

# A Study on Diversity Ofherpetofauna in Sanghagara Forest Ecosystem

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## Abstract

The present paper focuses on diversity of serpentofauna in Sanghagara forest ecosystem on the basis of observational method. This forest is located in between 21°1'-22°10' N latitude and 85°11'-86°22' E longitude. Sanghagara, one of the most significant and alluring natural scenic spots of Odisha, deserves its weightage, validity and importance because of assemblage of both floral and faunal diversity. The field study was undertaken twice a month and 27 herpetofaunal species were recorded during the survey. Among these, 5 families, 11 genera and 9 species of lizards; 5 families, 14 genera and 16 species of snakes are reported. Recorded lizard diversity is dominated by members of family Geckonidae, Lacertidae followed by Scincidae. Recorded serpentofaunal diversity is dominated by members of the family Elapidae, Colubridae followed by Viperidae. Among these, *Ptyas mucosa* (Indian rat snake) and *Amphiesma stolatum* (Buff striped keelback) were most frequently observed followed by *Bungarus caeruleus* (krait) and *Bungarus fasciatus* (Banded krait). Findings include both poisonous and non-poisonous species of snakes. The body of snakes is different in different habitats. The diversity of herpetofauna has been observed to be decreased with increase in altitude of the forest area.

**Keywords:** Sanghagara; Reptiles; Lizards; Snakes; Diversity.

## Introduction

Reptiles are the first successful terrestrial tetrapods which are evolved from Labyrinthodont amphibians 300 million years ago (Romer, 1949). The development of internal fertilization enabled reptiles to be the first vertebrates which radiated out across the landscape, diversified quickly and become the dominant life form on the planet during the Triassic, Jurassic and Cretaceous period of Mesozoic era (245 million to 65 million years ago) of geological time scale. Healthy biodiversity is a healthy indicator of an ecosystem. Today, a drastic decline in biodiversity has been observed in different parts of the world in an alarming rate. The destruction in different forms such as degradation, fragmentation or outright loss prompted mainly by several factors such as poverty, demographic factors, inadequate polices and economic incentives, anthropogenic activities such as overgrazing, deforestation, bushfires, shifting cultivation, developmental activities like mining, urbanization and road construction inside the protected areas are found to be the major causes of loss in biodiversity. Documentation, conservation and finding

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enhancement strategies of biodiversity is considered to be one of the important challenges in present day conservation, biological research and policy making process (Scott Mills,2013). In view of the above background, several studies on species diversity have been undertaken (Romer, 1949; Selvanayagam et al., 1995; Shrestha, 1996; Urfi, 1997). Since investigation on herpetofauna in Keonjhar district is inadequate, the present study was undertaken to enlist and evaluate the status of Lizards and snakes in hill forest, Sanaghagara natural ecosystem, Keonjhar, Odisha.

## Methodology

For this study, field visits were carried out twice a month at the study site to survey the reptilian diversity

from 2008 to 2013 in entire terrestrial site. The study site is situated between 21°01'-22°10'N latitude and 85°11'-86°22'E longitude. It is bounded by Mayurbhanja district and Bhadrak district to the east, Dhenkanal and Sundergarh district to the west, Jajpur district to the south and Singhbhum of the State Jharkhand to the north. Individuals of a particular species were recorded by visual encounter surveys (Rodel and Ernst, 2000). However, active search involving turning rocks and logs, excavating burrows and termite mounds by the help of snake catcher also provided good results. During day time, attempt was made for heliothermic (basking) reptiles along forest trails, forest edges and stream sides. Data were collected for each individual species encountered during field work. The various aspects such as locality, date, time, weather condition, habitat, sex of each individual (when possible), co-existing species if any and behaviour were noted in a field data sheet. Taxonomic characters of captured species were noted during field work. Photographs of different species and habitat were collected by digital camera from various positions and angle of the species. Species were identified using the described keys (Smith, 1929; David and Vogel, 1996; Schleich and Kastle, 2002). Common English name of herpetofaunal species is followed after Captain and Bhatt (2000) and Jude Sekar (2012). The status of reptilian species is enlisted by using the keys of Anderson (1871); Smith (1950); Bellairs and Underwood (1957); Carroll (1969); Das, (1994), Bhupathy (1995); Hermann (1997) and Venkateswarulu et al. (1995). Endangered species are checklisted by using Biswas et al. (1976); Grombridge (1981); Narayan and Rosland (1990); Murthy (1995); Aengels (1995); Klemens and Thorbjarnarson (1995); and Allen (1996). Data were collected from the secondary information sources like hunters and local inhabitants through interaction and discussion.

## Results and Discussion

Twenty Seven reptilian species were recorded during the survey. Among these, 5 families, 11 genera and 9 species of lizards (Table 1); 5 families 14 genera

**Plate 1:** Lizards of sanghagara forest



**Fig. 1:** Eutropis Multifasciata

and 16 species of snakes (Table 2) were recorded. Among lizards, the family Geckonidae is the dominant family with 4 species followed by family Lacertidae (3 species) and Scincidae (2 species). Similarly, the recorded serpentofaunal diversity is dominated by members of the family Colubridae followed by Elapidae and Viperidae.

