

Isosporan infection in domestic sparrows (*Passer domesticus*)

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Abstract

Fresh droppings were collected from house sparrows (*Passer domesticus*) and the faecal samples were screened for isosporan oocysts. Upon detailed microscopic examination the prevalence of isosporiasis was found to be 57.14%. Detailed morphological and morphometric analysis oocysts of positive samples revealed *Isospora lacazei* in all the sparrows studied. High prevalence of isosporiasis in house sparrows living in close association with human beings necessitates further studies on its zoonotic transmission as well as source of to other avifauna.

Introduction

Isosporan parasite *Isospora lacazei* is a spurious protozoan that has been reported to affect a wide number of birds (Forrester *et al.*, 1976; Duszynski and Gutierrez 1981; Al-Quraishy and Al-Nasar 2009). Passeriformes in general and house sparrows (*Passer domesticus*) in particular have been found to suffer from this infection. Debate continues on the conclusive nomenclature of isosporan species based on morphology, morphometry, sporulation, epidemiology, etc. albeit species *Isospora passeris* and *Isospora passerum* found in sparrows have been placed considered as *I. lacazei* (Al-Quraishy and Al-Nasar, 2009). In view of limited studies on the epidemiology of isosporiasis in India, the current investigation was planned with the objective of understanding the association of isosporans with domestic sparrows.

Material and methods

Freshly voided faeces were collected (n=70) between 6.00 AM to 9.00 AM from domestic sparrows (*Passer domesticus*) living in and around of Shival of Satara District (Maharashtra). Both white and greenish portions of voided droppings were subjected to direct microscopic examination after emulsifying the contents in sterile distilled water. Further, positive samples were kept for sporulation in a thin layer of 2.5% potassium dichromate solution at room temperature followed by zinc sulphate floatation for detailed microscopic examination. The morphology and morphometry of oocysts was evaluated as per standard references (Duszynski and Gutierrez 1981; Al-Quraishy and Al-Nasar 2009).

Results and Discussion

Of the 70 samples from domestic sparrows living in close proximity with

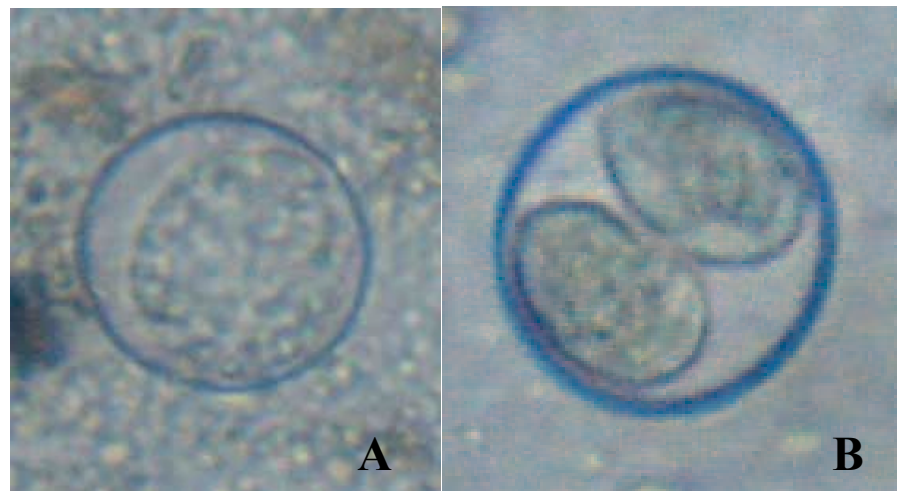


Figure 1: Unsporulated (A) and sporulated (B) oocysts of *Isospora lacazei* recovered from faecal droppings of house sparrows (*Passer domesticus*) [Magnification 40x, Direct microscopic examination]

human that were examined, about 40 birds were found to harbour protozoa belonging to the genus *Isospora* (prevalence 57.14%). The birds harbouring enteric *Isospora lacazei* oocysts (Figure 1) as evidenced by oocysts in their faeces, appeared less active compared to those bright, lustrous sparrows found negative for any oocysts. However, these observations were only qualitative and subjective as the birds were observed from a distance without handling or weighing. Observations continued for a year and revealed neither concomitant mortality nor shrinkage in the size of groups. Further, no variation was noticed in the faecal consistency of either affected or non-affected birds. However, Pinowski *et al.*, (1994) reported effects on development and even mortality of nestlings in birds harbouring isosporans. Similarly, Gill and Paperna (2008) also reported a severe form of Isosporan (previously called *Atoxoplasma*) infection in house sparrows with the overt manifestations of diarrhea, emaciation and death in as many as 70% of birds. In view of scanty information on the Isosporiasis in sparrows in India, a detailed systematic epidemiological study is required on this coccidian protozoan. Current observations made in this study add information on association of *Isospora* with house sparrows without overt clinical manifestations. Further, the carrier status in sparrows is of

significance in the light of potential contamination of water, feed and dwellings of animals or human habitat with oocysts of Isosporans. However, further studies are required to elucidate conclusive nomenclature, transmission mechanisms and potential of infection of human or animals with Isosporans of sparrows.

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A Preliminary Survey of Gastrointestinal Parasitism in Captive Herbivora of Sidhartha Municipal Zoo, Aurangabad

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Introduction

Zoological garden/park is the protected area for wild animal meant for captive breeding, to preserve ever diminishing endangered species. In nature, practically no animal is free from parasitism. When the parasitized animal is brought from wild to captivity, despite quarantine measures, the new condition of zoos is generally unfavorable for the animal but favourable to the parasites.

Although due care is ensured towards feeding, drinking and sanitary condition inside zoo, it is difficult to prevent or eliminate all parasite. Attempts should be made to identify these parasites for successful treatment and control of parasitic infection.

The present investigation was undertaken to know the prevalence and severity of gastro-intestinal parasitism in captive herbivores of Sidhartha Municipal Zoo, Aurangabad.

Material and methods

Random, fresh stool samples (27) were collected at random from 5 each of nilgai, deer, chinkara, sambar, chital and elephants. Examination of stool samples was immediately carried out by direct smear and flotation method as per the techniques of Thienpout (1929) and Georgi (1985).

The samples were examined for the presence of ova of different helminthic parasites. The stool samples were assessed to know severity of infection by estimating EPG (Eggs per Gram) level using Stoll's techniques. The results were then graded into 3 categories viz; below 500, between 500 and 1000 and more than 1000.

Results and discussion

Out of 27 samples examined, 21 (77.78%) were found positive for various parasitic infection. The sample of each species of herbivore was examined as a pooled sample. Among helminthic infection, 19 herbivores (90.47%) were found to be infected with nematode of one species only and 2 (9.52%) were found positive for infection with more than one species of nematodes (Table 1).

