

COASTAL WETLAND BLUE CARBON IN AOTEAROA NEW ZEALAND

**An update of current
projects**

October 2025



Prepared by Helen Kettles on behalf of the coastal wetland blue carbon community.

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Introduction

The project catalogue focuses on identifying initiatives that would enhance carbon sequestration science, covering areas such as carbon stocks and sediment dynamics. It also includes broader, national-level projects, such as mapping coastal wetlands, which are crucial to provide a comprehensive national overview.

This updates the list of projects contained in Appendix 4 of the 2024 report entitled Coastal Wetland Blue Carbon in Aotearoa: current projects, reflections and recommendations for a community of practice¹. The 2024 report outlines the original process and also contains a discussion of key observations.

The updated table below provides details on all coastal wetland projects in Aotearoa New Zealand that we were aware of as at October 2025. The projects highlighted in grey are shown on Figure 1, while those with an asterisk alongside the project number do not have a carbon component. The first projects are those at specific locations (ordered roughly north to south), followed by large national-scale projects and various desktop exercises that are underway at regional and national scales. The last five projects are new to this update.

A full list of the agencies and groups involved in these projects, and their abbreviations as used in this table, can be found in the Agencies and groups section, while further details can be found in the individual project reports and papers listed in the Catalogue references section.

¹ Kettles H, Albot O, Lalor K, Nicol S. 2024. [Coastal wetland blue carbon in Aotearoa New Zealand: Current projects, reflections and recommendations for a community of practice](#). Wellington: The Nature Conservancy Aotearoa New Zealand and Department of Conservation

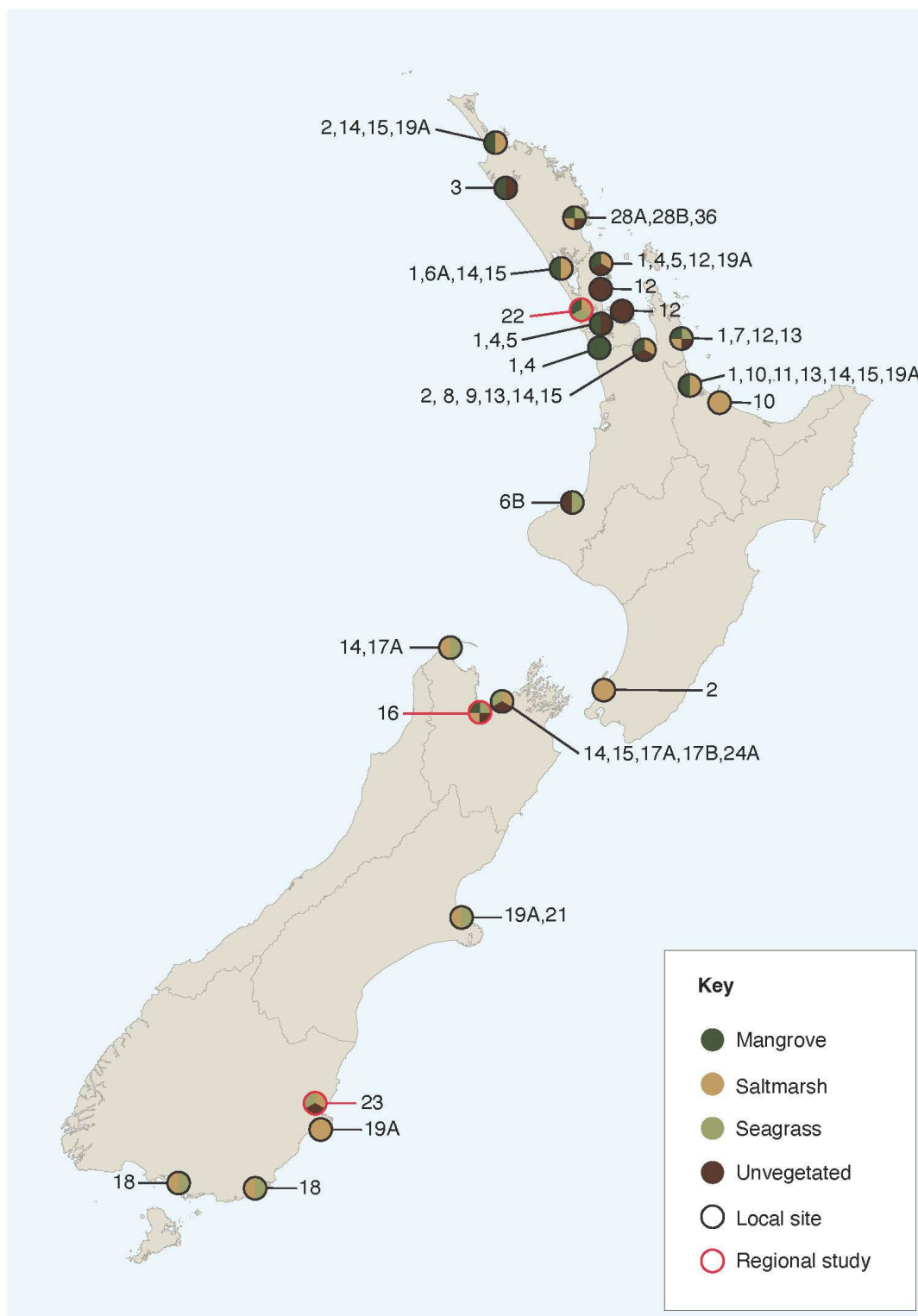


Figure 1. Locations where assessments of coastal wetland carbon stocks, sequestration rates and/or other coastal wetland blue carbon related information were available in 2025. The research type at each site is shown in the figure key. See the project table for more details.

Agencies and groups

The following agencies and groups have projects listed in the catalogue.

Iwi and hapū - Manaaki Te Awanui, Manawhenua ki Mohua, Ngāi Tahu, Ngāi Takato, Ngāti Apa ki te Rā Tō, Ngāti Kuri, Ngāti Mutunga, Ngāti Tama, Ngāti Kuri, Ngāti Mutunga, Ngāti Tama, Patuharakeke Te Iwi Trust, Te Ātiawa, Te Puuaha Hapū, Te Rarawa, Te Rūnanga o Ngāti Whakaue ki Maketū, Te Whānau o Tauwhao.

Environmental - Astrolabe Community Trust (Maketu), Conservation International, Forest & Bird (F&B), HealthPost Nature Trust, Live Ocean, Nelson Tasman Climate Forum, Parliamentary Commissioner for the Environment (PCE), Tasman Environmental Trust (TET), The Nature Conservancy Aotearoa New Zealand (TNC), Whaka-Ora Healthy Harbour.

Private - Art + Alchemy, Catalyst Fund (Royal Society), Friends of Nelson Haven & Tasman Bay Inc., Kidson Investments Ltd., Lauren Walker Ltd., NZ Andy, OneFortyOne, Pic's Peanut Butter, Port Nelson, Seagreen Ltd., Simplicity Foundation, Westpac NZ.

Central and local government - Auckland Council (AC), Bay of Plenty Regional Council (BOPRC), Department of Conservation (DOC), Environment Canterbury (ECAN), Environment Southland (ES), Ministry for Primary Industries (MPI), Ministry for the Environment (MfE), Ministry of Business, Innovation & Employment (MBIE), Nelson City Council (NCC), Northland Regional Council, Otago Regional Council (ORC), Taranaki Regional Council (TRC), Waikato Regional Council (WRC).

Research and education providers (Aotearoa) - Anderson Lloyd Beca, Bennion Law, Cawthron Institute (Cawthron), Ekos, Environmental Accounting Services, Lucas Associates, GNS Science (GNS), Jacobs, Manaaki Whenua - Landcare Research (MW-LR), National Institute of Water and Atmospheric Research Ltd. (NIWA), Nelson Marlborough Institute of Technology (NMIT), Pattle Delamore Partners (PDP), Salt Ecology, Tidal Research, University of Auckland (UOA), University of Canterbury (UOC), University of Waikato (UOW), Victoria University of Wellington (VUW).²

Research and education providers (international) - Deakin University – Blue Carbon Lab, Edith Cowan University, International Atomic Energy Agency, Macquarie University, University of Queensland, University of York, US Geological Survey.

