

APPENDICES

Status of chapter	Updated in 2026
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GLOSSARY AND MĀORI NAMES FOR MARINE SPECIES

Table 1. Glossary of terms and acronyms.

Term	Definition
Aquaculture	The practice of farming aquatic organisms such as salmon, freshwater prawns, or shellfish in marine and freshwater environments.
Benthic Protection Area (BPA)	Any area established by the Fisheries (Benthic Protection Areas) Regulations 2007 as being a BPA.
Biodiversity	The variety of species, and the ecological systems in which they reside. Includes diversity within and between species, and diversity of habitat. This term is defined in the Resource Management Act 1991 and the Fisheries Act 1996.
Biomass	The total quantity or weight of organisms in a given area or volume.
Bycatch	Species not targeted by a fishery but caught incidentally during fishing operations. Once caught, they are either landed, discarded or released.
Chondrichthyan	A member of the Chondrichthyes class, often referred to as cartilaginous fishes. Members of this class include sharks, rays, skates and chimaeras.
Continental Shelf	The submerged border of a continent that slopes gradually and extends to a point of steeper descent to the ocean bottom.
Continental Slope	A region on the outer edge of a continent between the generally shallow continental shelf and the deep-ocean floor, usually demarcated from the shelf by a 200 m isobath.
Cryptic Mortality	Interactions that result in mortality which are unobserved or unobservable.
Ecosystem	An interacting system of living and non-living parts such as sunlight, oxygen, water and nutrients. Ecosystems can vary in size and longevity (e.g., a raft of detached seaweed floating in the open ocean that supports a small community, or a seamount and its associated flora and fauna).
El Niño-Southern Oscillation (ENSO)	An irregularly recurring climate pattern that results in changes in the temperature of waters in the central and eastern tropical Pacific Ocean. The warming phase of sea temperature is known as El Niño and the cooling phase as La Niña, with each period lasting up to several years.
Endemic	An organism that occurs naturally only in one place or region.
Exclusive Economic Zone (EEZ)	An area of the ocean extending from 12 to 200 nautical miles from shore, including the seabed and subsoil. 1982 United Nations Convention on the Law of the Sea (UNCLOS).
Habitat	The place or type of area in which an organism resides. Can be biogenic/living (e.g., kelp forest) or abiotic/non-living (e.g., a rocky reef).
Indicator	A measure against which some aspects of performance can be assessed.
Indicator Species	A species whose presence or absence is indicative of a particular habitat, community or set of environmental conditions. The presence/absence of such a species is sometimes used as a proxy for characteristics of the environment.
Interdecadal Pacific Oscillation (IPO)	A pattern of climate variability in the Pacific Ocean with phases lasting 20-30 years.

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Term	Definition
Intergovernmental Panel on Climate Change (IPCC)	An international body that assesses the science related to climate change. IPCC assessments are written by hundreds of leading scientists from around the world.
Invertebrate	An animal without a backbone or spinal column. Corals, sponges and jellyfish are common marine examples.
Kaitiakitanga	The act of stewardship, guardianship or trusteeship; usually in reference to species and the environment.
Longline Fishing	A method of fishing using lines that trail back behind a boat for a set distance, with baited hooks set at fixed intervals.
Marine Protected Area (MPA)	Protected areas of seas, oceans, or estuaries that restrict human activity for a conservation purpose, typically to protect natural or cultural resources.
Mātauranga Māori	The knowledge, comprehension or understanding of everything visible and invisible; often used to mean 'wisdom'. Includes contemporary, historic, local and traditional knowledge.
Monitoring	The act of measuring change in the state, characteristics, number or presence of something.
Overfishing	A situation where observed fishing mortality (or exploitation) rates are higher than target or threshold levels.
Productivity	Productivity is a function of the biology of a species and the environment in which it lives. Generally, species with a high productivity are more resilient and take less time to rebuild from a depleted state.
Quota Management System (QMS)	A system established in 1986 to control the total commercial catch by allocating set amounts of catch or 'quota' for most of the main fish stocks in New Zealand's Exclusive Economic Zone.
Seamount	An isolated rise in elevation of 1000 metres or more from the surrounding seafloor.
Seine Fishing	A method of fishing that uses a net which hangs vertically in the water with its bottom edge held down by weights and its top edge buoyed by floats. Purse-seines have a number of rings on their bottom edge with a line running through.
Species	A group of genetically isolated interbreeding populations, that typically share an ecological niche
Territorial Sea	A belt of coastal waters extending at most 12 nautical miles from the baseline (usually the mean low-water mark) of a coastal state.
Threat Classification System	The New Zealand Threat Classification System classifies species as Not Threatened, Not Assessed or Threatened. Threatened includes three subcategories: Nationally Critical, Nationally Endangered and Nationally Vulnerable.
Trawling	A method of fishing that involves towing a large net through the water behind a boat for a set period before hauling on deck. Some operate in midwater, others touch the seafloor.

Table 2. List of Aotearoa moana taxa in te reo Māori, English common names, and recognised scientific names to lowest taxonomic resolution.

Māori Name	English Common Name	Scientific Name
Aihe	Common dolphin	<i>Delphinus delphis</i>
Arokehe/kirirua/orea	Longfin eel	<i>Anguilla dieffenbachii</i>
Ehouhounamu/ngutere/nanua/manua/maratea/ngutere	Red moki	<i>Cheilodactylus spectabilis</i>
Hānea	Black mussel	<i>Xenostrobus pulex</i>
Hangenge/lhe/takeke	Piperfish/garfish	<i>Hyporhamphus ihi</i>
Hanikura	Wedge clam	<i>Macomona liliana</i>

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Māori Name	English Common Name	Scientific Name
Hao/matamoe	Shortfin eel	<i>Anguilla australis</i>
Hāpuka/hāpuku/whapuku	Groper/wreckfish	<i>Polyprion oxygeneios</i>
Hoiho	Yellow-eyed penguin	<i>Megadyptes antipodes</i>
Hoka	Red cod	<i>Pseudophycis bachus</i>
Honu	Loggerhead sea turtle	<i>Caretta caretta</i>
Honu	Leatherback sea turtle	<i>Dermochelys coriacea</i>
Hoka/Hokorari	Ling	<i>Molva molva</i>
Hoki	Blue grenadier/blue hake/whiptail /hoki	<i>Macruronus novaezelandiae</i>
Hopuhopu/Kanae	Grey mullet	<i>Mugil cephalus</i>
Huangi/tuangi	New Zealand cockle	<i>Austrovenus stutchburyi</i>
Kakau moana	Gummy weed	<i>Splachnidum rugosum</i>
Kāeo	Cook's turban shell	<i>Cookia sulcata</i>
Kāeo	Snail whelk	<i>Haustorium haustorium</i>
Kahawai (hapukupuku)	Kahawai (juvenile form)	<i>Arripis trutta</i>
Kaikaikaroro	Triangle Shell	<i>Spisula aequilatera</i>
Kaitangata	Cat's eye	<i>Turbo smaragdus</i>
Kakere/mangō pare	Hammerhead shark	<i>Sphyrna zygaene</i>
Kapetā	School shark	<i>Galeorhinus galeus</i>
Karahiwa/marariwha	Queen pāua/austral abalone/yellow-footed pāua	<i>Haliotis australis</i>
Karengo/parengo/tupata	Southern laver	<i>Porphyra columbina</i>
Kataha/makawhiti/maraua/mokowhiti	Yellow-eye mullet	<i>Aldrichetta forsteri</i>
Kāunga	Hermit crab	Superfamily: Paguroidea
Kawikawi/Kehe/Koeae/ngehe	Marblefish	<i>Aplodactylus arctidens</i>
Karoro	Black-backed gull	<i>Larus dominicanus</i>
Kehe	Hake	<i>Merluccius australis</i>
Kekeno	New Zealand fur seal	<i>Arctocephalus forsteri</i>
Kina	Common sea urchin	<i>Evechinus chloroticus</i>
Koakoa/tītī/totorore/hakoko	Muttonbird/sooty shearwater	<i>Puffinus griseus</i>
Koinga/mango tara/pioke	Spiny dogfish	<i>Squalus acanthias</i>
Koio/marapeka	Virgin/white foot pāua	<i>Haliotis virginea</i>
Kōiro/ kōiro/ngōiro	Southern conger eel	<i>Conger verreauxi</i>
Kōkiri	Leatherjacket	<i>Parika scaber</i>
Kōrama	Winkle/cat's eye	<i>Turbo smaragdus</i>
Korokoro/piharau/puhikorokoro/tuna korokoro	Lamprey	<i>Geotria australis</i>
Kororā	Little blue penguin/fairy penguin	<i>Eudyptula minor</i>
Kōtore moana	Red sea anemone	<i>Actinia tenebrosa</i>
Kōura papatea/matapara	Red rock lobster/spiny crayfish	<i>Jasus edwardsii</i>
Kuku/kūtai/pōrohe	Green-lipped mussel	<i>Perna canaliculus</i>
Kuku-mau-toka	Banded mussel	<i>Modiolarca impacta</i>
Kumukumu/pūwhaiāu	Red gurnard	<i>Chelidonichthys kumu</i>
Kūpā	Horse mussel	<i>Atrina pectinata zelandica</i>

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Māori Name	English Common Name	Scientific Name
Kupae	Sprat	<i>Sprattus</i> spp.
Kuparu	John Dory	<i>Zeus faber</i>
Kuwaha	Elegant venus shell	<i>Irus elegans</i>
Kuwharu	Purple sunset shell	<i>Gari stangeri</i>
Kōpūpūtai roa	Long finger sponge	<i>Callyspongia ramosa</i>
Kōpūpūtai nui	Large cup sponge	<i>Gellius imperialis</i>
Kūtoro/moamoa/kourepoua	Spotted stargazer	<i>Genyagnus monopterygius</i>
Maki	Orca/killer whale	<i>Orcinus orca</i>
Mako	Shortfin mako	<i>Isurus oxyrinchus</i>
Makō/pioke	Rig/spotted dogfish/gummy shark	<i>Mustelus lenticulatus</i>
Mangō pounamu	Blue shark	<i>Prionace glauca</i>
Mangō ripi	Thresher shark	<i>Alopias vulpinus</i>
Mangō ururoa/mango tuatini	Great white shark/white shark/white pointer shark	<i>Carcharodon carcharias</i>
Mararī/rarī	Greenbone butterfish	<i>Odax pullus</i>
Moamoa/kourepoua	Giant stargazer/monkfish	<i>Kathetostoma giganteum</i>
Mohimohi	Pilchard	<i>Sardinops sagax</i>
Ngaeti	Common periwinkle	<i>Nodilittorina antipodum</i>
Ngerungeru/reremai	Bronze whaler	<i>Carcharhinus brachyurus</i>
Ngutoro/moeone	Bass	<i>Polyprion americanus</i>
Paea	Swordfish	<i>Xiphias gladius</i>
Pahiwihiwi	Kelpfish	<i>Chironemus marmoratus</i>
Paieka	Humpback whale	<i>Megaptera novaeangliae</i>
Pākirikiri/pātutuki/rāwaru	Blue cod/rock cod	<i>Parapercis colias</i>
Pākirikiri	Spotty	<i>Notolabrus celidotus</i>
Pāmu wēra/parāoa	Sperm whale	<i>Physeter macrocephalus</i>
Pāpaka	Paddle crab	<i>Ovalipes catharus</i>
Parakipīhi/tukuperu/upokohue/whāngai mokopuna	Pilot whale	<i>Globicephala melas</i>
Pātangaroa	Sun star	<i>Stichaster australis</i>
Pātiki	Flounder	<i>Rhombosolea</i> spp.,
Pātiki	Lemon sole	<i>Pelotretis flavilatus</i>
Pātiki	New Zealand turbot	<i>Colistium nudipinnis</i>
Pātiki tōtara/pātōtara	Yellowbelly flounder	<i>Rhombosolea leporina</i>
Pātiki mohoa/mohoa	Black flounder	<i>Rhombosolea retiaria</i>
Pawharu	Packhorse rock lobster	<i>Jasus verreauxi</i>
Pekapeka rau	Medusa-headed starfish	<i>Gorgonocephalus novaezelandiae</i>
Pōrohe	Blue mussel	<i>Mytilus edulis</i>
Popoto	Māui dolphin	<i>Cephalorhynchus hectori maui</i>
Porotaka moana	Globe sponge	<i>Tethya aurantium</i>
Puhikorokoro	Yellow moray	<i>Gymnothorax prasinus</i>

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Māori Name	English Common Name	Scientific Name
Pūngorungoru/kōpūpūtai	Sponge	Phylum: Porifera
Purewha	Hairy mussel	<i>Modiolus areolatus</i>
Pūpū terakihi/muheke	Paper nautilus	<i>Argonauta</i> spp.
Rātāhuihui	Sunfish	<i>Mola ramsayi</i>
Raiti wēra/tohora/kewa	Southern right whale	<i>Eubalaena australis</i>
Rāpoka	New Zealand Sea Lion	<i>Phocarctos hookeri</i>
Rau wheke	Sea lily	<i>Comanthus novaezelandiae</i>
Repe/reperepe	Elephantfish	<i>Callorhynchus milii</i>
Rimu/rimurimu	Seaweed	Divisions: Rhodophyta, Phaeophyta, Chlorophyta
Rimurapa/kōauau	Bull kelp	<i>Durvillaea antarctica</i>
Rimurehia	Eelgrass/seagrass	<i>Zostera</i> spp.
Rori whiore	Tailed sea cucumber	<i>Caudina coriacea</i>
Taketake/tarāpunga	Red-billed seagull	<i>Larus noae hollandiae scopulius</i>
Tāmure	Snapper	<i>Chrysophrys auratus</i>
Tāngahangaha/tāngāngā	Banded wrasse	<i>Notolabrus fucicola</i>
Tarakihi	Ocean bream	<i>Nemadactylus macropterus</i>
Taranui	Caspian tern	<i>Hydroprogne caspia</i>
Tawaki/tawhaki/pokotiwaha	Firedland crested penguin	<i>Eudyptes pachyrhynchus</i>
Tiikati	Hake	<i>Merluccius australis</i>
Tio reperepe/karauria ngakihi	Rock oyster	<i>Saccostrea glomerata</i>
Titi	Cook's petrel	<i>Pterodroma cooki</i>
Totorore/tōtōrore	Antarctic prion	<i>Pachyptila desolata</i>
Toroa	Black-browed mollymawk	<i>Diomedea melanophrys</i>
Toroa	Northern royal albatross	<i>Diomedea sanfordi</i>
Toroa/toroa ingoingo/toroa whakaingo	Southern royal albatross	<i>Diomedea epomophora</i>
Toroa	Wandering albatross	<i>Diomedea exulans</i>
Toroa pango/pēō/kōputu	Light-mantled sooty albatross	<i>Phoebastria palpebrata</i>
Toheroa/moeone	-	<i>Paphies ventricosa</i>
Tuare/tuere	Common hagfish	<i>Eptatretus cirrhatus</i>
Tuatini	Sevengill shark	<i>Notorynchus cepedianus</i>
Tuatini	Sixgill shark	<i>Hexanchus griseus</i>
Tuatua/kahitua	-	<i>Paphies subtriangulata</i>
Tutumairekurai/tūpoupou/upokohue/pehihi/ahoaho/waiaua	Hector's dolphin	<i>Cephalorhynchus hectori</i>
Warehenga	Kingfish	<i>Seriola lalandi</i>
Whai	Stingray/skate	Order: Myliobatiformes, rajiformes
Whai keo/whai repo	Eagle ray	<i>Myliobatis tenuicaudatus</i>
Whai repo	Short-tail stingray	<i>Dasyatis brevicaudata</i>

Māori Name	English Common Name	Scientific Name
Whai repo	Long-tail stingray	<i>Dasyatis thetidis</i>
Wheke	Octopus/squid	Subclass: Coleodidea

MEMBERSHIP AND PROTOCOLS FOR ALL SCIENCE WORKING GROUPS 2026

This document summarises the protocols for membership and participation in all Science Working Groups including Stock Assessment Working Groups, the Aquaculture Working Group (AQWG), the Aquatic Environment Working Group (AEWG), the Biodiversity Research Advisory Group (BRAG), the Statistics, Assessments and Methods Working Group (SAMWG), the South Pacific Working Group (SPACWG), the Antarctic Working Group (ANTWG), and the Marine Amateur Fisheries Working Group (MAFWG).

Working Group chairs

1. Fisheries New Zealand will select and appoint the Chairs for Science Working Groups. The Chair will be a Fisheries New Zealand fisheries or marine scientist who is an active participant in the Working Group, providing technical input, rather than simply being a facilitator. Working Group Chairs will be responsible for:
 - * ensuring that Working Group participants are aware of the Terms of Reference for the Working Group, and that the Terms of Reference are adhered to by all participants;
 - * setting the rules of engagement, facilitating constructive questioning, and focussing on relevant issues, email circulation should be considered as a review mechanism by the chair, particularly for routine methodology presentations, or follow-up items from previous meetings;
 - * ensuring that all peer review processes are conducted in accordance with the Research and Science Information Standard for New Zealand Fisheries¹ (the Research Standard), and that research and science information is reviewed by the relevant Working Group against the *P R I O R* principles for science information quality (page 6 in the Research Standard) and the criteria for peer review (pages 12–16 in the Research Standard);
 - * requesting and documenting the names and affiliations of participants at each Working Group meeting and ensuring that these are noted in the Working Group meeting notes. Chairs are responsible for managing conflicts of interest (refer to page 15 of the Research Standard), and ensuring that fisheries management or aquaculture implications do not jeopardise the objectivity of the review or result in biased interpretation of results;
 - * ensuring that the quality of information that is intended or likely to inform fisheries management or aquaculture decisions, the development of environmental standards, or the formulation of relevant fisheries policy is ranked in accordance with the information ranking guidelines in the Research Standard (page 21–23), and that resulting information quality ranks are appropriately documented in the Fisheries Assessment Plenary and the Aquatic Environment and Biodiversity Annual Review (AEBAR);

¹ Link to the Research Standard: <https://www.mpi.govt.nz/dmsdocument/3692-Research-and-Science-Information-Standard-for-New-Zealand-Fisheries>

- * striving for consensus² while ensuring the transparency and integrity of research analyses, results, conclusions and final reports; and
- * reporting on Working Group recommendations, conclusions and action items; and ensuring follow-up and communication with Fisheries New Zealand Principal Science Advisors, relevant Fisheries New Zealand fisheries management or aquaculture staff, and other key stakeholders.

Working Group members

2. Membership of Science Working groups is at the discretion of the Working Group Chair with the onus on the applicant to demonstrate the value they add to the Working Group. When considering membership Working group Chairs will consider the composition/balance of the working group and the active contribution to the scientific review process of the applicant, and any other factors they consider relevant to the effective functioning of the Working Group. All members are expected to actively participate in at least two and preferably considerably more Working Group meetings during a given year. Membership of the Working Group may be reviewed at the discretion of the Working Group chair in order to ensure effective functioning.
3. Working Groups will consist of the following participants:
 - * Fisheries New Zealand science chair – required;
 - * research providers – required (may be the primary researcher, or a designated substitute capable of presenting and discussing the agenda item);
 - * other scientists not conducting the presented research to act in a peer review capacity;
 - * representatives of relevant Fisheries New Zealand fisheries management or aquaculture teams; and
 - * any interested party who meets the participation threshold and agrees to the standards of participation below.
4. Working Group participants must commit to:
 - * participating appropriately in discussions;
 - * resolving issues;
 - * following up on agreements and tasks;
 - * maintaining confidentiality of Working Group discussions and deliberations (unless otherwise agreed in advance, and subject to the requirements of the Official Information Act and legal discovery and disclosure);
 - * adopting a constructive approach;
 - * avoiding repetition of earlier deliberations, particularly where a decision has already been made;
 - * facilitating an atmosphere of honesty, openness and trust;

² Consensus means the group generally agrees, and no member disagrees so strongly on scientific grounds that their remaining concerns need to be formally recorded and attributed in the meeting notes (as described in bullet point 25).

- * respecting the role of the Chair; and
 - * listening to the views of others, and treating them with respect.
5. Participants in Working Group meetings will be expected to declare their sector affiliations and contractual relationships to the research under review, and to declare any substantial conflicts of interest related to any particular issue or scientific conclusion.
 6. For externally funded research intended for potential use in fisheries management decisions, the development of environmental standards or the formulation of relevant fisheries policy, research funders must agree to:
 - a. Review and acceptance of results, usually by the appropriate Science Working Group, and inclusion of results in the appropriate Plenary document or the Aquatic Environment and Biodiversity Annual Review (AEBAR);
 - b. Submission of a draft report (either Fisheries Assessment Report (FAR), Aquatic Environment and Biodiversity Review and acceptance of results, usually by the appropriate Science Working Group. Final reports are then due within three months of the final Working Group presentation;
 - c. Provision of data, code and input and output files, within four months of the final Working Group presentation that would allow the analysis to be replicated by an independent research provider. Please contact RDM@mpi.govt.nz at the start of the project to determine the most appropriate format for data and code.
 7. Working Group participants must adhere to the requirements of independence, impartiality and objectivity listed under the Peer Review Criteria in the Research Standard (pages 12–16). It is understood that Working Group participants will often be representing particular sectors and interest groups and may be expressing the views of those groups. However, when participating in the review of science information, representatives are expected to step aside from their sector affiliations, and to ensure that individual and sector views do not result in bias in the science information and conclusions.
 8. Participants in each Working Group will have access to the corresponding sections of the Science Working Group website including the Working Group papers and other information provided in those sections. Access to Science Working Group websites will generally be restricted to those who have a reasonable expectation of attending at least two meetings of a given Science Working Group each year.
 9. Participants in Working Groups must not record all or any part of any Working Group meeting using audio devices nor utilise any automated transcription tools. This restriction is required as using these tools potentially breaches the confidentiality of the Working Group and inhibits an atmosphere of honesty, openness and trust.
 10. Working Group members who do not adhere to the standards of participation (paragraph 4), or who use Working Group papers and related information inappropriately (see paragraph 9 and 11), may be requested by the Chair to leave a particular meeting or to refrain from attending one or more future meetings. In more serious instances, members may be removed from the Working Group membership and denied access to the Working Group website for a specified period of time, or permanently.

Working Group papers and related information

11. Working Group papers will be posted on the Fisheries New Zealand website prior to meetings if they are available. As a general guide, all PowerPoint presentations and draft or discussion papers and near-

final papers, FNZ or externally funded, must be available at least three working days before a meeting³. However, if the last presentation (on the same topic) was within 2 weeks, then document submission a minimum of 1 day prior is acceptable. Papers not being available on these timeframes may lead to postponement of agenda items.

12. Working Group papers should be designed to be reviewed in up to 2-hour sessions (including at least 20 minutes for questions), or as otherwise agreed with the chair. Diagnostic plots (where required to be presented) should be limited to an appendix unless they are a key point of the presentation.
13. Working Group papers are “works in progress” intended to facilitate the discussion of analyses by the Working Groups. They often contain preliminary results that are receiving peer review for the first time and, as such, may contain errors or preliminary analyses that will be superseded by more rigorous work. **For these reasons, no-one may release the papers, or any information contained in these papers, or any other meeting materials to external parties. In general, Working Group papers should not be cited.** Exceptions may be made in rare instances by obtaining permission in writing from an FNZ Science Manager, and the authors of the paper. It is also anticipated that Working Group participants who are representing others at a particular Working Group meeting or series of such meetings may wish to communicate preliminary results to the people they are representing. Participants, along with recipients of the information, are required to exercise discretion in doing this, and to guard against preliminary results being made public.
14. From time to time, Fisheries New Zealand commissions external reviews of analyses, models or issues. Terms of Reference for these reviews and the names of external reviewers may be provided to the Working Group for information or feedback. It is extremely important to the proper conduct of these reviews that all contact with the reviewers is through the Chair of the Working Group or Chair of the review. Under no circumstances should Working Group members approach reviewers directly until after the final report of the review has been published.

Working Group meetings

15. Meetings will take place as required, generally January–May and July–November for Stock Assessment Working Groups and throughout the year for other Working Groups (AEWG, AQWG, BRAG, HMSWG, SPACWG, ANTWG and MAFWG).
16. A quorum will be reached when the Chair, the designated presenter, and at least three other technical experts are present. In the absence of a quorum, the Chair may decide to proceed as a sub-group, with outcomes being discussed with the wider Working Group via email or taken forward to the next meeting at which a quorum is formed. Items reviewed by email circulation will be sent to all on the relevant email list, therefore the requirement for a quorum is not relevant in these circumstances.
17. The Chair is responsible for deciding, with input from the entire Working Group, but focussing primarily on the technical discussion and the views of technical expert members:
 - * the quality and acceptability of the information and analyses under review;
 - * the way forward to address any deficiencies;
 - * the need for any additional analyses;

³ Due before noon three working days before to allow time for any internal FNZ review and distribution to the relevant Working Group.

Appendices

- * contents of research reports, Working Group reports and AEBA chapters;
 - * choice of best models and sensitivity analyses to be presented; and
 - * the status of the stocks, or the status/performance in relation to any relevant environmental standards or targets.
18. The Chair is responsible for facilitating a consultative and collaborative discussion, including focusing the review effort of the working group.
 19. Working Group meetings will be run formally, with agendas pre-circulated, and formal records kept of recommendations, conclusions and action items.
 20. A record of recommendations, conclusions and action items will be posted on the Fisheries New Zealand website after each meeting has taken place.
 21. Data upon which analyses presented to the Working Groups are based must be provided to Fisheries New Zealand in the appropriate format and level of detail in a timely manner (i.e. the data must be available and fully-accessible to Fisheries New Zealand; however, data confidentiality concerns mean that some data may not necessarily be made available to Working Group members).
 22. Working Group processes will be evaluated periodically, with a view to identifying opportunities for improvement. Terms of Reference and the Membership and Protocols may be updated as part of this review.
 23. Fisheries New Zealand scientists and science officers will provide administrative support to the Working Groups.

Information Quality Ranking

24. Science Working Groups are required to rank the quality of research and science information that is intended or likely to inform fisheries management or aquaculture decisions, in accordance with the science information quality ranking guidelines in the Research Standard (pages 21–23). Information quality rankings should be documented in Working Group reports and, where appropriate, in Status of Stock summary tables. Note that:
 - * Working Groups are not required to rank all research projects and analyses, but key pieces of information that are expected or likely to inform fisheries management or aquaculture decisions, the development of environmental decisions, or the formulation of relevant policy should receive a quality ranking;
 - * explanations substantiating the quality rankings will be included in Working Group reports. In particular, the quality shortcomings and concerns for moderate/mixed and low-quality information should be documented; and
 - * the Chair, working with participants, will determine which pieces of information require a quality ranking. Not all information resulting from a particular research project would be expected to achieve the same quality rank, and different quality ranks may be assigned to different components, conclusions or pieces of information resulting from a particular piece of research.

Record-keeping

25. The overall responsibility for record-keeping rests with the Chair of the Working Group, and includes:

- * keeping notes on recommendations, conclusions and follow-up actions for all Working Group meetings, and to ensure that these are available to all members of the Working Group in a timely manner. If full agreement on the recommendations or conclusions cannot readily be reached amongst technical experts, then the Chair will document the extent to which agreement or consensus was achieved, and record and attribute any residual disagreement and rationale in the meeting notes; and
- * compiling a list of generic assessment issues and specific research needs for each stock, species or environmental issue under the purview of the Working Group, for use in subsequent research planning processes.

TERMS OF REFERENCE FOR STOCK ASSESSMENT WORKING GROUPS IN 2026

Overall purpose

The purpose of the Stock Assessment Working Groups is to assess the status of fish stocks managed within the Quota Management System, as well as other important species of interest to New Zealand.

Based on scientific information the Stock Assessment Working Groups assess the current status of fish stocks or species relative to MSY-compatible reference points and other relevant indicators of stock status, conduct projections of stock size and status under alternative management scenarios, and review results from relevant research projects.

They do not make management recommendations or decisions (this responsibility lies with Fisheries New Zealand fisheries managers and the Minister responsible for fisheries).

Preparatory tasks

1. Prior to the beginning of the main sessions of stock assessment meetings (January to May and July to November),
 - Fisheries New Zealand fisheries scientists will produce a list of stocks and issues for which new stock assessments or evaluations are likely to become available prior to the next scheduled sustainability rounds.
 - This list will include stocks for which the fishing industry and others intend to directly purchase scientific analyses. It is therefore incumbent on those purchasing research to inform the relevant Stock Assessment Working Group chair and the science manager with a formal letter stating their intentions before the end of November the year prior to the research.
 - FNZ recognises that not all research is predictable and can be planned the previous calendar year. However, research that does not conform to these protocols may not be able to be supported with appropriate review or quick inclusion into fisheries management decisions. Stock Assessment Working Group Chairs will determine the final timetables and agendas for each Working Group.
2. At least six months prior to the main sessions of Stock Assessment Working Group meetings, Fisheries New Zealand fisheries managers will alert Fisheries New Zealand science managers and relevant Working Group chairs to unscheduled special cases for which assessments or evaluations are urgently needed.

Technical objectives

3. To review new research information on stock structure, productivity, abundance and related topics for each fish stock/issue under the purview of individual Stock Assessment Working Groups.

4. Where possible, to derive appropriate MSY-compatible reference points⁴ for use as reference points for determining stock status, based on the Harvest Strategy Standard for New Zealand Fisheries⁵ (the Harvest Strategy Standard).
5. To conduct stock assessments or evaluations for selected fish stocks in order to determine the status of the stocks relative to MSY-compatible reference points¹ and associated limits, based on the "Guide to Biological Reference Points for Fisheries Assessment Meetings"⁶, the Harvest Strategy Standard, and relevant management reference points and performance measures set by fisheries managers.
6. For stocks where the status is unknown, Stock Assessment Working Groups should use existing data and analyses to draw logical conclusions about likely future trends in biomass levels and/or fishing mortality (or exploitation) rates if current catches and/or TACs/TACCs are maintained, or if fishers or fisheries managers are considering modifying them in other ways.
7. Where appropriate and practical, to conduct projections of likely future stock status using alternative fishing mortality (or exploitation) rates, or catches, or other relevant management actions, based on the Harvest Strategy Standard and input from the Stock Assessment Working Group and fisheries managers.
8. For stocks that are deemed to be depleted or collapsed, to develop alternative rebuilding scenarios based on the Harvest Strategy Standard and input from the Stock Assessment Working Group and fisheries managers.
9. For fish stocks for which new stock assessments or analyses are not conducted in the current year, to review the existing Fisheries Assessment Plenary report text on the "Status of the Stocks" in order to determine whether the latest reported stock status summary is still relevant; else to revise the evaluations of stock status based on new data or analyses, or other relevant information.

Working Group reports

10. To include in the Working Group report information on:
 - commercial, Māori customary, non-commercial and recreational interests in the stock
 - all other mortality to that stock caused by fishing, which might need to be allowed for in setting a TAC or TACC.
 - Note: Estimates of recreational harvest will normally be provided by the Marine Amateur Fisheries Working Group (MAFWG).
11. To provide information and advice on other management considerations (e.g. area boundaries, by-catch issues, effects of fishing on habitat, other sources of mortality, and input controls such as mesh sizes and minimum legal sizes) required for specifying sustainability measures. Sections of the Working Group reports related to bycatch and other environmental effects of fishing will be reviewed by the Aquatic Environment Working Group (AEWG) although the relevant Stock Assessment Working Group

⁴ MSY-compatible reference points include those related to stock biomass (i.e., B_{MSY}), fishing mortality (i.e., F_{MSY}) and catch (i.e., C_{MSY} itself), as well as analytical and conceptual proxies for each of the three of these quantities.

⁵ Link to the Harvest Strategy Standard: <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>

⁶ Included in Fisheries Assessment Plenary Reports

is encouraged to identify to the AEWG Chair any major discrepancies between these sections and their understanding of the operation of relevant fisheries.

12. To summarise the stock assessment methods and results, along with estimates of MSY-compatible reference points and other metrics that may be used as benchmarks for assessing stock status.
13. To complete, or review and update if necessary, the “Status of the Stocks” tables in the May and November Fisheries Assessment Plenary reports for all stocks under the purview of individual Stock Assessment Working Groups (including those for which a full assessment has not been conducted in the current year) based on new data or analyses, or other relevant information.
14. It is desirable that full agreement amongst technical experts is achieved on the text of the Stock Assessment Working Group reports, particularly the “Status of the Stocks” sections, noting that the AEWG will review sections on bycatch and other environmental effects of fishing, and the MAFWG will provide text on recreational harvests. If full agreement amongst technical experts cannot be reached, the Chair will determine how this will be depicted in the Stock Assessment Working Group report, will document the extent to which agreement or consensus⁷ was achieved, and record and attribute any residual disagreement in the meeting notes.

Working Group input to the Plenary

15. To advise the Fisheries Assessment Plenary chair(s) about stocks requiring review by the Fisheries Assessment Plenary and those stocks that are not believed to warrant review by the Plenary. It is the responsibility of the research funder to ensure the presentation of research to the plenary meeting if required. The general criteria for determining which stocks should be discussed by the Plenary are that:
 - (i) the assessment is controversial and Working Group members have had difficulty reaching consensus⁷ on one or more base cases, or
 - (ii) the assessment is the first for a particular stock or the methodology has been substantially altered since the last assessment, or
 - (iii) new data or analyses have become available that alter the previous assessment, particularly assessments of recent or current stock status, or projections of likely future stock status. Such information could include:
 - new or revised estimates of MSY-compatible reference points, recent or current biomass, productivity or yield projections;
 - the development of a major trend in the catch or catch per unit effort; or
 - any new studies or data that extend understanding of stock structure, fishing patterns, or non-commercial activities, and result in a substantial effect on assessments of stock status.

Membership and Protocols for all Science Working Groups

16. Stock Assessment Working Group members are bound by the Membership and Protocols required for all Science Working Group members (see separate document).

⁷ Consensus means the group generally agrees, and no member disagrees so strongly on scientific grounds that their remaining concerns need to be formally recorded and attributed in the meeting notes.

TERMS OF REFERENCE FOR THE AQUATIC ENVIRONMENT WORKING GROUPS (AEWG) FOR 2026

Overall purpose

For all New Zealand fisheries in the New Zealand TS and EEZ as well as other important fisheries in which New Zealand engages to assess, based on scientific information, the effects of (and risks posed by) fishing on the aquatic environment, including:

- bycatch and unobserved mortality of protected species (e.g., seabirds and marine mammals), fish, and other marine life, and consequent impacts on populations;
- effects on benthic ecosystems, species, and habitat;
- effects on biodiversity, including genetic diversity; and
- changes to ecosystem structure and function from fishing, including trophic effects.

Where appropriate and feasible, such assessments should explore the implications of the effect, including with respect to government standards, other agreed reference points, or other relevant indicators of population or environmental status. Where possible, projections of future status under alternative management scenarios should be made.

AEWG does not make management recommendations or decisions (this responsibility lies with Fisheries New Zealand fisheries managers and the Minister responsible for Fisheries).

Fisheries New Zealand also convenes a Biodiversity Research Advisory Group (BRAG) which has a similar review function to the AEWG. Projects reviewed by BRAG and AEWG have some commonalities in that they relate to aspects of the marine environment. However, the key focus of projects considered by BRAG is on the functionality of the marine ecosystem and its productivity, whereas projects considered by AEWG more commonly focus on the direct effects of fishing.

Preparatory tasks

1. Prior to the beginning of AEWG meetings each year, Fisheries New Zealand fisheries scientists will produce a list of issues for which new assessments or evaluations are likely to become available that year.
2. The Ministry's research planning processes should identify most information needs well in advance but, if urgent issues arise, Fisheries New Zealand staff will alert the relevant AEWG Chair prior to the required meeting of items that could be added to the agenda. AEWG Chairs will determine the final timetables and agendas for meetings.

Technical objectives

3. To review any new research information on fisheries, including risks of impacts, and the relative or absolute sensitivity or susceptibility of potentially affected species, populations, habitats, and systems.
4. To estimate appropriate reference points for determining population, system, or environmental status, noting any draft or published Standards.
5. To conduct environmental assessments or evaluations for selected species, populations, habitats, or systems in order to determine their status relative to appropriate reference points and Standards, where such exist.

6. In addition to determining the status of the species, populations, habitats, and systems relative to reference points, and particularly where the status is unknown, AEWG should explore the potential for using existing data and analyses to draw conclusions about likely future trends in fishing effects or status if current fishing methods, effort, catches, and catch limits are maintained, or if fishers or fisheries managers are considering modifying them in other ways.
7. Where appropriate and practical, to conduct or request projections of likely future status using alternative management actions, based on input from AEWG, fisheries plan advisers, and fisheries and standards managers, noting any draft or published Standards.
8. For species or populations deemed to be depleted or endangered, to develop ideas for alternative rebuilding scenarios to levels that are likely to ensure long-term viability based on input from AEWG, fisheries managers, noting any draft or published Standards.
9. To review and revise existing environmental and ecosystem consideration sections of Fisheries Assessment Plenary report text based on new data or analyses, or other relevant information.

Working Group input to the Aquatic Environment and Biodiversity Annual Review

10. To include in contributions to the Aquatic Environment and Biodiversity Annual Review (AEBAR) summaries of information on selected issues that may relate to species, populations, habitats, or systems that may be affected by fishing. These contributions are analogous to Working Group reports from the Fisheries Assessment Working Groups.
11. To provide information and scientific advice on management considerations (e.g., area boundaries, bycatch issues, effects of fishing on habitat, other sources of mortality, and input controls such as mesh sizes and minimum legal sizes) that may be relevant for setting sustainability measures.
12. To summarise the assessment methods and results, along with estimates of relevant standards, reference points, or other metrics that may be used as benchmarks or to identify risks to the aquatic environment.
13. It is desirable that full agreement among technical experts is achieved on the text of contributions to the AEBAR. If full agreement among technical experts cannot be reached, the Chair will determine how this will be depicted in the AEBAR, will document the extent to which agreement or consensus⁸ was achieved, and record and attribute any residual disagreement in the meeting notes.
14. To advise the Fisheries New Zealand Principal Science Advisors and Aquatic Environment team manager about issues of particular importance that may require independent review or updating in the AEBAR. The general criterion for determining which issues should be discussed by a wider group or text changed in the AEBAR is that new data or analyses have become available that alter the previous assessment of an issue, particularly assessments of population status or projection results. Such information could include:
 - New or revised estimates of environmental reference points, recent or current population status, trend, or projections;
 - The development of a major trend in bycatch rates or amount;

⁸ Consensus means the group generally agrees, and no member disagrees so strongly on scientific grounds that their remaining concerns need to be formally recorded and attributed in the meeting notes.

- Any new studies or data that extend understanding of population, system, or environmental susceptibility to an effect or its recoverability, fishing patterns, or mitigation measures that have a substantial implications for a population, system, or environment or identify risks associated with fishing activity; and
- Consistent performance outside accepted reference points or Standards.

Membership and Protocols for all Science Working Groups

15. The AEWG is bound by the same membership and protocols as are other Science Working Groups (see separate document).

TERMS OF REFERENCE FOR THE BIODIVERSITY RESEARCH AND ADVISORY GROUP (BRAG) IN 2026

Overall purpose

Since 2000, the objectives of the Biodiversity Research Programme have been drawn directly from Fisheries New Zealand commitments to Theme 3 of the New Zealand Biodiversity Strategy (NZBS) 2000. Within this framework, the workstreams of the Biodiversity Research Programme have been adapted over time as new issues emerge, to build on synergies with other research programmes and work where biodiversity is under greatest threat from fishing or other anthropogenic activities, within the constraints of the overall purpose of the programme, which are:

“To improve our understanding of New Zealand marine ecosystems in terms of species diversity, marine habitat diversity, and the processes that lead to healthy ecosystem functioning, and the role that biodiversity has for such key processes” and the NZBS definition of biodiversity (the variability among living organisms from all sources including *inter alia*, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystem), the science currently commissioned broadly aims to:

- Describe and characterise the distribution and abundance of fauna and flora, as expressed through measures of biodiversity, and improving understanding about the drivers of the spatial and temporal patterns observed;
- Determine the functional role of different organisms or groups of organisms in marine ecosystems, and assess the role of marine biodiversity in mitigating the impacts of anthropogenic disturbance on healthy ecosystem functioning; and
- Identify which components of biodiversity must be protected to ensure the sustainability of a healthy marine ecosystem as well as to meet societal values on biodiversity.

Fisheries New Zealand also convenes an Aquatic Environment Working Group (AEWG) which has a similar review function to BRAG. Projects reviewed by BRAG and AEWG have some commonalities in that they relate to aspects of the marine environment. However, the key focus of projects considered by BRAG is on marine issues related to the functionality of the marine ecosystem and its productivity, whereas projects considered by AEWG are more commonly focused on the direct effects of fishing.

BRAG may identify natural resource management issues that extend beyond fisheries management and make recommendations on priority areas of research that will inform Fisheries New Zealand or other government departments of emerging science results that require the attention of managers, policymakers, and decision-makers in the marine sector. BRAG does not make management recommendations or decisions (this responsibility lies with Fisheries New Zealand fisheries managers and the Minister responsible for Fisheries).

Preparatory tasks

1. Prior to the beginning of BRAG meetings each year, Fisheries New Zealand fisheries scientists will produce a list of issues for which new research projects are likely to be required in the forthcoming financial year. The BRAG Chair will determine the final timetables and agendas.
2. The Ministry's research planning processes should identify most information needs well in advance but, if urgent issues arise, Fisheries New Zealand fisheries managers will alert the Aquatic Environment and Biodiversity Science Manager and the Principal Advisor Fisheries Science at least three months prior to the required meetings where possible.

BRAG technical objectives

3. It is the responsibility of the BRAG to review, discuss, and convey views on the results of marine biodiversity research projects contracted by Fisheries New Zealand. The review process is an evaluation of how existing research results can be built upon to address emerging research issues and needs. It is essentially an evaluation of "what we already know" and how this can be used to obtain "what we need to know". This information should be used by BRAG to identify gaps in our knowledge and for developing research plans to address these gaps.
4. It is the responsibility of BRAG participants to discuss, evaluate, make recommendations, and convey views on particular research area as required. Individual related projects on a species or fishery or research topic need to be aligned to relevant strategic and policy directions.
5. The recommendations on project proposals for the next financial year will be submitted via the Chair of BRAG to the Principal Science Advisor Fisheries.
6. The Biodiversity Research Programme includes research in New Zealand's TS, EEZ, Extended Continental Shelf, the South Pacific Region, and the Ross Sea region. There are six scientific work streams as follows:
 - To provide ecological information for a whole-of-systems approach to domestic fisheries management;
 - To develop tools and methods to assess and track the footprint of fisheries related activities on biodiversity and ecosystem functioning;
 - To identify and monitor threats and opportunities for adaptation or mitigation associated with environmental change;
 - To develop the blue-green economy within environmental constraints;
 - To evaluate and safeguard natural capital for future generations; and
 - To progress ecosystem based fisheries management under international obligations.

