

# ZOO'S PRINT

Communicating Science for Conservation



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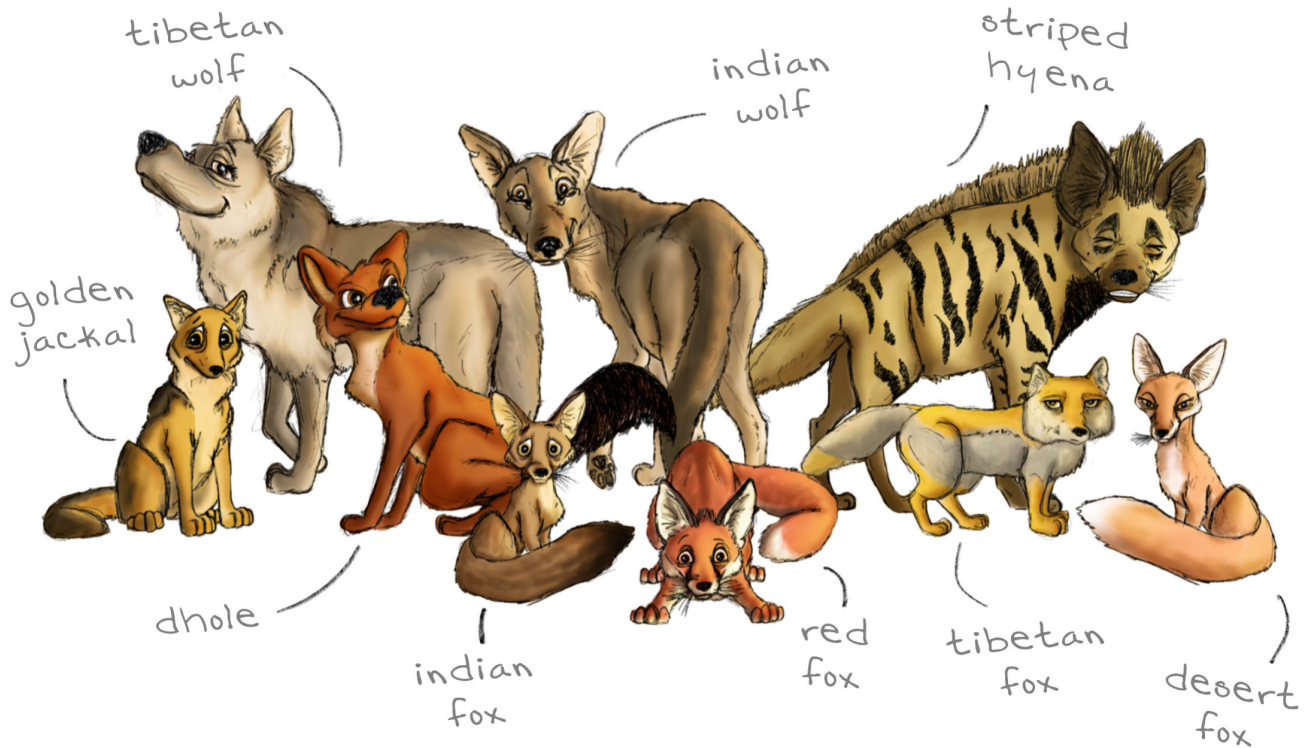
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Gharial may head for IUCN Green-listing on securing its habitat!

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# CaNid cRisiS?



Species that belong to the dog family are called 'canids'. India has 8 such wild canids, along with the striped hyena. We know very little about them, & this hampers their conservation.

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Arjun Srivathsa

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Wild Canids  
india project  
wildcanids.net

[arjunorivathsa.org](https://www.arjunorivathsa.org)

