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First description of the advertisement call of William's Bright-eyed Frog, *Boophis williamsi* (Guibé, 1973), on Ankaratra Massif, Madagascar

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Madagascar is a global hotspot for amphibian diversity, with exceptionally high species richness and endemism, yet much of this diversity remains poorly known and under severe threat (Ralimanana et al., 2022; Carné and Vieites 2024). Among the island's most threatened amphibian species is the William's Bright-eyed Frog, *Boophis williamsi* (Guibé, 1973), a species endemic to a tiny area of the Ankaratra Massif, which is Madagascar's third-highest mountain and a location undergoing rapid land-use change (Monteiro et al., 2023). Here, *B. williamsi* occurs along montane streams, with adults most often encountered in open savanna habitats and larvae inhabiting more shaded forested stream sections (Fanomezantsoa et al., 2026). Skeletochronological analyses indicate a relatively slow life-history strategy, with an extended larval stage and sexual maturity reached two years after metamorphosis (Andreone et al., 2014). The combination of its extreme range restriction, slow life-history pace, and ongoing habitat modification places *B. williamsi* among the most threatened frogs in Madagascar.

Boophis williamsi was originally described by Guibé (1973) without documentation of its vocalisation. Blommers-Schlösser (1979) described the tadpole and juvenile colouration based on individuals raised through metamorphosis but did not encounter calling adults. The species was not recorded again until rediscovery by Vences et al. (2002), who provided photographs and a detailed description of adult body sizes and habits along fast-flowing streams at high elevation. Despite intensified amphibian survey efforts in the highland streams of Ankaratra during recent years (e.g., Rabemananjara et al., 2012; Ndriantsoa et al., 2014; Radonirina et al., 2023), no vocalisations of *B. williamsi* have been reported prior to our work.

On 1 July 2021, at approximately 16:00 h, while establishing transects for amphibian surveys along a stream segment at the local site Tavolotara (19.3459°S, 47.2791°E; elevation 2020 m), the first author (R. Fanomezantsoa) heard an unfamiliar frog call. Upon locating the source, an adult *B. williamsi* was observed inflating and deflating its body while calling from a moss-covered rock at the edge of the stream at approximately 25 cm above the water (Fig. 1).



Figure 1. The individual *Boophis williamsi* recorded vocalising at Tavolotara on Ankaratra Massif, central Madagascar. This photograph was taken on the rock from which it was observed calling, but after being returned to its place of capture following morphometric measurements. Photo by Rebecca D. S. E. Fanomezantsoa.

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Subsequently, the call was recorded for 28 s using a mobile telephone (Itel A33 standard model/W5001P) at an estimated distance of 1 m from the frog. Following the recording, the individual was captured by hand to obtain morphometric and environmental data. Air temperature at the time of recording was 15.4 °C, which represented the maximum temperature of the day. Nighttime temperatures dropped to approximately 6 °C. The recorded individual measured 37.9 mm snout–vent length, had a head width of 11.1 mm, and weighed 2.9 g. After photographing the individual and collecting morphometrics, the frog was released at the point of capture. Following capture and release, the frog was not heard calling again.

The call of the individual *B. williamsi* we recorded was pulsed and multi-note (guild G sensu Emmrich et al., 2020), consisting of 19 notes across the full 28-s recording (mean +/- SD note duration: 183.9 +/- 107.5 ms, range 31.0–451.0 ms), with inter-note intervals of 561.5 +/- 462.5 ms (range 91.0–1538.0 ms, excluding gaps > 2 s; Figs. 2–3). The recorded call has a dominant frequency of 3.19 kHz and a bandwidth spanning roughly 1–8 kHz. In the full 28 s recording, two calling bouts were separated by approximately 6 s of near silence, which were interrupted by a single isolated note. A 5-s spectrogram showing the second calling bout from the recording was generated using Audacity and the *seewave* package in R following Köhler et al. (2017). The complete 28-s recording has been deposited in Zenodo for future reference (available at https://doi.org/10.5281/zenodo.20835850).

To our knowledge, this represents the first observation and recording of the vocalisation of *B. williamsi*. Notably, the call was recorded during the austral winter, which is typically outside the peak activity and breeding period of most Malagasy frogs (Heinermann et al., 2015; Dubos et al., 2020). If *B. williamsi* breeds during cooler months rather than during the warm rainy season, this may partially explain the historical absence of call records, as most herpetological fieldwork in Madagascar is conducted during warmer periods. The recording presented here provides a foundation for future studies on the species' reproductive ecology and enables the inclusion of *B. williamsi* in developing acoustic reference libraries for bioacoustic surveys in Madagascar (Vences et al., 2008). Because the recording was made opportunistically using a mobile telephone rather than a recorder, limited resolution may constrain some quantitative analyses. Future recordings using specialised recording equipment and made on multiple individual animals will be valuable for refining call parameters and assessing intraspecific variation.

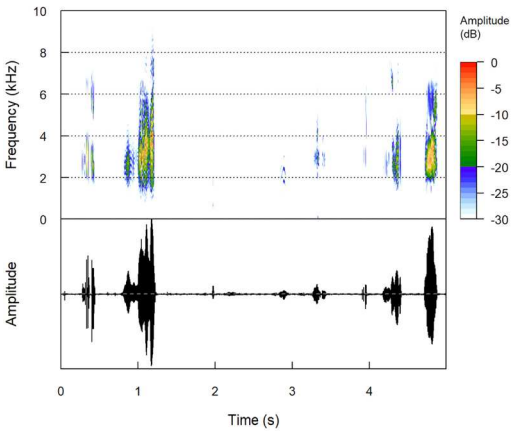


Figure 2. Spectrogram of a 5 s clip of the call recorded from *Boophis williamsi*. The full 28 s recording is available at https://doi.org/10.5281/zenodo.20835850.

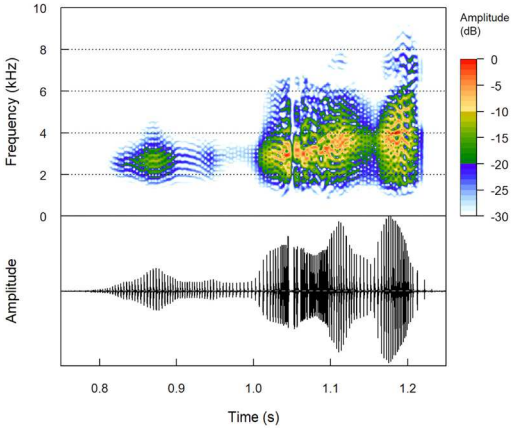


Figure 3. Spectrogram of a 500 ms clip zoomed in on one note of the call recorded from *Boophis williamsi* (section 0.75–1.25 s of Figure 2).

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