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A Study on snakes from Mokhada and Jawhar (Dist. Palghar) Maharashtra, India

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Abstract
Snakes are well adapted to their habitat's. Depending on their habitat they may be aquatic snakes, burrowing and arboreal snakes, Snakes found in different size, shape and color due to their mode of life. Snakes occupy a wide range of habitats which includes fields, forests, wetland, ponds, lakes, streams, rocky hillsides, farmland, vacant plots and residential areas also.
The Mokhada region is having a large number of snakes. A checklist of snakes is prepared on the basis of the information collected from the survey during August 2015 to April 2016.The captured snakes represent 31 types of species under 7 families. In these families 12 were venomous snakes, 19 non-venomous snakes.
The present study is an attempt to evaluate the information, occurrence, abundance &species richness and further assist in the knowledge, awareness and conservation of snake fauna in this region. So this study may play helpful role in conversation of the biodiversity.

Keywords: Biodiversity, Uropeltidae, Lamprophiidae, Elapidae, Viperidae, Venomous, endangered, Swampy

Introduction
The term "Biodiversity" refers to the variety of all forms of life present on the earth, including the different types of plants, various micro-organism and the genes they contain and the ecosystem they form. The biodiversity refers to the different genera and different species of an organisms present in that particular area. The degree of species diversity varies from one ecosystem to another ecosystem. India is very rich country in terms diversity of the flora and fauna present in the natural ecosystem.
The loss of diversity is causing major concern worldwide, the biological wealth of our planet has been declining rapidly and the accusing finger is clearly pointing to human activities. Because due various activities oh human biodiversity is in danger and losing its values. The accelerated rates of species extinctions that the world is facing now are largely due to different activities of humans. To appreciate the endemic and endangered species of India it is very important to understand and know the wide variety of plants and animal's species that are found in the whole country.
Snakes are the members of the class Reptilia commonly they are known as reptiles. All over the world, near about 3783 types of snake species are found out of which 297 species of snakes are found only in the India. The snakes found in India show great diversity and their length varies from 6mm to 10m, while weight ranges between few grams to several kilograms. These remarkable reptiles can live in every biogeographic region of the world, at an altitude higher than 5000m and also survive in deep waters. Snakes occupied deserts, forests, marshy, swampy places, lakes, streams and rivers of different terrains. (Dhamnankar Atul 2006). The present study is an attempt to evaluate the information about different types of snake species their occurrence, abundance and species richness and further assist in the knowledge, awareness and conservation of snake fauna in this region since there is acute paucity of established work and data on this subject till date.

Importance of study of Biodiversity
Every form of the life existing on the earth is very unique and warrants respect regardless of its worth to human beings, this is the ecosystems right of an organism. Every organism has an inherent right to exist regardless of whether it is valuable to human beings or not. It has right to survive in its environment.

Study of biodiversity is very important for conservation and protection of the different species of plants and animals on the earth. No work has been done in this area regarding biodiversity, so it may be very useful in conservation and protection of snakes.

Importance of Snakes

Snakes are very important creatures in the nature because as predators they feed on many harmful bugs and insects those may cause damage to us. Snakes are important to farmers because they eat mice, rats, and all other small mammals those may destroy crops. Snake venom is very important in synthesizing various drugs. Snakes control rodent populations. Snakes play very important role in the food web. Many snakes are medically important. So snakes are important in the nature. Their absence or removal may directly effect on the balance of the ecosystem.

History of Mokhada

Mokhada is a very tribal dominated block in Palghar district. It is situated in the north-eastern corner of the district. Its eastern boundary touches Nashik district and northern boundary touches Gujarat state.

Geography

This area is hilly, with undulating slopes. The area is covered with forests. Two major rivers Waal and Wagh flow through this region. The rivers are flooded during monsoon season, but significantly dry up during dry months. The area receives very heavy rainfall which is between 2500 and 3500mm per annum.

History of Jawhar

Jawhar is located at 19.92°N 73.23°E. It has an average elevation of 447 meters (1466 feet). Jawahar is a hill station located at an altitude of 518 m.It is about 80 km from Nashik and 145 km away from Mumbai. It is situated in newly formed Palghar district. Jawahar is known for its picturesque setting and a vibrant cultural heritage. It is also known as the "Mahabalewshar" of Palghar district. It is one of the very few tribal regions of Maharashtra and is famous for its Warli paintings that are a characteristic landmark of this place.

