Research projects

Research Provider: Project title (Funding organisation)	Delivery	Key research outcomes	Location/species of interest
University of Otago: **Rediscovering fisheries-habitat relationships within customary protection areas** (MBIE 2018 Smart ideas funding)	2019	• Incorporate Mātauranga Maori and marine mapping to help understand the relationship between key fisheries and their habitat • Provide information to optimise protection during any future allocation of management areas • Create a baseline to assess habitat change over time	Kaikoura, East Otago and Rakiura (Stewart Island) regions
University of Otago, Te Runanga o Ngai Tahu: **Using Mātauranga to inform management strategies for customary finfish fisheries** (MBIE 2016 Vision Mātauranga Capability fund)	2019	• Develop and strengthen relationships, capability, and resources to provide better management for finfish using Mātauranga and modern scientific tools • Provide Mātauranga informed quantitative survey tools and capability to tangata tiaki/kaitiaki to estimate key metrics of local fish populations.	Patiki (flounder) and rawaru (blue cod), South Island
Craig Stevens (NIWA/University of Auckland): **Stressor footprints and dynamics** (Sustainable Seas National Science Challenge)	2019	• Investigate how stressors from land use or coastal ecosystems connect with the wider marine environment	Tasman and Golden Bay
Sean Handley (NIWA): **Estimating historic effects from sedimentation and fishing** (Sustainable Seas National Science Challenge)	2019	• Investigate whether sedimentation and bottom contact fishing have contributed to the decline of green-lipped mussel, oyster and scallop fisheries • Determine where historic land-use sediment came from • Investigate the effects of bottom contact fishing on sediment structure	Green-lipped mussel, oysters, and scallops, Tasman and Golden Bay

Ian Tuck (NIWA): **Ecosystem models of Tasman and Golden Bay** (Sustainable Seas National Science Challenge)	2019	• Model dynamics and flow-on effects from changes in the environment or its management • Explore the implications of a range of environmental and management scenarios	Scallops, Tasman and Golden Bay
Carolyn Lundquist (NIWA/University of Auckland): **Spatially-explicit decision support tools** (Sustainable Seas National Science Challenge)	2019	• Model trade-offs between preserving and using marine resources • Model cumulative effects of multiple disturbances (such as fishing and sedimentation) on animals living on the seafloor • Develop techniques to assess whether uncertainty will affect model outcomes	Tasman and Golden Bay
Graeme Inglis (NIWA): **Novel risk assessment tools for EBM** (Sustainable Seas National Science Challenge)	2019	• Review new methods for risk assessment to see if they can be applied to ecosystem-based management of marine areas • Assess and manage risks to the marine environment from changing patterns of human use • Explore how mātauranga Māori can be incorporated into risk assessments and management • Determine management strategies that are most 'robust' to threats	NA
Frank Hippolite (Tiakina Te Taiao): **He Pou Tokomanawa - kaitiakitanga in practice in our marine environment** (Sustainable Seas National Science Challenge)	2019	• Enable a pathway for mana whenua iwi, to exercise their kaitiaki role over Te Tai-o-Aorere and Mohua • Develop a co-designed approach and robust ethics process to draw on mātauranga Māori expertise to contribute to wider ecosystem-based management (EBM) tools	NA
Anne-Marie Jackson (University of Otago): **Hui-te-ana-nui: Understanding kaitiakitanga in our marine environment**	2019	• Use kaupapa Māori and critical discourse analysis to examine mātauranga associated with the marine environment • Identify themes that are important to consider when making decisions about the marine environment	NA

(Sustainable Seas National Science Challenge)			
Drew Lohrer (NIWA): **Measuring ecosystem services and assessing impacts** (Sustainable Seas National Science Challenge)	2019	• Develop ways to measure the provision of refuge habitat that supports young finfish and shellfish and the removal of pollutants, specifically nutrients, from our coastal waters. • Predict and map variation in the amount of refuge habitat in the Hauraki Gulf and in the Marlborough Sounds.	Hauraki Gulf, Marlborough Sounds
Steve Wing (University of Otago): **Ecosystem connectivity: tracking biochemical fluxes to inform EBM** (Sustainable Seas National Science Challenge)	2019	• Provide information on the connections that are vital for productive, healthy ecosystems • Determine environmental change and removal of marine resources on the food web structure of coastal and offshore fisheries from pre-industrial to present times • Determine how changes in land-use have influenced uptake of organic matter and contaminants by bivalve populations • Investigate how waste materials from salmon farming operations are taken up and processed by natural food webs	Shellfish, including cockles, mussels, scallops and horse mussels
Simon Thrush (University of Auckland): **Tipping points in ecosystem structure, function, and services** (Sustainable Seas National Science Challenge)	2019	• Investigate the effects of multiple stressors and cumulative impacts on marine ecosystems	National
Malcom Clark (NIWA): **Sediment tolerance and mortality thresholds of benthic habitats** (Sustainable Seas National Science Challenge)	2019	• Determine the level of suspended sediment that has an impact on deep-sea species	Dog cockle, sponge (*Crella incrustans*)