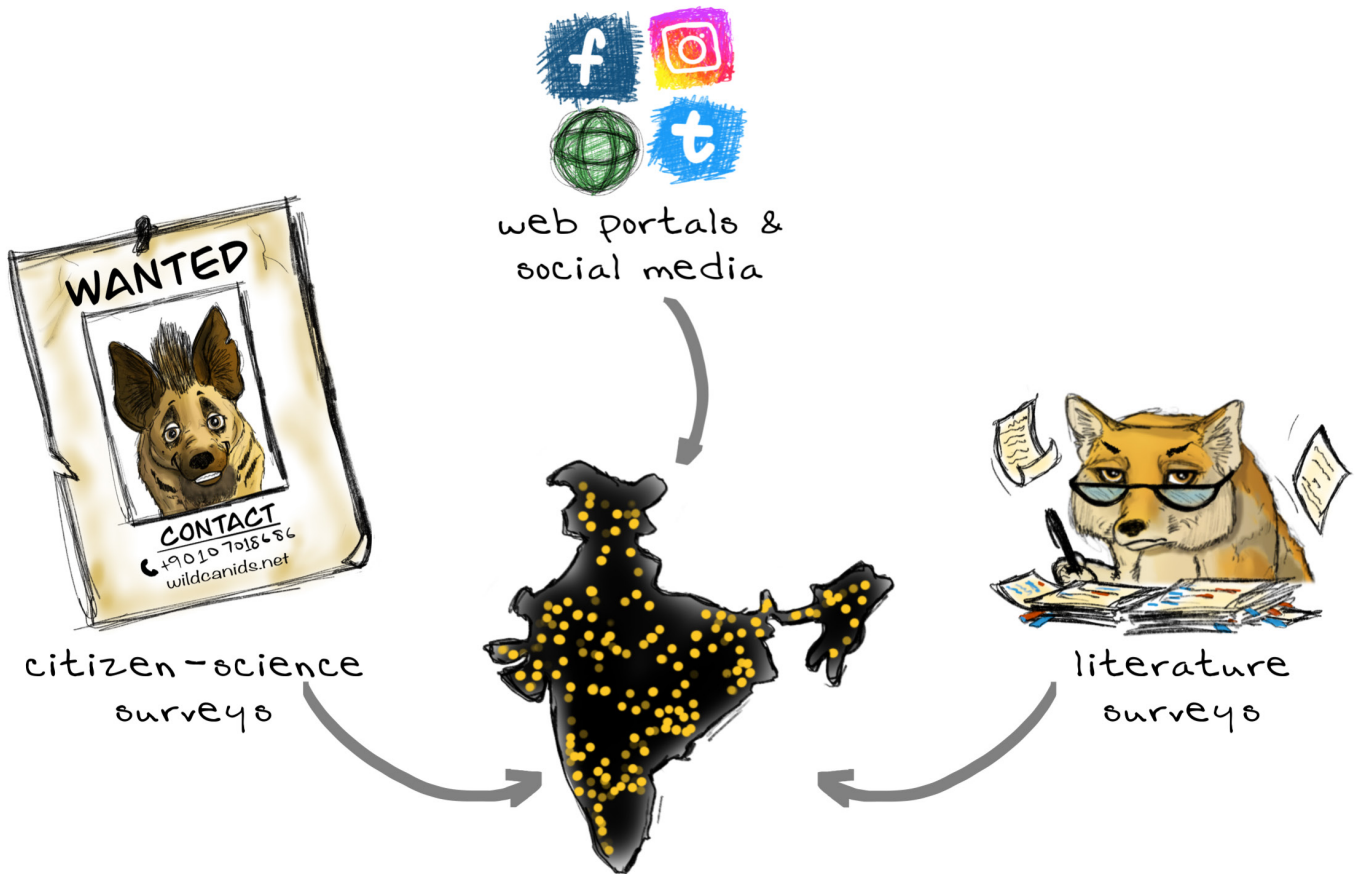
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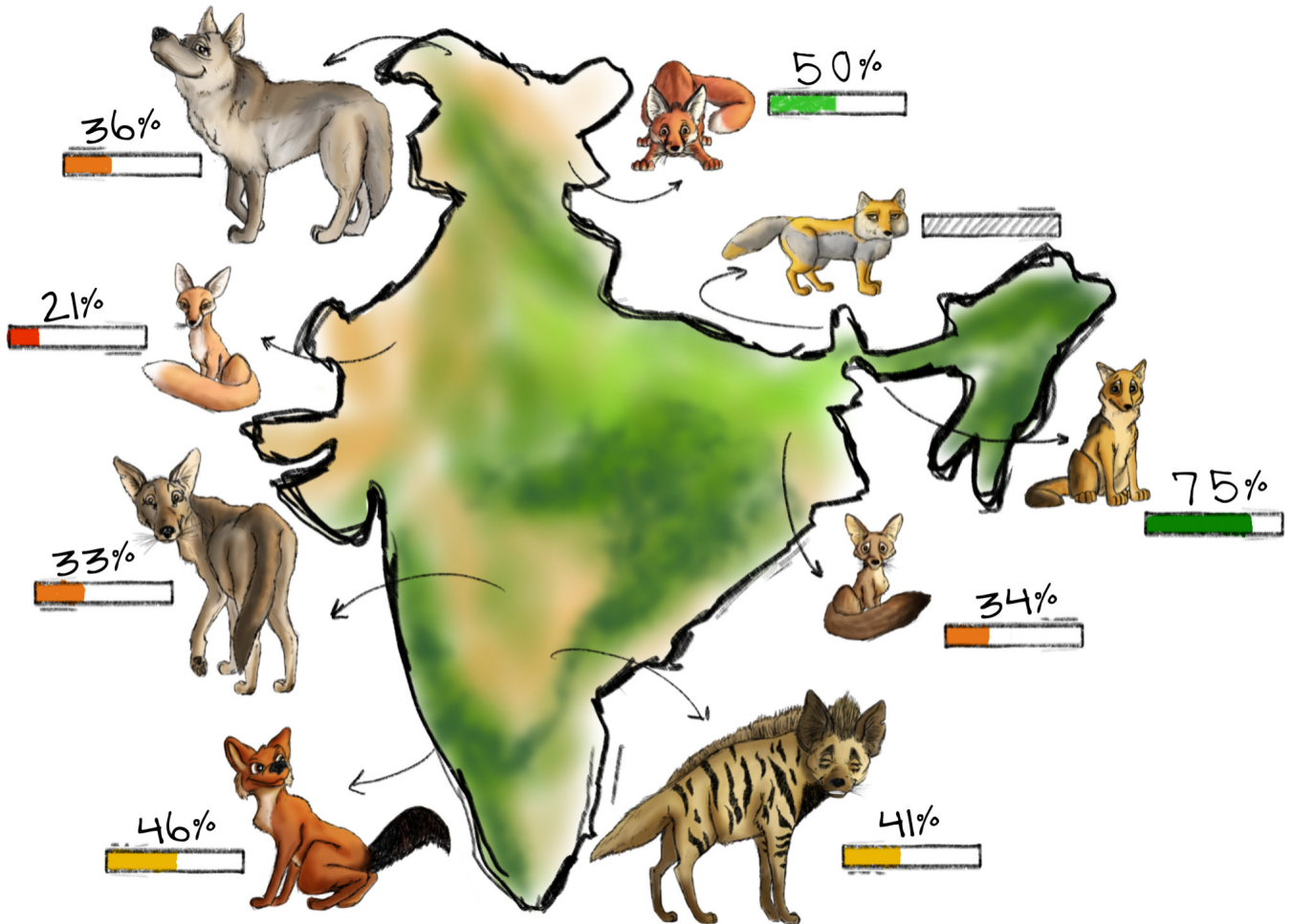
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How do we even map these species across the whole country ?



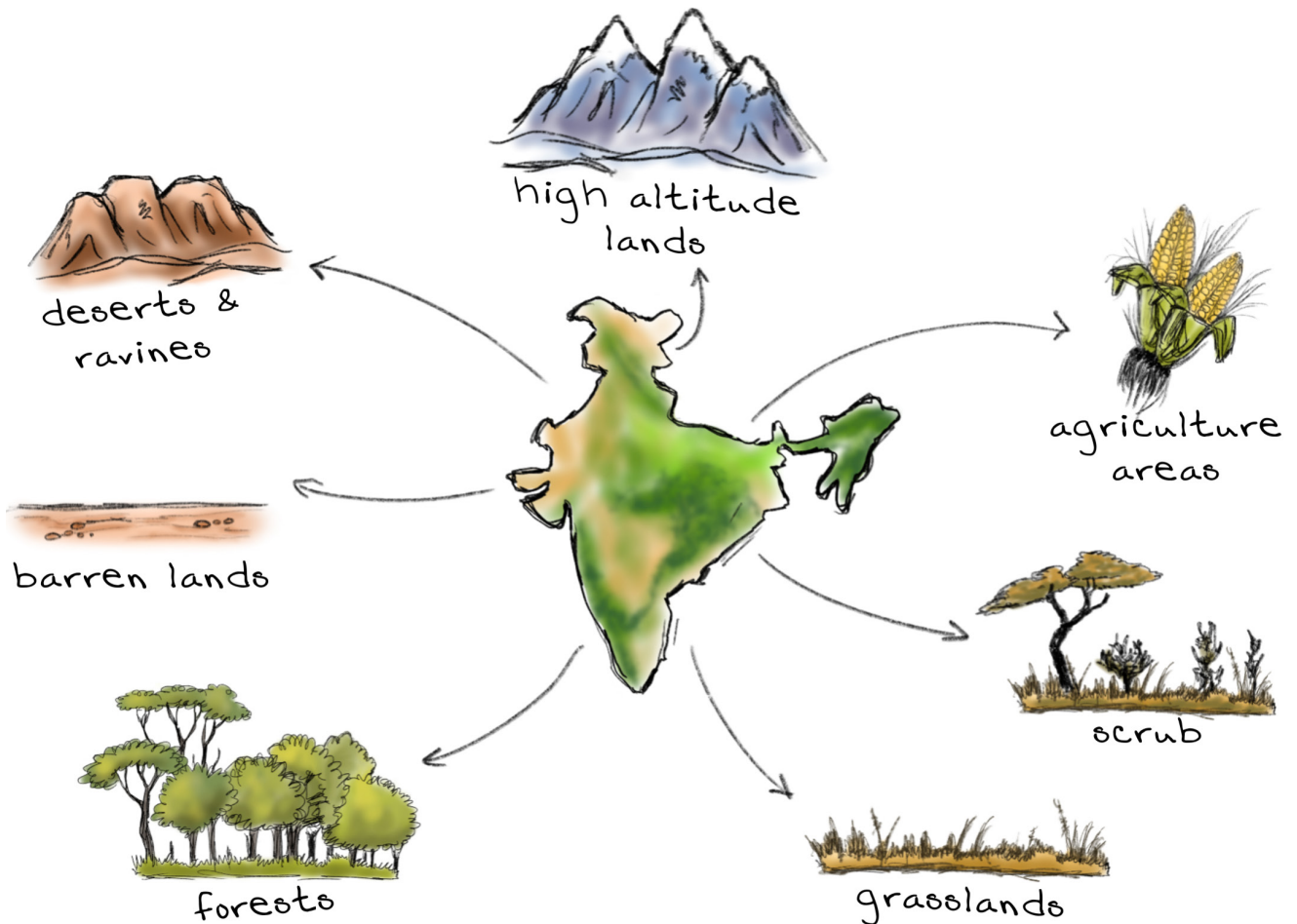
The Wild Canids-India Project used citizen-science surveys, photographs on social media & information from scientific literature to gather 5000 records & map these species across India.