Other - New Zealand Marine Sciences Society (NZMSS), Royal Society Te Apārangi, Foundation North.

² Note: in July 2025 science sector reforms merged and refocused New Zealand's 7 Crown Research Institutes (CRIs) into 3 Public Research Organisations (PROs). GNS and NIWA were merged into a new organisation Earth Sciences New Zealand. Manaaki Whenua – Landcare Research is now within the Bioeconomy Science Institute. The original CRI names are used in this catalogue for projects completed or started prior to 1 July 2025.

Acknowledgements

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Andrew Swales, Phoebe Stewart-Sinclair, Joe Prebble (Earth Sciences), Anna Berthelsen and Dana Clark (Cawthron Institute), Dayveen Stephens (Ngāti Tama), Jordan Goodrich and Deborah Burgess (Ministry for the Environment), Joseph Cook (Ngāi Takoto), Olya Albot (The Nature Conservancy Aotearoa New Zealand), Richard Bulmer (Tidal Research), Timothy Thomson, Jack Hamilton and Jade Visser (previously University of Waikato), Elizabeth Macpherson (University of Canterbury), Khulan Tumen (Forest and Bird).

Gratitude is also given to Pierre Tellier (Ministry for the Environment) and Catherine Jeffcoat (for The Nature Conservancy Aotearoa New Zealand) who reviewed the report.

Catalogue of coastal wetland related research in Aotearoa New Zealand, as at October 2025³

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
1	Mangrove carbon stocks and CO ₂ flux	Hātea River, Whangateau Harbour, Māngere Stream, Panmure Basin, Pahurehure Inlet, Waiuku River, Whangamatā Harbour, Tairua Harbour, Welcome Bay, Waikaraka Estuary, Matua, Uretara Stream	Collecting carbon sediment cores and carrying out flux chamber studies to quantify carbon stocks and greenhouse gas emissions	PhD thesis (Bulmer 2017), research papers	Market Development and Policy, Socio-Ecological Research	Degraded, pristine and expansion areas	Mangrove	No	Richard Bulmer (Tidal Research, lead); Carolyn Lundquist and Andrew Lohrer (NIWA); Luitgard Schwendenmann (UOA); WRC	UOA/NIWA PhD scholarship, WRC

³ Note: in July 2025 science sector reforms merged and refocused New Zealand's 7 Crown Research Institutes (CRIs) into 3 Public Research Organisations (PROs). GNS and NIWA were merged into a new organisation Earth Sciences New Zealand. Manaaki Whenua – Landcare Research is now within the Bioeconomy Science Institute. The original CRI names are used in this catalogue for projects completed or started prior to 1 July 2025.

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
2	Carbon stocks, sources and preservation within saltmarsh sediments Link: wgtn.ac.nz/antarctic/about/graduate-students/olya-albot	Rangaunu Harbour x2, Pāuatahanui, Pūkoro / Miranda	Collecting carbon stock data at 3 locations (5 survey sites), and measuring sequestration rates and other geochemical data to better understand the sources and preservation of organic carbon within saltmarsh sediments; performing two-dimensional (2D) modelling of saltmarsh and mangrove responses to sea level rise in Rangaunu Harbour	PhD thesis/ research papers (Dec 2025)	Market Development and Policy	Degraded, restored and unmodified	Saltmarsh	No	Olya Albot (VUW, lead); Richard Levy (GNS/VUW); Joss Ratcliffe (VUW)	VUW, GNS, DOC, MBIE, TNC
3	Hokianga Harbour sedimentation	Hokianga Harbour	Collecting sediment cores (up to 1.8 m long) at 7 sites within the middle to lower reaches of the harbour (as part of a wider study); analyses included the measurement of total organic carbon through the cores, stable isotope analyses to assess the source of the carbon (terrestrial versus marine – i.e. higher plants versus marine algae/plants); some radiocarbon dates were also obtained	Technical report (mid 2026)	Socio-Ecological Research, Te Ao Māori and Mātauranga Māori	Healthy and degraded	Mangrove, unvegetated	No	Kyle Bland (GNS, lead); Te Rarawa	MBIE Vision Mātauranga Capability Fund; GNS
4	Carbon capture by expanding	Whangateau Harbour, Mahurangi	Quantifying carbon stocks from 7 sites across the Auckland	Research paper (Bulmer et al. 2025)	Market Development and Policy,	Healthy	Mangrove	No	Richard Bulmer (Tidal Research), Peter Macreadie	NIWA, Deakin University –

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
	temperate mangrove forests Link: bluecarbonlab.org	Harbour, Bayswater, Hobson Bay, Point Chevalier, Māngare Inlet, Pahurehure Inlet	region where the mangrove extent has been increasing; sampling occurred between December 2018 and April 2019; the paper includes an estimate of carbon sequestration from mangrove expansion within the Auckland region		Socio-Ecological Research				(Deakin University – Blue Carbon Lab) (co-leads); Maria Palacios, Pawel Waryszak, Stacey Trevathan-Tackett (Deakin University – Blue Carbon Lab); Pere Masqué (International Atomic Energy Agency, Edith Cowan University); Carolyn Lundquist (UOA, NIWA); Luitgard Schwendenmann (UOA); Helen Kettles (DOC)	Blue Carbon Lab
5	Blue carbon characteristics across vegetated and non-vegetated coastal habitats in the Auckland region	Snells Beach, Hobson Bay (Auckland)	Quantifying the carbon stocks and nitrogen levels along transects from vegetated mangrove habitats to non-vegetated tidal flats in a muddy (Snells Beach) and sandy (Hobson Bay) estuary	PhD thesis (Wei 2022)	Market Development and Policy, Socio-Ecological Research	Range of states	Mangrove, unvegetated	No	Mengjie Wei (UOA, lead); Luitgard Schwendenmann, Carolyn Lundquist (UOA)	
6	Carbon transport and burial									GNS, Strategic Science Investment Fund
6A		Ruawai, North Kaipara	Assessing/ exploring ecosystem services in natural systems – social and environmental sciences	Technical report (Hita et al. 2024)	Empowering Communities, Te Ao Māori and Mātauranga Māori	Healthy	Saltmarsh, mangrove	No	Kyle Bland (GNS, lead); Annet Forkink, Di Bradshaw (GNS)	

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
6B		Urenui and Mimi estuaries	Examining sedimentation and catchment change (total organic carbon, stable isotopes, pollen analysis)	Technical reports (Clowes et al. 2024, early 2026)	Socio-Ecological Research, Te Ao Māori and Mātauranga Māori	Healthy	Saltmarsh, unvegetated	No	Kyle Bland (GNS, lead); Ngāti Mutunga; TRC	
7	Tairua carbon stocks and subsidies in saltmarsh, mangrove, seagrass and unvegetated habitats	Tairua Harbour	Collecting carbon sediment cores and conducting isotope studies to show where the carbon came from (4 transects through different habitats, 12 sampling locations in total)	Research paper (Bulmer et al. 2020)	Market Development and Policy, Socio-Ecological Research	Good quality	Saltmarsh, mangrove, seagrass, unvegetated	No	Richard Bulmer (Tidal Research), Carolyn Lundquist (NIWA, UOA) (co-leads); Hannah Jones, Mike Townsend (WRC); Fabrice Stephenson (NIWA); Jenny Hillman, Luitgard Schwendenmann (UOA)	
8	Firth of Thames project (in NIWA Catchments to Estuaries Strategic Science Investment Fund programme)	Firth of Thames	Investigating how wetlands will respond to sea level rise (e.g. rod surface elevation tables [RSETs] as a monitoring tool) and their resilience to storm events.	Research paper (2026)	Socio-Ecological Research	Range of states	Mangrove	No	Andrew Swales (NIWA, lead); Stephen Hunt (WRC); Ian McDonald (NIWA); US Geological Survey; University of Queensland	NIWA, WRC, MBIE Endeavour Fund (Future Coasts)
9	The spatial variability of elemental and isotopic compositions of carbon and nitrogen within sediments in mangroves at the Firth of Thames	Firth of Thames	Collecting sediment core samples along the entire coast, including from 80 sites in mangroves (plus 4 sites up the rivers), 4 sites in unvegetated tidal flats and 7 subtidal seabed sites; carbon stocks, sediment nitrogen and algal biomass were measured at all sites	MSc thesis (Ramirez-Matiz 2020)	Market Development and Policy, Coastal Wetland Habitat Protection and Restoration	Degraded to healthy	Mangrove, unvegetated	No	Yuliana Ramirez-Matiz (UOW, lead); Julia Mullarney (UOW)	UOW

