



A CHECK LIST OF SNAKES IN AND AROUND SHIVAMOGGA CITY CORPORATION, KARNATAKA, INDIA

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ABSTRACT

Shivamogga City Corporation is a part of region vernacularly known as Malnad (Land of hills) in Karnataka. Most of these hills are part of Western Ghats, a region famous for plentiful rainfall and lush greenery. Present study is aimed to document the ophiofauna in and around Shivamogga town. A checklist of snakes was prepared with the help of local snake catchers from July to October 2014. Totally 117 snakes were rescued of which 51 snakes were rescued inside the house, followed by 29 in courtyard, 5 in shops, 5 in tanks and ponds and 17 in agricultural fields. A total of 21 species of snakes belonging to 8 families were recorded. Among the five families, Colubridae dominated the list with 10 species, Elapidae and Natricidae with three species each. Families Viperidae, Pythonidae, Boidae, Uropeltidae and Typhlopidae were represented by a single species each. Four poisonous, two mildly poisonous and fourteen non-poisonous snakes were recorded and all snakes captured alive and were released back into nearby suitable habitats. Significantly more non-venomous snakes were rescued than venomous snakes. The highest number of snakes rescued was in August and lowest in October. Rare snakes like *Argyrogena fasciolata* and *Eryx johnii* were reused from the study areas. Due to anthropogenic pressures, the number of snakes is decreasing very sharply. No fatalities associated with the snake bites were recorded during the study period. For the conservation of snakes in Shivamogga, public awareness regarding the importance of snake to keep the ecosystem in balanced condition is essential.

KEYWORDS: Ophiofauna, poisonous snakes, *Ahaetulla nasuta*, *Boiga beddomei*, *Sibynophis subpunctatus* Shivamogga

INTRODUCTION

The snakes are integral part of a forest ecosystem as their position in the food chain as predators making them important in the nutrient flow (Soubhagya *et al.*, 2014). India is a home to 272 species of snakes (Whitakar and Captain, 2004) of which 102 species have been so far recorded from northeastern India (Ahmed *et al.*, 2009). They play an important role in controlling the rodent pests. Snakes maintain the balance the nature and serve as a lot to mankind. Depletion of snakes throughout out the globe and their extinction is causing a conscientious and diligent task to people of all spheres of the society to conserve them (Sahu *et al.*, 2014). Snakes have adopted themselves to almost all kinds of landscapes from aquatic to the high altitudes of Himalayas including urban areas and a few species have become human commensal (Anukul *et al.*, 2009). With their presence almost everywhere, snakes are frequently found in human habitations, both in villages and towns; leading to a serious human-snake conflict. Besides, snakebite is major medical hazard in India and it has been estimated that as many as 20,000 to 40,000 people die per year from snake bite (Das, 2002). Snake populations of are influenced by microhabitat factors such as soil, pH, humidity, leaf litter and woody debris (Faccio, 2001). The study was carried out to collect the baseline information and status of snakes in and around Shivamogga town.

MATERIALS AND METHODS

Study area

Shivamogga City Corporation (13o 55' 18" NL, 75o 34' 12" EL) is a heart land of Karnataka state, located on the banks of river Tunga. According to the Shivamogga city municipal corporation, city has a total area of about 19.31 square miles. Climate of Shivamogga is tropically wet and dry. This means that the winter and the early part of summer are typically dry periods. Majority of the rainfall occurs between June and early October. Shivamogga is a part of region vernacularly known as Malnad (Land of hills) in Karnataka. Most of these hills are part of Western Ghats, a region famous of plentiful rainfall and lush greenery (Adamsab and Hina Kousar, 2010).

