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Contents

Cover design by Latha G Ravikumar and G. Arul Jegadish, Zoo Outreach Organization, Coimbatore

FRUIT BATS OF SOUTH ASIA

PART 1

Nicobar Flying Fox *Pteropus faunulus* Miller, 1902

Distinguishing characters:

This is the smallest flying fox species within India. It is endemic to Nicobar Islands. The dorsal pelage is dark rufous brown in colour and the face hair is grizzled white and gray. The ventral surface is grayish-brown in colour. A distinguishing feature of this bat is its triangular ears.

Body measurements:

The head-body length is about 170mm, forearm length about 115mm and weight about 170g.

Habit and habitat:

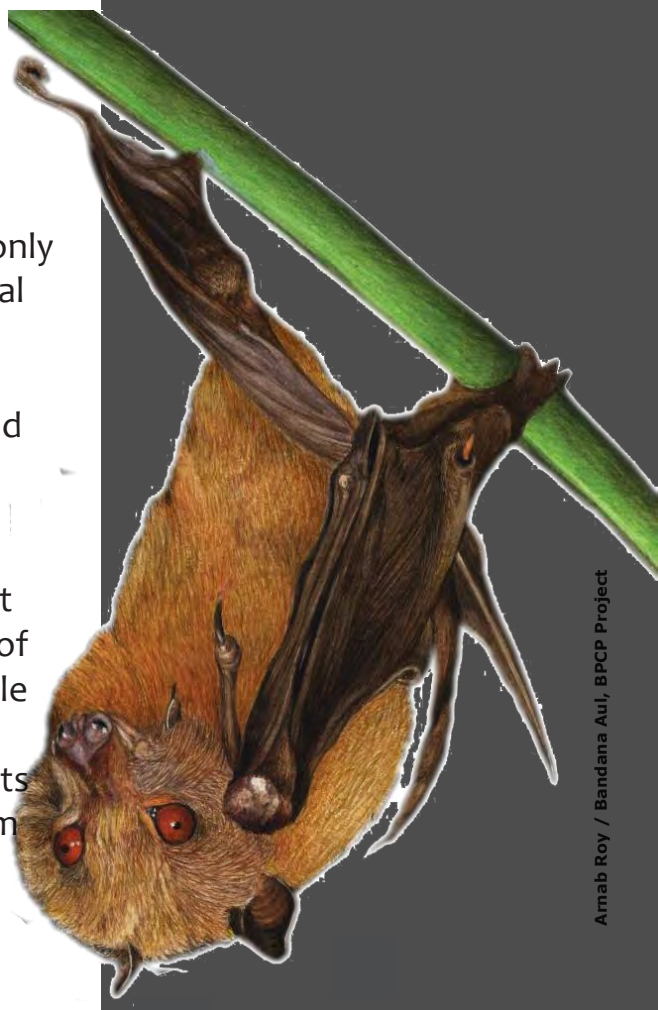
This is a solitary species, seldom roosting in groups. It also feeds singly. Like all fruit bats it helps in dispersal of seeds. It roosts in tree hollows and under fronds of big trees.

Distribution:

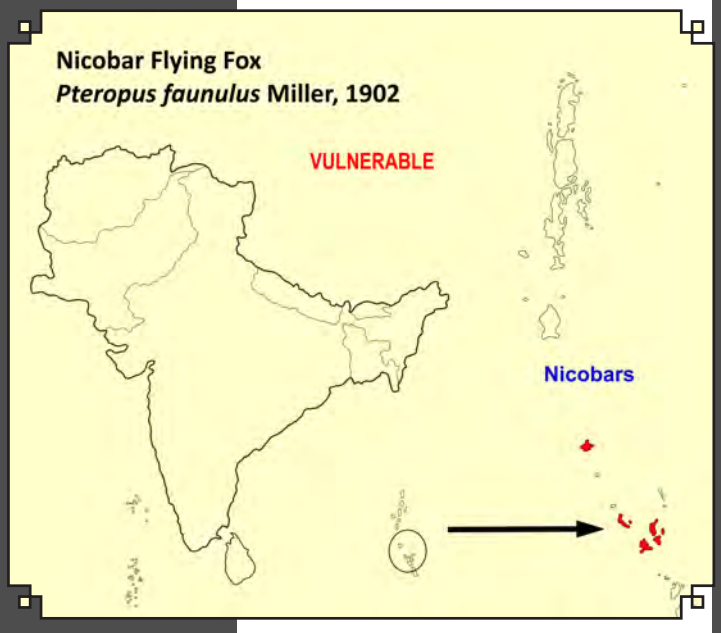
This species is found only on six islands of central Nicobar -- Bompuka, Kamorta, Katchal, Nancowrie, Tressa, and Trinket Islands.

Status:

This is one of the most threatened fruit bats of South Asia -- Vulnerable due to restricted distribution and threats to its populations from hunting for medicine and pets, and to its habitat from tsunami. It is believed to be extinct from the island from which it was first described, Car Nicobar Island.



Arnab Roy / Bandana Aul, BPCP Project



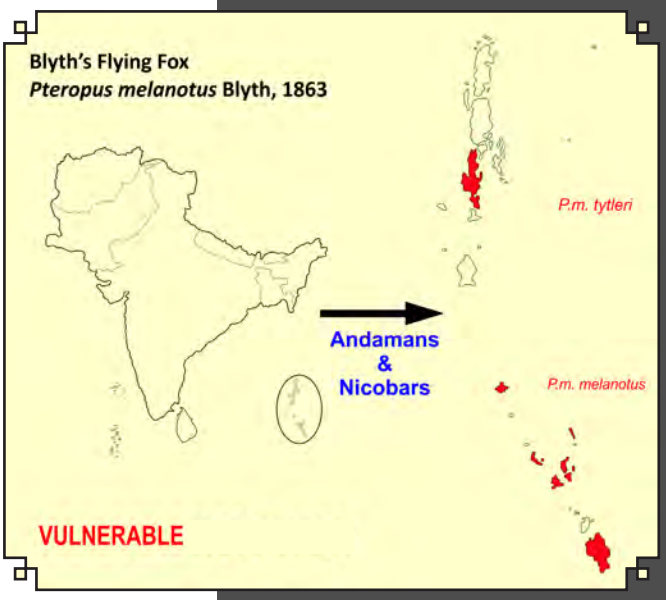
Blyth's Flying Fox *Pteropus melanotus* Blyth, 1863

Distinguishing characters:

This is a medium-sized fruit bat considerably bigger than *P. faunulus*. The dorsal pelage is black, grizzled with a few gray hairs. The ventral surface is dark to blackish-brown in colour sometimes with a few gray hairs. The ears are large, broad and have rounded tips.

Body measurements:

The head-body length is about 210mm, forearm length about 160mm and weight about 620g.



Habit and habitat:

This is a gregarious species roosting and feeding in groups. It occurs in the mangroves of Andaman and Nicobar Islands, and roosts in large numbers on mangrove trees and in small colonies under the fronds of the endemic Nypah palm. This species helps in dispersing seeds, thereby propagating fruiting trees in the mangroves and inland forests.

Arnab Roy / Bandana Aul, BPCP Project

Distribution:

This species is found only on Andaman and Nicobar group of islands including Bompuka, Campbell Bay, Car Nicobar, Great Nicobar, Kamorta, Katchal, Kondul, Nancowrie, Rutland, South Andaman, South and Trinket Islands. Two subspecies -- *P.m. melanotus* with paler pelage colour occurs in the southern Nicobar Islands, and *P.m. tytleri* with darker pelage colour occurs in the Andaman Islands.

Status:

It is threatened on Andaman and Nicobar Islands in South Asia -- Vulnerable due to restricted distribution, threats to its populations from hunting for medicine and pets, and to its habitat from tsunami and degradation due to human interference. The two endemic subspecies assessed separately are severely threatened and each qualify for Endangered status.

Indian Flying Fox *Pteropus giganteus* Brunnich, 1782

Distinguishing characters:

Pteropus giganteus is the biggest fruit bat in South Asia, and second biggest in the world after *P. vampyrus* of Southeast Asia. The dorsal pelage is narrow, dark brown to black with some hair tips being paler. The hair on the head is slightly longer and golden yellow in colour, nape and mantle being slightly lighter in colour or the same denoted by a distinct demarcation with the dark shoulder and back colour.

The belly is usually the same colour as head and mantle, but variations have been noticed in the intensity and shades. Other distinguishing characters include the lack of a tail, long and hairy snout, well-developed nostrils, almost hairless ears which are tall and pointed.

