



# Four New Herpetofaunal Records from Saint Martin's Island, Cox's Bazar, Bangladesh

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Photographs by the senior author.

The herpetofauna of Bangladesh is poorly known when compared to that of neighboring countries (Mahony et al. 2009). No intensive surveys have been undertaken to determine the status and distribution of amphibians in Bangladesh (Chowdhury 1996) and very few checklists (Khan 1986; Chowdhury 1996; Ahsan 1998; IUCN 2000; Asmat et al. 2003; Khan 2004) have been published. Only recently have scientists recognized the diversity of the amphibian and reptilian faunas in Bangladesh, and that revival of interest has seen the publication of much new material (e.g., Reza 2007, 2008a–b, 2010; Hasan et al. 2007; Khan 2007; Mahony and Reza 2007a–d; Mahony et al. 2009; Howlader 2010, 2011, 2015; Al-Razi 2014; Al-Razi and Selim 2014; Al-Razi et al. 2014; Sarker et al. 2014). However, Bangladesh is currently experiencing an “age of discovery,” and more than 42% of the amphibian species and 18% of the reptilian species have been reported from the country within the past decade (Reza 2010).

For the herpetofauna of Saint Martin's Island, one biodiversity survey listed five species of amphibians (*Duttaphrynus melanostictus*, *Euphlyctis cyanophlyctis*, *Hoplobatrachus tigerinus*, *Polyypedates maculatus*, *Kaloula pulchra*) and 27 species of reptiles including a marine turtle. Hasan et al. (2012) discovered *Hoplobatrachus litoralis* from Ukhiya, Teknaf of Bangladesh. Russel (2007) reported *Fejervarya teraiensis* as a first record for Bangladesh based on specimens captured on the Chittagong University campus, Bangladesh. The Crab-eating Frog (*Fejervarya cancrivora*) is the type species of the genus *Fejervarya* (Islam et al. 2008) and was first described by Gravenhorst (1829) as *Rana cancrivora*. *Eutropis carinata* is widely distributed in Bangladesh (Hasan et al. 2014) but was not reported from St. Martin's Island (Thompson 2010). We conducted a herpetofaunal survey of St. Martin's Island and recorded 11 species including four new records (three frogs and one skink.

## Methods

We conducted biodiversity surveys from January 2013 to September 2015 on St. Martin's Island in the Bay of Bengal, Bangladesh. These included ten nighttime and early morn-

ing searches (1900–2400 h and 0600–0900 h). Search techniques included visual scanning of all bodies of water, grasslands, paddy fields, and mangroves; following frog calls; and visual surveys for basking reptiles. Individual amphibians were captured using a small net, killed, and preserved in 10% formalin after measuring body sizes using a digital calliper with an accuracy of 0.1 mm. Specimens were deposited in the museum collection of the Department of Zoology, Jagannath University, Dhaka. We did not capture or preserve any reptiles because we identified animals to species during direct observation or by examining high-quality photographs.

## Results

We documented the presence of 11 species, including four that had not been previously reported from the island. The latter (three anurans in the family Dicroglossidae and one skink in the family Mabuyidae) are described below (Fig. 1; Table 1).

### Amphibia: Anura: Dicroglossidae

#### *Hoplobatrachus litoralis* (Hasan et al. 2012)

no English name (Fig. 1)

On 29 August 2014, we observed three individuals in a paddy field (20°37'42.45"N, 92°19'00.85"E) at night and collected one female (JnU/ZooM/Amp/2014/0012). We confirmed the specific identity using morphometric data (Table 1) and coloration of the live specimen. Dorsal ground color was brown with dark brown spots and large transverse black bands on the dorsal surfaces of the legs. No middorsal stripe was present. The tympanum was dark gray and circular. Toe tips were blunt and slightly rounded; relative toe lengths were T4>T5>T3>T2>T1.

#### *Fejervarya teraiensis* (Dubois 1984)

Terai Cricket Frog (Fig. 1)

On 29 August 2014, we observed four adult males in a paddy field (20°37'47.45"N, 92°19'00.69"E) and collected one



(JnU/ZooM/Amp/2014/0013). We found two additional males in a different paddy field and two females in grassy areas. All of the males were calling. We confirmed the specific identity using morphometric data (Table 1) and coloration of the live specimen. The dorsal ground color was greenish brown with a middorsal stripe, lower sides were white, and the vocal sac was W-shaped.

