Nocturnal Terrestrial Mammals of Teknaf Wildlife Sanctuary, Bangladesh

Mohammed Mostafa Feeroz[1], Md. Kamrul Hasan[2] and M. Ibrahim Khalilullah[3]

Abstract

Camera traps were used at six sites over a period of 36 days to identify nocturnal terrestrial animals of Teknaf Wildlife Sanctuary in Bangladesh. A total of 10 nocturnal species were recorded. These are Jackal (*Canis aureus)*, Fishing cat (*Prionailurus viverrinus)*, Large Indian Civet (*Viverra zibetha)*, Small Indian Civet (*Viverricula indica)*, Indian Porcupine (*Hystrix indica)*, Wild Boar (*Sus scrofa)*, Hog-Badger (*Arctonyx collaris)*, Greater Bandicoot Rat (*Bandicota indica),* Barking deer (*Muntiacus muntjak)* and Asian Elephant (*Elephas maximus*). Among these species, large Indian civet is very common while Hog-Badger is very rare in Teknaf Wildlife Sanctuary. The presence of Hog-Badger (*Arctonyx collaris)* has been confirmed and photographed for the first time in Teknaf, Bangladesh.

Image1. Camera trapping activities in Teknaf wildlife sanctuary

Introduction

From the zoo-geographical point of view, Bangladesh is in the Himalo-Chinese sub-region of the Oriental Region. Because of its geographic location at the eastern end of the Indian subcontinent, Bangladesh is a transitional zone for the flora and fauna of the subcontinent and that of Southeast Asia (Stanford 1991). Bangladesh is one of the few countries where the species of two bio-geographic realms (Indian and Malayan) overlap. The country has diverse ecosystems that are appropriate for a wide range of resident and migratory wildlife. During the last four decades survey of wildlife have been conducted by many researchers (Green 1978, Gittins and Akonda 1982, Khan 1981, 1982, , 1984, 1985, 1986, 1987, Khan and Ahsan 1986, Feeroz 2001, Hasan 2003, Khan 2008). The Red Data Book (IUCN Bangladesh, 2000) describes status of wildlife of Bangladesh. However, very little information is available on elusive and nocturnal mammals of Bangladesh. Among the 110 terrestrial mammals found in Bangladesh, most of the nocturnal mammals are recorded as Data deficient in (IUCN Bangladesh, 2000). Increased human population pressure with increased demand for fuel wood is wiping off the vegetal cover and forest of the country, resulting rapid degradation of wildlife habitat. Most of the mammals, specifically the nocturnal ones, are under constant threats for their survival and very little information is available about their status in Bangladesh. The aim of this study was to identify and evaluate the status of the nocturnal terrestrial mammals in the Teknaf Wildlife Sanctuary (TWS) in Bangladesh.

Study Site

Teknaf 'Game Reserve' was established in 1983 and was designated as a 'Wildlife Sanctuary' in 2010 under the Bangladesh Wildlife Act 1974. The wildlife sanctuary is located in the southeastern corner of Bangladesh (20°52'–21°09' N and 92°08'–92°18 ' E.), about 450 km from Dhaka and consists of 11,615ha of hill forest in the Teknaf peninsula. It is situated in the Teknaf and Ukia Upazilla of the Cox's Bazar district, under the jurisdiction of Cox's Bazar South Forest Division. The sanctuary consists of three Forest Ranges viz. Teknaf, Whykong and Shilkhali, and divided into 11 forest beats. It lies between the Naf River on the eastern side and Bay of Bengal on the western side while on the north and south it is bounded by Wrykong Bazar and Teknaf town respectively.

The continuous hilly range that forms the backbone of Teknaf Wildlife Sanctuary reach an altitude of 700 m and run from north to south through the central part of the peninsula, with a north-south length of nearly 28 km and an east-west width of 3-5 km.

[1&2]Professor, Department of Zoology, Jahangirnagar University, E-mail: feerozmm@yahoo.com, hasan_wildlifeju@yahoo.com(corresponding author)
[3]Research Associate, Biotrack, Arannyak Foundation supported project, E-mail: nomanwild@yahoo.com

Image 2. Camera trap photos of nocturnal terrestrial mammals of Teknaf Wildlife sanctuary

Numerous streams flow down to Naf River in the east and Bay of Bengal in the west. Most of the streams are seasonal and dry up during winter, and some of the streams are regularly inundated by tide from the River Naf and the Bay of Bengal. TWS is broadly known for its evergreen and semi-evergreen rain forest. Different habitat types found in TWS comprise of natural forests, cliffs and steep hills, cultivated fields, plantations (monoculture of exotics), wetlands, grasslands and bamboos, tidal mudflats, mangrove vegetation along the River Naf to the east and sandy beaches along the Bay of Bengal bordering the sanctuary to the west. Amid these diverse habitats TWS supports 290 species of plants, 55 species of mammals, 286 species of birds, 56 species of reptiles and 13 species of amphibians (NSP 2006).

