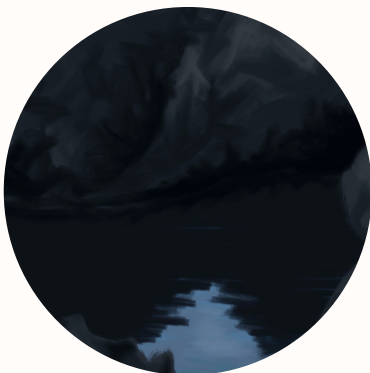
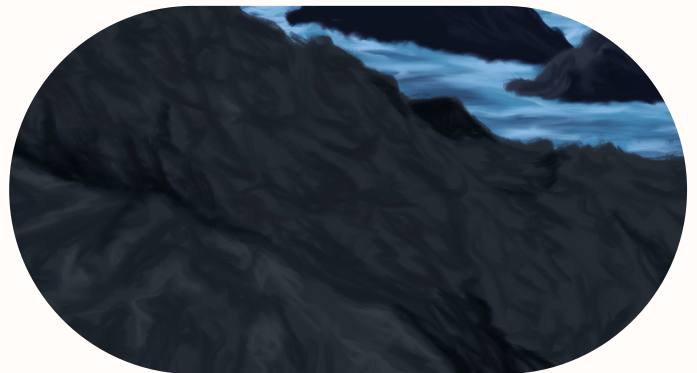


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Invisible Coast



Creating connection between people and Wellington's coastal marine environments through design.



Jean Donaldson

Invisible Coast

**Creating connection
between people in
Wellington and our
coasts through design.**

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Abstract

Invisible Coast is a web-tool prototype created to grow the connection between people in Wellington and our coasts. Aotearoa's coastlines are facing unprecedented ecological challenges due to human-created climate change. In Te Whanganui-a-Tara our sea levels are rising by 3mm a year, the water temperature is increasing and habitats are being destroyed by infrastructure encroaching along our coasts. This is in part due to our disconnected relationship with the natural world around us. My research aims to understand how we might use design as a catalyst to strengthen the connection between Wellingtonians and our coastal marine spaces, creatures and habitats.

This research uses a planet-oriented design methodology to make sure that creating an output that has benefits to the natural world around us remains at the heart of the project. *Invisible Coast* is built using a framework called *The Five Pathways to Nature Connectedness*. Activating the five pathways of contact through beauty, emotion, cultural meaning and compassion through the web-tool creates an increased feeling of connection between the audience and our natural world. The pathways have been modified slightly from their original form to work within an online and Aotearoa-specific context.

While remaining engaging for all Wellingtonians, the tool is primarily designed for those who have limited prior knowledge about our marine spaces. Much of the available information about our coastal marine environments is created by scientists and is hard to understand for people who are new to the language around marine conservation. Through the use of accessible language and storytelling, *Invisible Coast* aims to create a space where everyone can learn about the creatures and habitats on our doorstep.

Invisible Coast is a prototype and proposed as a case study for how we might increase our connection to the coastal marine environment using design methodology and the *Five Pathways to Nature Connectedness*. As we look towards the future this tool might act as a springboard for further research.

Acknowledgments

This work would not have been possible without the community of people who supported me through its creation. Firstly, I would like to extend my deepest thanks to Graeme and Maria Collinson as without them I would not have been able to undertake my Master's. Thank you for your generosity and commitment to helping young designers continue their study.

To Megan Oliver, thank you for your trust in this project and giving so much of your own time to help me put together the most accurate and scientifically true project I could. Thanks also to those at Greater Wellington who gifted me with their time, knowledge and expertise.

To Tim Parkin and Anna Brown, thank you for your expert guidance and care throughout this project. It is always an honour to learn from you both.

Thank you to David Donaldson and Plan 9 who collaborated with me to create the soundtrack.

I also want to thank my family and friends who helped push me along on this project, especially when I needed an extra hand to keep going. Your continued support in me following my passion will never go unnoticed.

And finally to those in Wellington and across Aotearoa who work tirelessly towards protecting our coasts and their inhabitants, my research would not be possible without your mahi.

Tahi

The Beginning

Introduction

What am I bringing to this mahi?

Key Issue: Marine conservation

Connecting with Greater Wellington

Greater Wellington survey

Introduction

Aotearoa's coastal marine spaces are a place of connection — to each other, to te taiao, to our past, our present and our future.

They are integral to our way of life, providing kai moana to nourish and sustain us and a place for us to play, both as children and as adults. They are also a way for us to learn directly from the natural world around us. But the ocean doesn't just sustain us. Our moana is home to 17,000 different marine species, with thousands more still to be discovered (Gordon et al.). Twenty two species of whale can be found in Aotearoa as well as 90% of the world's sea birds and over 1000 species of seaweed (Taonga).

Our moana is one of the most extraordinary parts of our national identity, but it is suffering at our hands. We are facing loss of biodiversity, increased ocean acidification and warming (Law et al.), increased erosion and rising sea levels. All of these are at least in part due to human created climate change (Pilkey and Hume). One way of combating these issues is increasing our level of connection to our natural environment. An increased level of connection has been shown to lead to pro-environmental behaviour (Kelly).

My project aims to explore how we might increase connection to our coastal landscapes by intertwining science and design. *The Five Pathways to Nature Connectedness*, a scientific framework, is reinterpreted through a design lens to understand how it might be influential in increasing Wellingtonians' connection to our coastlines. I created a prototype web-tool called *Invisible Coast* that acts as a case study for how the *Five Pathways* framework might be explored through a design lens.



Kia ora, ko Jean tōku ingoa

I grew up in Ōwhiro Bay on the south coast of Te Whanganui-a-Tara in Aotearoa with my twin sister and parents. Our house overlooks the ocean from up on the hill and we are able to see and hear the waves from our back garden, a sound that defined my childhood. The south coast of Wellington is an amazing place to grow up. My love for the ocean and its creatures is the result of living in a place where the shoreline was easily accessible. Lining the coast are rock pools, which at low tide shelter a multitude of different creatures. On a particularly clear day you can look across Te Raukawa Moana/ Cook Strait and see Te Wai Pounamu. Living so close to the coastline has meant that I have seen first-hand the ecological challenges we are facing. As I've grown up it has become more common for the waves to completely cover the roads and crash into the houses along the coast and Ōwhiro Bay is now thought to be the dirtiest beach in Wellington due to run-off from the landfill.

The rugged, rocky reefs that define this coastline have shaped who I am as a person. I feel a deep sense of purpose to return, in some way, what this coast has given to me and my whānau through the creation of my Masters of Design project and future design engagements.

What am I bringing to this mahi?

In my honours year of a Bachelor of Design at Massey University I combined two of my passions — illustration and conservation. I wrote, illustrated and designed a book called *Tiaki: a shout-out to Aotearoa's lesser-known species*, which was published by Potton & Burton in 2022. As a young person who is interested in conservation it is clear to me that there are not enough resources directed at engaging young people also interested in this challenge. That was the purpose of *Tiaki*, to create a space for young people to learn about conservation through highlighting some of our least-known endangered species.

The book features 17 different native creatures and instead of using photographs to visualise the animals, as is commonly done in scientific books, I digitally painted each of them. These illustrations sit alongside stories about each creature told through tailored language that is accessible to the audience. This project showed me the potential design and illustration can have in sharing Aotearoa's natural environment, particularly our hard-to-access habitats and creatures. This was an area of interest I chose to bring into my Master's project, exploring how design might be used to make the invisible visible.



Key Issue:

Marine conservation

Aoteaora's land creatures and habitats are often what we think of first when imagining our natural world. But our oceans are full of just as many diverse creatures and ecosystems. It's thought that up to 80% of our biodiversity could be found in the ocean (Gordon et al.).

With an expansive marine environment stretching from our most northern point in the Kermadec Islands to our most southern in Campbell Island, Aotearoa covers about 2600km of the Pacific Ocean (Francis). This huge distance allows for extreme variation in habitat — subtropical in the far north to subantarctic in the south. Due to this wide spectrum of marine landscape we have a vast array of different species, so much so that Aotearoa is seen as a global hotspot for biodiversity (Driskell et al.). Our coastal waters support 1,262 known species of fish, 48 species of marine mammals, 86 different species of seabirds (Robertson et al.) as well as all kinds of crustaceans and invertebrates (Roberts et al.). However every year, the statistics show us that our marine spaces are no longer flourishing in the ways they once were.

A report released in 2022 entitled *Our Marine Environment* released by the Ministry of Education and StatsNZ details the ways in which humans are impacting on the moana. Many of our large scale actions at sea continue to harm our environment including deep sea trawling, dredging, and accidental by-catch of native creatures. Our actions on land are just as impactful. Infrastructure continues to encroach on our coastal landscapes changing these habitats, and plastic now makes up 70% of the debris found in our ocean (Our-Marine-Environment-2022.Pdf). The need for conservation of our marine environments continues to grow year after year, and has never been more important.

Connecting with Greater Wellington

My connection to our coasts and commitment to conservation is what led me to choose this research topic. I wanted to create a project that had potential for positive change for Aotearoa's environment.

The conservation of our marine environments is a priority for many organisations and government bodies in Aotearoa. In particular, local and regional councils have huge influence and control over the conservation of our coasts. With the help of my supervisor Anna Brown, I was introduced to Dr Megan Oliver, a senior coastal scientist at Greater Wellington, the regional council for wider Wellington. Dr Oliver spoke about an idea that had generated some interest within the council — the concept of a 'Blue Belt'. The idea of the Blue Belt focused on growing our connections to the moana and increasing the health of our coasts so that everything that lives within them can flourish. Other countries around the globe have introduced their own versions of a Blue Belt. These are most often about defining protected areas and creating marine reserves. While my project does not specifically aim to create marine protected areas, the concept of a Blue Belt was a useful starting point for how we might engage with our coastline as a whole interconnected network.

The initial conversation turned into an informal partnership between Greater Wellington and my Master's research. Dr Oliver has continued to support me throughout my Master's and helped define my project with her vast local scientific knowledge about our coasts and their inhabitants.

To start my project Dr Oliver shared with me a survey (yet to be publicly released) completed in 2021 for Greater Wellington. Its purpose was to gather information about how Wellingtonian's felt about their coastal marine environments, how they used the marine environment, and which parts were most important to them in terms of conservation. It is an incredibly detailed survey including an extensive exploration into which activities are most popular at our coasts and which areas of the region are of most concern.

Of those interviewed, 93% said they were concerned to some extent about the environmental health of our coasts and 41% of respondents said they were very concerned. Participants were asked about nine specific concerns for the region and the participants identified those of most concern as:

- » Decline of species, habitat and ecosystems due to contamination, overfishing and urban development (66%);
- » Poor water quality affecting recreational activities such as swimming and fishing (57%);
- » Losing the natural character of the coast and scenic areas due to subdivision (51%).

As this survey was done by Greater Wellington for their own use, the topics are directed towards issues that they have the potential to change, like urban development and the control of our sewage and storm water run off into the ocean. As I started creating the *Invisible Coast* web-tool it was useful to keep these responses in the back of my mind to help inform which areas of the Wellington coastline to focus on, in order to make the tool most relevant to Wellingtonians. Although these questions may not be directly related to my research questions they show one thing very clearly — the people of Wellington are very worried about the current and future health of our coastal environments.

Access, Natural,
Clean, Protected,
Protection,
Project, Enjoyment,
Recreation,
Climate change,
Fishing, Reserves,
Pollution, Waste,
Plastic, Sewage,

Future generations,
Healthy, Species,
Wildlife, Managed,
Safe, Sustainable,
Biodiversity,
Ecosystems,
Erosion, Housing,
Vehicles.

After the survey was completed Greater Wellington put together a word cloud of the most common terms used. As I moved forward with my project it was useful to return to these words as things that are on the minds of people in Te Whanganui-a-Tara.

Rua

Research Questions and Methods

Research questions

Methodology: Planet-oriented design

Nature connectedness

The Five Pathways to Nature Connectedness

Primary research question

How can the *Five Pathways to Nature Connectedness* be interpreted through a design lens to **increase connection** between Wellingtonians and our coastal marine spaces, habitats and creatures?

I originally stated I would be exploring this topic through the use of visual communication design, but as the project went on it was clear other methods were a part of this work including illustration, design methodologies, web design and sound design.

The main aim of this research is to explore how we might create connection between people in Wellington and our coastal marine spaces and then in turn create sustainable behaviour change. Catherine Kelly, a researcher into the connection between human wellbeing, nature connectedness and sustainability states that *“the concept of environmental connectedness emphasises the transformative power of nature experiences and encounters towards pro-sustainable behaviours”* (Kelly). There is power in a connection to our natural world. The more connected we feel to a place the more likely we are to have feelings of stewardship (Beery and Wolf-Watz) or kaitiakitanga towards that place.

