



A Preliminary Wildlife Survey in Sangu- Matamuhuri Reserve Forest, Chittagong Hill Tracts, Bangladesh

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Submitted to:

Bangladesh Forest Department
Ministry of Forest and Environment
Bangladesh

Submitted By:

Creative Conservation Alliance
Lalmatia, Dhaka, Bangladesh

April 2016

Citation: Creative Conservation Alliance. (2016). A preliminary wildlife survey in Sangu-Matamuhuri Reserve Forest, Chittagong Hill Tracts, Bangladesh. Unpublished report submitted to Bangladesh Forest Department, Dhaka, Bangladesh.

Cover Photo: A patch of old growth forest in Sangu Reserve Forest

Acknowledgements

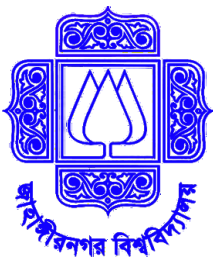
Creative Conservation Alliance is grateful to Bangladesh Forest Department for providing necessary support and allowing us to publish this report. We are also thankful to Bangladesh Army (Alikadam Zone) for their support. The funding for this work was provided by Turtle Survival Alliance through a grant from Turtle Conservation Fund and Mohammed Bin Zayed Species Conservation Fund. Lastly, we thank the local ethnic communities in Alikadam and Thanchi for helping us in many ways during the work period.

Table of Contents

Content	Page No.
1. Foreword	5
2. Executive summary	6
3. Background	8
4. Objectives	10
5. Methodology	11
6. Survey Results	14
6.1. Mammals	14
6.2. Birds	25
6.3. Reptiles and Amphibians	26
6.4. The People	29
6.5. Subsistence Hunting Practice	33
7. Threats to Biological Diversity	40
8. Way Forward?	44
9. Appendix	45
10. Reference	50

1. FOREWORD

Very few areas on earth are blessed with an extremely high diversity of life forms-from charismatic mega-fauna to microscopic organisms- together with high endemism. International body of Scientists has designated these areas as “biodiversity hotspots”, which demand for the highest priority for conservation. Among 34 such hotspots on earth, one of these is Indo-Burma Biodiversity hotspot, which has its western end in the Chittagong Hill Tracts (CHT) of Bangladesh, the only hotspot that is shared by Bangladesh. CHT, comprises over 10% of the total land area of Bangladesh, is one of the last strong hold of biodiversity in Bangladesh. CHT harbors many species of fauna and flora, and even more species are yet to be discovered. Despite its importance, CHT remains as the least explored area of Bangladesh, primarily due to the remote nature of the area and its political complexities. Despite facing formidable challenges, Creative Conservation Alliance, has already done some remarkable work in CHT. Primarily, with the help of the local ethnic people they have discovered and re-discovered many globally threatened species in the most remote part of CHT- the Sangu-Matamuhuri Reserve Forest. Their work indicates that Sangu-Matamuhuri Reserve Forest is one of the last strong hold of biodiversity in Bangladesh, where a number of charismatic mega-fauna still roam in the wild. Sadly, however, the amazing wildlife and their unique habitats of Sangu-Matamuhuri Reserve Forest are vanishing rapidly due to poaching, habitat destruction and many other threats. This report provides important insights on the current situation of this important biodiversity hotspot, and based on which, Bangladesh Forest Department can implement further work.



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2. Executive Summary

The Chittagong Hill Tracts (CHT) comprises 10% of the total land area of Bangladesh and falls within the Indo-Burma Biodiversity Hotspot which renders it, undoubtedly, the richest biodiversity hotspot in Bangladesh. However, due to political instability and the general remoteness of this region, the CHT remains the least explored area in Bangladesh. In particular, we know very little concerning the current status of wildlife within the Sangu and Matamuhuri Reserve Forest. We conducted exploratory surveys in Sangu-Reserve Forest, focusing particularly in Sangu Reserve Forest (SRF), from 2011 to 2015. The interview surveys resulting in hunting records, camera trap surveys, and visual observations were conducted primarily through the assistance of the local communities, including several members of Mro tribe who have been trained as a parabiologists. Some notable findings include: Gaur – the largest cattle species in the world, which was declared extinct by IUCN Bangladesh in 2000; six species of wild cats including Asiatic golden cat, marbled cat, clouded leopard, leopard cat, and tiger. The confirmation of tiger is based on the observation of several pugmarks, identified by experts. We do not have enough evidence to show whether a breeding population of tiger exists within the CHT, or if the pugmarks belong to transient individuals, but the pugmarks do prove that tigers still use this area as part of their home range. Furthermore, we documented both sun bear and Asiatic black bear, dhole/Asiatic wild dog, Asian elephants, sambar, barking deer, wild boar, six species of primates including hoolock gibbon and Phayre's Leaf Monkey, three species of hornbill: great hornbill, wreathed hornbill and oriental-pied hornbill; Burmese python, reticulated python, and king cobra; eight species of turtles and tortoises. There are 16 ethnic settlements within the SRF with a resident human population size of about 1600 people. Human influx, seasonal harvest of forest resources, slash and burn agriculture practice, subsistence hunting and poaching and logging are the major threats for wildlife and its habitat. Our preliminary situational analysis indicates that the SRF is one of the most important sites for wildlife in Bangladesh, and with a proper management plan the SRF can have the long term potential to sustain populations of tigers and elephants. 25 of the observed species are globally threatened-2 Critically Endangered, 9 Endangered and 14 Vulnerable-which deems the SRF an important biodiversity site from not only a national perspective, but also a global perspective.

