



CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF  
**PHARMACEUTICAL SCIENCES**

<http://doi.org/10.5281/zenodo.1001134>

Available online at: <http://www.iajps.com>

Research Article

**FAUNISTIC DIVERSITY OF SERPENTS (REPTILIA:  
SQUAMATA) IN NAVEGAON NATIONAL PARK OF NNTR  
MAHARASHTRA INDIA WITH SPECIAL REFERENCE TO  
THEIR CONSERVATION**

**G.T. Paliwal<sup>1\*</sup> and S.V. Bhandarkar<sup>2</sup>**

<sup>1</sup> Assistant Professor & Head, Department of Zoology, S. S. Jaiswal College,  
Arjuni/Morgaon-441701, Dist. Gondia. MS

<sup>2</sup> Assistant Professor & Head, Department of Zoology, M. B. Patel College, Deori-441901,  
Dist. Gondia. MS

**Abstract:**

*The Navegaon National Park is located on the undulating hills, which form the catchment of Itiadoh dam and Navegaon Bandh Lake. It covers an area of 133.88 sq km of pristine dry deciduous to moist deciduous forest. The area has special habitats like caves, cliffs, and thickets on gentle to steep slopes of hills which shelter variety of herpetofaunal species. This reserve is known for its rich diversity of endemic mammals and birds. Since its establishment in 1975, the faunal diversity of Navegaon National Park has been surveyed by wildlife scientists and nature lovers. A very little published literature is available on faunistic diversity of the park. Regardless of the high priority given to the forest in terms of legislation, the reserve is facing threats due to various human activities. This study investigates the faunistic diversity of snakes and also discusses the conservation approaches that would contribute the well being of serpent community of the park.*

**Keywords:** National Park, Serpents, NNTR, Conservation, Management.

**Corresponding author:**

**G.T. Paliwal,**

Assistant Professor & Head,

Department of Zoology,

S. S. Jaiswal College, Arjuni/Morgaon-441701,

Dist. Gondia. MS

Email: [drpaliwalgt@gmail.com](mailto:drpaliwalgt@gmail.com)

QR code



Please cite this article in press as G.T. Paliwal and S.V. Bhandarkar, *Faunistic Diversity of Serpents (Reptilia: Squamata) In Navegaon National Park of NNTR Maharashtra India with Special Reference to Their Conservation*, Indo Am. J. P. Sci, 2017; 4(10).

**INTRODUCTION:**

Navegaon National Park is situated in Gondia district of Maharashtra state and is about 150 km from Nagpur. It covers an area of 133.88 Sq km of pristine dry deciduous to moist deciduous forest [1]. The area has special habitat like caves cliffs, thickets on gentle to steep slopes of hills which shelter variety of herpetofaunal species. There were no scientific documentation available from this area, ours is the first attempt to explore the serpent diversity from this park.

A perusal of literature on reptilian (Serpent) diversity reveals that many reports from central India & erstwhile central provinces [2-7].

Various workers have studied & reported herpetofauna from National parks also. Agarwal (1976) [8] recorded 8 species from Kanha National park & Sanyal & Sur (1995) [9] described 22 species of reptiles from Kanha Tiger reserve. Chanda (1995, 96) [10,11] recorded 05 species. Agarwal recorded 03 species from Pench National park, Pasha et al., (2002) [12] recorded 10 species from Pench National park.

In terms of endemism in vertebrates India ranks fifth in reptiles but in management strategies of National parks mostly higher vertebrates like birds

and mammals are emphasized and reptilian fauna is overlooked. Such lack of attention to conservation issues with respect to reptilian community is mostly due to our ignorance of biology of such species. Therefore the present investigation is undertaken to prepare faunistic diversity atlas of serpents (snakes) of this park, and also to discuss threats and conservational issues.

**MATERIAL AND METHODS:**

For the present study all the forest ranges, zones, roads, water bodies, scrub jungle, dense forest, open forest etc were surveyed by using visual encounter method with the assistance of the park officials, local tribal & nature lovers from the area from September 2009 to August 2011. The serpents encountered were photographed & later identified using standard literature & diagnostic keys (Smith (1943) fauna of British India Vol. 3 (Serpents), Chanda (2002), Daniel (2002), Khaire (2006) [13-16].

