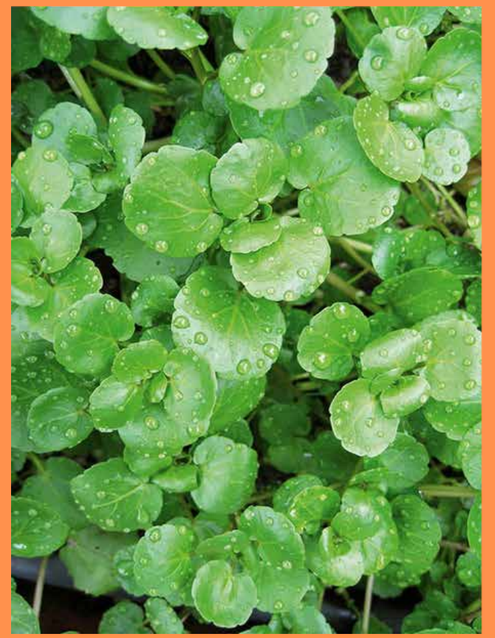
Tapuika

KAITUNA PĀTAKA KAI



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PROJECT

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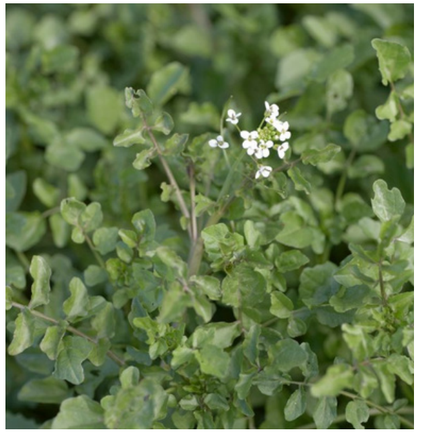
OVERVIEW

Increase and enhance habitats for kai awa, in particular tuna (eels), inanga (whitebait), kōura (crayfish), kākahi (freshwater mussels) and kōwhitiwhiti (watercress).

To enable hapū and iwi to demonstrate, in a practical way, **kaitiakitanga** of ngā awa me ngā taonga of the Kaituna River.



GOALS OF PĀTAKA KAI PROJECT

Establish a framework for future awa **kaitiakitanga** **monitoring and restoration**

Research + interviews

Awa monitoring

Restoration + planning

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RESEARCH + INTERVIEWS

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KAIAWA INTERVIEWS + RESEARCH

Where was kaiawa harvested and how was kai gathered?

What monitoring has been done within the catchment?

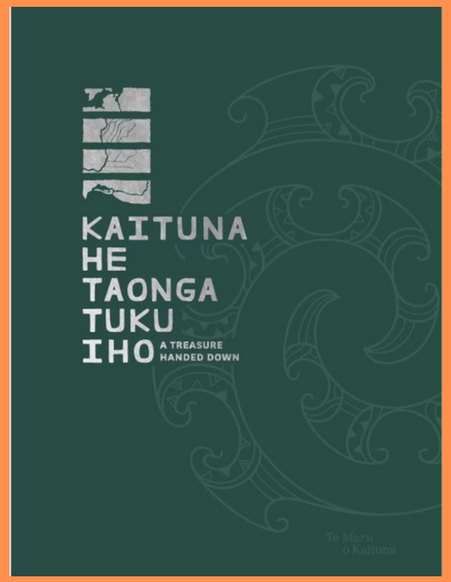
Understand where the traditional fisheries places were and the methods

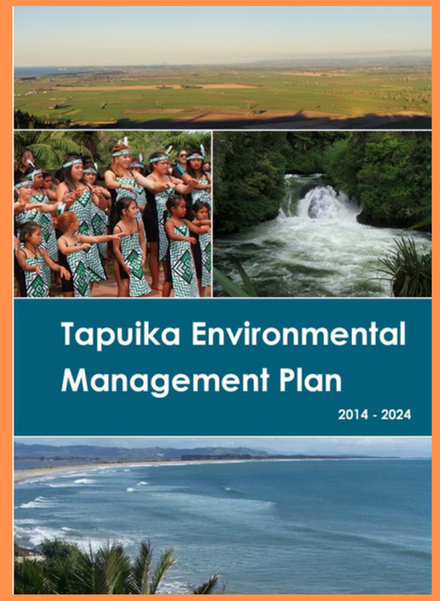
Identify potential sites for habitat restoration

Preserve and revitilise mātauranga and tikanga

Build knowledge and stories to connect whānau to kaiawa

COLLATED RESEARCH





DOCUMENTS

2 STATEMENTS OF ASSOCIATION

The statements of association of Tapuika are set out below. These are statements of the particular cultural, spiritual, historical, and traditional association that Tapuika has with identified areas.

Maketū Wildlife Management Reserve (as shown on deed plan OTS-209-14)

KAITUNA PĀTAKA KAI PROJECT

FINDINGS - KAIAWA COLLATED RESEARCH

Where was/is kaiawa harvested and how was kai gathered?

Trout fisheries found in Kaituna River, Mangorewa River, Waiari Stream

Indigenous fish found in Kaituna River, Mangorewa River, Pakipaki Stream, Parawhenuamea Stream, Kopuroa/Kopuaroa Canal, Ohineangaanga Stream, Raparapahoe Stream, Wairapukao Stream and Waiari Stream.

*Te Maru o Kaituna River Authority (2018) Kaituna, he taonga tuku iho I Kaituna River Document

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KAIAWA COLLATED RESEARCH

Where was/is kaiawa harvested and how was kai gathered?

