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# ELA JOURNAL

The Quarterly Newsletter of Ela Foundation for Nature Conservation through Education and Research

## Editorial

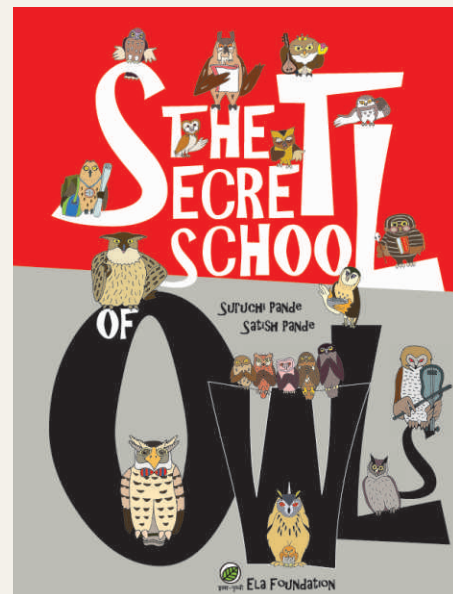
The festival of lights enlightens our minds and ushers knowledge. Ela Foundation has taken a small step in this direction and has published 'The Secret School of Owls', the first ever Indian comic book on owls, our most misunderstood birds, on the occasion of Diwali. The 26 owl characters, each belonging to different species, are specially created as cartoons in resemblance to actual species, and have Indian Sanskrit-based names to bring them closer to our hearts. The stories focus on physiological, anatomical and behavioral characters behind the various superstitious beliefs in which the owls are sadly shrouded. I am sure that a detour of the 'Secret School' shall enlighten the minds of readers and they shall befriend the owls, the friends of farmers. I wish you a happy reading and a 'Happy New Year' full of light, inspirations and aspirations.

The *Ela Journal* now has an ISSN registration. I hope this shall attract more articles from scholars. We have kept the journal in the free access format which can be downloaded from our website. The credit for publication goes to all our Ela Foundation members, because they have made the *Ela Journal* possible. The editorial committee has decided to design the forthcoming issues of the journal by balancing conservation science popularizing articles and original bio-science papers. We shall have contributions from people interested in

nature conservation as well as researchers and student of bio-sciences, conservation biologists and senior scientists. We shall peer review the contributions prior to publication to maintain the highest standards of academic excellence. The *Ela Journal* shall broadly conform to the mandate of Ela Foundation, particularly promoting research in ornithology, ethno-ornithology, natural sounds as well as other aspects of biology and conservation. I invite you to contribute in *Ela Journal* to ensure nature conservation through education and research.

Ela Foundation is preparing for the 8th ARRCN Symposium, India, to be held in February 2014. In preparation for this event the *Ela Journal* is publishing a series of articles in the 'Asia Speaks' section. This time we have a communication from a dedicated field biologist and ornithologist from Vietnam in line with the previous articles from Singapore, Malaysia and Japan.

I feel particularly happy to convey to our readers that Prof. Dhrub Jyoti Saikia, who attended our 8th 'Certificate Course in Basic Ornithology' and who has previously contributed in the *Ela Journal* on the novel interdisciplinary subject of 'Cosmic-Ethno-Ornithology', is now the Vice Chancellor of the Cotton College State University, Guwahati, Assam. His new article on the inter-galactic collision and bird forms gives



us a completely different insight into astronomy and life. In this issue we have papers on crab and butterfly diversity, Indian ethno-ornithology; success stories of rescue and release of Crested Serpent Eagle and Cinereus Vulture; forest fires; aquatic micro-life as well as popular articles from students and researchers. I hope that the embers in the *Ela Journal* shall light the fire of conservation consciousness in your sensitive minds.

Happy Reading.  
Happy New Year.



## Freshwater Crabs of India: Diversity, Conservation Needs and Future Potential

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**Copyright:** © PATI, S. K. & SHARMA, R. M. 2012.

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Freshwater crabs belong to the infraorder Brachyura of the order Decapoda in the class Malacostraca of phylum Arthropoda. They are adapted to freshwater, semi-terrestrial or terrestrial mode of life and known by their ability to complete life cycle independently of marine environment. They are found in almost all freshwater habitats such as, streams (Fig.-1), pools, ponds, rivers, swamps, rice fields (Fig.-2), rock holes/pits, tree trunk holes, leaf axils, etc. These animals are primarily nocturnal and prefer hidden places for shelter during the day time. Freshwater crabs are generally omnivorous, feeding on plant material and live or dead animals such as, fish, prawns, molluscs, etc. and sometimes cannibalism is also seen. Crabs are the chief food source for many animals including fishes, turtles, birds and mammals.

Over 1300 species are known from the world, of which only 96 species are recognized in India (Pati et al., 2012). Estimates of freshwater crab diversity suggest that a number of crab species are yet to be discovered in World at large (Yeo et al., 2008) and India in particular.

Majority of freshwater crabs show high endemism due to their limited dispersal ability, low fecundity and selected habitat preference. Few species are struggling for their survival in nature due to various anthropogenic activities e.g. habitat conversion, pollution, forest loss, unsuitable agricultural practices, etc. So, with proper planning, execution and management like declaration of few more protected areas, preserving enough natural forest, maintenance of good quality of natural water bodies, avoid/minimization of pesticide application in rice fields, preventing conversion of water bodies, we can save these animals from becoming endangered.

Freshwater crabs are an important and cheap source of protein particularly for tribal communities and lower income people. Freshwater crabs are believed to be consumed due to some medicinal properties. An infected crab, carrying parasitic worms or contaminated with heavy metals if eaten by human being, can cause health hazard. Some Indian species of crabs are valuable for aquarium trade.

Focused research is needed to carry out extensive or semi-intensive aquaculture practices to improve the stock of freshwater crabs in order to meet market demand and maintain the depleting wild population.



*Oziotelphusa ganjamensis* Pati & Sharma, 2012, recently described species from rice fields of Ganjam district, Odisha



*Barytelphusa guerini* (H. Milne Edwards, 1853), a common species of crab in the streams of Western Ghats

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## The tiny Dinosaurs of our age are at our mercy!!

Sameer Padhye<sup>1</sup>

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Temporary pools or ephemeral water bodies that form on plateaus at various places in Western Ghats are full of interesting animals. These pools are special ecosystems in themselves. Unicellular algae and other microscopic producers generate food on which a variety of animal forms survive and reproduce of which insects and crustaceans are the most common animals. Among crustaceans (animals with hard shells) smaller forms like cladocerans (water fleas), clam shrimps, anostracans (fairy shrimps) and notostracans (tadpole shrimps) are always present in such pools, often in great numbers.

Triops and *Lepidurus* (A temperate region group) or tadpole shrimps are an excellent example of living fossils. The reason why these are called as 'Living Fossils' is that they have evolved little from the time of their first occurrence more than 200 million years ago, and show hardly any morphological variation from their ancestral forms. This is an amazing feat as their lineage has seen extinction of once dominant animals like trilobites and dinosaurs!! They have witnessed a few mass extinctions that have occurred during the history of faunal evolution on our earth.

These crustaceans have a broad, flat and shield like semi-transparent carapace that covers their head and thorax, they have a pair of eyes dorsally and swim with their legs on their underside. A moderately long 'tail', which is actually abdomen of this animal, gives this animal a very superficial resemblance to tadpoles of frog, hence their popular name 'tadpole shrimps'. The

abdominal segments appear like rings and are often covered with long or short spines. The number of these segments is variable. Legs (often called as 'phyllopods' meaning leaf like appendages) are present on thoracic as well as some abdominal segments. Last few segments of abdomen are without legs. The abdomen ends in a telson that bears a pair of long, thin, caudal rami or appendages.

Tadpole shrimps are omnivorous animals feeding on other small animals and to some extent on the detritus. Triops prefer temporary rainwater pools as such pools are often devoid of predatory fishes. Triops *cancriformis*, the only other tadpole shrimp in India (as per the prevailing taxonomic concepts), is found mainly in Jammu and Kashmir area and often inhabits flooded rice fields. This species is sometimes considered as a minor pest in rice fields while the Western Ghat species are useful in controlling populations of small insects (such as mosquito larvae). Research work on other species of Triops found in the US has also proved their role as controllers of mosquito larvae. They have been observed to feed on fairy / clam shrimps using powerful mandibles. Filter feeding on planktonic organisms is also observed. When starved in lab population we have even observed cannibalism among Triops *granarius*.

Life cycle of Triops is very short but interesting. Larval stages of this animal are seen when their eggs present in dry soil hatch after the rains fill their habitats. Nauplii or early stages of these animals do not possess mouthparts and they survive



on yolk reserves. When food is abundant the animals grow rapidly and become sexually mature within 2 months. Male and female are separate but in some species hermaphrodites also occur. Females possessing egg sacs can be easily identified. These eggs are actually 'cysts' as they contain an encysted early embryonic stage rather than an ovum. Before the drying of such ponds sets in, the females oviposit on substrates such as stones or plants or glue these cysts on particles of sand. These lie in mud in dormant state for months or years until favorable conditions arrive. Cysts can withstand complete desiccation and are known to survive for years in a state of what is called as 'suspended animation'. These cysts are probably the key to their survival and success for such a long evolutionary time. Mature Triops reproduce sexually but parthenogenesis and hermaphrodites that show self-fertilization have also been seen. At appropriate time the eggs hatch in to a larva and the life cycle starts all over again.

