Pilot survey to record Anuran diversity in and around of Taralu, Bengaluru Region

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ABSTRACT

The present study was undertaken in and around Taralu village adjoining the Bannerghatta National Park, Bengaluru. Random sampling and visual encounter method were adopted across the study area. A total of seven species of anurans were identified during the present observations viz., *Polypedates maculatus*, *Microhyla ornata*, *Kaoula taprobanica*, *Duttaphrynus melanosticus*, *Fejervarya sp 1*, *Fejervarya sp 2*.

Key Words: Taralu, Bannerghatta, anurans, anthropogenic.

INTRODUCTION

Amphibians play an important role in the ecosystem as secondary consumers in food chains, biomonitors predating insect pests and as ecological indicators owing to their high degree of sensitivity to changes in the environment (Lips, 1998; Daniels, 2003). According to the Amphibia web globally there are 7307 species of amphibians, of which anurans contribute the most species richness (6442), followed by Caudata (665) and Gymnophiona (200) (amphibiaweb.org). In recent times there has been an increased consciousness for biodiversity census and monitoring new species and rediscoveries (Bossuyt et al. 2004; Kohler et al. 2005; Voris 2006). A lot of information has been accumulated in the field of biodiversity and conservation of amphibians from different regions of India (Daniels, 2001, 2003; Biju, 2001; Dahanukar & Padhye, 2005; Gururaja et al. 2007; Dinesh et al. 2008; Kamie et al. 2012; 2013). As a result of scientific efforts India has recorded 342 amphibian species which include 1 salamander, 35 caecilians and 306 species of anurans (Dinesh et al. 2013).

The global decline in the amphibian populations in recent years is alarming and is a matter of great concern for biologists (Houllahan et al. 2000; Daniels, 2003). Anurans are dependent on environmental quality (Marco, 1993; Duellman & Trueb 1994) and are also strongly influenced by abiotic factors, such as rainfall, temperature, and vegetation (Gascon, 1991; Eterovich, 2003; Parris, 2004; Werner et al. 2007). Forest ecosystems adjoining urban areas are prone to an array of issues causing population decline viz., habitat destruction (Blaustein & Kiesecker, 2002), pollution (Hecnar & M’Closkey, 1996) and road mortality (Beebee, 1997; Forman & Alexander, 1998; Hels & Buchwald, 2001). The present study was undertaken in and around Taralu village adjoining the Bannerghatta National Park, Bengaluru.
MATERIAL AND METHODS

Taralu (10° 17’-10° 19’ N; 76° 39’-76° 44’ E), Bengaluru South taluk, Bengaluru Urban District was selected as it has many perennial and seasonal water bodies, also dense foliage owing to its proximity to the Bannerghatta National Park. The survey was carried out on ten random days during March to May 2014 in the early morning (0630 to 0900 hrs IST) and late evening (1900 to 2200 hrs IST) of the day. Random sampling and visual encounter method were adopted across water filled and dried water bodies, agri-horticultural ecosystems including coconut plantation, sapota orchard, leaf litter, areca plantations and mango orchard. Anurans encountered were photographed using Canon power shot SX40 and assistance for taxonomical identification was sought from Dr.K.P.Dinesh, IISc, Bengaluru.

RESULTS AND DISCUSSION

In this first time survey from the study area a total of seven species were identified viz., Polypedates maculatus, Microhyla ornata; Kaoula taprobanica; Duttaphrynus melanosticus; Fejervarya sp 1; Fejervarya sp 2 (Figures 1-7). Among the above D. melanosticuttus was found to be abundant active during day and night (Figure 8). Although the present observations are a short duration study it has revealed moderate diversity (Table 1) of anurans laying emphasis to probe amphibian diversity in the region

<table>
<thead>
<tr>
<th>Fig. 1: Polypedates maculatus (Gray, 1834)</th>
<th>Fig. 2: Microhyla ornata (Duméril and Bibron, 1841)</th>
<th>Fig. 3: Ramanella variegata (Stoliczka, 1872)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 4: Kaoula taprobanica Parker, 1934</td>
<td>Fig. 5: Duttaphrynus melanosticus (Schneider, 1799)</td>
<td>Fig. 6: Fejervarya sp 1</td>
</tr>
</tbody>
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Dept. of Zoology, UCS, Tumkur. 129
Figure 8. Number of individual species recorded during the study period

- *Polypedates maculatus*
- *Microhyla Ornata*
- *Ramanella variegata*
- *Kaoula tapirobanica*
- *Duttaphrynus melanosticus*
- *Fejervarya sp 1*
- *Fejervarya sp 2*

![Bar chart showing species diversity over days of observation.](image)

Table 1. Biodiversity indices for anuran diversity recorded during the present study

<table>
<thead>
<tr>
<th>Taxa_S</th>
<th>Individuals</th>
<th>Dominance_D</th>
<th>Simpson_1-D</th>
<th>Shannon_H</th>
<th>Evenness_e^H/S</th>
<th>Brillouin</th>
<th>Menhinick</th>
<th>Margalef</th>
<th>Equitability_J</th>
<th>Fisher_alpha</th>
<th>Berger-Parker</th>
<th>Chao-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.00</td>
<td>191.00</td>
<td>0.54</td>
<td>0.46</td>
<td>0.98</td>
<td>0.38</td>
<td>0.92</td>
<td>0.51</td>
<td>1.14</td>
<td>0.50</td>
<td>1.43</td>
<td>0.72</td>
<td>7.00</td>
</tr>
</tbody>
</table>
Sixteen species of anurans are reported from Bengaluru (Anonymous, 2010). Sesadri et al., (2012) reported 17 species of frogs from Bengaluru region. Deepak et al., (2013), recorded 10 species from Bengaluru region of which 6 species were recorded from Anekal region of Bannerghatta National Park, the present study is on the other margin of BNP and thus serves as an additional check list in and around the park. This pilot study from Taralu will form baseline information for future in-depth studies and focus on the impact of anthropogenic activities in the area.

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