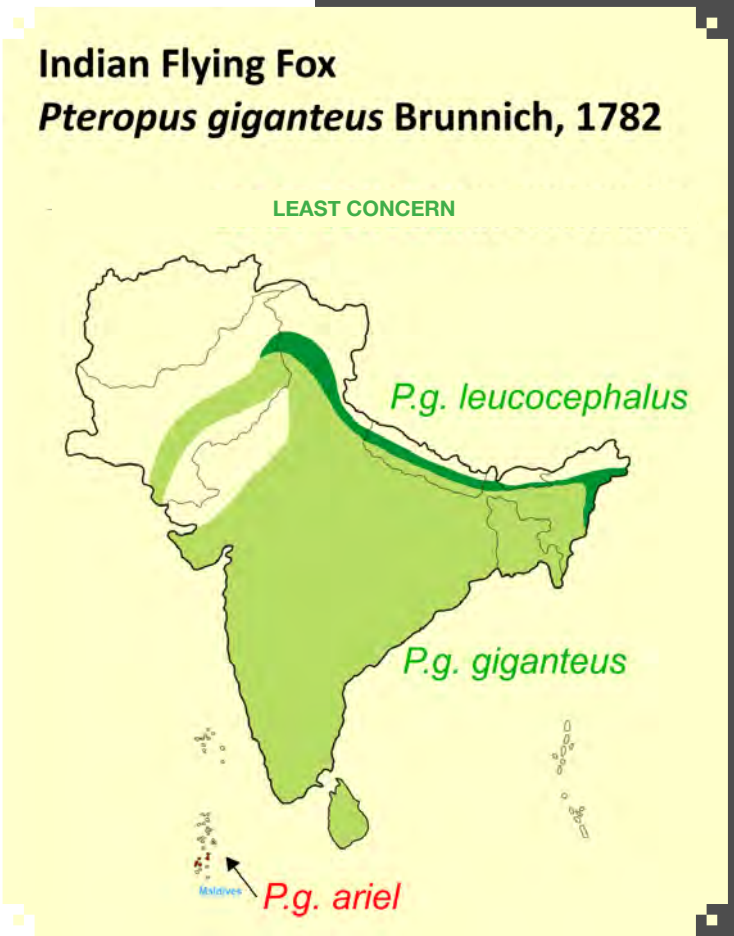
Body measurements:

The head-body length is about 270mm, forearm length about 170mm and weight about 800g.

Habit and habitat:

This species is one of the most popular bats in South Asia due to its size and conspicuous large roosting sites usually close to human habitation, roads and water bodies. This species is a good pollinator and helps in spreading seeds far and wide due to the long distances it is known to fly.

Arnab Roy / Dana LeBlanc, Lubee Bat Conservancy



Fantastic Facts

Distribution:

Very widely distributed throughout South Asia except Afghanistan. Three subspecies are recognized based on size, distribution and fur length.

The nominate *P.g. giganteus* is the most common, while the Himalayan subspecies *P.g. leucocephalus* occurs up to lower mid-elevations. The distinct *P.g. ariel* is endemic to Maldives. This species also occurs in Myanmar.

Status:

The species has been assessed as Least Concern in South Asia due to its wide distribution, high adaptability and lack of debilitating threats.

While the Indian subcontinent mainland and Sri Lanka taxa are considered Least Concern, *P.g. ariel* on the Maldives is Endangered because of very restricted distribution and continuous persecution.

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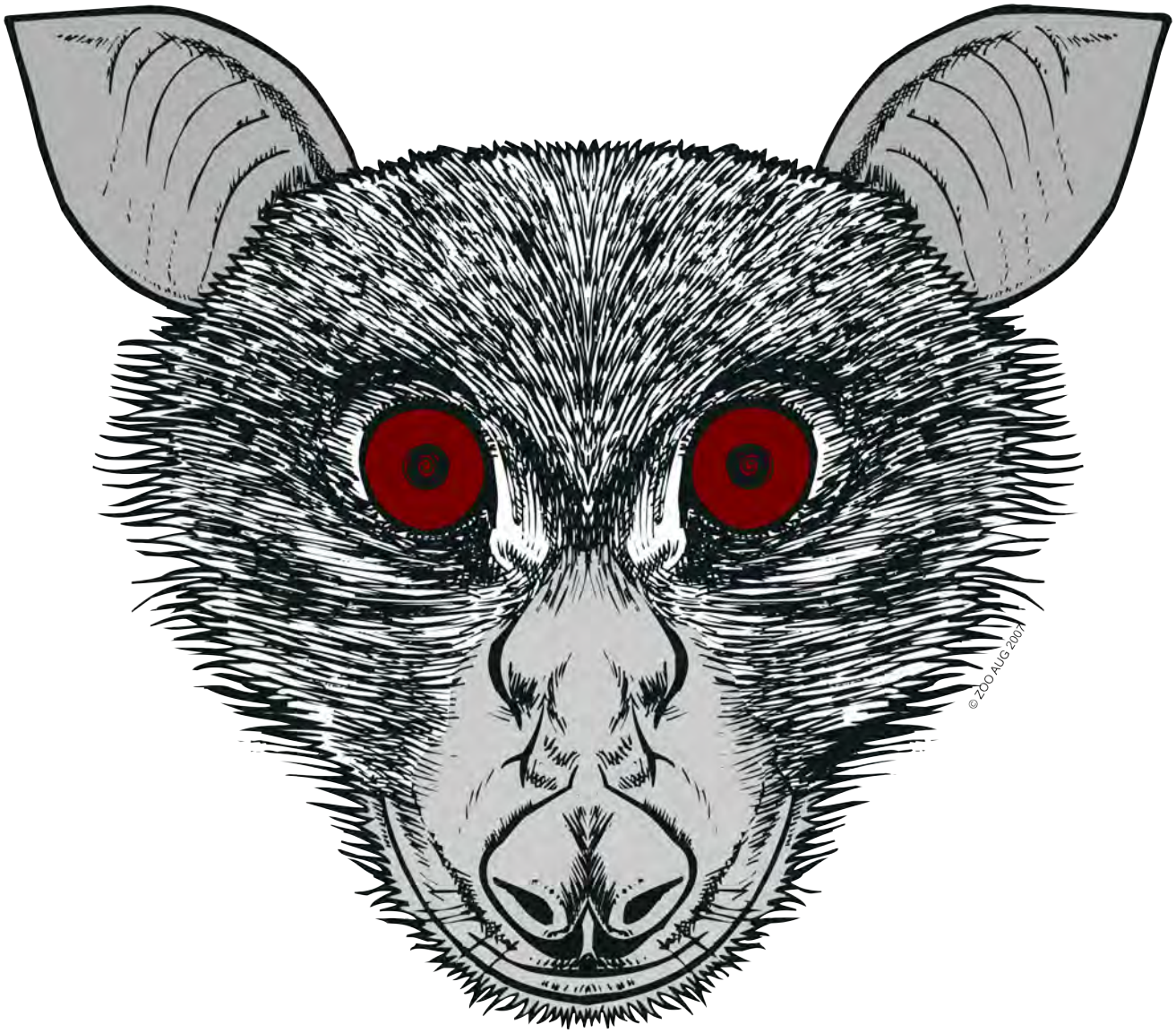
by Sally Walker and Sanjay Molur

Print this mask on a card and cut it



Pteropus melanotus
Blyth's Flying Fox

Collect these masks for exciting games

SPOT-BELLIED EAGLE-OWL

Range extension of *Bubo nipalensis* Hodgson, 1836 (Strigiformes: Strigidae) in Odisha, eastern India

Juvenile Spot-bellied Eagle-owl *Bubo nipalensis* in Deobhuin Reserve Forest of Athagarh Forest Division, Odisha, India

IUCN Red List: Least Concern (BirdLife International, 2016)

Aves
[Class of Birds]

Strigiformes
[Order of owls]

Strigidae
[Family of typical owls]

Bubo nipalensis
[Spot-bellied Eagle-owl]

