stripes. Female is black with ochreous yellow streaks on thorax and stripes on abdomen with uniform brown wings. Inhabits hill streams.

Remarks : This is a species of the Himalayas and NE India. Confirmation is desirable as just a single record has been recorded from Kotgargh, Orissa (ZSI)



FAMILY COENAGRIONIDAE



Coenagrionids or Marsh Darts are small or medium-sized damselflies with transparent wings which are rounded at their tips. The thin abdomen is longer than the hindwings and comes in almost all colours from blue to orange, but is always non-metallic. Known to occur in many kinds of aquatic habitats like marshes, ponds, slow-flowing streams, rivers and even garden ponds, they are among the most common damselflies. Out of the 65 species found within Indian limits, 25 have been recorded from the peninsular region. All 25 species have been recorded from Orissa.

VIOLET-STRIPED SLENDER DARTLET

Aciagrion hisopa

	Abdomen	Hindwing	Wing Spot	Eye
Male	22-24 mm	15-16 mm	Black eye	Black, greenish at sides and yellow below
Female	25 mm	17 mm	Olive	Black above greenish below

Male : A small damselfly with violet stripes on black thorax and slender black abdomen tipped with blue.

Female : Similar to male but duller greenish-blue stripes on thorax.

Habitat : Marshes and puddles in grasslands within forests. Can be found high in the hills as well.

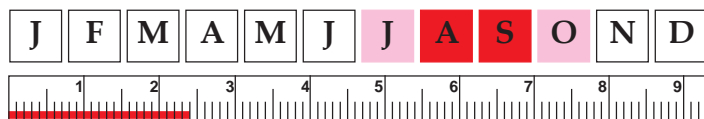
Behaviour : Occurs in small groups ; perches low and very close to water. During post-monsoons ventures into grasslands adjoining small water-bodies and colonises small seasonal puddles. Very parochial, colonies can be found in the same place year after year.

Distribution : Mayurbhanj. Throughout suitable habitats in India. Oriental region.

Easy to spot at : Debasthali, Similipal in monsoons.

Status : Uncommon.

Remarks : New record for Orissa.





GREEN-STRIPED SLENDER DARTLET

Aciagrion occidentale

	Abdomen	Hindwing	Wing Spot	Eye
Male	22-24 mm	15-16 mm	Blackish grey	Bottle green with small black cap
Female	24 mm	16 mm	Blackish	Black paling to yellow

Description : A small damselfly with pale green stripes on black thorax, with long slender blackish abdomen tipped with blue.

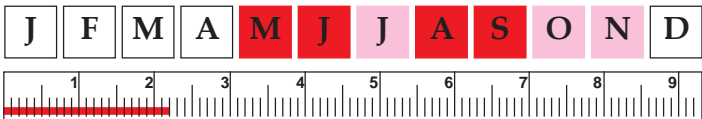
Female : Similar to male but duller, stouter and shorter abdomen.

Habitat : Marshes in forested landscapes.

Behaviour : Occurs in loose groups. Flies close to the ground. Males defend small territories in marshlands while females can be seen quite away from water.

Distribution : Mayurbhanj, Sundergarh. Peninsular India and Sri Lanka.

Status : Locally common.





PALE SLENDER DARTLET

Aciagrion pallidum

	Abdomen	Hindwing	Wing Spot	Eye
Male	31 mm	18 mm	Pale brown	Brown & creamy white at sides
Female	30 mm	20 mm	Pale brown	Pale brown

Male : Medium-sized pale brown damselfly without black markings on head and thorax.

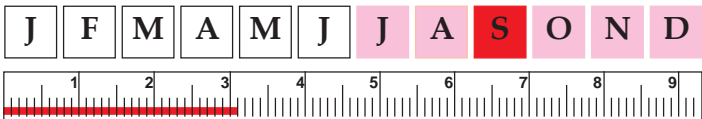
Female : Similar to male but with stouter abdomen.

Habitat : Dry habitats like scrub jungle, dry deciduous forests.

Behaviour : Occurs in small colonies, inconspicuously perching among dry grass or bushy undergrowth, often together with *Lestes umbrinus*, much away from water. One of the few damselflies which can be found in winter as well.

Distribution : Bolangir, Cuttack, Ganjam, Puri, Mayurbhanj, Sambalpur. Parts of Western, Central and E.India.

Status : Locally common





MILKY DARTLET

Agriocnemis lacteola

	Abdomen	Hindwing	Wing Spot	Eye
Male	16-18 mm	9.5-10.5mm	Black in FW, Pale blue in HW	Pale blue capped with black
Female	16-18 mm	15-17 mm	Pale yellow with grey centre	Olive green capped with black

Male : Small damselfly with black striped thorax and white unmarked abdomen from segment 4 onwards till tip.

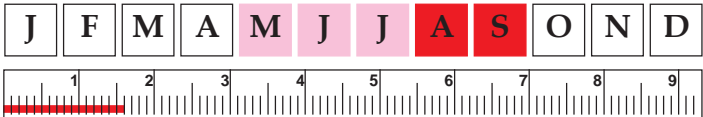
Female : Very different from male, with more black on head and abdomen and white replaced by azure blue.

Habitat : Wet meadows bordering wetlands.

Behaviour : Similar to other Dartlets; flies inches above ground, perching on grass blades etc., the male looks like a piece of white thread in jerky flight. Females rarer, more difficult to see and can often be found away from wet habitats. Perhaps due to their conspicuous colouration, males often get predated upon by other Damselflies, specially *I.senegalensis* and *C.coromandelianum*.

Distribution : Ganjam, Mayurbhanj. E and NE India.

Status : Uncommon.





PIGMY DARTLET

Agriocnemis pygmaea

	Abdomen	Hindwing	Wing Spot	Eye
Male	16-17 mm	9.5-10 mm	Pale yellow in FW, Black in HW	Pale blue capped with black
Female	18 mm	11-12 mm	Yellowish in both FW & HW	Yellow with black cap

Male : Small green and black damselfly with orange tipped abdomen.

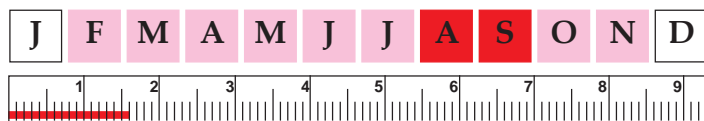
Female : Very different and more robust. A variety of colour forms seen, in which the red and green forms are commonly seen.

Habitat : Almost all kinds of aquatic habitats.

Behaviour : Found close to ground in small colonies. Both males and females are found in good numbers and several copulae can be seen during mornings. Males defend tiny territories. Forages actively among small grass blades, in hovering flight, lunging suddenly at small midges seated on stems. Gets attracted to lights , specially on stormy nights.

Distribution : Widespread. Occurs in all districts. All over India and entire Oriental, Australian and Pacific islands.

Status : Very common.





SPLENDID DARTLET

Agriocnemis splendidissima

	Abdomen	Hindwing	Wing Spot	Eye
Male	18 mm	10 mm	Black	Black cap brown equatorial line & bluish green below
Female	17-18.5 mm	12-13 mm	Golden yellow	Similar

Male : Small pale blue and black damselfly with characteristic abdominal markings.

Female : Similar to male but stouter with yellow instead of black wingspot.

