TITIPOUNAMU “ZIP”

VOCAL SIGNATURE RECOGNITION USING MACHINE LEARNING ALGORITHMS
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Many animals have a distinctive “voice”, which is also known as a **vocal signature**. Unique vocal signatures can be inherited, but they can also be influenced by the environment. Our research uses machine learning algorithms to investigate the presence of vocal signatures both at the individual level and at the nest level of an unlearned feeding zip call, in a wild population of titipounamu (Acanthisitta chloris), from Aotearoa-New Zealand. Our research is important because it constitutes one of the first steps for understanding how titipounamu communicate with one another.

**Do titipounamu have a vocal signature in their feeding calls?**

**WHAT WE DID**

1. Study site
2. Microphone
3. Microchip reader
4. Zip call extraction and ID matching
5. Time-offset correction
6. Microchip reader-Microphone

**WHAT WE FOUND**

1. Vocal signature detection
2. Machine learning vocal recognition

**WHY IT MATTERS**

1. Titipounamu have a vocal signature at the individual level and nest level.
2. Titipounamu vocal signature can be classified to the correct individual and nest with high accuracy using machine learning algorithms.
   - *This is intriguing: How could two unrelated individual parents from a same nest sound so similar if their calls are not learned?*

**Do titipounamu learn their vocal signature?**

- Titipounamu share a common ancestor with parrots and songbirds, both known for learning their calls.
- However, titipounamu are assumed to not learn their calls - so if their zip calls are in fact learned, this will change our understanding of how titipounamu communicate and how call learning evolved in birds.

**References**


**Images and Graphics**

- Maps of New Zealand
- Diagrams of titipounamu with microchips and microphones
- Graphs showing vocal signature detection and classification

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