

# TE KOROWAI

RECLAIMING AND PRESERVING INDIGENOUS  
KNOWLEDGE OF COASTAL AND MARINE ECOSYSTEMS



Sustainable Seas National Science Challenge - Tangaroa Programme  
Project T3 Nga Tohu o te Ao: Utilising Maramataka as a Framework for  
Marine Management

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Utilising Maramataka as a Framework for Marine Management

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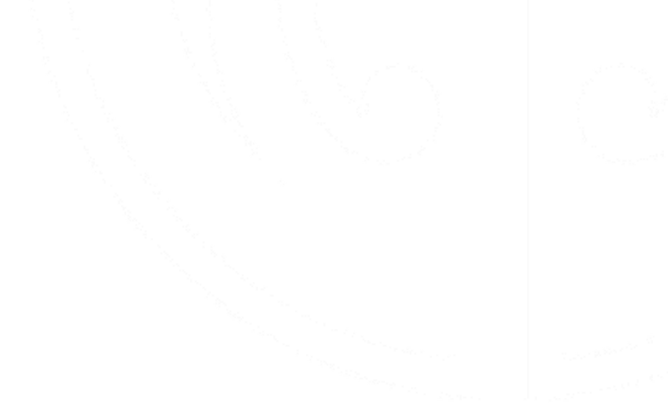
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# TE KOROWAI

## RECLAIMING INDIGENOUS KNOWLEDGE AND MARAMATAKA PRACTICES

The Māori moon calendar, maramataka, is an ancient knowledge system developed over millennia though an intimate connection with the environment. Maramataka is a natural timekeeping system that utilises the movement of the moon through any given month or season to determine appropriate times for diverse customary activities. Although maramataka is not as widely applied today, Indigenous communities have preserved knowledge and practices surrounding moon calendars across the Pacific. Here in Aotearoa, Indigenous practitioners still use maramataka, which continues to inform interaction with the environment and guide ecosystem management practices. The survival of maramataka through time has established it as a recognised instrument for Indigenous Ecological Knowledge (IEK) preservation and reclamation.

Ngā Tohu aims to utilise maramataka as a tool to explore the IEK of coastal and marine ecosystems. The project investigates its use as a framework for developing culturally responsive marine-monitoring knowledge and practice. Ngā Tohu is being developed over three case study areas across Aotearoa; these whānau groups include Pākirikiri Wānanga, based in Tokomaru Bay; Ngātaki Collective, in Ngātaki; and Ngā Pāpaka in Tauranga. These whānau groups have set the foundation for collective inquiry into maramataka and IEK.

IEK is the result of intimate connections, explorations and interactions with the natural environment and ecosystems. It has accumulated over many generations and been passed down via various modes of cultural transmission. IEK is linked directly to the lands and seas for which it was developed and crucially, holds knowledge distinctive and specific to place and people.

IEK is a source of invaluable information that continues to inform Indigenous theory and practice around coastal ecosystem protection and management. Ngā Tohu aims to reclaim IEK to inform and enhance maramataka practice in coastal management. Although the broader project looks at three levels of IEK reclamation – 1.) IEK of the Pacific, 2.) mātauranga Māori and 3.) tribal ecological knowledge (TEK) – this report focuses specifically on the last two. It is important to note here that this report does not fully present IEK reclaimed in this programme; rather, it describes the framework and processes the Ngā Tohu programme used to reclaim IEK regarding maramataka theory and practice.

### This report consists of three sections:

1. **Te Korowai (Cloak)** – Positioning of the framework
2. **Te Rākau (Tree)** – Framework structure
3. **Ngā Peka (Branches)** – Exemplar of framework applications

# TE KOROWAI

## THE FOUNDATIONS - POSITIONING THE FRAMEWORK

It is important for Ngā Tohu to describe the research process from a Te Ao Māori perspective and, as such, we have chosen to structure this report using the story of Te Korowai o Papatuānuku (The Cloak of Papatuānuku), also referred to throughout as Te Korowai o Papa and Te Korowai. This narrative helps to describe our Ngā Tohu research process.

Te Korowai speaks to reclaiming the seeds of IEK and positions the knowledge-reclamation process within pūrākau (traditional Māori stories). Pūrākau articulately describe the creation of our living world and detail its key stages.

One of particular significance to the development and positioning of this framework is Te Korowai o Papatuānuku, The Creation of the Indigenous Forests.

