Advancing riverine eDNA sampling methodology for monitoring and surveillance of terrestrial mammalian pest species

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Biography:

Nick Foster is an ecologist at Zero Invasive Predators (ZIP), who works in invasive small mammal elimination in mainland sites within Aotearoa New Zealand's South Island.

eDNA sampling has been demonstrated to be a highly sensitive and efficient technique for detecting and monitoring cryptic species and has found its place as a tool that improves biosecurity in many situations.

Abstract:

There is a potential for eDNA collected from riverine environments to revolutionise how the monitoring and surveillance of invasive terrestrial mammal species is conducted. However, the technique has not yet been established in this field, and it is not understood how to best apply it as an emerging practise.

One avenue to advance passive eDNA sampling is the physical sampling methodology with consideration to the environmental conditions in which it is used. In this study, we sought to understand how deployment duration, number of site replicates, precipitation, distance from eDNA source, and river characteristics affect the yield of eDNA of terrestrial taxa from passive samples collected in rivers. We used these findings to develop sampling methodologies for two purposes: for discerning between high, medium and low densities of an invasive rodent (Rattus rattus); and for detecting their populations at very low densities.

In this presentation, I share learnings from a suite of field trials conducted in the mountains and forests of Aotearoa New Zealand's West Coast within the Predator Free South Westland project area, where a range of invasive small mammals are targeted in an elimination programme. This research contributes to a growing understanding of how riverine eDNA sampling is best applied for detecting and monitoring terrestrial species and identifies key areas for further development.

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ABOUT eDNA

The Southern environmental DNA Society (SeDNA) is a newly established Australian and New Zealand society of environmental DNA researchers and end users. We aim to promote best practices and help the adoption of methods across sectors.

Our mission is promoting science and industry collaboration across Australia and New Zealand to advance best practice eDNA methods and adoption in government, private and community sectors.

Visit our website to find more about the society and what we do here. Membership registration is open on our website.

https://sednasociety.com/

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