How much area do wild canids & hyenas occupy?



Some have restricted ranges & some are more widespread. For example, desert foxes occupy a small part of their potential range in the northwest, whereas jackals are found almost all over India.

What kind of habitats do they need ?



They thrive in a wide variety of unique habitats. For example, dholes need forests, while Indian wolves, Indian foxes & hyenas need dry grasslands & scrub. Some even do well in agricultural areas.

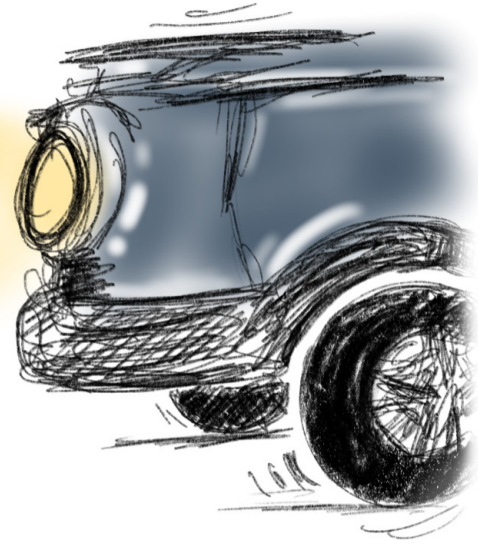
What is their conservation status in India?

## Report Card



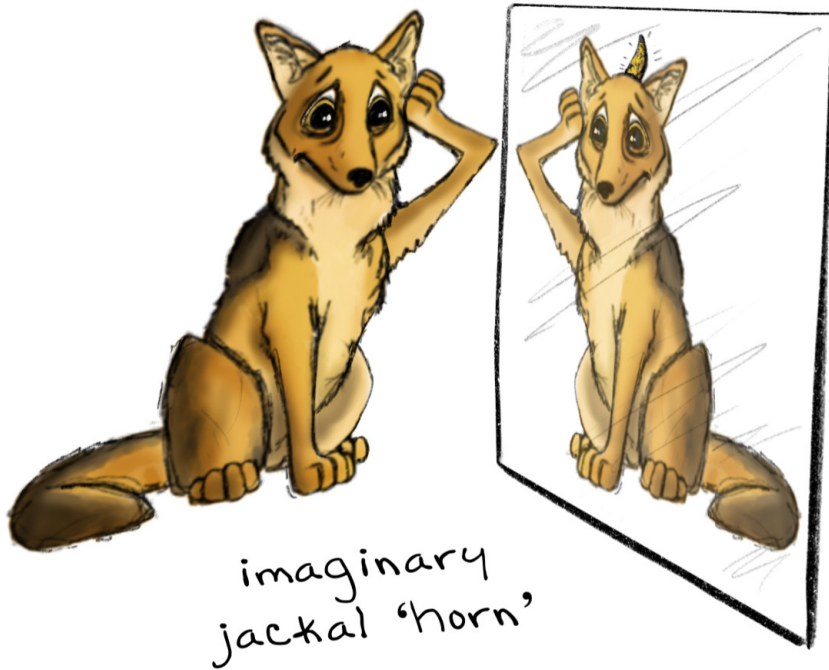
If we gave them grades (like in school) based on their conservation status in the country, then species like the jackal are doing ok, while others like Indian fox & striped hyena could do a lot better.

Do they face any threats at all ?



Vehicular accidents leading to 'roadkills' is one of the key threats that affects most of them. They are also threatened by domestic dogs which compete with them for food & spread diseases.

# What's the deal with jackals ?



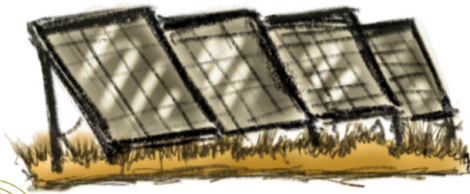
imaginary  
jackal 'horn'



tails & skulls

Although golden jackals are doing fairly ok in India, they are still poached for their tails, skulls, & their imaginary, non-existent 'horns', which find use in superstitious & religious practices.

# How safe are their habitats ?



1

solar farms



2

industries



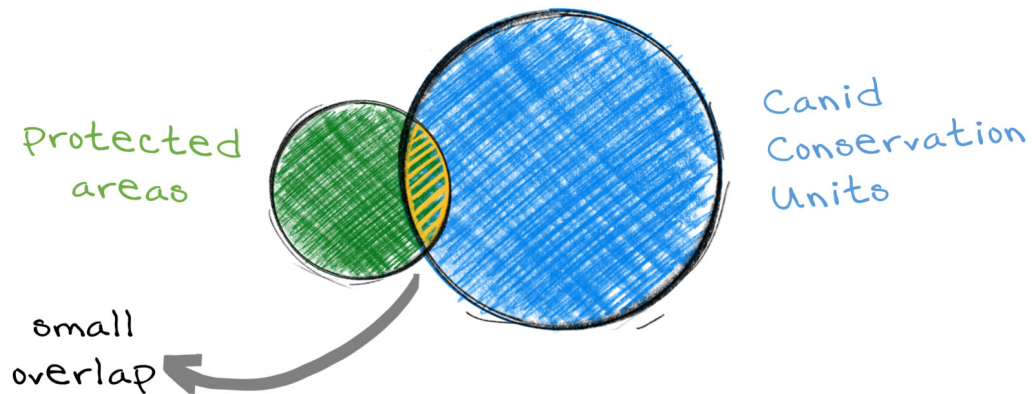
3



“afforestation”

Grasslands, scrub & barren lands are wrongly called “wastelands” & diverted for destructive infrastructure projects. They are also used for planting trees under afforestation schemes (mistake!).