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
10	Temporal variability of blue carbon stocks and sequestration rates across restored saltmarsh wetlands in the Bay of Plenty	Tauranga Harbour, Maketu Estuary	Collecting 12 cores from Tauranga Harbour (3 sites) and Maketu Estuary (3 sites); carbon stocks were measured (using bulk density, % carbon) and carbon dating was performed	Visser (2023)	Coastal Wetland Habitat Protection and Restoration, Market Development and Policy, Te Ao Māori and Mātauranga Māori	Stages of restoration varied temporally across sites	Saltmarsh	Yes	Jade Visser (UOW, lead); Astrolabe Community Trust (Maketu); Shari Gallop (UOW); Josie Crawshaw (BOPRC); Richard Bulmer (Tidal Research); Rewi Boy Corbett (Te Rūnanga o Ngāti Whakaue ki Maketū)	BOPRC, UOW, Astrolabe Community Trust (Maketu)
11	Tauranga Harbour saltmarsh carbon stocks	Tauranga Harbour (Katikati Inlet, Rereatukahia Estuary, Oikimoke Point)	Building an understanding of carbon stocks within existing saltmarsh habitats in Tauranga Harbour as a first step towards understanding the blue carbon restoration potential for the Bay of Plenty; this study was carried out in 3 saltmarshes of different ages and involves collecting blue carbon cores for loss-on-ignition, carbon/nitrogen, X-ray and radioisotope dating	Technical reports (Swales et al. 2024, 2025c, Crawshaw 2025)	Market Development and Policy, Coastal Wetland Habitat Protection and Restoration	Range of states	Saltmarsh	Yes	Shay Dean (BOPRC, lead); Josie Crawshaw (BOPRC); Andrew Swales (NIWA contract)	BOPRC
12	Unvegetated estuary blue carbon	Whangateau Harbour, Orewa River, Waiwera River, Waikōpua Creek, Tairua Harbour	Estimating carbon burial rates, the variability in intertidal sediment carbon accumulation and the role of macrofauna	Research paper (2026)	Socio-Ecological Research	Healthy	Unvegetated	No	Jack Hamilton (UOW, lead); Richard Bulmer (Tidal Research, MBIE Smart Ideas)	UOW, NIWA, AC, WRC, NZMSS

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
13	Microbial processes in mangrove forests, with a focus on the role of organic matter degradation in response to anthropogenic nutrient enrichment	Tauranga Harbour x11, Coromandel Harbour x12 (plus 1 manipulative experiment at Whangamatā Harbour), Firth of Thames x7	Undertaking in situ experiments at Whangamatā Harbour to understand how nutrients and land management affect sediment carbon processes in mangroves; includes a study at 30 sites of teabag decomposition rates (which relate to the impacts of carbon stocks and the sequestration potential)	PhD Thesis (Thomson 2024); research papers (Thomson et al. 2024; Thomson et al, 2025).	Socio-Ecological Research	Degraded to pristine	Mangrove	No	Timothy Thomson (UOW, lead); Prof. Joanne Ellis (UOW); Carolyn Lundquist (NIWA)	UOW, NIWA
14	TNC Coastal Wetland Blue Carbon Programme – Financial benefits of blue carbon	Wakapuaka River, Ruataniwha Inlet, Rangaunu x2, Waihi, Kaipara Harbour, Pūkoro / Miranda River	Testing the draft blue carbon accounting model (BlueCAM) methodology at 7 study sites to assess the potential credit return from restoration	Technical report summary (Oct 2025)	Market Development and Policy	Degraded	Saltmarsh	Yes	Olya Albot (TNC, lead); project partners (NCC, BOPRC, WRC, AC, DOC, landowners, iwi); subcontractors (NIWA, Tidal Research)	TNC
15	TNC Coastal Wetland Blue Carbon Programme – Carbon stocks and greenhouse gas monitoring in coastal environments	Wakapuaka River, Ruataniwha Inlet, Rangaunu x2, Waihi, Kaipara Harbour, Pūkoro / Miranda River	Measuring carbon stocks (7 sites), sequestration rates (2 sites) and greenhouse gas flux (5 sites) across degraded and intact saltmarsh sites	Technical report summary (Oct 2025)	Market Development and Policy, Socio-Ecological Research	Degraded, restored and unmodified	Saltmarsh	No	Olya Albot (TNC, lead); TNC; project partners (landowners, iwi); subcontractors (Cawthron; GNS; PDP; MW-LR)	TNC
16*	Cultural Health Indicators Framework	Ngāti Tama rohe	All coastal areas of the Ngāti Tama coastline	2025/27	Te Ao Māori and Mātauranga Māori	Degraded to pristine	Saltmarsh, mangrove, seagrass, unvegetated	No	Dayveen Stephens (Ngāti Tama)	

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
17	Core & Restore – Enhancing estuaries in Te Tau Ihu									
17A	Blue carbon pilot study Link: tet.org.nz/projects/blue-carbon-core-and-restore	Waimea Inlet, Farewell Spit/ Onetahua	Measuring how much blue carbon is stored in coastal ecosystems; assessing the benefits of protecting and restoring blue carbon ecosystems (fieldwork completed in 2022); engaging with businesses to contribute funds and develop interest in future carbon credit benefits; creating media stories to spread the word about the importance of blue carbon and biodiversity; working with iwi to create partnerships and understand the importance of tikanga (e.g. when obtaining core samples; there is Manawhenua ki Mohua involvement at Onetahua [Farewell Spit] to return the core samples to the land); Providing an opportunity to realise the cost for future restoration, but there is a need to identify funding to support	Technical report (Berthelsen et al. 2023), overall summary report (Walker 2023)	Market Development and Research, Empowering Communities, Coastal Wetland Habitat Protection and Restoration, Te Ao Māori and Mātauranga Māori	Primarily intact saltmarsh and seagrass; 1 site was under active restoration	Saltmarsh, seagrass	Yes	Lauren Walker (Lauren Walker Ltd for TET, lead); Anna Berthelsen, Sean Waters, Elaine Asquith, James Butler (Cawthron); Jen Skilton (Ngāti Apa ki te Rā Tō); Dan Chamberose, Sam Flewitt (Beca); Helen Kettles (DOC); NCC; HealthPost Nature Trust; Aaron Hemi (Ngāti Apa ki te Rā Tō); Makere Chapman, Ursula Passl (Manawhenua ki Mohua); Ian Shapcott, Daren Horne (Te Ātiawa); Andy McDonald (NZ Andy)	TET, Pic's Peanut Butter, NCC, Live Ocean, HealthPost Nature Trust, Kidson Investments Ltd, Nelson Tasman Climate Forum