Parsani *et al* (2001) found 60% parasitic infection in various captive herbivora at Rajkot Zoo. In similar study, Chauhan *et al* (1973) found 100% parasitic infection in captive herbivores of Delhi and Lucknow Zoo,

Table 1. Species and parasite wise infection in captive herbivores

Name of Animal (Herbivore)	Number of Sample taken	Number of positive found	Type of endoparasitic infection		
			Cestode	Nematode	Trematode
Nilgai	05	05	-	<i>Trichostrongylus spp</i>	-
Deer	05	05	-	<i>Toxocara spp</i> and <i>Trichostrongylus spp</i>	-
Chinkara	05	02	-	<i>Toxocara spp</i>	-
Sambar	05	05	-	<i>Trichostrongylus spp</i>	-
Chital	05	02	-	<i>Trichostrongylus spp</i>	-
Elephant	02	02	-	<i>Oesophagostomum spp</i>	-

Table 2. Species wise EPG level in captive herbivores

Name of Animal (Herbivore)	Number of positive samples	EPG Level		
		< 500	> 500 but less than 1000	> 1000
Nilgai	05	400	900, 600, 700	1100
Deer	05	400	700, 600, 600, 500	-
Chinkara	02	300	500	-
Sambar	05	-	700, 600, 700, 900	1000
Chital	02	400, 300	-	-
Elephant	02	-	800	1100

respectively. Modi *et al* (1997) observed 48% parasitic infection in Bihar zoo in captive herbivore.

Severity of endoparasitic infection was assessed by calculating EPG level. Only 5 animals viz; Nilgai (1), Deer (1), Chinkara (1) and Chital (2) has EPG level below 500 while 13 animals viz; Nilgai(3), Deer (4), Chinkara (1), Sambar (4) and Elephant (1) has EPG level more than 500 but below 1000. Remaining 3 animals viz; Nilgai (1), Sambar (1) and Elephant (1) was found to have levels of EPG more than 1000 (Table 2).

EPG levels of 500 or more demands immediate treatment to the animals and is consider as severe parasitic infection. EPG level detection in various species of herbivore has not been attempted or cited in literature. In order to measure the severity of parasitic infection, EPG level is must and will be helpful in knowing the amount of infection animal is suffering from.

Conclusion

Parasitic infestations cause considerable morbidity and mortality in captive herbivore. Apart from death, especially in young animals, the animals tend to become weak and unthrifty with decreased resistance to other infection. Usually captive

animals do not show alarming sign of parasitism due to routine deworming practices carried out in zoo.

By adopting effective control measure to prevent the possible recurrence of existing infection, we may be able to curb the losses due to parasitic infection.

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A case of total albinism in the Bonnet Macaque *Macaca radiata* (Geoffroy) from Goa

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In general, the albinism as a phenomenon of the lack of colour pigmentation resulting from the inability to synthesize the melanin and caused by the absence of dominating allele among mammals of India (Smielowski 1987). Further, a condition in which there is a simultaneous complete absence of melanin from eyes, skin, feathers (as in birds, Heimo 2003) and hairs, fur (as in mammals) is categorized as total albinism. Its occurrence in the wild is rare. During the faunistic survey of Goa state in November 2002, we came across a white-albino Bonnet Macaque, *Macaca radiata* (Geoffroy) (Primates: Cercopithecidae) near Valpoi village (Lat. 15° 31' 50.4552" N and Long. 74° 8' 14.652" E, altitude 31m), Sattari Taluka, Northern Goa district.

The macaque was a medium-sized female with total white haired crown and body whereas forehead, ears, fingers of forelimbs and hindlimbs were faint pinkish (Figure 1). The eyes were reddish in colour. The macaque was tied up with a chain to a tree outside a house (Figure 2). When we enquired with the owner of the house, he told that a monkey keeper found it in forested area of Goa (exact place not known) and left her over here. He comes here regularly to offer food and water. Sometimes the owner also offers food to this albino macaque.

While going through the literature, it was noticed that there were number of records of total albinism in mammals of India, for instance Tiger (Gee 1954), Lesser Rat-tailed Bat (Khajuria, 1973), Chital (Singh 1996), Common Palm Civet and Northern Palm Squirrel (Kumar 2004), Five-striped Palm Squirrel (Anil *et al.*, 2005) and Wild Boar (Neginhal 2005).

Total albinism has been reported in the Toque Macaque, *M. sinica* (Linnaeus) from Sri Lanka (Hill, 1933; Fooden 1979), Rhesus Macaque, *M. mulatta* (Zimmermann) from Pratabgarh (South Rajputana) in captivity (Bahadur 1942) and Bonnet Macaque, *M. radiata* from Trivandrum Zoo, South India in 1936 (Hill 1937; Fooden 1981). Further, a captive male Bonnet Macaque with white fur and skin, but with brown irises was observed in London Zoo by Ogilby in 1836 (Fooden 1981), probably a case of incomplete albinism and a pale golden brown sub-adult female with reduced pigmentation was also reported from U.S. National Museum of Natural History, Washington, D.C. (Fooden 1981). Hence, the present report is the second record of total albinism in Bonnet Macaque after nearly seven decades.

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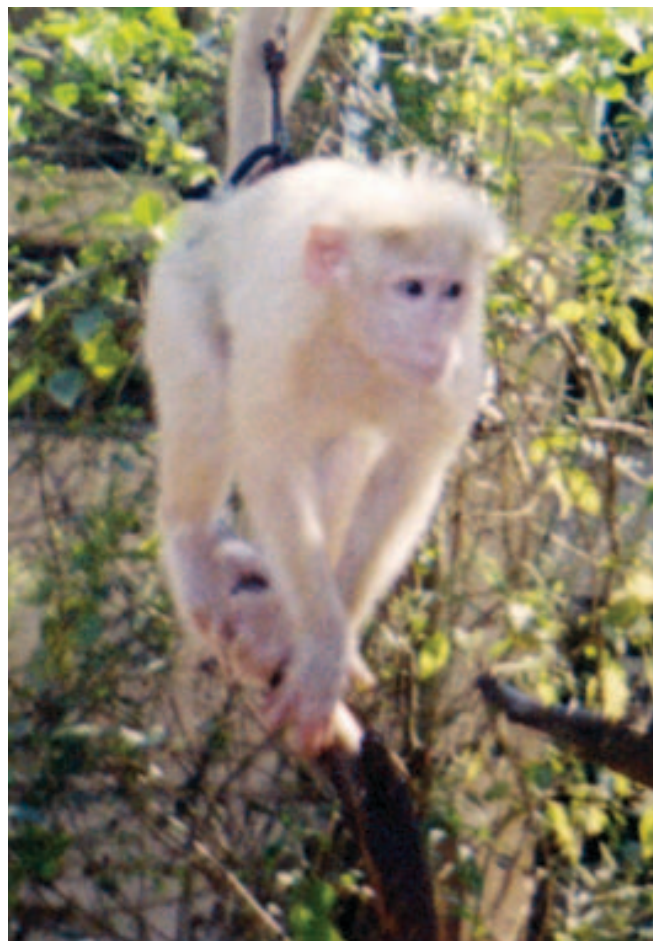


Figure 1. A total white-albino Bonnet Macaque, *Macaca radiata* (Geoffroy) from Goa



Figure 2. The albino macaque tied with a chain to a tree outside a house near Valpoi

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Biodiversity status and conservation strategies with special reference to North-East India by R. Varatharajan*

