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# The effect of airplane noise on the calls of the critically endangered Pickersgill's reed frog (*Hyperolius pickersgilli*), an in situ evaluation

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## Abstract

As a result of urbanisation many breeding sites for frogs have been lost or degraded and many are now surrounded by urban structures. Frogs rely on their vocalization to establish territories and call sites and to attract mates. Various studies have shown that these acoustic signals can be degraded by urban noise. Anuran abundance has shown to be negatively correlated to traffic. Although many studies have concentrated on traffic noise, only one other study documented effects of low flying airplane flyby noise on frogs. *Hyperolius pickersgilli* is a critically endangered reed frog native to the eastern coastal regions of South Africa. In order to effectively evaluate the call of *H. pickersgilli*, we included a description of the call properties. We compared a site with high levels of airplane flyby noise to a reference site without any airplane activity. Our results show that *H. pickersgilli* males made changes in both temporal and spectral properties of their call. Males call significantly more during and after an airplane flyby in relation to the call rate before the noise stimulus. We found that males call at higher median power weighted frequencies (mean weighted frequency difference = 161.4 Hz) when exposed to high-intensity airplane flyby noise. In comparison with call rate five minutes before the airplane flyby, males called 12% more during and 18% more after the airplane flyby. Although changes in the spectral and temporal properties of the call of *H. pickersgilli* were observed, this species were actively calling for much longer than any other local species. This is the first study from Africa to report effects of anthropogenic noise on anuran communication.

**Keywords:** airplane flyby noise, bioacoustics, urbanisation, call description, *Hyperolius pickersgilli*, critically endangered, acoustic habitat degradation, South Africa, anthropogenic noise

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