



**COASTAL
RESTORATION
TRUST OF NEW
ZEALAND
ANNUAL
CONFERENCE**

**Christchurch March 22-26
2017**



Table of Contents

Sponsors	2
Welcome from the Chair	5
Tāhuna Ora Waiata.....	6
The Coastal Restoration Trust of New Zealand	7
The Conference Venue	9
Conference Contact Number	10
The 2017 Conference Programme	11
Day 1: Wednesday 22nd March.....	11
Day 2: Thursday 23rd March: Field Trip – Pegasus Bay	12
Day 3: Friday 24 th March: Field Trip – Christchurch Coast.....	12
Optional Weekend Fieldtrips (March 25 th and 26 th).....	13
Community Evening Seminar and Weaving Workshop	15
Coastal Restoration Trust – Poster Abstracts	17
Conference Fieldtrip Guide	27
Fieldtrips - Keeping Safe	27
Day One Fieldtrip: Wednesday March 22 – New Brighton	28
Day Two Fieldtrip: Thursday March 23 – Pegasus Bay	30
Day Three Fieldtrip: Friday March 24 – Christchurch Coast	33
Dune Monitoring Workshop	39
A poem to end with	40

Sponsors

The Coastal Restoration Trust of New Zealand would like to thank the following conference sponsors, without whom this conference and the on-going success of the Trust would not be possible.

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We are New Zealand's National Coastal Sand Dune Revegetation Centre, we stock foredune and back dune plant species, specialising in propagating, growing and supplying quality eco-sourced native plants for sand dune replenishment and coastal erosion.



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Deirdre Hart

Conference Handbook Contributors

Justin Cope, Pieter Borchers, Greg Byrnes, David Bergin, Shane Orchard, Greg Bennett, Michael Bergin, Jim Dahm, Freya Colley



Welcome from the Chair

Ngā mihi nui kia koutou katoa. Nau mai, haere mai ki tēnei hui

Greetings to you all and I extend a warm welcome to the inaugural conference of the Coastal Restoration Trust of New Zealand.



We recently changed our name from the Dune Restoration Trust because as we have all become aware that it is not just about dunes as we will find out over the next few days. Our coastal geological and ecological systems are facing many challenges such as urban and agricultural encroachment, effects of sea level rise and introduced plants and animals. Over the next few days we will be looking at and discussing these issues and many more.

We have an interesting programme with most of our time spent outdoors visiting some of our stunning Canterbury coastline and because there is so much to see we added two extra days for the keen coastal aficionados.

I invite all of you to contribute to making our conference an enjoyable and valuable experience. Please ask questions, offer advice and contribute to the collective experience and knowledge of the event.

Many thanks to our sponsors who make it possible for us to host the event and keep the registration fees affordable and also special thanks to the conference organising committee who have worked hard to produce this special event.

Kia ora

Greg Bennett – Chair

Tāhuna Ora Waiata

Tāhuna Ora	Dunes, strong and vigorous
Tai timu, tai pari	<i>Tides that ebb and flow</i>
Tai mata tāhuna	<i>Caressing the banks' brow</i>
Piri tata, piri tahi	<i>Stand together and embrace as one</i>
Piri kia ora	<i>To ensure survival</i>
Mō āpōpō, mō ake, ake tonu rā	<i>For tomorrow, for the future, through the eons of time.</i>



The Coastal Restoration Trust of New Zealand

The Coastal Restoration Trust is a nationwide organisation that brings together the knowledge and experience of communities, iwi, management authorities, industry and science agencies to save and restore our sand dunes and coastal ecosystems. The Coastal Restoration Trust is an incorporated Charitable Trust formed in 2007 to continue the work of the Coastal Dune Vegetation Network. Our aim is to support and encourage the development of cost effective practical methods for coastal communities and management authorities to restore natural coastal ecosystems including the natural form and function of coastal dunes.

Our goals are to:

- Provide a network for information exchange on sustainable management of dunes and coastal ecosystems
- To facilitate research on NZ coastal and dune ecosystems
- Promote public awareness of proven methods for protection, restoration, conservation and sustainable management of coastal and dune ecosystems.

To achieve these goals we:

- Organise an annual conference and workshops to discuss issues, share information and hear the latest research.
- Run a website where information is free and easily accessible and can host community coast care web pages
- Commission research projects and offer a student study award
- Produce technical bulletins and articles detailing best practice methods for dune restoration

The Coastal Restoration Trust Trustees

The Coastal Restoration Trust of New Zealand board comprises up to 15 Trustees from a wide range of backgrounds, organisations and locations around the country. The Trustees have long term experience in a wide range of fields, such as botany, dune morphology, raranga, governance and community restoration projects.