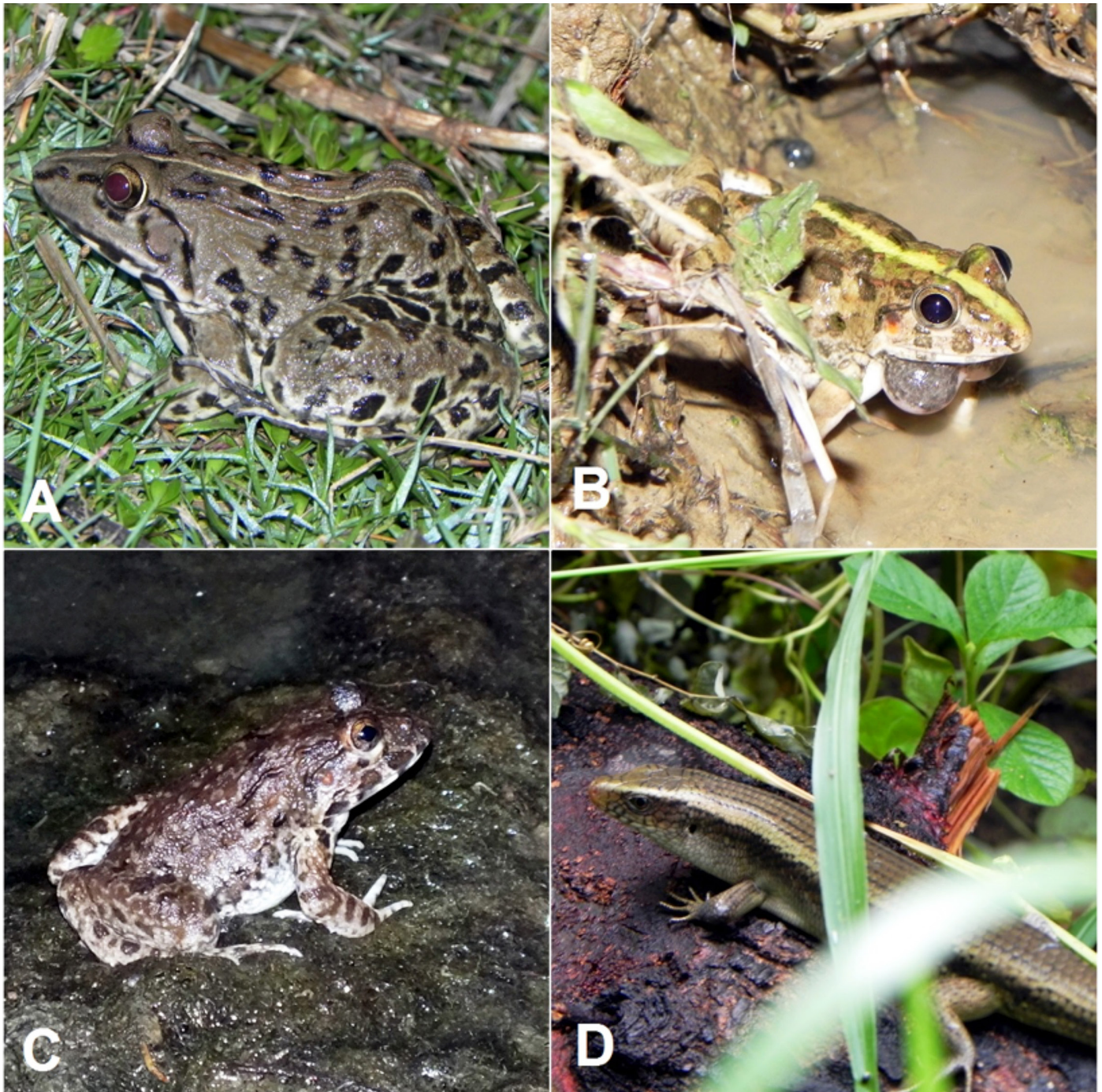
This species was known previously in Bangladesh only from the tea-plantation, high-elevation end of the country. However,

the high-elevation area is only 15–20 km away from the island, and recent literature (Al-Razi et al. 2014; Hasan et. al. 2014) indicated that this species is widely distributed in Bangladesh.