Fig 1: Map of Palghar district showing Mokhada and Jawhar

Materials and methods

A well-trained snake catcher had captured the snakes that have been sighted during visits or randomly or on request of local people, when snakes were observed in their houses or in and around their areas. After catching the snakes their characteristics, predominant features were noted, photographed and identified as per Deoras (1970), Romulus Whitaker and Khaire (1977). Subsequently the captured snakes were released into the forest area.

Snake catcher had captured all the poisonous, non-poisonous snakes on the request of telephonic calls from the houses of people throughout the year. The snakes were handled very carefully and all possible precautions were taken not to disturb or injure them. After study snakes were released safely in the forests without any harm to them.

The correct identification of reptiles was done by referring various books viz. The book of Indian reptiles (J.C. Daniel, 2002) [4], A guide to Snakes of Maharashtra, Goa and Karnataka (Neelimkumar Khaire, 2006) and Snakes of India: The field Guide (Romulus Whitaker, 2006) [35].

Ethical issues followed during the study

Snakes are abundant in these areas. Snake catchier had captured all the snakes on the request of telephone call from the houses of people throughout the year. the snakes were handled very carefully without giving any injury to them. After study all captured snakes were released in the forest von that day itself.

The snakes were released in a safe area in order to minimize their rescue from the nearby village peoples. All the caught snakes were released on that day itself in the forest without any harm to them.

Table 1: List of snakes in Mokhada and Jwahar:

Mokhada-Jawahar region shows the presence of 30 species of snakes belonging to 07 families. 19 snakes were non-venomous and 11 venomous snakes were identified during the study. Venomous snakes are shown by (English alphabet V). Non-venomous are shown by (English alphabet NV). List of the snakes with their vernacular names and scientific names is given in the following table.

Sr No.	Common Name	Vernacular Name	Scientific Name	Family
	Non-Venomous Snakes (NV)			
1	Indian Rock Python	Ajgar	*Python molurus molurus*	Boidae
2	Banded Racer	Patteri Dhulnagin	*Argyrogena fasciolata*	Colubridae
3	Gunther's Racer	Chitrang Naykul	*Coluber gracilis*	Colubridae
4	Common Indian Trinket Snake	Taskar	*Coelognathus helena helena*	Colubridae
5	Montain Trinket snake	Pahadi taskar	*Coelognathus helena monticollaris*	Colubridae
6	Indian Rat Snake	Dhaman	*Ptyas mucosa*	Colubridae
7	Checkered Keelback Water Snake	Divad	*Xenochrophis piscator*	Colubridae
8	Buff-Striped Keelback	Naneta	*Amphiesma stolatum*	Colibridae
9	Green keelback	Gwatya	*Macropisthodon plumbicolor*	Colubridae
10	Banded Kukari Snake	Kukari saap	*Oligodon arnensis*	Colubridae
11	Bronzeback tree snake	Ruka sarp	*Dendrelaphis tristis*	Colubridae
12	Common Wolf Snake	kavdya	*Lycodon aulicus*	Colubridae
13	Dumerils Black Headed	Kaaltondya	*Sibynophis subpunctatus*	Colubridae
14	Brahminy Worm snake	Wala	*Ramphotyphlops braminus*	Typhlopidae
15	Beaked worm snake	Chanchu wala	*Grypotyphlops acutus*	Typhlopidae
16	Common Sand Boa	Dhurkya ghonus	*Gongylophis conicus*	Boidae
17	John's Sand Boa	Mandul	*Eryx johnii*	Boidae
18	Mahabaleshwar shield tail	Mahabaleshwari khaparkhawlya	*Uropeltis macrolepis mahableshwarensis*	Uropeltidae
19	Bombay Shield tail	Khaparkhawlya	*Uropeltis macrolepis macrolepis*	Uropeltidae
	Venomous Snakes(V)			
20	Common Indian Cat Snake	Manjrya saap	*Boiga trigonata*	Colubridae
21	Common Vine Snake	Harantol	*Ahaetulla nasuta*	Colubridae
22	Brown vine snake	Harantol	*Ahaetulla pulverulenta*	Colubridae
23	Ceylon Cat Snake	Ceylon manjrya saap	*Boiga ceylonensis*	Colubridae
24	Forsten's Cat Snake	Forsten's manjrya saap	*Boiga forsteni*	Colubridae
25	Stout Sand Snake	Jaad Reti saap	*Psammophis longifrons*	Lamprophiidae
26	Common Indian Krait	Manyar	*Bungarus caeruleus*	Elapidae
27	Slender coral Snake	Powala	*Calliophis melanurus*	Elapidae
28	Spectacled Cobra	Naag	*Najanaja*	Elapidae
29	Russel's Viper	Ghonus	*Daboia russelli*	Viperidae
30	Saw Scaled Viper	Fursa	*Echis carinatus*	Viperidae
31	Bamboo Pit Viper	Chapada	*Trimeresurus gramineus*	Viperidae

