



Checklist of Anurans from semi-arid biotope of Deccan Plateau; Solapur District, Maharashtra, India

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ABSTRACT

Survey of anurans *i.e.* frogs and toads was carried out in the selected sampling sites from Deccan Peninsular Central Plateau; the Solapur district, Maharashtra, India. Solapur district comes under semi-arid zone with scanty and scattered precipitation and high temperature. The district is located between 17°10' to 18°32' N latitude and 74°42' to 76°15' E longitude, with the average height of about 500m asl. Opportunistic samplings and visual encounter survey was conducted for anurans during monsoon and winter seasons (June to December) from 2014 to 2016. During survey 17 species of anurans belongs to 4 families 8 genera were reported in Solapur district of known 405 species of amphibians from India belongs to 15 families. The survey provides quantitative and qualitative base line information on the distribution pattern and the present status for conservation of anurans found in Solapur district.

Keywords: Anurans, Solapur district, Semi-arid zone, Distribution pattern, Conservation

INTRODUCTION

The world amphibian data base has reported 7698 species of amphibians in the world (Frost, 2017). Out of these, 88% are Anurans consisting 6788 Frogs and Toads, 9% Caudata with 704 species of Nutes and Salamanders and 3% Gymnophiona having 206 species of Caecilians. In India about 405 species of amphibians have been reported (Dinesh *et al.*, 2017). They contain 364 Anurans, 2 Caudata and 39 Gymnophiona belonging to 15 families. In India and Maharashtra the number of herpetologist and researchers carried out field surveys to study the amphibian diversity *viz.* Inger & Dutta (1986), Boulenger (1890), Yazdani and Mahabal (1976), Sekar (1999), Jadhav *et al.* (2012), Prasad *et al.* (2013) and Sajjan *et al.* (2017). Ravichandran and Pillai (1990) have recorded 16 species of amphibians from Maharashtra including 1 new species. Kamble (2002) has reported 11 species of amphibians from

Ujani wetland from Solapur. According to Padhye *et al.* (2012) 53 species of amphibians were reported from Maharashtra. Solapur district is rich in biodiversity but remains neglected with regards to amphibian wealth. In Maharashtra, the amphibian research history shows that the amphibian taxonomists were attracted towards the forests of Western Ghats, surprisingly shown less interest in the amphibians of drought prone region of Maharashtra, in general and of Solapur district in particular. As we know we have poor distributional record of amphibians from Solapur district. This survey will provide quantitative and qualitative baseline information for diversity and distribution of anurans, which ultimately helps in conservation, on this bases of which the work can be planned.

METHODOLOGY

Survey of anurans *i.e.* frogs and toads was carried out in the selected sampling sites from Deccan Peninsular-Central Plateau; the Solapur district, Maharashtra, India from June-December 2014 to June- December 2016. Surveys were conducted in known habitats of anurans by Opportunistic samplings and Visual encounter survey (Crump and Scott, 1994 and Daniels, 2005). The searching for frogs and toads is made across the river bank, streams, near water bodies, agricultural land, grass lands, forest floors, under leaf litters, in bushes, wood, under stones, logs, rock crevices and decaying vegetation etc. Call, spawn and tadpole survey would be used to record the anurans. Morphometry, photography and call records were done for all the species encountered. All the species are identified up to species level using standard keys of Dutta (1997), Daniel (2002), Chanda (2002), Daniels (2005) and Gururaja (2012). Species nomenclature was updated with the help of checklist by Dinesh *et al.* (2017) and Frost (2017).

Study areas

Solapur district, 17°10' to 18°32' N latitude and 74°42' to 76°15' E longitudes and elevation 500m asl. is situated on the South –Eastern border of Maharashtra state, which touches to the border of Karnataka state. Solapur lies in Seena and Bhima river basin. The average rainfall is 500mm. per year. Temperature ranges between 15°C to 45°C. Soil types are black, coarse gray and reddish. The soil is shallow and poor, does not retain moisture. The vegetation of the district mainly represents tropical dry deciduous forest, thorny open

scrub and vast grass lands (Champion and Seth, 1968). The grass lands of this district are unique and known as Indian savannas. The district has a total area of 148446 sq km. and it is divided into eleven tehsils *viz.* Akkalkot, Barshi, Karmala, Madha, Malshiras, Mangalwedha, Mohal, Pandharpur, Sangola, North Solapur and South Solapur. The entire district has basaltic lava rock type which is popularly known as Deccan peninsular-central plateau (Pathak, 2006). The climate of Solapur district is characterised by general dryness in major parts of year with three seasons, *viz.* the monsoon (June to September), winter (October to February) and summer (March to June). The rainfall during the south west monsoon in the month of June to September amounts to about 75% of the annual rainfall. The Bhima River is a major river in Solapur district, supplies water to entire district. Chandani, Kamini, Moshi, Bori, Sina, Man, Bhogavati and Nira are the major tributaries of the river in Solapur District.