METHODS

Snakes were rescued during July to October 2014 from different locations in Shivamogga corporation city as and when we are informed about their staying in to residential area, form house and agricultural fields. The snakes were captured with the help of local snake catcher using hooked aluminum sticks and immediately transferred in to cloth bags. The length of the snake, location & different human habitations (inside the house, in the courtyard, inside a shop), time and date were noted. Species identification was done following Daniel (2002), Das (2002) and Whitakar and Captain (2004). In addition, secondary information was gathered from local people of surrounding spots and forest personnel about the different

species of snakes by interviewing and showing color pictures of the species of them. The snakes were released back to the nearest suitable habitat

RESULTS & DISCUSSION

Biodiversity of snakes in India varies in different parts. Anukul Nath *et al.* (2011) recorded 26 species of snakes from Bongaigaon municipal area of Assam. Soubhagya Pradhan *et al.* (2014) recorded 20 species of snakes from Gandhamardan hills range of Western Ghats of Orissa.

Manoj and Krishnendra (2013) recorded 19 species of snakes from Mukundara hills national park of Rajasthan. Rajeev and Ignas (2014) recorded 16 species of snakes from University of Dodoma campus of Tanzania. A total of 21 species of snakes (Table 1 and Figure 1-21) representing 8 families namely Colubridae, Elapidae, Natricidae, Viperidae, Pythonidae, Boidae, Uropeltidae and Typhlopidae were reported (Figure 22). The rescue status and density status of snakes were depicted in Figures 23 & 24.



FIGURE 1: King cobra



FIGURE 2: Russell's viper



FIGURE 3: Cobra



FIGURE 4: Vine snake



FIGURE 5: Banded racer



FIGURE 6: Common krait



FIGURE 7: Common trinket



FIGURE 8: Beddome's cat



FIGURE 9: Bronzeback tree



FIGURE 10: Common kukri



FIGURE 11: Rat snake



FIGURE 12: Common wolf



FIGURE 13: Stripped keelback



FIGURE 14: Green keelback



FIGURE 15: Checkered keelback



FIGURE 16: Russell's kukri



FIGURE 17: Common worm



FIGURE 18: Elliot's shield tail



FIGURE 19: Red sand boa



FIGURE 20: Indian rock python



FIGURE 21: Black Headed snake

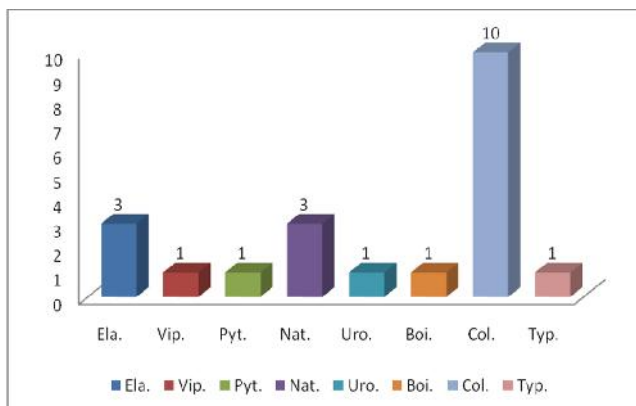


FIGURE 22: Snakes of families

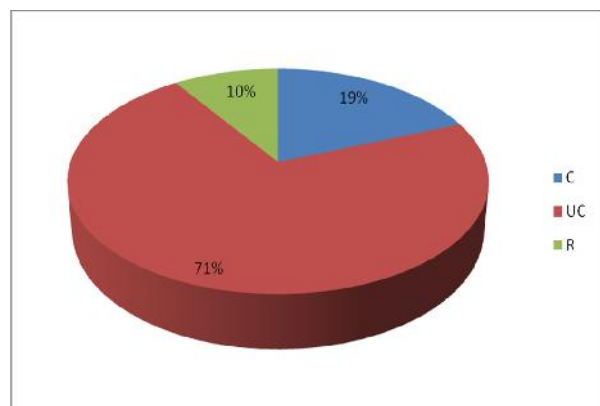


FIGURE 23: Status of snakes

TABLE 1: Rescue status and density of Snakes in and around Shivamogga City Corporation