Result

During the study period near about 400 snakes were captured. The captured snakes were classified under 07 families namely *Uropeltidae*, *Lamprophiidae*, *Elapidae*, *Viperidae*, *Typhlopidae Colubridae*, *Boidae* and *Pythonidae* represents 31 types of species. 12venomous snakes, 19 non venomous and were reported.

1. Indian Rock Python *(Python molurus molurus)* (NV)

Table 2: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Boidae
Genus	*Python molurus*

Distinctive character

1. It is heavily bodied, smooth scaled snake with a lance shaped head and short tail.
2. The bright, blotches pattern may be yellowish to dark brown.
3. The underside is whitish. Yellowish or light orange.
4. These snakes are equipped with heat sensors, small slits near the nostrils.
5. These are largest non-poisonous snakes.
6. Head is with incomplete arrow-shaped mark.
7. Labial pits on lip scale are thermoreceptors and help snake locate warm-blooded prey.

Distribution: All over India.

Habitat/Habits

1. It lives in rocky areas near water bodies.
2. Feeds mainly on small mammals.
3. It excretes undigested Parts of the prey body like horns, hooves, teeth, hair and beak.

Fig 2: *Python molurus*

2. Banded racer (Patteri Dhulnagin): *(Argyrogena fasciolata)* (NV)

Table 3: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Argyrogena fasciolata*

Distinctive character

1. It is light or dark brown, younger ones have white cross bands, regularly placed.
2. The head is little wider than neck. The nose slightly pointed.
3. The scales are smooth but not glossy.

4. The underside is white or yellowish.
5. Adults entirely light or dark brown. Juveniles have white regularly spaced bands. These bands disappear as the snake grow.

Distribution: All over India.
Habitat/Habits
1. It is a fast moving snake, lives in bushes, grasslands, rat holes and stone crevices.
2. Flattens body when alarmed causing it to be mistaken for a cobra.
3. Feeds on rats. Constricts prey before swallowing.

Fig 3: *Argyrogena fasciolata*

4. **Gunther's racer (Chitrang Naykul):** (*Coluber gracilis*) **(NV)**

Table 4: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Coluber gracilis*

Distinctive character
1. It is light greyish brown above with narrow white black edge, cross bar which expands on the outer sides of the body and tail.
2. A bar across the snout in front of the eye and forward forming V shaped marks on the top of the head.
3. Lower parts whitish or yellowish, the outer margins of the ventral are with black spots.
4. A black –edged yellow inverted 'V' mark on the head.

Distribution – Maharashtra, Madhya Pradesh.
Habitat/Habits
1. It lives under dried leaves or stones.
2. Feeds on geckos and skinks in captivity.
3. Found in diverse dry lowland habitats, valleys, rubble slopes, rocky slopes with bushes.

Fig 4: *Coluber gracilis*

4. **Common Indian trinket:** (*Coelognathus helena helena)* (NV)

Table 5: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Coelognathus helena helena*

Distinctive Character
1. It is tan and chocolate brown with two prominent dark stripes on the later part of the body and light band light band checks on the fore part.
2. Two short and dark lines on the either side of the neck may join medially to form and inverted V.
3. Underside is pearly white.
4. The scales are smooth and glossy.

Distribution: All over India
Habitat/Habits
1. It is a terrestrial snake that climbs trees in search of prey.
2. Feeds mainly on rats, lizards and small birds.
3. It raises head when disturbed and strikes with its mouth wide open.
4. Maximium length 168 cm.

Fig 5: *Elaphe Helena*

5. **Indian rat snake (Dhaman) (***Ptyas mucosa*) (NV)

Table 6: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Ptyas mucosa*

Distinctive character
1. Rat snake may be light yellow (on the planes) to jet black in the hills and many shades of green, olive or brown in between.
2. The underside often has cross bars that are quite prominent.
3. Lower lip often has clack horizontal lines.
4. The body is uniformly color but the skin bears inter scale markings which show up when the snake puffs itself up in defense.
5. Eyes are large.
6. Tail forms more than one third of the body and contain a length of 2.5 meters.