"Papahīkahawai was a prized fishing ground within the takapū. The first appearance of Rehua (Antares) in the night sky and the early flowering of the pohutukawa trees along the coast heralded the arrival of raumati (summer). Tapuika would move to their coastal pā at Papahīkahawai to fish and gather shellfish all of which would be dried and preserved in preparation for the coming of takurua (winter). "

"Amawake was the name of the mahinga kai plantation of Ngātokaturua. Ngātokaturua was the pā kainga of the Tapuika hapū Ngāti Totokau, and was located above the Te Rerenga Stream on the Taumata lands.
This area was a favoured place for the customary harvest of tuna heke when the adult tuna would begin their migration to the sea during ngāhuru (autumn).
In preparation for the harvesting tuna hinaki (eel traps) would be constructed from the roots of the kiekie and the vines of the rata. The hinaki would be baited with huhu grubs and toke (worms) and placed in the stream at night. In the early morning the hinaki would be removed from the stream and eels hung on rails of mānuka to bleed before being gutted and salted and then left to dry. Pāwhara tuna (dried eels) were a delicacy that could be stored and eaten at a later time."

*Statements of Association from the Tapuika Statutory Acknowledgement Areas

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KAIAWA COLLATED RESEARCH

Where was/is kaiawa harvested and how was kai gathered?

- Onaia Stream
- Kiwi Stream
  - Raparapaahoe Stream
  - Ōhaupara Stream
- Whataroa Stream
  - Coastal Marine Area - Little Waihi to Ōwairākei River
  - Mangatoi Stream
- Ruato Stream
  - Ōhineangaanga Stream
  - Kaokaonui Stream

*Statements of Association from the Tapuika Statutory Acknowledgement Areas

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KAIAWA COLLATED RESEARCH

Where was/is kaiawa harvested and how was kai gathered?

Tapuika Environmental Management Plan 2014

Waterways and Areas	Values					
	Wahi Mahinga Kai	Settlement (permanent / seasonal)	Wahi Tapu	Ara Tawhito (Trails)	Cultural Resources	Original Name
Kaituna River	✓	✓	✓	✓	✓	Te Awanui o Tapuika
Kaokaonui Stream	✓	✓	✓			
Kiwi Stream	✓	✓	✓	✓		Piparika Stream
Maketū Conservation Area	✓		✓		✓	Kawa repo
Maketū Wildlife Management Reserve	✓	✓				
Mangatoi Stream	✓	✓	✓			
Mangorewa River	✓	✓	✓	✓		Paraiti (from the confluence of the Mangorewa River and Ohaupara Stream down to the Kaituna River)

KAIAWA COLLATED RESEARCH

Where was/is kaiawa harvested and how was kai gathered?

Tapuika Environmental Management Plan 2014

	Wāhi mahinga kai	Settlement	Wāhi tapu	Ara tawhito	Cultural resources	Original name
Ohaupara Stream	✓	✓	✓			
Ōhineangaanga Stream	✓	✓	✓			
Onaia Stream			✓			
Ōpoutihi	✓	✓			✓	
Pokopoko Stream	✓	✓	✓	✓	✓	Kaikokopu Stream (where it flows towards the Waihi Estuary)
Raparapahoe Stream	✓	✓	✓			
Ruato Stream	✓	✓	✓		✓	
Te Rerenga Stream	✓	✓	✓	✓		Te Rerenga Wairua o Kahukura & Ōturuturu Stream (from the Whakauma Block)
Waiari Stream	✓	✓	✓	✓	✓	Waiariari
Waihi Estuary Wildlife Management Reserve	✓	✓	✓		✓	
Whataroa Stream	✓	✓	✓			

Kōrero was gathered from whānau. koeke, pūkenga in kaiawa harvesting

INTERVIEWS

Where was/is kaiawa harvested?

How was/is kaiawa harvested?

Observations over time in terms of kaiawa

How do we share this mātauranga + keep it alive?

When was/is kaiawa harvested?

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AWA MONITORING

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eDNA testing with rangatahi

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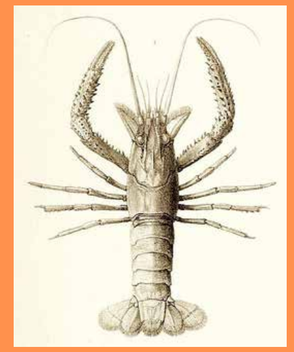
FINDINGS - AWA MONITORING