Species described by Hodgson in 1836

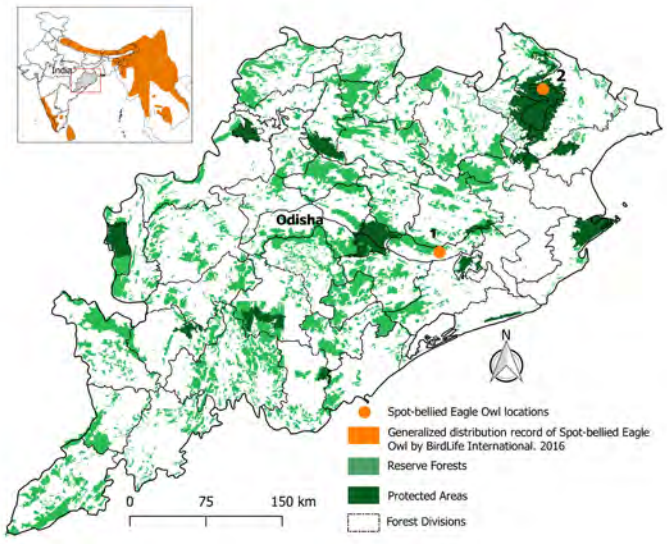
The Spot-bellied Eagle-owl *Bubo nipalensis* Hodgson, 1836 a member of the family Strigidae, is a very large nocturnal owl, native to India, Nepal, Bhutan, Bangladesh, Sri Lanka, Cambodia, China, Thailand, Laos, Myanmar and Vietnam (BirdLife International 2016). In India, the Spot-bellied Eagle-owl is found from the foothills of Uttarakhand to northeastern India, Western Ghats and even the southern Eastern Ghats (Shevaroy Hills) (Grimmett et al. 2011; Srinivasan 2013). According to IUCN it has been categorized as 'Least Concern' (BirdLife International 2016). It is also listed in Schedule IV of the Indian Wildlife (Protection) Act, 1972 and Appendix II of CITES. It prefers evergreen and moist deciduous tropical and subtropical

broadleaved forest (BirdLife International 2016); also inhabit in moist deciduous forest and temperate woodlands (Srinivasan 2013).

Global Distribution: Native: Bangladesh, Bhutan, Cambodia, China, India, Laos People's Democratic Republic, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam (BirdLife International, 2016)

On 9 May 2015, at about 16:30hrs, we rescued a bird in Deobhuin Reserve Forest (20.495293^{0}N & 85.430737^{0}E) of Athagarh Forest Division, Odisha. It was identified as a juvenile Spot-bellied Eagle-owl, based largely on the presence of ear tufts, paler grayish-cream colour body, pale-yellow coloured beak, and creamy yellow coloured legs (Grimmett et al. 2011). Its primaries, secondaries and tail feathers were dark with heavy barring. The bird was in a good condition. We kept the bird in captivity at the forest guest house, feeding and fostering it until it flew on 11 May 2015. The area from where the bird was sighted is located in the Eastern Ghats of Odisha with a vegetation largely comprising the northern tropical moist deciduous and dry deciduous forests (Champion & Seth 1968).

The presence of the juvenile Spot-bellied Eagle-owl indicates that this species may be breeding in Odisha. Until the present report, information on the occurrence of Spot-bellied Eagle-owl in Odisha was reported from Similipal Tiger Reserve (Nayak & Naik 2014). The species is considered as two well separated populations in India (Rasmussen & Anderton 2005). This sighting extends the range of this species further south in Odisha and indicate that the species might be more widely distributed in the State.



Sighting location of Spot-bellied Eagle-owl *Bubo nipalensis* in (1) Deobhuin Reserve Forest of Athagarh Forest Division and (2) Similipal Tiger Reserve, Odisha, India

The present sighting further strengthens the argument that lack of systematic surveys in many parts of Odisha and the Eastern Ghats has resulted in a biased understanding of distribution of many species across the Indian subcontinent as claimed by Mohapatra et al. (2014), Debata et al. (2013, 2015, 2017), Palei (2014). Intensive investigations are required in these unexplored areas of Odisha and northern Eastern Ghats, which might reveal the presence of further unrecorded species.

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Nimain Charan Palei[1], Himanshu Shekhar Palei[2], Bhakta Padarabinda Rath[3] & Arun Kumar Mishra[4]
[1&3] Office of the PCCF (Wildlife), Nilakanthanagar, Bhubaneswar, Odisha 751012, India
[2] Aranya Foundation, 625/12, Mars Villa, Panchasakha Nagar, Dumdoma, Khandagiri, Bhubaneswar, Odisha 751019, India
[4] Divisional Forest Office, Athagarh Forest Division, Cuttack, Odisha 754029, India
Emails: [1]wildpalei@gmail.com, [2]himanshu.palei@gmail.com (corresponding author), [3]bhaktaprath@gmail.com, [4]arunkumarmishra5@gmail.com

Citation: Palei, N.C., H.S. Palei, B.P. Rath & A.K. Mishra (2018). Spot-bellied Eagle-owl: Range extension of *Bubo nipalensis* Hodgson, 1836 (Strigiformes: Strigidae) in Odisha, eastern India. Bird-o-soar#18. In: *Zoo's Print* 33(6): 6-8

FUTTEYPORE STAR CHESTNUT

Melhania futteyporensis (Sterculiaceae): a new record for the flora of Haryana, India

Melhania futteyporensis

Plantae
(Plant Kingdom)

Tracheophyta
(Phylum of Vascular plants)

Malvales
(Order of Dicotyledonous flowering plants)

Sterculiaceae
(Family of Star Chestnut)

Melhania futteyporensis
(Futteypore Star Chestnut)

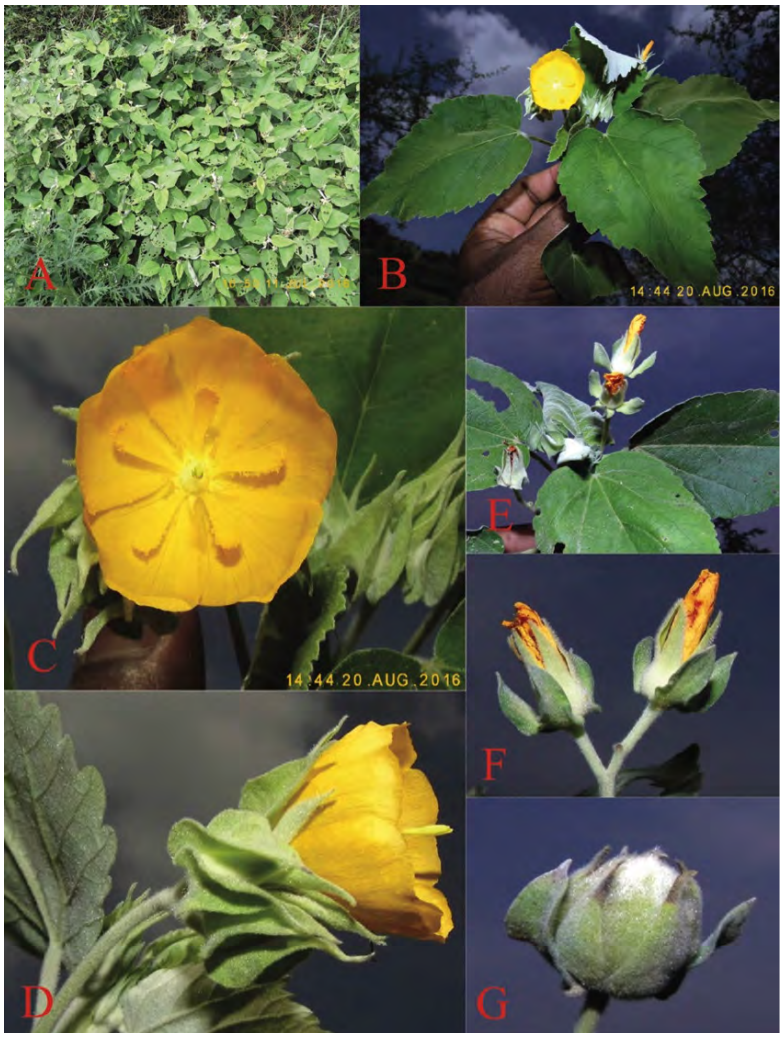
Species described by Munro ex Masters in 1874

Melhania Forssk. (Family: Sterculiaceae) comprises of *ca*. 50 species (Mabberley 2008) distributed in Asia, Africa and Australia. The genus comprises of hoary herbs or sub-shrubs; inflorescences axillary or terminal cymes, 1-4 flowered; 3 involucral bracts which are usually larger than or equal to sepals, accrescent; 5 basally connate sepals; 5 yellow to orange-yellow membranous petals; 5 stamens which alternate with 5 ligulate staminodes; ovary 5-loculed, ovules 2-many per locule; style long; stigmatic branches 5; fruits 5-valved capsules; seeds 10–20, usually 4, may be tubercled or smooth. In India, the genus is represented by total seven species, including the three endemics namely *M. cannabina* Wight ex Masters (Karnataka and Tamil Nadu), *M. hamiltoniana* Wall. (Andhra Pradesh, Bihar, Gujarat, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh) and *M. magnifolia* Blatt. & Hallb. (Gujarat, Maharashtra, Punjab and Rajasthan). Other four species of the genus are *M. futteyporensis* Munro ex Masters (reported from Delhi, Gujarat, Punjab, Rajasthan, Uttar Pradesh extended upto Pakistan); *M. tomentosa* Stocks ex Masters (reported from

Gujarat, Maharashtra, Punjab and Rajasthan extended upto Pakistan); *Melhania incana* Heyne ex Wight & Arn. (reported from Andhra Pradesh, Karnataka, Kerala, Tamil Nadu extended to Australia) and *M. denhramii* R. Br. (reported from Rajasthan, Arabia and Pakistan, also extended to tropical Africa) (Anamma et al. 2014).