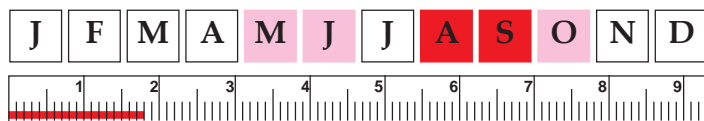
Habitat : Edges of streams and marshes in forested landscape.

Behaviour : Like other Dartlets but males often can be seen far into waterbodies, seated among emergent vegetation. Colonises small seasonal puddles inside forest areas during monsoons. Females rarely seen.

Distribution : Ganjam, Mayurbhanj. South, Central and E India.

Best seen at : Bachurichara, Similipal.

Status : Uncommon.





TINY HOODED DARTLET

Agriocnemis sp.

	Abdomen	Hindwing	Wing Spot	Eye
Male	13-14 mm	8-9 mm	Pale ochreous yellow	Green with black cap
Female	15-16 mm	10-12 mm	Pale yellow	Green with brownish cap

Male : Tiny black and bright yellow damselfly with characteristic ‘hood mark’ on the second abdominal segment.

Female : Very different from male; uniform greenish yellow with a black patch on occiput and vertex. Yet to be fully confirmed, as copulating pairs have not been seen so far.

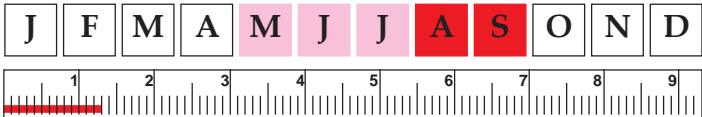
Habitat : Moist short grasslands bordering weedy ponds and rivers; also seasonal waterbodies which form after monsoons close to perennial ponds.

Behaviour : Similar to other Dartlets; because of its diminutive size, locating it is tough.

Distribution : Has been collected fom three widely separated regions of Orissa, thus indicating a continuous presence.

Status : Locally common.

Remarks : This tiny but distinctive species does not find any mention in any published literature. Though superficially similar to *A. keralensis*, examination of specimens show a series of major variations including wing venation, colour of pterostigma, pattern of post-ocular spots and anal appendages, and could be a species new to science.





PRUINOSED DARTLET

Agriocnemis femina

	Abdomen	Hindwing	Wing Spot	Eye
Male	16-17 mm	10-11 mm	Yellow	Dark brown cap, apple green on sides
Female	18 mm	11 mm	Pale brown	Similar but paler

Description : Male is a small damselfly with bluish white pruinescence on thorax and black abdomen. Female shows a large range of variations, but is always more robust than males. Inhabits edges of wetlands with short herbage and grassy banks. Anecdotal observations suggest that males occasionally grasp female *A. pygmaea* for mating. Found in parts of C., E., and NE India. **Status :** Uncommon. New record for Orissa.

ORANGE MARSH DART

Ceriagrion rubiae

	Abdomen	Hindwing	Wing Spot	Eye
Male	26-29 mm	17-18 mm	Reddish Brown	Green above, Olivaceous below
Female	30-31 mm	20 mm	Pale yellow	Greenish

Description : The male is a medium sized damselfly unmistakable due to its bright unmarked orange thorax and abdomen. Female is similar to male, but with orange replaced by olivaceous; stouter abdomen. Inhabits weedy ponds and marshes inside forests. Distribution is confined to the W. Ghats and southern peninsular India. Hence confirmation desirable as only a single record exists from Koraput (ZSI).



ORANGE-TAILED MARSH DART

Ceriagrion cerinorubellum

	Abdomen	Hindwing	Wing Spot	Eye
Male	31-33 mm	20-21 mm	Amber coloured	Olivaceous above, pale green below
Female	31-35 mm	20-21 mm	Pale amber	Bluish above, pale green below

Male : Medium sized green damselfly with bright orange base of abdomen and tail tip.

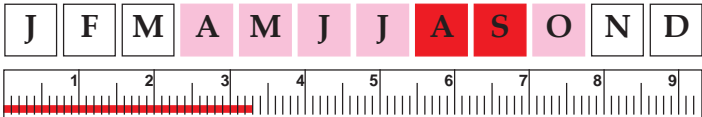
Female : Similar to male but with but duller and differently coloured eyes.

Habitat : Weedy lakes, ponds and marshes, mostly in well-wooded areas.

Behaviour : Occurs in loose colonies; mostly seen in jerky flight among vegetation at medium height, hawking for insects. Excellent predator of mosquitoes. Has great site fidelity and can colonies be seen in the same marsh for years together.

Distribution : Cuttack, Khurda, Mayurbhanj. All across India and Oriental region.

Status : Locally common.





COROMANDEL MARSH DART

Ceriagrion coromandelianum

	Abdomen	Hindwing	Wing Spot	Eye
Male	28-30 mm	18-20 mm	Golden yellow	Olivaceous above, pale greenish below
Female	29-32 mm	20 mm	Pale yellow	Pale greenish

Male : Medium sized green damselfly with bright yellow abdomen.

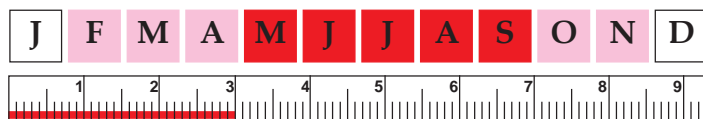
Female : Golden brown thorax and olivaceous abdomen with a tinge of rust shade.

Habitat : All types of standing water body including urban garden tanks.

Behaviour : One of the commonest damselflies. The yellow colour of the male makes it prominent as it flies. Males are found close to edges of waterbodies, foraging amongst grasses and herbs, while females often venture away. Good predator of midges and flies.

Distribution : Widespread, in almost all districts. Throughout India. Oriental region.

Status : Very common.





RUSTY MARSH DART

Ceriagrion olivaceum

	Abdomen	Hindwing	Wing Spot	Eye
Male	34-38 mm	22-23 mm	Pale Brown	Olivaceous brown
Female	33-35 mm	22 mm	Paler than male	Dull olive brown

Male : Medium sized brownish green damselfly with a rust-coloured slender tail.

Female : Similar to male but with stouter abdomen and duller colours.

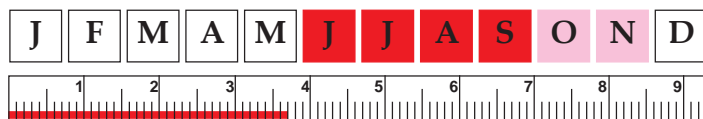
Habitat : Marshes, streams and backwaters of rivulets in forested habitats.

Behaviour : Males perch on shrubs close to water; Females found away from water among forest undergrowth; unlike others of its genus, the female apparently lays eggs in flowing water.

Distribution : Mayurbhanj. W.Ghats, E and NE India;

Best seen at : Jenabil, STR.

Status : Uncommon.



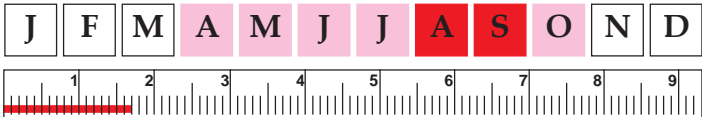


AZURE DARTLET

Enallagma parvum

	Abdomen	Hindwing	Wing Spot	Eye
Male	17 mm	11 mm	Blackish	Deep sky blue, paling below
Female	17 mm	11 mm	Greyish black	Pale azure blue

- Male** : Very small damselfly with black-striped azure blue thorax and broadly blue-tipped black tail.
- Female** : Different from male; 2 distinct forms exist, where the blue of thorax is replaced by greenish-yellow.
- Habitat** : Edges of weedy tanks, lakes and wet meadows.
- Behaviour** : Males despite their small size are readily spotted because of their azure colouration. Moves in jerky flight among low herbage; sometimes perches on the ground.
- Distribution** : Bolangir, Puri, Cuttack, Mayurbhanj. Throughout India; SE Asia.
- Best seen at** : Chahala meadow, STR in September.
- Status** : Uncommon.





