



STUDY OF ECOLOGICAL BEHAVIOUR OF TIGER, CORBETT NATIONAL PARK, RAMNAGER, UTTARAKHAND.

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ABSTRACT

The tiger counting in India has few downs 1411 individuals (71.5 years of age) (Jhala et al., 2008). India is habitat to about 50% of the world's wild tiger population. Indian tiger, *P. t. tigris* is noticed in India, Bhutan, Bangladesh, Myanmar and China. It is pondered that in India 40,000 tigers were found at the initiating of the 20th century but in 1972 it was detracted to about 1880. Tiger lives in a wide variety of habitats, established by their arrangement athwart a wide range of ecological stages. In general, tigers require only some vegetation cover, a median of water and enough victims.

. Biodiversity is the alteration in a living organism, sighted within a passed habitat ecosystem or in the world as a whole. Since 1995, the Corbett Foundation has been starting a cattle compensation programme where it gives financial help for the injury and harming of cattle to the cattle owner. The Corbett Foundation is execution the compensation scheme with the tiger conservation programme of WWF-India. Ecology of tiger and cattle plunder problem on a huge scale by tigers in the buffer area of CTR has not been searched so far. This type of study is helpful for Park managers to enumerate long-term quenching strategies to lower human-tiger conflict and to start superior management techniques in CTR.

Key words: ECOLOGICAL BEHAVIOUR OF TIGER NATIONAL PARK RAMNAGER

INTRODUCTION

India is one of the world's mega-diversity countries (McNeely et al., 1990). Biodiversity is also termed like "the diversity of life in all its forms and all its levels of organization" by Hunter in 1990. The word "biodiversity" was primarily marked by E.O. Wilson to manifest entire variation of life as stenosis of biological diversity. Biodiversity is the alteration in a living organism, sighted within a passed habitat ecosystem or in the world as a whole. Biodiversity's conviction is related to species diversity and the concept of genetic diversity is used for the transformation in genes inboard an individual species. India is recognized for the good diversity because it supports by good spot and diversity in the environmental stipulation. According to Sunderlin et al., 2005, the loss of biodiversity has negatively affected the livelihoods of these peoples. India's biodiversity is passing through danger because there is the huge pressure of increasing population of human & livestock and flourish activities. Forest is also facing intense anthropogenic stress regulating in their degression particularly in Asia, South America, and

Africa due to the fast rising of human and livestock population.

The tiger (*Panthera tigris tigris*) is national animal of India, Malaysia, Bangladesh and South Korea. The tiger is one of the animals shown on the Pashupati signet of Indus Valley civilization. Tiger is praised, dreaded and regarded by humans for its beauty, grace, power, mercilessness and other natural and supernatural qualities. The tiger is one of the greatest of four big cats and it is greatly fascinating to all people in the entire world. In among the people, the tiger (*Panthera tigris tigris*) is famous by different names e.g.- Bengal tiger, Royal Bengal tiger and Indian tiger. Tiger is top carnivore animal

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Tigers are opportunistic time-server predators, however and their feed e.g.- birds, fish, rodents, reptiles, insects, amphibian to add to another mammal like primates and porcupines. Tigers are generally solitary with adults having special territories or home range. Tiger is the biggest of all surviving wild cats. The weight of tiger is near 250 kg and length is about 10ft from the tip of nose to the last of the tail. It has a magnify body, dumpy neck and impassible head with shorter muzzle include a terrible set of canine teeth. Their huge canines and big hooked claws are dispensed to clutch prey. The tiger has stripes on all over the body. The stripes posture different between individual's tigers and are also several on both sides of the body of the same individual. Male weight is 175-260 kg and female weight is 100-160 kg. The total length of the tiger is 270-310 cm for males and 240-265 cm for females in that 85-110 cm long tails recorded. Shoulders height is 90-110 cm (Pocock 1929, Sunquist 1981). Body size and morphology are several in subspecies of tigers. Tiger uses several vocal communications for many purposes.

HISTORICAL REVIEW

The Bengal tiger (*Panthera tigris*, Linnaeus 1758) is greatest between the four big cats of genus *Panthera*. A current evaluation of tiger dispensation propounds that tiger boundary has further rumbled by 41% from 1996 to 2006 (Dinerstein et al., 2007) basically due to poaching (Chundawat et al., 2010) and harm of habitat and prey. Their counting has been decreased by 96% (GTRP 2010). Exclusively 5% of wild tigers of worlds continue to live since the end century (Linkie et al., 2010, Stokes 2010). A current explication has recognized 42 tigers "source sites" demonstrating a bare 6% of their existing limit that put about 70% of the recent calculated tiger population (Walston et al., 2010). Four of the nine recognized subspecies of tiger are beforehand destructed of the five present species, *Panthera tigris tigris* find in parts of India, Bangladesh, Nepal, Bhutan, and Burma. Globally all current subspecies of tiger have downfallen in count along with the harm of their habitat (Sanderson et al., 2006).