eDNA testing -Paraiti PR03- Mangorewa and the Ohaupara

Brown trout

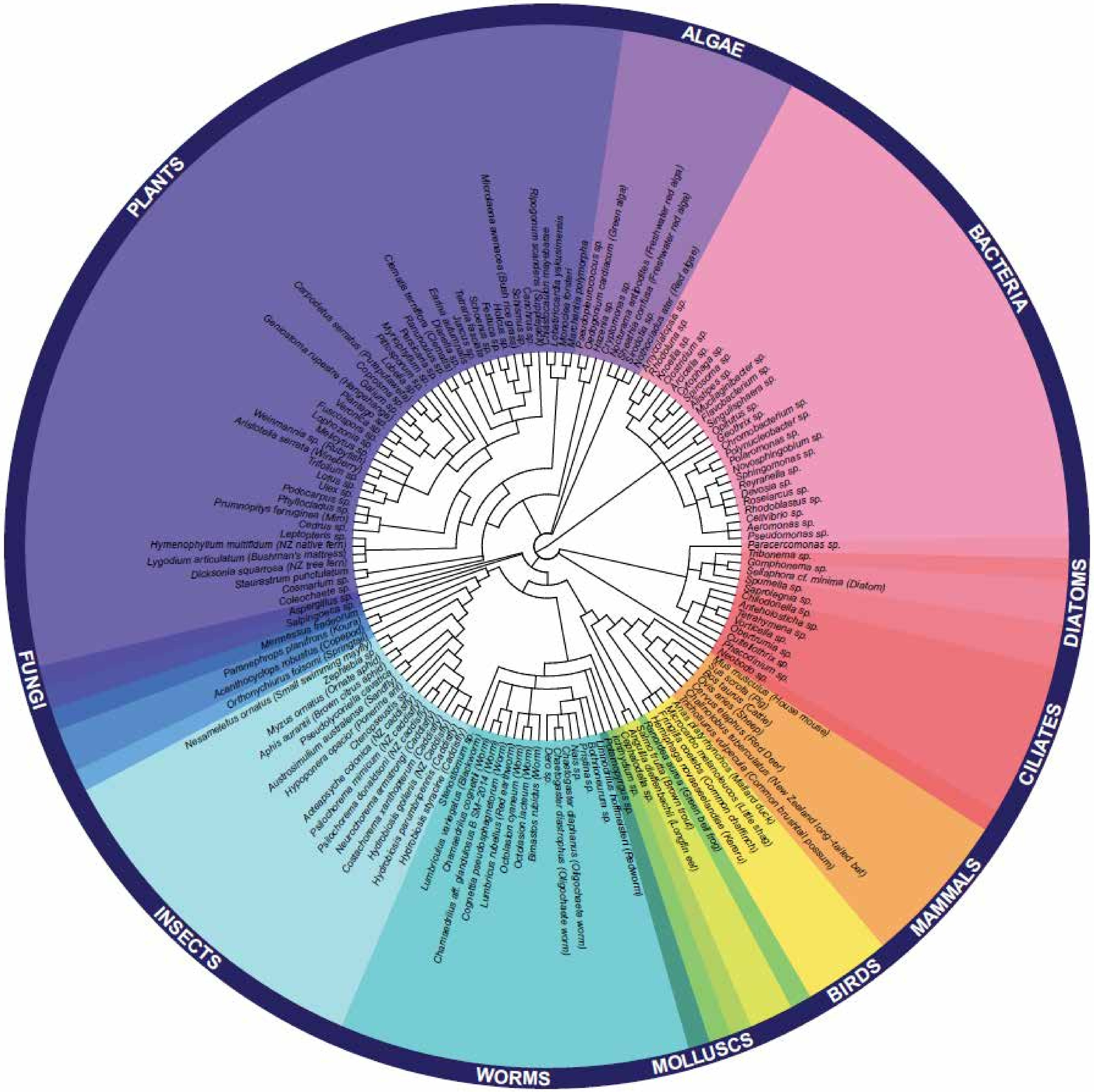
Pekapeka touroa



Freshwater kōura/kēwai

Longfin tuna

Mangorewa eDNA Results



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FINDINGS - ECOLOGICAL STREAM HEALTH

eDNA testing- Paraiti PR01- Mangorewa

Ohaupara eDNA Results

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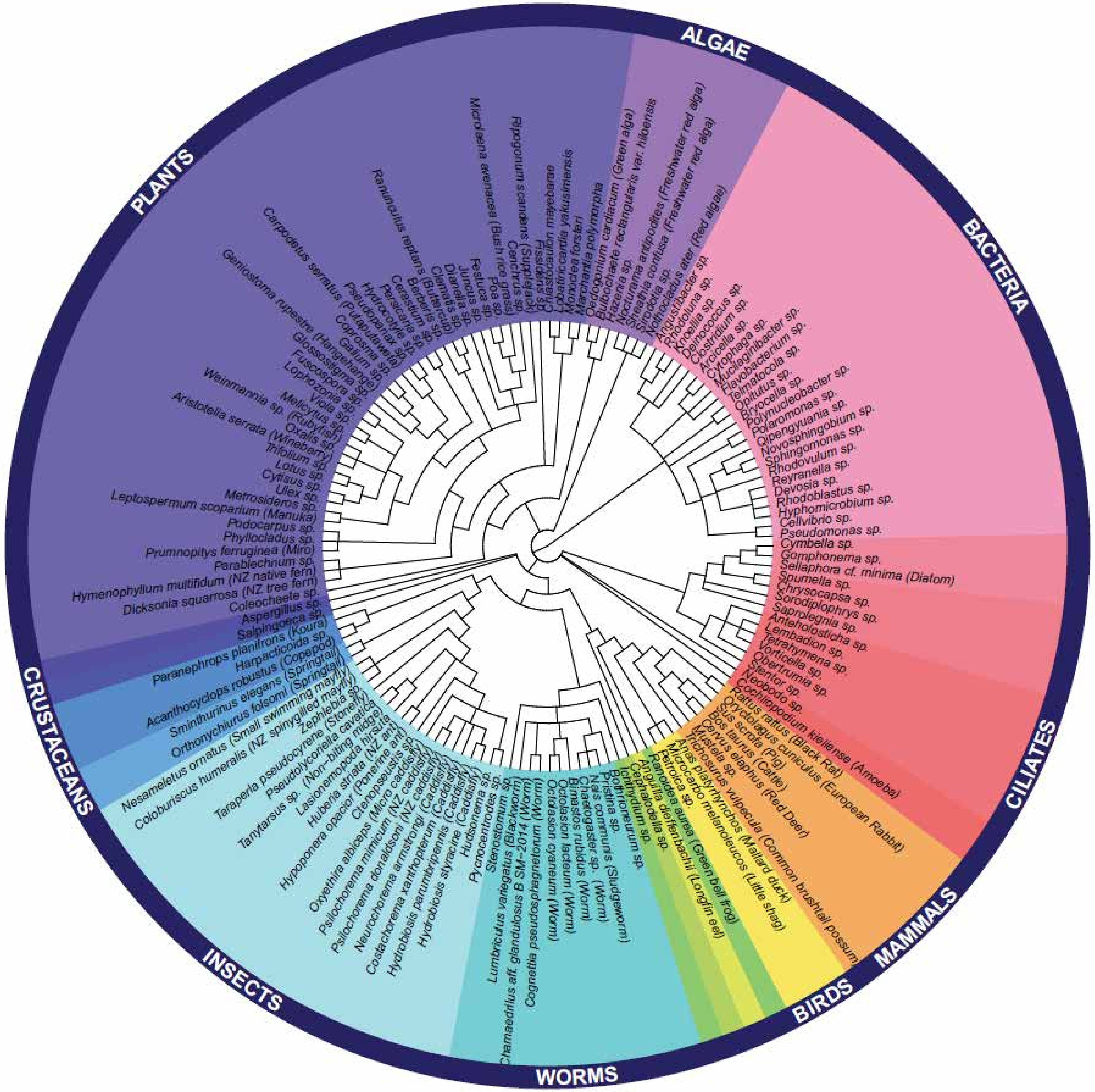