NIWA: **Nga Tai ki Uta – Seas to the Mountains** (MBIE 2019 Vision Mātauranga Capability fund)	2020	• Develop research capability and capacity of hapu kaitiaki in estuarine and coastal domains • Co-develop a cultural assessment framework for freshwater systems • Define the unique freshwater context, values, uses and opportunities of Tauranga hapū to build capability and train kaitiaki in relevant existing tools and develop novel hapu driven approaches • Nurture the next generation of hapu kaitiaki	Tauranga
NIWA: **Nga takapu ruku moana o Ngati Awa** (MBIE 2018 Vision Mātauranga Capability fund)	2020	• Develop a hands-on marine cultural monitoring approach underpinned by te-Mātauranga-o-Ngati-Awa for implementation in the rohe moana • Establish new ways for monitoring marine taonga species in coastal reefs and inshore islands	Bay of Plenty
NIWA: **Nga Taonga Waimataitai o Murihiku—Co-developing Culturally Appropriate Approaches to Improve Estuarine Mahinga Kai Management** (MBIE 2018 Vision Mātauranga Capability fund)	2020	• Co-develop best practices and inform waimataitai decision-making, such as the current freshwater limit-setting process	South Island
Department of Conservation: **New Zealand seafloor community classification**	2021	• Produce a numerical classification of the seafloor environment and communities within the New Zealand Territorial Sea and Exclusive Economic Zone	National
GNS: **Tataihia te Parataiao o Te Wahapu: Hokianga Harbour sedimentation** (MBIE 2019 Vision Mātauranga Capability fund)	2021	• Establish community-based research to bring Te Rarawa Mātauranga into dialogue with GNS Science staff, to engage Te Rarawa in authentic environmental science • Build resilient working relationships between scientists and iwi, and give grounded meaning to Vision Mātauranga aspirations	Hokianga

Armagan Sabetian (Auckland University of Techology): **Fish nearshore habitat-use patterns as ecological indicators of nursery quality**		• Use otolith microchemistry to look at estuarine/marine habitat use by juvenile snapper • Develop methods to use more chemicals in the otolith to try to look at historical and recent nursery areas	Snapper, Hauraki Gulf
Patuharakeke Te Iwi: **Ka pu te ruha, ka hao te rangatahi** (MBIE 2019 Vision Mātauranga Capability fund)	2021	• Develop a culturally significant approach to monitoring and managing marine taonga species	Shellfish, Patuharakeke rohe, south side of Whangarei Harbour
NIWA: **Refining the spawning sites and larval dispersal routes of eels using isotopic landscapes** (MBIE 2018 Smart ideas funding)	2021	• Determine where eels spawn and what oceanic routes they take to our coastline to enter lakes and rivers	Eels
NIWA: **Moving from limiting fisheries juvenile habitat bottlenecks to open high production pipelines** (MBIE 2016 programme funding)	2021	• Identify, reduce, and remove habitat bottlenecks for juvenile fish	Snapper, blue cod, terakihi, National
Dragonfly **Regional habitats project** (DoC)	2021	• Stocktake of marine geospatial layers and data from the regions, including regional councils and research bodies. • This information intends to contribute to other DoC research projects.	Territorial Sea
NIWA: **Resilience of deep sea benthic fauna to sedimentation from human activities** (MBIE 2016 programme funding)	2021	• Determine effects of sedimentation on deep sea benthos • Determine recovery following seabed disturbance	NA
NIWA:	2022	• Seek direct expert input to quickly compile best available information on habitat of particular	Multiple, National