**OBSERVATIONS AND RESULTS:**

Table I & plate I & II illustrates the serpents species recorded in the park. In the present investigation 29 species of serpents belongs to 05 families were recorded. The diversity of snakes apparently seems to be fairly rich in the park.

**Table 1: Serpent Diversity in Navegaon National park.**

Sr. NO.	Zoological Name	Common Name	Local Status	IUCN Status	IWPA Status
	<b>Class- Reptilia</b>				
<b>I</b>	<b>Sub-order- Serpents</b>				
	<b>Family- Typhlopidae</b>				
1	<i>Ramphotyphlops braminus</i> (Daudin)	Common Blind Snake	C	LR,NT	Sch:IV
2	<i>Rhinotyphlops acutus</i> (Dum and Bibr)	Beaked Worm Snake	UNC	LR,NT	Sch:IV
<b>II</b>	<b>Family-Boidae</b>				
3	<i>Python molurus</i> (Linnaeus)	Indian Rock Python	UNC	EN	Sch: I
4	<i>Eryx conicus</i> (Schneider)	Russell's Sand Boa	C	LR-NT	Sch:IV
5	<i>Eryx johnii</i> (Russel)	John's or Red Sand Boa	R	LR,LC	NS
<b>III</b>	<b>Family- Colubridae</b>				
6	<i>Coelognathus helena</i> (Daudin)	Common Trinket Snake	C	LR,NT	Sch:IV
7	<i>Ptyas mucosa</i> (Linnaeus)	Common Rat snake	C	LR,NT	Sch: II
8	<i>Argyrogena fasciolata</i> (Shaw)	Banded Racer	UNC	LR,NT	Sch:IV
9	<i>Oligodon taeniolatus</i> (Jerdon)	Russell's Kukri Snake	R	LR,NT	Sch:IV
10	<i>Oligodon arnensis</i> (Show)	Common Kukri Snake	C	LR,LC	Sch:IV
Continue.....					

Sr. NO.	Zoological Name	Common Name	Local Status	IUCN Status	IWPA Status
11	<i>Dendrelaphis tristis</i> (Daudin)	Common Bronze back Tree Snake	C	LR,NT	NS
12	<i>Lycodon striatus</i> (Shaw)	Barred Wolf Snake	C	LR,NT	Sch:IV
13	<i>Lycodon aulicus</i> (Linnaeus)	Common Wolf Snake	C	LR,LC	Sch:IV
14	<i>Sibynophis subpunctatus</i> (Dumeril & Bibron)	Dumeril's black headed Snake	UNC	LR,NT	Sch:IV
15	<i>Xenochrophis piscator</i> (Schneider)	Checkered keelback	C	LR,LC	Sch: II
16	<i>Amphiesma stolata</i> (Linnaeus)	Buffstriped keelback	C	LR,NT	Sch:IV
17	<i>Macropisthodon plumbicolor</i> (Cantor)	Green Keelback	R	LR-NT	Sch:IV
18	<i>Atretium schistosum</i> (Daudin)	Olive Keelback	C	LR,LC	NS
19	<i>Boiga trigonata</i> (Schneider)	Common Cat Snake	C	LR,LC	Sch:IV
20	<i>Boiga forsteni</i> (Dumeril & Bibron)	Forsten's Cat Snake	UNC	LR,LC	NS
21	<i>Ahaetulla nasuta</i> (Lacepede)	Common Vine Snake	UNC	LR,LC	NS
<b>IV</b>	<b>Family- Elapidae</b>				
22	<i>Bungarus caeruleus</i> (Schneider)	Common Krait	C	LR,NT	Sch:IV
23	<i>Bungarus fasciatus</i> (Schneider)	Banded Krait	C	LR,LC	NS
24	<i>Calliophis melanurus</i> (Shaw)	Slender Coral Snake	R	LR,NT	Sch:IV
25	<i>Naja naja</i> (Linnaeus)	Spectacled Cobra	C	LR,NT	Sch: II
26	<i>Naja naja kaouthia</i> (Lesson)	Monocled Cobra	R	LR,NT	Sch: II
<b>V</b>	<b>Family- Viperidae</b>				
27	<i>Daboia russelli</i> (Shaw & Nodder)	Russell's Viper	UNC	LR,NT	Sch: II
28	<i>Echis carinatus</i> (Schneider)	Saw Scaled Viper	R	LR,NT	Sch:IV
29	<i>Trimeresurus gramineus</i> (Shaw)	Bamboos Pit Viper	UNC	LR,NT	Sch:IV