The current Trustees are:

Greg Bennett (Chair) – North Canterbury

Colin Ryder (Treasurer) – Wellington

Tim Park – Wellington

David Bergin – Bay of Plenty

Betsy Young – Far North

Laura Shaft – Whangarei

Justin Cope – Canterbury

Graeme La Cock –
Wellington

Mark Dean – Bay of Plenty

Lyle Mason – Southland

Jim Dahm – Coromandel

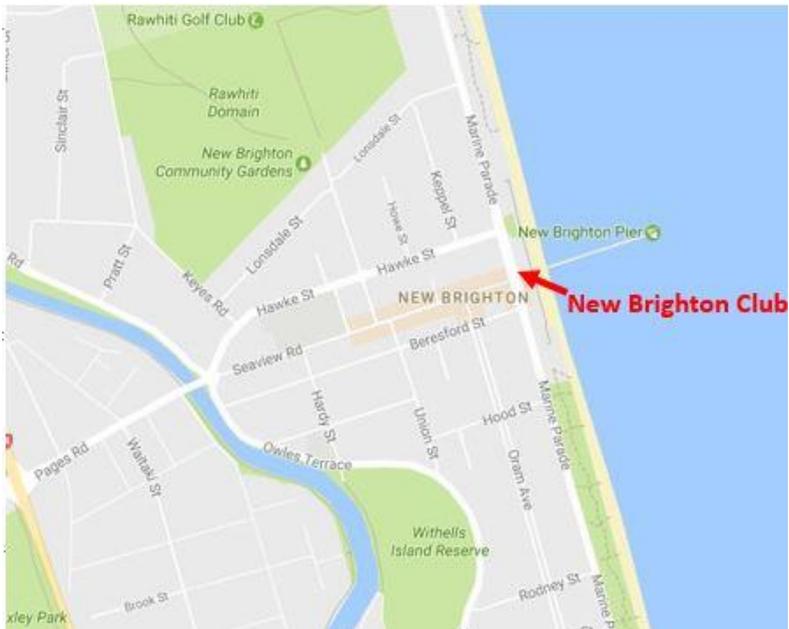
Administrator – Lyneke Onderwater



The Conference Venue

The conference venue is the New Brighton Club, 202 Marine Parade, New Brighton.

This will be the venue for day one of the conference, including the free evening public seminar and weaving workshop, which delegates are welcome to attend (Wednesday March 22) and the conference dinner (Thursday March 23).



There is plenty of on-site parking.

Public Transportation (metroinfo.co.nz): To bus from the city centre to New Brighton the most direct route is to take the Yellow Line. Buses 60 and 135 also go there. Do make sure you travel in the right direction as some of the buses also go in the opposite direction.

Conference Contact Number

For any emergencies, crises or drama of any sort during the conference please contact:

027 2294331



The 2017 Conference Programme

Day 1: Wednesday 22nd March

08:00 - 09:00: Registration

09:00 - 10:00: Mihi Whakatau – Te Ngāi Tū Ahuriri

Welcome and conference opening

Greg Bennett (Dunes Trust Chair), Andrew Turner (Christchurch Deputy Mayor), Cr Cynthia Roberts (Environment Canterbury), Cr David East (Coastal-Burwood Community Board)

10:00 - 10:30: Morning Tea

10:30 - 11:30: Canterbury's Coastal Diversity - Deirdre Hart (University of Canterbury) and Justin Cope (Environment Canterbury)

11:30 - 12:30: Coast Care and Agencies Regional Roundups (Part 1)

12:30 - 13:15: Lunch

13:15 - 14:15: Coast Care and Agencies Regional Roundups (Part2)

14:15 - 17:00: Local fieldtrip - 'Walk and Talk' New Brighton Beach: Visit dune care sites, local issues, management plans.

17:00 - 18:00: Beach BBQ Dinner (New Brighton Beach opposite conference venue)

18:30 - 20:30: Evening Community Engagement Seminar and co-current Weaving Workshop (at Conference venue) – Conference delegates welcome.

This will be an interactive event with key speakers Jim Dahm (Coastal Restoration Trust) and Shane Orchard (Resource Management Scientist)



who will discuss dune restoration techniques, what coastal restoration groups are doing to address climate and earthquake effects.

