

RECENT STUDY ON BIODIVERSITY OF SNAKES IN JINTUR HILLY REGION PARBHANI DISCTRICT, (MH) INDIA.

Mr.Gajanan.S.Sargar¹, Dr.Bhagwat.G.Thakare² Mr.Rajesh.M.Achegawe³, Mr.Niwрати.G.Popatwar⁴, Mr.Ashish.S.Hasekar⁵

M.phil students¹, Associate professor², Assistant professor³, HOD of fishery science⁴, assistant professor⁵

School of Life Sciences SRTM University Nanded (MH) India.

Abstract

Biological diversity basically pedals the stabilization and functioning of an ecosystem. Amongst faunal diversity herpetofaunal (reptiles and amphibians) checklist serve a most important role which provides the information of community and productivity dynamics. All ecosystem has its particular faunal and floral diversity but if this diversity is going on changing by various manmade activities it gives diverse reflections for its fauna and flora. There are no reports on the snake species diversity of Jintur Hilly Region, District-Parbhani and nearby 06Km². Area, which was work out initial time through this investigation. Total 12 species of snakes counting 03 venomous, 01 Semi-Poisonous and 08 non-poisonous species belongs to 04 families were occurred. Direct encounter method, public reports and individual observation survey was conducted to details the snake diversity. Snake killing by human being directly or indirectly and road killing was general.

Index Terms: Snake species, cobra, Jintur region.

Introduction

Snakes are friends of human being if we could understand their biology and ecology but they may be hurtful if not handled correctly and not understood them appropriately. Not every species of snakes are poisonous, large number of snakes are non poisonous while few are semi poisonous. Snake poison and biting apparatus that chiefly comprise 'Fangs' are made to kill their prey but not to bite the human being or other non-food item creatures of these shy creatures. Snakes do not waste their poison to hurt someone apart from their prey. Therefore actual difficulty in blaming the snakes as hurtful animals is in not understanding their life. There are near about 3000 species of all kinds of snakes around the world. Snakes harbor all major kinds of habitats and ecosystems in the world. Snakes occurs in sea are deadly poisonous, even the antidotes of several sea snakes are not presently known. Species of Viper, Cobra and Krait are generally poisonous snakes occurs in Maharashtra with their species variety. Water snake (Pandivad), Rat snakes (Dhaman), Boa's (Mandul, Durkya Ghonas), Grass snake are non-poisonous snakes and some snakes have semi poisonous type of ability. There are different local, regional and common names of snakes in different parts of country and the world but the scientific name doesn't change throughout the world. Some species of snake may show slight or major diverse colour pattern with change in habitat however the body coloration Shape and size of

scales on head, abdomen and; dorsal body surface; tail shape; presence of particular features on the head region are some of the important features taken in to consideration in categorizing the snake species and that has more importance in the classification of snakes. Near about 50,000 citizens in India die due to snake bite which is major death rate than epidemic deaths and accidental this indicate in common negligence of public about their surrounding, illiteracy of citizens about snake behavior and life and so on. Snake bites can be 100 % prevented by educating the people on snake behavior and ecology. As a interest to determine the diversity of snake species in the different Niches (microhabitats) Jintur hilly regions and surrounding area of the DSM college Jintur District Parbhani (MH) India .this study will be a most important baseline data for the further investigation on snakes of this region because in this region one of the ten mainly deadly snakes in the world is abundantly occurs i. e. 'Saw-Scaled Viper' (*Echis carinatus*) normally this snake comes out from its hides sites during night time. The main risk with this snake is that, a victim may make a mistake of waiting too long to go for treatment because the venom is so slow-acting. To avoid death in the majority of cases the proper treatment should be instant; but without treatment, death will occur slowly and painfully over the course of three to five weeks time.