Executive Summary (in Bangla)

ইন্দো-বার্মা হটস্পট'র অন্তর্ভুক্ত পার্বত্য চট্টগ্রাম এলাকা বাংলাদেশের মোট আয়তনের দশ শতাংশ জুড়ে অবস্থিত। ইন্দো-বার্মা হটস্পটের অন্তর্গত হওয়ায় এই অঞ্চলের জীববৈচিত্র্য অনেক বৈচিত্র্যপূর্ণ। যদিও রাজনৈতিক অস্থিরতা এবং দূরবর্তীতার কারণেই এলাকাটি বাংলাদেশের নূন্যতম অশ্বেষিত এলাকা হিসেবেই রয়ে গেছে। বিশেষত, সাজু এবং মাতামুহুরীর রক্ষিত বনাঞ্চলের বন্যপ্রাণীদের বর্তমান অবস্থা সম্পর্কে আমাদের ধারণা খুবই সীমিত।

স্থানীয় শ্রো জনগনের সহায়তায় আমরা ২০১১ থেকে ২০১৫ পর্যন্ত সাজু রক্ষিত বনাঞ্চল এবং আশপাশে অবস্থিত মাতামুহুরী রক্ষিত বনাঞ্চলে গবেষণামূলক অনুসন্ধান চালিয়েছি। প্রাথমিক অনুসন্ধানে অভ্যন্তরীণ শিকারের তথ্য যোগাড় করার জন্য ক্যামেরা ট্রাপ এবং সম্মুখ পর্যবেক্ষণের দ্বারা নিরীক্ষা চালানো হয়। এ সময়ের মধ্যে স্থানীয় জনগনের সহায়তায় আমরা কিছু উল্লেখযোগ্য বন্যপ্রাণীর সন্ধান এ এলাকায় পাই যা কিনা বাংলাদেশ থেকে বিলুপ্ত হয়ে গেছে বলে মনে করা হয় যেমন : বনগরু/গাউর - বৃহত্তম বন্যগরু প্রজাতি যা ২০০০ সালে 'আইইউসিএন বাংলাদেশ' এর দ্বারা বিলুপ্ত ঘোষণা করা হয়। ছয় প্রজাতির বনবিড়াল যার মধ্যে উল্লেখযোগ্য হল- সোনালী বিড়াল, মরমর বিড়াল, লামচিটা, চিতাবাঘ এবং বাঘ।

বাঘের পায়ের ছাপ পর্যবেক্ষণের দ্বারা বিশেষজ্ঞরা বাঘের উপস্থিতি সম্পর্কে নিশ্চিত হয়েছেন। পার্বত্য চট্টগ্রাম এলাকায় বাঘের বংশবৃদ্ধি হয় কিনা এ সম্পর্কে আমাদের কাছে পর্যাপ্ত তথ্যপ্রমাণ নেই, এমনকি পদচিহ্নগুলো অস্থায়ীভাবে তাদের আগমনের প্রমাণ কিনা এ সম্পর্কেও আমরা নিশ্চিত নই। তবে পদচিহ্নগুলো প্রমাণ করে যে, বাঘগুলো এই এলাকা তাদের আবাসস্থল কিংবা আবাসস্থলের নিকটবর্তী এলাকা হিসেবে ব্যবহার করে থাকে।

এছাড়াও আমরা নিশ্চিত করেছি- দুই প্রজাতির ভাল্লুক যার মধ্যে রয়েছে সূর্য ভাল্লুক এবং কালো ভাল্লুক; বন্য কুকুর; এশীয় হাতি; সান্দার; মায়া হরিণ; বন্য শূকর; ছয় প্রজাতির বানর যার মধ্যে উল্লেখযোগ্য রয়েছে উল্লুক এবং হনুমান; তিন প্রজাতির ধনেশ পাখি। এছাড়া সরীসৃপ ও উভচর প্রাণির মধ্যে রয়েছে আট প্রজাতির কচ্ছপ এবং কাছিম, বার্মিজ অজগর, গোলবাহার অজগর এবং কিং কোবরা এর উপস্থিতি।

সাজু রক্ষিত বনাঞ্চল'র ১৬টি গ্রামে প্রায় ১৬০০ ক্ষুদ্র নৃ-গোষ্ঠীর মানুষ বসবাস করছে। ক্ষুদ্র নৃ-গোষ্ঠীর জনসংখ্যা বৃদ্ধির সাথে সাথে বনাঞ্চল আবাসভূমিতে স্থানান্তর হওয়া, অনিয়ন্ত্রিতভাবে বনজ সম্পদ আহরন, জুম চাষ, বন্যপ্রাণি শিকার এবং অবৈধভাবে গাছ কাটা ইত্যাদি এই বনাঞ্চলের বন ও বন্যপ্রাণির জন্য প্রধান হুমকী। আমাদের প্রাথমিক নিরীক্ষা নির্দেশ করছে যে, সাজু রক্ষিত বনাঞ্চল বাংলাদেশে বন্যপ্রাণির জন্য অন্যতম গুরুত্বপূর্ণ ক্ষেত্র। যথাযথ ব্যবস্থাপনার দ্বারা সাজু রক্ষিত বনাঞ্চলে দীর্ঘমেয়াদীভাবে বাঘ এবং হাতির সংখ্যাবৃদ্ধির ক্ষেত্র হতে পারে। পর্যবেক্ষণকৃত প্রজাতির ভিতর ২৫ টি প্রজাতি আইইউসিএন'র লাল তালিকার অন্তর্ভুক্ত এর মধ্যে ২টি প্রজাতি মহাবিপন্ন, ৯টি প্রজাতি বিপন্ন ও ১৪টি প্রজাতি সংকটাপন্ন যা সাজু রক্ষিত বনাঞ্চলকে শুধু জাতীয় প্রেক্ষাপটেই নয় আন্তর্জাতিক পরিমন্ডলে একটি গুরুত্বপূর্ণ বন্যপ্রাণি সংরক্ষন ক্ষেত্র হিসেবে গুরুত্ব বহন করে।

