



E-ISSN: 2320-7078  
P-ISSN: 2349-6800  
JEZS 2017; 5(1): 158-162  
© 2017 JEZS  
Received: 21-11-2016  
Accepted: 22-12-2016

**Gajanan A Wagh**  
Shri Shivaji Science College,  
Amravati, Maharashtra, India

**Amol S Rawankar**  
Jagadamba Mahavidyalaya,  
Paratwada, District- Amravati,  
Maharashtra, India

**Vivek Sharma**  
Biodiversity Research  
Laboratory, Department of  
Zoology, Maharshi Dayanand  
Saraswati University, Ajmer,  
Rajasthan, India

**Jayant S Wadatkar**  
Wildlife and Environment  
Conservation Society, Amravati,  
Maharashtra, India

## A preliminary study on the amphibian diversity in different habitats of Amravati district, Maharashtra

**Gajanan A Wagh, Amol S Rawankar, Vivek Sharma and Jayant S Wadatkar**

### Abstract

The present paper deals with amphibian diversity of Amravati district in the different habitats including Melghat forest of the Satpura range. This study was carried out on the basis of previous photographic records and extensive survey conducted during the period of June 2016 to September 2016 in study area. A rapid survey method was involved in careful visual estimation and photographic evidences of amphibians were recorded in all possible habitats of the study area. A total of 11 species of amphibians belonging to 4 families and 9 genera were recorded. This study showed that the Amravati District including, Melghat forest area was found rich in amphibian diversity and support many more species. It was a preliminary study on the amphibian diversity but further studies are needed for addition of new species, and habitat use by amphibians.

**Keywords:** Amphibians, diversity, Amravati district, Melghat and Satpura

### 1. Introduction

The amphibian fauna of the Vidarbha region is less studied as compared to the Western Ghats range of the Maharashtra state. It was found that very less work has been conducted and published on Amphibians from Amravati district of the Vidarbha region. However, Amravati district is very much rich in biodiversity. The land of the Amravati district covers 30% forest area including, Melghat forest, Mahendri forest of the Satpura range and Pohra- Malkhed forest as a mixed forest remaining 70% land utilizes for the cultivation as well as human habitation. The Amravati District with Melghat like dense forest of Satpura range showing high percent of rainfall, more humidity and low temperature as well as Pohra – Malkhed like mixed scrub forest. Also saline belt in some talukas, orange belt and variety of crop pattern such as Jowar (*Sorghum vulgare*), Cotton (*Gossypium arboreum*), Soybean (*Glycine max*), Toor (*Cajanus cajan*), Mung (*Vigna radiata*), Pigeon pea (*Citer species*) and sunflower (*Helianthus annuus*) provides the ideal environment and habitats for the occurrence of the amphibians. These kinds of habitats well attracted to amphibian species and may use of various purposes such as food and home ground etc. Changing in agricultural pattern, the large expanses of agricultural lands and urbanization severely affecting the diversity of amphibian fauna directly and indirectly but its impact is largely remaining unknown in the study area. Though the large number of herpetofauna with special reference to snake fauna was reported from the district (Wadatkar <sup>[1]</sup>, Nande and Deshmukh, <sup>[2]</sup>) but till the diversity of the anurans remains unknown, hence attempt has been made to study the diversity of amphibian in the Amravati district.

Around the world there are 7,546 species of Amphibians have been reported (Frost <sup>[3]</sup>). Amphibians in India are mostly diverse with 382 species including 32 species listed recently from Goa. 217 species of amphibians have been reported from Western Ghats of India (Dinesh and Radhakrishan <sup>[4]</sup>, Biju *et al.* <sup>[5]</sup>, Zachariah *et al.* <sup>[6, 7]</sup>, Dinesh *et al.* <sup>[8]</sup>). Hence large number of species is remains to be explored.