India has only 2 species of Triops known so far but there are many species worldwide.

Many species of Triops show a high variation in their morphology on account of various biotic and abiotic factors and hence are difficult to identify up to species level. Recently molecular work has been initiated all over the world to settle the question of genetic variation and speciation in this interesting group. Should we allow such animals to become rare?? Should human carelessness about their interesting habitats make these animals rare and endangered species?? These are serious questions. The temporary rainwater pools are increasingly becoming affected by human activity; most serious being pollution of these habitats and also complete filling of these depressions with debris or complete loss of such places to urbanized dwellings. In Pune and nearby places like Satara, Panchgani and Mahabaleshwar as well as some places in Kolhapur such habitat destruction is rampant. There is an urgent need to conserve some of these pristine habitats since these ecosystems are unique because of their dependence on rainwater for filling. Besides, these are some of the more persistent and oldest freshwater

habitats worldwide. Local climate and nature of surrounding soil / rock structure determine the physical and chemical properties of water in these pools. Water levels, temperature, salinity, and other environmental conditions are highly fluctuating. The animals like Triops have evolved the best means to live and reproduce in such stressful environments. Their study will teach us several aspects about the process of evolution and adaptation. It will be a shame on our part if we lose such interesting animals due to our total disregard for such unique ecosystems. Conservation is not about large and charismatic animals alone; smaller animals like Triops must also receive attention. Every effort must be made to protect their habitat and I am sure it can be done at a much cheaper cost incurred for protecting larger animals!

## Ornithology Course in the 9th Year



The 9th 'Certificate Course in Basic Ornithology' has begun in December 2012 at Pune. It is jointly conducted by Ela Foundation and M.E.S.A.G. College, Pune and has 105 participants. It is the only such interactive course in India.

## Ela File presented to 'Mother of Hornbills'



Dr. Satish Pande and Rajgopal Patil of Ela Foundation presenting the Ela File on Malabar Pied Hornbill to Prof. Pillai Poonswad, at Khao Lak, Phuket, Thailand, during the International Ornithological Congress for South East Asia. The pictorial natural history files are published by

Ela Foundation to create awareness about nature conservation amongst public. Prof. Poonswad is called the 'Mother of Hornbills' in appreciation of her efforts to protect them in the rainforests of Thailand.

## Butterfly Diversity of Tata Power Hydro Lakes, Pune District, Maharashtra.

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### Abstract :

During the aquatic diversity surveys of six hydro power lakes of Tata Power Company in Pune District, we prepared an inventory of butterfly diversity adjacent to the lakes that showed 60 species of butterflies in six families. Shirawata Lake and the adjacent area were found to support good butterfly diversity. This area has minimal human interference and important conservation value.

### Introduction :

Western Ghats is one of the 27 biodiversity hotspots of the world (Myers et al. 2000). Literature survey of butterflies of the Western Ghats (Winterblyth 1956; Gaonkar 1996; Gunathilagaraj et al. 1998; Kunte 2000; and Nayak et al. 2004) showed that there are few recent scientific records on butterflies of Northern Western Ghats. Further, there are no inventory studies on the butterfly diversity of the catchments of hydro power lakes, hence our study is unique.

### Methodology :

Seven localities from hydro power lakes of Tata Power Company in Pune District, Northern Western Ghats were visited to collect the inventory data of the butterfly species diversity. Three visits were conducted to each site during pre-monsoon (June 2011), post-monsoon (October 2011) and summer (March 2012) seasons to collect the data. The data was then pooled for the preparation of checklist. Number of individuals of each species was also recorded every time to understand the relative percent abundance for each species, which was calculated using the formula:

$$Abi = \frac{ni}{N} \times 100$$

where Abi is the relative percent abundance of *i*th species, *ni* is the observed number of individuals of *i*th species, and

$$N = \sum ni$$

The frequency of occurrence was calculated by the formula:

$$\frac{l}{L}$$

where *l* is the number of sites where the species was observed while *L* is the total number of sites where monitoring was conducted.

Field data was collected by conducting random surveys by all out search method, when butterflies were most active, i.e. in the morning 0900h to 1100h and evening 1530h to 1730h. Butterflies were identified in the field with the help of field guides (Gunathilagaraj et al. 1998 and Kihimkar 2011). Specimen collection was strictly avoided. The localities are shown in Map (Figure 1).

### Study Area :

The Tata Power Company has six dams in Pune District, Maharashtra state, India. These are medium to large size dams for power generation. The man-made water reservoirs are in existence for about 100 years. They are surrounded by mountains. The landscape chiefly consists of paddy fields and small human settlements with cattle-sheds. There are interspersed grasslands with intermittent scrubland. The mountain slopes have semi-evergreen and moist deciduous forests with intermittent evergreen patches. They also show many ephemeral streams with riparian vegetation.

The rivers on which the various dams are built include Mula, Neela, Andra, Indrayani, and Kundalika. The Walvan and the Lonavla dams are built on the tributary streams that eventually join one of these rivers. These streams and rivers are





naturally flowing from west to east and originate in the Northern Western Ghats that are part of the biodiversity Hot-Spots of global importance. The study area includes seven sites viz. Mulshi, Ambavane, Lonavla Lake, Walvan, Shirawata, Kundali and Thokarwadi. The human interference is maximum at Lonavla Lake and minimum at Shirawata.

## Results and Discussion :

In all 60 species of butterflies were observed during this study, belonging to all six families. Nymphalidae was found to be the predominant family with 22 species. Common Grass Yellow (*Eurema hecabe*) was the most abundant species with relative abundance of 6.8 % and the most widely occurring species (frequency = 1).

Locality wise check list of the butterfly species along with the percent abundance and frequency of occurrence is given in Table 1. Rane & Ranade (2004) and Padhye et al. (2006) have studied the butterfly species diversity in Tamhini area. However, their study area includes only a part of the Mulshi dam catchments area. Nimbalkar et al. (2011) have recently studied butterfly diversity from Bhore Tahsil, Pune District that includes two dams, Bhatghar dam and Deoghar dam. They have not mentioned specific sites from the district from where the data was collected. Further, to the best of our knowledge, there are no focused inventories of the butterfly diversity of catchments of dams in general as well as those of the hydro power projects in particular. We conducted the study with the specific purpose of documenting the holistic diversity around these projects because these man-made reservoirs are in

existence for 100 years. Out of the seven study sites human interference is maximum at Lonavla Lake and minimum at Shirawata. Lonavla Lake is present amidst the city area and the water body is used for laundry and vehicle washing along with fishing activity. Mulshi, Shirawata, Kundali and Thokarwadi study sites are near the dam and are restricted areas with minimum human disturbance. Ambavane study site was at the end of the reservoir. The area is protected but it was found to receive sewage from surrounding human housing facilities. Walvan study site is a garden near the dam and though not a natural habitat, it has a positive impact on butterfly distribution due to regular floricultural practices by TATA Power Company.

These water-bodies have favored the growth and conservation of natural vegetation on the adjacent hill slopes and play a major role in the conservation of natural habitats. Long term monitoring of the biodiversity of such conserved areas will throw light on the role of these water-bodies in biodiversity conservation.

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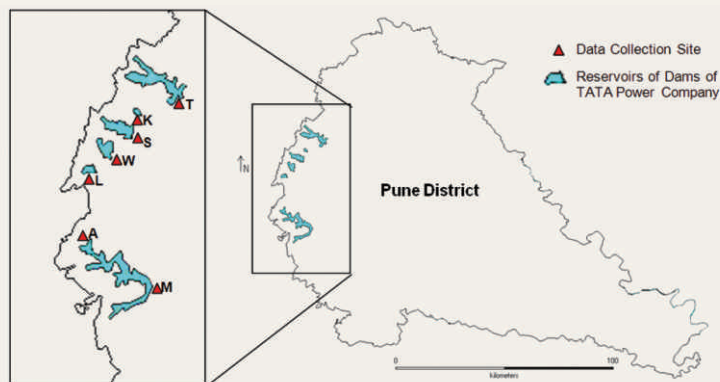
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**Figure 1: Sketch Map of the Study Area**



- Data Collection sites at hydro-power dams of TATA Power Company in Pune District; Maharashtra State, INDIA. Locality Code (north to south): T: Thokarwadi, K: Kundali, S: Shirawata, W: Walvan, L: Lonavla lake, A: Ambavane and M: Mulshi

**Table 1:**

Checklist of Butterflies with species distribution among seven data collection sites, percent abundance and frequency of occurrence of each species. Zero indicates absence while 1 indicates presence of the species in the locality.