BRAG input to the Fisheries Assessment Plenary and the Aquatic Environment and Biodiversity Annual Review

7. To contribute to and summarise progress on biodiversity research in the Aquatic Environment and Biodiversity Annual Review. This contribution is analogous to Working Group Reports from the Fisheries Assessment Working Groups.
8. To summarise the assessment methods and results, along with estimates of relevant standards, references points, or other metrics that may be relevant to biodiversity objectives, the Biodiversity Strategy, and international obligations.
9. It is desirable that full agreement among technical experts is achieved on the text of these contributions. If full agreement among technical experts cannot be reached, the Chair will determine how this will be depicted in the Aquatic Environment and Biodiversity Annual Review, will document the extent to which agreement or consensus⁹ was achieved, and record and attribute any residual disagreement in the meeting notes.
10. To advise the Principal Science Advisor Fisheries about issues of particular importance that may require review by a Plenary meeting or summarising in the Aquatic Environment and Biodiversity Annual Review. The general criterion for determining which issues should be discussed by a wider group include:
 - Emerging issues, recent or current biodiversity status assessments, trends, or projections;
 - The development of a major trend in the marine environment that will impact on marine productivity or ecosystem resilience to stressors; and
 - Any new studies or data that impact on international obligations.

Membership and Protocols for all Science Working Groups

11. The BRAG is bound by the same membership and protocols as other Science Working Groups (see separate document).

TERMS OF REFERENCE FOR THE ANTARCTIC WORKING GROUP (ANTWG) IN 2026

Overall purpose

The purpose of the ANTWG is to review science and research information intended for submission to or use by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). CCAMLR is an inter-governmental organisation that is committed to conserving the marine life of the Southern Ocean while allowing rational use of marine resources, including commercial fishing. The CCAMLR Convention requires that management considers the effects of fishing on dependent and associated species as well as on the target

⁹ Consensus means the group generally agrees, and no member disagrees so strongly on scientific grounds that their remaining concerns need to be formally recorded and attributed in the meeting notes.

species. The area of jurisdiction of the CCAMLR Convention is approximately south of the circumpolar Antarctic Polar Front in the Southern Ocean. Science and research requested or used by CCAMLR may include, inter alia, fishery characterisations, abundance indices, catch-at-age or catch-at-length data, and stock assessment modelling to assess the status of fish stocks managed by CCAMLR; bycatch and unobserved mortality of protected species, fish, and other marine life; effects on biodiversity and benthic biodiversity, species, and habitat; and changes to ecosystem structure and function as a result of fishing, including trophic effects. The ANTWG also undertakes scientific review of documents and papers that may be submitted to the scientific working groups of CCAMLR to aid and inform its management. The ANTWG does not make management recommendations or decisions; these responsibilities lie with CCAMLR's Scientific Committee and the Commission.

Preparatory tasks

1. Prior to the first meeting of the ANTWG each year, the ANTWG Chair will produce a list of stocks/issues for which new stock assessments, evaluations, impact assessments, risk assessments, or other scientific analyses have been requested by the CCAMLR Scientific Committee or the Commission (including its contributing bodies), fishing industry, or other stakeholders. The ANTWG Chair will determine the final timetables and agendas of the working group each year, taking account of the available time and resources.

Technical objectives

2. To review new research information on stock structure, productivity, abundance and related topics for each fish stock or environmental issue under the purview of the ANTWG.
3. Where possible, to derive yields or reference points requested by CCAMLR's Scientific Committee or Commission related to fish stocks or environmental issues relevant to CCAMLR fisheries.
4. To conduct stock assessments or evaluations for selected stocks in order to determine the precautionary yields and status of the stocks relative to the requested reference points or, if no such reference points are specified by CCAMLR, MSY-compatible reference points and associated limits, based on the "Guide to Biological Reference Points for Fisheries Assessment Meetings" and New Zealand's Harvest Strategy Standard.
5. For stocks where the status is unknown, the ANTWG should, where possible, use any existing data and analyses to draw conclusions about likely future trends in biomass levels and/or fishing mortality (or exploitation) rates if current catches and/or TACs are maintained, or if fishers or CCAMLR are considering modifying them in other ways.
6. Where requested by the CCAMLR Scientific Committee or Commission, to conduct projections of likely future stock status using alternative fishing mortality (or exploitation) rates or catches and other relevant management actions, based on input from the ANTWG and any guidance from the CCAMLR Scientific Committee or Commission.
7. Where requested by the CCAMLR Scientific Committee or Commission, in relation to specified stocks, to develop and report on alternative rebuilding scenarios.
8. To conduct environmental impact assessments and qualitative or quantitative risk assessments in relation to bycatch species, other species of concern, benthic systems, or vulnerable marine ecosystems to support the work of the CCAMLR Scientific Committee and Commission.

Working Group reports

9. To review, and update if necessary, the “Status of the Stocks” tables in the Fisheries Assessment Plenary report based on new data or analyses, or other relevant information.
10. To complete (and/or update) the Status of Stocks tables using the template provided in the Introductory chapter of the most recent May Plenary report.
11. To review, and update if necessary, the “Antarctic Science” chapter of the Aquatic Environment and Biodiversity Review (AEBAR) based on new data or analyses, or other relevant information.
12. It is desirable that full agreement amongst technical experts is achieved on the text of the ANTWG reports. If full agreement amongst technical experts cannot be reached, the Chair will determine how this will be depicted in the ANTWG report, will document the extent to which agreement or consensus¹⁰ was achieved, and record and attribute any residual disagreement in the meeting notes.

Papers and reports to CCAMLR

13. Papers and reports summarising work reviewed by the ANTWG are generally submitted to CCAMLR’s Scientific Committee, and their content varies widely. It is desirable that full agreement amongst technical experts is achieved on the content of such papers or reports, noting that deadlines for submission to CCAMLR may require the Chair to finalise text after a meeting of the ANTWG has considered and resolved scientific issues. If full agreement amongst technical experts cannot be reached, the Chair will determine how this will be depicted in the paper or report to be submitted to CCAMLR. In such cases, the Chair will also document the extent to which agreement or consensus¹⁰ was achieved and record and attribute any residual disagreement in the meeting notes.

Membership and Protocols for all Science Working Groups

14. ANTWG members are bound by the Membership and Protocols required for all Science Working Group members (see separate document).

FISHERIES ASSESSMENT WORKING GROUPS: MEMBERSHIP 2026

Antarctic Working Group

Convenors: Ian Tuck

Members: Adam Berry, Nancy Bertler, Jennifer Devine, Alistair Dunn, Regina Eisert, Jack Fenaughty, Brit Finucci, Simon Lampling, Warrick Lyon, Sophie Mormede, Richard O’Driscoll, Enrique Pardo, Steve Parker, Matt Pinkerton, Brodie Plum, Kazuto Senga, Ben Sharp, Andy Smith, Perry Smith, Leigh Tait, Aimee Tang, Hamish Tijssen, Barry Weeber, Alina Wieczorek.

¹⁰ Consensus means the group generally agrees, and no member disagrees so strongly on scientific grounds that their remaining concerns need to be formally recorded and attributed in the meeting notes

Species: Antarctic toothfish

Aquatic Environment Working Group – Protected Species

Convenors: William Gibson

Members: Ed Abraham, Carolyn Aguilar, Owen Anderson, Sonja Austin, Hilary Ayrton, Karen Baird, Barry Baker, Scott Baker, Joshua Baller, Josh Barclay, Steve Beatson, Erik Behrens, Elizabeth Bell, Mike Bell, Katrin Berkenbusch, Tiffany Bock, Laura Boren, Christine Bowden, David Bowden, Erin Breen, Paul Breen, Anthony Brett, Tom Brough, Curly Brown, Ian Brown, Sarah Bury, Glen Carbines, Susan Chalmers, Mark Chambers, Simon Childerhouse, Malcolm Clark, Tom Clark, Katie Clemens-Seely, Deanna Clement, George Clement, Damian Cloeter, Rochelle Constantine, Justin Cooke, Vonda Cummings, Roberta D’Archino, Steve Dawson, Igor Debski, Jessica Desmond, Jennifer Devine, Christopher Dick, Peter Dillingham, Clinton Duffy, Alistair Dunn, Matt Dunn, Charles Edwards, Mark Edwards, Pablo Esobar-Flores, Jack Fenaughty, Brit Finucci, David Foster, Allen Frazer, Debbie Freeman, Richa Garg, Sharleen Gargiulo, Shane Geange, Mark Geytenbeek, Dave Goad, Bruce Hartill, Barb Hayden, Jeremy Helson, Hannah Hendriks, Kristina Hillock, Freyda Hjorvarsdottir, Lyndsey Holland, Steven Holmes, Simon Hoyle, Lucy Jacob, Emma Jones, Daniel Kerrigan, Brianna King, Kirstie Knowles, Jo Lambie, Todd Landers, Kath Large, Laws Lawson, Mary Livingston, Carolyn Lundquist, Dave Lundquist, Greg Lydon, Gemma McGrath, Andy McKenzie, Darryl MacKenzie, Lucy Manning, Thomas Mattern, Sue Maturin, Stefan Meyer, Karen Middlemiss, David Middleton, Jodi Milne, Janice Molloy, Kiri Morgan, Mark Morrison, Riki Mules, Philipp Neubauer, Richard O’Driscoll, Enrique Pardo, Graham Parker, Steve Parker, Darren Parsons, Michael Patrick, Heiko Philippi, Johanna Pierre, Matt Pinkerton, Tiffany Plencner, Will Rayment, Trish Rea, Nathan Reid, Yvan Richard, Jesse Rihia, Peter Ritchie, Jim Roberts, Ashley Rowden, Richard Saunders, Carol Scott, Katherine Short, Liz Slooten, Andy Smith, Paul Starr, Kevin Sullivan, Darryl Sykes, John Taunton-Clark, Graeme Taylor, David Thompson, Finlay Thompson, Hamish Tijssen, Rob Tilney, Geoff Tingley, Rob Tinkler, Di Tracey, Ian Tuck, Dominic Vallieres, Anton van Helden, Josh van Lier, Adam Watson, Shannon Weaver, D’Arcy Webber, Trudi Webster, Barry Weeber, Richard Wells, Tamar Wells, James Williams, Oliver Wilson, Andrew Wright, Jingjing Zhang.

Aquatic Environment Working Group – Benthic and Habitats

Convenors: Karen Tunley

Members: Carolyn Aguilar, Harry Allard, Vikki Ambrose, Owen Anderson, Sonja Austin, Mike Beentjes, Andrew Biggerstaff, Tiffany Bock, David Bowden, Tom Brough, Curly Brown, Glen Carbines, Anthony Charsley, Michelle Cherrington, Malcolm Clark, Tom Clark, George Clement, Roberta D’Archino, Jean Davis, Jennifer Devine, Christopher Dick, Kim Drummond, Clinton Duffy, Charles Edwards, Rosa Edwards, Jack Fenaughty, David Foster, Shane Geange, Bianca Hampton, Barb Hayden, Freya Hjorvarsdottir, Lyndsey Holland, Aaron Irving, Emma Jones, Daniel Kerrigan,

Appendices

Brianna King, Jo Lambie, Laws Lawson, Daniel Leduc, Eva Leunissen, Megan Linwood, Drew Lohrer, Carolyn Lundquist, Greg Lydon, Kevin Mackay, Alicia McKinnon, Olivia Maes, Karen Middlemiss, David Middleton, Marco Milardi, Jodi Milne, Bradley Moore, Sophie Mormede, Mark Morrison, Charlotte Mortimer, Riki Mules, Campbell Murray, Wendy Nelson, Philipp Neubauer, Richard O'Driscoll, Enrique Pardo, Darren Parsons, Matt Pinkerton, Marine Pomarède, Nathan Reid, Mathilde Richer de Forges, Jesse Rihia, James Robertson, Ashley Rowden, Kareen Schnabel, Clara Schlieman, Alexandra Schwaab, Carol Scott, Katherine Short, Paul Sieberhagen, Andy Smith, Benjamin Steele-Mortimer, Scott Stephens, Fabrice Stephenson, Phillip Sutton, Jordi Tablada, Amelia Tan, John Taunton-Clark, Karli Thomas, Rob Tilney, Geoff Tingley, Robert Tinkler, Di Tracey, Laura Tremblay-Boyer, Ian Tuck, Josh van Lier, Oli Wade, Cath Wallace, Barry Weeber, Richard Wells, James Williams, John Willmer, Oliver Wilson, Robert Win, Brent Wood, Andrew Wright.

Aquatic Environment Working Group – Non-Target Fish and Invertebrate Catch

Convenors: Campbell Murray

Members: Aaron Irving, Alex Kroch, Alex Burton, Alexandra Northmore, Alistair Dunn, Andy Biggerstaff, Arnaud Gruss, Barry Weeber, Ben Sharp, Ben Steele-Mortimer, Brianna King, Brit Finucci, Carol Scott, Cath Wallace, Charlie Edwards, Chelsea McGaw, Chloe Hauraki, Clinton Duffy, Darren Parsons, Daryl Sykes, Dave Foster, Dave Goad, Dave Lundquist, David Kopp, David Middleton, Emma Jones, Enrique Pardo, Fabrice Stephenson, Geoff Tingley, Glen Carbines, Greg Lydon, Hannah Mello, Howard Reid, Ian Tuck, Inge Wisselink, Jack Fenaughty, James Andrew, Jaret Bilewitch, Jennifer Devine, Jeremy McKenzie, John Willmer, Karen Tunley, Karen Middlemiss, Kat Goddard, Kat Manno, Kath Large, Katie Goodwin, Katrin Berkenbusch, Laws Lawson, Lyndsey Holland, Malcom Clark, Malene Felsing, Marco Milardi, Marianne Nyegaard, Mark Morrison, Martin Cryer, Marty Bowers, Matt Dunn, Matthew Rolfe, Megan Linwood, Nathan Reid, Olivia Hamilton, Owen Anderson, Phil Heath, Rochelle Constantine, Richard Wells, Richard O'Driscoll, Rob Tinkler, Simon Childerhouse, Sonja Austin, Sophie Mormede, Stefan Meyer, Susannah Lynch, Sydney Curtis, Tamar Wells, Tanayaz Patil, Todd Landers, Trent Rasmussen, Trish Rea, Victoria Warren, Warrick Lyon.

Biodiversity Research and Advisory Group (BRAG)

Convenor: Jean Davis

Members: Alexander Arkhipkin, Adam Smith, Alex Kroch, Alexandra Northmore, Alice Rogers, Allen Frazer, Andrew Biggerstaff, Anna Berthelsen, Anna Wood, Anthony Brett, Barry Weeber, Ben Steele-Mortimer, Bruce Hartill, Campbell Murray, Carol Scott, Cath Wallace, Charlotte Mortimer, Clifford Baird, Dan MacGibbon, Darren Parsons, David Foster, David Goad, David Middleton, Denham Cook, Drew Lohrer, Emma Jones, Emma O'Malley, Enrique Pardo, Geoff Tingley, Hannah Mello, Harry Allard, Heather Benko, Howard Reid, Ian Tuck, Jack Fenaughty, Jake Hore,

Appendices

James Andrew, James Bell, James Robertson, Jaret Bilewitch, Jim Roberts, John Holdsworth, John Richardson, John Willmer, Jordi Tablada Torres, Judi Hewitt, Karen Lisa Tunley, Kath Large, Katherine Short, Kathryn Lister, Kirsten Rodgers, Leigh Tait, Lyndsey Holland, Marc Griffiths, Marianne Lukkien, Marine Pomarede, Mark Edwards, Mark Morrison, Matt Pinkerton, Matthew Desmond, Matthew Rolfe, Megan Carbines, Megan Linwood, Ohad Peleg, Olivia Hamilton, Owen Anderson, Pamela Mace, Paul Creswell, Phil Heath, Phil Ross, Rich Ford, Richard O'Driscoll, Rob Gear, Robert Tinkler, Sam Thomas, Samuel Heenan, Shruti Suvarna, Svenja Halfter, Sydney Curtis, Tom Brough, Tracey Turner, Victoria Syddall, Vikki Ambrose, Vonda Cummings, William Gibson

CURRENT AQUATIC ENVIRONMENT AND BIODIVERSITY FUNDED AND RELATED PROJECTS

Table 3. Current Aquatic Environment and Biodiversity funded and related projects.

Theme	Project code	Project title	Specific objectives	Status	Citation/s
AQU	AQU2025-01	Update the Ecological Effects of Aquaculture Guidance Document	<ol style="list-style-type: none"> 1. Review the existing document and summary. Update each chapter to reflect research undertaken since 2013. 2. Provide new chapters or sections to each chapter that addresses restorative aquaculture in a New Zealand context. 	In progress	
AQU	AQU2023-05	Identifying environmental drivers of mussel spat survival and growth	<ol style="list-style-type: none"> 1. Establish an industry led consortium to define the research strategies and delivery for the project objectives. 2. Deliver a quantitative assessment of mussel nursery site performance for a range (geographic and performance level) of sites. 3. Develop a predictive performance model for mussel nursery sites based on key environmental parameters. 4. Test the predictive performance model. 	In progress	<p>South et al. (2024) AEBR 346</p> <p>South et al. (2025) AEBR 368</p>
BEN	BEN2025-01	Identification of invertebrate bycatch from deepwater fisheries and trawl surveys	<ol style="list-style-type: none"> 1. To identify deepwater non-target and on-protected invertebrates to the highest taxonomic level possible in samples taken during research trawls and by observers on fishing vessels targeting deepwater stocks and update relevant databases recording the catch of invertebrates in research trawls and commercial fishing. 2. To identify invertebrate bycatch the highest taxonomic resolution possible in images collected by observers and update relevant databases recording the catch of invertebrates in commercial fishing. 	In progress	
PRO	DAT2023-04C	PSC Suite - 2022/2023, and 2023/2024 catch all	<ol style="list-style-type: none"> 1. Utilising existing databases, prepare an update to the PSC database for the 2022–23, 2023–24, and 2024–25 fishing year linking data from commercial catch and effort databases (e.g., EDW), fisheries observer databases (i.e., COD), protected species captures databases owned by Fisheries New Zealand (e.g., OREO, sea lion SLED database, etc.), and the necropsy database owned by DOC. 2. Estimate capture rates and total captures of seabirds, fur seals, common dolphins, Hector's 	In progress	

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			dolphin, New Zealand sealions, and turtles by method, area, and target fishery, and, where possible, by species for the 2022–23, 2023–24, and 2024–25 fishing years.		
PRO	PMM2024-03	Update to the quantitative Risk Assessment of Threats to New Zealand Sea Lions	<ol style="list-style-type: none"> 1. Collect and analyse an additional nine years of data (1 October 2015 to 30 September 2024) to assess the goals in the NZSL Threat Management Plan (TMP). 2. Based on the additional data collected in Specific Objective 1, use an integrated assessment model for quantitative risk assessment and fit it to demographic observations including mark-recapture data, pup census data and proportion-at-age estimates. 	In progress	
PRO	PMM2024-06	Study to assess diurnal offshore movement and fishing gear interactions in Hector's dolphins off the east coast and south coast of the South Island	<ol style="list-style-type: none"> 1. For each sub-population of Hector's dolphin off the east coast and south coast of the South Island design a DTAG study to assess diurnal offshore movement. 2. For each sub-population of Hector's dolphin off the east coast and south coast of the South Island design a study in which hydrophones are attached to fishing gear to assess the level of non-observable interactions or that occur. 3. Analyse and discuss how the insights provided from Specific Objective 1 and 2 would support objectives under the Threat Management Plan 2020 and provide greater precision to future iterations of the Hector's and Māui risk assessment. 4. Provide an estimate of costing for the studies in Specific Objectives 1 and 2 at a sub-population level. 	In progress	
PRO	PRO2024-03	Trialling LED mitigation in setnet fisheries to assess effect on target fish species catch and protected species bycatch	<ol style="list-style-type: none"> 1. Provision of green LED (500 nm) light mitigation technology for use on three setnet vessels. 2. Train fishers in the use of mitigation technology. 3. Analyse target catch and bycatch rates 	In progress	
PRO	PSB2024-01	Population and distribution modelling of king shag	<ol style="list-style-type: none"> 1. Summarise input data into distribution model for king shag (<i>Leucocarbo carunculatus</i>). 2. Construct distribution model to fit all available tracking and sightings-based spatial data for king shag around the Marlborough Sound. 3. Analyse overlap between king shag and anthropogenic activity within the 	In progress	

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			Marlborough Sounds using outputs from objective Two.		
PRO	RIS2023-02	Hector's and Māui dolphin multi-threat risk assessment to support review of the TMP	<ol style="list-style-type: none"> 1. Review population models for Māui dolphins, and for Hector's dolphins in those regional sub-populations used by Roberts et al. (2019) and Roberts & Webber (2023). Update as necessary. 2. Review distribution models for Māui dolphins, and for Hector's dolphins used by Roberts et al. (2019) and Roberts & Webber (2023). 3. Update maps of potential non-fishery threats to Māui and Hector's dolphins and estimate the overlap between dolphin distributions and both fishery and non-fishery threats. 4. Apply model from Roberts et al. (2019) to estimate fisheries impact and risk to Māui and Hector's dolphins, using the new information in the objectives above, including at a regional sub-population level. This analysis should include estimation and partition of total mortalities attributable to different threats (with uncertainty) at a regional sub-population level. 5. In consultation with government scientists and managers examine the effectiveness of current spatial management through both modelling and participation in a multi-threat risk assessment workshop. As needed, propose alternative spatial management scenarios where population recovery goals are not likely to be met. 	In progress	
PRO	RIS2024-03	Domestic Risk Assessment for New Zealand Seabirds Deepdive	<ol style="list-style-type: none"> 2. Undertake additional sensitivity analyses of the Edwards et al. (2023) model. 3. Provide additional reporting of the input parameters and the derivation for the Edwards et al. (2023) model. 4. Disaggregate the results of the five highest risk species in the Edwards et al. (2023) model. 	In progress	
PRO	RIS2024-04	Protected Species Population Sustainability Threshold simulations and comparisons to international approaches	<ol style="list-style-type: none"> 1. Run Population Sustainability Threshold (PST) simulations for a range of protected species taxa (to be decided under Research Reporting objective 1 after recommendations in the RFP) and run sensitivities for each input parameter. 2. Compare PST simulations from Specific Objective 1 with estimates of Potential Biological Removals (PBR). 	In progress	

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			3. Develop a list of assumptions that must be met based on outcomes 1 and 2 for the application of PST in risk assessments (including submission of primary literature publication).		
PRO	RIS2025-02	Southern Buller's albatross multi-threat risk assessment	<ol style="list-style-type: none"> 1. Construct population and distribution models for the Southern Buller's albatross colony/sub-population (using data from DOC ongoing monitoring). 2. Map fishery and non-fishery threats to Southern Buller's albatross and estimate the overlap between multi-year albatross distributions and threats. 3. Apply method from Antipodean albatross multi-threat risk assessment to estimate effect that overlap of threats with Southern Buller's albatross has on population trajectory. This analysis should include estimation and partition of total mortalities attributable to different threats (with uncertainty). 4. In consultation with government scientists and managers examine alternate spatial management scenarios through both modelling and participation in a multi-threat risk assessment workshop. 	In progress	
ZBD	ZBD2024-01	Extension of Continuous Plankton Recorder Project (Est. 2008)	<ol style="list-style-type: none"> 1. To map changes in the quantitative distribution of epipelagic plankton (including copepods and euphausiid (krill) life stages) and to track the abundance and variability of marine microplastics, in the ocean between New Zealand (southern EEZ) and the Ross Sea (Antarctica). 2. To continue and extend the 15-year time-series sampling of zooplankton and microplastic sampling by conducting 2 annual return transits (4 transits in total) with the Continuous Plankton Recorder (CPR) between Aotearoa New Zealand and the Ross Sea (Antarctica) during 2 austral summers (2024/25 and 2025/26) in collaboration with Sanford Limited. Transport samples to Aotearoa New Zealand and store appropriately. 3. Using the 15-year New Zealand dataset, and the full international dataset from the SCAR Southern Ocean-CPR survey (SO-CPR), carry out retrospective analysis of the impact of subsampling on data analysis and conclusions. In particular, consider the effect of subsampling on analyses to: <ol style="list-style-type: none"> a. Characterise latitudinal and temporal changes in the zooplankton populations 	In progress	Pinkerton et al. (2026) AEBR 374

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			<p>in New Zealand's EEZ and transit to the Ross Sea (including long-term trends, and similarities/differences between zooplankton in the Ross Sea region and elsewhere in the Southern Ocean).</p> <p>b. Complete coupled analysis of zooplankton with environmental data (including phytoplankton) to investigate causes of variation in zooplankton in the Ross Sea region and elsewhere in the Southern Ocean.</p> <p>c. Quantify and track changes in the abundance and type of marine microplastics in the ocean between New Zealand (southern EEZ) and the Ross Sea. Discuss these results with Aotearoa stakeholders and the international SO-CPR leadership. Present these results to the international CPR science community.</p> <p>4. Conduct laboratory analysis of two years of samples collected by the CPR (samples collected in 2023/24 and 2024/25), using methods generally consistent with the SO-CPR but also subsampled, taking into account results from Objective 2. Contribute the data collected to the SO-CPR.</p>		
ZBD	ZBD2024-04	Developing a climate vulnerability assessment tool for New Zealand's fisheries	<ol style="list-style-type: none"> 1. To review international approaches to climate change vulnerability assessments for fisheries and identify existing frameworks that could be adapted for use in New Zealand. 2. To develop a climate vulnerability assessment for New Zealand's fisheries that can be applied to any fishery or region and a user guide. 3. To apply the vulnerability assessment to a priority fishery or region. 	In progress	Boyce et al. (2025) AEBR 367
ZBD	ZBD2024-07	Diet plasticity of predators in the Hauraki Gulf marine food web	<ol style="list-style-type: none"> 1. Identify methods for investigating diet plasticity in the proposed species and design a sampling plan to create a robust, cost-effective, and replicable characterisation of their diet (incorporating temporal, spatial and individual variability). Appropriate methods could include but are not limited to Stable isotope, DNA, Stomach content. Proposals should demonstrate supplier knowledge on proposed methods. 2. Describe methodology for collecting samples to characterise predator diet, followed by sample preparation and laboratory analysis using the methods and species described in Specific Objective 1. Samples should identify 	In progress	

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			<p>impacts on food webs and identify what impacts community fishing is having. Samples should include up to five seabird species including breeding and nonbreeding and 1-2 dolphin species. MPI recognizes that the number of species that can be characterised within the allocated budget for this study will depend on the chosen approach and methodology and invites applicants to propose the most important species to focus on and what is viable within the allocated funding based on expert knowledge.</p> <p>3. Describe methodology for analysing diet data collected for each species to characterise diet plasticity and discuss the results in relation to the impacts of the broader marine food web and regional fisheries.</p>		
ZBD	SEA2026-01	Climate links to Fish Recruitment	<p>1. Update correlations between Level-1 quantitative fish stock recruitment estimates and appropriate climate indices.</p>	In progress	

HISTORICAL AQUATIC ENVIRONMENT AND BIODIVERSITY FUNDED AND RELATED PROJECTS

Table 4. Historical Aquatic Environment and Biodiversity funded and related projects. Research themes are ordered alphabetically (AQU = Aquaculture, BEN = benthic, BYC = bycatch, ECO = Ecosystems/Ecology, NPB = Non-Protected Bycatch, PRO = protected species, ZBD = biodiversity). AEBR citations can be found in an online repository [here](#), and FAR and FRR reports can be found [here](#).

Theme	Project code	Project title	Specific objectives	Status	Citation/s
AQU	AQU2024-05	Best Practice Guidelines for monitoring inshore marine farms	<p>1. Review existing information and produce draft guidelines.</p> <p>2. Finalise BMP Monitoring Guidelines through workshops with Iwi, Councils, industry, and stakeholders.</p>	Cancelled	
AQU	AQU2022-06	Environmental health measurements for open ocean aquaculture	<p>1. Identify key sessile and/or mobile epifaunal or infaunal species that are likely to occur in dispersive environments that may be affected by low level organic enrichment derived from open ocean finfish aquaculture.</p> <p>2. Define the effects of low levels of organic enrichment on the health of key species identified in Specific Objective 1.</p>	Complete	<p>McMullin & McGrath (2023) AEBR 317</p> <p>McMullin et al. (2025) AEBR 353</p> <p>McMullin et al. (2025) AEBR 364</p>

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			3. Assess the potential magnitude and effect of low level organic enrichment from OOA on environmental/ecosystem health.		
AQU		Type 1 monitoring (rapid benthic health assessments) protocol for Marlborough Sounds salmon farms		Complete	Bennett & Elvines (2022) AEBr 295
AQU		Best management practice guidelines for salmon farms in the Marlborough Sounds Part 1: Benthic environmental quality standards and monitoring protocol (Version 1.2 August 2022)		Complete	Fletcher et al. (2022) AEBr 294
AQU	Funded by the Aquaculture Strategy and Development team of Fisheries New Zealand	Best practice guidelines for benthic and water quality monitoring of open ocean finfish culture in New Zealand		Complete	Giles et al. (2021) AEBr 278
AQU	Funded by the Aquaculture Strategy and Development team of Fisheries New Zealand	Best practices and technologies available to minimise and mitigate the interactions between finfish open ocean aquaculture and marine mammals		Complete	Clement et al. (2021) AEBr 273
AQU	Funded by the Aquaculture Strategy and Development	Best practices and technologies available to minimise and mitigate the interactions between		Complete	Gaskin et al. (2021) AEBr 272

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
	nt team of Fisheries New Zealand	finfish open ocean aquaculture and seabirds			
AQU		Best management practice guidelines for salmon farms in the Marlborough sounds Part 2: Water quality standards and monitoring protocol (Version 1.0)		Complete	Elvines et al. (2019) AEBR 230
AQU		Best Management Practice guidelines for salmon farms in the Marlborough Sounds: Part 1: Benthic environmental quality standards and monitoring protocol (Version 1.1 January 2018)		Complete	Keeley et al. (2019) AEBR 219
BEN	BEN2023-01	Mobile bottom fishing footprint - assessment and development of estimation methods using ER and GPR data	1. To help MPI groom fisher-reported and GPR data, develop a hybrid approach using both GPR and ER data, and to report on and compare summary statistics and trends estimated using different approaches up to the 2022–23 fishing year. 2. Assess the effect of the introduction of a hybrid approach on footprint estimations for key inshore target species and deepwater tier 1 target species.	Complete	MacGibbon et al. (2026) AEBR 372
BEN	BEN2022-01	Extent and intensity of bottom contact by commercial trawling in New Zealand waters, 1990–2022	To help MPI groom data, develop and compile summary statistics for all deepwater and inshore trawl and dredge fishing by year, depth zone, sediment categories, fishable area, and any other agreed habitat classifications or proxies and to identify any trends or changes to meet management needs	Complete	MacGibbon et al. (2024) AEBR 344
BEN	BEN2022-06	Baseline survey of benthic habitats in the Hauraki Gulf and the design of a benthic habitat recovery monitoring programme	1. To design a long-term monitoring programme to enable the assessment of benthic habitat change following the closure of areas to mobile bottom fishing as set out in the Hauraki Gulf Fisheries Plan.	Complete	Morrison et al. (2025) FRR

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			2. To collect baseline data as required and described by the outputs of Specific Objective 1.		
BEN	BEN2021-01	Characterisation of benthic habitats in the Marlborough Sounds and their potential as HPSFM	<p>1. Identify and characterise benthic habitats in the Marlborough Sounds.</p> <p>2. Determine their potential as habitats of particular significance for fisheries management in conjunction with fisheries managers at Fisheries New Zealand and the work they are doing to develop guidance on determining such habitats.</p> <p>3. To identify brood-stock areas of scallops in the Marlborough Sounds region</p>	Complete	
BEN	BEN2021-02	Funding Agreement Marine habitat mapping Māhia Peninsula	The project aims to continue marine habitat mapping work in the region. The nature of the services include: use of the Research Vessel Ikatere to collect bathymetric, water column, and backscatter data using a dual-channel, high-resolution multibeam echo sounder; use the collected data to process into a Benthic Terrain Model (BTM) to classify the seafloor into zones based on bathymetric variability; production of a Final Mapping Survey Report which will include a brief description of work, equipment and methods employed, GIS data and benthic terrain classification images (both physical and virtual).	Complete	Project outputs delivered to HBRC. No report published by FNZ
BEN	BEN2021-03	Taxonomic identification of benthic invertebrate samples	<p>1. To taxonomically identify deepwater benthic invertebrates to species level where possible in samples taken during research trawls and by observers on fishing vessels targeting deepwater stocks.</p> <p>2. To update relevant databases recording the catch of invertebrates in research trawls and commercial fishing.</p>	Complete	Schnabel et al. (2026) AEBR 371
BEN	BEN2021-05	Habitat degradation and impacts on blue cod populations	<p>1. To identify key benthic habitats utilised by different life stages of blue cod in the northern Canterbury and the Marlborough Sounds regions.</p> <p>2. To review and identify environmental stressors to blue cod habitats around Kaikōura, Motunau, Banks Peninsula, and the Marlborough Sounds, and assess the extent/footprint of each stressor.</p> <p>3. To determine if and how key habitat features have been modified in the four locations and examine the relationship between habitat change</p>	Complete	Brough et al. (2023) AEBR 323

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			and blue cod populations within each of the locations.		
BEN		Characterising the shallow, soft-seafloor biomes of northern New Zealand's Bay of Islands		Complete	Booth et al. (2023) AEFR 310
BEN	BEN2020-01	Extent and intensity of bottom contact by commercial trawling and shellfish dredging in New Zealand waters, 1990–2021	<p>1. To assist MPI with grooming of fisher reported data and compile summary statistics for all deepwater (1989–2020) and inshore trawl and dredge fishing (2007–2020) by fishing year, depth zone, sediment categories, fishable area, and any other agreed habitat classifications or proxies, and to identify any trends or changes to meet management needs.</p> <p>2. To develop methods to map the extent and intensity of bottom contact by bottom fisheries for 2018–19 using GPR data and compare the outputs to those derived in Objective 1.</p>	Complete	MacGibbon and Mules (2023) AEFR 316
BEN	BEN2020-07	Underwater Topographic Features in the New Zealand region: development of an updated 'SEAMOUNT' database and information on the extent and intensity of deep-sea trawl fisheries on them.	<p>1. Update the database of all known UTFs with elevations exceeding 100 m in New Zealand's EEZ and develop a GIS layer delineating all known UTFs.</p> <p>2. Estimate the extent and intensity of trawl effort on or near the seafloor of UTFs for each fishing year between 1989–90 and 2019–20</p>	Complete	Clark et al. (2022) AEFR 291
BEN	KAI2020-01	Monitoring of rocky reef habitats across degrees of uplift caused by the 2016 Kaikoura earthquake	<p>1. Repeat three annual surveys of 16 intertidal areas across degrees of uplift.</p> <p>2. Repeat three annual surveys of 6 subtidal sites across degrees of uplift.</p> <p>2. Assess the recovery of nearshore rocky reef communities.</p>	Complete	Schiel et al. (2024) AEFR 328
BEN	SEA2020-14	Pelorus multibeam ground truthing and analysis	1. Generate BTM classifications from attributes, including depth, depth statistics (standard deviation), depth range (difference between minimum and maximum depth), slope (angular units from the horizontal), slope statistics (standard deviation), curvature (a measure of the change of slope), aspect (direction of the downslope dip) and	Complete	Maier et al. (2021) FRR 4202

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			<p>rugosity (ratio of surface area to planar area, roughness) or a measure of terrain complexity.</p> <p>2. Data compilation of marine mammal sighting into the integrated GIS project.</p> <p>3. Production of GIS layers for MPI and compilation of a digital summary document that provides an overview of the BTM results and appropriate examples.</p>		
BEN	ZBD2020-06	Exploring the use of spatial decision-support tools to identify trawl corridors in the Hauraki Gulf Marine Park	<p>1. Assess the potential for the recovery of habitats, offered by various spatial planning scenarios, taking into account meta-community dynamics, habitat condition, and ongoing stressors at local and regional scales and the interactive effects thereof.</p> <p>2. Identify feasible strategies for the recovery and maintenance of habitats in the Hauraki Gulf Marine Park and suggest principles for future spatial planning processes to enhance recovery potential.</p> <p>3. Identify areas that contain habitat types or biodiversity vulnerable to trawling and Danish seine fishing methods.</p> <p>4. Quantify benthic impacts of bottom trawl fisheries and assess habitat naturalness using available fishing effort data and the outputs of project BEN2019-04.</p> <p>5. Develop GIS layers representing value of fished areas to the fishing industry in conjunction with Fisheries New Zealand and the fishing industry.</p> <p>6. Following a series of advisory group workshops, identify corridors that could be utilised for trawling and Danish seine fishing activities while allowing for the recovery of benthic habitats and the protection of benthic biodiversity within the Hauraki Gulf Marine Park.</p>	Complete	Bennion et al. (2023) AEBR 306
BEN	ZBD2020-07	Recovery of Seamount Communities	<p>1. To repeat the quantitative photographic survey of benthic invertebrate communities on features of the Graveyard Knolls complex.</p> <p>2. To assess changes in benthic communities since the first survey in 2001.</p>	Complete	<p>Clark et al. (2021) AEBR 262</p> <p>Clark et al. (2022) AEBR 292</p>

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
BEN	BEN2019-01	Monitor the extent and intensity of bottom contact by trawl and dredge fishing in the Territorial Sea and Exclusive Economic Zone	<p>1. To help MPI groom data, develop and compile summary statistics for all deepwater and inshore trawl and dredge fishing by year, depth zone, sediment categories, fishable area, and any other agreed habitat classifications or proxies, and to identify any trends or changes and meet management needs.</p> <p>2. To update any relevant sections of the Aquatic Environment and Biodiversity Annual Review and Environmental and Ecosystem considerations sections of the Fisheries Assessment Plenary documents with new results.</p>	Complete	Baird & Mules (2021b) AEBR 260
BEN	BEN2019-04	Spatially explicit benthic impact assessments for bottom trawling in New Zealand	<p>1. Characterise all mobile bottom fishing gear configurations used since 2007/8 for inshore fisheries, and since 1989/90 for deepwater fisheries.</p> <p>2. Determine the spatial and temporal extent of bottom contact by different fishing gear configurations.</p> <p>3. Characterise the impacts of different gear configurations on key benthic taxa and/or communities.</p>	Complete	Rowden et al. (2024) AEBR 329
BEN	BEN2019-05	Spatial decision support tool development for managing the impacts of bottom fishing on in-zone, particularly vulnerable or sensitive habitats.	<p>1. Compile relevant inputs to be used in a spatial planning tool. This should include benthic biodiversity inputs, naturalness and the value to resource users.</p> <p>2. Apply the outputs of objective 1 to a spatial decision support tool to be used by fisheries management that will enable scenario testing and allow for the cost to fishing to be determined.</p> <p>3. Update any relevant sections in the Aquatic Environment and Biodiversity Annual Review with new results.</p>	Complete	Lundquist et al. (2024) AEBR 336
BEN	BEN2018-01	Monitoring of trawl footprint (including coastal).	<p>1. To help MPI groom data, develop and compile summary statistics for all deepwater and inshore trawl fishing by year, depth zone, fishable area, and any other agreed habitat classifications or proxies, and to identify any trends or changes to meet management needs.</p> <p>2. To update any relevant sections in the Aquatic Environment and Biodiversity Annual Review and Environmental and Ecosystem considerations</p>	Complete	Baird & Mules (2021a) AEBR 259

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			sections of the Fisheries Assessment Plenary documents with new results.		
BEN	BEN2018-03	Best practice in marine image analysis for determining taxa, habitat or substrate distribution.	To complete a desktop analysis to determine how high-quality data on taxonomic, habitat or substrate occurrence can be best collected or extracted from deep sea video imagery.	Complete	Bowden et al. (2020) AEFR 239
BEN	DAE2018-04	Taxonomic identification of benthic specimens	<p>1. To identify deepwater benthic invertebrates in samples taken during research trawls and by observers on fishing vessels targeting deepwater stocks.</p> <p>2. To update relevant databases recording the catch of invertebrates in research trawls and commercial fishing</p>	Complete	Schnabel et al. (2021) AEFR 269
BEN	BEN2017-01	Monitoring of deepwater trawl footprint	<p>1. To help MPI groom data, develop summary statistics, for Tier 1 deepwater fisheries and the aggregate of all Tier 1 and Tier 2 deepwater fisheries, of the extent and frequency of fishing by year, by depth zone, by fishable area, and by predicted BOME habitat class, and to identify any trends or changes to meet management needs.</p> <p>2. To update any relevant sections in the Aquatic Environment and Biodiversity Annual Review and Environmental and Ecosystem considerations sections of the Fisheries Assessment Plenary documents with new results from this work.</p>	Complete	Baird & Mules (2019) AEFR 229
BEN	SCA2017-03	Scallop habitat suitability in SCA7	<p>1. To map and characterise a gradient of environments within SCA7 that potentially support scallops.</p> <p>2. To sample and monitor a range of scallop indices across this gradient to determine factors suppressing settlement, growth and survival of scallops in the previously productive parts of the fishery.</p> <p>3. To monitor the survival and growth of scallop spat across this gradient to determine suitable sites for scallop reseeded or other intervention.</p>	Complete	Williams et al. (2024) AEFR 342
BEN		A data driven bioregionalisation to underpin shellfish fisheries		Complete	Handley et al. (2018) AEFR 205

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
		restoration, Nelson Bays, New Zealand			
BEN	DAE2016-05	Monitoring the trawl footprint for deepwater fisheries	<ol style="list-style-type: none"> 1. To estimate the trawl footprint and map the spatial and temporal distribution of trawling on or near the seabed throughout the EEZ between 1989/90 and the most recent completed fishing year. 2. To produce summary statistics, for Tier 1 deepwater fisheries and the aggregate of all Tier 1 and Tier 2 deepwater fisheries, of the extent and frequency of fishing by year, by depth zone, by fishable area, and by predicted BOMEC habitat class, and to identify any trends or changes to meet management needs. 3. To update any relevant sections in the Aquatic Environment and Biodiversity Annual Review and Environmental and Ecosystem considerations sections of the Fisheries Assessment Plenary documents with new results from this work. 	Complete	Baird & Wood (2018) AEFR 193
BEN	KAI2016-05	Rocky reef impact quantification and monitoring for the Kaikoura earthquake	<ol style="list-style-type: none"> 1. Determine the impact of the Kaikōura earthquake on rocky reef systems, this may also include sub-lethal responses where methodologies to test this exist. 2. Assess long-term monitoring sites to quantify the recovery from the earthquake in order to inform future marine management decisions. 3. Compare impacts across the range of uplift and habitats impacted on the rocky shore. 4. Continue monitoring sediment cover to suggest causation between short-term uplift and potentially longer-term increased sedimentation as a result of the Kaikōura earthquake. 5. Where possible include local participation in the recovery package work and specifically refer to relevant South Island iwi (Te Rūnanga o Kaikōura and Te Tau Ihu), and local community. 	Complete	<p>Alestra et al. (2019) AEFR 212</p> <p>Alestra et al. (2020) FAR2020/01</p> <p>Alestra et al. (2021) AEFR 253</p>
BEN	SEA2016-08	Power Analysis - Benthic Fauna in Spirits Bay	Using previous survey results, conduct a power analysis to estimate the likelihood of a range of survey designs consistent with the monitoring programme from project ENV2005/23 detecting changes in key indicators of the state of the benthic communities in Spirits Bay and Tom Bowling Bay since the last survey.	Complete	