Distribution: All over India.
Habitat/Habits:
1. It is commonly seen around agricultural field.
2. Climbs tree and swims well.
3. It feed mainly on rats, so called as rat snake. Also feeds on toads, frogs, lizards, geckos, small birds and bats.

Fig 6: *Ptyas mucosa*

6. Checkered Keelback water snake (Divad) (*Xenochropis piscator*) (NV)

Table 7: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Xenochropis piscator*

Distinctive character
1. Vary in color from black with light markings to bright yellow color with the characteristics black and white Checkered pattern.
2. The one or two black eye streaks are distinctive and head is obtusely pointed and distinct from neck.
3. Underside is usually shiny and pure white.
4. Nostrils are placed high on the snout which facilitate respiration in water.

Distribution: All over India.
Habitat/Habits
1. It is found in rivers, ponds, lakes hunting for fish in shallow waters.
2. It mainly feed on fish and frogs.
3. Maximum length is 175 cm.

Fig 7: *Xenochropis piscator*

7. Buff-Striped Keelback (Naneta) (*Amphiesma stolatum*) (NV)

Table 8: Classification

Kingdom	**Animalia**
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Amphiesma stolatum*

Distinctive character
1. It is closely resembled the water snake.
2. The overall color is light or dark brown with two tan or yellow stripes running down the body length, these stripes are especially bright on the last half of the body.
3. The head is light brown, and the sides of the head, lip area and chin are white or yellow.
4. Two black lines behind the eyes.

Distribution: All over India.
Habitat/Habits
1. It found near water bodies in marshy areas and paddy field.
2. It is called as a shy snake.
3. Spreads its body to display blue or red colour between scales when scared.
4. It feed on frogs and toads.

Fig 8: *Amphiesma stolata*

8. Banded kukari snake (Kukari saap) (*Oligodon arnensis*) (NV)

Table 9: Classification

Kingdom	**Animalia**
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Oligodon arnensis*

Distinctive character
1. Banded Kukaris are reddish or greyish brown with 10-20 black or dark brown bands.
2. The top of the head has a distinct chevron or arrow head design.
3. The underside is white.
4. The scales smooth and glossy, head thin with a blunt tip, eyes round pupiled.
5. Kukari snakes get their name from their sharp, curved teeth, perfect for holding strong prey such as geckos.

Distribution: All over India.
Habitat/Habits:
1. It found in anthills, crevices in rocks, tree hollows. old houses.
2. It feeds on reptile eggs, geckos, skinks and mice.
3. Maximun length is 70 cm.
4. It constricts prey with 2-3 coils before they swallow it.

Fig 9: *Oligodon arnensis*

9. **Bronze back tree snake (Ruka sarp) (***Dendrelaphis tristis*) (NV)

Table 10: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Dendrelaphis tristis*

Distinctive character
1. It is longer and slender with flat heads and large eyes.
2. The sides are dark brown or black with wide light bronze stripes down the Centre of the back. 3. The underside is whitish, grey or light green.
3. The outer edges of the belly scales are notched, forming a fold on either side of the body which serves the snakes when it is climbing.

Distribution: All over India.
Habitat/Habits
1. It mostly found in deciduous forests, dry scrub forests, often seen on babool trees.
2. It feeds on tree frogs, lizards, geckos and small birds.
3. It is one of the fastest Indian snake.

Fig 10: *Dendrelaphis tristis*

10. Common wolf snake kavdya) *Lycodon aulicus*(NV)

Table 11: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Lycodon aulicus*

Distinctive character
1. It is grey, brownish or black with 10-20 thin white or yellow bands.
2. The jet black eyes are protruding slightly and the pupil is invisible.
3. The head is flattish and somewhat pointed, the scales are smooth and slightly glossy.
4. The underside is white.
5. It is the most common Indian wolf snake.

Distribution: All over India.
Habitat/Habits
1. It is nocturnal, climbs vertical walls in search of geckos.
2. It found commonly near human habitation, generally prefers old houses or heaps of rubble.
3. Feeds mainly on geckos and occasionally on skinks and frogs.
4. Maximum length is 80 cm.