Scientific name	Common name	V/M V/NV	Status	Rescued										Total	Density				Total		
				IH	CY	IS	WT	FH	AF	P	Jul.	Aug.	Sep.		Oct.						
ELAPIDAE																					
<i>Bangarus caeruleus</i> Schneider, 1801	Common krait	V	UC	1	1	-	-	-	-	-	-	-	-	-	-	2	-	-	1	1	2
<i>Naja naja</i> Linnaeus, 1758	Common cobra	V	C	23	9	4	-	-	6	6	-	-	48	5	21	12	10	-	-	-	48
<i>Ophiophagus hannah</i> Cantor, 1836	King cobra	V	UC	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	1
VIPERIDAE																					
<i>Vipera russelli</i> Gray, 1842	Russell's viper	V	UC	-	-	-	-	-	-	1	-	-	1	1	-	1	-	-	-	-	1
COLUBRIDAE																					
<i>Ahaetulla nasuta</i> Lacepede, 1789	Green vine snake	MV	UC	-	-	-	-	-	-	1	-	-	1	-	1	-	-	-	-	-	1
<i>Aryzogeneta fasciolata</i> Shaw, 1802	Banded racer	NV	R	1	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	1
<i>Baiga beddomei</i> Wall, 1909	Cat snake	MV	UC	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
<i>Coelognathus helena</i> Daudin, 1803	Common trunket	NV	UC	1	-	1	-	-	-	-	-	-	2	-	1	-	-	-	-	-	2
<i>Dendrelaphis tristis</i> Daudin, 1803	Bronzeback snake	NV	UC	-	1	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	1
<i>Lycodon aulicus</i> Linnaeus, 1756	Common wolf	NV	UC	1	2	-	-	-	-	1	-	-	4	-	1	1	1	2	-	-	4
<i>Oligodon arneis</i> Shaw, 1802	Common kukri	NV	UC	2	2	-	-	-	-	-	-	-	4	-	2	1	1	1	1	1	4
<i>Oligodon taeniolatus</i> Jerdon, 1853	Russell's kukri	NV	UC	-	-	-	-	-	-	1	-	-	1	-	-	-	1	1	1	1	1
<i>Pryas mucosus</i> Linnaeus, 1758	Rat snake	NV	C	14	3	-	-	-	1	3	2	2	23	3	10	6	3	6	3	3	22
<i>Sibynophis subpunctatus</i> Dumeril, 1854	Black headed snake	NV	UC	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	1
NATRICIDAE																					
<i>Amphisena stotatum</i> Linnaeus, 1758	Striped keelback	NV	UC	-	2	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	2
<i>Macropishodon plumbicolor</i> Cantor, 1939	Green keelback	NV	UC	-	1	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	1
<i>Xenochrophis piscator</i> Schneider, 1799	Checkered keelback	NV	C	7	5	-	2	1	1	-	-	1	16	2	5	4	6	17	-	-	17
PYTHONIDAE																					
<i>Python molurus</i> Linnaeus, 1758	India rock python	NV	UC	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	1
BOIDAE																					
<i>Bryx johinii</i> Russell, 1801	Johns earth boa	NV	R	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	1
UROPELTIDAE																					
<i>Uropeltis ellioti</i> Gray, 1858	Elliot's shield tail	NV	C	-	-	-	-	-	-	2	-	-	2	-	-	2	-	-	-	-	2
TYPHLOPIDAE																					
<i>Ramphorhynchus braminus</i> Daudin, 1803	Brahmini worm	NV	UC	-	3	-	-	-	-	-	-	-	3	-	2	1	-	-	-	-	3

V- Venomous, MV- Mildly venomous, NV- Non-venomous, UC- Uncommon, C- Common, R- Rare, IH- Inside house, CY- Court yard, IS- Inside shop, WT- Water tank, FH- Farm house, AF- Agricultural field, P- Pond

