



Study of snake (Serpentes: Squamata) fauna of Dumna Nature Park, Jabalpur, India

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Abstract

Snakes are among the most successful creatures adapted to ecologically diverse habitats predominantly in warm tropical areas of the world. Ecologically they play a pivotal role in ecosystem functioning and are part and parcel of a number of food webs due to their predatory nature. The present paper reports 12 species of snakes belonging to twelve genera and six families of order Squamata from Dumna Nature Park, Jabalpur.

Keywords: squamata, serpentes, dumna nature park, scales, supralabials, temporals

1. Introduction

Snakes are diurnal or nocturnal, carnivorous and exothermic vertebrates. They have been placed in the suborder Serpentes of order Squamata of class Reptilia. Snakes are among the most successful creatures adapted to ecologically diverse habitats predominantly in warm tropical areas of the world. They are lacking girdles and limbs, except in Boas and Pythons and their body is covered by overlapping scales. These robust and repulsive creatures are bestowed with elongated body equipped with a tail of variable length (Sharma, 2007) [4]. Their size can range from mili meters (*Typhlop*: 73 mm, smallest snake) to meters (Reticulate Python: 10 m, largest snake). There are about 3273 species of snakes known worldwide, out of which 302 species have been reported from India (www.indiansnakes.org). There are about 153 species of fresh water snakes making about 5 per cent of all known snakes in the world (Pauwels *et al.*, 2008) [2]. Here in India, about 52 venomous species of snakes have been reported, among which 32 are over the land (examples are Vipers, coral snakes, Pythons, Kraits, Cobras, King cobra) and 20 are Sea snakes (Chandra, 2008). State of Madhya Pradesh is represented by 44 species of snakes (www.indiansnakes.org).

Study site

Jabalpur district lies in the eastern half of Madhya Pradesh- the central Indian state. Geographically it lies between 23° 10' North latitude and 79° 59' East longitude with a total geographic area of 5211 sq. km. Dumna Nature Park (DNP) is located (23° 10' North latitude and 80° 1' East longitude) on Dumna Airport Road in district Jabalpur of Madhya Pradesh. The Park has an area of 1058 ha is a mixed forest under Jabalpur Municipal Corporation managed by the Department of Forestry, government of Madhya Pradesh. The present paper reports the snake fauna of Dumna Nature Park.

2. Methodology

The study was carried out during 2015 and 2016 season to document the snake fauna of Dumna Nature Park, Jabalpur.

Extensive field expeditions were taken both during day and night in order to explore the diurnal and nocturnal snake fauna of the DNP. The surveys were based on opportunistic visual sightings. No specimen was physically harmed or collected due to legal constrains and ethical causes. Identification process was carried by using latest available taxonomic literature and field guides by Whitaker and Captain (2004) [6] and Pyron and Wallach (2014) [3]. Broadly four sites were marked in DNP namely Forest edge, Mid forest, Near water body and Road side for observing the snake fauna.

3. Results

Twelve species of snakes belonging to twelve genera and six families were documented during the year 2015 and 2016. The list of snakes (given in the table) and systematic account of the snake fauna is presented below.

Table 1: List of Snakes

S. No.	Scientific name	Common name
Pythonidae		
1	<i>Python molurus</i> Linnaeus, 1758	Indian Rock Python
Natricidae		
2	<i>Amphiesma stotatum</i> Linnaeus, 1758	Striped Keel back
3	<i>Macropisthodon plumbicolor</i> Cantor, 1839	Green Keel back
4	<i>Xenochrophis piscator</i> Schneider 1799	Checkered Keel back
Colubridae		
5	<i>Lycodon aulicus</i> Linnaeus, 1754	Common Wolf Snake
6	<i>Ptyas mucosus</i> Linnaeus, 1758	Rat Snake
7	<i>Oligodon taeniolatus</i> Jerdon, 1853	Russell's Kukri
8	<i>Argyrogena fasciolata</i> Shaw, 1802	Banded Racer
Elapidae		
9.	<i>Bungarus caeruleus</i> Schneider, 1801	Common Indian Krait
10.	<i>Naja naja</i> Linnaeus, 1758	Spectacled Cobra
Viperidae		
11.	<i>Echis carinatus</i> Schneider, 1801	Saw-scaled Viper
Sibynophiidae		
12.	<i>Sibynophis subpunctatus</i> Duméril and Bibron, 1854	Dumeril's Black-headed Snake



Fig 1



Fig 2



Fig 3

Systematic account

1. Python molurus Linnaeus, 1758

1758. *Coluber molurus* Linn, *Syst. Nat.*, 10th ed.: 225.

