

# Amphibian diversity of Rajgir Wildlife Sanctuary, Bihar, India



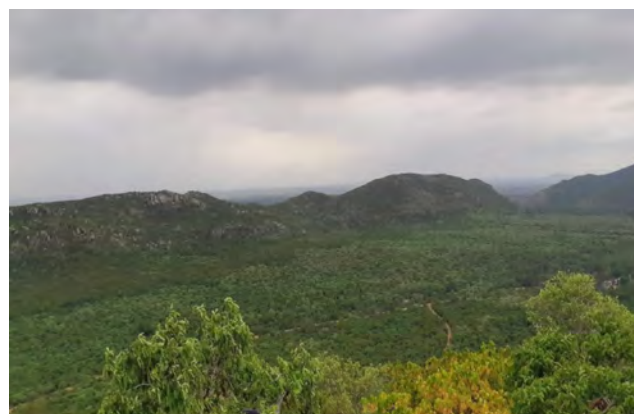
Amphibians hold vital positions in forest and aquatic food webs and are important for the nutrient portion of the vertebrate biomass (Hutchens & De Perno 2009). They are also indicators of the health of an ecosystem and therefore their conservation is critical. Currently, 7,707 species of amphibians are known from around the world and 384 from India (Dinesh et. al. 2015) and 432 (Dinesh et. al. 2019). Habitat fragmentation, pollution, and roadkill are the major threats to the amphibians today.

There is not much data available with respect to the herpetofauna of Bihar. Although Venkateswarlu & Murthy (1972) published a list of amphibians of Bihar, it only covered 12 species with some notes on their habit and habitat. Sarkar (1991) reported 11 species of frogs and toads from Chotanagpur (Bihar). This is the first detailed report on the amphibian diversity in and around Rajgir Wildlife Sanctuary in Nalanda, Bihar.

Rajgir Forest was notified in 1978 under Section 18 of the Wildlife Protection Act. Rajgir Wildlife Sanctuary (RWS) comes under the Gangetic floodplains. Coordinates of survey site is 25.003°N & 85.423°E. It is the only forested area left

in Nalanda District covering an area of 35.84km<sup>2</sup> which is surrounded by high hillocks. The sanctuary and the surrounding forests consist of a mixed type of foliage comprising dry deciduous, sal mixed moist deciduous, including dry deciduous scrublands, and uneven patches of bamboo grooves (Champion & Seth 1968). It is home to a number of herpetofauna that feeds on amphibians, such as Buff-striped Keelback Snake *Amphiesma stolatum*, Spectacled Cobra *Naja naja*, Common Bronzeback Tree Snake *Dendrelaphis tristis*, Common Sand Boa *Eryx conicus*, Common Krait *Bungarus caeruleus*, and Common Vine Snake *Ahaetulla nasuta*.

Surveys were conducted in various habitats of RWS in the pre-monsoon (June), monsoon (July–August), and post-monsoon (September) seasons from June 2017 to



Rajgir Wildlife Sanctuary, Nalanda, Bihar.



**Table 1. Amphibians of Rajgir Wildlife Sanctuary, Bihar, India.**

Family	Common name	Species	IUCN Status	Status of occurrence
Bufonidae (Gray, 1825)	Asian Common Toad	<i>Duttaphrynus melanostictus</i> Schneider, 1799	LC	Abundant
	Indian Marbled Toad	<i>D. stomaticus</i> Lütken, 1864	LC	Common
Dicroglossidae (Anderson, 1871)	Indian Bullfrog	<i>Hoplobatrachus tigerinus</i> Daudin, 1803	LC	Common
	Jerdon's Bullfrog	<i>H. crassus</i> Hoffman, 1932	LC	Common
	Skittering Frog	<i>Euphlyctis cyanophlyctis</i> Schneider, 1799	LC	Abundant
	Alpine Cricket Frog	<i>Fejervarya limnocharis</i> Gravenhorst, 1829	LC	Common
	Indian Burrowing Frog	<i>Spaerotheca berviceps</i> Schneider, 1799	LC	Uncommon
	Roland's Burrowing Frog	<i>S. rolandae</i> Dubois, 1983	LC	Uncommon
Microhylidae (Gunther, 1858)	Ornate Narrow-mouthed Frog	<i>Microhyla ornata</i> Duméril & Bibron, 1841	LC	Common
	Guangdong Rice Frog	<i>M. rubra</i> (Jerdon, 1854)	LC	Uncommon
	Marbled Balloon Frog	<i>Uperodon systoma</i> Schneider, 1799	LC	Rare
Rhacophoridae (Hoffman, 1932)	Indian Tree Frog	<i>Polypedates maculatus</i> J.E. Gray, 1830	LC	Common