Book Review by B.A. Daniel

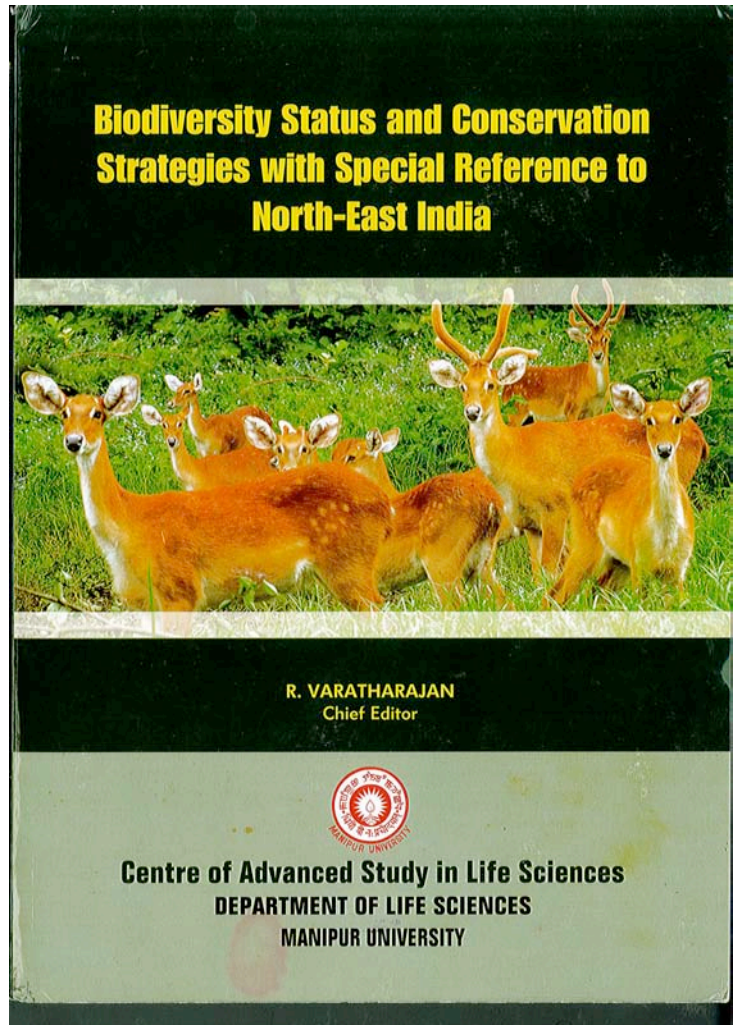
ISBN: 978-81-923343-1-8
Rs. 1200. (for students Rs. 600).

The proceedings of the symposium on 'Biodiversity Status and Conservation Strategies with Special Reference to North-East India' published in 2012 has addressed several aspects of biodiversity conservation of fauna, flora and ecosystem. This proceedings is the outcome of a symposium that records the occurrence of over 1200 species of plants and animals in North-east India. This publication would be a very useful reference source for researchers, academics and conservation planners.

The proceeding has two sections, 1. Plant and microbial diversity and conservation and 2. Animal diversity and conservation. Including two invited articles, a total of 50 full articles have been included. The invited articles highlight on seaweed biodiversity and conservation contributed by P.V. Subba Rao and an over view of insect biodiversity and climate change by K.G. Sivarakairishnan and C. Selva Kumar.

Articles related to plant diversity of North East India, ethonbotany, traditional knowledge, fungi and ecology are main focus of the section dealing with plant and microbial diversity. Animal diversity includes topics articles related to insect diversity, nematode, rotifers, earthworms and fishes. The volume reveals the richness of this region and airborne fungi, 55 orchids, 52 edible fruits, 50 medicinal plants, 75 each of woody plants, shrubs and herbs, 5 rotifers, 169 nematodes, about 500 insects, and 120 fish species. The authors have enumerated the organisms authentically and focused their status, utility, and conservation strategies wherever possible. Assessment of plant diversity in selected sub tropical forests, National parks, home gardens, and grasslands of North-east India has been highlighted in this publication. Articles related to ethno-botany, cultural aspects and bio-resources like lichens, canes, insects as food, fruits, fishes have been included.

The editor has done a good job in selection of the articles that covers all aspects of biodiversity of North-east India. Some highlighted articles of this



volume are: plants associated with tribe of Manipur, diversity of Sisoroid catfishes, and other fishes of North-east India, extensive plant diversity list of Langol Hills and Kangchup Hills, Manipur and many other articles.

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Distribution of *Hybanthus puberulus* M. Gilbert. (Violaceae) – A new record for Karnataka

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Abstract

Hybanthus puberulus M. Gilbert, an Ethiopian species, so far known to occur only in Maruthamalai hills of the Southern Western Ghats, Coimbatore district, Tamil Nadu, India is now discovered from Mysore in Karnataka State in India. In the present study, taxonomic description, distribution, and comparison with allied species of this species are provided.

Introduction

The genus *Hybanthus* Jacq. has about 100 species distributed throughout tropics (Mabberley 2008). In India four species were reported; two of them namely, *H. enneaspermus* (L.) F. Muell. and *H. travancoricus* (Bedd.) Melch. were included in the Flora of India (Banerjee & Pramanik 1993). Among the other two, *H. vatsavayii* C.S. Reddy was described as a new species (Reddy 2001) and *H. stellarioides* (Domin) P.I. Forst., was collected from Hyderabad and described as a new distributional record to India by Ramana *et al.* (2011).

Recently, a species of *Hybanthus* was collected during the floristic studies of Karnataka (Mysore), India. On critical examination and perusal of literature concerning the genus *Hybanthus*, it was identified as *Hybanthus puberulus* M. Gilbert, so far known to occur in Ethiopia (Gilbert 1992). Recently *Hybanthus puberulus* M. Gilbert. was reported as a new record to India in Tamil Nadu (Maruthamalai hills, Coimbatore) (Sasi *et al.*, 2011). The present collection of *Hybanthus puberulus*, therefore forms a new record for Karnataka.

Systematic treatment

Hybanthus puberulus M. Gilbert in *Nord. J. Bot.* 12 (6): 689 - 693. 1992. Sasi *et al.*, in *Zoo's print.* 26 (12). 2011. (Fig 1).