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
17B	'Teabag' project Link: youtube/LqAu2pmmWK0	Waimea Inlet, Nelson Haven	continuation of the project and the writing of further outputs Undertaking a community citizen science project using teabags to assess decomposition rates; this included an assessment of bacterial assemblages associated with carbon sequestration potential in marine wetland sediments; cultural advisors worked alongside the community	Technical report (Zaiko and Pearman 2022)	Empowering Communities, Socio-Ecological Research, Te Ao Māori and Mātauranga Māori	Range of states	Saltmarsh, seagrass, unvegetated	No	Vikki Ambrose, Harry Allard (NCC, successive leads); TET; NMIT; Ngāti Apa ki te Rā Tō; Ngāti Kuia; Art + Alchemy; Cawthron (technical report)	NCC, Envirolink (MBIE)
17C *	Evaluating social outcomes Link: tet.org.nz/projects/blue-carbon-core-and-restore/	Nelson and Tasman regions	Evaluating social outcomes of the Core & Restore blue carbon pilot study	Technical report (Berthelsen et al. 2023)	Empowering Communities, Socio-Ecological Research	Primarily intact saltmarsh and seagrass; 1 site was under active restoration	n/a	No	See 17A, plus James Butler (Cawthron, technical lead for evaluating social outcomes)	See 17A
17D	Field monitoring protocol	Top of the South Island	Developing a community field core sampling protocol and guidance (fieldwork completed 2021/22)	Blue Carbon Field Protocol (Walker et al. 2023)	Empowering Communities	Primarily intact saltmarsh and seagrass; 1 site was under active restoration	Saltmarsh, seagrass, unvegetated	No	See 17A	See 17A

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
18	Drivers of blue carbon dynamics in saltmarsh ecosystems	Pounawea, Mokonoko Bay	Investigating the influence of sea level rise on carbon accumulation and stocks, and identifying the drivers responsible for carbon stock variability in restored saltmarshes; one of the regional case studies involved taking carbon core samples in the southern South Island	PhD thesis (McMahon 2023)	Market Development and Policy, Socio-Ecological Research	Degraded to healthy	Saltmarsh, seagrass	No	Lucy McMahon (University of York, lead); Roland Gehrels (University of York)	University of York
19	Future Coasts Aotearoa Link: niwa.co.nz/natural-hazards/research-projects/future-coasts-aotearoa								Overarching lead: Scott Stephens (NIWA), co-developed with Te Puuaha Hapū; partnership with Ngāi Takoto	MBIE Endeavour Fund
19A	Core analysis	Ashley River/ Rakahuri, Omaha Taniko Wetlands Scientific Reserve, Athenree, Sinclair Wetlands, Rangaunu Harbour	Collecting cores for carbon analysis and conducting isotope dating of the cores to understand rates of sequestration; RSETs are being installed in all sites	Presentations (Swales et al. 2025b, 2025c), research papers (2026)	Market Development and Policy	Range of states	Saltmarsh, mangrove, kānuka	No	Andrew Swales (NIWA, lead); BOPRC (partnering for installing RSET in its region); DOC (at Sinclair Wetlands)	

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
19B *	GIS project including coastal wetland data (desktop)	National	Compiling a national database of surveyed coastal wetlands (primarily through aerial images and ground-truthing); GIS layers also include LiDAR, land use type, cultural drainage, and infrastructure.	GIS layers (2026)	National Coastal Wetland Blue Carbon Strategy	n/a	Saltmarsh, mangrove, seagrass, unvegetated	No	Sanjay Wadhwa (NIWA)	
19C *	Modelling of sea level rise impacts on coastal wetlands	National	Modelling wetlands and intertidal change with sea level rise and sediment supply scenarios; Producing maps of where coastal wetlands might migrate to and any barriers to that movement (topography, roading,)	Presentations (Swales et al. 2025b, 2025c), GIS layer and research papers (2026)	National Coastal Wetland Blue Carbon Strategy	n/a	Saltmarsh, mangrove, seagrass, unvegetated	No	Andrew Swales (NIWA)	
19D *	Modelling of sea level rise impacts on groundwater	National	Developing a national model of groundwater salinisation and groundwater rise with sea level rise	Model, research papers (2026)	National Coastal Wetland Blue Carbon Strategy	n/a	n/a	No	Contact Scott Stephens	
19E *	(Desktop)	n/a	Creating a storyboard for the project	Web page (2025)	Empowering Communities	n/a	Saltmarsh, mangrove, seagrass, unvegetated	No	Contact Scott Stephens	

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
20*	NZ SeaRise – sea level rise projections Link: searise.nz; gns.cri.nz/news/vertical-land-movement-key-to-understanding-future-sea-level-rise	National	Making sea level rise projections for Aotearoa, accounting for vertical land deformation	GIS layers (2022)	Socio-Ecological Research	n/a	n/a	No	Tim Naish (VUW), Richard Levy (GNS) (co-leads)	MBIE Endeavour Fund
21	What are the risks and opportunities of blue carbon as a response to sea level rise in the Lyttelton Harbour basin? (desktop)	Lyttelton Harbour/ Whakaraupō	Examining the viability of blue carbon habitats throughout the Lyttelton Harbour basin to understand if sea level rise could have any positive or negative outcomes	Technical report (Price et al. 2021)	National Coastal Wetland Blue Carbon Strategy, Socio-Ecological Research, Coastal Wetland Habitat Protection and Restoration	Degraded to healthy	Saltmarsh, seagrass	No	Meghan Price, Hsin-Yu Miu, Hanna Lyford, Devon Ashcroft, Alex Hansby (UOC, co-leads); Di Lucas (Lucas Associates); Jillian Frater, Deirdre Hart, Jamie Shulmeister, Mads Thomsen, Shane Orchard (UOC); Justin Cope, Lesley Bolton-Ritchie (ECAN); Karen Banwell (Whaka-Ora Healthy Harbour)	UOC

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
22	Benefits, co-benefits and policy implications of restoring coastal wetlands in Auckland: a climate change perspective (desktop)	Auckland region	Assessing whether and how the mitigation and adaptation benefits of coastal wetlands could be integrated into urban land use decision making; the research reviews global and national knowledge, estimates the carbon sink potential of Auckland's coastal wetlands, and discusses policy and management responses	PhD thesis (Khodabakhshi 2017)	National Coastal Wetland Blue Carbon Strategy, Socio-Ecological Research, Market Development and Policy, Coastal Wetland Habitat Protection and Restoration	Degraded to healthy	Mangrove, saltmarsh, seagrass	No	Behnaz Khodabakhshi (UOA, lead); Stephen Knight-Lenihan, Marjorie Van Roon, Luitgard Schwendenmann (UOA); Catherine Lovelock (University of Queensland); Andrew Swales (NIWA); Neil Saintilan (Macquarie University); Peter Newsome (MW-LR)	UOA
23	Blue carbon habitat in the Otago region (desktop)	Otago region	Identifying the extent, and loss, of blue carbon habitats in 16 estuaries; Calculated estimates of the current above- and below-ground carbon stocks and sequestration rates.	Technical report (Ho et al. 2023)	National Coastal Wetland Blue Carbon Strategy, Socio-Ecological Research, Market Development and Policy, Coastal Wetland Habitat Protection and Restoration	Degraded to healthy	Saltmarsh, seagrass, unvegetated	No	Maureen Ho (contractor, lead); Anna Berthelsen, Dana Clark (Cawthron)	ORC