According to Karanth 2003, by centuries the tiger, *Panthera tigris* has been deferences as an effective cultural icon and attended as a dominant umbrella species in conserving various styles of biodiversity in the Indian sub- continent. But the elaborating human population has held a grow then stress on tigers, its habitat, and prey as grasslands and forests are harmed, degraded and fragmented conducting the ungulate population to decreasing precipitously, both insufficiency and spreading (Sunquist et al., 1999). Anteriorly human deeds as logging, hunting, a gathering of non-timber forest yields, animal husbandry, agricultural spread and evolutionary projects have contrarily affected wildlife and their habitat's (Karanth & Madhusudan 2002) and there has been a tuff negative impact on the population dynamics of the tiger (Reddy et al., 2004). According to Ranganathan et al., 2008, hence conflict with humans,

MATERIAL AND METHODS

Site Selection- For this study, Corbett Tiger Reserve is selected because it is rich in flora and fauna biodiversity. The “Tiger Project” is started from here firstly. In Corbett Tiger Reserve there are sufficient tigers found for the study. Since Corbett Tiger Reserve get in beneath protected zone, a network of Wildlife Act, entrance in the forests is rigidly banned, however beneath particular situations allowance for entrance is passed for the motive of study and research. So prior to starting the work legal allowance to go the forests and to gather the data was obtained from Corbett Park Authority (Officials) was not exclusive kind sufficient to allow the permission but also read out the officials tasking in Corbett Tiger Reserve (CTR) to help the author to gather the data.

Research Design and Methods- Research design is a good way for gathering and analyzing data. For superior description, descriptive research has been utilized. It is helpful in statistical calculation, as well as there is used the quantitative method and qualitative methods. Quantitative research is helpful in organizing the experimental method of observation and statistical technique is applied to it. The data is shown in the table or numerical form like a graph,

percentage, chart etc. Normally this method is utilized in technical and social research work and help to quantify the results easily and better technical form. Quantitative method is perfect to describe a huge community or large population because if we took huge population, there will not find out the correct & fine outcomes.

According to Hyman & Tember 1978 and Babbie 1995, some qualitative research methods are group discussion, observation, informal interviews, in-depth interview methods, conservation analysis, and analysis of documentary evidence. Qualitative and quantitative methods together called mixed research method. For this study, mixed research method applied. In that interview, a method is selected for the quantitative approach as well as observation is selected for the qualitative method.

Methods of Data Collection- Data collection is an integral part of the research. In research work, there is the necessity of sample population for a gathering of data. After collecting the data, different tools are applied to gain essential information about the data. To get this information the tools are primary and secondary data.

Direct Observation- Direct observation was implemented in study zone to present the vegetation type, to concept the anthropogenic stress (transgression and resolution), to understand in common near the movement of animal and their paths, vegetation classification map is also seen in CTR.

Results

ECOLOGY AND BEHAVIOUR STUDY OF TIGER: In the Mesozoic era, about 64-200 million years ago, there was ascendancy of dinosaurs on the earth. According to Martin, 1989 about 64 million years ago, the dinosaurs gradually destructed as well as other fauna also at the end of Cretaceous and began chances for shrew-like early mammals which are either insectivorous or omnivorous. In moist tropical forests and swamps, the mammals elapsed gruesome radiations and filled the niche left void, few becoming huge herbivores, few omnivores and another carnivore (Macdonald 1992). Miacids, early carnivores effloresced on the earth in the period between 60 and 55 million years ago.

All the recent members of the order “Carnivora” are the scions of miacids. According to Martin 1989, carnivores can be splitted into four ecomorphs such as that civet-like, cat-like, mustelid like and dog like. The cat-like was effective in the old world and the dog like in the new world. Cat like carnivores usually stalks or lurking place victim and murder victim by cutting the back of the neck that was completed by the learned behaviour of throat champ. The first true cat was *Pseudaelurus*, which developed by 20 million years ago, and was scimitar-toothed felid spreading from a pet cat to the figure of a miniature Jaguar. These carnivores were moderate-sized ambushers of little vertebrates accommodated to chase fields in the impendence of trees. The members of family Felidae (true-cats) are unique hunters and these are clearly carnivores. High-domed skulls and short snouts are the specialties of true cats which give

grip for muscles that strength a fatal bite. Cats have spiked.