Observations

During present study, the plants of Melhania Forssk. have been collected from three different places in southern Haryana, namely Madhavgarh, Block Satnali, District Mahendragarh, a part of Aravalli Hills (28^{0}18'7.7"N & 76^{0}2'29.9"E); Dhosi Hills, Narnaul, District Mahendragarh (28^{0}3'34.8"N & 76^{0}2'9.6"E), again foothills of Aravalli and from near village Bapora (28^{0}50'0.4"N & 76^{0}2'26.6"E), district Bhiwani, nearly 10km away from Bhiwani City. Based on literature, by comparing the digital images as well as herbarium specimens, the material was identified as *Melhania futteyporensis* Munro ex Masters, hitherto not reported from the state of Haryana, thus forming a new record for the flora of Haryana State. It was observed that only one or two individuals are growing at its place of occurrence except for one locality in Bhiwani District, where 15–20 individuals were found aggregated. This plant has not been seen at any other place of survey covering five districts of south Haryana. Neither there is any report of finding it anywhere in Haryana, as per the published works on flora of Haryana (Jain et al. 1982; 2000; Kumar 2001).



A-G *Melhania futteyporensis* Munro ex Masters
A - Habit; B - Leaves; C - Top View; D - Flowers side view
Close up; E - Flowering bud; F - Bracts; G - Capsule

This taxon was earlier described from Indian sub-continent and was known to occur in north-western drier parts of India which include Delhi, Gujarat, Punjab, Rajasthan and Uttar Pradesh (Hooker 1872–1897) along with Baluchistan, Sind and Pakistan. Also reported from Punjab, Delhi, Uttar Pradesh, Rajasthan and Gujarat, as per the online Flora of India, published by Botanical Survey of India (BSI 2014).

Maheshwari (1963), has quoted that “I have not seen this plant in field, Falconer is the one (in Duthie) who collected from Delhi” making it clear that this plant is not common to see in the field. Recently, this species has also been reported from southern India (Anamma et al. 2014).

Description

Melhania futteyporensis Munro ex Masters in Hook. f., Fl. Brit. India 1: 373, 1874; Duthie, Fl. Upp. Gangetic Plain 1: 106. 1903; Bamber, Pl. Punjab: 74, 1914; R.N. Parker, Forest. Fl. Punjab: 47, 1918; *M. tomentosa* Stocks ex Masters var. major Blatt. &Hallb.in J. Bombay Nat. Hist. Soc. 26: 228, 1918; *M. futteyporensis* Munro ex Masters var. major (Blatt. & Hallb.) Santapauin J. Bombay Nat. Hist. Soc. 56: 278.1959; Maheshwari, Fl. Delhi 85, 1963; B.V. Shetty& V. Singh, Fl. Rajasthan 1: 141, 1987; K.C. Malickin B.D. Sharma et al., Fl. India 3: 438, 1993. Type: India, Fatehpur Sikri, Sept. 1843, Munro No. 258, K (K00067 1882, Hook. herb.)

A - Image of type material (© copyright of the Board of Trustees of the Royal Botanic Gardens, kew); B - Image of Collected specimen

A small sub-shrub, 40–70 cm high, coarsely pubescent, stems terete. Leaves simple, 5-7-costate, ovate or broadly ovate-lanceolate, ca. 15×7 cm, velvety on both sides, crenate-serrate, base cordate, apex acute to sub-acuminate; petioles hairy, up to 3 cm long; stipules brown, setaceous. Flowers in 2–4-flowered axillary or terminal, shortly-peduncled cymes, bright yellow, showy, 1.5-2 cm across, pedicellate, peduncle and pedicel both pubescent, pedicel elongating in fruit; involucral bracts 3, ovate, ca. 2×1cm, slightly exceeding or equaling the sepals, acuminate at apex, pubescent, accrescent. Sepals 5, connate at base, ovate-oblong, apex acuminate, glabrous on inner side, persistent. Petals 5, yellow, oblique, obovate, membraneous; fertile stamens 5, ca. 0.8–1.0 cm long, alternating with staminodes, staminodes 5, exceeding the fertile stamens in length, ca. 1.5–2.0 cm, fimbriate. Ovary sub-globose, villous, with 5 locules; capsules oblong to subglobose, villous, minutely beaked, villous. Seeds angular, 2–4 in each locule, muricate, angled, brown to black. (Image 1).

Habitat: Rocky, dry habitats of plains or lower hills, usually in sandy soils.

Flowering and Fruiting: May–October; in present study flowers and fruits have been observed in July as well as in August.

Specimens examined: India: Haryana, Madhavgarh, Aravalli Hills, Mohan Lal (Department of Botany, Kurukshetra University Kurukshetra, Haryana, KUK-Lal-017, 11.viii.2016); India: Haryana, Dhosi Hills of Aravalli Mohan Lal (KUK-Lal-036, 20.viii.2016); India: Haryana, village Bapora, District Bhiwani, Mohan Lal (KUK-Lal-053, 20.viii.2016). Image 2 is a comparative image which shows the type specimen collected by the original author vis-à-vis the specimen collected by the author of this paper (Kew 2018).

Diagnosis of seven Indian *Melhania* species is provided by Anamma et al. 2014. As this species can be closely allied to *M. hamiltoniana*, distinguishing characteristics between *M. futteyporensis* and *M. hamiltoniana* is being provided here, based on Anamma et al., 2014:

1a. Staminodes pointed; seeds 4 to many in each locule……*M. hamiltoniana*

1b. Staminodes obtuse; seeds 2–4 in each locule……*M. futteyporensis*

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Mohan Lal[1], Nidhan Singh[2] & B.D. Vashistha[3]
[1&3] Department of Botany, K.U. Kurukshetra, Haryana 136119, India
[2] I.B. (PG) College, GT Road, Panipat, Haryana 132103, India
Email: [2]nidhansinghkuk@gmail.com (Corresponding author)

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CATTLE EGRET

Successful management of mudballing in *Bubulcus ibis* - A case report

Egret with mudball

Aves
[Class of Birds]

Pelecaniformes
[Order of medium-sized and large waterbirds]

Ardeidae
[Family of wading birds]

Bubulcus ibis
[Cattle Egret]

Species described by Linnaeus in 1758

IUCN Red List:
Least Concern (BirdLife International, 2016)

Cattle Egret *Bubulcus ibis* belongs to the order Ciconiiformes and family Ardeidae (Ali 1996). The Cattle Egrets acquired the name due to their feeding habit in association with livestock and riding over the back and take the insects over the cattle. They generally feed on invertebrates, amphibians and reptiles disturbed by grazing animals and also insects from freshly ploughed fields. It is a gregarious bird, seen in small gatherings nearby grazing livestock and near water source by running in and out between their legs, and attacking the insects present in the water also. Due to its primarily insectivorous behaviour, Cattle Egret is considered as a biological insect pest control agent in an agroecosystem (Patankar et al. 2007). Chronic accumulation of mud, feces and black soil around the foot and formation of hard ball like structure is called mudballing. Mudballing occurs mainly

due to adherence nature of materials during their inhabitants (Laurie & Rebecca 2007). Hardness of the mud ball varies with the type of material adhered to the foot. If the problem becomes very severe, the bird may be unable to walk or move naturally. Present communication reports the successful removal of mud ball in an egret.

