

Seasonal Impacts on Species Specificity in Squamates from Dhule, Maharashtra

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Abstract

The present study was carried out at Dhule district during June 2022 to May 2023. The survey was carried out by indirect and direct method. Total 198 individual of different species were observed from study area. After comparing the data, it had been observed that most species of lizards were lower in number in the public places and dance populated area habitat as compared to the natural peaceful area away from public places. the seasonal diversity of lizards in concerned of the study area, the more species observed in monsoon season and few found in winter.

Key Words :- lizards, species, seasonal, diversity, habitat, Dhule .

Introduction

India is rich in species diversity of lizards, which are the remnants of a certain ancestral group of reptiles, once widely distributed in much diverse ecological conditions. The modern lizards comprise capable swimmers, fast runners, accomplished burrowers, tree dwellers and perfect gliders. These lizards exhibit remarkable arboreal scansorial (climbing)~saltatorial (fossorial or burrowing), cursorial (running), aquatic (swimming) and volant (flying) adaptations. Lizards can be defined as exothermic (poikilothermic), secretive, diurnal or nocturnal, carnivorous, herbivorous and omnivorous creatures. Skull is typically diapsida with two temporal arches and the articulation of mandibular rami is sutural. The form of the teeth vary according to the food habits. Generally two types of teeth are found in Indian species; acrodent, which are fixed to the parapet of the jaws and pleurodent, which are fixed to the inner aspects of the jaws. Many species show a clear division of teeth into incisors, canines and molars. The bones of anterior skull region have some flexible movements. Supraoccipital and parietal form a loose attachment, thus providing a flexible and lever-like mechanism to the bones of fronto-parietal portion over the occipitospheoidal legion of the skull.

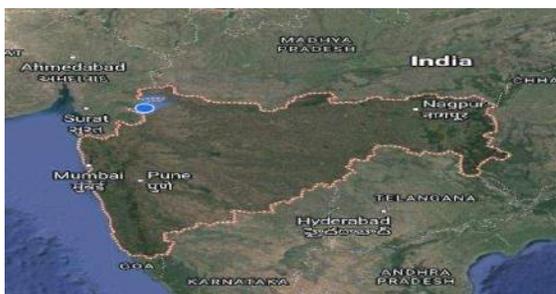
The body of a lizard is covered with a horny epidermal sheath of scales, which periodically shed either in flakes or in a single piece like the snakes. Scales exhibit a marked degree of variations in arrangement, position and -structure depending on the species. Tongue is an olfactory organ and is extremely variable in shape, size and structure in different families of lizards. This may be short or long, forked, thickened, club-shaped, extensible and retractile. In lizards tongue-cannot be withdrawn into a sheath. Eyes are well developed in terrestrial species; degenerated in burrowing forms; devoid of nictitating membrane; pupils are movable round or vertical, eyelids are well developed or fuse to form a transparent spectacle over the eye; in most of the terrestrial species vision is well developed. External ear openings are present but the hearing is poor. respiration is pulmonary, both left and right lungs are present and breathing takes place by thoracic movements. lizards are oviparous or viviparous; ,eggs are flexible or hard shelled and ovoid in shape; embryo is provided with a sharp calcareous egg-tooth at the extreme tip of the snout, which is shed shortly after birth. Size of the tail varies from species to species, depending on the habitat and mode of life, in some cases it is absolutely short while in others it is abnormally long and males are with a broaden tail base than females.

Material And Method

Study area

Dhule city is District headquarters and one of major city located on border of two states namely Madhya Pradesh and Gujarat. With three national highway and two state highway it has great connectivity with other parts of country. Tapi is the major river of this district while Panzara river is passing from the middle of city. it has the great historical background with many forts like laling,

Galna, Songir, Thalner. Topographically Dhule city is located at 20.9°N;74.78'E. The total area of Dhule city is 172 km². rural area of Dhule 8063 km². The average temperature ranges from 16°C to 41°C. it is a tropical wet and dry climate with hot, dry summer and mild to cool winter. Summer last from march to June, monsoon season from July to October and winter from November to March. collection of sample from the different regions of the Navapur region of dhule district. namely S₁,S₂, S₃, S₄, S₅



Survey and Data collection: -

The collection of data was started from June -2022 to May 2023. In various locations of Dhule district namely S₁,S₂,S₃,S₄,S₅. this period used direct sampling such as visual Encounter Method (Doan2003), Opportunistic and head to head counting method and indirect sampling such as acquiring information from local people.

Photographic Documentation: -

Natural photographs of the lizards were by using a Nikon COOPIXB500 digital camera. It was taken at different angels of the species which were observed in natural condition at surveyed period.

