

CSP Initial research proposals 2024/25

CSP RAG 1 March 2024

Purpose

These initial project proposals have been developed to deliver outputs to address research gaps identified by the Conservation Services Programme (CSP) Research Advisory Group (RAG). These gaps have been identified through the development of medium-term research plans, or at previous meetings of the RAG. It is intended that these initial proposals, and any other proposals identified by the RAG, will be prioritised at the CSP RAG meeting of 1 March 2024. The prioritised proposals will be used to develop the CSP Annual Plan 2024/25.

These initial research proposals should be considered in light of the following key documents:

- [CSP Strategic Statement](#)
- [CSP Seabird Medium Term Research Plan](#)
- [CSP Protected Fish Medium Term Research Plan](#)
- [CSP Marine Mammal Medium Term Research Plan](#)
- [CSP Sea Turtle Medium Term Research Plan](#)
- [CSP Protected Coral Medium Term Research Plan](#)
- [CSP Annual Plan 2023/24](#)

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Interaction Projects

Ongoing projects

INT2022-02 Identification of seabirds captured in New Zealand fisheries

This multi-year project was consulted on in 2022/23 and is due for completion in June 2025.

It is proposed to form part of the CSP Annual Plan 2024/25.

Full details are provided in the CSP Annual Plan 2022/23.

INT2022-03 Identification, storage and genetics of cold-water coral bycatch specimens

This multi-year project was consulted on in 2022/23 and is due for completion in June 2025.

It is proposed to form part of the CSP Annual Plan 2024/25.

Full details are provided in the CSP Annual Plan 2022/23.

INT2023-04 Identification of marine mammals, turtles and protected fish captured in New Zealand fisheries

This multi-year project was consulted on in 2023/24 and is due for completion in June 2026.

It is proposed to form part of the CSP Annual Plan 2024/25.

Full details are provided in the CSP Annual Plan 2023/24.

INT2023-06 Investigating the impact of fisheries on endangered hoiho diet, microbiome and disease susceptibility

This multi-year project was consulted on in 2023/24 and is due for completion in June 2025.

It is proposed to form part of the CSP Annual Plan 2024/25.

Full details are provided in the CSP Annual Plan 2023/24.

Proposed projects

INT-1 Observing commercial fisheries

Term: 1 year

Guiding Objectives: CSP Objectives A, B and C; National Plan of Action – Seabirds, National Plan of Action – Sharks; New Zealand sea lion and Hector’s and Māui dolphin Threat Management Plans.

Project Objective: To understand the nature and extent of protected species interactions with New Zealand commercial fishing activities.

Understanding the nature and extent of interactions between commercial fisheries and protected species can identify where the most significant interactions are occurring and can be used to inform development of ways to mitigate those interactions and adverse effects. Such data contribute to assessments of the risks posed to protected species by commercial fishing and whether mitigation strategies employed by fishing fleets are effective at reducing protected species captures.

The CSP Observer Programme will continue to purchase baseline services for “offshore” fisheries from Fisheries New Zealand Observer Services, given the scale of their operation, which allows observers to be placed strategically across New Zealand Fisheries. Inshore fisheries observer coverage will also be delivered by Fisheries New Zealand Observer Services, per a joint planning process. DOC purchases 50% of inshore observer services.

Planning of observer coverage is undertaken jointly by Fisheries New Zealand and DOC as part of a separate process and will be consulted on as part of the consultation on the CSP Annual Plan 2024/25.

Indicative cost: TBD in consultation with FNZ

INT-02 Testing bycatch mitigation scenarios for protected corals in New Zealand using best available information

Term: 1 year

Guiding Objectives: CSP Objectives B and C, CSP Coral Medium Term Research Plan

Project Summary:

Building on results and recommendations stemming from CSP projects INT2022-04 (coral risk assessment), POP2021-02 (coral hotspots), and POP2022-04 (coral cataloguing), this project seeks to map new distribution and abundance results for protected corals and to test them against multiple bycatch-reduction scenarios at the species to morphotype to (sub) class level (i.e. the four protected coral groups) across the EEZ (excluding the territorial sea). Firstly, the most current information on coral distribution and abundance (including hotspots) will be mapped against recent and historical fishing effort for multiple methods to update understanding of areas of overlap based upon new coral diversity and effort data. Secondly, as defined via stakeholder working groups and workshops, multiple hypothetical scenarios to mitigate and reduce bycatch will be tested to assess best options to manage fishing impacts on corals at multiple scales, including, for example, those at highest risk (from INT2022-04), in areas of high diversity/and or abundance (from POP2021-02), or other rare / limited taxa (POP2022-04). Hypothetical scenarios could consider effects on rates and diversity of coral bycatch from, for example, spatial closures, relevant national and international obligations, fishery input / output control settings, or consideration of species-specific measures or encounter thresholds; including methods such as management strategy evaluations or structured decision making - these approaches will be refined and agreed with the supplier as the project progresses in line with any relevant or comparable policy. The project therefore offers the opportunity to ensure best available information from recent CSP projects is considered in future coral bycatch reduction initiatives and it will facilitate ongoing inter-agency and stakeholder agreement regarding coral bycatch mitigation.

