COASTAL RESTORATION TRUST OF NEW ZEALAND
Tahuna Ora

Support the Coastal Restoration Trust of New Zealand

Research Partners are helping us achieve the aims of the Trust and our mission:

"To see the majority of New Zealand coasts restored and sustainably managed using indigenous species by 2050".

Why we need to restore our coasts?

Human modification of coastlines is common worldwide.

In New Zealand such impacts have been more significant than is commonly realised with major changes in coastal morphology, vegetation cover and composition, and natural coastal processes.

Seaside development, and the proliferation of engineering structures such as seawalls, cause adverse impacts on natural processes and in turn cultural and recreational use of our coasts. There are serious questions about the resilience and sustainability of modified coastlines in the face of climate change.

Natural plant successions in indigenous coastal plant and animal communities are now extremely rare. Only narrow zones of native vegetation remain in most places and much of the coastline is completely dominated by exotic species with no natural vegetation left at all.

The challenge is to manage our coasts in a cost-effective and sustainable manner. This is where the Coastal Restoration Trust – in collaboration with Research Partners and Coast Care groups – can make a real difference.

The role of Research Partners

Essential to the Coastal Restoration Trust is the ongoing financial support and in-kind input from our Research Partners. These include the Department of Conservation, regional, city and district councils, Coast Care groups, iwi, native plant nurseries, environmental consultants, coastal landowners, corporate sponsors, and other environmental networks.

Our Research Partners have three main roles:

1. **Identifying priority areas requiring research and technical advice** with a focus on restoring indigenous plant and animal biodiversity;
2. **Providing co-funding and in-kind support to the Trust** and leveraging central government funding for undertaking large projects aimed at restoring natural coastal form and function; and
3. **Facilitating community and managing agency involvement in projects** including disseminating scientifically robust practical information on the management of our coasts.

How have Research Partners contributed to coastal restoration?

Over the last two decades, funding support from Research Partners has enabled the Coastal Restoration Trust to:

- **Increase awareness of the degraded state of our natural coastal ecosystems** through coastal communities, managing agencies, and the general public;
- **Evaluate and deliver sustainable cost-effective options** that empower coastal communities with the knowledge and skills to restore natural form and function to coastal ecosystems with a focus on indigenous biodiversity;
- **Provide a robust scientific platform for restoration and management** of coastlines rather than relying on anecdotal information and untested procedures; and
- **Provide free technical guidelines** on community-based restoration and management of coastal environments.

Benefits for Research Partners

Our Research Partners hold a specific category of membership in the Coastal Restoration Trust of New Zealand (CRT).

Research Partners are able to:

- Identify and prioritise research proposals and undertake and/or disseminate in their region;
- Help leverage central government funding, sponsorship and philanthropic support;
- Develop further resources and facilitate action with our coastal communities;
- Contribute financially to our core research programme;
- Lead small and large-scale coastal restoration programmes in collaboration with community groups.

Check out what we have achieved with your help over the last two decades as well as current projects and proposals.

Our achievements to date speak for themselves.
They fall into two broad categories – **applied research** and **technology transfer.**

Applied research

A core component of the Trust's objectives is to coordinate and support research that has been identified as priority by our Research Partners. Research undertaken by the CRT has been adopted as standard best-practice in small and large-scale coastal restoration programmes nationwide, often led by Research Partners in collaboration with local community groups.

Research Partner and central government funders are indicated for each project including: Department of Conservation's Community Fund (DOC); Regional Councils (RC), District Councils (DC) and City Councils (CC); Ministry for Primary Industries' Sustainable Farming Fund (SFF); Ministry for the Environment's Community Environment Fund (CEF).