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
24	Restore the Meadows								Dana Clark, Anna Berthelsen (Cawthron, co-leads); partnership with local iwi, Port Nelson, OneFortyOne, UOW	Westpac NZ Government Innovation Fund, Simplicity Foundation, Catalyst Fund, Friends of Nelson Haven and Tasman Bay Inc., NCC, Port Nelson, OneFortyOne, UOW, Envirolink (MBIE)
24A *	(Field) Link: cawthron.org.nz/research/our-projects/seagrasses-restoration/#:~:text=Cawthron%20Institute%20has%20partnered%20with,change%20and%20improve%20ecosystem%20health	Nelson (Nelson Haven, Wakapuaka River, Waimea Estuary)	Developing new technologies for seagrass restoration	Reports (Clark and Berthelsen 2021; Hindmarsh and Hooks 2022; Fearn et al. 2023); Barr et al. 2024); PhD thesis (late 2026)	Coastal Wetland Habitat Protection and Restoration	Fairly healthy	Seagrass	No		
24B *	(Desktop)	National	Developing a Seagrass Restoration Blueprint	Report (Berthelsen et al. 2024)	Coastal Wetland Habitat Protection and Restoration	n/a	Seagrass	No		

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
25	Pre-feasibility assessment for a blue carbon voluntary market in Aotearoa; seagrass and saltmarsh sites around Aotearoa (desktop)	National	Undertaking a technical feasibility assessment for the application of voluntary carbon markets for saltmarsh and seagrass restoration	Report (Weaver et al. 2022)	Market Development and Policy	Degraded	Seagrass, saltmarsh	No	Olya Albot (TNC, lead); landowners; subcontractors Sean Weaver (Ekos), Anna Berthelsen (Cawthron), Tom Bennion (Bennion Law)	TNC

Link:

nature.org/en-us/about-us/where-we-work/asia-pacific/new-zealand/stories-in-new-zealand/blue-carbon

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
26	Contributions of coastal blue carbon to climate change mitigation (desktop)	National	Providing a preliminary estimate of the contribution of coastal blue carbon to climate change mitigation in Aotearoa	Research paper (Ross et al. 2023)	Socio-Ecological Research, Market Development and Policy	n/a	Mangrove, saltmarsh, seagrass	No	Finn Ross (Deakin University – Blue Carbon Lab, lead); Dana Clark, Anna Berthelsen (Cawthron); Olya Albot (VUW); Richard Bulmer (Tidal Research); Josie Crawshaw (BOPRC); Peter McCreddie (Deakin University – Blue Carbon Lab)	Deakin University – Blue Carbon Lab, Seagreen Ltd
	Link: youtube.com/watch?v=XvA1NnmDFbl ; newshub.co.nz/home/new-zealand/2023/09/scientists-uncover-how-blue-carbon-can-help-new-zealand-s-fight-against-carbon-emissions.html									
27	Coastal wetland blue carbon policy research in Aotearoa	National	Advancing the development of a blue carbon credit scheme in Aotearoa by exploring key aspects, including environment and planning law, greenhouse gas inventories and carbon trading, coastal land tenure and carbon rights, existing blue carbon schemes and methodologies, market demand and dynamics, and the co-benefits of	Jacobs, Environmental Accounting Services, Anderson Lloyd and Conservation International (2024)	Market Development and Policy	Degraded	Saltmarsh, mangrove, seagrass	No	Olya Albot (TNC, lead); partner Kate Hebblethwaite (MfE); subcontractors (Jacobs, Environmental Accounting Services, Conservation International, Anderson Lloyd)	TNC, MfE

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
28	Quantifying carbon sequestration and greenhouse gas emissions from blue carbon habitats in Aotearoa		blue carbon projects such as biodiversity conservation; this research will also be supported by engagements with central and local government and iwi						Richard Bulmer (Tidal Research, programme lead)	MBIE Smart Ideas
28A	Stocktake of historic carbon core data and new sampling (field and desktop)	Whangārei Harbour	Collecting core samples (to measure carbon stocks and sequestration rates), measuring greenhouse gas emissions and undertaking mapping for a variety of habitats; carrying out a stocktake of all historic carbon core and carbon flux data to calculate the average and variance for each habitat type (this includes sign work as part of UOW and UOA theses – e.g. Bulmer et al. 2015, 2016, 2020; Suyadi et al. 2020)	Research paper (Bulmer et al. 2024)	Market Development and Policy, National Coastal Wetland Blue Carbon Strategy	Degraded to pristine	Saltmarsh, mangrove, seagrass, unvegetated	No	Richard Bulmer (Tidal Research, lead); Phoebe Stewart-Sinclair, Orlando Lam-Gordillo, Carolyn Lundquist, Steph Mangan (NIWA); Karin Bryan, Jack Hamilton (UOW); partnering with Patuharakeke Te Iwi Trust Board via Taryn Shirkey (Patuharakeke Taiao unit)	

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
28B	BlueCAM (desktop)	Whangārei Harbour	Adapting the BlueCAM methodology to Aotearoa; determining a way to calculate the amount of carbon in sediments and relative credits from different restoration work, using Whangārei Harbour as a case study	Research paper (Bulmer et al. 2024)	Market Development and Policy, Coastal Wetland Habitat Protection and Restoration	Degraded to pristine	Saltmarsh, mangrove, seagrass, unvegetated	Yes	Phoebe Stewart-Sinclair (NIWA, lead); Richard Bulmer (Tidal Research); Orlando Lam-Gordillo, Carolyn Lundquist, Steph Mangan (NIWA); Jack Hamilton (UOW); partnering with Patuharakeke Te Iwi Trust Board	
28C *	Mapping (desktop)	National	Using satellites to map the extent of seagrass, mangroves and saltmarsh; using digital elevation models to predict tidal influence, along with land use and ownership, to identify degraded sites and restoration opportunities; restoration costs were collated from across Aotearoa, with the addition of some international data	Research paper (Bulmer et al. 2024), presentation (Sinclair-Stewart et al. 2025), spatial data (available on request from Earth Sciences)	Market Development and Policy, National Coastal Wetland Blue Carbon Strategy	Degraded to pristine	Saltmarsh, mangrove, seagrass	No	Phoebe Stewart-Sinclair (NIWA, lead); Richard Bulmer (Tidal Research); Orlando Lam-Gordillo, Carolyn Lundquist, Steph Mangan (NIWA); Jack Hamilton (UOW)	

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
28D	Barriers (desktop)	National	Undertaking a review of legal and policy barriers to coastal restoration within carbon emissions trading systems (voluntary and Emissions Trading Scheme)	Technical report (Stewart-Sinclair et al. 2024)	Market Development and Policy, National Coastal Wetland Blue Carbon Strategy	n/a	Seagrass, saltmarsh, mangrove	No	Phoebe Stewart-Sinclair (NIWA, lead); Richard Bulmer (Tidal Research); Orlando Lam-Gordillo, Carolyn Lundquist, Steph Mangan (NIWA); Karin Bryan, Jack Hamilton (UOW); Liz Macpherson (UOC); Taryn Shirkey (Patuharakeke Taiao unit)	
28E	Guidance (desktop)	National	Developing blue carbon management guidelines, a toolbox and infographics; the toolbox will include information on planting, hydrology management, unintended consequences, management considerations with climate change, and social and economic considerations	Research paper (Bulmer et al. submitted), Restoration guidance (NZJMFR Special Issue on coastal restoration, tbc).	Market Development and Policy, National Coastal Wetland Blue Carbon Strategy, Empowering Communities	Degraded	Saltmarsh, mangrove, seagrass, unvegetated	No	Richard Bulmer (Tidal Research, lead); Phoebe Stewart-Sinclair, Orlando Lam-Gordillo, Carolyn Lundquist, Steph Mangan (NIWA); Karin Bryan, Jack Hamilton (UOW); partnering with Patuharakeke Te Iwi Trust Board via Taryn Shirkey (Patuharakeke Taiao unit)	

