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Original Research

Snakes of the Bhopal district, Madhya Pradesh, India with special reference to road mortality

Authors:
Amit Manhas[1], Rajni Raina[2] and Ashwani Wanganeo[1]

Institution:
1. Department of Environmental Sciences and Limnology, Barkatullah University, Bhopal.

2. Department of Zoology Govt. science and Commerce College (Benazir) Bhopal.

ABSTRACT:

A checklist of snakes observed in the Bhopal district of Madhya Pradesh from March 2013 to September 2015 is documented here. Seventeen species of the snakes belonging to five families were recorded during the current study. All species of snakes were observed, photographed and released back to secure areas away from the human daily interference. In addition, road kills of snakes were also recorded along the forest trails and in urban areas. Out of all the species of snakes *Xenochrophis piscator* and *Ptyas mucosa* were found to be the most common snake followed by *Amphiesma stolata and Oligodon arnensis* .

Keywords:
Snakes of Bhopal, Checklist of Snakes, Road Kills, Snakes

Corresponding author:
Amit Manhas

Email Id:
amitmanhas1986@gmail.com

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INTRODUCTION

India covers approximately 10 % of the total snake species found in the world, adding up 279 species to the common count. (Aengals *et al*., 2012). They inhibit from seas to deserts, swamps, lakes and even the outer Himalayas; one can find snakes in almost all the habitat types of India. In India the snakes range from Worm Snake (*Ramphotyphlops braminus)* which is about 10 cm in length to the King Cobra (*Ophiophagus hannah*), which grows upto six meters. Chandra and Gajbe (2005) reported 76 species of reptiles from Madhya Pradesh whereas 30 species of snakes were documented from Malwa region of Madhya Pradesh by Ingle (2002). Manhas *et al.* (2015) reported nine species of snakes from Barkatullah University, Bhopal. Snakes were mostly killed in fear by humans because of unawareness regarding them as they are natural predator for some pest like rats which give a lot of damage to crops and other stored materials in rural as well as urban areas. It is in this backdrop that the present study was carried out with the aim of providing a comprehensive checklist and present IUCN status of the snakes of Bhopal.

Study area

The present study was carried out in Bhopal Division of Madhya Pradesh state, India. The geographical location of Bhopal district is within the coordinates latitude 23° 14' 01"N and longitude 77° 23' 36"E (Fig.1). The city of Bhopal has irregular elevation and small hills within its restrictions. The climate here is humid subtropical with hot summer and a humid monsoon season. Here summers start in the late March and go on till mid-June, the average temperature is around 30°C (86°F), with the peak of summer in May, when it regularly exceed 40°C (104°F) while monsoon starts in late June and ends in late September. The average temperature is around 25°C (77°F) and the humidity is quite high.