August 2018 to document the amphibian and reptile species of the area. Only the amphibian fauna in the area is discussed in this note. The surveys were carried out after sunset (18.00–21.00 hr), at night (22.00–00.00 hr), and before dawn (04.00–05.00 hr). The most productive time for the amphibian survey was after sunset during the monsoon season. Individuals of all species documented were observed in their natural habitat. Roadkill specimens were also observed during the survey. Identification was done with help of Daniels (2005). The nomenclature of species placement follows Frost (2018).

We recorded 12 species of amphibians referable to eight genera from four families (Table 1). Our surveys yielded rich



**Satellite google earth image of Rajgir Wildlife Sanctuary.**



assemblage of species documented in undisturbed habitats as well as the adjoining agricultural lands. The Indian Bullfrog *Hoplobatrachus tigerinus*, Indian Skittering Frog *Euphlyctis cyanophlyctis*, Ornate Narrow-mouthed Frog *Microhyla ornata*, Roland's Burrowing Frog *Spaerotheca rolandae*, and Indian Tree Frog *Polypedates maculatus* were the common anurans easily found here. *Microhyla ornata* was found in the forest floor under leaf litter. Further studies are required to understand the herpetofauna of RWS.



Indian Skittering Frog *Euphlyctis cyanophlyctis* - This frog was observed in good numbers in flooded paddy fields, ponds, puddles and stream. Mating was observed from June onwards. The Skittering Frog is most commonest frog in this region. *Euphlyctis cyanophlyctis* is closely related to *Euphlyctis hexadactylus* which has not yet been reported from study area. The skipper frog is collected in large number as laboratory specimen in India.



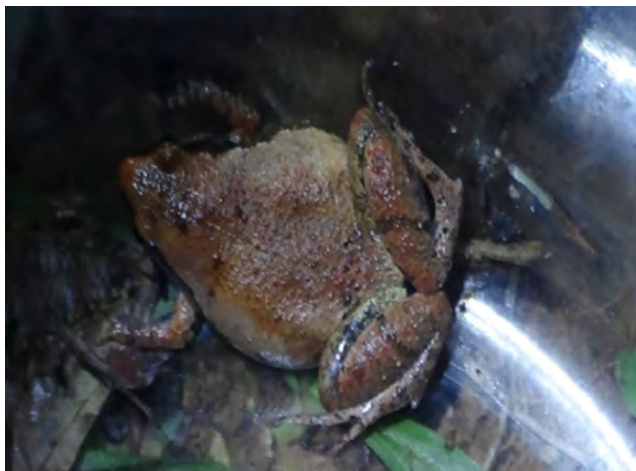
Indian Bullfrog *Hoplobatrachus tigerinus* - Largest frog of the region, breeds before pre-monsoon. Mating was observed in pre-monsoon, monsoon and post-monsoon as well. Full grown adult frogs and tadpoles observed May onwards in ponds and puddles. Specimen were observed nearby the FRH, Circuit house, Jaiprakash udyan, Rajgir. Habitat loss/degradation and use excess of pesticides is major threats to the Bullfrogs.



Jerdon's Bullfrog *Hoplobatrachus crassus* - Natural history of this species almost matches with its congener *H. tigerinus*. Roadkilled specimen were collected and fixed in 4 % solution of formaldehyde.

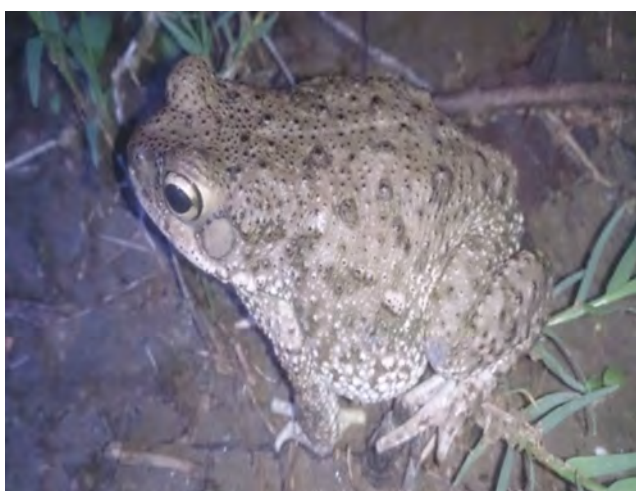


Voucher specimen were deposited in Zoological Survey of India Gangetic Regional Plain Centre Patna as national zoological collection.