No.	Scientific Name	Common Name	M	A	L	W	S	K	T	%Ab	Fr
	<b>PAPILIONIDAE</b>										
1	<i>Graphium agamemnon</i>	Tailed Jay	0	0	0	1	0	0	0	0.5	0.14
2	<i>Graphium sarpedon</i>	Common Bluebottle	0	0	0	0	0	1	0	0.5	0.14
3	<i>Papilio polymnestor</i>	Blue Mormon	1	1	1	1	1	1	0	3.7	0.86
4	<i>Papilio polytes</i>	Common Mormon	1	0	0	1	1	1	0	3.2	0.57
	<b>PIERIDAE</b>										
5	<i>Belenois aurota</i>	Pioneer Or Caper White	0	0	1	0	1	1	0	1.6	0.43
6	<i>Catopsilia pomona</i>	Common Emigrant	1	1	1	1	1	0	1	5.8	0.86
7	<i>Catopsilia pyranthe</i>	Mottled Emigrant	0	1	0	1	0	0	1	1.6	0.43
8	<i>Cepora nerissa</i>	Common Gull	1	0	0	0	1	1	0	1.6	0.43
9	<i>Colotis danae</i>	Crimson Tip	0	0	0	0	1	0	0	0.5	0.14
10	<i>Delias eucharis</i>	Common Jezebel	0	0	0	1	0	0	0	0.5	0.14
11	<i>Eurema brigitta</i>	Small Grass Yellow	1	0	0	0	0	0	0	0.5	0.14
12	<i>Eurema hecabe</i>	Common Grass Yellow	1	1	1	1	1	1	1	6.8	1.00
13	<i>Ixias marianne</i>	White Orange Tip	1	0	0	0	0	0	0	0.5	0.14
14	<i>Leptosia nina</i>	Psyche	0	0	0	0	1	0	0	0.5	0.14
15	<i>Pareronia valeria</i>	Common Wanderer	0	1	0	1	1	0	0	2.1	0.43
	<b>NYMPHALIDAE</b>										
16	<i>Ariadne merione</i>	Common Castor	1	1	1	0	1	0	0	3.2	0.57
17	<i>Vanessa cardui</i>	Painted Lady	0	0	0	0	1	0	0	0.5	0.14
18	<i>Danaus chrysippus</i>	Plain Tiger	1	0	1	1	1	0	1	3.2	0.71
19	<i>Danaus genutia</i>	Striped Tiger	1	0	0	1	1	1	1	3.7	0.71
20	<i>Euploea core</i>	Common Indian Crow	1	1	1	1	1	0	0	4.2	0.71
21	<i>Hypolimnas bolina</i>	Great Eggfly	0	0	0	0	1	0	0	0.5	0.14
22	<i>Hypolimnas misippus</i>	Danaid Eggfly	1	0	0	1	0	0	1	1.6	0.43
23	<i>Junonia atlites</i>	Grey Pansy	0	0	0	1	1	0	0	1.6	0.29
24	<i>Junonia hierta</i>	Yellow Pansy	1	0	0	0	1	0	0	1.1	0.29
25	<i>Junonia(Precis) iphita</i>	Chocolate Pansy	1	1	0	0	1	1	0	5.8	0.57
26	<i>Junonia lemonias</i>	Lemon Pansy	1	1	0	1	1	1	0	4.7	0.86
27	<i>Neptis hylas</i>	Common Sailer	1	1	1	1	1	0	0	3.7	0.71
28	<i>Pantoporia hordonia</i>	Common Lascar	0	0	0	0	1	0	0	0.5	0.14
29	<i>Parantica aglea</i>	Glassy Tiger	0	0	0	0	1	1	0	1.1	0.29
30	<i>Phalanta phalantha</i>	Common Leopard	1	1	1	1	1	0	0	4.7	0.71
31	<i>Rohana parisatis</i>	Black Prince	0	0	0	0	1	0	0	0.5	0.14
32	<i>Tinimala limniace</i>	Blue Tiger	0	0	0	0	1	1	0	1.1	0.29
33	<i>Tinimala septentrionis</i>	Dark Blue Tiger	0	0	0	0	1	0	0	0.5	0.14
34	<i>Ypthima asterope</i>	Common Threering	1	1	1	0	0	0	0	1.6	0.43
35	<i>Ypthima avanta</i>	Jewel Fourring	0	1	0	1	0	0	0	1.1	0.29
36	<i>Ypthima baldus</i>	Common Fivering	0	0	0	0	1	0	0	1.1	0.14
37	<i>Ypthima huebneri</i>	Common Fourring	0	1	0	1	0	0	1	1.6	0.43
	<b>LYCAENIDAE</b>										
38	<i>Amblypodia anita</i>	Leaf Blue	0	0	0	0	1	0	0	0.5	0.14
39	<i>Caleta caleta</i>	Angled Pierrot	1	1	0	0	1	0	1	3.7	0.57
40	<i>Castalius rosimon</i>	Common Pierrot	1	1	0	1	1	0	0	2.1	0.57
41	<i>Catochrysops strabo</i>	Forget-Me-Not	1	0	0	0	0	0	0	0.5	0.14
42	<i>Chilades pandava</i>	Plains Cupid	0	0	0	0	1	0	0	0.5	0.14
43	<i>Euchrysops cnejus</i>	Gram Blue	0	0	0	0	1	0	1	1.1	0.29

44	<i>Jamides alecto</i>	Metallic Cerulean	0	0	1	0	1	0	0	1.1	0.29
45	<i>Jamides bochus</i>	Dark Cerulean	1	1	0	0	0	0	0	1.6	0.43
46	<i>Jamides celeno</i>	Common Cerulean	0	0	0	1	1	0	0	1.6	0.29
47	<i>Prosotas dubiosa</i>	Tailless Line Blue	0	0	0	0	1	0	0	0.5	0.14
48	<i>Pseudozizeeria maha</i>	Pale Grass Blue	0	0	0	1	0	0	0	0.5	0.14
49	<i>Zizula hylax</i>	Tiny Grass Blue	0	0	0	0	1	0	0	0.5	0.14
	<b>HESPERIIDAE</b>										
50	<i>Badamia exclamationis</i>	Brown Awl	0	0	0	0	0	1	0	0.5	0.14
51	<i>Pseudoborbo bevani</i>	Bevan's Swift	0	0	0	0	1	0	0	0.5	0.14
52	<i>Hasora chromus</i>	Common Banded Awl	0	0	0	0	0	1	0	0.5	0.14
53	<i>Iambrix salsala</i>	Chestnut Bob	0	0	0	1	1	1	0	1.6	0.43
54	<i>Parnara bada</i>	Common Straight Swift	1	0	0	0	0	0	0	0.5	0.14
55	<i>Psuedocoladenia dan</i>	Fulvous Pied Flat	0	0	0	0	1	0	0	0.5	0.14
56	<i>Sarangesa dasahara</i>	Common Small Flat	0	0	0	0	1	0	0	0.5	0.14
57	<i>Suastus gremius</i>	Indian Palm Bob	0	0	0	0	1	0	0	0.5	0.14
58	<i>Taractrocera ceramas</i>	Tamil Grass Dart	0	0	0	0	0	0	1	0.5	0.14
59	<i>Udaspes folus</i>	Grass Demon	0	0	0	0	1	0	0	0.5	0.14
	<b>RIODINIDAE</b>										
60	<i>Abisara echerius</i>	Plum Judy	1	1	0	0	1	0	0	2.1	0.43

- Taxonomic status as per Kunte (2008) and Ghorpade & Kunte (2010)
- Locality Code: M: Mulshi, A: Ambavane, L: Lonavla Lake, W: Walvan, S: Shirawata, K: Kundali and T: Thokarwadi

## Parakeet Count by Ela Foundation

In January-February 2011 Rose-ringed Parakeets were counted in Western Maharashtra under the supervision of Ela Foundation. Dr. Satish Pande coordinated this project. The various researchers that contributed to the project were as follows:

Pune: Dr. Satish Pande, Abhijit Gandhi, Dr. Anil Mahabal, Sarabjit Singh, and students of 'Certificate Course in Basic Ornithology'. Kolhapur: Banda Pednekar. Sangli: Sharad Apte. Nasik: Ketan Patwardhan. Saswad: Amit Pawashe, Kumar Pawar and Dr. M. N. Mahajan.

Parakeets were counted at evening starting one hour before sunset as they return to their night roosts. In Pune the total number of parakeets counted at Vaikunth crematorium were 4910. In addition to the parakeets at Vaikunth crematorium in Pune 539 Mynas; 83 Indian River Terns; 670 Egrets; 73 White Ibises; and 1962 crows were also counted. At Yerawada parakeet count was 743. Total for Pune was 5653 parakeets.

In other places, the parakeet count was Saswad : 511; Sangli : 942; At one roost site in Nasik : 309.

The trees that the parakeets used for nesting were Mango, Ficus species, Tamarind, Rain Tree, etc. The roosting sites were traditional and parakeets stopped arriving after sunset.

The study will be conducted by Ela Foundation again in 2013 in February with the participation of the 9th batch of Ornithology Course students. Regular monitoring of the parakeets will tell us about the population trends of these birds. Parakeets are fruit eating birds and they nest in self excavated tree hollows. The parakeet populations also tell us about the environment, availability of fruits, and availability of nesting trees. Ela Foundation has contributed the data on parakeet count to the Leiden University, The Netherlands and Heidelberg University, Germany. A world parrot count is conducted by these universities, under the auspices of 'Extra-tropical Department' of the Parrot Researchers Group of the International Ornithological Union (IOU). Ela Foundation contributes from India.