Project Objectives:

1. To update our understanding of coral overlap with commercial fishing, based upon new coral abundance and diversity data at multiple taxonomic levels, and up-to-date and historical fishing effort.
2. To engage with experienced subject matter experts to draft multiple options for ways to reduce coral bycatch.
3. To assess how hypothetical scenarios suggested through Part 2 could mitigate and reduce bycatch of corals at multiple taxonomic levels of diversity and varied abundance.

Project Outputs:

A technical report detailing EEZ-wide overlap between coral distribution and fishing effort, and including assessment of potential performance of scenarios intended to reduce coral bycatch at multiple taxonomic (diversity) and abundance levels.

Indicative Cost: \$80,000 per annum

INT-03 Exploring impacts and recovery potential of protected deep-sea stony corals, utilising Remotely Operated Vehicle capability on RV Sonne in the New Zealand region.

Term: 1 year

Guiding Objectives: CSP Objectives B and C, CSP Medium Term Research Plan

Project Summary:

Multiple CSP and AEWG Technical Working Groups have identified a gap in understanding coral diversity and distribution through direct observation, and this gap is identified in the CSP Coral Medium Term Research Plan. This project will benefit from a rare and cost-effective opportunity to deploy New Zealand coral researchers on a NZ-EEZ wide research voyage aboard German vessel the RV Sonne in January 2025 on the 26-day expedition CoralNewZ.

The scientists will participate in multiple research activities including revisiting locations monitored for long-term seamount recovery study on Graveyard Knolls (Chatham Rise) as well as explore new sites in the region that are both unfished and potentially impacted by fisheries – Puysegur Bank, off Fiordland, and Colville Ridge, re-examine fished vs. unfished seamounts to gauge feature-specific impacts and recovery, determine the functional role of fish and fisheries in coral ecosystems, ground-truth predictive habitat models, collect samples and live specimens for further experiments and genetics from areas previously examined via biodiversity trawl surveys, alongside novel areas lacking in current sampling and understanding (as identified through CSP projects POP2021-02 'hotspots' and POP2022-05 'coral cataloguing' - both of which have informed the voyage plan).

There is additionally scope to retrieve settlement plates, and tag colonies for growth and photogrammetry work, plus additional coral research which is to be determined. Of a team of 35 scientists, there are berths for eight New Zealanders. The indicative budget is based upon ship-time only for two junior scientists, or pre-and post-voyage analysis/processing time and ship-time for one senior scientist, with an additional DOC government observer to provide time in kind.

This project has substantial cost leverages on a state-of-the-art vessel with a Germany-based team of coral experts, including technology not available on the RV Tangaroa (i.e. ROV material collection and targeted footage collection) that would substantially improve our understanding of offshore corals and the impacts of commercial fisheries on them.

Project Objectives:

1. To assess direct impacts of fishing on corals and to determine their recovery at seamounts and other sites subject to a range of fishing intensity; and
2. To survey, assess and collect corals at multiple unexplored sites across the EEZ to improve recent coral distribution/fisheries overlap assessments and to ground truth coral habitat models.

Project Outputs:

A voyage report and CSP report detailing research undertaken aboard the voyage, including updated maps of coral distribution, coral recovery, and diversity metrics relative to fishing effort.

Indicative Cost: \$140,000 per annum

INT-04 Distribution of protected corals in southern Fiordland and risk of fisheries interactions

Term: 2 years

Guiding Objectives: CSP Objectives B and E, CSP Coral Medium Term Research Plan

Project Summary:

This project builds upon INT2022-05 Determining the resilience of Fiordland corals, and continues southern Fiordland protected coral distribution mapping and overlap with fisheries assessment for other types of protected corals in addition to black corals in INT2022-05 (i.e. stony cup corals, gorgonians and stylasterids). Preliminary video footage from INT2022-05 has revealed large areas of protected cup corals, gorgonians, and lace corals outside of closed areas that are at present not mapped or surveyed systematically; as such there are no data on where these taxa overlap with local fishing effort. The indicative budget mirrors the previous project and would cover some fieldwork and video survey analysis; there are significant cost leverages for the fieldwork component of this project including ROV accessibility.

Project Objectives:

1. To map distribution of protected stony, gorgonian and lace corals at multiple sites in Fiordland and overlap for baseline presence data.
2. To overlap maps with fishing effort data to determine potential risk of adverse impacts.

Project Outputs:

A technical report detailing distribution of all four protected coral groups at select sites in Fiordland including fished areas.

Indicative Cost: \$40,000 per annum

INT-05 Interaction of spotted shags with northern North Island set net fisheries

Term: 1 year

Guiding Objectives: CSP Objectives C and E; CSP Seabird Medium Term Research Plan; National Plan of Action – Seabirds

Project Summary:

The northern North Island population of spotted shags are recognised as a species of concern under the NPOA Seabirds 2020 and have suffered alarming population declines. Shags are known to be susceptible to bycatch in set nets and the coastal foraging range of these birds overlaps with set net effort. A tracking programme by Auckland Museum in collaboration with Oregon State University has been undertaking a comprehensive tracking and dive behaviour project on this vulnerable population. This project will analyse the data collected in the context of commercial set net fishing effort to make it readily available to inform fisheries management actions, including to identify areas and times where fisher outreach and seabird bycatch mitigation uptake should be targeted to minimise the impact of these fisheries on this population.