COMPLETED RESEARCH PROJECTS

Project *(Research Partner funding)*	**Management issue and research priority**	**Implementation and benefit**
Native sand binders on foredunes *(All local authorities, DOC)*	Developing practical low-cost methods for large-scale propagation and establishment of key native sand-binding plants, especially spinifex and pingao/pikao	Hundreds of thousands of sand-binders now raised in community-based and commercial nurseries annually for foredune planting nationwide
Fertiliser at planting *(All local authorities, DOC)*	Boosting growth of newly-planted sand-binders on foredunes by testing a range of slow-release fertilisers applied at planting	All Coast Care plantings incorporate slow-release fertiliser with sand-binders during planting, giving a 10-fold increase in biomass for as little as 10 cents/plant
Fertilising existing dunes *(Northland RC, Waikato RC, Christchurch CC)*	Boosting existing degraded native foredune vegetation	Large-scale applications of low-rates of fast-release fertiliser on foredunes now carried out by Coast Care groups to improve vigour
Sustainable harvesting of pingao *(DOC)*	Developing techniques for sustainable harvesting of pingao to provide fibre for cultural weaving purposes in collaboration with Maori	Weavers have adopted sustainable harvesting practices for pingao fibre. Iwi are involved in restoring foredunes to ensure pingao is available for weaving
Returning spinifex to Canterbury *(Christchurch CCl and Canterbury RC)*	Developing methods for re-establishment of the key native sand-binder spinifex to the Canterbury region where it became locally extinct in the 1940s	Spinifex successfully re-introduced to Canterbury where thousands of seedlings are currently being raised and planted by community groups at several beaches
Review of rabbit and hare control options *(DOC)*	Reviewing rabbit and hare control methods to determine practical options for use on sand dunes, including high-use recreational beaches	Information widely disseminated on effective practical control methods with large-scale control programmes introduced to most regions
Reshaping degraded dunes *(Taranaki RC)*	Establishment of the first documented mechanical reshaping trial of a degraded foredune and planting with native sand binders at Oakura Beach, Taranaki	Reshaping has been adopted for restoring severely degraded foredunes in many regions to restore natural dune form and function
Restoring difficult coastal sites *(DOC, Waikato RC)*	Significant difficulties and failures have been experienced on exposed coastlines and where significant weed problems occur	Step-by-step guidelines on restoration of challenging dune systems to avoid major losses of plants and other resources with case studies on high-energy exposed sites of the west coast of the North Island
Monitoring dunes *(CEF, DOC, Northland, Auckland, Waikato, BOP, Canterbury RCs, Christchurch CC, Timaru DC)*	Need for easy-to-use community-based methods for assessing and monitoring dunes to determine status of existing dune vegetation and quantify success of restoration efforts	Rapid-Point sampling guide using transects across dunes to sample vegetation cover and dune profile, with repeat surveys over time
Restoring backdunes *(DOC, all local authorities, CEF)*	Restoring degraded backdunes with greater diversity of species and plant communities	Practical guidelines for coastal groups published as 12 technical articles in the Coastal Trust Handbook on restoration of backdune sequence from mid to landward

COMPLETED RESEARCH PROJECTS and NEW PROPOSALS

Project or Proposal *(Partner)*	Management issue and research priority	Implementation and benefit
Pest fish as fertiliser *(CEF, Waikato RC)*	Koi carp is an invasive pest fish widespread in Auckland and Waikato regions, causing catastrophic habitat loss for native fauna and flora and decline in water quality. Led by Waikato RC, trapping and processing into fertiliser and other products is an option	Processed koi carp performs at least as well as commercial fertiliser tablets in Coast Care planting of native sand-binders as a viable organic alternative. Potential lure for predator control. Animal repellent applied to foliage of planted natives
Adaptive Management of exotic forest buffers *(Northland RC, Waikato RC, SFF)*	Extensive areas of exotic production forest with a protective buffer zone on dunes are at significant risk of catastrophic collapse	Exploring options to transform failing exotic buffers into sustainable buffer of native coastal forest in the face of expected impacts of climate change
Restoration of native coastal sequences, north Canterbury *(DOC, Canterbury RC, Te Kohaka o Tuhaitara Trust)*	No complete native coastal vegetation sequences remain in the Canterbury region, and few nationwide. An iwi-led project aims to demonstrate restoration of a coastal sequence from foredunes to inland native forest	Current project replacing pines and marginal pasture with native sand-binders on foredunes, shrublands, wetlands and lagoons in mid-zone, and landward coastal podocarp forest.
Spinifex seed viability *(proposal)*	Spinifex is a key native sand binder widely planted where there has been a significant decline in seed viability and germination success rates	Research into decline in seed viability and germination of spinifex to support ongoing Coast Care restoration programmes
Coastal citizen science capture *(proposal)*	There is no integration of data captured by community groups and individuals on vegetation types, bird sightings, coastal retreat and other consequences of climate change and loss of biodiversity	Proposal to develop an app and web-based science monitoring tools to collate, analyse and provide access to citizen science monitoring and restoration data for Coast Care groups and managing agencies
Interpreting the NZ Coastal Policy Statement (CPS) *(proposal)*	An easy-reference document is required by coastal managing agencies, Coast Care groups, landowners, iwi and developers to interpreting the Coastal Policy Statement	Proposed freely available resource providing guidance in applying the CPS consistently across coastal resource consent applications
Videos and workshops *(proposal)*	An urgent need for managing agencies and communities to adapt to climate change impacts. Need for expert advice and options on coastal management	Proposed series of videos and field-based workshops for coastal stakeholders to act now in adapting to climate change through planning, restoration and management