Rose ringed Parakeet Photograph by Satish Pande



## Galaxy Collisions in the Shape of Birds

Prof. D. J. Saikia



Galaxies are the fundamental building blocks of the Universe, and consist of stars, remnants of stars, an interstellar medium and dark matter. The typical distance between stars in a galaxy like our own, the Milky Way, is approximately a parsec ( $3.09 \times 10^{16}$  m) which is many orders of magnitude larger than the size of the stars (the radius of the Sun is about  $7 \times 10^8$  m) that make up our Galaxy. The vast spaces between stars are not empty, but consist of the interstellar medium which comprises of gas, dust and magnetic fields. The gaseous component has a number of constituents ranging from the cold, dense molecular gas with temperatures less than a few tens of K, cooler clouds of neutral hydrogen with temperatures of about 100K to hot, tenuous, ionized gas with temperatures of about a million degree K. The cold, dense molecular clouds are the stellar nurseries where gas collapses due to gravity and new stars are born.

The more massive galaxies in the nearby Universe have been traditionally classified into the spirals, ellipticals and irregulars following the classification scheme suggested by Edwin Hubble. The spiral galaxies consist of a bulge in the centre and a disk with spiral arms. There may also be a bar-like structure in the centre. Ellipticals do not have a disk, and appear elliptical in the sky but could be intrinsically either egg-shaped, bun-shaped or have no axis of symmetry. The irregular galaxies, like the Magellanic Clouds in the southern hemisphere, which have been named after Ferdinand Magellan the Portuguese explorer, have no regular shape as the name suggests. Our Galaxy, the Milky Way is a barred spiral galaxy. As we probe much

farther into our Universe with the improved sensitivity of our telescopes at different wavebands, we find that the distant galaxies are often more complex exhibiting a variety of shapes and are commonly found to be gravitationally interacting with companion galaxies. Such interactions are also seen in the nearby Universe but were more common earlier in the history of the Universe. The cosmic history of interactions and mergers of galaxies, where two galaxies may sometimes combine to form a single unit, have shaped the appearances and properties of the galaxies as we see them today. During these interactions, the gaseous component of galaxies may be tidally stripped by gravitational interactions to form huge tails of gas enriching the space between galaxies, which is called the intra-group medium, for groups of galaxies, or the general intergalactic medium.

These cosmic collisions of galaxies or mergers can give rise to spectacular shapes in the sky, especially when collisions occur between two massive galaxies. If one of the galaxies is much smaller, it may be 'swallowed' by the bigger one, and we may well surprise the bigger galaxy at its dinner. The cosmic collision of two massive spiral galaxies and a third irregular galaxy, giving rise to a shape called 'The Bird' (see Figure) is a spectacular example of collisions in galaxies. This system was imaged by Petri Väisänen et al. (2008) and collaborators using the Very Large Telescope of the European Southern Observatory, and the South African Large Telescope. The two massive galaxies in this system (named ESO 593-IG 008 or IRAS 19115-2124) form the heart and the body, the irregular galaxy the head, and the tidally stripped gas the wings and the tails. The wings of this system which is at a distance of 650 million light years are spread over a distance of about the size of our Galaxy, the Milky Way.

Another striking example is Arp84, which consists of two interacting galaxies NGC5395 and 5394. It is believed that the smaller galaxy NGC5394 may have cart wheeled through the bigger one NGC5395. This system is called 'The Heron' and it is not difficult to imagine the body, head and beak of a heron, and of-course the 'nearby' fish! This image (see Figure) reproduced from the web was taken with the 10.4m GranTeCan, La Palma, with further

processing being done by Noel Carboni (<http://www.terraastro.com/blog/amazing-starmus-experience/>).

Galaxy collisions play an important role in our understanding of the evolution of the galaxies themselves and our Universe, and here we have seen two spectacular examples giving rise to bird-like shapes on the scale size of galaxies from the web was taken with the 10.4m GranTeCan, La Palma, with further processing being done by Noel Carboni (<http://www.terraastro.com/blog/amazing-starmus-experience/>).

Galaxy collisions play an important role in our understanding of the evolution of the galaxies themselves and our Universe, and here we have seen two spectacular examples giving rise to bird-like shapes on the scale size of galaxies.



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## Varuna

### Suruchi Pande

At the beginning of the Taittiriya Upanishada, the sage offers his humble salutation to Varuna. He says,

*Sham Varuna:* |

“Let Varuna be auspicious (for us)”. Varuna was considered to be one of the most respected deities in the Vedic period. The word Varuna is derived from the root verb *vru*, “to cover, to surround.”

In the Rigveda the sages say that Varuna controls the forces of water; he wears the cloth of water and due to him rivers flow in the direction of oceans. Thus, Varuna is the one who “encompasses the whole world”. Perhaps it was the personification of the sky. Varuna was also believed to be the deity of night and the deity of moral law. During the day time he guards the creation with the help of the Sun and during the night he is attentive with the eyes of the moon and thousands of stars. These stars are said to be the spies of Varuna. He punishes those who transgress the moral law and the rules of good conduct. He activates Vayu, the lord of the wind and sustains life by giving rain and crops.



In the Puranic period, Varuna was believed to be the lord of oceans, water and aquatic animals. In some temples, Varuna is depicted as riding on a crocodile or sometimes he is depicted as riding a chariot drawn by seven swans.

There is an amazing symbolism behind the concept of Varuna. We can think of him as our conscience which is omnipresent in our mind and intellect, but is sadly and surprisingly neglected. The world has

progressed rapidly due to modern technology but the present way of life with complex ramifications seems not to have a deep rooting. Thus, Varuna is an image of positive energies that we have to accumulate till the last breath. That is the 'encompassing existence' of Varuna in Nature and in human life.

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## Bail-Pola - The Bullock Festival

### Rajkumar Pawar

The Bullock Festival, Bail-pola or Bendur is the day to express our gratefulness towards our bullocks that toil in our farms for the entire year and help us create the wealth of grains. This festival is celebrated during the Marathi months of Ashadha, Shravan, Bhadrapad or Kartik. On the previous night of the day of Bail-pola, the shoulders of the bullocks are carefully and lovingly massaged with oil. On the day of the festival, early in the morning, the bullocks are taken out for feeding, and they are then bathed in a stream or river near the village. In the afternoon, hingul (red paint) is applied on their horns and they are decorated with colorful paper festoons. Their backs are painted beautifully and bells are tied around their neck. Bullocks are offered a new vesan (bridle) and a rope. In the evening a procession of bullocks is taken to the temple to offer respects to the village-deity. When the bullocks return home, the women of the house wash their



feet and lights are waved (aarti) before the bullocks as well as the farmer, in an act of adoration. Bullocks are fed with puran-polis (a type of sweet stuffed chapatti made in Maharashtra). In some parts, wedding ceremony of bullocks is also performed. During the night, lights are kept in the cowshed and the pieces of a recipe named shingulya (a preparation made with jaggery and wheat flour) are tied to the horns of the bullocks. Bail-pola is celebrated by giving a holiday to all the work related to field. This is the season when the bajra is ready for harvesting, jowar is sown and rice fields are

blossoming. Chores started in the months of Vaishakha, Jyeshtha, Ashadha and Shravan enter the stage of completion. Our nation is primarily agricultural and our festivals and celebrations have an eternal connection with Nature.

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## Ecology in Hindu Religion

### Yashwant Lele

In India, in the ancient times, there were thick forests teeming with wild life and hunting was considered a royal sport. Using the skin of deer or tiger as mattress in royal households and during meditation was then popular. One can see several drawings showing a sage meditating by the side of a river in a thick forest and seated on a tiger or a deer skin. The subject of a proper mattress to be used during meditation is important since there are several misconceptions around it.

Traditionally, a grass or bamboo mat is recommended for meditation or while performing yoga. A clean and folded piece of cotton or silk cloth is supposed to be the best material during meditation which facilitates all yogic postures. A mattress made from sheep's wool is deemed equally proper and is said to fulfill the desires of a person. In fact, a wooden seat which is now popular during several religious purposes is nowhere recommended by the traditional religion-technology (tantrashastra). Particularly, as far as the environment is

considered, an animal hide and a wooden seat should be prohibited because they directly destroy fauna and flora. The use of new or old deer and tiger or other animal skins are now banned by Indian law. A mattress should be eco-friendly; it must never be made of animal skin or wood but must be made from renewable material. The Hindu religion does not insist on the use of animal skins as mattresses. Now a day's mats made from plastic are available, but they are neither comfortable nor eco-friendly and hence should be discarded.

*Kausheyam pushtidam proktam,  
kambalam sarvasiddhidam I  
Shuklam va yadi va krishnam visheshat  
raktakambalam I  
Kashthasnam vihitetaram nishiddham II*  
(Swatantra Tantra)

[A seat from cotton cloth eradicates diseases; while a bamboo seat enhances love. Silk cloth is nourishing. A mattress of sheep's wool ensures accomplishments when it is white or black or especially red. A wooden seat is not prescribed and is the

one to be avoided'.]

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## Environmental Policy of the Maratha Rulers

### Saurabh Deshpande

Our younger generation is inclined to protect the environment but it is likely that the youth may not be aware of what our forefathers did in this direction. On the contrary, looking at the sad state of our present day environment they may be convinced that our ancestors did not care for our environment at all! It is true that in recent times, particularly during the British occupation of India (with the introduction of fire arms and good roads), several generations and agencies have destroyed our environment and the animals living in it, but others have also endeavored to protect it. In this focused series I shall present certain aspects of the environmental concerns of the Maratha Rulers from Maharashtra, India.