Project Objective:

To describe key fine-scale areas where the northern North Island population of spotted shag are at risk of bycatch in commercial fisheries.

Project Outputs:

1. A report describing the existing data, methods used and results.
2. Spatial data on distribution suitable for inclusion in future updates to fisheries risk assessments.

Indicative Cost: \$30,000 per annum

INT-06 Westland petrel overlap with commercial fishing effort

Term: 1 year

Guiding Objectives: CSP Objectives C and E; CSP Seabird Medium Term Research Plan; National Plan of Action – Seabirds

Project Summary:

Westland petrel is classified on a relative scale as at High Risk in the updated SEFRA 2023. This project leverages considerable historic tracking and ongoing research collaboration interest to support further at-sea tracking. The project will include the analysis of raw data in the context of domestic fisheries to better inform fisheries management processes. Opportunities for collaboration on the deployment of tracking devices will be maximised.

Project Objective:

To describe key fine-scale areas where Westland petrels are at risk of bycatch in commercial fisheries.

Project Outputs:

1. Report describing the existing data, methods used and results.
2. Spatial data on distribution suitable for inclusion in future updates to fisheries risk assessments.

Indicative Cost: \$30,000 per annum

INT-07 Understand the effects of fishing depth on turtle bycatch

Term: 2 years

Guiding Objectives: CSP Objectives A and B, CSP Sea Turtle Medium Term Research Plan

Project Summary:

This project will build on current depth-logger deployments planned under project MIT2023-02 Understanding and mitigating seabird and turtle bycatch during the pelagic longline soak period, which aims to broadly characterise hook depth profiles across surface longline fisheries. The focus will be on adding additional depth loggers to vessels operating in areas of leatherback turtle occurrence, who are reporting turtle bycatch. Comparisons will be made with vessels not catching turtles to understand if differences in gear setting have an impact on bycatch rates.

Project Objective:

To characterise the effects of gear setting on leatherback turtle bycatch using TDR data obtained from vessels operating inside and outside North-East New Zealand bycatch hotspot area (within the EEZ) and recommend gear configurations to mitigate turtle bycatch.

Project Outputs:

A technical report detailing the research undertaken, results, and recommendations to improve bycatch mitigation.

Indicative Cost: \$30,000 per annum

INT-08 Characterising great white shark interactions with BLL, set-net and trawl fisheries

Term: 1 year

Guiding Objectives: CSP Objectives B and C; CSP Protected Fish Medium Term Research Plan; National Plan of Action – Sharks

Project Summary:

Nationally endangered great white sharks are most commonly reported as bycatch in bottom trawl fisheries, particularly around the Auckland Islands, in BLL fisheries around northern New Zealand (FMAs 1, 5, 6, & 9) and in set-nets. Bycatch occurs mostly between Dec-Mar. Between 2008-2021, 136 great white sharks were caught in fisheries (observed and fisher reported). 39 of those between 2017-2021. Regular review is necessary to identify trends and factors that may be increasing the risk of captures (AEBR 289, 2021). This desktop study aims to characterise the nature and extent of how great white sharks are interacting with snapper BLL, SQU trawl, and set-net fisheries with a view to developing improved mitigation strategies. Research will include talking to vessel operators with higher catch rates to gain insight into the how and when great white sharks are interacting with vessels/gear.

Project Objectives:

1. To characterise the nature and extent of great white shark interactions with snapper BLL, set net, and squid trawl fisheries from currently available data sources and identify correlations between trends in bycatch rates and mitigation use.
2. To interview vessel operators to gain insight into their experiences with how great white sharks are interacting with fishing gear and their real-time responses to avoid bycatch.
3. To identify data gaps and make recommendations for future projects to gather more information and inform mitigation.

Project Outputs:

A technical report detailing the research undertaken, results, summary of fisher interviews, and recommendations to improve bycatch mitigation.

Indicative Cost: \$30,000 per annum

INT-09 Potting gear: seabird, shark, turtle and humpback whale interactions.

Term: 1 year

Guiding Objectives: CSP Objectives A and B; CSP Seabird Medium Term Research Plan; National Plan of Action – Seabirds; CSP Sea Turtle Medium Term Research Plan; CSP Protected Fish Medium Term Research Plan; National Plan of Action – Sharks

Project Summary:

In New Zealand waters, pot fishing occurs in all FMAs, except FMA 10. Much is known about marine mammal interactions with potting gear but very little research has been done on other groups of protected species. Pot entanglements typically occur in the ropes connecting the pot to a buoy or float at the sea surface and can result in injuries and mortalities, whilst some species are caught in the pots (e.g Chatham Island shag, CSP INT2011-02). Methods to reduce interactions include gear modifications and spatial/temporal management. Research will investigate and characterise the nature and extent of most at risk seabird, shark, turtle and whale species with potting gear using all available information sources (e.g. observer, EM, fisher). Note: humpback whale research will potentially be extended into another CSP project in 25/26 to examine occurrence as determined by acoustic data with fishing effort and correlation with previous entanglements. Results will consider pot fishing effort and current domestic and international mitigation methods. Based on results, recommendations will look to include an assessment of whether data can be used to inform SEFRA and explore potential for further gear modifications.