### DISCUSSION:

In the present investigation 29 species of snakes (Venomous 07, Semi-venomous 02 & 10 Non-venomous) belonging to 05 families were recorded. Out of the total 29 species recorded family Colubridae was dominated with 16 species followed by family Elapidae with 05 species, family Boidae & Viperidae with 03 species each and family Typhlopidae with 02 species.

As far as local status in the park is concerned 15 species are commonly found (C), 09 species are uncommon (UNC) and 05 species are rare (R) in their occurrence. According to IUCN status 01 species is included as Endangered (EN), 11 species in Near Threatened (NT) and 08 in Least Concern (LC) category. As per status under Indian Wildlife (Protection) act 1972 (IWPA), 01 species is included in schedule- I, 05 in schedule -II and 17 in schedule- IV.

Reptiles are poorly studied groups as the information regarding their distribution, population dynamics and threats are incomplete, and most of the information available is only from a few well studied locations. Many species share common distribution with the National parks and Sanctuaries in the State itself as well as with the

PAs from the nearby states like Chhattisgarh, Madhya Pradesh, Gujarat, and Andhra Pradesh and so on.

Many species of them are habitat specialists can be used in monitoring habitat quality as indicators of specific habitat. According to Biju (2008) [17] the core philosophy of the conservation is to protect the habitat, the species then conserve themselves. Thus accordingly a very rich reptilian fauna, though some of them are threatened occurs in the habitat of the National park under study.

Due to various human activities (such as encroachment, cattle grazing, agriculture, use of inorganic fertilizers & pesticides, extraction of non-timber forest produce, forest fire etc.) of inhabitants of the villages in vicinity of the forest imposing a great degree of disturbances that adversely affect the forest species especially herpetofauna (serpents) that are known to be highly sensitive to habitat alteration.

There are some villages around the boundary of the Navegaon National Park. The main form of livelihood of these villagers is agriculture, which takes a variety forms such as cultivation of

economic crops mainly paddy farming. Most of the cultivation fields & human settlements are located quite close to forest boundary. It is also observed that villagers, who live adjoining the forest boundary, they encroached the forest area mainly for cultivation. The application of pesticides and inorganic fertilizers in paddy fields especially in the periphery of the forest may adversely affect insect population within the forest causing the reduction in prey population for reptiles. Besides the use of agro-chemicals can cause direct toxicity and therefore have lethal effects on reptiles (Somaweera, 2001) [18].

In addition to agriculture the villagers are engaged in extraction of non-timber forest produce like Tendu leaves (*Diospyros melonoxylon*) Mahua (*Madhuka indica*) flowers and other commercial forest products. Peoples use to burn the forest floor for easy collection of these products due to which the inhabitant fauna like small insects & other invertebrates, on which serpents usually feed gets destroyed and thus imposing serious threats to these creatures. Peoples always kill snakes because they are afraid of a poison. Taking in to consideration all the threats some recommendations is made.

#### RECOMMENDATIONS:

- Promoting research activities that focus on aspects of population dynamics, distribution and ecology of herpetofaunal groups is vital for conservation of these populations.

- The populations of threatened herpetofauna should be continuously monitored, particularly in the face of habitat loss and fragmentation.
- Awareness programmes should be carried out to educate the people and to encourage in them the value of safeguarding biodiversity. Such educational programmes should target the villagers living around the Navegaon National Park.
- The stakeholders of the forest should be encouraged to adopt eco-friendly agricultural practices. Local farmers should be encouraged to use organic fertilizers and biological pesticides and strict instructions should be given regarding the recommended dosages of agro-chemicals.
- In all conservation activities wherever possible, it is advised that a participatory approach be adopted, where the conservation approaches would consider the socio-economic status of local inhabitants and attempt to practically involve the local people in the management and sustainable utilization of forest and wildlife resources (IUCN, 1991) [19].