Herbaceous shrubs, much branched, 17–30 cm high; stem green when young, base pinkish woody, hairy. Leaves green above and slightly paler beneath, simple, alternate, clustered at apex, linear to lanceolate, obscurely crenate, mucronate at apex, attenuate at base, hairy, 25 - 35 X 3 - 5 mm; stipules linear - lanceolate, densely hairy, gland tipped, c 2 mm long. Flowers pinkish with darker patterns, solitary, axillary inflorescence; peduncle slender, densely short pubescent, 8 - 10 mm long; pedicel

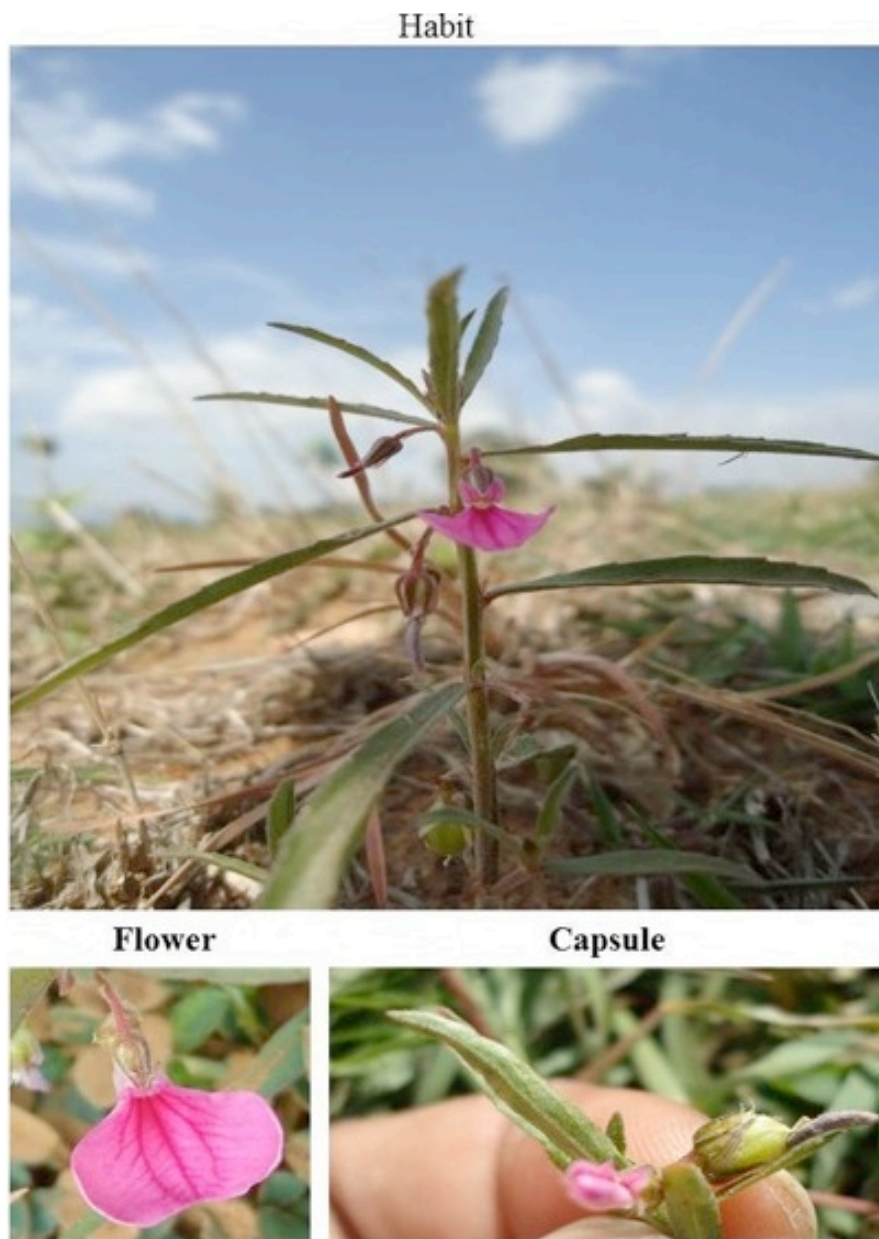


Fig. 1 *Hybanthus puberulus* M. Gilbert

short, slender, pubescent, 5 - 7 mm long; bracts triangular, densely pubescent, margins ciliate, c 1 mm long; sepals 5, unequal, ovate - lanceolate, pubescent, c 2 mm long; petals 5, unequal, upper pale pink, oblong, 4 - 5 mm long, lateral petals pale pink, oblong ending in a sharp acute apex, c 3 mm long; lower petals pinkish with darker patterns, enlarged, oblong- elliptic, shortly cuspidate, 10 x 6 - 7 mm along with a limb; stamens 5, filaments free, the anterior 2 filaments with hairy appendages, anthers villous, the posterior 3 filaments and stamens glabrous; pistil 3 mm long, style erect and stigma flat.

Capsules 3- angled, short pubescent c 6 mm long; seeds pale yellow, ellipsoid, ribbed, glabrous, c. 3 mm long.

Flowering and fruiting: July–October.

Distribution: Ethiopia (Sidamo region) and now in India from Tamil Nadu (Maruthamalai hills, Coimbatore)

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and Karnataka (Mysore). The few existing records recommend to *Hybanthus puberulus*, is rare and endangered in India.

Ecology: Growing along the Wild forest, especially under bushes, Infrequently found in chasmoendolithophytic (rock crevices) with some cool areas in hills or hill slopes. Some times *Hybanthus puberulus* living associates with rock moist grassy wetland. Fine particles of soil and rock that fill the space among root and rock conditions make good interaction for water flow.

Uses: The attractive flower structure and fascinating pinkish colour can be recommended to grow as an ornamental plant in residents, park and also in rock gardens.

Specimen examined: Karnataka (Mysore), 23 Sep. 2012. Parthipan, M. & Rajendran. A. 156. (BUH).

Conclusion: *Hybanthus puberulus* grows intermingled with *H. enneaspermus* and gives the similar appearance, probably due to this, it might have been overlooked and could not be listed by the earlier workers (Sasi *et al.*, 2011). *Hybanthus puberulus* is closely allied to *H. enneaspermus* but it differs by its dense very short indumentum, which covers all the parts including capsule. In *H. enneaspermus* the indumentum is much laxer, usually longer and the capsule is always glabrous.

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Remembering Francis Day

Francis William Day a world famous ichthyologist of southern Asia was born on 2nd March 1829 at Maresfield in United Kingdom to William and Ann Day. By profession, Day was an assistant surgeon in the then East India Company. In 1852 he was posted to Madras medical service as a surgeon and this marked the beginning of his career in the southern region of the Indian subcontinent. Francis from his early days was very much interested in taxonomical study of fishes and other animals found in India and Indian subcontinent. Day lived for some years in Cochin on the Malabar Coast and this provided him with a unique opportunity to study fishes found along the Malabar Coast. His study really provided an insight into the problems of fisheries and fish supply along the Indian subcontinent. He also travelled extensively and worked on the fishes of Pakistan, Bangladesh, Myanmar and Sri Lanka.

Francis Day contributed immensely to the study of fish taxonomy. In 1864 Francis Day returned to England on leave, carrying sufficient amount of research material. His first research work was published as "The Fishes of Malabar" in 1865. He then returned back to India in 1866 and continued to live in India until 1874. In 1871 he was appointed as Inspector – General of Fisheries in India. Francis Day's publications were followed in 1878 by "The Fishes of India" and then in 1889 with two volumes on fishes as "Fauna of British India". The Fauna of British India contained 1418 fish species taxonomic description in the first volume and about 195 plates of drawing done by him in the second volume. Francis Day was an active member and the president of the Cheltenham Natural Sciences Society. Also the University of Edinburgh awarded Day a honorary LLD. Day retired from British services in 1877. Day was raised to the post of Companion of the Order of the Indian Empire in 1885. He died on 10th July 1889 in

Cheltenham from stomach Cancer.

