

Notes on Advertisement Calls Playback by Three Species of Sarawakian Frogs

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ABSTRACT

Male and female frogs respond differently towards advertisement calls. The fittest call will be chosen by the conspecific female to produce progenies, means that call from male to female is to ensure the survival of the species. The objective is to observe the response of both male and female frogs by playing the advertisement call to another male or female of the same species at their breeding site. The advertisement calls were recorded manually and were replayed using a speaker with built-in amplifier. The frog's responses were then recorded in video form. Ambient temperatures were taken using data logger. The calls were analyzed to describe call characteristics. From the acoustic playback, both male and female *Pulchrana glandulosa* responded towards the calls. The male produces a crying-like sound while approaching playback source meanwhile the female produces a small "wik" sound. Male *Pulchrana baramica* responded by straining their calls and approaches the playback source. For male *Kurixalus appendiculatus*, the individuals responded by moving towards the sound source without calling. Results show that male of different species and male and female of the same species react differently towards playback calls. This shows that the breeding call recorded can be recognized by other frogs when they were played on amplifier.

Keywords: Advertisement calls, call characteristics, playback recording, Sarawakian frogs

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INTRODUCTION

Advertisement calls are necessary for males and females of the same species to indicate it is time to sexually reproduce. If the call from male frogs is not recognized by female frogs, then no breeding will occur, and the species are reproductively isolated from each other. Male and female frogs respond differently towards advertisement calls. This is because the call from male to female is to ensure the survival of the species, as only the fittest will be chosen by the conspecific female to produce progenies (Zainudin *et al.*, 2009; Zainudin *et al.*, 2010; Amram *et al.*, 2018). For frogs that call in choruses, the sounds of a chorus could also act as an acoustic beacon for some frogs to locate the breeding aggregation (Bee, 2007). The calls contain unique acoustic characters that allow them to communicate for reproductive receptiveness (Preininger *et al.*, 2013; Reichert, 2013; Lima *et al.*, 2014; Santana *et al.*, 2016).

However, not much is known on how well they respond towards playback recording. Playbacks of audio stimuli to wild animals are a widely used experimental tool in behavioral ecology. However, most of playback experiments are constrained by observer limitations such as the time observers can be present, or the accuracy of observation (Lendvai *et al.*, 2015). These problems are more apparent when playbacks are targeted towards specific purposes, like towards specific individuals to illicit their response. Previous field playback studies have shown that other than for mating, vocalizations also mediate species recognition among male frogs (Amézquita *et al.*, 2005). They play an important role in sexual selection by male–male competition, like to assess opponent's resource holding potential (Bee *et al.*, 1999; Bee *et al.*, 2000), to mediate inter-male spacing (Marshall *et al.*, 2003), and for recognition of territorial neighbour (Bee & Gerhardt, 2002). The calls playback was used in this study to observe the response of both male and