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New record of *Duttaphrynus scaber* (Schneider, 1799), the Schneider's Toad (Family: Bufonidae) from West Bengal, India

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ABSTRACT: We found a small-sized toad species under genus *Duttaphrynus* in Purba and Paschim Medinipur district, West Bengal from July to August 2018. After the analysis of a few morphological characters, this specimen identified as *Duttaphrynus scaber* (Schneider, 1799). It is the first state record for this species from West Bengal. Morphometric data for the species identification and habitat characteristics are provided.

Keywords: *Duttaphrynus scaber*; habitat; microhabitat; morphometric; species; paddy fields; temperature

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INTRODUCTION

The genus *Duttaphrynus* represents 27 species (Frost *et al.* 2019) but 19 species under this genus are reported from India (Dinesh *et al.*, 2019). West Bengal is the home to 3 species of Genus *Duttaphrynus D. melanostictus*, *D. himalayanus* and *D. stomaticus* (De 2016 and Deuti *et al*., 2017). There is no annulated checklist on Amphibians in this State.

Previously *Duttaphrynus scaber* has been reported from Orissa (Dutta, 1988); Telangana (Narayana *et al*., 2014); Kerala (Daniels, 2005); Mysore (Daniel, 1963); Lakkavalli state forest (Krishnamurthy, 1999) and Dharwad (Dutta, 1997) in Karnataka; Chennai in Tamil Nadu (Rao, 1915); Andhra Pradesh (Donahue & Daniel 1966); Maharastra (Modak *et al*., 2013); Gujrat (Padhey *et al*. 2013); Manipur (Mathew & Sen 2009, 2010). This species is also reported from Srilanka (Dutta & Manamendra-Arachchi 1996). This is the first state record for this species from state West Bengal.

MATERIALS AND METHODS

During a herpetological survey, we found some small-sized toad in July 2018. This species is identified as Schneider's toad *Duttaphrynus scaber* with the help of the pictorial guide of Mathew & Sen (2010). After that, we carried out an extensive survey to understand the distribution of this newly found species. The survey was mainly centered on localities of Purba and Paschim Medinipur district of West Bengal; using Egra S.S.B. College as a Centre of the radius. We carried our survey for 15 days from July, 2018 to August, 2018. The previous records were compared with new distribution records of *D. scaber* (Fig. 1).

We conducted call surveys at each locality and primarily surveyed on nights when Schneider's toad was most likely to be active based on perceived weather preferences derived from past studies.

The presence of Species is primarily known by its Advertisement call. Only one male specimen was collected from paddy field for morphometric analysis, in Aklabad village (21°54'36.6"N 87°32'26.6"E elevation 11m), Egra subdivision, Purba Medinipur and this specimen was deposited at Estuarine Biology Regional Centre, Zoological Survey of India, Gopalpur; Voucher ID-EBRC/ZSI/Am-11455. We used GARMIN eTrex 10 GPS for measure co-ordinates; thermohygrometer and FLUKE 59 Mini IR Thermometer to measure environment, microhabitat and body temperature of *D. scaber*. Measurements were taken to the nearest 0.1mm using a digital caliper and the occurrence map of this species was made by using ArcGIS 10.3 Software.

RESULT AND DISCUSSION

We found a total of 389 individuals of *D. scaber* during our field survey. We first found 3 male individuals of *D. scaber* on 17 July 2018 from a temporal water pool (N 21°52.793´ & E 087°33.102´ elevation 11m), Dompukur village, East Midnapore district at 21.35hr by its advertisement call (Fig. 2). The calling males are found in a temporal water pool sitting on a Kans grass (*Saccharum spontaneum*). The weather was cloudy, the atmospheric temperature was 32°C, the ambient temperature was 29.4°C and the body temperature was 29.2°C.

A total of 14 records of Environmental, ambient and body temperature of *D. scaber* were obtained. The mean environmental temperature of the toads was (31-34°C), the mean microhabitat temperature was (29.2-29.6°C) and the mean body temperature was (29.4-29°C). We carried out a complete morphometric study on a single male specimen collected from Aklabad village (21°54'36.6"N 87°32'26.6"E elevation 11m), Egra subdivision, Purba Medinipur District, on 28 august at 21.05hr from paddy fields. During our study, we found *D. scaber* in 7 subdivisions of Purba Medinipur district and 5 subdivisions of Paschim Medinipur district (Fig. 1). The number of advertisement calls of males indicates the abundance of this species.