1943. *Python molurus*, Smith, *Fauna Brit. India*, Reptilia and Amphibia, 3: 106.

Diagnostic characters: Average body length 7 ft to 12 ft; dorsal body surface irregular shaped with patches of dark brown or blackish color; head triangular, clearly broader than neck and distinct from the neck with symmetrical shields, eyes with vertical pupils, iris flecked with gold; body scales arranged in 60-75 rows; ventrals 245-270 and are much narrower; caudals in 60-72 pairs; nostrils are large and situated high on the snout (Fig. 1).

Observation locality: Dumna Nature Park (Near forest edge).

Distribution: India: Andhra Pradesh, Chattisgarh, Delhi, Goa, Haryana, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Puducherry, Punjab, Tamil Nadu, Telangana, Uttar Pradesh, West Bengal. Elsewhere: Nepal, Pakistan and Sri Lanka.

2. Amphiesma stolata Linnaeus, 1758

1758. *Coluber stolatus* Linnaeus, *Syst. Nat.*, 10 th ed.: 219.

1943. *Natix stolata*, Smith, *Fauna Brit. India*. Reptilia and Amphibia, 3: 303.

1991. *Amphiesma stolata*, Sanyal, *Fauna of Orissa*, 4: 68.

Diagloistic characters: Average body length 50 cm. Olive-greenish or brownish above with black spots or reticulated crossbars; two yellowish brown stripes run longitudinally from neck to end of the tail where they become more prominent; ventral surface glossy white with reddish or grayish tint on either side near dorsals. Supralabials 7; one pre and 3 postocular; temporals are generally 1+2; scales round the body are in 19 rows, strongly keeled except the outer most row; subcaudal shields are from 50-89; ventral shields are from 118-158 (Fig. 2).

Observation locality: Dumna Nature Park (Mid forest).

Distribution: India: Throughout India. Elsewhere: Bhutan, Nepal, Pakistan and Sri Lanka.

3. Macropisthodon plumbicolor Cantor: 1839

1839. *Tropidonotus plumbicolor* Cantor, *Proc. Zoo I. Soc.*: 54.

1943. *Macropisthodon plumbicolor*, Smith, *Fauna Brit. India*, Reptilia and Amphibia, 3: 314.

Diagnostic characters: Average length- 50cm; head is distinct from the neck, head broad and short; eyes with round pupil; supralabials are 7; loreal is one; one preocular and 2 or 3 postocular scales present; one subocular is found most cases, in certain cases it is missing; temporals are 2+3 or 2+2; hemipenis reaches upto the 15th caudal plate. Lush green dorsal body surface, a black stripe from the eye to the angle of the mouth and regular transverse black spots on the back and tail (Fig. 3).

Observation localities: Dumna Nature Park, Jabalpur (Mid forest)

Distribution: INDIA: Chhattisgarh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Uttar Pradesh and Rajasthan. Elsewhere: Burma, Pakistan and Sri Lanka.

4. Xenochrophis piscator Schneider: 1799

1799. *Hydrus piscator* Schneider, *Hist. Amph.*, 1: 247.
1943. *Natrix piscator*, Smith, *Fauna Brit. India, Reptilia and Amphibia*, 3: 293.

Diagnostic characters: Average length- 90cm. Body olivaceous or yellowish above, whitish or yellowish below. Head is distinct from neck, with a bluntly pointed snout; nostrils are between nasals; one loreal; eyes with round pupil; preocular one or rarely two; postocular three; posterior temporals are 2 to 4 in number; anterior temporals two in number; eight to ten upper labials; ventrals are 122-158; anal is divided; subcaudals are 60-97; Hemipenis forked (Fig. 4).
Observation locality: Dumna Nature Park, Jabalpur (Forest edge).

Distribution: Throughout India. Elsewhere: Bangladesh, Bhutan, Myanmar, Nepal and Sri Lanka.

5. Lycodon aulicus Linnaeus, 1754

1754. *Coluber aulicus* Linnaeus, *Mus. Adolph. Frieder*, 1: 219.
1943. *Lycodon aulicus*, Smith, *Fauna Brit. India, Reptilia and Amphibia*, 3: 263.