*Fejervarya cf. cancrivora* (Gravenhorst 1829)

Crab-eating Frog (Fig. 1)

We observed several individuals and collected two males and three females (JnU/ZooM/Amp/2013/0001–5). We identified specimens using descriptions in Iskandar (1998) and



**Fig. 1.** Four herpetofaunal species documented for the first time on St Martin's Island, Cox's Bazar, Bangladesh: A = *Hoplobatrachus litoralis* (no English name); B = *Fejervarya teraiensis* (Terai Cricket Frog); C = *Fejervarya cf. cancrivora* (Crab-eating Frog), D = *Eutropis carinata* (Common Indian Skink).



**Table 1.** Morphometric characteristics of specimens of *Hoplobatrachus litoralis*, *Fejervarya teraiensis*, and *F. cf. cancrivora* collected during nocturnal surveys on St. Martin's Island, Cox's Bazar, Bangladesh.

Character	<i>H. litoralis</i>	<i>F. teraiensis</i>	<i>F. cf. cancrivora</i>
Sex	Female	Male	Female
Snout-vent length (SVL)	94.30	41.30	65.5
Head length (HL)	32.00	15.30	27.45
Head width (HW)	30.70	14.80	24.75
Snout length (SL)	6.35	2.80	7.65
Tympanum diameter (TYD)	5.05	4.05	5.00
Eye diameter (ED)	8.15	3.75	6.30
Tympanum–eye distance (T-E)	4.10	2.65	3.50
Eye–nostril distance (E-N)	8.50	3.70	5.95
Relation of finger length (RFL)	F3>F1>F2>F4	F3>F1>F2>F4	F3>F1>F2>F4

Satheeshkumar (2011). Mean SVL ( $\pm$  one SE) = 50.2  $\pm$  4.5 mm. Irregular longitudinal ridges were present on the dorsum, the dorsum and sides were dark gray to chocolate brown, with even darker spots extending onto toes, and the venter was white. Fingers and toes were pointed, fingers lacked dermal fringes, toes were webbed (web nearly reaching the tips of the first, second, and third toes), a free flap of skin was present on the outer edge of the fifth toe, relative toe length was T1<T2<T3<T5<T4, and an inner metatarsal tubercle but no outer metatarsal tubercle was present. We found these frogs adjacent to a small body of water, in a grassy field, and in a paddy field. All bodies of water on the island contained fresh water and provided habitat for freshwater crabs. Some frogs were sitting in front of the holes presumably dug by crabs. Morphometric data (Table 1) are presented for a female specimen (JnU/ZooM/Amp/2013/0002).

Dutta (2007) and Satheeshkumar (2011) recorded *F. cancrivora* from Orissa State in mainland India. In Bangladesh, the species has been recorded from mainland Sundarbans and Barisal Districts (Islam et al. 2008; Howlader 2010). Kurniawan et al. (2010) suggested that the mangrove-dwelling populations of *F. cancrivora* be reclassified as *F. moodiei*, almost certainly the species encountered on Saint Martin's Island. However, until the identity of the population can be confirmed, we refer to these frogs as *F. cf. cancrivora*.

## Reptilia: Squamata: Mabuyidae

### *Eutropis carinata* (Schneider 1801)

Common Indian Skink (Fig. 1)

The body was dorsoventrally flattened, SVL about 12.5 cm, tail length about 8 cm. Dorsal ground color was olive-brown or bright bronze, flanks were darker. These diurnally active lizards live on the plains and low hills of the Indian Subcontinent

(Das 2002). We observed six individuals during our five surveys in grassy areas, under bushes, and in rocky areas.

The other seven herpetofaunal species we encountered during our surveys are listed in Table 2; four of them are illustrated in Fig. 2.

