



OPHIDIAN DIVERSITY, ECOLOGICAL STATUS OF NAKANA LAKE AND CONSERVATION: CASE STUDY

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ABSTRACT:

Nakana Lake is irrigation project built over Panzara River, Morane, Dist. Dhule. Previously known as West-Khandesh, North- Maharashtra region of India, run parallel to the National Highway No.-6 (NH-6). It is natural site where river originate within the in close proximity hills. Survey on ophiodiofauna right through the lake and vicinity area was made from Aug., 2018 to Sept., 2019. Yielding of our observations was 23 species of snakes which represent six families and 20 genera with including species of Typhlopidae (2), Pythonidae (1), Boidae (2), Colubridae (13), Elapidae (3) and Viperidae (2). As per previous and earlier research family colubridae had been included maximum species here also. Among the reported species 10 species are under Lower Risk- near Threatened (LR-nt), 9 are Lower Risk- least Concern (LR-lc), 3 are Not Assessable (NA) and *Coelognathus Helena* species shown Vulnerable (Vu) according to International Union for Conservation of Nature (IUCN) status. Nakana lake shown diverse and favorable habitats for significant creature of the ecosystem but these animals are forever susceptible by anthropogenic activities.

Keywords: Panzara River, *Coelognathus Helena*, Morane, Khandesh.

INTRODUCTION:

Most captivating animal in the world is snake. Owing to different mode of life they show diversity in size, shape and coloration. They reside in ample variety of territories including sea and still Himalayan mountains, like Aquatic: pond, lake and stream or Terrestrial: grassland, woodland, farm land, barren land, hillside, fossorial, arboreal and also in inhabited site of human, Harney (2011). They are nocturnal and form key role in food chain, biomoniter as pest controller and admirable bioindicator due to their power of detection of even trivial environmental change. Near about 3000 snake species are found all over the world. Amid them 278 species are reported in India out of which 58 species are Poisonous (Raut *et al.*, 2014).

Chemical structure of snake venom is Complex mixture of protein. These toxins are affecting different systems of the body. Among

these neurotoxins (bother on nervous system), haemotoxins (affect on circulatory system), Cytotoxins (Affect on cell system), bungarotoxins (affect on respiratory system and cerebral part of brain) and numerous other toxins influence on the body by various way. Near about all snake venom contains a special type of enzyme, the hyaluronidase which is helpful in faster diffusion rate of venom, Maidankar (2015). For envenoming of every snake bite, Antivenom is the merely specific treatment. But in rural communities which are living in tropics snake bite is one of the ignored public health issue. Every year 1.8 million people snake bites were recorded, out of which 1, 25,000 died in it and thousands are survive but as sufferer with life- altering long term morbidity, Slagboom *et al.* (2017), shown in fig.- 15 and 16. But obtainable content of Antivenom wrap only inadequate number of medically important snake species. According to Simpson (2008) public

awareness about use of antivenom is main anxiety. There is no ophidiofaunal study carries out until at the present.

MATERIAL AND METHOD:

The present study area is one of man-made lake situated on the Panzara River, 6 km away from Dhule city, Maharashtra, India. It is very scenic and calm place located on heaving hills. The geographical location of the lake having Longitudes: 74.7417477 and the Latitudes: 20.9095349 shown in fig., -1. Well-developed forest is present at the opposite side of the lake. Including many trees, shrubs, herbs and grasses that start drying from post monsoon, cattle grazing are observed in the area. This natural forest declared as bird sanctuary. Agricultural plots are cover North West side of the lake. All type of habitats is present which is favorable and prefer by the snake in this area. The study was conducted during Aug., 2018 to Sept., 2019 from Nakana lake Dist. - Dhule, Maharashtra, India. Active explorations were made in day and night, randomly walking by visual counter method (Doan, 2003). with the help of well trained snake catchers in their habitats like water body of lake, rocks and crevices, dead and fallen logs, grass land and dense bushes of “Kewda (*Pandanus odoratissimus*)” etc., shown in fig.3, with help of snake catching devices. After recognition of snake with their morphological structure photographs were taken. By referring tactics of Deoraj (1965); Danial (2002); Whitakar and Captain (2004) and Khaire (2010) identification and comparison was done. Next to then the captured species of snakes were released in the study area with the help of snake catcher.

RESULT AND DISCUSSION:

In the present investigation total 23 snake species were reported from the Nakane lake and around area, these species belonging to 6 families and 20

genera. The scientific name, common name, type, occurrence, habitat and IUCN status of the snake species were illustrated in Table- 1. These families are namely Typhlopidae, Pythonidae, Boidae, Colubridae, Elapidae and Viperidae. Family wise percentages of these ophidian species were shown in fig., -2. Family Colubridae was dominant with 13 species.

