

Original Research Article

Diversity, Threats and Conservation of Herpetofauna in Shivaji University Campus, Kolhapur, Maharashtra, India

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ABSTRACT

The present study is conducted in Shivaji University campus during July 2012 to Dec 2013. Shivaji University, Kolhapur (SUK) situated at South-West of Maharashtra at 16°40'31.81"N and 74° 15'12.10"E. It covers an area of about 853 hectare and the major area is covered with natural vegetation. During the survey, we reported 34 species of herpetofauna, which represents about 4.25% of all known amphibians and reptiles from India. All reported species belongs to 30 genera distributed among the 6 families of amphibia in which *Ramanella marmorata* is endangered and *Raorchestes bombayensis* is vulnerable and 10 families of reptilian. The SUK campus is confronting various degrees of threats due to human disturbances including habitat destruction by cutting grass for cattle feed, setting fire to the grasslands, cutting big trees and therefore relative abundances of the above mentioned herpetofauna is low due to above mentioned threats. Therefore, immediate conservation actions are recommended and specific attention must be paid over restoration of open areas with fast growing plants and control over fire settings in grasses.

Keywords

Conservation,
Diversity,
Herpetofauna,
SUK,
Threats

Introduction

Amphibians and Reptiles play an important role in the ecosystem as links in food chains, bio-monitors in controlling insect pests and also as excellent ecological indicators owing to their high degree of sensitivity to even a slight change in the environment (Lips 1998; Roy 2002; Daniels RJR 2003).

India harbors 342 species of amphibians which includes 306 species of anura, 35 species of gymnophiona and 1 species of

salamander (Dinesh et al. 2013). The amphibians of the Western Ghats are diverse and unique, with more than 80% of the 181 amphibian species being endemic to the region (Radhakrishnan & Rajmohana 2012). 518 species of reptiles which includes 3 species of crocodiles, 34 species of turtles and tortoises, 202 species of lizards and 279 species of snakes belonging to 28 families recorded till date from India (Aegnals et al. 2012), among which Western Ghats comprise 203

species with 61% (124 spp.) endemism (Radhakrishnan & Rajmohana 2012). Shivaji University situated in outskirts of Kolhapur city adjacent to Western Ghats. In the present study, an attempt has been made to document the diversity of herpetofauna in Shivaji University, Kolhapur (SUK) campus.

Study area

The present study was conducted in Shivaji University; Kolhapur (SUK) situated at South-West of Maharashtra at 16°40'31.81"N and 74°15'12.10"E, in the outskirts of historic Kolhapur city and is at altitude of 607 m above msl. The campus has a total area of 853 acre and the major habitats include garden lands, botanical garden, plantations of Australian acacia, *Terminalia* spp., *Saraca asoka*, *Gliricidia*, guava, *Zizyphus* etc. SUK campus enjoys a moderate climate. The climate is tropical with three distinct seasons, viz., the monsoon (mid June to October), winter (October to February) and summer (March to mid June). The southwest monsoon is irregular and erratic. The temperature has a relatively narrow range between 10 °C to 35 °C. Average rainfall for last five years is 1967.32 mm (Hydromet division, India meteorological department). There is no Herpetofaunal study so far in Shivaji University campus.

Materials and Methods

A detailed survey of herpetofauna was conducted from 1st July 2012 to 31st December 2013. The conducted survey was done by opportunistic field observations. Active searches were made by walking across small streams and roads, turning rocks, gleaning leaf litters, prodding bushes, wood logs, rock crevices and observing walls of buildings etc. Apart

from active searches basking reptiles were also observed during day time and snakes were surveyed by rescue calls also so as to include most of the species in campus. Frogs were also surveyed on the basis of their calls between 19.30-22.30 hr aided by torchlight. Species were measured (Snout-vent length) and released back. All species encountered are identified up to species level using keys and other publications (Gunther 1864; Boulenger 1890; Smith 1931, 1935, 1943; Dutta 1997; Bossuyt 2002; Daniels 2002; Daniels RJR 2005; Giri & Bauer 2008; Whitaker & Captain 2008; Aengals et al. 2012; Gururaja 2012) and the assessment of threat status of the observed species in the area was based on IUCN red list (2013).