It is important to acknowledge that traditional creation stories differ tribally, this report therefore presents a general narrative, and describes the fundamental concepts in the pūrākau of the creation of Indigenous forests. Te Korowai follows a common narrative of indigenous forests, from their creation and pre-human state to widespread clearances and, finally, to the current phase of active forest restoration and regeneration. .



# TE TIMATANGA

## CREATION OF TE KOROWAI Ō PAPATUĀNUKU

The pūrākau of Te Korowai Ō Papatuānuku tells us that after the separation of Papatuānuku (Earth) and Ranginui (Sky), Papatuānuku lay unclothed, bare and barren. Out of pure aroha (love), Ranginui instructed his son, Tāne Mahuta (guardian of the forests), to cover Papatuānuku. Tāne set about this task, sowing the seeds of his children within the fertile soils of his mother. The first of his children were rākau, the trees. Over time, these grew, creating safe spaces for other life to exist and flourish. Because of this, our forest systems were created, Te Korowai Ō Papatuānuku, the cloak of Papatuānuku.

Prior to human arrival, Aotearoa was covered in thick forests, each of them unique. They teemed with a diversity of life, a myriad of

balanced, interconnected, self-supporting systems and energies, in which every organism served a vital role in the whole. Every part of the forest, living and non-living, offered the potential for a knowledge system.

Over time, after they came, humans realised the potential for knowledge offered by the forests. Over generations of lived interactions and experiences, IEK of the indigenous forests developed and grew. Through acute environmental-observation skills, Māori developed understandings of individual species and their connections and relationships with the entire system. Like the stitching of a korowai, IEK wove together knowledge of the forest's energy flows.