Fig 11: *Lycodon aulicus*

11) Brahminy Worm snake (Wala) *Ramphotyphlops braminus* (NV) (Image not available)

Table 12: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Typhlopidae
Genus	*Ramphotyphlops*

Distinctive character
1. It is one of the smallest snake in India.
2. Brown or reddish – brown in colour. Underside is lighter in colour.
3. Body is thin, cylindrical with closely places shiny scales.
4. Eyes are very small and visible under magnification only.
5. Round tail has pointed tip.

Habitat/Habits
1. It lives in soft soil, under fallen leaves or stones. Found above ground after heavy rain.
2. It uses its head to burrow.
3. It feeds on ants, termites and their eggs.

12) Beaked worm snake (chanchu wala) (*Grypotypholus acutus)* (NV)

Table 13: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Typhlopidae
Genus	*Grypotypholus acutus*

Distinctive features
1. Head has same width as the body.
2. Snout pointed with large, hooked beak like scales.
3. Nostrils below the neck.
4. Tiny scales covered eye visible as black dot.
5. Glossy brown above distinctly paler below.
6. Short tail ends in spine.

Distribution: All over India.
Habitat
1. It lives under soil, rotting logs or often fallen leaves.
2. It feeds mainly on worms and insects.

Fig 12: *Rhinotyphlops acutus*

13) Dumerils black headed Snake (Kaaltondya) (*Sibynophis subpunctatus*) (NV)

Table 14: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Sibynophis subpunctatus*

Distinctive character
1. Pale brown above, with a vertebral series of small round black spots.
2. Rostral scale nearly twice as broad as deep.
3. Head and nape dark brown or black lips. *Canthus rostralis* a transverse line between the eyes and two broad cross-bands.
4. It is similar to slender coral snake but belly scales pale greenish, whitish.

Distribution: South of Rajasthan and south of Ganges Valley.
Habitat/Habits:
1. It is terrestrial by nature.
2. Feeds on lizards.

Fig 13: *Sibynophis subpunctatus*

14. Common Sand Boa *(Gongylophis conicus)* (NV)

Table 15: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Boidae
Genus	*Gongylophis conicus*

Distinctive character
1. The overall color of the common sand boa varies from yellowish white to dark brown with irregular blotches all over the body.
2. They are stumpy snake with a very rough tail and a square nose.
3. Superfically they resemble like a Russell's viper.
4. Tail is small, non-prehensile, thick.
5. It burrows in dry sandy plains and hills in India.

Distribution: All over India.
Habitat/Habits
1. It found in sandy areas, prefers to live in crevices or burrows.
2. It is short tempered, coils and hides under body when disturbed.
3. It feeds on mainly small birds, squirrel's, lizards and skins, occasionally eats frogs and small birds.

Fig 14: *Gongylophis conicus*

15) Earth boa/Johns sand boa (Mandul) (*Eryx Johnii)* (NV)

Table 16: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Boidae
Genus	*Eryx johnii*

Distinctive Characters
1. The overall color of the Red sand boa varies considerably, from reddish brown and speckled grey or yellowish to black.
2. The thick body is well adapted for burrowing.
3. The shovel shape nose and a tail so blunt that it appears to have been chopped off make them easy to recognize.

Distribution – Throughout the drier parts of India.
Habitat/Habits
1. It lives in burrows in soft soil and emerges in the monsoon when the ground is waterlogged.
2. It feeds mainly on rats and other small mammals, lizards,

geckos or small birds that land on the ground.
3. Maximum length is 100 cm.

Fig 15: *Eryx johnii*

16. Common Vine Snake *(Ahaetulla nasuta)* **(NV)**

Table 17: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Ahaetulla nasuta*

Distinctive character
1. Vine snakes are long and thin with very pointed heads. The body is uniform parroty green often with a thin white or yellow line separating the black scales from the belly scales.
2. The underside is light green or yellow the scales are smoothie but not shiny.

Distribution: All over India.
Habitat/Habits
1. It found on small bushes and trees.
2. When disturbed enlarges fore body to display a black and white pattern that is hidden under the scales.
3. It feeds on lizards, frogs and small bird.

Fig 16: *Ahaetulla nasuta*

17. Brown vine snake: *(Ahaetulla pulverulenta)* (NV)

Table 18: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Ahaetulla pulverulenta*

Distinctive character
1. Vine snakes are long and thin with very pointed heads.
2. The body is uniform brown in colour.

Distribution: All over India.
Habitat/Habits
1. It found on low bushes in forests.
2. It feeds on small birds, lizards, small mice and tress frogs.
3. Maximum length is 170 cm.