BLACK MARSH DART

Onychargia atrocyana

	Abdomen	Hindwing	Wing Spot	Eye
Male	23 mm	17 mm	Pale yellow	Black above brown below
Female	23 mm	18 mm	Brownish	Black above, greyish green below

Male : Small damselfly unmistakeable due to its glossy bluish black body.

Subadult males resemble females but base of abdomen bulged.

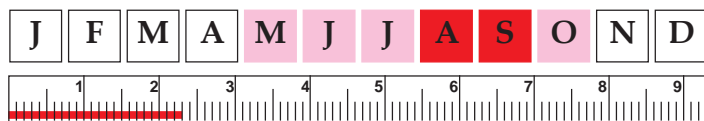
Female : Very different; black thorax striped boldly on the sides with yellow.

Habitat : Lakes, marshes and swamps in forested landscapes.

Behaviour : Perches on bushes and sometimes high on trees, occasionally with wings partly open; very local and seen gregariously in small groups with high site fidelity; copula seen in densely wooded marshlands where female oviposits among water weeds; has migratory tendencies and thus ventures into houses at times during monsoons attracted to lights.

Distribution : W.Ghats, NE India and parts of SE Asia.

Status : Locally common.





GOLDEN DARTLET

Ischnura aurora

	Abdomen	Hindwing	Wing Spot	Eye
Male	16-20 mm	10-20 mm	Rose-red in FW; Pale grey in HW	Narrow black cap over olive green
Female	18-20 mm	14-15 mm	Pale pink	Narrow black cap over pale yellowish green

Male : Small damselfly with black-striped apple-green thorax and yellow tail tipped with blue and black.

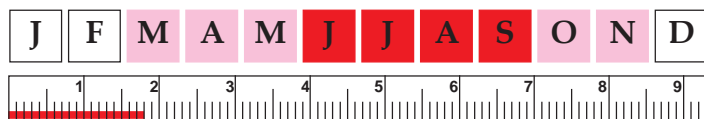
Female : Very different; has duller colours and lacks the bright yellow tail.

Habitat : Wet meadows, short grasslands bordering both standing and flowing waterbodies and swampy areas, from plains to hills.

Behaviour : Flies very close to the ground. Males defend small territories. Females venture far from water.

Distribution : Throughout India; Oriental and Australian regions and Oceania.

Status : Very common.





SENEGAL GOLDEN DARTLET

Ischnura senegalensis

	Abdomen	Hindwing	Wing Spot	Eye
Male	21-23 mm	13-15 mm	Black in FW; Dull white with black tip in HW	Black above and pale green below
Female	20-24 mm	14-16 mm	Pale greyish	Narrow blackish cap & pale greenish below

Male : Medium sized to small damselfly with black-striped green thorax and blue sub-terminal spot at the tail tip.

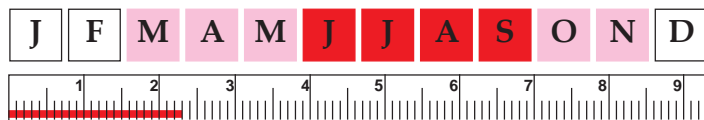
Female : Exists in 3 forms, one resembling the male.

Habitat : Wet meadows and short grasslands bordering marshes, swamps, weedy lakes etc.

Behaviour : Seen perched on low herbage or flying in spurts; voracious predator in its size, often preying on other smaller odonates. Copula seen on lily pads or in vegetation near water; females oviposit in standing waters.

Distribution : Throughout India; Oriental and Ethiopian region.

Status : Locally common.





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FORCIPATE DARTLET

Ischnura forcipata

	Abdomen	Hindwing	Wing Spot	Eye
Male	22-23 mm	13-14 mm	Inner half black, outer blue for FW; HW pale blue or colourless	Black above, pale bluish-green in the lower half
Female	23 mm	13 mm	Pale yellow or colorless	Orange above, olivaceous below

Description : Male is a small pale bluish green damselfly with black thoracic stripes and blue-tipped tail. Female is more robust and has olivaceous thorax. Inhabits marshes in the hills.

Remarks : The distribution of this species is confined to the Himalayan region. Hence the single record from Bolangir by ZSI has to be treated with caution.

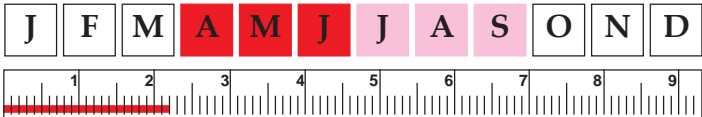
MALAY LILY SQUATTER

Paracercion malayanum

	Abdomen	Hindwing	Wing Spot	Eye
Male	22 mm	15 mm	Yellowish White	Olivaceous above paling to grey
Female	20 mm	15 mm	Yellowish White	Similar

Description : Male is a small damselfly with black markings on blue thorax and blue-tipped black abdomen. Has a row of spines between abdominal segments 8 and 9. Female has a greenish thorax with fine black markings and greenish yellow abdomen.

Remarks : Mayurbhanj. Central and N.E.India. Oriental and Australian region. Status: Uncommon.



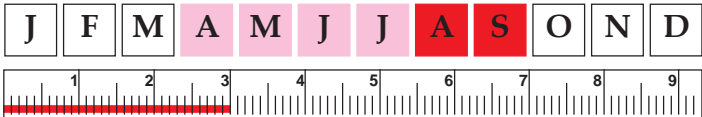
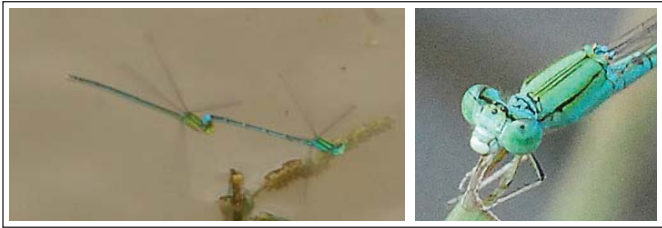


THREE-LINED DART

Pseudagrion decorum

	Abdomen	Hindwing	Wing Spot	Eye
Male	28-30 mm	18-20 mm	Bluish grey	Bluish green
Female	31 mm	20 mm	Pale grey	Olivaceous above, pale green below

- Male** : Medium sized damselfly with pale bluish green thorax and azure blue-tipped abdomen. Three fine black lines on mid-dorsum and forward-pointing black arrowhead marking on second abdominal segment.
- Female** : Very different from male, with blue thorax and yellowish green abdomen marked dorsally with black.
- Habitat** : Edges of reservoirs, lakes and rivers, mostly in dry areas.
- Behaviour** : Flies along shoreline or perches on emergent vegetation, its pale colouration showing up conspicuously. Shows migratory flights post-monsoon, along with *P.microcephalum*.
- Distribution** : Sundergarh, Puri, Mayurbhanj. Throughout peninsular India and Burma.
- Status** : Locally common.