#### Plate I: Serpent Diversity in Navegaon National Park



*Gongylophis coincus*



*Coilognathus helena*



*Macropisthodon plumbicolor*



*Phython molurus molurus*

Plate II: Serpent Diversity in Navegaon National Park



*Daboia russelli*



*Ptyas mucosa*



*Sibynophis subpunctatus*



*Bungarus fasciatus*



*Naja naja*



*Boiga trigonata*



*Trimeresurus graminsis*



*Amphiesma stolata*

**REFERENCES:**

- 1.Champion, H.P. (1968): A revised survey of forest types of India, Government of India press New Delhi.
- 2.Smith, M.A. (1931): The Fauna of British India including Ceylon and Burma: Reptilia and Amphibia. Vol.I Loricata, Testudines. Taylor and Francis, London. (Reprinted 1974, 1995 by Today and Tomorrow's Printers and Publishers, New Delhi).
- 3.Agrawal, H.P. (1981): on the collection of reptiles from Madhya Pradesh, India. The Indian Journal of Zoology 22 (3), 203-206.
- 4.Sanyal, D.P. and G. Dasgupta (1990): On the collection of reptiles from Baster District- M.P., Central India, Hamadryad 15 (1): 18-20.
- 5.Pillai, R.S., M.S. Ravichandran and P. Tamilarasan (1991): Herpetological survey of Narmada valley Madhya Pradesh 2 Amphibia of Narmada Valley. Cobra 5: 12-14, 18-19.
- 6.Ingle, M. (2002): Ecology and status of the ophiofauna of eight districts of Malva region of Madhya Pradesh. Cobra 50: 1-17.
- 7.Gajbe, P. (2003 b): Herpetofaunal diversity of Dindori district, M.P. Cobra 54. 6-8.
- 8.Agrawal, H.P.(1976): Fauna of Kanha National park, Reptilia Newsletter of the Zoological Survey of India 2 (6), 247-249.
- 9.Sanyal, D.P. and S. Sur. (1995): Reptilia In: Fauna of Conservation areas No. 7: Fauna of Kanha Tiger Reserve, Z.S.I., 51-62 pp.
- 10.Chanda, S.K. (1995): Amphibian Fauna of Indravati Tiger Reserve. In Fauna of Conservation areas, ZSI, (6): 71-75.
- 11.Chanda, S.K. (1996) Amphibian Fauna of Kanha Tiger Reserve. In: Fauna of Conservation areas, ZSI, (7): 47-49.
- 12.Pasha, M.K.S., G. Areendran, K. Sankar and Q. Qureshi (2002): A Preliminary checklist of Snakes of Pench Tiger Reserve, M.P., Cobra 40: 5-8.
- 13.Smith, M.A. (1943): The fauna of British India, Cylon and Burma: including the whole of the Indo-Chinese region. Reptilia and Amphibia vol. 3 (serpents). Taylor and Francis, London, 383 pp + I-Xii + I map.
- 14.Daniel, J.C. (2002): The Book of Indian Reptiles. B.N.H.S., Bombay, 141 pp.
- 15.Daniel, J.C. (2002): Indian Reptiles & Amphibians, Oxford University press, Oxford House, Mumbai.
- 16.Khaire, N. (2006): A guide to snakes of Maharashtra, Goa and Karnataka. Indian Herpetological Society.
- 17.Biju, S.D. (2008): The tragedy of nameless extinction. *The Hindu* Survey of Environment.123-129 pp.
- 18.Somaweera, R. (2001): Biodiversity survey on the herpetofauna of the Manikdena archeological site, Dambulla, Sri Lanka. Abstracts of the young environment symposium. University of Sri Jayawardenapura and young biologists Association of Sri-Lanka.
- 19.IUCN (1991): Caring for The Earth- A Strategy for Sustainable living. IUCN, Gland, Switzerland.