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
BEN	SEA2016-12	SEA2016-12 GLM Spat composition	Half funding of GLM spat composition study for 90 mile beach (aquaculture unit funding the other half).	Complete	
BEN	BEN2014-01	Risk assessment for benthic habitats, biodiversity, and production	<p>1. To review the design and implementation of management frameworks, including objectives and targets, to manage the effects of mobile bottom fishing methods on vulnerable benthic taxa and habitats.</p> <p>2. To complete spatially explicit quantitative impact assessments for benthic taxa and/or habitats affected by bottom fisheries, within spatially distinct or overlapping zones within the New Zealand EEZ, consistent with available databases and the outputs of existing projects.</p> <p>3. To compile and combine impact assessments from Objective 2, to inform a spatially explicit quantitative risk assessment with reference to potential management targets for benthic taxa and/or habitats (from Objective 1) combined across all bottom fisheries in the New Zealand EEZ.</p> <p>4. To conduct spatially explicit Management Strategy Evaluation to simulate and evaluate the effects of alternate fisheries management scenarios on benthic taxa and/or habitats in the EEZ.</p>	Complete	Mormede et al. (2021) AEBr 274
BEN	BEN2014-02	Monitoring recovery of benthic fauna on the Graveyard complex	<p>1. To repeat the quantitative photographic survey of benthic invertebrate communities on the Graveyard complex.</p> <p>2. To assess changes in benthic communities since the first survey in 2001.</p>	Complete	
BEN	BEN2014-03	Monitoring recovery of benthic fauna in Spirits Bay	<p>1. Using previous survey results, conduct a power analysis to estimate the likelihood of a range of survey designs consistent with the monitoring programme from project ENV2005/23 detecting changes in key indicators of the state of the benthic communities in Spirits Bay and Tom Bowling Bay since the last survey.</p> <p>2. To survey Spirits Bay and Tom Bowling Bay benthic invertebrate communities in accordance with an agreed design from Objective 1.</p>	Complete	Tuck et al. (2019) AEBr 206

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			3. To assess changes in benthic communities inside and outside of the closed area since 1997.		
BEN	SEA2014-09	Review of New Zealand's SPRFMO VME protocol	1. To prepare a review of the scientific basis for the 'biodiversity component' of the move-on-rule thresholds comprising the current New Zealand Vulnerable Marine Ecosystem Evidence Process.	Complete	Penney (2014) AEBR 135
BEN	BEN2012-01	Spatial overlap of mobile bottom fishing methods and coastal benthic habitats	1. To use existing information and classifications to describe the distribution of benthic habitats throughout New Zealand's coastal zone (0–250 m depth). 2. To rank the vulnerability to fishing disturbance of habitat classes from Objective 1. 3. To describe the spatial pattern of fishing using bottom trawls, Danish seine nets, and shellfish dredges and assess overlap with each of the habitat classes developed in Objective 1.	Complete	Baird et al. (2015) AEBR 144
BEN	DEE2010-06	Design a camera / transect study	1. To design and provide indicative costs for a programme to monitor trends in deepwater benthic habitats and communities. 2. To explore the feasibility of using existing trawl and acoustic surveys to capture data relevant to monitoring trends in deepwater benthic habitats and communities.	Complete	Bowden et al. (2015) AEBR 143
BEN	DAE2010-01	Taxonomic identification of benthic specimens	1. To identify benthic invertebrates in samples taken during research trawls and by Observers on fishing vessels. 2. To update relevant databases recording the catch of invertebrates in research trawls and commercial fishing.	Complete	Mills et al. (2013) FRR 2013/17 Tracey et al. (2014) FRR 2014/17
BEN	DAE2010-04	Monitoring the trawl footprint for deepwater fisheries	1. To estimate the 2009/10 trawl footprint and map the spatial and temporal distribution of bottom contact trawling throughout the EEZ between 1989/90 and 2009/10. 2. To produce summary statistics, for major deepwater fisheries and the aggregate of all deepwater fisheries, of the spatial extent and frequency of fishing by year, by depth zone, by fishable area, and by habitat class, and to identify any trends or changes.	Complete	Black et al. (2013) AEBR 110 Black & Tilney (2015) AEBR 142 Black & Tilney (2017) AEBR 176
BEN	Project funded by	Analysis of New Zealand's trawl grounds for key	1. Determine the extent of the bottom-trawled grounds for Tier 1 species in relation to the total extent of the EEZ and TS, their known distribution	Complete	Black & Wood (2014) AEBR 122

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	Deepwater Group Ltd	middle depths and deepwater Tier 1 fisheries	ranges and various marine environment classification zones.		
BEN	Internally funded 1	SPRFMO	1. To develop detection criteria for measuring trawl impacts on vulnerable marine ecosystems in high sea fisheries of the South Pacific Ocean.	Complete	Parker and Bowden 2010
BEN	Internally funded 2	SPRFMO	1. To document protection measures implemented by New Zealand for vulnerable marine ecosystems in the South Pacific Ocean.	Complete	Penney et al. 2009
BEN	Internally funded 3	CCAMLR	1. An Impact Assessment Framework for Bottom Fishing Methods in the CCAMLR Convention Area.	Complete	Sharp et al. 2009
BEN	Internally funded 4	SPRFMO	1. To develop a bottom Fishery Impact Assessment: Bottom Fishing Activities by New Zealand Vessels Fishing in the High Seas in the SPRFMO Area during 2008 and 2009.	Complete	Ministry of Fisheries 2008
BEN	BEN2009-02	Monitoring recovery of benthic communities in Spirits Bay	1. To survey Spirits Bay and Tom Bowling Bay benthic invertebrate communities according to the monitoring programme designed in ENV2005/23. 2. To assess changes in benthic communities inside and outside the closed area since 1997.	Complete	Tuck & Hewitt (2013) AEFR 111
BEN	IFA2008-04	Guide for the rapid identification of material in the process of managing Vulnerable Marine Ecosystems	1. To produce a guide for the rapid identification of material in the process of managing Vulnerable Marine Ecosystems.	Complete	Tracey et al. 2008
BEN	BEN2007-01	Assessing the effects of fishing on soft sediment habitat, fauna, and processes	1. To design and test sampling and analytical strategies for broad-scale assessments of habitat and faunal spatial structure and variation across a variety of seafloor habitats. 2. To design and carry out experiments to assess the effects of bottom trawling and dredging on benthic communities and ecological processes important to the sustainability of fishing at scales of relevance to fishery managers.	Complete	Tuck et al. (2017) AEFR 178
BEN	IFA2007-02	Development of a Draft New Zealand High-Seas	1. To generate data summaries and maps of New Zealand's recent historic high-seas bottom trawling catch and effort in the proposed convention area of the South Pacific Regional Fisheries Management	Complete	Parker (2008) FRR

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		Bottom Trawling Benthic Assessment Standard	Organization (SPRFMO). 2. To map vulnerable marine ecosystems (VMEs) in the SPRFMO area. 3. To develop a draft standard for assessment of benthic impacts of high-seas bottom trawling on VMEs in the proposed SPRFMO convention area.		
BEN	BEN2006-01	Mapping the spatial and temporal extent of fishing in the EEZ	1. To update maps and develop GIS layers of fishing effort from project ENV2000/05 to show the spatial and temporal distribution of mobile bottom fishing throughout the EEZ between 1989/90 and 2004/05. 2. To produce summary statistics of major fisheries and the aggregate of all bottom impacting fisheries in terms of the extent and frequency of fishing by year, by depth zone, by fishable area, and, to the extent possible, by habitat type. 3. To identify and document any major trends or changes in fishing effort or fishing behaviour. 4. To identify, discuss the implications of, and make recommendations on data quality and other problems with current reporting systems that complicate characterisation and quantification of bottom fishing effort. 5. To integrate information on the distribution, frequency, and magnitude of fishing disturbance with habitat characteristics throughout the EEZ, using information stored in national databases, expert opinion, and the MEC.	Complete	Baird et al. 2009 Baird et al. (2011) AEBR 73 Baird & Wood 2010 Baird & Wood (2012) AEBR 89 Leathwick et al. 2010 Leathwick et al. (2012) AEBR 88
BEN	ENV2005-15	Information for managing the Effects of Fishing on Physical Features of the Deep-sea Environment	1. To provide an updated database that identifies all known seamounts in the 'New Zealand region', encompassing the area from 24°00' – 57°30'S, 157°00'E – 167°00'W. The database will catalogue relevant data (e.g., physical, biological, location, fishing effort) for individual seamounts. 2. To identify indicators and measures suitable for the assessment of risk pertaining to the effects of fishing disturbance on the benthic biota of seamounts, and review suitable ecological risk assessment methods, that can be derived or utilise information contained within the seamount database.	Complete	Rowden et al. (2008) AEBR 27 Clark et al. 2010b
BEN	ENV2005-16	Investigate the Effects of Fishing on Physical Features of the Deep-sea Environment	1. To monitor changes in fauna and habitats over time on selected UTFs in the Chatham Rise area that have a range of fishing histories. 2. To continue development of the risk assessment model to predict the effects of fishing, and provide options for the management of UTF ecosystems.	Complete	Clark et al. (2010a) AEBR 46, 2010b, 2010c, Clark et al. (2011) AEBR 74

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BEN	ENV2005-20	Benthic invertebrate sampling and species identification in trawl fisheries	1. To produce identification guides for benthic invertebrate species encountered in the catches of commercial and research trawlers.	Complete	Tracey et al. (2007) AEBR 10 Williams et al. 2010 Clark et al. 2009
BEN	ENV2005-23	Monitoring recovery of the benthic community between North Cape and Cape Reinga	1. To design a monitoring programme that will provide the following quantitative estimates: i) Estimates of the nature and extent of past fishing impacts on the benthic community between North Cape and Cape Reinga; ii) Estimates of change over time in areas previously fished but subsequently closed to fishing. Estimated parameters will include indices representing biodiversity, community composition, and biogenic structure; iii) Estimates of change over time in areas environmentally comparable to those assessed in (ii), above, but subject to ongoing fishing impacts; and iv) Estimates of change over time in areas comparable to those above, but not impacted by fishing (if any such areas can be found).	Complete	Tuck et al. (2010) AEBR 53
BEN	ZBD2005-04	Information on benthic impacts in support of the Foveaux Strait Oyster Fishery Plan	1. To assess the distribution, vulnerability to disturbance, and ecological importance of habitats in Foveaux Strait, and describe the spatial distribution of the Foveaux Strait oyster fishery relative to those habitats. 2. To assemble and collate existing information on the Foveaux Strait system between the Solander Islands and Ruapuke Island or other area to be agreed with MFish. 3. To map, using best available information, substrate type, bathymetry, wave energy, and tidal flow in this area. 4. To assess the extent to which these data can be used to define useful functional categories that might serve as habitat classes. 5. To rank the vulnerability to fishing disturbance of habitat classes developed in Objective 3 using approximate regeneration times. 6. To describe the functional role and ecosystem services provided by each habitat class developed in Objective 3, including an assessment of the relative importance of each to overall ecosystem function and productivity. 7. To describe the spatial pattern and intensity of dredge fishing for Foveaux Strait oysters over the past 10 fishing years and relate this to natural	Complete	Michael et al. 2006

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			disturbance regimes and habitat classes developed in Objective 3. 8. To carry out a qualitative video survey of benthic habitats in Foveaux Strait, both within the established commercial oyster fishery area and areas outside the fishery area but within OYU 5.		
BEN	ZBD2005-15	Information on benthic impacts in support of the Coromandel Scallops Fishery Plan	1. To assemble and collate existing information on the coromandel Scallop Fishery between cape Rodney and Town Point or other, wider area to be agreed with Mfish. 2. To map, using best available information, substrate type, bathymetry, wave energy, and tidal flow in this area. 3. To assess the extent to which data can be used to define useful functional categories that might serve as habitat classes. 4. To rank the vulnerability of fishing disturbance of habitat classes developed in Objective 3 using approximate regeneration times. 5. To describe the functional role and ecosystem services provided by each habitat class developed in Objective 3, including an assessment of the relative importance of each to overall ecosystem function and productivity. 6. To describe the spatial pattern and intensity of dredge and trawl fishing within the Coromandel scallop fishery over the past 15 fishing years and relate this to natural disturbance regimes and habitat classes developed in Objective 3.	Complete	Tuck et al. 2006a, 2006b
BEN	ZBD2005-16	Information on benthic impacts in support of the Southern Blue Whiting Fishery Plan	1. To assemble and collate existing information on the Southern Blue Whiting fishery in SBW6A, SBW6B, SBW6I, and SBW6R or other wider area to be agreed with Mfish 2. To map, using best available information, substratum type, bathymetry, wave energy, tides, and ocean currents in these areas 3. To assess the extent to which these data can be used to define useful functional categories that might serve as habitat categories. 4. To rank the vulnerability to fishing disturbance of habitat classes developed in Objective 3 using approximate regeneration times. 5. To describe the functional role and ecosystem services provided by each habitat class developed in Objective 3, including an assessment of the relative importance of each to overall ecosystem function and productivity. 6. To describe the spatial pattern and intensity of trawl fishing within the Southern Blue Whiting fishery over the past 10 fishing years and relate this	Complete	Cole et al. 2007

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			to natural disturbance regimes and habitat classes developed in Objective 3.		
BEN	ENV2003-03	Determining the spatial extent, nature and effect of mobile bottom fishing methods	1. To determine the spatial extent, nature and time between disturbances of mobile bottom fishing methods in the Chatham Rise trawl fisheries.	Complete	Baird et al. 2006
BEN	ENV2002-04	Benthic invertebrate sampling and specific identification in trawl fisheries	1. To quantify and map the benthic invertebrate species incidental catch in commercial and research trawling throughout the New Zealand EEZ.	Complete	Tracey et al. (2005) AEBR 1
BEN	ENV2001-09	The effects of mobile bottom fishing gear on benthic-pelagic coupling	To describe any effects of fishing that might modify benthic-pelagic coupling (a complex, interlinked suite of processes transferring energy, oxygen, carbon, and nutrients between pelagic and benthic systems), to consider the scale of such possible effects, and to put the summary in a New Zealand context.	Complete	Cryer et al. 2004
BEN	ENV2001-15	The effects of bottom impacting trawling on seamounts	1. To design a programme in New Zealand waters previously trawled and now closed to trawling to monitor the rate of regeneration of benthic communities on seamounts.	Complete	Clark & O'Driscoll 2003 Clark & Rowden 2009
BEN	OYS2001-01	Foveaux Strait oyster stock assessment	1. To carry out a survey and determine the distribution and absolute abundance of pre-recruit and recruited oysters in both non-commercial and commercial areas of Foveaux Strait. The target coefficient of variation (c.v.) of the estimate of absolute recruited abundance is 20%. 2. To estimate the sustainable yield for the areas of the commercial oyster fishery in Foveaux Strait for the year 2002 oyster season. 3. To identify and count benthic macro-biota collected during the dredge survey.	Complete	Rowden et al. 2007
BEN	ENV2000-05	Spatial extent, nature and impact of mobile bottom fishing methods in the New Zealand EEZ	1. To determine the spatial extent, nature and impact of mobile bottom fishing methods within the New Zealand EEZ.	Complete	Cryer and Hartill 2002 Baird et al. 2002

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BEN	ENV2000-06	Review of technologies and practices to reduce bottom trawl bycatch and seafloor disturbance in New Zealand	To review technologies and practices to reduce bottom trawl bycatch and seafloor disturbance in New Zealand.	Complete	Booth et al. 2002 Beentjes & Baird 2004
BEN	ENV98-05	The effects of fishing on the benthic community structure between North Cape and Cape Reinga	1. To determine the effects of fishing on the benthic community structure between North Cape and Cape Reinga.	Complete	Cryer et al. 2000
BYC	BYC2024-02A	Integrating catch, bycatch, and discard rates into the PSC database	<ol style="list-style-type: none"> Utilising the most recent version of the PSC database build (v10 - 2025) incorporate fish, invertebrate and benthic taxon catch from both statutory reported catch data and observer derived data. Workflows developed under specific objective 1 should be documented in a Fisheries Research Report to be held by Fisheries New Zealand. 	Complete	Mansfield et al. (2025) FRR
BYC	BYC2023-03	Identification and mapping of habitats of significance for sharks	<ol style="list-style-type: none"> Review existing literature and analyse fisheries-dependent and fisheries-independent data to identify habitats of significance for chondrichthyan species. Produce maps and a prioritisation of specific areas that could be selected for future investigation and methodologies that could be used for these investigations. Identify opportunities to increase data collection to improve identification of habitats of significance (and potential adverse effects on them) for chondrichthyan species. 	Complete	Finucci et al. (2025) AEBR 361
BYC	BYC2022-02	Risk assessment for selected shark species	<ol style="list-style-type: none"> Develop distribution maps for selected chondrichthyan species using available data. Utilise catch and distribution data to conduct a spatial overlap-based risk assessment for selected chondrichthyan species. Where possible, estimate the nature and extent of incidental captures of selected chondrichthyan species in New Zealand commercial fisheries up to the 2021/22 fishing year. 	Complete	Edwards et al. (2025) AEBR 354 Edwards (2025) AEBR 355

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BYC	BYC2021-01	Development of spatial risk assessment methods for sharks and turtles in New Zealand	<ol style="list-style-type: none"> 1. To develop distribution maps for a selected subset of species (to be agreed at the start of the project) using available data. 2. Utilise these maps, and other available distribution maps, to trial an overlap-based semi-quantitative risk assessment. 	Complete	<p>Mormede & Lyon (2023) AEBr 311</p> <p>Edwards (2023) AEBr 319</p>
BYC	BYC2021-02	Protected Chondrichthyan captures characterisation	<ol style="list-style-type: none"> 1. Describe and characterise captures of all protected Chondrichthyans in New Zealand waters, using all available data. 2. Analyse gears/fisheries, locations, status at release, and capture trends, and identify factors that appear to lead to captures. 	Complete	Finucci et al. (2022) AEBr 289
BYC	BYC2021-03	Bycatch monitoring and quantification in deepwater fisheries	<ol style="list-style-type: none"> 1. Estimate catch composition in target deepwater fisheries (various fisheries to be addressed cyclically). This should include an estimation of the quantity of non-target fish species caught, and the target and non-target fish species discarded, in a format that meets management needs. Estimated rates and amounts of bycatch and discards in the different deepwater fisheries are to be compared with previous estimates to identify trends over time. 	Complete	<p>Anderson et al. (2023) AEBr 315</p> <p>Finucci et al. (2024) AEBr 330</p> <p>Anderson et al. (2025) AEBr 348</p>
BYC	DAE2018-01	Bycatch monitoring and quantification in deepwater fisheries	<ol style="list-style-type: none"> 1. To estimate the catch composition in specified fisheries. This should include the quantity of non-target fish species caught, and the target and non-target fish species discarded, using data from MPI Observers to the end of the most recent complete fishing year in a format that meets management needs. 2. To compare estimated rates, amounts, and trends of bycatch and discards over time in specified fisheries. 3. To update any relevant sections of the Aquatic Environment and Biodiversity Annual Review and Environmental and Ecosystem considerations sections of the Fisheries Assessment Plenary documents with new results from this work. 	Complete	<p>Finucci et al. (2020) AEBr 241</p> <p>Finucci et al. (2022) AEBr 279</p> <p>Anderson & Finucci (2022) AEBr 282</p>
BYC	ENV2020-20	Temporal and spatial distribution of non-target catch, and non-target	<ol style="list-style-type: none"> 1. A spatially- and temporally-detailed representation of non-target catch in deepwater fisheries around New Zealand, coupled with catch data and fishery information on the location of non-target catch hotspots; the influence of 	Complete	Edwards & Mormede (2023) AEBr 303

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		species, in deepwater fisheries	seasonal factors on non-target catch hotspots; and the species and fishing methods that may be driving these hotspots. 2. A spatial distribution of some of the most representative non-target species, modelled from catch and survey data, as well as environmental data.		Edwards & Mormede (2023) AEBR 304
BYC	SEA2020-24	Feasibility of tagging deepwater sharks in New Zealand	1. Develop a mark and recapture study setup, including both tagging strategy and recapture data analysis, for relevant shark species	Complete	Finucci (2022) AEBR 284
ECO		Characterising fisheries and other marine harvesting in the Bay of Islands, with ecological consequences, from first human settlement to the present		Complete	Booth (2017) AEBR 186
ECO	ANT2017-03	Antarctic Research - Ross Sea region MPA	1. To provide advice and scientific knowledge to MPI that would allow the CCAMLR Scientific Committee to advise the Commission on: (i) the degree to which the specific objectives of the MPA are being achieved. 2. To provide advice and scientific knowledge to MPI that would allow the CCAMLR Scientific Committee to advise the Commission on the degree to which the MPA objectives are still relevant in different areas of the MPA. 3. To provide advice and scientific knowledge to MPI that would allow the CCAMLR Scientific Committee to advise the Commission on what management actions may be required to improve the achievement of the objectives for this MPA.	Complete	
ECO	MDC2015-01	MDC Benthic coring	To support benthic coring in the Marlborough Sounds by the Marlborough District Council (MDC). The results of this will provide historical information to support environmental restoration and reporting goals. It will also support potential restoration using empty mussel shell disposal.	Complete	
ECO	ENV2014-09	Spatial decision support tools for multi-use and cumulative effects	To provide a customised GIS decision support tool to help assess the cumulative effects of fishing.	Complete	

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ECO BEN	SEA2013-01	Provision of identification guides (sea pens and black corals)	To produce identification guides for sea pens and black corals electronically as AEBR (including MPI review).	Complete	Tracey et al. (2014) FRR 2014/6 Williams et al. (2014) AEBR 132 Opresko et al. (2014) AEBR 131 Clark et al. (2015) AEBR 149
ECO	ANT2012-01	Antarctic research		Complete	McMillan et al. (2014) AEBR 134
ECO	ENV2012-01	A literature review of nitrogen levels and adverse ecological effects in embayments in temperate regions.	1. To complete a literature review of nitrogen levels and adverse ecological impacts from temperate embayments in order to assist aquaculture consenting authorities in determining at what concentration of nitrogen adverse effects may be expected.	Complete	Hartstein & Oldman (2015) AEBR 159
ECO	SEA2012-17	NPOA Sharks extension work	NPOA Sharks extension work.	Complete	Clarke et al. (2013) FAR 2013/65
ECO	ZBD2012-02	Tier 1 statistic: Ocean	1. To identify candidate oceanographic variables for potential development as part of the proposed Tier 1 Statistic, Atmospheric and Ocean Climate Change.	Complete	Pinkerton et al. (2015a) AEBR 151
ECO	DEE2010-04	Development of a methodology for Environmental Risk Assessments for deepwater fisheries	1. To review approaches to Ecological Risk Assessments (ERA) and methods available for deepwater fisheries both QMS and non-QMS. 2. To develop and recommend a generic, cost effective, method for ERA in deepwater fisheries by using or modifying methods identified in Objective 1.	Complete	Clark et al. submitted; Mormede & Dunn (2013) AEBR 106
ECO	DEE2010-05	Development of a suite of environmental indicators for deepwater fisheries	1. To review the literature and hold a workshop to recommend a suite of ecosystem and environmental indicators that will contribute to assessing the performance of deepwater fisheries within an environmental context. 2. To examine available data and design a data collection programme to enable future calculation of the indicators identified in Specific Objective 1.	Complete	Tuck et al. (2014) AEBR 127

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ECO	ENV2010-03	Habitats of particular significance for inshore finfish fisheries management	<ol style="list-style-type: none"> 1. To review the literature to determine the most important juvenile or reproductive (spawning, pupping or egg-laying) areas for inshore finfish target species. 2. To use a gap analysis to prioritise areas for future research concerning the important juvenile or reproductive (spawning, pupping or egg-laying) areas for target inshore finfish fisheries. 	Complete	Morrison et al. (2014b) AEBR 125
ECO	ENV2010-05A&B and SEA2010-15	Habitats of particular significance for fisheries management: shark nursery areas	<ol style="list-style-type: none"> 1. Identify, from the literature, important nursery grounds for rig in estuaries around mainland New Zealand. 2. Design and carry out a survey of selected estuaries and harbours around New Zealand to quantify the relative importance of nursery ground areas. 3. Identify threats to these nursery ground areas and recommend mitigation measures. 	Complete	Francis et al. (2012) AEBR 95 Jones et al. (2015) AEBR 150
ECO	ZBD2010-42	Development of a National Marine Environment Monitoring Programme	<ol style="list-style-type: none"> 1. To design a Marine Environment Monitoring Programme (MEMP) to track the physical, chemical and biological changes taking place across New Zealand's marine environment over the long term. 2. To prepare an online inventory (metadatabase) of repeated (time series) biological and abiotic marine observations/datasets in New Zealand. 3. To review, evaluate fitness for purpose, and identify gaps in the utility and interoperability of these datasets for inclusion in MEMP from both science and policy perspectives. 4. To design a MEMP that includes relevant existing data collection and proposed new time series. 	Complete	Hewitt et al. (2014) AEBR 141
ECO	ENV2009-04	Trends in relative mesopelagic biomass using time series of acoustic backscatter data from trawl surveys	<ol style="list-style-type: none"> 1. To evaluate relative changes in abundance of mesopelagic fish and other biological components from acoustic records collected during Chatham Rise and Sub-Antarctic trawl surveys. 2. To explore links between trends in mesopelagic biomass and climate variables and variations, and condition indices of commercial species in the Chatham Rise and Sub-Antarctic areas. 	Complete	O'Driscoll et al. (2011) AEBR 76
ECO	ENV2009-07	Habitats of particular significance for fisheries management: Kaipara harbour	<ol style="list-style-type: none"> 1. Collate and review information on the role and spatial distribution of habitats in the Kaipara Harbour that support fisheries production. 2. Assess historical, current, and potential anthropogenic threats to these habitats that could affect fisheries values, including fishing and land-based threats. 	Complete	Morrison et al. (2014d) AEBR 129

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			3. Design and implement cost-effective habitat mapping and monitoring surveys of habitats of particular significance for fisheries management in the Kaipara Harbour.		
ECO	GMU2009-01	Spatial Mixing of GMU1 using Otolith Microchemistry	1. To determine the level of spatial mixing and connectivity of grey mullet (<i>Mugil cephalus</i>) populations using otolith microchemistry. 2. To collect and analyse the chemical composition of grey mullet otoliths. 3. To analyse the otoliths collected under Objective 1 to determine if the samples can be spatially separated.	Complete	Morrison et al. (2016) FAR 2016/15
ECO	IPA2009-11	Trophic studies publication of review	1. To publish the comprehensive review of New Zealand-wide trophic studies completed in 2000 that was prepared by NIWA.	Complete	Stevens et al. (2011) AEBR 85
ECO	FLA2009-01	Assess the feasibility of using juvenile netting surveys to predict adult yellow-belly & sand flounder	1. Assess the feasibility of using juvenile netting surveys to predict adult yellow-belly and sand founder abundance in the Manukau Harbour and Firth of Thames (this also examined correlations between juvenile catch and environmental factors).	Complete	McKenzie et al. (2013) FAR 2013/10
ECO	AQE2008-02	Review of ecological effects of farming shellfish and other species	1. To collate and review information on the ecological effects of farming mussels (<i>Perna canaliculus</i>), including offshore mussel farming and spat catching, in the New Zealand marine environment. 2. To collate and review information on the ecological effects of farming oysters in the New Zealand marine environment. 3. To collate and review information on the ecological effects of farming species other than mussels (<i>Perna canaliculus</i>), oysters, and finfish, in the New Zealand marine environment.	Complete	Keeley et al. 2009
ECO BEN	IFA2008-08	Inputs to the Ross Sea bioregionalisation	1. To produce one or more benthic invertebrate classifications of the Ross Sea region. 2. To use fishery catch data to examine spatial distributions of major demersal fish species. 3. To prepare other biological or environmental spatial data layers for use in the Ross Sea workshop.	Complete	Pinkerton et al. 2009a
ECO	TOH2007-03	Toheroa Abundance	1. To investigate variations in the abundance of toheroa.	Complete	Williams et al. (2013) AEBR 114

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			2. To investigate sources of mortality of toheroa and factors affecting the recruitment of toheroa		
ECO	BEN2007-05	Risk assessment framework for assessing fishing & other anthropogenic effects on coastal fisheries	1. To collate existing information on the distribution, intensity, and frequency of anthropogenic disturbances in the coastal zone that could be used in a risk assessment model to estimate their likely aggregate effect on ecosystem function across habitats and over different scales of ecosystem functioning and biological organisation. 2. To develop a risk assessment framework in conjunction with a variety of stakeholders and environmental scientists.	Complete	MacDiarmid et al. (2012) AEBr 93
ECO	ENH2007-01	Stock enhancement of blackfoot paua	1. To assess the survival rate of enhanced paua from introduction into the wild through to harvest. 2. To assess the genetic diversity of hatchery spawned juvenile paua bred for enhancement purposes. 3. To assess interactions between introduced and wild paua populations and to recommend research and monitoring to quantify those impacts that are potentially adverse.	Complete	McCowan 2013
ECO	ENV2007-04	Climate and Oceanographic Trends Relevant to New Zealand Fisheries	1. To summarise, for fisheries managers, climatic and oceanographic fluctuations and cycles that affect productivity, fish distribution and fish abundance in New Zealand.	Complete	Hurst et al. (2012) AEBr 90
ECO	ENV2007-06	Trophic Relationships of Commercial Middle Depth Species on the Chatham Rise	1. To quantify the inter-annual variability in the diets of hoki, hake and ling on the Chatham Rise 1992–2007. 2. To quantify seasonal dietary cycles for hoki, hake and ling that have been collected from the commercial fleet throughout the year.	Complete	Horn & Dunn (2010) AEBr 54
ECO		Forecasting quantity of displaced fishing Part 1: Challenger scallop fishery		Complete	Osborne et al. (2014) AEBr 140
ECO BEN	HAB2007-01	Biogenic habitats as areas of particular significance for fisheries management	1. To collate and review available information on the location, value, functioning, threats to, and past and current status of biogenic habitats that may be important for fisheries production in the New Zealand marine environment. 2. To identify information gaps, in the New Zealand context, and recommend measures to address	Complete	Morrison et al. (2014a) AEBr 130

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			those important to an ecosystem approach to fisheries management.		
ECO	IPA2007-07	Land Based Effects on Coastal Fisheries	1. To review and collate scientific knowledge and research on the impacts of land-based activities on coastal fisheries and biodiversity.	Complete	Morrison et al. (2009) AEFR 37
ECO	ENV2006-04	Ecosystem indicators for New Zealand fisheries	1. To carry out a literature review of potential fish-based ecosystem indicators and identify a suite of indicators to be tested in Objective 2. 2. To test a suite of fish-based ecosystem indicators (identified by Objective 1) on existing trawl survey time series in New Zealand. The utility of these indicators for monitoring the effects of fishing in New Zealand should also be evaluated.	Complete	Tuck et al. (2009) AEFR 42
ECO	GBD2006-01	DNA database for commercial marine fish and invertebrates	1. To collect DNA sequences for vouchered specimens of commercially important marine fishes and submit the DNA data to the international Barcode of Life Database (BOLD). 2. To collect DNA sequences for vouchered specimens of commercially important marine invertebrates and submit the DNA data to the international Barcode of Life Database (BOLD). Note: The funding was limited to \$60 000 for this Objective. Therefore, MFish agreed to omit the invertebrate species (Objective 2) from this project and reduce the number of fish species sequenced from 100 to 80 (up to 5 specimens per species). During the course of the project MFish staff asked NIWA to identify smoked eel product, suspect shark fillets, and possible paua slime with DNA markers, consequently the project was modified to accommodate these requests.	Complete	Smith et al. (2008) AEFR 22
ECO	IPA2006-08	Review of the Ecological Effects of Marine Finfish aquaculture: Final Report	1. Summarise and review existing information on ecological effects of finfish farming on the marine environment in New Zealand and overseas.	Complete	Forrest et al. 2007
ECO	SAP2006-06	West Coast South Island review	1. To publish a review document summarising oceanic and environmental research information particularly relevant to hoki, but also other fisheries, that spawn off Westland in winter. 2. Update the draft chapters prepared in 2004 by oceanographers, modellers, and scientists towards the overall objective. 3. Incorporate a section on other west coast spawning fisheries.	Complete	Bradford-Grieve & Livingston (2011) AEFR 84

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
ECO	ENV2005-08	Experimental design of a programme of indicators	<ol style="list-style-type: none"> 1. To assess the utility/feasibility of using demographic information to assess the effects of fishing on seabird populations. 2. To identify population indicators and to provide sampling protocols and experimental design for selected high to medium priority seabird populations. 3. To recommend experimental protocols for sampling of selected seabird populations in New Zealand influenced by fisheries mortality, employing robust design methodology and including recommendations for inclusions of data into Ministry of Fisheries databases. 	Complete	MacKenzie & Fletcher (2010) FRR
ECO	IPA2005-02 and MOF2003-03A	A guide to common offshore crabs in New Zealand Waters	<ol style="list-style-type: none"> 1. Develop a guide to common offshore crabs in New Zealand waters 	Complete	Naylor et al. (2005) AEBR 2
ECO	SAM2005-02	Effects of climate on commercial fish abundance	To examine the possible effects of climate on fishery yields and abundance indices for commercial fisheries around New Zealand.	Complete	Dunn et al. (2009) AEBR 31
ECO	HOK2004-01	Hoki Population modelling and stock assessment	To investigate the prediction of year class strength from environmental variables.	Complete	Francis et al. 2005
ECO	AQE2003-01	Effects of aquaculture and enhancement stock sources on wild fisheries resources and the marine environment.	<ol style="list-style-type: none"> 1. To identify, discuss the effects and qualitatively assess the risks of aquaculture and enhancement stocks improved by hatchery technology on New Zealand's wild fisheries resources and the marine environment. 2. To identify, discuss the effects and qualitatively assess the risks associated with the translocation of aquaculture and enhancement stocks on New Zealand's wild fisheries resources and the marine environment. 3. To make recommendations on priority issues, risks, or research to be undertaken, as a result of information discussed and evaluated in Objectives 1–2. 	Complete	Speed 2005
ECO	EEL2003-01	Non-fishing mortality of freshwater eels	<ol style="list-style-type: none"> 1. To undertake a feasibility study on establishing an estimate of the mortality of eels caused by hydroelectric turbines and other point sources of mortality caused by human activity. 	Complete	Beentjes et al. 2005

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ECO	MOF2003-01	The implications of marine reserves for fisheries resources and management in the New Zealand context	Investigations of the implications of marine resources for fisheries resources and management in the New Zealand context.	Complete	Speed et al. 2006
ECO	ENV2002-03	Beach cast seaweed review	<ol style="list-style-type: none"> 1. To collate existing information on the role of beach-cast seaweed in coastal ecosystems to assess the nature and extent of the impacts that the removal of beach cast seaweed may have on the marine environment. 2. On the basis of the review in Specific Objective 1 above, to identify key research gaps related to any marine environment impacts that the removal of beach cast seaweed may have. 	Complete	Zemke-White et al. (2005) FAR2005/44
ECO	ENV2002-07	Energetics and trophic relationships of important fish and invertebrate species	<ol style="list-style-type: none"> 1. To quantify food webs supporting important fish and invertebrate species. 	Complete	Livingston 2004
ECO	ENV2000-04	Identification of areas of habitat of particular significance for fisheries management within the New Zealand EEZ	<ol style="list-style-type: none"> 1. To review literature and existing data for all significant fish species, including all QMS species, encountered from the 200-1500 m contour within the New Zealand EEZ to: <ol style="list-style-type: none"> a) determine areas of important juvenile fish habitat; b) determine areas of importance to spawning fish populations; and c) determine areas of importance for shark populations for pupping or egg laying. 2. To review literature and existing data for all significant pelagic fish species (excluding highly migratory species) encountered within the New Zealand EEZ to: <ol style="list-style-type: none"> a) determine areas of important juvenile fish habitat; b) determine areas of importance to spawning fish populations; and c) determine areas of importance for shark populations for pupping or egg laying. 3. To review literature and existing data for all significant marine invertebrate species encountered within the New Zealand EEZ to: <ol style="list-style-type: none"> a) determine areas of important juvenile habitat; and b) determine areas of importance to spawning populations. 	Complete	O'Driscoll et al. 2003

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ECO	MOF2000-02A	Future research requirements for the Ross Sea Antarctic toothfish (<i>Dissostichus mawsoni</i>) fishery.	To recommend future research requirements for the Ross Sea Antarctic toothfish (<i>Dissostichus mawsoni</i>) fishery.	Complete	Hanchet 2000
ECO	ENV99-03	Identification of areas of habitat of particular significance for fisheries management within the NZ EEZ.	1. To determine areas of habitat of importance to fisheries management within the New Zealand EEZ for selected fish species in selected areas.	Complete	Hurst et al. 2000
ECO	ENV99-04	A framework for evaluating spatial closures as a fisheries management tool	To design a framework for evaluating spatial closures as a fisheries management tool.	Complete	Bentley et al. 2004
ECO	No project number	The fishery for freshwater eels (<i>Anguilla</i> spp.) in New Zealand	To review the fishery for freshwater eels (<i>Anguilla</i> spp.) in New Zealand.	Complete	Jellyman 1994
NPB	ENV2018-06	Improved distribution information for higher risk non-QMS shark species.	<p>1. To update, using new analytical techniques where applicable, predictive layers of distribution from Leathwick et al. (2006) for the seven demersal shark species listed below.</p> <p>2. To analyse and discuss any patterns in distribution in regards to depth, sex and stage (where possible) for the seven shark species below.</p> <p>3. To compare the patterns from specific objectives 1 and 2 above with observer records and patterns observed from overseas in order to better understand the reliability of these predictions.</p>	Complete	Finucci et al. (2021) AEBR 271
NPB	DAE2017-01	Bycatch monitoring and quantification in deepwater fisheries (HOK/HAK/LIN)	<p>1. To estimate the catch composition in target trawl fisheries for hoki, hake and ling. This should include the quantity of non-target fish species caught, and the target and non-target fish species discarded, using data from MPI Observers to the end of the most recent complete fishing year in a format that meets management needs.</p> <p>2. To compare estimated rates, amounts, and trends of bycatch and discards over time in the hoki, hake, and ling trawl fisheries.</p> <p>3. To update any relevant sections of the Aquatic Environment and Biodiversity Annual Review and Environmental and Ecosystem considerations</p>	Complete	Anderson et al. (2019) AEBR 220

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			sections of the Fisheries Assessment Plenary documents with new results from this work.		
NPB	DAE2017-04	Quantification of key bycatch groups across fisheries	<ol style="list-style-type: none"> 1. To compare estimated rates, amounts, and trends of bycatch over time in deepwater fisheries. 2. To update any relevant sections of the Aquatic Environment and Biodiversity Annual Review (section 9.3.2 – 9.3.11 and 9.4) and Environmental and Ecosystem considerations sections of the Fisheries Assessment Plenary documents with new results from this work. 	Complete	Finucci et al. (2019) AEFR 210
NPB	DAE2016-01	Total catch composition in deepwater fisheries (squid & scampi)	<ol style="list-style-type: none"> 1. To estimate the catch composition in the target fisheries for squid and scampi. This should include the quantity of non-target fish species caught, and the target and non-target fish species discarded, using data from MPI Observers and commercial fishing returns to the end of the most recent complete fishing year in a format that meets management needs. 2. To compare estimated rates, amounts, and trends of bycatch and discards from this study with previous projects on bycatch in the squid and scampi fisheries. 3. To update any relevant sections of the Aquatic Environment and Biodiversity Annual Review and Environmental and Ecosystem considerations sections of the Fisheries Assessment Plenary documents with new results from this work. 	Complete	Anderson & Edwards (2018) AEFR 199
NPB	SEA2016-19	Spatial methods for development to support risk assessment (part II). Estimation of capture and retention efficiency for non-target fish species in commercial trawl fisheries	<ol style="list-style-type: none"> 1. To implement and test a spatially-explicit two-part delta-gamma statistical model (e.g., Thorson et al. 2015) for estimating species density and capture and retention efficiency in the commercial fishing gear. 2. To estimate relative densities and fishery groups catchability (with uncertainty) in a number of non-target fish species in Chatham Rise trawl fisheries. 3. To perform a simulation self-test of the model. 4. To submit the results for publication in the primary literature. 	Complete	Edwards et al. (2018) FRR
NPB	DAE2015-04	Bycatch monitoring and quantification in deepwater fisheries	<ol style="list-style-type: none"> 1. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the target fisheries (specified below) using data from MPI Observers and 	Complete	Anderson et al. (2017) AEFR 190

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			<p>commercial fishing returns to the end of the most recent complete fishing year in a format that meets management needs.</p> <p>2. To compare estimated rates, amounts, and trends of bycatch and discards from this study with previous projects on bycatch in the orange roughy and oreo fisheries.</p>		
NPB	ENV2015-03	Addressing key information gaps identified by the shark qualitative risk assessment	1. To collect and analyse biological information to improve estimates of risk for inshore and deepwater shark species identified as being at relatively high risk.	Complete	McMillan et al. (2018) AEBR 203
NPB	ENV2015-01	Updating tools for at-sea fish identification	<p>1. To review the level of information required by the seafood sector and other users of fish identification guides in New Zealand.</p> <p>2. To evaluate the most beneficial and cost-effective methods of delivery that are practicable and consistent with MPI policy directions.</p> <p>3. To review, revise and produce the appropriate information tools on fish identification.</p>	Complete	<p>McMillan et al. (2019) AEBR 208</p> <p>McMillan et al. (2024a) AEBR 333</p> <p>McMillan et al. (2024b) AEBR 334</p>
NPB	ENV2014-02	NPOA-sharks: age and growth of selected at-risk species	1. To estimate basic biological parameters for high risk, high uncertainty chondrichthyans.	Complete	<p>Francis et al. (2018) AEBR 195</p> <p>Francis et al. (2018) AEBR 196</p>
NPB	No Project Code	Qualitative Shark risk assessment	To produce a qualitative risk assessment for all shark species possible within the New Zealand EEZ.	Complete	Ford et al. 2015 AEBR 157
NPB	No project code	Mitigation options for shark bycatch in longline fisheries	Conduct a literature review and assess the options for improvements in the practice of fisheries to mitigate shark bycatch.	Complete	Howard 2015 AEBR 148
NPB	SEA2013-16	Data collation for shark risk assessments	1. To assemble and collate all available information on the distribution and intensity of all fishing methods for the most recent five full fishing years that potentially cause fishing-related mortality of chondrichthyans.	Complete	Francis (2015) AEBR 156

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			2. To assemble and collate all available information on the distribution, abundance, demographics and productivity of all New Zealand chondrichthyans.		
NPB	ENV2013-01	Development of model-based estimates of fish bycatch	<p>1. To develop a statistical modelling approach to estimate total captures of fish and invertebrates using observer and catch-effort information from selected fisheries.</p> <p>2. To compare estimates of total captures, confidence limits, and trends for selected species, species groups, and fisheries made using existing ratio-based methods and statistical models.</p> <p>3. To estimate, within a simulation framework, the potential for bias in ratio-based and model-based methods, the sizes of confidence limits for estimates from the two approaches in comparable situations, and identify the factors associated with good and poor performance.</p>	Complete	Edwards et al. (2015) AEBR 154
NPB	DAE2010-02	Bycatch monitoring & quantification for scampi bottom trawl	<p>1. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded in the specified fishery, for the fishing years since the last review, using data from Ministry of Fisheries Observers and commercial fishing returns.</p> <p>2. To compare estimated rates and amounts of bycatch and discards from this study with previous projects on bycatch in the specified fishery.</p> <p>3. To compare any trends apparent in bycatch rates in the specified fishery with relevant fishery independent trawl surveys.</p> <p>4. To provide annual estimates of bycatch for nine Tier 1 species fisheries and incorporate into the Aquatic Environment and Biodiversity Report specified in Objective 3 for SQU, SCI, HAK, HOK, JMA, ORH, OEO, LIN, SBW.</p>	Complete	<p>Anderson (2012) AEBR 100</p> <p>Anderson (2013a) AEBR 112</p> <p>Anderson (2013b) AEBR 113</p> <p>Anderson (2014a) AEBR 138</p> <p>Anderson (2014b) AEBR 139</p> <p>Ballara (2015) AEBR 158</p> <p>Ballara & O'Driscoll (2015) AEBR 163</p> <p>Anderson et al. (2017) AEBR 177</p> <p>Anderson (2017) AEBR 181</p>

