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## **The effects of acute exposure to mining machinery noise on the behaviour of eastern blue-tongued lizards (*Tiliqua scincoides*)**

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### **Abstract**

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*The mining industry is an important source of noise for wildlife, and the eastern blue-tongued (EBT) lizard (*Tiliqua scincoides*) is an Australian animal that may be impacted. We analysed the behaviour of nine EBT lizards during and after exposure for 5 s to one of five combinations of mining machinery noise frequency and amplitude (frequency < or > 2 kHz, low [60–65 dB (A)] and high [70–75 dB (A)] amplitude, or a control treatment). Following exposure, lizards could leave the test chamber and enter an escape chamber, which led into a small hiding chamber. Chambers were monitored for 15 min after initial exposure. In the test chamber, lizards exposed to high frequency, high amplitude noise spent more time freezing, a typical stress response in reptiles, when compared with animals in all the other treatments. This was especially the case for lizards exposed to high frequency noise. In the hiding chamber, high frequency noise at high amplitudes decreased durations of head positioning to the right and downwards, suggesting a lateralised fear reaction, but decreased standing and freezing behaviours. We hypothesise that lizards have lateralised behaviour reactions to mining noise, with high frequency, high amplitude noise being the most detrimental. Our results demonstrate that acute exposure to mining noise had negative effects on EBT lizards' behaviour and welfare, which may suggest a threat for lizards experiencing chronic mining noise in the wild, making the study of mining machinery noise in situ a research priority.*

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**Keywords:** animal welfare, anthropogenic noise, eastern blue-tongued lizard, lateralisation, mining noise, sound mimicking