



FIG. 1. Larva of *Epomis* sp. predating an *Indirana chiravasi* in Maharashtra, India.

known from Spain (Escoriza Boj et al. 2017. B. Asoc. Herpetol. Esp. 28:50–52), Madagascar, Israel, Sri Lanka, Japan, and India (Kulkarni et al. 2020. J. Bombay Nat. Hist. Soc. 117).

At 1957 h on 3 November 2018, we came across a partially lifeless and inactive *Indirana chiravasi* (ca. 29 mm SVL) while surveying for frogs in a stream near Ranewadi Village in the Tillari Conservation Reserve, Sindhudurg District, Maharashtra, India (15.8001°N, 74.1450°E; WGS 84). The *I. chiravasi* was lying motionless on a rock with the *Epomis* sp. larva attached to its throat (Fig. 1). The larva was white with black and orange markings, probably in the second instar stage. A few similar interactions were previously reported from India's Western Ghats. *Epomis* sp. larvae preyed on *Pseudophilautus amboli*, *Fejervarya cepfi*, and *Duttaphrynus melanostictus* in Amboli Ghat (Kulkarni et al. 2020, *op. cit.*; Pardeshi et al. 2020. IRCP Rept. Amphib. 27:279–80; Wizen et al. 2017. Herpetol. Rev. 48:612), *I. leithii* in Mahabaleshwar, Maharashtra (Yadav et al. 2021 IRCP Rept. Amphib. 28 :161–62), and *Duttaphrynus scaber* from the Regional Natural History Museum, Mysore, Karnataka (Barve and Chaboo 2011. Herpetol. Rev. 42:83–84). The *Epomis* sp. larva appeared to be feeding on the *I. chiravasi*. The *I. chiravasi* showed no resistance when disturbed or righting reflex when flipped. One plausible reason could be a lack of energy owing to the loss of body fluids. The *Epomis* sp. larva, however, adjusted itself without letting go of its feeding position. The *I. chiravasi* exhibited some slight movement of the limbs, indicating it was barely alive. This is the first record of an *Epomis* sp. larva preying on *I. chiravasi*, a Western Ghats endemic species. While previous records from India have mentioned the attacked frog's behavior as normal and active, this is the first record of fatal predation by an *Epomis* sp. larva from India. Given that this is an uncommon event and thus difficult to study, we suggest citizen science as a promising initiative to help record and study similar events in India.

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***KALOULA BOREALIS* (Boreal Digging Frog). HIBERNACULUM.**

Kaloula borealis is a microhylid ranging from central China to the Korean Peninsula (<https://amphibiansoftheworld.amnh.org/>; 28 Dec 2020). While listed as Least Concern across its range by the IUCN Red List of Threatened Species (<https://www.iucnredlist.org/species/57849/63887081>; 28 Dec 2020), *K. borealis* is currently listed as an endangered species in the Republic of Korea (NIBR 2019. Red Data Book of Republic of Korea Volume 2. Amphibians and Reptiles. National Institute of Biological Resources, Incheon, Republic of Korea. 140 pp.). Despite previous studies on the species, some key aspects of its ecology remain poorly known. For example, while the species is known to hibernate near agricultural fields and wetlands (NIBR 2019, *op. cit.*), detailed characteristics of hibernacula have never been documented. Here, we report the characteristics and use of an artificial hibernaculum by *K. borealis* in the Republic of Korea.

At 1659 h on 21 November 2020, we observed an artificial hibernaculum of *K. borealis* in Odo-dong, Paju-si, Gyeonggi Province, Republic of Korea (37.75085°N 126.72781°E; WGS 84). The hibernaculum was a large ceramic pot 45 cm wide and 75 cm deep. The pot was buried ca. 70 cm into the ground, being used for overwinter vegetable storage. There was about 3 cm of moist soil accumulated at the bottom of the pot, with two bricks placed horizontally. We found two *K. borealis* in hibernation under these bricks during the process of emptying and cleaning the pot. At the time of observation, the pot was filled with vegetables, but was initially filled with coarse fabric from top to bottom, which the *K. borealis* presumably used to climb down to the bottom. We did not handle the *K. borealis* to minimize disturbance, but both individuals were ca. 30 mm SVL. The ambient air humidity was 75% while the ambient air temperature was 9.8°C at the time of observation. The inside of the pot was considerably warmer compared to the outside conditions, with an internal pot surface temperature of 11.5°C and the soil surface temperature of 11.3°C. We observed a number of invertebrate species alongside the two *K. borealis* in the pot, including pillbugs (Armadillidiidae), several species of earwigs (Dermaptera), and house centipedes (Scutigeridae).

This observation provides information on the characteristics of a *K. borealis* hibernaculum, albeit derived from an artificial hibernaculum rather than a natural one. Nevertheless, artificial hibernacula can be applied to amphibian conservation (Neave et al. 2007. Herpetol. Bull. 99:20–22), and the traditional vegetable storage, such as the one outlined herein, may have the potential to be adapted to conservation planning for *K. borealis*.

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FIG. 1. An artificial hibernaculum (ceramic pot) utilized by *Kaloula borealis* (A) and the two individuals found in the pot (B).

