

1. Title:

**Behavior of endemic, endangered frog, *Fejervarya greenii* in a tropical montane cloud forest of Sri Lanka**

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2. Introduction:

Decline and extinction of amphibians is not a surprise with the gaps of certain information on ecology. Import information about species decline can be achieved through research into the behavioral aspects of declining species. *Fejervarya greenii* is an endemic, endangered and a rare frog species which is restricted to central hills of Sri Lanka. In order to provide information to conserve declining population of *F. greenii*, under this study we investigate its behavior at Horton Plains National Park (HPNP).

3. Methodology:

Behavior of *F. greenii* was studied in and around six lentic water bodies at the montane cloud forests of Horton Plains National Park situated in the highland plateau of the Nuwaraeliya District of Sri Lanka from January 2016 to December 2016. Five time periods were selected as morning (06:00hrs – 09:00hrs), before noon (09:00hrs-12:00hrs), afternoon (12:00hrs-15:00hrs), evening (15:00hrs-18:00hrs) and night (18:00hrs-20:00hrs). The behavior of both mature and immature individuals were recorded in 30 second intervals for 20 minutes while maintaining a distance of 5 meters between the frog and the observer in each time period using focal animal sampling method. A maximum of five individuals were selected and only the frogs not responding to the observer's presence were observed. Locomotion, feeding, resting, refuge use, alert, calling, courtship and swimming were identified as distinct behaviors of *F. greenii*.

#### 4. Results:

Behavior patterns of mature and immature *F. greenii* individuals did not differ significantly among months (ANOVA,  $P > 0.05$ ). Mature individuals tend to rest between 06:00hrs – 09:00hrs time period. They were moderately active during 09:00hrs-12:00hrs time period and used to call most of the time. *F. greenii* was mostly inactive during the time period of 12:00hrs-15:00hrs exhibiting, resting and refuge use as most prominent behaviors. They tend to rest, call and exhibit courtship behaviors during 15:00hrs-18:00hrs. They were most active during the night time period and exhibited all the behavior types identified. Calling and courtship behaviors were absent in immature individuals. Resting and refuge use can be identified as most prominent behaviors of immature individuals.

#### 5. Discussion:

Relatively inactive behavior of frogs during the time period of 12:00hrs-15:00hrs was probably a behavioral adaptation to avoid the high desiccation because this was the hottest time period of the day. Calling and courtship behaviors were observed in all the months which indicated that this species breed continuously throughout the year. This behavior is probably due to the rainfall and horizontal precipitation patterns at montane cloud forests of the Horton Plains National Park of Sri Lanka. The present study indicates the conservation and management practices concerning this endemic endangered frog should include the montane cloud forest habitats of Horton Plains National Park which provides the optimum conditions for *F. greenii* to perform its behavior.

**Key words:** *Fejervarya greenii*; Horton Plains National Park; Montane Cloud Forest; Behavior

**GPS Coordinates:** Horton Plains National Park resides between  $6^{\circ} 47'$  -  $6^{\circ} 50'$  northern latitudes and  $80^{\circ} 46'$  –  $80^{\circ} 50'$  eastern longitudes.

## 6. Visual Component

### Behavior: Insights to Conservation

### *Fejervarya greenii* and a tropical montane cloud forest of Sri Lanka

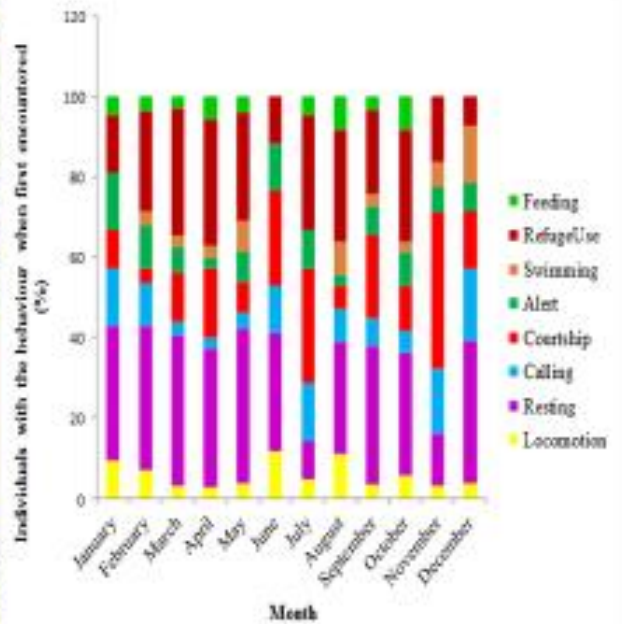


Figure . Monthly variations in behavioural patterns of *F. greenii*.