Fig 17: *Ahaetulla pulverulenta*

18. Forstens cat snake (Forstens manjrya saap) *Boiga forsteni* (SV)

Table 19: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Boiga forsteni*

Distinctive characters
1. It is long slightly compressed body and tail.
2. Head is large, large cat like golden eyes with vertical black pupils.
3. It found in ash brown in color, with dark brown or black marks on the back; dark brown streak behind eyes.
4. It resembles Ceylon Cat snake.

Habitat/Habits
1. It found mostly on trees and bushes, sometimes seen at night on the ground.
2. It feeds on lizards, small birds, mice and geckos.
3. Maximum length is 123 cm.

Fig 18: *Boiga forsteni*

19. Slender coral Snake (powala) *Calliophis melanurus* (V)

Table 20: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Elapidae
Genus	*Calliophis melanurus*

Distinctive character
1. It has small body, thin and cylindrical; smooth scaled.
2. It is light brown in colour with black head and neck. Tail has two black rings.
3. Underside of body is coral red, scales under tail are greyish-blue and black.

Distribution: Throughout the peninsular India up to Southern parts of West Bengal.

Habitat/Habits
1. It found mainly underground, in crevices, under stones and dried leaves.
2. When it is disturbed, it curls tail upwards.
3. It fed on Brahminy Worm snakes in captivity.

20. Common krait (Manyar) (*Bungarus caeruleus)* (V)

Table 21: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Elapidae
Genus	*Bungarus caeruleus*

Distinctive character
1. Common kraits are smooth, glossy bluish-black snakes with rounded heads slightly distinct from the neck.
2. There are normally about 40 thin white cross bands.
3. The underside is white.

Distribution: All over India.
Habitat/Habits:
1. Shy temperament.
2. Feeds mainly on snakes sometimes even other kraits, occasionally eat mice, frogs or lizards.

Fig 19: *Bungarus caeruleus*

21. Spectacled cobra (Cobra) (*Naja naja)* (V)

Table 22: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Viperidae
Genus	*Naja naja*

Distinctive character
1. It is smooth scaled snake with black eyes, wide neck and head with medium body.
2. Coloring varies from black or brown to yellowish white.
3. The underside is usually white or yellowish with a wide dark neck band.
4. The famous hood marking of the classic design, shows a connected pair of ring Spectacled cobra.
5. It is the most common and deadly snake in India. When excited it raises itself off the ground.

Distribution: All over India.
Habitat/Habits
1. It is India's commonest venomous snake, found in jungles, grasslands, paddy field, anthills and even in old houses.
2. It feeds on frogs, toads, mice, small birds and occasionally small snakes.

Fig 20: *Naja naja*

22. Saw Scaled Viper (*Echis carinatus***) (V)**

Table 23: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Viperidae
Genus	*Echis carinatus*

Distinctive character
1. Small brownish body of dry appearance.
2. Mostly found under rock and in dry areas produces sound like saw on disturbing by mutually rubbing scales on planks.
3. Arrow shaped mark on the top of the head is also identification.
4. Rounded body. Scales with saw like keels. short tail.

Distribution: All over India.
Habitat/Habits
1. Though it is a nocturnal.it may be seen basking in the morning.

2. When disturbed it coils and rubs its saw like scales together to make a noise like a wood saw.
3. It feed on scorpions, centipedes, geckos, skinks, frogs and small mice.
4. Maximum length is 80.

Fig 21: *Echis carinatus*

23. Russells Viper (Dhurkya ghonus) (*Daboia russelii*) (V)

Table 24: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Viperidae
Genus	*Daboia russelii*

Distinctive character
1. Russell's viper are heavy, rough scaled snakes with vertical eye pupils and generally a very bright pattern.
2. The body color is usually brown or yellowish and the pattern is composed of dark round spots edged with white and black.
3. The underside is white in the western, partly speckled in the southeastern and heavily speckled in the northeastern races.

Distribution: All over India**.**
Habitat/Habits:
1. It found in anthills, rat holes, fields and grassland.
2. It makes a loud hissing sound when disturbed, strikes fast when provoked.
3. It feeds on rats.
4. Maximum length is 180 cm.