Global Distribution:
Native: Algeria, Angola, Anguilla, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belize, Benin, Bermuda, Bhutan, Bolivia, Plurinational States of Bonaire, Sint Eustatius and Saba (Saba, Sint Eustatius), Botswana, Brazil, Brunei Darussalam, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Cayman Islands, Central African Republic, Chad, Chile, China, Cocos (Keeling) Islands, Colombia, Comoros, Congo, Congo, The Democratic Republic of the Costa Rica, Côte d'Ivoire, Cuba, Curaçao, Cyprus, Djibouti, Dominica, Dominican Republic, Ecuador (Galápagos - Introduced), Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Falkland Islands (Malvinas), France, French Guiana, Gabon, Gambia, Georgia, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, India, Indonesia, Iran, Islamic Republic of Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Korea, Democratic People's Republic of Korea, Republic of Kuwait, Lao People's Democratic Republic, Lebanon, Lesotho, Liberia, Libya, Macao, Madagascar, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Martinique, Mauritania, Mauritius, Mayotte, Mexico, Micronesia, Federated States of Montenegro, Montserrat, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Northern Mariana Islands, Oman, Pakistan, Palau, Palestinian Territory, Occupied Panama, Papua New Guinea, Paraguay, Peru, Philippines, Portugal, Puerto Rico, Qatar, Réunion, Romania, Russian Federation (Eastern Asian Russia - Vagrant, European Russia), Rwanda, Saint Barthélemy, Saint Helena, Ascension and Tristan da Cunha, Saint Kitts and Nevis, Saint Lucia, Saint Martin (French part), Saint Vincent and the Grenadines, Sao Tomé and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Sint Maarten (Dutch part), Somalia, South Africa, South Georgia and the South Sandwich Islands, South Sudan, Spain (Canary Is.), Sri Lanka, Sudan, Suriname, Swaziland, Syrian Arab Republic, Taiwan, Province of China, Tanzania, United Republic of, Thailand, Timor-Leste, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Turks and Caicos Islands, Uganda, United Arab Emirates, United States (Hawaiian Is. - Introduced), United States Minor Outlying Islands, Uruguay, Venezuela, Bolivarian Republic of, Viet Nam, Virgin Islands, British, Virgin Islands, U.S., Western Sahara, Yemen, Zambia, Zimbabwe (BirdLife International, 2016)

Case History and Observations

A young egret was found struck in-between the creepers in a garden. It was identified by sound of vigorous movements of the dried plants and leaves. It was rescued from the site and allowed freely, but it was unable to fly. It had a mud ball over the left leg and it was around six centimetres in radius. Mud balls were dry and very hard formed of clay from black soil. The bird showed little anxiety and was looking dull.

Immersion of the leg in the water containing Dioctyl sodium sulfosuccinate

Treatment and Discussion

The legs were immersed in the water containing Dioctyl sodium sulfosuccinate (10% solution) for about 10 minutes. Mud was softened and removed using foreceps. Collected mud from the bird weighed about 100g. It took about twenty minutes for careful removal of the mud and the bird was administered vitamin drops orally to prevent the stress caused by the handling. After complete removal of the mud ball, the bird was able to walk freely and could fly without any difficulty. "Balling up" of the toes is very common on heavy soils especially with young stock. During continued rains in early summer, clay soil adhere to feet of young birds and forme great balls of mud. Mudballing

of the feet had been reported in pheasants, patridges and the young birds were unable to move freely and died from starvation, exhaustion or exposure (Laurie & Rebecca 2007). Dioctyl sodium sulfosuccinate was a wetting, penetrating agent and surface tension reducer. It produces the effect by reducing the surface tension and allowing water to penetrate the mass (Eghianruwa 2014). Dioctyl sodium sulfosuccinate in water was used for breaking up the mud ball in the present case and was found to be easier when compared to water alone.

Egret free from the mudballing

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G. Vijayakumar[1], S. Radish[2] & B. Sudhakara Reddy[3]
[1-3] Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Namakkal, Tamil Nadu 637002, India
Email: [1]drvijaymvc@gmail.com(corresponding author)

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A note on Parvo virus (Scabies) infection treatment in Jackals (*Canis aureus*) at Guindy National Park, Tamil Nadu [Article withdrawn]

Baskar, N.

Biologist, Guindy National Park, Chennai, Tamil Nadu 600025, India
Email: nbrzoo@yahoo.com

The author has withdrawn the article as several errors were detected.

Announcement - Job Opportunity

Centre for Environment Education (CEE) is looking for 'Park Manager' for Sundarvan, A Nature Discovery Centre at Ahmedabad.

Sundarvan
A Nature Discovery Centre

Essential qualification and Experience

1. Masters degree in life science with at least 5 years of relevant experience, 2. Prior experience working in zoos/captive breeding centres/rescue centres, 3. Familiar with Indian Zoo Rules and other Central Zoo Authority guidelines, 4. Good written and verbal communication in English (knowing Hindi/Gujarati preferable), 5. Computer knowledge (MS Office, research and social media handling), 6. Good Management, networking and team work skills

Job profile

1. Zoo management (supervision of day to day zoo activities, record keeping, communication with Forest Department(s)/Central Zoo Authority, etc), 2. Designing and development of educational activities and material, 3. Assistance in conducting educational activities, 4. Development of proposals, 5. Networking with other institutions/partners, 6. Excellent team building skill to coordinate with internal and external stakeholdres.

Salary: 40,000 to 50,000 (indicative salary, to be finalized based on Interviews)
Last date to receive applications: 30 June 2018
Visit: http://ceeindia.org/?q=opportunities and apply online.

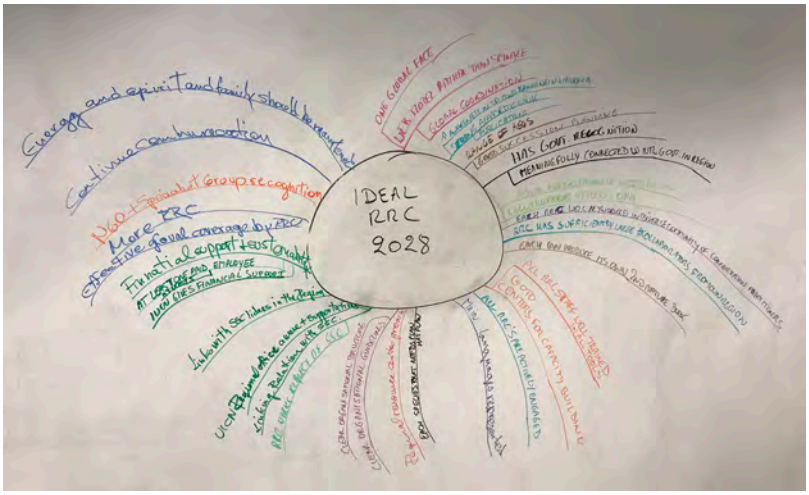
The next 10 years!

CPSG RRC Meet 5-7 June, Minneapolis, USA

First established as the Captive Breeding Specialist Group (popularly CBSG) more than three decades under the SSC IUCN, the highly active and innovative group continues to contribute in the field of conservation planning, justifying the name change recently to Conservation Planning Specialist Group or CPSG. The mantle of responsibility of leading the group has changed hands from Ulie Seal, the founder & innovator to Bob Lacy, developer of Vortex to Onnie Byers, the current chair. Many a conservation leader has contributed to the functioning, development and running of CPSG over the decades and many continue to do so currently keeping the spirit of the organization flying high.

Sally Walker of Zoo Outreach Organization was responsible for one of the outreach innovations of the then CBSG when she convinced and got unconditional support from Ulie Seal to set up the first national network CBSG-India in 1991. Continuous engagement of CBSG-India in all of the processes and techniques of CBSG made the national initiative into a regional one for South Asia. Following on the heels of CBSG-South Asia was the establishment of CBSG-Meso America based in Costa Rica. Several network experiments later CPSG today is represented in regions of Australasia, Brazil, Europe, Indonesia, Japan, Mesoamerica, Mexico, North America, South Asia, Southern Africa and perhaps soon in Southeast Asia too.

Over the years the networks of CPSG have by themselves become a centre of expertise in various aspects of CPSG processes such as facilitation, population viability assessments, population and habitat viability analysis, risk assessments, conservation needs assessments, disease risk assessments, conservation plans, species action plans, among others. This extensive spread of knowledge and empowerment prompted the current chair of the SSC IUCN, Jon Paul Rodrigues to recognize CPSG as the species planning arm of the Species Survival Commission, giving one-third of the mandate of the SSC's ambit to the specialist group; and officially changing the name to Conservation Planning Specialist Group in early 2017. The erstwhile networks also changed their involvement from



Mind map for an ideal regional resource centre by 2028. © Sanjay Molur

A selfie of some of the CPSG folks in front of the Guthrie Theatre in Minneapolis. © Sanjay Molur

being mere representations to Regional Resource Centres or RRCs. Zooreach is the home for CPSG-South Asia RRC.