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
29*	Using remote sensing to quantify coastal vegetation cover	National	Developing an open-source coastal vegetation mapping tool focusing on seagrass, macroalgae, mangroves and saltmarsh with an associated user guide; this will include documented case studies that demonstrate the relative accuracy of coastal vegetation detection using satellite imagery	Vegetation mapping tool and case studies (June 2026)	Market Development and Policy, National Coastal Wetland Blue Carbon Strategy	Degraded to pristine	Seagrass, mangrove, saltmarsh	No	Melanie Burns (ECAN, lead); Leigh Tait, Steph Mangan, Rose Pearson, Hamish Biggs, Hamish Sutton (NIWA); Sam Thomas (ORC); Nuwan DeSilva (ES); Josie Crawshaw (BOPRC)	Envirolink (MBIE)
30*	Transforming coastal monitoring	Auckland, Avon Heathcote, Jacobs River, New River/ Kaimata, Whangateau, Waikawa, Tauranga, Akaroa and Whangārei estuaries and harbours; Waimea and Delaware inlets; Mahurangi and Blueskin bays	Developing new tools for estuary health assessments using environmental DNA (eDNA) / microbial communities, which may provide insights into the microbial processes associated with carbon sequestration; developing a guidance document on how eDNA monitoring tools could be used alongside conventional monitoring and mātauranga Māori to assess estuary health	Research papers, technical reports (2025–2026)	Socio-Ecological Research	Degraded to pristine	Saltmarsh, mangrove, seagrass, unvegetated	No	Dana Clark (Cawthron, lead); in partnership with UOW, AC, Manaaki Te Awanui, Te Whānau o Tauwhao	MBIE Smart Ideas

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
31	Organic soils (desktop)	National	Updating the national map of organic soil extent using S-Map where available (with uncertainties); this is mostly relevant to inland wetlands, grasslands and croplands, but there may be some coastal overlap	Spatial layers, technical report (Pronger et al. 2025)	Market Development and Policy	Degraded to pristine	Saltmarsh	No	Deborah Burgess (MfE contact); Joel Gibbs (MPI, lead); Jordan Goodrich (MfE); MW-LR; UOW	MPI Greenhouse Gas Inventory Research Fund
32*	Wetland mapping – inland and coastal delineation Link: mpi.govt.nz/dmsdocument/57106-Greenhouse-Gas-Inventory-Research-Fund-2023-24-Priorities	National	Delineating inland and coastal vegetated wetlands, which is vital to implementing the 2013 IPCC wetlands supplement (IPCC 2014) for carbon credits; this project will develop an approach to extend the current New Zealand Land Use Map to capture all coastal wetlands, as the current boundaries are incorrect	Spatial layers, technical report (Harris et al. 2025)	Market Development and Policy	n/a	Saltmarsh, mangrove	No	Deborah Burgess (MfE contact); Joel Gibbs (MPI)	MPI Greenhouse Gas Inventory Research Fund

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
33	Organic carbon stocks and vulnerability in marine sediments (desktop) Link: pce.parliament.nz/explore/marine-organic-carbon	New Zealand exclusive economic zone scale (including harbours, estuaries, fiords)	Mapping the distribution of organic carbon in marine sediments around Aotearoa, and assessing its vulnerability to seafloor disturbance, particularly bottom trawling	Client report (Nodder et al. 2023), marine sediment organic carbon database, organic carbon distribution and vulnerability maps	Socio-Ecological Research	Degraded to pristine	Unvegetated	No	Scott Nodder (NIWA, lead); Geoffroy Lamarche (PCE); Scott Nodder, Sally Watson (NIWA)	PCE, NIWA, with extensive data provided by a wide range of people
34	Developing a quantitative dataset for blue carbon in coastal wetlands in Aotearoa New Zealand.	National	Development of a quantitative dataset on coastal wetland blue carbon in Aotearoa New Zealand. The primary purpose of the dataset is to inform a framework for potential inclusion of coastal wetlands into compliance and voluntary carbon credit schemes.	Technical report (late 2025)	Market Development and Policy	Degraded to pristine	Saltmarsh, seagrass, mangroves	No	Anna Berthelsen (Cawthron), Richard Bulmer (Tidal Research), Phoebe Stewart-Sinclair and Carolyn Lundquist (NIWA) (all co-leads)	MfE in partnership with TNC

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
35	Blue Carbon Futures in Aotearoa New Zealand: Law, Climate, Resilience https://elizabethmacpherson.co.nz/blue-carbon-futures	National, plus study locations in Canterbury and Southland	Includes representative place-based studies at different spatial scales to explore the various legal barriers, opportunities and risks of blue carbon; The programme will also explore comparative case studies, in-depth engagement with local communities and some desktop research.	End-user policy briefings, Ngāi Tahu Blue Carbon Blueprint, Research papers, Law and Policy book (all 2025-2030)	Market Development and Policy; Te Ao Māori and Mātauranga Māori	n/a	Saltmarsh, mangrove, seagrass	No	Elizabeth Macpherson (UOC, lead), John Reid (Ngāi Tahu Research Centre), Karen Fisher (UOA), Richard Bulmer (Tidal Research), Rachael Mortiaux and Claire Burgess (UOC),	Rutherford Discovery Fellowship Programme (2024-2029) – Royal Society Te Apārangi

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
36	Takahiwai Marae Stream and Wetland Restoration Proposal	Takahiwai, Whangārei	Wetland Restoration Project Aims – 1) Connect to a range of other foundational projects to restore mauri, reinvigorate hapū mātauranga and connections and build capacity; 2) Retire non-productive paddock from whānau block; 3) Measure carbon sequestration over time; 4) Establish Pa harakeke - access to plants for rongoa and raranga, other customary uses and practices; 5) Enhance habitat for taonga species eg. inanga, watercress, kawai; 6) “Future-proof” wetland by designing for future sea level rise to create resilience; 7) Enhance cultural landscape adjacent to Marae reservation.	Technical Wetland Design Plans and methodology (2025/26); Brief report and presentation at a future Community of Practice wānanga (2025/2026).	Te Ao Māori and Mātauranga Māori; Empowering communities; Coastal wetland habitat protection and restoration	Degraded	Pasture, saltmarsh, mangrove, tidal areas adjacent	Yes	Patuharakeke Te Iwi Trust (Te Pou Taiao – Julianne Chetham, David Milner, Steve Johnson); Richard Bulmer Tidal Research (co-leads); Rachel Hall (TNC)	TNC, Northland Regional Council, Foundation North, Patuharakeke Te Iwi Trust in-kind contribution
37	Coastal wetland blue carbon roadmap/vision	n/a	A vision and roadmap for coastal wetland blue carbon work in Aotearoa developed by the Community of Practice	Prebble et al. 2024, summary document (Dec 2026)	National Coastal Wetland Blue Carbon Strategy	n/a	Mangroves, saltmarsh, seagrass	No	Joe Prebble (GNS), Olya Albot (TNC) co-leads; Rachel Hall (TNC)	TNC

No	Title	Locations	Brief overview	Delivery output	Relevant pou	State of habitats	Habitats	Restoration project?	Team	Funding sources
38	Mātauranga Māori coastal wetland grants	tbc	Mātauranga grants to support iwi and hapū on coastal wetland restoration initiatives in their rohe	Wānanga (2026)	Te Ao Māori and Mātauranga Māori; Empowering communities	Degraded to pristine	Saltmarsh	tbc	Olya Albot (lead), Rachel Hall (TNC)	TNC

Catalogue references

Note that the following list is not intended as a review of all relevant literature in Aotearoa.

