

TE TIRITI GUIDED NATIONAL DNA REFERENCE LIBRARY

TE HUINGA IRA TAKETAKE O AOTEAROA

The project, Te huinga ira takekake o Aotearoa, aimed to build capability for a national DNA reference library. Given that Aotearoa's commitments to Te Tiriti encompass data sovereignty, the research team also sought to develop a co-governance approach to the DNA library.

This project will lead to the creation of a national DNA reference library that upholds Te Tiriti commitments and maintains scientific value by collating reference barcodes of plants, animals and fungi in Aotearoa, New Zealand.



AT A GLANCE

DNA-based monitoring tools are routinely used for conservation, biodiversity, and biosecurity surveillance. Aotearoa New Zealand lacks a national DNA reference library for local species, which limits the decision-making ability based on these tools.

BUILDING CAPABILITY FOR A NATIONAL DNA REFERENCE LIBRARY

A project working group was assembled, composed of experts who have worked with Te Tiriti and data sovereignty, as well as researchers, curators, and database specialists who use and generate genetic and genome-based data. This group reviewed current practices associated with the generation of these data in Aotearoa and identified potential issues to and opportunities for embedding Te Tiriti into the library. They also investigated how to implement technical specifications that meet Te Tiriti obligations, including:

- ensuring the safety and security of the database;
- integrating indigenous knowledge as metadata;
- data provenance information as biocultural labels;
- applying appropriate transparency and control measures over sensitive data;
- regulation of certain data use cases.

Six key topics of importance were developed into a public facing wānanga series. The series brought in experts to speak to these topics, such as Māori perceptions, privacy, and data stewardship and sovereignty. The working group captured both the expert opinions and public discussion during each wānanga. These conversations, along with follow-up surveys, are being used to inform and shape the advice to the government being developed for investment in the national DNA reference library.

KĀWAI KAIMAI CASE STUDY

The research team tested the initial concept for a Te Tiriti-guided reference DNA library through a collaboration with the Tura Ngāti Te Ngākau Iwi hapu Trust. The iwi had been collecting insects with pitfall and malaise traps to survey the insect diversity in the Kaimai forest. They recognised the laborious nature of identifying all of the invertebrates taxonomically and were keen to co-design a DNA-based monitoring approach for their environmental surveillance.

Together, the research team and iwi created a collaborative project (Kāwai Kaimai) focused on developing a reference library specific to their rohe. As part of the collaboration, the research team and iwi met multiple times to flesh out the parameters of this engagement, to discuss the DNA reference library, and to figure out what would be valuable for both parties.

In the summer of 2023/24, aligned funding from the BioHeritage State-of-the-art-surveillance programme, supported five interns to assist Tura Ngāti Te Ngākau in collecting insects, sorting specimens morphologically, and conducting DNA extractions of the samples.

Several community days focused on Kāwai Kaimai were run in Ngongotahā. These events raised awareness and understanding of how genetic tools can be used for biodiversity surveillance among school kids, their families, and members of the iwi.

The team is now conducting ongoing work to generate a reference library specific to the Tura Ngāti Te Ngākau's rohe that includes Mamaku and Ngongotahā communities. Specifically, testing Te-Tiriti guided additions such as indigenous metadata and biocultural labels that will be implemented within the larger national DNA reference library. The iwi also has the choice of whether they would like the data generated during Kāwai Kaimai to be included in the national library, which aligns with their vision to extend the benefits of this kaupapa to all schools and citizens of Aotearoa, alongside the iwi.



WHAT'S NEXT?

Now the scope and shape of a Te-Tiriti guided national DNA reference library has been developed, the research team are looking to find the funding to build and implement the library. The development of the DNA reference barcode informed by indigenous data sovereignty is being watched closely by the International Barcode of Life Consortium, so the learnings can also help improve how we engage with these aspects globally.



PHOTOS FROM THE COMMUNITY DAYS IN NGONGOTAHĀ

WHERE TO FIND OUT MORE

References

1) Wānanga Series-
<https://www.landcareresearch.co.nz/events/national-dna-database-webinar-series/>

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