An additional record of the Tamdil Leaf-litter Frog *Leptobrachella tamdil* (Sengupta et al., 2010) (Amphibia: Megophryidae) from Dampa Tiger Reserve, Mizoram, India


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Among anurans, family Megophryidae consists of 251 species with two subfamilies, of which the subfamily Leptobrachiinae is the largest with 154 species under four genera. The Tamdil Leaf-litter Frog belongs to the genus Leptobrachella Smith, 1925, which includes 75 species known to be distributed from southern China, northeastern India, Myanmar through Thailand, Vietnam to Malaya, Borneo, and Natuna Island (Frost 2020). Leptobrachella tamdil was described by Sengupta et al. (2010) as Leptolalax tamdil on the basis of two specimens collected from Tamdil National Wetland, Mizoram, northeastern India on the 19 April 2007. After its description, many herpetological surveys did not yield additional specimens from the type locality and its surrounding habitats (Lalremsanga et al. 2015; Lalropeki 2018; Lalbiakzuala & Lalremsanga 2019). The species remains known only from its type locality for more than a decade. This paper presents a third specimen of L. tamdil which was rediscovered from Dampa Tiger Reserve, Mamit District, Mizoram.

Dampa Tiger Reserve, the largest protected area in Mizoram is located in Mamit District along the international border with Bangladesh. It covers an area of ca. 500km² (23.387°–23.705° N & 92.273°–92.431° E) and lies in the western part of Mizoram. It has remained one of the least explored areas of northeastern India and till date, very few studies have been taken up to record its faunal richness. During herpetological collections for an inventory 14 February 2020, an individual, adult male frog was collected from Tuilut Stream (23.697°N & 92.371°E, 449m) at around 19.15h ca. 59km west of the type locality. The collected specimen (MZMU-1631) is preserved in 70% ethanol and catalogued in the Departmental Museum of Zoology, Mizoram University, Aizawl, Mizoram, India. Careful observation of the specimen revealed it to be the Tamdil Leaf-litter Frog Leptobrachella tamdil (Sengupta et al. 2010). The morphometric measurements were taken with Mitutoyo (505-730 D15TX) dial callipers and are given to the nearest 0.1mm. The sex was determined through

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dissection.

We used the following abbreviations for measurements and morphometry: SVL – snout to vent length (from tip of snout to vent); IN – internarial distance (distance between nostrils); HL – head length (distance between angle of jaws and snout-tip); HW – head width (measured at angle of jaws); HD – head depth (greatest transverse depth of head, taken posterior of the orbital region); ED – eye diameter (horizontal diameter of the eyes); E-S – eye to snout distance (distance between anterior-most point of eyes and tip of snout); E-N – eye to nostril distance (distance between anterior-most point of eyes and nostrils); E-T – eye to tympanum distance (distance between posterior corner of orbit and anterior corner of tympanum); UE – upper eyelid width (greatest width of upper eyelid); IO – interorbital distance (least distance between upper eyelids); HTD – horizontal tympanum diameter (greatest diameter of tympanum along horizontal plane); VTD – vertical tympanum diameter (greatest diameter of tympanum along vertical plane); FL – forelimb length (distance between elbow and base of outer tubercle); F1 – first
finger length; F2 – second finger length; F3 – third finger length; F4 – Fourth finger length; TBL – tibia length (distance between surface of knee and surface of heel, with both tibia and tarsus flexed); IMT – length of inner metatarsal tubercle (greatest length of inner metatarsal tubercle); IPT - length of inner palmar tubercle (greatest length of inner palmar tubercle); T1 – first toe length; T2 – second toe length; T3 – third toe length; T4 – fourth toe length; T5 – fifth toe length; A–G – axilla to groin distance (distance between posterior edge of forelimb at its insertion to body to anterior edge of hind limb at its insertion to body) and BW – body width (greatest width of body).