Day 2: Thursday 23rd March: Field Trip – Pegasus Bay

8:00: Buses depart from City Centre (location TBC)

8:30: Pick-up at New Brighton

9:15 - 11:00: Kairaki and Woodend Beach Visit - Tūhaitara Coastal Park

11:00 - 12:30: Walk (or bus/vehicle option) from Woodend Beach to Pegasus Township via Tūtaepatu Lagoon

12:30 - 13:00: Lunch at Waikuku

13:00 - 14:00: Ashley Estuary

14:30 - 16:30: Spencer Park Beach

16:30 - 17:00: Bus back to New Brighton and city

19:00 - 22:00: Conference Dinner at New Brighton Club

Day 3: Friday 24th March: Field Trip – Christchurch Coast

0800: Buses depart from City Centre (location TBC)

9:00 - 10:30: Walk or bus Godley Head to Taylors Mistake Beach. Includes 30mins at Harris Bay penguin colony

10:30 - 11:00: Taylors Mistake Beach talk

11:00 - 13:00: Travel to Sumner. Sumner Beach talk and LUNCH

13:00 – 14:00: Travel to South Shore Spit and Estuary. Spit Reserve walk and talk.

14:00 – 15:00: Travel Spit to South Brighton. South New Brighton dunes walk including Te Karoro Reserve

15:00 - 15:15: Travel to New Brighton for conference wrap-up and Poroporoaki/Farewell

16:00 – 1645: Bus to airport

Optional Weekend Fieldtrips (March 25th and 26th)

Saturday 25th March: Field Trip to Banks Peninsula

8:00: Bus departs from City Centre (location TBC)

8:30 – 9:30: Motukarara Nursery (Department of Conservation)

9:30 – 11:15: Travel to Kaitorete. Kaitorete dune walk and talk

11:15 – 12:30: Travel to Birdlings Flat. Walks and talk Birdlings Flat and Lake Waiwera outlet

12:30 – 13:00: Lunch

13:00 – 14:30: Travel to Tumbledown Bay. Tumbledown Bay walk and talk

14:30 – 15:45: Travel Tumbledown Bay, via Governors Bay and Victoria Park, to City Centre.

15:45 – 16:30: Bus to airport

Saturday 26th March: Field Trip to North Canterbury

8:00: Bus departs from City Centre (Location TBC)

8:45 – 9:15: Ashworths Beach

9:15 – 10:00: Travel to Leithfield Beach. Leithfield Beach walk and talk

10:00 – 10:45: Travel to Amberley Beach. Amberley Beach walk and talk

10:45 – 11:45: Travel to Port Robinson. Port Robinson visit

12:15 – 13:30: Travel to Gore Bay. Gore Bay walk and talk

13:30 – 14:30: Travel to Cheviot. Refreshments

14:30 – 16:00 Travel to airport then to city



Community Evening Seminar and Weaving Workshop

Wednesday 22nd March, 6.30-8.30pm, New Brighton Club, 202

Marine Parade

This community seminar is being run in conjunction with the 2017 National Coastal Restoration Conference. The seminar will focus on providing information about coastal processes and raising awareness of dune management techniques.

There will also be a con-current pingao weaving workshop hosted by Betsy Young, master weaver and Trustee on both the Coastal Restoration Trust and Te Roopu Whakaoranga a Te Taha Moana.

Our seminar key speakers, Jim Dahm and Shane Orchard, will provide national and local perspectives on, and examples of, sand dune management projects and programmes and how coastal communities are working with the spectre of climate change.



Jim Dahm (MSc Earth Sciences)

Jim specialises in coastal management with over 25 years work experience in this area. He has worked for various consultancies, and within central and regional government. Jim specialises in coastal hazard assessment and



management, coastal restoration, and estuarine sedimentation and management. He is also experienced with community facilitation and planning and serves as a Commissioner on resource consent hearings. Jim also initiated Beachcare and Coastcare community based dune restoration in New Zealand and is also the primary author of the existing national guidelines for this work and a trustee on the Coastal Restoration Trust. He

has advised on, designed and implemented scores of dune restoration projects around New Zealand.

Shane Orchard (M.Sc, PGDipMāoriResEnvtlMgmt)

Shane Orchard is a resource management scientist based in Christchurch. He works on coastal and waterway management with interests in land-water and freshwater-saline boundaries, ecosystems approaches, and climate change. Shane is involved in several coastal and riparian restoration projects including coastcare, projects on whitebait, and work on the Christchurch Red Zone. He's also completing a part-time PhD on coastal resilience with a focus on risks posed by sea level rise.



Shane's other interests include surfing, kayaking, mountaineering, and backcountry snowboarding. He is also a developer of the citizen platform NatureWatch NZ.