3. BACKGROUND

The Chittagong Hill Tracts are part of a 1,800 km-long mountain range oriented from north to south in parallel ridges, incised by deep gorges from the eastern Himalayas in China, to western Myanmar. The CHT comprises 10% of the total land area of Bangladesh (Nath et al. 1998) and lies within the Indo-Burma Biodiversity Hotspot (Myers et al. 2000) with many globally threatened species (Tordoff et al. 2012). Patches of the old-growth, semi-evergreen, and bamboo forest within the CHT has been cleared for commercial teak plantations during the British colonial period. The present-day Forest Department of Bangladesh uses the same practices (Khan 2015). There are three officially protected areas within the CHT:

- 1) Pabla Khali Wildlife Sanctuary, year of establishment: 1962, Area: 42,087 ha;
- 2) Kaptai National Park, year of establishment: 1999; Area: 5464 ha;
- 3) Sangu Wildlife Sanctuary, year of establishment: 2011; Area: 2331 ha;

The 33,836 ha (83,612 acres) Sangu Reserve Forest (SRF) is located in south of Boro Modok in Thanchi Upazila of Bandarban District (Figure 1). Contained within the Sangu Reserve Forest is the Sangu Wildlife Sanctuary (SWF), which was declared by the Forest Department of Bangladesh (Gazetted on June 4, 2010), however there is no clear demarcation of its boundaries and both the wildlife sanctuaries and reserve forests lack adequate enforcement and jurisdiction. Adjacent to the SRF is the 40,661 ha (100,476 acres) Matamuhuri Reserve Forest (MRF) situated south of Babu Para in Alikadam Upazila of Bandarban District (Figure 1). The MRF has been encroached upon by Bengali and ethnic settlers since the 1980s and as a result, very relatively large patch of natural forest is not left in this area. While the more remote SRF still contains patches of primary forest due to the more recent period of degradation.

The climate of the region is tropical, with a mean annual rainfall of 2,666 mm. A dry, cool season occurs in the region during November-March, followed by a hot and sunny pre-monsoon season during April-May, and a warm, cloudy, and wet monsoon season during June-October (Khan 2015). The CHT is undoubtedly the richest biodiversity hotspot in Bangladesh. However, due to political instability and the general remoteness of this region, the CHT remains the least explored area in Bangladesh (Khan 2015). As a consequence, there has been very little biodiversity survey work done in the area and no systematic surveys have been carried out. What we know about the biodiversity of this region is primarily based on information generated from historical expeditions in earlier colonial periods. In recent years, Dr. Monirul Khan and Dr. Suprio Chakma have conducted several expeditions in the CHT. These surveys have resulted in several new species of birds, amphibians, and reptiles being recorded for the country. Despite these surveys we still know very little about the

biodiversity of the Sangu Reserve Forest. To fill this knowledge gap, our organization – The Creative Conservation Alliance (CCA) has conducted opportunistic, exploratory surveys in Sangu Reserve Forest, and adjacent areas in Matamuhuri Reserve Forest, from 2011 to 2015, primarily with the assistance of the local ethnic people. The following report contains the preliminary findings from those surveys.

