DEPLETION OF FAUNAL BIODIVERSITY FROM JHARKHAND STATE

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ABSTRACT: The newly formed state Jharkhand is rich in biodiversity because of its diverse physiographic and climatic conditions. The state conform tropical dry deciduous, moist deciduous, dry peninsular and dry mixed deciduous forest. The total forest cover of the state is approximately 23605.5 sq. km. (reserved forest 4,387.20 sq. km., protected forest 19,184.78 sq. km. and unclassified forest 33.49 sq. km.), which offers excellent cover for its inhabitants including 39 mammalian species, 12 reptilian species (8 snake species and 4 lizard species) and about 15 insect species. The biodiversity is under serious threat from various factors like industrialization, urbanization, agricultural activities, stone quarrying, unrestricted grazing by free range cattle, mining activities, construction of railway tracks, roads, dams and other developmental activities. In the present study, survey of mammalian diversity was carried out and has been found that it is continuously declining indicating the need of conservation.

Keywords: Jharkhand, Dalma, animal diversity, biodiversity depletion.

INTRODUCTION:

The term biodiversity was coined by Walter and Rosen in 1985, which is the abbreviated word of Biological Diversity (Mandal and Ray, 2006). The biosphere constitutes a vital life support system for man and its existence of human race. The newly formed state Jharkhand is very rich in biodiversity due to its diverse physiographic and climatic conditions. The Jharkhand state is situated between 21°58'10" to 25°18' N Latitude and 83°22' to 87°57' E Longitude. Jharkhand forms part of the Chotanagpur plateau province of the Deccan Peninsula Biogeographic Zone. As the name of the state suggests, it is having a good covering of forests. The forest of the state includes tropical dry deciduous, moist deciduous, dry peninsular and dry mixed deciduous forest. The forests form catchments of the three main rivers - Koel, Damodar and Subernekha. The forest covering is 23605.47 sq.km, which is 29.6% of the total geographical area of the state, i.e. 79714 sq.km. The landscape of the state has wild, semi-wild and cultivated habitats.

The state is also very rich in natural resources. Nearly 50 % of the country's minerals are located in the state - iron and coal being important among the main, but the mineral map and the forests overlap for the major minerals (Anonymous 2009). The state possesses a wide variety of wildlife. The floristic diversity includes 97 species of trees, 46 varieties of shrubs and herbs, 25 types of climbers, parasites and orchids and 17 types of grasses. The major trees of the state are *Shorea robusta* (Sal), *Delbergia sissioo* (Sesum), *Madhuca indica* (Mahua), *Acasia nilotica* (babool), *Azadirachta indica* (Neem), *Terminalia* arjuna (Arjun), *bombax ceiba* (Semul) and Butea *monosperma* (Palas). 39 species of mammals, 170 avian species, 12 reptilian species including 8 snake species and 4 lizard species and about 21 insect species were reported from the forest of Jharkhand. The major mammalian fauna include tiger, leopard, sloth bear, elephant, wild boar, Indian bison, hyena, wild monkey and langur, deer and antelopes, wolf, etc. (Jharenvis 2008).

MATERIALS AND METHODS:

For the present investigation, a survey was conducted in May - June 2010 by the authors with the help of Department of Forest of Jharkhand and the data were collected. The study area was divided into seven zones, *viz.* Udhuwa lake wildlife sanctuary (WLS), Topchanchi wildlife sanctuary, Koderma wildlife sanctuary, Hazaribagh wildlife sanctuary, Lawalong wildlife sanctuary, Simdega forest and Dalma wildlife sanctuary. The observation were made through the watch towers and data collected by actual observation as well as by gathering information from the local tribes and villagers by showing photographs of animals. The collected data were analysed and compared to the previous data provided by the officials.

RESULTS AND DISCUSSIONS :

The survey revealed a total 35 mammalian species from the study areas. The details of mammalian diversity listed in table 1. Data provided by forest officials were listed in table 2. Graph 1 represents varied mammalian diversity in the last decade.

Table 2: Data sheet provided by forest office:

Year	2000	2003	2005	2008	2010
Mammalian Sps.	45	41	37	39	**35***
Avian Sps.	205	201	165	170	**168***
Reptilian Sps.	15	14	14	12	**11***
Invertebrate Sps.	15	16	15	21	**23***

*Actually collected data.
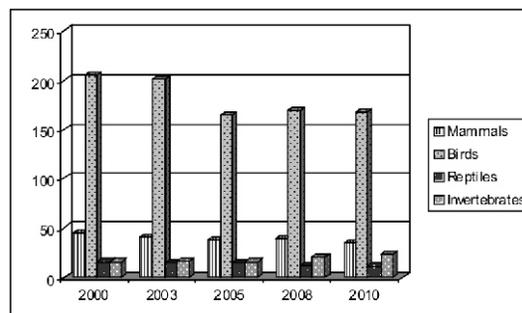
Graph 1: Graph showing alteration in species diversity of major animal groups.

Table 1: Data collected from seven study areas.