*The Recorded Reptiles are As Follows.*

### Lizards-1:

*Eutropis multifasciata* (Fig 1) It is commonly called as "many lined grass skink". It is diurnal; basking in the sun, along forest tracks or on the trees. Skin is smooth and scaled with small legs. Its body colour is olive brown. 2. *Eutropis macularia* (Fig 2). It is commonly called as "bronze grass skink". The body is brown or olive in colour. Tail is 1.25-1.75 times the length of head. It has short snout. 3. *Calotes emma* (Fig 3). It is commonly called as "Gray's forest lizard". Its dorsal crest is well developed on the neck and on the anterior part of the trunk, gradually disappearing behind. Tail is compressed. 4. *Calotes versicolor* (Figs 4 and 5). It is commonly called as "Indian garden lizard". Its colour ranges from brownish-buff to greyish. It has a short crest above the neck. Spines are present above the tympanum. 5. *Japalura planidorsata*. (Fig.6). It is commonly called as "flat backed japalura". Dorsal side is golden yellow in colour and ventral side is grey in colour. Black lines are present on its dorsal side. 6. *Gecko gecko* (Fig.7). It is commonly called as "tokay gecko". Its body is grey in colour having large eyes. Foot pads are well developed. 7. *Cosymbotus platyurus* (Fig.8). Body colour is brown. Its size is small. 8. *Hemidactylus frenatus* (Fig. 9). It is commonly called as "house gecko". This species is largely recorded from human habitations and buildings at various localities of study area. Body colour is dark brown. Length is about 4-6 inches. 9. *Varanus benghalensis* (Fig. 10). It is commonly called as "Bengal monitor". It is dark grey or brownish in colour. It is a tree climber or inhabited in dryer land and road sides of forest.



**Fig. 2:** E. Acularia



Fig. 3: Calotes Emma



Fig. 4: C. Versicolor



Fig. 5: C. Versicolor



Fig. 6: Japalura Planidorsata



Fig. 7: Gecko Gecko



Fig. 8: Cosymbotus Platyrus



Fig. 9: Hemidactylus Frenatus



Fig. 10: Varanus Bengalensis

Table 1: List of lizards from Sanghagara forest

Family	Sl. No.	Common Name	Scientific name	Date of Encounter	Time	Habitat
Scincidae	01	Many lined grass skink	<i>Eutropis multifasciata</i>	07.03.2008	11:20am	Secondary and degraded forest areas, road sides
	02	Bronze grass skink	<i>Eutropis macularia</i>	12.06.2008	4:40pm	Scrub forest, near human habitation
Lacertidae	03	Gray's forest lizard	<i>Calotes esemina</i>	27.07.2008	10:20am	Stream side, scrub forest

	04	Indian garden lizard	<i>Calotes versicolor</i>	02.05.2008	05:30	Scrub forest, mesic forest, near human habitation
Geckonidae	05	Flat backed Japalura	<i>Japalura planidorsata</i>	10.04.2008	11:25am	Rocky dry stream bed, shrub forest
	06	Tokay Gecko	<i>Gecko gecko</i>	27.07.2008	8:30am	Shrub forest, road side shrubs along forest trails
	07	Flat tailed Gecko	<i>Cosymbotus platyurus</i>	12.06.2008	09:50am	Secondary forest, on rocks trees
	08	Asian house Gecko	<i>Hemidactylus frenatus</i>	10.04.2008	4:30pm	Human habitation, ruined gardens, scrub and mesic forest
	09	Bengal monitor	<i>Varanus benghalensis</i>	08 02 2009	09:40am	Peripheral region of forest

**Snakes-1.** *Typhlops diardii* (Blind snake) (Fig. 11). Its body is elongated, cylindrical, and wormlike with blunt snout. Body scales are small. 2. *Python molurus* (Fig.12). Body is greyish-brown with black and red spots. Head is distinct from the neck. Tail is short and prehensile. 3. *Dendrelaphis pictus* (Bronze back tree snake) (Fig. 13). It is a long, slender snake with a pointed head and a bronze coloured line running down its back. This harmless snake prefers the tree tops to life on the ground. This active snake was restless and quick, both on the ground as well as in the trees. 4. *Boiga cynea* (Green cat snake) (Fig. 14) it was tree dweller and green in colour. 5. *Lycodon aulicus* (Common wolf snake) (Fig.15). It was reported near human habitat at study area. 6. *Ptyas mucosa*. (Figs.16 and 17) It was commonly called as "Indian rat snake". Snout was obtuse which was slightly projecting with large eyes. Dorsal side was brown above, frequently with more or less distinct black cross bands on the posterior part of the body and on the tail. 7. *Amphiesmaa stolatum*(Fig.18). It was commonly known as "buff striped keelback". It was a small, slender snake, generally olive-brown to gray in colour. The head and the body are of the same colour. The body of the buff striped keelback was short, and it has a long slender tail. Two yellow stripes along the