Photo credit: Shane Orchard

Coastal Restoration Trust – Poster Abstracts

Compiled by David Bergin, Jim Dahm and Michael Bergin

The Coastal Restoration Trust currently has five projects in collaboration with coast care groups, councils and the Department of Conservation. These cover a wide range of activities and priority areas of applied research and technology transfer aimed at the vision of the trust to promote restoration and management of natural shoreline buffers and ecosystems, and use of

The five projects are:

1. Restoration of difficult sand dune sites
2. Developing community-based methods for monitoring sand dunes
3. Outreach programme for restoration of dunes
4. Koi carp - turning a pest fish into an environmental gain
5. Coastal ecosystems reference database

Acknowledgements

These projects have been funded in various combinations by the Ministry for the Environment's Community Environment Fund, the Department of Conservation's Community Fund and their Terrestrial and Freshwater Biodiversity Information System fund, as well as by contributions from the research partners of the Coastal Restoration Trust, and project partners. These include the Northland Regional Council, Auckland Council, Waikato Regional Council, Bay of Plenty Regional Council, Wellington Regional Council, Wellington City Council, Canterbury Regional Council, Te Kohaka o Tuhaitara Trust, Christchurch City Council, and Timaru District Council. In addition these collaborative projects have been supported in many regions throughout New Zealand by local iwi, coast care and beach care groups, regional Department of Conservation staff, and coastal landowners and managers.



For further information on these projects contact the Coastal Restoration Trust of New Zealand. Website: www.coastalrestorationtrust.org.nz
Email: info@coastalrestorationtrust.org.nz

1. Restoration of difficult sand dune sites

Over the last two decades, significant progress has been made with restoration of degraded sand dunes using community-based approaches on high-use publically owned land. However, significant difficulties and failures have been experienced on particularly exposed coastlines, sometimes in more remote locations, and where significant weed problems occur.

This project works with local communities, landowners and the Waikato Regional Council to restore severely degraded coastal dunes at difficult sites on the east and west coasts of the Waikato Region. Guidelines and case studies will demonstrate options for restoration of similar sites elsewhere throughout New Zealand.

The primary focus is on preparation of guidelines for community and management agencies, and is a step-by-step approach to restoration of our most challenging dune systems to avoid major losses of plants and other resources. The project is funded by the Department of Conservation's Community Fund in collaboration with Waikato Regional Council, local landowners, and Beachcare groups.

Several flagship sites have been identified in the Waikato region where collaborative projects are underway on the exposed west coast, and weed infested eastern Coromandel coast. Restoration of two severely degraded dunes on exposed, high energy Waikato **west coast** sites:

- **Nukuhakari Station north of Awakino** - a large sheep and cattle farm on the west coast north of Awakino exposed to the prevailing westerly winds with extensive landward migrating dunes now covering several hectares of both frontal and backdune environments. To date, several thousand spinifex have been planted over several years focusing on areas between existing vegetation to

form a continuous zone of vegetation which is already reducing sand movement landward.

- **Seaview, Awakino** - a private camping ground where the natural dunes have been levelled, filled and grassed. The adjacent shoreline presently experiences severe wave erosion along a high wind and wave energy coastline. Restoration of a wide, naturally-vegetated frontal dune involves removal of grass and fill, formation of a natural dune shape, then planting spinifex on the frontal dune and establishing a vine/rushland on landward sites.



Establishment of the fertiliser planting trials in collaboration with the Waikato Regional Council and landowners Hamish and Bridget Nelson (left). Fore-dune vegetation comprising spinifex and pingao five months after planting in 2016 (right).

Restoration of two severely degraded weed-dominated backdune sites on the Waikato **east coast** which are typical of modified dune sites at urban/resort communities elsewhere in the country:

- **Cooks Beach and Whangapoua Beach, Coromandel Peninsula**

Sites have expanded and now include locations at Whangapoua, Whitianga, Cooks Beach, Tairua, Pauanui and Whangamata, where frontal dune areas are dominated by dense exotic vegetation communities, or where the original dune was bulldozed level at the time of development and then grassed, often over a clay/fill cap. As dunes are dominated by exotics, a 'whole-of-dune' approach involves:

- blanket spraying of dense, exotic vegetation from front to landward
- mechanical removal and burial of the vegetation cover and seed banks
- reshaping where needed
- dense planting of native sand binders on frontal dunes, and wiwi and other mid-dune species landward

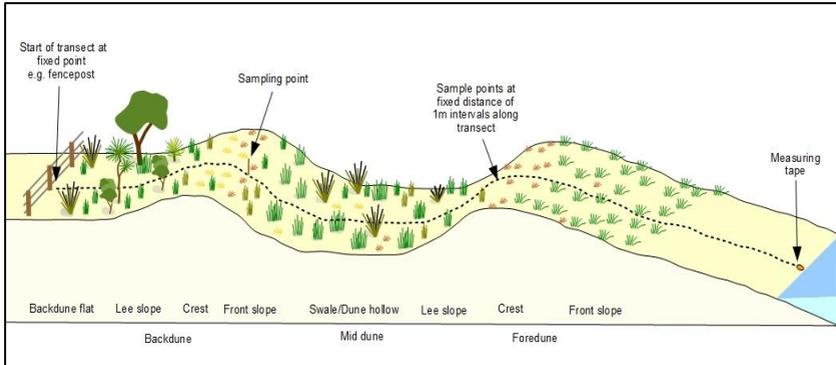
Guidelines will focus on community-based restoration of difficult sites in the form of peer-reviewed Technical Articles published as part of the Dunes Trust Coastal Restoration Handbook and will also draw on lessons learned from a wide range of other projects on the Northland, Auckland, Waikato, Bay of Plenty, Taranaki, Kapiti, Tasman, and Pegasus Bay coasts.