Mammalian species	Scientific name	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7
Four-horned Antelope	*Tetraceros quadricornis*	+	+	+	-	-	+	+
Fulvous Fruit Bat	*Rousettus leschenaulti*	+	+	-	+	-	+	+
Indian Flying Fox	*Pteropus giganteus*	+	+	+	+	+	-	+
Short-nosed Fruit Bat	*Cynopterus sphinx*	+	+	+	+	+	+	+
Sloth Bear	*Melursus ursinus*	+	+	-	+	+	-	+
Indian Bison or Gaur	*Bos gaurus*	+	+	+	+	-	+	+
Indian Wild Boar	*Sus scrofa*	+	+	+	+	+	+	+
Jungle Cat	*Felis chaus*	+	-	+	+	+	+	+
Common Palm Civet	*Paradoxurus + hermaphroditus*		+	-	+	+	+	+
Small Indian Civet	*Viverricula indica*	-	-	-	+	-	-	+
Barking Deer or Muntjac	*Muntiacus muntjak*	+	+	+	+	+	-	+
Mouse Deer or Indian Chevrotain	*Tragulus meminna*	-	+	-	+	+	-	+
Spotted Deer or Chital	*Axis axis*	+	+	+	+	+	+	+
Indian Wild Dog	*Cuon alpinus*	+	+	+	+	+	+	+
Elephant	*Elephas maximus*	+	+	+	+	+	+	+
Indian Fox	*Vulpes bengalensis*	+	+	+	+	+	+	+
Indian Hare	*Lepus nigricollis*	+	+	+	+	+	+	+
Striped Hyena	*Hyaena hyaena*	+	+	+	+	+	-	+
Jackal	*Canis aureus*	+	+	+	+	+	+	+
Common Langur	*Presbytis entellus*	+	+	+	+	+	+	+
Leopard or Panther	*Panthera pardus*	+	+	-	+	+	-	+
Rhesus Macaque	*Macaca mulatta*	+	+	+	+	+	+	+
Common Mangoose	*Herpestes edwardsi*	+	+	+	+	+	+	+
Indian Field Mouse	*Mus booduga*	+	+	+	+	+	+	+
Nilgai or Blue Bull	*Boselaphus tragocamelus*	+	+	+	+	+	+	+
Indian Pangolin	*Manis crassicaudata*	-	-	-	+	+	+	+
Indian Porcupine	*Hystrix indica*	+	+	+	+	+	+	+
Bandicoot Rat	*Bandicota indica*	+	+	-	+	-	+	+
Indian Bush Rat	*Golunda ellioti*	+	+	+	+	+	+	+
Sambhar	*Cervus unicolor*	+	+	+	+	-	+	+
Grey Musk Shrew	*Suncus murinus*	+	-	-	+	-	+	+
Indian Giant Squirrel	*Ratufa indica*	+	+	+	+	+	+	+
Three-striped Palm Squirrel	*Funambulus palmarum*	+	+	-	+	-	+	+
Tiger	*Panthera tigris*	+	-	-	+	-	-	+
Wolf	*Canis lupus*	+	+	+	+	+	+	+

From the above data, it is obvious that the species diversity of the state is continuously declining. The mammalian and avian fauna is declined gradually up to 2010, with a slight increase in 2008, might be due to conservation strategies, undertaken by the state government. As far the reptilian diversity is concerned, it has declined continuously. The insect diversity has shown a trend of increase.

Biodiversity of the state is under constant pressure due to **unsustainable harvests of living resources, habitat destruction and fragmentation, impacts of pollutants, and competition with colonizing, often exotic, invasive species.** Unsustainable harvests of natural resources have been a key factor for degradation of biodiversity. Vegetation in the forest areas have been under constant threat because of the unsustainable exploitation in the form of illicit felling, firewood and fodder collection etc. Habitat destruction and fragmentation has plagued some of the major ecosystems in the state. The wild animals are also under severe threat due to habitat destruction, poaching as well as ethnic customs of the local tribes. The biodiversity is also having threat from various other factors like industrialization, urbanization, agricultural activities, stone quarrying, unrestricted grazing by free range cattle, mining activities, construction of railway tracks, roads, dams and other developmental activities (Kate *et. al.* 2004). Recently, some new lease areas for iron ore extraction and mining inside sal forest tracts have been proposed and marked for private companies. As such these forest tracts are now threatened with mining and so is their biodiversity (Singh 2010).

Some of the reported threatened wildlife species of Jharkhand are Asiatic elephant *Elephas maximus* (Endangered; Choudhury *et. al.* 2008); sloth bear *Melursus ursinus* (Vulnerable; Garsheliset *et. al.* 2008) and Indian giant squirrel *Ratufa indica* (Least Concern; Rajamani *et. al.* 2009). Races of two species of birds, green-billed malkoha *Phaenicophaeus tristis tristis,* and pin-striped tit babbler *Macronous gularis rubicapilla* recorded here are isolated populations lying at the southern most edge of their distribution range in central-west India. Prominent amongst the reptiles was the Indian chameleon *Chamaeleo zeylanicus* which is listed in Schedule II of the Indian Wildlife (Protection) Act 1972 .

Understanding the biodiversity profile of the area can provide data for better mining practices, mitigation plans, and suggesting biodiversity offsets for the conservation of threatened biodiversity. Habitat loss not only precipitates species extinctions, it also represents a loss of biodiversity in its own right. The dramatic loss of species and ecosystem obscure equally large and important threats to genetic diversity. Loss of genetic diversity could imperil agriculture (Verma and Kumar 2008). How much the genetic base has already eroded is hard to say, but since the 1950s the spread of modern "Green Revolution" varieties of corn, wheat, rice and other crops has rapidly squeezed out native landraces (Sharma *et. al.* 2008). The present survey suggests that there is a serious need of wildlife conservation in the state.

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