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Communicating science for conservation

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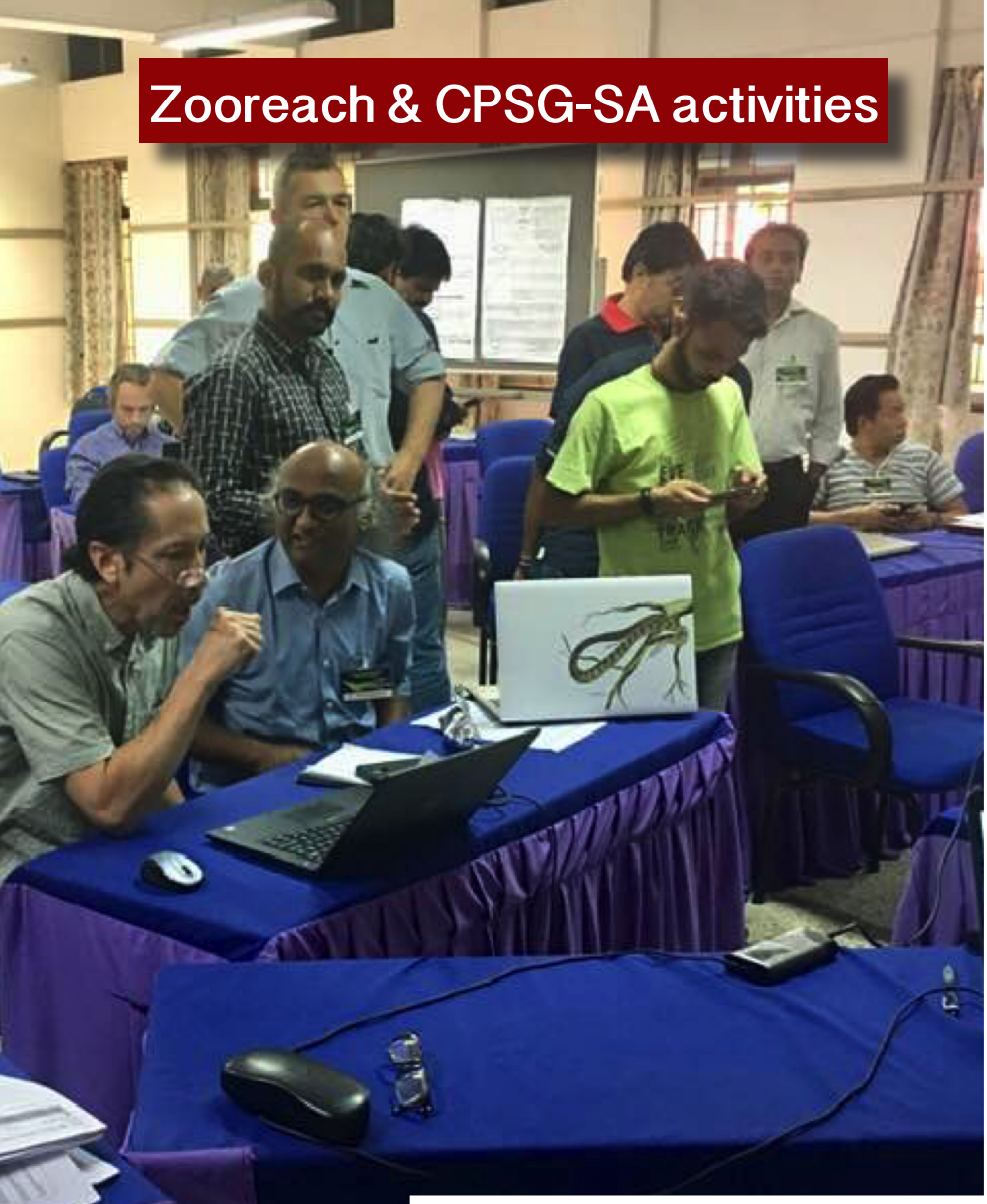
Contents

Mainland South Asia Reptile Red List, Key Biodiversity Areas (KBA), & Assessment 2 Planning (A2P) Workshop

05-10 September 2019, Karl Kübel Institute, Coimbatore

Close to 500 Reptile species were evaluated for the IUCN Red List status. Quick results (not final) — 53 species Threatened and 83 species Data Deficient. Working groups on Indian endemics, Andaman & Nicobar Isles, and Himalayan & northeastern regions deliberated for four days. Key Biodiversity Areas were identified based o the assessments and some key action points based sites were defined for follow up under the Assessment to Planning section. Thanks to our donors and partners: IUCN, Conservation Planning Specialist Group, Rainforest Trust, Rufford Small Grants Foundation, South Asian Reptile Network, and the Journal of Threatened Taxa.

Zooreach & CPSG-SA activities



Initial thoughts and discussions on moving to the phase after status evaluation.

A window of experience for the young — conservation planners and practitioners explaining to kids on the science of species assessments.

The Key Biodiversity Areas approach helps to identify and designate areas of international importance in terms of biodiversity conservation using globally standardised criteria. Identified KBAs — 45 threatened species prioritised.

On the ground conservation happens with planning. Planning independent species conservation in a multiple species assessment requires a bridge between assessments and action planning. CPSG's Assessment to Planning (A2P) session post the reptile assessments session makes that bridge.

Sri Lankan Reptile Red List, Key Biodiversity Areas (KBA), & Assessment 2 Planning (A2P) Workshop

14-19 September 2019, Simpson's Forest Hotel, Wattegama, Kandy

Over 185 Sri Lanka Reptile species were evaluated for the IUCN Red List status — 102 species Threatened and 12 species Data Deficient. 33 KBAs identified — 10 within existing IBAs and 23 newly formed. Thanks to our donors and partners: IUCN, Conservation Planning Specialist Group, Rainforest Trust, South Asian Reptile Network, and the Journal of Threatened Taxa.

Studying rhino poop, which is used for communication among the species.

Reaching out to people living in rhino range areas.

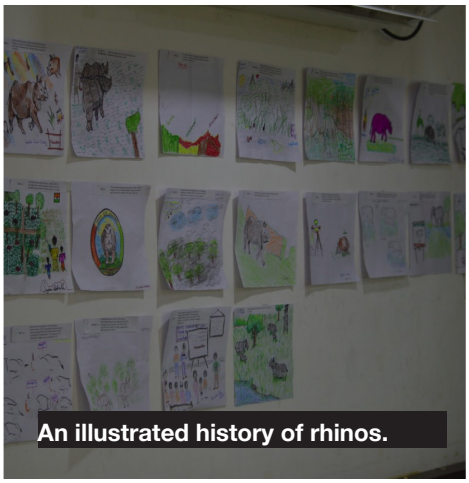
Rhino Conservation Education Training Workshop at Lataguri, West Bengal

To reach out to people living in and around protected areas that are home to small populations of the Greater One-horned Rhino, ZOO is conducting a series of rhino conservation and education training workshops at Lataguri in Jalpaiguri District, West Bengal, from 24 July to 06 August. By combining lively training and effective educational material, the three-day training programmes aim at creating a network of conservation educators who can bring about changes in attitudes and behaviour of people living in rhino range areas.

Ganga Prasad Chhetri IFS, Chief Conservator of Forests, Northern Circle, during the inaugural function of the workshop.

Uniting for rhino conservation!

Scene from a drama on the role of zoos in species conservation.



An illustrated history of rhinos.

A group activity to understand rhino distribution.

Instagram

INSTAGRAM IMAGES

The Tawny Coster is one of the most unhurried butterfly species you will ever encounter in the wild—it is a common sight in open spaces, sailing lazily through the summer air, fluttering its uniquely shaped tawny wings in dance-like moves while it takes a leisurely sip from one of its beloved flowers. Its self-assuredness comes from the efficiency of its defence mechanism—if attacked, it plays dead and exudes a noxious substance from its legs in an act of chemical warfare; it even has a tough exoskeleton that can help it survive a few pecks or bites from predators! Shot at Coimbatore by B. Ravichandran, ZOO; posted on 09 Aug 2019.

The Common House Mouse Mus domesticus is indeed very common in Coorg, especially in coffee estates close to human habitations. This extremely cute and agile rodent has very soft fur over its entire body and white gloves and sox and a pinkish tail. Though initially aggressive and skittish, the small mammal calms down when handled gently and nuzzles in the palm nibbling softly. Shot at Coorg by S. Molur, ZOO; posted on 05 Aug 2019.

The Plain Tiger caterpillar is anything but plain—not only does it stand out with its bright and brilliant stripes but also spend laborious days equipping itself with plant poison to defend itself against its hapless predators. Talk about a fierce and fearless spirit! Shot at Coimbatore by B. Ravichandran, ZOO; posted on 30 Jul 2019.

Jungle Babblers are commonly seen foraging in groups, constantly babbling among themselves in harsh, nasal tones. Described in 1823, these well-adapted birds can be easily identified by their brownish-grey plumage, yellow bill, pale eyes, and short rounded wings. Shot at Coimbatore by B. Ravichandran, ZOO; posted on 26 Jul 2019.