Expert input on habitat of particular significance for fisheries management (MPI)		significance for fisheries management and identify how future work could be focused	
BEN2019-04: A spatially explicit benthic impact assessment for inshore and deepwater fisheries in New Zealand (MPI)	2022	• Quantify impacts (disturbance intensity) to benthic taxa by mobile fishing methods	National
BEN2019-05: Spatial decision support tool development for managing the impacts of bottom fishing on in-zone, particularly vulnerable or sensitive habitats (MPI)	2022	• Collect layers for benthic biodiversity, naturalness and value to resource users • Develop a decision support tool to support the spatial management of inshore and deepwater bottom fishing	National
NIWA: **The extent and intensity of seabed contact by mobile bottom fishing in the New Zealand Territorial Sea and Exclusive Economic Zone** (MPI)	2022	• Quantify impacts (disturbance intensity) to benthic taxa by mobile fishing methods	EEZ
NIWA: **Extent and intensity of trawl effort on or near underwater topographic features in New Zealand's Exclusive Economic Zone** (MPI)	2022	• Identify seamount habitats that could be particularly significant habitats • Estimate trawl intensity over sensitive habitats	EEZ
NIWA: **ZBD2020-06 - Recovery of biogenic habitats: assessing the recovery**	2022	• Assess the feasibility of various spatial planning scenarios for the recovery of biogenic habitats • Understand restoration of ecological function of nurseries	Hauraki Gulf Marine Park

potential offered by spatial planning scenarios proposed in the Sea Change Plan (MPI)			
ZBD2020-09 - Cumulative effects of stressors on scallops and scallop habitats in the Marlborough Sounds (MPI)	2022	• Understand scallop recovery potential • Identify key factors inhibiting scallop recovery from both a biological and habitat perspective	Scallops, Marlborough Sounds
BEN2021-01 - Characterisation of benthic habitats and their potential as habitats of particular significance for fisheries management (MPI)	2022	• Characterise benthic habitats and determine their potential as habitats of particular significance to fisheries management	Bay of Islands, Marlborough Sounds, Tasman Bay
Maru Samuels (Iwi Collective Partnership) & Irene Kereama-Royal (Ngā Wai A Te Tūī Māori & Indigenous Research Centre): **Kia tika te hī ika: Exploring fisheries tikanga and mātauranga** (Sustainable Seas National Science Challenge)	2022	• Identify Māori knowledge systems, values frameworks, and tikanga based practices in fisheries management	National
Oliver Wilson (Fisheries Inshore New Zealand): **Quantifying seafloor contact** (Sustainable Seas National Science Challenge)	2022	• Understand and minimise bottom contact • Create decision-making tools for mitigating seafloor habitat disturbance by fishing gear • Develop & deploy low-cost, user-friendly bottom contact sensors	Hawkes Bay
NIWA: **ZBD2021-02 - Habitat degradation impacts on fishery productivity in northern harbours**	2023	• Assess the nature and extent of habitat change in key northern harbours in New Zealand • Assess the effect of habitat changes on key fisheries species	Snapper, grey mullet, yellow-eyed mullet, trevally, and scallops, Kaipara

(MPI)			and Manukau harbours
BEN2021-02 - Marine habitat mapping Māhia Peninsula (MPI)	2023	• Map and characterise habitats around Māhia Peninsula	Māhia Peninsula
NIWA: **BEN2021-05 - Habitat degradation and impacts on blue cod populations** (MPI)	2023	• Identify key benthic habitats utilised by different life stages of blue cod • Review and identify environmental stressors to blue cod habitats • Determine if and how key habitat features have been modified	Blue cod, Kaikōura, Motunau, Banks Peninsula, and the Marlborough Sounds
Simon Thrush (University of Auckland) & Kura Paul-Burke (MUSA Environmental/University of Waikato): **Ecological responses to cumulative effects** (Sustainable Seas National Science Challenge)	2023	• Address the cumulative effects of multiple stressors on soft-sediment and rocky reef biodiversity and ecosystem function • Co-develop place-based tohu (traditional indicators) of the ecological condition of our estuaries and coasts • Develop ecological footprint analysis to support improved decision-making, investment and knowledge of how activities and stressors impact on biodiversity and ecosystem services • Investigate bottlenecks to recovery of reef and soft-sediment seafloor ecosystems • Develop new methods to map ecological response footprints of stressors and their impacts on ecosystem services	Shellfish, Multiple
Carolyn Lundquist (NIWA): **Spatially-explicit cumulative effects tools** (Sustainable Seas National Science Challenge)	2023	• Build the capacity of existing marine spatial management tools to include assessment of cumulative effects • Model stressor interactions, system capacity, and recovery dynamics	National