Until Francis Day nobody had ever extensively studied the freshwater and marine fishes found in the Indian subcontinent. Francis Day has been a very able draftsman which is evident through the unique and splendid collection of watercolours and drawings of India fishes by the great ichthyologist Francis Day himself. Even 123 years after his death students of fishery science and ichthyologists still refer to the publications of Francis Day as ready reckoner in laboratory and on the field for identification of fishes. Thus Francis Day has to be considered as a true ichthyologist and taxonomist for his contribution to the study of fishes of the Indian subcontinent.

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Linking fragmented Biodiversity spots by building Green Corridor along the stretch of the river Yamuna

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India is known for its rich heritage of its biological diversity consisting of approximately 91 thousand species of animals and around 45.5 thousand species of plants. The conservation of biodiversity is basic for the sustenance of our life. There are many biodiversity spots in India which need some kind of conservation models along the course of Indian rivers on the priority basis.

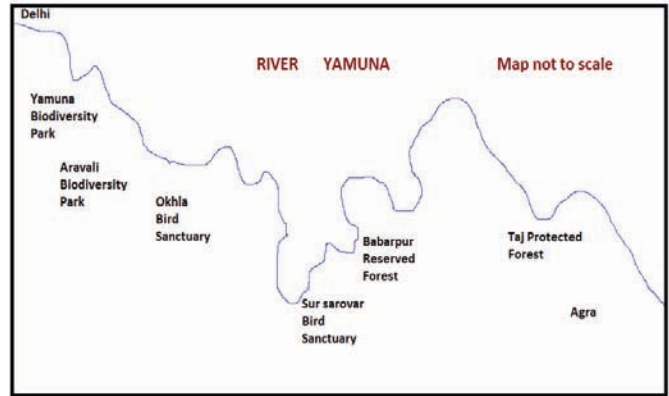
The total length of the river Yamuna is 1376 km and the stretch of river Yamuna from Delhi to Agra is about 235km. The river Yamuna between Delhi and Agra is the worst polluted section of the river showing the seasonal flow of water. In peak summer season the river takes the shape of a drain. This not only affects the total environmental quality of life in that area but the most impact is felt by the animals and vegetations comprising the biodiversity. Thereby river banks have been encroached leaving no space for recharging the river water.

This write up proposes a conservation model leading to sustenance and protection of six (6) biodiversity spots falling under the Yamuna stretch between Delhi and Agra. Six biodiversity spots namely- Yamuna bio diversity park (located near Wazirabad village), Aravali biodiversity park (near Mehrauli-Mahipalpur road), Okhla bird sanctuary (at Okhla near Delhi), Sur Sarovar bird sanctuary (Keetham at Agra-Mathura, NH-2), Babarpur reserve forest (at Agra-Mathura road), and Taj protected forest (Near Taj Mahal in Agra) have been located along the Yamuna stretch.

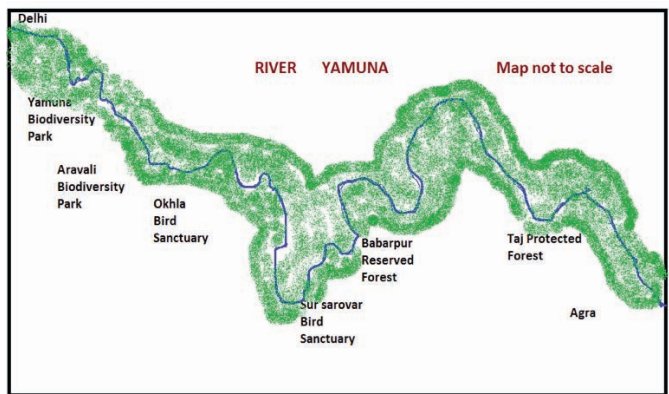
The proposal is an approach to link these fragmented patches through a 50 meter wide green corridor which may enable the exchange and migration between the species living in the respective spots. This will also enhance the existing species of flora and fauna on the bank of river

Six biodiversity spots

Sr. No.	Sites	Present Scenario
1.	Yamuna Biodiversity Park	Located near Wazirabad village herbal garden, sacred grove, butterfly conservatory.
2.	Aravali Biodiversity Park	Located at the Mehrauli - Mahipalpur road, blue bull, butterfly garden, orchidarium, fernery.
3.	Okhla Bird Sanctuary	Located at Okhla near Delhi, shelter to approximately 329 species of birds 2 critically endangered, 9 vulnerable, 7 near threatened species.
4.	Sur Sarovar Bird Sanctuary	Located in keetham at Agra-Mathura NH-2 over 106 species of birds, bear rescue center (SOS) and python point.
5.	Babarpur Reserve Forest	Located at Agra-Mathura road, conserves many species of butterflies.
6.	Taj Protected Forest	Located near Taj Mahal in Agra includes Bulbul, myna, Varanus, blue bull, Hornbill, mongoose etc.



Site Description



Future Scenario

Yamuna. Also the protection from anthropological exploitation takes place. It promotes the holistic approach to conservation, enhancement and sustainable utilization of biodiversity. The other objective includes- enhance the continuous gene flow, reduce the inbreeding depression, prevention of developmental activities along the area of the proposed plan. This Yamuna stretch between Delhi and Agra area is under the flood zone of the river bank so there is no chance for the encroachment and floods can be prevented as well by this model. This model also will influence the hydrological phenomenon such as infiltration and surface flow and helps to conserve endemic, endangered as well as keystone species on the priority basis which is basic to our survival and well being i.e. it maintains the biodiversity at all levels- species level, genetic level and ecosystem level. The expansion of genetic diversity in turn provides lesser vulnerability to diseases and adaptability to environmental changes. This approach also avoids the loss of habitat due to over exploitation of natural resources.

Given the state of conditions of these selected biodiversity spots it appears that model proposed for conservation may be replicated in other areas of urgency for the betterment of our country and mankind.

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Wildlife Week Education Reports

Nethaji Snake Trust celebrate Wildlife week in collaboration with Colleges in Madurai District, TN

NEST conducted two programmes during wildlife week. The first programme was held on 04 October at Thevar College, Usilampatti, Madurai. About 800 students participated. Mr. Balakrishnan, Supt. of Police, Madurai was the chief guest and he spoke about the need to conserve wildlife.

Dr. V. Muruganandan, Principal of the college talked about global warming. Mr. Balasubramaniam, Secretary of the College shared some rare information about the fruit eating bats. Mr. Ravichandran, Forest Ranger described about the Indian Wildlife Protection Act. Mr. Ramesh, Founder of Nethaji Sanke Trust gave detailed information of wildlife and particularly about vultures. Students planted saplings and set up herbal garden at the campus. They all wore the masks and took an oath to save wildlife. Mr. Masanam, President of the college gave vote of thanks.