Materials and Methods

Study area

To find out the species diversity of snakes the investigation was conducted in Jintur hilly regions and surrounding area of the DSM college Jintur and Sevadi, Bhoosi village etc. The the study area consists of 27 different sites that comprise buildings of college; Lakes, polytechnic Boys Hostels etc. Large number snakes are nocturnal in mode of living for locomotion and feeding. Snakes favor the hiding places during rest under the rock, crevices and stones, under the wooden logs, in the mound of termites, abandoned mound of ants. Also the snakes from deciduous forested areas they may live below the dry fallen leaf foliage, they also occur in the shades of bushes, on the tree branches. In the present study area Jintur hilly regions and surrounding area of the DSM college Jintur and area of 6 km² around the DSM college, there is different kind of habitat conditions. The college area mainly has low height hilly area and low land with few plain platue. There is one small water bodies (0.5 ha. area) that remain dry during summer (March - may) every year. As per latest survey there are about 10 tree species in the region that mainly

includes *Ziziphus mauritiana*, *Acacia nilotica*, *A. karroo*, *Azadirachta indica*, *Palas (Butea monosperma)*, *Jatropha plantation*, *Ficus religiosa*, *Teak plantation* some trees of thorny shrubs and Tamarind. The soil color in the region is yellowish red and the soil surface is covered by minute to medium sized stone logs. There are 27 residential houses in the near the college campus that include Students Hostels, Government polytechnic college, hotels, Water filter plant, college canteen. During monsoon and winter season whereas the grass get dried and convert from green to straw colored material. The land in the region remains covered with grass (*Palm fronds*).

The overall geographical conditions in the college is having hilly area with savannah land with rarely spread bushes and trees spread often ally. Due to abundant availability of grass in the region there are grasshopper species and dependent Calotes species (*C. versicolor*), Frogs (*Rana tigrina*), Mice and Rats near human habitations available in good number. This makes the area with high availability of food for snakes in the region. Due to human habitation in the region the domestic wastage generated as waste food and garbage attracts the rodents like shrews, mice and some bird species. Near the termite mounds the frogs were occurs feeding on the termite workers during night. All the ecological and geographical conditions favors the occurrence of snake species in the selected study area. Lewis (2010) reported 30 species of snakes in North Karnataka and South-West of Maharashtra in India, as compare to this vast area study present study represents high diversity of snakes up to 12 species in the 10 Km² are of this area. This study is first report on snakes of Jintur hilly region, DSM college compous area which is 2.5Km away from the main Jintur city.

Methods of surve used

Follow three methods were used to collect the records on existence of snake species in the DSM College and surrounding areas during the June 2018 to May 2019.

Direct encounter method

In this method for the duration of walk in area during day time as well as night time the snakes encountered on the way for the researchers

and the requested volunteers (03 friends of author living in the same area) were recorded. By actual visit to the area reported for the occurrence of snake was directly visited for the verification of species. Mobile phone communication was frequently used in this study.

Directed and time bound observations of snake habitats

Two days/weak during 07.00 – 9.00 am.; evening 06:30 – 08:30.00 pm. and 11.00 p.m. –1.00 a.m. the snake species were search in the selected study area. Each day the number and type species encountered were noted on the notebook.

Citizens reports for the snake occurrence

For the citizens near the college campus and two villages around the college campus Shevadi Bhoi, the author provided personal contact number to the villagers to inform the occurrence of snake species in their particular villages.

NIKON Coolpix 510 Camera was used for the steel photo and video recording using 42X Zoom and 16 Mega pixl specifications. All the information collected was deposited in the Zoology Department of DSM college Jintur. No any snake species was preserved either in live or dead condition for the further study.

The snakes occurs in the residential area were caught carefully by using snake handling sticks and packed in cotton made snake bags through metal rings and carried to the wild habitats at secure places from human habitations. Snakes that observed were identified via using standard literature by Gunther (1864), Devrus (1970), Boulenger (1890), Smith (1931, 1943), Nicholson (1870) and Daniel (2002).

Types of habitats preferred by snakes

The noted species of snakes (Table 1.) were observed at different habitats in the study area (Fig.1-12) that mostly comprises hilly area, water bodies and grass land, with rarely spread stone cover, close by weedy vegetation and shrubs, different tree species as shelters, area near human habitations, in the mounds of termites etc.