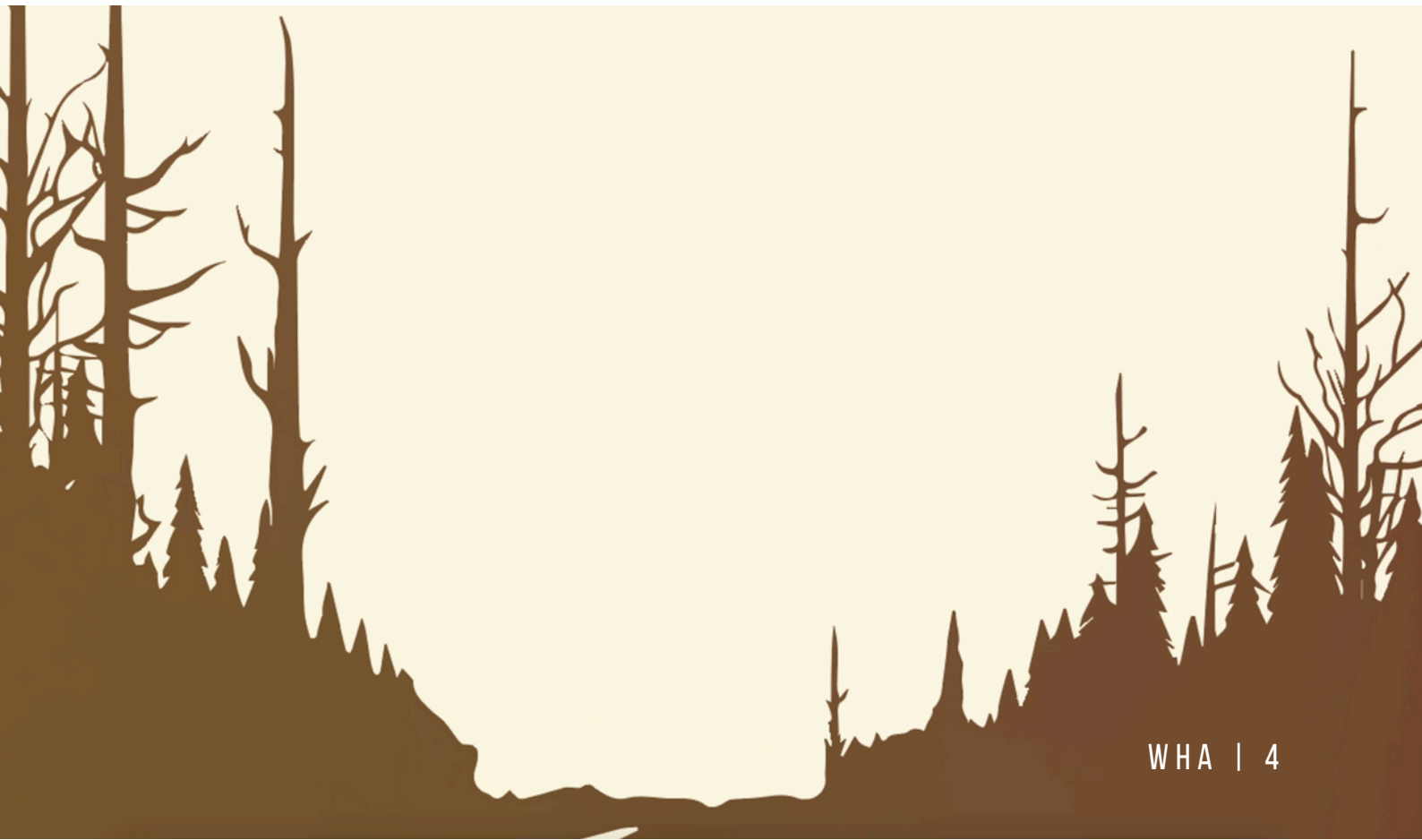


# TE TUAKANGA

The forests of Aotearoa reflect a story not dissimilar to other indigenous forests around the world. With human arrival, they experienced a history of intentional clearing through successive stages of pre- and, even more, colonial and post-colonial, occupation. In traditional Māori histories, Tāne clothed his mother Papatuānuku with forest, a life-giving korowai. Then, over generations of human occupation, piece by piece, her korowai of protection has been removed and, today, Papatuānuku again lies bare, barren and exposed. With her cloak removed, she no longer has the same strength and resilience, and we now see a land that struggles to support her delicate life systems.

## CLEARING OF INDIGENOUS FORESTS

The clearing of indigenous forest is used here as a metaphor to position the loss of IEK. Indigenous Māori knowledge systems, once diverse and resilient, have experienced analogous processes of clearing to that of Aotearoa's indigenous forest systems. Like the Korowai ō Papatuānuku, the Indigenous knowledge systems are but remnants of their former state; today we actively seek to reclaim and preserve the seeds of knowledge and harness the potential still held in the land and people.



# TE PITOMATA

## RESTORATION OF INDIGENOUS FOREST

In recent history, we have come to realise the consequences of forest clearing and land modification on both local and global environmental systems. As a result, there has been a conscious movement toward protecting and restoring indigenous forests across Aotearoa and elsewhere. This movement to restore indigenous forests is reflected in the Ngā Tohu project of reclaiming Indigenous knowledge. Te Korowai ō Papatuānuku draws upon the principles and processes of forest restoration which, in turn, provides a basis for guiding Indigenous knowledge reclamation.

Reflecting again on the teachings of the pūrākau, Te Korowai ō Papatuānuku: like Tāne clothing his mother with the rākau, nurturing the multitudinous forest life and systems, Te Korowai looks to restore the rākau of knowledge through reclaiming the seeds of Indigenous knowledge. Each rākau is a source of knowledge and, as we reclaim the seeds, we plant and care for their growth. As we observe that growth, we gain a deeper connection to, and understanding of, them and their sacred place in Taiao (the natural environment). We observe how the rākau connects and interacts with the whole, and from this we understand our connection and our place in Taiao. It is from this place of knowing that we are able to more effectively act as kaitiaki (guardians) of our land, sky and water.





# TE RAKAU

## FRAMEWORK STRUCTURE

Te Korowai tells us that rākau are the foundations of our forests. So, if we are to restore the forests of knowledge, the first strands must be the rākau of knowledge. In the Ngā Tohu project, these are the foundational elements of the maramataka, the core knowledge components that, once established, will support the growth and development of the whole knowledge system. This is a broad conceptualisation,

and it is important to acknowledge that each whānau within the project will determine which rākau knowledge components are important, relevant, and meaningful to their own work towards forest restoration. This report does not detail specific IEK reclaimed by each whanau research group, rather, it describes the framework and processes of knowledge exploration positioned within the broader context of Te Korowai.

As a restorative framework, we have framed Te Korowai in terms of four stages of forest restoration:



These stages provide the progressive action points that guide the broader restorative aspirations of Te Korowai. To date, Ngā Tohu has been working in two primary areas, kakano and pihi, which are described here in more detail.

# 1. KĀKANO

## RECLAIMING SEEDS

Kākano (our seeds of knowledge) are the source of potential and the core foundational components for further exploration and development of maramataka knowledge. Reclaiming the seeds of knowledge is the first step to re-establishing rākau, and the forests of knowledge. Depending on each whānau group's aspirations, the form, function and pathways to reclaiming kākano will differ. It is important that whānau are able to identify those kākano that are beneficial to their own reclamation journeys. In this project, the initial stages of kākano exploration and reclamation have been guided by a series of pātai (questions) that have helped to provide focus and direction.