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KURIXALUS YANGI. DIET. *Kurixalus yangi* is a rhacophorid frog recently described from south China (Yu et al. 2018. Zootaxa 770:211–226). The species is known to be distributed from western Yunnan, China, the vicinity of the type locality (Nabang, Yingjiang County, Dehong Autonomous Prefecture), into adjacent northern Myanmar, and was recently reported from Nagaland, northeastern India (Frost 2021. Amphibian Species of the World: an Online Reference. Version 6.1; www.amphibiansoftheworld.amnh.org; 31 Jan 2021). It is a nocturnal anuran found residing in the stumps of live bamboo internodes in groups of 10–15 individuals mostly in undisturbed forests and very rarely near human habitations (Humtsoe et al. 2020, Russ. J. Herpetol. 27:257–274). Recently, the species was also reported from Mizoram, northeastern India (Muangsanga et al. 2021. J. Anim. Divers. 3:9–17).

There have been no reports on the diet of *K. yangi* to date. To know the diet of a species is fundamental to understanding its natural history (Simmons et al. 2005. Herpetologica 61:124–134) therefore informing conservation strategies. In this note we report the first record of the diet of *K. yangi*. The gut contents of 28 *K. yangi* collected from various parts of Mizoram were examined. We were able to identify food items in four specimens collected from Hmuifang Community Reserve Forest (23.45418°N, 92.75214°E; WGS 84; 1484 m elev.). We recovered the remains of a hemipteran (Fig. 1A) from the gut of MZMU 2122 (32.71 mm SVL), a juvenile spider (Araneae; Fig. 1B) from specimen MZMU 2121 (32.31 mm SVL), and hymenopterans from both MZMU 1019 (30.61 mm SVL) and MZMU 2125 (30.47 mm SVL; Fig. 1C, D). The gut contents of the remaining 24 individuals were mostly digested and not identifiable. This report contributes to our understanding of the natural history of *K. yangi* and is the first report on the diet of this poorly known species.

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LEPTOBRACHIUM SMITHI (Southern Bicolor-eyed Toadfrog) and **POLYPEDATES TERAIENSIS (Perching Frog)**. **INTERSPECIFIC AMPLEXUS.** In anurans, a reduced competence in males recognizing conspecific females during explosive breeding can result in interspecific amplexus (Marco and Lizana 2002. Ethol. Ecol. Evol. 14:1–8), and various types of erroneous pairings with deceased females, other males, or even with inanimate objects (Mollov et al. 2010. Biharean Biol. 4:121–125; Theis and Caldart 2015. Herpetol. Notes 8:448–451).

Leptobrachium smithi (Megophryidae) is distributed in Bangladesh, northeastern India, Peninsular Myanmar, southern Thailand, and western Laos, overlapping the range of *Polypedates teraiensis* (Rhacophoridae) in Bangladesh, northeastern India and Myanmar (Frost 2020. Amphibian Species of the World: An Online Reference. Version 6.1; https://amphibiansoftheworld.amnh.org; 24 Aug 2020). Herein, we report interspecific amplexus between *L. smithi* and *P. teraiensis*. In Mizoram, *L. smithi* breeds during the monsoon season (March to August) and is often seen in aggregations with competing males on its breeding grounds (Lalremsanga et al. 2009. Sci. Vis. 9:121–129). *Polypedates teraiensis* normally breeds from April to August in northeast India (Tamluly and Dey 2014. Curr. World Environ. 9:182–187) and has also been observed in aggregations of competing males on its breeding grounds (Jacinta and Lalremsanga 2017. Sci. Vis. 17:25–32).

During an expedition for the herpetofaunal survey at Dampa Tiger Reserve (DTR), Mamit District, Mizoram, India, on 10 July 2020, at ca. 2100 h, we encountered a male *P. teraiensis* (45.6 mm SVL) in axillary amplexus with a female *L. smithi* (56.3 mm SVL) on a forest path near Teirei Forest Guest House in DTR (23.68934°N, 92.45019°E; WSG 84; 280 m elev.; Fig. 1). They were captured and temporarily kept in a perforated plastic box. The pair was observed amplexing each other overnight and the female *L. smithi* released eggs the next morning. During this survey, we recorded several other anuran species at the site, including *Euphlyctis cyanophlyctis*, *Hoplobatrachus litoralis*, *Hydrophylax*

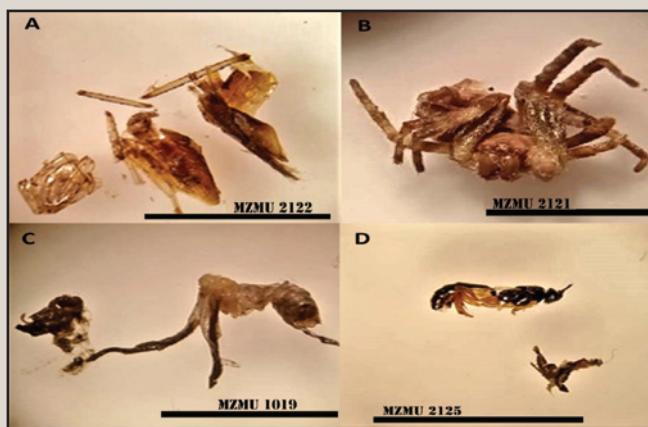


FIG. 1. Gut contents of four *Kurixalus yangi* consisting of: A) Hemiptera; B) Araneae; C) Hymenoptera; D) Hymenoptera (scale bar = 5 mm).



FIG. 1. Male *Polypedates teraiensis* amplexing a female *Leptobrachium smithi* at Dampa Tiger Reserve, Mizoram, India.