Whangapoua Beach - restoration work end of Year 1 (left) and end of Year 2 (right) where wiwi is the dominant native successfully planted.

2. Developing community-based methods for monitoring sand dunes

The Coastal Restoration Trust of New Zealand is developing easy-to-use community-based methods for assessing and monitoring dunes that can be quickly implemented by Coast Care groups, councils and other managing agencies. The project is funded by the Ministry for the Environment's Community Environment Fund in collaboration with coast care groups, councils and the Department of Conservation.



Rapid-Point sampling along a tape placed across the dune along a bearing perpendicular to the coast from a fixed landward marker (e.g. peg, fencepost) to high water mark.

A survey of sand dunes across the range of zones from foredune to landward establishes a baseline in dune profile, vegetation cover and species composition, and then changes can be monitored over time. This will assist Coast Care groups and agencies in setting priorities for restoration and management of their dunes, and assessing the effectiveness of their interventions.

As zonation on sand dunes typically runs parallel to the sea, sampling vegetation is best undertaken by running transects perpendicular to the coastline. Techniques for setting up and assessing dune vegetation cover and species composition have been developed and are based on an easy-to-use Rapid-Point sampling method along a tape laid across the dune from a landward permanent datum point, seaward to high water mark.

Practical techniques are under development to measure slopes and distances along each transect to map the dune contour using mobile devices.

The Coastal Restoration Trust is developing user-friendly methods for analysis and presentation of data for interpreting vegetation cover and species composition in relation to dune morphology. This will show changes over time

and assist in adjusting dune restoration and management priorities where required.

Monitoring workshop

As part of this conference, these dune transect monitoring techniques developed to date will be demonstrated during our fieldtrip to Sumner Beach led by Shane Orchard (refer to further workshop details in the conference handbook).

3. Outreach programme for restoration of dunes

The Coastal Restoration Trust is working in two regions - Gisborne/East Coast and Otago - to assist local communities and councils in developing capability for restoration and management of their coastal sand dunes.

This project is funded by the Department of Conservation's Community Fund in collaboration with coast care groups and councils in each region.

Field Advisors have been engaged in each of the two target regions to assist in implementing this outreach programme. The work will include:



- liaison with management agency staff and local community groups to promote and build support for Coastcare dune restoration

- running workshops in each region for local communities, agencies and other interest groups

- running field visits to local dune systems to provide site-specific advice with local experts and advocates illustrating approaches to consider in dune restoration and management

The aim is to provide a basis for detailed planning and prioritised implementation of the coastcare work required at each site. Measures of success include:

- raising community and management agency understanding of the importance and benefits of dunes and dune ecosystems
- increasing the proportion of degraded sand dune ecosystems under effective restoration and management with a focus on planting and managing appropriate native plant communities
- improving awareness of the cultural and archaeological values of local dune systems
- building local support and capacity for dune restoration



4. Koi carp - turning a pest fish into an environmental gain

Koi carp (*Cyprinus carpio*) populations have exploded in fresh water systems of the lower Waikato since introduction, contributing to poor water quality. The species is now officially classified under various central and local regulations and Acts as a 'noxious fish', an 'unwanted organism', and a 'containment animal pest'. They are opportunistic omnivores eating a wide range of food including insects, fish eggs, juvenile fish of other species, and a diverse range of plants and other organic matter.

This Waikato Regional Council Carp-N Neutral project managed by freshwater scientist Dr Bruno David aims to trap large numbers of koi carp and "digest" them into a range of products. The fish trap screens carp and other pest fish such as catfish while allowing smaller native species such as eel and smelt to pass through unharmed.



Koi carp have exploded in number in the lower Waikato River basin. They grow to 75cm in length and weigh up to 10kg (left). Directing koi carp down a chute where they are sorted prior to digestion (right).

The Waikato Regional Council and Coastal Restoration Trust have teamed up to evaluate the use of digested koi carp in a range of products for positive environmental gains in community-based restoration initiatives. These can be applied to a range of ecosystems - coastal dunes, riparian zones, wetlands, forest ecosystems. Potential uses of processed koi carp include:

- slow release fertiliser – replacing artificial fertiliser for planting on sand dunes
- animal repellent – applied to foliage of palatable planted natives to deter browsing
- rodent bait – as lures for control operations targeting rodents and mustelids
- nursery propagation – additive to potting mix and liquid fertiliser
- fungal and insect control – foliar protection of planted natives
- carbon/organic matter – mixed with bio-char from willows to boost carbon storage

This project promotes the concept of sustainability and traceability of “energy” flow within and between ecosystems – for instance, harvesting

nutrients in pest fish and using this as an organic fertiliser replacing artificial petro-based fertilisers to boost planted natives on sand dunes.