*Ka kimi i te aha?*

*What seeds are we looking for?*

*Ki hea kimi ai?*

*Where do we find the seeds?*

*He aha tōna momo?*

*What do seeds look like?*

*Hei āhea kimi ai?*

*When is the appropriate time to collect the seeds?*



## 2. PIHI NURTURING SEEDLINGS

Pihi (seedling) refers to planting the kākano, grounding them in safe spaces and collectively nurturing them so that they develop strong, established, roots. Hui (noho and wānanga – meetings and cultural gatherings) have been valuable in providing spaces for establishing and grounding the knowledge development process. These cultural spaces acknowledge and uphold traditional Māori values and practices, allowing for safe exploration of knowledge reclamation. Hui have fostered open sharing and learning, both within the Ngā Tohu whānau and among extended whānau/pūkenga (expert practitioners). They have enabled progressive inquiry into maramataka, whereby each hui provides a platform to which another layer of

knowledge can be added, strengthening the positioning and understanding of the whole.

Once whanau identified and named their kākano, the next stage focused on planting them and nurturing their growth. This first involved establishing strong roots by deepening the understanding of whakapapa (genealogy). Following this, we sought nourishment to unlock their potential, which involved deep exploration of korero (ancestral knowledge). Finally, pihi involved reaching upward to Te Ao marama (the world of light) and harnessing the energy of the sun to expand and extend. In this stage, we explore environmental indicators and physical expressions to further deepen our understanding.

### TONA INGOA?

#### WHAT IS THEIR NAME?

*What is their expression? What can their name tell us about their natural processes and characteristics?*

Ingoa (Māori names) provide a cultural description of observations, processes, activities, events, experiences, qualities, traits and characteristics. They are a unique source of IEK which can give us insight into the natural characteristics and process of Taiao.

### TŌNA WHAKAPAPA

#### WHAT IS THEIR WHAKAPAPA?

*What are their relationships and connections to the wider environmental systems and what can this tell us?*

Whakapapa maps out connections and relationships in the natural world on the basis of local knowledge and understandings of Taiao. Whakapapa holds an extremely useful system of IEK relating to the interconnections and interdependencies of Taiao.

### ŌNA KŌRERO

#### WHAT IS THEIR STORY?

*What is their story? What can ancestral stories tell us about their broader processes and relationships with the environment?*

Traditional oral histories are housed in many forms, e.g., pūrākau, karakia, whakairo, waiata and many more. These are unique forms of cultural expressions of knowledge, observation and interpretation of Taiao.

### ŌNA TOHU

#### WHAT IS THEIR EXPRESSION?

*What are their physical expressions?*

Tohu are the physical expression of a system of interacting processes. Tohu track the transitions of natural cycles and processes and provide us with time markers to understand where we are in the cycles of life.