BLUE DART

Pseudagrion microcephalum

	Abdomen	Hindwing	Wing Spot	Eye
Male	27 mm	17 mm	Greyish	Dark azure blue sky-blue beneath
Female	29 mm	20 mm	Paler brown	Olive green above palest blue beneath

Male : Medium sized black and light blue damselfly with blue-tipped tail. Black goblet shaped mark on second abdominal segment (S2).

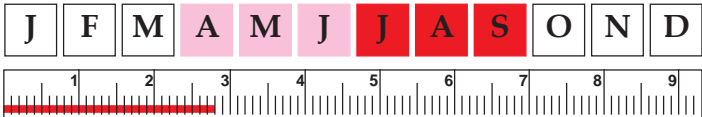
Female : Very different; orange-tinted head and thorax with a single thin black line on mid dorsum and bifid black mark on S9.

Habitat : Edges of paddy fields, canals, ponds, lakes, rivers in the plains and mid-elevations. Even in brackish and polluted waters.

Behaviour : Males maintain territories with favourite perches; strongly migratory species, showing mass movements during post-monsoon.

Distribution : Chilika, Mayurbhanj, Sambalpur. Most parts of India. Oriental and Australian region.

Status : Common.





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SAFFRON-FACED BLUE DART

Pseudagrion rubriceps

	Abdomen	Hindwing	Wing Spot	Eye
Male	29 mm	18-22 mm	Reddish brown	Olivaceous green above, orange on sides and below
Female	29 mm	21 mm	Pale brown	Dark blue above, azure blue below

Male : Medium sized blue and green damselfly with diagnostic bright orange-red face.

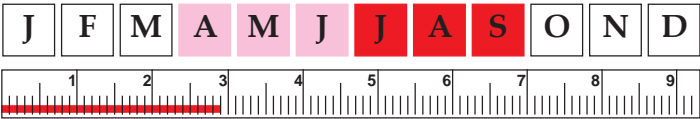
Female : Similar to male but with stouter abdomen, more extensive black markings and less extensive blue markings on tail tip.

Habitat : Edges of rivers, slow flowing streams and canals in plains and mid-elevation hills.

Behaviour : Loose colonies found, mostly of males always near water; females hard to spot except in copula.

Distribution : Bolangir, Bargarh, Sambalpur, Mayurbhanj. Most parts of India. Throughout India and parts of SE Asia.

Status : Common.



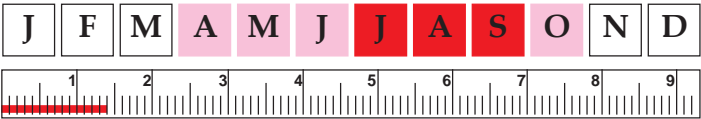


PIXIE DARTLET

Rhodischnura nursei

	Abdomen	Hindwing	Wing Spot	Eye
Male	14 mm	9.5 mm	Pale yellow in FW Uncoloured in HW	Green paling, to yellow
Female	15-17 mm	11 mm	Pale yellow	Similar

- Male** : Small unmistakable black, red and yellow damselfly. Older males show less yellow on the abdomen.
- Female** : Several forms, some resembling males.
- Habitat** : Grassy edges of reservoirs, lakes and marshes; sometimes found away from water in dry meadows.
- Behaviour** : Similar to Dartlets; flies very close to ground.
- Distribution** : Bolangir, Sambalpur. Dry zones of NW, Central, Eastern and Northern India.
- Status** : Locally common.





FAMILY EUPHAEIDAE



Euphaeids or Torrent Darts are large damselflies with large round eyes. They are characterised by forewings being long and narrow and hindwings broad and rounded. Hindwings are also shorter than forewings and abdomen. They require clean running water and are found in fast flowing hill streams. Out of the 20 species found within Indian limits, 3 have been recorded from the peninsular region. Only 1 species has been recorded from Orissa.

BLACK TORRENT DART

Dysphaea ethela

	Abdomen	Hindwing	Wing Spot	Eye
Male	38 mm	33 mm	Black	Black above, pale bluish grey below
Female	32 mm	33 mm	Black	Dark olivaceous brown above, bluish grey below

Male : Large damselfly, unmistakable with overall black body and amber coloured wings. Has a characteristic perching posture with slightly upturned tail tip.

Female : Very different; thorax and abdomen are black marked with yellow.

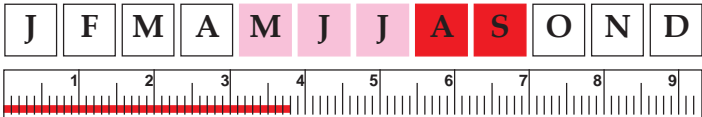
Habitat : Fast flowing hill streams in dense forests.

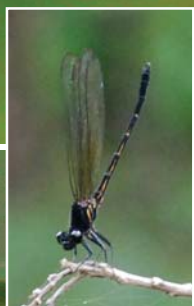
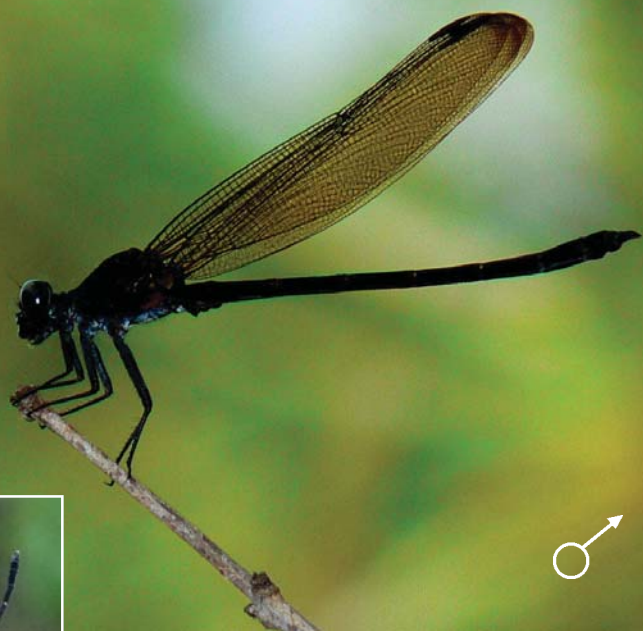
Behaviour : Males perch on favourite perches on overhanging vegetation or mid-stream boulders, occasionally patrolling their territory. Females reclusive and perch high among vegetation and is almost never seen.

Distribution : Mayurbhanj. W.Ghats and parts of E.Ghats.

Best seen at : Palpala river, STR. **Status** : Rare.

Remarks : Excellent indicator of dense forests, pure water and general habitat quality. New record for Orissa.





FAMILY LESTIDAE



Lestids or Spreadwings are medium-sized damselflies with predominantly green or brown ground colour, sometimes with iridescent markings. While perched, the wings are kept spread out unlike other damselflies, giving the family its common name. They have a wide choice of habitats, being found from dry grasslands to evergreen forests. Out of the 25 species found within Indian limits, 8 have been recorded from the peninsular region. 6 species have been recorded from Orissa.

EMERALD SPREADWING

Lestes elatus

	Abdomen	Hindwing	Wing Spot	Eye
Male	34-36 mm	23-24 mm	Black	Brown above, turquoise blue below
Female	34 mm	24 mm	Greyish Black	Brown

Male : Medium sized brown damselfly with a diagnostic metallic green 'hockey stick' mark on dorsal thorax.

Female : Similar to male but paler brown in colour with stouter abdomen.

Habitat : Near paddy fields, ponds, canals and lakes.

Behaviour : Males readily seen perched among vegetation, occasionally 'wagging' their tail; weak in flight. Females confined to shrubbery and rarely seen.