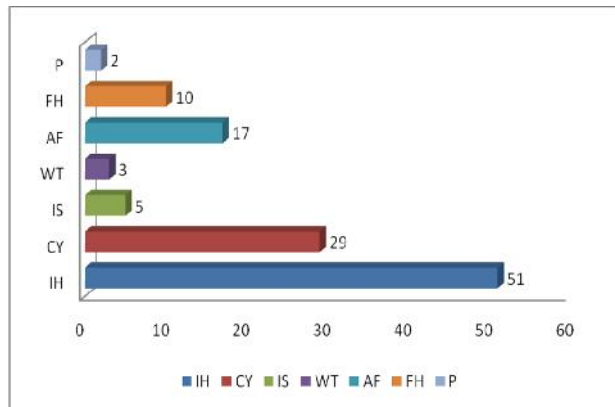


FIGURE 24: Rescue of snakes

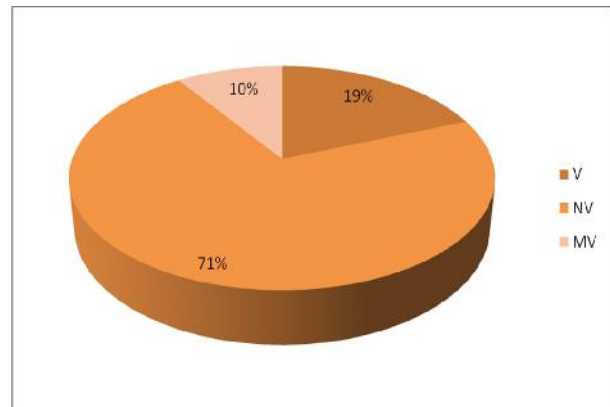


FIGURE 25: Venomous status of snakes

Ophiofauna showed a dominant position of Colubridae (47.61%), followed by Elapidae and Natricidae (14.28%), Viperidae, Pythonidae, Boidae, Uropeltidae and Typhlopidae (4.76%). Totally 117 snakes were rescued of which 51 snakes were rescued inside the house, followed by 29 in courtyard, 5 in shops, 5 in tanks and ponds and 17 in agricultural fields. Four poisonous, two mildly poisonous and fifteen non-poisonous snakes were recorded (Figure 25). Poisonous snakes include *Naja naja*, *Ophiophagus hannah*, *Doboia russelli* and *Bangarus caeruleus*. Mild venomous snakes include *Ahaetulla nasuta* and *Boiga beddomei*. Non venomous snakes include *Argyrogena fasciolata*, *Coelognathus helena*, *Dendrophis tristis*, *Lycodon aulicus*, *Oligodon arnesis*, *Oligodon taeniolatus*, *Ptyas mucosus*, *Amphisema stolatum*, *Macropisthodon plumbicolor*, *Xenochrophis piscator*, *Python molurus*, *Eryx johnii*, *Uropeltis ellioti*, *Sibynophis subpunctatus* and *Ramphotyphlops braminus*

Forty eight common cobras were rescued during the study period, followed by 22 rat snakes. Maximum cobras (21) were rescued in the month of August and minimum (5) in the month of July. Maximum rat snakes (10) were rescued in the month of August and minimum (3) in the months of July and October. 23 cobras and 14 rat snakes were rescued inside the house. The activity of snakes at different habitations at the time of rescue was resting (43.1%), feeding (16.37%), moving (37.06%) and unhealthy (2.58%).

CONCLUSION

The present study recorded 21 snake species belonging to 20 genera and 8 families in and around Shivamogga City Corporation. Totally 117 snakes were rescued of which 51 snakes were rescued inside the house, followed by 29 in courtyard, 5 in shops, 5 in tanks and ponds and 17 in agricultural fields. Four poisonous and fifteen non-poisonous snakes were recorded. Agricultural fields, permanent ponds, gardens and houses provide a variety of habitats for frogs and their ophidian predators. Social and various other human activities also increase the rodent population and possibly the lizard population which in turn are regular prey items for many snakes. Local people were found to kill both the venomous and non-venomous snakes due to lack of knowledge and fear of being bitten. Lack of awareness was the main reason for the killing. While rescuing the snakes, we also motivated people not to kill snakes instead to inform the

concerned authorities, which seemed to create awareness during the study period.

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