The evolution of tiger has been estimated from fossil evidence and modern molecular genetics technologies (Hemmer 1967, Kitchener 1999, Kitchener and Dugmore, 2000). The tiger (*Panthera tigris*) pertains to a cluster of cat species evoked Pantherines (Hemmer, 1966). Cat of genus 'Panthera' perhaps developed within last five million years or so (Hemmer 1976, Collier & O'Brien 1985, Wayne et. al., 1989). Molecular phylogenies endorse the near kinship among the members of genus Panthera. The tiger pertains to the family Felidae and the genus Panthera, inside which dividing of tiger line has taken space even before Lion (*Panthera leo*), Leopard (*Panthera pardus*) and Jaguar (*Panthera onca*) and were widely dispensed over China and Southeast Asia even before two million years ago (Hemmer 1987, Kitchener 1999, Karnath 2003).

The alteration of climate that shaped elaboration of tiger border athwart Asia during Pleistocene and Holocene firstly served through alters in connectivity of land- bridges and landscapes, which in turn were driven by alters in sea level and vegetation patterns. Tigers take place in cold temperate zones forests of northeastern Asia as well as in the hot, humid, wet or arid forests ateriorly south. In the Indian subcontinent, they are obtained in Tropical Dry and Moist Deciduous forests, Evergreen and Mangrove forests, Riparian grassland forests of Terai and in mixed subtropical forests of Himalayan foothills. Tiger had settled the zone from Northwest India (Heptner & Sludskii 1992) or a path from Northeast Asia via Central Asia (Hemmer 1987, Mazak 1981).

Global Distribution and Status

In ancient period, tigers were discovered all the way from the temperate zone forests of the Russian Far East to the tropical forests of the southwestern India (Karanth 2003). In the current, the tiger is searched exclusively in southern, south-eastern and eastern parts of Asia. Geographic distribution of tigers was once expanded athwart Asia from eastern Turkey to the sea of Okhotsk (Map 3). Its distribution limit expanded athwart 30 current countries, straining over 70 degree of latitude and 100 degrees of longitude on the earth surface (Karanth 2001). But presently tigers survive exclusively in separated dispersed population from India to Vietnam and in Sumatra, China and the Russian Far East (Nowell and Jackson 1996). These tiger survive in 76 Tiger Conservation Units (TCUs) with various efficiency for the long-term conservation of tiger.

Jackson (1996) are provided in such a manner (Table 6 and Map 4). The tiger is delicately endangered three of the eight professedly subspecies are extinct and fourth is near to senility in the wild (Nowell and Jackson 1996).

In all over the limit, the latest tiger viewing has been endorsed in 158 guarded zones except North Korea. These covered zone range in size from Xiaolingzhi at 21 km² in China to Kerinci Seblat in Indonesia at 14,846 km². Many of these covered zones are separated forest patches, where the tiger has a small opportunity for long-term survival (WWF 1999). Location of eight traditional subspecies of tiger is given in Table 7 as has assembled by Peter Jackson, WWF and IUCN from various mediums.

Distribution and status of tiger species location wise.

S. No.	Local Name	Species Name	Distribution Location	Status of species
1.	Bengal tiger	<i>Panthera tigris tigris</i>	Indian Sub-Continent	Endangered
2.	Caspian tiger	<i>Panthera tigris virgata</i>	Eastern Europe/ West Asia, Central Asia	Extinct
3.	Amur tiger	<i>Panthera tigris altaica</i>	Russia, China and North Korea	Endangered
4.	Javan tiger	<i>Panthera tigris sondaica</i>	Java, Indonesia	Extinct
5.	South China tiger	<i>Panthera tigris amoyensis</i>	South-Central China	Endangered
6.	Bali tiger	<i>Panthera tigris balica</i>	Bali, Indonesia	Extinct
7.	Sumatran tiger	<i>Panthera tigris sumatrae</i>	Sumatra, Indonesia	Endangered
8.	Indochinese tiger	<i>Panthera tigris corbetti</i>	South – East Asia	Endangered

Status of the tiger *Panthera tigris* (Linnaeus 1758) in 1999 (Modified from Peter Jackson).

