MALABAR NARROW- MOUTHEDED FROG

Deformities in endemic *Uperodon triangularis* in Nilghiris

Amphibian deformities have remained one of the most prominent and controversial environmental issues of the past fifteen years (Sessions & Ballengee 2010). Malabar Narrow-mouthed Frog *Uperodon triangularis* Günther, 1876 is an endemic species found in southern Western Ghats of India (elevation 300–1000 m) and found in moist places like moist deciduous and evergreen forest, plantation and human habitations (Gururaja 2012) with an extent of occurrence less than 20,000km², its distribution is severely fragmented, and there is a continuing decline in the extent and quality of its forest habitat in southern India (Biju et al. 2016). In this note, we present observations on deformities in *U. triangularis* in the Nilghiris.

**Amphibia**
[Class of amphibians]

**Anura**
[Order of Frogs and toads]

**Microhylidae**
[Family of Narrow-mouthed Frog]

**Uperodon triangularis**
[Malabar Narrow-mouthed Frog]

Species described by Günther in 1876

**IUCN Red List:**
Global — Vulnerable B1ab(iii) (Biju et al. 2016)
On 11 & 12 June 2016, during a field trip to Emerald, Nilgiris, we observed a total of eight deformed individuals of *U. triangularis* in the agricultural areas. Emerald area is located in southern Nilgiri District close to Avalanche Reserve Forest. Species was identified based on the taxonomic key provided by (Gururaja 2012). Most of the individuals were found having missing legs, feet or digits on forelimb and hind limbs (Table 1). Morphometric measurements were taken using a digital caliper (measured to the nearest 0.1mm). The snout to vent length (SVL) of *U. triangularis* ranged between 13.2mm and 35.8mm, body width (BW) ranged between 2.1mm and 20.2mm, head length (HL) ranged between 3.1mm and 12.2mm, head width (HW) ranged between 3.1mm and 10.3mm, fore limb (FLL) length ranged between 6.4mm and 28.6mm and hind limb (HLL) ranged between 12.1mm and 36.4mm (Table 1).

### Table 1. Morphometric measurement of *U. triangularis*

<table>
<thead>
<tr>
<th>Individuals</th>
<th>Size</th>
<th>Deformities</th>
<th>Morphometric (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SVL</td>
</tr>
<tr>
<td>1</td>
<td>Juvenile</td>
<td>Missing leg on right hindlimb</td>
<td>13.2</td>
</tr>
<tr>
<td>2</td>
<td>Juvenile</td>
<td>Missing digits on right forelimb and right hindlimb</td>
<td>14.5</td>
</tr>
<tr>
<td>3</td>
<td>Adult</td>
<td>Missing digits on left hindlimb</td>
<td>30.2</td>
</tr>
<tr>
<td>4</td>
<td>Adult</td>
<td>Missing digits on left forelimb</td>
<td>35.8</td>
</tr>
<tr>
<td>5</td>
<td>Adult</td>
<td>Missing digits on right hindlimb</td>
<td>35.4</td>
</tr>
<tr>
<td>6</td>
<td>Adult</td>
<td>Missing two digits on right hindlimb</td>
<td>32.4</td>
</tr>
<tr>
<td>7</td>
<td>Adult</td>
<td>Missing digits on left hindlimb</td>
<td>34.6</td>
</tr>
<tr>
<td>8</td>
<td>Adult</td>
<td>Missing foot on left hindlimb</td>
<td>32.9</td>
</tr>
</tbody>
</table>

SVL - Snout to vent length; BW - Body width; HL - Head length; FLL - Fore limb; HLL - Hind limb

Several reports have been recorded in the presence of abnormalities/deformities in frogs like *Hoplobatrachus tigerinus* (Kurulkar & Deshpande 1932), *Fejervarya sp*, *Fejervarya limnocharis*, *Euphlyctis hexadactylus*, *Hyla annectans*, *Amolops gerbillus*, *Polypedates sp* (Mathew & Sen 2006), *Indirana beddomii* (Nair & Kumar 2007), *Fejervarya rufescens* (Nair & Kumar 2007), *Fejervarya limnocharis*, *Fejervarya keralensis*, *Fejervarya brevipalmata* and *Fejervarya rufescens* (Gurushankara et al. 2007) from the Indian region. Among these, four species (*Indirana beddomii*, *Fejervarya rufescens*, *F. keralensis*, *F. brevipalmata*) are endemic...
to Western Ghats. However, this present observation is the first record of this endemic species. Several factors have been proposed as the cause of abnormalities/deformities in amphibians, with parasitic infection, injuries from predation, UV-B radiation, and chemical contamination being the most widespread and studied (Johnson et al. 2010). All the four factors have support, yet each has its problems as well. Ouellet et al. (1997) reported that deformity rates tend to be higher in agricultural areas suggesting that the herbicides and pesticides are the likely causes, and also correlated the use of pesticide with high frequency of hind limb abnormality. Similar to in the present study, most affected limb was hindlimbs (six out of eight case). Therefore, present observation on deformities of *U. triangularis* in the agricultural areas, indicates that may be due to pesticide impact on this endemic species. Exposure to pesticides in the laboratory causes deformities, and the general consensus is that amphibian deformities in the U.S. are occurring at increasing frequencies (Johnson et al. 2010). This is a short time observation, therefore more scientific study is required to predict the pesticide impact on amphibians in the Nilgiris and moreover to take conservation actions to protect endemic amphibian species.

References

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