Distribution : Widespread and occurs in most districts. Peninsular India.

Status : Uncommon.

BLACK-STRIPED SPREADWING

Lestes sp.

	Abdomen	Hindwing	Wing Spot	Eye
Male	37 mm	24 mm	Brownish black	Greyish blue
Female	36 mm	24 mm	Pale brownish	Similar

Description : Medium sized grayish black damselfly with a broad stripe of mat black along the middle of greenish grey thorax and black anal appendages. Female similar but paler with differently shaped anal appendages. Occurs in small colonies; very brief flight period during peak monsoons. Recorded only from Similipal hills.

Remarks : Specimens collected match in some aspects with *Lestes patricia*, which is confined to Coorg. However it shows variations in structure of anal appendages and patterns of thorax and abdomen. Taxonomic investigation is underway to determine its exact identity.



BROWN SPREADWING

Lestes umbrinus

	Abdomen	Hindwing	Wing Spot	Eye
Male	32 mm	29-30 mm	Pale Brown	Brown above, yellow beneath
Female	20 mm	21 mm	Pale Brown	Brown

Male : A medium sized pale brown damselfly with reddish brown unmarked thorax

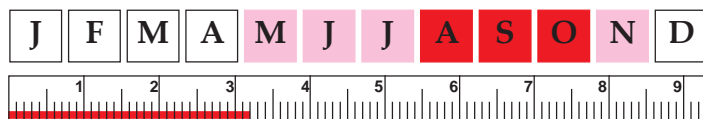
Female : Very similar to male, but duller and with stouter abdomen.

Habitat : Grasslands, scrub and around waterbodies, mostly in dry areas.

Behaviour : Like other *Lestes*, but more sedentary.

Distribution : Bolangir, Koraput, Sundergarh, Mayurbhanj. Northern and Eastern India. Parts of SE Asia.

Status : Locally common.





SAPPHIRE-EYED SPREADWING

Lestes praemorsus

	Abdomen	Hindwing	Wing Spot	Eye
Male	32-35 mm	21-22 mm	Black	Sapphire Blue
Female	30-32 mm	20-21 mm	Black	Similar but duller

Male : Medium sized bluish damselfly with sapphire blue eyes and diagnostic scalloped pattern on dorsal thorax.

Female : Similar but duller, with sapphire blue replaced by greenish blue.

Habitat : Marshes, swamps, seasonal puddles and check-dams in forested landscapes.

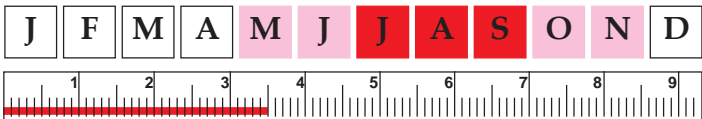
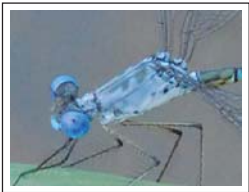
Behaviour : Like other *Lestes*, but more readily seen because of colouration; flight stronger and more sustained than congeners. Female lays eggs on emergent grass stalks, which gets washed down into the water below.

Distribution : Mayurbhanj. Wetter parts of India. S.E. Asia.

Best seen at : Chahala meadow, STR in September.

Status : Locally common.

Remarks : New record for Orissa.





EMERALD-STRIPED SPREADWING

Lestes viridulus

	Abdomen	Hindwing	Wing Spot	Eye
Male	34-35 mm	23-24 mm	Khaki Brown	Brown above, golden yellow below
Female	34 mm	24 mm	Paler, narrower and longer	Pale brown

Male : Medium sized khaki brown damselfly with a pair of diagnostic narrow reddish brown stripes bordered by metallic green strips on either sides of middorsal carina.

Female : Similar to male, but with a blackish brown mid-dorsal mark on S9.

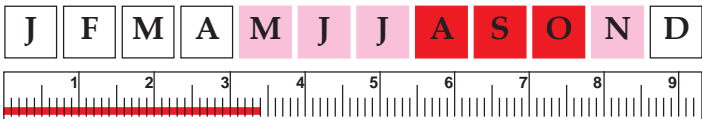
Habitat : Dry grass, and forest undergrowth.

Behaviour : Like other Lestids.

Distribution : Widespread in most districts. Confined to peninsular India, especially to Deccan peninsula.

Best seen at : Jashipur, Mayurbhanj.

Status : Common.





FAMILY PLATYCNEMIDIDAE



Platycnemidids or Bush Darts are medium-sized Damselflies which are coloured black with mostly yellow markings, with round-tipped transparent wings. Abdomen is always longer than the hindwing. They are found both in running and standing water, thus enabling them to colonise a wide variety of habitats. Out of the 30 species found within Indian limits, only 3 have been recorded from the peninsular region. Four species have been recorded from Orissa.

TWIN-SPOTTED COELICCIA

Coeliccia cf. bimaculata

	Abdomen	Hindwing	Wing Spot	Eye
Male	c.36 mm	c.22 mm	Blackish Brown	Bluish with a black cap on upper half
Female	c.35 mm	c.23 mm	Blackish Brown	Black above Bluish below

Description : Large bluish black damselfly with diagnostic pale blue oval spots on the anterior half of the thorax on either side of the mid-dorsal carina. Female is very different, with whitish stripes on thorax.

Habitat : Seepages and slow brooks in shady dense mid-elevation forests.

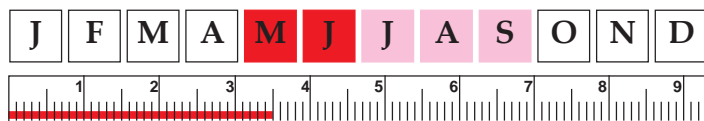
Behaviour : Scanty information available.

Distribution : Known only from Garo hills, Meghalaya. All the members of this genus are from the Himalaya and N.E. India.

Best seen at : Two records from Kulipal, Karkachia in STR.

Status : Very rare.

Remarks : More taxonomic investigation is required to confirm the identity of this species. However, this constitutes the first record of this S.E.Asian genus from peninsular India, and thus has great biogeographical significance.





PIED BUSH DART

Copera ciliata

	Abdomen	Hindwing	Wing Spot	Eye
Male	35-37 mm	22-23 mm	Reddish Brown	Black above, olivaceous at side & below
Female	33-37 mm	22-24 mm	Greyish Brown	Black above, olivaceous at side & below

Male : Large damselfly with unmistakable pied colouration, long spiny legs and characteristic anal appendages.

Female : Broadly similar to male, but the white areas replaced by reddish, stouter abdomen and differently shaped anal appendages.

Habitat : Heavily weeded ponds and small lakes with shady surrounding vegetation.

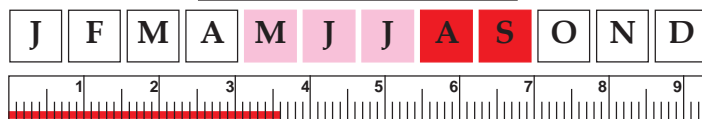
Behaviour : Found in small colonies in suitable habitats, both males and females found together.

Distribution : Mayurbhanj. Eastern and NE India.

Best seen at : Ranibandh, Baripada.

Status : Uncommon.

Remarks : New record for Orissa.