Don't we already have  
"protected areas" ?



Then how do we do this ?

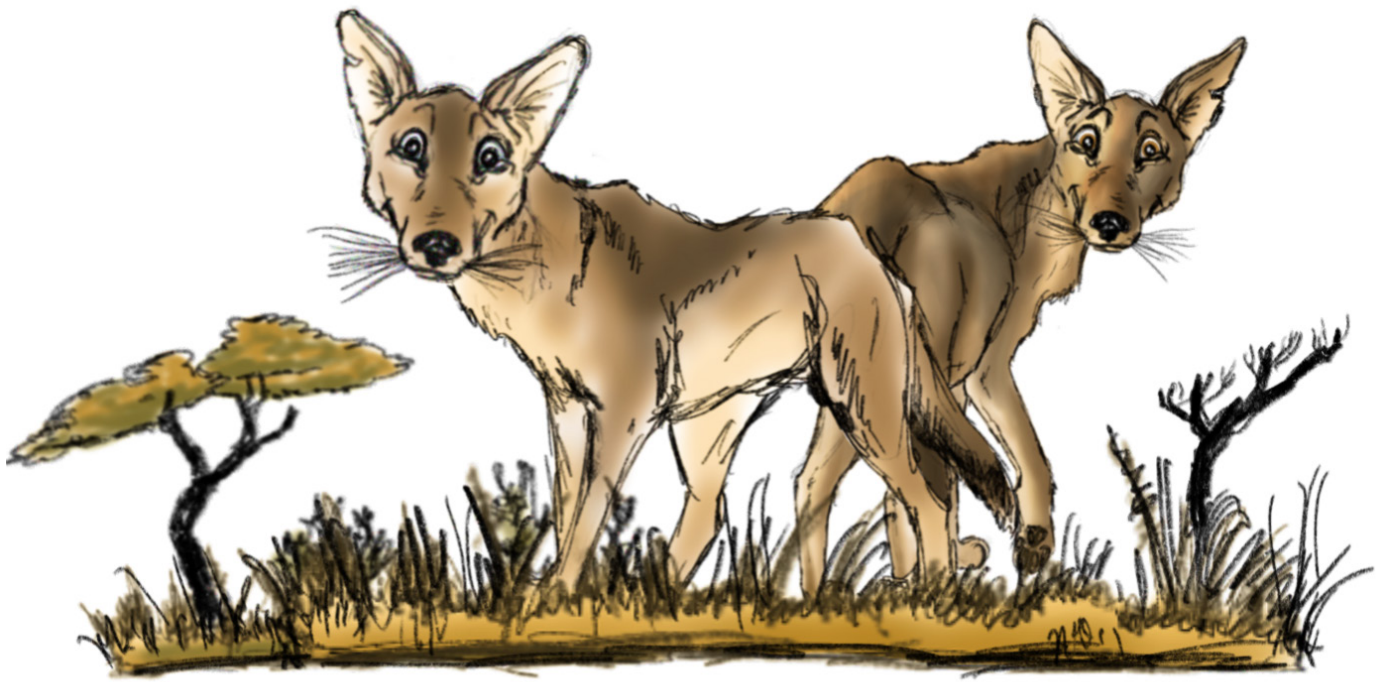


India's protected areas are mostly inside forests. These carnivores & all their non-forest habitats need innovative conservation models that protect wildlife & also the wellbeing of people in shared areas.

But do India's states have the capacity to do this ?



Twelve states are of high priority, eight of which need to invest more money towards wildlife. But importantly, we need to expand our definition of conservation & rethink what/how we conserve.



Most of India's diverse species & habitats have long been ignored & overlooked. Safeguarding wild canids & hyenas will need continuous monitoring efforts by scientists, proactive support from citizens & committed, eco-conscious governments.

Arjun is a wildlife biologist who works on the conservation ecology of large carnivores in India. He earned a PhD from the University of Florida (USA), and is currently a Research Associate with Wildlife Conservation Society-India.



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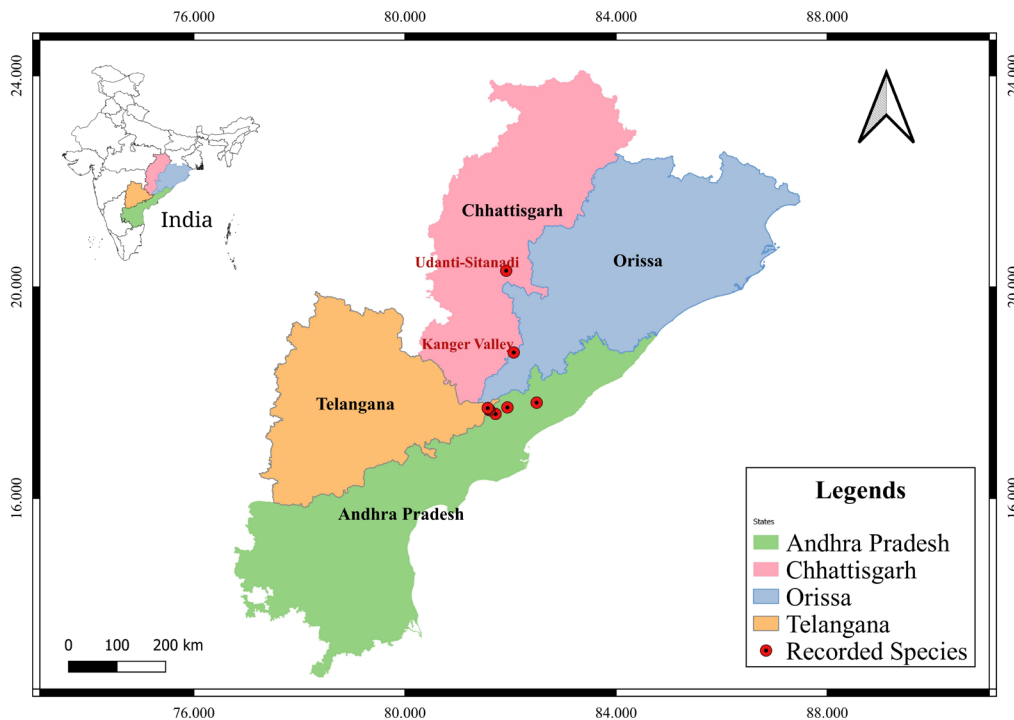
## First photographic record of the Little Spiderhunter *Arachnothera longirostra* from Kanger Valley National Park, Bastar, Chhattisgarh

The Little Spiderhunter *Arachnothera longirostra* (Latham, 1790) is a nectarivore bird species found in the Western Ghats (Ali & Ripley 1989), Lamasinghi in Vishakhapatnam District of the Eastern Ghats (Raju & Selvin 1971; Ripley et al. 1986), parts of Odisha (Majumdar 1979), eastern Himalayan foothills, and hills of northeastern India (Grimmett et al. 2014).