Methods

A total of 36 days were spent for camera trapping in Teknaf Wildlife Sanctuary between November 2010 and April 2011. Systematic camera trapping was conducted in six sites inside Teknaf Wildlife Sanctuary (Map 1). Two Moultrie I60 and 4 Bushnell Trophy Cam (2010) camera traps were used in this study (Image 1). One camera in each site was used continuously for six nights in each month for camera trapping. Photos from the camera were transferred in the early morning. Each camera was set with time, date and moon phase and all photos were recorded with this information printed on it. Cameras were set for three photos per trigger in 5 seconds interval. So the numbers of animals visiting a site were carefully separated and calculated from the total pictures taken. Attempts were made to identify individuals of the same species captured in the same camera at the same site. Size, shape and body

Table 1. Nocturnal terrestrial mammals of Teknaf Wildlife Sanctuary

Common Name	Local Name	Scientific Name	Status as per IUCN-Bangladesh, 2000	Global Status as per IUCN, 2010	Status as per CITES appendices	Status as per Bangladesh Wildlife Protection Act, 1974	Status in Teknaf WS (present study)
Jackal /Asiatic Jackal/Golden Jackal	Pati Shial/ Shial	*Canis aureus* Linnaeus, 1758	Vulnerable	Least Concern	Excluded	Excluded	Common
Fishing Cat	Mechho Biral/ Mechho Bagh	*Prionailurus viverrinus* (Bennett, 1833)	Endangered	Endangered	Appendix-II	3rd Schedule	Rare
Hog-Badger	Gor khodok	*Arctonyx collaris* F. Cuvier, 1825	Data Deficient	Near Threatened	Excluded	Excluded	Very Rare
Large Indian Civet	Bagdash	*Viverra zibetha* Linnaeus, 1758	Endangered	Near Threatened	Excluded	3rd Schedule	Very Common
Small Indian Civet	Khatash/ Gandho Gokul	*Viverricula indica* (Desmarest, 1817)	Vulnerable	Least Concern	Excluded	3rd Schedule	Rare
Asian Elephant/ Indian Elephant	Hati	*Elephas maximus* Linnaeus, 1758	Critically Endangered	Endangered	Appendix-I	3rd Schedule	Rare
Wild Boar	Buno Shukar/ Shuar/ Bonnya	*Sus scrofa* Linnaeus, 1758	LR/LC	Least Concern	Excluded	1st Schedule	Common
Barking Deer	Maya Harin	*Muntiacus muntjak*	Endangered	Least Concern	Excluded	3rd Schedule	Rare
Bandicoot Rat/ Greater Bandicoot Rat	Bara Indur/ Dhari Indur	*Bandicota indica* (Bechstein, 1800)	LR/LC	Least Concern	Excluded	3rd Schedule	Common
Indian Crested Porcupine/Indian Porcupine	Shojaru	*Hystrix indica* Kerr, 1792	Endangered	Least Concern	Excluded	3rd Schedule	Rare

marking was used for individual identification, but in most cases, it was very difficult to identify individuals. Hence, only the occurrence was estimated on the basis of the proportion of photos captured for a species during the whole study period. Camera traps were placed near permanent water bodies, wildlife trails, human trails, specific feeding sites (under fruit tree), behind human settlement and on remote forest floor. On the basis of photos captured during the whole study period, different species were categorized in to four categories for their status in the TWS. The categories were, very rare (recorded only once), rare (recorded less than 10 times), common (recorded 11 to 25 times), very common (recorded more than 25 times).

Results and Discussion

Ten species of nocturnal terrestrial mammals were recorded from Teknaf Wildlife Sanctuary (Image 2). On the basis of 390 photos (1 photo from each trigger) captured during this study period, one species was recorded as very common, 3 species were recorded as common, 5 species as rare and one species was very rare (Table 1). Among these 10 species, globally 2 species are endangered, 6 are Least concern and 2 are Near Threatened (IUCN 2010). While locally seven of these species are under different categories of threats, two species are 'Not Threatened' and one species belongs to the category of Data Deficient (IUCN-Bangladesh, 2000). The presence of Hog-Badger in Bangladesh was mentioned by Khan (1987) from Teknaf Game Reserve but later recorded as Data Deficient (IUCN-Bangladesh, 2000). During this study presence of Hog-Badger has been confirmed in Teknaf and photographed for the first time. The different nocturnal species recorded during this study are as follows.