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NPB	ENV2009-02	Bycatch and discards in oreo and orange roughy trawl fisheries	<p>1. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the trawl fisheries for oreos for the fishing years 2002/03 to 2008/09 using data from Scientific Observers and commercial fishing returns.</p> <p>2. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the trawl fisheries for orange roughy for the fishing years 2004/05 to 2008/09 using data from Scientific Observers and commercial fishing returns.</p>	Complete	Anderson (2011) AEBR 67
NPB	IDG2009-01	Finfish field identification guide	1. To complement the field identification guide under IDG2006/01 with the remaining 120 fish species caught by commercial fishers in New Zealand waters.	Complete	McMillan et al. (2011a) AEBR 78, 2011b, 2011c
NPB	ENV2008-01	Fish and invertebrate bycatch and discards in southern blue whiting fisheries	1. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the trawl fisheries for southern blue whiting for the fishing years 2002/03 to 2006/07 using data from Scientific Observers and commercial fishing returns.	Complete	Anderson (2009) AEBR 43
NPB	ENV2008-02	Estimation of non-target fish catch and both target and non-target fish discards in hoki, hake and ling trawl fisheries	Estimates of the catch of non-target fish species, and the discards of target and non-target fish species in the hoki (<i>Macruronus novaezelandiae</i>), hake (<i>Merluccius australis</i>), and ling (<i>Genypterus blacodes</i>) trawl fisheries for the fishing years 2003–04 to 2006–07 using data from Scientific Observers and commercial fishing returns.	Complete	Ballara et al. (2010) AEBR 48
NPB	ENV2008-04	Productivity of deepwater sharks	1. To determine the growth rate, age at maturity, longevity and natural mortality rate of shovelnose dogfish (<i>Deania calcea</i>) and leafscale gulper shark (<i>Centrophorus squamosus</i>).	Complete	Parker & Francis (2012) AEBR 103
NPB	ENV2007-01 & ENV2007-02	Bycatch and Discards in Squid Trawl Fisheries	1. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the trawl fisheries for squid for the fishing years 2001/02 to 2005/06 using data from MFish Observers and commercial fishing returns.	Complete	Ballara & Anderson (2009) AEBR 38

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NPB	ENV2007-03	Productivity and Trends in Rattail Bycatch Species	1. To estimate growth, longevity, rate of natural mortality, and length at maturity of four key rattail bycatch species in New Zealand trawl fisheries. 2. To examine data from trawl surveys and other data sources for trends in catch rates or indices of relative abundance for species in Objective 1.	Complete	Stevens et al. (2010) AEBR 59
NPB	DEE2006-03	Monitoring the abundance of deepwater sharks	1. To monitor the abundance of deepwater sharks taken by commercial trawl fisheries.	Complete	Blackwell (2010) AEBR 57
NPB	ENV2006-01	Bycatch and discards in ling longline fisheries	To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the longline fisheries for ling for the fishing years 1998/99 to 2005/06 using data from MFish Observers and commercial fishing returns.	Complete	Anderson (2008) AEBR 23
NPB	IDG2006-01	Finfish field identification guide	1. To produce a field guide for fish species in New Zealand. 2. To produce a field identification guide for all QMS and other fish species commonly caught in commercial and non-commercial fisheries.	Complete	McMillan et al. (2011a) AEBR 68 McMillan et al. (2011b) AEBR 69 McMillan et al. (2011c) AEBR 78
NPB	TUN2006-02	Estimation of non-target fish catches in the tuna longline fishery	1. To estimate the catches, catch rates, and discards of non-target fish in tuna longline fisheries data from the Observer Programme and commercial fishing returns for the 2005/06 fishing year. 2. To describe bycatch trends in tuna longline fisheries using data from this project and the results of previous similar projects.	Complete	Griggs et al. (2008) FAR 2008/27
NPB	ENV2005-17	Estimation of non-target fish catch and both target and non-target fish discards in jack mackerel trawl fisheries	1. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the trawl fisheries for jack mackerel for the fishing years 2001/2002 to 2004/05 using data from Mfish observers and commercial fishing returns.	Complete	Anderson (2007) AEBR 8
NPB	ENV2005-18	Estimation of non-target fish catch and both target and non-target fish discards in orange roughy trawl fisheries	1. To estimate the quantity of non-target fish species caught, and the target and non-target fish species discarded, in the trawl fisheries for orange roughy for the fishing years 1999/2000 to 2003/04 using data from Scientific Observers and commercial fishing returns.	Complete	Anderson (2009) AEBR 39

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NPB	TUN2004-01	Estimation of non-target fish catches in the tuna longline fisheries	<ol style="list-style-type: none"> 1. To estimate the catch rates of non-target fish in the longline fisheries for tuna using data from the Observer Programme and commercial fishing returns for the 2002/03, 2003/04 and 2004/05 fishing years. 2. To estimate the quantities of non-target fish caught in the longline fisheries for tuna using data from the Observer Programme and commercial fishing returns for the 2002/03, 2003/04 and 2004/05 fishing years. 3. To estimate the discards of non-target fish caught in the longline fisheries for tuna using data from the Observer Programme and commercial fishing returns for the 2002/03, 2003/04 and 2004/05 fishing years. 4. To describe trends in the non-target fish catches in the tuna longline fisheries using data from this project and the results of previous similar projects. 	Complete	Griggs et al. (2007) FAR 2007/18
NPB	ENV2003-01	Estimation of non-target catches in the hoki fishery	<ol style="list-style-type: none"> 1. To estimate the catch rates, quantity and discards of non-target fish catches and the discards of target fish catches in trawl fisheries for hoki, using data from the Observer Programme and commercial fishing returns for the 1999/00 to 2002/03 fishing years. 2. To compare and contrast the estimates from the four years of data in Specific Objective 1 above with the 1990/91 through 1998/99 series previously reported. 	Complete	Anderson & Smith (2005) FAR 2005/3
NPB	ENV2002-01	Estimation of non-target fish catch and both target and non-target fish discards for the tuna longline fishery	<ol style="list-style-type: none"> 1. To estimate the catch rates, quantity and discards of non-target fish, particularly oceanic shark species, broadbill swordfish and marlin species, caught in the longline fisheries for tuna, using data from Scientific Observers and commercial fishing returns for the 2000/01 and 2001/02 fishing years. 	Complete	Ayers et al. (2004) FAR 2004/46
NPB	ENV2001-04	Non-target fish catch and discards in selected New Zealand fisheries	To generate estimates of the catch of non-target fish species, and the discards of target and non-target fish species in three important New Zealand trawl fisheries: arrow squid (<i>Nototodarus sloani</i> & <i>N. gouldi</i>), jack mackerel (<i>Trachurus declivis</i> , <i>T. novaezelandiae</i> , & <i>T. symmetricus murphyi</i>) and scampi (<i>Metanephrops challengeri</i>).	Complete	Anderson (2004) FAR 2004/10
NPB	ENV2001-05	To assess the productivity and relative abundance of deepwater sharks	<ol style="list-style-type: none"> 1. To review the relative abundance, distribution and catch composition of the most commonly caught deepwater shark species: shovelnose 	Complete	Blackwell & Stevenson (2003) FAR 2003/40

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			dogfish (<i>Deania catcea</i>), Baxter's dogfish (<i>Etmopterus baxteri</i>), Owston's dogfish (<i>Cenoscymnus owstoni</i>), longnosed velvet dogfish (<i>Centroscymnus crepidater</i>), leafscale gulper shark (<i>Cenophom squamosus</i>), and the seal shark (<i>Dalatias ticha</i>).		
NPB	ENV2001-07	Reducing bycatch in scampi trawl fisheries	<ol style="list-style-type: none"> 1. Collate and review the international literature on methods of reducing bycatch in crustacean trawl fisheries. 2. Review and analyse the data from New Zealand studies. 3. Develop recommendations on future approaches to reducing bycatch in the New Zealand scampi fishery, including some general thoughts on the experimental design of field trials. 	Complete	Hartill et al. (2006) AEBR 4
NPB	PAT2000-01	Review of rattail and skate bycatch, and analysis of rattail standardised CPUE from the Ross Sea toothfish fishery in Subarea 88.1, from 1997-1998 to 2001-02	Report on review of rattail and skate bycatch, and analysis of rattail standardised CPUE from the Ross Sea toothfish fishery in Subarea 88.1, from 1997-1998 to 2001-02.	Complete	Fenaughty et al. (2003) Marriot et al. (2003)
NPB	ENV99-02	Estimation of non-target fish catch and both target and non-target fish discards in selected New Zealand fisheries	<ol style="list-style-type: none"> 1. To estimate the quantity of non-target fish species caught in the trawl fisheries for hoki and orange roughy for the fishing years 1990-91 to 1998-99 using data from Scientific Observers, commercial fishing returns and from research trawl surveys. 2. To estimate the quantity of target and non-target fish species discarded in the trawl fisheries for hoki and orange roughy for the fishing years 1990-91 to 1998-99 using data from Scientific Observers, commercial fishing returns and from research trawl surveys. 3. To explore the effects of various factors on the total catch of non-target fish species and the discards of target and non-target fish species in the trawl fisheries for hoki and orange roughy for the fishing years 1990-91 to 1998-99. 4. To recommend appropriate levels of observer coverage for estimation of non-target fish catch and discards of target and non-target fish species in the hoki and orange roughy fisheries. 	Complete	Anderson et al. (2001) FAR 2001/16

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NPB	ENV99-05	To identify trends in abundance of associated or dependent species from selected commercial fisheries	To estimate trends in abundance of associated and dependent species, including invertebrates, from deepwater and middle depth fisheries on the Chatham Rise.	Complete	Livingston et al. (2003) FAR 2003/52
NPB	ENV98-02	Pelagic shark bycatch in the New Zealand tuna longline fishery	To determine pelagic shark bycatch in the New Zealand tuna longline fishery.	Complete	Francis et al. (2001)
NPB	No project number	Fish bycatch in New Zealand tuna longline fisheries	To report on fish bycatch in New Zealand tuna longline fisheries.	Complete	Francis et al. (1999, 2000)
NPB	ENV97-01	Estimation of nonfish bycatch in New Zealand fisheries	To estimate non-fish bycatch in New Zealand fisheries.	Complete	Doonan (1998); Baird (1999); Baird et al. (1999)
NPB	SCI97-01	Scampi stock assessment for 1998 and an analysis of the fish and invertebrate bycatch of scampi trawlers	1. To summarise catch, effort, observer, and research information for scampi fisheries in QMAS 1,2,3,4 (east and western portions), and 6A in 1998.	Complete	Cryer et al. (1999)
PRO	CON2020-15	An updated assessment of historical impact of setnet fisheries on Māui dolphin.	Calculate updated Hector's/Maui's dolphin entanglement rates given updated ECSI Hector's dolphin abundance estimates, and evaluate change in understanding of historical impacts of setnet fishing effort based on methods of Davies et al. (2008) and Slooten and Dawson (2010).	Complete	Mackenzie (2022) AEBr 293
PRO	ENV2020-01	Distributional study of Antipodean albatross using satellite reporting GPS tags	1. To collect spatial data using Argos tags to allow refinement of the spatial overlap of seabirds with fishing throughout New Zealand's EEZ and the South Pacific, with satellite tracking devices to be deployed on a wider range of ages/breeding stages. This project will leverage off existing Department of Conservation field work, to collect demographic information on the Antipodes albatross.	Complete	
PRO	ENV2020-04	Spatial distribution modelling of inshore finfish and cephalopods with a focus on protected species prey	1. Utilise available data to identify key prey species (and prey size-class preferences) for up to ten top predator species that forage in the inshore environment. Predator species will include fur seals, sea lions, yellow-eyed penguins,	Complete	Mormede et al. (2022) AEBr 283 Mormede (2023) AEBr 305

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			<p>Hector's/Mauī dolphins, and 3–6 additional species chosen in consultation with Fisheries New Zealand.</p> <p>2. Applying statistical spatial modelling techniques, estimate spatially resolved densities of up to 30 inshore fish and cephalopod species, including seasonal variation, with a focus on prey species and size classes identified under Objective 1. Where top predators exhibit size-selective foraging (e.g., eating only small fish), estimate separate spatial distributions for the relevant prey size classes.</p>		
PRO	DAT2023-05	Adding set net coverage from the Proof-of-Concept electronic monitoring programme to the Central Observer Database	<p>1. Review set net data collected under the Proof-of-Concept and compare to the COD data schema. Create standardised approach to parsing data from Proof of Concept to COD.</p> <p>2. Rerun the data pipeline developed under PRO2019-12 for v7 of the PSC database for the 2019–20 fishing year including the set net data from the Proof of Concept.</p> <p>3. Review data schema for the Wider Rollout of Cameras and document differences with Proof-of-Concept data schema.</p>	Complete	
PRO	DAT2020-05	Risk Atlas development for protected species risk models	<p>1. In consultation with Fisheries New Zealand, enhance the capability of the existing Risk Atlas platform to include improved customised queries, output displays, and model diagnostics as required, including for multi-species assessments as they become available.</p> <p>2. Assemble and document a centralised repository whereby input parameterisation for all protected species spatial risk assessments (including model structure definitions, biological parameters, mathematical definitions of other input priors, and spatial distribution layers) are stored and displayed, including source documentation where appropriate, and version control.</p> <p>3. Assemble and document a set of repositories of protected species spatial risk assessment models and their associated output files to be accessed via Risk Atlas, with appropriate documentation/ version control.</p> <p>4. In consultation with Fisheries New Zealand, design a spatial risk assessment sensitivity interface, whereby as model inputs recorded in Objective 2 are changed and the models are re-run,</p>	Complete	

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			the consequences of these changes are easily quantified and compared in standard outputs and model diagnostics, via automated comparison of output files, with appropriate documentation/version control.		
PRO	SEA2025-06	Rapid update to support consultation on permanent measures to protect hoiho	<ol style="list-style-type: none"> 1. Incorporate updated fishing effort (provided by Fisheries New Zealand) and updated breeding pairs (provided by DOC) into the Hoiho multi-threat Risk Assessment. Noting updated necropsy data is not available. 2. Update the SEFRA model to test the assumption that a portion of the observed captures of non-fledgling birds (i.e., immature/non-breeders) have the same foraging patterns as fledgling birds. 3. Present tables of predicted deaths relative to the population size and fishing effort distribution in 2024 and 2025. 4. Change ϕ (the management setting parameter) within the model so that northern population risk is set to 4 (to provide an associated Population Sustainability Threshold (PST) for fishing related mortality considering impact from other sources or mortality). This will allow risk to be managed towards a 75% reduction in fisheries related risk when phi is equal to 1. 5. Provide an estimate of PST by sub-population and for the total northern population. 6. Rerun up to three management option scenarios to assess impact of area closures on risk. 7. Participate in a review of this work and provide a Final Research Report documenting the outputs. Under Research and Science Information Standard for New Zealand Fisheries this review of the final report will be undertaken by individual scientists. 	Complete	Webber & Roberts (2026) FRR
PRO	SEA2025-21	Expert Identification of Protected Seabirds	<ol style="list-style-type: none"> 1. To determine, through examination of camera footage clips, the taxon and, where possible, other characteristics of protected seabird interactions in Aotearoa New Zealand fisheries (for live captures or dead specimens discarded at sea). 2. To evaluate the taxonomic resolution achievable and effectiveness of using experts in the identification of camera detected seabird interactions. As well as identifying any potential barriers to camera-based identification for continuous improvement. 	Complete	Bell & Bell (2026) AEBR 373

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			3. To determine, through examination of photos, the taxon and, where possible, other characteristics of protected seabird interactions captured in New Zealand fisheries that have been photographed and provided by Fisheries Observer Services.		
PRO	SEA2021-26	NZ sea lion population estimate		Complete	Roberts & Edwards (2023) AEBR 320
PRO	SEA2021-30	A standardised approach for creating spatial grids for New Zealand marine environment and species data	1. Update the draft document “A <i>standardised approach for creating spatial grids for New Zealand marine environment and species data</i> ” in relation to software upgrades and revisions, and other relevant developments, and submit for publication as an AEBR.	Complete	Wood et al. (2022) AEBR 288
PRO	SEA2019-06	Increased fisher-reporting of seabird captures during an electronic monitoring trial.	1. To conduct comparative analysis of fisher reporting of protected species captures for vessels in the SNA BLL fishery in FMA1 for vessels in the electronic monitoring pilot fleet	Complete	Tremblay-Boyer & Abraham (2020) AEBR 238
PRO	SEA2019-21	Characterisation of DOC Hector’s and Maui dolphin incidents data focusing on changing patterns of fishery and non-fishery deaths through time	1. Characterise dolphin deaths in the DOC Hector’s and Maui dolphin incident database with reference to seasonal patterns, demographic composition, changes in exposure to fisheries risk, and other apparent trends. 2. Submit and present a draft short paper describing the analysis to a meeting of the FNZ Aquatic Environment Working Group. 3. Incorporating feedback from the AEWG, revise and submit.	Complete	Roberts & Hendriks (2020) AEBR 248
PRO	SEA2019-22	Reanalysis of Banks Peninsula Hector’s dolphin demographic data	1. Deliver two separate Bayesian models analysing available mark-recapture data from the Banks Peninsula Hector’s dolphin population described in Gormley (2012), to evaluate the effect of alternate model structures and parameterisations on conclusions about changing demographic rates over time. 2. Submit and present results of these analyses to a meeting of the FNZ Aquatic Environment Working Group 3. Incorporating feedback from the AEWG, prepare and submit a draft short paper to the 2020 meeting	Complete	Mackenzie & Roberts (2020) AEBR 247

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			of the IWC Scientific Committee, in a format suitable for submission to a suitable peer reviewed science journal.		
PRO	SEA2019-27	Feasibility study: vessel-based Hector's dolphin acoustic monitoring systems	1. Undertake a feasibility study on methods of localisation and vessel installation considerations for Hector's dolphin detection systems	Complete	McPherson et al. (2021) AEBr 254
PRO	PRO2023-15	Post-release survivability for leatherback turtles caught in New Zealand waters	<p>1. Conduct a workshop in conjunction with Fisheries New Zealand to collate information on the specific nature of both surface longline fishing and turtle captures in New Zealand</p> <p>2. Conduct a second workshop in conjunction with Fisheries New Zealand to review methods and refine inputs for post release survival estimation of leatherback turtles caught in New Zealand surface longline fisheries</p> <p>3. Estimate post-release survivability of leatherback turtles caught in New Zealand surface longline fisheries</p>	Complete	Finucci & Dunn (2024) AEBr 345
PRO	PRO2023-17	Tracking tags for southern royal albatross	1. To collect spatial data using satellite tags to allow refinement of the spatial overlap with fishing throughout New Zealand's EEZ and the Southern Hemisphere, with tracking devices to be deployed on a wider range of ages/breeding stages.	Complete	
PRO	PRO2023-18	Desktop review of FUR mitigation technology	<p>1. Using the outputs from MacKenzie et al. (2022) identify the fisheries, areas, and seasons that pose the highest risk to fur seals.</p> <p>2. Conduct a literature review of domestic and international research to suggest potential mitigation options and how these could be applied across the outputs of specific objective 1.</p>	Complete	Underwood et al. (2025) AEBr 349
PRO	PRO2022-01	Hoiho multi-threat risk assessment	<p>1. Construct population models for yellow-eyed penguin at the appropriate colony/sub-population scale (as possible given data availability).</p> <p>2. Map fishery and non-fishery threats to yellow-eyed penguins and estimate the overlap between penguin distributions and threats.</p> <p>3. Apply the SEFRA method to estimate fisheries impact and risk to yellow-eyed penguins, using the new information from specific objectives 1 and 2,</p>	Complete	Roberts & Webber (2025) AEBr 370

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			<p>including at a regional sub-population level. This analysis should include estimation and partition of total mortalities attributable to different threats (with uncertainty) at a regional sub-population level.</p> <p>4. In consultation with government scientists and managers examine alternate candidate spatial management scenarios through both modelling and participation in a multi-threat risk assessment workshop.</p>		
PRO	PRO2021-02	Estimation of warp capture cryptic mortality multipliers with seabird corpse catcher devices	<p>1. To improve estimates of cryptic mortality for input to the SEFRA method by attaching seabird corpse catchers to the warps of a deepwater vessel targeting squid and an inshore vessel targeting snapper to increase the probability that a seabird killed on a warp will be retained until hauling.</p> <p>2. These observations will then be used to create an estimate of the number of unobservable captures that occur; this will be compared with observed captures to work out the cryptic multiplier scalar for use in the multi-species seabird SEFRA.</p>	Complete	
PRO	PRO2021-03	Antipodean albatross multi-threat risk assessment	<p>1. Construct a population model for the Antipodean albatross colony/sub-population using data from ongoing monitoring by DOC.</p> <p>2. Map fishery and non-fishery threats to Antipodean albatross and estimate the overlap between multi-year albatross distributions and threats.</p> <p>3. Apply the SEFRA method to estimate fisheries impact and risk to Antipodean albatross, using the new information from specific Objectives 1 and 2 above. This analysis should include estimation and partition of total mortalities attributable to different threats (with uncertainty).</p> <p>4. In consultation with government scientists and managers examine a range of spatial management scenarios through both modelling and participation in a multi-threat risk assessment workshop.</p>	Complete	Richard et al. (2024) AEBr 332
PRO	PRO2021-04	Comparing results of protected species captures interactions using different data collection methods	<p>1. To conduct a review of PRO2019-12 SEFRA outputs for the FMA 1 bottom longline fishery targeting snapper, comparing estimates derived from observer data and when combined with electronic monitoring data.</p>	Complete	Meyer & Hickcox (2023) AEBr 318

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			<p>2. To carry out a power analysis to assess levels of EM coverage needed to achieve varying level of precision in capture estimates.</p> <p>3. To compare these estimates with fisher reported data.</p>		
PRO	PRO2021-06	Identification of seabird capture 'hotspots' in the CCSBT RFMO	<p>1. Summarise existing tracking and demographic information from 2018, 2019, and 2020 for the 26 species listed by the Agreement for the Conservation of Albatrosses and Petrels (ACAP) that have breeding colonies in the southern hemisphere.</p> <p>2. Summarise risk for all species as a ratio of estimated annual captures to a measure of the population productivity (the Population Sustainability Threshold, PST; Abraham et al. 2019).</p> <p>3. Identify annual risk within high-risk areas. Summarise and compare these to CCSBT effort and seabird risk.</p>	Complete	Richard et al. (2024) AEBC 331
PRO	PRO2021-07	Review, cataloguing, and continuation of footage collected from the 2020/21 Black Petrel Electronic Monitoring project	<p>1. To collect footage via an electronic monitoring programme for the snapper bottom longline fishery in FMA1.</p> <p>2. To conduct a review of electronic monitoring footage collected from the snapper bottom longline fishery in FMA1, consistent with project PSB2020-10.</p> <p>3. To submit data in a format that enables data to be parsed into the PSC database.</p> <p>4. Link catch composition and protected species capture to the relevant clips to create an image training library for assessing catch composition and protected species captures.</p>	Complete	Middleton & Abraham (2024) AEBC 340
PRO	PRO2019-01	Preparation and documentation of standardized linked database – including commercial fisheries effort data, fisheries observer data, and protected species captures.	<p>1. Describe and catalog existing MPI databases (including their history and custody chain) containing data relevant to understanding protected species/ commercial fisheries interactions.</p> <p>2. Host a data linking/grooming workshop (including FNZ, industry, research providers, and technical/database experts) to discuss, document, and modify existing data linking and grooming algorithms used to combine and modify these</p>	Complete	

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			<p>databases (especially regarding the linking of trip level data from COD and WAREHOU).</p> <p>3. Utilising existing databases, prepare a comprehensive database linking data from commercial catch/effort databases (e.g., WAREHOU), fisheries observer databases (i.e., COD), and protected species captures databases owned by MPI (e.g., OREO, sea lion SLED database, etc).</p> <p>4. Audit, document, and catalog in a standardised way the error-trapping and grooming code that are applied to modify these data before they are used in protected species research, both for the standard 'root' database and at the 'branch' level, i.e., as applied in the course of delivering individual research projects.</p> <p>5. Build and update a standardised and easily queried repository for metadata documenting the database, its genesis and structure, version control, and all grooming/linking/error-trapping code, including those arising from future protected species research projects.</p>		
PRO	PRO2019-02	Maintenance of PSC (protected species captures) website displaying updated observer commercial fisheries captures, and total estimated captures for selected species.	To maintain a public website displaying a time series of fishing effort, observer effort, observed captures and available estimates of total captures/mortalities in trawl, longline, set net and purse seine fisheries within the New Zealand EEZ.	Complete	
PRO	PRO2019-09	Spatial distribution modelling of at-risk seabirds in New Zealand commercial fisheries.	<p>1. Secure access to existing satellite telemetry for New Zealand seabird populations, including via the Global Procellariiform Tracking Database.</p> <p>2. Compile available data indicative of seabird distributions -- including satellite telemetry, sightings data, fisheries captures, and colony-specific population estimates -- for up to ten seabird species chosen in consultation with FNZ.</p> <p>3. Apply spatial modelling techniques to estimate the spatial distribution and density of selected seabird species (including seasonal variation, and estimated separately for breeding and non-breeding birds), using seabird data from Objective 2 and spatially comprehensive environmental data layers available from other FNZ funded projects.</p>	Complete	<p>Mormede et al. (2022) AEFR 283</p> <p>Roberts et al. (2022) AEFR 298</p>

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			4. In collaboration with researchers delivering updated parameterisation of the seabird SEFRA model, examine the spatial goodness-of-fit of captures estimates using the updated spatial distribution layers from Objective 3, and modify these layers as appropriate where poorly fitted patterns seem to reflect poorly estimated spatial distribution layers.		
PRO	PRO2019-10	Refine SEFRA model parameterization for at-risk protected species (seabirds).	<p>1. Use available published and unpublished data to test and refine biological input parameterisation (i.e., definition of priors) in the multi-species seabird risk assessment model produced under project PRO2016-06, with an emphasis on at-risk and high-capture species.</p> <p>2. Within the existing Risk Atlas platform, test and refine the underlying structural assumptions affecting the estimation of vulnerability in the multi-species seabird risk assessment model (i.e., the definition of fisheries vulnerability groups, species vulnerability groups, and time periods over which vulnerability is estimated).</p> <p>3. Illustrate the effects of input and structural changes applied under Objectives 1 and 2 in a transparent way, using sensitivities, and document their scientific justification.</p> <p>4. Using the Risk Atlas platform, query, disaggregate and summarise the outputs of the updated multi-species seabird risk assessment in consultation with FNZ scientists and managers, to inform relevant questions at the scale of particular fisheries or to address the particular information needs of fisheries managers at smaller scales, rather than only at the species scale.</p> <p>5. Create a publicly accessible online repository of risk assessment inputs (biological parameters, spatial data layers, and vulnerability group definitions under objectives 1 and 2) and summarised risk assessment outputs, with a simple user interface to facilitate transparency.</p>	Complete	<p>Peatman et al. (2023) AEBC 312</p> <p>Edwards et al. (2023) AEBC 313</p> <p>Edwards et al. (2023) AEBC 314</p>
PRO	PRO2019-11	Historical reconstruction and characterization of spatially explicit historical set-net fishing effort data.	1. Compile and summarise available fisheries catch/effort data, landings data, and other historical data indicative of spatial patterns of setnet fishing (including subsistence, recreational, and commercial setnetting) in the period before there were requirements to report fisheries catch	Complete	Meyer (2022) AEBC 299

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			<p>and effort data at finer spatial scales (and as early as 1900).</p> <p>2. Compile and summarise available data indicative of historical protected species capture rates in setnet fisheries, especially in the period before there were requirements to report protected species captures in a standardised way.</p> <p>3. Host a workshop including fisheries managers, scientists, fishing industry experts and historians to identify relevant data under Objectives 1 and 2 and to discuss its interpretation, with the aim of turning qualitative or summarised data into spatially and temporally resolved estimates of historical setnet effort and protected species captures.</p> <p>4. Using spatial modelling approaches, generate spatially explicit estimates of setnet fishing effort intensity at decadal scales during the 20th and 21st centuries, within fishery groups corresponding to gear or deployment characteristics likely to affect protected species capture rates (e.g., net material, mesh size, target species).</p> <p>5. Consistent with the SEFRA approach, intersect spatial effort characterisations under Objective 4 with protected species and fish distribution layers available from other projects, to estimate spatially resolved estimates of historical encounter rates (i.e., spatial overlap) at a decadal scale.</p> <p>6. Combining estimated encounter rates from Objective 5 with evidence of historical captures from Objectives 1 and 2, estimate catchability, total captures, and population-level risk in historical setnet fisheries for up to four species of interest, chosen in consultation with FNZ (including Hector's – Māui dolphins).</p>		
PRO	PRO2018-01	Protected species population dynamics model and simulations to estimate Population Sustainability Threshold (PST).	<p>1. Construct a generalised population dynamics model, consistent with the SEFRA framework, to estimate likely population recovery or stabilisation outcomes associated with different levels of anthropogenic impact and estimated risk.</p> <p>2. Run simulations to test the sensitivity of expected population outcomes to variation across the full range of plausible life history parameters for different taxonomic or life history groups (e.g.,</p>	Complete	

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			<p>seabirds, marine mammals, protected fish, harvested fish, benthic organisms).</p> <p>3. Develop the means to generate comparable risk ratios reflecting non-lethal impacts (i.e., impacts affecting demographic parameters other than adult survival), including across different life history groups.</p> <p>4. Test the sensitivity of expected population outcomes (i.e., also Risk Ratios and PSTs) to environmental stochasticity at different time scales, and investigate what range of environmental stochasticity is plausible for different life history groups and in different environments.</p>		
PRO	PRO2017-19	Factors affecting capture rate of black petrels and flesh-footed shearwaters	Build a spatially and temporally explicit commercial fisheries risk model estimating capture/ rates of black petrels and flesh-footed shearwaters as a function of multiple spatial, temporal, and vessel- or effort-specific variables potentially affecting capture rates, for fishery groups generating considerable risk to these species. Identify what factors most strongly drive fisheries risk, and evaluate risk reduction options.	Cancelled	
PRO	PRO2013-13	Global seabird risk assessment (for New Zealand species)	<p>1. Evaluate relative exposure to commercial fisheries at a global scale for New Zealand seabird populations applying a seasonally-disaggregated spatial overlap approach (i.e., accessing global seabird spatio-temporal distribution data and compiling comprehensive global fisheries effort databases) for different categories of fishing effort.</p> <p>2. Apply estimates of population PBR (from the updated NZ-EEZ seabird risk assessment (including uncertainty), and species- or guild-specific estimates of seabird Vulnerability (i.e., as estimated in the updated NZ-EEZ seabird risk assessment, modified to the extent possible by data indicative of relative seabird bycatch rates in comparable fishing effort inside vs. outside the New Zealand EEZ (including uncertainty), to estimate global fisheries risk for New Zealand seabird populations.</p> <p>3. For each New Zealand seabird population estimate what proportion of global fisheries risk is attributable to mortalities occurring inside vs. outside the NZ-EEZ, and what proportion is likely to</p>	Complete	<p>Abraham et al. (2017) (CCSBT ERS paper)</p> <p>Francis & Hoyle (2019) AEER 213</p>

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			<p>be unaccounted for in the analysis (e.g., due to incomplete global fisheries data or risk from IUU fishing).</p> <p>4. For that portion of species risk outside the NZ-EEZ, summarise the source of that risk to the extent possible, for example by RFMO (or other relevant management agency), and by fishery group, geographic area, season, vessel size, and other relevant categories.</p>		
PRO	PSB2020-01	At sea re-captures of black petrels (juvenile survivability) and continued population monitoring	<p>1. To collect information on population size, adult survival, age at first reproduction, and key demographic parameters for black petrel to reduce uncertainty or bias in estimates of risk.</p> <p>2. To sample Medium Grade habitat on Great Barrier Island/Aotea to increase the precision of estimates for the population size within this habitat grade.</p>	Complete	Bell et al. (2022) AEBR 280
PRO	PSB2020-04	Spatial distribution modelling for hoiho	<p>1. Secure access to existing satellite telemetry data collected under government contract.</p> <p>2. Compile available data indicative of hoiho distribution: NOMAD sightings data, CSP sightings data, fisheries capture, and colony specific population estimates.</p> <p>3. Apply spatial modelling techniques to estimate the spatial distribution and density of hoiho (including seasonal variation, and estimated separately for breeding and non-breeding birds), using data from Objective 2 and spatially comprehensive environmental data layers available from other Fisheries New Zealand funded projects.</p> <p>4. In collaboration with researchers delivering updated parameterisation of the seabird SEFRA model, examine the spatial goodness-of-fit of captures estimates using the updated spatial distribution layers from Objective 3, and modify these layers as appropriate where poorly fitted patterns seem to reflect poorly estimated spatial distribution layers.</p>	Complete	
PRO	PSB2020-05	Grooming and preparation of the hoiho database	1. Describe and catalogue existing hoiho databases (including the history and custody chain) containing data relevant to understanding hoiho population monitoring and hoiho intervention	Complete	Hickcox et al. (2023) AEBR 307

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			<p>2. Audit, document, and catalogue the source and genesis of all data in the hoiho database(s) in a standardised way.</p> <p>3. In collaboration with data owners or custodians, conduct data grooming/error correction/interpolation as necessary, and populate missing fields wherever possible by accessing other available information, to make the data suitable for subsequent research (including population models and spatial risk assessments).</p> <p>4. Build and update a standardised and easily queried repository for metadata documenting the database, including its genesis and structure, version control, and all grooming/linking/error-trapping code and other estimations carried out under Objective 3, including allowance for new data arising from future hoiho research projects.</p>		
PRO	PSB2020-06	Characterisation of all fishing activity that overlaps with hoiho including fish bycatch	<p>1. Characterise the commercial fisheries that overlap with the South Island population of hoiho, including spatial and temporal effort patterns and trends, and differences in gear configuration likely to affect catchability of hoiho.</p> <p>2. Characterise fish catch patterns and trends in these fisheries, including QMS and non-QMS species. Particular attention should be given to species that are known to make up the hoiho diet.</p> <p>3. ECSI inshore trawl survey data should be incorporated into the characterisation along with observer data, to identify CPUE indices for hoiho prey species that may not be recorded in commercial effort.</p> <p>4. Summarise relevant fisheries management changes over the time period of the available catch and effort data characterised in Objectives 1-2.</p> <p>5. Prepare the data in a format that can be used in a SEFRA to understand the risk that commercial fisheries overlapping with hoiho distributions impact their long term population status.</p>	Complete	Beentjes & Bian (2022) AEBr 297
PRO	PSB2020-07	Factors affecting protected species captures in domestic surface longline fisheries	<p>1. Conduct modelling analyses to examine the influence of factors that could potentially lead to the capture of protected species by domestic longline vessels.</p>	Complete	Meyer & MacKenzie (2022) AEBr 296

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			2. Based on the outcome of Objective 1, summarise the results and organise a workshop to test potential mitigation strategies.		
PRO	PSB2020-08	Desktop update of estimation of seabird cryptic mortality in trawls, via warp and net captures in the New Zealand domestic fleet using standard mitigation	<p>1. Summarise existing data to assign priors for various parameters within a simple transition matrix model to estimate cryptic mortality of seabirds in trawls using standard mitigation, including rates of: live release survival; death by drowning in the net; death by warp strike; as well as rates of body retention vs. body non-retention in the net.</p> <p>2. Construct a simple Bayesian model combining the parameter estimates from Objective 1, and fit to available data (e.g., pre- vs. post-tori line warp strike rates; results of autopsies; injury reporting codes; capture method) to estimate cryptic mortality.</p>	Complete	Meyer (2023) AEBR 322
PRO	PSB2020-09	Southern hemisphere seabird risk assessment	<p>1. To evaluate relative the overlap of New Zealand seabird populations with commercial fisheries at a southern hemisphere scale applying a seasonally-disaggregated spatial overlap approach (i.e., accessing global seabird spatio-temporal distribution data and compiling comprehensive global fisheries effort databases) for different categories of fishing effort estimated under project PRO2013-11 and from explicit sources of fisheries effort data.</p> <p>2. Apply estimates of population APF (from the updated New Zealand-EEZ seabird risk assessment, including uncertainty) and species- or group-specific estimates of seabird Vulnerability (i.e., as estimated in the updated New Zealand-EEZ seabird risk assessment, modified to the extent possible by data indicative of relative seabird bycatch rates in comparable fishing effort inside vs. outside the New Zealand EEZ, including uncertainty) to estimate global fisheries risk for New Zealand seabird populations.</p> <p>3. For each New Zealand seabird population, estimate what proportion of southern hemisphere fisheries risk is attributable to mortalities occurring inside vs. outside the NZ-EEZ, and what proportion is likely to be unaccounted for in the analysis (e.g., due to incomplete southern hemisphere fisheries data or risk from IUU fishing).</p> <p>4. For that portion of species risk outside the New Zealand-EEZ, summarise the source of that risk to</p>	Complete	Edwards et al. (2023) AEBR 321

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			the extent possible, for example by RFMO (or other relevant management agency), and by fishery group, geographic area, season, vessel size, and other relevant categories.		
PRO	PSB2020-10	Review and continuation of footage collection from the 2020–21 Black Petrel Electronic Monitoring project	<ol style="list-style-type: none"> 1. To collect footage via an electronic monitoring programme on the snapper bottom longline fishery in FMA 1. 2. To conduct footage review of electronic monitoring footage collected from the snapper bottom longline fishery in FMA 1 consistent with project PSB2019-06/07. 3. To submit data in a format that enables estimation of total captures in the SEFRA framework. 	Complete	Middleton & Abraham (2024) AEBR 340
PRO	PSB2019-01	Estimation of total seabird captures using standardized estimation methods.	To estimate capture rates and total captures of seabirds (plus fur seals) by method, area, and target fishery, and where possible, by species for the 2019/20, 2020/21 and 2021/22 fishing years.	Complete	
PRO	PSB2019-02	Distributional study of Antipodean albatross using satellite reporting GPS tags.	To collect spatial data to allow refinement of the spatial overlap with fishing throughout New Zealand's EEZ and the South Pacific, with tracking devices to be deployed on a wider range of ages/breeding stages.	Complete	
PRO	PSB2019-04	Black petrel population monitoring and distributional study.	<ol style="list-style-type: none"> 1. To collect information on population size, adult survival, age at first reproduction and key demographic parameters for black petrel to reduce uncertainty or bias in estimates of risk. 2. To collect spatial data to allow refinement of the spatial overlap with fishing, with tracking devices to be deployed on a wider range of ages/breeding stages. 	Complete	Bell et al. (2021) AEBR 270
PRO	PSB2019-06	Review footage collected from the 2018/19 Black Petrel Electronic Monitoring project.	<ol style="list-style-type: none"> 1. To conduct footage review of electronic monitoring footage collected from the snapper and bluenose bottom longline fisheries in FMA1. 2. To conduct a comparative analysis of the various datasets collected regarding seabird captures. 	Complete	Middleton & Abraham (2023) AEBR 302

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PRO	PSB2019-07	Continuation of the Black Petrel Electronic Monitoring Project for the 2019/20 summer.	<ol style="list-style-type: none"> 1. To collect footage via an electronic monitoring programme on snapper and bluenose bottom longline fisheries in FMA1. 2. To review footage. 3. To conduct a comparative analysis of the various datasets collected regarding seabird captures. 	Complete	Middleton & Abraham (2023) AEBR 302
PRO	PSB2019-08	Feasibility trial of underwater baitsetter.	<ol style="list-style-type: none"> 1. Feasibility trial of the underwater baitsetter in New Zealand surface longline. 2. Assessment of the behavioural response of seabirds to the underwater baitsetter. 	Complete	Robertson et al. (2025) FRR
PRO	PSB2019-09	Aerial survey of white-capped albatross on the Auckland Islands.	<ol style="list-style-type: none"> 1. To undertake aerial surveys of the white-capped albatross on Auckland Islands in 2019/20 and 2020/21, and undertaking analysis of total counts for each field season. 2. Based on the counts in Objective 1 and previous counts on the resulting dataset covering 14 years, assess the population trend, taking into account the proportion of loafers identified in the photo montages and by ground counts. 	Complete	
PRO	PMM2024-01	Harbour usage by Hector's and Māui dolphin - desktop study	<ol style="list-style-type: none"> 1. Conduct a literature review on harbour use by Hector's and Māui dolphins. 2. Identify data sources to be used in the updated Hector's and Māui risk assessment and any barriers to access these. 3. Characterise data identified under Specific Objective 2 and fisheries effort data to provide an overview of harbour usage by Hector's and Māui dolphin and their proximity to commercial fishing. 	Complete	Roberts (2025) AEBR 363
PRO	PMM2020-07	Novel technologies to monitor Maui and Hector's dolphin abundance, spatial distribution, behaviour, and/or reproductive success	<ol style="list-style-type: none"> 1. Design a trial to demonstrate the capability of a novel research platform or technology to collect important data for Maui or Hector's dolphins, as part of a regular monitoring programme. The trial description should include the means by which trial data will be processed and the criteria by which the success or failure of the trialled technology or platform will be evaluated. Priority data for collection are identified in the Objective rationale below. 2. Implement the trial described in Objective 1 in one or more identified priority locations. Locations 	Complete	Clement et al. (2024) AEBR 327

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			<p>of particular interest for different types of data collection are identified in the Objective rationale below.</p> <p>3. With the results of Objective 2 and, in consultation with Fisheries New Zealand and DOC, design and present options for a regular monitoring programme to collect priority data at specified intervals over a 3–5 year timeframe.</p>		
PRO	PMM2020-08	Novel technologies to mitigate the risk of dolphin capture in inshore trawl fisheries	<p>1. Design a passive acoustic sensor system deployed on inshore trawl vessels to detect the presence of Hector's dolphins and to characterise the nature of their interaction with the vessel and fishing gear during fishing operations.</p> <p>2. Deploy the acoustic sensor system on inshore trawl vessels during normal fishing operations in a range of field conditions, in locations where frequent Hector's dolphin interactions are expected. In consultation with fishers and with Fisheries New Zealand, identify different categories of vessels or gear configurations for comparison.</p> <p>3. Characterise the frequency and nature of Hector's dolphin interactions with the fishing vessel and gear including during different periods of operation (e.g., steaming, setting, hauling) and detail different types of interaction with the fishing gear.</p> <p>4. Evaluate, and if possible test, the likely utility of different mitigation options to reduce the likelihood of capture or injury to dolphins. Options may include a real-time warning system to alert the vessel to potentially dangerous interactions, or acoustic deterrent devices that are triggered by particular types of dolphin-gear interactions.</p> <p>5. Evaluate the cost and utility of deploying the acoustic sensor system from Objectives 1-3, and potentially also the deterrent options in Objective 4, more widely in trawl fisheries of interest, chosen in consultation with fishers and with Fisheries New Zealand.</p>	Complete	Warren et al. (2023) AEBR 325
PRO	PMM2020-09	Local-scale spatial distribution modelling of Hector's dolphins in key areas, to improve risk management	<p>1. Identify and compile data potentially indicative of Hector's dolphin spatial distributions in up to three local populations or local habitats of particular interest.</p> <p>2. Applying an appropriate spatial modelling statistical method, estimate the spatial density of</p>	Complete	Robertss & Webber (2023) AEBR 308