Tiger subspecies	Minimum	Maximum	Source
Indian (Bengal) tiger <i>P. t. tigris</i> (Linnaeus 1758)	3,176	4,556	-
Bangladesh	362	362	Jalil 1998
*Bhutan	67 (adults)	81 (adults)	McDougal & Tshering
China	30	35	Wei 1998
India	2,500	3,750	Project Tiger 1993
Myanmar, western	124	231	Uga & Thang 1998
*Nepal	93 (adults)	97 (adults)	Govt. of the
Caspian (Turan/Hyrcanian) tiger <i>P. t. virgata</i> (Illiger 1815)	Extinct 1970s	-	Kingdom of Nepal 1997
Formerly Afghanistan, Iran, Chinese and Russian Turkestan, Turkey			-
Amur (Siberian/Ussuri/Manchurian/Northeast China) tiger	360	406	-
<i>P. t. altaica</i> (Temminck 1844)			
China	30	35	Wei 1998
Korea (North)	<10	<10	P. U-II 1994 (in litt.)
*Russia	330 (adults)	371 (adults)	Matyushkin et al. 1996

Tiger subspecies	Minimum	Maximum	Source
Javan tiger <i>P. t. sondaica</i> (Temminck 1844)	<i>Extinct 1980s</i>	-	-
Formerly Java, Indonesia			
South China (Amoy) tiger <i>P. t. amoyensis</i> (Hilzheimer 1905)	20	30	Wei 1998
China			
Bali tiger <i>P. t. balica</i> (Schwarz 1912)	Extinct 1940s	-	-
Formerly Bali, Indonesia			
Sumatran tiger <i>P. t. sumatrae</i> (Pocock 1929)	400	500	Wartaputra et al., 1994
Sumatra, Indonesia			
Indo- Chinese tiger <i>P. t. corbetti</i> (Mazak 1968)	1,227	1,785	-
Cambodia	150	300	Samith et al., 1995
China	30	40	Wei 1998
Laos	Present	-	-
Malaysia	491	510	Abdul 1998
Myanmar eastern	106	234	Uga & Thang 1998
Thailand	250	501	Rabinowitz 1993, Govt. of the Kingdom of Thailand 1998
Vietnam	200	200	Bao et al., 1995
Totals	5,183	7,277	-
Rounded totals	5,000	7,000	-

Source: Table compiled by Peter Jackson, Chairman, Cat Specialist Group, The World Conservation Union (IUCN), WWF 1999.

*Figures for Bhutan, Nepal and Russia are for adult tigers counted. Tiger specialists consider such figures more realistic because many cubs are unlikely to survive to maturity.

Feeding

Tigers dissipate 20-35 kg of meat in their first diet and unless unsettled remain nearby to save their slaughters from other tigers and scavengers. Tigers eat their victims till 1-7 days and depend upon the size. The tiger eats about two-thirds of the slaughters adding little fairly rotten meat. The escaping one-third, including of huge bones, rumen contents and intestines are commonly detached (Karanth & Sunquist 2000). When unfed, tiger's slaughters made by

another tiger or by another predator species (Karanth 2003). Although copious talented hunters, tigers are frequently unsuccessful (Nowell and Jackson 1996). They do not commonly chase the prey after a failing invasion. According to Schaller (1967) noticed 12 whole stalks, of which exclusive one was successful, and he propounded that obviously exclusive one attack in 20 attacks flourished. Tiger predation does not commonly seem to limit victim counts over the long-term (Sunquist and Sunquist 2002). Mostly tigers begin feeding on the back part of victim animals but cubs occasionally begin feeding on the ahead and another body portion of the prey.

In the wild tigers mainly feed on huge and moderate sized animals, choosing natal ungulates weighing at least 90 kg. Sambar, Deer, Chital, Barasingha, Wild boar, Gaur, Nilgai, Water buffalo and Domestic buffalo, in climbing down the sequence of priority, are the tiger's favoured victim Tamil Nadu in India, while Sambar and Gaur are the selected victim and compose the major diet of tigers in another part of India. Tigers are opportunistic as various predators and may feed smaller victim such as monkey, peafowl and other ground-based birds, hares, porcupines and fish.

Normally tigers do not feed the fully mature adult Asian elephants but events have been recorded. Mostly it is more permeable little calves that are taken. Tigers have been recorded assaulting and slaughtering elephants ridden by humans during tiger kills in the 19th century, when in near impudence to humans, tigers will also often prey on such pet livestock as cattle, goat, horses and donkeys. The tigers who are senile or injured, incapable to grasp wild victim, can become man-eaters, this stance has recurred repeatedly across India. After murdering their victim, tigers often stretch it to hide it in vegetation guard, ordinarily drawing it by catching with their mouth at the site of slaughtering bite. An adult tiger can live hunger till two weeks then gorge on 34 kg of meat at one time. In immurement, adult tigers are eating 3 to 6 kg of flesh a day.