Secondary research questions

During my literature scoping I explored various frameworks and methodologies that might align with my project. This process led to the development of a number of secondary research questions. These questions were developed from the framework I used for this project, the *Five Pathways to Nature Connectedness*.

To involve people in conservation in the long term it is key to allow them to decide the ways in which they want to interact with marine conservation and what that means to them personally. For some people it's important to interact through a scientific lens, for others it may be through their cultural background or community, and these different ways of interacting need to be complementary to each other (Wheaton et al.). The aim of this project is not to tell people what actions they should be taking but rather to provide them with knowledge to move towards the place where they might find their fit in the conservation landscape.

- » How might we create connection between people in Aotearoa and our coastal marine environment using the *Five Pathways to Nature Connectedness*?
- » How might we transition the *Five Pathways to Nature Connectedness* into a uniquely Aotearoa context?
- » How might we engage with the *Five Pathways to Nature Connectedness* through a design lens and in an online environment?

Methodology: Planet-oriented design

Planet-oriented design forces the designer to reshape the anthropocentric view that underpins many of our contemporary design decisions, allowing us to view ourselves as intrinsically connected to our natural world and not above it (Bardzell et al.).

From this project I am hoping that a stronger, more sustainable and reciprocal relationship with nature can be built through a deeper connection to our coastal marine spaces. Human-centred design — a popular design methodology — is often seen as the beacon of a good design output (Tironi et al.) and considers the needs of people at the centre (Steen). But as we continue to face challenges of human-created climate change it seems the only option is to extend that methodology to include the needs of our planet as a whole. This is the heart of planet-oriented design (Tironi et al.). Planet-oriented design is a relatively new concept and is given multiple different names by different researchers including more-than-human design (NTNU, Norway and Tarcan),

life-centred design (Borthwick et al.) and planetary-centric design (Poleac). For the purpose of my research I will be referring to this concept as planet-oriented design as it is the most well researched. This term was created by Martin Tironi, Camila Albornoz and Marcos Chilet, three researchers who are attempting to extend the field of planet-oriented design.

As connection to our natural world is the driving concept behind my research, it is imperative that I approach this through a planet-oriented design methodology rather than a human-centred one.

Nature connectedness

The *Biophilia Hypothesis* and nature connectedness are two interconnected theories that describe the human-nature relationship. They were both used to create the *Five Pathways to Nature Connectedness*.

The *Biophilia Hypothesis*, defined by researchers Wilson and Kellert, a biologist and social ecologist, argues that humans have an innate desire to connect with other living things and that this connection brings about benefits to our wellbeing (Nisbet et al.). There are nine values that make up the *Biophilia Hypothesis*, all of them together describing the different ways humanity interacts with nature (Lumber et al.) Kellert and Wilson's theory suggests that this need for connection to our natural world may have an evolutionary explanation. Humans evolved in the natural world. Only in the last few hundred years have we started living in modern urban environments. This is very different from our ancestors. To survive they would have had to be able to understand visual indications in nature to find necessities like food, shelter and water. This would have required an intimate connection or understanding of the natural world around them. Those who were connected to nature would have had an advantage over those who were not (Capaldi et al.).

The connection between humans and the natural world can be defined by the term nature connectedness (Capaldi et al.). It is our understanding of our place in the natural world, on both a species and personal level (Lumber et al.). This relationship creates benefits for both humans and nature. It has been shown to improve health and wellbeing in humans (Sheffield et al.) and those who have a higher level of nature connectedness are more likely to engage in pro-environmental behaviours and be supportive of environmental infrastructure (Howell et al.). It is clear that our current relationship with nature is failing. We must re-imagine our relationship with nature if we are to avert the impending crisis.

A disconnected relationship with nature can in part be attributed to an anthropocentric worldview. This is a western ideology that places humans above everything else in nature or sometimes as completely separate from nature. It creates a viewpoint where nature is only there for us to use as a resource rather than something we are a part of (Washington et al.). Nature connectedness aims to re-establish our connection to the natural world and attempt to shift our world view to one where we understand that we are an intrinsic part of our environment.

The Five Pathways to Nature Connectedness

The Five Pathways to Nature Connectedness is the scientific framework I am exploring through a design lens to understand how we might create connection to our coastal marine environments.

The Five Pathways to Nature Connectedness were created by UK based nature connection researchers Ryan Lumber, Miles Richardson and David Sheffield, they were first published in 2017 in a paper called *Beyond knowing nature: Contact, emotion, compassion, meaning, and beauty are pathways to nature connection* (Lumber et al.).

The aim of the research paper *Beyond knowing nature* was to explore ways to increase experiences of nature connectedness in humans. To do this the researchers used the nine values of the *Biophilia Hypothesis* as a framework to understand which parts of the human-nature relationship lead to increased nature connectedness. Each of the nine values of Biophilia describe a different way that humans interact with the natural world around them. They are detailed in the next table.

The Nine Values of the *Biophilia Hypothesis*

Value	Definition
Utilitarian	Practical use of material nature
Naturalistic	Pleasure from contact with nature
Ecologicistic — Scientific	Scientific study of the interconnectedness of nature and natural systems
Aesthetic	Appeal of nature
Symbolic	Expressing ideas through nature based language and metaphors
Humanistic	Emotional bond with, and love for nature
Moralistic	Ethical concern/judgements and revering nature
Dominionistic	Control and dominance of nature
Negativistic	Aversion, removal and fear of nature

The researchers completed two studies using the *Biophilia Hypothesis* as a framework. The first was a survey of over 200 participants. The survey asked the participants to state how much they agreed or disagreed with a range of different statements, each relating to one of the nine values of Biophilia. They then completed a second study which was a revised version of study one. The statements were reworked to more reliably align with each of the values of Biophilia.

The results of these two studies showed that the following Biophilic values led to increased feelings of nature connectedness: naturalistic, humanistic, moralistic, aesthetic, and symbolic. As the focal point of the paper was to understand the predictors of nature connectedness and not directly research the values of Biophilia, the researchers decided to rename each of the values. This was done to distinguish the values as their own group of pathways to nature connectedness and make them more easily understood by a wider audience. The values were renamed contact, emotion, compassion, beauty and meaning and they became the *Five Pathways to Nature Connectedness*.

This table shows the change from the nine values of the *Biophilia Hypothesis* to the *Five Pathways*.

Value	Pathway	Definition
Naturalistic	→ Contact	The act of engaging with nature through the senses
Aesthetic	→ Beauty	The perception of aesthetic qualities including shape, colour and form that please the sense
Symbolic	→ Meaning	Using nature or natural symbolism to communicate a concept that is not directly expressed
Humanistic	→ Emotion	An affective state or sensation that occurs as a result of engaging with nature
Moralistic	→ Compassion	Extending the self to include nature, leading to concern for other natural entities that motivates understanding and helping/co-operation

Once the *Five Pathways* were established, a third study was undertaken to test whether these truly were predictors of nature connectedness. There were 72 participants who took part in this study, split into three groups. The first group walked through a natural environment, a forest in Derby. At three points along the route they completed an activity based on a combination of the different pathways. The second group walked through an urban environment, Derby University grounds, and again at three points were asked to complete pathways-based activities. The last group of people walked through the same natural environment alone, with no pathways-based activities. The participants were asked to rank their level of nature connectedness before and after taking part in the study.

At the completion of the study It was found that participants who were in the two groups that engaged with the pathways-based activities reported a higher level of nature connectedness, whereas the participants who walked through the forest alone reported almost no change at all. This led the researchers to the conclusion that the five pathways contact, beauty, emotion, meaning and compassion lead to increased feelings of nature connectedness.

The *Five Pathways to Nature Connectedness* is the framework I am using to explore how we might use design to increase the connection between people in Wellington and our coastal marine spaces. The pathways have allowed me to have a tangible and purposeful way of designing the prototyped web-tool. The next table shows the original pathways and how the researchers stated they could potentially be activated.

Pathways	Create a society where people...	Potential interventions
Contact	Notice and actively engage with nature, spending time truly experiencing nature with all their senses	Landscape design and art installations to prompt sensory engagement with nature
Beauty	Find beauty throughout the natural world. Every day, take the time to appreciate beauty in nature and engage with it through art or words	Transport policy should celebrate the beauty of the natural world visible from trains and roads
Meaning	Explore and express how nature brings meaning to their lives. Notice how nature appears in songs and stories, poems and art, how special places are natural spaces. Celebrate the mystery, signs and cycles of nature	Direct arts funding to celebrate our connections with the natural world through festivals and performances
Emotion	Engage emotionally with nature and find happiness and wonder in nature. Note the good things in nature, the joy and calm that they can bring. Embrace nature at times of sorrow	The creation of spaces to enjoy the good things in nature
Compassion	Think about what they can do for nature. Take actions that are good for nature. Recognise shared life stories and be a part of the community of nature	Resident management of public wildlife freindly gardens

Lumber, Ryan; Richardson, Miles; Sheffield, David (2017): *The pathways to nature connectedness and examples of potential interventions.*

Toru

A Design Response

[Science communication](#)

[Access to knowledge as a path to connection](#)

[Ocean literacy](#)

[Language](#)

[Other work in this space](#)

[Who has used the *Five Pathways*?](#)

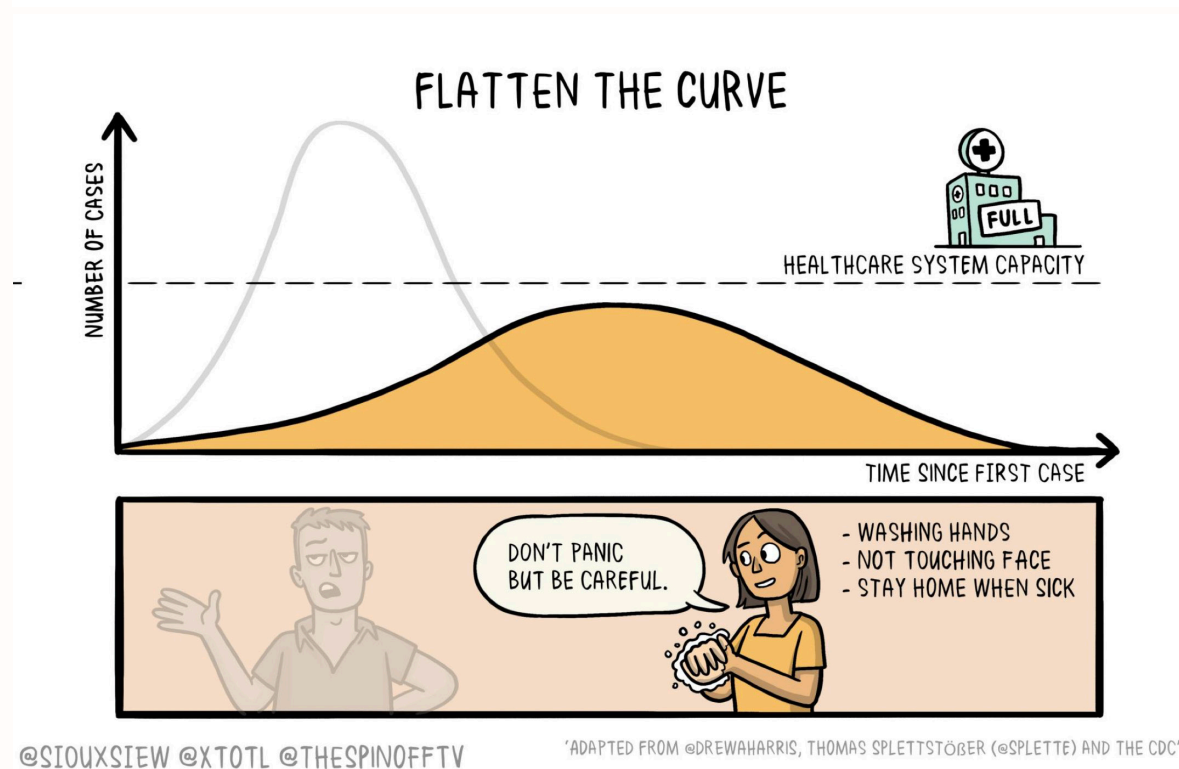
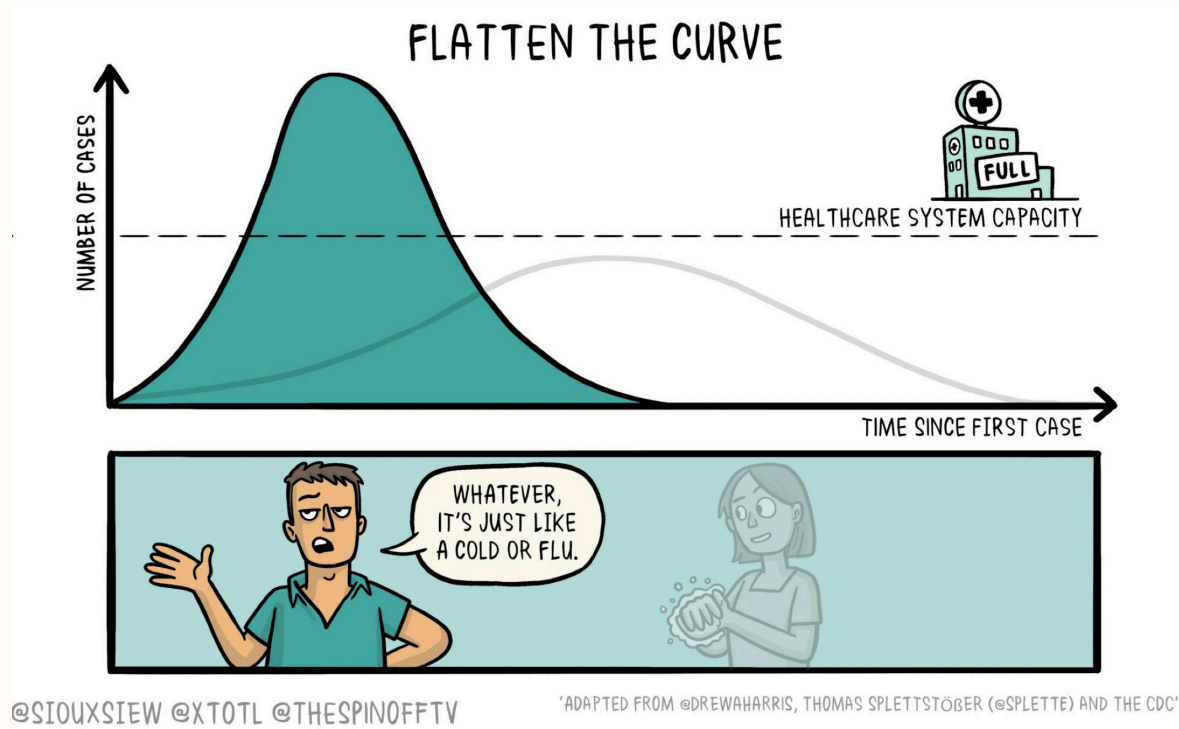
[Re-defining the *Five Pathways*](#)