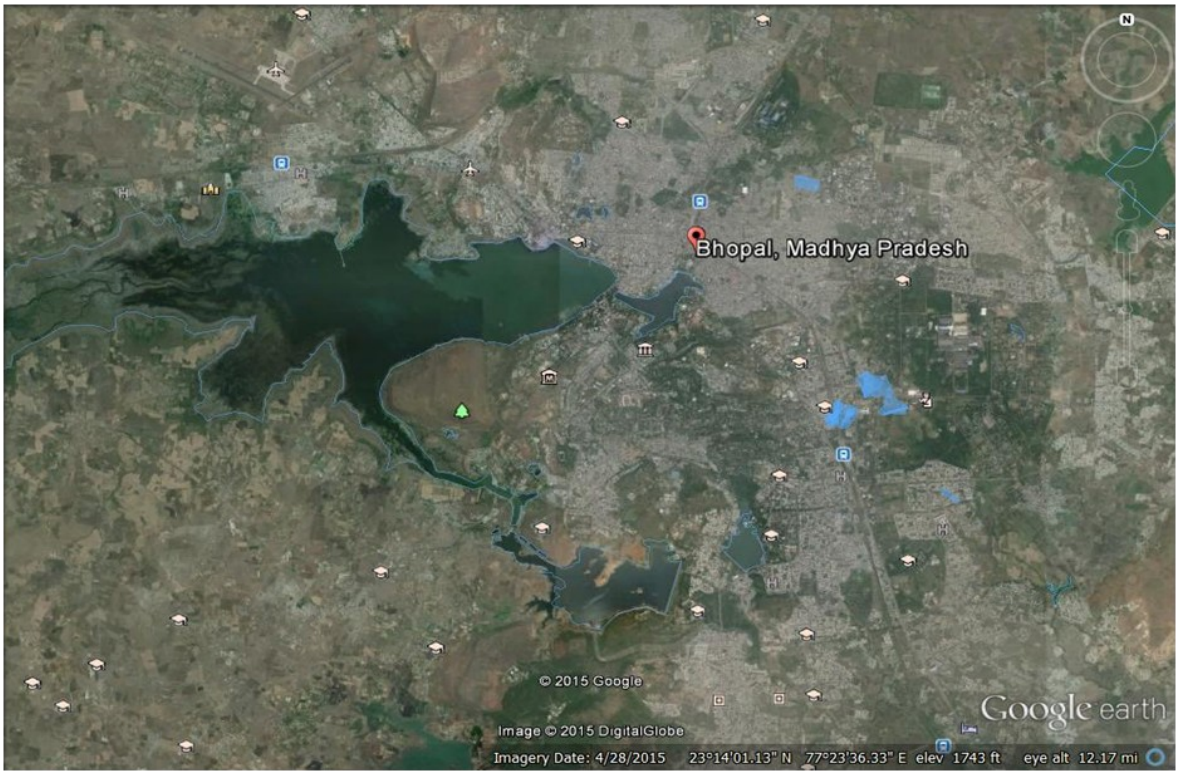

Figure 1. Satellite imaginary of Bhopal (Source: earth. google.com)

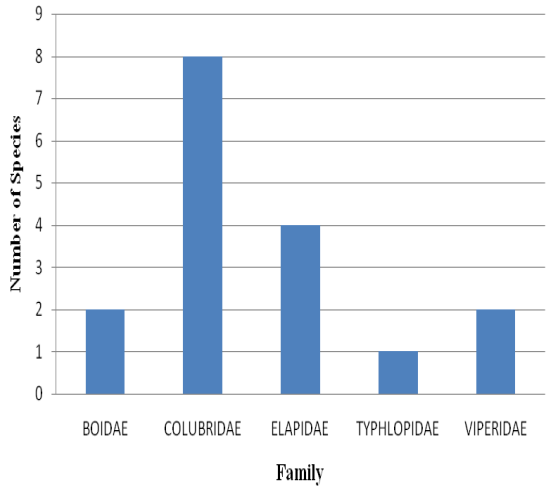

Figure 2. Family wise distribution of snakes

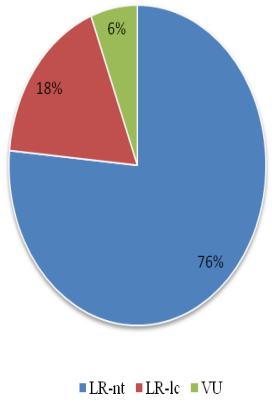

Figure 3. IUCN Status of Snakes recorded during current study

METHODS

During the present study data collection was conceded out by using visual encounter method following rescue calls. Whenever the snakes were rescued or sighted they were handled by using snake hooks. After collection required morphometric measurement were taken and specimens were released back to the nearby habitat away from human intervention. Afterwards, the snakes were identified with the help of reference guides (Daniel, 2003; Smith, 1943; Whitaker and Captain 2008). Besides this, the road surveys were also conducted from 6:00 a.m. to 8:00 a.m. in morning and 8:00 p.m. to 10:00 p.m. at night to collect the record of road mortality of snakes by vehicular movements.