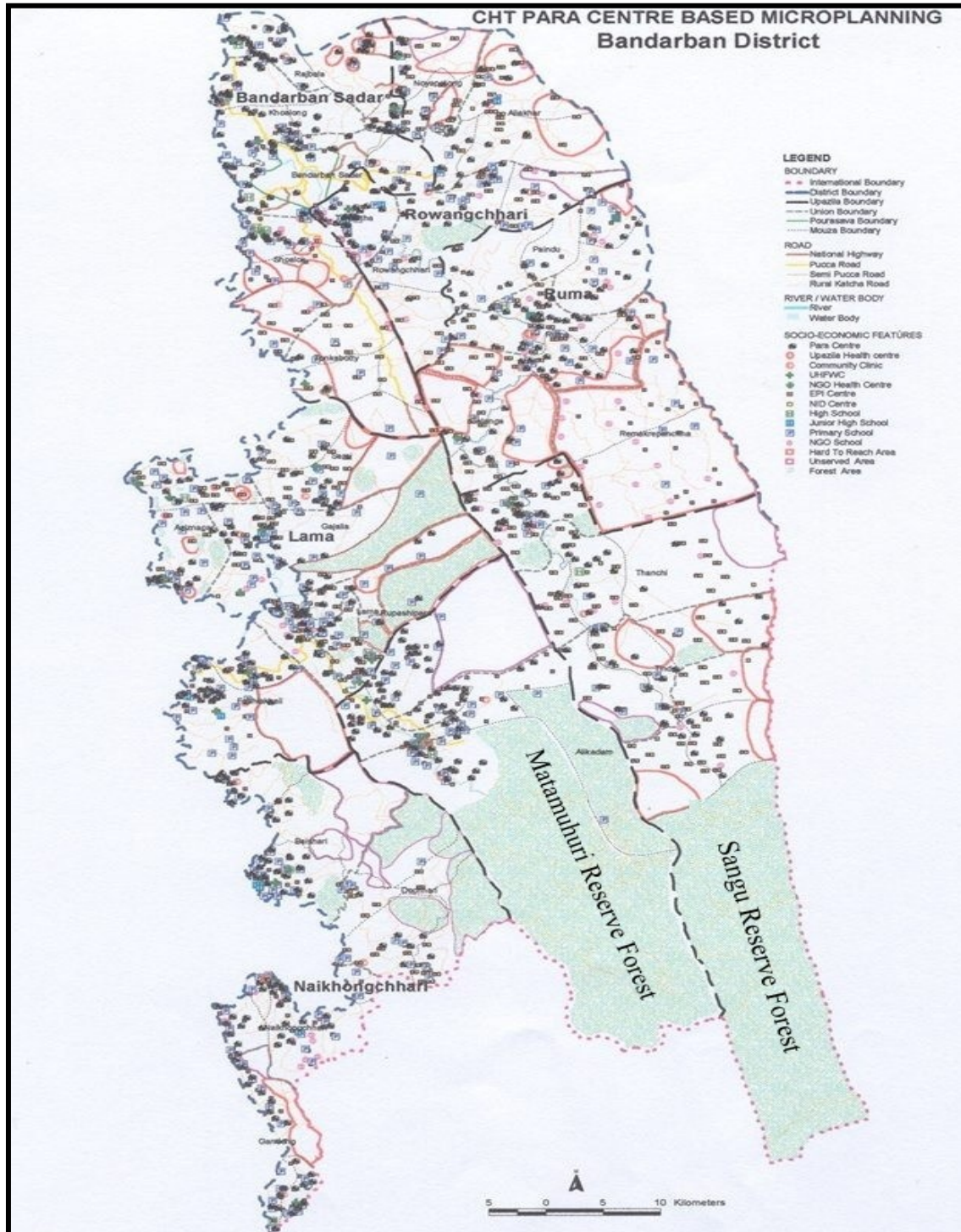


Figure 1: A map of Sangu and Matamuhuri Reserve Forest, Bandarban District

4. OBJECTIVES

1. To conduct exploratory surveys focusing on the biodiversity within the Sangu Reserve Forest and adjacent areas;
2. To gather information on traditional hunting practices of the ethnic people;
3. To identify the major threats to the biodiversity of the region;
4. To conduct a baseline socioeconomic survey of the local ethnic communities;
5. To initiate a preliminary situational analysis of the Sangu Reserve Forest through visual observation and discussions with the local communities;
6. To build rapport and gain the trust of the local communities

5. METHODOLOGY

The surveys were conducted primarily through the assistance of the local communities. Three local community members of Mro tribe were trained to operate digital cameras, camera traps, GPS, handheld weather station, and questionnaire survey techniques. The following strategies were used to collect data:

1. Visits were made in tribal villages to inspect remains of recently hunted specimens;
2. Digital point-and-shoot cameras were distributed to local community members in order to take photographs of live specimens;
3. Camera traps were distributed to previously-trained local community members in order to detect the presence of medium to large-sized mammals.