Red Narrow-Mouthed Frog *Microhyla rubra* - Adults breed during monsoon season in agricultural lands. Uncommon frog seen on forest floor after rain. Dorsally reddish pink with dark brown sides and faintly cross-barred reddish limbs. Ventral side is white. in breeding male throat is black.

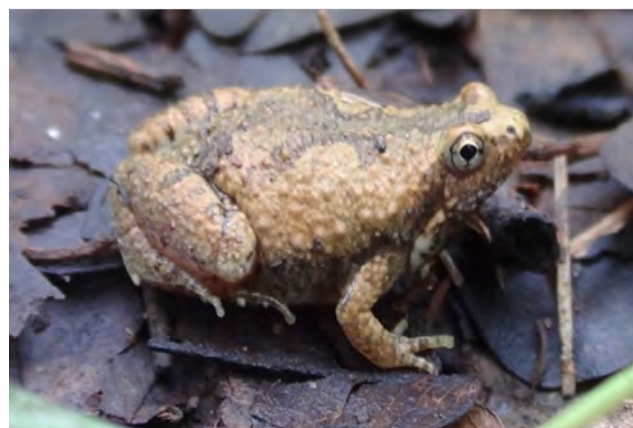
Indian Marbled Toad *Duttaphrynus stomaticus* - *Duttaphrynus stomaticus* was less common than its congener. Mating



was observed in June after pre-monsoon showers. I found many specimen in village. Observed to feed on variety of insects such as beetles, planthoppers, grasshoppers, may flies and moths.



Roland's burrowing frog *Spaerotheca rolandae* - These little frogs are seen after rains. We have found this frog inside the sanctuary region and in the adjacent villages while surveying. *Spaerotheca rolandae* were photographed in its natural habitat, the call has been also observed near water bodies.



Ornate Narrow-Mouthed Frog *Microhyla ornata* - A very small sized microhylid in this



region can be observed under leaf litter. Its sound can be heard in the evening around paddy fields and near water bodies.



Alpine Cricket Frog *Fejervarya limnocharis* - Medium-sized semi-aquatic frog. A good number of Indian Cricket Frog was observed also photographed after rain. *Fejervarya limnocharis* starts breeding after rain. This species is common frog throughout the study area and found usually around water bodies.

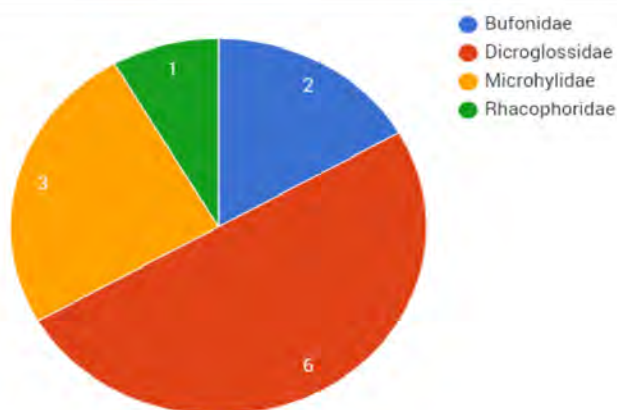


Indian Tree Frog *Polypedates maculatus* - Very common Rhacophorid throughout the area. Active during rains only. Genus

*Polypedates* represented by single species the *P. maculatus*. During dry season was found under water tanks. Active at night, observed to feed on moths, small beetles and bugs around bulbs, often found in and around human habitation. The call of the male frog and mounted pair is observed after at night. Males have been observed to call from hanging branch of shrubs near pond. Female lay eggs in protective foam nest. Males have single internal vocal sac. Generally females are larger than males. While surveying the rajgir forest and nearby villages, where we found 27 specimen of *Polypedates maculatus*. Road Killed specimen was collected for preservation .



Common Indian Toad *Duttaphrynus melanostictus*: Common throughout the sanctuary found in and around the human settlements. Observed in good number near FRH, Jaiprakash udyan, Ropeway site, Venuvana etc.



**Pie chart showing observed number of species in each family.**

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