From above data 17 species were non-venomous, a single species was Semi-venomous and 5 species were venomous snakes, equivalent study made by Joshi *et al.* (2014). According to Khobragade and Pawar (2015); Lalremsanga *et al.* (2018) point out that from their survey in various states of India including Maharashtra, non-poisonous snakes were found to be highest content as compare to venomous and semi-venomous snakes. Snakes were shown assortment about their abundance i.e. Brahminy Worm Snake, Common Trinket Snake, Indian Rat Snake, Common Wolf Snake, Checkered Keel back, Spectacled Cobra and Russell’s viper are found abundant. Banded Racer, Common Kukri snake, Painted Bronze back Tree Snake and Indian Green Keel back were occurred communally, Beaked Worm Snake, Rock Python, Red Sand Boa, Barred Wolf snake and Common Krait are uncommon. Common Sand Boa, Slender Racer, Russell’s Kukri Snake, Yellow Spotted Wolf Snake, Common Cat Snake, Slender Coral Snake and Saw-Scaled Viper were occur in rare status, corresponding investigation made by Bhandarkar *et al.* (2010). Habitat preferred by these species like Arboreal, Terrestrial, Aquatic, fossorial, land dweller and some were occurred in rock crevices. According to IUCN red list (Molur and Walkar, 1998) above mention 23 species of snakes, out of which 10 are LR-nt (Lower Risk- near Threatened), 9 are LR-lc (Lower Risk- least Concern), 3 are NA (Not Assessable) and the species single is Vu (Vulnerable). Related work carried out by Ingle *et*

al. (2014) recorded 21 species were rescued from Malegaon Tahsil of Washim District after receiving call from local people and shared their experiences as snake friends (Sarpmitra). Lewis (2010) recorded 28 snake species from North Karnataka and South-West of Maharashtra as well as Tambre and Chavan (2016) recorded 12 species from SRTMU Campus of Nanded and 10 km² in close proximity area.

Conservation:

Snakes are impotent group of animals to maintain the connections keep up equilibrium of nature in territories, Walmik *et al.* (2012). But they threatened always by anthropogenic activities, shown in fig 4 to 6. Unluckily so many misconceptions are about snakes in people's mind and millions of villagers are face as painful reality in their day to day life. Grass bidders set fire for cutting grass in rainy season and snakes are moved outside and easily identified to the predatory birds, tree cutting of fire wood and cattle grazing appears to be frightening the snake species, human interference in their habitat for recreation, frequently fire and smoke occurs at the process of food preparation, all these things are destroyed their habitat. For the reason of the degradation of the territory they move in search of new habitat and encountered by human (Yadav *et al.*, 2014) or sufferer to accidental road killing (Bernardino and Dalrympel, 1992). Obviously the density and diversity of the snake species decline globally bit by bit. From recorded data 9 species shown rare status of occurrence, amid the venomous snakes, Saw Scales viper is one of the snakes which come beneath most deadly venomous 10 snakes of the world and three species of *Lycodon* genera (*L. straitus*, *L. flavomaculatus*, *L. aulicus*) also reported from study area hence there is pressing requirement to protect these bedrock species. This study will facilitate to deliver information, alertness and

protection of the organism. Some vessel and region of this area necessity to extensive investigation give probabilities of more species reported after this with its density.

CONCLUSION:

It has been accomplished according to the annotations, Nakana lake and vicinity area are provide accommodation to affluent diversity of ophidian fauna. Presence of rare species designate the ecosystem fulfills all the need of each and every factor but various anthropogenic activities destroy their environment. Snakes are key factor and plays important role in food chain. Due to habitat destruction they divert to human habitat and kill by them. By providing correct information and elevating scientific awareness intensity about snake is the urgent necessity. More species being report in future and prefer excellent opportunities for quantitative appraisal of ophidian species.

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REFERENCES:

- Bernardino, Jr., F. S. and Dalrymple, G. H. (1992). Seasonal activity and road mortality of the snakes of the Pa-Hay-okee wetlands of Everglades National Park, USA. *Biological Conservation*, 61: 71-75.
- Bhandarkar, W. R., Paliwal, G. T., Bhandarkar, S .V. and Kali, A. A. (2012). Herpetofaunal diversity at Navegaon National Park, Distt.-Gondia, Maharashtra, *Int. J. for Env. Rehab. and Cons.*, III (1): 41-49.