5. Coastal ecosystems reference database

The Coastal Restoration Trust initiated this online reference database two years ago, and was originally funded by the Department of Conservation's Terrestrial and Freshwater Biodiversity Information System (TFBIS). The Coastal Restoration Trust continues to fund updating of the database and currently has engaged university student Andrew La Cock to load a substantial number of additional references to the database, update links, and load pdfs.

This database is an online bibliography of literature and information focusing on understanding, restoration and management of coastal ecosystems in New Zealand.

To date, over 4000 coastal records are included in this database - over half have links to or PDFs of the abstract or full document. This reference database aims to make it easy to find information from both published and unpublished sources relevant to the restoration and management of our coastal ecosystems in New Zealand. Information from both historical and recent sources covers:

- coastal dune geomorphology
- native and exotic flora and fauna of our dunes
- scientific research
- practical aspects of protection, enhancement and management of our coastal dune systems
- other information relevant to restoration of our dunes and other coastal environments



The database is regularly updated. Please send in new references and advise of any corrections or further sources of relevant information. It's easy to use - go to the Coastal Restoration Trust's website:

<http://www.coastalrestorationtrust.org.nz/resources/coastal-reference-database>

A special acknowledgement is due to one of our founding trustees of the Coastal Restoration Trust Graeme La Cock who has provided, and continues to provide substantial references and sources of documents relevant to this database. The Database is managed by our trust's administrator Lyneke Onderwater, with assistance in updates by Michael Bergin.



Conference Fieldtrip Guide

Fieldtrips - Keeping Safe

Please note that the extended field trips on this conference will involve a number full day fieldtrips, outdoors and away from the conference venue.

The Day Two fieldtrip will include a 30min walk from Woodend Beach to Pegasus township (alternate vehicular option available) and the Day Three fieldtrip will include an optional approximately 90min walk (alternate bus option is available) from Godley Head to Taylors Mistake.

We will visit locations outdoors in environments that require you to be responsible about ensuring your own health safety. Please ensure that you:

- Have appropriate clothing to deal with the very variable weather conditions that can be encountered, from water-proof and warm clothing to hats and sun-block.
- Wear footwear appropriate for walking and providing proper grip on wet slippery surfaces.
- Have any medication and/or food/drink you may need on a trip of some hours.
- Keep within safety barriers, adhere to safety advisory signs and instructions, take care when crossing roads and keep a safe distance from hazards like steep drop-offs, fast flowing water or other areas that might present a safety risk.
- Inform the conference coordinators before you leave of any special medical conditions or needs for which you may require assistance.

If you don't have the right clothing, please ask a conference coordinator before you leave on the trip, so that assistance can be provided in finding appropriate gear.

Have an enjoyable, safe and healthy field trip!

Day One Fieldtrip: Wednesday March 22 – New Brighton

14:15 – 17:00

Join Christchurch City Council Parks staff on a “walk and talk” tour of the local New Brighton beach. Hear about the long history of human modification of the New Brighton dune system, see some of the dune restoration efforts and share some of the challenges of managing a heavily used urban coastline.

Natural History

The New Brighton coastline as we know it today is a fairly recent occurrence. Six to seven thousand years ago the coastline was at Kaiapoi, Fendalton and Riccarton. Sea levels were more than 150m higher than they are now, because 14,000 years ago a warmer climate melted the icecaps and glaciers, raising the sea level. Two thousand years ago the coastline was approximately 3–4km inland of the present shoreline. Sediment, eroded from the Southern Alps, has been washed down the rivers, building up the shoreline, slowly shifting it eastwards.

Human History

The Ōtautahi/Christchurch coastline was a source of fish, shellfish and seabirds for Maori, particularly Ihutai Avon-Heathcote Estuary and the wetlands of Brooklands Lagoon. Several thousand campsites have been found along the coastline, between Ihutai Avon-Heathcote Estuary and the Waikari River mouth in North Canterbury.

The European naming of New Brighton was apparently done on a 'spur of moment' decision by William Fee, an early settler of the area. When Guise Brittan, the Waste Lands Commissioner, visited the area in December 1860, he was recognised and Fee chalked 'New Brighton' on a wooden plank, supposedly in reference to his fellow settler Stephen Brooker, who had come from New Brighton in England.

The Māori name for the area is Kaiaua (kai means food and aua is Yellow-eye mullet) or O-ruapaeroa (an east wind blowing along the shore).

