

THREAT TO SNAKES

Mortality of snakes due to vehicular traffic and anthropogenic impacts in Jahangirnagar University campus, Bangladesh



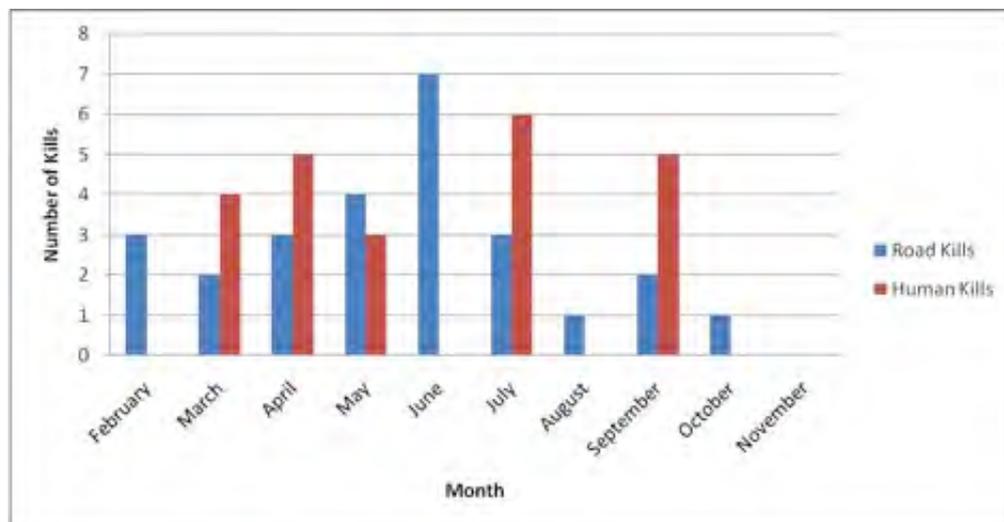
Human kill: Checkered keelback (Photo: A.K. Datta)

Mortality of animals, especially snakes due to vehicular impact is well understood and studied globally (Foster & Humphrey 1995; Groot & Hazebroek 1996; Trumbulak & Frissell 2000; Das et al. 2007; Row et al. 2007; Shwiff et al. 2007; Seshadri et al. 2009). Accidents with vehicles on road may affect populations of common and threatened species (Dhindsa et al. 1988). But mortality of snakes due to impacts of vehicular traffic and deliberate killing by human is poorly documented in Bangladesh. Although the country has so far recorded 76 species of snakes (Hasan et al. 2014) and the list is flourishing day by day. Rahman et al. (2013) carried out a survey in Lawachara National Park and its adjacent area in Bangladesh and recorded 503 road killed snakes, belonging to 30 different species. Apart from a single opportunistic observation, (Datta 2015) reported the mortality of 18 Spectacled Cobra (*Naja naja*) by students and staffs in Jahangirnagar University campus, but there is no information/data available on snake mortality due to vehicular traffic. The present study provides evidence of the impacts of vehicular traffic

and anthropogenic impacts on the snake community in the University Campus.

Study Area

The study was carried out during February 2015 to November 2015 in Jahangirnagar University Campus (23°52'76"N & 90°16'06"E), 32km north of Dhaka



in central Bangladesh. The area of the campus is approximately 280 hectares and consists of natural and artificial lakes, agricultural lands, botanical gardens in and around human settlements.

Monthly variation of road kills and snakes killed by humans in study area

Originally the campus was a vast tract of ‘Sal’ (*Shorea robusta*) forest. The existing vegetation in this area is now of secondary character, originated from a tropical deciduous ‘sal’ forest community (Begum 2016). At present the campus supports 230 species of plants, 196 species of birds and 11 species of snakes (Hossain et al. 1995; Begum 2016; Kamrul Hasan pers.comm. June 2015). This is the country’s only residential university with 13 student dormitory and a few more are under construction to provide residential support for about 20000 students. Every day in an average more than 20 buses, hundreds of private cars, motorbikes, and rickshaws run in and out of the campus to provide transportation facility for students, academic and administrative staffs.