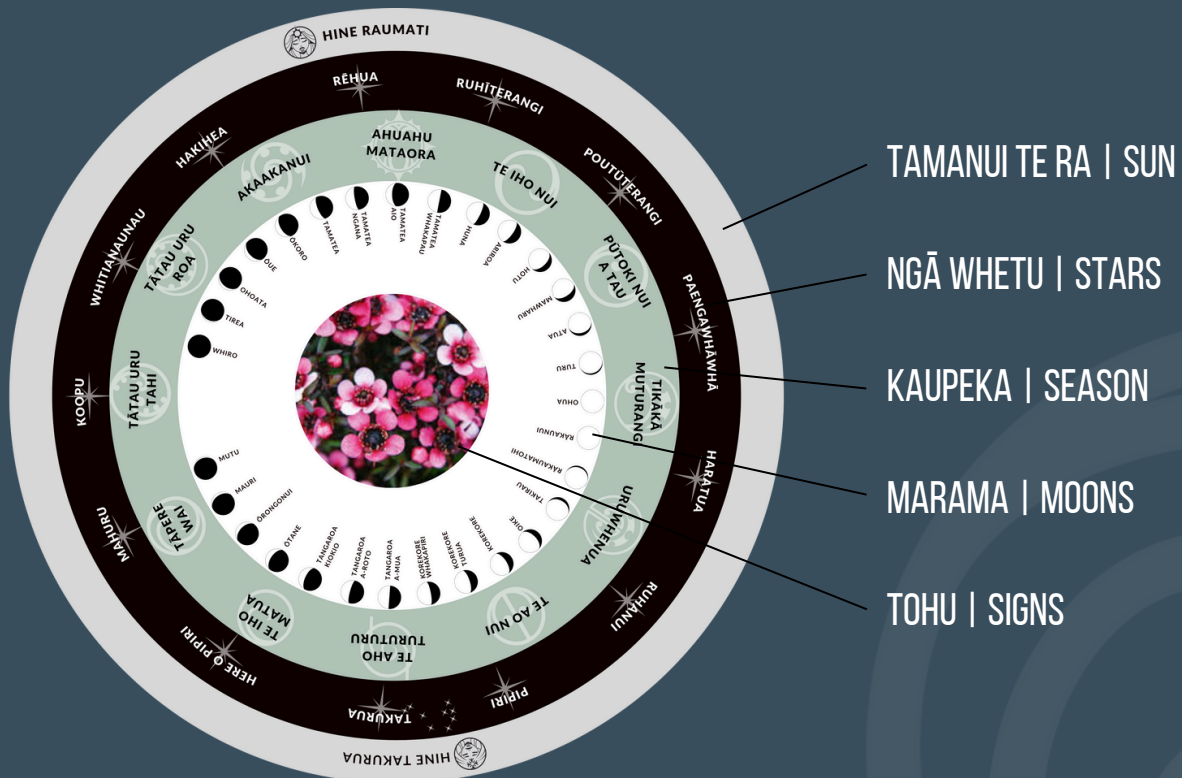
# NGĀ PEKA

## EXEMPLAR OF IEK RECLAMATION PROCESS

The final section of this report aims to provide an exemplar of how Nga Tohu has applied kakano and pihi (growth) to support the reclamation of maramataka knowledge. It brings together five kakano, which are fundamental components of the maramataka: Tamanuiterā (sun), Whetū (stars), Marama (moon), Kaupeka (environmental processes), and Tohu (environmental indicators). The section presents examples of how pihi has facilitated deeper exploration of these core components and describes the use of maramataka dials to support and guide knowledge reclamation.

Maramataka dials were designed as a simple interactive tool that acknowledges local maramataka and enables the development of practice. They are comprised of a base layer coupled with a series of moving and adjustable dials of various sizes. The base layer records constants within the maramataka system, specifically Tamanuiterā and Whetū. The adjustable dials allow users to explore relationships and interactions between the different dial layers and are intended to capture the variable environmental process and indicators that relate to Papatuānuku and Wai. They can be layered on top of each other as knowledge is gathered.

### MARAMATAKA DIAL



# TAMANUITERĀ | SUN

Tamanuiterā dial is positioned on the base layer and provides a reference point upon which the other components of the tool can build. Tamanuiterā sits in the centre and guides the annual seasons.

## EXAMPLE – HINERAUMATI AND HINETAKURUA

TONA INGOA?  
WHAT IS THEIR  
NAME?

*What are the names of the seasons of the year?  
What do the names mean?*

Hineraumati  
(summer maiden)  
and Hinetakurua  
(winter maiden)

TŌNA WHAKAPAPA  
WHAT IS THEIR  
WHAKAPAPA?

Hineraumati and Hinetakurua are the wives of Tamanuiterā. Tamanuiterā moves between his two wives during his annual cycle.

ŌNA KŌRERO  
WHAT IS THEIR  
ANCESTRAL KORERO?

Hineraumati sits in the south and is observed when Tamanuiterā rises at his most southern point along the eastern horizon. This is the longest day and shortest night.

ŌNA TOHU  
WHAT IS THEIR  
EXPRESSION?

Hinetakurua sits in the north and is observed when Tamanuiterā rises at his northernmost point along the eastern horizon. This is the shortest day and longest night.

# NGĀ WHETU | STARS

Whetū are positioned on the base layer. This layer records the names of the lunar months as they relate to the position of stars. In some maramataka, each lunar cycle is marked by a star. These stars can help to track the earth's position in the annual cycle of the sun.

## EXAMPLE – REHUA

TONA INGOA?

WHAT IS THEIR  
NAME?

What are the names of the whetū used to mark monthly cycles? What do the names mean?

Rehua

TŌNA WHAKAPAPA

WHAT IS THEIR  
WHAKAPAPA?

Rehua is a son of Ranginui and Papatuanuku. Two of his wives, Ruhiterangi and Ruhanui, are associated with the heat of summer.