In Vidarbha region initial work on anurans was done by Sawarkar & Kasambe <sup>[9]</sup>. He reported the 10 species of frogs and toad from the Nagpur city and its adjoining areas. Dhande & Khandare <sup>[10]</sup> reported first record of Painted Kaloula or Indian Painted frog (*Kaloula taprobanica*) from Daryapur taluka of the Amravati District but the data from the Amravati district in concern of species occurrence, and population abundance concerned is lacking.

**Correspondence**  
**Gajanan A Wagh**  
Shri Shivaji Science College,  
Amravati, Maharashtra, India

In the present study we surveyed five different microhabitats *viz.* Cultivated fields (CF), Pohra –Malkhed mixed type forest (PMF), Melghat forest (MF), Semi urban land (SUL) and water bodies (WB). On the basis of extensive survey data gathered and prepared in the form of checklist of Amphibians of the Amravati District. During the study some direct and indirect threats to the Amphibian diversity was also enlisted at the study area.

## 2. Materials and Methods

### 2.1 Study Area

Amravati district is a District of Maharashtra state in central India. The district is situated between 20°32' and 21°46' North latitudes and 76°37' and 78°27' East longitudes. The district occupies the geographical area of 12,235 km<sup>2</sup>. There is Satpura range towards the North of Amravati district. 75% of Amravati district area is covered by Deccan trap while 25% area covered by Purna alluvium. Out of the total land of the district 30% covered by forest while 70% utilized for cultivation and human habitation. The climate of the district is hot and dry. The year can be divided into three clear seasons, cold season is from November to February, hot season is from March to May and the monsoon season is from June to October. The area receives rainfall during southwest monsoon. The average rainfall is 800-1000 mm. Average temperature of the district ranges from minimum of 10°C in winter to a maximum of 42°C in summer with the humidity ranges from 10-15% to 60-95%.

Melghat region is a part of the Satpura Range of Hills in the Amravati district. The crests of this range attain an average

elevation about 1000 meter. Melghat has Southern Tropical Dry Deciduous type of forest (Champion & Seth <sup>[11]</sup>). Tapi, Sipna, Khapra, Khandu, Dolar, Khandu Chandrabhaga are the major rivers and many seasonal streams flows through Melghat. Melghat experiences tropical climate with temperatures ranging between 13°C and 22°C during winter and between 23°C and 42°C during summer. In Melghat the annual rainfall ranges between 1000mm and 2250mm.

### 2.2 Amphibian sampling

Present study was carried out on the basis of previous photographic collection during various visits of last five years and extensive survey during rainy season from June to September 2016 in the study area. The survey was performed at a weekly interval in all possible habitats and microhabitats such as open land, cultivated field, water bodies, dense forest and mixed forest during the rainy seasons. The timing of the survey is in between 7.00 pm to 11.00 pm in night and 5.30 am to 8.00 am in early morning. The Road transect method was mainly applied. Anurans species were recorded by direct sighting method and also by recording the calls from the concerned species. No specimen was collected from the study area during the study period. Photographs of the sighted animals were taken by Nikon camera D7000 and lens 60 mm micro for documentation and identification purpose. The identification was confirmed by using various diagnostic keys and publications (Das & Dutta <sup>[12]</sup>, Chanda <sup>[13]</sup>, Daniel <sup>[14]</sup>, Daniels <sup>[15]</sup>). Also some identification was confirmed by consulting herpetologists.



Fig 1: Map of India



Fig 2: Map of Maharashtra



Fig 3: Map of Study area of Amravati district

## 3. Result and discussion

A total of 11 species of amphibians belonging to 4 families and 9 genera were recorded (Table 1 and Fig. 4). Among the

recorded species the highest number of species recorded belonging to family Dicroglossidae and the minimum number of species recorded from the family Rhacophoridae.