Life Expectancy

Normally tigers live 8 to 10 years in the wild, even though they can access ages into their 20's (Schaller 1967, Sankhala 1978 a). In immurement, tigers have been known to exist up to 26 years old (Jones 1977), even though a typical prisoner lifespan is 16 to 18 years. It is calculated that most adult tigers die as a consequence of human harassment and killing, even though their huge victim can infrequently hurt them fatally. Young tigers combat various hazards when they spread from their mother's home border adding being invasion and eaten by male tigers. Some scientists calculate about 50% survival rate of young tigers.

SUMMARY

Ecology and Behaviors Study of Tiger

On the basis of geographic isolation and morphological distinctions traditionally eight subspecies of Bengal tiger. The tiger counting in India has few downs 1411 individuals (71.5 years of age) (Jhala et al., 2008). India is habitat to about 50% of the world's wild tiger population. Indian tiger, *P. t. tigris* is noticed in India, Bhutan, Bangladesh, Myanmar and China. It is pondered that in India 40,000 tigers were found at the initiating of the 20th century but in 1972 it was detracted to about 1880. Tiger lives in a wide variety of habitats, established by their arrangement athwart a wide range of ecological stages. In general, tigers require only some vegetation cover, a median of water and enough victims.

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magnify body, dumpy neck and impassible head with shorter muzzle include a terrible set of canine teeth. Their huge canines and big hooked claws are dispensed to clutch prey. The tiger has stripes on all over the body. The stripes posture different between individual's tigers and are also several on both sides of the body of the same individual. Male weight is 175-260 kg and female weight is 100-160 kg. The total length of the tiger is 270-310 cm for males and 240-265 cm for females in that 85-110 cm long tail is recorded. Shoulders height is 90-110 cm (Pocock 1929, Sunquist 1981). Body size and morphology are several in subspecies of tigers. Tiger uses several vocal communications for many purposes. Tiger maintains their social organization with such a communication modus with relatively some aggressive fights that can have fatal outcomes for the animals mingled. Tiger appears to reach sexual maturity at about 3-6 years of age. The common period of oestrous is 5-7 days. After mating tigress gives the birth to cubs. Before giving the birth the tigress chooses a deserted hideaway to keep her young and rabidly securer from other predators and tigers

Tiger cub's mortality rate is about 5% in starting two years. Some other predators kill tiger cubs due to struggle and monstrosity of mother tiger. The usual reasons of cub mortality are starvation, freezing and accidents. A tigress may hold a territory of 20 km² while the territories of males are much greater, girdling 60-100 km². Male tigers are normally much intolerant of another male within their territories than females are of another female. Normally tigers like to eat victim which are captured by themselves, but are not above eating putrid in times of lacks and may even corsair victim from another huge carnivore. Tigers normally slaughter the victim from the sides or rear rapsit down by the effect of its momentum and by capturing with its forelimb. Tigers eat 20-35 kg of meat in their first diet and unless disturbed remain nigh to save them slaughters from other tigers and scavengers. Tigers eat their victims till 1-7 days and succumb upon the size. The tiger eats almost 2/3 of the slaughters adding little justly putrid meat. Wild tigers that have to keep no prior communication with human active avoid interplays with a human. Tiger attacks on human are commonly in the daytime when people are working outdoors and are not keeping watch according to Corbett sooner writings set out to extensive man-eating tigers as cowardly because of their wait devices.

After the arrival of British in India, tiger's survival became in danger with the first threat. Tigers have been killed on a huge scale so their popular striped skin could be gathered. Most of the tiger's border is being kibbled dueto the population explosion. Despite all efforts occasion of long-term survival of their species detract the enemy stress of different problem e.g.- degradation, destruction, habitat, fragmentation and harm illegal poaching of tigers and their victim species, detracting protection effort, genetic inbreeding, and natural calamities. There is a huge stress on tiger habitats due to the growth of human and livestock population and it allocates threat for tiger entity. To clean the forested zones for agriculture, industrial development and breach on forestland straightly cause the loss of tiger habitat.

.According to WWF 1999, poaching of tigers for the orient medicine trade is broadly comprehended as the chief reason factor discharging the recent decaying of the tiger. In long-term, tigers are in big hazard of extinction from the poaching. The pecuniary reasons the death of a tiger in various parts of its border by illegal hunting. Small and separated tiger populations are accessible to natural calamities as forest fires, hurricanes, flood and epidemic sickness. Along with diverse man-made puzzles, natural calamities also keep the negative impact on tiger populations. According to WWF 1999, hurricanes and monsoon floods eternally kill few tigers in the Indian subcontinent.

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