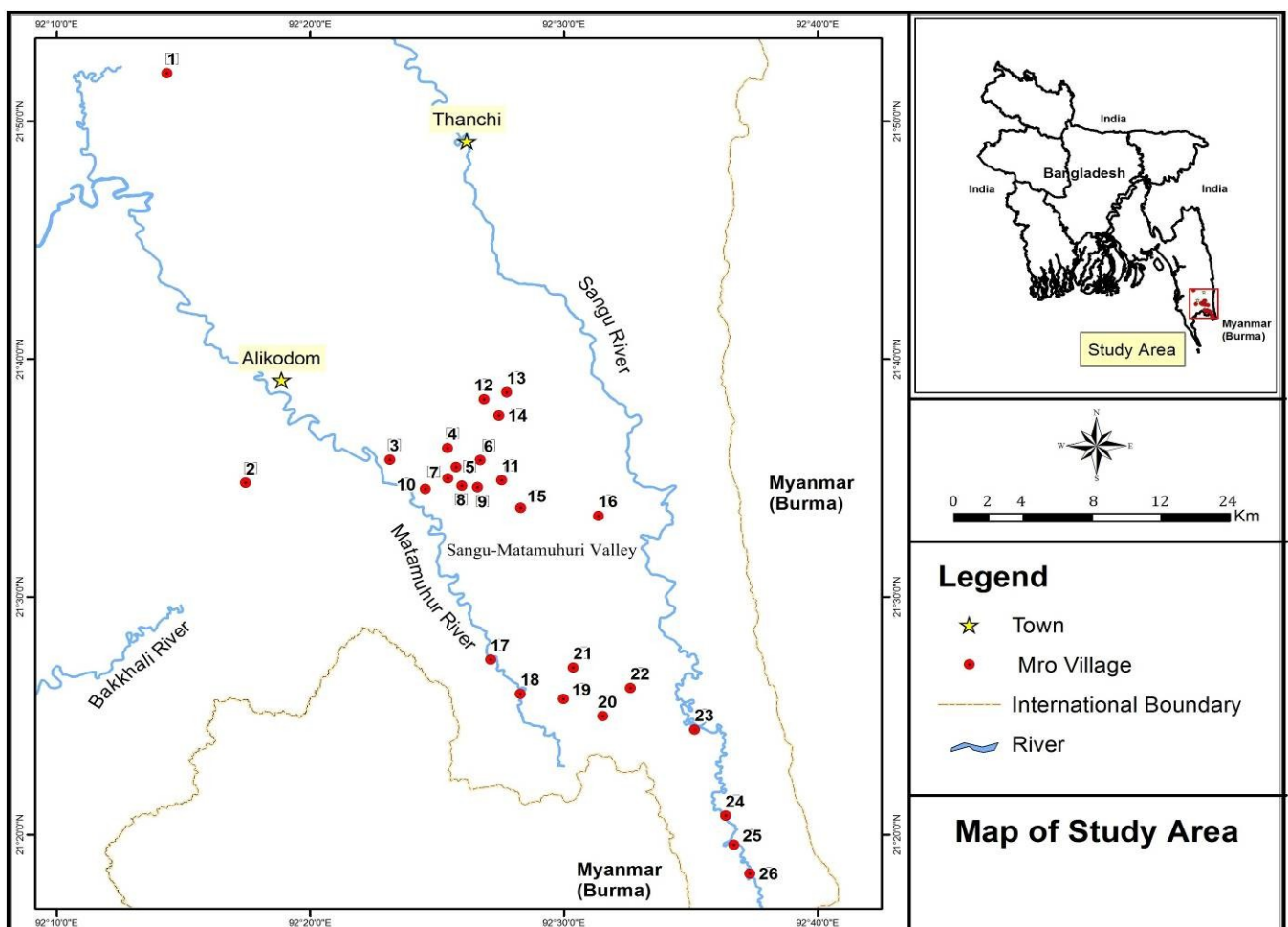


Figure 2: A map of the study area showing the Mro villages visited during the study

Data were collected between December 2011 and August 2015, from 28 of the 33 villages where the survey team has built their rapport. The surveys purposely focused on 28 of the 33 villages where we have established the strongest trust of the local people. A total of eight visits were made south of

Alikadam and Thanchi town and every visit lasted for at least 12 days. The previously-trained Mro people conducted the survey used a combination of focus group discussions, semi-directive interviews, and collaborative field work (Huntington 2000) to gather information on traditional hunting practices and quantify hunting off take. Ten camera traps were placed from June 2015 to February 2015, totaling over 700 trap/nights.

Interviews were conducted in the evening at the house of a village chief, where a representative from each individual household of the village was present. Each representative was asked to recall the number of wild animals each household had harvested in the previous year. Larger animals (> 2 kg), which are usually consumed communally, were included in the harvest inventories, and tended to have more reliable recall values (Usher and Wenzel 1987, Knapp et al. 2010). Animals such as small mammals (< 2 kg), frogs, snakes, birds, etc. were not included as it would be difficult for villagers to give accurate information. We also gathered information on the population size of the village, average years of field fallows, distance of the village from the nearest town settlements, and number of individuals who own guns and/or actively use traps to capture animals.



Figure 3: Mro parabiologists during a workshop on camera trapping in Bhawal National Park



Figure 4: Our parabiologists setting up a camera trap in remote part of SRF

In addition, the team visited each village to interview people regarding targeted species hunted and respective hunting practices. Photographs of species including mammals, reptiles, amphibians, and birds were shown to the interviewees and the corresponding species occurrence, traditional knowledge, and taboos were recorded. A list of species hunted that could be validated by evidence—whole

carcasses, skins, or body parts that the villagers had in their possession—was made, noting the hunting techniques used.