STUDENT RESEARCH

Year	Student	Project
2012	Susanne Krejcek, Victoria University of Wellington	Direct and indirect interactions of native and introduced species in coastal habitats
2013	Renee Johansen, University of Auckland	Scattered far and wide: A broadly distributed temperate dune grass finds familiar fungal root associates in its invasive range, A coastal sand dune in New Zealand reveals high arbuscular mycorrhizal fungal diversity, A native and an invasive dune grass share similar, patchily distributed, root-associated fungal communities
2014	Michael Fake, Lincoln University	Unmanned Aerial System derived Multi-Spectral Imagery for the Monitoring of Coastal Dune Plant Communities
2015	Shane Orchard, University of Canterbury	Coastal and Marine Citizen Science in New Zealand, Development of a fine-scale salinity model for the Avon Heathcote Estuary Ihutai
2016	Johannes Fischer, Victoria University of Wellington	South Georgian Diving Petrel/ Whenua Hou Diving Petrel: Nest selection, Artificial nests, New Species, Pest Control, Lizards and diving petrel burrow correlation
2017	Aidan McLean, Victoria University of Wellington	Histories and Mechanisms of Change in the Development of Shore Platforms at Kaikōura and Rodney, New Zealand: Application of Cosmogenic Nuclides and Numerical Modelling on Exposed Coastal Surfaces

Technology transfer

Wherever possible, the Trust provides a forum for the free exchange of information on sustainable management of coastal ecosystems, with emphasis on the use of native vegetation to restore natural character, form and function. Check out the substantial resources listed below on the Coastal Restoration Trust's website https://www.coastalrestorationtrust.org.nz/ developed with the help of Research Partners.

TECHNOLOGY TRANSFER AND PROMOTION		
TITLE*(Partner)*	**Information gap**	**Resources available**
Adapting coasts to Climate Change by local authorities *(Climate Change Office, all local authorities)*	Councils require information to provide local coastal communities with sustainable options to mitigate and adapt to the impacts of climate change	Published report outlining benefits of a community-based dune restoration as an adaptive approach to mitigate effects of sea level rise in a changing climate, and encourage councils to adopt community-based partnerships for successful dune restoration
Climate Change regional workshops *(CEF, all local authorities, DOC)*	Practical regional workshops on options for mitigating effects of climate change on coasts	Trust completed 12 highly successful workshops for local communities from Northland to Southland entitled *Empowering Coastal Communities to Adapt to Climate Change,* including technical presentations and field visits
Productive land adaption to Climate Change (NZ Landcare Trust, regional councils, SFF)	Need to highlight opportunities to integrate farming and productive forestry in coastal areas with natural values	Scoping study completed which summarises key existing and potential Climate Change issues for farming and production forestry on coastal dunes and estuarine wetlands, including case studies
Coastal Restoration Technical Handbook *(all local authorities, DOC)*	Online and hardcopy quick reference handbook articles on latest best-practice restoration and management of coasts	Technical Handbook on Coastal Restoration with over 30 articles available free online that can be updated as research projects are completed
Coast Care workshops *(all local authorities, DOC)*	Ongoing field-based workshops with coastal communities	The Trust provides contributing speakers and posters to community Coast Care networking days and a 101 coastal restoration workshop at each annual conference
Outreach programme for restoration of dunes *(DOC, Gisborne DC, Otago RC)*	Need to support councils at political, management and community levels to initiate and support coast care	Completed project providing technical support for Coast Care programmes in Gisborne/Tairāwhiti, and Otago aimed at encouraging development of self-sustaining coast care programmes
National Coastal Restoration Trust's Annual Conference *(local authorities, DOC)*	Essential sharing of knowledge, experiences, up-to-date research and visions for coastal restoration	A highlight each year for volunteer groups participating in regional roundups and field trips, along with research providers, other NGOs, local authorities, and government agencies
Coastal Reference Database *(TFBIS, DOC)*	Easy online bibliography of literature and information focusing on restoration and management of coastal ecosystems	To date, over 5000 coastal records are included in this database with links or PDFs and search function for published and unpublished sources on restoration and management of coastal ecosystems
Coastal Trust Newsletter and website *(local authorities, DOC)*	Provide regular updates on latest technical information and free downloads of research outputs, Restoration Handbook, and databases	Newsletter published twice a year with contributions by Research Partners. Most resources are available free on website : https://www.coastalrestorationtrust.org.nz/

Become a Research Partner

Join other local authorities and the Department of Conservation at the Coastal Restoration Trust and become a Research Partner to meet the challenges on our coasts in the face of loss of indigenous biodiversity and expected impacts of climate change.

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For more information on becoming a Research Partner please contact:
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