The CPSG RRCs met up recently in Minneapolis, the HQ of CPSG, 5-7 June 2018. As part of the biennial meeting of the RRCs since 2013, this year's gathering proved very invigorating as we discussed the plans for the next ten years of CPSG RRCs. The onus was not on what each RRC was doing currently, instead what each RRC wanted to build its cores strengths in the next five years. Capacity building, participatory approaches, exchange of expertise, mentoring, etc. are critical areas of future development of the RRCs, feeding back into the construction of the HQ itself.

Three days of hard work, typical of CPSG's workshops, were interspersed with some extracurricular and team building activities such as kayaking/canoeing, 'Fly Over America' at the Great Mall, and dinner at the famous Guthrie Theatre. The tribe of CPSG grows as its spirit remains flying high. Here's to looking forward to proactive conservation planning around the world.

Sanjay Molur
Convener, CPSG-South Asia
Executive Director, Zoo Outreach Organization

A chair that holds all of CPSG team. © Kind passerby

The sprawling North Carolina Zoo -- a treat for zoo buffs

It was fortuitous to have an introduction to the Collections Manager Roger Sweeney, and (retired) director of the zoo for 22 years Dr. David Jones. On my way to Minneapolis after meeting with Sally Walker in her hometown, I spent a day at the NC Zoo. The trip was worth every cent for the warm hospitality I received, the wonderful meeting we had on discussing future strategies, and for the personal tour of the well-wooded humongous zoo and its grounds.

Spread over 2500 acres, the zoo currently has a focus on two continents Africa and North America, and is planning on adding exhibits from other continents. One of the two state-owned zoos in the United States, NC Zoo has an envious setting in a rural /semi-urban area close to the big cities of Raleigh, Durham, Asheboro, and Greensboro.

Impressive sculptures by artists spread across the zoo to promote wildlife art in conservation

Sally and I always wanted to visit the zoo, and we would talk about it every time I visited her hometown in Goldsboro, but it never materialized. Since after the 2001 Afghanistan war when Kabul Zoo was nearly destroyed, it was David Jones of NC Zoo and Sally who worked together on various aspects of building back the Kabul Zoo. Zooreach has been involved in training and building capacity for Kabul Zoo staff over the years through SAZARC. It was, therefore, a sobering meeting between David and me not to have Sally in with us and there was not a moment


With Roger Sweeney (centre) and David Jones (right) at the Sonoran Desert exhibit

spent without referring to her contributions in India and South Asia.

The aviary, one of the oldest, but well ahead of its time when constructed when the zoo was established in 1967, boasts several thousand plants in addition to birds. A botanical-cum-zoological garden the NC Zoo contributes to the outreach of fauna and flora equally throughout its campus. The Sonoran Desert was another testament to this flora-fauna association that can make exhibits interactive, well-rounded and naturally beautiful.

The Cypress Swamp, permanent wetland, and the open African grasslands make one believe they are transported out of the zoo. The zoo's famed gorilla exhibit, the expanded baboon exhibit, the chimpanzee and lemur exhibits are all worth their stories of transformation, individual animal behaviours, training protocols, exhibit designs, etc. The zoo staff is involved in marking and tracking 200+ individuals of native snakes on the property, combined with an active outreach for visitors. The NC Zoo is an excellent example for large zoos in South Asia to learn from, and perhaps partner.

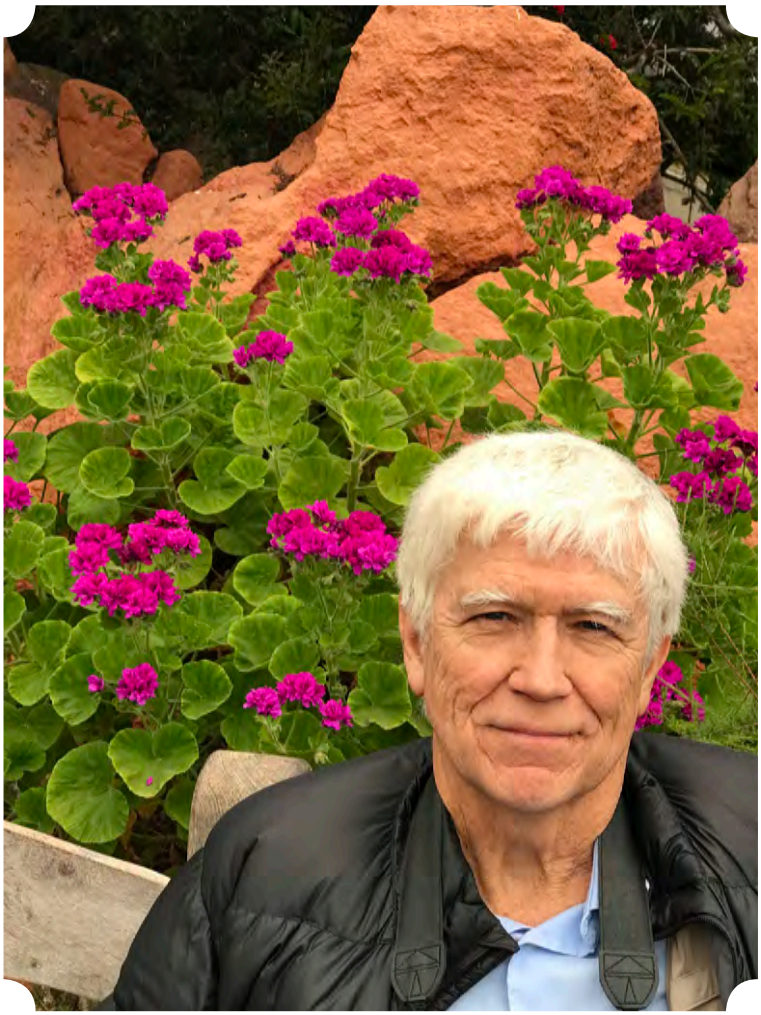
Sanjay Molur


The botany in this aviary is as impressive as the birds

Indiana Jones of Conservation wins the prestigious Indianapolis Prize!

Thirty-two nominees from around the world
Six finalists
...
Russ Mittermeier!

How great is this?! Russ is the evergreen hero of conservation worldwide. Underlying his flamboyance, the swag and glib lies a pure heart for the conservation of wildlife, the environment, and local communities. A fantastic memory for people, places, events and species, this man is a living and walking encyclopedia on wildlife. Equally comfortable with hardcore science and local outreach, his ability to communicate in six languages with confidence and humor is worth watching (even if you cant understand them). A stickler for perfection, he understands the need for compromises when it comes to promoting conservation. A rare virtue, Russ plays the role of on-the-ground activities, research, taxonomy, eco-tourism, press conferences, presentations, fundraising, networking and any challenge thrown at him in conservation, with elan. I have had the pleasure of knowing him and working with him for a decade and a half and I can't but help think of him as the Indiana Jones of Conservation.



Russ Mittermeier at the Mediterranean Biome in Eden Project, Cornwall, UK

Well deserved, Russ! Congratulations!

Sanjay Molur

Wildlife Educators summer course at Chennai Snake Park

The Chennai Snake Park, Guindy, Chennai conducted wildlife educators summer course for students and general public focussing primarily on reptile biology and their conservation from April 16 to May 25. About 135 individuals participated in the summer course, of which most of them were students. The participants were from all walks of life and included age group from as low as 9 year old school kids to retired, senior citizens. The participants were from many educational and linguistic backgrounds. About 15% of the participants were from other states. Apart from students, the rest of the participants were from various professions, such as software and engineering, to business enterpreuners, teachers and home makers. Among the college students too, there was this variation – from both zoology / life science majors (both as mainstream subjects or electives / allied / ancillary subjects) and non-life science discipline

Dr. S. Paulraj, IFS, Executive Secretary interacting with the summer course participants

students (like Arts, Business Managment, Commerce, Journalism, Visual Communication etc.). But yet, on many occassions, our programmes were speicifically tailored in such a way that it meets the necessity of this mixed-audience groups, without compromising on subjects and contents.

This five day course consists of speical talks on need for wildlife awareness, natural history and biology of reptiles, bird watching techniques and methods, Snake bite management and first aid and amphibian conservation. Interactive sessions covering topcis such as wildlife health monitoring, role of zoos in reptile conservation including hands-on learning experiences with professional experts were also in place. Out door activities such as reptile adapdation (star tortoise, monitor lizard, Iguna) and biology, snake identification (venomous and non-venomous) amphibian physiology and adapdation and vetinary care were

Students hop like a frog for the competition

conducted in the park premise. Additionally, all participants, guided by the Forest Dept. staff and the team experts took a nature trail eco-walk into Guindy National Park aiming to sight wildlife.