Science communication

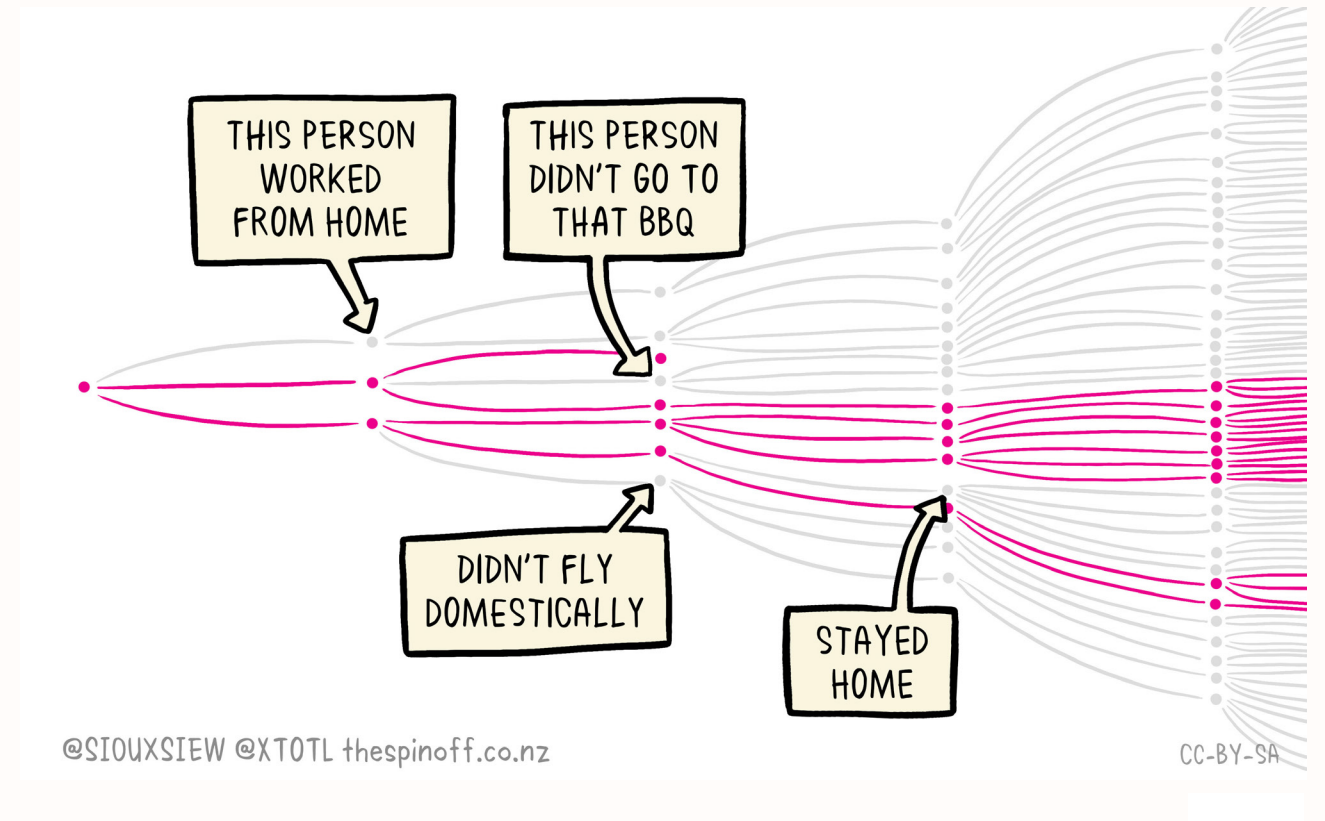
Historically, western science and research has been communicated in a way that allows it to be understood by others with a similar level of education and expertise in the subject. This has been upheld throughout time and contributed to the elitism within the scientific discipline (Trench and Bucchi).

There is no definable origin of science communication. Throughout history different countries, cultures, and people have used various methods of describing and understanding our place in the world (Allum et al.). Today it is generally understood that the driving intention behind science communication is to 'communicate scientific knowledge, methodology, process or practices in settings where non-scientists are a recognised part of the audience' (Felt). Although science communication has now emerged as its own discipline (Trench and Bucchi), it is acknowledged that most of the research that has led to defining this discipline is situated in a European context. What we consider to be 'science' often only encompasses western practices and leaves out a huge wealth of knowledge from other worldviews (Allum et al.) including indigenous Māori knowledge.

While it has become increasingly common to train science practitioners in accessible communication, the benefits of collaboration between different disciplines should not be underestimated (Davis and Estrada). This was exemplified through the collaboration between Sousixe Wiles, a scientist, and Toby Morris, an illustrator, throughout the COVID19 pandemic. The suite of images they created together over the course of the pandemic were widely shared throughout Aotearoa and the world. Their work helped explain the complex systems and decisions behind New Zealand's COVID19 response and how to protect yourself and others against the virus. Their collaboration literally saved people's lives.



Morris, Toby. Wiles Siouxsie. 'Flatten the Curve', The Spinoff, 2020.



Morris, Toby. Wiles Siouxsie. Drawing the Pandemic. <https://www.wgtn.ac.nz/victorious/issues/victorious-2020/drawing-the-pandemic> Te Herenga Waka, 2021.

Access to knowledge as a path to connection

Creating a space for people to develop their understanding of our natural environment through education and access to knowledge can help create a sense of connection to the environment (Frantz and Mayer). Ocean literacy and tailored language are ways of making knowledge about our natural world accessible.

Ocean literacy

The term ocean literacy — a concept created in 2004 by a group of US-based professionals from marine science backgrounds — is defined as ‘*an understanding of our oceans’ influence on us and our influence on the ocean*’ (Santoro and Selvaggia). Ocean literacy aims to increase our connection to the ocean through knowledge and education about our marine spaces. Based on the concept of ocean literacy, *Invisible Coast* aims to create access to some of the knowledge needed to understand the importance of our connection to the ocean.

To be meaningful, ocean literacy should be approached in different ways that acknowledge the nuance of individuals’ and communities’ connection to the ocean. It is imperative that these approaches are situated not only from a global viewpoint but even more importantly from a local one (Kelly) which is one reason why *Invisible Coast* has a specific focus on the Wellington Region. Although the dominant ocean literacy approach is still scientific, there has been increased acknowledgment that all kinds of understandings are valuable. Engaging different communities in *kōrero* around marine conservation allows space for non-scientific knowledge to come to the forefront (Kelly et al.). Specifically in Aotearoa, incorporating *matāuranga* is essential to comprehensively understanding our connection to the ocean.

Language

Using the concept of ocean literacy we can minimise this gap through education. The way that research and knowledge is shared about marine spaces tends to use language and concepts that need prior education to be understood. There is a need to create space for different ways of knowledge sharing outside of scientific methods. Doing so will allow people from all backgrounds to engage and connect with the information. One way of making knowledge accessible to more people is by being purposeful about the language used. To do this you must understand the audience you are creating for. It means acknowledging the community or audience of people being invited to engage and curating the style of communication specifically for that group (Nerlich et al.).

This was an important consideration while writing content for *Invisible Coast*. For example I've still chosen to use some scientific terms and concepts within the tool, I just took extra care in explaining them in a way that is familiar to the audience I'm trying to reach. Switching words like species, which are tied to scientific concepts, to words like creature or plant when appropriate also helps to move away from a scientific feel.

“Good communicators make themselves look smart. Great communicators make their audiences feel smart.”

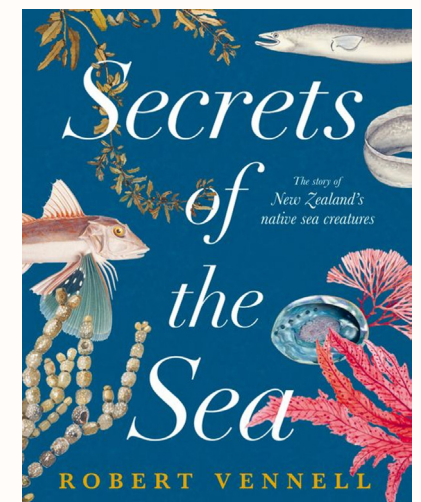
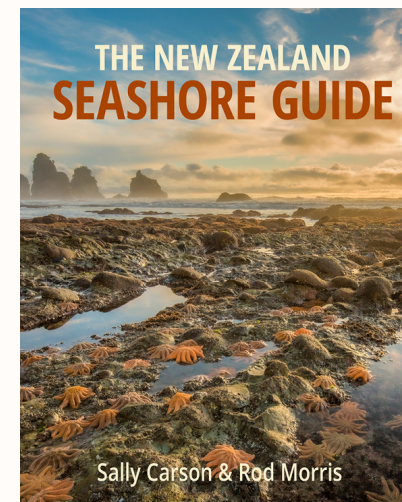
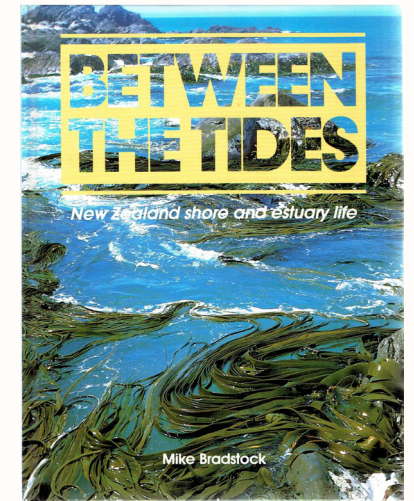
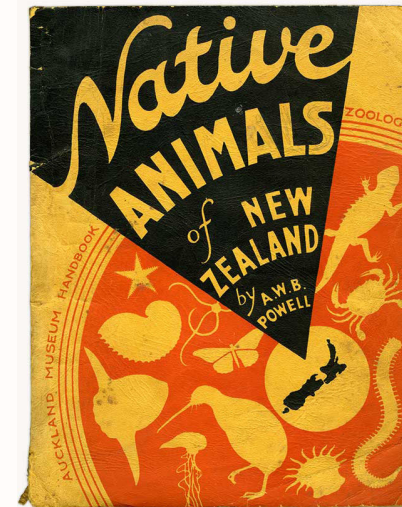
— Adam Grant, author and professor at the University of Pennsylvania

Other work in this space

There is a lot of different work that has been created with the intention of sharing facts and stories about Aotearoa's natural environment. As I was completing research towards gathering facts and interesting information about the creatures and habitats that are a part of *Invisible Coast* I turned towards books.