The powerful king Chatrapati Shivaji is recognized as the founder of the Maratha Kingdom. Shivaji Maharaj (demise 1680 AD) fought for independence from the Mughals, a concept novel to his time. While fighting the enemy he never ignored the need for the protection of environment,

which is reflected in his proclamations. After Shivaji Raje's demise Maharashtra continued fighting the Moghals for 27 years. Eventually the Peshwas - the Prime Ministers, held power on the behalf of the subsequent weak kings (1720 - 1818 AD), and during their reign the Maratha Kingdom spread across entire India. In this series, I shall restrict myself to the concepts of environmental protection promoted and practiced during the Maratha period from Chatrapati Shivaji's time till the end of the Peshwa's rule.

We shall consider royal orders, proclamations and decrees issued for the protection of the environment; water management, tree plantations, the concept of a special zoo, rules for hunting and exploiting birds and animals; war techniques based on the skills of the wild animals; and war strategies based on local geography. The history of the Marathas was not limited to warfare, but also included an administrative system that guaranteed the welfare of the State. Their attitude

towards looking at nature was benevolent and utilitarian. The work done by them is still relevant, useful and can serve as guidelines to our present day understanding of nature. Let us appreciate what our forefathers did for protecting our environment.

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## Forest Fires: A Dilemma and Possible Solutions

Nitin Kakodkar



Forest fires inflict great damage if timely and prompt action is not taken to extinguish them. Several problems arise due to repeated forest fires. The displacement or destruction of flora spreads across species and impoverishes biodiversity. Taxa exhibiting restricted range movement such as insects, arachnids, amphibians, reptiles, and even birds, get either burnt or die. Repeated incidents of fire in the same area negatively affect populations which reduce over a period of time and the habitats are temporarily destroyed or permanently modified. One such problem of great concern is the emergence and subsequent dominance of fire hardy floral species such as lantana. This problem has achieved major magnitude in several of our forests. There is a reduction in the moisture level and the water regime is reduced resulting in the reduction and regeneration of flora. The soil gets brittle leading to higher rates of erosion during rains.

Several traditional methods are in vogue to control forest fires. The forest department takes preventive containment measures like cutting and burning fire lines at the boundaries of compartments in broad-leaved forests (including Teak, Kusum, Jamun, Moha, etc. trees). These fire lines have varying widths depending on the sensitivity of the area and the width can vary from as less as 3 m to a maximum of 15 m. In case of smaller forest fires the fire can be smothered by beating with green bushes to cut the oxygen supply. Dousing small embers can be done by pouring water or throwing soil depending on the availability. The wind direction and speed, the magnitude of fire, the number of forest staff and forest watchers and other laborers available, the type of terrain (such as mountains, nullahs, gulleys, stream beds, cliffs), are crucial factors that decide how quickly and to what extent the forest fire can

be controlled. In case of fires which are difficult to approach because of their intensity a counter fire is lit and this is tactically used to prevent the spread of the forest fire to adjoining areas. This may however entail sacrificing some forest area.

Many forests in India are deciduous in nature and the fuel build up is very high in summer. In order to prevent major catastrophes due to forest fires, the UNDP (United Nations Development Program) had initiated a 'Modern Forest Fire Control Project' at Chandrapur and Haldwani in the early eighties. The tools developed under this project were ergonomically efficient in comparison to the traditional and tiring method where beating of fire using leafy branches was in vogue. The modern tools used were rakes to clear the leaf litter. The McLeod tool combined the axe and shovels and was used to cut the bushes to clear a fire line and shovel it away. Modern methods also included the use of blowers carried on the backpack to scatter leaf litter and prevent spread of fire. Portable fire extinguishers can be carried on the back to spray foam. If the terrain permits, fire engines could be used to extinguish fire using rolls of long hose pipes.

Prevention and rapid detection and immediate response are the essence of fire control. This is possible with the participation of local people who have knowledge of the terrain. The forest department employs local fire extinguishers or angaris as fire watchers on daily wages from 15th February till 15th June. The job of the angaris is to maintain the fire line by sweeping it clean (to prevent leaf litter accumulation); survey the terrain from watch towers or temporary machans for signs of smoke or fire; and monitor the sites where fields are baked (raab burning) to prevent possible spread of fire into the adjoining forest. The fire line is maintained by clearing the regeneration of trees and grass by cutting the fire lines once the grass starts drying in the month of November and December and then burning it sometime in January using the 'stack and burn' technique. All fire lines have to be burnt before the 15th February each year, before the onset of summer. If for some exigencies it is not possible to complete the burning of fire lines before the 15th February then the

prior permission of the Divisional Forest Officer (DFO) is mandatory as such burning has to be monitored closely to prevent its spread into the adjoining forest areas.

Fire control involves several other problems such as the embers blowing by wind and jumping the fire line. If the fires start at night and the terrain is difficult, people may get lost in the forests. Clean drinking water may not be available as most streams run dry in the summer months. The fire-fighters can suffer severe dehydration, disorientation or burns, only to be rescued in the morning, at times losing their lives.

Solutions to the problem of forest fires are difficult. Education of the local people is the long term answer. The formation of 'Joint Forest Management Committees' involves participation of local communities. If they have stakes in the local forest produce (timber, seeds, fruits, leaves and nuts with medicinal value etc.) they actively participate to prevent forest fires. Cordial relationships between forest department and local communities are useful. Maintenance of fire lines and appointment of sufficient fire watchers requires timely funds for paying the labor (at the government rate of Rs. 207 per day as on 2012). Uncertain funding sources affect the planning process. Fires not only lead to destruction of flora but also annihilate the invaluable wildlife that dwells in the forests. The dry deciduous forests burn vigorously and controlling such fires demands rapid reaction in a sustained manner for a fairly long period in the difficult summer months. This is a herculean task difficult to achieve unless the motivation levels are very high.

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## Nature Conservation in Vietnam

### Le Man Hung

Photograph by Le Man Hung



Vietnam is a country rich in natural and biological resources that represent a unique physical environment developed over tens of thousands of years. Vietnam has been identified as one of Asia's most biologically valuable countries. The wide range of habitats has given rise to the country's rich and diverse wildlife species, many of which are endemic.

Vietnam government has been highly aware about the importance of wildlife and nature resources and takes great effort on conservation issue with the establishment of 32 national parks, 46 nature reserves and almost 100 different kinds of protected areas. However, owing to the rapid growth of economy, the natural heritage of

Vietnam is also being lost and degraded day by day. For the past few decades, millions of hectares of natural forests have been lost, many species face high threats from habitat loss and hunting. Particularly, the recent extinction of the last One-horned Rhinoceros from Vietnam is an alarm bell.

The government and communities need to pay serious attention for the conservation of Indonesian wildlife.

The avifauna of Vietnam comprises 891 species, 76 of which are listed in the IUCN Red List in various categories, including 4 critical species, 13 endangered species, 23 vulnerable species, and 36 near-threatened species. Moreover, Vietnam has 63 Important Bird Areas and four sites which qualify as Endemic Bird Areas of the world, with a total of 12 national endemic bird species. However, the research and conservation activities are still very limited and are mainly restricted to the avifaunal surveys.

There are few international cooperation programs which includes the 'Joint Monitoring of Raptor Migration Project' with Asian Raptor Research and Conservation Network (ARRCN) since 2001. As an outcome of this program, six raptor

migration sites have been set up and monitored in northern Vietnam.

Over the last two decades, several conservation international NGO such as Birdlife International, WWF, FFI, WCS, Wildlife at Risk, and others have worked in Vietnam and have contributed to the wildlife conservation in Vietnam. Recently, local conservation NGO's such as 'Pan Nature' and 'Vietnam Bird Watching Club' have begun their work and promise a new hope for the future of wildlife conservation in Vietnam.

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## Rescue of A Cinereous Vulture

### Mufaddal A Shakir



A Cinereous Vulture *Aegypius monachus* was found on the first day of a survey, on February 10th, 2012 at 8:30 AM in the Suklihenda Valley in Dhakna Wildlife Range, under Melghat Tiger Reserve (MTR). It was on the ground. We rescued it from possible predators and took it to our range headquarters at Dhakna. It weighed 12-14 kg; wingspan was 230 cm. It was treated by Dr. Swapnil Sonone of the NGO - 'Youth for Nature Conservation'. After treatment and feeding, the vulture recovered well and was



able to fly. On 19th February it flew away. We are trying to locate any roost site in the Suklihenda valley. I was assisted by forester Sadanand Pachange, Dhakna Wildlife Range. It is classified as Near Threatened in the IUCN Red List. It breeds in Eurasia, the Middle East and in Northern India and Pakistan. Little is known about its population in India, although wintering populations appear to be declining in Nepal and increasing in South Korea.