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			<p>Hector's dolphins in the local area(s) of interest, including seasonal variation.</p> <p>3. Intersect predicted spatial densities under Objective 2 with fishing effort data to estimate spatial overlap and fisheries risk, including changes over time, in the local population(s) of interest. In consultation with Fisheries New Zealand working groups, test alternate structural assumptions potentially affecting estimation of fisheries risk.</p> <p>4. Using model sensitivities, test the extent to which the spatial distribution(s) from Objective 2 and the estimates of overlap/ risk from Objective 3 are sensitive to alternate plausible model parameterisations.</p>		
PRO	PMM2019-10	Update Campbell Island NZSL (Population Sustainability Threshold) estimation.	<p>1. Compile and update population demographic data indicative of population size and trend, and indicators of relevant demographic rates, from the Campbell Islands New Zealand Sea Lion population</p> <p>2. Update population models available from previous and ongoing research projects (i.e., Roberts et al. 2014 and PRO2018-01) to approximate the current population consistent with Objective 1 and simulate future population trajectories under alternate management and climatic scenarios, applying a range of sensitivities chosen in consultation with FNZ.</p> <p>3. Apply the model(s) and sensitivities in Objective 2 to estimate Population Sustainability Threshold (PST) values consistent with a range of relevant population outcomes (selected in consultation with FNZ).</p>	Withdrawn	
PRO	PMM2018-04A	Estimate spatial distribution for at-risk mammals to assess fisheries overlap and risk: New Zealand fur seals.	<p>1. Summarise available information indicative of population structure for New Zealand fur seals, and population trend (i.e., stable, increasing, decreasing) at different colonies.</p> <p>2. Characterise the spatio-temporal foraging distribution of New Zealand fur seals (including by sex and by season) using available telemetry, sightings, captures, and other data to parameterise spatially comprehensive habitat utilisation models.</p> <p>3. Apply the Spatially Explicit Fisheries Risk Assessment (SEFRA) method to estimate encounter rate with fisheries, fishery related deaths, and</p>	Complete	Large et al. (2019) AEFR 224

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			population risk to New Zealand fur seals at biologically relevant scales.		
PRO	PMM2018-04B	Estimate spatial distributions for at-risk marine mammals to assess potential fisheries overlap and risk: Mainland and Stewart Island New Zealand Sea Lions.	<ol style="list-style-type: none"> 1. Characterise and estimate the spatio-temporal foraging distributions of New Zealand sea lions at mainland and Stewart Island colonies, using satellite telemetry and other available data to parameterise spatially comprehensive habitat utilisation models, including variation by sex and season. 2. Apply the Spatially Explicit Fisheries Risk Assessment (SEFRA) method to estimate overlap with commercial fisheries, fishery related deaths, and population risk to mainland sea lion subpopulations. 3. Characterise current mainland and Stewart Island haul-out locations for New Zealand sea lions, and identify likely future haul-out and colony locations based on observed or known habitat preference functions 4. Apply the analyses in Objectives 1 and 2 to potential future haul out locations identified in Objective 3, to estimate fisheries overlap and risk associated with potential future haul out locations as the mainland and Stewart Island sea lion population expands. 	Complete	
PRO	PMM2018-07	Updated spatially explicit fisheries risk assessment for New Zealand marine mammal populations.	<ol style="list-style-type: none"> 1. Assemble and prepare new spatial distributions for marine mammal species (including on a season and/or sex-specific basis where appropriate), and updated demographic parameterisation (e.g., population size, adult survival), as inputs to an updated Marine Mammal Risk Assessment (MMRA) using the SEFRA method. 2. Produce and fit a multi-species multi-fishery MMRA model using the updated inputs, including model diagnostics to evaluate fishery group definitions, species group definitions, structural assumptions, and spatial goodness of fit. 3. Produce a model interface to facilitate automated/routine update of the model as new fisheries data and updated inputs become available, to allow interrogation of the model to produce user-defined outputs and diagnostics, and to facilitate evaluation of alternate management scenarios. 	Complete	MacKenzie et al. (2022) AEBr 290

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PRO	PMM2018-08	Update SEFRA risk assessment tool – build observer coverage optimization function.	<p>1. Update the SEFRA risk assessment tool ‘Risk Atlas’ to include a fisheries observer coverage simulation tool and power analysis, to evaluate the consequences of assigning different levels of fisheries observer coverage or digital monitoring for the estimation of non-target species captures and risk under different user-defined scenarios</p> <p>2. In close collaboration with MPI, run the working model to evaluate particular observer scenarios as requested by MPI fishery managers.</p>	Procurement not initiated	
PRO	PMM2018-09	Desktop estimation of New Zealand sea lion cryptic mortality in trawls using SLEDs.	<p>1. Summarise existing data to assign priors for various parameters within a simple transition matrix model to estimate cryptic mortality of sea lions in trawls using SLEDs, including rates of: live escape survival; death by drowning in the net; death by post-escape drowning; and death by mild traumatic brain injury; as well as rates of body retention vs. body non-retention in the net.</p> <p>2. Construct a simple Bayesian model combining the parameter estimates from Objective 1, and fit to available data (e.g., pre- vs. post-SLED observed capture rates; results of deployed net camera trials) to estimate cryptic mortality.</p>	Complete	Meyer (2019) AEBR 222
PRO	PMM2018-11	Update Auckland Islands New Zealand sea lion demographic population model.	<p>1. Update the existing Auckland Islands New Zealand sea lion population demographics model including new data up to and including from the 2018-19 summer field season.</p> <p>2. Project future population trajectories and estimate Population Sustainability Threshold values (PSTs) to meet a range of specified population reference outcomes, including for a best estimate base case and sensitivities.</p>	Complete	Roberts (2019) AEBR 223
PRO	PSB2018-01A	Habitat use and spatial distribution of Antipodean albatross.	<p>1. Design a sampling plan to achieve a statistically robust spatial and temporal distribution across age/breeding stages.</p> <p>2. To collect spatial data on a wider range of ages/breeding stages of Antipodean albatross to allow refinement of the spatial overlap with fishing throughout New Zealand’s EEZ and the South Pacific.</p> <p>3. To produce an updated species distribution suitable for use in spatial risk assessment.</p>	Complete	

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PRO	PSB2018-09	Monitoring trial: comparing observers v Electronic Monitoring (EM) for seabirds on FMA1 bottom longline vessels.	<ol style="list-style-type: none"> 1. To conduct an audit of electronic monitoring footage collected from the bottom longline fishery. 2. To conduct a comparative analysis of the observer and electronic monitoring review datasets of seabird captures. 	Complete	McKenzie (2021) AEBR 251
PRO	PSB2018-10	Deepwater net capture analysis.	To complete model-based analyses to examine the influence of various factors that could potentially lead to the trawl net captures of seabirds on larger trawl vessels (>28m).	Complete	Edwards & Dunn (2021) AEBR 266
PRO	PSB2018-14	Development and testing of mitigation techniques to reduce penguin captures in setnets.	To develop and test mitigation techniques to reduce penguin captures in setnets, including the assessment of any impact on target species catch.	Withdrawn	
PRO	RIS2023-01	Updated spatially explicit fisheries risk assessment for New Zealand marine mammal populations	<ol style="list-style-type: none"> 1. Assemble and update marine mammal species spatial distributions (including on a season and/or sex-specific basis where appropriate), and updated demographic parameterisation, as inputs to an updated Marine Mammal Risk Assessment (MMRA) using the SEFRA method. 2. Produce and fit a multi-species multi-fishery MMRA model using the updated inputs, including model diagnostics to evaluate fishery group definitions, species group definitions, structural assumptions, and spatial goodness of fit. 3. Using the processes developed by MacKenzie et al. (2022) update the model with new fisheries data and updated inputs, to allow interrogation of the model outputs and diagnostics, and to facilitate evaluation of alternate management scenarios. 	Complete	
PRO	RIS2023-03	Collaborative update to Southern Hemisphere Risk Assessment	<ol style="list-style-type: none"> 1. Participate in intersessional CCSBT ERS meetings to help prepare member nations observer data to update catchability estimates for their respective fishing fleet. Document the grooming needed to include these data and provide recommendations for future data preparation or collection, including minimum specifications for data inclusion in future studies. 2. Evaluate relative overlap with commercial fisheries at a southern hemisphere scale for New Zealand seabird populations applying a seasonally disaggregated spatial overlap approach (i.e., access global seabird spatio-temporal distribution data 	Complete	<p>Edwards et al. (2025) AEBR 357</p> <p>Edwards et al. (2025) AEBR 359</p>

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			<p>and compile comprehensive global fisheries effort databases) for different categories of fishing effort estimated under project PSB2020-09 and from CCSBT member nations fisheries effort data.</p> <p>3. Apply estimates of population APF (to be delivered from project PSB2020-09 and using data from Specific Objective 1) and species- or group-specific estimates of seabird Vulnerability (i.e., as estimated in PSB2020-09, modified to the extent possible by data provided by CCSBT member nations) to estimate global fisheries risk for seabird populations in the previous iteration of the Southern Hemisphere Risk Assessment.</p> <p>4. For each seabird population estimate what proportion of southern hemisphere fisheries risk is attributable to mortalities occurring inside vs. outside the EEZ boundaries, and what proportion is likely to be unaccounted for in the analysis (e.g., due to incomplete southern hemisphere fisheries data or risk from IUU fishing).</p> <p>5. For that portion of species risk both outside EEZ boundaries and within, summarise the source of that risk to the extent possible; for example by nation, RFMO (or other relevant management agency), and by fishery group, geographic area, season, vessel size, and other relevant categories.</p>		
PRO	SEA2018-19	Supplemental population dynamics modelling and simulated trajectories for Maui dolphins	<p>1. Re-parameterise and re-fit the Māui dolphin population dynamics model described in IWC-SC/67b/ASI using updated demographic priors, and fisheries and non-fishery impact level estimates, consistent with the TMP risk assessment model. Disaggregate and estimate the likely impacts of commercial fishery threats (setnet and trawl) vs non-fishery threats (including disease).</p> <p>2. In consultation with FNZ and as directed by FNZ scientific working group(s), produce quantitative diagnostics of model fit and model power, and use sensitivities to test the influence of structural assumptions and input priors on model outputs.</p> <p>3. Using a base case model and agreed sensitivities, simulate current status and future population recovery trajectories under a range of threat management scenarios identified by FNZ and/or its scientific working groups, to estimate how much threat reduction is required to meet alternate population recovery objectives.</p>	Complete	Cooke et al. (2019) AEBr 216

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PRO	SEA2018-20	Supplemental population dynamics modelling simulated trajectories for Māui dolphins including evaluation of fishery and non-fishery threat effects	<ol style="list-style-type: none"> 1. Re-fit the Māui dolphin population model described above, including historical annual threat-specific deaths arising from both commercial fishery and selected non-fishery threats, consistent with the TMP risk assessment model. 2. In consultation with Fisheries New Zealand and as directed by Fisheries New Zealand scientific working group(s), produce quantitative diagnostics of model fits to mark-recapture and population size estimates. 3. Explore alternate plausible historical impact levels from different threats. 4. Using a base case model and agreed sensitivities, simulate current status and future population recovery trajectories under a range of threat management scenarios identified by Fisheries New Zealand and DOC and/or its scientific working groups, to estimate population trajectories. 	Complete	Roberts et al. (2019) AEBR 215
PRO	PRO2017-01A	Research into the demographic parameters for at-risk seabirds as identified by the Risk Assessment (black petrels)	<ol style="list-style-type: none"> 1. To collect information on population size, adult survival, age at first reproduction and key demographic parameters for black petrel to reduce uncertainty or bias in estimates of risk. 2. To collect spatial data to allow refinement of the spatial overlap with fishing, with tracking devices to be deployed on a wider range of ages/breeding stages. 	Complete	Bell et al. (2020) AEBR 246
PRO	PRO2017-01B	Research into the demographic parameters for at-risk seabirds as identified by the Risk Assessment (Southern Buller's/Snares)	To collect information on population size, adult survival, age at first reproduction and key demographic parameters for southern Buller's on The Snares to reduce uncertainty or bias in estimates of risk.	Complete	Thompson & Sagar (2019) AEBR 231
PRO	PRO2017-04	Risk Assessment to support the development of revised NPOA seabirds	<ol style="list-style-type: none"> 1. To explore the recommendations made by the expert review of the risk assessment framework due to occur in June 2017, via trialling any suggested changes to the methodology or undertaking sensitivity runs. 2. Following the methods as described in the AEBAAR and agreed changes from the expert review, construct a spatially explicit fisheries risk assessment for seabirds. 	Withdrawn	

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PRO	PRO2017-05A	Population specific modelling of adult survival of black petrels	To update previous population modelling of black petrels to produce an updated population trend and estimate of adult survival.	Complete	Zhang et al. (2020) AEBR 244
PRO	PRO2017-05B	Population specific modelling of adult survival of Chatham Island albatross	To compile all mark-recapture data collected for the Chatham Island albatross and produce an adult survival estimate for the time period corresponding to that used by the risk assessment.	Complete	
PRO	PRO2017-06	Characterisation of yellow eyed penguin / fishery interactions	To undertake a review and characterisation of all available information to better understand when, where and how yellow-eyed penguins become caught in set nets, and to the extent possible, the frequency of occurrence.	Complete	Mattern (2020) AEBR 243
PRO	PRO2017-08A	Research into the demographic parameters for at-risk marine mammals as identified by the marine mammal risk assessment (common dolphins)	Characterise population structure and estimate population size for New Zealand common dolphin population(s), with an emphasis on populations that are most exposed to fisheries risk.	Complete	Möller et al. (2024) AEBR 341
PRO	PRO2017-08C	Research into the demographic parameters for at-risk marine mammals as identified by the marine mammal risk assessment (sea lions)	<p>1. To investigate the likely causes and consequences of changing New Zealand sea lion pup mass and pup survival, using biological and population monitoring data collected at the Auckland islands both before and after the advent of population decline (i.e., pre- and post-2000).</p> <p>2. To investigate the extent to which indices derived from the analyses in Objective 1 can be used to predict sea lion population trends, by incorporation into the existing sea lion population model and/or as a relevant indicator for future population monitoring efforts.</p>	Complete	<p>Roberts et al. (2021) AEBR 255</p> <p>Edwards & Roberts (2021) AEBR 256</p>
PRO	PRO2017-10	Analysis of New Zealand sea lion tracking data to estimate overlap with fisheries	<p>1. Characterise the foraging behaviour of Auckland Islands sea lions in a spatially and temporally explicit manner using available satellite telemetry data.</p> <p>2. Apply spatial overlap methods to inform improved estimation of encounter rate, strike rate, and cryptic mortality rate of Auckland Islands sea lions with commercial fisheries over time, including</p>	Complete	

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			<p>for fishing effort with and without the use of Sea Lion Exclusion Devices (SLED).</p> <p>3. Apply estimates from Objective 2 (with uncertainty) to inform spatially explicit estimates of fishery related deaths in association with current fishing effort patterns.</p>		
PRO	PRO2017-12	Hector's and Māui dolphin multi-threat risk assessment to support review of the TMP	<p>1. Construct population models for Māui dolphins, and for Hector's dolphins in those regional sub-populations where data are sufficient.</p> <p>2. Map potential non-fishery threats to Māui and Hector's dolphins and estimate the overlap between dolphin distributions and both fishery and non-fishery threats.</p> <p>3. Apply the Spatially Explicit Fisheries Risk Assessment (SEFRA) method to estimate fisheries impact and risk to Māui and Hector's dolphins, using the new information in the objectives above, including at a regional sub-population level. This analysis should include estimation and partition of total mortalities attributable to different threats (with uncertainty) at a regional sub-population level.</p> <p>4. In consultation with government scientists and managers examine alternate spatial management scenarios through both modelling and participation in a multi-threat risk assessment workshop.</p>	Complete	Roberts et al. (2019) AEBR 214
PRO	PRO2017-15	Use of innovative tag technology to examine foraging patterns of seabirds and association with fishing vessels	To undertake tagging programs alongside other field programs monitoring populations of relevant seabird species using tags that can detect radar strength and potentially depth of dives to examine the relative occurrence of seabird foraging close to fishing vessels.	Complete	Filippi & Elliott (2022) AEBR 285
PRO	SEA2017-03	Shark qualitative analysis for risk assessment rerun	Collection from post November 2014 for each shark species assessed in Ford et al. (2015) of plenary chapters, data files, summaries and maps of reported captures over last 5 complete fishing years up to 30 September 2016, heat maps as generated for NABIS layers, trawl survey information on distribution and trends and papers or summaries of biology, age, growth, fecundity and general productivity.	Complete	Ford et al. (2018) AEBR 201

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PRO	SEA2017-08	A synthesis of the population work carried out as part of PRO2006-01	Preparation of a report which summarises work under the PRO2006-01 A to E Mfish contracts including White-chinned petrel and grey petrel on Antipodes Island, Salvin's albatross on Snares, Northern buller's albatross, northern royal albatross and northern giant petrel on Forty-Fours and Sisters, and Chatham Island albatross on the Pyramid.	Complete	Thompson (2019) AEFR 228
PRO	SEA2017-10	Black petrel Electronic Monitoring; Audit and Analysis	Audit, data analysis, and report of the footage of seabird captures recorded electronically and by on-board observers collected as a result of the collaborative Black Petrel Electronic Monitoring trial.	Complete	McKenzie (2019) FRR held by FNZ
PRO	SEA2017-27	Underwater sound propagation modelling to illustrate potential noise exposure to Maui dolphins from seismic surveys and vessel traffic on West Coast North Island, New Zealand.	<ol style="list-style-type: none"> 1. Characterise seasonal (Summer and Winter) density of vessel AIS and oil & gas seismic survey locations in 2014-15 within 100km of the West Coast of the North Island potentially occupied by Maui dolphins. 2. Produce time-averaged sound footprints for all vessel traffic and seismic survey testing at a resolution of 3km grid-squares 3. Estimate sound levels at defined receiver points corresponding with locations potentially occupied by Maui dolphins, at a frequency band relevant to this species. 	Complete	McPherson et al. (2019) AEFR 217
PRO	KAI2016-06	Sperm Whale impact quantification and monitoring for the Kaikoura earthquake	<ol style="list-style-type: none"> 1. Determine the impact of the Kaikōura earthquake on the local sperm whale population, through surveys that include resighting of known whales, their spatial distribution, behaviour and collection of samples to investigate potential trophic impacts. 2. Process samples to investigate potential trophic impacts of the Kaikōura earthquake on the local sperm whale population. 	Complete	Guerra et al. (2020)
PRO	KAI2016-08	Hutton's Shearwater Survey after the Kaikoura Earthquake	<ol style="list-style-type: none"> 1. To survey Hutton's shearwater populations in colonies around Kaikoura 2. To assess ongoing threats and limits to recovery from recent earthquake impacts of the colonies of Hutton's shearwater around Kaikoura 	Complete	Cuthbert (2018) AEFR 209 Scofield et al. (in prep)

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PRO	KAI2016-10	Hector's Dolphin Survey after the Kaikoura Earthquake	<p>1. To survey Hector's dolphins along Kaikoura coast in 2017/18 in a manner consistent with previous surveys (Weir and Sagnol 2015)</p> <p>2. To analyse historical and 2017/18 Hector's dolphin survey information to characterise any impact of the 2016 Kaikoura earthquakes.</p>	Complete	Weir & MacKenzie (2021) AEBr 252
PRO	Project funded by Deepwater Group Ltd	Simulating sea lion dives to assess the probability of post-exit drowning for sea lions exiting SLEDs		Complete	Middleton (2019) AEBr 225
PRO	PRO2016-01A	Demographic parameters of black petrels	To collect or analyse information on population size, distribution, or key demographic parameters to reduce uncertainty or bias in estimates of risk for selected at-risk seabirds.	Complete	Bell et al. (2018) AEBr 198
PRO	PRO2016-02	Factors affecting capture rate of black petrels and flesh-footed shearwaters	Build a spatially and temporally explicit commercial fisheries risk model estimating capture/kill rates of black petrels and flesh-footed shearwaters as a function of multiple spatial, temporal, and vessel- or effort-specific variables potentially affecting capture rates, for fishery groups generating considerable risk to these species. Identify what factors most strongly drive fisheries risk, and evaluate alternate risk reduction options.	Withdrawn	
PRO	PRO2016-03	Estimation of captures of protected species in New Zealand Fisheries	<p>To summarise fishing effort, observer effort, and observer reported captures in trawl, longline, set net and purse seine fisheries within the New Zealand EEZ, for the 2016/17, 2016/17 and 2017/18 fishing years.</p> <p>To estimate capture rates and total captures of protected species by method, area, and target fishery, and where possible, by species for the 2016/17, 2016/17 and 2017/18 fishing years.</p>	Complete	<p>Abraham & Richard (2019a) AEBr 211</p> <p>Abraham & Richard (2019b) AEBr 226</p> <p>Abraham & Berkenbusch (2019a) AEBr 233</p> <p>Abraham & Berkenbusch (2019b) AEBr 234</p> <p>Abraham et al. (2019)</p>

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					<p>Abraham & Berkenbusch (2020) AEBR 237</p> <p>Abraham & Richard (2020) AEBR 249</p> <p>Abraham et al. (2021) AEBR 258</p>
PRO	PRO2016-04	Characterisation and quantification of non-fishing threats on seabirds	To characterise and quantify the non-fishing threats to seabirds.	Withdrawn	
PRO	PRO2016-06	Spatially explicit risk assessment query and simulation tool	Build an interactive user-driven query and simulation tool to enable MPI fisheries managers and government scientists to: i) access, query, display, and disaggregate spatially explicit data layers and outputs of the L2 seabird risk assessment for user-defined combinations of fishery groups, species, and/or areas; ii) define and examine the consequences of alternate assumptions and alternate risk management scenarios, including spatial and temporal effort controls, mitigation uptake, and/or new research to reduce biological and statistical uncertainty -- and iii) for each alternate scenario, estimate seabird captures, fatalities, uncertainty, and corresponding risk; iv) simulate the assignment of fisheries observer coverage within user defined scenarios and estimate the power to accurately estimate seabird captures and risk under different observer coverage levels.	Complete	
PRO	PRO2016-09	Abundance and distribution of Hector's and Māui dolphins	<p>1. To develop and refine designs and methods for summer and winter surveys for Hector's dolphins along the SCSl.</p> <p>2. To estimate the abundance of Hector's dolphins along the SCSl applying an agreed survey and analysis methodology.</p> <p>3. To estimate the distribution of Hector's dolphins along the SCSl applying an agreed survey and analysis methodology.</p>	Complete	Mackenzie & Clement (2019) AEBR 236
PRO	SEA2016-20	Helicopter based aerial surveys of the Auckland Islands	Helicopter based aerial surveys of the Auckland Islands.	Complete	

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PRO	SEA2016-21	Stocktake of Status of development of Mitigation measures applicable to New Zealand commercial fisheries	<p>Stocktake of Status of development of Mitigation measures applicable to New Zealand commercial fisheries.</p> <p>Report summarising (by fishing method) the bycatch mitigation measures and hurdles to uptake in New Zealand, including development, testing and cost.</p>	Complete	
PRO	SEA2016-24	SEA2016-24 Supplemental sea lion population modelling to support an updated Squid Trawl Fishery Operational Plan	Update the existing Auckland Islands sea lion population model with two additional years of pup count data and estimate population trajectories corresponding to alternate management and hypothetical mortality scenarios.	Complete	
PRO	SEA2016-26	SEA2016-26 SPRFMO bottom fishing impact assessment	<p>1. Use NZ bottom trawl data from the entire SPRFMO area and apply the plotImpact method developed for CCAMLR to the SPRFMO area using NZ bottom trawl data.</p> <p>2. The overall dataset will be divided into the type of fishing (slope, seamount, or mixed) and the impact summaries and histograms of percent impact will be generated for each fishing type at the four spatial scales.</p> <p>3. The relationship between the cell size and estimated percentage impact will be evaluated for two selected habitats (slope and seamount). For this exercise, the data for a given habitat will be summarised as a distribution of impact percentages for the cells included, and profiled across cell sizes starting at 100m and with increasing cell size to show the relationship between estimated percent impact and cell size.</p> <p>4. If time allows, illustrate the potential impact and recovery dynamics of an example VME taxon using an assumed spatial distribution and demographic parameters in one area of interest, and an assumed single move on rule (trigger and distance) to redistribute fishing effort to the remaining areas.</p>	Complete	
PRO	SEA2016-26 ORC	Quality analysis and documentation of catchmapper protocols	<p>1. Demonstrate how CatchMapper represents fishing events and landings and document any exclusions.</p> <p>2. Explain the accuracy and uncertainty in CatchMapper spatial estimates of commercial fishing catch and effort and interpretation of quality indices.</p>	Complete	Osborne (2018) AEBR 200

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			<p>3. Explain the mapping of fishing intensity, options for mapped values and flexibility in selection of fishing events for mapping.</p> <p>4. Demonstrate the uses of CatchMapper for quantifying the potential effects of spatial allocations on commercial fishing.</p>		
PRO	SEA2016-29	Analysis for the White-capped albatross Aerial Survey	<p>1. Prepare photo montages and count nesting and loafing albatross according to existing methodology (as presented to CSP TWG and AEWG previously) for the aerial surveys undertaken during the summers of 2015/16 and 2016/17 (undertaken under contract to DOC, Deepwater Group and MPI),</p> <p>2. Based on the counts in objective 1 and previous counts, assess the population trend, taking into account the proportion of loafers identified in the photo montages and by ground counts.</p> <p>3. Analyse the trends shown by sub-areas for the entire time series of aerial surveys to assess whether selected sub-areas could be monitored and represent the trend of the wider population.</p>	Complete	
PRO	SEA2016-30	Hector's and Māui dolphin risk disaggregation tool	<p>1. Expand the custom risk assessment disaggregation and query tool (contract PRO2016-06) to include Hector's and Māui dolphins, incorporating all data inputs for Hector's and Māui dolphins utilised in the Marine Mammal Risk Assessment. Risk estimation will be carried out via a single-species application of the SEFRA method (2017 MPI AEBAR, Chapter 3) for both the setnet and inshore trawl fishery groups.</p> <p>2. Expand the capability of the risk query tool to include a sub-population definition function that subdivides a population according to user-defined boundaries, and automatically generates separate outputs for each.</p> <p>3. Expand the capability of the risk query tool to include analysis of hypothetical scenarios using alternate species spatial distribution layers and/or alternate fishing effort distribution layers (provided as user-defined inputs, e.g., as GIS layers) with standardised diagnostic outputs comparing alternate scenarios with the base case scenario.</p> <p>4. Expand the capability of the risk query tool to allow the fishing effort and observed captures database query and display function to be applied to any protected species in the groomed and linked</p>	Complete	

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			effort and captures database. This objective is for the visual display outputs only; it does not include risk assessment modelling for species other than Hector's and Māui dolphins.		
PRO	DAE2015-01	Characterisation of seabird capture data	To collate and characterise the seabird capture information from deepwater trawl fisheries to improve understanding of potential risk factors for captures of seabirds, with a focus on net captures.	Complete	
PRO	PRO2015-01	Improving estimates of cryptic mortality for use in seabird risk assessments	<p>1. To develop guidelines for the production of estimates of total seabird captures from observer data, with methods varying based on the level and quality of data.</p> <p>2. To increase the capability of other countries to produce robust estimates of seabird captures.</p>	Complete	Baker et al. (2021) AEBR 268
PRO	PRO2015-04	Addressing key information gaps for Māui dolphins	1. To collect information on spatial distribution and overlap with fisheries to decrease uncertainty in our understanding and estimates of risk to Māui dolphins.	Complete	
PRO	SEA2015-06	Additional aerial survey effort for Hector's dolphins on the West Coast South Island	Following increased Hector's dolphin sightings over the summer survey this project allows for extra effort in the Grey (0-4nm), Hector (4-12nm) and Okarito (4-12nm) strata (Plan A). If time and weather permit, this will also allow for extra effort in the 4-12nm strata off Whanganui, Jackson Bay and Milford.	Completed as part of PRO2013-06	MacKenzie & Clement (2016) AEBR 168
PRO	SEA2015-10	Sea lion prey survey	<p>1. Undertake a demersal trawl survey of the Auckland Islands and Stewart/Snares shelf to determine the spatial and bathymetric distribution and abundance of the main prey species of NZ sea lions in the areas used by benthic and pelagic foraging lactating females.</p> <p>2. Conduct a potting feasibility study to determine the distribution, abundance and biology of yellow octopus (<i>Enteroctopus zealandicus</i>).</p> <p>3. Conduct a benthic habitat characterisation based on acoustic swath mapping of the seafloor in the area immediately surrounding demersal trawl stations.</p>	Complete	Roberts et al. (2018) AEBR 204

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			<p>4. Deploy underwater cameras to visually survey seafloor habitat and sea lion prey species at a representative subsample of habitat types, identified from the acoustic swath habitat characterisation.</p> <p>5. Make oceanographic observations to quantify physical characteristics of sea lion foraging habitat.</p>		
PRO	SEA2015-12	Potential impacts of fisheries restrictions for the NZ sea lion TMP	<p>1. To estimate the likely impact on catch rates and total catches of squid, scampi, and hoki of a range of specified potential fishing restrictions.</p> <p>2. To estimate the likely impact on sea lion interactions and captures of the specified fishing restrictions.</p>	Complete	Roux & Roberts (2016) FRR
PRO	SEA2015-15	Stewart Island sea lion survey	<p>1. To determine the feasibility of monitoring pup production in January, concurrent with the monitoring of other colonies.</p> <p>2. While testing the feasibility of using thermal technology in finding sea lion pupping locations.</p> <p>3. To screen for <i>Klebsiella pneumoniae</i>.</p> <p>4. Determine common causes of death for Stewart Island pups.</p>	Complete	Boren et al. (2016)
PRO	PRO2014-06	Update of level-2 seabird risk assessment	<p>1. To update the level-2 seabird risk assessment using all new information on bird population size, productivity, and distribution, and all relevant fishing effort and observer data for the 2009/10 to 2013/14 fishing years.</p> <p>2. To identify key drivers of uncertainty and opportunities to reduce uncertainty in the risk ratios for species at high or very high risk.</p> <p>3. To participate in, and provide data for, a workshop to review the findings relative to other available data and results.</p> <p>4. To update the level-2 seabird risk assessment using all new information on bird population size, productivity, and distribution, and all relevant fishing effort and observer data for the 2010/11 to 2014/15 fishing years.</p> <p>5. To identify key drivers of uncertainty and opportunities to reduce uncertainty in the risk ratios for species at high or very high risk.</p>	Complete	Richard et al. (2017) AEBr 191

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PRO	PRO2014-03	Research in response to advice from the Māui's dolphin research advisory group	1. To be developed through the MRAG process: agreed project was genetic mark recapture estimation of Māui dolphin abundance with field effort in 2014/15 and 2015/16.	Complete	
PRO	PRO2014-02	Risk assessment modelling for fishing-related mortality of sea lions to underpin the TMP	<p>1. To review existing models of New Zealand sea lions that have been used to estimate key demographic rates and their variability.</p> <p>2. Based on the results of Objective 1, develop an operating model of the Auckland Island population of New Zealand sea lions suitable for use in management strategy evaluation.</p> <p>3. To use a management strategy evaluation to assess the risk posed by commercial fishing to New Zealand sea lions, including assessing the likely performance of candidate management approaches against current or agreed performance criteria.</p> <p>4. To extend the modelling to other populations and risks as information permits.</p>	Complete	Roberts & Doonan (2016) AEBR 166
PRO	PRO2014-05 Co-funded with DOC POP2015-01	Reducing uncertainty in biological components of the risk assessments for at-risk seabird species	1. Species, population, and information requirements to be determined based on the prioritisation procedures in the NPOA-seabirds and the table of priorities from the outputs of the review workshop.	Complete	Bell et al. 2016
PRO	PRO2014-01	Improving information on the distribution of key protected species	<p>1. To produce an agreed list of seabird and marine mammal species for inclusion and compile all available spatial data for these species.</p> <p>2. To model and map the distribution of the species identified in objective 1 from available spatial data, reflecting any temporal changes (seasonality or trends).</p> <p>3. To refine the results of the mapping for priority species by developing and implementing predictive habitat distribution models.</p>	Complete	Stephenson et al. (2020) AEBR 240
PRO	SEA2014-12	NZ sea lion stable isotope analysis	1. Locate the ideal NZ sea lion teeth for stable isotope analysis from that will provide the best temporal coverage.	Complete	

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			<p>2. Prepare and micro-drill the NZ sea lion teeth within the annual bands to document changes in their foraging and changes in ocean conditions through time using stable isotope analysis.</p> <p>3. Assess the stable isotope datasets in combination with existing diet studies, prey abundance estimates and climate indices to best examine temporal patterns.</p>		
PRO	SEA2014-15	Sensitivity of the Seabird Risk Assessment to selected scenarios	<p>1. Assess the sensitivity of the Seabird Risk Assessment to assumptions about Buller's albatrosses.</p> <p>2. Assess the ability of the Seabird Risk Assessment to detect changes in the capture rates.</p> <p>3. Assess the sensitivity of the risk assessment to live captures.</p>	Complete	Richard & Abraham (2017) AEBR 182
PRO	SEA2014-16	Observer coverage power analysis for NPOA	<p>1. Assess the level of observer coverage required to detect a change in the estimated risk of fisheries to New Zealand seabirds, for varying levels of decrease in fishing-related fatalities, for selected seabird species and fisheries.</p>	Complete	
PRO	SEA2014-19	Development and production of smaller hook pods for trial in NZ	<p>To modify the current Hook Pod to New Zealand version without the LED incorporated. This will result in a smaller and more robust Hook Pod that will be equally effective at reducing seabird bycatch in New Zealand's surface longline fisheries.</p>	Complete	
PRO	SEA2014-21	Additional analyses to support the New Zealand sea lion risk assessment	<p>1. The effect of past mortality resulting from key threats for which data are available (such as disease and fishing mortality), or for which plausible estimates are available (such as cryptic mortality), will be explored by fitting the historical demographic model including data on mortality arising from known threats to estimate starting (1960) and current population structure. Threat-derived mortality will then be excluded from the model and re-run from the estimated starting population to predict population structure in the absence of such mortality.</p> <p>2. Questions were raised about the most appropriate way to deal with animals of unknown pupping status in the model. At present, decision rules are used to determine pupping status from</p>	Complete	Roberts & Doonan (2016) AEBR 166

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			<p>observations (observed suckling, at least 3 sightings with a pup or 3 sightings without a pup) to determine pupping status, with the remaining animals classified as unknown and divided in the proportion of known pupping/non-pupping. Exclusion of animals of unknown status results in increased estimates of pupping rate. Alternative approaches should be considered and the sensitivity of pupping rate to relaxing the decision rules should be explored, such as relaxing the decision rules used to determine pupping status to 2 or 1 observations with or without a pup, or use of other information such as females calling to pups. (Linked to the following item).</p> <p>3. Similar questions were raised about determining pupping status before an animal that has moved between colonies is used to estimate migration (translocation) rates. As an alternative, these requirements could be relaxed to include animals simply observed (but not confirmed to be pupping) at another colony to be included in migration rate estimation.</p> <p>4. The assumption of a CV of 0.06 for pup census indices, as the only way of specifying a relative weighting between census and tag-recapture data, was questioned. Alternative CVs and weighting approaches should be determined using something like standard deviations of Pearson residuals.</p> <p>5. Incorporation of time-varying re-sighting probability was noted to improve model fits, indicating that re-sighting probabilities did vary over time. One could explore whether the number of days on which re-sightings were conducted each year are correlated with effort days, in which case effort days could be used to estimate re-sight probabilities for recent years that have not been back-corrected.</p> <p>6. It was recommended that the effect of incorporation of 'phantom tags' on parameters such as re-sighting probability should be explored. An alternative approach would be to simply multiply the survival rate from tagging to age 1 yr by the directly estimated proportion of pups that die prior to tagging. The latter is, after all, the basis for how many phantom tags are added.</p>		
PRO	SEA2014-23	An assessment of thermal aerial survey techniques on fur seals	1. Undertake field work component.	Complete	

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			2. Submit draft report and present to the Aquatic Environment Working Group.		
PRO	SEA2014-25	Black petrel distribution and fisheries overlap	1. Geographical Information Systems (GIS) data, giving the distribution of black petrel. 2. GIS data giving the overlap of black petrel with bottom longline, surface longline, set net, and trawl fisheries.	Complete	
PRO	SEA2013-06	Black Petrel Distribution Modelling	1. To use the best available information to develop a spatial and seasonal distribution of black petrel, in New Zealand waters.	Complete	Abraham et al. (2015) AEBR 161
PRO	SEA2013-14	Re-Run of Level-2 Seabird Risk Assessment 2014	1. To provide an update of the Seabird Risk Assessment, including observer and fisheries data to the end of the 2012/13 fishing year.	Complete	Richard & Abraham (2015) AEBR 162
PRO	SEA2013-08	Data preparation for protected species bycatch estimation	1. Groom catch effort, observer, and protected species capture data. 2. Provide web-based interface to allow exploration, display, and reporting on the data.	Completed: preparation for PRO2013-01	
PRO	PRO2013-01	Protected species capture estimation	1. To estimate capture rates and total captures of seabirds, marine mammals, turtles, and protected fish species by method, area, and target fishery, and where possible, by species for the fishing years 2012/13, 2013/14 and 2014/15. 2. To estimate factors associated with the capture of seabirds and marine mammals. 3. To estimate, where possible, the nature and rate of warp strike incidents and total number of seabirds affected.	Complete	Abraham et al. (2016) AEBR 169 Abraham & Richard (2017) AEBR 184 Thompson et al. (2017) AEBR 192 Abraham & Richard (2018) AEBR 197 Abraham & Berkenbusch (2017) AEBR 188
PRO	PRO2013-06	Abundance and distribution of WCSI Hector's dolphins	1. To develop and refine designs and methods for summer and winter aerial surveys for Hector's dolphins along the WCSI consistent with the recent ECSI surveys. 2. To estimate the abundance of Hector's dolphins along the WCSI in summer 2013/14 applying an agreed aerial survey methodology.	Complete	MacKenzie & Clement (2016) AEBR 168

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			3. To estimate the distribution of Hector's dolphins along the WCSI in summer 2013/14 applying an agreed aerial survey methodology. 4. To estimate the abundance of Hector's dolphins along the WCSI in winter 2014 applying an agreed aerial survey methodology. 5. To estimate the distribution of Hector's dolphins along the WCSI in winter 2014 applying an agreed aerial survey methodology.		
PRO	PRO2013-08	Reanalysis of Hector's dolphin line transect aerial survey data	1. To collate sightings and effort data for all Hector's dolphin aerial surveys that applied different approaches to estimating the detection function. 2. To assess the impact of different approaches to estimating the detection function on estimates of abundance and distribution and develop correction factors. 3. To reanalyse all relevant survey data to estimate Hector's dolphin abundance and distribution applying the agreed approach to estimating the detection function.	Included in PRO2013-06	
PRO	PRO2013-17	Repeat quantitative modelling of southern Buller's albatross	1. To update the fully quantitative population model of southern Buller's albatross to assess population trend and key demographic rates for this population. 2. To use the model to predict future trends assuming recent average demographic rates.	Complete	Fu & Sagar (2016) AEBR 165
PRO	PRO2013-18	Authoritative Sea Lion Capture List	To produce a definitive data set of New Zealand sea lion captures and to reconcile data from the different sources, and resolve any discrepancies.	Complete	Thompson et al. (2015) AEBR 145
PRO	SEA2013-08	Data preparation for protected species bycatch estimation	1. Groom catch effort, observer, and protected species capture data 2. Provide web-based interface to allow exploration, display, and reporting on the data	Completed: preparation for PRO2013-01	
PRO	No project number	A risk assessment of threats to Māui's dolphins	To evaluate of the risks posed to Māui's dolphin to support the review of the TMP.	Complete	Currey et al. 2012
PRO	PRO2012-02	Assessment of the risk to marine mammal populations from New Zealand commercial fisheries	1. To scope the risk assessment, including producing an agreed list of marine mammal populations (in concert with MAF and DOC). 2. To review the literature, compile the required information and evaluate the appropriate level of risk assessment for the marine mammal	Complete	Berkenbusch et al. (2013) AEBR 119

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			<p>populations identified in objective 1.</p> <p>3. To conduct a risk assessment for the marine mammal populations identified in objective 1 using, where possible, a risk index reflecting the ratio of fisheries-related mortality to the level of potential biological removal.</p> <p>4. To refine the results of the risk assessment for priority marine mammal populations by incorporating spatially and temporally-explicit abundance, distribution and capture information.</p>		Abraham et al. (2017) AEBR 189
PRO	PRO2012-07	Cryptic mortality of seabirds in trawl and longline fisheries	<p>1. To review available information from international literature and unpublished sources to characterise and inform estimation of cryptic mortality and live releases for at-risk seabirds in New Zealand trawl and longline fisheries</p> <p>2. To review the extent to which fisheries observer data informing current estimates of seabird captures may be used to also estimate cryptic mortalities in different fishery groups in the seabird risk assessment, and identify key assumptions and associated uncertainty in the estimation of cryptic mortalities.</p> <p>3. To identify those species and/or fishery groups for which current uncertainty regarding cryptic mortality contributes most strongly to high-risk scores for at-risk seabird species, and recommend options to improve estimation of cryptic mortality for those species / fishery group combinations.</p>	Complete	Pierre et al. 2015
PRO	PRO2012-10	Level 3 risk assessment for Antipodean albatross	<p>1. Develop an Antipodean albatross population model.</p> <p>2. Assess the effect of fisheries mortality on population viability.</p> <p>3. As information permits, assess the effect of alternative management strategies.</p>	Complete	Edwards et al. (2017) AEBR 180
PRO	ENV2011-01	NPOA-sharks science review	<p>1. To collate and summarise information in support of a review of the National Plan of Action for the Conservation and Management of Sharks (NPOA-sharks).</p> <p>2. To identify research gaps from objective 1 and suggest cost-effective ways these could be addressed.</p>	Complete	Francis & Lyon (2012) AEBR 102 Francis & Lyon (2013) AEBR 107
PRO	SEA2011-14	CCSBT Seabird risk assessment	To undertake an Ecological Risk Assessment for seabird interactions in surface longline fisheries managed under the Convention for the Conservation of Southern Bluefin Tuna.	Complete	Waugh et al. 2012

