Novel audio lures to improve interaction and encounter rates of possums (*Trichosurus vulpecula*) with control methods in New Zealand

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The brushtail possum (*Trichosurus vulpecula*), a marsupial native to Australia, was widely introduced in both the North and South Islands of New Zealand between 1890 and 1930 to support the fur industry that was booming in Australia at the time. Possums were one of the many mammalian species that humans introduced when they discovered and settled in New Zealand. Before the settlement of humans in New Zealand, there were no terrestrial mammals; therefore, the local species evolved in the absence of mammalian predators. This resulted in native species populations falling at alarming rates and possibly facing extinction due to numerous predators and species that had not been intended to coexist alongside one another.

The government's initiative to reduce New Zealand's predators (possums, rats, and stoats) by 2050 has significantly expanded efforts to eliminate these pest mammals in recent years. Managing these pest mammal populations is crucial to protect the native bird, reptile, and invertebrate species.

In New Zealand, predator control has been practiced for a long time, but what started with simple trapping has since developed into a thriving industry full of expertise to boost the efficiency of trapping and toxins, including species-specific attractants. The number of traps and bait stations needed to be set up and the associated labour and expense would be significantly reduced if animals could be reliably drawn from a distance to a bait station or trap. Any sound played to encourage or discourage interaction with a control tool/area is known as an audio lure.

This research aims to identify if audio lures can significantly increase possum encounter and interaction rates of control devices and establish an audio lure tool that is durable, easy to use, and cost-effective for the wider public to use.

Preliminary captive trials found that an aggressive possum sound is significantly more attractive to possums than an alarmed possum sound, a beeping sound, or a control (no sound).

Preliminary field trials have found that the audio lure being developed performs similarly to an already established audio lure included as part of the Cacophony Project Thermal Camera. The price point of the audio lure being developed is around $250 (NZD) and should last 30 days in the field.

At the conference, I will present the final captive trial results and more field trial research. The field trial research will investigate encounter and interaction rates of possums feeding in live-capture traps with and without audio lures. I will also, report the final audio lure costings and field life before servicing is required.