Map 1. Camera trapping sites in Teknaf wildlife sanctuary

(1) Jackal (*Canis aureus*): Nocturnal, rarely sighted during day. Carnivorous, part time scavenger and occasionally eats fruits. Widely distributed in Bangladesh and found in all habitat types. Major threats are habitat loss and killing as a poultry pest by villagers or just for sports. This species is not included in CITES Appendix and BW(P)(A)A 1974.

(2) Fishing Cat (*Prionailurus viverrinus*): Nocturnal, solitary, carnivorous, preys upon on almost everything in its surrounding from snails to fishes and frogs to small mammals. Widely distributed in all types of forests, swamps and marshy areas of the country. Habitat destruction, hunting and poaching are the major threats for this species and included in CITES Appendix II; 3rd Schedule of BW(P)(A)A 1974.

(3) Hog-Badger (*Arctonyx collaris*): Very little is known about this species. Doubtful occurrence of this species was recorded from Teknaf (Khan 1987) but present study provides photographic evidence for the first time to confirm its presence in Teknaf, Bangladesh. This species is recorded as very rare in TWS. IUCN Bangladesh recorded this species as Data Deficient but it is neither included in CITES Appendices or the Schedules of BW(P)(A)A 1974.

(4) Large Indian Civet (*Viverra zibetha*): Nocturnal, solitary and found in all habitat types of Bangladesh. Among the ten species of nocturnal terrestrial mammals found in Teknaf Wildlife Sanctuary, this species is very common and recorded in all camera trap sites almost in every night indicating its presence in all diverse habitat. This species is included in 3rd Schedule BW(P)(A)A 1974.

(5) Small Indian Civet (*Viverricula indica*): Strictly nocturnal and good climber; mainly preys on rats, squirrels, small birds, lizards, insects and poultry. This species is rarely found in the study site. They avoid heavy forest areas and recorded from long grass and scrub areas of TWS. Habitat loss and indiscriminate killing are the major threats for this species. This species is included in 3rd Schedule of BW(P)(A)A 1974.

(6) Asian Elephant (*Elephas maximus*): Forage both in day and night. Mostly raids crop fields at night and feed inside forest during day time. Habitat destruction due to various anthropogenic activities leads to increasing conflict with local people. TWS is known for its elephant population. There are 30 to 35 elephants (IUCN-Bangladesh, 2004).

(7) Wild Boar (*Sus scrofa*): Adult males are usually solitary in non-breeding season but females and their offspring live in groups. This species is found in almost all the forested areas of Bangladesh. They are omnivorous and feed on almost anything including grass, nuts, carrions, roots, tubers, insects and small reptiles. It was recorded as a common species in Teknaf Wildlife Sanctuary.

(8) Barking deer (*Muntiacus muntjak*): Solitary, nocturnal but mostly active during twilight, forages in forests and thickly wooded areas. This species is recorded as rare in Teknaf Wildlife Sanctuary during the study period. It is included in 3rd Schedule BW(P)(A)A 1974.

(9) Greater Bandicoot Rat (*Bandicota indica*): It is widely distributed and a common rodent in almost all the forest areas. They are mostly found at the edge of the forest.

They feed on grains and vegetables and act as a severe agricultural pest in Bangladesh.

(10) Indian Crested Porcupine (*Hystrix indica*): Nocturnal, solitary and burrower, found in bushy forested areas. Hunting for meat and traditional medicine are the major threats for this species. It is included in 3rd Schedule of BW(P)(A)A 1974.

References

Feeroz, M.M. (2001). Species diversity and population density of non-human primates in north-east and south-east of Bangladesh. *Ecoprint* 8(1):53–57.

Gittins, S.P. & A.W. Akonda (1982). What survives in Bangladesh? *Oryx.* 16(3): 275–281.

Green, K.M. (1978). Primates of Bangladesh: A preliminary survey of population and habitat. *Biol. Conserv*. 13(2): 141–160.

Hasan, M.K. (2003). Hoolock gibbon of Bangladesh: Status, distribution and ecology. M.Sc. thesis (unpubl.), Department of Zoology, Jahangirnagar University, Savar, Dhaka, Bangladesh.

IUCN Bangladesh (2000). *Red Book of Threatened Mammals of Bangladesh.* IUCN-The World Conservation Union. 294 pp + xii.

IUCN Bangladesh (2004). Conservation of Asian Elephants in Bangladesh. IUCN Bangladesh Country Office, Dhaka, Bangladesh.

