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## First record of common Indian Treefrog, *Polypedates maculatus* (Gray) (Amphibia: Anura: Rhacophoridae) in Burdwan, West Bengal, India

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### Abstract

The common Indian tree frog, *Polypedates maculatus* is reported first time from Burdwan, West Bengal. It is an anuran Amphibia under the family Rhacophoridae. The species is listed as "Least Concern" under IUCN Red List.

**Keywords:** Amphibia, Anura, Burdwan, common Indian tree frog, *Polypedates maculatus*, Rhacophoridae, Least Concern

### 1. Introduction

Anuran amphibians are integral part of the both aquatic and terrestrial ecosystem. They feed on several species of insects and other invertebrates as well as are food of many predators [1-4]. Frogs are known as indicator species and can give scientists valuable insight into how an ecosystem is functioning [5-7]. Amphibian population is declining in alarming rate throughout the planet, more specifically in tropical region. Decline of amphibian population was first documented as a worldwide incident in the early 1990s [8]. Current extinction rates of this group may be to the extent that 200 times higher than background extinction [9]. Out of nearly 6600 global amphibian species, ~32% suffering threatened with extinction, ~43% experiencing declines, and another 22% with inadequate data [10], this phenomenon is rightly addressed by Wake and Vredenburg [11] as the Earth's sixth mass extinction. The major threat to their survival is still habitat loss and fragmentation. However, others factors like global climate change, the infection caused by deadly chytrid fungus, *Batrachochytrium dendrobatidis*, environmental pollutants including immunosuppressive effects of pesticides, anthropogenic eutrophication, invasive alien species etc. could not be ignored [12-18]. Exploration of Amphibia in West Bengal is not satisfactory except few frequently occurred species [19-23].

The purpose of the study is to present first record of common Indian treefrog, *Polypedates maculatus* from Burdwan, West Bengal, India.

### 2. Material and Methods

On 14<sup>th</sup> May 2014 morning around 11.30 hours, an uncommon anuran Amphibia was caught under a wet mop kept in the corner of verandah of ground floor of author's residence, Dewandighi (north bank of Dewandighi pond) (23°16'49.8"N, 87°52'48.9"E), outskirts of Burdwan town, West Bengal. The frog was, put in a plastic jar with some grass and little amount of water and brought to the Department of Zoology, The University of Burdwan, and West Bengal for examination. The mouth of the jar was covered with a net to avoid escaping of the frog. Several insects like grasshopper nymph, damsel fly, dragon fly, ants etc. were put in the jar as live food on regular basis. Body weight was measured on a Satorius make digital balance (0.1g). Length of whole body and different body parts was measured in cm scale. Photographs were taken in Nikon Coolpix 500. The frog was confined up to 18<sup>th</sup> May, 2014. Later it was released in the University Campus. Identification of frog was made following after [19-21].

### 3. Results

During captivity following observations were noticed in the laboratory. The frog did not take any food not even at night. When the frog was kept in undisturbed condition, colour of the frog was golden yellow with few black spots/patches on the dorsum and faint cross-barred stripes

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on the legs (Fig. 1). However, when the frog was disturbed by stirring the container, prominent black spots and stripes on the dorsum and legs appeared against golden yellow integument of dorsum (Fig. 2). It was also noticed that the frog was often crawled up the wall of the jar and stayed there for long time using their adhesive discs. The frog was identified as Common Indian treefrog, *Polypedates maculatus* (Gray). *Polypedates maculatus* belongs to the family Rhacophoridae under order Anura. It is a medium sized slim-waisted frog. Snout is obtusely pointed and forwarded a slight beyond the mouth. Nostril is closer to the tip of the snout than the eye. A dark brown line exists between snout and eye on each side. A dark black marking extends from the nostril on both sides of the head, covering the eye, down the flanks right nearly upto the middle of the belly. The limbs are cross-banded with black stripes and the lower side of the thighs patterned with round yellow spots. Tympanum is prominent. When the frog was stationary, sacral vertebrae form a pair of distinct elevations on the back (Fig. 3). Necessary measurements of the specimen are given in table 1.

**Table 1:** Morphometric data of common Indian treefrog, *Polypedates maculatus* (Gray).

Sl. No.	Morphological characters	Measurement	
1.	Weight	25.4g	
2.	Body Length (Snout-vent)	6.8cm	
3.	Eye-snout tip distance	1cm	
4.	Head length	2cm	
5.	Head width	2.4cm	
6.	Diameter of tympanum	5mm	
7.	Eye diameter	6mm	
8.	Eye-nostril distance	8mm	
9.	Nostril diameter	1mm	
10.	Distance between eyes	1cm	
11.	Width at trunk	2.2cm	
12.	Width at abdomen	1.2cm	
13.	Distance between two ends of the jaw	2.5cm	
14.	Diameter of tip of second finger	1mm	
15.	Fore limb length	Humerus	2cm
		Radio-ulna	1.5cm
16.	Hind limb length	Femur	3.5cm
		Tibio-fibula	3.7cm
		Astragalus-calcaneum	2cm



**Fig 1:** Undisturbed common Indian treefrog, *Polypedates maculatus* (Gray) with almost no spots or patches on dorsum and legs, obtusely pointed snout, and nostril closer to the tip of the snout.



**Fig 2:** Disturbed treefrog *Polypedates maculatus* showing prominent spots and patches.



**Fig 3.** Stationary treefrog, *Polypedates maculatus* with sacral vertebrae forming a pair of distinct elevations on the back, narrow waist, fingers without web, tips of fingers and toes dilated into spherical adhesive discs.

#### 4. Discussion

The species is listed as **Least Concern** under IUCN Red List [24] considering its wide distribution, tolerance of a broad range of habitats, supposed large population and because it is unlikely to be declining to qualify for listing in a more threatened category. This species is found all over most of Bangladesh, Bhutan, India, Nepal, and Sri Lanka. It has been reported from sea level up to at least 1,500m asl [24]. However, from regional/national perspective, unlike other widely distributed anuran species like *Duttaphrynus melanostictus*, *Hoplobatrachus tigerinus* etc. in this area, the Indian treefrog has a patchy distribution and seldom occurs here. This species is recorded from Durgapur, West Bengal by Dutta & Mukhopadhyay [23]. However, it is reported first time from Burdwan, West Bengal.

In treefrogs, dorsal color change is prevalent, functioning to adjust body temperature [25], minimise water loss [25], avoid predation by background matching [26], and/or also play an important role in sexual selection and mating [27, 28]. Such phenomenon is known as metachrosis. Color change is influenced by both ecological as well as intrinsic factors. The ecological factors include temperature [25], background color [29], predators [30], and ecological niche [31, 32]. The important intrinsic factors include visual perception [33], physiological ability for color change [30], and genetics [32]. The color change is due to the rearrangement of pigment granules in

three kinds of dermal dendritic pigment cells, chromatophores like xanthophores, iridophores and melanophores<sup>[34]</sup>. Dorsal color change of treefrog may occur by changes in one of the three colour variables, brightness<sup>[35, 36]</sup>, hue<sup>[36, 37]</sup>, or chroma<sup>[38]</sup>. However, the validity and capability of the physiological model of Nielsen<sup>[34]</sup> was not tested using different background colors to justify which colour variable(s) is/are responsible for the colour changes of *P. maculatus*. King *et al.*<sup>[25]</sup> reported that treefrog *Hyla cinerea* (Schneider) became lighter on brighter backgrounds and at higher temperature. The present species also showed similar type of behaviour when confined in a transparent container having a lighter background.

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