length and to the sides of the spine are the distinctive feature of this snake. 8. *Trimeresurus erythrurus*. (Spot tailed pit viper) (Fig.19). It was long and tree dweller. 9. *Echis carinata*(Fig.20 ). It was commonly called as "saw scaled viper". Size ranges between 38 and 80 cm (15-31.5 inches) in total length (body + tail). Head was distinct from neck and snout was very short. 10. *Daboia russelii* (Fig. 21). This snake can grow to a maximum total length (body + tail) of 166 cm (5.5 ft). The head was flattened, triangular and distinct from the neck. The snout was blunt, rounded and raised. 11. *Bungarus fasciatus* (Fig. 22). It is commonly called as "banded krait". Body is elongated and slender, measuring about one metre in length. The colour of the body is steel-blue with narrow cross bars or white specks dorsally and the underparts are uniformly white. Head with normal shields and is not differentiated from neck. Eyes are of moderate size. 12. *Bungarus caeruleus*. (chiti) (Fig.23). It is brown in colour and small in size. 13. *Bungarus niger* (Fig.24) Length is about 4.5 ft. Color is black. Pointed tail and obtuse head was present. 14. *Naja naja* (Cobra). (Fig.25). Body is elongated, measuring one and half to two metres in length. The colour of the body is brown. Head is differentiated from the neck. Neck is dilatable. 15. *Naja kaouthia*(Monocled cobra)

**Plate 2:** Snakes of sanghagara forest



**Fig. 11:** *Typhlops Diardii*



**Fig. 12:** *Python Molurus*



**Fig. 13:** *Dendrelaphis pictus*



**Fig. 14:** *Boiga Cynea*



**Fig. 15:** *Lycodon Aulicus*



**Fig. 16:** *Ptyas Mucosa*



**Fig. 17:** *Ptyas Mucosa*



**Fig. 18:** *Amphiesma Stolatium*



**Fig. 19:** *Trimeresurus Erythrusus*



**Fig. 20:** *Echis Carinata*



**Fig. 21:** *Daboia Russelii*

**Fig. 22:** *Bungarus Fasciatus*



**Fig. 23:** *Bungarus Caerulus*



**Fig. 24:** *Bungarus Niger*



**Fig. 25:** *Naja Naja*



Fig. 26: Naja Kaouthia



Fig. 27: Ophiophagus Hannah



Fig. 28: Ophiophagus Hannah

Table 2: List of snakes from Sanghagara forest

Family	SI No	Common Name	Scientific Name	Habitat
Typhlopidae	01	Blind snake	<i>Typhlops diardii</i>	Near human habitation,shrub forest below rock boulder
Boidae	02	Burmese rock python	<i>Python molurus</i>	Trees, forest in mesic forest
Colubridae	03	Painted bronze back tree snake	<i>Dendrelaphis pictus</i>	On trees, near human habitation,scrub forest
	04	Green cat snake	<i>Boiga cynea</i>	Branches of trees
	05	Common wolf snake	<i>Lycodo nalicus</i>	Forest floor,leaf litter,below rock boulder,scrub forest
	06	Indian rat snake	<i>Ptyas mucosa</i>	Forest floor, termit mound,below rock boulder
Viperidae	07	Buff striped keelback	<i>Amphiesma stolatum</i>	Grassland, near human habitat
	08	Spot tailed pit viper	<i>Trimeresurus erythrurus</i>	Grass land ,peripheral region of forest
	09	Saw-scaled viper	<i>Echis carinata</i>	Schrubforest,near human inhabitants
Elapidae	10	Daboia	<i>Daboia ruselii</i>	Scrub forest, near human habitats
	11	Banded krait	<i>Bungarus fasciatus</i>	Scrub forest, near human habitat
	12	Krait	<i>Bungarus caeruleus</i>	Near human habitat
	13	Black krait	<i>Bungarus niger</i>	Scrub and mesic forest, road side
	14	Cobra	<i>Naja naja</i>	Scrub forest, near human habitat, forest floor, degraded termite mound
	15	Monocled cobra	<i>Naja kaouthia</i>	At degraded forest edge, scrub forest
	16	King cobra	<i>Ophiophagus hannah</i>	Tree, shrub forest.

(Fig.26).The monocled cobra has an O-shaped, or monocellate hood pattern, the dorsal surface may be yellow, brown, gray, or blackish, with defined cross bands. It has a black spot on the lower surface of the hood on either side, and one or two black cross-bars on the belly behind it. 16. *Ophiophagus hannah* (Figs. 27 and 28). It is commonly called as King cobra. Length is about 3-5 metre. Skin is either olive-green or black and it has faint, pale yellow cross bands down the length of the body. It has an expandable hood.

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