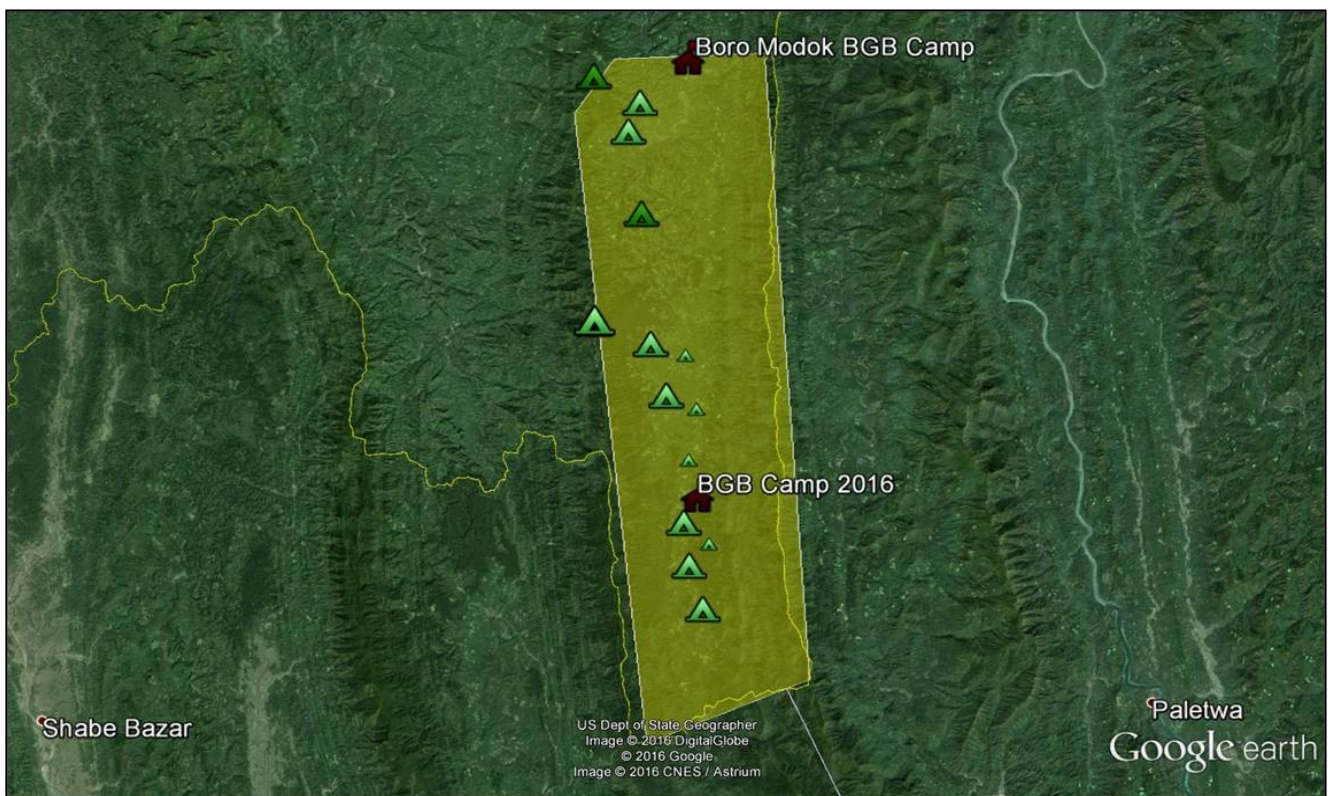


Figure 5: A satellite image showing tribal villages and BGB camps within the SRF (highlighted in yellow)

6. SURVEY RESULTS

We recorded 37 species of mammals, 46 species of reptiles, 19 species of amphibians, and 11 species of birds during our study period. Following the International Union for Conservation of Nature Red List Classification, some 3% of the species hunted were listed as Critically Endangered, 10% Endangered, 17% Vulnerable, 6% Near Threatened, 59% Least Concern, and 5% Data Deficient.

6.1. Mammals

We confirmed the presence of tiger in the SRF. This confirmation is based on a 14 cm pug mark that we have recorded from one of our study sites in February, 2016. We still do not have any data to

show whether a resident population occurs within the

CHT or if the pugmarks belong to transient individuals. In several villages, especially in the southern part of the SRF, the locals have mentioned during the interviews that



Figure 6: Tiger pugmark

they often see tigers in the area. There have been at least six different sightings of tigers in the area in the last two years. We were also told that Burmese hunters poached two tigers from the area in 2013, and at least two locals have seen mating tigers in the last two years.



Figure 7: The creek where the tiger pug marks were found

We also recorded the presence of key tiger prey species such as Sambar, wild boar, and barking deer. These species are found in both primary forest and degraded habitat. The locals mentioned that they have seen wild boar herds of over 200 individuals. Sambars are relatively rare, but do occur throughout the SRF. Barking deer and wild boar appeared to be very common in the SRF and throughout the Sangu-Matamuhuri Valley.



Figure 8: A male sambar



Figure 9: Barking deer



Figure 10: Wild boar

Apart from tigers, we have documented the presence of six other wild cat species within the SRF. We have found camera trap images and recently hunted skins of leopard (*Panthera pardus*), clouded leopard (*Neofelis nebulosa*), marbled cat (*Pardofelis marmorata*), Asiatic golden cat (*Catopuma temminckii*) and leopard cat (*Prionailurus bengalensis*). Wild cat species are opportunistically hunted by locals primarily for subsistence. Hunters from neighboring Myanmar are also reported to visit the SRF occasionally to trap for tigers and other wild cats. We did not record fishing cat (*Prionailurus viverrinus*) during our study period but they are known to occur within the SRF (S. Chakma, Pers. Comm.). The smallest of the locally occurring cat species, the jungle cat (*Felis chaus*), probably occurs closer to urban areas and human settlements.