Results and Discussion

A total of 20 species of Reptiles belonging to 10 families are distributed over 18 genera. Studies on the amphibians revealed that the presence of 14 species belonging to 6 families are scattered over 12 genera including one endangered species (*R. marmorata*) and two Vulnerable species (*R. bombayensis* & *U. phipsonii*) (Table 1).

The family-wise distribution of Amphibians of SUK campus is given in Fig. 2. Family Dicroglossidae dominated the amphibian fauna of SUK campus with 5 species followed by Microhylidae 4 species, Rhacophoridae 2 species, Bufonidae, Ranidae and Ichthyopidae with a single species. In reptiles, more number is observed from family Colubridae with 8 species followed by Gekkonidae, Scincidae & Elapidae with 2 species and Bataguridae, Agamidae, Typhlopidae, Uropeltidae, Boidae & Viperidae with single species (Fig.3).

Table No.1 Checklist of Herpetofaunal species in Shivaji University campus, Kolhapur (MH) India

Sr.No.	Species	Scientific name	Family	IUCN status
Amphibians				
1	Common Indian Toad	<i>Duttaphrynus melanostictus</i> (Schneider, 1799)	Bufoidea	LC
2	Indian skittering frog	<i>Euphlyctis cyanophlyctis</i> (Schneider, 1799)	Dicroglossidae	LC
3	Indian bull frog	<i>Hoplobatrachus tigerinus</i> (Daudin, 1802)	Dicroglossidae	LC
4	Indian burrowing frog	<i>Sphaerotheca breviceps</i> (Schneider, 1799)	Dicroglossidae	LC
5	Indian Rice Frog	<i>Fejervarya limnocharis</i> (Gravenhorst, 1829)	Dicroglossidae	LC
6	Syhadra frog	<i>Zakerana syhadrensis</i> (Annandale, 1919)	Dicroglossidae	LC
7	Ornate narrow-mouthed frog	<i>Microhyla ornata</i> (Dumeril and Bibron, 1841)	Microhylidae	LC
8	Red narrow-mouthed frog	<i>Microhyla rubra</i> (Jerdon, 1854)	Microhylidae	LC
9	Marbled Ramanella	<i>Ramanella marmorata</i> Rao, 1937	Microhylidae	EN
10	Indian balloon frog	<i>Uperodon globulosus</i> (Gunther, 1864)	Microhylidae	LC
11	Fungoid frog	<i>Hylarana malabarica</i> (Tschudi, 1838)	Ranidae	LC
12	Chunam tree frog	<i>Polypedates maculatus</i> (Gray, 1834)	Rhacophoridae	LC
13	Bombay bush frog	<i>Raorchestes bombayensis</i> (Annandale, 1919)	Rhacophoridae	VU
14	Bombay caecilian	<i>Ichthyophis bombayensis</i> Taylor, 1960	Ichthyophiidae	LC
Reptiles				
15	Indian black turtle	<i>Melanochelys trijuga</i> (Schweigger, 1812)	Bataguridae	LR/NT
16	Indian garden lizard	<i>Calotes versicolor</i> (Daudin, 1812)	Agamidae	LR/NT
17	Brook's house gecko	<i>Hemidactylus brookii</i> Gray, 1845	Gekkonidae	LC
18	Yellow green house gecko	<i>Hemidactylus flaviviridis</i> Rüppell, 1835	Gekkonidae	LC
19	Common keeled skink	<i>Eutropis carinata</i> (Schneider, 1801)	Scincidae	LC
20	Three-lined grass skink	<i>Eutropis trivittata</i> (Hardwicke & Gray, 1827)	Scincidae	LC
21	Brahminy worm snake	<i>Ramphotyphlops braminus</i> (Daudin, 1803)	Typhlopidae	LR/NT
22	Phipson's shieldtail	<i>Uropeltis phipsonii</i> (Mason, 1888)	Uropeltidae	VU