The second programme on Human Elephant Coexistence was held at Meenakshi Govt. College for Women at Madurai. About 200 students participated. Mrs. Kannambal, Principal inaugurated the programme. Student's pre knowledge on the subject assessed through brain map and attitude assessment. Then, past and present range of Asian elephants through maps, the difference between Asian and Africana elephants, do's and don't's in elephant areas, dramas on habitat loss and saving fallen elephant from well were conducted. At the end the student's knowledge level increase was assessed by brain map and attitude assessment methods. They all took an oath to coexist with the elephants. Participation certificates were awarded to the students.

Submitted by: P. Ramesh. Email: ramesh_nsrc@yahoo.com

Lucknow University, UP celebrates wildlife week

Department of Zoology celebrated Wildlife Week sponsored by Zoo Outreach Organisation's Educator Network (ZEN), and Regional Science City, Lucknow. It was conducted at Regional Science City involving more than 700 students of class 4-8, High School, Intermediate, as well as Graduate, Post-graduate, N.S.S. (National Service Scheme), N.C.C. (National Cadet Corps), Rover & Rangers (Bharat Scouts & Guides) from about 35 schools, colleges and



Mr. V. Balakrishnan, Supt. of Police addressing in the celebration



Elephants past and present range countries learned through a map activity

Universities of Lucknow. It began with a "Wildlife Awareness Car", flagged off by Mrs. Meena Misra, wife of the Vice Chancellor Prof M.K. Misra. The car was then taken around the Lucknow City by Mr. Nafees Aalam and Mrs. Sheel Tiwari to make aware the public through the distribution of various flyers (turtles, eagles, vulture, sparrows, butterflies, amphibians etc.) During the 7 days 10,000 flyers both in English and Hindi were distributed.

Mr. Neeraj Srivastava, Bird Expert, made a presentation on "World of the Birds" with many interesting bird facts on the first day. Following this a movie "Journey to the amazing caves" was screened. A competition in Wildlife Play for Junior group was organized after that. On 2 October, on the

occasion of birthday of Mahatma Gandhi and Lal Bahadur Shastri, students participated in fancy dress competition, family quiz and logo competition. During the programme, a rakhi tying ceremony was conducted in which the teachers, parents and students tied an animal rakhi to each other and took an oath to protect and conserve wildlife. Zoo Outreach Organisation's Educator Network (ZEN) provided the materials. On 3rd October the students participated in debate and expressed their thought for and against of sea food consumption, a threat to marine biodiversity. There were movies on vultures and Asiatic lions for the audience as well as a very informative lecture by Dr. R.L.Singh, retired PCCF who shared his experiences on wildlife conservation.



Participants posing with the materials received from ZEN

On 4th day a ppt presentation on Wildlife Trade was given. Dr. Ramjee Srivastava, Senior Scientist, U.P. State Biodiversity Board gave a lecture on "Perspective of Climate Change, Biodiversity and Wildlife". He informed students about the biodiversity of the State and major threats to wildlife. On 5 Oct, painting (theme amphibians and reptiles), slogan writing (on wildlife theme) and greeting card making (theme elephants and wild plants) were held with 500 students participation. Movies on Asiatic lions and Gharial were also shown. The students from HAL School presented on the spot skits on vulture, pollinators and bats conservation with the help of awareness materials received from ZOO. Collaborative Art was also an attraction of the day in which an incomplete landscape on board was completed by the participants, teachers as well as judges.

On 6 Oct more than 70 students from different schools and colleges participated in Rangoli competition on the theme Marine biodiversity. The students showed their creativity and reflected their thoughts in their creations. The students visited the wildlife photo exhibition. The school students interacted and learnt a lot from the material in display from Zoo Outreach Organisation, Tamil Nadu as well as Dept. of Zoology, University of Lucknow, Regional Science City and U.P. State Biodiversity Board.
Submitted by: Dr. Amita Kanaujia.
Email: kanaujia.amita@gmail.com

Vulture awareness programme in Assam school during Wildlife Week

In collaboration with Zoo Outreach Organisation's Educator Network (ZEN) an awareness programme themed

"Vulture Conservation in Assam" was held at Vidyaniketan Govt. High School, Pandu, Guwahati, Assam on 3 October, 2012. Thirty five students of Class VIII participated. The students were described about the theme. The Indian Vulture species have suffered a 99%-97% population decrease in Pakistan and India and between 2000-2007. "Extinction of vultures is a cause of concern. Almost 40 percent of remaining vultures are dying every year," Dr. Asad Rehmani, a senior member of National Board for Wildlife and Director of Bombay Natural History Society (BNHS).

There are 9 species in Indian sub continent and 8 species are found in Assam, out of that 2 are Critically Endangered. Vulture conservation movement in the subcontinent is set to get a boost with Ministry of Environment and Forest (MoEF) expecting 30 young vultures to be released from the Captive Breeding facilities in 3 places (Pinjor, Rajabhatkhowa and Rani) and also marking of vulture safe zones at three places in India by 2014.

The zone between Uttarakhand to Nepal, which spans from Corbett to Katriya Ghat, a Tarai belt, covering 30,000 sq kms, will be earmarked as 'Vulture Safe' zone. Similarly a belt between Dibrugarh (Assam) to North Lakhimpur (Arunachal Pradesh) will also be conserved as a vulture safe zone where slender-billed and white-backed species of vultures are found. The third zone would be in central India, covering Chhattisgarh, where white-backed and long-billed vultures are found.

Slender-billed vulture has a special significance as the species is now



Amity school students performed a skit on wildlife conservation

mainly confined to Assam and has almost disappeared from most of its distribution range in India which was from Himachal Pradesh to Assam. Regarded as the most endangered vulture in the country, only an estimated 1000 birds remain in the wild.

Established in 2007 as a collaborative project of the Assam Forest Department and Bombay Natural History Society, the centre houses 25 White-backed ones and 22 Slender-billed species, most of which were caught from the wild as juveniles. The birds take almost five years to reach adulthood. A nestling each of the white-backed and the slender-billed species have hatched at the centre. Born more than four months ago, the nestlings are healthy now.

Keeping in view the efforts of Assam Forest Department and BNHS for the conservation of vulture in Assam, this education programme has been planned to aware the students for conserving the Gyps vulture from extinction. The education materials on vultures was explained to the students and then distributed. They went through each materials. They tied rakhi with other and holding the placard. They read the flash cards. I want to thank Zoo Outreach Organisation for providing the vulture education materials. **Submitted by: Ms. Arpita Das, Assistant Science Teacher. Email: arpitadas_ghy@yahoo.co.in**

Wildlife Week at Sundarvan, Ahmedabad, Gujarat
Sundarvan designed and conducted activities for different walk of people during wildlife week. A bat awareness programme for general public was arranged on 1 October. The education materials received from Zoo Outreach Organisation (ZOO) was used during the occasion to enhance our regular activities. Activities such as painting, quiz and elocution were conducted for school kids on 2 Oct. Gift vouchers to take part in Sundarvan's camps were given to top three candidates in each category. A half-a-day reptile awareness workshop was carried out on 3 Oct. School teachers and other interested people attended this programme.