They are usually seen in single or pairs. They have a distinctive long beak that sets it apart from other sunbirds. The male and female are alike except for a paler base to lower mandible in the female. Male has complete black beak (Rasmussen & Anderton 2005). They make a buzzy *zick-zick* call that is made regularly when disturbed or foraging (Rasmussen & Anderton 2005). Spiderhunters have been noted as good



Photograph of Little Spiderhunter observed in Bastar Plateau on 29 November 2018.



Recorded species from Chhattisgarh and surrounding state (Source [www.ebird.org](http://www.ebird.org)).

pollinators of wild banana species (Zhong et al. 2002) and several species of the ginger family (Yumoto et al. 1997; Sakai et al. 1999).

Here we report a sighting and the first photographic record of the Little Spiderhunter from Koleng range (18.761°N & 82.059°E) of Kanger Valley National Park (KVNP), Bastar, Chhattisgarh.

The KVNP is located in Bastar Plateau of southern Chhattisgarh. On 29 November 2018, a Little Spiderhunter was seen

foraging on a wild banana flower in Kanger Valley National Park. Although the species was reported earlier from the Udanti-Sitanadi Tiger Reserve (20.309°N and 81.916°E), Chhattisgarh in May 1996 (Bharos et al. 2018) after that there was no report of this species for more than 23 years. There is around 150km aerial distance from previous sighting to this sighting. Furthermore, this is the first photographic record of this species from Chhattisgarh.

Birds are highly mobile vertebrates and considered

as indicators of biological richness and health of our environment. The KVNP is rich in terms of birds (311 species; Bharos et al. 2019) and other fauna with high endemism but it is now threatened by habitat loss and fragmentation. As a result of that, some habitats have totally vanished while others are getting fragmented.

The major difficulties in conserving birds are limited by the availability of habitat, which highly impacts wide-ranging species. In this context, we suggest a

systematic study of birds of this landscape is a prerequisite for the long-term conservation and to fill the existing knowledge gap on birds.

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## Observation of Shaheen Falcon in Odisha, India

Shaheen Falcon *Falco peregrinus peregrinator* is a subspecies of Peregrine Falcon *Falco peregrinus* found mainly in the Indian subcontinent, Sri Lanka (Döttlinger 2002; Döttlinger & Nicholls 2005), central, southeastern China, and northern Myanmar (de Silva et al. 2007). The Shaheen Falcon has also been reported in Andaman & Nicobar Islands (Pande et al. 2009). It is said to be a resident bird of this region (Ali & Reply 1987) and described as a migratory subspecies by (Molard et al. 2007).

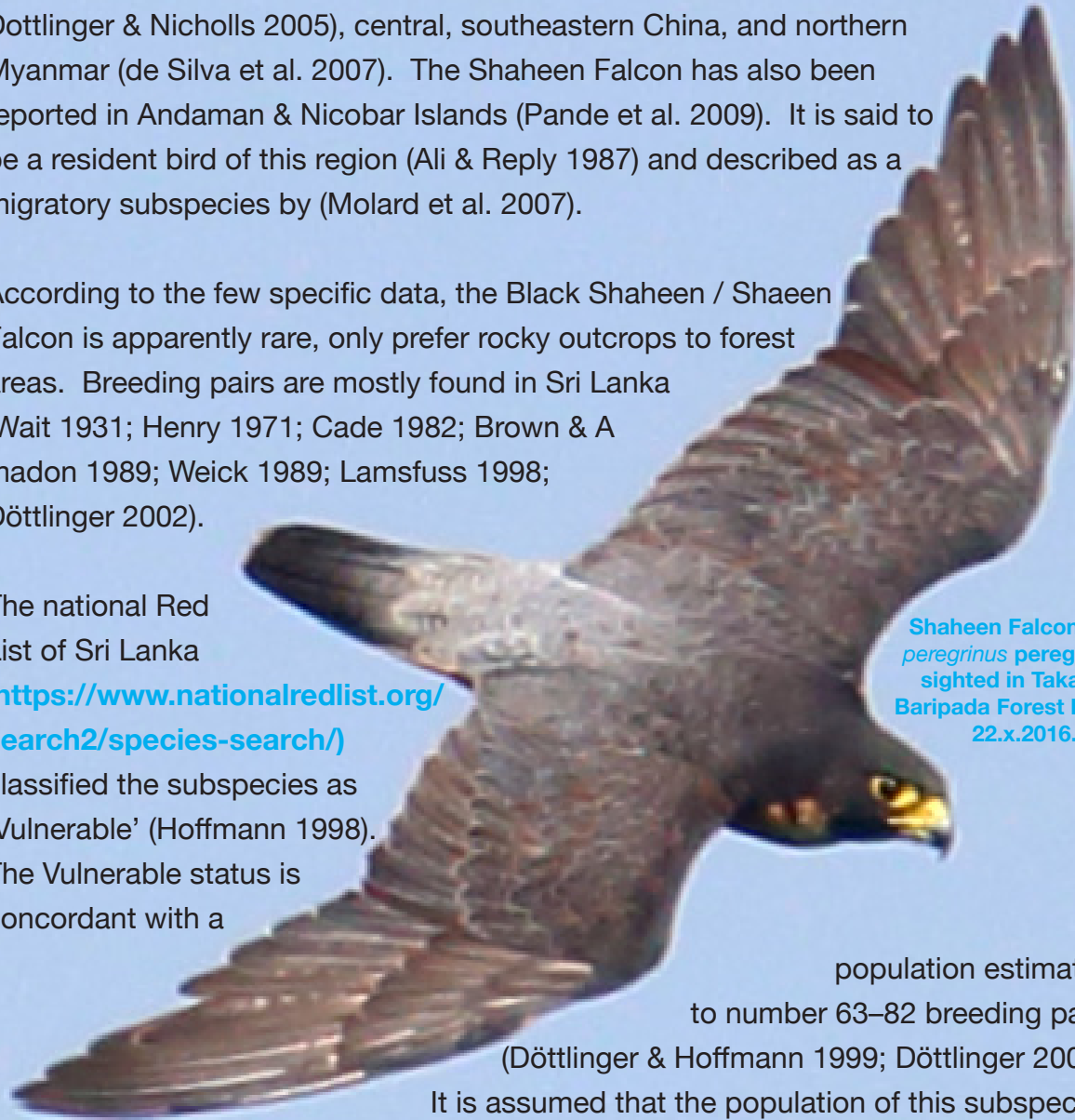
According to the few specific data, the Black Shaheen / Shaheen Falcon is apparently rare, only prefer rocky outcrops to forest areas. Breeding pairs are mostly found in Sri Lanka (Wait 1931; Henry 1971; Cade 1982; Brown & Amadon 1989; Weick 1989; Lamsfuss 1998; Döttlinger 2002).