23	Common sand boa	<i>Gongylophis conicus</i> (Schneider,1801)	Boidae	NA
24	Common trinket snake	<i>Coelognathus helena helena</i> (Daudin,1803)	Colubridae	LR/NT
25	Indian Rat snake	<i>Ptyas mucosa</i> (Linnaeus,1758)	Colubridae	LR/NT
26	Common kukri snake	<i>Oligodon arnensis</i> (Shaw,1802)	Colubridae	LR/NT
27	Common wolf snake	<i>Lycodon aulicus</i> (Linnaeus,1754)	Colubridae	LR/NT
28	Striped keelback	<i>Amphiesma stolatum</i> (Linnaeus,1758)	Colubridae	LR/NT
29	Checkered keelback	<i>Xenochrophis piscator</i> (Schneider,1799)	Colubridae	LC
30	Green keelback	<i>Macrophistodon plumbicolor</i> (Cantor,1839)	Colubridae	NA
31	Common vine snake	<i>Ahaetulla nasuta</i> (Lacepede,1789)	Colubridae	LR/NT
32	Common Indian krait	<i>Bungarus caeruleus</i> (Schneider,1801)	Elapidae	LR/NT
33	Spectacled cobra	<i>Naja naja</i> (Linnaeus,1758)	Elapidae	LR/NT
34	Russell's viper	<i>Daboia russelii</i> (Shaw & Nodder,1797)	Viperidae	LR/NT