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PRO	SRP2011-03	Probabilistic modelling of sea lion interactions	1. Estimate the probability that a sea lion suffers mild head trauma following a collision with a SLED grid.	Complete	Abraham (2011) FRR
PRO	SRP2011-04	HSL Modelling	1. Revise Breen-Fu-Gilbert sea lion model.	Complete	Breen et al. 2010
PRO	PRO2010-01	Estimating the nature and extent of incidental captures of seabirds, marine mammals and turtles in New Zealand commercial fisheries	1. To estimate the nature and extent of captures of seabirds, marine mammals and turtles, and the warp strikes of seabirds in New Zealand fisheries for the fishing years 2009/10, 2010/11 and 2011/12.	Complete	Thompson et al. (2012) FRR Thompson et al. (2013) AEBR 105 Thompson et al. (2016) AEBR 167 Richard & Abraham (2015)
PRO	PRO2010-02	Research into key areas of uncertainty or development of mitigation techniques for the revised NPOA-seabirds	1. To provide the information necessary to underpin the revised NPOA-seabirds or develop mitigation techniques to reduce risk identified via the revised NPOA-seabirds.	Complete	Richard & Abraham (2013a) AEBR 108 Richard & Abraham (2013b) AEBR 109 & 109s Richard & Abraham (2013c) Berkenbusch et al. 2013
PRO	No project number	A risk assessment framework for incidental seabird mortality associated with New Zealand fishing in the New Zealand EEZ	To describe the conceptual and methodological framework of this risk assessment approach to guide the completion of similar risk assessments elsewhere.	Complete	Sharp et al. 2011
PRO	SRP2010-03	Fur Seal interactions with a SED excluder device	1. Fur seal interactions with SED excluder device (Dr J Lyle).	Complete	Lyle 2011
PRO	SRP2010-05	Fur seal interaction with an SLED excluder device	1. Using a series of 10-15 impact tests at a maximum collision speed of 5 or 6 ms ⁻¹ , develop a 'HIC map' for the SLED grid to enable the consequences of collisions with different parts of the grid by sea lions of different head masses to be	Complete	Ponte et al. 2011

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			<p>predicted (scaling values (for eq 3) will include -1/3, -2/3, and -3/4).</p> <p>2. Using a small number of collision tests, verify that the HIC for a glancing blow can be predicted with sufficient accuracy by resolving vectors.</p> <p>3. Calculate the maximum possible sensitivity to different boundary conditions using the relative masses of the SLED grid and sea lion heads.</p> <p>4. Clarify in the final research report that undertaking tests in air (as opposed to underwater) should not affect the results.</p>		
PRO	IPA2009-09	Sea Lion bioenergetics modelling	<p>1. To review and collate data on growth, metabolism, diet and reproductive parameters of NZ sea lions or, if data are inexistent, of other sea lion species.</p> <p>2. To analyse the energy density of various NZ sea lion prey items.</p> <p>3. To incorporate the data acquired in Objectives 1. and 2. into a bioenergetics model to estimate the energy and food requirements of NZ sea lions.</p>	Complete	Meynier 2010
PRO	IPA2009-16	Preliminary impact assessment of NZ sea lion interaction with SLEDs	1. Preliminary impact assessment of New Zealand sea lion interactions with SLEDs.	Complete	Ponte et al. 2010
PRO	IPA2009-19/20	Level 2 seabird risk assessment rerun	1. To examine the risk of incidental mortality from commercial fishing for 64 seabird species in New Zealand trawl and longline fisheries.	Complete	Richard et al. 2011
PRO	No project number	External review of NZ sea lion bycatch necropsy data and methods	<p>The primary purposes of this review were to determine whether, in the opinion of a group of independent experts:</p> <ul style="list-style-type: none"> - the interpretation of necropsy findings and trauma classification system used by Dr Wendi Roe are valid - sea lions recovered from trawl nets have sustained clinically significant trauma - some or all of the sea lions exiting through SLEDs are likely to survive. 	Complete	Roe 2010a
PRO	PRO2009-01A	Abundance & distribution of Hector's & Māui's dolphins (5-year project)	<p>1. To estimate the distribution of the South Coast South Island Hector's dolphin sub-population in both winter and summer.</p> <p>2. The work for this sub-project was subsequently extended to include data collection necessary to estimate abundance.</p>	Complete	Clement & Mattlin (2010) FRR

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PRO	PRO2009-01B	Abundance, distribution, and productivity of Hector's (and Māui's) dolphins	<ol style="list-style-type: none"> 1. To estimate the likely precision of abundance estimates from summer aerial surveys for Hector's dolphins along the East Coast South Island (ECSI; from Farewell Spit to Nugget Point) under different levels of sampling intensity and stratification. 2. To estimate the likely precision of abundance estimates and the likely quality of distribution information from winter aerial surveys for Hector's dolphins along the ECSI under different levels of sampling intensity and stratification. 3. To identify and quantify trade-offs between the precision of abundance estimates and the quality of distribution information as well as between overall precision and likely cost (e.g., based on the number of flying hours required). 4. To identify key areas and times for which it would be particularly useful to have information on Hector's dolphin distribution (e.g., where risk may come from overlap with particular fisheries) and quantify trade-offs between the precision of ECSI-wide surveys and collecting such fine-scale information. 5. Assess the extent to which two-phase or adaptive approaches would be useful to improve the surveys' utility for assessing dolphin distribution, particularly the seaward limit. 	Complete	MacKenzie et al. (2013) FRR
PRO	PRO2009-01C	Abundance, distribution and productivity of Hector's (and Māui) dolphins	<ol style="list-style-type: none"> 1. To estimate critical aspects of the biology, abundance and distribution of Hector's and Māui's dolphin populations to assess the effects of fishing-related mortality on these populations including the abundance of Hector's dolphins along the ECSI in summer 2012/13 applying an agreed aerial survey methodology. 2. To estimate critical aspects of the biology, abundance and distribution of Hector's and Māui's dolphin populations to assess the effects of fishing-related mortality on these populations including the distribution of Hector's dolphins along the ECSI in summer 2012/13 applying an agreed aerial survey methodology. 3. To estimate critical aspects of the biology, abundance and distribution of Hector's and Māui's dolphin populations to assess the effects of fishing-related mortality on these populations including the abundance of Hector's dolphins along the ECSI in winter 2013 applying an agreed aerial survey methodology. 4. To estimate critical aspects of the biology, abundance and distribution of Hector's and Māui's 	Complete	MacKenzie & Clement (2014) AEBR 123 & 123s

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			dolphin populations to assess the effects of fishing-related mortality on these populations including the distribution of Hector's dolphins along the ECSI in winter 2013 applying an agreed aerial survey methodology.		
PRO	PRO2009-04	Development and efficacy of seabird mitigation measures	1. To test the efficacy of a variety of configurations of mitigation techniques at reducing seabird mortality (or appropriate proxies for mortality) in longline fisheries.	Complete	No reports specified as required output
PRO	ENV2008-03	Bycatch of basking sharks in New Zealand fisheries	1. To review the productivity of basking sharks. 2. To describe the nature and extent of fishery-induced mortality of basking sharks in New Zealand waters and recommend methods of reducing the overall catch.	Complete	Francis & Smith (2010) AEFR 49
PRO	PRO2008-01	Risk assessment of protected species bycatch in NZ fisheries	1. To provide an assessment of the risk posed by different fisheries to the viability of New Zealand protected species, and to assign a risk category to all New Zealand fishing operations.	Complete	Waugh et al. 2009
PRO	PRO2008-03	Necropsy of marine mammals captured in New Zealand	1. To necropsy marine mammals captured incidentally to New Zealand fishing operations in the SQU6T fishery during the 2008/09 fishing year to determine life-history characteristics such as sex-reproductive status and the likely cause of mortality- and to determine the species- and sex of captured animals returned for necropsy. 2. To determine, through examination of returned carcasses, the species, sex, reproductive status, and age-class of sea lions and fur seals captured in the SQU6T New Zealand fishery. 3. To detail any injuries and, where possible, the cause of mortality of sea lions and fur seals returned from New Zealand fisheries, and examine relationships between injuries and body condition, breeding status, and other associated demographic characteristics. 4. To review and collate data from previous NZ sea lion autopsy programmes.	Complete	Roe (2010) AEFR 47 Roe & Meynier (2012) AEFR 98
PRO	SAP2008-14	Sea lion population modelling, additional	1. To assess the likely performance of different bycatch control rules for the SQU6T fishery. 2. To correct and update the Breen-Fu-Gilbert (2008) sea lion model, including assessment of the performance of 200-series and 300-series management control rules. 3. To document the development of the model,	Complete	Breen et al. 2010 Breen et al. (2016) AEFR 175

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			including all four objectives of project IPA2006/09 and objective 1 of this project, in a single report suitable for an international review.		
PRO	Project funded by Deepwater Group Ltd	Necropsy of marine mammals captured in New Zealand fisheries in the 2007–08 fishing year	Necropsy of marine mammals captured in New Zealand fisheries in the 2007–08 fishing year.	Complete	Roe (2009) AEBR 34
PRO	IPA2007-09	Protected species risk assessment	To provide an assessment of the risk posed by different fisheries to the viability of NZ protected species, and to assign a risk category to all NZ fishing operations.	Complete	Waugh et al. 2008
PRO	PRO2007-01	Estimating the nature and extent of incidental captures of seabirds in New Zealand commercial fisheries	1. Estimate capture rates per unit effort and total captures of seabirds for the New Zealand EEZ and in selected fisheries by method, area, target fishery, in relation to mitigation methods in use, and, where possible, by seabird species for the fishing year 2006/07, 2007/08 and 2008/09. 2. Examine the incidence of seabird warp strike in trawl fisheries where these data are available from fisheries observers, and estimate the rate of incidents (birds affected per hour) and total number of seabirds affected by fishery, area and method. Examine the factors (fishery, environmental, seasonal, mitigation, area) that influence the probability of warp-strike occurring.	Complete	Abraham & Thompson (2009a) AEBR 32 Abraham & Thompson (2009b) AEBR 33 Thompson & Abraham (2009) AEBR 35 Abraham & Thompson (2010) FRR Abraham et al. (2010) AEBR 45 Abraham (2010) AEBR 60 Abraham & Thompson (2011a) AEBR 79 Abraham & Thompson (2010) AEBR 80
PRO	PRO2007-02	Estimating the nature and extent of incidental captures of marine mammals in New Zealand commercial fisheries	1. Describe the nature and extent of marine mammal captures in New Zealand commercial fisheries. 2. Estimate the total numbers, releases, and deaths of selected marine mammals, where possible by species, fishery, and fishing method, caught in	Complete	Abraham et al. (2010) AEBR 45 Thompson & Abraham (2009a) AEBR 36

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			commercial fisheries for the fishing years 2006–07, 2007–08, and 2008–09.		<p>Thompson & Abraham (2009b) AEBR 41</p> <p>Thompson & Abraham (2010a) AEBR 61</p> <p>Thompson & Abraham (2010b) AEBR 66</p> <p>Thompson et al. (2010a) Was AEBR 63, became FRR 2014/02</p> <p>Thompson et al. (2010b) AEBR 52</p> <p>Thompson et al. (2010c) AEBR 56</p>
PRO	ENV2006-05	The use of electronic monitoring technology in New Zealand longline fisheries	<ol style="list-style-type: none"> 1. Trial the deployment of electronic monitoring systems in selected longline fisheries, monitoring incidental take of protected species. 2. Evaluate the efficacy of electronic monitoring in allowing enumeration and identification of protected species captures. 3. Recommend options for data management and information transfer arising from the deployment of electronic monitoring in selected fisheries. 	Complete	McElderry et al. (2008) AEBR 24
PRO	IPA2006-02	The efficacy of warp strike mitigation devices: trials in the 2006 squid fishery	<ol style="list-style-type: none"> 1. Groom the mitigation trial data and produce a summary of the data. 2. Examine strike rates and capture rates on warps and mitigation devices. 3. Determine the relative efficacy of mitigation devices tested in the trial. 4. Make recommendations regarding future trials. 5. Compare seabird warp strike data for 2005 and 2006. 6. Work with SeaFIC and the mitigation trials TAG to produce analyses and outputs. 	Complete	Middleton & Abraham 2007
PRO	IPA2006-09	Modelling interactions between trawl fisheries and New Zealand Sea lion interactions	<ol style="list-style-type: none"> 1. Model the New Zealand sea lion population and explore alternative management procedures for controlling New Zealand sea lion bycatch in the SQU 6T fishery. 2. Collate and review all available sea lion biological data, fisheries data, and sea lion bycatch data relevant to a population model and management 	Complete	<p>Breen 2008</p> <p>Breen et al. (2016) AEBR 175</p>

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			<p>strategy evaluation for the Auckland Islands sea lion population.</p> <p>3. Update and improve the existing Breen and Kim sea lion population model (2003) to incorporate all relevant data and address model uncertainties including but not necessarily limited to those identified by the AEWG.</p> <p>4. Fit the revised model to all available data and test sensitivity including but not necessarily limited to runs identified by the AEWG.</p> <p>5. Test a range of management procedures (rules) with the model to determine if they meet agreed management criteria.</p>		
PRO	IPA2006-13	Identification of Marine Mammals Captured in New Zealand Fisheries	<p>1. To determine, through examination of returned marine mammal carcasses, the species, sex, reproductive status, and age-class of marine mammals returned from New Zealand fisheries.</p> <p>2. To detail any injuries and, where possible, the cause of mortality of marine mammals returned from New Zealand fisheries, and examine relationships between injuries and body condition, breeding status, and other associated demographic characteristics.</p>	Complete	Roe (2009) AEBR 29
PRO	PRO2006-01	Data collection of demographic, distributional and trophic information on selected seabird species to allow estimation of effects of fishing on population viability	<p>1. To gather demographic, distributional and dietary information on selected seabird species to allow assessment of effects of fishing on population viability.</p>	Complete	<p>Sagar & Thompson (2008) AEBR 17</p> <p>Sagar et al. 2009a, 2009b, 2010a, 2010b, 2010c</p> <p>Baker et al. 2008, 2009, 2010</p> <p>Baker et al. (2020) AEBR 242</p>
PRO	PRO2006-02	Modelling of the effects of fishing on the population viability of selected seabirds	<p>1. Model the effects of fisheries mortalities on population viability compared with other sources of mortality or trophic effects of fishing.</p> <p>2. Examine the overlap of fishing activity with species distribution at sea for different stages of the breeding and life-cycle and for different sexes, and assess the likely risk to species or populations from fisheries (by target species fisheries, fishing methods, area and season) in the New Zealand EEZ.</p>	Complete	<p>Francis & Bell (2010) AEBR 51</p> <p>Francis (2012) AEBR 104</p> <p>Francis et al. (2015) AEBR 152</p>

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
PRO	PRO2006-04	Estimation of the nature and extent of incidental captures of seabirds in New Zealand commercial fisheries	1. To estimate the nature and extent of captures and warp-strikes of seabirds in New Zealand fisheries for the fishing year 2005/06.	Complete	Baird & Smith (2008) AEFR 18
PRO	PRO2006-05	Estimating the nature and extent of marine mammal captures in New Zealand commercial fisheries	1. To estimate and report the total numbers, releases and deaths of marine mammals where possible by species, fishery and fishing method, caught in commercial fisheries for the years 1990 to the end of the fishing year 2005/06. 2. To analyse factors affecting the probability of fur seal captures for the years 1990 to the end of the fishing year 2005/06. 3. To classify fishing areas, seasons and fishing methods into different risk categories in relation to the probability of marine mammal incidental captures for the years from 1990 through to the end of the fishing year 2005/06.	Complete	Mormede et al. (2008) AEFR 19 Baird (2008a) AEFR 20 Baird (2008b) AEFR 21 Baird (2011) AEFR 72 Smith & Baird (2009) AEFR 40 Smith & Baird (2011) AEFR 71
PRO	PRO2006-07	Characterise non-commercial fisheries interactions	1. To characterise non-commercial fisheries interactions with seabirds and marine mammals. 2. Characterise non-commercial fisheries risk to seabirds and marine mammals by area and method. Recommend mitigation measures appropriate for uptake in non-commercial fisheries in which seabird or marine mammal captures occur.	Complete	Abraham et al. (2010) AEFR 64 Thompson & Abraham 2009a, 2009b, 2009c, 2010, 2011 Thompson et al. 2010a, 2010b, 2010c
PRO	ENV2005-01	Estimation of the nature and extent of incidental captures of seabirds in New Zealand fisheries	1. To estimate the nature and extent of captures of seabirds in selected New Zealand fisheries for the fishing year 2004/05.	Complete	Baird & Smith (2007) AEFR 9 Baird & Gilbert (2010) AEFR 50
PRO	ENV2005-02	Estimation of the nature and extent of marine mammal captures in New Zealand fisheries	To examine the nature and extent of the captures of marine mammals in New Zealand fisheries, for the whole New Zealand EEZ, by Fishery Management Area and fishing season, and by smaller metrics as appropriate for the fishing year 2004/05. 2. Examine alternative methods for estimating sea lion captures and recommend one or more	Complete	Abraham (2008) AEFR 15 Baird (2007) AEFR 13 Smith & Baird (2007) AEFR 12

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			alternative standardised methods for describing and estimating sea lion captures in the SQU 6T fishery.		Baird & Smith (2007) AEBr 14
PRO	ENV2005-04	Identification of marine mammals captured in New Zealand	<ol style="list-style-type: none"> 1. To determine the species, sex, and where possible, age and reproductive status of marine mammals captured in New Zealand fisheries. 2. To necropsy marine mammals captured incidentally in New Zealand fishing operations to determine life-history characteristics and the likely cause of mortality. 3. To determine, through examination of returned marine mammal carcasses, the taxon to species level, sex, and reproductive status, and age-class of marine mammals captured in New Zealand fisheries. 4. To detail the injuries and where possible the cause of mortality of marine mammals returned from New Zealand fisheries, along with their body condition and breeding status, and other associated demographic characteristics. 5. To detail the protocol used for the necropsy of marine mammals, to provide a standardised procedure for autopsy to determine species, age, sex and associated demographic characteristics for fishery-killed specimens. 	Complete	Roe (2007) AEBr 11
PRO	ENV2005-06	Estimation of protected species captures in longline fisheries using electronic monitoring	<ol style="list-style-type: none"> 1. To provide estimates of seabird and marine mammal mortalities from longline fisheries in New Zealand using electronic monitoring systems and to recommend deployment and data management options for ongoing use of these systems for estimation of protected species incidental take. 	Complete	McElderry et al. 2007
PRO	ENV2005-09	Data collection to estimate key performance indicators in the Chatham albatross, <i>Diomedea eremita</i> .	<ol style="list-style-type: none"> 1. To gather data on key population parameters for Chatham albatross <i>Diomedea eremita</i>, to enable population viability to be assessed, and the responses of key parameters to fisheries mortality and fisheries management activities to mitigate fisheries related risk. 2. To undertake field research to collect data on population growth rates, adult survival, inter-breeding season survival, mortality due to predation at the colony, fecundity, and associated parameters for Chatham Albatross following the study design project. 3. To undertake field research to determine the range and extent foraging movements of Chatham albatrosses within New Zealand fishing waters, and examine the nature and extent of any association between Chatham albatrosses and fishing activities. 	Complete	No reports specified as required output

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PRO	ENV2005-13	Assessment of risk to yellow-eyed penguin <i>Megadyptes antipodes</i> from fisheries incidental mortality	1. To review existing data on yellow-eyed penguin <i>M. antipodes</i> population performance and fisheries information and provide an analysis of the potential effect of fishing mortality and other factors on population viability. 2. To recommend data collection requirements and protocols for the assessment of the effects of fishing on yellow-eyed penguins.	Complete	Maunder 2007
PRO	ENV2004-02	Estimation of New Zealand sea lion incidental captures in New Zealand Fisheries	1. To estimate the level of New Zealand sea lion (<i>Phocartos hookeri</i>) incidental capture in New Zealand fisheries	Complete	Smith & Baird 2007a
PRO	ENV2004-04	Characterisation of seabird captures in New Zealand fisheries	1. Characterisation of seabird captures in New Zealand fisheries.	Complete	Mackenzie & Fletcher 2006
PRO	ENV2004-05	Modelling of impacts of fishing-related mortality on New Zealand seabird populations	1. To examine and identify modelling approaches to analyse seabird demographic impacts that may be occurring as a result of fisheries mortality. 2. To compile databases of available demographic and distributional data on selected seabirds affected by fisheries mortality and New Zealand fisheries and estimate key population parameters and seasonal distribution for each species. 3. To estimate rates of removals related to fishing activities in New Zealand for selected seabird species, where possible by age class and sex. 4. To describe the spatial overlap of seabird distributions at sea, with fisheries where the risk of incidental mortality has been demonstrated to be moderate to high. 5. To examine the potential for factors other than fisheries removals within the New Zealand zone to influence the population dynamics of the selected study species. 6. To characterise selected seabird populations' abilities to sustain removals related to fishing operations within the New Zealand EEZ, and to recommend, where possible environmental standards for assessing the sustainability of selected fishing operations in relation to impacts on seabird populations.	Complete	Fletcher et al. 2008
PRO	ENV2004-06	Māui's dolphin study	1. To quantify and compare summer and winter distribution of Māui's dolphin.	Complete	Slooten et al. 2005

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PRO	IPA2004-14	Seabird warp strike in the southern squid trawl fishery	1. To document seabird warp strike in the southern squid trawl fishery, 2004–05.	Complete	Abraham & Kennedy (2008) AEBR 16
PRO	ENV2003-05	Review of the Current Threat Status of Associated or Dependent Species	1. To assess the current threat status of selected associated or dependent species.	Complete	Baird et al. 2010
PRO	No project number	QMA SQU6T New Zealand sea lion incidental catch and necropsy data for the fishing years 2000–01, 2001–02 and 2002–03	Report on New Zealand sea lion incidental catch and necropsy data for the fishing years 2000–01, 2001–02 and 2002–03	Complete	Mattlin 2004
PRO	MOF2002–03L	Exploring alternative management procedures for controlling bycatch of Hooker’s sea lions in the SQU 6T squid fishery	Report on exploring alternative management procedures for controlling bycatch of Hooker’s sea lions in the SQU 6T squid fishery.	Complete	Breen & Kim 2006
PRO	ENV2001-01	Estimation of seabird incidental captures in New Zealand fisheries	1. To estimate the level of seabird incidental capture in New Zealand fisheries. 2. To recommend appropriate levels of observer coverage for estimation of seabird incidental capture in New Zealand fisheries.	Complete	Baird 2004a, 2004b, 2004c Smith & Baird (2008) AEBR 25
PRO	ENV2001–02	Incidental capture of <i>Phocarctos hookeri</i> (New Zealand sea lions) in New Zealand commercial fisheries, 2001–02.	1. To estimate and report the total numbers of captures, releases, and deaths of <i>Phocarctos hookeri</i> caught in fishing operations, including separate estimates for SQU 6T and other areas, as appropriate, during the 2001-02 fishing year, including confidence limits and an investigation of any statistical bias in the estimate.	Complete	Baird 2005a, 2005b Baird & Doonan 2005
PRO	ENV2001-03	Estimation of <i>Arctocephalus forsteri</i> (New Zealand fur seal) incidental captures in New Zealand fisheries	1. To estimate the level of <i>Arctocephalus forsteri</i> incidental capture in New Zealand fisheries. 2. To recommend appropriate levels of observer coverage for estimation of <i>Arctocephalus forsteri</i> incidental capture in New Zealand fisheries.	Complete	Smith & Baird (2008) AEBR 26 Baird 2005c, 2005d, 2005e
PRO	ENV2000–01	Protected species bycatch	1. To estimate the total numbers of captures, releases, and deaths of seabirds and marine mammals by species caught in fishing operations during the 1999–2000 fishing year.	Complete	Baird 2003

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PRO	ENV2000-02	Estimation of incidental mortality of New Zealand sea lions in New Zealand fisheries	1. To examine the factors that may influence the level of incidental mortality of New Zealand sea lion in New Zealand fisheries. 2. To recommend appropriate levels of observer coverage for estimation of incidental mortality of New Zealand sea lion in New Zealand fisheries.	Complete	Doonan 2001 Bradford 2002 Smith & Baird 2005a, 2005b
PRO	ENV2000-03	ENV 2000-A Estimation of seabird and marine mammal incidental capture in New Zealand fisheries	1. To estimate the level of seabird and marine mammal incidental capture in New Zealand fisheries. 2. To determine the factors that influence the level of seabird and marine mammal incidental capture in New Zealand fisheries. 3. To recommend appropriate levels of observer coverage for estimation of seabird and marine mammal incidental capture in New Zealand fisheries.	Complete	Bradford 2002, 2003 Francis et al. 2004
PRO	ENV99-01	Incidental capture of seabirds, marine mammals and sealions in commercial fisheries in New Zealand waters	To estimate the level of seabird and marine mammal incidental captures in New Zealand fisheries.	Complete	Baird 2001 Doonan 2000
PRO	No project number	Factors influencing bycatch of protected species	To determine the factors that influence the level of seabird and marine mammal incidental capture in New Zealand fisheries.	Complete	Baird & Bradford 2000a, 2000b
PRO	ENV98-01	Estimation of non-fish bycatch in commercial fisheries in New Zealand waters, 1997–98	To estimate the level of non-fish bycatch in New Zealand fisheries.	Complete	Baird 1999b Baird & Bradford 1999
PRO	No project number	Annual review of bycatch in southern bluefin and related tuna longline fisheries in the New Zealand 200 n. mile Exclusive Economic Zone	Review bycatch in New Zealand's southern bluefin and related tuna longline fisheries.	Complete	Baird et al. 1998
PRO	SANF01	Report on the incidental capture of nonfish species during fishing operations in New Zealand waters	To report on incidental captures of non-fish species in New Zealand fisheries.	Complete	Baird 1997

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PRO	No project number	Non-fish Species and Fisheries Interactions	To estimate the level of non-fish bycatch in New Zealand fisheries.	Complete	Baird 1996
PRO	No project number	Analyses of factors which influence seabird bycatch in the Japanese southern bluefin tuna longline fishery in New Zealand waters, 1989-93	1. To assess the influence that 15 monitored environmental and fishery related factors had on seabird bycatch rates, and to gauge the effectiveness of various mitigation measures.	Complete	Duckworth 1995
PRO	No project number	Incidental catch of Hooker's sea lion in the southern trawl fishery for squid, summer 1994	Report on the incidental catch of Hooker's sea lion in the southern trawl fishery for squid, summer 1994.	Complete	Doonan 1995
PRO	No project number	Nonfish Species and Fisheries Interactions	To estimate the level of non-fish bycatch in New Zealand fisheries.	Complete	Baird 1995
PRO	No project number	Nonfish Species and Fisheries Interactions	To estimate the level of non-fish bycatch in New Zealand fisheries.	Complete	Baird 1994
PRO	No project number	Incidental catch of fur seals in the west coast South Island hoki trawl fishery, 1989-92	To report on incidental captures of fur seals in the west coast South Island hoki trawl fishery 1989–92.	Complete	Mattlin 1993
PRO	No project number	Incidental catch of non-fish species by setnets in New Zealand waters	To report on incidental captures of non-fish species in New Zealand setnet fisheries.	Complete	Taylor 1992
PRO	No project number	Seabird bycatch by Southern Fishery longline vessels in New Zealand waters	1. To describe the tuna longline fishery in the New Zealand EEZ and how seabirds are caught by longline vessels. 2. To summarise information available on seabird population trends, and estimate the scale of the incidental capture of seabirds in the larger of two tuna longline fisheries in the EEZ. 3. To describe measures which could reduce the number of seabirds caught by tuna longlines.	Complete	Murray et al. 1992
ZBD	Funded by Fisheries New Zealand	A shallow water benthic habitat survey and trial kina	1. Survey, classify and map shallow reef habitats within the Whāngai Mokopuna Rohe Moana.	Complete	Hansford et al. (2025) AEBr 358

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	Fisheries Management under contract number C0036897	removals in the Whāngai Mokopuna Rohe Moana	2. Undertake targeted kina removal in two selected areas with adjacent control areas (under customary permit).		
ZBD	INV2023-10	Ecosystem Based Management case study	<p>1. To review ecosystem modelling for inshore multi-species fisheries, both within New Zealand and in the international literature and best approaches to operationalise their use.</p> <p>2. To identify a model or suite of models to create or further develop and outline steps required to operationalise them for a priority fishery.</p> <p>3. To run a workshop to discuss the application of the models to New Zealand fisheries with relevant experts and stakeholders.</p>	Complete	Grüss et al. (2025) AEBR 360
ZBD	SEA2023-11	Environmental and Ecosystem structure review	1. Review fisheries classifications and structure for future Environment and Ecosystem reporting	Complete	Middleton et al. (2024) AEBR 338
ZBD	SEA2023-15	Analysis of Baited Underwater video - Hapuku and Blue cod monitoring	1. Review footage collected by Baited Remote Underwater Video from all sites sampled in Dusky Sound and summarise abundance and size structure information on blue cod, hāpuku and the biodiversity of other species observed.	Complete	
ZBD	SEA2022-12	Cyclone impacts on fisheries	1. To understand sediment impacts in affected marine environments to enable rapid fisheries management decisions	Complete	Leduc et al. (2024) AEBR 326
ZBD	SEA2022-13	Cyclone Gabrielle sediment analysis	1. To determine the contribution of land use activities to soil erosion and downstream impacts of sedimentation in the marine environment.	Complete	Swales et al. (2024) AEBR 343
ZBD	SEA2021-27	Hydrographic Surveys around Pepin Island, Tasman Bay		Complete	No report
ZBD	SEA2019-00	Assessment of impacts of mechanical spat harvesting on the surf clams of Te Oneroa a Tōhē		Complete	Ross (2020) AEBR 250

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ZBD	SEA2019-13	Baseline distribution data of large brown macroalgae from Island Bay to Houghton Bay	<ol style="list-style-type: none"> 1. Turn the machine learning method into a practical system that applies readily-trained neural networks to new videos and provides results in both .csv files and maps. 2. Acquire baseline data of large brown algal distribution along transects in Island Bay and Houghton Bay (Taputeranga Marine Reserve) for monitoring. Undertake one day of field survey to acquire video transects; apply the ML algorithm to these video data to produce a distribution map of large brown algae. 	Complete	D'Archino et al. (2021) AEBR 263
ZBD	ZBD2024-02	Habitats of significance for blue cod spawning stock in the Marlborough Sounds	<ol style="list-style-type: none"> 1. Review, collate, and groom all available sources of blue cod abundance, sex ratio, fecundity, hydrographic and biogenic habitat data from the Marlborough Sounds for the analysis. 2. Analyse datasets to identify a network of potential locations throughout the Marlborough Sounds that provide opportunities for blue cod spawning recovery, taking into account areas of current low abundance, quality of adult habitat, associated potential egg production and distribution, proximity to juvenile habitat, and any other key factors. 3. Rank several spatial management approaches by potential to increase egg production across the Marlborough Sounds and provide advice on spatial management of blue cod spawning stock. 	Complete	Brough et al. (2025) AEBR 369
ZBD	ZBD2023-03	Science to incorporate trophic cascades into EBFM in New Zealand	<ol style="list-style-type: none"> 1. Review international approaches to fishery-induced trophic cascades and identify examples of successful management. 2. Compile available data (photos and diver surveys) and oral accounts of kina barren distribution to create a timeline of kina barren development in New Zealand and identify uncertainties. 3. Address key knowledge gaps identified during the March 2023 workshop on kina barrens, which may include modelling of different management scenarios. 	Complete	Spyksma (2025) AEBR 365
ZBD	ZBD2023-05	Importance of macroalgae to New Zealand fisheries	<ol style="list-style-type: none"> 1. To review the role of large brown algae in supporting New Zealand's wild fisheries and; 	Complete	Mangan et al. (2025) AEBR 362

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		and the effects of climate change	<p>2. To explore applicability of creating an updateable data layer of kelp distribution for Aotearoa-New Zealand.</p> <p>3. Choose two regions in New Zealand as case studies to:</p> <ul style="list-style-type: none"> • Map the distribution of large brown algae using pre-existing data and provide advice on the prospects of using a data layer at different scales (local, regional, and national). • Assess historical trends and model future scenarios of algal distribution in response to the effects of climate change and discuss the implications for fisheries management in each area. 		Tait et al. (2025) AEBR 366
ZBD	ZBD2022-02A	The impacts of marine heatwaves on fisheries in New Zealand	<p>1. Review data and information available regarding the nature of marine heatwaves in New Zealand and their potential effects on marine ecosystems and fishstock productivity.</p> <p>2. Map the distribution of temperature anomalies in coastal waters and identify locations of concern to fisheries management.</p> <p>3. If feasible, conduct a risk assessment on the vulnerability of key fishstocks to marine heatwaves in New Zealand.</p>	Complete	<p>Behrens et al. (2025) AEBR 351</p> <p>Cook et al. (2025) AEBR 352</p>
ZBD	ZBD2022-02B	The impacts of marine heatwaves on paua	<p>1. Complete a suite of analyses on pāua sampled before, during and after a heatwave event as a case study to identify likely causes of starvation observed in pāua.</p>	Complete	Alfaro et al. (2025) AEBR 356
ZBD	ZBD2022-11	Trophic cascades, kina barrens, and fishing effects	<p>1. Review and update the trophic cascade hypothesis.</p> <p>2. Summarise and discuss the evidence for the hypothesis to date in New Zealand fisheries.</p> <p>3. Draft a science programme to further test the hypothesis and better inform management of key fisheries.</p> <p>4. Hold an expert workshop in conjunction with Fisheries New Zealand by end of September 2022 to agree on the revised hypothesis; discuss the evidence available in New Zealand; and finalise a science programme to better understand how ecotrophic information can contribute to EBFM.</p>	Complete	Doheny et al. (2023) AEBR 324

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ZBD	ZBD2022-18	Environmental pollution impacts on shellfish life-history in New Zealand estuaries	<p>1. Identify and qualitatively assess the relative risk posed by historical and contemporary land-based pollutants to the marine and estuarine environments for selected locations around Aotearoa New Zealand, using a mātauranga Māori approach.</p> <p>2. Collect and analyse sediment and invertebrate samples of different life-stages to detect identified pollutants and compare with known limits to understand the impact their presence may have had on life history, mortality, and suitability for human consumption.</p>	Complete	<p>McDougall & Jeffs (2024a) AEBR 335</p> <p>McDougall & Jeffs (2024b) AEBR 339</p>
ZBD	ZBD2021-02	Habitat degradation impacts on fishery productivity in northern harbours	<p>1. Assess the nature and extent of habitat change in key northern harbours in New Zealand.</p> <p>2. Assess the effect of habitat changes on key fisheries species dependent on the harbour environments for all or part of their life cycle, including implications for wider stock level recruitment for species that use these harbour habitats as nurseries.</p>	Cancelled	
ZBD	ZBD2020-08	Role of low and mid trophic fish in the Hauraki Gulf	1. The project should deliver a model describing the role of low- and mid-trophic level fish in terms of energy transfer through the food web of the Hauraki Gulf.	Complete	Pinkerton et al. (2023) AEBR 301
ZBD	ZBD2020-09	Cumulative effects of stressors on scallops and scallop habitats in the Marlborough Sounds	1. Use experimental and modelling techniques to assess the cumulative effect of a range of physical, biological, and ecological stressors (including fishing) on scallops and scallop habitat in the Marlborough Sounds.	Complete	Hale et al. (2024) AEBR 337
ZBD	ZBD2020-11	Review of land-based effects on coastal fisheries and kaimoana and their habitats	<p>1. To review current state of knowledge of land-based effects on coastal fisheries and kaimoana species in New Zealand.</p> <p>2. To 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</p>	Complete	Morrison et al. (2023) AEBR 309
ZBD BEN	ZBD2019-01	Quantifying Benthic Biodiversity – Phase 2	1. Predict gradients in benthic faunal turnover across Campbell Plateau (CP) using relationships between faunal distributions and environmental	Complete	Anderson et al. (2021) AEBR 264

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			<p>gradients developed for Chatham Rise (CR) under ZBD2016-11;</p> <p>2. Run a dedicated photographic survey of seabed habitats and fauna across CP, structured on the basis of predictions from (1);</p> <p>3. Use quantitative data from the CP survey to assess the utility of predictions from the existing CR models when applied to a neighbouring area of the EEZ;</p> <p>4. Generate updated models with a spatial domain encompassing both regions by merging data from the CP survey with the existing CR dataset.</p>		<p>Stephenson et al. (2021) AEBR 276</p> <p>Bowden et al. (2022) AEBR 281</p>
ZBD	ZBD2019-04	Plastics and marine debris across the ocean floor in New Zealand waters.	<p>1. Create a metadatabase of all potential sources of data on plastics and marine debris in New Zealand waters.</p> <p>2. Select and analyse appropriate sets and subsets of data that will provide density estimates of plastics and map debris on the seabed.</p> <p>3. Provide summary statistics of benthic debris density, types of debris, and heat maps of occurrence throughout the TS and EEZ.</p>	Complete	Behrens et al. (2021) AEBR 267
ZBD	ZBD2019-08	Sources of suspended sediment load and impact on coastal kaimoana.	Compare and contrast sedimentation datasets from different estuaries and determine how different sedimentation histories have impacted on a range of kaimoana species.	Procurement not initiated	
ZBD	ZBD2019-11	Development of Electronic Automated Reporting System (EARS) to improve seabird bycatch monitoring.	<p>1. Develop and ruggedize technology and test on NZ domestic vessel.</p> <p>2. At sea trials in New Zealand and Japan.</p>	Complete	Carovano et al. (2025) AEBR 350
ZBD	ZBD2018-01	Five-year continuous plankton survey (Phase 3).	<p>1. Conduct annual return transits with the CPR to the Ross Sea during the austral summer in collaboration with Sanford Limited, and contribute the data collected to the SCAR Southern Ocean CPR Survey (SO-CPR).</p> <p>2. Combine the data collected during phase 1 and phase 2 (years 1–10) with the data collected during phase 3 (years 11–15) to:</p>	Complete	Pinkerton et al. (2024) AEBR 347

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			<p>(i) determine zooplankton and phytoplankton trends in the full dataset; and</p> <p>(ii) compare results with datasets available through the SCAR SO-CP Survey.</p> <p>3. Characterise latitudinal and temporal changes in phytoplankton and zooplankton populations in New Zealand's EEZ and transit to the Ross Sea.</p> <p>4. Complete couple analysis of phytoplankton and zooplankton with environmental data to investigate causes of variations between the Ross Sea and other Southern Ocean zones.</p> <p>5. Describe broad similarities and differences observed between NZ, and other southern hemisphere data with patterns or trends observed in the northern hemisphere.</p>		
ZBD	ZBD2018-02	Climate change, fish distribution meta-analysis.	<p>1. Explore data time series and biological data for evidence of spatial change in living marine resources that may be consistent with climate change or regime shifts.</p> <p>2. Investigate novel approaches to identify ecologically relevant change by examining species and community relationships between the organisms and their environment.</p> <p>3. Identify fisheries, communities and locations that are most vulnerable or will remain stable under the response to climate change effects on the ocean.</p>	Complete	<p>Dunn (2022) AEBR 286</p> <p>Dunn et al. (2022) AEBR 287</p>
ZBD	ZBD2018-03	Climate variability, trends and fish population parameters.	<p>1. Determine and review how productivity parameters commonly used in New Zealand stock assessments may be affected by climate change, or long-term environmental variability.</p> <p>2. Review how these productivity parameters are likely to change, and determine what level of change is likely to be important for stock assessment advice.</p> <p>3. Identify methods of monitoring to detect important levels of change using existing data sources.</p>	Complete	<p>Neubauer et al. (2023) FAR2023/56</p> <p>Neubauer et al. (2023) FAR2023/57</p>
ZBD	ZBD2018-05	Environmental variability, regime shifts, and	<p>1. Explore and identify datasets that provide environmental and biological signals about environmental change affecting the state of the marine environment in the Subantarctic. Known</p>	Complete	<p>Roberts et al. (2022) AEBR 300</p>

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		ecosystem function in the Sub-Antarctic.	<p>datasets of interest include from population monitoring programmes (e.g., New Zealand sea lions; Antipodean albatrosses); trawl survey time series; commercial catch and stock assessment time series of important species (e.g., squid, southern blue whiting) and remotely-sensed environmental and oceanographic data.</p> <p>2. Explore the various data for synchronous changes and analyse these signals to identify likely environmental drivers or mechanisms affecting ecosystem function and change</p> <p>3. Construct one or more ecosystem models incorporating change mechanisms identified in Objective 2</p> <p>4. Design and conduct RV Tangaroa survey to test structural assumptions and inform parameterisation of ecosystem models produced under Objective 3.</p> <p>5. Identify likely indicators of important environmental change, such as regime shifts, environmental tipping points or persistent trends affecting the distribution and productivity of marine living resources in the area, to inform the design of environmental monitoring.</p>		
ZBD	ZBD2017-02	Linking primary and secondary production in the sea	<p>1. Investigate the role that the p-ratio and the z-ratio play in modifying the relationship between primary and secondary productivity at fishery-relevant scales in New Zealand</p> <p>2. Improve and refine the methodology for the projection of climate change scenarios on primary and secondary productivity.</p>	Withdrawn	
ZBD	ZBD2017-04	Implications of ocean acidification on the capacity of carbonates in sediments to buffer eutrophication effects	<p>1. Determine how the carbonate content of coastal benthic sediments affects sediment biogeochemistry and processes such as nitrogen recycling and removal.</p> <p>2. Improve understanding of what the loss of carbonate materials from sediments in an acidified world (through dissolution) will mean for critical marine ecosystem functions.</p>	Withdrawn	

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ZBD BEN	TAN1612	Biodiversity of the Kermadec Islands and offshore waters of the Kermadec Ridge: report of a coastal, marine mammal and deep-sea survey (TAN1612)	<ol style="list-style-type: none"> 1. To describe and quantify the diversity of benthic invertebrate fauna and fish communities of the central Kermadec Islands and Ridge 2. To develop and expand marine mammal identification around the Kermadec Islands, and determine links to regional populations 3. To characterise the demographic and genetic connectivity of coastal populations and quantify morphological adaptation in shallow reef communities 	Complete	Clark et al. (2017) AEBR 179
ZBD	ZBD2016-04	Organic Carbon Recycling in Deepwater	<ol style="list-style-type: none"> 1. To describe the biodiversity of large nektonic crustaceans in subtropical and subantarctic waters. 2. To assess the environmental drivers of nektonic plankton crustacean abundance and diversity over weekly to sub-decadal time scales in subtropical and subantarctic waters 	Complete	FRR2021
ZBD	ZBD2016-07	Multiple stressors on coastal ecosystems – in situ	To assess the effects of global warming and ocean acidification on coastal productivity processes in New Zealand	Complete	Law et al. (2021) AEBR 277
ZBD BEN	ZBD2016-11	Quantifying benthic biodiversity	<ol style="list-style-type: none"> 1. Collect quantitative data about seabed habitats and fauna by undertaking a survey of unsampled areas on Chatham Rise. 2. Process and compile seabed habitat and fauna data from the survey and merge these with comparable data from previous quantitative surveys on Chatham Rise. 3. Use merged data to assess the utility of existing community and species distribution models for Chatham Rise. 4. Use merged data to build new community and species distribution models for Chatham Rise. 	Complete	<p>Bowden et al. (2017) AEBR 185</p> <p>Bowden et al. (2019a) AEBR 221</p> <p>Bowden et al. (2019b) AEBR 235</p>
ZBD	ZBD2014-01	Live corals: Age and growth study of deepsea coral in aquaria.	Ocean acidification and temperature manipulation are now underway to look at the physiological responses (e.g., growth) of deepsea corals to future predicted environmental conditions.	Complete	Tracey et al. 2016