The national Red List of Sri Lanka

(<https://www.nationalredlist.org/search2/species-search/>)

classified the subspecies as 'Vulnerable' (Hoffmann 1998).

The Vulnerable status is concordant with a



Shaheen Falcon *Falco peregrinus peregrinator* sighted in Takatpur, Baripada Forest Division 22.x.2016.

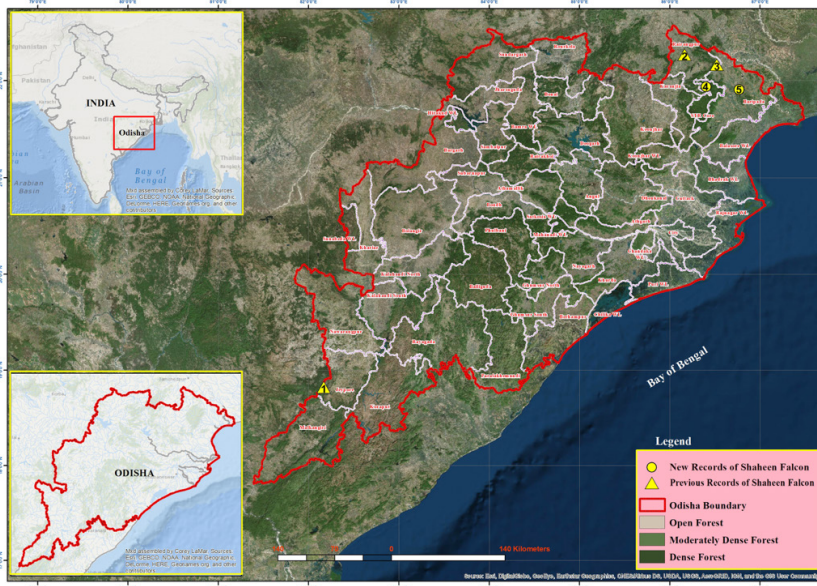
population estimated to number 63–82 breeding pairs (Döttlinger & Hoffmann 1999; Döttlinger 2002).

It is assumed that the population of this subspecies has always been numerically small. At 09.18h on 22 October 2016, we observed the Shaheen Falcon, which flew in front of us and sat on a mobile tower at Baripada, the district of Mayurbhanj, Odisha, which was outside of our university campus (21.90944° N, 86.76911° E). Nearly after a year, on 1 Nov 2017 we spotted this raptor for the second time in Joranda waterfall, Similipal Tiger Reserve, Odisha. It was identified as an adult Shaheen Falcon based on its blackish upper parts, rufous under parts, dark streaks, and white on throat (Ali & Reply 1987). The



Shaheen Falcon sighted in Joranda, Similipal Tiger Reserve, Baripada, 01.xi.2017.

complete black face mask is sharply demarcated from the white throat. The length of the bird ranged from 380 to 440 mm (Dottlinger 2002; de Silva et al. 2007). There is no record of the Shaheen Falcon documented from Odisha before. Shaheen Falcons were frequently reported from Bangiriposi, Rairangpur Forest Division and Gupteswar, Koraput Forest Division, Odisha (Table 1). The high cliffs and rocky mountains of Similipal is one of the best habitats for this raptor. Looking at the rarity of Shaheen Falcon, our information is valuable for protection and conservation of this species.



Sighting Location map of Shaheen Falcon in Takatpur and Joranda, Similipal Tiger Reserve, Baripada, Odisha, India

This sighting extends the range of this species in Odisha and indicates that the species might be rare in the state of Odisha. The

Table 1. Sighting records collected from social media.

Sighted by	Year of sighting	Place of sighting	Source
Barun	2017	Similipal Biosphere Reserve, Odisha	<a href="https://m.facebook.com/groups/283892515069116?view=permalink&amp;id=686124621512568">https://m.facebook.com/groups/283892515069116?view=permalink&amp;id=686124621512568</a>
Bapu	2017	Rairangpur Forest Division, Odisha	<a href="https://m.facebook.com/groups/283892515069116?view=permalink&amp;id=882209418570753">https://m.facebook.com/groups/283892515069116?view=permalink&amp;id=882209418570753</a>
Swetashree	2017	Gupteswar, Koraput Forest division, Odisha	<a href="https://ebird.org/species/perfa19/IN-OR">https://ebird.org/species/perfa19/IN-OR</a>
Chinmaya	2016	Odisha	<a href="https://www.facebook.com/photo.php?fbid=575073705992445&amp;set=gm.10153456976707411&amp;type=3&amp;theater">https://www.facebook.com/photo.php?fbid=575073705992445&amp;set=gm.10153456976707411&amp;type=3&amp;theater</a>

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 in Odisha (Debata et al. 2013, 2015; Palei et al. 2018; Sajan et al. 2018). Intensive studies are required in these unexplored areas of Odisha. The frontline field staff of forest department needs to be aware to help the protection and conservation of this species.

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# A new distribution record of Annandale's Bush Frog from Dalma Wildlife Sanctuary, Jharkhand

There is not much data available with respect to the herpetofauna of Bihar and Jharkhand. Venkateswarlu & Murthy (1972) and Sarkar (1991) published a list of 12 species of amphibians in Bihar along with some notes on their habit and habitat and 11 species from Chotanagpur Plateau region. The present study provides new distributional records of Annandale's Bush Frog *Chirixalus simus* from different localities of Dalma Wildlife Sanctuary (DWS), Jamshedpur, Jharkhand.

It has also been reported from Assam, West Bengal, and different locations of Mizoram.

India is one of the recognized mega-diverse countries of the world,

harbouring 432 species of amphibians (Dinesh et al. 2019). *Chirixalus simus* is a small rhachophorid that spends its life almost on low height plant. This is the first time five specimens were studied and photographed from DWS located 10km from the city of Jamshedpur in Jharkhand. The sanctuary

covers around 195km<sup>2</sup> in the Dalma Hills and as high as 915m. Dalma comes under the category of dry peninsular and northern dry mixed deciduous forest. Coordinates are 22.904<sup>0</sup>N 86.216<sup>0</sup> E. Temperature may reach up to 44°C in the month of May and June and receive maximum precipitation in July and August. It inhabits richest diversity of flora and fauna such as the Asian Elephant *Elephas maximus*, Barking Deer *Muntiacus muntjak*, Sloth Bear *Melursus ursinus*, Indian



*Chirixalus simus* on a habitat plant

Pangolin  
*Manis crassicaudata*,  
Indian Paradise Flycatcher  
*Terpsiphone paradise*,  
White-throated Kingfisher  
*Halcyon smyrnensis*,  
Indian Peafowl  
*Pavo cristatus*,

Forsten's Cat Snake *Boiga forsteni*, Indian Rock Python *Python molurus*, Buff-striped Keelback *Amphiesma stolatum*, Bengal Monitor *Varanus bengalensis*, Indian Tree Frog *Polypedates maculatus*, Marbled Balloon Frog *Uperodon systema*, Indian Painted Frog *Uperodon taprobanicus*, Yamfly



Lateral view of an adult Annandale's Bush Frog photographed near Pinderabera Forest Rest House.