Road kill: Common smooth water snake (Photo: A.K. Datta)

Methods

The roads passing through University campus



Human kill: Common wolf snake (Photo: A.K. Datta)

were divided into five segments (4.24km) for the convenient of study. The roads were systematically searched in early morning (06:00-08:00hrs) and late evening (05:00-07:00hrs) by walking slowly at least three days a week. In addition, using opportunistic

sampling method, data on road kills and snakes killed by humans were also collected during incidental visits and based on the information received from other researchers, department staff and local people. The dead animals were identified up to species level, wherever possible, and removed from the road to avoid repeat count. For identification we used field guides (Daniel 2002; Hasan et. al. 2014). No snakes were preserved during the study period.

Results

Mortality of 49 snakes belonging to 7 species was recorded during the study. Of which 53.06% (n=26) were road kills and 46.94% (n=23) were killed by humans. Snakes belonging to the families Colubridae (5 species), Typhlopidae (1 species) and Elapidae (1 species) were recorded.

In case of road kills, individuals of the species Common smooth water snake

Table 1: Number of road kills and Human kills, family of the snake, common name and their scientific names

Family	Common Name	Scientific Name	Frequency (n)	
			Raod kills	Human Kills
Typhlopidae	Diard's blind snake	<i>Typhlops diardii</i>	0	2
Colubridae	Striped keelback	<i>Amphiesma stolata</i>	1	6
	Checkered keelback	<i>Xenochrophis piscator</i>	6	1
	Common smooth water snake	<i>Enhydris enhydris</i>	18	5
	Common wolf snake	<i>Lycodon aulicus</i>	1	5
	Indian rat snake	<i>Ptyas mucosa</i>	0	1
Elapidae	Spectacled cobra	<i>Naja naja</i>	0	3
Total			26	23

(*Enhydris enhydris*) were more frequently encountered (n=18) followed by Checkered keelback (*Xenochrophis piscator*) (n=6). Whilst in case of human killed, six individual of Striped keelback and five individuals of each Common wolf snake (*Lycodon aulicus*) and Common smooth water snake (*Enhydris enhydris*) were accounted.



Human kill: Common blind snake (Photo: A.K. Datta)

Monthly variation was observed for both road kill and snakes killed by humans. Highest impact of vehicular traffic was observed during June (n=7) followed by May (n=4), February April and July (n=3) respectively. Snakes that were killed by humans were found highest during the month of July (n=6) followed by April and September (n=5), March (n=4), May (n=3). No snakes were killed by humans during

February, June, August, October and November. November is the only month when no mortality of snakes was observed by both incidents.

Discussion

Out of 7 species recorded in the campus, we found 4 species of snakes are due to road kills. It is worth mentioning although Common smooth water snake (*Enhydris enhydris*) and Checkered keelback (*Xenochrophis piscator*) both are water snakes but were found mostly as road kills. About 18 road kill Common smooth water snake (*Enhydris enhydris*) and 6 Checkered keelback (*Xenochrophis piscator*) were found. A study conducted by Das et al. (2007) at Kaziranga National Park, Assam, India observed very few water snakes as road kill. Another study on road mortalities of snakes in Mudumalai (Gokula 1997) shows that out of seven species of snakes, the Common vine snake (*Ahaetulla nasutus*) was the most affected (12 out of 23 snake road kills).

Common smooth water snake (*Enhydris enhydris*) is the only mildly venomous snake species found as road kill and the rest were completely non venomous. In a study Andrews & Gibbons (2005) found that venomous snakes crossing the road were more than non-venomous snakes. But here we found opposite scenario.

All the 7 snake species (total of 23) that were killed by campus dwellers are protected by Bangladesh Wildlife Act 2012 and killing of any such species is a punishable



offense. Datta (2015) reported killing of 18 Spectacled cobra (*Naja naja*) from a student dormitory of this university campus. This present findings justifies that such incidents of snake mortality is very common here. Students and staffs of this university campus may not be aware about country's Wildlife Act.

A detailed and long term study is needed to measure the anthropogenic impact and vehicular traffic on snakes as well as other animal species.

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