Identification and Nomenclature: -

After the photography, lizards were identified by using diagnostic keys of Smith (1935; 1943). Nomenclature by Das (2000) and Daniel (2002).

Data analysis: -

The data were used to obtain significance or non- significance and comparative species diversity and richness of the studied lizard fauna were quantified with the help of PAST version 1.6 software (Hammer *et al.*, 2011).

Observations And Results:-

In this study, a total of 178 lizards were observed by indirect and direct methods in natural habitat. The observed species *Hemidactylus flaviviridis*, *Hemidactylus frenatus*, *Hemidactylus giganteus*, *Hemidactylus frenatus*, *Calotes versicolor*, *Calotes rouxi*, *Eutropis carinata*, *Eutropis macularia*, *Varanus bengalensis*, *Asymblepharus sikkimensis* and *Sitana ponteceriana*. Consequently 75 (41.67%) individual of 10 species of Lizards found from residential area where as 105 (58.33%) individual of 11 species of Lizards found from the on residential area. Among them *Hamidactylus flaviviridis* has highest proportion to the residential area habitat type. *Sitana ponteceriana*, fan throated lizard was not f found in residential area habitat.(The total individual of all species of lizard fauna which observed in both residential and non-residential areas were separately tested for species diversity and richness. Non- Residential area habitat was found most diverse for lizard fauna (H= 2.237) as compared to the Residential area habitat.

Table 1.0 Shows the observations of lizards occurance during study period.

No	Common Name	Scientific Name	Family	S1	S2	S3	S4	S5	IUCN Status
1	Brook's Gecko	<i>Hemidactylus brookii</i>	Gekkonidae	15	12	12	02	00	C
2	Banded Gecko	<i>Geckoella deccanensis</i>	Gekkonidae	10	07	12	11	12	UC
3	Rock Gecko	<i>Hemidactylus</i>	Gekkonidae	06	07	08	08	08	UC

		<i>maculatus</i>							
4	Yellow-green House Gecko	<i>Hemidactylus flaviviridis</i>	Gekkonidae	09	05	03	01	00	UC
5	Leschenault's Leaf-toed Gecko	<i>Hemidactylus leschenaultii</i>	Gekkonidae	07	02	03	04	04	UC
6	Common Garden Lizard	<i>Calotes versicolor</i>	Agamidae	15	14	12	22	23	C
7	Fan-throated Lizard	<i>Sitana ponticeriana</i>	Agamidae	01	02	05	12	11	UC
8	Forest Calotes	<i>Calotes rouxii</i>	Agamidae	11	13	12	14	17	C
9	Monitor Lizard	<i>Varanus bengalensis</i>	Varanidae	00	00	00	00	01	VR
10	Indian Chameleon	<i>Chamaeleo zeylanicus</i>	Chamaeleonidae	00	00	00	01	01	VR

C= common, UC= Uncommon, R=Rare VR=very rare

Seasonal diversity:-

Lizard diversity in Dhule area showed that the maximum diverse species of reptilian in rainy season in July, August, September and October. In Winter Season low diverse species of reptilian in urban area of Dhule.

Discussion:-

Annual diversity of lizard fauna in the present study showed that the maximum diversity in June, July, August and September. The minimum lizard fauna observed in November to February (Winter Season). This is due to the fact that Lizards are poikilothermic animal and hence they hibernate in crevices, borrows or other their habitual place, which was the reason to be low diversity in winter season. On the other hand monsoon is favorable breeding season for most lizards' species and hence diverse reptilian fauna observed in rainy season. The present observation is mimicking with the observation of (Joshi *et al.*, 2016; Kumbharet *al.*, 2013) on the lizards study in other areas of Maharashtra. Increasing road networks, noise pollution and increasing industrial garbage in human residing area which leads negative response to number as well as variety of species at that area. The maximum number of individual attribution of *Hemidactylus flaviviridis*, a wall lizard that resides on the walls of human inhabitant areas is because this species is adaptable to anthropogenically altered habitat. This species has given more proportion of individual to residential area habitat type. The rest of other species on human residential area is low in number as compared to non-residential area. Increased ground temperature and radiation due to removal of trees for road, bungalows and industrial purpose may also effect on normal temperature regime which influence the lizard is attribution. Absence and low number of individual is due to the reduction of resource, protection, camouflage, microclimate and reduction in influence of biotic interaction. (Henkel and Schmidt, 2000; Scot *et al.*, 2006).

Conclusion:-

Concluded that the human activities such as cementation, dumping of garbage on breeding place, deforestation, habitat fragmentation, disturbance due to noise pollution etc. can lead to decline the numbers and variety of lizard's community in urban area. In future, researchers should keep an eye to eye to prevent further alienation and vulnerability of lizards community in response to human activities.

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