IUCN (2010). IUCN Red List of Threatened Species. Version 2010.4. <www.iucnredlist.org>.

Khan, M.A.R. (1981). The non-human primates of Bangladesh. *Tigerpaper.* 8 (1):12–15.

Khan, M.A.R. (1982). *Wildlife of Bangladesh- A Checklist.* Bangladesh: Dhaka University. Pp iv + 174.

Khan, M.A.R. (1984). Endangered mammals of Bangladesh. *Oryx.*18 (3): 152–156.

Khan, M.A.R. (1985). *Mammals of Bangladesh- a field guide*. Dhaka: Nazma Khan. 92pp.

Khan, M.A.R. (1986). Wildlife in Bangladesh mangrove ecosystem. *J. Bombay Nat. Hist Soc*. 83 (1): 32–48.

Khan, M.A.R. (1987). *Bangladesher Bonnyaprani* ({in Bengali}: Wildlife of Bangladesh). Vol.1-3. Dhaka: Bangla Academy. Pp vol.-1: xvi + 169, vol.-2: xiii + 174 and vol.-3: x + 136.

Khan, M.A.R. & M.F. Ahsan (1986). The status of Primates in Bangladesh and a description of their forest habitats. *Primate Conservation.* 7 (2): 102–109.

Khan, M.M.H. (2008). *Protected Areas of Bangladesh- A Guide to Wildlife.* Nishorgo Support Program, Bangladesh Forest Department. 304 pp.

NSP (2006). Management Plan for the Teknaf Game Reserve. Nishorgo Support Project. Pp. 1–116.

Stanford, C.B. (1991). The capped langur in Bangladesh: behavioural ecology and reproductive tactics. Contributions to Primatol. Vol. 26:1–179.

Acknowledgement

This paper is the outcome of the project 'Biodiversity monitoring in Protected forests of Bangladesh', commonly known as BioTrack, funded by Arannayk Foundation and implemented by Wildlife Research Group of the Dept. of Zoology, Jahangirnagar University. Apart from using camera trap of BioTrack, we also use some other camera trap provided by "SPECIES, at Life Scape International" and we are grateful to them. We would like to thank Forest Department of Bangladesh for permitting us for the study and for constant help in the field. The authors are also grateful to the WRC and the BioTrack Team especially to Mominul Islam Nahid, Rajib Miah, Md. Iftekhar Hossain and Ibrahim Khalil for helping fieldwork during this study. We would also like to thank Sharmin Akhter and SM Robiul Alam for their constant help during the study period.

ANNOUNCEMENT: UFAW Animal Welfare Conference "Recent advances in animal welfare science III", 21st June 2012

Animal welfare is a cross-disciplinary area of science that is attracting increasing interest and funding and is being widely employed to guide and inform legislation and practice relating to the use of animals. Much, however, still remains to be understood. As part of its commitment to improving the way we understand and care for animals, the Universities Federation for Animal Welfare is holding the third of a series of one-day conferences on *'Recent advances in animal welfare science'* on 21st June 2012. There will be a poster session during the lunch break which will feature over 50 presentations. Further details, including the full programme of speakers and a registration form, can be found on the UFAW website http://www.ufaw.org.uk/conference2012.php. Registration is from 8.30, with talks starting at 9.30 and ending at 17.10.

Other details: UFAW intends these regular conferences provides a forum at which the broad community of scientists, veterinarians and others concerned with animal welfare can come together to share knowledge and practice, discuss advances and exchange ideas and views. As part of this commitment, and to ensure that the meeting is accessible to widest range of those with an interest in animal welfare, UFAW aims to keep the registration fee to attend the conferences low, this year it is just **£25.** *Note: This price includes refreshments but delegates will need to make their own arrangements for lunch.*

Venue: The conference is being held in York, in the medieval Merchant Adventurers' Hall, Fossgate YO1 9XD. Located next to the pedestrianised centre of York and built in 1357, the timbered Hall and Undercroft make up one of the best preserved medieval guild halls in the world.

Background to UFAW: UFAW, the Universities Federation for Animal Welfare, is an internationally-recognised, independent, scientific and educational animal welfare charity. The organization promotes high standards of welfare for farm, companion, laboratory and captive wild animals and those with which we interact in the wild.

Contact Details: Stephen Wickens, Development Officer, UFAW, The Old School, Brewhouse Hill, Wheathampstead, Hertfordshire, AL4 8AN, UK. Tel: +44 (0) 1582 831818; Fax: +44 (0) 1582 831414; Website: www.ufaw.org.uk; Email: wickens@ufaw.org.uk