Dorsal view of Annandale's Bush Frog.



*Chirixalus simus* with fresh deposited eggs in foamy nest on Giant Elephant's Ear Plant.



The habitat in Dalma Forest from where the animal was collected.



Macrohabitat of the bush frog in Dalma Wildlife Sanctuary.



Panorama of the study area Dalma Wildlife Sanctuary.



Foamy nest of *Chirixalus simus* on *Alocasia macrorrhizos*.



*Loxura atymnus*, Pansy *Junonia* sp., and Common Four-ring *Ypthima huebneri*. An uncommon species of frog was reported from DWS. After dusk on 28 June 2017 the survey party reached the Pinderabera Guest House (23.520° N, 86.229° E) and collected four fresh specimens of *Chirixalus simus*, from bushy plant *Alocasia macrorrhizos* (L.) G. Don. Specimens were photographed on leaves of Giant Elephant's Ear Plant *Alocasia macrorrhizos* and fortunately we found a foamy nest that was hanging from a leaf in water at a height of one meter above the ground. A monsoon breeder, the bush frog is mostly polyandrous in nature. Mounted pairs of *Chirixalus simus* and *Polypedates maculatus* were observed on the same plant. While on 04 July 2017 while searching for herps in Dalma at night near Makulakocho Forest Rest House entry gate (Tulin) (23.520° N, 86.229° E), again we got a chance to photograph two specimens at 00:20h. We used random survey method and photograph specimen with the help of Canon 1300D 55-250 mm EFS lens and Garmin GPS.

We assign this species on the basis of morphological characters; Small sized frog with broader head; snout rounded; pupil horizontal; tympanum is about half of the eye diameter; toe tips are dilated into large disc; the frog is brownish red with clear longitudinal line dorsally; under part is white.

The International Union for Conservation of Nature (IUCN) categorised it as least concern (LC). The other studies show that the population trend is decreasing due to loss of natural habitat, use of pesticides,

and changes in agriculture practices. The amphibian fauna of Bihar and Jharkhand is poorly studied and not much data is available. Further studies are required to understand amphibian diversity of the sanctuary. There is an urgent need of a conservation action plan and habitat restoration in Dalma Wildlife Sanctuary.

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# Bugs & All

Invertebrate Conservation & Information Network of South-Asia (ICINSA)

Newsletter of the

## Observation of a unique nesting in Bullhorn Ant *Polyrhachis lacteipennis*



Image: 1. Lateral view | 2. Front view of worker of *Polyrhachis lacteipennis*.

The ant species *Polyrhachis lacteipennis* (Smith, 1858) (Image 1 & 2) belongs to the subfamily Formicinae of the family Formicidae. This species is black in colour and has characteristic three pairs of spines (Image 1). The largest pair is located in the petiole and curve to the shape of abdomen. The second pair of spine is moderate in size and located in the propodeum. The tips of these spines are curve outward. The last pair of spine is short and thick and located in the pronotum. This species is also called bullhorn ant because the petiolar spines look like horn of a bull (Narendra & Kumar 2006).

This species is capable of nesting in subterranean, lignicolous, and arboreal locations (Robson & Kohout 2007). They prepare their nests by a silk (Robson & Kohout 2007; Karmakar et al. 2012) which is secreted by both the larvae and adult workers (Karmakar et al. 2012).

Narendra & Kumar (2006) have reported that these ants construct carton nests at the base of trees, by cementing twigs with their salivary exudates.

In Barnoti (32.431°N, 75.431°E, 354m) Kathua, Jammu & Kashmir in an agricultural

# Bugs & All

Invertebrate Conservation & Information Network of South-Asia (ICINSA)

Newsletter of the



**Image 3.** Sac like nest of *Polyrhachis lacteipennis*.

land in January 2019, we had observed an interesting and unique nesting structure of this species. The species was found to build a sac like structure (Image 3) and the whole colony was found to be packed within the sac and there was no opening in that structure. The rubber like nest material was thin and whitish. The nest was built along the way of the tunnelling done by the species. It was found covering all the tunnels of the nest (Image 4–5). The dimension of the structure was about 700 × 550 × 450 mm. The nest was found under the stone in an agricultural field and during the observation time, the atmospheric temperature was 18.6°C. The species was identified by using the key illustrated by Karmaly (2004).

Temperature is an important factor for all ectothermic organisms including ants. In ants and termites, the upper part of the nest, the mound, often works as a solar

collector and can also have an efficient ventilation system and some species of ants build their colonies underneath a rock in the winter (Kadochová & Frouz 2013). The rock warm up under the sun and provide sufficient heat to sustain the colony until they can emerge again in spring (Kadochová & Frouz 2013). Maintenance of high inner nest temperature increases the rate of sexual brood development and thereby increases the colony fitness (Brian 1973; Porter & Tschinkel 1993; Kadochová



**Image 4.** Below ground structure of the nest of *Polyrhachis lacteipennis*.

# Bugs R All

Newsletter of the Invertebrate Conservation & Information Network of South Asia (ICINSA)



**Image 5.** Inner view of the nest of *Polyrhachis lacteipennis*.

& Frouz 2013). The present observation on this new nesting strategy in bullhorn ants seems to be developed to prevent them from cold. It is recommended that further study should be carried out on the behavioural ecology of this species.

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## COVID-19 Lockdown: fish in dinner, Gharials, and conservation

Both mighty humans and Critically Endangered Gharials *Gavialis gangeticus* (Lang et al. 2019) are fighting for fish (food for gharials) in various rivers and streams (such as the Narayani and Rapti) in Chitwan. This issue has been ongoing for many years. In Tirtha Man Maskey's 1989 thesis on Gharial Conservation, he raised the issue of entrapment of gharials in nylon gill nets introduced for fishing (Ballouard et al. 2010; Maskey 1989; Whitaker & Members of the GMTF 2007). Then in 2018, there was a ban issued on cooking of fish in the canteen of National Park and Army camp inside the

park territory (Mandal 2018). There is a report in Nature Khabar about the death of three gharials during COVID-19 lockdown in Chitwan, Nepal. Dead gharials were found in Bine Khola Dovan, Leda Ghat and near Sauraha in Dhungre Khola. All three gharials are thought to have been killed by human activities (Nature Khabar 2020).