YELLOW BUSH DART

Copera marginipes

	Abdomen	Hindwing	Wing Spot	Eye
Male	28-31 mm	16-18 mm	Brown framed with yellow	Black above, greenish sides with narrow equatorial band
Female	29-30 mm	20 mm	Paler than male	Similar to male but cap olivaceous brown

Male : Medium sized bronze-black damselfly with fine bright yellow stripes on thorax and creamy white tip to tail. Immature male has greyish blue abdomen. Legs are bright yellowish orange. Can be confused with the next species, but for the diagnostic point that the superior anal appendages are only one-fourth the length of the inferiors. Teneral of both sexes are pale white, and are called 'ghost forms'.

Female : Similarly shaped but black replaced by brown, irregular markings on thorax and brownish legs.

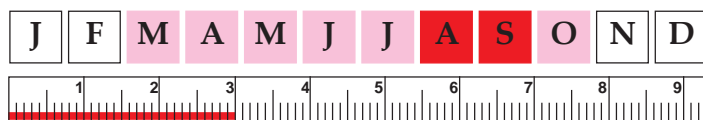
Habitat : Undergrowth near streams, slow flowing rivulets in well-wooded habitats.

Behaviour : Found in herbage and streamside vegetation, often at low heights.

Distribution : Throughout India and Oriental region

Status : Common.

Remarks : This species shows a range of variations, based on the region of occurrence. New record for Orissa.





BLUE BUSH DART

Copera vittata

	Abdomen	Hindwing	Wing Spot	Eye
Male	28-34 mm	16-18 mm	Reddish brown	Blackcap above, olivaceous below with black equatorial belt
Female	28-30 mm	18 mm	Blackish brown	Dark brown above and apple green below

Male : Similar to previous species but with differently patterned thorax with coarse yellow spots and reddish legs. Diagnostic point is the length of the superior anal appendages which being at least half the length of the inferiors.

Female : Similar to males but brownish instead of black and legs yellowish.

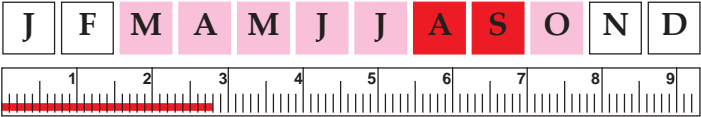
Habitat : Similar to the previous species.

Behaviour : Similar to the previous species.

Distribution : Throughout Indian and Oriental region.

Status : Common.

Remarks : Shows extreme variability between regional populations, mainly in the head patterns. New record for Orissa.





FAMILY PROTONEURIDAE



Protoneurids or Bamboo Tails are medium to large-sized damselflies, mostly with transparent wings which are rounded or pointed at the tip. They are usually coloured black with blue or yellow markings on the thorax and tail tip. The thin abdomen which is long, but never more than twice the length of hindwing, gives the family its name. They are found in flowing water in forested landscapes. Out of the 24 species found within Indian limits, 15 have been recorded from the peninsular region. Three species have been recorded from Orissa.

COORG BAMBOOTAIL

Caconeura ramburi

	Abdomen	Hindwing	Wing Spot	Eye
Male	43-44 mm	28-29 mm	Black	Azure blue with black cap
Female	40-11 mm	28 mm	Black	Yellowish with black cap

Male : Large black damselfly, unmistakable with azure blue thoracic stripes and broad bright azure blue tip to the tail. Immature male resembles female with yellow thoracic stripes but has broad blue tip to tail.

Female : Similar to male but blue replaced with yellow and broader abdomen with a small blue patch on tail tip.

Habitat : Hill streams, rivulets and check-dams with overflow, in dense forests.

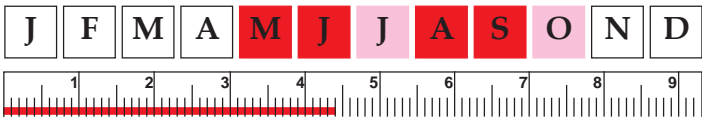
Behaviour : Males are seen perching on overhanging vegetation, always near water. Females reclusive and occur away from water and are mostly seen only during copula.

Distribution : W.Ghats and parts of E.Ghats.

Best seen at : Sanjo river, STR.

Status : Uncommon.

Remarks : New record for Orissa. Possibly this species was mistakenly identified as *C.gomphoides* in earlier literature.





Immature male

BLACK-WINGED BAMBOO-TAIL

Disparoneura quadrimaculata

	Abdomen	Hindwing	Wing Spot	Eye
Male	32 mm	22 mm	Rusty brown	Brick red with two black equatorial stripes
Female	29-30 mm	22 mm	Yellowish	Blackish brown with two equatorial stripes

Male : Medium-sized brick red damselfly with variegated markings on thorax, unmistakable due to its black banded wings.

Females : Very different; more robustly built with stouter abdomen and olivaceous green thorax marked with marbled pattern.

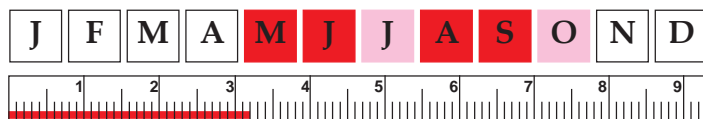
Habitat : Edges of boulder-strewn rivers and streams.

Behaviour : Males perch on low twigs or emergent rocks, making occasional patrolling flights, hovering in between, the wing patches describing a blurred black circle, giving them the appearance of helicopters with black rotor blades ! Females keep away from water except during copula, and can be seen low in forest undergrowth

Distribution : Similipal, Kuldiha, Kotgarh and Debrigarh. W.Ghats, C.India and E.Ghats.

Best seen at : Palpala river, STR. **Status** : Locally Common.

Remarks : New record for Orissa.





BLACK BAMBOOTAIL

Prodasineura verticalis

	Abdomen	Hindwing	Wing Spot	Eye
Male	29 mm	19 mm	Dark reddish brown	Black on upperside & coral red below
Female	30 mm	20 mm	Dull reddish brown	Paler with equitorial band

Male : Medium-sized black damselfly with narrow blood-red stripes on thorax and slender black tail.

Female : Similar to male but with stouter abdomen and red marks replaced with yellowish white.

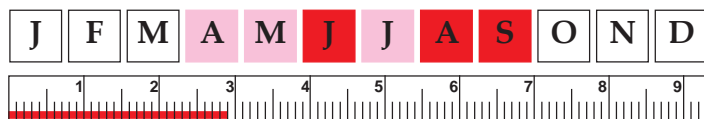
Habitat : Edges of streams, rivulets and backwaters of rivers, running through well-wooded habitats

Behaviour : Males are seen perched on low overhanging vegetation, while females are rarely encountered. Although eggs are laid mostly in running water, one female was recorded ovipositing among roots in a seasonal rainwater ditch in July.

Distribution : W.Ghats, NE India and parts of SE Asia.

Easy to see at : Lulung, STR. Status: Locally common

Remarks : New record for Orissa.





5.

How to study odonates and make your garden odonate - friendly

One does not need to go to a forest or a sanctuary to watch odonates. They are there all around wherever there is water - be it a well, cement water tank, garden pond, paddy field or any natural wetland like a river, lake, pond, marsh or stream. Some can even be found away from water, in your garden or flying about in the open sky. Though they can be found throughout the year in Orissa and eastern India, post-monsoon months are generally the best time to spot the maximum number of species; summer is also a good time to search for certain rare species frequenting hill streams flowing through dense forests. Generally, the best time of the day to watch and photograph odes is during the morning hours after the sun has come up; morning hours before mid-day is the best, both on account of the soft light as well as the fact that odes are less fidgety during that time. As the sun goes up, so does their activity and the harshness of the light, thus making it difficult to approach and take good pictures. A digital SLR camera with a 100 mm macro lens is ideal for photographing odes; however, any point-and-shoot camera having a minimum of 7 megapixels and 7x zoom is a cheaper and handy option, and can deliver excellent results in their 'macro mode'. It also helps to wear dull-coloured clothes and approach odonates gently without any abrupt movements, preferably from behind/at an angle.