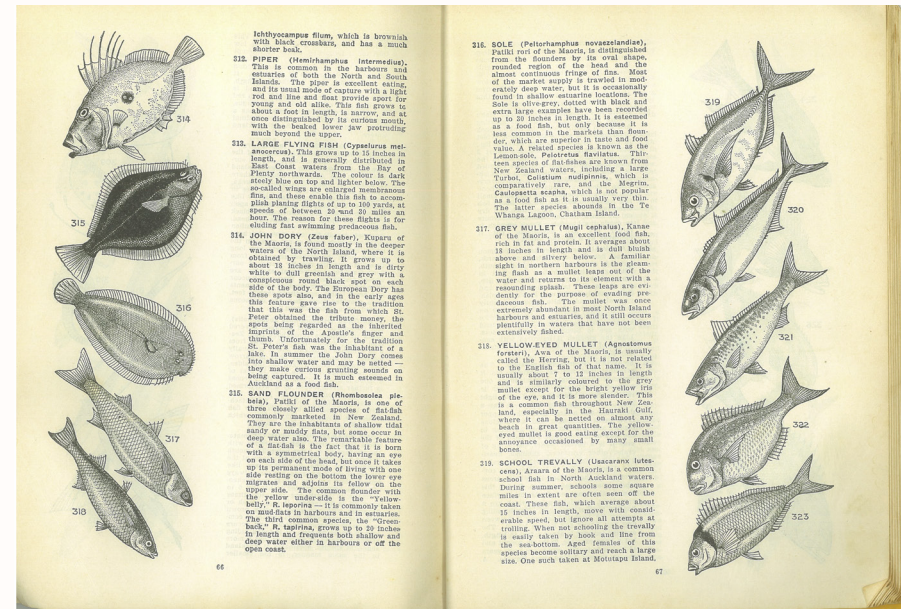
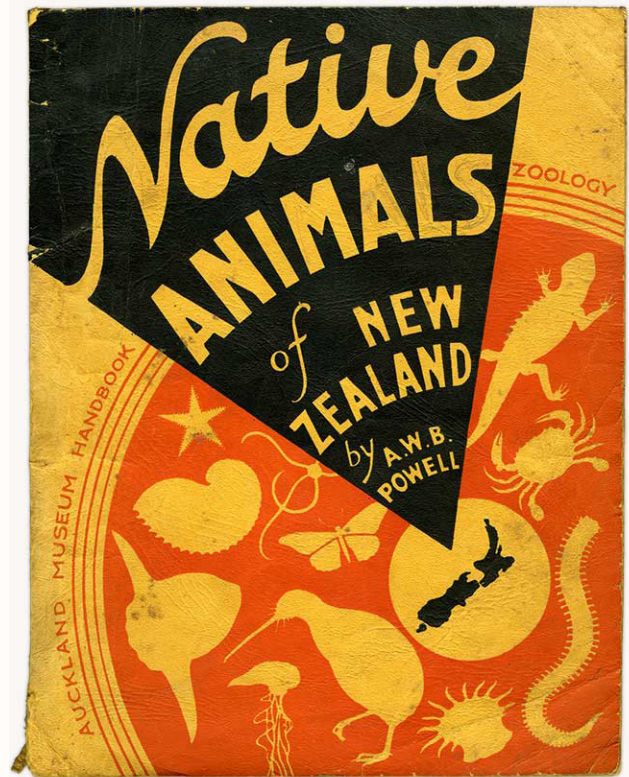
During this period of research I noticed some themes around the style of communication and the type of information available. Almost all of the resources I found highlighted Aotearoa-wide information and were made to be relevant for anyone across the whole country. While this is an important type of resource, information about our country should be available across Aotearoa, *Invisible Coast* is taking advantage of the opportunity to curate a resource specifically based around a place for the local people.

The following four books were influential when designing and curating the communication style of *Invisible Coast*. They were published over the last 75 years — between 1947 and 2022.



Native Animals of New Zealand

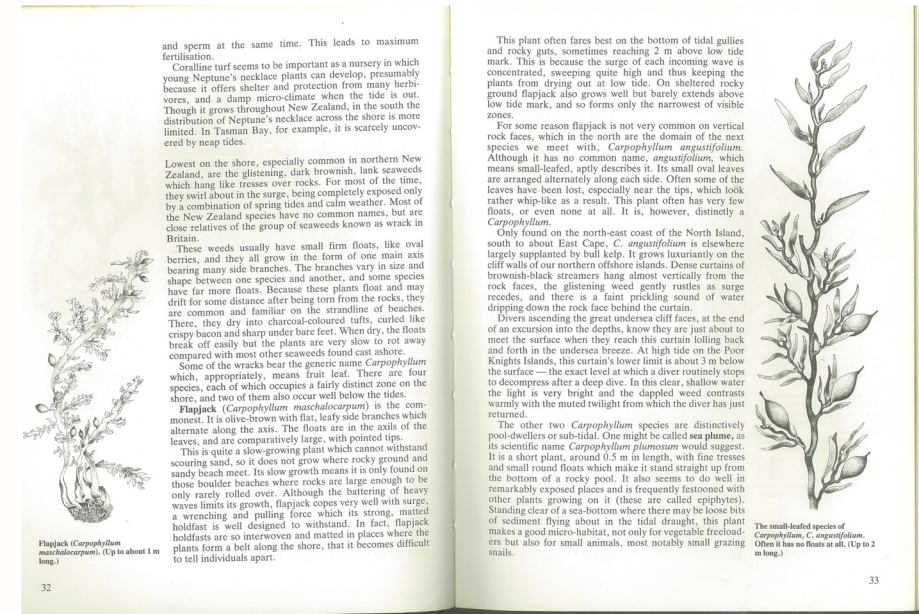
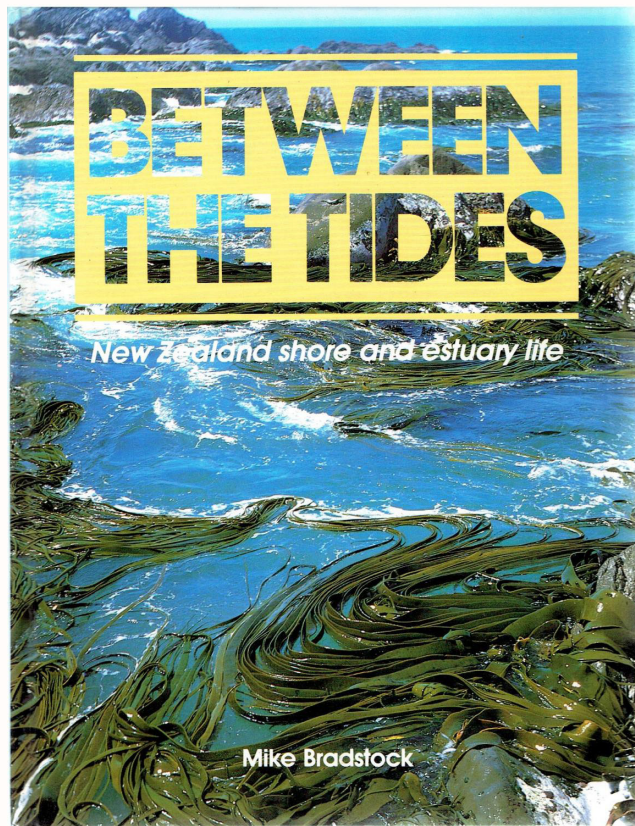
Written and illustrated by AWB Powell



Native Animals of New Zealand was written and first published in 1947. Its intention was to act as a resource for New Zealand school-aged children to learn about our native species, my copy of this book was my mothers when she was at school in the 1970s in Invercargil. *Native Animals of New Zealand* is expansive — both in the number of species it covers and type of creature. This is simultaneously a strength and a weakness. It is incredible to have such a compact and detailed account of almost all of our native creatures in one place but it also means you only get small snippets of information about each species. The style of communication and language is very focused on scientific fact — asking questions about the physical attributes of the species, where it lives and what it eats. This doesn't allow for narrative or storytelling about the creature as a part of its wider habitat and in relation to us as humans.

Between the Tides

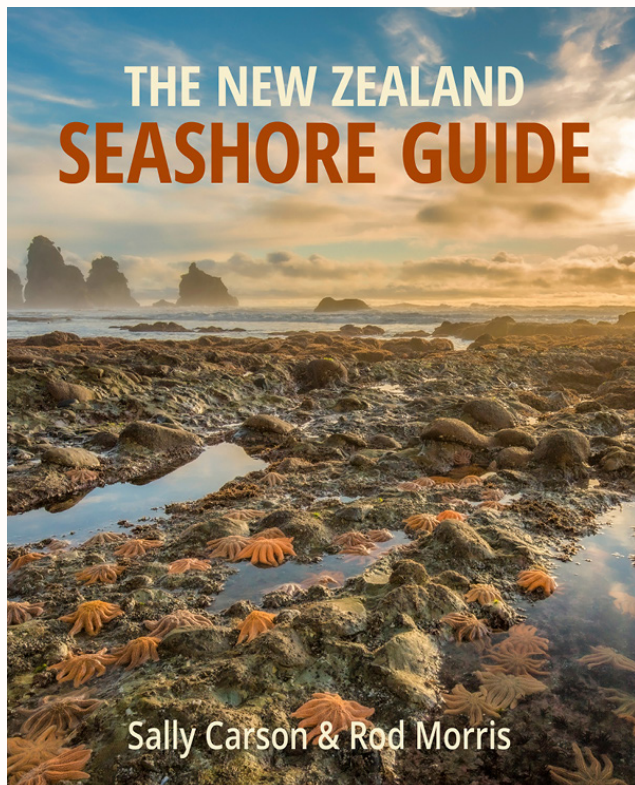
Written by Mike Bradstock,
illustrated by Violet Starford



Between the Tides was published in 1982, covers purely coastal plants and animals and is tailored towards a general adult audience. Both *Between the Tides* and *Native Animals of New Zealand* are printed completely in black and white and feature hand-done illustrations using ink — probably partly due to the time period they were created. A problem with visualising the species this way is that the audience doesn't get to see the creature in relation to its habitat and the wider environment. I struggled to find resources that weren't ordered by species type or if they were habitat based, I found they were extremely general categorisations of creatures that lived in either water, mountains or the forest. Making sure I wasn't separating the creature from its surroundings was a consideration when designing *Invisible Coast*.

The New Zealand Seashore Guide

By Sally Carson and Rod Morris



ANEMONES AND THEIR RELATIVES



Olive anemone
Hümenga
Urticina olivacea

Tapering tentacles in olive to dark green extend to 30mm in length. The smooth column, usually the same colour as the tentacles, is often higher than it is wide. The disc area is usually a deeper green and the mouth may have a pinkish tinge. Patches of green or yellow may be visible around the base.

This species attaches itself to the rock with a well-developed muscular disc that is wider than the column. Some individuals have a projecting flat rim around the

disc diameter to 35mm
habitat: rocky shores
found: common mid tide
distribution: NZ wide

36



column base. The olive anemone holds on so tightly that prying it loose would certainly tear its tissues.

HABITAT
This species is abundant in the mid tidal zone on semi-protected to exposed shores. It is often found in crevices and tidal pools, where it may be partially buried in the sand at the bottom.

LIFESTYLE
The long, tapering tentacles are covered with stinging cells to capture tiny crabs, shrimp and other planktonic crustaceans from the surrounding water. Prey is paralysed and transferred to the mouth. With limited movement and no protective outer covering, these stingers also provide some defence against predators.

ANEMONES



Giant shore anemone
Kōtore
Dulacris magna
Other name: Camouflaged anemone

Vibrant colours are characteristic of this species. When the anemone is open, its central disc and tentacles resemble a beautiful flower. The disc area is large and often various shades of green, pink, blue or brown. The tentacles are also a single colour (blue, mauve, orange or white) and may match or contrast with the colour of the disc. The tentacles are short (10mm), blunt and numerous, with up to 190 arranged in 4 rows. This column is wider than it is high (10cm) and covered with small white projections that use adhesion to hold on to pieces of shell and rock. The lacy white ruffs below the tentacles are outgrowths of the body

that are sticky and packed with stinging cells.

HABITAT
This species usually inhabits the mid to low tidal zone. It is found on exposed headlands adjacent to surf beaches, where the column is buried in the sediment at the bottom of large rock pools or channels.

