**CHAPTER 1 : INTRODUCTION**

The tiger (*Panthera tigris*) evolved, along with other modern felids in the Panthera lineage, from an ancestral cat species around 10.8 million years ago. Several million years later, the tiger branched off along with the other "great roaring cats" of the modern Panthera genus. The oldest known tiger fossils, approximately 2 million years old, were found in China and on Java, Indonesia.

The tiger once ranged throughout southern and eastern Asia. Approximately 73,000 years ago, the Toba volcanic eruption on Sumatra may have resulted in a major range reduction, population bottleneck, and resultant decreased genetic variation in the survivors. The most recent common ancestor for tiger matrilineal mitochondrial DNA is estimated to have originated 72,000-108,000 years ago.

According to Nowell and Jackson (1996), the distributions of the eight sub-species are as follows -

1. Bengal tiger (*P. t. tigris*): Indian sub-continent.
2. Caspian tiger (*P. t. virgata*): Formerly in Turkey through central and west Asia (extinct).
3. Amur tiger (*P. t. altaica*): Amur river region of Russia and China, and North Korea.
4. Javan tiger (*P. t. sondaica*): Formerly in Java, Indonesia (extinct).
5. South China tiger (*P. t. amoyensis*): South-central China.
6. Bali tiger (*P. t. balica*): Formerly in Bali, Indonesia (extinct).
7. Sumatran tiger (*P. t. sumatrae*): Sumatra, Indonesia.
8. Indo-Chinese tiger (*P. t. corbetti*): continental South-east Asia.

Among the existing subspecies of tigers, Bengal tiger (*Panthera tigris tigris*) is one of the most beautiful sub-species for its royal beauty, for which it is called Royal Bengal tiger (distribution specially in Sundarban of Bangladesh & India, also few area in Nepal, Bhutan & North-west of Myanmar) (Ziaur Rahman *et al*.2006). Bengal is traditionally fixed as the typical locality for the binomen *Panthera tigris*, to which the British taxonomist Reginald Innes Pocock subordinated the Bengal tiger in 1929 under the trinomen *Panthera tigris tigris* (Pocock *et al.*1929).

The Bengal tiger’s coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant of the Bengal tiger, which is reported in the wild from time to time in Assam, Bengal, Bihar and specially from the former state of Rewa. Male Bengal tigers have an average total length of 270 to 310 cm (110 to 120 in) including the tail, while females measure 40 to 65 cm (94 to 104 in) on average ( Mazak *et al.*1981). The weight of males ranges from 180 to 258 kg, while that of the females ranges from 100 to 160 kg ( Mazak *et al.*1981). Bengal tigers have exceptionally stout teeth, and the canines are the longest among all living felids; measuring from 7.5 to 10 cm (3.0 to 3.9 in) in length (Sunquist *et al.*2002).

Tigers were once widespread in Bangladesh and even up to the 1930s they were reportedly present in 11 out of 17 districts (Mitra *et al.* 1957). However, widespread hunting and forest depletion has reduced the tiger’s range and numbers. Now the largest remaining population of tigers is in the Sundarbans, although there are also reports of vagrant tigers in the Chittagong Hill Tracts (Khan1986; Khan 2004; Reza *et al.*2004). An area of forest near Teknaf was included as a survey landscape (Sanderson *et al.*2006), but there have not been any reports of tiger presence there in recent decades (M.M.H. Khan pers. Obs.).

There are reports of tigers in the mixed evergreen hill tract valleys of Kassalong-Sajek and Sangu-Matamuhuri, which are contiguous with forests in India and Myanmar respectively (Khan 2004). Both of these sites are within an area classified as a Tiger Restoration Landscape, contiguous with the Northern Forest Complex-Namdapha-Royal Manas Global Priority Tiger Conservation Landscape (TCL) (Sanderson *et al.* 2006) (Fig. 1). Because of the unknown status of tigers in the Chittagong Hill Tracts, BTAP (Bangladesh Tiger Action Plan) will not focus on this area, apart from mentioning the need for a preliminary survey.

The area of Sundarbans has been identified as a Class 3 TCL of Global Priority (Sanderson *et al.* 2006) and at approximately 10,000 sq km, the Sundarbans of Bangladesh and India is the largest mangrove forest in the world. The BTAP addresses tiger conservation in the 6,000 sq km Bangladesh Sundarbans, referred to here after as ‘the Sundarban’. Tigers are known to be present throughout the Sundarbans, with higher concentrations found in the south and west compared to the north and east (Barlow *et al.* 2008). In Bangladesh, Tigers are also present in captive condition in different safari parks and zoos.

**Objectives:**

The objectives of this study are-

1. To see the present status of tiger in Bangladesh and
2. To find out what are the steps needed to conserve the Bengal tigers.