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## An Eagle Flies to Freedom

### Amit Pawashe and Dr. M.N. Mahajan

Location : Kodit Village, Purandar taluka, Pune district. On a hot afternoon of 18.v.2012, Dr. Mahajan received information from a boy about a very big kite lying on the ground and harassed by crows. Few people were standing near the kite to protect it. Dr. Mahajan immediately reached the location and was amazed to notice that it was not a kite but a juvenile Crested Serpent Eagle *Spilornis cheela*, the specialized predator of snakes. The eagle was gasping with its beak open. On closer approach the juvenile tried to escape. It flew but landed in a thicket a few meters away. It was rescued by covering its head with a cloth that kept the bird calm. It was carried in the 'raptor grip' that allowed easy handling. There was no external injury, fracture or dislocation. Plumage was normal, mass was 1200 gm, wing cord 38 cm and tail 32 cm. The mucous membranes and gape were dry and eyes were lusterless. The probable causes of incapacity were sunstroke / dehydration / exhaustion. The bird was kept in a large cardboard box in a closed room and the local forest official was informed. We force fed it some water with rehydration powder (Electral). Before retiring for night, few pieces of meat were offered, but were not accepted by the eagle.

Next day, in the morning, the cardboard box was found to be open and empty. The juvenile eagle was perching on a cupboard and was flapping its wings. We succeeded

in feeding a few pieces of meat after carefully holding the legs in the 'raptor grip' to prevent any injury from its formidable talons, because in self defense, the eagles use claws and not the beak. A 10 X 10 feet enclosure was made on the open terrace to give it some more rest. We could observe the eagle by hiding in a room to see its natural reactions. It perched well and remained calm for two hours but later became restless and tried to fly. We decided to give it a trial flight by carrying the eagle, wrapped in cloth, to an open scrub land. We chose a hill slope away from human habitation. Prior to release we force fed about 50 grams of raw chicken flesh to the juvenile. We placed it on the ground and removed the cloth. But to our surprise, it remained motionless. We were worried. What if it refused or failed to fly? We would have to take it to the bird orphanage in Pune. Time flew but the eagle refused to fly. After a long wait we approached the juvenile eagle to take it in our custody. And lo! The very next moment the eagle suddenly took to wings. The strategy of releasing the eagle from a hill slope provided two advantages; it became possible for us to observe the long flight and the hill slope provided the much needed initial lift. For the first three hundred meters it took a straight flight and then started soaring till it disappeared in the clear blue sky. The eagle was free again. All it needed was a bit of understanding, protection, rest and a little care.



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## Fruiting Trees Important for Birds

### R. M. Dhole

- Banyan *Ficus bengalensis* (Vad)
- Peepal *Ficus religiosa* (Pimpal)
- Cluster Fig *Ficus glomerata* (Umber)
- Drumstick *Moringa oleifera* (Shevga)
- Singapore Cherry *Muntingia calabura*
- Sandalwood *Santalum alba* (Chandan)
- Black Plum *Syzigium cumini* (Jambhul)
- Common Fig *Ficus carica* (Anjeer)
- Indian Kino Tree *Pterocarpus marsupium* (Aasana)
- Christ's Thorn *Carissa congesta* (Karvand)

**Author Information:** RMD is a horticulturist. He is actively involved in conservation and tree plantation. This year he has donated one lac trees for plantation. He is also the participant of the 'Certificate Course in Basic Ornithology'.



## *Bixa Orellana* - Lipstick Tree

### Vivek Vishwasrao

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*Bixa orellana* also known as Shendri in Marathi is an evergreen shrub or small tree, originating from tropical America. Annatto tree or lipstick tree in English, Latkan in Hindi and Bengali and Japhara in Tamil are some of the indigenous Indian names. The genus name is probably derived from the Portuguese biche meaning beak which alludes to the beak shaped pods, while the species name is given in memory of Francisco de Orellano, a Spanish conquistador of the 16th century, who also discovered the Amazon.

In the 17th century the Spaniards introduced this plant in South East Asia. Though not common it is found in small pockets in India. It is best known for its natural colour pigment called Annatto extracted from the fruit.

The plant bears pink nectar rich flowers, pollinated by honeybees. The bright red spiny fruits contain red seeds. The fruits dry and harden to brown capsules. The bush produces abundant fruits on a single tree. Local people use the pulp as hair dye or lip stick. The pulp is also said to repel insects and protect against sunburn due to the

UV-filtering properties of the carotenoid pigment Bixin.

It is used as a condiment in traditional cooking of rice and chicken; and as a colorant in butter, cheese, popcorn, drinks, and breads.

**Propagation:** *Bixa orellana* is usually grown from seed taken from freshly gathered ripe pods, which germinate better than dry ones. Vegetative propagation is possible by means of budding, air-layering or cuttings. Propagating by cuttings allows selection of high-yielding, rapidly growing cultivars that flower early and profusely and bear fruit within two years. It requires a frost-free, warm, humid climate and a sunny location. It grows in tropical to subtropical climates up to an altitude of 2000 m; mean annual temperature between 20-26 °C; an annual rainfall around 1250-2000 mm; and grows in all types of soil, with a preference for well-drained, neutral or slightly alkaline soils. It grows into a large tree when planted in deeper and more fertile organic rich soil. The tree is in bloom from October to December.



## New Species

### Crab:

A new species of freshwater crab *Oziotelphusa ganjamensis*, (Brachyura: Gecarcinucidae) from south Odisha (Orissa) state, eastern India was described by S.K. Pati And & R.M. Sharma, of the Zoological Survey of India, Western Regional Centre, Akurdi, Pune. *Zootaxa* 3528: 49–56(2012).

### Crake:

An apparently new species of *Rallina* Crake was reported from Great Nicobar Island by Z.S.I. researchers S. Rajeshkumar, C. Ragunathan with P. C. Rasmussen in *Birding Asia* 17(2012):44-46.

## Range Extension

**Dollar Bird** *Eurystomus orientalis* was recorded at Lonavala in December 2012 by Dr. Vaibhav Deshmukh, Pravin Kawale and Dr. Neil Soares. This is a record photo of the sighting. This is the first record of the species for Lonavala.

**Amur Falcon** *Falco amurensis* was sighted at Lonavala Lake on 23 December 2012. This is the first record of this species for the hill station. (See photograph on page 1 of the *Ela J.*)

So also **White-rumped Munia** *Lonchura striata* was photographed by Ashish Kolambekar in December 2012 around Sinhagad foothills, Pune. This is the range extension of the species.



## Rediscovery

### The Sillem's Mountain Finch:

*Leucosticte sillemi* was rediscovered in June 2012 on the Tibetan plateau after 80 years by a French nature photographer Yann Muzika who was trekking in the Yenigou valley of Qinghai province in China.

## 'Batak-Vel' The Duck Flower - An Innocent Killer! Tasneem Lokhandwala

Carnivorous plants grow in tropics and other humid or marshy habitats. They are specialized to attract prey for pollination and as a source of food. They can capture, kill and digest the prey. Several mechanisms to capture prey in various plants include pitfall traps, flypaper traps (leaves with slimy, mucilaginous surfaces), snap traps (lids that snap shut over prey), suction traps (as in *Utricularia* species) or lobster pot traps. How much and what nourishment the carnivorous plants really derive from such captured prey depends on the plant species, its habitat and on the plants ability to capture and digest prey.

The popularly known carnivorous plants are the Bladderwort, Butterwort and Fly Bush; Venus Flytrap (*Dionaea*); Cobra Lily (*Sarracenia*); Sun Dew (*Drosera*); and Pitcher plant (*Nepenthes*). Unlike carnivorous animals, that take fat and proteins from the flesh of prey, the carnivorous plants derive nitrogen, phosphorus and other necessary metals from prey, to compensate for such nutrients that are deficient in their wetland habitats.

Many species of carnivorous plants are presently threatened because of pollution and pesticides; indiscriminate use of fertilizers that overdose the plants with metals; poaching and clandestine overharvesting and most importantly habitat loss.

One has to visit remote areas to see the carnivorous plants. In Maharashtra, we can see *Utricularia* and *Drosera* species on the Western Ghats and other humid areas in the rainy season. However, some carnivorous plants can be grown in gardens. The Duck Flower is a perennial vine belonging to the Family: *Aristolochiaceae*. It originated from Brazil in South America. It grows well in full sunlight and is a popular garden plant in India. The shape of the flower resembles a duck.

The Duck Flower attracts insects and arachnids for the purpose of pollination. However, though this beautifully designed flower is a carnivorous plant, the death of prey is not intentional. The Duck Flower in fact has a specialized pollinating mechanism. The vibrant bright colours and

design of its long floral tube attract pollinators. The pollinator first enters the tube via its partially open mouth. The long tube is equipped with guiding unidirectional hair. The pollinator can walk the length of the tube only in one direction to enter the spacious atrium, where the reproductive parts of the flower are housed. The visitor pollinates the flower. Subsequently, another vertical tube in the atrium allows the pollinator to escape from the flower. The Duck Flower does not intend to kill its pollinators and is capable of surviving and growing with the nutrients derived from the soil and sunlight. However, some of the pollinators get trapped and die in the intricate mechanical arrangements of the Duck Flower plant. Can we call such unintentional killing of pollinators, where the nutrition derived by the plants from such corpses is of uncertain value to the plant, an act of murder? Well that is life!

\* Photographs of the Duck Flower are taken in the garden of Tasneem and Shabbir Lokhandwala





## Poison Dart Frogs Anand Padhye



Blue Poison Dart Frog or Okopipi *Dendrobates azureus* is a type of poison dart frog from southern Suriname and Brazil.