LIFESTYLE
This predator uses the stinging cells on its tentacles to paralyse and capture shrimp, small crabs, small fish or whatever happens to bump into them. Once the prey is inside the central cavity, digestive enzymes are released to break down the food. The nutrients are absorbed, and shells and anything indigestible are expelled back through the central opening.



citizens of the tidal pools, some individuals have occupied the same spot for over 30 years, while anemones in captivity have been recorded living for over 70 years.

disc diameter to 12cm
habitat: rocky shores
found: common mid, low tide
distribution: NZ wide

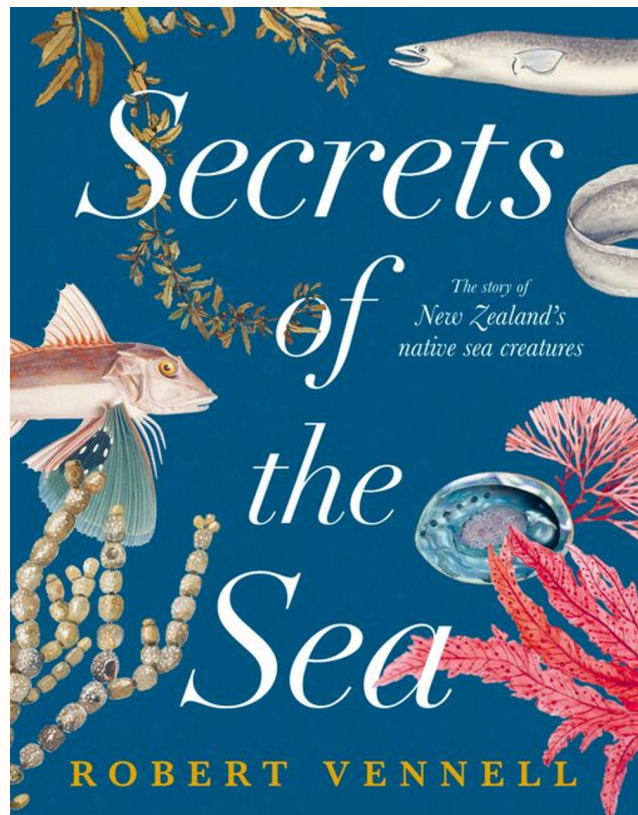
Often described as senior

37

The New Zealand Seashore Guide by Sally Carson and Rod Morris is almost like a 2022 version of the previous two books. The authors caption it as ‘the most up-to-date and comprehensive guide available to this country’s seashore’ (Carson and Morris). They are correct; like the previous two books it covers hundreds of our native creatures. While the communication style is updated to fit with our current world, for example the book now includes te reo names for many of the creatures, it still follows the same scientific structure of listing facts about the species. The imagery is the most compelling part of the book. Each of the photographs were taken by the author Rod Morris. This book was tremendously helpful for me in gathering information about each creature. I took the facts and translated them into the language and style of communication used within *Invisible Coast*.

Secrets of the Sea

Written by Robert Vennell



Secrets of the Sea written by Robert Vennell breaks outside the mould of the previous science based books. There is an emphasis throughout the book on the cultural stories and histories of the creatures in relation to people of Aotearoa and in particular Māori. *Secrets of the Sea* was the first book I found that was successful in weaving together western scientific knowledge, indigenous knowledge and history, storytelling and compelling imagery of the creatures. The majority of the imagery in the book is historic illustration. Visually these are beautiful and give a sense that *Secrets of the Sea* is closer to a picture book than a scientific document. Although it's likely many of these historic illustrations would have been done by early colonial settlers and are in the style of historic western scientific illustration. I feel this is slightly problematic and contradictory to part of the book's purpose of highlighting the importance of these creatures historically to Māori.

Who has used the *Five Pathways*

Since the *Five Pathways to Nature Connectedness* were first published in 2017 they have been used by a selection of different groups and organisations, one of these being our very own Department of Conservation (DOC).

DOC has used the *Five Pathways* to create a series of resources for teachers. Six resources were created with an aim of helping teachers elevate the nature connectedness of their students. In addition DOC used the *Five Pathways* as a framework to build their 50 things to do campaign as a part of the 50th anniversary of Conservation Week. The original campaign was created in both English and te reo, starting the journey towards imagining the *Five Pathways to Nature Connectedness* alongside te ao Māori.

For more ideas visit [doc.govt.nz/50things](https://www.doc.govt.nz/50things)

Department of Conservation
Te Papa Atawhai

We asked Kiwi kids just like you, to put together a list of things you love to do in nature. We listened to all your ideas and created a top list of **50 things to do before you're 12¾** (although still great if you're 82¾). You'll find fun things to do in all kinds of outdoor spaces: your backyard, deck or window sill, mountains to sea, forest and fields. So what are you waiting for? **Check them out and see how many you can do!**

New Zealand Government

In the UK, both the National Trust, a conservation organisation and charity, and Scouts in the UK have used the *Five Pathways* to build a suite of activities for children to increase their level of connection with nature.

Each activity is based around one of the *Five Pathways* and not the group of pathways as a whole. Although each of the *Five Pathways* are defined as their own interaction I have chosen not to keep them completely separate in *Invisible Coast* as Scouts and the National Trust have done. Connecting to two or more pathways at once only makes them stronger.

Both of these pathways based tools are designed to be real world activities and are directed towards engaging children. I think they are successful in this task as the activities are easy and practical for kids. *Invisible Coast* is taking this a step further by not asking the audience to complete nature based activities but rather engaging them with an indirect nature experience in an online space.

Contact



Use your senses to tune into the sights, smells, sounds, tastes, and textures of nature.

You could:

- Listen to birdsong.
- Smell wild flowers.
- Watch the breeze in the trees.
- Walk barefoot outside.
- Taste blackberries from hedgerows.

Put this pathway into practice



Something sticky

Close your eyes and memorise the feeling and shape of a stick. Can you identify your stick from a collection?

Takes: 10 minutes

Run this activity

Meet a tree

Can you use your senses to find out which tree you met? Trust your partner and get connected to nature.

Takes: 20 minutes

Run this activity

Mini solo

Can you become one with nature? Take time to explore and connect with the area around you.

Takes: 1 hour

Run this activity

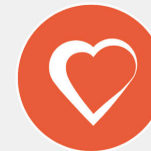
Rope walk

Be brave and test your senses on this adventurous trail.

Takes: 45 minutes

Run this activity

Emotion



Feel joy, wonder, and calm when interacting with the natural world.

You could:

- Find joy in wildlife at play.
- Wonder at a spiders' web.
- Find calm whilst near water.

Put this pathway into practice



Discovery treasure hunt

Discover nature by heading out on a treasure hunt. How many items will you find?

Takes: 25 minutes

Run this activity

On the flipside

Use your senses to see nature from a different perspective.

Takes: 20 minutes

Run this activity

Sound fists

Relax and listen to the sounds of nature. Can you recreate what you hear?

Takes: 15 minutes

Run this activity

Gratitude scavenger hunt

Tune into your emotions and sensations with this scavenger hunt with a difference!

Takes: 20 minutes

Run this activity

Scouts UK, "Nature and Me Activities" <https://www.scouts.org.uk/volunteers/running-your-section/programme-guidance/take-part-in-generation-green/five-pathways-to-nature-connectedness/>, 2021

Re-defining the *Five Pathways*

As the *Five Pathways to Nature Connectedness* were created outside Aotearoa and undertaken through a singular lens of western science, they were never going to be a perfect fit for a design-led project within Aotearoa.

The importance of nature connection, for human and planet wellbeing, remains true across the globe. But the ways in which that connection is built and strengthened varies between countries, communities and cultures.

As a visual designer in Aotearoa, the lens I am applying to the *Five Pathways* has likely never been used before. The output of this project is a digital tool and not a physical nature experience such as the original researchers used. Therefore it was necessary to reimagine the *Five Pathways* and their definitions in order to suit an online environment. The purpose and core of each of the *Five Pathways* remains the same but I have redefined them to address some of the challenges that arise from activating them in a digital environment.

The table on the next page details how I've changed the definitions.

Pathway	Original definition	New definition
Contact	The act of engaging with nature through the senses	Engaging with the habitats through your senses, both directly and indirectly
Beauty	The perception of aesthetic qualities including shape, colour and form that please the sense	The perception of aesthetic qualities including shape, colour and form that please the senses
Meaning	Using nature or natural symbolism to communicate a concept that is not directly expressed	Changed to Cultural Meaning. Connecting to the meaningful cultural connections nature holds specific to Aotearoa.
Emotion	An affective state or sensation that occurs as a result of engaging with nature	An affective state or sensation that occurs as a result of engaging with nature
Compassion	Extending the self to include nature, leading to concern for other natural entities that motivates understanding and helping/co-operation	Extending the self to include nature and cultivating a sense of kaitiakitanga towards our environment and everything that lives within it

These two tables detail why I decided to change the definition of a pathway and potential activations of the pathway through a design lens and in an online space.

My thought process for re-defining

Contact	Activating the audience's senses in an online environment is a challenge. I have had to re define this pathway slightly to work within a digital medium. As you cannot directly activate the senses of touch, taste and smell I have changed it to allow for indirect activation through other senses eg. sight and hearing.
Beauty	I did not change the definition of this pathway, instead I am just reimagining how we might showcase nature's beauty. The same landscape is still beautiful in real life and in an image. Although an image can be made more impactful through the conneciton to the other pathways.
Cultural Meaning	I have changed this pathway to specifically connect to cultural meaning. Our marine spaces and creatures have a deep cultural history in Aotearoa. I think connecting to places through cultural stories is much more meaningful to people in Aotearoa than just using symbolism or metaphor.
Emotion	I have not changed the emotion pathway from its original definition.
Compassion	I have slightly reworked the compassion pathway to focus on an outcome of the viewer feeling a sense of kaitiakitanga specifically for Aotearoa's natural spaces.

Potential activations

Contact	Directly activating the senses of sight and hearing and indirectly the senses of touch, smell and taste. This can be done by highlighting textural elements of the environment, plants and creatures through the use of illustration, connecting the audience to a memory of a physical experience they have already had in that place and using sound to deepen the audience's experience.
Beauty	While still being true to the real creature or plant using illustration to enhance its most eye-catching aesthetic qualities. This could be making its colours slightly more vivid or illustrating it in a pose where its form alludes to gracefulness or skillfulness.
Cultural Meaning	In Aotearoa our creatures and environments have deep cultural meaning, particularly intertwined with te ao Māori. Enhancing this through the use of the correct local te reo names of creatures and plants. Highlighting creatures that are commonly seen and have a presence in people's lives but they don't know much about.
Emotion	Connecting with positive emotions. Sparking joy, awe or wonder through particularly astonishing or interesting traits of different animals. This pathway is directly connected to cultural meaning, you can create emotions through cultural experiences, eg. connections to common childhood experiences
Compassion	Activating each of the other four pathways is one way of instilling the pathway of compassion into the audience. This can also be activated by sharing relevant tips and information on how to look after a specific place.