We bring to you every week shots and tidbits of incredibly diverse species from around the natural world! Follow us on Instagram to be part of a growing community that celebrates our natural heritage: https://www.instagram.com/threatenedtaxa/
Follow B. Ravichandran on Instagram: https://www.instagram.com/discoverravi/
Follow S. Molur on Instagram: https://www.instagram.com/molursanjay/
Captions by Vidya Mary George.

Sighting of melanistic squirrel in Bengaluru Rural district, Karnataka

Melanistic squirrel spotted near Devanahalli

The Three-striped Palm Squirrel (TSPS), *Funambulus palmarum* Linnaeus is greyish brown with three pale parallel lines on its back from head to tail and pale underparts. Additionally, it has black-and-white peppered tail and has a bold reddish-brown mid-ventral line running through the tail (Menon 2014). The common commensal squirrel of peninsular India is adapted to living close to human settlements (Menon 2014). During a roving survey on insect pests in different horticultural ecosystems in March 2013, a melanistic squirrel was spotted climbing on the stone walls of a well in a village in Devanahalli Taluk of Bengaluru Rural District by one of our field assistants Mr. Chethan. It could be idenitifed based on its peppered tail and the reddish-brown colour at the base of the tail. The individual seems to be a young one. Of the 17 cases of colour aberrations reported under Sciuridae in a review on colour aberrant mammals there is only one reference with regard to TSPS exhibiting leucism (Mahabal et al. 2019) reported from Tamil Nadu (Samson et al. 2017). The concentration and distribution of melanin results in an aberrant colour (van Grouw 2013). Leucism is a total lack of pigmentation in the whole body

due to an inherited defect in the pigment transfer process effecting white or whitish hair, pale skin, but normal coloured eyes while Melanism is the opposite condition of albinism wherein there is an excessive synthesis of melanin pigment in the skin resulting in a melanistic animal (van Grouw 2006, 2013; Abreu et al. 2013; Lucati & Lopez-Baucells 2016; Mahabal et al. 2016). Although the spotting of the melanistic squirrel was done in 2013 during my association with the Indian Institute of Horticultural Research (IIHR) as a Research Associate, the review by Mahabal et al. (2019) triggered the compilation of this article, firstly its data compilation as a review and the data deficiency in reporting of melanistic mammals from Karnataka.

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Citation: Jayashankar, M. (2019). Sighting of melanistic squirrel in Bengaluru Rural district, Karnataka. Small Mammal Mail #422, In: *Zoo's Print* 34(9): 06–07.

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Records of Brown Palm Civet *Paradoxurus jerdoni* in Satara district, Maharashtra: extension of known range in Western Ghats, India

Additional records of Brown Palm Civet in Satara district, Maharashtra

The Brown Palm Civet or Jerdon's Palm Civet *Paradoxurus jerdoni* Blanford, 1885 (Order: Carnivora; Family: Viverridae) is a small carnivore endemic to the Western Ghats of India (Rajamani et al. 2002; Pradhan & Talmale 2012). It's body colour is chocolate-brown; head, neck and limbs are darker; shoulders more buff and flanks are more grey. The tail is proportionately longer than the body and its tip is variable from pale to brown. A distinctive feature is the reversed direction of hair growth on the nape (Menon 2003). It is confined to the tropical wet-evergreen forests, and plantations with native trees as shade (such as coffee and cardamom) in the Western Ghats ranges in the states of Kerala, Tamil Nadu, Karnataka, Goa and southern Maharashtra (Rajamani et al. 2002; Mudappa et al. 2010; Bhosale et al. 2013). It is largely arboreal, nocturnal and although omnivorous, it is predominantly frugivorous in habit (Bhosale et al. 2013). It is listed as Least Concern in the IUCN Redlist of Threatened Species (Muddapa et al. 2016) and is included in Schedule II, Part II of the Indian Wildlife (Protection) Act, 1972 (as amended in 2006).

The locations of sightings reported here were made by the first author (AS), who sighted the species opportunistically while

conducting a study on the breeding biology and distribution of some amphibian species from northern Western Ghats of Satara district, Maharashtra during 2013–16. The records are a compilation of sightings of the brown palm civet in Satara district, Maharashtra by the first author and his team including one sighted by Dr. Anand Padhye, Pune in Table 1.

A few published reviews and records report the known distribution of the Brown Palm Civet in the Western Ghats (viz. Pradhan & Kurup 2001; Rajamani et al., 2002; Kumara & Singh 2007; Mudappa et al. 2007; Bhosale et al. 2013; Chunekar 2014). Rajamani et al. (2002) reviewed the former and recent (from 1884 to 2002) distributional records of Brown Palm Civets and indicated their distributional range from the southern extremity of the Western Ghats in Kalakad-Mundanthurai Tiger Reserve (08^0 48' N & 77^0 25' E) in Tamil Nadu to Dudhsagar, Bhagwan Mahaveer Wildlife Sanctuary (15^0 19' N & 74^0 19' E) in Goa in the north (Fig. 1a). More recently, Bhosale et al. (2013) reported the species' occurrence in Sangli, Sindhudurg and Satara districts of Maharashtra and pointed out that the distribution of the Brown Palm Civets extends about 275 kms. north from the earlier reported records (i.e. Goa) along the northern Western Ghats, into the state of Maharashtra (i.e. up to Satara district; Fig. 1b).

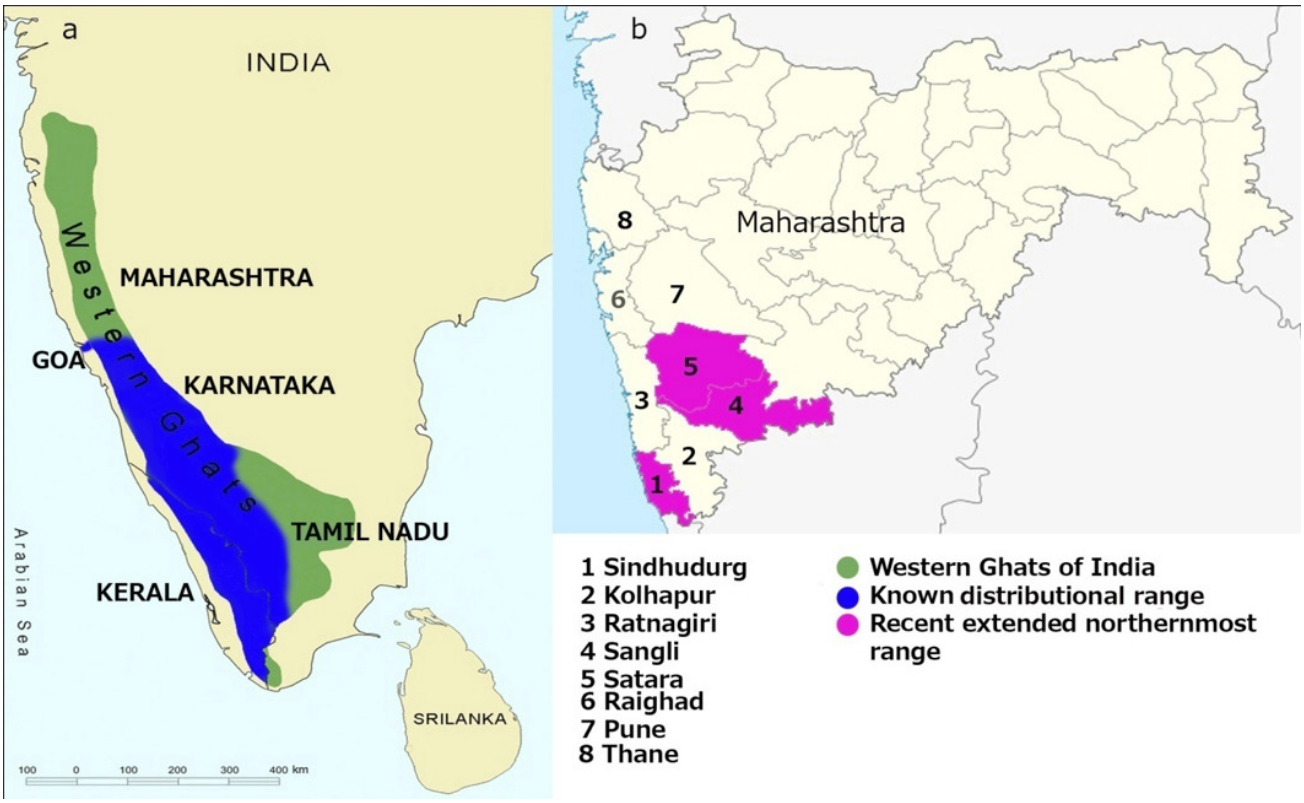

Fig. 1a. Known distributional range (prior to Bhosale et al. 2013) of Brown Palm Civet in Western Ghats, India. Fig. 1b. Recent extended range of Brown Palm Civet in the state of Maharashtra (Bhosale et al. 2013).

Table 1. Additional records of Brown Palm Civets in Satara district, Maharashtra.