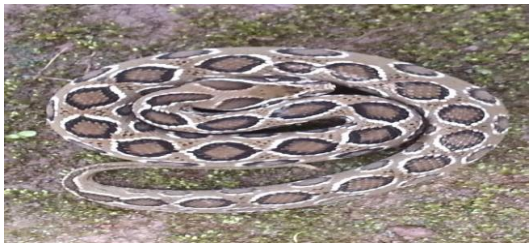

Fig 22: *Daboia russellii*

24.) Green keelback (Gawatya) *Macropisthodon plumbicolor* (NV)

Table 25: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Macropisthodon plumbicolor*

Distinctive character
1. Prescence of yellow color behind the neck. Young have a black inverted 'V' mark on the head and blue black bands on the body, which disappears in adults.
2. Underside is whitish with irregular blocks of black.
3. It is an aquatic species closely related with water.
4. It is olive green, brown or greyish in color with a variable row of black bars along the sides.

Distribution: Distribution: All over India.
Habitat/Habits
1. It found in grassland, forests and also in densely populated cities.
2. It feeds on mainly toads, lizards and frogs.
3. It is harmless to human but its saliva is toxic to toads and frogs.

Fig 23: *Macropisthodon plumbicolor*

25) Bamboo pit viper (Chapada) (*Trimeresurus gramineus)* (V)

Table 26: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Viperidae
Genus	*Trimeresurus gramineus*

Distinctive character
1. Small in size with scales on the body. It has pit like sensory organ placed between each eye and nostril.
2. Upper portion of the body is green while lower is yellow.
3. Broad and triangle shaped head.
4. It is nocturnal and arboreal species.

Distribution: Andhra Pradesh, Bihar, Goa, Gujrat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil nadu and Telangana.

Habitat/Habits
1. Found in hill forest of Sahyadri and Western Ghats. Also reported in Melghat and Nagzira (Maharashtra).
2. It feeds on small mammals, mice, young birds and lizards

Fig 24: *Trimeresurus gramineus*

26 Ceylon Cat snake (Ceylon manjrya saap) Boiga ceylonensis (SV)

Table 27: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Boiga ceylonensis*

Distinctive character
1. Body is brown or yellowish marked with blackish markings.
2. Laterally flattened body with smooth and long scales.
3. Black, dark brown or reddish patches to cross lines found from head to tail.
4. It resembles Beddome's Cat snake.

Distribution: Whole of Western Ghat up to Maharashtra.
Habitat/Habits
1. It is an arboreal snake.
2. It found on trees and bushes.
3. It feeds mainly on lizards, small birds, mice, frogs and geckos.
4. Maximum length is 130 cm.

Fig 25: *Boiga ceylonensis*

27 Stout sand snake (Jaad Reti saap) *Psammophis longifrons* (SV)

Table 28: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Lamprophiidae
Genus	*Psammophis longifrons*

Distinctive character
1. Black edge on most of the dorsal scales on grayish brown ground color.
2. Long body, slender and covered with smooth scales.
3. Elongated head, not depressed on top and slightly broader than neck.
4. Large eyes with rounded pupil.

Distribution: Found in drier zones of Western India including eastern, central, western Maharashtra, most of central Gujrat, Western Madhya Pradesh.
Habitat/Habits
1. It found in trees and also on the ground. Hot and arid habitats.
2. It is very shy, does not bite if handled.
3. Feeds mainly on skinks.

Fig 26: *Psammophis longifrons*

28. Mahabaleshwar shieldtail (Mahabaleshwari khaparkhawlya) *Uropeltis macrolepis mahableshwarensis.* (NV)

Table 29: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Uropeltidae
Genus	*Uropeltis macrolepis mahableshwarensis.*

Distinctive character
1. Small, slender body and covered with glossy smooth scales.
2. Dorsal color ranges from brown to dark chocolate brown with more or less yellow spots.
3. Very short tail, appears sloppy and bears two spines lying side by side on end.

Distribution
Found in major hill ranges. Western ghat, eastern ghat, Satpura hills of central India.

Habitat/Habits
1. It found in Mahabalewshar.
2. It feeds on earthworm.

Fig 27: *Uropeltis macrolepis mahableshwarensis*.

29. Bombay Shieldtail (Khaparkhawlya) *Uropeltis macrolepis macrolepis* (NV) (Image not available)

Table 30: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Uropeltidae
Genus	*Uropeltis macropelpis*.

Distinctive character
1. It has cylindrical smooth body with shiny scales.
2. Ventral scales are narrower than breadth of the belly.
3. It has small head and truncate tail.
4. Black or bluish black body has spots and a short yellow stripe on each side of the tail and these join at the anal scale.