Apart from the theory sessions, the hands-on learning experiences were very effective. The participants, particularly students, were very enthusiastic about the practical sessions and leaping frog exercises. They were also very eloquent and spontaneous during the quize competetions. From their feedbacks that were collected at the end, most participants, regardless of age and occupation, unanimously stated that the trip inside Guindy National Park was the highlight. This was so for good reasons. With sightings of elusive animals like the jackal, palm civet, mongoose and the key-stone species of the region – the black buck, spotted deer in the wild, one has no hesitation in expressing their opinion. Additionally, other interesting animals like the star tortoise, rat snake, bronzeback tree snake, fan-throated lizards were also sighted by the participants. A multitude of birds such as green malkoha, pied crested cuckoo, babblers, bulbuls, koel, mynahs, black-drongos, sun birds, bee-eaters, oriole, king fisher, hoopoe, woodpecker, coppersmith barbet, coucal, black-winged kite, black kite, spotted owlet and butterflies were a feast for their eyes. Fun apart, this was also an excellent opportunity for the participants to learn about spotting wildlife in natural habitats. Indirect evidences and signs such as scats and foot prints / pug marks of jackals, civet cats, jungle cats, mongooses as well as shed skins of snakes were encountered.

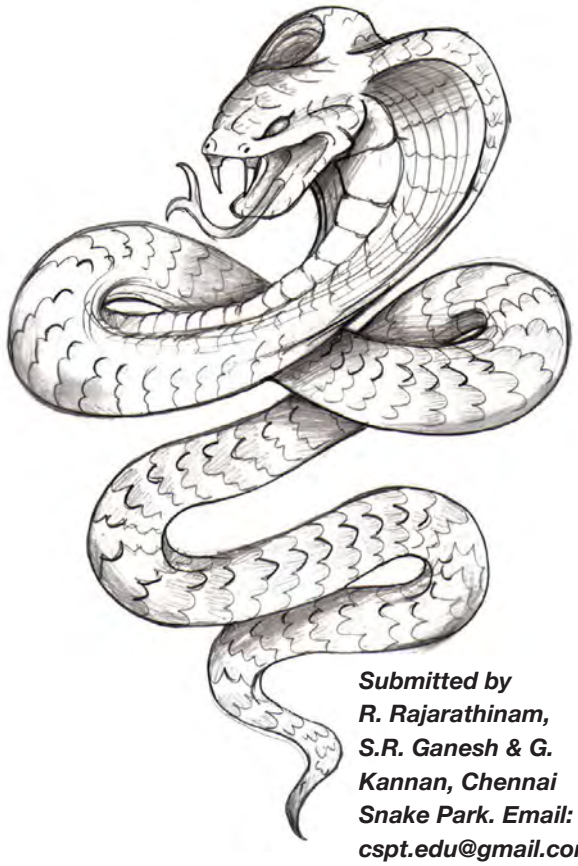
Therefore, the participants were quite enthusiastic about the course and many showed positive attitude on wildlife after attending the prgramme.

A special attraction was the frog jumping excercise and competition. Aside from fun, the particpiants were imparted with all the essential information on health benefits of such excercies and above all the uniqueness and abilities of frogs. The participants got many prizes in extempore and

written quiz competetions conducted during the programme based on the modules handled. It is hoped that the special programmes enhanced the public understanding and appreciation of reptiles and amphibians and wildlife in general by the public.

Briefing the importance of Guindy National Park

After completion of this programme, the participants had a chance to become "ZOO EDUCATORS" for Chennai Snake Park. This would allow the participants to have a free passes to visit the park 50 times in a year and also opportunity to educate about our zoo animals to school kids who visit the park. Our heartfelt thanks are due to the Chairman, Executive Secretary, Executive Trustee and Trustees of Chennai Snake Park Trust for encouraging this activity. We thank A.V. Sudhakar, MNS for inguarating the summer course programme. Thanks are also due to the Chief Wildlife Warden and Wildlife Warden, Guindy National Park for allowing us to create awarenss in the vicinity of Guidy National Park. We are extemely thankful to Dr. S. Paulraj, Executive Secretary, Dr. Jayathangaraj, Dr. T. Senthil Kumar, Dr. V. Kalaiarasan Trustees and Dr. C. Arivazhagan, Project Scientist for delivering inguaration talks and technical sessions. We thank Mr. V. Prabhakaran, Executive Trustee and Dr. M. Arumugam, Dr. K.A. Subramanian and Mrs. T. Uma, our Trustees, for kindly gracing the ocassions during the valedictory events and prize / certificate distributions. We are thankful to our guest speakers Dr. M.C. Sathyanarayana, Dr. G. Ramaswamy, Dr. Palanivelrajan, Dr. M. Bubesh Gupta and Mr. S. Dravidamani for sharing their valuable knwoledge with our participants.



Submitted by R. Rajarathinam, S.R. Ganesh & G. Kannan, Chennai Snake Park. Email: cspt.edu@gmail.com

Tata Steel Zoological Park celebrates World Environment Day

World Environment Day is celebrated annually on 5th of June since 1973, to raise the global awareness about declining condition of the environment as well as put into the knowledge of the people about the importance of healthy and green environment on earth. As we all aware about the condition of our environment which is getting declined day by day, because of the industrialization, deforestation, technological development, global warming, pollution, etc. It is time for us to educate more and more people especially the student fraternity to enhance awareness on importance of preserving our biodiversity and take pledge also to make earth a better place to live in by keeping it clean and green.

This year, Tata Steel Zoological Park and the International Association of Lions Clubs, District 322A jointly organised a weeklong awareness programme on the said theme of United Nations “Beat plastic

Awareness campaign by local NGO Anwesha against using of plastic items

Participants of “Best out of waste” workshop cum competition

Submitted by Seema Rani, Biologist cum Education Officer, Tata Steel Zoological Park, Jamshedpur. Email: cmarani00@rediffmail.com

Participants of "hands and face painting" competition

pollution". During the occasion, a slew of events such as rally for river, on the spot essay writing competition, workshop on 'Best out of waste' and face and hands painting competition were organized for school/college students from 1-5 June at Zoo Nature Education Center (NEC).

The celebration of World Environment Day commenced with a rally at 7.00am, in order to raise awareness on importance of preserving our biodiversity and pledged to make earth a better place to live in by keeping it clean and green a "Rally for river" was organized. During this the students from different schools and Members of Lions club, marched about 2km around the green spreads of the Jubilee Park with banners in their hand and slogans on their lips. More than 100 participants were present in rally.

On the second day (2nd June) of the World Environment Day, on the spot essay writing competitions was organized during which Sanjana Raj from S.D.S.M. School merged as the Winner. The topic of the essay was "Plastics are non-biodegradable". A total of 36 participants participated.

On the third day (3rd June) of the World Environment Day celebration a workshop cum competition on "Best out of Waste" was organized. There were 53 participants from 10 schools took part in the competition. In a keenly contested workshop, the winners were Sneha Kumara, Sanjana Raj, Astha Rai, Nakshtra, Pranav,Tanmoy,

Participants of "sit and draw" competition organised by Local NGO Jaisawal Samaj

Rally for Rivers being flagged off on occasion World Environment Day

Prakash,Sahil Kumari, Arjun Anand, Prakash Kumari, Roshni Kumari, Khushboo Kumari of Team-A.

On 5th June, a face and hands painting competition was organized. A total of 54 students from 11 schools participated in the competition. At the same day two more events were organized parallelly, first an awareness campaign inside the zoo premises for the visitors in association with ANWESHA, a local NGO, to make people aware of "plastic Ban". Second, a sit and draw competition was organized in association with Jaiswal Samaj, in which more than 500 students participated.

The awareness campaign was coordinated and executed by Dr. Seema Rani, Biologist cum Education Officer, Tata Steel Zoological Park along with Mrs. Sunita Singh, District chair person, Environment, member of Lions Clubs International, District 322A. In all, more than 800 children from different schools, institute and local NGOs of Jamshedpur participated in various events during the Celebrations.

Participants of essay competition

Summer Zoo at Sundarvan

Reptile session at the zoo

Sundarvan organizes month long summer special activities to rekindle the connection with nature and engage children with wildlife. The nature appreciation events were arranged for children of 4-15 years in the month of May. Two batches of “Mom and Me Exploring the Zoo” for the toddlers age 4-7 years were scheduled on Sundays. The programme was designed to be participated by a parent and the child, so there will be comfort zone for the participants to open up. Apart from that, the duo can spend some quality time exploring, learning and making memories at the zoo. The programme was planned for three hours with icebreaker, nature trail and art activity session. The ice breaker activity was “Tingle your Senses” where children would use their perceptive senses to identify few objects. Children were blindfolded to guess the name of the substance by smelling, tasting or touching. The nature trail at Sundarvan is most popular among children, who interact closely with range of domestic birds and feed them. The art sessions bring out the colour for the day. Guardians team up with their toddler pasting their handprints on the canvas bags provided for them. To customize it uniquely, one of the handprint is of the parent’s and another is of the child.