Project Objectives:

1. To review and summarise available data on potting interactions with seabird, shark, turtle and whales including gear types, mitigation use, and information gaps.
2. To provide recommendations on suitability of data to inform SEFRA.
3. To identify potential actions and new mitigation methods to manage protected species entanglement risks in pot fisheries.

Project Outputs:

A technical report detailing the research undertaken, results, and recommendations to improve bycatch mitigation and inform risk assessments.

Indicative Cost: \$50,000 per annum

INT-10 Seabird ID app

Term: 1 year

Guiding Objectives: CSP Objective C; CSP Seabird Medium Term Research Plan; National Plan of Action – Seabirds

Project Summary:

This project will use existing seabird identification resources targeted at observers to develop a phone app targeted at commercial fishers. The app would facilitate improved accuracy of fisher-reported seabird interactions. There is the potential to expand this project to include supplementary advice on handling and release. It is expected that industry will be consulted to ensure the app is fit for purpose operationally.

Project Objective:

To develop a phone app to facilitate improved accuracy and species resolution of fisher-reported seabird interactions.

Project Outputs:

A report describing the work undertaken and a phone app ready for deployment.

Indicative Cost: \$30,000 per annum

INT-11 Factors influencing risk of Hector's dolphin bycatch in trawl and set net fisheries

Term: 1 year

Guiding Objectives: CSP Objectives B and C; CSP Marine Mammal Medium Term Research Plan; Hector's and Māui dolphin Threat Management Plan.

Project Summary:

This project will be a small desktop study investigating the impacts of environmental and operational variables like vessel speed and headline height on dolphin bycatch.

Project Objective:

To identify if any environmental or operational variables have an impact on dolphin bycatch.

Project Outputs:

A report describing the work undertaken, and results and recommendations around environmental and operational variables to consider for mitigating further dolphin bycatch.

Indicative Cost: \$30,000 per annum

INT-12 Impact of fishing on the ecosystem services provided by deep-sea corals in the New Zealand region

Term: 1 year

Guiding Objectives: CSP Objectives B, D and E; CSP Coral Medium Term Research Plan

Project Summary:

The proposed project will determine the relationship between the abundance/biomass of protected deep-sea corals and the ecosystem services they provide, and compare the provision of these services in fished, unfished, and closed areas, focusing on representative habitat-forming species (e.g., *Solenosmilia variabilis*, *Madrepora oculata*, *Goniocorella dumosa*, *Enallopsammia rostrata*) of protected stony corals

impacted by deep-sea trawling. This study will be the first to assess coral ecosystem services in New Zealand waters. Deep-sea corals provide important ecosystem services, for example provision of habitat for a high diversity of associated invertebrate taxa, habitat and nursery grounds for commercially exploited fish and carbon cycling and storage. The project will use existing image data taken on the Graveyard and Andes seamount complexes on the Chatham Rise, and elsewhere in the EEZ (depending of suitability of available data), to establish the relationship between the abundance of corals and the abundance and diversity of associated invertebrates and fish, and use this information to establish coral density thresholds at which significant amounts of biodiversity are supported. Information on the size and behaviour of the imaged fish will be used to determine if there is evidence that habitat-forming corals provide a potential nursery ground for juvenile fish. Additionally, the image abundance data can be used to determine the coral biomass as a proxy for the carbon storage provided by coral habitat at particular coral densities. The results of the project can be combined with existing data (i.e., distribution of trawling), results from recently completed studies (i.e., abundance-based species distribution modelling of protected corals, POP2021-02 coral hotspots) as well as results from ongoing work (i.e., influence of spatial closures on coral populations) to improve understanding of the potential impact of fishing on the coral ecosystem services, and the likely success or otherwise of mitigation strategies to avoid/minimise the adverse effects of commercial fishing on protected corals. This project has been updated and resubmitted to CSP from NIWA, based upon a similar proposal from 2022/2023.

Project Objective:

To determine the relationship between the abundance/biomass of protected corals and the ecosystem services they provide, and compare the provision of these services in unfished, fished and closed areas.

Project Outputs:

A technical report and maps of ecosystem services in relation to fishing effort. Data and GIS files and products will also be provided for subsequent use by DOC and others for conservation and management planning.