Barr J, Whittall S, Ho M, Clark D, Berthelsen A, Crossett D. 2024. 2023–24 Nelson-based seagrass flower surveys to inform seed-based restoration in Aotearoa New Zealand. Nelson: Cawthron Institute. Cawthron Report 4101. Prepared with funding from the Westpac New Zealand Government Innovation Fund, Port Nelson Limited, OneFortyOne, Friends of Nelson Haven and Tasman Bay, Simplicity Foundation and a Royal Society Catalyst Grant. [Project 24A]

Berthelsen A, Walker L, Skilton J, Chamberose D, Flewitt S, Waters S, Asquith E, Butler J, Kettles H. 2023. Sediment organic carbon stocks in coastal blue carbon habitats: pilot study for Te Taihu. Prepared for Tasman Environmental Trust. Cawthron Report No. 3867. Nelson: Cawthron Institute. [Projects 17A and 17C]

Berthelsen A, Crossett D, Ho M, Brett E, Clark D. 2024. A blueprint for seed-based seagrass restoration in Aotearoa New Zealand. Nelson: Cawthron Institute. Cawthron Report 4011. [Project 24B]
https://www.researchgate.net/publication/380264132_A_blueprint_for_seed-based_seagrass_restoration_in_Aotearoa_New_Zealand_Summary#fullTextFileContent

Bulmer RH. 2017. Mangrove ecosystem dynamics and clearance impacts [Phd dissertation]. Auckland: University of Auckland. [Project 1]
researchspace.auckland.ac.nz/handle/2292/32250.

[Bulmer R, Flowers G, Albot O, Bryan K, Lam-Gordillo O, Macpherson E, Shao Z, Shirkey T, Stewart-Sinclair P, Lundquist C. \(Submitted\). Potential contribution of blue carbon ecosystems to Aotearoa New Zealand's climate response strategy. New Zealand Journal of Marine and Freshwater Research. \[Project 28E\]](#)

Bulmer RH, Lundquist CJ, Schwendenmann L. 2015. Sediment properties and CO₂ efflux from intact and cleared temperate mangrove forests. *Biogeosciences*. 12(20):6169–6180. [Project 28A]
[researchspace.auckland.ac.nz/bitstream/handle/2292/30474/Bulmer%20et%20al.%202015 Biogeosciences.pdf?sequence=28&isAllowed=y](https://researchspace.auckland.ac.nz/bitstream/handle/2292/30474/Bulmer%20et%20al.%202015%20Biogeosciences.pdf?sequence=28&isAllowed=y).

Bulmer RH, Schwendenmann L, Lundquist CJ. 2016. Carbon and nitrogen stocks and below-ground allometry in temperate mangroves. *Frontiers in Marine Science: Global Change and the Future Ocean*. 3(150). [Project 28A]
frontiersin.org/articles/10.3389/fmars.2016.00150/full.

Bulmer RH, Stephenson F, Jones H, Townsend M, Hillman J, Schwendenmann L, Lundquist CJ. 2020. Blue carbon stocks and cross-habitat subsidies. *Frontiers in Marine Sciences*. 7(380). [Projects 7 and 28A]
frontiersin.org/articles/10.3389/fmars.2020.00380/full.

Bulmer RH, Palacios MM, Masque P, Lundquist CJ, Schwendenmann L, Trevathan-Tackett SM, Waryszak P, Kettles H, Macreadie PI. 2025. Carbon capture by expanding temperate mangrove forests. *Estuarine, Coastal and Shelf Science* 323: 109415. 11 p. [Project 4] <https://www.sciencedirect.com/science/article/pii/S0272771425002938>

[Bulmer RH, Stewart-Sinclair P, Lam-Gordillo O, Mangan S, Schwendenmann L, Lundquist CJ. 2024. Blue carbon habitats in Aotearoa New Zealand—opportunities for conservation, restoration, and carbon sequestration. *Restoration Ecology*. 32\(7\), e14225. \[Projects 28A, 28B and 28C\] <https://onlinelibrary.wiley.com/doi/10.1111/rec.14225>](#)

Clark D, Berthelsen A. 2021. Review of the potential for low impact seagrass restoration in Aotearoa New Zealand. Prepared for Nelson City Council under Envirolink advice grant 2146 NLCC119. Cawthron Report No. 3697. Nelson: Cawthron Institute. [Project 24A] envirolink.govt.nz/assets/Envirolink/2146-NLCC119-Review-of-the-potential-for-low-impact-seagrass-restoration-in-Aotearoa-New-Zealand.pdf. [Project 24A]

Clowes CD, Kennedy EM, Arnot MJ, Bland KJ, Dahl JA, Te Koha TA, McKay AM, McElroy T. 2024 Late Holocene vegetation history from a new sediment core, Urenui River, Taranaki, New Zealand. Lower Hutt, NZ: GNS Science. GNS Science report 2024/46. 36 p.; [Project 6B] doi: https://shop.gns.cri.nz/sr_2024-46-pdf/

Crawshaw J. 2025. Blue carbon potential: current and future sequestration in Bat of Plenty's marine habitats, Bay of Plenty Regional Council Environmental Publication 2025/02. 14 p. [Project 11] <https://atlas.boprc.govt.nz/api/v1/edms/document/A4884489/content>

Fearn D, Hudson I, Clark D, Berthelsen A, Crossett D, Ho M. 2023. Research to inform seed-based seagrass restoration in Aotearoa New Zealand. Cawthron Report No. 3994. Nelson: Cawthron Institute. [Project 24A]

Harris L, Belliss S, Pairman D, Sutherland A, Curwen G. 2025. Delineating inland and coastal wetlands. Prepared for the Ministry for Primary Industries by Manaaki Whenua – Landcare Research. 2023 Greenhouse Gas Inventory Research (GHGIR) Funding Agreement 407149. MPI Technical Report [Project 32]

Hindmarsh B, Hooks R. 2022. Research to inform seagrass restoration in Aotearoa. A Cawthron undergraduate summer scholar report. Cawthron Report No. 3775. Nelson: Cawthron Institute. [Project 24A] researchgate.net/publication/365409572_Research_to_inform_seagrass_restoration_in_Aotearoa#fullTextFileContent.

Hita B, Nathan R, Retimana T, Toka H, Le Gros G, Hammon J, Bradshaw D, Olsen G, Dumaru P. 2024. A marae-based approach to climate-change adaptation: Te Kowhai, Naumai and Parirau Marae, Ruawai, Te Tai Tokerau Northland Region. Lower Hutt, NZ: GNS Science. GNS Science report 2024/15. 95 p.; [Project 6A] doi: [10.21420/J3P4-AN57](https://doi.org/10.21420/J3P4-AN57)

Ho M, Berthelsen A, Clark D. 2023. Blue carbon habitats in the Otago Region. Prepared for Otago Regional Council. Cawthron Report No. 3963. Nelson: Cawthron Institute. [Project 23]

- [IPCC] Intergovernmental Panel on Climate Change. 2014. 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands. Hiraishi T, Krug T, Tanabe K, Srivastava N, Baasansuren J, Fukuda M, Troxler TG, editors. Switzerland: IPCC. [Project 32]
ipcc.ch/publication/2013-supplement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories-wetlands.
- Jacobs, Environmental Accounting Services, Anderson Lloyd and Conservation International. 2024. Coastal wetland blue carbon policy research in Aotearoa. Prepared for the Ministry for the Environment and The Nature Conservancy. [Project 27]
<https://environment.govt.nz/publications/coastal-wetland-blue-carbon-policy-research-in-aotearoa/>
- Khodabakhshi B. 2017. Benefits, co-benefits and policy implications of restoring coastal wetlands in Auckland: a climate change perspective [dissertation]. Auckland: University of Auckland. [Project 22]
researchspace.auckland.ac.nz/handle/2292/36904.
- McMahon L. 2023. Drivers of blue carbon dynamics in saltmarsh ecosystems [dissertation]. York: University of York. [Project 18] <https://etheses.whiterose.ac.uk/id/eprint/33602/>
- Nodder S, Watson S, Davidson S, Frontin-Rollet G, Woelz S. 2023. Organic carbon stocks and potential vulnerability in marine sediments around Aotearoa New Zealand. Prepared for Parliamentary Commissioner for the Environment. NIWA Client Report No: 2023162WN. Wellington: National Institute of Water & Atmospheric Research Ltd. [Project 33] pce.parliament.nz/media/cdoodc0l/niwa-organic-carbon-stocks-and-potential-vulnerability-in-marine-sediments-around-aotearoa-new-zealand.pdf.
- Prebble JG, Grant GR, Cradock-Henry NA, Albot O, Berthelsen A, Bulmer R, Gallop SL, Lundquist C, Macpherson E, McLeod R. 2024. Carbon sequestration in coastal wetlands: applying systems thinking in support of strategy development. Lower Hutt, NZ: GNS Science. GNS Science report 2024/41. 12 p. [Project 37]
<http://dx.doi.org/10.21420/N855-4M66>
- Price M, Miu H, Lyford H, Ashcroft D, Hansby A. 2021. What are the risks & opportunities of blue carbon as a response to sea level rise in the Lyttelton Harbour basin? Christchurch: University of Canterbury. [Project 21]
- Pronger J, Price R, Glover-Clark G, Campbell D. 2025. A national-scale map of organic soil nutrient status. Prepared for Ministry for Primary Industries. Manaaki Whenua Contract Report: LC4591. [Project 31]
- Ramirez-Matiz Y. 2020. The spatial variability of elemental and isotopic compositions of carbon and nitrogen within sediments in a subtropical mangrove forest [master's thesis]. Hamilton: University of Waikato. [Project 9]
<http://researchcommons.waikato.ac.nz/handle/10289/13900>
- Ross FW, Clark DE, Albot O, Berthelsen A, Bulmer R, Crawshaw J, Macreadie PI. 2023. A preliminary estimate of the contribution of coastal blue carbon to climate change