Poison Dart Frog or Poison Arrow Frog is the common name of a group of frogs in the family Dendrobatidae (branch dwelling frogs). They are endemic to hot and humid, tropical environments of Central and Latin America and are generally found in tropical rainforests of Bolivia, Costa Rica, Brazil, Colombia, Ecuador, Venezuela, Suriname, French Guiana, Peru, Panama, Guyana, Nicaragua, and Hawaii (introduced). There are more than 100 species of Poison

Dart Frogs. Unlike most of the frogs, these species are active during the day time and often exhibit brightly-colored bodies. Some Poison Dart Frogs species include a number of conspecific color morphs that have emerged as recently as 6,000 years ago. The vibrant colors of these tiny frogs are a clear signal: Predators Beware!

These amphibians are often called 'Dart Frogs' as they have been used for centuries by American-Indian tribes in Columbia to coat the tips of blowgun darts and arrows. In fact, out of more than 175 species, only three have been documented as being used for this purpose.

The skin of the poison dart frog (*Dendrobates*) secretes a natural poison that is toxic to birds and small animals. Although all wild dendrobatids are at least somewhat toxic, the levels of toxicity vary considerably from one species to the next and from one population to another. A steady diet of toxic insects such as ants is what makes these frogs lethal.

Some, like the Golden Poison Dart Frog, are so deadly that the poison from a single frog, entering through cuts or contact with the mouth, can kill ten people! Most species of poison dart frogs are small, sometimes less than 1.5 centimeters in adult length, although a few grow up to 6 centimeters in length. They weigh about 2 grams, depending on the size of the frog.

Photos by Adrian Pingstone, Wikipedia under CCA



Yellow-banded Poison Dart frog *Dendrobates leucomelas*

## CITES News

Seven nations could lose their permission to legally trade any of the 35,000 wildlife species after the 62nd meeting of the standing committee of the CITES (about 350 participants from 175 member states) who met at Geneva (23 to 27 July, 2012) agreed to penalize them for lacking tough regulations or failing to report on their wildlife. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) aims to ensure that such trade remains legal, sustainable and accountable; and that no species of wild animal or plant becomes threatened in the wild as a result of such trade. About 96% of the species it regulates are commercially traded (total up to \$530 million a year) for food, fuel (logging up to \$160 million yearly), forest products, construction materials, cosmetics, clothes, health care, trophies, etc. while the remaining 3 percent are prohibited. Ivory, rhino horn, tiger parts, American black bears, Asian snakes, South American grey foxes, Senegal parrots and Malaysian box turtles are hot on the trade list. TRAFFIC estimates that commercial trade is increasing since 1990s and the escalating problem is said to be due to lack of enactment and enforcement of national laws. CITES was adopted in Washington

D.C. on 3 March 1973. The 40th anniversary of the Convention will be celebrated in March 2013 which coincides with the 16th Meeting of the Conference of the Parties to be held in Bangkok, Thailand, from 3 to 15 March 2013. (For more information visit the official website: [www.cites.org](http://www.cites.org)).

## Leopard Found Dead



A full grown adult leopard was found dead by a villager on October 8, 2012, in a sugarcane farm at Kandalgao village, Tal. Indapur, Pune district, Maharashtra. The village is about 40 km from Baramati. Leopard did not have any external injury and no body part was removed. Post Mortem was done and subsequently the body was incinerated by the Forest Department. This is the first record of the

leopard for Indapur taluka.

(Report by Dnyaneshwar Rayate, Photograph by Madhukar Galande).

## Taiping Raptor Festival

The Malaysian Nature Society (Perak Branch) Bird Group organized the 'Taiping Raptor Festival 2012' on 3 & 4 November. This is the 2nd year of this public event. Taiping is a major autumn raptor migration site with seasonal counts of some 60,000 raptors of up to 10 species. The event aims to increase awareness among the local community of the importance of Taiping for the safe passage of migrating raptors. (Announced by Lim Kim Chye, MNS Perak Branch Bird Group Co-ordinator.)

## Bird on Visa Stamp



Taiwan has incorporated the photograph of a tree frog on its visa issue stamp. This is a step towards eco-sensitivity.



## Education Program

### Environment Education Program:

The program was jointly conducted by the Forest Department, Maharashtra, Jayadri Mitra Sanstha, Jejuri, & Ela Foundation at Purandar taluka, Maharashtra: Field visits to the nurseries of Forest Department for schools from villages and towns of Kaldari, Mandar, Yadavwadi, Shivari, Valhe, Daundaj and Jejuri are being arranged jointly by Jayadri Mitra Sanstha, Forest Department, Maharashtra and Ela Foundation. Information about bird-watching, medicinal plants, temples in Purandar district, and historical and religious importance of Jejuri area is given to school children by Ela Foundation member Mr. Rajkumar Pawar and Mr. Ganesh Tak of Jayadri Mitra Sanstha. Films on Bhimashankar Forest and Vultures, Owl Conservation are screened. Mr. Vilas Bardekar (Conservator of Forest), Mr. V. R. Jagtap (Sub-divisional Forest Officer, Bhore Division) have visited the programs. Mr. S. K. Ghadage (Vanapal, Jejuri), Mr. Shivarkar and Ms. Gauri Hingane (Vana Rakshak), and the other staff members as well as the members of Jayadri Mitra Sanstha, Jejuri have taken great efforts under the guidance of Mr. J. M. Pisal (Ranger, Forest Dept., Saswad) to make this activity a successful event.



## Palm Civet Rescued

This Palm Civet baby was rescued and released in the wild with its parents at Lonavala recently by Vivek Vishwasrao and Avinash Nagare.



## Donation by 'Tata Motors'

### Tata Motors Donates MUV to Ela:

'Tata Motors' donates MUV to Ela Foundation: Ela Foundation has received a generous donation from 'Tata Motors' in the form of the tough and sturdy off road vehicle - MUV 'Tata Sumo Gold' for supporting our rural outreach programs and fieldwork.



## Darode-Jog Properties support 'Project Bhadalwadi'

### Project Bhadalwadi:

Ela in Conservation: Ela Foundation has identified the problem faced by one of the largest mixed heronries with nesting of three globally threatened species - Painted Storks, Eurasian Spoonbills and Black-headed Ibises, among several others. As a solution to rampant tree felling where the water birds nest and breed, Ela Foundation experts have conceived and deployed the eco-friendly artificial nesting cement concrete platforms in the reservoir with the permission of the Irrigation Department, Government of Maharashtra, facilitated by Mr. Deepak Modak, Chief Engineer, Irrigation Department, and with the active participation of local community under the guidance of Shri. Yekale sir and Adv. Mahesh Kanherkar of the NGO 'Spandan'. Mr. Sudhir Darode, proprietor of 'Darode-Jog Properties' and participant of our Ornithology Course, has kindly financially supported this unique conservation project, the first such in India, that has possible wider applications for conservation of our heronries.



## ARRCN, Pune India

### 8th ARRCN, India:

Regarding the 8th ARRCN, the noteworthy happenings are that the Director, Indian Institute of Science and Technology (IISER, Pune) has generously agreed to collaborate with Ela Foundation for the 8th ARRCN, India. Director, National Institute of Virology has consented to support us in this global conservation event. We also have academic and advisory support from the Director, Zoological Survey of India, Kolkata and the Director, Bombay Natural History Society.

## River Cleaning Program

### River Cleaning Program at Jejuri:

Members of Jayadri Mitra, Jay Malhar Pat Sanstha, workers from Hotel Abhishek and other people undertook 'river cleaning campaign' near Nazare dam on the Karha river at Jejuri, taluka Purandar, district Pune. They removed 1.5 tons of garbage (clothes, bed sheets, plastic, rubber items, organic waste, sanitary napkins, old photographs, frames, flowers-garlands-turmeric and other oblations made to deities, items used in black magic, etc.). The drive started at 8 AM and continued till evening. A pamphlet highlighting the importance of water conservation and pure drinking water was later released by Mr. Kumar Pawar of Jayadri Mitra, who had organized the campaign.



## Monsoon Plantation

Ela Foundation members planted 1000 trees in the monsoon plantation program at Kundli, in the Tata Power premises with the permission and encouragement of Vivek Vishwasrao.



## Website Review

### Website Review: [globalraptors.org](http://globalraptors.org) & [grin@peregrinefund.org](mailto:grin@peregrinefund.org)

Raptors are at the top of the food chain. Several raptor habitats and species are threatened worldwide. Many organizations are devoting themselves to raptor research and conservation. A leading organization in that space is the 'Peregrine Fund' which is well known for conservation of Peregrine Falcons in the USA and Gyps vultures in India. In 2002 the fund built a wonderful library dedicated to raptors, called the Gerald D. and Kathryn S. Herrick Collection in Boise, USA. It is a treasure trove of raptor information containing more than 20,000 books, technical journals, magazines etc. and has made this information available online through Global Raptor Information Network (GRIN) [[grin@peregrinefund.org](mailto:grin@peregrinefund.org)]. GRIN is an online service that provides encyclopedia-style species accounts of diurnal hawks, eagles and falcons, connects raptor researchers and conservation organizations through a global communications network, and posts information on research findings and raptor conservation issues. A variety of information is collated at this website. For any given raptor you can look up its

conservation status, population trend, other names, distribution, description of subspecies, taxonomy, movements, habitats, habits, food and feeding behavior, breeding, conservation, population estimates and all the available reference material on the species. It also lists various researchers who are studying a particular species. Additionally you can look up raptor species by country, conservation status, region, population size and trend, family etc. The website also points to more resources about raptors such as organizations working on raptors, journals publishing information on them and other websites carrying information on them. Another interesting feature of the website, especially for raptor researchers, is the extensive bibliography of published research papers. Overall this website has a wealth of information on raptors. It is a wonderful step towards research and conservation of raptors. Peregrine Fund's Science Director Lloyd Kiff (retired) and his team has done a wonderful job of putting a large amount of invaluable information at the finger tips of raptor researchers and enthusiasts. Presently Travis Rosenberry is the Library Director.