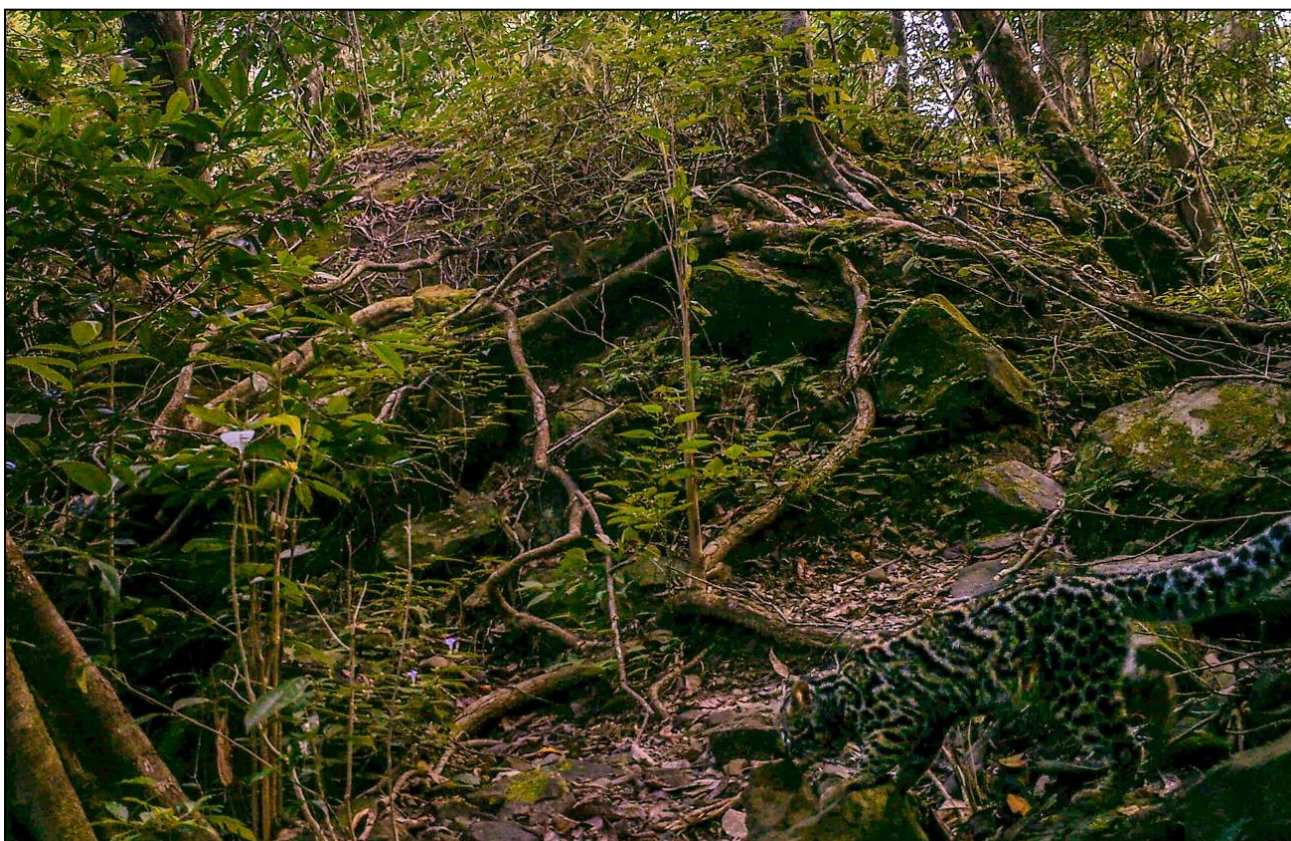


Figure 11: Marbled cat



Figure 12: Asiatic golden cat



Figure 13: Clouded leopard



Figure 14: Leopard

Among the wild canids, we have recorded the globally endangered Asiatic Wild Dog/Dhole (*Cuon alpinus*) and golden jackals (*Canis aureus*) in the SRF and adjacent areas. Dholes were found to occur throughout the SRF and the adjacent areas. We have recorded at least five different dholes in our camera traps including



Figure 15: Asiatic wild dog/Dhole

a pregnant individual. The locals mentioned that dholes are fairly common in the area, while jackals appeared to be very rare in the area and have accounted for only one recent hunting record outside of the SRF.

We also have rediscovered populations of wild gaur (*Bos gaurus*) in SRF. Gaur were declared extinct from Bangladesh according to IUCN (2000) Red List. We have recorded at least three different herds of gaur in our camera trap images during the study. The locals approximated that 60-100 gaur are found in this area.



Figure 16: Gaur

We have also recorded several resident herds of Asian elephants (*Elephas maximus*) in the SRF. According to the locals, about 38 elephants live in this area. They also mentioned there has been a sharp decline in the population of elephants; poachers from Myanmar are known to visit this area to hunt wild elephants for ivory and meat.

We recorded six species of primates in SRF, including two globally endangered species- Western hoolock gibbon (*Hoolock hoolock*) and Phayre's leaf monkey (*Trachypitecus phayrei*). The gibbon population in the SRF is probably one of the largest remaining populations in Bangladesh. Arboreal species, such as hoolock gibbon, capped langur, and Phayre's leaf monkey have been extirpated from most regions within the Bandarban; their last stronghold is in the SRF. Pig-tailed macaque (*Macaca leonina*) and Rhesus macaque (*Macaca mulatta*) are found in degraded areas adjacent to SRF as well. And among the meso-predators, we have recorded masked palm civet (*Paguma lavarta*), large Indian civet (*Viverra zibetha*), and binturong (*Arctictis binturong*) – a globally endangered mammal.



Figure 17 : Capped langur



Figure 18: Sun bear

Two species of bears, the Asiatic black bear (*Ursus thibetanus*) and sun bear (*Helarctos malaynus*), were recorded in the SRF. A previous study mentioned that resident populations of sun bear do not occur in Bangladesh (Islam et al. 2013). We have captured camera trap photos of at least three different sun bears and found remains of recently hunted specimens in three different villages. This evidence indicates that resident populations of sun bear likely do occur in Bangladesh.