Whā

My Approach

52 habitats of significance

Audience

Naming

Web-tool as a proof of concept

Visual style

Animation

Illustration

Colaboration with Plan 9

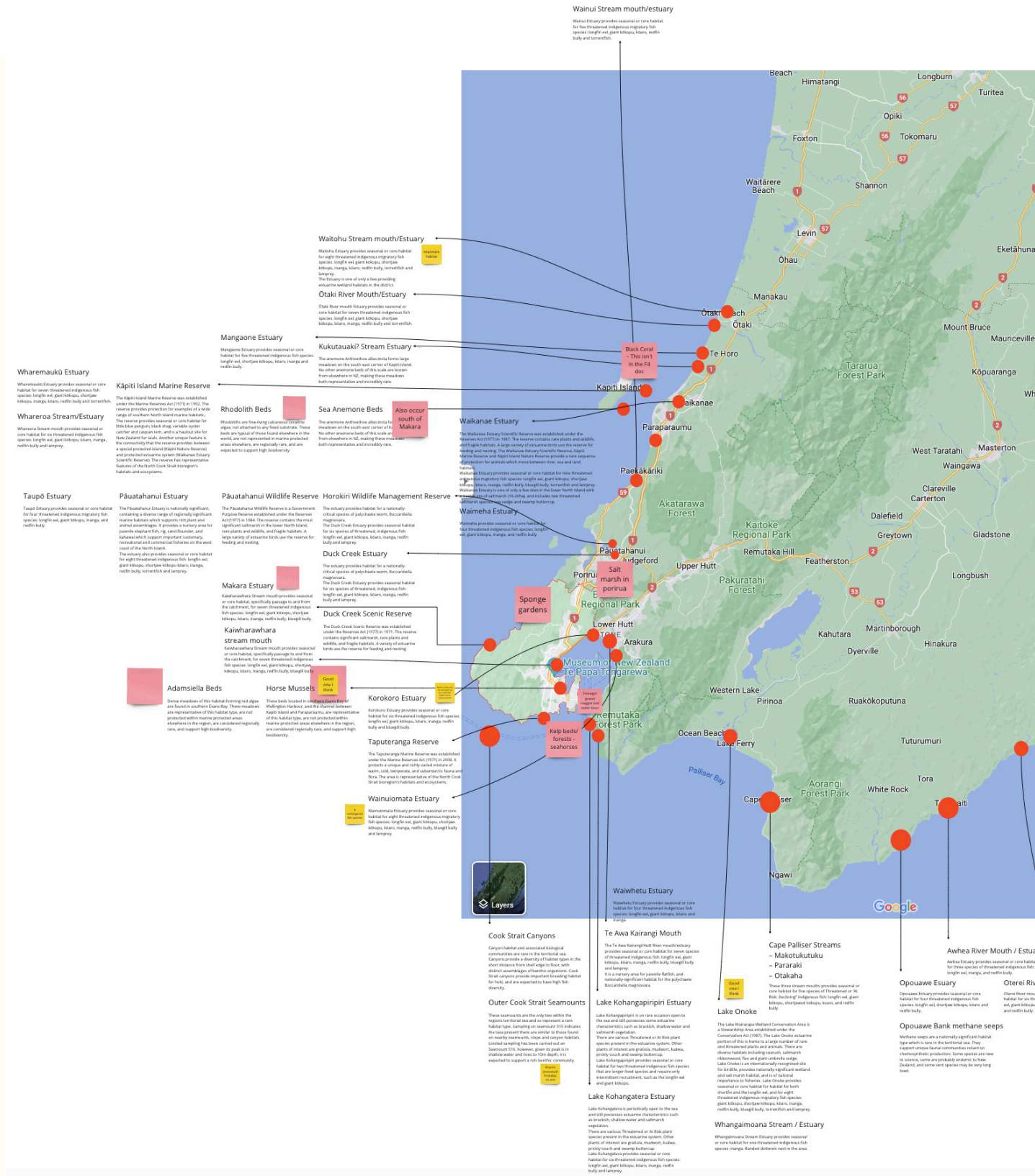
52 habitats of significance

To start building the web-tool Dr Oliver shared with me a document called *Schedule F4: Sites with significant indigenous biodiversity values in the coastal marine area*. It is a collection of 52 different habitats, chosen by Greater Wellington because they are the home of endangered species or have extensive biodiversity.

To help me understand the scope of this document I mapped each habitat onto a visual map of the Wellington region. I also put together a short description of each habitat, from both the *Schedule F4* document and my own research. These descriptions included what kind of habitat it was, what species lived there and if they were considered threatened, along with any particularly intriguing facts about either the habitat or the species.

The process of putting this document together was extremely useful for extending my own understanding of our coastal spaces. Seeing it laid out visually put into perspective the huge diversity Wellington has amongst its coastal habitats, both ecologically and geographically.

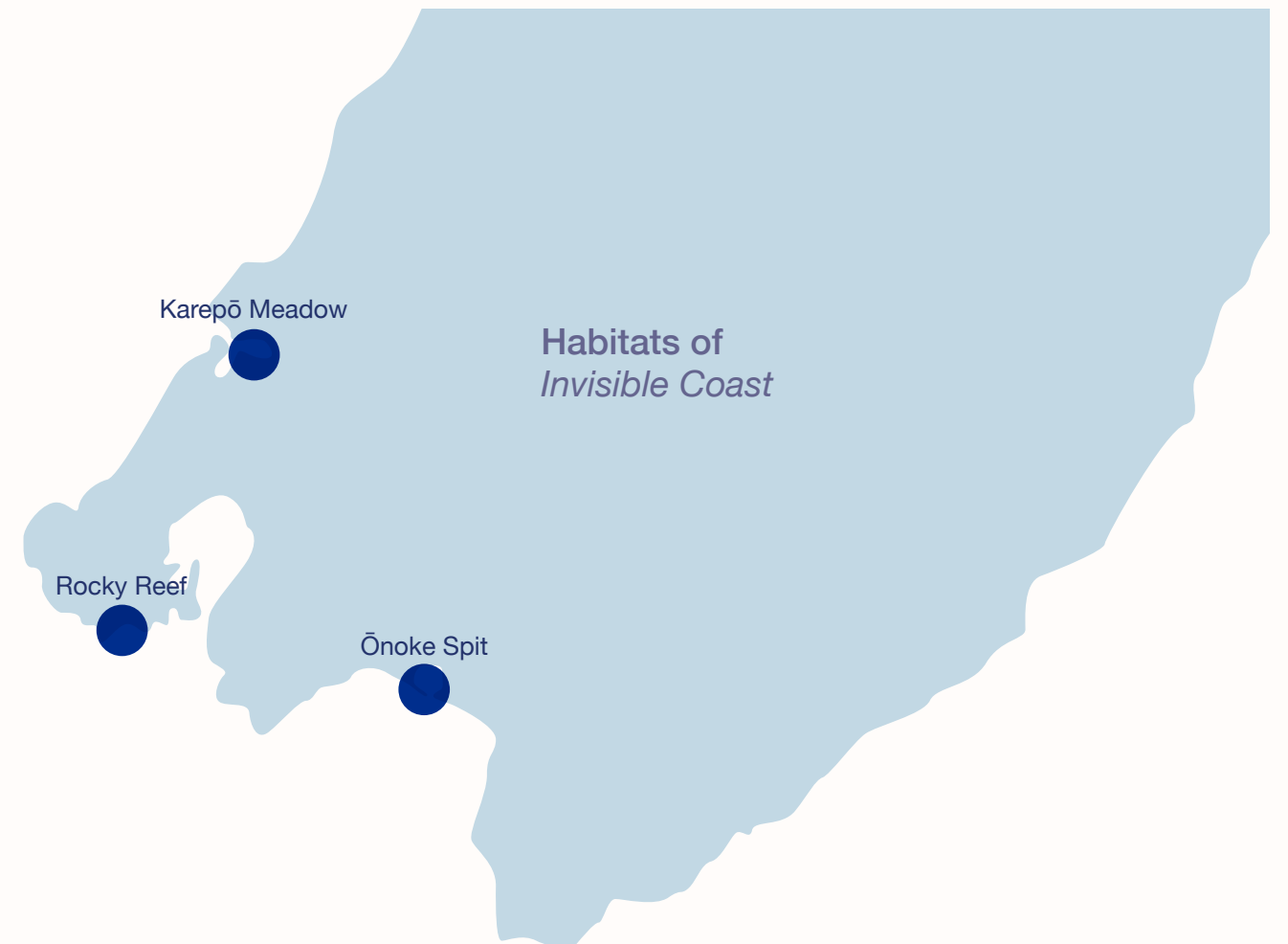
I then began the process of narrowing these locations down into a more manageable number. It was important that the sites chosen to be a part of *Invisible Coast* were geographically representative but also typical of the habitat and the species present. I chose locations that had a particularly interesting history or were culturally significant to people in Wellington. Places that aligned with these things were more likely to connect well to each of the *Five Pathways*. Dr Oliver aided in this process by incorporating her awareness of Wellington's coastal marine environment.



We originally selected ten different habitats, but as I began designing the tool it became clear that this was too many to complete within the timeframe of a Master's. I settled on three sites to include in the prototype. The rocky reef on the south coast of Wellington, Ōnoke spit where Wairarapa Moana flows into the ocean and the karepō meadows in Porirua harbour.

Narrowing down these sites from ten to three is also when I feel the project shifted from creating a complete website about Wellington's coastlines to truly exploring how the *Five Pathways to Nature Connectedness* can be utilised through a design lens.

I deliberately chose to use the habitats as drivers behind *Invisible Coast*. As I explored in section toru, so much of the available information about Aotearoa's creatures separates them from the specific natural environment that they live in. The species and the natural world around them are interconnected — one cannot exist without the other.



Audience

Invisible Coast is created for people who live in the Greater Wellington region, although it would be available to everyone in Aotearoa.

The Greater Wellington region is widespread and encompasses people who live in the city, rurally, along the coastline and much farther inland. This informed the choices I made about which locations to highlight as a part of the tool. It's aimed at those who may not have much prior knowledge about our coastal marine environments but who are interested in conservation or protecting our environment in some way. While I decided to direct the tool at adults and not children due to the multitude of resources already available for them, *Invisible Coast* still has the potential to be engaging and useful as an education tool for young people.

Naming

So much of our coastal marine environment, inhabitants and histories are invisible to everyday Wellingtonians — literally hidden under the surface.

I originally called the web-tool *The Blue Belt* based on the original concept discussed with Greater Wellington. But as my project developed from the original idea it was important that the name did too. I settled on the name *Invisible Coast*. This refers to one of the concepts that flows through this work — how can we make the invisible visible? So many of our coastal marine environments creatures and histories are invisible to everyday Wellingtonians — literally hidden under the surface.

Invisible Coast

Web-tool as a proof of concept

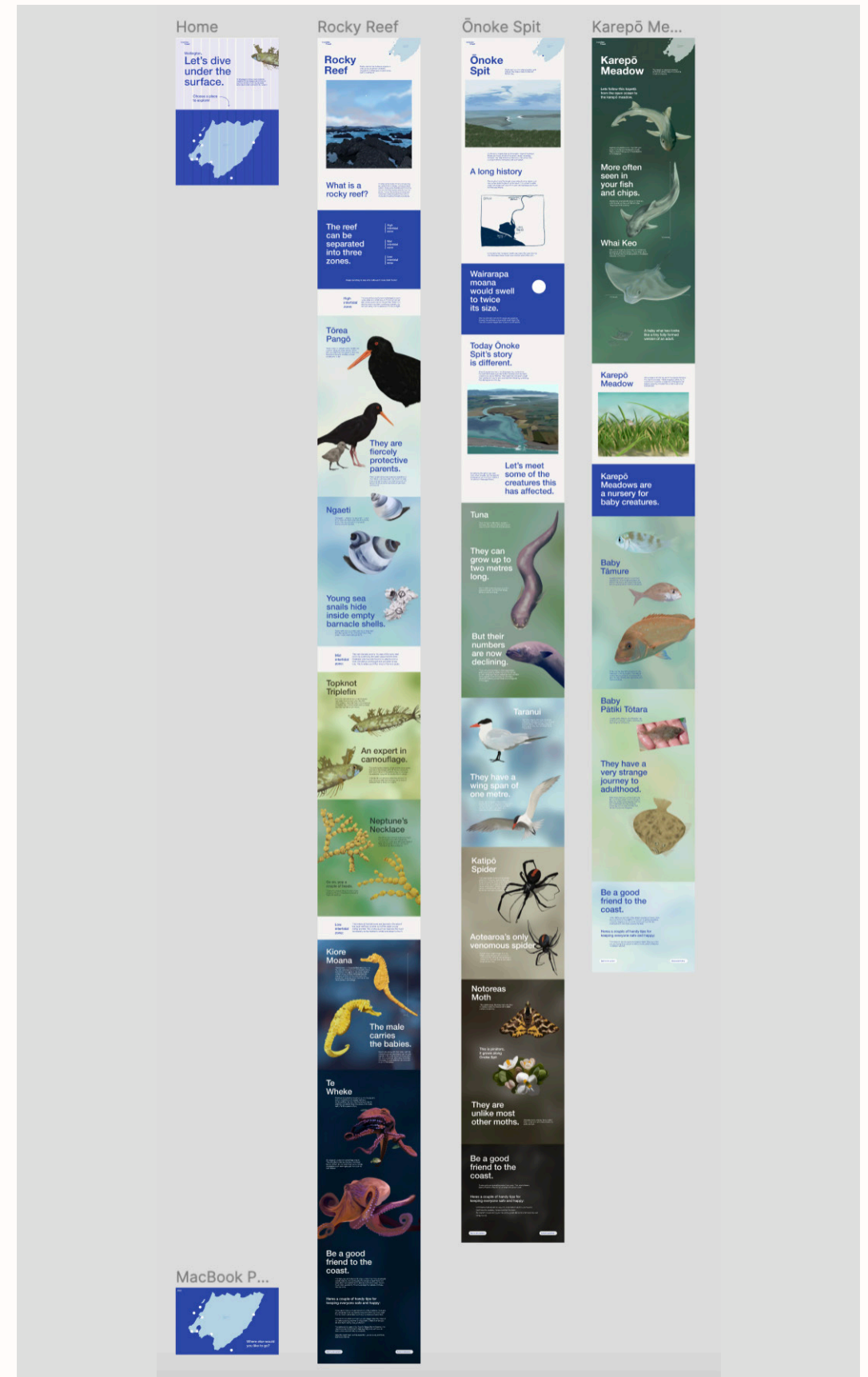
The core aim of this project is increasing Wellingtonian's connection to our coastal marine environments. After looking into how access to knowledge can be a driver towards connection I decided the tool would be built in an online space.