**Table 1:** Table showing the recorded anurans species with their scientific names, IUCN status and habitats.

Family	Taxon	Common Name	IUCN Status	Habitat wise distribution
Bufonidae	<i>Duttaphrynus melanostictus</i>	Asian Toad	<i>Least Concern</i>	MF, PMF, CF, SUA.
	<i>Duttaphrynus stomaticus</i>	Marbled Toad	<i>Least Concern</i>	CF, SUA
Dicroglossidae	<i>Euphlyctis cyanophlyctis</i>	Indian Skittering Frog	<i>Least Concern</i>	MF, PMF, WB
	<i>Hoplobatrachus tigerinus</i>	Indian Bull Frog	<i>Least Concern</i>	MF, PMF, CF, SUA.
	<i>Hoplobatrachus crassus</i>	Jerdon's Bull Frog	<i>Least Concern</i>	MF
	<i>Fejervarya limnocharis</i>	Indian Cricket Frog	<i>Least Concern</i>	CL, PMF, SUA
	<i>Fejervarya species</i>	Indian Paddy Field Frog	<i>Least Concern</i>	CF, PMF, SUA.
	<i>Sphaerotheca breviceps</i>	Indian Burrowing Frog	<i>Least Concern</i>	MF, CF
Rhacophoridae	<i>Polypedates maculatus</i>	Indian Tree Frog	<i>Least Concern</i>	MF, PMF, CF
Microhylidae	<i>Microhyla ornata</i>	Ornate Microhylid	<i>Least Concern</i>	CF, SUA
	<i>Kaloula taprobanica</i>	Painted Kaloula	<i>Least Concern</i>	SUA, CF

Abbreviations – MF – Melghat Forest, PMF – Pohra – Malkhed Forest, CF – Cultivated Field, SUA – Semi Urban Area, WB - Water Bodies.



*Duttaphrynus melanostictus* (Asian Toad)



*Duttaphrynus stomaticus* (Marbled Toad)



*Hoplobatrachus tigerinus* (Indian Bull frog)



*Hoplobatrachus crassus* (Jerdon's Bull frog)



*Sphaerotheca breviceps* (Burrowing frog)



*Polypedates maculatus* (Indian tree frog)



*Microhyla ornata* (Ornate Microhylid)



*Kaloula taprobanica* (Painted Kaloula)



*Euphlyctis cyanophlyctis* (Indian skittering frog) *Fejervarya limnocharis* (Indian Cricket Frog)



*Fejervarya Species*

*Fejervarya species*



*Fejervarya species*

*Fejervarya species*



*Fejervarya species*

*Fejervarya species*

**Fig 4:** Anurans recorded from the study area.

In four months survey, family Dicroglossidae was found the most dominant family of frogs with 6 species followed by Bufonidae and Microhylidae with 2 species each and only single species of Rhacophoridae was found.

It was observed that the *Duttaphrynus melanostictus*, *Euphlyctis cyanophlyctis* and *Hoplobatrachus species* were found in all the possible habitats. These three species had wide spread distribution throughout the Amravati district. While the *Duttaphrynus stomaticus*, *Fejervarya species* and *Microhyla ornata* were found mainly in agricultural fields and

sub urban areas. The ample food availability and habitat suitability was the prime reason for their occurrence in those fields.

The Indian burrowing frog *Sphaerotheca breviceps* and Indian tree frog *Polypedates maculatus* was found rare but dominantly in Melghat forest and agricultural fields. The forest area and agriculture field provides the suitable habitat for the burrowing frog and Indian tree frog hence they preferred that areas and showed widespread distribution. All the recorded species are least concern in the IUCN status.

Asian toad and Marbled Toad of family Bufonidae was found mainly near to the human habitations and in the agricultural fields. *Fejervarya* species showed widespread distribution and were relatively more common than other species. They can be observed in majority of the habitats, including grasslands, waterbodies, agricultural fields and human habitations. *Euphlyctis cyanophlyctis* showed restricted distribution and was found only in and around waterbodies. *Kaloula taprobanica* species was not reported during the four month survey but it was recorded earlier in the Paratwada city (Personal communication with Thakare Alkesh & Shrikant Kathoi, 2010) and in the Daryapur taluka of the study area (Dhande & Khandare <sup>[11]</sup>).