The observed habitats in the study area are classified as aquatic, arboreal, terrestrial and stones and rock and mentioned against each snake species (Table1.).

Results and Discussion

In present study area total 12 species of snakes (Fig.1-12) originating to 04 different Families was noted namely Viperidae, Elapidae, Natricidae and Colubridae (Nicholson 1870; Whitaker, 1977, Gharpurey, 1954;2008; Khaire 1996,2006). From the noted snake species 03 poisonous and 08 species were non-poisonous 01 semi-poisonous (Table 1.). Spectacled Cobra, Saw scaled Viper and Russell's viper were the poisonous snakes from these Saw Scaled Viper comes under the majority deadly venomous ten snakes of the world. Two species of Lycodon (*L. aulicus*, *L. striatus*) were occurred in same part of study area.

Wolf snake (*Lycodon aulicus*), Rat snake (*Ptyas mucosa*) and Russell's Kukri (*Oligodon taeniolatus*) were generally occurring non poisonous snake species whereas Russell's viper (*Daboia russelii*) the poisonous snake species were normally occurring in this region. The semi-poisonous (Midly Poisonous) Green vine snake (*Ahaetulla nasuta*) was infrequently found particularly during monsoon and early winter. The occurrence of the snake species was relatively more in the hilly area specially polytechnic Boys hostels, Area near water filter plant and along the Yeldari road from Bus stand to shevadivillage. Deshmukh (2007) reported 30 snake species in district Amravati. Joshi (2015) reported 22 species of snakes in district Buldhana, Harney (2010) found 16 species from 06 families at Bhadravati of Chandrapur district, Walmiki et al., (2012)

Investigate the herpeto fauna of Maharashtra nature park at New Mumbai and found 25 species of snakes originate to 06 families; in this study he state that *Daboia russelii* (Russells Viper) were usually and abundantly cited snakes of this region. In other research on occurrence of snakes in Maharashtra, Rout et al., (2014) has studied the snake diversity in Palghar area of Thane District, Maharashtra and

found 24 species of snakes that includes 07 venomous, 03 semi-venomous and 14 were non-venomous. Karangutkar et al., (2014) studied the faunal diversity of Kolak estuary Gujrat, Vapi and found 10 diverse species of snakes. Lewis et al., (2011) studied on the herpetological observations from field expeditions to North Karnataka and South Maharashtra and found 27 snakes species. From the all above mentioned investigation it can be concluded that, in India in different States include Maharashtra the non-poisonous snake species were occurred in greatest number as compared to the poisonous and semi-poisonous snakes. Andrew (2008) noted the presence of 20 snakes species from Oman in United Arabian region, presence of Russell's viper species were occurred as one of the dominant species of this region.

The current study area is almost arid zone and remains dry and hot except 2- to 3 months of July to September in monsoon season also represents the occurrence of Saw-scaled viper and Russell's viper. Upadhye (2012) studied the herpeto fauna of Vidyanagari Campus of the Mumbai University, Ahsan (2016) has studied the current status and diversity of snakes of University Campus of Chittagong, Bangladesh and found 35 species. Yadav (2015) Herpetofaunal diversity in Radhanagari Wild Life Sanctuary, Kolhapur, Maharashtra and

studied the diversity, conservation and threats of herpetofauna in Shivaji University Campus at Kolhapur and reported 14 snakes species ; and also reported the tree cutting , cattle grazing grassland burning, , human encounter and killing are the major important factors for the destruction of Herpetofauna from this University campus.

Whereas in the present study these threats were not found apart from killing of snakes by mankind was most general destructive factor for the snake species. We found that 99% people without knowing the value of snakes in ecosystem and without having adequate knowledge of morphological variation between poisonous and non-poisonous snakes they directly kill them by declaring it as poisonous and hurtful creature. It is our attempt through this study to make aware and educated the public in the region to understand and assist on snake conservation; because we have truthful opinion that all the creatures include snakes have equal right to live on this Earth planet. No any snake bite case was noted during this study but 15 snakes were occurred killed by the citizens, the majority of them were non-poisonous while 08 snake species were found in road killing by vehicles normally during the night time.