Two batches of “Zoo Keeper for a Day”, a programme for 10-15 years were arranged. This programme included an entire day filled with learning and fun. Along with close interaction of animals, the participants cleaned cages, chopped vegetables as well as fed birds and animals, such as geese, ducks, bantam hens, turkeys, guinea pigs, tortoises and more. They closely observed birds and animals such as cockatiel, love birds, hedgehog, rat

snakes etc., while they were being fed by the zoo keepers. Participants got a chance to interview animal keepers of Sundarvan who have more than 30 years of experience in handling and caring for animals. A presentation on zoos introduced students to history of zoos, who is who in a zoo – different staff and their role, basics of zoo management, etc. An art and science related hands-on activity of creating animal footprint casts using 'Plaster of Paris' was also taught during the workshop. The curious young zoo keepers asked number of questions and shown complete involvement in all the activities.

The activity of tingle your senses

The Young Naturalist- 4 days of fun with one overnight stay at the zoo was arranged for the age group 8-12 years. Two batches of the programme were carried out in the month of May which involved understanding of animal groups such as reptiles, birds and mammals. Touch table materials consisting of different artefacts were used to enhance the learning. A session on trees was also carried out involving activity of "Touch-Smell-Taste" where the participants were told to feel, smell and taste different parts of a tree to identify them. Two art activities were carried out, where the participants made a funny tortoise and painting animal footprints/leaves on t-shirts. During the night stay the children observed nocturnal activity of various animals at the zoo and maintained a checklist of spiders. To reminisce the old days and properly mark the end of a night stay at a reptile dominated zoo, "Jurassic Park" was screened at the open air theatre. The thrill continued with the morning bird watching session, the young birders spotted and identified the birds at the zoo campus. Through such exposure, the children develop a strong bond on this green space and its biodiversity.

Mom and me celebrating a day at the zoo

Submitted by S. Sivakumar, Park Manager, Saymanti Bandyopadhyay, Education Officer, Meena Nareshwar, Senior Programme Co-ordinator, CEE. Email: s.sivakumar@ceeindia.org

University of Lucknow observed *International Day for Biological Diversity* and *World Environment Day*

International Day for Biological Diversity

"Biodiversity Festival" was organized by the Biodiversity & Wildlife Conservation Lab, Department of Zoology, University of Lucknow in collaboration with Institute for Wildlife Sciences, University of Lucknow, and Centre for Biodiversity & Wildlife Research & Conservation, U.P. State Biodiversity Board, and Regional Science City, Lucknow.

Participants of poster competition

Beat the plastic pollution: The Posters

The aim was to spread the message of biodiversity conservation and its importance amongst school students and common people thereby sensitize them towards biodiversity conservation. Celebration of the International Day for Biological Diversity under the theme, therefore provides an opportunity to raise awareness and action towards the safeguarding life on earth.

Activities

On 20th May 2018 different events were organized at the Regional Science City and around 300 students from different schools and colleges of Lucknow enthusiastically participated in different events like quiz, poster, slogan, photography and extempore competitions based on biodiversity. The winners were felicitated with books and certificates as prizes. In between the programme Prof. Amita Kanaujia delivered an informative lecture on Biodiversity and its conservation and at the end, Professor Padma Saxena appealed to the children along with their teachers

and guardians, to think about the importance of biodiversity and the duties of every human being towards the nature. On 22nd May during International Day for Biological Diversity, the first and second prize winners of events held at Regional Science City, Lucknow were felicitated by Hon'ble Forest & Environment, Zoos' Minister Shri Dara Singh Chahuan. An awareness stall was also set up at Ram Manohar Lohiya Law University.

Posters made by the participants

Awareness Stall and exhibit

The stall was decorated with the posters designed by Biodiversity and Wildlife Conservation Lab on common reptiles, amphibians, birds, butterflies, wetlands of Lucknow etc. People from different sectors visited the exhibit and collected posters. Research scholars of the lab spread awareness regarding the role of flora and fauna in our ecosystem using posters.

Distribution of awareness materials from stall set up at Ram Manohar Lohiya Law University

World Environment Day 2018

India is the global host for this year's World Environment Day celebration which was held on 5 June 2018 with the theme "Beat Plastic Pollution".

Volunteers collecting the plastic bottles from the selected area of campaign

Preparation of flower pots from plastic water bottles

Biodiversity and Wildlife Conservation Lab, University of Lucknow in collaboration with Uttar Pradesh State Biodiversity Board, Centre for Biodiversity and Wildlife Research and Conservation, Lucknow celebrated World Environment Day 2018 at University of Lucknow on 5th and 6th June 2018 with great enthusiasm.

Awareness acitivities
We have been continuously distributing biodegradable bags and planting trees in the city for the past few years. This year as well we distributed around 200 saplings and 500 paper bags. Volunteers distributed the paper bags to the public and appealed and convinced them to stop using of polybags.

A plantation drive was also started from early morning till afternoon, near the bank of river Gomti and near University of Lucknow. Around 200 plants were planted and watered. The volunteers promised to take care of those saplings until it grow and becomes strong. Moreover, we collected used plastic bottles from the city and our volunteers and local people made beautiful flower pot out of it and it was also used in grow plants such as basil, aloe vera, and other creepers.

The whole awareness, plantation and cleaning program got operated under the expert supervision of Prof. Amita Kanaujia, Dept. of Zoology, University of

Mass awareness by volunteers to reuse or refuse of plastic products

Lucknow and her research scholars Adesh Kumar, Shivangi Mishra, Ruby Yadav, Ankit Sinha, Daya shanker sharma and volunteers Asif Ahmad Siddiqui, Ravi Singh, Pratishtha Singh, Aakriti, Deepti Verma, Ankit, Aditya, and many more.

Submitted by Amita Kanaujia, Adesh Kumar and Shivangi Mishra, Biodiversity & Wildlife Conservation Lab, Department of Zoology and Institute of Wildlife Sciences, ONGC Center for Advanced Studies, University of Lucknow, Lucknow, U.P. Email: kanaujia.amita@gmail.com

Street awareness: Say No to Polythene or Plastic

ZOO'S PRINT

Communicating science for conservation

ZOO's PRINT Publication Guidelines

We welcome articles from the conservation community of all SAARC countries, including Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and other tropical countries if relevant to SAARC countries' problems and potential.

Type — Articles of semi-scientific or technical nature. News, notes, announcements of interest to conservation community and personal opinion pieces.

Feature articles — articles of a conjectural nature — opinions, theoretical, subjective.

Case reports: case studies or notes, short factual reports and descriptions.

News and announcements — short items of news or announcements of interest to zoo and wildlife community

Cartoons, puzzles, crossword and stories

Subject matter: Captive breeding, (wild) animal husbandry and management, wildlife management, field notes, conservation biology, population dynamics, population genetics, conservation education and interpretation, wild animal welfare, conservation of flora, natural history and history of zoos. Articles on rare breeds of domestic animals are also considered.

Source: Zoos, breeding facilities, holding facilities, rescue centres, research institutes, wildlife departments, wildlife protected areas, bioparks, conservation centres, botanic gardens, museums, universities, etc. Individuals interested in conservation with information and opinions to share can submit articles ZOOS' PRINT magazine.

Manuscript requirements
Articles should by typed into a Word format and emailed to zooreach@zooreach.org. Avoid indents, all caps or any other fancy typesetting. You may send photos, illustrations, tables.

Articles which should contain citations should follow this guideline: a bibliography organized alphabetically and containing all details referred in the following style: surname, initial(s), year, title of the article, name of journal, volume, number, pages.

Editorial details
Articles will be edited without consultation unless previously requested by the authors in writing. Authors should inform editors if the article has been published or submitted elsewhere for publication.

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ZOOs' PRINT magazine is informal and newsy as opposed to a scientific publication. ZOOS' PRINT magazine sometimes includes semi-scientific and technical articles which are reviewed only for factual errors, not peer-reviewed.

Address
Zoo Outreach Organisation
Post Box 5912, 12, Thiruvannamalai Nagar,
Saravanampatti - Kalapatti Road, Saravanampatti,
Coimbatore, Tamil Nadu 641035, India
Phone: +91 9385339862 & 9385339863
E-mail: zooreach@zooreach.org
Website: www.zoosprint.org, www.zooreach.org

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