Indicative Cost: \$100,000 per annum

INT-13 The influence of commercial fisheries on Southern Buller's albatross foraging during chick rearing

Term: 1 year

Guiding Objectives: CSP Objectives A and D; CSP Seabird Medium Term Research Plan; National Plan of Action – Seabirds

Project Summary:

Southern Buller's albatross is the seabird at highest risk from domestic commercial fisheries, and 70% of the risk comes from trawl fisheries. Large vessel southern trawl fisheries are likely to be most influential. This project aims to improve understanding of fine-scale spatiotemporal movements of individual birds around vessels (particularly arrow squid and silver warehou trawl fisheries around the Stewart/Snares Shelf and Auckland Islands (Apr-Jul) during the southern Buller's breeding season. Particularly during the guard and post-guard stages (Apr-Sep) when seabird foraging trips are much shorter distances away from the colony and are likely to overlap with fishing vessels. Food sources that attract seabirds to vessels include fish processing waste discharged from vessels, non-target discards, and fish or food items in the net. To investigate fisheries related vs naturally foraged seabird prey we will use FNZ data on discards & offal/waste management, vessel and seabird tracking data, and eDNA analyses of dietary samples obtained from tracked individuals at the Snares southern Buller's colony in 2024 (INT2023-08, POP2023-02). Results will help us better understand the fisheries risk, the role of fisheries-derived food in southern Buller's albatross diet during chick-rearing, and help inform any review of vessel management plans/operational procedures.

Project Objectives:

1. To overlay vessel and seabird tracking data to investigate the amount of time spent foraging around and away from commercial fishing vessels in the southern ocean during chick-rearing.
2. To identify naturally foraged prey species present in diet of adult southern Buller's compared to prey sources associated with vessels.
3. To summarise current vessel operating procedures and mitigation strategies in place to reduce vessel attractiveness to seabirds and make recommendations on potential areas for improvement based on project results.

Project Outputs:

A technical report identifying fine-scale spatiotemporal movements of southern Buller's albatross in association with commercial trawl fishing operations in the southern ocean, discussed in the context of dietary analysis and vessel discards/waste management, and providing future recommendations on considerations for improved vessel operating procedures.

Indicative Cost: \$25,000 per annum

INT-14 Collection and curation of tissue samples from protected fishes and turtles

Term: 3 years

Guiding Objectives: CSP Objectives B, C, E; CSP Protected Fish Medium Term Research Plan; CSP Sea Turtle Medium Term Research; National Plan of Action – Sharks

Project Summary:

This project is a continuation of INT2021-04 Collection and curation of tissue samples from protected fishes and turtles. Tissue sample collection has been extended to all protected fish and sea turtle species taken as bycatch in commercial fisheries. Sampling kits and sampling instructions will be provided to interested commercial fishers and Fisheries Observers deployed in fisheries likely to catch protected species. Costs of returning samples and unused kits will be met by the project. Legal authority to collect and retain samples from protected species will be provided to participating fishers. Sample storage and curation will be consistent with accepted international standards and data standards and tracking will be interoperable with national and international initiatives such as IraMoana, Genomics Aotearoa and GEOME. Access to archived samples will be moderated by the Marine Species Manager, Department of Conservation.

Project Objectives:

1. To provide coordinated storage and curation of tissue samples collected from protected marine fishes and sea turtles by researchers, Fisheries Observers and fishers.
2. To ensure all relevant metadata is associated with each sample, that samples are accessible to bona-fide researchers, appropriate cultural controls on the use of samples are in place, and that the use of samples and publications arising from their use are tracked.

Project Outputs:

1. Archived tissue collection and associated electronic metadata.
2. Annual report on tissues housed in the archive, the use or fate of archived samples, and any publications arising from their use.
3. Final report describing the structure of the database, including use of Traditional Knowledge and Biocultural Labels and Notices.

Indicative Cost: \$20,000 per annum

Population Projects

Ongoing projects

POP2022-01 Black petrel

This multi-year project was consulted on in 2022/23 and is due for completion in June 2025. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2022/23.

POP2022-08 Auckland Islands seabird research: Gibson's and white-capped albatross

This multi-year project was consulted on in 2022/23 and is due for completion in June 2025. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2022/23.

POP2022-10 Antipodes Island seabird research: Antipodean albatross and white-chinned petrel

This multi-year project was consulted on in 2022/23 and is due for completion in June 2025. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2022/23.

POP2023-01 Aerial survey of leatherback turtles off Northeast North Island

This multi-year project was consulted on in 2023/24 and is due for completion in June 2026. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2023/24.

POP2023-02 Southern Buller's population study

This multi-year project was consulted on in 2023/24 and is due for completion in June 2026. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2023/24.

POP2023-03 Updated population estimate and marine habitat utilisation of yellow-eyed penguins/hoiho breeding on Campbell Island

This multi-year project was consulted on in 2023/24 and is due for completion in June 2025. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2023/24.

POP2023-04 Campbell Island seabird research

This multi-year project was consulted on in 2023/24 and is due for completion in June 2025. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2023/24.

POP2023-05 Auckland Islands New Zealand sea lions

This multi-year project was consulted on in 2023/24 and is due for completion in June 2026. It is proposed to form part of the CSP Annual Plan 2024/25. Full details are provided in the CSP Annual Plan 2023/24.

Proposed Projects

POP-01 Flesh-footed Shearwater population monitoring

Term: 1 year

Guiding Objectives: CSP Objectives B and E; CSP Seabird Medium Term Research Plan; National Plan of Action – Seabirds

Project Summary:

This is a continuation of POP2021-04, which aimed to collect data to make improved estimates of juvenile survival and recruitment, amongst other things. However, juvenile recruitment of flesh-footed shearwaters has been much more delayed than anticipated and as such, the investment made through POP2021-04 has not paid off yet. As such, we are proposing a reduced additional season to the project to continue the monitoring effort allowing us to still estimate this key population parameter.