**CHAPTER 2 : MATERIALS AND METHODS**

**2.1 Study area:**

This study was carried out throughout the Bangladesh where tiger is found naturally and also where tigers are kept in captive. This includes- the Sundarbans (Bangladesh part) which is known as the largest mangrove forest of the world; Safari parks (Bangabandhu Sheikh Mujib Safari Park, Gazipur & Bangabandhu Sheikh Mujib Safari park, Dulhazra); Zoos (Dhaka Zoo, Chittagong zoo, Comilla Zoo, Rajshahi Zoo, Rangpur Zoo & Khulna Zoo).

**2.2 Study period:**

The study was carried out from 25th July to 15th September.

**2.3 Study population:**

The population was tigers of Bangladesh which are found in naturally and captivity.

**2.4 Data Collection:**

Data for this study were collected from three sources:

(a) Survey of literature for past records of tiger

(b) Information gathered through interviewing people from forest officials and field staff with previous or present working experience in the study area and

(c) The records on results of tiger census which is based on camera trapping method.

**2.5 Study design:**

A cross sectional study was performed.

**CHAPTER 3 : RESULTS AND DISCUSSION**

The tiger is listed as Endangered by the [IUCN Red List](http://www.catsg.org/catnews/20_cat-news-website/home/index.php?id=62). In 2009, the in situ tiger population was estimated to be around 3,200 individuals with likely fewer than 2,500 mature animals. This represents a significant decline from an estimated 100,000 living at the beginning of the 20th century. Currently, the total population size of tigers is estimated at 3,159 animals based on field data from 2009-2014 and at 4,240 individuals according to official government estimates published in 2011 in the Global Tiger Recovery Program. At present, the tiger is found only in southern, south-eastern and eastern parts of Asia. The geographic distribution of the tiger once extended across Asia from eastern Turkey to the Sea of Okhotsk, but its range has been greatly reduced in recent times. Now tigers survive only in scattered populations from India to Vietnam, and in Sumatra, China, and the Russian Far East (Nowell and Jackson 1996).

The current populations of tiger in Bangladesh are-

|  |  |
| --- | --- |
| **Place** | **Population (N)** |
| Banghabandhu Seikh Mujib Safari Park, Gazipur | 10 |
| Dulahazra Safari park, Cox’s Bazar | 4 |
| Dhaka Zoo | 7 |
| Comilla Zoo | - |
| Rajshahi Zoo | - |
| Chittagong Zoo | - |
| Rangpur Zoo | 2 |
| Khulna Zoo | 2 |
| Shundharban(Bangladesh part) | 106 |

As of 2004, population estimates in Bangladesh ranged from 200 to 419, mostly in the Sundarbans ( Khan et al.2004). This region is the only mangrove habitat in this bioregion, where tigers survive, swimming between islands in the delta to hunt prey. Bangladesh’s Forest Department is raising mangrove plantations supplying forage for spotted deer. From October 2005 to January 2007, the first camera-trap survey was conducted across six sites in the Bangladesh Sundarbans to estimate tiger population density. The average of these six sites provided an estimate of 3.7 tigers per 100 sq km. Since the Bangladesh Sundarbans is an area of 5,770 sq km, it was inferred that the total tiger population comprised approximately 200 individuals (Khan *et al.*2012). But recently it is noticed that Bangladesh Sundarban has tiger occupancy of 4832 sq. km and estimated population of 83 to 130 tigers with a mid point of 106 (Tiger status report of Bangladesh Sundarban, 2015). Though the tiger population estimate is much lower than previously believed, it still forms one of the top five largest population in the world. During this study some major threads to tigers have been identified. The tigers living in the Sundarbans are threatened by Poaching, habitat destruction, prey depletion, highly aggressive and rampant intraspecific competition, tiger-human conflict, and direct tiger loss. The most significant immediate threat to the existence of wild tiger populations is the illegal trade in poached skins and body parts between India, Nepal and China. Little is known about tiger poaching in Bangladesh, with cases only being documented from opportunistic arrests or seizures by the authorities. The main prey for tigers in the Sundarbans is spotted deer (*Axis axis*) and to a lesser extent wild boar (*Sus scrofa*) ( Khan *et al.*2004). Barking deer (*Muntiacus muntjak*) are also present in low numbers, and may fall prey to tiger (Khan 2004). Prey depletion is a serious threat to any tiger population and there are signs that it is occurring in the Sundarbans, with snaring apparently the most common practice (Jagrata Juba Shangha 2003). This technique can also kill non-target species such as tigers.

A safari park, sometimes known as a wildlife park, is a zoo- like commercial drive-in tourist attraction where visitors can drive in their own vehicles or ride in vehicles provided by the facility to observe freely roaming animals. This safari parks are also good source of tiger habitation. Here tigers get their natural living though they are kept in a boundary. This is to help researchers learn more about them. It is also a way for humans to get to see them up close and personal. The hope is that by bringing people to see them they will get interested in protecting these animals. Safari parks can also be taken in consideration for the conservation of Bengal tiger.