Members and friends of Navgujarat Multicourse Training Institute under the guidance of Mr. Ketan Modi, displayed their photographs on 4th and 5th and Mr. Nirav Bhatt, Savannah Nature Conservation Society, displayed his photographs on 6th and 7th in the Sundarvan premises. The photographers generously provided



Govt. High School, Assam students with vulture placard committing for vulture conservation

their photographs free of cost purely in sake of creating awareness on nature conservation. A workshop on basic photography by Mr. Ketan Modi and one on birds by Mr. Maynk Ghadi were conducted for interested people on 4th and 5th respectively. A reptile awareness workshop was conducted for students of a reputed college from Ahmedabad in the park premises on 6th, where more than 300 students participated.

A one day field outing to Hingolghad and Lothal was arranged for general public on 7th. Apart from regular activities, importance of pollinators was explained to the participants using the education materials supplied by ZOO. **Submitted by: S. Sivakumar,**

Shivbhadrasinh Jadeja, and Rajendrasinh Jadeja. Email: wildlifessiva2050@gmail.com

Wildlife Week Celebration at Maharaja Ganga Singh University, Bikaner, Rajasthan
The wildlife week-2012 organized by Dept. Env. Science was inaugurated by Prof. A.K. Gehlot, Vice Chancellor of Rajasthan Veterinary University, Bikaner on the 1 October, 2012. Prof. M.M. Saxena, Dean and Dr. Meera Srivastava, Head, Department Zoology, Doongar College gave their views on the role and responsibilities of academicians in the education and awareness for wildlife involving the youth in wildlife conservation researches and studies. Dr. Pratap



School kids are learning about insect pollinations during field visit

Singh, Department Zoology, Doongar College, Bikaner presented a lecture on the "status of wildlife including mammals, birds and reptiles". About 90 students of Maharaja Ganga Singh University and other colleges participated in the poster competition, on the subject "Wildlife Conservation".

Participants visited the animal museum and plant herbarium of Government Doongar College, Bikaner on the second day. They were given detailed information about animal collection, preservation, and science of taxidermy, insect collection and preservation and herbarium sheet preparation by the staff of the colleges. Prof. G. R. Jakher, VC, MGS University, presented a lecture and film showed on "The Herbivores of the Thar Desert" on the third day. Then Dr. Anil Kumar Chhangani showed documentaries on vultures and Hanuman langurs social behaviors and also gave a lecture on the status of vultures in Rajasthan. Elocution competition on the topic "Wildlife Conservation" was organised 4 day in which 19 students participated. After this, education and awareness materials provided by the Zoo Outreach Organisation were explained its importance and distributed. On the 5-day, all the participants visited Jorbeer, a Protected Area near Bikaner. During the visit participants were given practical trainings for the field methods of floral and faunal surveys, population estimation, identification, etc. Use of the field equipment like Binoculars, Digital and SLR cameras, video

camera, camera traps, digital voice recording, Global Positioning System, reading of maps and toposheets, etc. Field training about the vegetation survey methods and plant species identification, collection and preparation of herbarium training in the field itself by Dr. Anil Kumar Chhangani, Dr. Rajaram Choyal, Dr. Leela Kaur and Dr. Prabhu Dan Charan. After the training the participants were divided in to teams and given various field exercises like, measurement, estimation and identification of floral and faunal diversity of the Jorbeer. This field visit was also joined by people from press and media headed by Shri Yogesh Sain, Chief Sub-editor, Rajasthan Patrka, Bikaner.

Day six and seven, the trained participants were sent in small teams to various schools and colleges of Bikaner city and also the places where children who do not go to school. They organized wildlife awareness programs through play, talk in local language and distributed the various education and awareness material provided by Zoo Outreach Organisation. All the participants were given certificates and winners of the various competitions awarded with the prizes. **Submitted by: Dr. Anil Kumar Chhangani. Email: chhanganiak@yahoo.com.**

BCF, Trichy celebrate Wildlife Week in Sathyamangalam, Nagapattinam & Trichy Dt. of Tamil Nadu

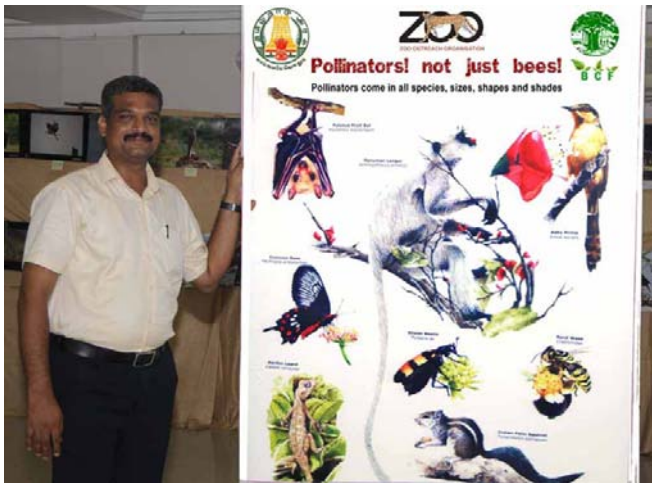
Biodiversity Conservation Foundation (BCF), a NGO based at Trichy,

celebrated this week and achieved the goal of this week through four different programs based at Sathyamangalam, Nagapattinam and Trichy. Wildlife photography exhibition was conducted in all three places to display the rare vignettes of wildlife ambience. Special Wildlife Week training programme was organized in collaboration with Tamil Nadu Police Department for Special Task Force (STF) on 1 October. Dr. A.Kumaraguru, followed by a discussion on "role of forensic science in wildlife crime" with the STF delivered a special lecture on "Biodiversity conservation". The importance of conservation was explained through the information booklet on Daily life Wildlife provided by ZOO.

Another programme was conducted at Sathyamangalam to address people of Bhavanisagar range with TamilNadu Forest Department (TNFD) collaboration on 2 October. People working and travelling across this forest range for their daily activities were contacted to create awareness on the importance of wildlife and its conservation through WLPE with a theme of animal welfare. We also distributed information pamphlets on role of plastics in global warming and the importance to avoid plastics bags and plastic dumping at the forest ecosystem to the people of peripheral villages. Wildlife week was celebrated at Nagapattinam on 9th Oct. with the support of TNFD, Nagapattinam and held at collectorate. Mrs.Asiya Mariam, Collector (in-charge) of Nagapattinam



Dr. Meera Srivastava explains about the insect collection and preservation at Doongar College



Dr. A. Kumaraguru, BCF with blow-up pollinator poster

district, District Chief Education Officer and TNFD headed by DFO, S.Ramasubramaniam IFS. More than 300 students and government officials witnessed the wildlife photographic exhibition themed "green landscape". BCF pamphlets pictorially represented the benefits of planting trees which extends the green cover of our country and reduces the impact of global warming. The documentary on bird migration and importance of conservation of Green turtle and mangrove flora at Point Calimere portrayed the importance of conservation of the green flora of this ecosystem.