RESULTS AND DISCUSSION

During the present study a total of 17 species of snakes belonging to six families were recorded from the current study area (Table.1). Family Colubridae contributed the maximum number of species (eight species) followed by Elapidae with four species and family Boidae and Viperidae with two species each and family Typhlopidae with one species alone. Family wise distributions of snakes were given in Fig 2. The species *Ophiophagus hannah* was detained by forest authorities in 2003 from Jahangiribaad Bhopal and now present at the Van Vihar National park, Bhopal as this species distribution is restricted to the southern parts of India. Out of all 17 species of snakes 13 species (76 %) come under Lower Risk -Near threatened (LR-nt) category and three species (18 %) fall under Lower risk-least concern (LR-lc) category and one species (6 %) come under vulnerable (VU) category (Fig. 3).

The common snake species found in the order of their scarcity were: *Ptyas mucosa, Xenochrophis piscator, Ramphotyphlops braminus, Oligodon arnensis*, *Amphiesma stolata, Naja naja oxiana* and *Python molurus*. Whereas *Lycodon aulicus, Argyrogena fasciolata, Naja naja, Eryx johnii, Dendrelaphis tristis, Daboia russelii*, *Echis carinatus*, *Bungarus caeruleus* and *Coelognathus helena* were termed as rare snake species during this survey period. The study area is attracted by various anthrpogenic stress. Moreover, *Lycodon aulicus, Xenochrophis piscator, Amphiesma stolata, Argyrogena fasciolata, Oligodon arnensis, Echis carinatus* were killed on roads by vehicular traffic during night which threatens these species in the study area mostly during monsoon seasons.

Throughout the entire study period we have observed the killing of snakes in most of the places

Oligodon arnensis

Naja naja oxiana

Amphiesma stolata

Python molurus

Ptyas mucosa

Xenochrophis piscator

Ramphotyphlops braminus

Figure 4. Images of some of the snakes observed

Table 1. Checklist of snakes recorded from Bhopal, Madhya Pradesh

	Family/ Scientific Name	Common Name	IUCN Status
Order **Squaaata**			
Suborder **Serpentes**			
Family **Boidae**			
1	*Gongylophis conicus* (Schneidar, 1801)	Common Sand Boa	LR-nt
2	*Python molurus* (Linnaeus, 1758)	Indian rock python	LR-nt
Family **Colubridae**			
3	*Amphiesma stolata* (Linnaeus, 1758)	Buff-Striped Keelback	LR-nt
4	*Argyrogene fasciolatus* (Shaw, 1802)	Banded racer	LR-nt
5	*Atretium schistosum* (Daudin, 1803)	Olive Keelback water snake	LR-nt
6	*Coelognathus helena (Daudin,1803)*	Common trinket snake	LR-nt
7	*Lycodon aulicus* (Linnaeus, 1758)	Common Wolf snake	LR-lc
8	*Oligodon arnensis* (Shaw, 1802)	Banded Kukri Snake	LR-lc
9	*Ptyas mucosa* (Linnaeus, 1758)	Indian Rat snake	LR-nt
10	*Xenochrophis piscator* (Schneider, 1799)	Checkered Keelback	LR-lc
Family **Elapidae**			
11	*Bungarus caeruleus* (Schneider, 1801)	Common Indian krait	
12	*Naja naja oxiana* (Eichwald, 1831)	Black Cobra	LR-nt
13	*Naja naja* (Linnaeus, 1758)	Spectacled cobra	LR-nt
14	*Ophiophagus hannah* (Cantor, 1836)	King Cobra	VU
Family **Typhlopidae**			
15	*Ramphotyphlops braminus* (Daudin, 1803)	Brahminy worm snake	LR-nt
Family **Viperidae**			
16	*Daboia russelii* (Shaw & Nodder, 1797)	Russell′s Viper	LR-nt
17	*Echis carinatus* (Schneider, 1801)	Saw Scaled Viper	LR-nt

IUCN Status: VU= Vulnerable; LR-lc= Lower Risk least concern; LR-nt= Lower Risk near threatened.

because of the lack of knowledge influenced by superstitious belief and fear regarding these animals. To protect these species awareness programs should be carried out to aware people about them and their importance in maintaining ecological stability in the environment and in order to conserve these species, it becomes significant to reduce various anthropogenic activities like habitat destruction, traffic near forest trails and killing of these creatures. However we suggest that more studies should be carried out related to the habitat, ecology, climate change and impacts of anthropogenic activities on these beautiful creatures.

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