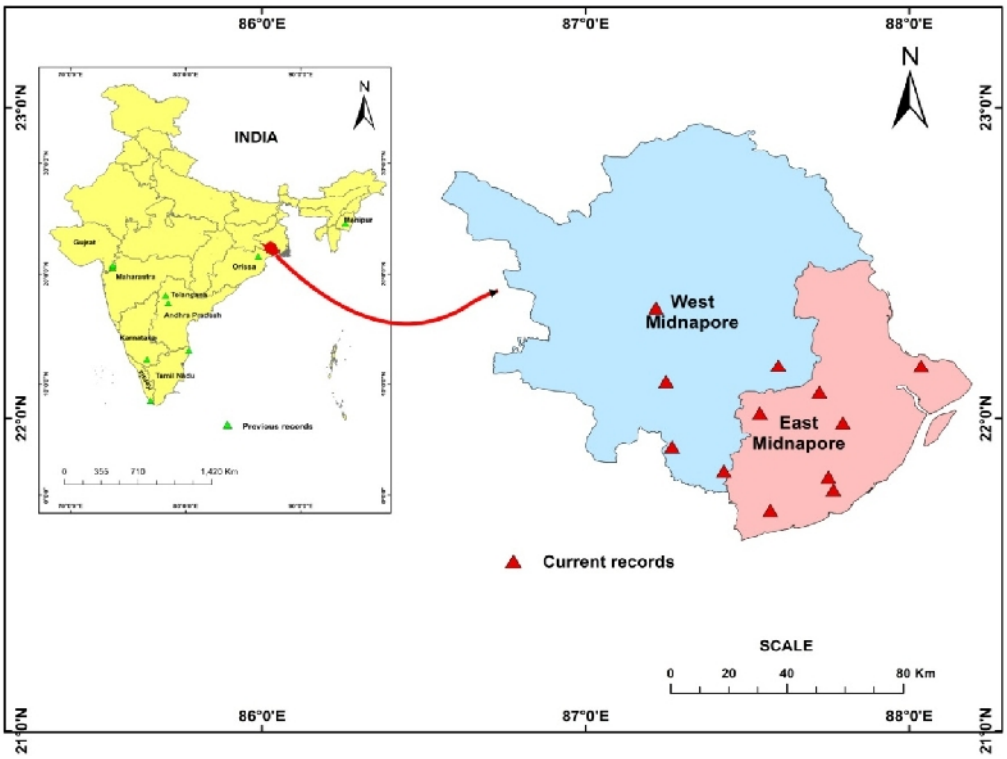

Fig. 1. Distribution map of *D. scaber*. The green triangle showing the previous distribution record and the red triangle showing the current distribution record.

Fig. 2. Dorsal view of *D. scaber*.

A. Morphometric analysis

The specimen was confirmed to be an adult male (Fig. 2) of *Duttaphrynus scaber* (Schneider, 1799) (Fig. 3) with the help of descriptions in Dubois and Ohler (1999) and Mathew & Sen (2010) based on following characters (Table 1):

(A) Size. Small toad (SVL 28.3 mm), body robust.

(B) Head. Head is slightly wider (HW 9.96 mm) than long (HL 7.92 mm; MN 3.11 mm; MAE 4.32 mm; MPE 2.12 mm); Snout (SL 3.06 mm) slightly shorter than horizontal diameter of eye (EL 3.11 mm); Inter-orbital space flat, larger (IUE 3.05 mm); than upper eyelid (UEW 2.83 mm) and inter-narial distance (IN 1.98 mm); distance between front of eyes (IAE 5.37 mm) less than two thirds of distance between back of eyes (IPE 8.45 mm); Oval shaped nostril closer to tip of the snout (NS 0.79 mm) than to eye (EN 2.89mm); Tympanum rounded (TYD 1.51 mm); distinct, almost half of eye diameter; Tympanum-eye distance (TYE 0.72 mm) less than two time of its diameter; Parotid glands present, nicely rounded, with horny spines and warts, very prominent, slightly longer (PL 2.32 mm) than wide (PW 2.20 mm), shorter than the distance between them (PD 4.63 mm); Canthal, supraorbital, postorbital, parietal and preorbital ridges present; Co-ossified skin absent.