	Date	Locality	Co-ordinates	No. of civets	Habitat	Reference
a) Previous record:						
1.	07&12.xii.2013	Wai region	18.018^{0}N & 73.674^{0}E	1+1	-	Bhosale et al. (2013)
b) Recent records:						
2.	21.iv.2008	Vasota, Met Indavali	17.661^{0}N & 73.696^{0}E	1	On tree, Evergreen Forest	Dr. Anand Padhye, Pune (pers.comm)
3.	13.i.2015	Kaas	17.705^{0}N & 73.806^{0}E	3	Semi-evergreen forest	Team of WLPRS*
4.	17.i.2015	Pratapgad, Mahabaleshwar	17.941^{0}N & 73.579^{0}E	1	Evergreen Forest	-do-
5.	04.iii.2015	Bawdhan, Wai	17.939^{0}N & 73.889^{0}E	1	On Mango tree near human habitation	-do-
6.	18.iii.2015	Koyananagar	17.403^{0}N & 73.7294^{0}E	1	Evergreen Forest	-do-
7.	24.xi.2015	Kaas-Bamnoli Road	17.716^{0}N & 73.800^{0}E	2	Evergreen Forest	-do-
8.	21.i.2016	Lingmala, Mahabaleshwar	17.930^{0}N & 73.980^{0}E	1	Evergreen Forest	-do-

* Wildlife Protection and Research Society.

The Table 1 and Fig 2. shows the additional records of Brown Palm Civets in northern Western Ghats of Satara district, Maharashtra. These records fill in the gap in the intervening regions south of the northern record for the species (Bhosale et al. 2013).

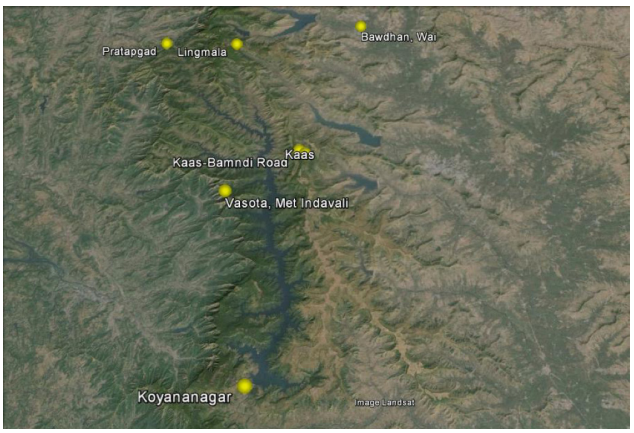

Fig 2. Additional records of Brown Palm Civet in Satara district, Maharashtra.

Therefore, it would be essential to survey (1) areas between Goa and Sangli district particularly for their occurrence in Kolhapur and Ratnagiri districts falling under the northern Western Ghats of Maharashtra State as there are no published reports from these areas, and (2) the surrounding districts (viz. Pune, Raigad, Thane; Fig. 1b), particularly areas containing wet and moist tropical forest for the presence of the species.

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A case of partial albinism/leucism in Red-vented Bulbul *Pycnonotus cafer* (Aves: Passeriformes: Pycnonotidae) from Visakhapatnam, Andhra Pradesh, India

Leucistic Red-vented Bulbul recorded at Lambasingi foothills, Visakhapatnam, with a greyish crest, red vent, and white body. Photo: Bhagyasree Venugopal.

This communication is aimed at reporting the first documented case of leucism in a Red-vented Bulbul *Pycnonotus cafer* (RVB) from Andhra Pradesh, India. One of the many plumage colour aberrations called leucism is characterized by partial or total reduction of melanin production or expression in birds. It is a result of genetic mutation where pigment cells do not migrate to certain parts of the body, failing in providing pigment to the developing feathers. Partially leucistic birds have normally coloured feet, bill, and eyes as opposed to albino birds (Grouw 2013).

BV sighted a white-coloured RVB on a bird-watching trip with two other birdwatchers at Lambasingi foothills of Visakhapatnam District (GPS Co-ordinates: 17.76412054 N and 82.53815621 E, Altitude: 186m). It was eye-catching and was immediately recognized by its red-coloured vent. The bird was moving along with its possible pair from one tree to another, making it difficult for it to be photographed. The bird was too cautious unlike other individuals of the same species. After perching in three different palm trees, the pair took off. RVB, an extant species in the Indian

subcontinent, is an omnivorous bird known to occupy a wide range of habitats such as dry scrub forests, grasslands, gardens, and agricultural fields (Gabadage et al. 2015). RVB is easily identified by its short crest which gives the head a squarish appearance. The body is dark brown with a scaly pattern while the head is darker or black. The rump is white, the vent is red, and the black tail is white-tipped. Both the sexes are similar in plumage.

The habitat where the bird was spotted was dry scrub forest with upcoming human habitations and interrupted agricultural fields. The temperature here ranges from 42^{0}C in summer to freezing temperatures during the winter. The Lambasingi hills harbour a wide range of birds year-round, including a few migrant species.

Leucism and progressive greying are usually confused with each other and are hard to distinguish in field conditions. Progressive greying is defined as the progressive loss of pigment cells with age (Grouw 2013). In this case too, at first, the bird's white features gave rise to similar confusions. On further detailed study of the flight images of the bird, however, it was confirmed to be a case of leucism.

Leucistic individuals of RVB were incorrectly documented in the early years. For instance, Joshua (1996) reported a leucistic RVB as a case of albinism. A few melanistic cases have been reported in RVB before (Berry 1894; Law 1921). Recently, an albino RVB was reported from Sri Lanka (Gabadage et al. 2015).

In March 2016, a similar leucistic RVB was photographed in Masinagudi, Tamil Nadu. The find was not properly documented though the experience was presented in a blog (Vidjit Photography, 2016).

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Note on first record of Asian Desert Warbler *Sylvia nana* at Mokarsagar Wetland Complex, Gujarat, India

Asian Desert Warbler *Sylvia nana* photographed from Gosabara Wetland.

The Mokarsagar Wetland Complex, formally known as the Gosabara Wetland, is located in the Porbandar district of the Kathiawar peninsula in the state of Gujarat, India.

The Mokarsagar Wetland Complex, formed by the Karli Recharge Reservoir and Karli Tidal Regulator, contains a group of wetlands, including the Medha creek, Kuchhadi, Subhashnagar, Zavar, Kurly I, Karly II, Vanana, Dharampur, Gosabara, Bhadarbara, Mokarsagar, Bardasagar, and Amipur (Nagar 2017). The Mokarsagar Wetland Complex is a combination of estuary and fresh-water habitats. It is dominated by sedges and other hydrophytic vegetation (Nagar 2017).

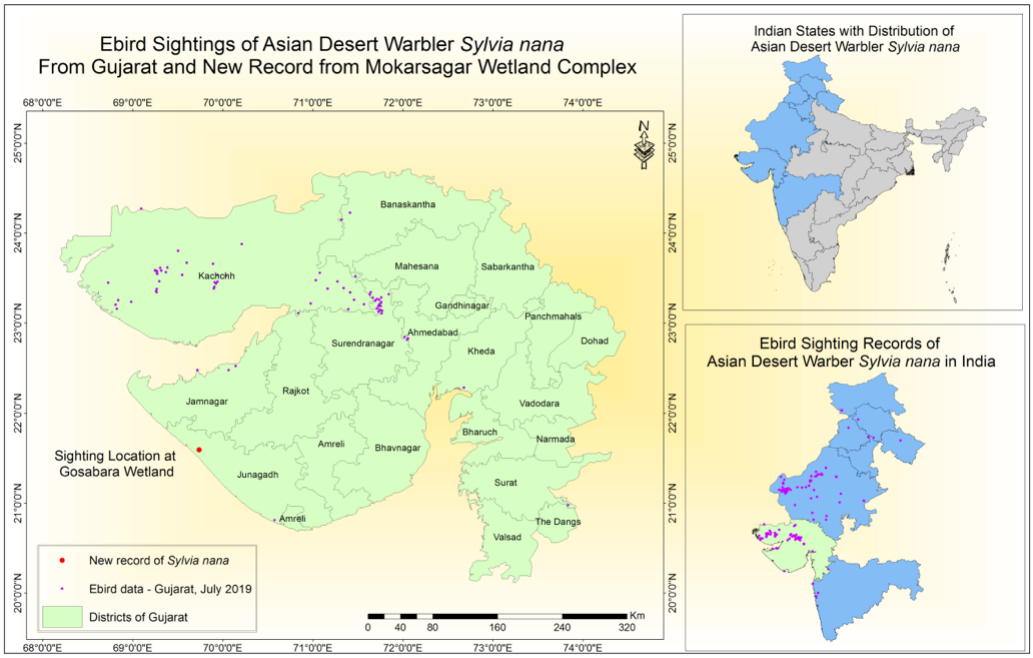
The wetland is a lifeline for the community and for its dependent biodiversity, comprising both flora (mangrove, macroalgae & macrophytes) and fauna (birds, reptiles, insects, & mammals). During winter season, many migratory birds such as Demoiselle Crane, Common Crane, Pelican, and many species of Duck can be seen here. After the water dries up, birds such as Larks, Pipits, and Pratincole can be seen. At 14:39hr on 26 January, 2017, the author was carrying out vegetation

quadrat sampling at the Prosopis Island in Gosabara wetland. Suddenly, a bird that looked very different, flew across the authors and perched on a branch of *Suaeda nudiflora*.