During the study also we have recorded some direct and indirect threats to the Amphibian diversity of the study area such as extensive use of insecticides and weedicide by farmers to control the agricultural pest inhabiting the same localities, urbanization, road kills, habitat fragmentation, habitat loss and also modern agricultural practices.

#### 4. Conclusion

The observations showed the Anurans diversity richness in study area. This study generated the base line data for the anurans diversity in Amravati district. It was a preliminary study on the amphibian faunal diversity but further study is need to explore the diversity of anurans in the study area by addition of new amphibians species, habitat study, population estimation, and to find out the severity of the threats to diversity, and also to propose several conservation strategies in the study area.

#### 5. Acknowledgement

The Authors sincerely acknowledge the Mr. Shubham Wagh, Mr. Hayat Qureshi, Mr. Jagdev Iwane, Prathmesh Tiwari and Abhijeet Agarkar for their field assistance during the survey.

#### 6. References

1. Wadatkar J. Herpatofauna of the Amravati University campus, District Amravati, Maharashtra. Zoos' Print Journal. 2004; 19(2):1381-1382.
2. Nande R, Deshmukh S. Snakes of Amravati District including Melghat, Maharashtra with Important Records of the Indian Egg Eater, Montane Trinket Snake and Indian Smoth Snake. Zoos' Print Journal. 2007; 22(12):2920-2924.
3. Frost DR. Amphibian species of the World: an online reference. Version 6.0 (9<sup>th</sup> Oct) Electronic database accessible at <<http://research.amnh.org/vz/herpetology/amphibia/>> American Museum of Natural History, New York USA, 2016.
4. Dinesh KP, Radhakrishnan C. Checklist of amphibians of Western Ghat. *Frog leg*. 2011; 16:15-21.
5. Biju SD, Bocxlaer IV, Mahony S, Dinesh KP, Radhakrishnan C, Zachariah A *et al*. A taxonomic review of the Night Frog genus *Nyctibatrachus* Boulenger, 1882 in the Western Ghats, India (Anura: Nyctibatrachidae) with description of twelve new species. *Zootaxa*. 2011; 3029:1-96.
6. Zachariah A, Dinesh KP, Kunhikrishnan E, Das S, Raj DV, Radhakrishnan CV *et al*. Nine new species of bush frogs, *Raorchestes* (Amphibia: Anura: Rhacophoridae) from southern Western Ghats, India. *Biosystematica*. 2011a; 5(1):25-48.
7. Zachariah A, Dinesh KP, Radhakrishnan C, Kunhikrishnan E, Palot MJ, Vishnudas CK. A new Species of *Polypedates tschudi* (Amphibia: Anura: Rhacophoridae) from southern Western Ghats, Kerala, India. *Biosystematica*. 2011b; 5(1):49-53.
8. Dinesh KP, Radhakrishnan C, Channakeshavamurthy BH, Kulkarni NU. Checklist of Amphibia of India, updated till January 2015 available at <http://mhadeiresearchcenter.org/resources> (online only).
9. Sawarkar DB & Kasambe R. A survey of the amphibian fauna of Nagpur, Maharashtra. *Bionotes*. 2009; 11(3):84-85.
10. Dhande A, Khandare A. Occurrence of *Kaloula taprobanica* in Daryapur, Maharashtra. *Frog leg*. 2013; 19:5-6.
11. Champion HG, Seth SK. A revised survey of the forest Types of India. Government of India Press New Delhi, 1968, 404.
12. Das I, Dutta SK. Checklist of amphibians of India with English and common names. *Hamadryad*. 1998; 23:63-68.
13. Chanda SK. Handbook – Indian Amphibians. Zoological Survey of India, Calcutta. 2002; Viii:335.
14. Daniel JC. The Book of Indian Reptiles and Amphibians. Bombay Natural History Society, Oxford University Press, Mumbai, 2002.
15. Daniels RJR. Amphibians of Peninsular India. University Press, Hyderabad, 2005, 268.