This was also informed by the fact that many of the original 10 sites I chose to be a part of the tool were unable to be visited by people without the right equipment and knowledge to physically get to the location. A web-tool is able to bring these unseen and inaccessible places directly into the hands of the people of Wellington.

Invisible Coast is a prototype of potential ways we might use design methods to increase people's connection with our coastal environments. It is also an exploration into how the *Five Pathways to Nature Connectedness* might be reimaged through a design lens and utilised in an online space.

The prototype is built using Figma and is prototyped with a focus on the desktop version. I created *Invisible Coast* to be used when you are away from the coast, as a resource to learn about our marine environments without having to access them directly.

My digital skill levels and Figma itself have limitations. There is huge potential to extend the motion or interaction design of *Invisible Coast* through collaboration with web and motion designers.

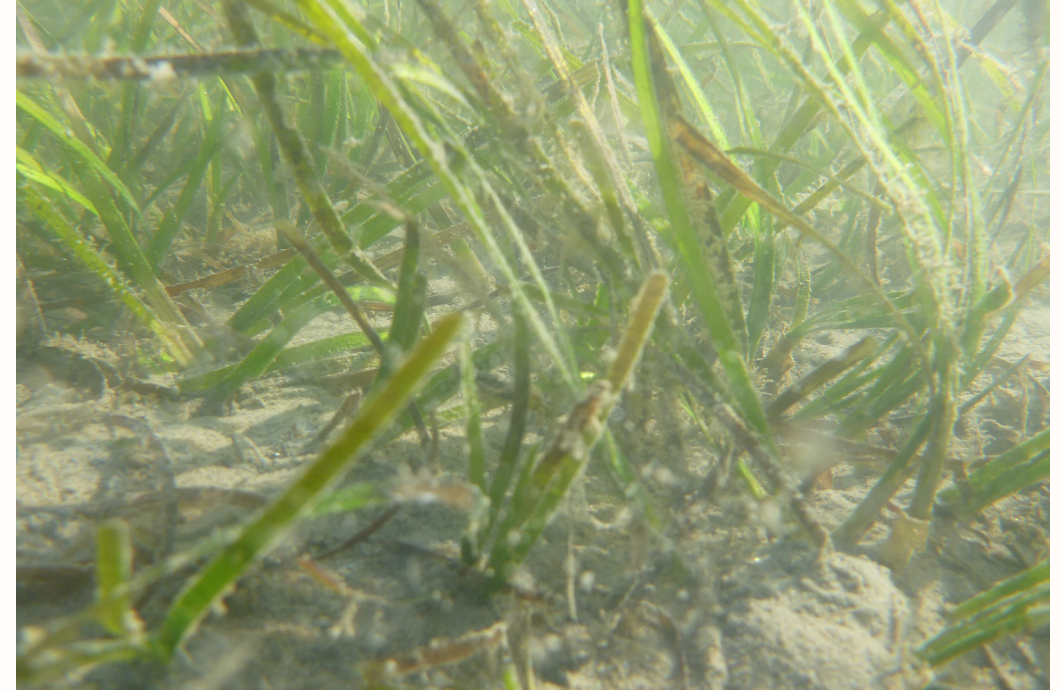


Visual style

I am an illustrator, it's one of the skills and passions I brought to the project from the beginning. Although it wasn't the only reason I chose to illustrate the visuals for the tool.

Many of the habitats and creatures I chose to be a part of this project are inaccessible to people without the right equipment or tools. For example you would need diving gear and knowledge of the exact location to reach the sponge gardens, one of the original ten locations. Taking visually engaging photographs of these locations is difficult, even for those with the right equipment, and one that can only be done by people with knowledge of the location. It's not something I would have been able to do myself, and I would have had to rely on the images provided by Greater Wellington. By creating my own illustrations I am able to decide on the best way to visually showcase the creatures or their habitats. While still remaining accurate to real life I am able to choose the lighting, the pose of the animal and its surroundings among other things. This enables me to truly decide how I want to activate each of the *Five Pathways* through the illustration.

Greater Wellington photograph



My illustrative interpretation



Illustration

All the illustrations that are a part of *Invisible Coast* are painted digitally using the drawing tool Procreate.

Even though the illustrations look realistic it adds another layer of interest if the viewer is aware that they were actually painted. To do this I use a set of oil paint brushes that were created from real brush strokes. I also follow a relatively traditional method of painting. I paint everything together on one layer and start from the darkest points and build up to the lightest. As I wanted the paintings to represent the creatures and habitats realistically, they are painted using reference photos, which are a mix of my own images, found images and images that the council supplied. Being able to completely design the image of the habitats and creatures allows me to be very calculated about how I'm activating the *Five Pathways* within the illustration.

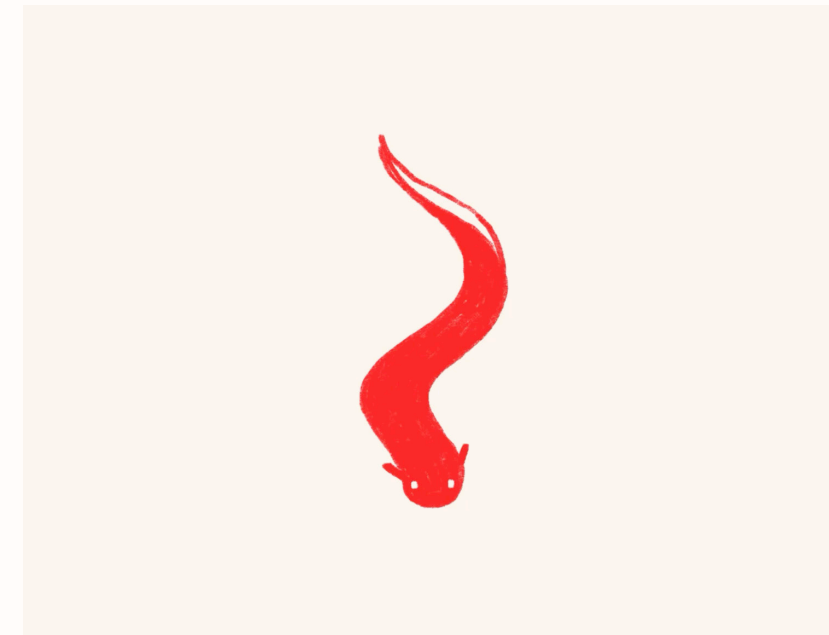
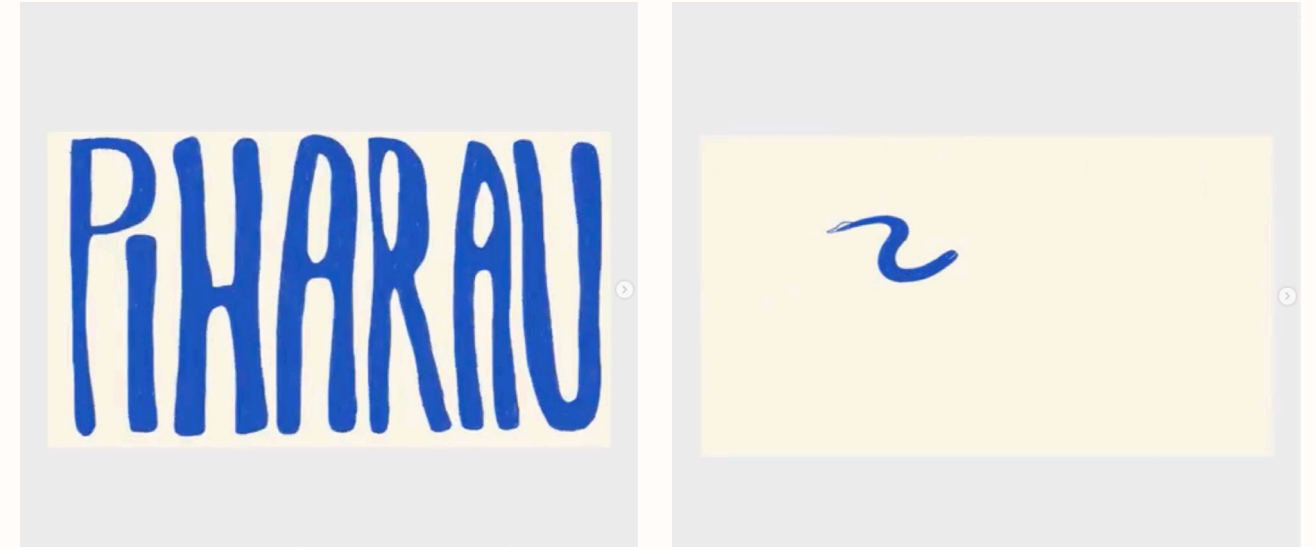


Animation

I didn't immediately settle on realism as the visual style. I created a selection of animations.

I tested different ways I might visualise these environments and creatures. As part of this I created a selection of animations of some of the species. These were done in an abstract style that is very far from what the real creature or its environment look and feel like. Creating these animations gave me an opportunity to work with the idea of motion design as a part of *Invisible Coast*. While I didn't decide to go with this style it showed me the potential that moving imagery can have in engaging audiences with the creatures.

To continue extending *Invisible Coast* further it would be beneficial to work with someone who is a motion designer or animator.



Colaboration with Plan 9

To activate the pathway of contact each of the habitats in *Invisible Coast* have a soundtrack that plays as you scroll down the webpage.

The soundtrack was created as a collaboration with David Donaldson who is part of Plan 9, a studio in Wellington, composing music for film and television. To make the music specific to each place I met with David Donaldson at the Plan 9 studio and talked him through what I wanted from the soundtrack. This included explaining the *Five Pathways*, what emotions I was trying to elicit in the audience, sharing with him the creatures that live in each habitat and the story each of the locations follow as you scroll. David then created a 90 second piece of music/sound design for each habitat.

The sound in this prototype is a set length and the moment where certain sounds happen was based on a set scroll through the webpage. I cannot control how a viewer will scroll and at what points they might stop or scroll faster. With more time and people with the right skill sets it would be interesting to imagine how this sound track might be responsive to the audiences movements on the site. The next iteration of this tool could include place-based sound that was recorded at the actual habitat.

Rocky Reef

The music follows the same story from the shore into the deeper water. Up on the shore the music consists of small waves, shags and other common birds as well as the calls of one tōrea pangō to another. As you get further into the water the tones get deeper and you hear the sounds of bubbles under the water. The sound of flexed metal represents the presence te wheke.

Ōnoke Spit

The first habitat illustration is based on an experience my dad and I had together at Lake Ōnoke sitting on the hill overlooking the spit. The music starts with distant wave sounds and seagulls with bees and insects close to the listener. To set the serious tone of the habitat's story there is bowed double bass and bells. The percussion is dried harakeke. Harakeke is traditionally used in the harvesting of tuna (Te Rūnanga o Ngāi Tahu). Due to the draining and filling of the lake, Wairarapa Moana is at times referred to as the lungs of the Wairarapa, this is represented in the bowed cymbals ("WAIRARAPA").

Karepō Meadow

The soundtrack over the karepō meadow starts with a blown conch shell. The tone of the music — light and playful — stays consistent throughout. The sound that represents the swaying of the seagrass in a mallet being hit on a glass bowl.

Rima

Activating the Five Pathways

Rocky Reef

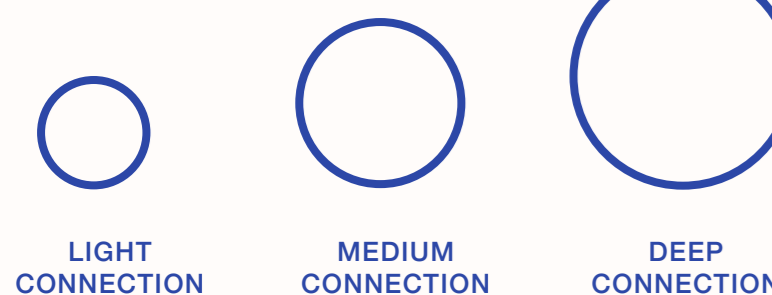
Ōnoke Spit

Karepō Meadow

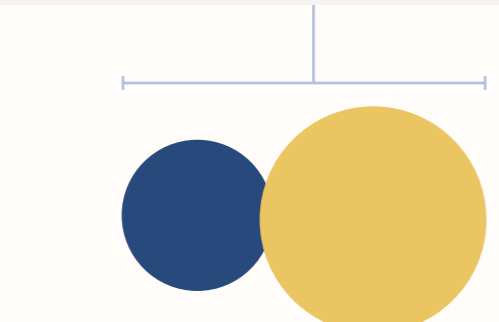
Activating the Five Pathways Rocky Reef

Refer to the video of *Invisible Coast* for a closer look at the web-tool.