The specimen is mid-sized (SVL 31.3mm smaller than 32.3mm in the male holotype) (Image 1; Table 1), allocated to *Leptobrachella tamdil* (Sengupta et al. 2010) showing the following combination of characters: head wider than long (HW/HL ratio 1.14); vocal sac indistinct; snout obtusely pointed when viewed dorsally and laterally; projecting slightly beyond mandible; nostrils dorso-laterally positioned, nearer to tip of snout than to eye (E-N/E-S ratio 0.52); canthus rostralis obtuse; internarial distance greater than distance from anterior margin of eye to nostril (IN/E-N ratio 1.28); eye large (ED/HL ratio 0.47; ED/E-N ratio 1.72); pupil elliptical; interorbital space flattened, interorbital width greater than upper eyelid width (IO/UE ratio 1.55); vomerine teeth absent; choanae located at anterior of palate; tongue subtriangular, bifid; snout smooth; dorsum tuberculate; tuberculated eyelids; tympanum & supratympanic fold distinct; supratympanic extending to posterior edge of tympanum; macroglands (preaxillary, pectorals, femoral and ventrolateral glands) present; under surfaces of forelimbs, shanks & thighs smooth. Fore limbs short (FL/SVL ratio 0.29); nuptial pads absent; indistinct subarticular tubercles; relative length of fingers: F3 > F2 > F1 > F4 (7.3mm > 4.5mm > 4.4mm > 4.2mm); fingers lacking webbing, tips rounded, not disk-like; inner and outer metacarpals present. Hind limbs relatively long and slender (TBL/SVL ratio 0.49), with heels overlapping when limbs are held perpendicular to body; outer metatarsal tubercle absent; toe webbing basal, tips not dilated apically, bearing dermal fringes; relative length of toes: T4 > T3 > T5 > T2 > T1 (12.4 mm > 9.3mm > 8.6mm > 6.3mm > 3.8mm); subarticular tubercles indistinct. The morphometric data is provided in Table 1.

In life, forehead and dorsum mid-grey, with irregular dark grey blotches; flanks with large dark blotches; that partially encircle pale tubercles; eyes with bright orange iris pigmentation mostly restricted to upper orbit;
blackish vertical ellipsoid pupil; dark tympanic mask present; venter pale pinkish grey; dark greyish-black labial bars present and limbs with dark cross-bars; fingers and toes with faint dark transverse stripes; macroglands pale pink.

The habitat where the specimen was found is located in the core area of the western part of Dampa Tiger Reserve. The natural vegetation in the reserve is tropical evergreen to semi-evergreen, corresponding to the Cachar Tropical Evergreen 1B/C3 and semi-evergreen 2B/C2 forest (Champion & Seth 1968). The forest in the moist valleys is lofty and evergreen, while the steeper slopes on the west aspect have more deciduous elements, often with sympodial bamboos in the understory. Tuilut, the slow-flowing stream where the specimen was collected, is located in the core area of the western part of Dampa Tiger Reserve. The specimen was collected from the exposed pebbles by the stream, Dampa Tiger Reserve, Mizoram, northeastern India.

At present, as only three individuals are recorded so far, there is still very little information on the natural history and distribution range of *L. tamdil*. In fact, the conservation status for the species remains ambiguous till recently, where Deuti (2013) categorized this species as data deficient but later changed the status into not assessed by Dinesh et al. (2019), however, we suggested that the species is very rare, solitary and secretive with nocturnal behavior, and in need of a proper assessment on its conservation status. The macrohabitat of *L. tamdil* appears to consist primarily of slow-flowing stream mixed with rocky terrain within tropical semi-evergreen forest. By updating our knowledge of the distribution, *L. tamdil* remains endemic to Mizoram, India. Other aspects of the natural history of *L. tamdil* remain largely unknown and considerable work remains in order to fill gaps in its known range and determine whether its distribution extends further outside the state of Mizoram.

References


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