FINDINGS - ECOLOGICAL STREAM HEALTH

KAITUNA PĀTAKA KAI

eDNA testing- Paraiti PR01- Ohaupara

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FINDINGS - AWA MONITORING

eDNA testing -Paraiti PR01

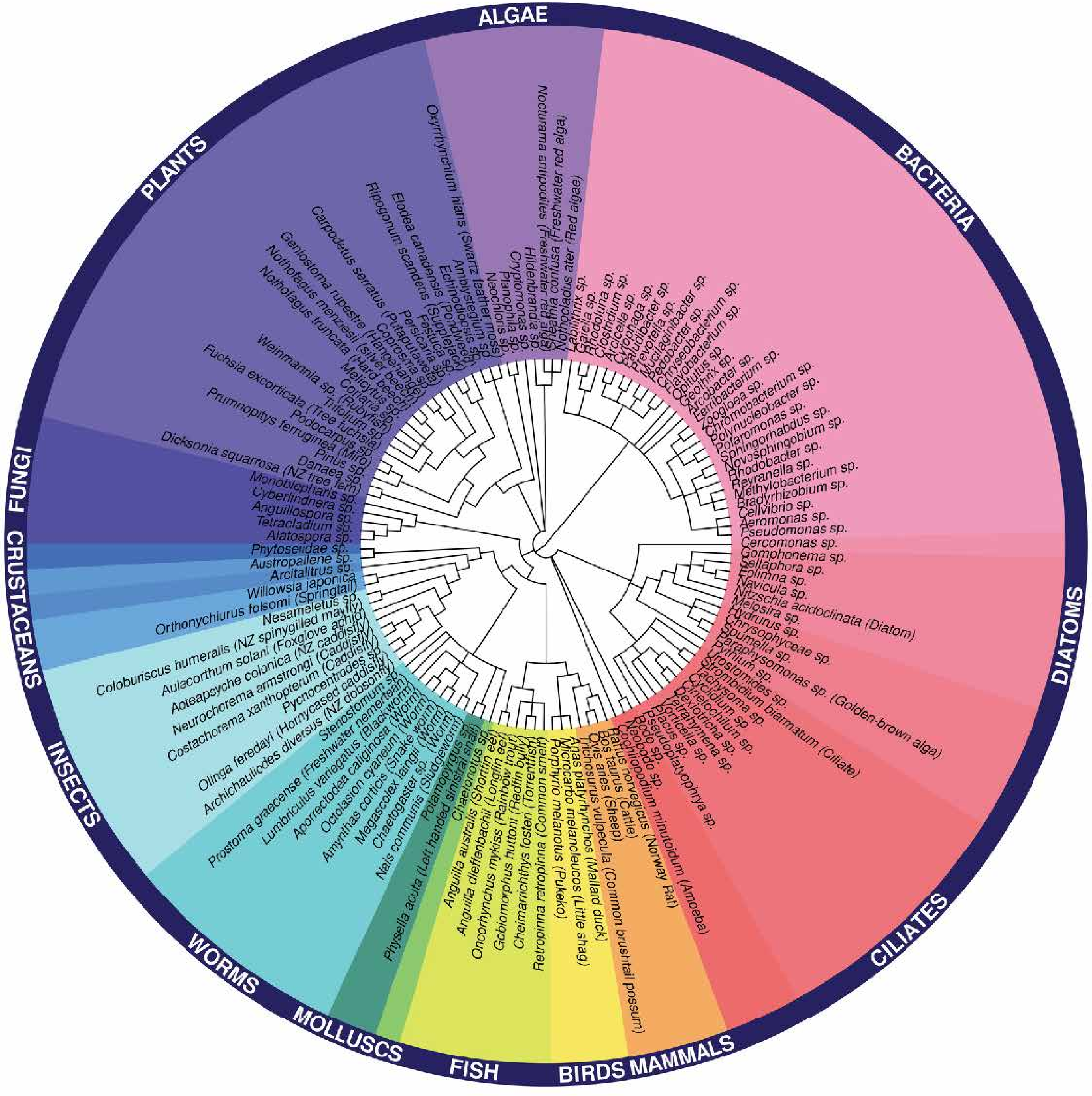
Rainbow trout

Longfin and shortfin tuna

Redfin bully

Panoko

Paraiti eDNA Results



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FINDINGS - ECOLOGICAL STREAM HEALTH