Diagnostic characters: Average length, 50 cm. Snout spatulate, projecting beyond the lower jaw; preocular is one, touching the frontal shield; temporal scales are variable; supralabials are 9; loreal is one with intimate contact with the internasal; body scales are smooth, in 17:17:15 rows; supralabials are 9; ventral shields are 172-224; subcaudal shields are 56-80; hemipenis extends up to the tenth caudal plate (Fig. 5).

Observation locality: Dumna Nature Park, Jabalpur (Near water body).

Distribution: Throughout India. Elsewhere: Bangladesh, Pakistan, Sri Lanka and Myanmar.

6. Ptyas mucosus Linnaeus: 1758

1837. *Coluber korros* Schlegel *Phys. Serp.* ii.: 139 and *Abbild Amphib.* 1840: 99, pls. 27-28
1758. *Coluber mucosus* Linnaeus, *Mus. Ad. Frid.*, 1: 37.
1943. *Ptyas mucosus*, Smith, *Fauna Brit. India, Reptilia and Amphibia*, 3: 159.

Diagnostic characters: Average length 7 ft. Body brown, yellowish or greyish above, with irregular black crossbars on the posterior side of the body; the scales on the posterior portion of body are edged laterally in certain cases; maxillary teeth 23-28; body scales in 15: 15 rarely 13: 11 smooth rows; subcaudals 120- 147; ventrals 160-187; anals are 2; intromission organ, hemi-penis extends up to the 10th-12th caudal plate (Fig. 6).

Observation locality: Dumna Nature Park, Jabalpur (Near road side).

Distribution: India: Throughout India and its associated islands. Elsewhere: Burma, Bangladesh, Malaysia, Nepal and Southeast Asia.

7. Oligodon taeniolatus Jerdon: 1853

1853. *Coronella taeniolata* Jerdon, *Jour. Asiat. Soc. Bengal*, 22: 528.
1943. *Oligodon taeniolatus*, Smith, *Fauna Brit. Ind.*, 3: 223.
1966. *Oligodon taeniolatus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134: 133-134.

Diagnostic characters: Average length- 45cm. Body slender with uniform diameter from neck to vent; ventrum is yellowish or grayish; dorsal body surface is quite variable and light brown, blackish brown or buff; with transverse spots which are rounded; head is slightly distinct from the neck; loreal is open; supralabials 7, the 3rd and 4th touching the eye; preocular is 1; postocular 2; anterior temporal 1; supralabials 7, the 3rd and 4th touching the eye; usually scales at middle of body are in 15 rows; ventral shields are 158-218; subcaudal scales 29-56; anal shield is divided; hemipenis is forked and extends to the 11th caudal plate (Fig. 7).

Observation locality: Dumna Nature Park, Jabalpur (Road side).

Distribution: India: Found in peninsular India, Northern-western states excluding Jammu and Kashmir, Gujarat and Bihar. Elsewhere: Bangladesh, Iran.

8. Argyrogena fasciolata Shaw: 1802

1802. *Coluber faciolutus* Shaw, *Gell. Zoo I. iii:* 528.
1995. *Argyrogena faciolutus*, Sanyal and Sur, *Fauna of Kanlza Tiger Reserve, Madhya Pradesh. Zool. Sur. India:* 51-62.

Diagnostic characters: Average length- 90cm. Light or dark olive-brown dorsal surface, embellished with narrow cross-bars towards anterior half of the body; body slender and covered with sub-equal smooth scales; posterior part of body with indistinct dark cross-bars or spots, these spots progressively disappear posteriorly towards the tail. Supralabial scales 8 or 9; preocular 1; presubocular 1 or may be absent; loreal 1; temporal 2+2, 2+3 or sometimes 3+3; postocular 2; Subcaudal 77-92; anal divided. Maxillary teeth 12-14 in number (Fig. 8).

Observation locality: Dumna Nature Park, Jabalpur (Mid forest).

Distribution: India: Madhya Pradesh, Uttar Pradesh, West Bengal and throughout Peninsular India. Elsewhere: Bangladesh, Nepal, Pakistan and Sri Lanka.

9. Bungarus caeruleus Schneider: 1801

1801. *Pseudoboa caerulea* Schneider, *Hist. Amph.*, 2: 284.
1943. *Bungarus caeruleus*, Smith, *Fauna Brit. India, Reptilia and Amphibia*, 3: 413.