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ZBD	ZBD2014-03	Sublethal effects of environment change on fish populations	Co-funded by MBIE, this project explores the effects of ocean acidification on the behaviour of young snapper with a view to scaling up these effects to model long-term effects on the snapper population.	Complete	Parsons et al. (2021) AEBr 275
ZBD	ZBD2014-04	Isoscapes for Trophic and Animal Studies	1. To generate a new tool for fisheries management and conservation. Specifically, to produce a validated, modelled, south-west Pacific and Southern Ocean carbon and nitrogen isotopic map, referred to as an 'isoscape', which will improve our understanding of trophic interactions and its relationship with marine animals.	Complete	Graham & Bury (2019) AEBr 218
ZBD	ZBD2014-05	Modelling the effects of ocean acidification.	1. Determine how much the aragonite and calcite saturation horizons (ASH and CSH) have changed over the industrial era for the southwest Pacific, including New Zealand's EEZ.	Complete	Mikaloff-Fletcher et al. (2017) AEBr 187
ZBD	ZBD2014-06	Macroalgae mapping and potential as national scale indicators	Many countries use seaweeds to monitor the state of the marine environment, however this approach has not been explored in New Zealand. In this project, seaweeds will be selected according to their mapped distribution and availability, and assessed for their indicator potential.	Complete	D'Archino et al. (2019) AEBr 207
ZBD	ZBD2014-07	Southern coralline algae shellfish habitat	Coralline algae are a structurally important component of coastal habitats and play an important role in ecosystem processes. They produce chemicals which promote the settlement of the larvae of certain herbivorous invertebrates, particularly paua. Coralline algae appear to enhance larval metamorphosis and the survival of larvae through the critical settlement period. The first objective is to document critical baseline information on the diversity of coralline algae in southern New Zealand using morphological and molecular identification.	Complete	Nelson et al. (2019) AEBr 232
ZBD	ZBD2014-09	Climate change risks and opportunities	1. To prepare a technical report that explains the most up to date issues and hypotheses with regard to observed and predicted changes to the physical, chemical and biological properties of New Zealand coastal and offshore waters. 2. To prepare a synthesis of the Technical Report that will be informative and provide guidance on	Complete	Cummings et al. (2021) AEBr 261

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			what can be done, for stakeholders, policymakers and resource managers.		
ZBD BEN	ZBD2014-10	BPA Biodiversity	<ol style="list-style-type: none"> 1. To update the inventory of benthic samples and biodiversity data available within BPA and Seamount Closure areas. 2. To process and identify undescribed samples and material in selected BPAs and for selected taxonomic groups. 3. To identify gaps in sample coverage, evaluate priority areas and design a sampling programme to collect appropriate data. 4. To undertake an objective spatial management planning exercise to assess the effectiveness of the current BPAs to protect biodiversity. 	Complete	Clark et al. (2019) AEBR 227
ZBD	Report from the New Zealand-U.S. workshop, Nelson New Zealand, 3-4 December, 2013	Future proofing New Zealand's shellfish aquaculture: monitoring and adaptation to ocean acidification		Complete	Capson & Guinotte (2014) AEBR 136
ZBD	GLM2013-01	Testing techniques for tracing the provenance of green-lipped mussel spat washed up on Ninety Mile Beach		Complete	Dunphy et al. (2015) AEBR 164
ZBD	ZBD2013-01	Modelled distribution of Vulnerable Marine Ecosystems in SPRFMO area	<ol style="list-style-type: none"> 1. Identify areas of likely VMEs based on habitat suitability models for VME indicator taxa. 2. Map the recent historical and current distribution of bottom fishing (trawling) to identify areas where substantial impacts may have already modified VMEs. 3. Combine the main elements of i) and ii) to guide the choice of spatial management options that will balance protection of VMEs with maintenance of productive fisheries. 	Complete	Rowden et al. (2015) AEBR 155

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ZBD	ZBD2013-02	VME Genetic Connectivity	This project addresses the critical lack of data concerning deep sea genetic connectivity of VME indicator taxa, and will clarify the spatial relationships and distribution of biodiversity of several protected invertebrate VME species within New Zealand's EEZ and beyond.	Complete	Holland et al. (2020) AEBR 245 Rowden et al. 2015
ZBD	ZBD2013-03	Continuous Plankton Recorder - Phase 2	The overall objective of the CPR programme is to map changes in the quantitative distribution of epipelagic plankton, including phytoplankton, zooplankton and euphausiid (krill) life stages, in New Zealand's EEZ and transit to the Ross Sea, Antarctica. To enable trend analysis, the Contractor will continue the annual time series for a further 5-year period (years 6–10).	Complete	Robinson et al. (2021) AEBR 257
ZBD	ZBD2013-08	NZ-Ross sea connectivity Humpback whales	1. To determine the migration path and Antarctic feeding grounds for New Zealand humpback whales.	Complete	Riekkola et al. 2018 , 2019
ZBD	ZBD2013-06	Shell generation and maintenance of aquaculture species	Shells of individuals of NZ pāua, flat oysters and cockles will undergo detailed analysis to determine how the decreased pH/increased temperature modified their shell (i) thickness, (ii) mineralogy and (iii) construction.	Complete	Cummings et al. 2019
ZBD	ZBD2013-07	Interactive keys for easy identification keys of amphipods	Generate interactive identification keys for marine Amphipoda families Synopiidae and Epimeriidae for easy and free use online.	Complete	
ZBD	ZBD2012-01	Development of a Tier 1 National Reporting Statistic for New Zealand's Marine Biodiversity	To perform a preliminary investigation of the utility and feasibility of developing the variables published by Costello et al. (2010) as a Tier 1 statistic.	Complete	Lundquist et al. (2015) AEBR 147
ZBD BEN	ZBD2012-03	Chatham Rise Benthos - Ocean Survey	1. In relation to the Fishing Intensity Effects Survey, determine whether there are quantifiable effects of variations in seabed trawling intensity on benthic communities. 2. In relation to the Crest Survey, conduct seabed mapping and photographic surveys in previously un-sampled areas on the central crest of the Chatham Rise.	Complete	Bowden & Leduc (2017) AEBR 183 Pinkerton et al. 2016

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ZBD BEN	MPI2012-02	Hauraki Gulf Marine Park habitat restoration potential	<ol style="list-style-type: none"> 1. Review estuarine and marine habitat restoration concepts and practice, both active and passive. 2. Describe as far as possible the estuarine and marine habitats and shellfish resources present within the Hauraki Gulf Marine Park during the early 20th century prior to the development of modern commercial fisheries and extensive urbanisation around Auckland. 3. Evaluate the services/values of these habitats provided. 4. Describe the ecological requirements of these habitat/species. 5. Identify which have been lost or substantially reduced in area, and any that may have increased in extent since 1950. 6. Identify the suite of habitats, including sites that would need to be restored within the Hauraki Gulf Marine Park to meet the outcomes of the Plan. 7. Prioritise possible active restoration efforts and describe the most practicable restoration approaches. 	Complete	Morrison (2021) AEBR 265
ZBD	SRP2011-02	IDG 2009-01 MPI fish ID field guide	<ol style="list-style-type: none"> 1. IDG 2009-01 field guide. 	Complete	McMillan 2011a, 2011b, 2011c
ZBD	ZBD2011-01	Evaluation of ecotrophic and environmental factors affecting the distribution and abundance of highly migratory species in NZ waters	Evaluation of ecotrophic and environmental factors affecting the distribution and abundance of highly migratory species in New Zealand waters.	Complete	<p>Horn et al. (2013) AEBR 116</p> <p>McGregor & Horn (2015) AEBR 146</p>
ZBD BEN	ZBD2010-39	Improved benthic invertebrate species identification in trawl fisheries	<ol style="list-style-type: none"> 1. To revise and update the document 'A guide to common deepsea invertebrates in New Zealand waters (second edition)' to allow a third edition of this guide to be printed. 	Complete	Tracey et al. (2011) AEBR 86
ZBD	ZBD2010-40	Predictive modelling of the distribution of vulnerable marine ecosystems in the South Pacific Ocean region.	<ol style="list-style-type: none"> 1. To develop and test spatial habitat modelling approaches for predicting distribution patterns of vulnerable marine ecosystems in the convention Area of the South Pacific Regional Fisheries Management Organisation with agreed international partners. 2. To collate datasets and evaluate modelling 	Complete	Rowden et al. (2013b) AEBR 120

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			approaches which are likely to be useful to predict the distribution of vulnerable marine ecosystems in the South Pacific Ocean region.		
ZBD	ZBD2010-41	Ocean acidification in fisheries habitat	<ol style="list-style-type: none"> 1. To assess the risks of ocean acidification to deep-sea corals and deepwater fishery habitat. 2. To determine the carbonate mineralogy of selected deep-sea corals found in the New Zealand region. 3. To assess the distribution of deep-sea coral species in the New Zealand region relative to improved knowledge of current and predicted aragonite and calcite saturation horizons, assessment of potential locations vulnerable to deep water upwelling. 4. Through a literature search and analysis, determine the most appropriate tools to age and measure the effects of ocean acidification on deep sea habitat-forming corals, and recommend the best approach for future assessments of the direct effects. 	Complete	Tracey et al. (2013) AEBR 117
ZBD BEN	ZBD2009-25	Predicting impacts of increasing rates of disturbance on functional diversity in marine benthic ecosystems	<ol style="list-style-type: none"> 1. Further develop the landscape ecological model of disturbance/recovery dynamics in marine benthic communities, incorporating habitat connectivity, based on existing model by Lundquist, Thrush, and Hewitt. 2. Predict impacts of increasing rates of disturbance on rare species abundance, functional diversity, relative importance of biogenic habitat structure, and ecosystem productivity. 3. Use literature and expert knowledge to quantify rare species abundance, biomass, functional diversity, habitat structure, and productivity of various successional community types in the model. 4. Field test predictions of the model in appropriate marine benthic communities where historical rates of disturbance are known, and benthic communities have been sampled. 	Complete	Lundquist et al. 2010, (2013) AEBR 118
ZBD BEN	IPA2009-14	Bryozoan identification guides	<ol style="list-style-type: none"> 1. For each of ~50 species of common bryozoans, provide photos and text to allow for identification. Provide information on distribution and habitat (as far as is known) and further references for each species and on bryozoans as a whole. 2. Submit these data for publication in the Ministry of Fisheries series New Zealand Aquatic Environment and Biodiversity Research. 	Complete	Smith & Gordon (2011) AEBR 75

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ZBD BEN	ZBD2009-03	To evaluate the vulnerability of New Zealand rhodolith species to environmental stressors and to characterise diversity of rhodolith beds.	<ol style="list-style-type: none"> 1. To characterise the distribution and physical characteristics of two New Zealand rhodolith beds and characterise the associated biodiversity. 2. To measure the growth rates and evaluate the vulnerability of New Zealand species of rhodoliths to environmental stressors. 	Complete	Nelson et al. (2012) AEBR 99
ZBD	ZBD2009-10	Multi-species analysis of coastal marine connectivity	<ol style="list-style-type: none"> 1. Determine overall patterns of regional connectivity in a broad range of NZ coastal marine organisms to define the geographic units of genetic diversity for protection and the dispersal processes that maintain this diversity. 2. Review previous studies of marine connectivity and population genetics in NZ coastal organisms to determine the preliminary range of patterns observed and the principal gaps (taxonomic geographic and ecological) in our understanding. 3. In a range of invertebrate and vertebrate marine organisms determine geographic patterns of genetic variation using standardised sampling and molecular techniques. 4. Analyse data across past and present studies to reveal both common and unique patterns of connectivity around the NZ coastline and the locations of common barriers to dispersal. 	Complete	Gardner et al. (2010) AEBR 58 Hannan et al. (2016) AEBR 172
ZBD	ZBD2009-13	Ocean acidification impact on key NZ molluscs	<ol style="list-style-type: none"> 1. Controlled laboratory experiments will be used to determine the effect of pCO₂ levels that are predicted to occur in NZ waters over the next few decades on appropriate life history stages of at least two key NZ mollusc species. A number of response variables will be assessed. 2. Implications of these responses to the local and broader ecosystems will be assessed. 	Complete	Cummings (2011) Cummings et al. (2011, 2013)
ZBD BEN	ZBD2008-01	Biogenic large-habitat-former hotspots in the near-shore coastal zone (50–250 m); quantifying their location, identity, function, threats and protection	<ol style="list-style-type: none"> 1. To collect and integrate existing knowledge on biogenic habitat-formers in the <5–150 m depth zone of New Zealand's continental shelf, from sources including structured fisher interviews, primary and grey literature, and other sources as available. 2. Using the findings of Objective 1, design and deploy a series of sampling voyages to selected locations, to map and characterise locations of significant biogenic structure (either still existing, or historical), and collect relevant biological samples (both through visual census, and physical collection). 3. Process and analyse the samples collected in Objective 2, to provide a hierarchical, quantitative description of the biogenic habitats and associated 	Complete	Jones et al. (2016) AEBR 174 Jones et al. (2018) AEBR 202

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			<p>species encountered.</p> <p>4. Using the findings from Objective 1–3, assess the present status, likely extent, ecological role, and threats to, biogenic habitat formers in the <5–150 m depth zone. This should include a spatial modelling and risk assessment framework. Integrate (as appropriate) with other information sources and/or approaches that may exist by the year 2010/11.</p>		
ZBD	ZBD2008-05	Macroalgal diversity associated with soft sediment habitats	<p>1. Conduct a targeted collection programme across diverse soft sediment environments to develop a permanent reference collection of representative macroalgae.</p> <p>2. Examine algal distribution in soft sediment habitats in relation to selected environmental variables.</p> <p>3. Prepare an annotated checklist of macroalgae found in soft sediment environments in the New Zealand region.</p>	Complete	Neill et al. (2012) AEBR 87
ZBD	ZBD2008-07	Carbonate sediments: the positive and negative effects of land-coast interactions on functional diversity	<p>1. To quantify shifts in community structure and functional diversity in mollusc dominated habitats along gradients associated with an estuary-coast interface in two locations.</p> <p>2. To characterise the influence of estuary-derived food sources across these gradients for key species.</p> <p>3. To measure changes in growth of key species in relation to changes in food supply and land-derived sediment impacts.</p> <p>4. To quantify carbon and nitrogen uptake and tissue turnover rates of key species in laboratory experiments.</p>	Complete	Thrush et al. (2011) Savage et al. (2012)
ZBD	ZBD2008-11	Predicting changes in plankton biodiversity and productivity of the EEZ in response to climate change-induced ocean acidification	<p>1. To document the spatial and inter-annual variability of coccolithophore abundance and biomass- and assess in terms of the phytoplankton abundance- biomass and community composition in sub-tropical and sub-Antarctic water.</p> <p>2. To document the seasonal and inter-annual variability of foraminifera and pteropod abundance and biomass at fixed locations in sub-tropical and sub-Antarctic water by analysis of sediment trap material from time-series data collection.</p> <p>3. To document the spatial and seasonal distribution of the key coccolithophore species, <i>Emiliana huxleyi</i>, using both archived and ongoing ingestion of satellite images of Ocean Colour, and ground-truth the reflectance.</p> <p>4. To determine the sensitivity and response of <i>E. huxleyi</i> and other EEZ coccolithophores to pH under a range of realistic atmospheric CO₂ concentrations</p>	Complete	Law et al. (2012) FRR Boyd & Law (2011)

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			in perturbation experiments, using monocultures and mixed populations from in situ sampling. 5. To document the spatial variability of diazotrophs (nitrogen-fixing organisms) and associated nitrogen fixation rate, and assess in terms of phytoplankton abundance, biomass and community composition in sub-tropical waters north of the STF. 7. To determine the sensitivity of, and response of <i>Trichodesmium</i> spp. and other diazotrophs to pH under a range of realistic atmospheric CO ₂ concentrations in perturbation experiments using monocultures.		
ZBD	ZBD2008-14	What and where should we monitor to detect long-term marine biodiversity and environmental changes, remote sensing, biota, context, inshore offshore workshop	1. Identify the key questions to be addressed by long-term monitoring of marine biodiversity and environment. 2. Identify appropriate monitoring indices, how they should be spatially distributed and their sampling frequency. 3. Identify relevant existing monitoring programmes across the range of New Zealand agencies and science providers and identify gaps. 4. Provide those agencies setting environmental goals/ standards or research needs (MoRST, FRST, MFish, DOC, MfE, Commissioner for the Environment) with a thorough situational analysis, including a list of priority monitoring projects/plans.	Complete	Livingston (2009)
ZBD	ZBD2008-15	Continuous plankton recorder project: implementation and identification	1. To set up a time series of annual CPR data collection by deployment from a toothfish vessel on the annual summer transit between New Zealand and the Ross Sea. 2. To identify phytoplankton and zooplankton according to strict observation protocols determined by the SAHFOS[1] CPR Survey and SO-CPR[2]. 3. To enter species data, frequency and location along the transect into a spreadsheet that will allow spatial mapping of the plankton density and distribution. 4. To analyse the full dataset after 5 years of data collection to: (a) determine trends in the dataset and (b) compare results with Australian datasets available through SO-CPR. 5. To evaluate the continuation of the programme.	Complete	Robinson et al. (2014) AEFR 128
ZBD	ZBD2008-20	Ross sea benthic ecosystem function: predicting consequences of shifts in food supply	1. To increase understanding of Ross Sea coastal benthic ecosystem function. 2. Conduct in situ investigations into responses to and utilisation of primary food sources by key	Complete	Cummings & Lohrer (2011) Cummings et al. (2011)

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			species, at two contrasting coastal Ross Sea locations.		Lohrer et al. (2013)
ZBD	ZBD2008-22	Acidification and ecosystem impacts in NZ and southern ocean waters (data collected during IPY).	<ol style="list-style-type: none"> 1. To assess the response of cocolithophorids, and their replacement by non-calcifying organisms during incubation under a range of dissolved CO₂ concentrations. 2. To describe and characterise changes in abundance and biodiversity of microbial components of the samples incubated at sea under a range of dissolved CO₂ concentrations. 3. To predict the likely impacts of higher acidity on foodwebs and on carbon fixation under scenarios to be encountered in the Southern Ocean under forecasted trends associated with climate change. 	Complete	Maas et al. (2010b)
ZBD	ZBD2008-23	Macroalgae diversity and benthic community structure at the Balleny Islands	<ol style="list-style-type: none"> 1. To describe and characterise macroalgae diversity from the Balleny Islands and the Western Ross Sea. 2. To describe and quantify benthic community structure from one location at the Balleny Islands 3. To complete anatomical and morphological investigations & molecular sequencing required for the identification of macroalgae samples from the Balleny Islands & western Ross Sea coastline to describe & characterise macroalgae diversity in Balleny Islands. 4. To process and analyse samples collected at the Balleny Islands, to analyse them using ICECUBE methodology and compare results with those from other ICECUBE sampling locations along the Ross Sea coastline 	Complete	Nelson et al. (2010) AEFR 55
ZBD	ZBD2008-27	Scoping investigation into New Zealand abyss and trench biodiversity	<ol style="list-style-type: none"> 1. Review what is already known of abyssal, canyon and trench faunas in NZ. 2. Review what is already known of abyssal, canyon and trench faunas around the world. 3. Prioritise science questions and locations for exploration. 4. Assess NZ capacity to sample at the required depths; identify sampling equipment needs. 5. Design a suitable vessel-based sampling programme. 	Complete	Lörz et al. (2012b) AEFR 92
ZBD BEN	ZBD2008-50	OS2020 Chatham Rise Biodiversity Hotspots	<ol style="list-style-type: none"> 1. To improve understanding of the effects of trawl fishing in New Zealand on the biodiversity of seamounts, knolls and hills. 2. To describe differences in benthic biodiversity between northwestern and eastern regions of the Chatham Rise. 	Complete	Clark et al. (2009)

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			<p>3. To continue the time series of observations in the NW Chatham Rise to demonstrate recovery in terms of biodiversity.</p> <p>4. To extend the observations on fished-unfished contrasts and recovery of fauna on protected seamounts to an oceanographically distinct location.</p>		
ZBD	IPY2007-01	International polar year census of antarctic marine life post-voyage analysis: Ross Sea - Southern Ocean Biodiversity	<p>1. To measure seabed depth and rugosity using the multibeam system to identify topographic features such as bottom type, iceberg scouring, seamounts etc and to determine areas for targeted benthic faunal sampling.</p> <p>2. To continue the analysis of opportunistic seabird and marine mammal distribution observations from this and previous BioRoss voyages and published records, and in relation to environmental variables.</p> <p>3. To identify and determine near-surface spatial distribution, diversity and abundance of phytoplankton, and zooplankton, based on Continuous Plankton Recorder samples collected during transit to and from the Ross Sea.</p> <p>4. To collect & analyse data collected both underway, & at stations for salinity, temperature nutrient and chlorophyll-a data, spot optical measurements with the SeaWiFS.</p> <p>5. To identify and determine the spatial distribution, abundance (biomass), diversity, and size structure of epipelagic, mesopelagic (and possibly bathypelagic) species using acoustics and net sampling.</p> <p>6. To identify and measure diversity, distribution & densities of mesozooplankton, macrozooplankton & meroplankton (as collected by all plankton sampling methods except transit CPR samples).</p> <p>7. To determine diversity, distribution & densities of viral, bacterial, phytoplankton & microzooplankton species in the water column.</p> <p>8. To determine the spatial distribution, abundance (biomass), diversity, and size structure of shelf and slope demersal fish species and associated invertebrate species using a demersal survey.</p> <p>9. To determine the diversity, abundance/density, spatial distribution, and physical habitat associations of benthic assemblages across a body size spectrum from megafauna to bacteria, for shelf, slope, seamounts, and abyssal sites in Ross Sea.</p> <p>10. To describe trophic/ecosystem relationships in the Ross Sea ecosystem (pelagic and benthic, fish and invertebrates).</p> <p>11. Assess molecular taxonomy and population genetics of selected Antarctic fauna and flora to estimate evolutionary divergence within and</p>	Complete	<p>Allcock et al. 2009, 2010, submitted; Alvaro et al. 2011; Baird & Mormede (2014) AEBR 121; Bowden et al. 2011a, in prep; Clark et al. 2010a; Dettai et al. 2011; Eakin et al. 2009; Eléaume et al. 2011, in prep; Ghiglione et al. 2012; Gordon 2000; Grotti et al. 2008; Hanchet et al. 2008a, 2008b, 2008c, 2008d, 2013 ; Hanchet 2009, 2010; Heimeier et al. 2010; Hemery et al. in prep; Koubbi et al. 2011; Leduc et al. 2012a, 2012b, 2012c, 2013, 2014; Linse et al. 2007; Lörz 2009, 2010a, 2010b; Lörz & Coleman 2009; Lörz et al. 2007, 2009, 2012a, 2012b, 2012c, in prep; Maas et al. 2010a; McMillan et al. 2012; Mitchell 2008; Nielsen et al. 2009; Norkko et al. 2005; O'Driscoll 2009; O'Driscoll et al.</p>

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			among ocean basins in circumpolar species. Provide DNA barcoding.		2009, 2010, 2012; O'Loughlin et al. 2011; Pakhomov et al. 2011; Pinkerton et al. 2007a, 2009b, 2010, 2013; Schiaparelli et al. 2006, 2008, 2010; Schwarz et al. (2014) AEBR 133; Smith et al. 2011a, 2011b; Stein 2012; Strugnell et al. 2012
ZBD	IPY2007-02	International polar year census of antarctic marine life post-voyage analysis: Ross Sea - Southern Ocean Biodiversity	<ol style="list-style-type: none"> 1. To measure and describe key elements of species distribution, abundance (density or biomass) & biodiversity for the Ross Sea and Southern Ocean for main habitats and key functional ecosystem roles, for major groups, viruses, bacteria, and archaea. 2. To report on the diversity of Antarctic Cephalopoda (Octopus and Squid), including a complete inventory of taxa, & reports on ontogenetic & sexual variation in species, their systematics, diversity, distribution, life histories, & trophic importance. 3. To Beak/Biomass Regression Equations. 4. Life cycle determination. 	Complete	Garcia (2010)
ZBD BEN	ZBD2007-01	Chatham-Challenger Oceans 20/20 Post-Voyage	<ol style="list-style-type: none"> 1. To quantify in an ecological manner, the biological composition and function of the seabed at varying scales of resolution, on the Chatham Rise and Challenger Plateau. 2. To elucidate the relative importance of environmental drivers, including fishing, in determining seabed community composition and structure. 3. To determine if remote-sensed data (e.g., acoustic) and environmentally derived classification schemes (e.g., marine environmental classification system) can be utilised to predict bottom community composition, function, and diversity. 4. To count, measure, and identify to species level (where possible, otherwise to genus) all macro invertebrates (> 2 mm) and fish collected during Oceans 20/20 voyages. 5. To count, measure and identify to species level (where possible, otherwise to genus or family) all meiofauna (> 2 mm) from multicore samples collected during the Oceans 20/20 voyages. 	Complete	<p>Bowden (2011) AEBR 65</p> <p>Bowden et al. (2011b) AEBR 77</p> <p>Bowden et al. (2014) AEBR 126</p> <p>Bowden & Hewitt (2012) AEBR 91</p> <p>Coleman & Lörz (2010)</p> <p>Compton et al. (2012)</p> <p>Floerl et al. (2012) AEBR 97</p>

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			<p>6. To count, measure and identify to species level (where possible, otherwise to genus or family) all fauna collected by hyper-benthic sled during the Oceans 20/20 voyages.</p> <p>7. To count, measure, and identify to species level all macrofauna observed on DTIS images collected during the Oceans 20/20 voyages. The number of biogenic features (burrows/mounds) and habitat (spatial) complexity should also be estimated.</p> <p>8. To count, measure, and identify to species level (where possible, otherwise to genus or family) all macrofauna observed on DTIS video footage collected during the Oceans 20/20 voyages.</p> <p>9. To calculate and compare the performance of a suite of diversity measures (species and taxonomic-based) at varying levels of resolution.</p> <p>10. To estimate particle size composition and organic content of sediment samples. Sediment samples should be aggregated over the top 5 cm of sediment.</p> <p>11. To measure the bacterial biomass (top 2 cm) of the sediment and in the sediment surface water samples, collected during the Oceans 20/20 voyages.</p> <p>12. To elucidate the relationships, patterns and contrasts in species composition, assemblages, habitats, biodiversity and biomass (abundance) both within and between stations, strata and areas.</p> <p>13. To define habitats (biotic) encountered during the survey and assess their relative sensitivity to modification by physical disturbance, their recoverability, and their importance to ecosystem function/production.</p> <p>14. To quantify the productivity, energy flow (trophic networks) and the energetic coupling (benthic pelagic or otherwise) of the area surveyed areas at various levels of resolution.</p> <p>15. To assess the extent to which patterns of species distributions and communities can be predicted using environmental data (including fishing) collected during the Ocean 20/20 voyages or held in other databases.</p> <p>16. To provide an interactive, high resolution mapping facility for displaying & plotting all data collected & derived indices. Includes environmental data, the abundance of species, indices of biomass or diversity, and statistically derived groupings.</p> <p>17. To assess the extent to which acoustic, environmental or other remote-sensed data can provide cost-effective reliable means of assessing biodiversity at the scale of the Oceans 20/20 surveys.</p> <p>18. To assess the extent to which the 2005 MEC and subsequent variants can provide cost-effective reliable means of assessing biodiversity at the scale</p>		<p>Hewitt et al. (2011a) AEBR 81</p> <p>Hewitt et al. (2011b) AEBR 83</p> <p>Lörz (2011a, 2011b)</p> <p>Nodder et al. (2011) AEBR 70</p>

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			of the Oceans 20/20 surveys. 19. Collating all information and analysis from all objectives, devise a series of statistically supported recommendations for surveying marine biodiversity in the future. Including – but may not be limited to – statistical analyses and modelling.		
ZBD	ZBD2006-02	Ongoing NABIS development	<p>As part of NABIS, users will be able to identify spatial information relating to the annual distribution (average distribution over the period of a year) of particular species within the waters around New Zealand and in the terrestrial environment (including offshore islands) of New Zealand. Users will also be able to interrogate metadata and attribute data related to the information layers presented. Users will employ NABIS to identify where a particular species is found, to identify what species are found within an area of interest, and be able to compare the spatial distribution of a particular species with other information layers.</p> <p>2. Some species may have notable changes in their spatial distribution throughout a year. For such species, users of NABIS will be able to view spatial information relating to the seasonal distribution of particular species within the waters around New Zealand and in the terrestrial environment (including offshore islands) of New Zealand. Users will also be able to interrogate metadata and attribute data related to the information layers presented. For species with a seasonal component to their biological distribution, users will employ NABIS to identify where a particular species is found within the waters around New Zealand and in the terrestrial environment (including off shore islands) of New Zealand at a particular time of the year, to identify what species are found within an area of interest at a particular time of year, or be able to compare the distribution of a particular species at a particular time of year, with other information layers.</p> <p>3. To provide analysis of the data used in determining the hotspot distribution.</p>	Complete	Anderson (2007)
ZBD BEN	ZBD2006-03	Antarctic coastal marine systems	<p>1. Quantify patterns in benthic community structure and function at two coastal Ross Sea locations (Terra Nova Bay and Cape Evans).</p> <p>2. Quantify benthic community structure and function at selected locations in Terra Nova Bay and Cape Evans.</p>	Complete	<p>Cummings et al. (2003, 2006b, 2008)</p> <p>Thrush & Cummings (2011)</p> <p>Thrush et al. (2010)</p>

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
ZBD BEN	ZBD2006-04	Chatham/Challenger oceans 20/20	<ol style="list-style-type: none"> 1. To collect seabed fauna, sediment samples and photographic images along transects in the Chatham Rise and the Challenger Plateau, as determined by the sampling protocol described in the Voyage Programmes for Voyages 2 and 3 of the project. Multibeam data should be collected opportunistically as time allows. 2. To describe the distribution of broad macro epifauna groups (ID level to be determined at sea during Surveys 2 & 3), their relative abundance, the substrate and habitat types, including representative photographic images of each seabed habitat and associated fauna along transects in the survey areas. 3. To provide a description of the observed evidence of fishing along transects. 4. To provide indicative measures of alpha biodiversity (richness, number of taxonomic groups) at appropriate scales within and between transects, and between the Chatham Rise and the Challenger Plateau. 5. To determine broad scale variability in sea-bed habitats and associated biodiversity within and between MEC classes at 20 class levels. 6. To process and archive biological samples and data into databases and collections for future analysis in meeting the Overall Objectives above. 	Complete	Nodder (2008) Nodder et al. (2011)
ZBD	ZBD2005-01	Balleny Islands Ecology Research, Tiama Voyage (2006)	<ol style="list-style-type: none"> 1. To characterise shallow benthic communities across a range of habitat settings around the Balleny Islands, utilising a range of data collection methodologies (including SCUBA-based rock-wall suspension feeder photo quadrats, SCUBA-based linear video transects, and drop camera photography), and to analyse community patterns with reference to possible physical/oceanographic, biological, and/or biogeographic influences on community structure. 2. To characterise aspects of the marine food web of the Balleny Islands area, using stable isotope analysis of specimens from important functional groups, and to make inferences about factors affecting ecosystem-scale trophodynamics in the Balleny Islands area and potential implications for the function of the wider ecosystem. 3. To characterise the spatial and temporal distributions of higher-level consumer species (birds, seals and whales) and of dominant pelagic prey (i.e., krill swarms) by opportunistically recording all at-sea sightings, and by systematic observation of landbased top predators (birds and seals) while sailing along the coast of the islands. 4. To collect and photograph and/or retain fish 	Terminated	Smith (2006)

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			specimens from shallow benthic environments using a range of fishing methods, including food-baited fish traps, lightbaited fish traps, rotenone sampling, and/or baited lines. 5. To continuously collect bathymetric data and water-column acoustic data (i.e., mesopelagic acoustic marks) throughout the voyage, using an acoustic sounder. 6. To opportunistically collect a variety of data/materials during shore-based landings, including wherever possible: i) breast feathers from living penguins; ii) tissue samples/feathers/bones from dead seals/penguins/other sea birds; iii) seal scats; iv) visual estimates of adult and juvenile penguin numbers; v) visual assessments of penguin colony status; vi) photographs of penguin colonies; vii) sediment excavations of occupied and abandoned colonies. (Where appropriate these data will contribute to Objective 2).		
ZBD	ZBD2005-02	Marine Environment Classification Project	1. Co-fund the Marine Environment Classification Project (being done by NIWA) with the Department of Conservation.	Complete	Snelder et al. (2005, 2006) Leathwick et al. (2006a, 2006b, 2006c)
ZBD	ZBD2005-03	Tangaroa Ross Sea voyage	1. To test the feasibility of obtaining estimates of demersal fish relative abundance using cameras with and without flood lights in areas of high importance for the Ross Sea toothfish fishery (principally 800–1200 m). 2. To utilise deepwater camera transects, supported by other direct sampling methods, to characterise the relative abundance, distribution, and diversity of demersal fish species (assuming Objective 1 yields satisfactory results) and of benthic macro-invertebrates, and to examine relationships between demersal fishes and benthic habitats/communities. Camera transects will be deployed opportunistically, with focus on the following high-priority areas (in order of high to low priority) wherever possible: i) Areas of the continental shelf break at depths of high importance for the toothfish fishery (principally 800-1200 m but also 600-800m & 1200-1500 m if time permits), ii) Shallow (50-200 m) water in the immediate vicinity of the Balleny Islands; iii) Deeper water in the vicinity of the Balleny Islands; iv) seamounts around and between Scott Island and the Balleny Islands; and v) at other locations (<600 m) as opportunity arises (e.g.,	Complete	MacDiarmid & Stewart (2015) AEBR 153 Mitchell & MacDiarmid (2006)

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			<p>around Scott Island, western Ross Sea, south-eastern Ross Sea).</p> <p>3. To collect specimens/tissues of selected benthic and pelagic organisms with priority in the vicinity of the Balleny Islands (and to the east/southeast, for pelagic specimens especially Antarctic krill species) and deliver specimens to other projects for stable isotope analysis in order to contribute to understanding of trophic relationships.</p> <p>4. To acquire a continuous acoustic survey of the water column, opportunistically undertake species verification of acoustic marks, integrate the acoustic marks and produce a GIS map of verified and unverified distributions of functionally important mesopelagic species (e.g., krill, Antarctic silverfish).</p> <p>5. To undertake routine identification and abundance estimates of marine mammal and seabird species and deliver raw and GIS summarised data to other related projects in order to generate spatially and temporally explicit population biomass and foraging distribution estimates for top air-breathing predators in the Ross Sea.</p> <p>6. To undertake automated water sampling in order to monitor the identities and spatial and temporal distributions of plankton in the Ross Sea region and to allow ground-truthing of data collection from satellites (e.g., surface seawater temperature, and chlorophyll-a concentration).</p>		
ZBD	ZBD2005-05	Long-term effects of climate variation and human impacts on the structure and functioning of New Zealand shelf ecosystems	<p>1. To estimate changes in marine productivity via fluctuations in ocean climate and terrestrial nutrient input over the last 1000 years.</p> <p>2. To assess and collate existing archaeological, historical and contemporary data (including catch records and stock assessments) on relevant components of the marine ecosystem to provide a detailed description of change in the shelf marine ecosystem in two areas of contrasting human occupation over last 1000 years.</p> <p>3. To collect additional oral histories from Māori and non-Māori fishers and shellfish gathers regarding the distribution, sizes and relative abundance (compared to present availability) of key fish and invertebrate stocks in both regions during the first half of the 20th century before the start of widespread modern industrial fishing.</p> <p>4. To build mass-balance ecosystem models (e.g., Ecopath) of the coastal and shelf ecosystem in each area for five critical time periods: now, 60 years BP (before modern industrial fishing), 250 years BP (before European whaling and sealing), 600 y BP (early Māori phase) and 1000 years BP (before</p>	Complete	<p>Carroll et al. (2015)</p> <p>Lalas et al. (2014)</p> <p>Lalas & MacDiarmid (2014)</p> <p>Lorrey et al. (2013)</p> <p>MacDiarmid et al. (2016a) AEBR 171</p> <p>MacDiarmid et al. (2016b) AEBR 170</p> <p>MacDiarmid et al. (2018) AEBR 194</p>

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			human settlement). 5. To use qualitative modelling techniques to determine the critical interactions amongst species and other ecosystem components in order to identify those that should be a priority for future research.		Maxwell & MacDiarmid (2016) AEBR 173 McKenzie & MacDiarmid submitted Neil et al. (2012) Parsons et al. (2011) Paul (2012) AEBR 94 Paul (2014) AEBR 124 Pinkerton et al. (2015b) AEBR 160 Smith (2011) AEBR 82
ZBD	ZBD2005-09	Rocky reef ecosystems - how do they function? Integrating the roles of primary and secondary production, biodiversity and connectivity across coastal habitats	1. To develop a qualitative numerical model of how New Zealand's rocky reef systems are functionally structured. 2. To quantify the effects of human predation, and environmental degradation across reef gradients – top-down, or bottom-up functioning? 3. To advance our understanding of how subtidal reef systems are fuelled through primary and secondary production (from a range of sources), the role that biodiversity plays, and how this varies across different reef settings. 4. To quantify how subtidal reef systems are linked with other habitats and ecosystems at broader spatial scales, including the connectivity of MPAs with other habitats and areas.	Complete	Beaumont et al. (2011)
ZBD BEN	ZBD2004-01	Baseline information on the diversity and function of marine ecosystems	1. To quantify, and compare, the macro-invertebrate assemblage composition of a number of seamounts at the southernmost end of the Kermadec volcanic arc. 2. To compare the macro-invertebrate diversity of the southernmost end of the Kermadec volcanic arc with that of seamounts already sampled and reported on.	Complete	Rowden & Clark (2010) AEBR 62 Smith et al. (2008)

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
ZBD	ZBD2004-02	Ecosystem-scale trophic relationships: diet composition and guild structure of middle-depth fish on the Chatham Rise	<ol style="list-style-type: none"> 1. To quantitatively characterise the diets of abundant middle-depth fish species on the Chatham Rise, by analysis of fish stomach contents collected from the January 2005, January 2006 and January 2007 Chatham Rise middle-depths trawl surveys. 2. To quantitatively characterise Chatham Rise fish diets throughout the year, for a period of 24 months, by analysis of fish stomach contents collected opportunistically aboard industry vessels. 3. To describe and examine patterns of diet variation within each fish species as a function of spatial, temporal, and environmental variables, and of fish size. 4. To define and characterise trophic guilds for abundant fish species on the Chatham Rise, using multivariate analysis of fish diet data, and to analyse the nature and relative strength of potential trophic interactions between guilds. 5. To create and populate a diets database to store all of the dietary information collected under Objectives 1 and 2, and for use in subsequent dietary studies. 	Complete	<p>Connell et al. (2010)</p> <p>Dunn (2009)</p> <p>Dunn et al. (2009b, 2010a, 2010b, 2010c)</p> <p>Forman & Dunn (2010)</p> <p>Horn et al. (2010)</p> <p>Stevens & Dunn (2010)</p>
ZBD	ZBD2004-05	Assessment and definition of the biodiversity of coralline algae of northern New Zealand	<ol style="list-style-type: none"> 1. To assess and define the biodiversity of coralline algae in northern New Zealand. 2. To develop rapid identification tools for coralline algae using molecular sequencing data. 3. To contribute representative material to the national Coralline Algal Collections. 4. To produce ID guides to common coralline algae of northern New Zealand. 	Complete	Farr et al. (2009)
ZBD	ZBD2004-08	Sea-grass meadows as biodiversity and connectivity hotspots	<ol style="list-style-type: none"> 1. Quantify the biodiversity values and functioning of New Zealand sea-grass assemblages. 2. Complete national bio-geographic assessment of sea-grass associated biodiversity. 3. Quantify sea-grass connectivity with surrounding marine landscapes through nursery functions and detritus export. 4. Quantify sea-grass replication connectivity mechanisms. 5. Develop a risk assessment and appraisal model for sea-grass systems. 	Complete	Morrison et al. (2014c) AEBR 137
ZBD	ZBD2004-10	Development of bioindicators in coastal ecosystems	<ol style="list-style-type: none"> 1. Investigate linkages between land use patterns in catchments and nitrogen loading to recipient estuaries and coastal ecosystems. 2. Characterise isotopic signatures of selected bioindicator organisms in relation to different terrestrial nutrient loads. 	Complete	Savage (2009) AEBR 30

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			3. Validate the use of bioindicators using controlled laboratory and field experiments.		
ZBD	ZBD2004-19	Ecological function and critical trophic linkages in New Zealand soft-sediment habitats	<ol style="list-style-type: none"> 1. Define the interactive effects of two functionally important benthic species in maintaining critical trophic linkages in soft-sediment systems from a series of integrated field experiments. 2. Quantify effects of heart urchins (<i>Echinocardium australe</i>) on sediment properties, benthic primary production, and macrofaunal diversity through manipulative field experiments in Mahurangi Harbour. 3. Test for interactions between pinnid bivalves (<i>Atrina zelandica</i>) and heart urchins (<i>Echinocardium australe</i>) in field experiments, and measure their respective and combined contributions to sediment properties, benthic primary production, and macrofauna. 4. Determine the dependence of results from objectives 1 and 2 (functional contributions of <i>Echinocardium</i> and <i>Atrina</i>) in an environmental context by conducting experiments along an estuarine-coastal gradient. 	Complete	Lohrer et al. (2010) AEFR 44
ZBD BEN	ZBD2003-02	Biodiversity of Coastal Benthic Communities of the North Western Ross Sea.	<ol style="list-style-type: none"> 1. Quantify patterns in biodiversity and community structure in the coastal Ross Sea region. 2. Quantify biodiversity in benthic communities at selected locations in the Ross sea north of Terra Nova Bay. 3. Describe ecosystem function at selected locations in the Ross Sea north of Terra Nova Bay. 	Complete	<p>Cummings et al. (2006) AEFR 6</p> <p>Cummings et al. (2003)</p> <p>Cummings et al. (2010)</p> <p>De Domenico et al. (2006)</p> <p>Guidetti et al. (2006)</p> <p>Norkko et al. (2004)</p>
ZBD	ZBD2003-03	Biodiversity of deepwater invertebrates and fish communities of the north western Ross Sea	1. To describe, and quantify the diversity of, the benthic macroinvertebrates and fish assemblages of the Balleny Islands and adjacent seamounts, and to determine the importance of certain environmental variables influencing assemblage composition.	Complete	<p>Rowden et al. (2012a) AEFR 101</p> <p>Rowden et al. (2013a) AEFR 115</p>

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
					Mitchell & Clark (2004)
ZBD	ZBD2003-04	Fiordland Biodiversity Research Cruise	1. How can ecotone boundaries be defined? 2. If you have an ecotone boundary defining the edge of a commercial exclusion zone, how wide is the transition zone across the boundary? 3. If you have an area delineated as a marine protected area or a commercial exclusion zone, does it adequately represent the different habitats or biodiversity of the whole region?	Complete	Wing (2005)
ZBD	ZBD2003-09	Macquarie Ridge Complex Research Review	To review and summarise both biological and physical research carried out on or around the section of the Macquarie Ridge Complex that lies between New Zealand and Macquarie Island.	Complete	Grayling (2004)
ZBD	ZBD2002-01	Ecology of Coastal Benthic Communities in Antarctica	To research the ecology of coastal benthic Communities in Antarctica.	Complete	Cummings et al. (2003) Schwarz et al. (2003, 2005) Sharp et al. (2010) Sutherland (2008) Thrush et al. (2006) Thrush & Cummings (2011)
ZBD	ZBD2002-02	Whose larvae is that? Molecular identification of planktonic larvae of the Ross Sea.	1. To use molecular sequencing tools in the taxonomic identification of cryptic/invasive marine species. 2. To provide a molecular description and characterisation of gobies that are introduced (<i>Arenigobius bifrenatus</i> and <i>Acentrogobius pflaumii</i>) cryptogenic (<i>Parioglossus marginalis</i>) or native (e.g., <i>Favonigobius lentiginosus</i> and <i>F. expusitus</i>). 3. To describe the molecular diversity of the above species throughout their native and introduced distributions, and characterise a range of the greatest potential invasive gobioid and blennioid species from the Australasian region.	Complete	Sewell (2005, 2006) Sewell et al. (2006) AEBR 3