RESULTS AND DISCUSSIONS

During survey 17 species of anurans belongs to 4 families 8 genera were reported in Solapur district of known 405 species of amphibians from India belongs to 15 families. Considering number of species in each family, Bufonidae represents 2 species, Dicroglossidae represents maximum of 11 species, followed by Microhylidae with 3 species and Rhacophoridae 1 species (Table 1). The family Dicroglossidae dominates the anuran fauna of Solapur district. All the species recorded during the study are non endemic to the Western Ghats. Out of 17 species, 16 species are least concern and 1 species is not assessed. 17 species of anurans recorded from Solapur is quite comparable to any other place along the Western Ghats. *Duttaphrynus melanostictus*, *Duttaphrynus stomaticus*, *Euphlyctis cyanophlyctis*, *Fejervarya limnocharis*, *fejervarya sp.* and *Hoplobatrachus tigrinus* were most common and widely distributed amphibian species and were found more frequently almost thought the study area in Solapur district. *Sphaerotheca breviceps*, *Sphaerotheca pashchima*, *Microhyla ornata*, *Uperodon globulosus*, and *uperodon systoma* were abundant and found only during breeding season. The rare sighting includes a single individual *Polypedates maculatus*. Highest amphibian population was observed in monsoon while lowest population was observed during winter.

Table 1: Checklist of anurans from Solapur district, MS, India

SR. NO.	SPECIES	COMMON NAME	IUCN RED LIST	ENDEMISM	HABITAT
CLASS: AMPHIBIA (Gray)					
ORDER: ANURA (Fischer von Waldheim)					
FAMILY: BUFONIDAE (Gray)					
01	<i>Duttaphrynus melanostictus</i> (Schneider 1799)	Common Indian Toad / (Common Asian Toad)	Least Concern	Non- Endemic	Terrestrial, near human habitation, on bare land, under stone and crevices, forest floor, under street lights
02	<i>Duttaphrynus stomaticus</i> (Lutken 1862)	Marbled Toad / (Indus Valley Toad)	Least Concern	Non- Endemic	Terrestrial, near human habitation, on bare land, under stone and crevices, near temporary water bodies
FAMILY: DICROGLOSSIDAE (Anderson)					
03	<i>Euphlyctis cyanophlyctis</i> (Schneider, 1799)	Indian Skittering Frog / (Indian Skipper Frog)	Least Concern	Non- Endemic	Aquatic, found in almost all kinds of fresh water bodies.
04	<i>Fejervarya cf. keralensis</i> (Dubois, 1981)	Kerala Warty Frog (Verrucose Frog)	Least Concern		Semi aquatic, near human habitation wet soil, in grasses near water bodies, sugarcane field
05	<i>Fejervarya limnocharis</i> (Gravenhorst, 1829)	Indian Cricket Frog	Least Concern	Non- Endemic	Semi aquatic, wet soil, in grasses near water bodies, sugarcane fields
06	<i>Fejervarya syhadrensis</i> (Annandale, 1919)	Bombay Wart Frog	Least Concern	Non- Endemic	Semi aquatic, near human habitation. wet soil, in grasses near water bodies, sugarcane field
07	<i>Fejervarya sp.1</i>	Cricket Frog			
08	<i>Fejervarya sp.2</i>	Cricket Frog			
09	<i>Fejervarya sp.3</i>	Cricket Frog			
10	<i>Hoplobatrachus tigerinus</i> (Daudin, 1802)	Indian Bull Frog	Least Concern	Non- Endemic	Semi aquatic, near human habitation, agricultural fields, ponds, lakes, wells
11	<i>Sphaerotheca breviceps</i> (Schneider, 1799)	Indian Burrowing Frog	Least Concern	Non- Endemic	Terrestrial, burrowing frog, near human habitation, close to water bodies, in moist soil, in agricultural land, on bare ground, in grasslands
12	<i>Sphaerotheca pashchima</i> (Padhye, et al., 2017)	Western Burrowing Frog	Not Assessed	Non- Endemic	Terrestrial, burrowing frog, near human habitation, in moist soil, near water bodies, in agricultural land, on bare ground, in grassland
13	<i>Sphaerotheca sp.</i>				
FAMILY: MICROHYLIDAE (Gunther)					
14	<i>Microhyla ornata</i> (Dumeril and Bibron, 1841)	Ornate Narrow- mouthed Frog	Least Concern	Non- Endemic	Semi aquatic, near human habitation in grasses, in and near water bodies, under stones, in crevices, on bare ground
15	<i>Uperodon globulosus</i> (Gunther, 1864)	Grey Balloon Frog	Least Concern	Non- Endemic	Terrestrial, burrowing frog, termite mountain, on bare ground, near water bodies, in cultivated land
16	<i>Uperodon systoma</i> (Schneider, 1799)	Marbled Balloon Frog	Least Concern	Non- Endemic	Terrestrial, burrowing frog, in moist soil, near human habitation, on bare ground, near water bodies, in cultivated land
FAMILY: RHACOPHORIDAE (Hoffman)					
17	<i>Polypedates maculatus</i> (Gray, 1834)	Common Indian Tree Frog (Chunam Frog)	Least Concern	Non- Endemic	Arboreal, on herbs, trees, on sugarcane plantation, near water bodies

During the survey, we recorded four anuran species which may unknown and their identity was done with reference, e.g. *Fejervarya* sp.1, 2, 3 and *Sphaerothera* sp. These species are either previously unknown or are members of cryptic species complexes. This is first every systematic study of anuran amphibians from the Solapur district, which will serve as a bench mark for further research on anurans from this area. The present study provided diversity, habitat variation and species distribution in Solapur district.

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