Diagnostic characters: Average length- 90-120cm. Black or

bluish-black on dorsal surface with narrow white crossbars, which are less distinct on the anterior portion, or sometimes entirely absent; dorsal coloration is jet black to dark-brown; eyes small and dark. Scales round the body are in 15 or 17 rows; 7 supralabials; 1 preocular touches posterior nasal hence loreal absent; 2 postocular; upper labials are yellowish; ventrum is whitish (Fig. 9).

Observation locality: Duma Nature Park, Jabalpur (Forest edge)

Distribution: India: Throughout India. Elsewhere: Bangladesh, Bhutan, Pakistan and Sri Lanka.

10. *Naja naja naja* Linnaeus: 1758

1758. *Coluber naja* Linnaeus, *Syst. Nat.*, 10th ed.: 221.

1943. *Naja naja*, Smith, *Fauna Brit. India*, Reptilia and Amphibia, 3: 427.

Diagnostic characters: Colour variable, generally brownish to blackish and dorsoventrally flattened. Head slightly distinct from the neck, dilated into a hood; usually with a spectacle mark on the hood or mark may be absent; eyes with round pupil; Scales smooth, in 19-25 rows, no occipital shields. Preoculars one or two in number; three postoculars; supralabials are 7; Infralabials are 7, 8 or 9; temporals are 2+3 or 2+4; anterior and posterior chin shields are nearly equal (Fig. 10).

Observation locality: Dumna Nature Park, Jabalpur (Near water body).

Distribution: Throughout India. Elsewhere: Africa, Malaysia, Sri Lanka and Southern Asia.

11. *Echis carinatus* Schneider: 1801

1796. *Ind. Serp. Russell*, 1: pl. 2, (Arni).

1801. *Pseudoboa carinata* Schneider, *Hist. Amphib.*, 2: 2.

1943. *Echis carinatus*, Smith, *Fauna Brit. India*, Reptilia and Amphibia, 3: 487.

Diagnostic characters: Average length- 40 cm. Pale brown or greyish or sandy dorsal side with a vertebral series of pale dark edged spots which are connected on each side with a light inverted-U shaped mark enclosing a dark area; a cruciform mark on top of the head; head is short, quite distinct from the neck; ventral side whitish, uniform or spotted with brown. Scales on the top of the head are small, imbricate, elongated keeled, 8-12 on a line between the supraoculars; 10-15 scales are present in most of the individuals excluding the supraocular; temporal scales are keeled except the lower most row; supralabials are 10-12; scales of the body are in 25-29: 27-37: 21: 27 rows, the oblique series is in 4-5 rows; subcaudal shields are from 23-39; ventral shields are from 132-185; hemipenis is deeply forked (Fig. 11).

Observation locality: Dumna Nature Park, Jabalpur (Mid forest).

Distribution: India: Throughout India. Elsewhere: Ghana, Kenya, Nigeria, Iran, Sri Lanka, whole of Middle East and Pakistan.

12. *Sibynophis subpunctatus* Duméril and Bibron: 1854

Common name: Duméril's Black-headed Snake

1854. *Oligodon subpunctatus* Dum. and Bibr., *Erp. Gen.*, 7: 58.

1943. *Sibynophis subpunctatus*, Smith, *Fauna Brit. Ind.*, 3: 279.

Diagnostic characters: Average length 30 cm. Dorsal body surface is light brown with a dorso-median series of black spots; ventrim is yellowish; Supralabials 9 or 10, the 3rd, 4th and 5th touching the eye; two anterior temporals are present; subcaudal shields are from 42-76; ventral shields are 151-215; the hemipenis not forked, extends to 8th subcaudal plate (Fig. 12).

Observation locality: Dumna Nature Park, Jabalpur (Road side).

Distribution: India: Andhra Pradesh, Chattisgarh, Daman and Diu, Goa, Gujarat Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Puducherry, Punjab, Tamil Nadu and West Bengal. Elsewhere: Sri Lanka and Pakistan.

4. Conclusion

India has a rich and diverse Serpentes fauna. So far 302 species of snakes have been reported from India, out of which 44 belong to the state of Madhya Pradesh. The present paper reports 12 species belonging to six families of suborder Serpentes of Squamata from Dumna Nature Park, Jabalpur. The snake fauna was observed in four arbitrarily marked sampling sites namely Mid forest, Near water body, Forest edge and Road side.

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6. References

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