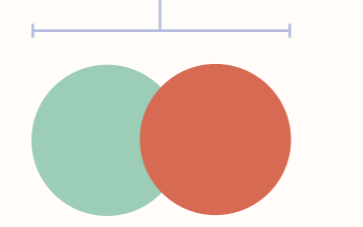
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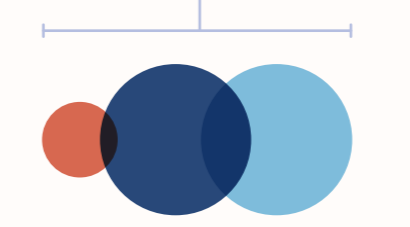
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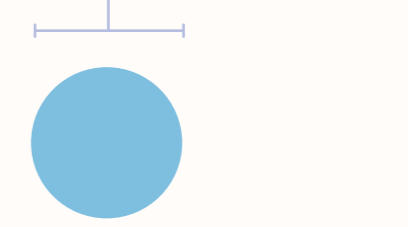
- » Over-arching view of the habitat.
- » Painted at sunset — the colours are soft and atmospheric at that time of day.
- » Features recognisable landmarks that are a part of the rocky reef habitat like Tapu Te Ranga Island.



- » Highlighting species that are common along our coasts.
- » They are a significant presence in the habitat, and subsequently are an extremely important part of the landscape.



- » Interactive action asking the user to pop a bead of the neptunes necklace.
- » Neptunes necklace is a hugely recognisable part of this habitat.
- » Popping the beads is something many people did when they were children.

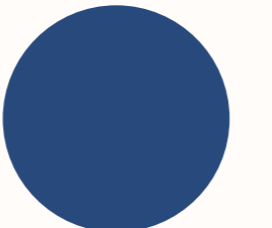


- » As you scroll the background gets deeper to create the sense that you are sinking deeper into the water.
- » Sound is used throughout the website to build the atmosphere of each location.

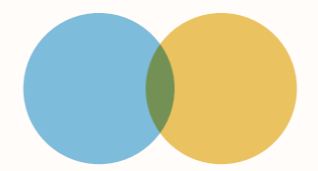


- » Highlighting real word actions towards protecting the habitat you have experienced.
- » These are different for each location and are specific to each habitats needs.

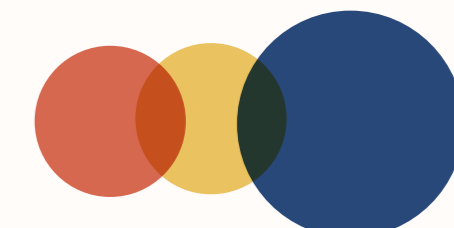
- » Te reo name is used where possible — the te reo names for each species hold significant cultural meaning.
- » For those who are learning about these creatures for the first time, they are learning the te reo name before they learn the English one.



- » Close up of illustration to create a textural experience
- » Also highlights some of the creatures aesthetic attributes like it's pattern and fins for camouflage



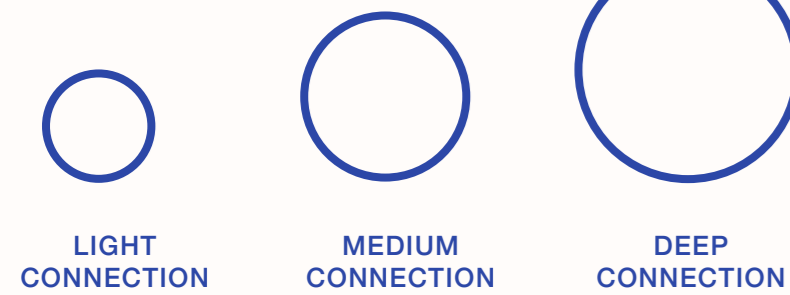
- » Choosing animals that are highly respected by many people like te wheke.
- » Focusing on the bright purple pink hues of te wheke.



Activating the Five Pathways Ōnoke Spit

Refer to the video of *Invisible Coast* for a closer look at the web-tool.

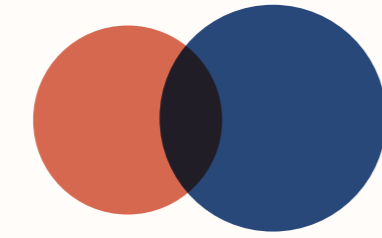
Size Key:



Pathways Key:

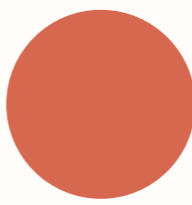


» A focus on the history of Ōnoke spit. Which has huge cultural significance for the region and is highly emotional.

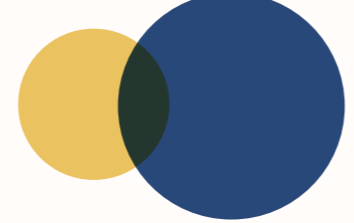


» Visual representation of the opening of the spit.
» The image physically changes as you hover over it.

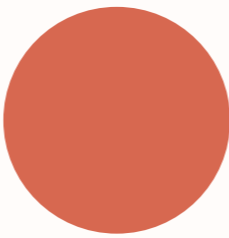
» This is quite a shocking fact, and something we know doesn't happen today.



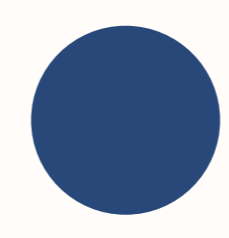
» An overview of the connected awa that we don't often get to see.
» Connecting the story to the whole of the Wairarapa, what we do in one place affects the whole area.



» Connecting to the feeling of awe that these creatures can get so big.
» Using the action of scrolling down the page to add to the feeling of length.



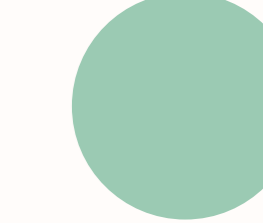
» The sound track plays while you are scrolling through the habitat.



» The Katipō spider is a nationally recognised spider, but most people don't know the meaning behind its name.



» Highlighting real word actions towards protecting the habitat you have experienced.
» These are different for each location and are specific to each habitats needs.



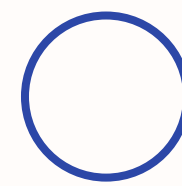
Activating the Five Pathways Karepō Meadow

Refer to the video of *Invisible Coast* for a closer look at the web-tool.

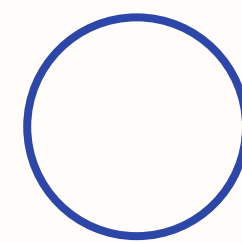
Size Key:



LIGHT CONNECTION

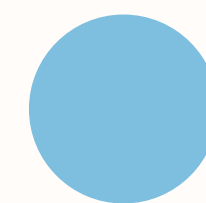


MEDIUM CONNECTION

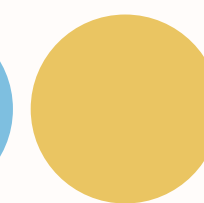


DEEP CONNECTION

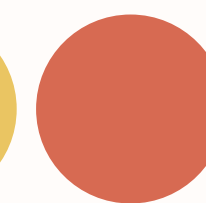
Pathways Key:



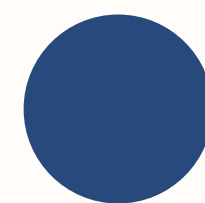
SENSES



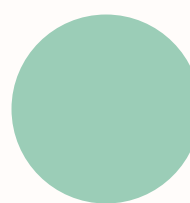
BEAUTY



EMOTION



CULTURAL MEANING



COMPASSION



» Connecting the kapetā to our lives as humans.

» Whai keo are common in Wellington harbor, whether they know it or not many people are familiar with this creature.

» Snapper are one of our most widely known and beloved fish. Although many people probably don't know the te reo name, or that they grow up in our sea grass meadows.

» Many people in Aotearoa will be familiar with flounder but they likely have never heard the story of how they transition to adulthood.

» Highlighting real word actions towards protecting the habitat you have experienced.
» These are different for each location and are specific to each habitats needs.

» The two illustrations together almost look like the kapetā is swimming down.
» The poses are chose to represent the skill of the kapetā maneuvering in the water.

» This is an astonishing fact, forces the viewer to see the karepō meadow as an important habitat to many, rather than just a patch of seaweed.

» As you are scrolling the ambient soundtrack is playing, created specifically for this habitat.

» These illustrations show a baby snapper growing into the adult version so many of use recognise.

Ono

What's next

What's next for Greater Wellington

Potential opportunities

Conclusion

Next steps for Greater Wellington

As it was important to me that this work could be useful and have the ability to exist outside of my master's research Dr Oliver connected me with the Greater Wellington communications team.

Together we created a brief to define the ways that my work might be of use to them. It was decided that at the end of my project I would share with them the illustrations and adjoining information about each creature and plant. This material would then have the potential to be used for these purposes outlined by Greater Wellington on the next page.

More likely

Create story-map or use another digital approach to enable people to 'explore' hard-to-access underwater locations

Social media content (primarily Facebook, Instagram)

Web banners/image

Suite of GW Teams backgrounds

Tiles/video for GW newsletters — internal and external

GW TV — Screens (internal channel)

Technical reports (ESci)

Shared with related media releases

Less likely but possible

Print materials

Banners for events

Online advertising (display)

GW documents more broadly

Potential future opportunities

Invisible Coast was designed to explore how the scientific framework of the *Five Pathways to Nature Connectedness* and design methodologies can work together and uplift each other in creating connection between people in Wellington and our coastal marine spaces, creatures and habitats.

As this research is about conservation in Aotearoa and is situated in a Wellington context I hoped from the beginning that other local communities could have been a part of it. This includes local conservation groups like Friends of Tapu te Ranga or Wairarapa Moana protectors and even more importantly connecting with the different iwi who are kaitiaki of the habitats involved in *Invisible Coast*. Through Greater Wellington's connection Dr Oliver reached out to their iwi partners, who expressed interest in the project but have not yet been able to connect with the project. If this work or similar were to continue in Wellington there's a need for a Māori world view to be part of the project.

While I was attempting to bring the *Five Pathways to Nature Connectedness* into an Aotearoa specific context I was doing so through the limitations of a Pākehā lens. From a western viewpoint purposefully connecting to nature through a concept like the *Five Pathways to Nature Connectedness* is foreign. But for many indigenous communities a deep connection to nature is intrinsic to their way of life (Green and Raygorodetsky). For example, connecting through storytelling and cultural histories is commonplace in te ao Māori. There's an interesting opportunity to explore the concept of what 'pathways to connection' would look like through a truly Aotearoa specific lens, incorporating mātauranga and other local communities' knowledge.

It was obvious through the collaboration with Greater Wellington and Plan 9 that this work can only be made exponentially stronger by a team of people. There is huge potential for this project to be extended through collaboration with a range of different people including visual designers, web designers, animators, scientists and sound designers, among others. If this work were to continue it is imperative that it does so through collaboration.

The tool now acts as a case study for one way the relationship between the *Five Pathways* and design might be utilised to create connection. There is potential for this research to be used as a case study by both designers and non-designers to explore within their own work the benefits that come through approaching the *Five Pathways to Nature Connectedness* through a design lens.

Conclusion

The multitude of threats that Wellington's coastal marine environments are facing is only continuing to grow year after year.

To combat this everyone in Wellington will need to play a part. But there are barriers to being involved in the conservation of our environments. A critical one of these barriers being a lack of connection between Wellingtonian's and our coastal marine spaces. *Invisible Coast* aims to increase that connection to our coasts by using the scientific framework of the *Five Pathways to Nature Connectedness* alongside a Planet-oriented design methodology and a multitude of different design processes.

I believe that *Invisible Coast* provides a useful starting point for further work towards imagining how the *Five Pathways to Nature Connectedness* might work in an Aotearoa context, through a design lens and in a digital environment. This research has massive potential to be extended further through collaboration between councils, scientists, visual designers, sound designers, animators and web designers, iwi and community groups.

This research has brought great joy into my own life. Working on a project with an aim of conservation in my home place, Te Whanganui-a-Tara, has been extremely fulfilling. It is a huge privilege to learn so much about our coastlines histories, creatures and habitats. This project has confirmed to me that a commitment to conservation in Aotearoa will always be a part of my life.



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