eDNA testing -Paraiti PR03

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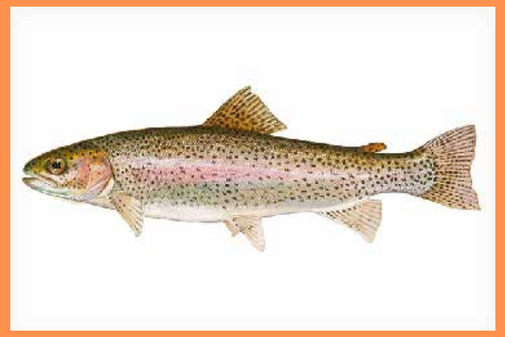
FINDINGS - AWA MONITORING

eDNA testing -Pakipaki PP01



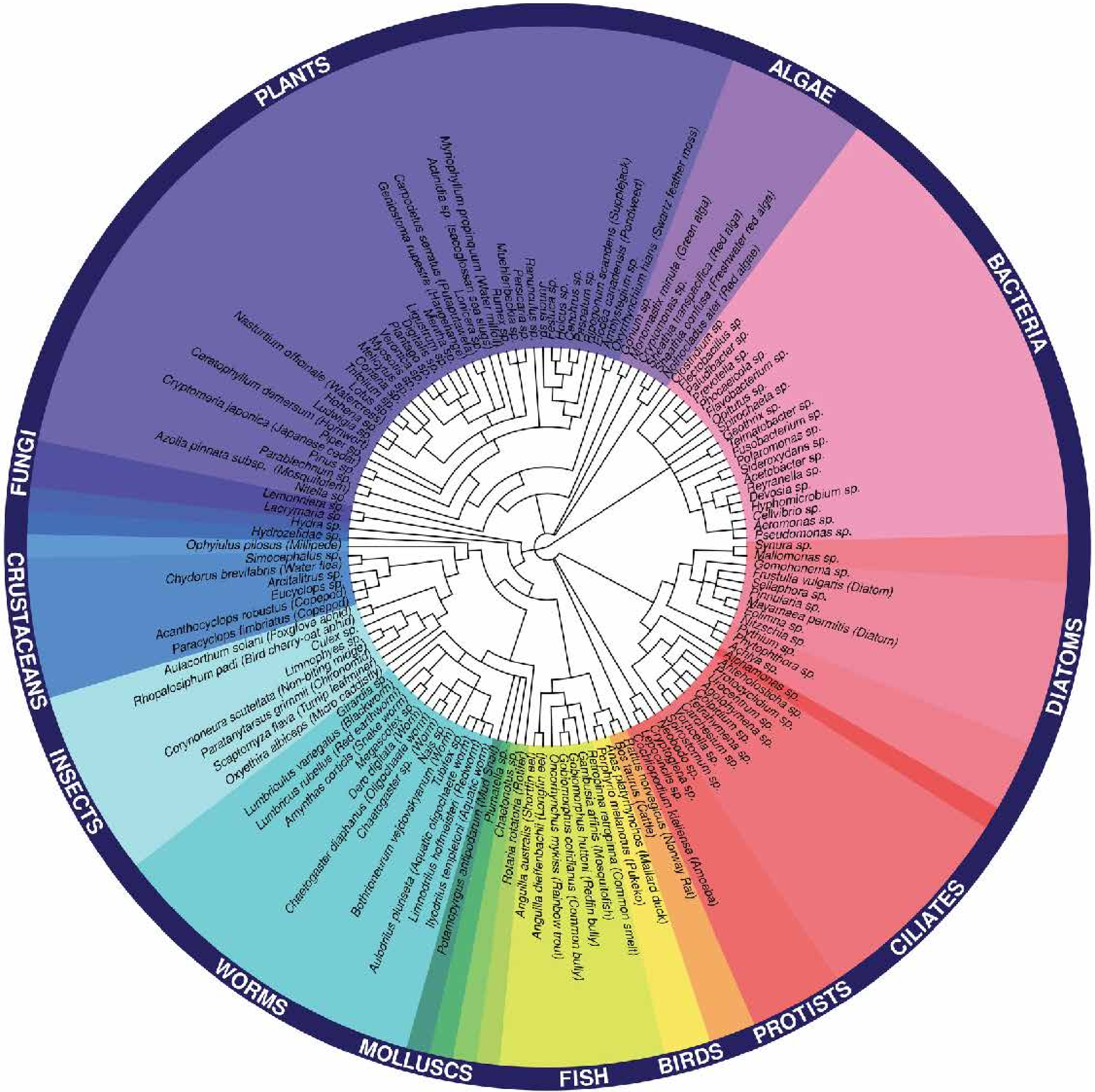
Rainbow trout

Longfin and shortfin tuna

Kōwhitiwhiti(Watercress)