Knowing where to find species of choice and a knowledge of their behaviour and activity pattern constitutes a major part of successful ode photography. 'Perchers' have favourite places to which they return invariably; hence waiting nearby often yield results. They also readily perch on a stick or bamboo sprig planted upright at the edge of a waterbody. 'Patrollers' are more difficult to photograph, though they too rest for brief spells. Crepuscular species are best discovered by carefully searching undergrowth near water. They are also often

attracted to lights, especially during thunder storms, when a cursory inspection of outdoor / verandah lamps can yield interesting and elusive species. Tying a white bedsheet across two branches and suspending a portable camp light in front of it, makes for a makeshift 'light trap' and often attracts interesting species at dusk, especially near marshes and forest swamps. Tiny dartlets can be very difficult to spot unless one searches carefully, bending low over damp and marshy grasses. As is the case with any taxon, the trick is to develop a 'search image' by constant effort. Though many species allow close approach, some are rather jittery, taking off at the slightest of disturbance. A pair of binoculars (preferably a 7x35 or 8x40, with good near-focussing capability) can be an excellent aid for detailed observations regarding colour and pattern. Casual collection of odonates is to be avoided at all cost; these days, a reasonably good photograph is all that one needs for identifying any of the widespread species. Carefully recorded observations in a field note-book, supplemented by sketches will prove to be invaluable sources of information, once done over long periods of time.

Ode gardening is literally unknown in India (though butterfly gardens are slowly catching on), but is a very popular activity in countries like Japan. In fact, making your garden or surroundings attractive to odonates can be done with very little effort – just increasing the availability of water either in the shape of a pond or a wet meadow with standing water, along with a bit of natural vegetation surrounding it is all that is required. The first step is to make a small shallow waterbody, in the fashion of an ornamental fish pond or lily pond; in small gardens, readymade shallow cement water containers can also serve the purpose. These have to be filled with water from a local pond/lake, taking care to spread some mud/debris collected from the same pond along with whatever aquatic creatures and fish fingerlings that come with it. Further, aquatic plants of different types (some floating, some rooted, some emergent) have to be planted in it. Over a period of time, as the pond becomes a self-sustaining ecosystem, adult

dragonflies and damselflies also get attracted to them. This gives a fantastic opportunity for both photographing odes up close. It also constitutes a readymade natural laboratory to study territorial and breeding behaviour as well as larval stages. Larvae can be collected from nature and reared in small tanks / containers, studying the characters of each instar, till the adult finally emerges. Being voracious predators, they pounce upon anything manageable that moves and hence are easy to feed with mosquito larvae, midge larvae or tiny fish fingerlings. This also means that they can be cannibalistic, making rearing many larvae together, a rather difficult proposition. However, any effort taken towards rearing larvae is sure to enhance our understanding of this less-studied group. In this regard, it would surprise many to know that the detailed life-history and biology of hardly 15 out of 500 odd species found in our country, are known. Thus, enormous opportunities exist for any interested naturalist, keen on expanding the frontiers of knowledge.

Along with creating new artificial habitats for odonets to colonise, conserving existing habitats is also crucial. In urban areas particularly, any remaining patch of greenery or waterbody has to be protected. Habitat destruction by way of draining and 'reclamation' of ponds, marshes and reed swamps for real estate development is possibly the single most important threat to odonates, both in urban and rural settings. Even the smallest pond has its own dependent dragonfly and damselfly community; saving it also saves odonates from going extinct. Hence, odonate conservation is nothing but wetland conservation.

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2. **Philip S. Corbet (1980).** Biology of Odonata. Annual Review of Entomology, 25:189-217.

USEFUL WEBSITES :

<http://asia-dragonfly.net>

<http://dragonflyindia.yahoogroups.com>

Checklist of the Odonata of Orissa

Class : Insecta

Order : Odonata

Suborder : Anisoptera

Family : Aeshnidae

1. *Anaciaeschna jaspidea* (Burmeister, 1839)
2. *Anax guttatus* (Burmeister, 1839)
3. *Anax immaculifrons* Rambur, 1842
4. *Anax imperator* Leach, 1815
5. *Gynacantha bayadera* Selys, 1891
6. *Gynacantha dravida* Lieftinck, 1960
7. *Gynacantha* sp.
8. *Hemianax ephippiger* (Burmeister, 1839)

Family: Gomphidae

9. *Anormogomphus heteropterus* Selys, 1854
10. *Gomphidia williamsoni* Fraser, 1923
11. *Gomphidia T-nigrum* Selys, 1854
12. *Heliogomphus promelas* (Selys, 1873)
13. *Ictinogomphus rapax* (Rambur, 1842)
14. *Macrogomphus annulatus* (Selys, 1854)
15. *Microgomphus verticalis* (Selys, 1873)
16. *Megalogomphus hannyngtoni* (Fraser, 1923)
17. *Onychogomphus* sp.
18. *Paragomphus lineatus* (Selys, 1850)

Family: Libellulidae

19. *Acisoma panorpoides* Rambur, 1842
20. *Aethriamanta brevipennis* (Rambur, 1842)
21. *Brachydiplax chalybea* Brauer, 1868
22. *Brachydiplax farinosa* Krüger, 1902
23. *Brachydiplax sobrina* (Rambur, 1842)
24. *Brachythemis contaminata* (Fabricius, 1793)
25. *Bradinopyga geminata* (Rambur, 1842)
26. *Camacinia gigantea* (Brauer, 1867)
27. *Cratilia lineata* Foerster, 1903

28. *Crocothemis servilia* (Drury, 1770)
29. *Diplacodes nebulosa* (Fabricius, 1793)
30. *Diplacodes trivialis* (Rambur, 1842)
31. *Hydrobasileus croceus* (Brauer, 1867)
32. *Hylaeothemis indica* Fraser, 1946
33. *Indothemis limbata* (Selys, 1891)
34. *Indothemis carnatica* (Fabricius, 1798)
34. *Lathrecista asiatica* (Fabricius, 1798)
35. *Macrodiplax cora* (Brauer, 1867)
36. *Neurothemis fulvia* (Drury, 1773)
37. *Neurothemis intermedia* (Rambur, 1842)
38. *Neurothemis tullia* (Drury, 1773)
39. *Onychothemis testacea* Laidlaw, 1902
40. *Orthetrum glaucum* (Brauer, 1865)
41. *Orthetrum luzonicum* (Brauer, 1868)
42. *Orthetrum pruinatum* (Burmeister, 1839)
43. *Orthetrum sabina* (Drury, 1770)
44. *Orthetrum taeniolatum* (Schneider, 1845)
45. *Orthetrum triangulare* (Selys, 1878)
46. *Palpopleura sexmaculata* (Fabricius, 1787)
47. *Pantala flavescens* (Fabricius, 1798)
48. *Potamarcha congener* (Rambur, 1842)
49. *Rhodothemis rufa* (Rambur, 1842)
50. *Rhyothemis variegata* (Linnaeus, 1763)
51. *Tetrathemis platyptera* Selys, 1878
52. *Tholymis tillarga* (Fabricius, 1798)
53. *Tramea basilaris* (Palisot de Beauvois, 1805)
54. *Tramea limbata* (Desjardins, 1832)
55. *Tramea virginia* (Rambur, 1842)
56. *Trithemis aurora* (Burmeister, 1839)
57. *Trithemis festiva* (Rambur, 1842)
58. *Trithemis pallidinervis* (Kirby, 1889)
59. *Trithemis kirbyi* Selys, 1891
60. *Urothemis signata* (Rambur, 1842)
61. *Zygonyx iris* Selys, 1869
62. *Zygonyx torrida* (Kirby, 1889)
63. *Zyxomma petiolatum* Rambur, 1842