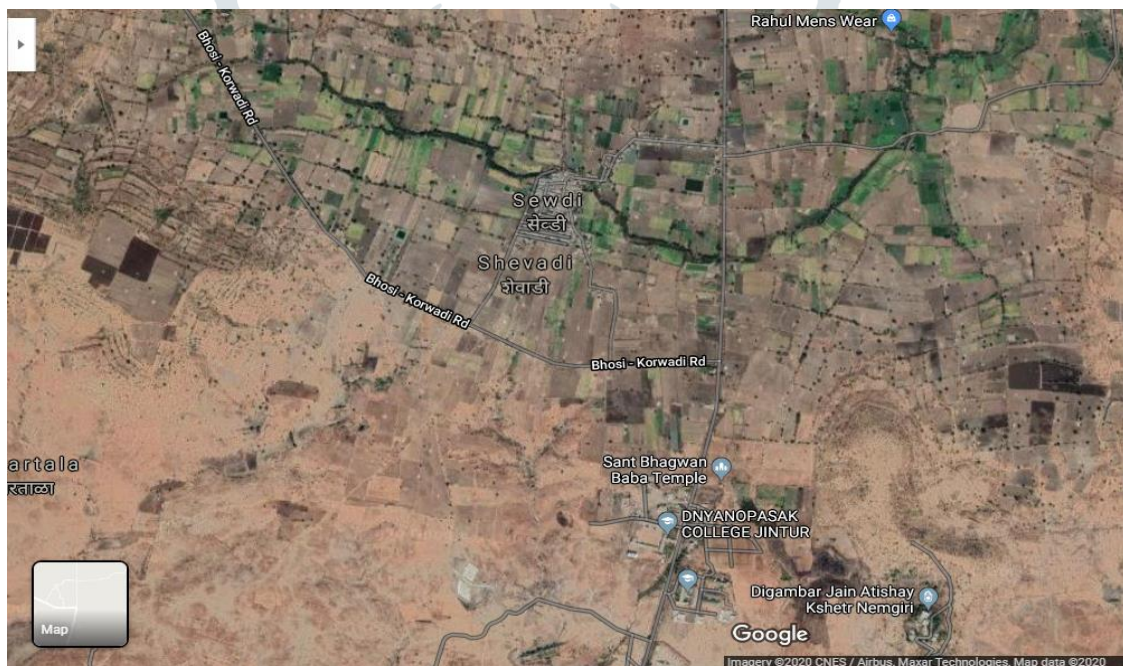


Figure 1 Study Area for the survey of Snake Species in Jintur Hilly regions, District Parbhani, (MH) India.

Hiding / habitats places of the snake's species in study area (Jintur hilly regions District-Parbhani).





	
<p>Figure:-2) Hilly, dry area with bushes.</p>	<p>Figure 3) Drainage water under pools is the hiding place for snake</p>
	
<p>Figure 4) Dry fallen leaves as a hiding sites for snake species</p>	<p>Figure 5) Snakes can hides under the tyres.</p>
	
<p>Figure 6) Aquatic weeds sorrounding the water body as habitats (water body near DSM college).</p>	<p>Figure 7) Stones and Rocks covered by dry land which help the snakes to hide.</p>



Figure 8) Dried wooden logs are usual hideouts for snake species.



Figure 9) Temporary house of snake.