ŌNA KŌRERO

WHAT IS THEIR  
ANCESTRAL KORERO?

There are many pūrākau related to the activities of Rehua. Some examples include Te Putahi nui a Rehua and Nga manu a Rehua.

ŌNA TOHU

WHAT IS THEIR  
EXPRESSION?

Rehua is the brightest star in Te Matau a Maui (Scorpius constellation); he is associated with summer.

# KAU PEKA | SEASON

The kaupeka dial is a movable layer. This dial is used to record the names of different kaupeka or seasons within an annual cycle. These seasons are not necessarily linked to the whetu, or marama, but are more closely related to cycles of water and provide deeper insight into the environmental processes tied to a particular period of the year.

## EXAMPLE – TĪKĀKĀ MUTURANGI

TONA INGOA?

WHAT IS THEIR  
NAME?

Tīkākā muturangi.  
  
Tīkākā, meaning to be burnt by the sun. Muturangi refers to the end of a phase.

TŌNA WHAKAPAPA

WHAT IS THEIR  
WHAKAPAPA?

Tīkākā muturangi is connected to and describes the transition into the winter period.

ŌNA KŌRERO

WHAT IS THEIR  
ANCESTRAL KORERO?

Tīkākā muturangi speaks to a temporal phase in which the heat of summer has receded.

ŌNA TOHU

WHAT IS THEIR  
EXPRESSION?

After the heat of the year has passed, and the colder weather is setting in. Tīkākā muturangi is said to align with Paeagawhāwhā

# MARAMA | MOONS

Marama are another layer of smaller adjustable dials. These dials are used to record the names of the moon phases, which tell us where we are in the monthly lunar cycle. The combination of moon and star can provide a more specific time reference to the earth's positioning in the annual cycle.

## EXAMPLE – OTĀNE

TONA INGOA?  
WHAT IS THEIR  
NAME?

Otāne  
The name Otāne relates to Tāne Mahuta (Guardian of forest).

TŌNA WHAKAPAPA  
WHAT IS THEIR  
WHAKAPAPA?

Tāne is one of the eldest sons of Ranginui and Papatuanuku

ŌNA KŌRERO  
WHAT IS THEIR  
ANCESTRAL KORERO?

There are many pūrākau related to the activities of Tāne; some examples include Te Wehenga (the separation of sky and earth) and Ngā kete o te wānanga (baskets of knowledge)

ŌNA TOHU  
WHAT IS THEIR  
EXPRESSION?

Otāne is a waning crescent moon phase observed at sun rise.

# TOHU | SIGNS

Tohu are another layer of adjustable dial used to track the processes of different indicators over the annual cycle. They can be aligned to build a more comprehensive understanding of the relationships between different tohu cycles.

## EXAMPLE – TĀWHIRIRANGI

TONA INGOA?  
WHAT IS THEIR  
NAME?

Tāwhirirangi

TŌNA WHAKAPAPA  
WHAT IS THEIR  
WHAKAPAPA?

Tāwhirirangi is a son of Papa and Rangi.

ŌNA KŌRERO  
WHAT IS THEIR  
ANCESTRAL KORERO?

Tawhirirangi is said to be a brother of Tawhirimatea; he resides in the upper skies.

ŌNA TOHU  
WHAT IS THEIR  
EXPRESSION?

Tāwhirirangi is associated with the high jet winds. When the Kuaka (godwit) migrate, they use the wind of Tāwhirirangi.





RAROPUA, TAURANGA

## ME AHU PEHEA?

## WHERE TO FROM HERE?

This report presents Te Korowai, a framework used to guide IEK reclamation in the Ngā Tohu project. It describes the first two stages of the framework in detail (Kākano and Pihi) and provides examples of its practical application through the use of the maramataka dials resource. As Ngā Tohu will continue to develop over the next two years, focusing on the final stages of Te Korowai – Whakatō and Tiaki.

We humbly acknowledge each of the Ngā Tohu case study groups, Pākirikiri Wānanga, Ngātaki Whanau Collective and Ngā Pāpaka, for their continued commitment and dedication to the project. It has been a privilege and honour to present this collective learning on behalf of the Nga Tohu project. Mauri Ora.

*"Maramataka is part of our culture; it is our special and unique time-keeping system that has been developed over generations of lived experiences and handed down. Reclamation of time is a form of decolonisation: we reclaim our time systems, we reclaim our Indigenous knowledge of time and space, we know where we are, and we can decide where we want to go; it's super empowering" (Fairlie, 202)*