### Pallid Scops Owl - Winter Migrant Spotted

Hitesh Rajput recorded and photographed this winter migratory Pallid Scops Owl *Otus brucei* at Zainabad around Viramgaon near Ahmedabad in Gujarat in the last week of December 2012.

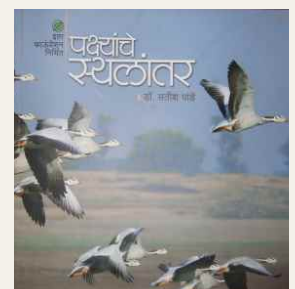
## Book Review

### The First Book in Marathi on Bird Migration:

'Pakshyanche Sthalantar' written by ornithologist Dr. Satish Pande is the first book in Marathi addressing the fantastic phenomenon of Bird Migration. The book is published by Ela Foundation in October 2010. The book has a Foreword by Prof. Reuven Yosef, the internationally acclaimed bird migration researcher from Eilat, Israel.

It explains the various facets of the fascinating annual and traditional awe-inspiring journey of bird migration. The 150 pages book is printed on art paper and has about two hundred fifty colour photographs with colour illustrations on every page. It has specially drawn bird cartoons by artist Girish Sahasrabudhe. The rare photographs of birds and habitats are taken by the author and other nature photographers like Niranjan Sant, Avi Mayer, Iva Haristova, Boris Nikolav, Clement Francis, Suresh Pardeshi, Dr. Shreekant Kelkar, Rohan Pandit and Pramod Deshpande. Basic questions like Why, How and When of migration are explained in details. The flyways of migration, their directions, the preparation for this annual journey, the various compasses that the birds use during migration, the stage-posts where the birds briefly rest, the threats and the conservation measures and methods for the study of bird migration are stated. Appendixes stating the migration facts such as the flight height, flight speed, and distances covered, longevity records, other migrating animals, migration-like journeys and a list of all migratory birds of India with English, Latin and Marathi names.

The book is dedicated to late Prof. Baburao Shirole, then Professor Emeritus, Department of Zoology, Fergusson College, Pune. The book is highly subsidized due to the donations from the 'Rotary Club of Poona' and students of the 'Certificate Course in Basic Ornithology'.





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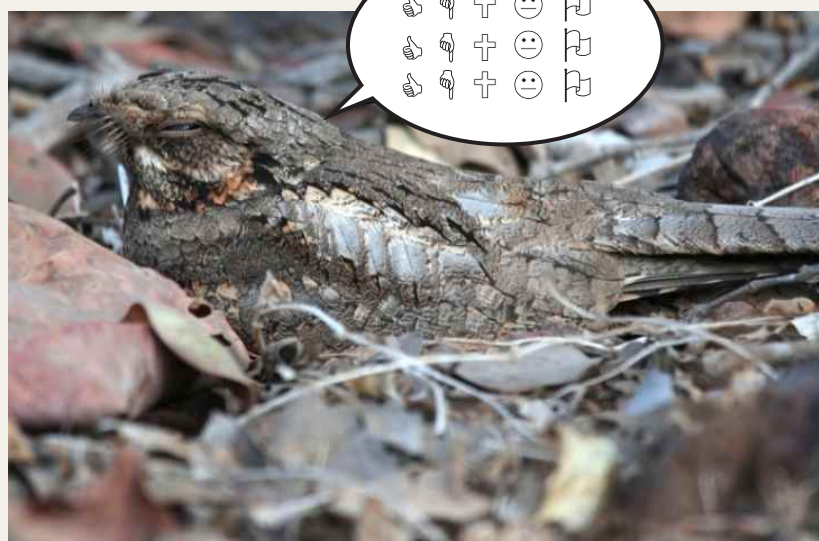
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### The Bird Puzzle: What is the Nightjar saying?

Vishakha Patil



## A Brush with Raptor

### Short-eared Owl *Asio flammeus*

By Dilip Navalkar

Drawing based on a photograph by Dr. Satish Pande





## Shivkumar Pednekar Rajgopal Patil\*

Rankala Lake is a picturesque lake in Kolhapur that adds to the beauty of this vibrant city in southern Maharashtra. But not too long ago it was neglected and threatened by pollution from the sewage from the city. Shivkumar Pednekar or 'Banda' as he is popularly known, a resident of Kolhapur stepped in with his friends to do something about the state of the lake. Along with few friends he started cleaning the lake by removing the hyacinth that had accumulated over the years and building a parapet. They called upon others to support and soon more than 150 people joined their efforts. Their work was applauded across the city. Today because of efforts from people like Banda, Rankala remains the focus of people and any activities that could harm the lake are highlighted by the media. Even today he is worried about the encroachments planned around the lake and is vigilant.

Banda's interest in birds started early in life while spending childhood vacation in the scenic Panhala mountain fort. Panhala apart from being a famous historical fort also used to have a nice forest cover. His grandfather being an occasional shikari Banda learnt the ways of animals from him. He was fascinated by the variety in birds.

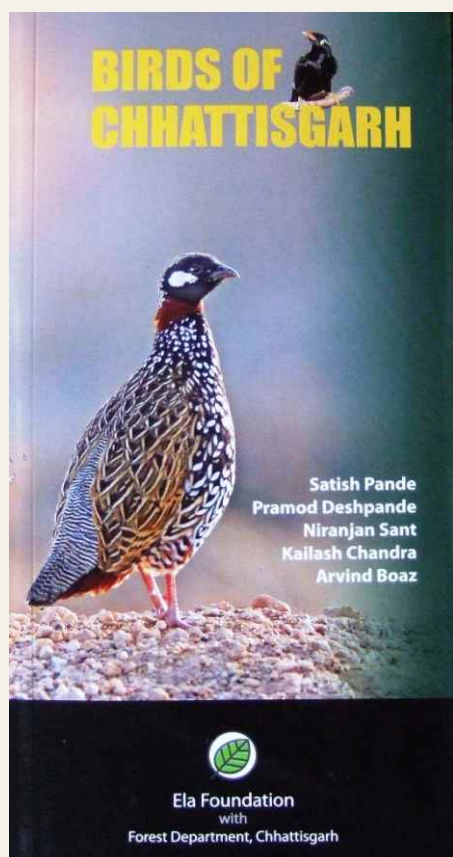
The love of animals stayed with him and he turned to the study and conservation of wildlife. Save Western Ghats movement opened his eyes to the threats faced by our fragile environment.

A Pakshimitra Sammelan (conference) held in Panhala with the attendance of Dr. Salim Ali was where he started taking the birds seriously. With some friends Banda video graphed the breeding cycle of the Pheasant-tailed Jacana. He has also kept notes on the nest of Bonelli's Eagles at Panhala fort since 1991. During that time he has noticed many unusual things about the eagle including how they hunted Hanuman Langurs. During that study he noticed kids robbing eggs from nests of Bonelli's eagle. He then worked with them to turn them to the cause of conservation and protect the eggs instead. He co-authored a paper about Bonelli's eagle that was published in the internationally renowned Journal of Raptor Research published from the US. He found encouragement from Dr. Satish Pande during that study and continued association with Ela Foundation with the study of Edible-nest Swiftlets on the Vengurla Rock Island off the coast of Maharashtra. He descended into the caves to study the birds. He also supported the



efforts to stop poaching of the nests there. He was part of the team that surveyed the birds along the western coast of India. He joined Ela Foundation to participate in multiple surveys of the birds on the archipelago of Lakshadweep and Andaman and Nicobar. He has co-authored papers based on these studies. Banda is a mechanical engineer by education and a teacher by profession. He conducts tuition classes for the higher secondary school children at Kolhapur. He continues to contribute to the nature conservation efforts. He conducts nature camps for children every year to make them aware of our natural heritage.

\*Rajgopal Patil is an IT professional, honorary trustee of Ela Foundation and conducts research on bio-acoustics.



## First photographic guide to Birds of Chhattisgarh published

Ela Foundation has published the first pictorial guide to the birds of Chhattisgarh with the State Forest Department. It includes and illustrates all the bird species from the state.

During a recent function in December, 2012, organized by IISER, Pune, with Jnan Prabodhini at the Jigyasa Vigyan Shibir under the 'Bachpan Bano' initiative of the Government of India, Dr. Satish Pande addressed students from Dantewada, Chhattisgarh, and presented the book - 'Birds of Chhattisgarh' to them.