Nepal government started the effort to conserve gharials four decades ago. From 1976 AD, the Gharial Conservation Breeding (Rearing) Centre in Chitwan has released 1,465 gharials in various rivers in Chitwan

Phoebe Griffith 2019



(Dhakal 2019). Many gharials die or get lost from the habitat due to lack of food or while in search of fish, as well as being killed from entanglement in gill nets. The gharials are extinct from Myanmar, Pakistan and Bhutan. Nepal, India and Bangladesh house the resident population. Human impact in the region has pushed its habitat to only six percent of its historical range. There is 94% or more decline in population of Gharials with only a few hundred in wild left from thousands in 1940s (Lang et al. 2019).

Diversity and abundance of fish (in gharial habitat) is threatened due to:

1. Mixing in river of polluted water from urban and

industrial centers.

2. Extraction of sand and other earth materials from tributaries of river.

3. Over extraction of fish.

4. Tourism, recreation, and other human activities.

Bed Bahadur Khadka, Assistant Conservation Officer at Chitwan National Park, said to the Kathmandu post that around 100 people living near the park have

fishing license. A huge number of people living along Narayani and Rapti river banks depend on the river for fresh fish. There were deaths of seven gharials in Rapti River and two in Narayani River in the fiscal year 2017–2018 after getting caught in fishing nets. Among the nine gharials dead that year, eight were released from breeding center at Kasara (Puri 2016; Dhakal 2019).

Gharials of small size are usually killed by fishermen when entangled in fishing nets. Adults knotted in fishing nets may get released but are still vulnerable to death resulting from inability to swim or open mouth for food and continue living (Whitaker & Members of the GMTF 2007).



Phoebe Griffith 2019



The lack of quality education materials, inadequate awareness plan from national park, and non-inclusion of the subject on wildlife conservation education in curricular books are challenging conservation efforts.

At one point of time, limited procreation of Gharial was deemed due to lack of adult male Gharials in the vicinity of Chitwan National Park. So to induce natural breeding in the region Chitwan National Park authorities translocated a male Gharial from Babai River in Bardiya into Khoriya of Rapti Dovan in December 2017 (Puri 2017). Currently, there are only three male Gharials in the Rapti and Narayani rivers to keep the hope of wild existence of the creature (Dhakal 2019).

The continuous effort from Chitwan National Park and surrounding community forests had brought the species back from brink of extinction in 1970s. The impact of COVID-19 will obviously change morality of community. There is reduction in pollution and extraction of natural resources.

It is wished the fishes will have huge breeding. Community along river bank will respect the right of Gharials to live by leaving fish for gharial's meal. Wish for the day is that the people competing for fish will smile at Gharial with happy family in river and feel proud of themselves. I wish my grandson will see this lone species under its family Gavialidae.

I am thankful to Phoebe Griffith for important comments, suggestions and photographs.

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## Gharial may head for IUCN Green-listing on securing its habitat!

Gharial *Gavialis gangeticus* occurs in Nepal in the Karnali and Babai rivers in Bardia National Park (BNP) and the Narayani and Rapti rivers in Chitwan National Park (Lang et al. 2019) with active conservation action plan (DNPWC 2018) and captive facilities in Chitwan at the Gharial Conservation and Breeding Center (GCBC) (Khadka & Bashyal 2019).

We congratulate everyone involved in the Gharial Conservation Project in Nepal, and appreciate the sentiment of the author Sunil Sapkota of Nepal, presently a student in Bhutan who wants his grandson to see Gharial *Gavialis gangeticus* in nature. We wish the sentiments in favour of Gharial conservation become strong in the coming years and flourish in the entire range of Gharial habitat in the Indian subcontinent (Singh 1991a; Thapaliyal et al. 2010; Lang, et al 2019).

Forty-three years ago, on 14 July 1977, when I joined Gharial Research and Conservation Unit (GRACU), Gharials faced the threat of imminent extinction in India (FAO, 1974 based on the work of Dr. H.R Bustard). Because of growth in knowledge and its application in ex situ and in situ conservation for Gharials, (Bustard 1975, 1976, FAO 1975, Singh 1978, 2018) now they appear fairly safe as a species.

Although the conservation efforts have not been uniformly successful (Singh 1991), over the years Gharial conservation has resulted

in multiple aspects of species conservation, research and training (Singh 1999).

Also, areas with improved population of Gharial are receiving encouraging attention in research and conservation, as in the river Gandak (Sinha 2018). Gandak is the continuation of river Narayani of Nepal and it provided the initial clutches of eggs which were transported to the first Gharial project of India at GRACU, Tikarpada, Odisha (Behura & Singh 1979). 18 June 1975 is a landmark in the history of Gharial Conservation. On that day, the first Gharial hatched in captivity at GRACU (Singh 1979).

Another good example of return of Gharial is into river Yamuna, upstream of its confluence with river Chambal (Tripathy et al. 2019). Sharma (2006), based on a survey conducted in February 1997 had mentioned the absence of gharial in Yamuna upstream the confluence.

Overall, the status of gharial from 1974–75 has improved and in coming years we may hope for its listing in the IUCN Green List for species (IUCN 2020).

Lang et al. (2019) mention about the extinct status of Gharial in Myanmar, Pakistan, and Bhutan. The possibilities of a project for conservation of Gharial in Bhutan was thought in the past (Bustard 1979, 1980a,b). Gharials are within the list of herpetofauna of Bhutan (Wangyal 2014). The levels of awareness about the species appear to have improved. Presently, visitors are able to see



gharial in captivity (Singh & Tshering 2004; Anonymous 2018, 2020)

We wish further that the young generation and the local people help gharial return through its entire range of habitats in the subcontinent.

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## Call for donations

In the first phase of the fundraiser for the **Sally Walker Conservation Fund**, we target three objectives.

(i) **The Sally Walker Lifetime Award for Conservation** — The first award is proposed for 12 October 2020 on Sally's birth anniversary.

(ii) **The Sally Walker Training Programme in Conservation Biology and Application** — The first workshop to train young biologists and foresters is planned for the third week of March 2020.

(iii) **Communicating Science for Conservation through innovative education programs** — A series of outreach programs for the rural kids in the districts adjoining the Western Ghats in Tamil Nadu are being planned for in 2020.

We solicit your generous contributions to the above activities of your choice. Please log onto our website [www.zooreach.org](http://www.zooreach.org) and click on the **SWCF page** for information on how to donate.

You can also click here to go directly to the donation page.

**Donations by Indians**

**Donations by non Indians**

In case you wish to know more about the **Sally Walker Conservation Fund**, please contact Dr. Sanjay Molur by email <[sanjay@zooreach.org](mailto:sanjay@zooreach.org)> or by phone +91 9677822997.