Table 1: Morphometrics (in mm) of *D. scaber* from Aklabad village, Egra subdivision, Purba Medinipur.

Characters	Length(in mm)
SVL	28.3
HL	7.92
HW	9.96
MN	3.11
MAE	4.32
MPE	2.12
SL	3.06
EL	3.11
IUE	3.05
UEW	2.83
IN	1.98
IAE	5.37
IPE	8.45
NS	0.79
EN	2.89
TYD(Horizontal)	1.48
TYD(Vertical)	1.51
TYE	0.72
PL	2.32
PW	2.20
PD	4.63
FLL	7.26
HAL	5.83
TFL	3.80
F1	3.34
F2	3.71
F3	6.16
F4	4.11
IMC	0.48
OMC	0.95
FL	7.92
TL	8.15
TW	2.21
FOL	8.89
FTL	4.42
TFOL	13.24
T1	2.14
T2	3.57
T3	5.78
T4	9.23
T5	6.68
IMT	1.52
OMT	0.67

(C) Forlimbs. Arm short (FLL 7.26 mm), longer than hand (HAL 5.83 mm); fingers long, slender (TFL 3.80); Relative length of fingers, shortest to longest is I<II<IV<III; tips of fingers rounded, without grooves; fingers without dermal fringe, webbing absent; Inner metacarpal tubercle rounded, prominent and its length (IMC 0.48 mm); Outer metacarpal tubercle elongated, prominent and its length (OMC 0.95 mm). Small nuptial spines on prepollex and fingers 1 to 3.

(D) Hindlimbs. Tibia more than three times longer (TL 8.15 mm) than wide (TW 2.21 mm) and longer than thigh (FL 7.92 mm); Foot length (FOL 8.89 mm); toes rather short, thin, toe IV long (FTL 4.42mm); Less than one third the distance from base of tarsus to tip of toe IV (TFOL 13.24 mm); relative length of toes, shortest to longest is I<II<V<III<IV; Tips of toes rounded, not enlarged, without grooves; Webbing formula: I0-1II1-1½III2-3½ IV3½-1V; Dermal ridge along toe V absent; Subarticular tubercles prominent, rounded, all present; Inner metatarsal tubercle elongated, prominent; its length (IMT 1.52 mm); Tarsal fold absent; Outer metatarsal tubercle present, prominent, rounded; its length (OMT 0.67 mm); numerous tubercles on the sole of the foot and toe.

(E) Skin. Snout somewhat smooth; lateral sides of head without warts; eyelids and the region behind the eye with round and conical warts; back and flanks with round (smoothened, small and large) and conical warts; Limbs covered with warts and spines, ventrally with smaller warts. Single vocal sac present.

(F) Color. Dorsum olive-brown or pinkish-brown with darker markings on the head, the underside of the body yellowish.

Fig. 3. Lateral view of *D. scaber*.

According to our report, its microhabitat is mainly located in paddy fields and roadside temporal water pools in two districts (Fig. 4). The abundance of the species is different in the roadside temporal water pool with that of paddy fields. The mortality of the species by road crash is significantly high. The water pools are indirectly associated with agricultural fields. So, these habitats of *D. scaber* are affected by harmful pesticides and chemicals. Pesticides may kill individual amphibians directly (Kirk, 1988), immune system and neurological dysfunction (Cooke, 1971), malformation (Ouellet *et al.*, 1997), disrupting the normal growth and development of young or by impairing adult reproduction (Carey and Bryant, 1995). Some pesticides, herbicides and nematocides are documented to have endocrine-disrupting effects (Crain *et al.*, 1997).

Fig. 4. Habitat of *D. Scaber*, Mirgoda ganj, Purba Medinipur district.

We are therefore extending the geographic distribution of this species by at least 169 km to the west from the nearest locality Simlipal Biosphere Reserve, Orissa (Dutta *et al.*, 2009). Therefore, we suggest that further study needed to understand biogeography, road ecology and effects of agrochemicals on different life stages of this species.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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