Redfin bully

Pakipaki eDNA results



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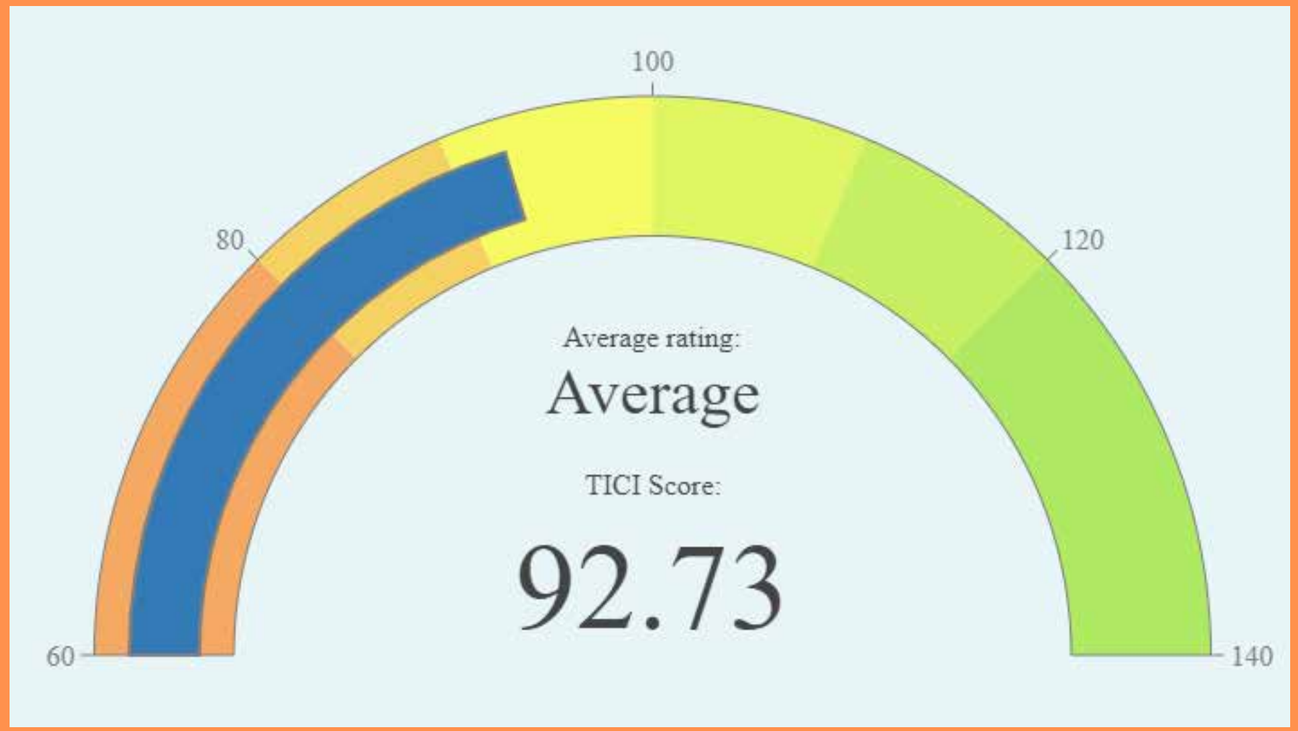
FINDINGS - ECOLOGICAL STREAM HEALTH

eDNA testing -Pakipaki PP01



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AWA MONITORING

SHMAK testing

- Visual clarity
- Water temperature
- Conductivity
- Nitrate
- Phosphate
- Macroinvertebrates
- Current velocity
- Stream habitat

How do we interpret the results? Healthy is

•Clarity = clearer the better 5 m+

•pH = 7 neutral

•Dissolved O2 = above 6.5-8 mg/L & between about 80-120 %

•Temperature 8-12oC (season dependent)

•Conductivity <50 µS/cm (excellent) or 50-149 µS/cm (good)

•Nitrate (mg/l) = 0.12 to 2.2 mg/L total N

•Phosphate (mg/l) = 0.05 mg/L or less

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FINDINGS - AWA MONITORING

SHMAK testing - kākahi

Requirements	Present Paraiti/Pakipaki	SHMAK	Results Paraiti/Pakipaki	
Fine sand or silt	✓ ✓	Streambed composition -visual assessment	5% large gravel 80% sand/silt/mud 15% large wood	100% Sand/silt/mud
Kai: algae, bacteria, phytoplankton etc	✓ ✓	eDNA test	Presence of multiple algae and bacteria	Presence of multiple algae and bacteria
Carrier fish of larva: kōaro, tuna, bullies banded kokopu	✓ ✓	eDNA test	Presence of longfin tuna, shortfin tuna and redfin bully	long fin eels, shortfin eels, common bully, common smelt .

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FINDINGS - AWA MONITORING

SHMAK testing - kōura/kēwai

Requirements	Present Paraiti/Pakipaki	SHMAK	Results Paraiti/Pakipaki
Mud/Sand/Rock Large wood, undercut banks	✓ ✓	Streambed composition -visual assessment	5% large gravel 80% sand/silt/mud 15% large wood 100% Sand/silt/mud
Kai: Invertebrates like snails, midges, mayfies, mayfly larvae, dead leaves	✓ ✓	eDNA test Macroinvertebrate sampling	Presence of multiple algae, bacteria and shrimp Presence of multiple algae, bacteria, shrimp
water temp NOT exceed 16ºC	✓ ✓	EC Tester	12.30°C 14.80°C Winter results

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FINDINGS - AWA MONITORING

SHMAK testing - tuna

Requirements	Present Paraiti/Pakipaki	SHMAK	Results Paraiti/Pakipaki
All types of stream beds. No specific river beds.	✓ ✓	Streambed composition -visual assessment	5% large gravel 80% sand/silt/mud 15% large wood / 100% Sand/silt/mud
Kai: insect larvae, worms and water snails	✓ ✓	eDNA test	insect larvae, worms and water snails / insect larvae, worms and water snails
under 25°C but can tolerate up to 35°C	✓ ✓	EC tester	12.30°C / 14.80°C Winter results

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PĀTAKA KAI

FINDINGS - AWA MONITORING

SHMAK testing - inanga

Requirements	Present Paraiti/Pakipaki	SHMAK	Results Paraiti/Pakipaki
All types of habitats	✓ ✓	Streambed composition -visual assessment	5% large gravel 80% sand/silt/mud 15% large wood / 100% Sand/silt/
under 27 ˚C	✓ ✓	EC Tester	12.30°C / 14.80°C Winter results
can tolerate PH levels of 9.5	✓	PH PROBE	PH N/A / PH 8.20