Kura Paul-Burke (University of Waikato) & Richard Bulmer (NIWA): **Awhi Mai Awhi Atu: Enacting a kaitiakitanga-based approach to EBM** (Sustainable Seas National Science Challenge)	2023	• Co-develop and co-produce marine research that actively positions tikanga and mātauranga Māori as a fundamental approach alongside western science • Recognise, interpret, and respond to contemporary tohu or environmental signs, signals and indicators of the natural world	Shellfish, Ohiwa harbour
Lara Taylor (Manaaki Whenua – Landcare Research) & Dan Hikuroa (University of Auckland): **Enabling Kaitiakitanga and EBM** (Sustainable Seas National Science Challenge)	2023	• Co-develop a practical kete of strategies and tools that practitioners can use for collaborative kaitiakitanga and EBM approaches in marine governance and management	NA
University of Otago: **Protecting what we can't see: Mapping deep seabed habitat in Otago's first proposed offshore marine reserve** (University of Otago Research Grant)	2023	• Determine best practices for reusing historical multibeam echosounder data to map low-relief biogenic habitat • Map the bryozoan beds off the Otago peninsula	Otago
Department of Conservation: **Thematic habitat classification** (DOC)	2023	• Application of the Coastal and Marine Ecological Classification Standard (CMECS) into New Zealand habitat context. • Develop guidance for applying CMECS and will persuade others to adopt these classification standards.	National
LINZ-DOC-MPI-Te Arawhiti MOU: **DIA Innovation Fund – Geospatial data-mesh** (DOC)	2023	• Department of Internal Affair Innovation Fund to develop a marine data mesh to increase findability and accessibility to marine geospatial data. • DOC proof of concept, to use the data-mesh to apply the Key Ecological Area criteria on certain habitats at national and regional scale.	National

Department of Conservation: **Assessment of the effective protection and management of MPAs and networks of MPAs in New Zealand**	2023	• Project spread across 3 FY (2021/2022 theme 1 completed) • MSAG identified need for a process to evaluate the effectiveness of MPA and networks of MPAs at different stages of the process (establishment, proposals development, after establishment) • Assessment divided across 3 main themes as identified in the IUCN guidelines for applying Protected Management Areas: 1) design issues, 2) the adequacy and appropriateness of management systems and processes, 3) delivery of protected area objectives, including conservation values • Outputs will go towards the potential update of protection standards	National
NIWA: **BEN2021-03 - Taxonomic identification of benthic invertebrate samples** (MPI)	2024	• Taxonomically identify benthic invertebrates in samples taken during research trawls and by observers on fishing vessels	National
Department of Conservation: **Deep reefs project**	2024	• Final phase of a 3-year project- gathered information will inform management decisions and priority research needs to strengthen conservation objectives • Identify location, associated biodiversity and threats to these ecosystems and, classify them accordingly. • Identify conservation objectives- • Application of the CMECS to classify these ecosystems	National and regional focus: - Greater Wellington Northeast coast of the North Island
MetOcean Solutions, NZ (MetService) in partnership with many research providers: **Moana Project** (MBIE Endeavour Fund)	2024	• Aims to improve understanding of coastal ocean circulation, connectivity and marine heatwaves to produce information that supports sustainable growth of the seafood industry, iwi initiatives and marine environment management.	National

		• Four project workstreams: Te Tiro Moana (eyes on the sea) Ngā Ripo o Te Moana (Whirlpools of the Ocean), He Hono Moana (Ocean connection), He Papa Moana (Ocean foundation)	
Department of Conservation: **Delineating key ecological areas**	2025	• Evaluating the feasibility of adaptation of Key Biological Areas (IUCN) criteria and thresholds as a possible mechanism for delineation of key areas in NZ • Assemble relevant spatial datasets, identify initial site boundaries based on ecological data and thresholds, and refine ecological boundaries to yield practical key area boundaries.	National
Department of Conservation/NIWA: **BIO-193 Benthic Terrain Model (BTM)** (DOC / NIWA)	from 2022	• DOC geospatial team to develop and publish benthic terrain model of existing LINZ and DOC multibeam survey. • NIWA contract to supervise and validate the methodology applied by DOC analyst. • New multibeam surveys will also be analysed in the future. The ongoing project will help to identify broad scale seabed classification.	National / seabed habitats
James Bell – Victoria University: Deep reef mapping	TBD	• Collaborative projects with regional councils and others. • Aims to investigate local scale variation of deeper reef ecosystems to improve their classification, conservation objectives and provide adequate conservation management recommendations.	Local/regional- Greater Wellington, HGMP, Poor Knights, Taranaki, Fiordland
NIWA: **ZBD2020-11 - Review of land-based effects on coastal fisheries and kaimoana and their habitats** (MPI)	TBD	• Review the current state of knowledge of land-based effects on coastal fisheries and kaimoana species in New Zealand. • Collate information on land-based stressors to coastal ecosystems, mitigation measures taken, and to provide a detailed list of all available datasets and spatial layers at regional and national scales	National