The author followed the bird and observed it for a few seconds and could photograph it before it flew out of sight. The bird was short and compact, pale sandy brown with a pale rufous rump and tail, white outer rectrices, and whitish under-parts. It had yellow-coloured eyes, bill (except on the tip), and legs, all characteristics that match with the characteristics of an Asian Desert Warbler (*Slyvia nana*) (Rasmussen & Anderton 2012). Later that evening, the bird was confirmed as Asian Desert Warbler *Sylvia nana* (Rasmussen & Anderton 2012; Grimmett et al. 2013). Identification of the bird was strengthened by its longitudinal tail-flickering behaviour observed in the field.

Sylvia nana is an arid bird species which breeds through North and East Caspian Sea coasts and Northeast Iran, East to Central and South Mongolia and Northwest China. It is a winter visitor (mainly Dec–Feb) to drier plains of Pakistan and deserts of adjacent Northwest India (mainly Haryana, Rajasthan, & Kutch) (Rasmussen & Anderton 2012; Del Hoyo et al. 2006; Del Hoyo & Collar 2016; BirdLife International 2017).

Ebird Basic Dataset (June, 2019) suggests that the distribution of the species has extended to eight states of India, including Jammu and Kashmir, Himachal Pradesh,



Ebird sightings of Asian Desert Warbler *Sylvia nana* from India and New Record from Mokarsagar Wetland Complex.

Punjab, Uttarakhand, Haryana, Rajasthan, Gujarat and Maharashtra. Among these, the main wintering sites are Gujarat and Rajasthan, while all the other states have made a few sporadic records (Sullivan et al. 2009). In Gujarat, the major population of the bird is concentrated around the Kutch District, Little Rann of Kutch, and Nalsarovar, while a few sporadic records have been recorded from other parts:

• Three in Jamnagar coast
• One in Junagadh coast
• One in Khambhat coast
• One in the Tapi district

(Ebird Basic Dataset, June, 2019)

The sighting of *Sylvia nana* at the Mokarsagar Wetland Complex forms the first recorded sighting in the area. Moreover, the sighting is 100km away from the nearest sporadic sighting and 200 kms away from the regular wintering grounds. This sighting provides ornithologists with a new understanding of the distribution of the bird. Further studies may enunciate proper distribution range of the species.

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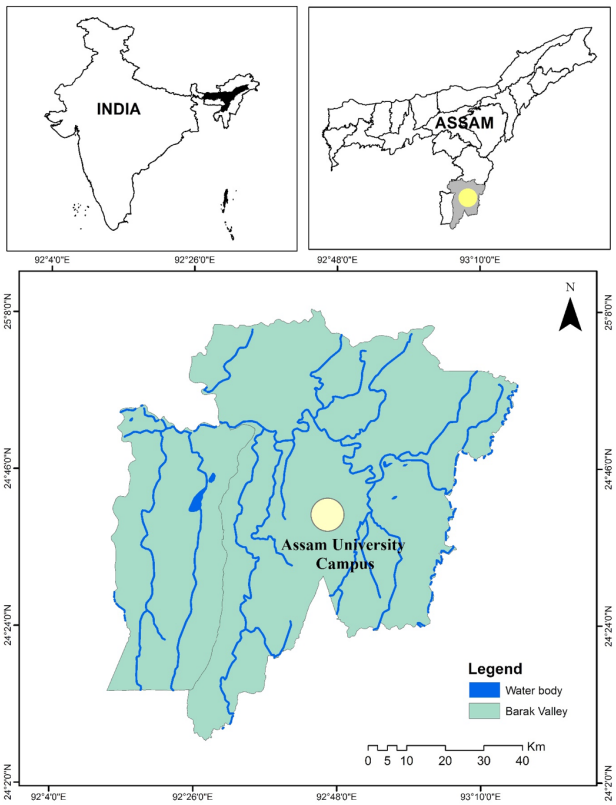
Sighting of Greater Spotted Eagle *Clanga clanga* in Assam University, Silchar Campus with its current distribution in Assam, India

Greater Spotted Eagle *Clanga clanga* in Assam University, Silchar (Photo: M. Miraj Hussain).

Once grouped under genus *Aquila*, *A. hastata* and *A. clanga* have been placed under a new genus *Clanga*, and now they are known as *Clanga hastata* (Indian Spotted Eagle) and *Clanga clanga* (Greater Spotted Eagle) (Praveen et al. 2017; BirdLife International 2018). Both species are categorized as Vulnerable (Praveen et al. 2017).

Greater Spotted Eagle (GSE), *Clanga clanga* is locally uncommon and a winter resident called as *Kurua, Bor Chorai* (Assamese), *Boloa* (Bengali) or *Go-nor* (Mishing) in Assam (Choudhury 2000). A large bird of prey usually dark blackish brown, sometimes with tiny white specks. It also has some white on upper tail coverts. Sexes are alike but females are larger than the males. Immature individuals have conspicuous white or buff streaks and spots. Crown and nape are buffy. Underparts are dark brown with bold buff streaks (Choudhury 2000). It is partially a resident bird but mainly a winter visitor and visits northern part of Indian subcontinent widely during winters (Rahmani & Choudhury 2012; Grimmett et al.2013).

On 28 October 2017 at around 0820 hr, a lone raptor was sighted soaring four to five times above the hillocks of the eco-forest region of Assam University, Silchar campus (24.681^{0}N, 92.068^{0}E, 24 MSL). The bird was seen soaring and hovering above the hillocks for about three minutes, until it finally disappeared. Few record shots were taken for identification of the raptor, which was later confirmed as Greater Spotted Eagle by Firoz Hussain (Admin., Oriental Birding Tours), Wichyanan Limparungpatthanakij (AIDIB 2017) and confirmed by Tim Inskipp (OBC 2017). The bird was identified on the basis of its tail and wing fingers which separate it from the other similar species like Black Eagle and Indian Spotted Eagle.



The location of Assam University, Silchar campus (Courtesy: Anukul Nath)

The Assam University, Silchar (AUS) campus, located in Cachar District of Assam spreads over 600 acres of land and surrounded by several small hillocks, natural lakes, tea gardens and agricultural lands (Dutta et al. 2008). The area experiences a warm, humid climate having mean annual rainfall of 2660mm, most of which is received during May to September. The university campus has different habitats viz., degraded forest, secondary forest, marshy areas and scrublands. A checklist of 113 species of birds in Assam University, Silchar campus and its adjoining areas were reported (Dutta et al. 2008). The recent published checklist of the campus, however, mentioned only 73 species, where Greater Spotted Eagle was not sighted or recorded (Chakdar et al. 2016).

Greater Spotted Eagle is a medium-sized eagle with rather short and broad wings, stocky head, and short tail. Wings are distinctly angled down at carpals when gliding and almost flat when soaring (Grimmett et al. 2013). It can be easily confused with the Indian Spotted Eagle; it has a slightly broader wing, a marginally shorter, somewhat wedge-shaped tail, more deeply emarginated primary fingers and squarish tips than the Indian Spotted (Rahmani & Choudhury 2012). When compared with the Steppe Eagle, it has less protruding head in flight, with shorter wings and less deep-fingered wing-tips; at rest, trousers less baggy, and bill smaller

Table. Sightings of Greater Spotted Eagle *Clanga clanga* in Assam (chronological order).

	Date	No. of individuals	Location	Sighted by	References
1.	20-xi-1987	1	Pani-Dihing Bs	Anwaruddin Choudhury	Choudhury 1991
2.	29-xi-1987	1	Phokolai *Beel*, Sibsagar	Anwaruddin Choudhury	Choudhury 1991
3.	2-xii-1987	1	Doboli *Chapori*, Sibsagar	Anwaruddin Choudhury	Choudhury 1991
4.	27- xii-1987	1	Near Saragua, Sibsagar	Anwaruddin Choudhury	Choudhury 1991
5.	23-x-1989	2-3	Bakri *Haor*, Hailakandi District	Anwaruddin Choudhury	Choudhury 2000
6.	08-ii-1990	1	Orne *Chapori* Near Matmora, Lakhimpur District	Anwaruddin Choudhury	Choudhury 2000
7.	04-iii-1990	1	Bordoibam-Bilmukh Bs	Anwaruddin Choudhury	Choudhury 2000
8.	28-xi-1990	1	Orne *Chapori* Near Matmora, Lakhimpur District	Anwaruddin Choudhury	Choudhury 2000
9.	23-iii-1991	1	Andharu *Beel*, Lakhimpur District	Anwaruddin Choudhury	Choudhury 2000
10.	1-xi-1992	1,1	Torali and Dighali, Dibru-Saikhowa Np	Anwaruddin Choudhury	Choudhury 1994
11.	08-xi-1992	1	Churke *Chapori*, Dibru-Saikhowa Np	Anwaruddin Choudhury	Choudhury 1994
12.	06-xii-1992	2	Rongmola *Beel*, Dibru-Saikhowa Np	Anwaruddin Choudhury	Choudhury 1994
13.	1995	1	Dhakra *Beel*, Dhubri District	M. Barua	Barua 1995
14.	1996	9 lone birds	Kaziranga Np (9 Sites)	M. Barua	Barua 1996
15.	25-i-1996	1 (immature)	Deepor *Beel*, Bs	Anwaruddin Choudhury	Choudhury 2000
16.	04-iv-1996	1	Orang Np	Anwaruddin Choudhury	Choudhury 2000
17.	04-xi-1997	1	Pabitora Ws	Anwaruddin Choudhury	Choudhury 2000
18.	18-i-1998	1	Chenimari *Beel*, Burhachapori Ws	K. Lashkar pers. comm.	Choudhury 2000
19.	December 1998	3	Between Kurua And Singri, Darrang District	M. Barua pers. comm.	Choudhury 2000
20.	1999	*	Kaziranga National Park	M. Barua and P. Sharma	Barua & Sharma 1999
21.	24-ii-2004	*	Kaziranga Np, Eastern & Central Range, Golaghat, As	John Allcock	Ebird 2018
22.	28-ii-2004	*	Kaziranga Np Eastern Range	John Allcock	Ebird 2018
23.	06-i-2005	1	Kaziranga Np, Golaghat	Rita Swinnen	Ebird 2018
24.	07-i-2005	2	Kaziranga Np, Golaghat	Rita Swinnen	Ebird 2018
25.	2005	<10	Nameri National Park	Maan Barua and Pankaj Sharma	Barua & Sharma 2005
26.	31-iii-2006	1	Kaziranga Np, Golaghat	Howard Laidlaw	Ebird 2018
27.	09-ii-2007	1	Kaziranga Np Eastern Range	Craig Robson	Ebird 2018
28.	01-iv-2007	1	Kaziranga Np, Golaghat	Mike Prince	Ebird 2018