Sr. No.	Scientific Name	Common Name	Family	Category	Habitat
01	<i>Naja naja</i> (Linnaeus, 1758)	Pectacled Cobra	Elapidae	Poisonous Snake	Tr, RS
02	<i>Daboia russellii</i> (Shaw and Nodder, 1799)	Russell's Viper	Viperidae	Poisonous Snake	Tr, RS
03	<i>Echis carinatus</i> (Schneider, 1801)	Saw-scaled Viper		Poisonous Snake	Tr, RS
04	<i>Oligodon arnesis</i> (Shaw, 1802)	Common Kukri	Colubridae	Non-poisonous Snake	Tr
05	<i>Oligodon taeniolatus</i> (Jerdon, 1853)	Russell's Kukri		Non-poisonous Snake	Tr
06	<i>Ptyas mucosa</i> (Linnaeus, 1758)	Rat Snake		Non-poisonous Snake	Ab, Tr, Aq,
07	<i>Lycodon aulicus</i> (Linnaeus, 1758)	Common Wolf Snake		Non-poisonous Snake	Ab, Tr, RS
08	<i>Lycodon striatus</i> (Shaw, 1802)	Barred Wolf Snake		Non-poisonous Snake	Ab, Tr, RS
09	<i>Coelognathus Helena</i> (Daudin, 1803)	Common Trinket Snake		Non-poisonous Snake	Ab, Tr
10	<i>Argyrogena fasciolata</i> (Shaw, 1802)	Banded Racer		Non-poisonous Snake	Tr
11	<i>Ahaetulla nasuta</i> (Lacepede, 1789)	Green Vine Snake		Midly-poisonous Snake	Ab
12	<i>Xenochrophis piscator</i> (Schneider, 1799)	Checked Keelback or Asiatic Water-snake	Natricidae	Non-poisonous Snake	Aq, RS

Table 1 Checklist of snake species In Jintur hilly region District Parbhani (MH), India. Subphylum: Vertebrata, Class: Reptilia, Order: Squamata, Sub Order: Serpentes



Saw-scaled Viper.(*Echis carinatus*)



Checkered keelback.(*Xenochrophis piscator*)



Common Cobra (*Naja naja*).



Russell's Viper(*Daboia russellii*).



Green vine snake (*Ahaetulla nasuta*)



Russell's Kukri or Variegated Kukri(*Oligodon taeniolatu*)

	 <i>Lycodon aulicus</i>
Barred wolf snake (<i>Lycodon striatus</i>)	Common wolf snake (<i>Lycodon aulicus</i>)
	
Banded Racer (<i>Argyrogena fasciolata</i>)	Banded Kukri (<i>Oligodon arnesis</i>)
	 <i>Coelognathus helena</i> (Daudin, 1803)
Rat snake (<i>Ptyas mucosa</i>).	Common Trinket (<i>Coelognathus helena</i>)

Conclusion

Present study, it is concluded that Jintur hilly region and Sevadi, bhosi village and surrounding area of DSM college Jintur has 12 snakes species belongs to 04 special families (Viperidae, Elapidae, Natricidae and Colubridae) were noted . Among the snake species Wolf snake (*Lycodon aulicus*), Rat snake (*Ptyas mucosa*), Russell's Kukri (*Oligodon taeniolatus*) non-poisonous while Russell's viper (*Daboia russelii*) which is poisonous snake were frequently found in this region. The present study reveals that the non-poisonous snakes were found in greatest number as compare with the poisonous and semi-poisonous snakes.

References

Albert, Gunther. 1864. The Reptiles of British India. Published by Oxford & IBH Publishing Co. New Delhi. Pp 451.

E .Nicholson. 1870. Indian Snakes- An Elementary Treatise on ophiology, IARI, New Delhi.
G.A. Boulenger 1890. The fauna of British India including Burma and Ceylon : Reptilia and Batrachia, .London, pp. Viii + 546.

Gardner Andrew. 2009. Mapping terrestrial reptile distributions in Oman and the United Arab Emirates, Zookeys 30:165-157. Doi. 10.3897/zookeys31.130.

Haider, I.K.A., Rahman, Ahsan, M.F., M.M. 2015. Status and variety of snakes at Chittagong University site in Chittagong, Bangladesh. J. Threatened Taxa, 7(14): 8159-8166.
K. G. Gharpurey (1954). Snakes of India and Pakistan, 5th edition, The Popular Book Depot, Lamington Road, Bombay.
M.A. Smith 1931. The fauna of British India including Burma and Ceylon : Reptilia and Amphibian. Vol. 1. Loricata, Testudines. Taylor and Francis, (Reprinted 1975, 1995 by Today and Tomorrow's Printers and Publishers, New Delhi).