## Discussion

The Government of Bangladesh declared St. Martin's Island an Ecologically Critical Area (ECA) in 1995 based on its ecological importance and tourism value. The island has an area of 12 km<sup>2</sup> and is only 14 km from the mainland coast, suggesting that its fauna is likely to be a subset of the nearby continental fauna, and the amphibians and reptiles recorded to date from the island support that assumption.

In a recently published field guide, Hasan et al. (2014) provided no information on the herpetofauna of the island. However, Thompson and Islam (2010) had conducted a biodiversity survey of the island and reported four anurans (Common Indian Toad, *Duttaphrynus melanostictus*; Indian Skipping Frog, *Euphlyctis cyanophictis*; Indian Bullfrog, *Hoplobatrachus tigerinus*; Common Indian Treefrog, *Polypedates maculatus*) and a few reptiles. We found no evidence of *H. tigerinus* and suggest that those frogs were misidentified *H. litoralis*. We also did not find *P. leucomystax*, but did see many Painted Frogs (*Kaloula pulchra*) perched on trees. We suggest that this was likely another misidentification. Sarker et al. (2013) recorded *K. pulchra* from St. Martin's Island.

All of the species recorded on the island for the first time are known from elsewhere in Bangladesh (Hasan et al. 2012; Russel et al. 2007; Islam et al. 2008). Hasan et al. (2012) described *Hoplobatrachus litoralis* from Ukhiya, Teknaf in extreme southeastern Bangladesh, but the species probably

ranges into coastal regions of adjacent Myanmar. Based on specimens captured on the Chittagong University campus, Rasel et al. (2007) reported the Terai Cricket Frog (*Fejervarya teraiensis*) for the first time in Bangladesh, but the species has a wide range extending from southern Nepal through northeastern India and adjacent southeastern and central Bangladesh. The Crab-eating Frog (*Fejervarya cancrivora*) has been recorded from mainland Sundarban and Barisal Districts (Islam et al. 2008; Howlader 2010). Morphometric

data from one of our samples suggests that it is *F. cancrivora* (Iskandar 1998; Satheeshkumar 2011), which has recently been recognized as *F. moodiei* by Kurniawan et al. (2011). Molecular studies are necessary for confirmation of the population's identity. However, Hassan et al. (2014) indicated that the complex probably had a wide distribution in the country but did not provide any details. The Common Indian Skink (*Eutropis carinata*) is widely distributed in Bangladesh (Hasan et al. 2014) but had not been reported from St. Martin's



**Fig. 2.** Additional herpetofaunal species encountered during surveys on St Martin's Island, Cox's Bazar, Bangladesh: A = *Kaloula pulchra* (Painted Frog); B = *Euphlyctis cyanophictis* (Indian Skipping Frog); C = *Duttaphrynus melanostictus* (Common Indian Toad); D = *Calotes versicolor* complex (Oriental Garden Lizard).



**Table 2.** Amphibians and reptiles previously reported from St Martin’s Island, Cox’s Bazar, Bangladesh, that we encountered during our surveys. The presence of the Indian Flap-shelled Turtle (*Lissemys punctata*) was confirmed by interviews with island residents.

Species	Family	Habitat(s)
AMPHIBIA: ANURA		
<i>Duttaphrynus melanostictus</i>	Bufonidae (Common Indian Toad)	Roadside, near human habitation, grassland
<i>Euphlyctis cyanophictis</i>	Dicroglossidae (Indian Skipping Frog)	Pond, small stagnant body of water
<i>Kaloula pulchra</i>	Microhylidae (Painted Frog)	Under trees and along roadside fences near human habitation
REPTILIA: SQUAMATA		
<i>Calotes versicolor</i> complex	Agamidae (Oriental Garden Lizard)	Sandy substrates, on rocks, bushes, and trees
<i>Hemidactylus frenatus</i>	Gekkonidae (Common House Gecko)	Inside rooms and on trees
<i>Varanus salvator</i>	Varanidae (Common Water Monitor)	Small body of water near the beach
REPTILIA: TESTUDINES		
<i>Lissemys punctata</i>	Trionychidae (Indian Flap-shelled Turtle)	Freshwater ponds

Island (Thompson and Islam 2010). These new records increase the known number of anuran species on St. Martin’s Island from five to eight and that of reptilian species from 27 to 28.

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