	Date	No. of individuals	Location	Sighted by	References
29.	01-i-2008	3	Orang Np, Darrang	David Stanton	Ebird 2018
30.	29-i-2010	1	Brahmaputra River Launch, Debaswasi, Golaghat	Anne Sammis & Eric Gropp	Ebird 2018
31.	21-iii-2010	*	Kaziranga Np, Western Range, Nagaon	Jan Rosender	Ebird 2018
32.	01-iv-2010	2	Kaziranga Np, Golaghat	Josh Engel	Ebird 2018
33.	30-iii-2011	*	Kaziranga Np Eastern Range	Josh Engel	Ebird 2018
34.	16-iv-2011	1	Kaziranga Np, Golaghat	Jude Power	Ebird 2018
35.	17-iv-2011	1	Kaziranga, Np, Central Ranga, Golaghat	Jude Power	Ebird 2018
36.	16-iv-2013	1	Kaziranga Np, Golaghat	Bryan J. Smith	Ebird 2018
37.	16-iv-2013	3	Kaziranga Np Eastern Range	Deborah Power	Ebird 2018
38.	22-xi-2013	1	Brahmaputra River, Darrang	Forest Venkat	Ebird 2018
39.	24-xi-2013	1	Kaziranga Np, Western Range, Nagaon	Forest Venkat	Ebird 2018
40.	24-xi-2013	2	Kaziranga Np, Eastern Range	Forest Venkat	Ebird 2018
41.	26-xi-2013	*	Kaziranga, Np, Central Ranga, Golaghat	Forest Venkat	Ebird 2018
42.	08-i-2014	*	Kaziranga Np, Golaghat	Ameet Zaveri	Ebird 2018
43.	16-ii-2014	2	Kaziranga Np, Golaghat	Pritam Baruah	Ebird 2018
44.	28-ii-2014	*	Kaziranga Agaratoli Range	Vivek Menon	Ebird 2018
45.	10-iii-2014	1	Kaziranga Np, Nagaon	Marie Lister	Ebird 2018
46.	29-x-2014	1	Pobitora Ws, Morigaon	Shrikanth Nayak	Ebird 2018
47.	03-xi-2014	*	Kaziranga Np, Golaghat	Avisek Chatterjee	Ebird 2018
48.	09-xi-2014	1	Kaziranga Np Eastern Range	Simon Tonge	Ebird 2018
49.	16-xi-2014	1	Nameri Np, Nagaon	Mihir Joshi	Ebird 2018
50.	24-xi-2014	3	Dadara, Kamrup	Jaydev Mandal	Ebird 2018
51.	01-xii-2014	1	Kaziranga Np, Golaghat	Toby Austin	Ebird 2018
52.	17-xii-2014	1	Kaziranga Agaratoli Range	Sutirtha Lahiri	Ebird 2018
53.	03-i-2015	1	Deepor *Beel* Ws, Guwahati	Jaydev Mandal, Somoyita Sur	Ebird 2018
54.	21-i-2015	1	Deepor *Beel* Ws, Guwahati	Jaydev Mandal, Somoyita Sur	Ebird 2018
55.	26-i-2015	1	Kaziranga Np, Golaghat	Sophia S., Vishal Dutta	Ebird 2018
56.	13-ii-2015	2	Guahati University Campus, Botany Garden, Guwahati	Shah Nawaz Jelil, Pranjal Mahananda, Hrishikesh Choudhury, Shah Sofiullah Mahmud Hussain, Jaydev Mandal, Somoyita Sur	Ebird 2018

	Date	No. of individuals	Location	Sighted by	References
57.	20-ii-2015	1	Kaziranga Np, Nagaon	Pankaj Raina, Karma Choden Bhutia	Ebird 2018
58.	02-iii-2015	*	Kaziranga Np, Western Range, Nagaon	Siddhesh Surve	Ebird 2018
59.	29-iii-2015	1	Kaziranga Np, Golaghat	Abhinand C.	Ebird 2018
60.	18-iii-2015	2	Kaziranga, Np, Central Ranga, Golaghat	Craig Morley	Ebird 2018
61.	04-iv-2015	*	Kaziranga, Np, Central Ranga, Golaghat	Stuart White	Ebird 2018
62.	14-xi-2015	1	Kaziranga Np, Golaghat	Sujan Chatterjee	Ebird 2018
63.	19-xii-2015	*	Kaziranga Np, Sonitpur, As	Nawal Ahuja	Ebird 2018
64.	28-xii-2015	1	Kaziranga Np Eastern Range	Soham Sinha, Ruma Sinha, Snehasis Sinha	Ebird 2018
65.	30-xii-2015	1	Nameri Np, Sonitpur	Snehasis Sinha	Ebird 2018
66.	17-ii-2016	1	Kokilamukh, *Beel*, Jorhat	Firoz Hussain	Ebird 2018
67.	21-ii-2016	1	Kaziranga Np, Golaghat	10,000 birds collaborative & Donna Schulman	Ebird 2018
68.	22-ii-2016	2	Kaziranga Np, Golaghat	10,000 birds collaborative & Donna Schulman	Ebird 2018
69.	19-iii-2016	1	Pobitora Ws, Morigaon	Cathy Pasterczyk	Ebird 2018
70.	24-iii-2016	1	Kaziranga Np Eastern Range	Sue & Gary Milks	Ebird 2018
71.	24-iii-2016	1	Bihpuria, Lakhimpur, As	Anuj Saikia	Ebird 2018
72.	27-iii-2016	*	Nameri Np, Sonitpur	Ajay Gadikar	Ebird 2018
73.	08-iv-2016	*	Maguri *Beel*, Tinsukia, Assam	Vivek Govind Kumar	Ebird 2018
74.	10-iv-2016	1	Maguri *Beel*, Tinsukia, Assam	Albin Jacob, Manjula Ravi	Ebird 2018
75.	30-x-2016	2	Kaziranga Np, Western Range, Nagaon	Anonymous ebirder, Sahana M	Ebird 2018
76.	19-xi-2016	*	Kaziranga Np, Burapahar Range (Ghorakati)	Roy & Lorraine Ingleston	Ebird 2018
77.	20-xi-2016	*	Kaziranga Np, Burapahar Range (Ghorakati)	Roy & Lorraine Ingleston	Ebird 2018
78.	25-xi-2016	*	Kaziranga Np, Golaghat	Harsha Jayaramaiah	Ebird 2018
79.	02-xii-2016	1	Kaziranga Np, Central Ranga, Golaghat	Gavin Emmons, Alacia Welch	Ebird 2018
80.	02-xii-2016	1	Dehing Patkai Ws, Tinsukia, Assam	Micheal Bird	Ebird 2018
81.	25-xii-2016	6	Kaziranga Np, Burapahar Range (Ghorakati)	Firoz Hussain, Amy Packer, Jay Packer, Wichyanan (Jay) Limparungpatthanakij	Ebird 2018
82.	27-xii-2016	2	Kaziranga Np, Eastern Zone, Nagaon	Archit Hardikar, Pushkar Chaubal	Ebird 2018