Project Objectives:

1. To collect key demographic parameters of flesh-footed shearwater at Lady Alice Island/Mauimua and Ohinau Islands, especially juvenile survival and recruitment.
2. To estimate the current population size of flesh-footed shearwaters at Titi Island, Marlborough Sounds.

Project Outputs:

A technical report providing methods used and results of the flesh-footed shearwater population and demography assessments.

Indicative Cost: \$30,000 per annum

POP-02 Opportunistic collection and feasibility study for reproductive observations and experiments on live deep-sea protected stony corals collected in the New Zealand region.

Term: 2 years

Guiding Objectives: CSP Objective E; CSP Coral Medium Term Research Plan

Project Summary:

This project is an experimental approach that will utilise live, protected deep-sea coral specimens collected on the RV Sonne voyage and maintain them long-term in-aquaria, with the aim of observing and conducting experiments on reproductive and larval biology. This new information will contribute to our understanding of the productivity and vulnerability of coral species to fishing impacts and their ability to recover from these disturbances; such information can also be used to parameterise risk assessments and spatial management scenarios. The study will assess the feasibility of maintaining specimens in aquaria and will employ histological approaches to determine reproductive traits on a seasonal basis. The indicative budget includes contribution to on-board costs for initially maintaining corals on board the RV Sonne voyage and at NIWA's Marine Environment Manipulation Facility, subsequent periodic historical sampling, and reporting. Focal species include the stony branching corals *Solenosmilia variabilis*, *Enallopsammia rostrata*, *Madrepora oculata*, and *Goniocorella dumosa* and potentially stony cup corals, ie fragile morphotypes subject to direct impacts of bottom trawling that constitute a large portion of coral bycatch in New Zealand. This project was submitted by NIWA and builds upon previous CSP projects, including BCBC2020-01 and POP2022-03 and incorporates international subject matter expertise on deep sea coral reproduction.

Project Objectives:

1. To test the feasibility of maintaining deepsea corals in-aquaria for seasonal determination of reproductive traits.
2. To improve our understanding of coral reproductive strategies that will inform the productivity and vulnerability values of coral species to fishing impacts and their ability to recover from these disturbances for risk assessments and spatial management scenarios.

Project Outputs:

A technical report detailing the research undertaken, results, and recommendations to improve understanding of the adverse effects of fishing on protected corals and to inform risk assessments.

Indicative Cost: \$65,000 per annum

POP-03 Deep-sea protected coral reproduction – next steps: Specimen collection and method development

Term: 2 years

Guiding Objectives: CSP Objective E; CSP Coral Medium Term Research Plan

Project Summary:

This project builds upon findings and recommendations from BCBC2020-01 Protected coral reproduction, and POP2022-03 Deep sea protected coral reproduction study, and will increase the breadth of coral taxa assessed for their reproductive traits, focusing specifically on Antipatharia (black corals), bubblegum octocorals (Paragorgia arborea) and the branching stony coral *Solenosmilia variabilis*. The research will employ histological techniques and fisheries observer-derived coral specimens and will 1. facilitate collection of coral specimens for histological analyses by observers, 2. develop methods for histological analysis on collected samples and 3. address knowledge gaps in the reproductive strategy for protected corals in the New Zealand region, data which is crucial to fully describe the productivity and to infer vulnerability of this diverse group. Recent bycatch events from deepwater trawls have included large bubblegum corals, highlighting the relevance of this research to understanding vulnerability of multiple coral taxa to fishing impacts. This project has been updated and resubmitted to CSP from NIWA, based upon a similar proposal from 2022/2023.

Project Objectives:

1. To assess the reproductive traits of additional protected corals using specimens collected by Fisheries Observers held at the NIWA Invertebrate Collection.
2. To address knowledge gaps in the reproductive strategy for protected corals in the New Zealand region, data which is crucial to fully describe the productivity and to infer vulnerability of this diverse group for ongoing risk assessments and spatial management scenarios.

Project Outputs:

A technical report detailing the research undertaken, results, and recommendations to improve understanding of the adverse effects of fishing on protected corals and to inform risk assessments.

Indicative Cost: \$35,000 per annum

POP-04 Desk top review of LBT populations in the Pacific

Term: 1 year

Guiding Objectives: CSP Objective E

Project Summary:

This project is a desktop review of leatherback turtle populations and research programmes happening in the Pacific to better understand the level of bycatch threat to different populations, connectivity between nesting beaches and habitat use in New Zealand, and to advance our understanding of threats to LBTs from all sources in order to progress mitigation of bycatch in New Zealand Fisheries. This project has been submitted to CSP by SPREP.