- mitigation in New Zealand. *New Zealand Journal of Marine and Freshwater Research*. [accessed 2023 Nov 27]:[11 p.]. [Project 26]
[tandfonline.com/doi/full/10.1080/00288330.2023.2245770?src=](https://doi.org/10.1080/00288330.2023.2245770?src=).
- [Stewart-Sinclair PJ, Bulmer RH, Macpherson E, Lundquist CJ. 2024. Enabling coastal blue carbon in Aotearoa New Zealand: opportunities and challenges. *Frontiers in Marine Science*, 11. \[Project 28D\] <https://doi.org/10.3389/fmars.2024.1290107>](#)
- Stewart-Sinclair P, Qu Z, Lam-Gordillo O, Bulmer R, Cummings V. Submitted. Valuing the co-benefits of Blue Carbon Ecosystems in Aotearoa New Zealand. *New Zealand Journal of Marine and Freshwater Research*. [Projects - various]
- [Stewart-Sinclair P, Zabarte-Maeztu I, Rautenbach C, Swales A. 2025. Estuaries under a changing climate: adaption and restoration opportunities for coastal wetlands. *New Zealand Coastal Restoration Trust Annual Conference*, 11-14 March 2025, Tolaga Bay, Tairāwhiti. \[Projects - various\]](#)
- Suyadi, Gao J, Lundquist CJ, Schwendenmann L. 2020. Aboveground carbon stocks in rapidly expanding mangroves in New Zealand: regional assessment and economic valuation of blue carbon. *Estuaries and Coasts*. 43:1456–1469. [Project 28A]
link.springer.com/article/10.1007/s12237-020-00736-x.
- [Swales A, Lundquist CJ. 2024. Mangrove habitat extent and quality. In: Lohrer, D., et al. *Information Stocktakes of Fifty-Five Environmental Attributes across Air, Soil, Terrestrial, Freshwater, and Estuarine/Coastal Domains*. Prepared by NIWA, Manaaki Whenua Landcare Research, Cawthron Institute, and Environment Limited for the Ministry for the Environment. NIWA report no. 2024216HN \(project MFE24203, June 2024\). \[Relevant but project not included in the catalogue\]](#)
- Swales A, Olsen G, Jung R, Greenfield B, Crump M, McMonagle M, Broadhead A. 2024. Evaluation of blue carbon sequestration in salt marsh habitats, Tauranga Harbour. NIWA Client Report No: 2024197HN. Prepared for Bay of Plenty Regional Council June 2024. 63 p. + appendices. [Project 11]
<https://atlas.boprc.govt.nz/api/v1/edms/document/A4764185/content>
- Swales, A, Olsen G, Jung R, Greenfield B, Crump M, McMonagle M, Broadhead A, Carter K. 2025a. Evaluation of blue carbon sequestration in salt marsh habitats, Tauranga Harbour Stage 2 study. NIWA Client Report No: 2025110HN. Prepared for Bay of Plenty Regional Council June 2025. 81 p. + appendices. [Project 11]
- [Swales A, Zabarte-Maeztu I, Stewart-Sinclair P, Buffington K, Carr JA, Guntenspergen GR, Carter K, Hattingh R, MacDonald IT, Bind J, Havelaar P, Goodmanson F, Hailes S, Krauss K, Thorne KM, Lovelock CE 2025b. Blue carbon stocks in Aotearoa New Zealand's coastal wetlands and prospects under rising sea levels. *NZMSS, Conference, July 2025*. \[Projects 19A and 19C\]](#)
- [Swales A, Zabarte-Maeztu I, Stewart-Sinclair P, Tanner C, Carter K, Hattingh R, Olsen G, Hitchcock D, Hailes S, MacDonald I, Bind J. 2025c. Future Coasts Aotearoa. *Informing*](#)

- [adaption and restoration opportunities for coastal wetlands. Invited presentation to the Bay of Plenty Wetland Forum, BoPRC, Whakatane, 1 April 2025. \[Projects 19A and 19C\]](#)
- Thomson, T. 2024. Effects of anthropogenic land use on temperate mangrove forests [PhD dissertation]. The University of Waikato. [Project 13]
- Thomson T, Ellis JI, Fusi M, Prinz N, Lundquist CJ, Bury SJ, Shankar U, Cary SC, Pilditch CA. 2024. Effects of catchment land use on temperate mangrove forests. *Science of The Total Environment* 940: 173579. [Project 13]
<https://doi.org/10.1016/j.scitotenv.2024.173579>
- Thomson T, Pilditch CA, Fusi M, Prinz N, Lundquist CJ, Ellis, JI. 2025. Vulnerability of Labile Organic Matter to Eutrophication and Warming in Temperate Mangrove Ecosystems. *Global Change Biology* 31(2). 13 p. [Project 13]
<https://onlinelibrary.wiley.com/doi/epdf/10.1111/gcb.70087>
- Visser JS. 2023. Variability of blue carbon stocks in restored saltmarsh wetlands: Bay of Plenty, Aotearoa New Zealand. [Masters thesis]. The University of Waikato. [Project 10]
- Walker L. 2023. Core & Restore project pilot: overview, results and next steps. Prepared for Tasman Environmental Trust. Nelson: Lauren Walker Ltd. [Project 17A]
- Walker L, Berthelsen A, Chamberose D, Ambrose A, Skilton J, Waters S, Asquith E, Flewitt S. 2023. Core & Restore project pilot: field protocol. Nelson: Tasman Environmental Trust. [Project 17D]
- Weaver S, Berthelsen A, Schattschneider J, Bennion T. 2022. Feasibility assessment: Aotearoa New Zealand blue carbon resilience credit projects. Report to The Nature Conservancy. Christchurch: Ekos. [Project 25].
https://www.nature.org/content/dam/tnc/nature/en/documents/FeasibilityAssessmentofBlueCarbonOpportunitiesinNewZealand_reduced.pdf
- Wei M. 2022. Blue Carbon characteristics across vegetated and non-vegetated coastal habitats in the Auckland Region, New Zealand [dissertation]. Auckland: University of Auckland. [Project 5]
researchspace.auckland.ac.nz/bitstream/handle/2292/65453/Wei-2022-Thesis.pdf?sequence=4.
- Zaiko A, Pearman J. 2022. Bacterial assemblages associated with carbon sequestration potential in marine wetland sediments. Prepared for Nelson City Council. Cawthron Report No. 3845. Nelson: Cawthron Institute. [Project 17B]