	Date	No. of individuals	Location	Sighted by	References
83.	28-xii-2016	3	Kaziranga Agaratoli Range	Firoz Hussain, Amy Packer, Jay Packer, Wichyanan (Jay) Limparungpatthanakij	Ebird 2018
84.	28-xii-2016	2	Kaziranga Agaratoli Range	Firoz Hussain, Amy Packer, Jay Packer, Wichyanan (Jay) Limparungpatthanakij	Ebird 2018
85.	29-xii-2016	2	Kaziranga Agaratoli Range	Firoz Hussain, Amy Packer, Jay Packer, Wichyanan (Jay) Limparungpatthanakij	Ebird 2018
86.	29-xii-2016	1	Kaziranga Np, Eastern & Central Range, Golaghat, As	Firoz Hussain, Amy Packer, Jay Packer, Wichyanan (Jay) Limparungpatthanakij	Ebird 2018
87.	30-xii-2016	1	Guwahati Airport, Guwahati	Wichyanan (jay) Limparungpatthanakij	Ebird 2018
88.	31-xii-2016	1	Borpukhuri, Kamrup	Jitendra Sarmah	Ebird 2018
89.	04-i-2017	4	Kaziranga Agaratoli Range	Rofikul Islam	Ebird 2018
90.	12-i-2017	2	Kaziranga Agaratoli Range	Aashutosha Lele, Pallab Prakash Saikia	Ebird 2018
91.	16-i-2017	1	Kaziranga Np, Western Range, Nagaon	John Fitzpatrick, Sahas Barve	Ebird 2018
92.	16-i-2017	1	Kaziranga Np Eastern Range	John Fitzpatrick, Sahas Barve	Ebird 2018
93.	20-i-2017	3	Kaziranga Agaratoli Range	Aashutosha Lele, Prajval Shastri, Pallab Prakash Saikia, Abhimanyu Lele	Ebird 2018
94.	26-i-2017	1	Kokilamukh, Barsaral *Beel*, Jorhat	Nilutpal Mahanta	Ebird 2018
95.	26-i-2017	4	Kaziranga Agaratoli Range	Subhojit Chakladar	Ebird 2018
96.	30-i-2017	1	Kaziranga, Np, Golaghat As	Nijib Ahmed, Pallab Prakash Saikia, Rick Yetter, Rofikul Islam	Ebird 2018
97.	30-i-2017	3	Kaziranga, Np, Central Ranga, Golaghat	Rofikul Islam, Pallab Prakash Saikia	Ebird 2018
98.	03-ii-2017	1	Borbeel Karakuch, Barpeta	Jitendra Sarmah	Ebird 2018
99.	07-ii-2017	1	Kaziranga Agaratoli Range	Pallab Prakash Saikia, Nijib Ahmed, Rofikul Islam	Ebird 2018
100.	07-ii-2017	1	Kaziranga, Np, Golaghat As	Pallab Prakesh Saikia	Ebird 2018
101.	08-ii-2017	4	Kaziranga, Np, Golaghat As	Rofikul Islam & Pallab Prakash Saikia	Ebird 2018
102.	09-ii-2017	2	Kaziranga, Np, Golaghat As	Rofikul Islam & Pallab Prakash Saikia	Ebird 2018
103.	10-ii-2017	2	Kaziranga, Np, Golaghat As	Rofikul Islam & Pallab Prakash Saikia	Ebird 2018

	Date	No. of individuals	Location	Sighted by	References
104.	15-ii-2017	1	Kaziranga, Np, Central Ranga, Golaghat	Ss. Cheema	Ebird 2018
105.	16-ii-2017	1	Kaziranga, Np, Golaghat As	Rofikul Islam & Pallab Prakash Saikia	Ebird 2018
106.	16-ii-2017	1	Kaziranga, Np, Central Ranga, Golaghat	Robert Gowan	Ebird 2018
107.	19-ii-2017	3	Kaziranga Agaratoli Range	Yoav Perlman	Ebird 2018
108.	19-ii-2017	1	Kaziranga, Np, Golaghat As	Pallab Prakesh Saikia, Rofikul Islam & Nijeb Ahmed	Ebird 2018
109.	19-ii-2017	2	Kaziranga, Np, Central Range, Golaghat	Yoav Perlman	Ebird 2018
110.	08-iii-2017	2	Kaziranga, Np, Golaghat As	Rofikul Islam	Ebird 2018
111.	09-iii-2017	1	Kaziranga, Np, Golaghat As	Rofikul Islam	Ebird 2018
112.	11-iii-2017	1	Manas National Park, Mathanguri	Vineeta Dixit, Sudesha Dey	Ebird 2018
113.	12-iii-2017	3	Kaziranga, Np, Golaghat As	Rofikul Islam, Pallab Prakash Saikia	Ebird 2018
114.	12-iii-2017	1	Kaziranga, Np, Central Ranga, Golaghat	Harsha Jayaramaiah, Scott Lukens	Ebird 2018
115.	13-iii-2017	1	Kaziranga Agaratoli Range	Anuj Saikia	Ebird 2018
116.	14-x-2017	1	Manas National Park, Kaklabari No.2 Bauyan Para Range	Chagan Boro	Ebird 2018
117.	02-xi-2017	1	Kaziranga Np, (26.5974^{0}N, 93.3812^{0}E), Golaghat	Rofikul Islam	Ebird 2018
118.	03-xi-2017	1	Kazaringa Np (Western & Central Range) Golaghat, As	Catherine Hamilton, Peter Trueblood	Ebird 2018
119.	04-xi-2017	1	Kaziranga, Np, Central Ranga, Golaghat	Catherine Hamilton, Peter Trueblood	Ebird 2018
120.	05-xi-2017	1	26.584^0 N, 93.291^0 E, Nagaon, As	Rana and Sugandhi Belur	Ebird 2018
121.	06-xi-2017	1	Kaziranga Np, Western Range, Nagaon	Anonymous ebirder, Vijaya Lakshmi	Ebird 2018
122.	24-xi-2017	1	Kaziranga, Np, Golaghat As	Rofikul Islam, Pallab Prakash Saikia	Ebird 2018
123.	25-xi-2017	2	Kaziranga, Np, Golaghat As	Rofikul Islam, Pallab Prakash Saikia	Ebird 2018
124.	04-xii-2017	2	Kaziranga Np (Kohora Range, Golaghat)	Ashok Madaravally	Ebird 2018
125.	27-xii-2017	*	Pobitora Ws, Morigaon	Prosenjit Dawn	Ebird 2018
126.	04-i-2018	1	Kaziranga Np, Golaghat, As	Rofikul Islam	Ebird 2018
127.	04-i-2018	1	Kazaringa Np (26.6102^0 N, 93.3027^0 E) Golaghat, As	Rofikul Islam	Ebird 2018

	Date	No. of individuals	Location	Sighted by	References
128.	07-i-2018	1	Orang Np	Nejib Ahmed	Ebird 2018
129.	15-i-2018	1	Kaziranga Np, Western Range, Nagaon	Vikas Madhav Nagaran-jan	Ebird 2018
130.	26-i-2018	1	Kaziranga, Np, Central Ranga, Golaghat	Pankaj Lad	Ebird 2018
131.	27-i-2018	1	Kaziranga Np Eastern Range	Pankaj Lad	Ebird 2018
132.	29-i-2018	2	Kaziranga Np (26.6641^{0}N, 93.5656^{0}E)	Rofikul Islam	Ebird 2018
133.	02-ii-2018	1	(26.661^{0}N,92.95^{0}E) Sonit-pur	Neeraj Bora	Ebird 2018
134.	02-ii-2018	1	Kaziranga Np (26.6632^{0}N, 93.5660^{0}E)	Simon RB Thompson & Rofikul Islam	Ebird 2018
135.	03-ii-2018	2	Kaziranga Np, (26.6064^{0}N, 93.3888^{0}E), Golaghat	Simon RB Thompson & Rofikul Islam	Ebird 2018
136.	07-ii-2018	1	Bagori Range, Kaziranga Np	Pallab Prakash Saikia	Ebird 2018
137.	08-ii-2018	1	Agoratoli Range, Kaziran-ga Np	Pallab Prakash Saikia	Ebird 2018
138.	09-ii-2018	*	(26.662°N, 92.948°E) Sonitpur As	Pranjal Baruah	Ebird 2018
139.	14-ii-2018	1	Kohora Range, Kaziranga Np	Kranti Singh	Ebird 2018
140.	23-ii-2018	1	Pobitora Ws	Gaurang Bagda	Ebird 2018
141.	01-iii-2018	1	Kaziranga Np, (26.6641^{0}N, 93.5657^{0}E)	Rofikul Islam	Ebird 2018
142.	02-iii-2018	1	Kaziranga Np, (26.6108^{0}N, 93.3802^{0}E)	Rofikul Islam	Ebird 2018
143.	06-iii-2018	1	Assam University, Silchar	M Miraj Hussain pers. obs.	-
144.	13-iii-2018	1	(26.663^{0}N, 93.566^{0}E) Dif-floo Pathar, As	Alain Pataud & Frẻdẻric Pelsy	Ebird 2018
145.	14-iii-2018	1	Aranya Lodge, Kaziranga Np	Alain Pataud & Frẻdẻric Pelsy	Ebird 2018

Table legends: BS: Bird Sanctuary, WS: Wildlife Sanctuary, NP: National Park, AS: Assam, Beel: Lake/wetlands, Chapori: Riverine Islands, Haor: Wetlands, *: no. of individuals is not mentioned, Pers. Obs.: Personal Observation, Pers. Comm.: Personal Communication. Ebird 2018: see the references.

with rounded nostril and shorter gape; lacks adult Steppe's barring on underside of flight and tail feathers, and dark trailing edge to wing, and has a dark chin (Grimmett et al. 2013). This species can be seen near wetlands and waterbodies, where it sits and waits for its prey. It preys upon rodents, small mammals, water birds, frogs and snakes, hunting over swamps and wet meadows (Ali & Ripley 1987; BirdLife International 2018).