Project Objectives:

1. To identify and map all populations of leatherback turtles in the Pacific and provide information on current monitoring, research and protection, historically and currently underway by NGOs and community groups.
2. To identify populations where further GPS tracking will assist with understanding connections between nesting beaches and New Zealand.
3. To identify populations/projects where further support will assist with improving understanding of leather back turtle population trends and the threat from NZ fisheries.
4. To update population data for each nesting beach and current knowledge of trends. Identify all sources of threats to leatherback turtles in the Pacific

Project Outputs:

1. All populations of leatherback turtles in the Pacific are identified and mapped with latest known data on population size and trend, if known. Key gaps identified.
2. Connections made with all researchers (NGOS/community groups) who are working on leatherback turtles in the Pacific. Understanding of future research/monitoring and conservation objectives of these groups and key gaps.
3. Identify key populations where satellite tracking is needed.
4. Identify populations where further support for conservation monitoring is required.
5. Provide a report with all the above information and recommendations for supporting Pacific research.

Indicative Cost: \$10,000 per annum

Mitigation Projects

Ongoing projects

MIT2023-06 Underwater line setting devices for bottom longline vessels

This multi-year project was consulted on in 2023/24 and is due for completion in June 2025.

It is proposed to form part of the CSP Annual Plan 2024/25.

Full details are provided in the CSP Annual Plan 2023/24.

Proposed projects

MIT-01 Testing the utility of visual deterrent options to mitigate incidental bycatch of protected species in set nets

Term: 1 year

Guiding Objectives: CSP Objectives A and B; National Plan of Action – Seabirds.

Project Summary:

Visual deterrents show potential for reducing bycatch of seabirds in set nets. For example, green LED lights have shown some promise for reducing seabird bycatch in set nets (Mangel et al. 2018). In addition, Looming Eye Buoys deployed in the vicinity of set nets can act as a visual deterrent above water, reducing the abundance of seabirds near nets (Rouxel et al. 2021). However, there remains some uncertainty for both methods around their application, including potential unintended consequences for seabirds and target fish species, particularly in a New Zealand context. This project aims to test the effectiveness of visual deterrents on protected species and their impact on catch of target species. This project will be designed to complement planned research by Fisheries New Zealand under project PRO2024-03 and use a combination of under-water deployed cameras and shore and/or boat-based human observers on the surface to monitor and assess behaviour of marine wildlife (including target fish species) in response to the visual deterrents.

Project Objectives:

1. To describe the nature of effect that novel visual deterrents for set nets have on a range of protected species.
2. To recommend any further development and testing of visual deterrents for set nets to improve protected species bycatch mitigation effectiveness.

Project Outputs:

A report describing the work undertaken, results and recommendations for any further development or testing work.

Indicative Cost: \$80,000

MIT-02 Assessment of weighted hooks as a seabird bycatch mitigation option for surface longline fisheries

Term: 1 year

Guiding Objectives: CSP Objective A; National Plan of Action – Seabirds.

Project Summary:

Following feedback from a range of fishers on the prototype of a weighted hook, the Procella hook, work is underway to manufacture an operationally and economically feasible product. This product will support the planned at-sea testing of the Procella hook to quantify the sink rate achieved in comparison to current best practice methods, investigate any effect on target fish catch and identify any practicality issues with their use.

Project Objective:

To support the planned at-sea testing of the Procella hook to quantify the sink rate achieved in comparison to current best practice methods, investigate any effect on target fish catch and identify any practicality issues with their use.

Project Outputs:

A report describing the work undertaken, results and recommendations around the comparative effectiveness of Procella hooks compared to current best practice line weighting options.

Indicative Cost: \$40,000

MIT-03 Protected Species Liaison Programme

Term: 3 years

Guiding Objectives: CSP Objective A; CSP Seabird Medium Term Research Plan; National Plan of Action – Seabirds, National Plan of Action – Sharks.

Project Summary:

Building on MIT2021-01 Protected Species Liaison Programme, this project aims to continue the work of the inshore/HMS Protected Species Liaison Programme. Liaison Officer (LO) work will continue to include outreach and education of protected species bycatch information, as well as advice on bycatch risk reduction especially when following up trigger events. LO's will also continue to liaise with commercial fishers in their area in order to establish/review/update Protected Species Risk Management Plans. This next iteration of the project will look to expand capacity in programme coordination, liaison officer support, as well as establish an efficient and effective platform for data collection and operations.

Project Objectives:

1. To grow liaison capacity across inshore fleets around the country including surface longline, bottom longline, trawl, set net and purse seine.
2. To coordinate Liaison Officer effort and target protected species bycatch reduction by encouraging vessel operators to meet best-practice bycatch mitigation.
3. To deliver on the vision and outcomes of relevant cross-government plans (NPOAs, TMPs, etc).

Project Outputs:

1. Database including PSRMPs installed and updated, vessels visited, trigger responses, mitigation materials and training provided.
2. Creation of an inter-agency Advisory Group and internal Project Executives Group to work through challenges within the programme and report progress.
3. Development of management protocols and responses to triggers.
4. Reports to relevant advisory groups detailing progress and any developments which have come from the fleet.
5. Annual written reporting will be provided as part of the NPOA-Seabirds – Annual Research Report.

Indicative Cost: \$300,000

MIT-04 Hector's dolphin acoustic deterrence in trawl and set net fisheries

Term: 1 year

Guiding Objectives: CSP Objectives A, B and C; Hector's and Māui dolphin Threat Management Plan.