- M.A. Smith 1943. The fauna of British India including Burma and Ceylon: Reptilia and Amphibia. Vol III. Serpentes. Taylor and Francis, (Reprinted 1975, 1995 by Today and Tomorrow's Printers and Publishers, New Delhi).
- M.S. Hossain, S. Muhammad, A.A., Mamun, S.M. Haque. 2013. Patch weeding on success of plantation in University Chittagong. Bangladesh Research Publication J., 9(2): 76–78.
- M.V. Upadhye, V.V. Puranik, P. Dabholkar, U. Jadhav 2012. Herpetofauna of Vidyarnagari Mumbai university capus (MH). Zoo's print 15 – 20. IISN: 2232-7070.
- N. Khaire 2006. A Guide to Snakes Of (MH), Goa and Karnataka. Indian Herpetological society. 'USANT', (MH)India.
- N. Walmiki, V. Awsare, S. Karangutkar, V. Wagh, B.Yengal, S. Salvi, R. Pillai, . 2012. Herpetofauna of Maharashtra Nature Park, Mumbai, Maharashtra (India). World J. Environ. Biosci., 1(2): 91-100.
- Neelamkuma Khaire. 1996. Indian Snakes, Indian Herpetological Society, Pune.
- Omkar Yadav, S.R. Yankanchi, A.M. Patil, 2014. Diversity and threats of herpetofauna in Shivaji University Campus, Kolhapur. International J. Curr. Microbiol. Appl. Sci., 3(6): 741– 750. IISN: 2319 – 7706.
- P.J. Devrus 1970. Snakes of India, National Book Trust (NBT), New Delhi. J.C. Daniels 2002. The book of Indian Reptiles and Amphibians, Bombay explanation Society and Oxford University Press. Mumbai.
- P.S. Joshi, V.T. Tantarale, K.M. Kulkarni 2015. The seasonal diversity and population dynamics of ophidian fauna in district Buldhana (MH). Indian J. Sci. Res., 6(1): 22-29. IISN: 0976-2876(print); 2253-0138(online).
- R. Whitaker, A. Captain. 2008. Snakes of India. The Field Guide. Draco Books.Chengalpattu, Tamil Nadu, xiv: 47.
- Raghvendra Nanded, Sawan Deshmukh. 2007. Snakes of district Amraoti including melghat,(MH),with important records of the Indian egg- eater, Montane trinket snake and Indian smooth snake.Zoos' Print J., 22(12): 2921-2924.
- Romulus Whitaker. 1977. Common India Snakes, A guidebook National Book Trust (NBT), New Delhi.
- S. Karangutkar, Walmiki N., Awsare, V., Wagh, V., Yengal, B., Salvi, S. Karangutkar 2013. Mangroves and associated faunal diversity of Kolak Estuary, Vapi, Gujrat. J. Scientific J., Health, Safety and Environment, 1(7): 170-185.
- S.R. Rout, S.N. Deshbhratar, J.A. Mahaley, V.K. Hile, A.J. Singh, G. Mehata. 2014. Recent studies on the biodiversity of snakes in Palghar region, Thane, (MH), India. Pelagia research library, Adv. Appl. Sci. Res., 5(2): 373-381.
- S.R. Yankanchi. 2014. Herpetofaunal diversity in Radhanagari Wild life Sanctuary, Kolhapur, (MH). J. Biolife, 2(4): 1154– 1159. IISN: 2320 – 4257.
- T. Lewis, S. Piggot, G. Rowland, G. Oldham. 2010. Herpetological observations from field expeditions to North Karnataka and South-west (MH). Herpetological Bull., 15-38.
- V. Narendra, Harney. 2011. Snakes of Bhadravati, Chandrapur -District- (M.S.) India. Online Int. Interdisciplinary Res. J. vol-1; 11-18.