The global distribution of this species ranges from Eastern-Central Europe

East through Russia to South Ussuriland (Siberia, Russia) and North East China. In winters, locally, from South Europe, North East and East Africa (mainly Ethiopia, with occasional records in West Africa and South to Tanzania and Zambia) and Middle East (and perhaps North to Kazakhstan) through Pakistan and India (South mainly to about West Maharashtra) to South & East China and Indochina to Singapore; exceptionally south as far as Sumatra, irregularly to Taiwan, and exceptionally North to Southeast Russia and Japan (Meyburg et al. 2016). But it breeds mainly in northwestern part of the subcontinent, Eastern Europe, Russia, Central Asia, Mongolia and China (Rahmani &Choudhury 2012). Passage or wintering individuals, however, are observed in many countries (del Hoyo et al.1994; Ferguson-Lees & Christie 2001).

In Assam, most of the sightings are reported from the Brahmaputra valley (Table). It is still widely but very patchily distributed, and mainly reported from Kaziranga National Park (Barua & Sharma 1999), open areas along the river Jia Bhareli and its tributaries in Nameri NP (Barua & Sharma 2005). It was also reported from Dibru-Saikhowa NP (Choudhury 2006). Out of 145 sighting records, 93 (64.83%) were from Kaziranga National Park; this is may be due to more number of birders visiting this site. One hundred twenty-six sighting records have been retrieved from Ebird 2018. Maximum sighting records were of single bird; 36 sightings had more than one bird. The highest record of the species from a single area, i.e., Kaziranga National Park was nine “lone birds” by Maan Baruah during 1996.

Apart from Bakri ‘haor’ (Hailakandi District) in Southern Assam (Barak Valley) most of the sightings are from the Brahmaputra valley (Rahmani & Choudhury 2012). Choudhury (2000) has listed about 18 localities (ten are protected areas) of its distribution records throughout Assam but when we collated with all the recent sightings, we found it is to be very rare in the southern Assam i.e., Barak Valley. Apart from Bakri ‘haor’ (Hailakandi District) (Choudhury 2000), no previous report mentioned its presence in the Barak Valley (Birand & Pawar 2001; Hussain 2015). Although, Rahmani et al. (2016) mention its presence in two of the IBAs of Barak Valley i.e. Bauwwa Beel (Hailakandi District) and Son Beel (Karimganj District), that were of no recent sighting. Hence, this is an important recent sighting record, which shows its pocketed presence in the Barak valley. More detailed survey for this species should be initiated to understand its status, distribution and population across this valley.

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An update on the Endangered Black-bellied Tern *Sterna acuticauda* (Gray, 1832) from D'Ering Memorial Wildlife Sanctuary and Dibru-Saikhowa National Park, Assam, India

Image 1. A Black-bellied Tern in breeding plumage flying over the Siang River in D'Ering WS on 10 February 2018. © Rohan K. Menzies

The Black-bellied Tern *Sterna acuticauda* (Gray, 1832) is an endangered species, mainly found in the Indian subcontinent and parts of southeastern Asia; however, it is thought to be nearing extinction in a large part of its distribution outside the subcontinent (Goes et al. 2010; BirdLife International 2017). This riverine specialist was extirpated from Cambodia mainly by domestic dogs predating on nests and local communities collecting eggs (Goes et al. 2010). The Black-bellied Terns are also susceptible to illegal fishing, sand and gravel mining, predation by cats, and river damming (Goes et al. 2010; BirdLife International 2017). The Black-bellied Tern has a bright orange bill, which is longer than the Whiskered Tern; a black cap, and the black on the belly is fuller and more distinctive when in full breeding plumage. Due to the confusion with the Whiskered Tern, records without photographic evidence can be tricky to rely on. The decline of the species along with its limited range, therefore requires more detailed accounts of sightings from birdwatchers

Image 2. A Black-bellied Tern mid-moult, flying over the Siang River in D'Ering WS on 10 February 2018. © Rohan K. Menzies

and researchers, in order to build on understanding its current distribution. Here, we present details of four sightings of the Black-bellied Terns: one from D'Ering Memorial Wildlife Sanctuary (DMWS) and three while on a 39.1km-long boat ride in Dibru-Saikhowa National Park (DSNP), Assam, India.

D'Ering Memorial Wildlife Sanctuary, Arunachal Pradesh

There is mention of the presence of the Black-bellied Tern in the DMWS, Arunachal Pradesh (Rahmani & Choudhury 2012; Rangini et al. 2014; Rahmani et al. 2016); However, it remains imperative to re-evaluate the situation of the species in the Sanctuary, considering that it is classified as Endangered (Birdlife International 2017).

On 10 February 2018, as part of a large-scale riverine bird survey across Arunachal Pradesh, a pair of Black-bellied Terns were seen at the DMWS (27.997^{0}N, 95.463^{0}E; 120m). The two Black-bellied Terns were observed calling and flying over the Siang River, during the survey. One of the birds was in breeding (Image 1). The other Tern seemed to be moulting into breeding plumage with a patchily greyish underbelly, but with a pronounced black cap and a bright orange beak (Image 2). They were observed only flying over the Siang River, along a stretch of about 1km. This was the only sighting of the Black-bellied Tern during our state-wide survey on riverine birds, across seven river basins covering 93km, between October 2017 and March 2018.

There is some degree of boat traffic on the rivers in the protected area which could potentially disturb the birds. We also observed fishermen from a nearby village fishing on the river.

Dibru-Saikhowa National Park, Assam

The Black-bellied Terns have previously been observed in DSNP (Choudhury 1998), situated in the eastern reaches of the state of Assam, in northeastern India. DSNP (27.669^{0}N, 95.362^{0}E; 120m) is a river island

Image 3. The first pair of Black-bellied Terns seen perched on a sandbar and preening in DSNP on 13 December 2018. © Megha Rao

Image 4. One Black-bellied Tern of the second pair perching on a sandbar after displaying in DSNP on 13 December 2018. © Megha Rao

with the Brahmaputra and Lohit Rivers in the north and the Dibru River in the south. This results in a suitable habitat for species like the Black-bellied Tern since there are several sandbars and sandy banks all through the park. Previously, there have been three birds spotted in 1992 and 10 individuals in 1993 (Choudhury 1998). More recently, between 2013 and 2018, there have been six records from Kaziranga National Park (eBird 2018) which is over 300km west of DSNP; however, none from Dibru-Saikhowa.

On 13 December 2018, at 11.00h, we started our boat journey from Guijan into DSNP which lasted over five hours during which we observed three pairs of Black-bellied Terns. The first pair was observed at 13.31h, perched on a sandbar (Image 3). The birds were fairly sedentary and did not flee even upon hearing the noise of the motor. This pair was less than 50m away from the boat. Beyond 4.65km from the first pair, we saw the second pair of Black-bellied Terns at 1407h. The birds were flying ahead of the boat and displaying in the air. Unfortunately, this could not be photographed from the boat. The two birds then landed on a sandbar and one was photographed (Image 4). The pair stayed on the sandbar after being sighted and did not fly away with the sound of the motor. At 15.46h, the third pair of Black-bellied Terns was seen flying and feeding. They took turns swooping down to the water surface and picking up fish. Both individuals were seen successfully fishing and eating (Image 5). The fish can be seen in the bird's beak as well. They would swoop, feed, and circle back to the same stretch of the river to feed again, perhaps indicating a decent fish population of suitable feeding size. All the three pairs were seen in full breeding plumage and considering the breeding season is between February and June, and these sightings being in December, it is likely that these pairs were courting or pairing up in this season.

Image 5. One Black-bellied Tern of the third pair seen flying with a fish in its beak while feeding in DSNP on 13 December 2018. © Megha Rao

We observed a number of threats in the area which could impact this unique habitat which continues to have new records of birds (Menzies & Rao 2019). Firstly, the large number of cattle and buffaloes in the area could trample nests and destroy eggs on the sandbars. Secondly, fishing could be detrimental to the Black-bellied Terns as boat traffic in the breeding or courtship phase could disturb them. Thirdly, increased footfall on the sandbars, and catching targeted fish could impact their dietary requirements. Fourthly, excessive tourism could possibly impact the Black-bellied Terns in the area since motor boats will increase. Finally, we observed a number of domestic dogs in and around the settlements within the biosphere reserve which suggest some level of nest predation. Potentially, proposed dams of this habitat could alter the river, rendering it unsuitable for the Black-bellied Terns to breed. The close proximity between DMWS and DSNP, along with similarities in habitats, could suggest a restricted suitable range for Black-bellied Terns which also implies a greater need for its protection and preservation. The human-induced impact should not result in northeastern India going the way of Cambodia with this species' extinction.