(From: Harper, Margaret (July 2011). "Christchurch Place Names". Christchurch City Libraries. pp. 131f.)

In the 19th Century, European settlers destroyed many of the coastal plants on the dunes, through burning and over-grazing. To try and stabilise the dunes large areas were planted with pine trees and marram grass. Today, restoration programmes on the coastal sand dunes are under way to replant areas with native sand-binding plants, such as pingao (golden sand sedge), spinifex (kowhangatara), cottonwood, milkweed (*Euphorbia glauca*), blue milkweed (*E. pepuls*), and sand coprosma (*waiuu-o-kahukura*).

The New Brighton Piers

There have been two New Brighton Piers. The first pier, built from timber was opened on 18 January 1894 after three years of construction. It was 700 feet long (210m). The pier fell into disrepair over the years and was demolished in 1965.



The Pier and Foreshore Society campaigned for many years to save the original pier but to no avail and the group continued lobbying for a new pier. When NZ\$2m had been raised, this was matched by funding from Christchurch City Council and a new pier was designed using reinforced concrete. The new pier was built in exactly the same location. It was officially opened on 1 November 1997.



It spans 300 metres, which makes it the longest pier in Australasia.

Day Two Fieldtrip: Thursday March 23 – Pegasus Bay
Kairaki – Woodend – Waikuku – Spencer Park



Tūhaitara Coastal Park stretches 10.5 kilometres along the Northern Pegasus Bay coastline from the Waimakariri, north to the Ashley Rakahuri Estuary. Covering approximately 700 hectares, the area is predominantly protection and plantation pine forest and sand dunes. However, it also comprises many natural features of local, regional and national importance including Tūtaepatu Lagoon, remnant vegetation, coastal freshwater wetlands and waterways connecting to the braided rivers and Regional Parks at either end.



Tūtaepatu Lagoon

Native fauna species range from marine mammals including seals and penguins, freshwater fish species including tuna, kowaro and inaka and birds including korimako, kotare, and koitareke.

The Park was established as an outcome of the settlement between Te Runanga o Ngāi Tahu and the Crown with the lands being gifted to the people of New Zealand.

This stretch of the coastline reflects many of the coastal protection and management issues around New Zealand ranging from dune building at the southern end to erosion and dune loss at the northern end, motor vehicle use, restoration costs and future coastal community protection.

Te Kōhaka o Tūhaitara Trust which manages the park has a 200-year mission to restore the lands to an indigenous coastal ecosystem while protecting and enhancing mahinga kai and upholding the mana of the Ngai Tahu Whanui.

The pillars that support our mission are culture, education, environment and recreation.

To date we have focussed on protecting and restoring our wetland biodiversity hubs, establishing our back-dune Biota Node project (micro ecosystem network) and developing and facilitating our own bicultural environmental education programme.

We have commenced work on the fore dune restoration and see this as a priority over the next decade.

This field trip will look at the areas of decline and growth in the dune systems, back dune wetlands and biota nodes, cross boundary issues and co-operation, cultural considerations and visit the nationally significant Tūtaepatu Lagoon and Ashley/Rakahuri Estuary.



Photo credit: Shane Orchard

Day Three Fieldtrip: Friday March 24 – Christchurch Coast
Godley Head – Taylors Mistake – Sumner – South New Brighton



Our day three field trip starts with a bus out to Godley Head where we will take a walk back to Taylor's Mistake Beach along some of Christchurch's coastal cliffs, stopping in at the Harris Bay White-Flipped Penguin colony and predator proof fence. This is a good hour-long walk and there will be the option of staying with the bus and catching up with the rest of the group at Taylor's Mistake.

Once at Taylors Mistake we will look at some of the dune restoration work that has been undertaken here by the CCC ranger team and volunteers.



Taylor's Mistake

From Taylor's it is a short trip over to Sumner beach to meet up with some of the Sumner Environment Group volunteers who have been working on the dune restoration in this area. We will also have a demonstration and discussion from David Bergin and Shane Orchard on dune monitoring techniques. Sumner will be our lunch stop for the day.

From Sumner we will bus around to Southshore Spit Reserve to look at some of the back dune restoration work that has been taking place after many parts were destroyed by fires over the last few years.

From here it's a quick stop in at some of South New Brighton's spinifex sites before heading back to the New Brighton working Men's club for the Conference rap up and Poroporoaki.



Sumner and Southshore Spit

Te Onepoto/Taylor's Mistake

The Māori name Te Onepoto, means short or little beach. In early European days the bay was originally known as Vincent's Bay but changed at some unknown time to Taylor's Mistake, owing to the master of a vessel running in here during the night-time, thinking he was about to pass over the Sumner Bar.