Habitat/Habits:
1. It is shy in temperament and pushes its head under soil to hide itself.
2. It mostly feed on earthworm.

30. Montane Trinket snake (pahadi taskar) *Coelognathus helena monticollaris* (NV)

Table 31: Classification

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Reptilia
Order	Squamata
Sub-order	Serpentes
Family	Colubridae
Genus	*Coelognathus helena monticollaris*

Distinctive character
1. It is slender-bodied.
2. The colour may vary from olive to tan to chocolate-brown, with a distinctly banded forebody. The bands consist of several rows of large, yellow, oval or round spots encircled with black.
3. It is found in both thick evergreen forests and towns.
4. Trinket snakes will eat lizards, frogs and small birds. Like the common rat snake, they are also extraordinary rat-eating machines!
5. The montane trinket snake is a viviparous snake (it gives birth to live young).4. It is a non-venomous snake that is active by day and night.

Distribution: All over India.
Habitat/Habits:
1. It is a terrestrial snake that climbs trees in search of prey.
2. It feeds on rats, lizards, and small birds.
3. Maximum recorded length is 28 cm.

Fig 28: *Coelognathus helena monticollaris*

Discussion
Species in reptile assemblage are not only distributed in space either horizontally or vertically, but occupy discrete microhabitat. (Heatwole 1982).
The India subcontinent, being tropical, harbors a variety of venomous and non-venomous snakes. The four major venomous biting species are cobra or Naja Naja (Linne,1758) Krait or Bungarus caeruleus(Schneider.1801) Russell's viper or Vipera russelli (Shaw,1797), and saw scaled viper or Echis carinatus (Schneider 1801).
Nande and Deshmukh (2007) also reported 32 species of snakes in Amravati district. Joshi (2011) also reported 22 species of snakes in Buldhana district.
Ingale P., Bali S., Khandale J., also have studied Preliminary Survey of Snake Diversity from Malegaon Tehsil of Washim District. Maharashtra. During their study they have reported 15 venomous snakes.04 non-venomous and 01 semi venomous snake
In previous study Harney N.V. (2011) have also Studied On Snakes of Bhadrawati, District Chandrapur (M.S.). During their study period they had collected 466 snakes and classified under 6 families namely Elapidae, Viperidae, Colubridae, Diapsididae, Boidae and Pythonidae these families represents 17 types of species. 4 poisonous snakes, 12 nonpoisonous and 1 semi poisonous snakes were reported.
Walmiki N. *et al.*, (2012) also have studied herpe to fauna of Bassein fort and surrounding region, Thane, Maharashtra, India. They have reported the reptilian and amphibian diversity was in and around Bassein fort. The reptilian diversity comprises 23 snake species, 3 skinks species, 5 gecko species and 3 lizard species and 1 terrapin and 1 turtle species. Amphibian includes 5 frog and 1 toad species.
Karangutkar *et al.*, (2013) studied the faunal diversity of Kolak estuary Vapi, Gujrat and found 10 different species of snakes. Lewis *et al*., (2010) studied on the herpetological observations from field expeditions to North Karnataka and South-West Maharashtra and found 28 species of snakes.
Raut S.R., *et al* (2014) have studied the biodiversity of snakes from Palghar district. They have studied biodiversity of snakes from, Palghar, Manor and Saphale. They have identified 15 non-venomous, 03 semi venomous and 07 venomous snake's species.
Whereas this study includes the biodiversity of Jawahar and Mokhada from Palghar district. No study has been done in this area on same topic. It is very important in conservation of biodiversity. I have found 19 non-venomous snake's species, and 12 venomous species. Few species are not reported in previous study.

Conclusion
During this study, I have observed 31 species of snakes amongst which 19were non-venomous, 12venomous snakes. The area with lush green vegetation, hilly terrain forms a suitable habitat for other reptilians. From the above studies, it can be concluded that the Mokhada-Jawahar has 301 types of

snake's species belonging to 7 families of which 12 are venomous and 19 are non-venomous snakes. The present study indicates rich biodiversity of snakes and presence of some rare snakes in this region. It will help to provide information, awareness and conservation of snake's fauna of Mokhada–Jawahar city. If one snake park is available here it may play a vital role in conservation of snakes. Similarly, with the natural beauty this place may get scientific beauty and attention also. Due to rich biodiversity in this area, it may give best condition to preserve snakes.

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