Project Summary:

There is evidence to support the trial of pingers and Acoustic Deterrent Devices (ADDs) as a mitigation tool to reduce bycatch of Hector's and Māui dolphin in NZ inshore fisheries. Building on the work and methodologies developed in MIT2019-01 Review of dolphin dissuasive device mitigation in inshore fisheries, this project will aim to achieve a staged approach to pinger and ADD research. Following discussions with industry and Marine Species Team, a follow-up project will likely be proposed for at-sea trials of recommended acoustic devices.

Project Objectives:

1. To determine the types and specifications of pingers and ADDs currently in use in the New Zealand set net fleet.
2. To identify operational, biological and environmental factors which may constrain viable device options.
3. To provide recommendations on the most effective and viable acoustic devices for further testing.
4. To design and cost a set of at-sea trials of recommended acoustic devices.

Project Outputs:

A report describing the work undertaken, and results and recommendations around viable acoustic devices and at-sea trial design to consider for mitigating further dolphin bycatch.

Indicative Cost: \$30,000

MIT-05 Enabling seabird bycatch mitigation in the surface longline fleet

Term: 1 year

Guiding Objectives: CSP Objectives A; National Plan of Action – Seabirds.

Project Summary:

This project will continue to support the surface longline fleet to apply best practice seabird bycatch mitigation (as defined in the Mitigation Standard). This project will include ongoing provision Hookpods to the surface longline fleet facilitating alignment to best practice mitigation standards. Cost efficiencies from bulk orders would be maximised. The project will also support further efforts to minimise bycatch using other methods, including those during the soak and haul period in accordance with relevant recommendations arising from MIT2022-01, MIT2023-01 and MIT2023-02.

Project Objective:

To increase uptake of seabird bycatch mitigation in the surface longline fleet that is in line with Mitigation Standards, including the provision of hook-shielding devices.

Project Outputs:

1. Mitigation gear supplied to fleet operators.
2. Summary report of activities undertaken and mitigation uptake across the fleet.

Indicative Cost: \$120,000

MIT-06 Efficacy of seabird mitigation in large vessel trawl

Term: 2 years

Guiding Objectives: CSP Objective A; National Plan of Action – Seabirds.

Project Summary:

Existing observer data was found to be insufficient to adequately quantify the effectiveness of bird bafflers and other mitigation (MIT2022-05 Large vessel trawl warp mitigation). This project will develop new targeted at sea observational data collection for a range of baffler configurations, as well as further assessment of minimising the pooling area for mitigating net captures. Data collection would primarily be through Fisheries Observers, with consideration of other tools such as temporary camera deployments at the back of the vessel. The project will analyse the first year of data collection and make recommendations for ongoing monitoring needs.

Project Objectives:

1. To develop revised data collection protocols to assess seabird bycatch mitigation effectiveness in the large vessel trawl fleet.
2. To assess the adequacy of the first year of data collection to quantify seabird bycatch mitigation effectiveness.

Project Outputs:

1. Revised data collection protocols.
2. Report on the effectiveness of different seabird bycatch mitigation options based on data collection over a one-year period.
3. Recommendations for any further improvements need for ongoing monitoring of seabird bycatch mitigation effectiveness in the fleet.

Indicative Cost: \$40,000

MIT-07 Using thermal cameras to assess effectiveness of seabird mitigation

Term: 1 year

Guiding Objectives: CSP Objectives A, B and C; National Plan of Action – Seabirds.

Project Summary:

This project will assess the utility of thermal cameras to quantify seabird attendance around vessels as a proxy for risk, noting their applicability to night observations. Visual seabird attendance protocols are currently used to quantify risk and effectiveness of seabird mitigation devices, but are limited to daytime. These trials will involve a comparison of visual and thermal camera collected data. The potential use of thermal cameras allows for the assessment of effectiveness of night setting as a mitigation option across a range of moon illumination.

Project Objective:

To assess the utility of thermal cameras to quantify seabird attendance around vessels as a proxy for risk and thus as a tool for assessing seabird bycatch mitigation effectiveness.

Project Outputs:

A report describing the work undertaken, results and recommendations for use of thermal cameras in future data collection to assess seabird bycatch mitigation effectiveness.

Indicative Cost: \$50,000

MIT-08 Adaptive management tool for small vessel bottom longline

Term: 1 year

Guiding Objectives: CSP Objective A; National Plan of Action – Seabirds.

Project Summary:

An initial adaptive management tool to allow fishers to assess sink rate was developed as part of MIT2018-03 Setting mitigation for small longline vessels. This project would seek to progress this tool for widespread use across the fleet. Key issues to address include the accurate recording of TDR deployment time to ensure accurate measurement of sink time to 5 or 10m depth. This information is key to inform the suite of seabird bycatch mitigation used while setting.

Project Objectives:

To develop an adaptive management tool to allow fishers to assess sink rate.

Project Outputs:

1. An adaptive management tool to allow fishers to assess sink rate.
2. A report describing the development work undertaken.

Indicative Cost: \$30,000