- Danial, J. C. (2002). Books of Indian Reptiles and Amphibians, Bombay Natural History Society and Oxford University Press. Mumbai,
- Deoras, P. J. (1965). Snakes of India, National Book Trust (NBT), New Delhi.
- Doan, T. M. (2003). Which Methods are Most Effective for Surveying Rain forest Herpetofauna, *J. of Herpetology*, 37: 72e81.
- Harney, N.V. (2011). Studied on snakes of Bhadravati, District Chandrapur (M.S.) India, *Online Intern. Inter. Res. J.*, 1(1): 12-17.
- Ingle, P., Bali, S. and Khandagale, J. (2014). Preliminary Survey of Snake Diversity from Malegaon Tahsil of Washim District, *World J. of Zoo.*, 9(2): 134-137.
- Joshi, P. S., Tantarapale, V. T. and Kulkarni, K. M. (2014). A Review of Ophidian studies in Vidarbha region (M.S.) India. *Sci. Res. Reporter*, 4(2): 167-170.
- Khaire, N. (2010). Snakes, Indian Herpetological society, Pune.
- Khobragade, K. and Pawar, V. B. (2015). Diversity and Ecological Status of Serpent Fauna of Degraded Forest Habitat of in and around Lonar Lake Reservoir (Lonar Crater Rim), Buldhana District, Maharashtra, *IJESI*, 4(1):19-21.
- Lalremsanga, H. T., Saipari, Sailo and Chinliansiana (2018). Diversity of Snakes (Reptilia: Squamata) and Role of Environmental Factors in Their Distribution in Mizoram, Northeast India, *Adv. in Env. Chem.* Pp. 265-268.
- Lewis, T., Piggot, S., Rawland, G. and Oldham, G. (2010). Herpetological observations from field expeditions to North Karnataka and South-West Maharashtra. *Herpetological Bull.*, 17-37.
- Maidankar, S. A. (2015). Study and Data Collection of Snakes Sighted in Amravati Region, (M.S.) India. *Ind. J. of App. Res.*, 5(11): 360-362.
- Molur, S. N. and Walkar, S. (eds.) (1998). Report of Workshop “Conservation Assessment and Management Plan for Mammals of India” (BCCP- Endangered Species Project), Zoo Outreach Organization, Conservation Breeding Specialist Group, India, Coimbatore, India.
- Raut, S. R., Deshbhratar, S. N. Mahaley, J. A., Hile, V. K., Singh, A. J., Mehata, G. (2014). Recent studies on the biodiversity of snake in Palghar region, Thane, Maharashtra, India. Pelagia Research Library. *Adv. Appl. Sci. Res.*, 5(2): 373-381.
- Simpson, I. D. (2008). The “worldwide Shortage” of antsnake venom: is the only right answer “produce more” or is it also “use it smarter?” *Wildness Environ Med.*, 19: 99-107.
- Slagboom, J., Kool, J., Robert, A. H. and Casewell, N. R. (2017). Haemotoxic snake venoms: their functional activity, impact of snake bite victims and pharmaceutical promise, *British Journal of Hematology*, 117, 947-949.
- Tambre, G. N. and Chavan, S. P. (2016). Snake species diversity of Swami Ramanand Teerth Marathwada University, Nanded, Maharashtra State, India, *J. Curr. Res. Aca. Rev.* 4 (6): 104-115.
- Walmiki, N., Awsare, V. Karangutkar, S., Wagh, V., Yengal, B., Salvi, S. and Pillai, R. (2012). Herpetofauna of Maharashtra Nature Park, Mumbai, Maharashtra (India). *World J. of Env. Biosciences*, 1(2): 90-99.
- Whitaker, R. and Captain, A. (2008). Snakes of India. The field Guide. Draco Books. Chengalpattu, Tamil Nadu, xiv+479.
- Yadav, O.V., Yankanchi, S. R. and Patil A. M. (2014). Diversity, Threats and Conservation of herpetofauna in Shivaji University Campus, Kolhapur, Maharashtra, India. *Int. J. Curr. Microbiol. App. Sci.*, 3(6): 742-749.

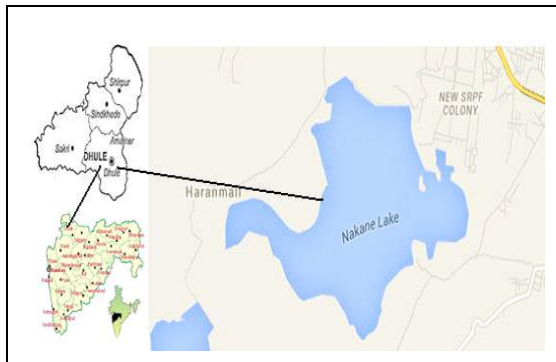


Fig.-1, Map Showing Nakana Lake, Dhule.

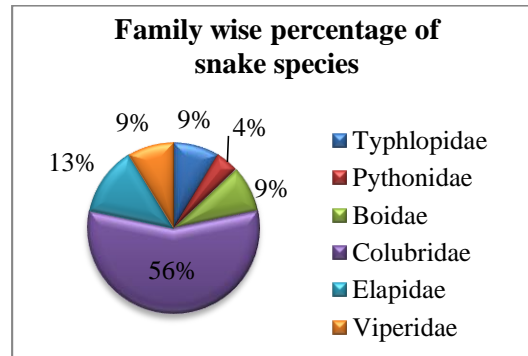


Fig.-2, % occurrence of families of snake



Fig-3, Dense bushes of "Kewda"



Fig-4, Fire wood collection



Fig-5, Cattle grazing



Fig.-6, Food preparation by people.



Fig.- 7, *Gongylophus conicus*



Fig.-8, *Ramphotyphlops braminus*



Fig.-9, *Macropisthodon plumbicolor*



Fig.-10, *Naja naja*



Fig.-11, *Echis carinatus*



Fig.-12, *Daboia russelii*



Fig.-13, *Bungarus coeruleus*



Fig.-14, *Dendrelaphis pictus*



Fig.-15, Victim of snake bite.



Fig.-16, Victim of snake bite.