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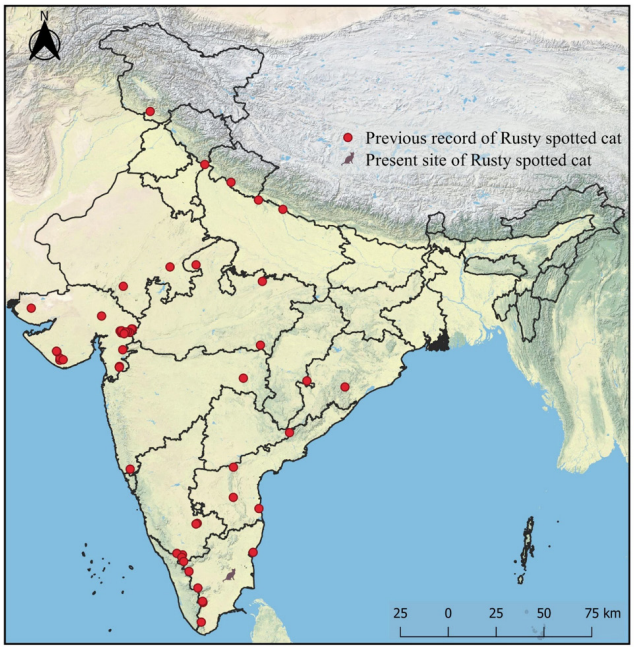
New distributional record of Rusty-spotted Cat *Prionailurus rubiginosus rubiginosus* (Mammalia: Carnivora: Felidae) in Tiruchirappalli, Tamil Nadu, India

A adult Rusty-spotted Cat on a crotch of Tamarind tree *Tamarindus indica*.

Rusty-spotted Cat *Prionailurus rubiginosus rubiginosus* (Geoffroy Saint-Hilaire, 1831) is one of the diminutive felids (Sunqist & Sunquist, 2002) found in India, Nepal and Sri Lanka (Mukherjee et al. 2016). Recently a photographic record has been reported from Bardia National park in Nepal, which extends its distribution range farther to the north (Lamichhane et al. 2016). It is found to be inhabitants of moist and dry deciduous forest, tropical thorn forest, scrub forest, grasslands, arid shrublands, rocky areas and hill slopes (Sunquist & Sunquist 2002), in addition to that, it has been frequently reported from teak, bamboo, grassy, dry thorny vegetation (Guggisberg 1975; Pathak 1990; Worah 1990; Pocock 1939) and also amid agricultural regions and human settlements (Nowell & Jackson 1996; Mukherjee 1998; Kettle & Watson 2004). In Sri Lanka Rusty-spotted Cat *Prionailurus rubigniosus phillipsi* is found from sea level to elevation of 2,100 meters in humid forests, in low scrub, on mountaintops, and in arid coastal regions (De Alwis 1973; Phillips 1984). A pair of solid brown colour stripes on the nape and withers is a distinct character of Rusty-spotted Cat (Pocock 1939). It is nocturnal and more arboreal

in habits (Nowell & Jackson 1996), it is an effortlessness climber than domestic cat and is extremely agile and active (Sunquist & Sunquist 2002). Though, the diet of Rusty-spotted Cat has not been reported properly, they mostly hunt on the ground and its diet consist primarily of birds, small mammals, insects, lizards, and frogs. Local residents in Sri Lanka has reported that Rusty-spotted Cat are most active after heavy rain shower, as they emerge to devour on rodents and frogs (Kristin & Peter 1996) and it is also known to depredate on domestic poultry (Phillips 1935; Pocock 1939).

Habitat loss and anthropogenic activities considered to be significant cause for its population decline, as well, poaching and killing for meat are some of the important threats for the species (Mukherjee & Koparde 2014). In connection to that, IUCN has categorized its global conservation status as 'Near threatened' and listed as 'Endangered' in National Red List of Sri Lanka (MOE, 2012). Further, it has been listed as listed as a Schedule I species under the Wildlife (Protection) Act, 1972 of India. Exclusive ecological studies have not been carried out in Rusty-spotted Cat as in larger cat (Schaller 1967; Chundawat 1992; Chellam 1993; Karanth & Sunquist 1995; Acharya 2007; Andheria et al. 2007; Ramesh et al. 2012; Selvan et al. 2013). Not-widely known about its behaviour in the wild though few studies have documented about its population status in Kevadi reserve forest of Gujarat (Kunal 2012) in India and its behavioral study in captivity at Sri Lanka (Jayaratne et al. 2015). Present observation intensifies it's existing spatial distribution.



Map of India showing the various locations of previous and present sightings of Rusty-spotted Cats.

Although, this species has been recorded virtually everywhere in India, its distribution is yet to be documented clearly (Nayak et al. 2017). Here we present recent record of this species from Tiruchirappalli (Trichy, as it well known), Tamil Nadu. Tiruchirappalli district is located at the central part of Tamil Nadu, situated on the bank of Cauvery river and surrounded by Perambalur district in north, Sivagangai and Madurai in south, Karur, Dindugal in west and Thanjavur in east. The entire district is almost plain in topographically except a detached Pachaimalai hill in the north (Kavitha & Aruchamy 2013). The present sighting of rusty-spotted cat was recorded at 20:15 h on 05 March 2012 at Kollidakarai residential area (N10^{0}52'47.43" E78^{0}41'25.12"), where it has been sitting on crotch of Tamarind tree *Tamarindus indica*. The tree was stood on the bank of dry stream together

with *Borassus flabellifer*, *Prosopis juliflora*, *Senna auriculata*, *Opuntia ficus-indica*, and *Azadirachta indica*. The present sighting occurred outside the Reserve Forest, signifies the new location for this species in human-dominated habitat. The record of this species in different locations in India emphasizes that a detailed field survey is required on its population status and distribution.

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First reproductive description of captive Coyotes (Canidae: *Canis latrans*) in Honduras

Image 1. One of the most common behaviors observed was holes made by the alpha female and her pups. Usually they hide food there, but sometimes play on or near the holes. Note that one of the pups is trying to get into the hole. © Alejandro Velásquez.

Introduction

Coyotes (*Canis latrans)* are opportunistic carnivores distributed from Alaska to Panama, including colonized urban areas (Morey et al. 2007). Hidalgo-Mihart et al. (2004) presented convincing paleontological evidence that Coyotes have been in southern Mexico and central America prior to the arrival of the Europeans in the 15th century and that the habitat suitable for Coyotes increased due to the deforestation of forests for agriculture. Yet, information about coyote activity in Mexico and central America is scarce (Hidalgo-Mihart et al. 2009). In 1936, Goldman described a new subspecies of coyotes in Honduras (previously *C. hondurensis* and formerly *C. l. hondurensis*), and after this description, there has been insufficient information about Coyotes in Honduras, with no reproductive information of *C. latrans* in the country. Herein, we describe for the first time, the reproductive and behavioral patterns of Coyotes in captivity in Honduras.

Methods

Behavior in captivity was attained at the Rehabilitation and Conservation Rescue Center El Ocotal (authorized and registered by the wildlife department at ICF (Instituto Nacional de Conservación y Desarrollo Forestal, Áreas Protegidas y Vida Silvestre) under resolution GG–MP–066–2001). This rescue center is located in Sabanagrande, Francisco Morazán (13^{0}47’27”N, 87^{0}18’51”W; 970 m asl) and the two coyotes came from a locality in La Arcadia, Francisco Morazán, which were held in

Image 2. The herd of Coyotes in El Ocotal, Francisco Morazán. Notice that the adult female of the first litter is sensitive to her surroundings, while the others are searching for food as an alimentary enrichment activity. © Alejandro Velásquez.

captivity by people who captured them in the wilderness. The life zone represented in the area near the cave in which the pups were found (13°54'50"N; 87°14'48"W; 1,260m), according to Holdridge (1987), was a subtropical moist forest with abundance of pines *Pinus oocarpa* and *P. maximinoi*, and oaks *Quercus oleoides*.

In April and May 2016, a juvenile male and female, respectively, were taken to the rescue center.

Results

Direct observations were made from May 2016 to February 2018, specifically in the gestation stage of the female for documenting the birth of the litters. The Coyotes showed two peaks of activity; the first between 04.00h and 05.00h (with howls and whimpers), and the second between 17.00h and 17.45h. The time that they were inactive was between 11.00h and 13.00h. When the juveniles started to grow, every time the male was the first to interact with the new alimentary enrichments.

After 60 days of the gestation period, in June 2016, the female gave birth to one female and two males. During the first five days of giving birth, the female made low howls with the litter, and they produced whimpers in response to the mother. The female never left the shelter (1.22 m x 1.23 m x 1.16 m) in the enclosure (150m^2 x 2.50m of height with an open roof) where she gave birth, and after the first month and a half, the litter left the shelter.

In February 2018, the alpha female was in gestation period again, and the mating process lasted for three days. The female gave birth exactly after 60 days, and again, one female and two males were born. The mother always maintained a vigilant behavior for protecting the new litter, and sometimes was seen digging with two of her pups burying food (Image 1). The herd of eight Coyotes (Image 2) had successfully adapted and no evidence of aggression was shown in the hierarchy.

Discussion

From the two Coyotes kept in captivity, six pups were born, and a successful hierarchy was arranged in the herd. The alpha male always continued to be the leader, protecting and guiding the herd. According to Schultz & Young (2018), the most common behaviors they observed were scanning while they rested, being vigilant, maintaining a social hierarchy, and preferring complex shelters to simple ones (especially in breeding seasons). The timing of gestation recorded in this study is among the ones mentioned by Reid (2009).

We strongly recommend population studies that can determine the trends in Honduras, which might in turn help to determine other behaviors in the wild. Finally, we encourage to solve the human-coyote interactions by reaching out to the communities nearby, spread awareness and educate people about the threats and challenges faced by coyotes because of human interference, importance of coexistence with animals, and also to avoid taking their cattle to graze near the sites in which Coyotes have been recorded.

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