TNFD, Trichy which has extended their support to conduct the wildlife week celebration exclusively for four days (October 10-13, 2012) at Poomalai Commercial complex, Trichy. Along with our photo exhibition we displayed the importance of pollinators (supported by ZOO) and global warming. Mrs. Jayashree Muralidharan, Collector of Trichy, inaugurated the wildlife photo exhibition and the documentary session on wildlife was inaugurated by Mr. Balamurugan, Regional Passport Officer, Trichy. The documentaries on tigers and wildlife conservation provided us with an easy way to reach people. District Forest Officer, Mr. Anwardeen, IFS, had encouraged and provided necessary support for special lectures every day by BCF

members. The topics addressed during the programme are "Biodiversity" and "Biodiversity Conservation and Role of Forensic Science" by Dr. A. Kumaraguru, Wildlife and its ecosystem" by T. Brinda, Scientist, "Wildlife Management – *in-situ* and *ex-situ* conservation" by Dr. U. Lakshmikanthan, Cryopreservation, scientist, BCF and "Biodiversity Conservation and Role of Forensic Science" by Dr. A. Kumaraguru, which is exclusively arranged for various levels of TNFD officials.

The theme of pollinators was focused to create awareness among students and people of the importance of pollinators in an ecosystem. However, tigers, lion and other charismatic species attract much attention from the government as well as field biologists during the Wildlife Week. But there are other species that are indispensable for the fragile ecosystems. And there are other species on the verge of extinction or endangered and also as important as tigers for the balance of ecosystems. Other animals, which are significant in an ecosystem, are pollinators, which include several fauna such as bats, butterflies, garden lizard, birds, monkeys, beetles and squirrels. The exhibition has been visited by more than 350 people mainly families along with their kids. Interactive sessions with them helped us to disseminate the importance of wildlife and to educate them that the key global wildlife conservation in the 21st century will be to craft solutions that meet the integrated ecosystem approach.

BCF expresses its sincere thanks to TNFD of Sathyamangalam, Nagapattinam and Trichy divisions who have approved our requests and supported us in immense ways in fulfilling our mission well. Our special thanks go to Mr. B. Rathinasabapathy who kindled our interest for this awareness programme. BCF thanks Zoo Outreach Organisation, SAsISG, UFAW and Columbus Zoo and Aquarium for the education materials. **Submitted by: Dr. A. Kumaraguru. bioconserve2010@gmail.com.**

Wildlife Week celebrations in Chennai schools, Tamil Nadu

Three conservation education awareness programmes were conducted during wildlife week on the theme daily life wildlife, pollinators and bats with the materials received from Zoo Outreach Organisation.



Forest tribal watchers of Sathyamangalam are looking at the photo exhibition

Daily life Wildlife: Forty Eco club teacher co-coordinators belonging to 3 Govt, 11 Corporation and 26 Government aided schools of Chennai observed Wildlife Week at Jai Gopal Garodia Govt GHSS, Saidapet Chennai. Mr. Pitchaimuthu, District Eco Club Coordinator welcomed and introduced the resource person Mrs. Jessie Jeyakaran to the participants. The program began with the introductory talk on wildlife along with explanation of the technical assistance agencies like ZOO and WILD. Chances were given to the teachers who are going to retire in near future to distribute the booklets supplied by ZOO Outreach Organization. With smiles the participants looked into the nine pictures of animals and few started to mention their names. After explaining the difference between wildlife and captive wildlife the title created by ZOO i.e., Daily Life Wildlife was explained. With much enthusiasm the participants tied up the head band. Few colored the pictures too. Secondly ABC of Wildlife was dealt with. They were excited to know about bat, bear, frog, rodent and invertebrates. Participants really felt the cruelty done to these little creatures and appreciated the ZOO, India for their efforts besides extending thanks to ZOO and WILD. Finally they turned into little kids by looking into the invertebrate stamp album and started to paste, while majority liked their Eco club students to take this activity. They also thanked ZOO for the pictures of different types of eyes in the last page as it will be very useful when they see any animal at home, school and in the public places. All were instructed to carry out the program within three days to the Eco club students of the respective schools. Glad to inform that ZOO`s effort is not in vain, because we are receiving the reports from the teacher participants. The speed with which they have carried out the follow up shows the value of the effort taken by the director and the ZOO`s crew besides WILD

Pollinators: The second programme was held at Ebbas GR. HSS Chennai for about forty students of class 8 and their teachers on Pollinators on 9 Oct. 2012. Mrs. Jasmine Daniel, Head Mistress gave the welcome address. After the introductory talk on wildlife week, the booklets were distributed. Brightened were the students` faces, while they looked at the pictures on a bright white paper. With an uncontrolled voice they showed the bats, monkey and gecko pictures to one another. Mrs. Jessie Jeyakaran briefed about ZOO and Columbus Zoo and Aquarium USA and South Asian Invertebrate Specialist Group. On having the tag on pollinators-Save all Our Lives!!! They came to know the best pollinator is BEES. Their postures changed when they hold the placard with primates are also pollinators. They tied up the head band-pollinators came in all species, sizes, shapes



Students are looking out for pollinators at the school campus



Fruit bat cards are displayed by the students

and shades to each other happily. The details about the pollinator, their importance, kinds, and their decline in number were explained. The percentage of pollinators in the world has kindled their minds. The students collected their experience during bees and wasp bites and concluded that their sufferings at that particular time are nullified when compared to the benefits of this little creature. No Pollinators-No Plants-No Food-No Survival-this has turned into the thought for the day. There was a role-play with tag, bees-flower-honey besides a drawing competition. The winners were awarded with pictures. The students were divided into four groups to identify the pollinators in the campus. A follow up of data collection on pollinators in the campus during different months in different areas was given. All the participants and teachers filled with new experience departed to decentralize the days experience to others.

Bats: On 10 Oct. nearly 220 students of standard VIII in Montfort Mt. HSS Chennai celebrated wildlife week on the theme Bats in the International Year of Bat. Bro. KN Thomas, The Correspondent`s inspiring speech on wildlife, Mrs. Jessie Jeyakarans introductory talk and the distribution of educational kit by Bro. Arul Deeparaj, The Principal and Mr. Paul Jeyakaran. The students divided into four groups and each group taken each activity such as tying of rakhi, holding the placard, learning from the bookmark and reading the truth and untruth of Bat. Pictures on the cover had leaded them by self-learning. Participants were excited to know about the insectivorous and frugivorous bats. The 180 observers learnt a lot from the students. Elucidatory questions were asked at the end. The role play with the mask of family members Govt and forest officials add the real spirit. Identification of the bat pollinators from the fruit bat was very interesting. The drawing sheets and the clay model have thrown new knowledge to the onlookers. Students given their feed back at the end and they says: very informative; interesting and entertaining; excellent gifts with the pictures of bat; the assumptions about bat (wild, bad) are erased from my mind; wish to spread the news; on the spot questioning about the bat was appreciated; very proud to be a part of ZOO, India. The Principal distributed the gifts (post card, sticker with bat) to the winners of drawing clay model and on the spot answering. Ms. Susan and Ms. Nancy the teacher coordinators shared this to 106 science club students and 105 eco club students in the same week. Ms. Kanthimathi the reporter from The Hindu witnessed the entire program for publishing in the daily. **Submitted by: Mrs. Jessie Jeyakaran. Email: jessiejey@rediffmail.com**