Family: Macromiidae

- 64. *Ephthalma vittata* Burmeister, 1839
- 65. *Ephthalma frontalis* Selys, 1871
- 66. *Macromia moorei* Selys, 1874

Suborder: Zygoptera

Family: Calopterygidae

- 67. *Neurobasis chinensis* (Linnaeus, 1758)
- 68. *Vestalis apicalis* Selys, 1873
- 69. *Vestalis gracilis* (Rambur, 1842)

Family: Chlorocyphidae

- 70. *Libellago lineata* (Burmeister, 1839)
- 71. *Rhinocypha bisignata* Hagen in Selys, 1853
- 72. *Rhinocypha quadrimaculata* Selys, 1853

Family: Coenagrionidae

- 73. *Aciagrion hisopa* (Selys, 1876)
- 74. *Aciagrion occidentale* Laidlaw, 1919
- 75. *Aciagrion pallidum* Selys, 1891
- 76. *Agriocnemis femina* (Brauer, 1868)
- 77. *Agriocnemis lacteola* Selys, 1877
- 78. *Agriocnemis pygmaea* (Rambur, 1842)
- 79. *Agriocnemis splendidissima* Laidlaw, 1919
- 80. *Agriocnemis* sp.
- 81. *Ceriagrion cerinorubellum* (Brauer, 1865)
- 82. *Ceriagrion coromandelianum* (Fabricius, 1798)
- 83. *Ceriagrion olivaceum* Laidlaw, 1914
- 84. *Enallagma insula* Fraser, 1920
- 85. *Enallagma parvum* Selys, 1876
- 86. *Ischnura aurora* (Brauer, 1865)
- 87. *Ischnura elegans* (Vander Linden, 1823)
- 88. *Ischnura forcipata* Morton, 1907
- 89. *Ischnura rufostigma* Selys, 1876
- 90. *Ischnura senegalensis* (Rambur, 1842)
- 91. *Onychargia atrocyana* (Selys, 1865)
- 92. *Paracercion calamorum* (Ris, 1916)

- 93. *Paracercion malayanum* (Selys, 1896)
- 94. *Pseudagrion decorum* (Rambur, 1842)
- 95. *Pseudagrion microcephalum* (Rambur, 1842)
- 96. *Pseudagrion rubriceps* Selys, 1876
- 97. *Rhodischnura nursei* (Morton, 1907)

Family: Euphaeidae

- 98. *Dysphaea ethela* Fraser, 1924

Family: Lestidae

- 99. *Lestes elatus* Hagen in Selys, 1862
- 100. *Lestes nodalis* Selys, 1891
- 101. *Lestes praemorsus* Hagen in Selys, 1862
- 101. *Lestes thoracicus* Laidlaw, 1920
- 102. *Lestes umbrinus* Selys, 1891
- 103. *Lestes viridulus* Rambur, 1842

Family: Platycnemididae

- 104. *Coeliccia* cf. *bimaculata* Laidlaw, 1914
- 105. *Copera ciliata* (Selys, 1863)
- 106. *Copera marginipes* (Rambur, 1842)
- 107. *Copera vittata* Selys, 1863

Family: Protoneuridae

- 108. *Caconeura ramburi* (Fraser, 1922)
- 109. *Disparoneura quadrimaculata* (Rambur, 1842)
- 110. *Prodasineura verticalis* (Selys, 1860)

Note : Some collected specimens which show considerable variation from known species are currently under taxonomic scrutiny and might turn out to be new species. Such specimens whose specific identity is yet to be confirmed is indicated by their genus alone. Eg. *Agriocnemis* sp.

GLOSSARY

Carina : Upper side of thorax.

Clutch: Complement of oocytes that mature together to produce a batch of eggs, which are usually laid together.

Conspecific: Belonging to the same species.

Congeneric : Belonging to the same genus.

Costal : Anterior border of wings from base to apex.

Courtship: A set of behavioural interactions between male and female that facilitates copulations; usually refers to displays by males.

Crepuscular: Active during twilight hours.

Cubital : Median space between base of wings & discoidal cell.

Dimorphism: Occurrence of two forms of individuals of a species.

Dispersal: Spatial displacement of individuals, that causes them to become further apart.

Diurnal: Active during day.

Ecosystem: Natural unit consisting of interacting living and non living parts.

Ectoparasite: Parasite living on the host.

Emergence: Events in which an adult comes out from larva.

Endemic: Restricted to a particular geographic area.

Feeding: Behaviour that follows prey capture.

Flight season: Period of the year during which reproductively mature adults are active.

Foraging: Behaviour that increases the likelihood of prey capture.

Frons : Forehead or upper portion of head.

Guarding: Behaviour of male when escorting a female and usually while she is ovipositing.

Habitat: Place where a given species or community lives.

Hyaline: Transparent, colourless.

Instar: Stage of larva between two successive moults.

Lacustrine : Having a preference for lakes

Larva: Development stage between egg and adult.

Microhabitat: Specific part of a habitat in which an individual is normally found during a specific stage of its life cycle or when performing a particular activity.

Migration: Spatial displacement of population from emergence site to a different habitat where reproduction ensues. Migration may be facultative or obligate and migrating individuals may or may not travel in aggregations.

Monotypic: Genus with only one species.

Nocturnal: During night.

Obelisk posture: Position adopted by perching dragonflies with abdomen pointing vertically upward, usually when the sun is overhead.

Occiput : back of head

Ovipositor: Extension of female genitalia involved in oviposition.

Oviposition: Act of laying eggs.

Parasitism: Interaction between species in which one species-the parasite lives in or on the other species-the host-from which it is benefited; the host is not necessarily killed by the interaction.

Parasitoid: Larvae of insects which parasite other insects and kill host.

Pterostigma : Wing spot.

Pruinescence: A powdery substance developing on various body parts of adult odonates, mostly in males.

Riparian: Along the bank of a river or lake.

Site fidelity: Duration of site residentiality.

Tandem linkage: Physical connection between male and female before copulation formed by male holding female by prothorax or head with his anal appendages.

Teneral: Freshly emerged adult.

Wetland: Ecosystems of fresh or brackish water with distinct set of plant and animal community. Ecosystems such as puddles, pools, ponds, tanks, lakes, reservoirs, canals, streams, rivers, marshes, paddy fields and estuaries are wetlands.

Wheel position: Heart-shaped copulation posture where male and females remain attached.

FREQUENTLY USED ABBREVIATIONS

FW : Forewing

HW : Hindwing

STR : Similipal Tiger Reserve

WLS : Wildlife Sanctuary

ZSI : Zoological Survey of India



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About the author

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- The first photographic handbook for Odonates of Eastern India.
- Covers 101 species (90% of all recorded species in the region).
- Over 250 photographs for quick identification.
- Pictures of male, female and immature for many species.
- English common names introduced to hitherto unnamed species.



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