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FINDINGS - AWA MONITORING

SHMAK testing - kōwhitiwhiti

Requirements	Present Paraiti/Pakipaki	SHMAK	Results Paraiti/Pakipaki
Mud/Clay banks	✓ ✓	Streambed composition -visual assessment	5% large gravel 80% sand/ silt/ mud 15% large wood / 100% Sand/silt,Mud
Clear/clean Water	✓ ✗	Water clarity	Very good / Poor

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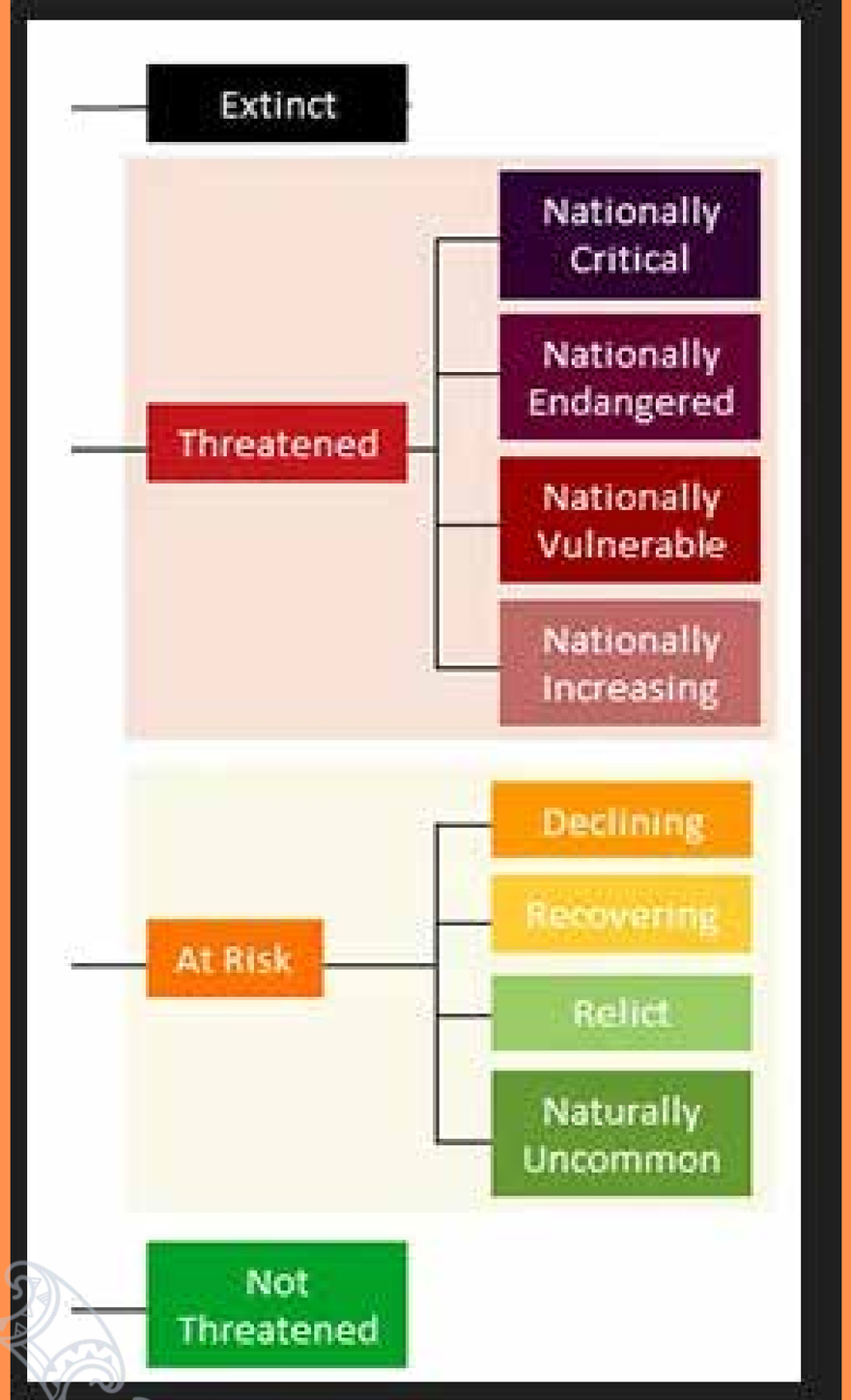
Threat classification

Many of our assessed indigenous species are categorized as threatened with extinction or are at risk of becoming threatened: as threatened with extinction or are at risk of becoming threatened

Freshwater fish: 63% of species have a decreasing population trend (32 of 51) and 2 percent have an increasing trend (1 of 51)