Both species of bears are found in primary and degraded patches of secondary forest. The local people often hunt bears during the jhum harvest season when the bears enter the fields to feed on crops.

Among rodents, we recorded two species of porcupines- Malayan porcupine (*Hystrix brachyura*) and Asiatic brush-tailed porcupine (*Atherurus macrourus*). Both species of porcupines appeared to be fairly common throughout the area and were found in both natural and degraded habitats. Two species of flying squirrels were recorded during the study – the common giant flying squirrel (*Petaurista petaurista*) and Hodgson's giant flying squirrel (*Petaurista magnificus*). Flying squirrels are nocturnal and are seldom seen during the day.



Figure 19: A. Large Indian civet; B. Masked palm civet

The critically endangered Chinese pangolin (*Manis pentadactyla*) is recorded from the region, however, the locals mentioned that pangolins are probably extirpated or are very rare due to the targeted poaching for their scales. Locals also reported that otters are also extirpated from the area. All other recorded mammals are listed below in the Appendix.

Notes on extinct megafauna:

The Mro people claim that Banteng never occurred in this area but that wild water buffalo still exists in the area. It can be safely assumed that rhinoceros no longer exist in this part of the CHT. A 90-year-old Mro man mentioned that he encountered a rhinoceros 70 years ago in the Sangu-Matamuhiri Valley.

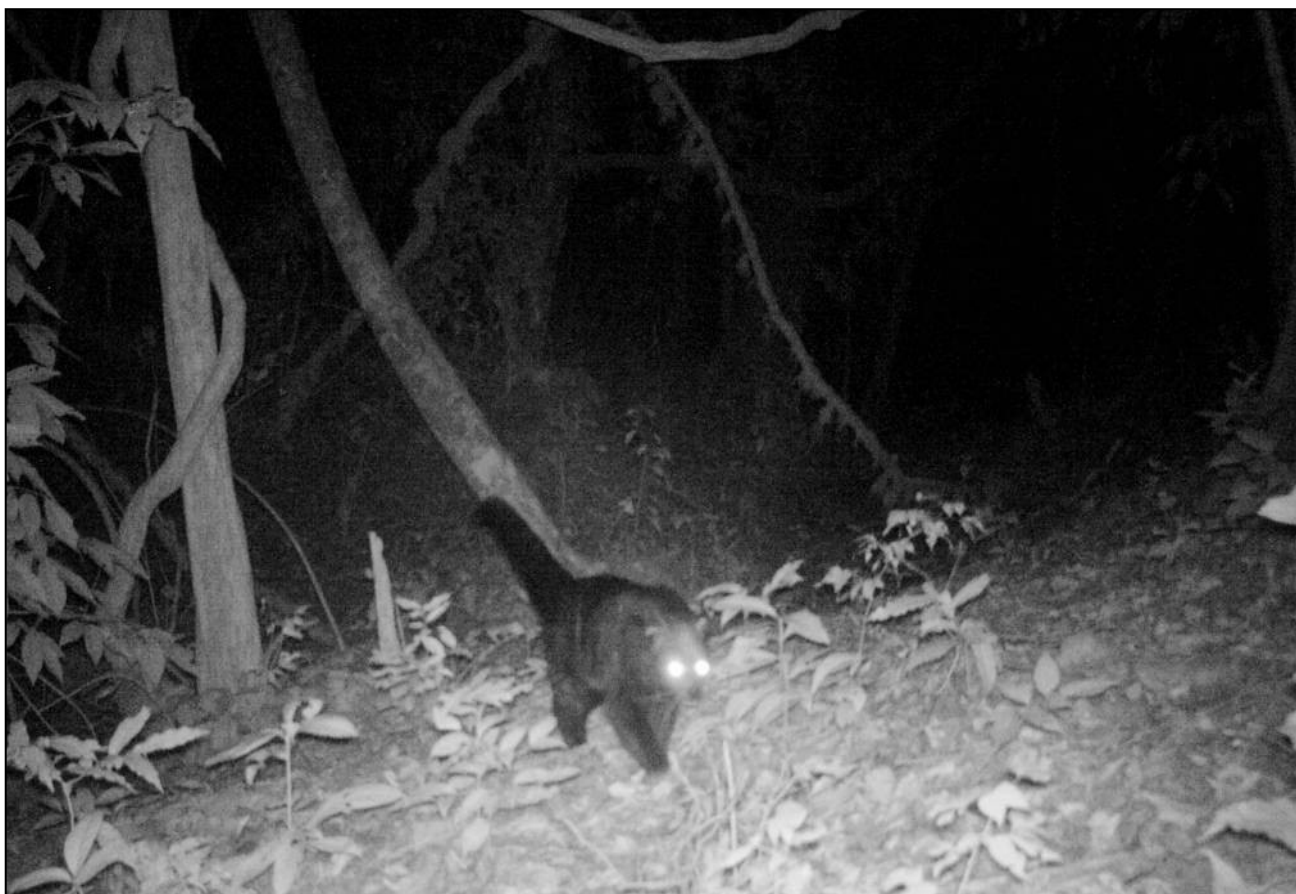


Figure 20: Binturong