During World War II, hills above the beach were fortified with two machine gun posts, to guard the Godley Head coastal defence battery.

The Esplanade at Scarborough



The Sumner Esplanade and rock revetment at Scarborough Beach was constructed in stages from around the early 1930s through to the early 1950s. Prior to this the beach was backed by a sand dune system. The dunes succumbed to the early

popularity of Scarborough beach by becoming degraded due to vegetation loss, which resulted in inundation from coastal storms and damage from sand blown inland. Pressure was put on authorities to protect the adjacent beach front properties and construction of a seawall (well seaward of the dune system, seen pictured above) began in 1930.

The remaining sand dunes were further depleted during WW2 where military defensive works removed more of the natural dunes and replaced them with rocks and boulders. Over the next three decades the current revetment replaced the old seawall and was



topped by a promenade which now runs the entire length of Scarborough Beach. There has been very little in the way of high tide beach since 1952.

Six years of success - coastal restoration with the Sumner community (by Shane Orchard & Freya Colley)

Sumner Coastcare Project is a joint project between the local community and Christchurch City Council's coastal parks team. Its aim is to restore the coastal environment in the Sumner and Taylors Mistake area. Both beaches have suffered from dune degradation over the years, mainly due to the encroachment of land for development near the beach. For a time Sumner Beach had no dunes and sand from the beach blew onto the road. The dunes are now being restored to create a more natural beach habitat and help protect the coast from erosion by trapping sand.



In its natural state the sand dunes merged with lowland coastal forest types. Remnants are present at both sites and backdune restoration is one of the newer activities. Despite



being confined by other land-uses nearby there are good opportunities for improving ecological connectivity at these peri-urban sites. Streams naturally occur at both beaches and a recent focus is on improving these waterway connections. In floods they become more obvious. In between times the swales are good sites for re-establishing suitable plants.

Since 2011 we have been trialling a range monitoring techniques. The sites are monitored twice yearly and are showing great results. Two cases studies have been prepared with some of the details (see below). Some recent highlights include strong pīngao growth in our latest restoration area after

years of mixed success further down the beach, continued spinifex growth everywhere, and finally getting on top of lupins in our backdune restoration area.



Field tour highlights:

- History of this urban restoration site
- Stages of the project and results
- New backdune area and integration with the new surf club building
- Sand release and re-capture from marram remnants

* followed by Dune Monitoring Workshop.

More info:

Orchard, S. (2014). Potential roles for coastal protected areas in disaster risk reduction and climate change adaptation: a case study of dune management in Christchurch, New Zealand. In: Murti, R. and Buyck, C. (ed.) (2014). *Safe Havens: Protected Areas for Disaster Risk Reduction and Climate Change Adaptation*. Gland, Switzerland: IUCN. pp83-93

Orchard, S. (2015). Community-based approaches for restoring biodiversity in coastal parks. PANORAMA solutions for a healthy planet. IUCN WCPA. see <http://bit.ly/2IKYLVY>

Orchard, S. (2016). Community-led approaches and climate change: Perspectives from coastal restoration projects. In: *Adapting to the consequences of climate change: engaging with communities*. NZ Coastal Society Special Publication. Wellington: IPENZ. pp23-27. see <http://bit.ly/2loVYRf>

Sumner Coastcare blog www.sumnercoastcare.wordpress.com

Dune Monitoring Workshop

A hands-on workshop at Sumner Beach hosted by Shane Orchard (University of Canterbury, Waterlink Ltd) & David Bergin (Coastal Restoration Trust of New Zealand, Ecological Restoration Ltd)

Assessing the state of vegetation cover on sand dunes is a useful indicator of the degree of modification and also establishes a baseline so that changes can be monitored over time. These monitoring methods must be easy to use to promote uptake and also need to produce consistent repeatable results. The workshop will provide a quick overview of newly developed rapid methods for monitoring coastal vegetation (both cover and species composition) and dune profile. There will be a chance to give it a go on the dunes at Sumner Beach. We're also interested in collecting your feedback and suggestions for further improvements.



Greg Byrnes, General of Te Kohaka o Tuhaitara Trust, and Greg Bennett, Chair Coastal Restoration Trust of NZ, trialling transect point monitoring methods on foredunes at Woodend Beach.

A poem to end with Once by the Pacific

By Robert Frost

*The shattered water made a misty din.
Great waves looked over others coming in,
And thought of doing something to the shore
That water never did to land before.
The clouds were low and hairy in the skies,
Like locks blown forward in the gleam of eyes.
You could not tell, and yet it looked as if
The shore was lucky in being backed by cliff,
The cliff in being backed by continent;
It looked as if a night of dark intent
Was coming, and not only a night, an age.
Someone had better be prepared for rage.
There would be more than ocean-water
broken
Before God's last Put out the Light was
spoken.*