Threatened species: Giant kōkopu, Shortjaw Kōkopu, Piharau, Longfin tuna

At risk of being threatened species: Inanga, Kōaro, Kākahi, Kōura

RESTORATION

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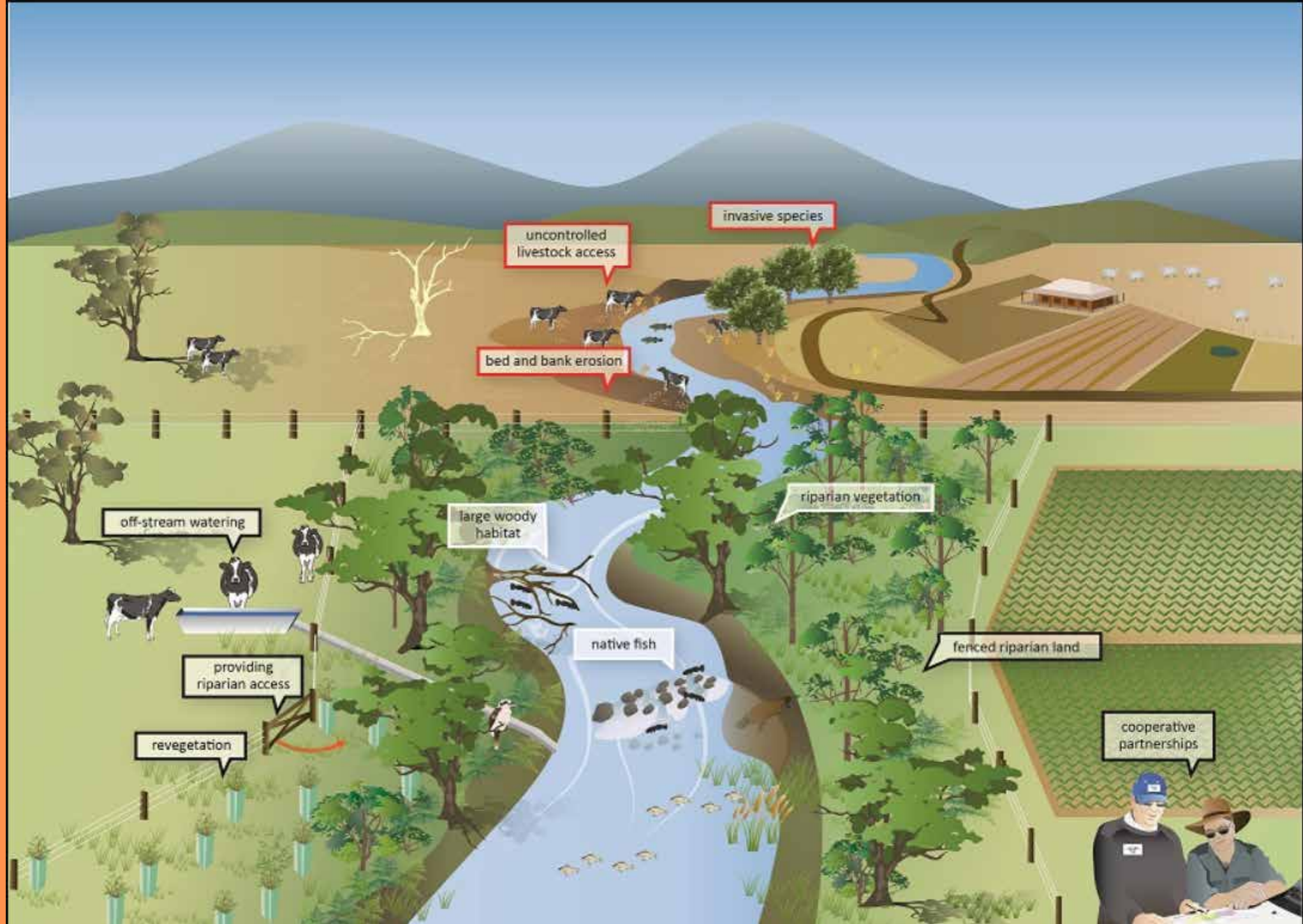
Current

Riparian

Ideal



Current State

Ideal state

OTHER FINDINGS

- Various stakeholders and interested parties, including commercial
- Plastics found in riverbanks (kiwifruit clips etc) - microplastics a possible issue (doco: Plastic Island Netflix).
- Erosion: there is no vegetation. No riparian zones!
- New drain entering near the Pakipaki mouth.
- Silt really bad at Paraiti.
- Rubbish being dumped at mouth of the Pakipaki.
- Farms and orchards are polluting our river, not just Affco contributing to paru.
- Pakipaki is not as clean as it used to be.
- Commercial eelers have been spotted on the Paraiti and RC workers seen ripping watercress out with the roots.
- Ohau channel: Ohau wall helping contain algae from diverting down the Kaituna. Peak rain season flooding out the Mangorewa is actually doing more damage to our awa than the lake diversion.
- Ngāti Pikiao's new septic tank scheme and Wastewater Treatment Plant removes some of the paru before it enters the main line of Rotorua.
- Alum dosing into awa to bring down the phosphate levels to help contain algae from growing. They pump 80L of alum per hour into the Utuhina to help stop excess phosphate feeding algae. Half of the phosphate in the lake is natural, other half from run offs.
- Dr. Ian Kusabs (freshwater expert) is an expert in kōura and native fish monitoring. He uses western science and mātauranga maori in his work. He's willing to help us with our projects as an advisor and mentor for our freshwater projects. Also, with the help of Andy Bruere who is the Lakes Operations Manager, he will help get funding to continue our project and future projects for our awa.
- Te Arawa using uwhi for their kōura protection against the catfish, and tau kōura for kōura monitoring.

KAITIAKITANGA

- What responsibility do we have?
- How do we practice kaitiakitanga?
- Tukuihotanga - what stories will our mokopuna tell?
- How do we practice mana motuhake?
- Cultural monitoring - kākahi monitoring, kōura monitoring
- Access to our awa
- Connection to our awa
- Uniting as whānau, hapū, iwi, land block owners
- Having a common vision and goal

KAITUNA PĀTAKA KAI PROJECT

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PĀTAKA KAI

We would like to acknowledge all the following people who have contributed to this project.

Whānau, hapū, iwi members who have given us feedback:

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