A zoo (short for zoological garden or zoological park) is a facility in which animals are confined within enclosures, displayed to the public, and in which they may also bred. There are many zoos in Bangladesh where tigers are kept in captive. But it is true that survivality of tiger is more in captive condition because it facilitates biodiversity and save species from extinction. Tigers are able to breed extremely well in captivity. This is one of the ways in which efforts have been made to help increase their population. Since less than half of the cubs survive in the wild there are proper techniques in place to help ensure their survival in captivity.

Fig 2 : Tigers in Bangabandhu Sheikh Mujib Safari Park,Dulhazra

Fig 1 : Tigers in the Sundarbans Bangladesh part

Fig : Tigers at Sundarban (Bangladesh Part)

**CONCLUSION**

Tiger population estimation is difficult as they are nocturnal, solitary, elusive and cryptic in nature. It becomes more difficult in Sundarban landscape where tigers do not move in definite tracks. There are several methods for determining tiger population in the world but above all, Camera Trapping has been proved to be a very effective method in the tiger range countries. Bangladesh forest Department did tiger estimation in 2004 and 2015. At present there are 106 tigers available in the Sundarban Bangadesh part and 25 tigers present in safari parks and zoos of Bangladesh. It can be said that the number of tigers are declining gradually and now it is the time to conserve the Bengal tigers and to save it from extinction.

**REFERENCES**

Barlow, A C D, Ahmed, M I U, Rahman, M M, Howlader, A C & Smith, J L D (2008) Linking monitoring and intervention for improved management of tigers in the Sundarbans of Bangladesh. Biological Conservation 141, pp-2031-2040

First Phase Tiger Status Report Of Bangladesh Sundarban, Wildlife Management And Nature Conservation Division, Khulna, October,2015

IUCN-Bangladesh 2000. Red book of threatened mammals of Bangladesh*.* IUCN, Dhaka. pp-71.

Jagrata Juba Shangha, 2003. Human-wildlife interactions in relation to the Sundarbans reserved forest of Bangladesh. Sundarbans Biodiversity Project report

Khan, M. 2012. Population and prey of the Bengal Tiger *Panthera tigris tigris* (Linnaeus,1758) (Carnivora: Felidae) in the Sundarbans, Bangladesh. Journal of Threatened Taxa. 4 (2): pp: 2370-2380

Khan, M. A. R. 1986. The status and distribution of the cats in Bangladesh. Cats of the world. National Wildlife Federation, USA. pp- 43-49.

Khan, M. M. H. 2004. Ecology and conservation of the Bengal tiger in the Sundarbans mangrove forest of Bangladesh. PhD Thesis, University of Cambridge.

Khan, M.M.H.2002. The Sundarbans. Pp. 280-289 in P.R. Gil, ed. Wilderness – earth’s last wild places*.* Cemex, Mexico City/Conservation International and Sierra Madre.

Mazak, V. 1981 *Panthera tigris* Mammalian Species (152): pp: 1-8

Mitra, S.N. 1957. Banglar shikar prani [Animals for hunting in Bengal]. Government of West Bengal, Calcutta. pp-139 (in Bengali).

Nowell, K. and Jackson, P. 1996. Wild cats: status survey and conservation action plan*.* IUCN, Gland. pp-382.

Reza, A. H. M. A., M. A. Islam, M. M. Feeroz, and A. Nishat. 2004. Bengal tiger in the Bangladesh Sundarbans. IUCN The World Conservation Union, Bangladesh Country Office, Dhaka, Bangladesh pp-141.

Sanderson, E, J. Forrest, C. Loucks, J. Ginsberg, E. Dinerstein, J. Seidensticker, P. Leimgruber, M. Songer, A. Heydlauff, T. O’Brien, G. Bryja, S. Klenzendorf, and E. Wikramanayake. 2006. Setting Priorities for the Conservation and Recovery of Wild Tigers: 2005–2015. The Technical Assessment. Washington (DC): WCS, WWF, Smithsonian, NFWF-STF.

Sunquist, M.E. and Sunquist, F.C. 2002. Wild cats of the world.University of Chicago Press, Chicago and London. pp- 345-372

WWF 199. Tigers in the wild*:* 1999 WWF species status report*.* WWF, Gland. pp- 31

Ziaur Rahman, A. & Syed Ali Ahasan; ZOOS' PRINT, Volume XXI, Number 12, December 2006 (RNI 8:3)

**Websites*:***

IUCN 2003. 2003 IUCN red list of threatened species. <www.redlist.org>.

WWF 2001. Tiger. <www.panda.org/downloads/species/tigeraccount01.doc>.

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**Biography**

I am Raihan Mostafa Chowdhury, son of Mr. Golam Mostafa Chowdhury and Mrs. Salina Mostafa. I passed Secondary School Certificate (SSC) examination in 2007 (G.P.A-5.00) and Higher Secondary Certificate (HSC) examination in 2010 (G.PA-5.00). I am a student of 16th batch and now I am an intern student under the Faculty of Veterinary Medicine ,in Chittagong Veterinary and Animal Sciences University (CVASU) . In the future I would like to work as a veterinary practitioner and do research on clinical animal diseases in Bangladesh.