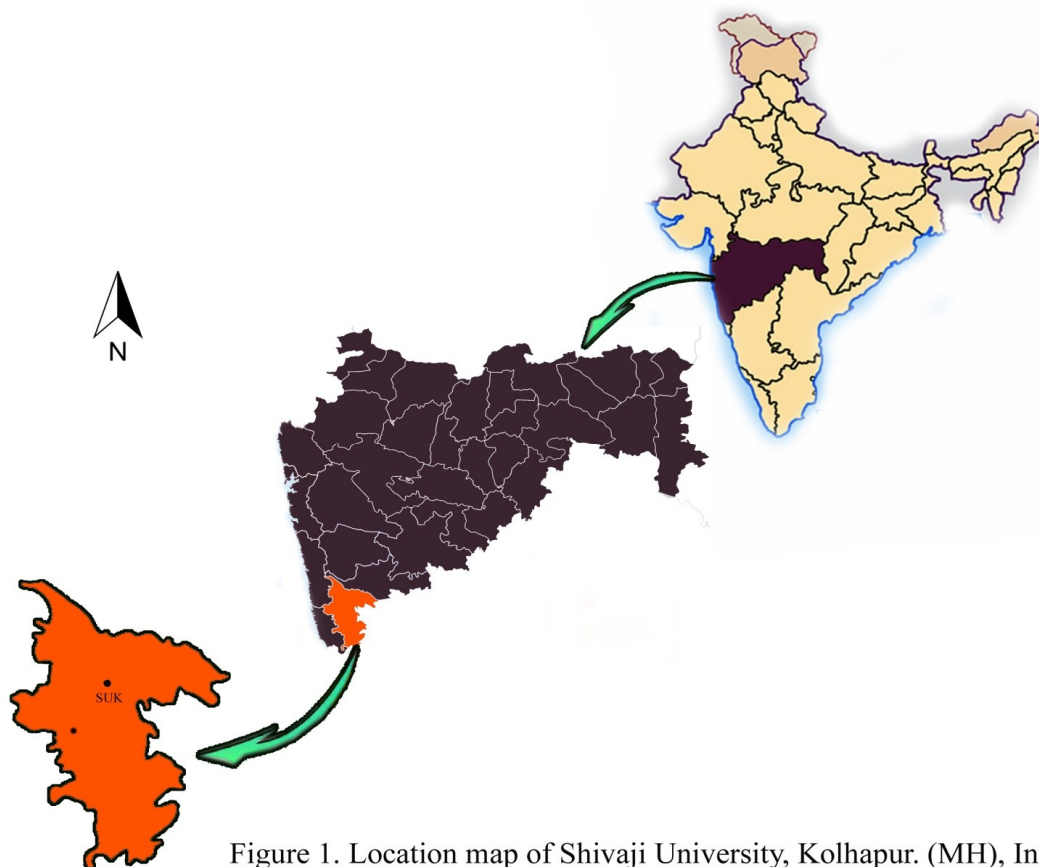


Figure 1. Location map of Shivaji University, Kolhapur. (MH), India

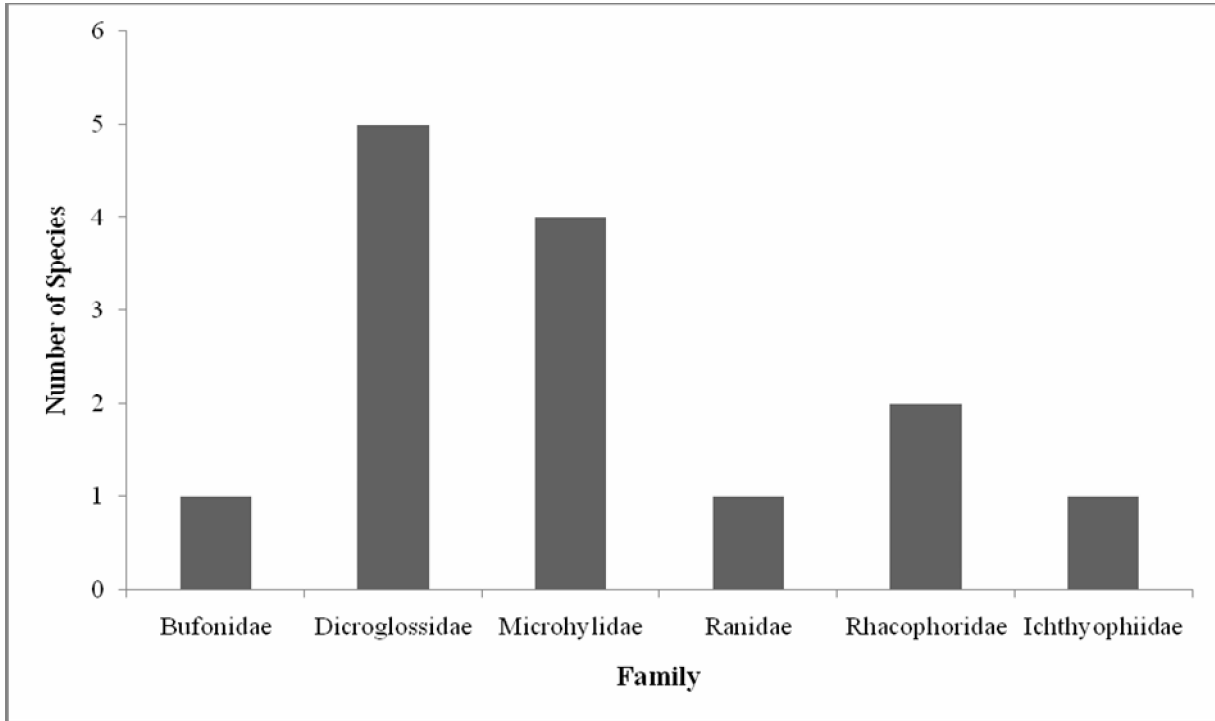


Figure.2 Family wise distribution of Amphibian species in SUK campus

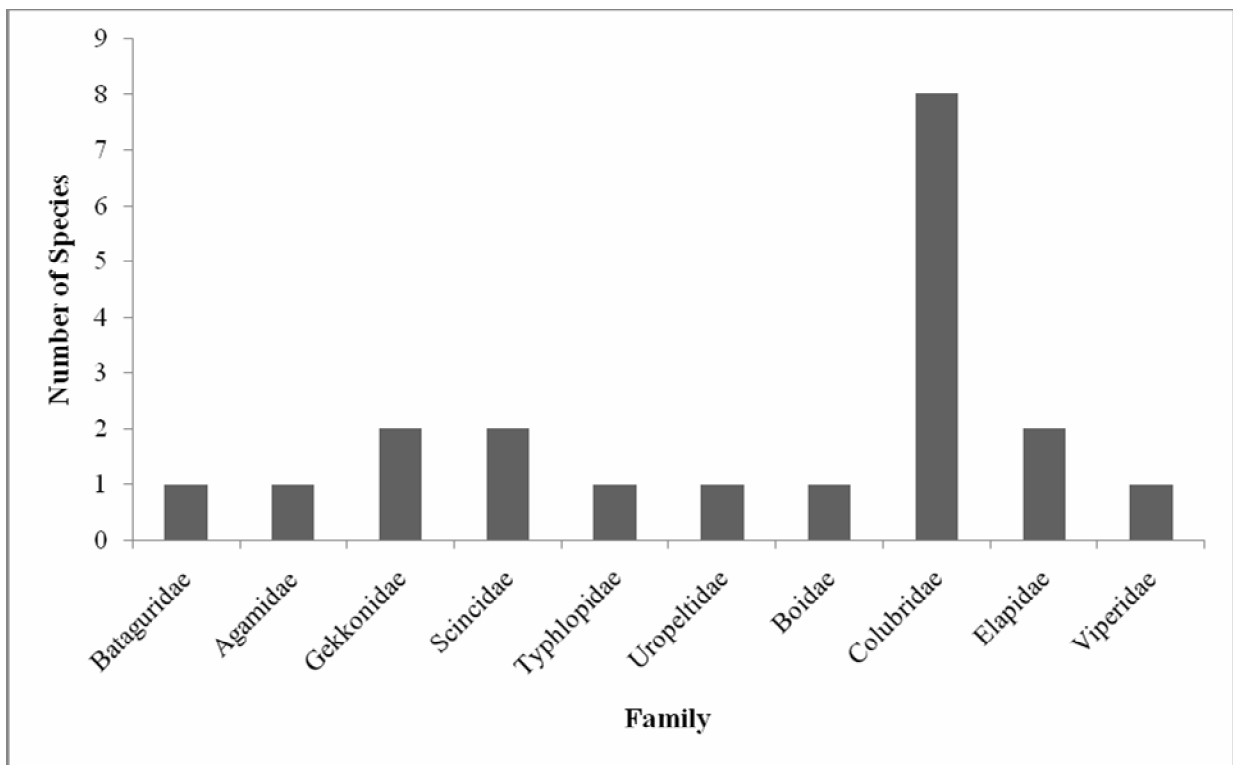


Figure.3 Family wise distribution of Reptilian species in SUK campus



Uperodon globulosus



Hylarana malabarica



Polypedates maculatus



Raorchestes bombayensis



Melanochelys trijuga



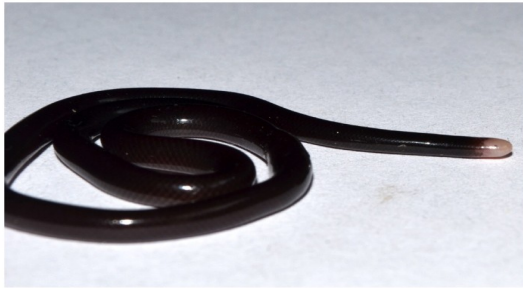
Calotes versicolor



Hemidactylus brookii



Eutropis trivittata



Ramphotyphlops braminus



Gongylophis conicus



Amphiesma stotatum



Ptyas mucosa



Macrophistodon plumbicolor



Ahaetulla nasuta



Naja naja



Bungarus caeruleus

SUK campus is confronting various degrees of anthropogenic stress. Cuttings auctioned grass before ending of rainy season destroys the natural habitat of Herpetofauna & these individuals easily get predated by their natural enemies as well as by human beings. The grass bidders constantly set fires to these grasslands; this not only destroys the habitat but also directly kills herpetofaunal species. We found that, cutting of some large trees destroys the habitat of tree frogs & bush frogs. In addition, predation may also be another contributing factor for decline of Herpetofauna as most of campus area is rich in predatory birds such as peacock & other birds at the time of field observations.

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