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			4. To develop molecular criteria to rapidly identify invasive or cryptogenic gobioid and blennioid fish.		
ZBD	ZBD2002-06A	Impacts of terrestrial run-off on the biodiversity of rocky reefs	<ol style="list-style-type: none"> 1. Conduct field and laboratory experiments to determine relationships between sediment loading, epifaunal assemblages, and mortality of filter feeding invertebrates. 2. Conduct field and laboratory experiments to identify the influence of sediment on early life stages of key grazers. 3. Determine photosynthetic characteristics and survival of large brown seaweeds and understory algal species in relation to a sediment gradient. 	Complete	Schwarz et al. (2006) AEBR 7
ZBD	ZBD2002-12	Molecular identification of cryptogenic/invasive marine species – gobies.	<ol style="list-style-type: none"> 1. To use molecular sequencing tools in the taxonomic identification of cryptic/invasive marine species 2. To provide a molecular description and characterisation of gobies that are introduced (<i>Arenigobius bifrenatus</i> and <i>Acentrogobius pflaumii</i>) cryptogenic (<i>Parioglossus marginalis</i>) or native (e.g., <i>Favonigobius lentiginosus</i> and <i>F. expusitus</i>). 3. To describe the molecular diversity of the above species throughout their native and introduced distributions- and characterise a range of the greatest potential invasive gobioid and blennioid species from the Australasian region. 4. To develop molecular criteria to rapidly identify invasive or cryptogenic gobioid and blennioid fish. 	Complete	Lavery et al. (2006) AEBR 5
ZBD	ZBD2002-16	Joint New Zealand and Australian Norfolk Ridge	<ol style="list-style-type: none"> 1. To describe the marine biodiversity of the Norfolk Ridge and Lord Howe Rise seamount communities. 2. To survey, sample and document the marine biodiversity and environmental data from seamounts on the Norfolk Ridge and Lord Howe Rise to a depth of at least 1000 m depth. 3. To preserve samples of fishes and invertebrates and hold these in accessible curated museum collections to support biosystematic research projects. 4. To provide specimens to support projects which research the identity, diversity, relationships, distributions, and assess uniqueness and conservation value of the marine life. 5. To correlate observed distribution patterns, especially areas of high diversity and areas of endemism, with measured biological and physical parameters. 	Complete	Clark & Roberts (2008) AEBR 28

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
ZBD	ZBD2002-18	Quantitative survey of the intertidal benthos of Farewell Spit Golden Bay	<ol style="list-style-type: none"> 1. To undertake a baseline survey of intertidal macrobenthic organisms at Farewell Spit Nature Reserve and adjacent flats. 2. To undertake an initial field survey of <i>Zostera</i> distribution at Farewell Spit Nature Reserve and adjacent intertidal flats. 3. To undertake a preliminary survey of sediment characteristics of the intertidal flats at Farewell Spit Nature Reserve and adjacent flats. 	Complete	Battley et al. (2005)
ZBD	ZBD2001-02	Documentation of New Zealand Seaweed	<ol style="list-style-type: none"> 1. To publish a regional algal flora of Fiordland based on voucher herbarium specimens. 2. To assemble a database of references and to review the current state of knowledge about New Zealand macroalgae. 	Complete	Nelson et al. (2002)
ZBD BEN	ZBD2001-03	Ecology and biodiversity of coastal benthic communities in Antarctica.	<ol style="list-style-type: none"> 1. To develop sampling protocols for estimating the relative abundance of algae and benthic invertebrates. 2. To quantify patterns in biodiversity and benthic community structure at two locations in McMurdo Sound. 3. To analyse Ross Island Sea-Level data. 	Complete	Norkko et al. (2002)
ZBD	ZBD2001-04	'Deep Sea New Zealand'	To help publish the book 'Deep Sea New Zealand'.	Complete	Batson (2003)
ZBD	ZBD2001-05	Crustose coralline algae of New Zealand	<ol style="list-style-type: none"> 1. To assess the biodiversity of crustose coralline algae in NZ using modern taxonomic methods and molecular sequence tools. 2. To establish the NZ National Coralline Algal Collection. 3. To produce identification guides to NZ species. 	Complete	Harvey et al. (2005) Farr et al. (2009) Broom et al. (2008)
ZBD BEN	ZBD2001-06	Biodiversity of New Zealand's soft-sediment communities	<ol style="list-style-type: none"> 1. To review the current knowledge of the biodiversity of macroinvertebrates and macrophytes living in and on soft-sediment substrates in New Zealand's harbours, estuaries, beaches and to 1000 m water depth. 2. To review existing published and unpublished sources of information on soft-sediment marine assemblages around New Zealand. 3. Using the results of Objective 1, identify gaps in the knowledge, hotspots of biodiversity, areas of particular vulnerability, and make recommendations on areas or assemblages that 	Complete	Rowden et al. (2012) AEBR 96

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
			could be the subject of directed research in future years.		
ZBD BEN	ZBD2001-10	Additional Research on Biodiversity of Seamounts	<ol style="list-style-type: none"> 1. To determine the macro-invertebrate assemblage composition on Cavalii seamount, and adjacent seamount W1, by photographic transects and epibenthic sled sampling. 2. To determine the distribution of macro-invertebrate assemblages on the seamounts. 3. To compare the macro-invertebrate species diversity of neighbouring seamounts. 4. To evaluate and collect samples from suitable macro-invertebrate species for genetic analysis. 5. To map bathymetry and habitat characteristics of the seamounts. 6. To compare macro-invertebrate assemblage composition of the seamounts with nearby hard bottom low relief (under 100 m) on the slope, if suitable areas can be located. 	Complete	Rowden et. al (2004)
ZBD BEN	MOF2000-01	Bryozoan thickets off Otago Peninsula	To research the bryozoan thickets off the Otago Peninsula.	Complete	Batson & Probert (2000)
ZBD	ZBD2000-01	A review of current knowledge describing the biodiversity of the Ross Sea region	<ol style="list-style-type: none"> 1. To review and document existing published and unpublished information describing the biodiversity of the Ross Sea region. 2. To identify and document Ross Sea region marine communities that are under high pressure or likely to come under high pressure from human activities in the near future. 	Complete	Bradford-Grieve & Fenwick (2001a, 2001b, 2002) Fenwick & Bradford-Grieve (2002a, 2002b) Varian (2005)
ZBD BEN	ZBD2000-02	Exploration and description of the biodiversity, in particular the benthic macrofauna, of the western Ross Sea	<ol style="list-style-type: none"> 1. To utilise sampling opportunities provided by the presence of RV <i>Tangaroa</i> in the western Ross Sea in February/March 2001 to make collections of (primarily) benthic organisms as a contribution to the understanding of biodiversity in the region. 2. To identify and document the organisms collected and provide for their proper storage in national collections. 3. To describe the logistic constraints of working in the Ross Sea region, and make recommendations for future research to improve understanding of biodiversity in the Ross Sea. 	Complete	Page et al. (2001)

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Theme	Project code	Project title	Specific objectives	Status	Citation/s
ZBD BEN	ZBD2000-03	The spatial extent and nature of the bryozoan communities at Separation Point, Tasman Bay	1. To assess the present state and extent of bryozoan communities around Separation Point. 2. To characterise the bryozoan communities around Separation Point.	Complete	Grange et al. (2003)
ZBD BEN	ZBD2000-04	Supplementary Research on Biodiversity of Seamounts	1. To determine the biodiversity of seamounts of the southern Kermadec volcanic arc (Rumble V, Rumble 111, Brothers). 2. To describe the distribution of fauna, with an emphasis on mapping the nature and extent, of biodiversity associated with hydrothermal vents. 3. To compare the biodiversity of the three seamounts, and adjacent slope. 4. To collect samples from near the vent sources (if possible, as these are thought to be very localised) to measure chemical and thermal aspects of the environment.	Complete	Rowden et al. (2002, 2003) Clark & O'Driscoll (2003)
ZBD	ZBD2000-06	'The Living Reef: The Ecology of New Zealand's Rocky Reefs'	1. Funding to support the publication of this book.	Complete	Andrew & Francis (2003)
ZBD BEN	ZBD2000-08	A review of current knowledge describing New Zealand's Deepwater Benthic Biodiversity	1. To review and document existing published and unpublished reports and data describing New Zealand's deepwater benthic biodiversity. 2. To make recommendations on representative communities and potentially impacted communities that could be the subject of directed research.	Complete	Key (2002)
ZBD	ZBD2000-09	Antarctic fish taxonomy	1. Ross Sea fishes processing and identification.	Complete	Roberts & Stewart (2001)

APPENDICES FROM NON-TARGET FISH AND INVERTEBRATE CATCH CHAPTER

Table 5. NON-TARGET CATCH: Total annual non-target catch by fishery area for seven deepwater trawl fisheries and one longline fishery from 2002–03 to 2022–23 (except SBW estimates; 2006–07 to 2022–23). Where data have not yet been updated for recent years for a fishery, the non-target catch rate from the most recent modelled year is applied to subsequent years scaled by fishing effort in order to calculate annual totals. FY = fishing year (presented as year ending, e.g., “2023” is the 2022–23 fishing year), LLL = ling longline fishery; HHLSW = hoki/hake/ling/silver warehou/white warehou fishery. [Continued on next pages]

AUCKLAND ISLANDS									
FY	Fishery								Total
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	
2003	473	3	0	77	32	0	1025	955	2565
2004	360	0	13	10	31	0	1111	1802	3327
2005	484	0	2	3	8	0	1201	1385	3083
2006	73	0	0	3	0	0	487	1680	2243
2007	109	0	0	2	0	0	831	1343	2285
2008	187	0	1	7	29	0	705	1676	2605
2009	166	0	0	7	17	0	660	1593	2443
2010	74	0	19	8	16	31	552	1663	2363
2011	206	0	81	15	25	0	696	1519	2542
2012	82	0	19	8	4	0	542	924	1579
2013	163	0	0	0	7	0	554	1968	2692
2014	372	0	12	9	24	0	618	713	1748
2015	286	0	0	2	49	15	250	579	1181
2016	176	0	4	5	64	25	511	853	1638
2017	175	0	0	16	74	3	857	1859	2984
2018	323	0	38	0	43	9	853	1049	2315
2019	221	0	43	4	21	0	759	1107	2155
2020	61	0	55	2	21	2	656	1478	2275
2021	182	0	47	2	20	0	572	1363	2186
2022	126	0	44	2	18	0	529	1108	1826
2023	137	0	33	3	14	0	559	779	1525

CHATHAM RISE									
FY	Fishery								Total
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	
2003	26356	2276	1855	268	3287	0	1395	6321	41758
2004	28615	126	1741	302	3963	0	1017	3499	39263
2005	17018	83	1858	472	3295	0	1032	10257	34015
2006	18755	5542	1927	409	4077	0	1255	7539	39504
2007	15726	1164	1099	246	2892	0	2579	8133	31839
2008	15658	986	1752	301	3538	0	1987	3257	27479
2009	14452	1031	1841	359	4076	0	1115	717	23591
2010	22542	737	1554	533	3839	0	1606	1508	32319
2011	14814	988	1686	238	523	0	1290	3098	22637
2012	13161	1073	1392	311	605	0	1546	1301	19389
2013	17006	2258	1803	504	327	0	1970	233	24101
2014	15491	4398	1177	193	485	0	2999	85	24828
2015	25090	1641	776	426	533	0	1966	454	30886
2016	18088	507	1840	226	2159	0	1428	2105	26353
2017	18699	816	2898	218	2285	0	474	772	26162
2018	16615	1341	2741	229	2601	0	1094	1158	25779
2019	12642	2215	3103	128	1421	0	1311	2612	23432
2020	7049	2435	3937	107	1786	0	1742	2171	19227
2021	9730	2250	3398	124	1667	0	1887	2436	21491

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CHATHAM RISE									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2022	10451	2267	3190	100	1512	0	1745	1980	21244
2023	11353	2697	2408	141	1206	0	1843	1392	21040

COOK STRAIT									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	1529	0	53	6	23	0	7	2	1620
2004	1259	0	22	1	8	0	0	0	1290
2005	1328	2	44	2	16	0	36	0	1428
2006	819	3	114	4	22	0	0	0	962
2007	635	70	154	1	16	0	1	2	879
2008	1260	18	93	0	42	0	4	0	1417
2009	637	0	24	1	33	0	0	0	695
2010	645	3	12	0	20	0	0	0	680
2011	503	0	33	0	42	0	0	0	578
2012	546	0	10	0	21	0	0	0	577
2013	757	0	16	0	9	0	0	0	782
2014	800	2	30	0	18	0	0	0	850
2015	735	2	12	0	28	0	0	0	777
2016	286	0	18	0	13	0	0	2	319
2017	228	3	78	0	14	0	0	0	323
2018	257	0	11	0	17	0	0	0	285
2019	282	3	12	0	7	0	0	0	304
2020	63	3	16	0	3	0	0	0	85
2021	107	3	14	0	3	0	0	0	126
2022	135	3	13	0	3	0	0	0	153
2023	147	4	10	0	2	0	0	0	162

EAST COAST NORTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	660	3	160	50	193	0	1375	10	2451
2004	658	0	86	11	164	0	689	0	1608
2005	497	0	78	10	180	0	712	0	1477
2006	264	0	465	8	149	0	299	0	1185
2007	399	0	205	2	97	0	511	0	1214
2008	351	0	152	1	170	0	386	0	1060
2009	594	0	146	1	151	0	218	0	1110
2010	504	0	83	1	318	0	612	0	1518
2011	658	0	157	1	207	0	474	0	1497
2012	503	4	80	0	65	0	243	0	895
2013	614	0	120	0	80	0	235	0	1049
2014	1020	0	126	0	51	0	343	0	1540
2015	1105	0	64	0	54	0	274	0	1497
2016	652	0	36	0	102	0	247	0	1037
2017	696	0	70	0	59	0	378	0	1203
2018	606	0	263	0	92	0	352	0	1313
2019	715	0	298	0	67	0	303	0	1383
2020	185	0	378	0	130	0	329	0	1022
2021	211	0	326	0	121	0	339	0	997
2022	274	0	306	0	110	0	313	0	1004
2023	298	0	231	0	88	0	331	0	948

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NORTHLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	149	0	11	0	36	0	429	12	637
2004	203	0	5	0	15	0	631	8	862
2005	138	0	9	0	16	0	855	1	1019
2006	205	0	19	0	11	0	313	11	559
2007	161	2	15	0	11	0	523	11	723
2008	186	0	41	0	16	0	460	2	705
2009	198	0	12	0	19	0	373	5	607
2010	283	2	8	0	8	0	585	0	886
2011	194	4	19	0	41	0	403	0	661
2012	219	0	11	0	25	0	355	0	610
2013	394	2	12	0	10	0	501	9	928
2014	230	0	14	0	14	0	550	0	808
2015	309	6	9	0	12	0	373	0	709
2016	419	1	10	0	10	0	321	8	769
2017	404	0	12	0	18	0	411	0	845
2018	459	0	16	0	5	0	358	0	838
2019	420	2	18	0	2	0	273	0	715
2020	409	2	23	0	8	0	230	0	672
2021	680	2	20	0	7	0	181	0	890
2022	532	2	19	0	7	0	167	0	727
2023	578	2	14	0	5	0	177	0	777

PUYSEGUR									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	1785	2	96	274	54	0	165	1599	3975
2004	1080	0	44	65	58	0	21	1251	2519
2005	901	0	48	76	102	0	8	1892	3027
2006	1690	0	157	56	102	0	0	852	2857
2007	1106	0	79	17	0	0	0	63	1265
2008	710	0	219	36	8	0	0	63	1036
2009	1132	0	34	6	17	0	0	17	1206
2010	1364	0	6	15	18	0	0	156	1559
2011	1497	0	103	12	21	0	0	226	1859
2012	1081	0	44	10	22	0	0	90	1247
2013	1525	0	64	14	1	0	0	84	1688
2014	1538	0	93	23	17	0	0	227	1898
2015	1176	0	31	2	31	0	0	128	1368
2016	1731	0	78	5	1	0	0	231	2046
2017	1251	0	148	76	17	0	0	209	1701
2018	553	0	76	29	38	0	0	362	1058
2019	805	0	86	28	54	0	0	117	1090
2020	665	0	109	7	38	0	0	24	843
2021	807	0	94	8	35	0	0	452	1397
2022	1211	0	88	7	32	0	0	367	1705
2023	1316	0	67	9	26	0	0	258	1675

STEWART-SNARES SHELF									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	4399	2624	70	260	0	0	156	9259	16768

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STEWART-SNARES SHELF									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2004	2360	521	141	24	0	0	40	18279	21365
2005	2824	670	68	92	0	0	6	12410	16070
2006	2792	1422	54	135	0	0	0	15737	20140
2007	5169	551	465	59	0	0	0	3820	10064
2008	2782	80	218	21	5	0	0	7838	10944
2009	4494	1186	192	26	0	0	0	14032	19930
2010	3918	943	62	19	0	0	0	9990	14932
2011	3455	1241	104	13	0	0	0	12439	17252
2012	2410	3143	297	32	0	0	0	10448	16330
2013	5224	1656	135	74	0	0	0	9080	16169
2014	10242	2043	114	24	0	0	0	9386	21809
2015	10057	1776	60	11	0	0	0	9099	21003
2016	4281	1914	49	30	0	0	0	7267	13541
2017	7580	647	24	28	0	0	0	8183	16462
2018	4261	2837	143	4	0	0	0	7799	15044
2019	4116	1383	162	7	0	0	0	9038	14706
2020	2556	1520	205	4	0	0	0	12001	16287
2021	3072	1405	177	5	0	0	0	10246	14905
2022	2910	1415	166	4	0	0	0	8326	12822
2023	3161	1684	126	5	0	0	0	5854	10831

SUBANTARCTIC									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	1844	0	565	406	87	0	41	318	3261
2004	1791	0	784	112	99	0	58	1637	4481
2005	1095	0	200	161	57	0	0	273	1786
2006	176	0	223	262	193	0	0	181	1035
2007	673	0	189	175	68	84	0	495	1684
2008	1117	0	890	206	61	135	0	6	2415
2009	775	0	538	225	64	102	0	2	1706
2010	414	3	360	279	60	103	0	22	1241
2011	413	0	174	99	41	194	0	19	940
2012	155	0	117	74	6	330	0	8	690
2013	189	0	0	0	0	181	0	20	390
2014	505	0	554	0	0	175	18	2	1254
2015	618	0	248	0	0	237	35	2	1140
2016	189	0	387	25	0	316	5	5	927
2017	576	0	1338	16	8	104	0	28	2070
2018	1255	0	499	26	34	47	0	113	1974
2019	839	0	565	24	15	163	0	32	1638
2020	904	0	717	21	10	88	0	58	1797
2021	610	0	619	24	9	61	0	19	1342
2022	403	0	581	20	8	57	0	15	1085
2023	438	0	438	28	7	54	0	11	975

WEST COAST NORTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	82	9648	0	0	80	0	0	89	9899
2004	104	15241	2	0	84	0	0	6	15437
2005	74	9508	1	0	50	0	8	0	9641

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WEST COAST NORTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2006	270	14736	13	0	68	0	0	0	15087
2007	100	14155	25	0	64	0	0	1	14345
2008	354	11172	45	0	50	0	0	0	11621
2009	299	9093	29	0	51	0	0	0	9472
2010	73	12361	30	0	37	0	0	0	12501
2011	106	5836	82	0	43	0	0	0	6067
2012	71	7813	42	0	72	0	0	0	7998
2013	185	7414	31	0	49	0	4	2	7685
2014	167	6346	43	0	60	0	0	0	6616
2015	155	5255	20	0	26	0	0	0	5456
2016	73	5468	39	0	237	0	0	0	5817
2017	204	4606	38	0	118	0	0	0	4966
2018	175	6066	59	0	191	0	0	0	6491
2019	80	5348	67	0	31	0	0	0	5526
2020	98	5879	85	0	57	0	0	0	6119
2021	140	5433	73	0	53	0	0	0	5699
2022	179	5473	69	0	48	0	0	0	5769
2023	194	6512	52	0	38	0	0	0	6797

WEST COAST SOUTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	6583	2184	185	0	6	0	8	1590	10556
2004	6853	431	94	0	3	0	0	369	7750
2005	4566	663	126	0	10	0	8	764	6137
2006	5042	1994	219	0	19	0	0	185	7459
2007	3302	4830	209	0	2	0	0	418	8761
2008	5206	1717	323	0	0	0	0	0	7246
2009	5706	1954	252	0	20	0	0	37	7969
2010	2113	272	111	0	11	0	0	41	2548
2011	4231	612	192	0	19	0	0	0	5054
2012	3218	1054	165	0	25	0	14	0	4476
2013	5564	441	152	0	38	0	21	0	6216
2014	6801	823	193	0	10	0	31	0	7858
2015	8296	553	131	0	130	0	34	450	9594
2016	7718	990	199	0	237	0	39	0	9183
2017	5262	885	99	0	808	0	0	0	7054
2018	5284	834	132	0	111	0	0	0	6361
2019	4343	654	149	0	134	0	0	0	5280
2020	2694	719	190	0	131	0	0	0	3734
2021	2506	664	164	0	122	0	0	0	3456
2022	2879	669	154	0	111	0	0	0	3813
2023	3127	796	116	0	88	0	0	0	4128

Table 6. DISCARDS: Total annual discards by fishery area for seven deepwater trawl fisheries and one longline fishery fishery from 2002–03 to 2022–23 (except SBW estimates; 2006–07 to 2022–23). Where data have not yet been updated for recent years for a fishery, the discard rate from the most recent modelled year is applied to subsequent years scaled by fishing effort in order to calculate annual totals. FY = fishing year (presented as year ending, e.g., “2023” is the 2022 –23 fishing year), LLL = ling longline fishery; HHLSW = hoki/hake/ling/silver warehou/white warehou fishery. [Continued on next pages]

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AUCKLAND ISLANDS									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	236	0	0	26	11	0	651	747	1671
2004	184	0	5	5	3	0	383	1520	2100
2005	53	0	1	1	1	0	874	698	1628
2006	56	0	0	1	0	0	337	4162	4556
2007	19	0	0	1	0	0	679	900	1599
2008	4	0	0	2	2	0	566	671	1245
2009	3	0	0	1	1	0	491	1777	2273
2010	7	0	8	1	1	0	472	826	1315
2011	1	0	5	0	1	0	570	965	1542
2012	6	0	4	0	1	0	417	429	857
2013	9	0	0	0	1	0	442	1385	1837
2014	1	0	1	2	2	0	490	303	799
2015	34	0	0	0	5	0	201	457	697
2016	15	0	1	1	25	0	392	1163	1597
2017	21	0	0	1	5	0	512	651	1190
2018	16	0	9	0	0	0	604	407	1036
2019	7	0	10	1	1	0	525	325	869
2020	1	0	13	1	7	0	462	680	1164
2021	23	0	11	1	7	0	377	362	781
2022	5	0	10	1	6	0	349	294	665
2023	5	0	8	1	5	0	368	207	594

CHATHAM RISE									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	15042	33	1073	89	556	0	854	760	18407
2004	9192	0	1129	100	590	0	335	677	12023
2005	3489	0	1737	139	686	0	1884	3843	11778
2006	3636	36	1333	166	1435	0	805	2758	10169
2007	2870	12	1956	67	852	0	2026	4363	12146
2008	7217	17	1269	51	243	0	1561	801	11159
2009	12684	2	1139	64	267	0	824	309	15289
2010	3871	4	1434	35	105	0	1361	411	7221
2011	5169	1	594	16	26	0	1011	872	7689
2012	3004	7	793	48	82	0	1147	358	5439
2013	1694	5	166	10	36	0	1515	73	3499
2014	1687	5	942	61	32	0	2254	24	5005
2015	2691	9	409	14	85	0	1503	267	4978
2016	910	3	827	58	287	0	1034	2024	5143
2017	864	4	1209	23	335	0	740	93	3268
2018	2011	8	1249	107	1318	0	735	112	5540
2019	1062	11	1414	33	314	0	870	814	4518
2020	222	12	1794	18	446	0	1189	865	4546
2021	687	11	1548	21	416	0	1204	652	4539
2022	905	11	1454	17	378	0	1113	530	4407
2023	983	13	1097	24	301	0	1176	373	3967

COOK STRAIT									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	1987	0	10	3	5	0	3	2	2010
2004	1296	0	12	1	1	0	0	0	1310

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COOK STRAIT									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2005	693	0	30	1	4	0	28	0	756
2006	669	0	32	2	4	0	1	0	708
2007	674	0	50	0	4	0	1	0	729
2008	858	0	16	0	11	0	2	0	887
2009	990	0	5	0	5	0	0	0	1000
2010	348	0	5	0	4	0	0	0	357
2011	661	0	5	0	6	0	0	0	672
2012	653	0	3	0	4	0	0	0	660
2013	342	0	1	0	2	0	0	0	345
2014	512	0	6	0	3	0	0	0	521
2015	216	0	3	0	4	0	0	0	223
2016	368	0	5	0	4	0	0	2	379
2017	301	0	29	0	3	0	0	0	333
2018	371	0	9	0	3	0	0	0	383
2019	383	0	10	0	1	0	0	0	394
2020	98	0	13	0	1	0	0	0	112
2021	118	0	11	0	1	0	0	0	130
2022	138	0	10	0	1	0	0	0	149
2023	150	0	8	0	1	0	0	0	158

EAST COAST NORTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	73	0	30	23	71	0	819	11	1027
2004	81	0	51	4	63	0	221	0	420
2005	38	0	56	4	86	0	485	0	669
2006	30	0	46	3	66	0	194	0	339
2007	35	0	68	1	55	0	392	0	551
2008	23	0	42	0	95	0	291	0	451
2009	43	0	33	0	31	0	151	0	258
2010	45	0	39	0	165	0	491	0	740
2011	44	0	23	0	63	0	363	0	493
2012	48	0	23	0	42	0	176	0	289
2013	44	0	5	0	29	0	176	0	254
2014	63	0	26	0	19	0	255	0	363
2015	11	0	21	0	26	0	207	0	265
2016	103	0	26	0	60	0	178	0	367
2017	113	0	44	0	28	0	219	0	404
2018	100	0	80	0	37	0	233	0	450
2019	100	0	91	0	41	0	197	0	429
2020	16	0	115	0	56	0	218	0	405
2021	25	0	99	0	52	0	210	0	386
2022	7	0	93	0	47	0	194	0	342
2023	8	0	70	0	38	0	205	0	321

NORTHLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	46	0	2	0	10	0	244	35	337
2004	66	0	2	0	3	0	194	2	267
2005	28	0	4	0	8	0	557	0	597
2006	68	0	4	0	4	0	194	4	274
2007	52	0	6	0	3	0	383	5	449

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NORTHLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2008	34	0	3	0	3	0	331	1	372
2009	47	0	2	0	4	0	247	2	302
2010	61	0	2	0	2	0	447	0	512
2011	64	0	1	0	6	0	295	0	366
2012	81	0	2	0	11	0	245	0	339
2013	89	0	0	0	5	0	357	3	454
2014	94	0	1	0	2	0	392	0	489
2015	76	0	1	0	3	0	270	0	350
2016	134	0	1	0	5	0	220	6	366
2017	161	0	1	0	6	0	227	0	395
2018	70	0	2	0	2	0	228	0	302
2019	126	0	2	0	1	0	169	0	298
2020	77	0	3	0	3	0	146	0	229
2021	92	0	2	0	3	0	107	0	204
2022	68	0	2	0	3	0	99	0	172
2023	74	0	2	0	2	0	104	0	182

PUYSEGUR									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	817	0	22	125	5	0	32	296	1297
2004	254	0	33	35	4	0	4	265	595
2005	622	0	51	31	10	0	5	341	1060
2006	1875	0	35	17	15	0	0	266	2208
2007	444	0	36	9	0	0	0	21	510
2008	586	0	25	28	0	0	0	9	648
2009	144	0	5	1	0	0	0	4	154
2010	263	0	2	2	1	0	0	28	296
2011	159	0	8	1	1	0	0	55	224
2012	470	0	9	1	1	0	0	16	497
2013	393	0	2	1	0	0	0	4	400
2014	227	0	11	6	1	0	0	53	298
2015	272	0	5	0	2	0	0	49	328
2016	496	0	11	1	0	0	0	163	671
2017	439	0	17	5	1	0	0	61	523
2018	70	0	14	1	3	0	0	50	138
2019	231	0	16	3	6	0	0	15	271
2020	54	0	20	2	3	0	0	3	82
2021	68	0	17	2	3	0	0	15	105
2022	152	0	16	2	3	0	0	12	185
2023	165	0	12	3	2	0	0	9	191

STEWART-SNARES SHELF									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	3175	13	38	140	0	0	44	1345	4755
2004	1188	1	43	14	0	0	9	2078	3333
2005	2112	1	35	53	0	0	3	1516	3720
2006	1844	2	33	77	1	0	0	1606	3563
2007	4925	1	64	30	0	0	0	740	5760
2008	400	0	28	7	0	0	0	562	997
2009	1415	2	25	5	0	0	0	1254	2701
2010	512	3	17	6	0	0	0	1081	1619

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STEWART-SNARES SHELF									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2011	856	2	8	4	0	0	0	1278	2148
2012	1033	2	17	6	0	0	0	917	1975
2013	1339	2	3	9	0	0	0	1040	2393
2014	1778	2	12	8	0	0	0	978	2778
2015	1963	4	7	4	0	0	0	1116	3094
2016	823	3	6	9	0	0	0	1349	2190
2017	2023	1	8	4	0	0	0	681	2717
2018	1470	22	5	2	0	0	0	396	1895
2019	1195	2	6	3	0	0	0	957	2163
2020	916	2	7	2	0	0	0	890	1817
2021	962	2	6	2	0	0	0	662	1635
2022	650	2	6	2	0	0	0	538	1198
2023	706	2	4	3	0	0	0	378	1094

SUBANTARCTIC									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	691	0	270	162	13	0	19	160	1315
2004	2495	0	355	85	40	0	13	533	3521
2005	676	0	81	78	24	0	0	116	975
2006	141	0	73	120	64	0	0	128	526
2007	477	0	89	75	25	141	0	366	1173
2008	246	0	218	66	15	153	0	2	700
2009	247	0	85	49	10	175	0	1	567
2010	119	0	117	58	7	114	0	10	425
2011	4	0	34	23	4	199	0	7	271
2012	86	0	72	15	1	163	0	2	339
2013	21	0	0	0	0	93	0	6	120
2014	26	0	102	0	0	34	14	1	177
2015	107	0	52	0	0	52	25	1	237
2016	5	0	96	6	0	143	4	3	257
2017	208	0	226	2	1	57	0	9	503
2018	1290	0	168	12	4	67	0	36	1577
2019	391	0	190	6	2	162	0	11	762
2020	965	0	241	13	4	124	0	15	1362
2021	438	0	208	15	4	35	0	4	704
2022	184	0	196	12	3	88	0	3	486
2023	200	0	148	17	3	101	0	2	471

WEST COAST NORTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	10	239	0	0	17	0	0	140	406
2004	12	117	2	0	14	0	0	2	147
2005	2	114	1	0	28	0	5	0	150
2006	32	108	5	0	17	0	0	0	162
2007	21	160	18	0	28	0	0	1	228
2008	24	133	12	0	11	0	0	0	180
2009	28	83	9	0	17	0	0	0	137
2010	4	346	18	0	23	0	0	0	391
2011	5	94	14	0	11	0	0	0	124
2012	7	145	14	0	49	0	0	0	215

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WEST COAST NORTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2013	16	127	2	0	27	0	3	1	176
2014	10	202	10	0	40	0	0	0	262
2015	10	146	5	0	18	0	0	0	179
2016	17	167	12	0	202	0	0	0	398
2017	31	188	12	0	67	0	0	0	298
2018	22	253	21	0	156	0	0	0	452
2019	5	206	24	0	18	0	0	0	253
2020	7	226	30	0	51	0	0	0	315
2021	7	209	26	0	48	0	0	0	290
2022	10	211	24	0	43	0	0	0	288
2023	11	251	18	0	34	0	0	0	315

WEST COAST SOUTH ISLAND									
FY	Fishery								
	HHLSW	JMA	LLL	OEO	ORH	SBW	SCI	SQU	Total
2003	3407	16	96	0	3	0	3	212	3737
2004	2498	2	99	0	1	0	0	9	2609
2005	1799	3	130	0	5	0	6	29	1972
2006	3270	5	106	0	9	0	0	5	3395
2007	3950	15	154	0	1	0	0	14	4134
2008	1801	8	112	0	0	0	0	0	1921
2009	2391	5	83	0	9	0	0	1	2489
2010	618	3	71	0	6	0	0	1	699
2011	1929	3	39	0	6	0	0	0	1977
2012	2984	5	60	0	13	0	9	0	3071
2013	2610	4	9	0	18	0	14	0	2655
2014	2193	9	53	0	4	0	19	0	2278
2015	2645	12	27	0	62	0	21	20	2787
2016	2892	22	45	0	124	0	28	0	3111
2017	2453	19	63	0	423	0	0	0	2958
2018	1725	18	68	0	39	0	0	0	1850
2019	654	25	77	0	39	0	0	0	795
2020	533	27	98	0	81	0	0	0	739
2021	388	25	84	0	76	0	0	0	573
2022	541	26	79	0	69	0	0	0	714
2023	588	30	60	0	55	0	0	0	733

APPENDICES FROM CHONDRICHTHYANS CHAPTER

Table 7. List of New Zealand chondrichthyans, with details of their fisheries management classification, IUCN Red List of Threatened Species (IUCN Red List) global status and New Zealand Threat Classification System (NZTCS) national status, and their distribution area. IUCN Red List status: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient; NE, Not Evaluated. NZTCS status: NCR Threatened – Nationally Critical; NE, Threatened – Nationally Endangered; NV, Threatened – Nationally Vulnerable; UNC, At Risk – Uncommon; NOT, Not Threatened; DD, Data Deficient; MI, Migrant; VA, Vagrant. NZTCS qualifiers: CD, Conservation Dependent; CI, Climate Impact; CR, Conservation Research Needed; De, Designated; DPR, Data Poor Recognition; DPS, Data Poor Size; DPT, Data Poor Trend; NS, Natural State; RR, Range Restricted; SO, Secure Overseas; SO?, Secure Overseas?; S?O, Secure? Overseas; Sp, Biologically Sparse; TO, Threatened Overseas; T?O, Threatened? Overseas. Sources: IUCN Red List of Threatened Species (<https://www.iucnredlist.org/>); NZTCS status (Duffy et al. 2025; [Conservation status of chondrichthyans \(chimaeras, sharks and rays\) in Aotearoa New Zealand, 2024](#)). [Continued on next page].

Group	Family	Species	Authority	Common name	Code	Management class	IUCN Red List status	NZTCS status	NZTCS qualifier	Location
Chimaera	Callorhynchidae	<i>Callorhynchus milii</i>	Bory de Saint-Vincent, 1823	Elephantfish	ELE	QMS	LC	NOT	CD, SO?	NZ EEZ
Chimaera	Rhinochimaeridae	<i>Harriotta haeckeli</i>	Karrer, 1972	Smallspine spookfish	HHA	Non-QMS	LC	NOT	SO	NZ EEZ
Chimaera	Rhinochimaeridae	<i>Harriotta avia</i> (previously <i>H. raleighana</i>)	Finucci, Didier, Ebert, Green & Kemper, 2024	Australian narrow-nosed spookfish	LCH	Non-QMS	LC	NOT	SO	NZ EEZ
Chimaera	Rhinochimaeridae	<i>Rhinochimaera pacifica</i>	(Mitsukuri, 1895)	Pacific spookfish	RCH	Non-QMS	LC	NOT	SO	NZ EEZ
Chimaera	Chimaeridae	<i>Chimaera carophila</i>	Kemper, Ebert, Naylor & Didier, 2014	Brown chimaera	CHP	Non-QMS	LC	NOT	DPR	NZ EEZ
Chimaera	Chimaeridae	<i>Chimaera lignaria</i>	Didier, 2002	Purple chimaera, giant chimaera	CHG	Non-QMS	LC	DD	DPR, SO	NZ EEZ
Chimaera	Chimaeridae	<i>Chimaera panthera</i>	Didier, 1998	Leopard chimaera	CPN	Non-QMS	LC	NOT	DPS, DPT	NZ EEZ
Chimaera	Chimaeridae	<i>Hydrolagus bemisi</i>	Didier, 2002	Pale ghost shark	GSP	QMS	LC	NOT	CD, DPR	NZ EEZ
Chimaera	Chimaeridae	<i>Hydrolagus homonycteris</i>	Didier, 2008	Black ghost shark	HYB	Non-QMS	LC	NOT	DPR, DPS, DPT, SO	NZ EEZ
Chimaera	Chimaeridae	<i>Hydrolagus novaezealandiae</i>	(Fowler, 1911)	Dark ghost shark	GSH	QMS	LC	NOT	CD, DPR	NZ EEZ
Chimaera	Chimaeridae	<i>Hydrolagus trolli</i>	Didier & Seret, 2002	Pointynose blue ghost shark	HYP	Non-QMS	LC	NOT	DPR, SO	NZ EEZ
Chimaera	Chimaeridae	<i>Hydrolagus cf. affinis</i>	(de Brito Capello, 1868)	Giant black ghost shark	HGB	Non-QMS	NE	DD	DPR, DPS, DPT, SO	NZ EEZ
Shark	Chlamydoselachidae	<i>Chlamydoselachus anguineus</i>	Garman, 1884	Frilled shark	FRS	Non-QMS	LC	NOT	DPS, DPT, SO	NZ EEZ
Shark	Hexanchiidae	<i>Heptranchias perlo</i>	(Bonnaterre, 1788)	Sharpnose sevengill shark	HEP	Non-target	NT	DD	CR, DPR, DPS, DPT, S?O	NZ EEZ
Shark	Hexanchiidae	<i>Hexanchus griseus</i>	(Bonnaterre, 1788)	Sixgill shark	HEX	Non-QMS	NT	NOT	DPS, DPT, S?O	NZ EEZ

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Group	Family	Species	Authority	Common name	Code	Management class	IUCN Red List status	NZTCS status	NZTCS qualifer	Location
Shark	Hexanchiidae	<i>Notorynchus cepedianus</i>	(Péron, 1807)	Broadnose sevengill shark	SEV	Non-QMS	VU	NOT	DPS, DPT, TO	NZ EEZ
Shark	Echinorhinidae	<i>Echinorhinus brucus</i>	(Bonnaterre, 1788)	Bramble shark	BRS	Non-QMS	EN	DD	TO	NZ EEZ
Shark	Echinorhinidae	<i>Echinorhinus cookei</i>	Pietschmann, 1928	Prickly shark	ECO	Non-QMS	DD	DD	S?O	NZ EEZ
Shark	Squalidae	<i>Cirrhigaleus australis</i>	White, Last & Stevens, 2007	Southern mandarin dogfish	MSH	Non-QMS	DD	NOT	DPS, DPT, S?O, Sp	NZ EEZ
Shark	Squalidae	<i>Squalus acanthias</i>	Linnaeus, 1758	Spiny dogfish	SPD	QMS	VU	NOT	CD, TO	NZ EEZ
Shark	Squalidae	<i>Squalus griffini</i>	Phillipps, 1931	Northern spiny dogfish	NSD	Non-QMS	LC	NOT	CR, De, DPR, SO	NZ EEZ
Shark	Squalidae	<i>Squalus raoulensis</i>	Duffy & Last, 2007	Kermadec spiny dogfish		Non-QMS	LC	UNC	CD, DPR, NS, RR	NZ EEZ
Shark	Squalidae	<i>Squalus</i> sp.	Not yet resolved	Shortspine spiny dogfish		Non-QMS	NE	DD	DPR, TO?	NZ EEZ
Shark	Centrophoridae	<i>Centrophorus harrissoni</i>	McCulloch, 1915	Harrisson's dogfish		Non-QMS	EN	DD	TO	NZ EEZ
Shark	Centrophoridae	<i>Centrophorus squamosus</i>	(Bonnaterre, 1788)	Leafscale gulper shark	CSQ	Non-QMS	EN	NOT	TO	NZ EEZ
Shark	Centrophoridae	<i>Deania calceus</i>	(Lowe, 1839)	Shovelnose dogfish	SND	Non-QMS	NT	NOT	S?O	NZ EEZ
Shark	Centrophoridae	<i>Deania hystricosa</i>	(Garman, 1906)	Rough longnose dogfish	SNR	Non-QMS	NE	DD	DPR, S?O	NZ EEZ
Shark	Centrophoridae	<i>Deania quadrispinosa</i>	(McCulloch, 1915)	Longsnout dogfish	DEQ	Non-QMS	VU	DD	DPR, DPS, DPT, TO	NZ EEZ
Shark	Etmopteridae	<i>Centroscyllium kamoharai</i>	Abe, 1966	Fragile dogfish		Non-QMS	LC	DD	DPR, SO	NZ EEZ
Shark	Etmopteridae	<i>Etmopterus abernethyi</i> (previously <i>E. lucifer</i>)	Garrick, 1957	Blackbelly lantern shark	ETL	Non-QMS	NE	NOT	SO	NZ EEZ
Shark	Etmopteridae	<i>Etmopterus granulosus</i>	(Günther, 1880)	Baxter's dogfish	ETB	Non-QMS	LC	NOT	SO	NZ EEZ
Shark	Etmopteridae	<i>Etmopterus moller</i>	(Whitley, 1939)	Moller's lantern shark	EMO	Non-QMS	DD	DD	S?O	NZ EEZ
Shark	Etmopteridae	<i>Etmopterus pusillus</i>	(Lowe, 1839)	Smooth lantern shark	ETP	Non-QMS	LC	DD	SO	NZ EEZ
Shark	Etmopteridae	<i>Etmopterus unicolor</i>	(Engelhardt, 1912)	Bristled lantern shark	ETU	Non-QMS	DD	DD	DPR, S?O	NZ EEZ
Shark	Etmopteridae	<i>Etmopterus viator</i>	Straube, 2011	Blue-eye lantern shark	EVI	Non-QMS	LC	NOT	DPT, SO	NZ EEZ
Shark	Somniosidae	<i>Centroscymnus coelolepis</i>	Barbosa du Bocage & de Brito Capello, 1864	Portuguese dogfish	CYL	Non-QMS	NT	NOT	DPT, S?O	NZ EEZ
Shark	Somniosidae	<i>Centroscymnus owstonii</i>	Garman, 1906	Owston's dogfish	CYO	Non-QMS	VU	NOT	DPT, TO	NZ EEZ

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Group	Family	Species	Authority	Common name	Code	Management class	IUCN Red List status	NZTCS status	NZTCS qualifier	Location
Shark	Somniosidae	<i>Centroselachus crepidater</i>	(Barbosa du Bocage & de Brito Capello, 1864)	Longnose velvet dogfish	CYP	Non-QMS	NT	NOT	DPT, S?O	NZ EEZ
Shark	Somniosidae	<i>Scymnodalatias albicauda</i>	Taniuchi & Garrick, 1986	Whitetail dogfish	SLB	Non-QMS	DD	DD	SO?	NZ EEZ
Shark	Somniosidae	<i>Scymnodalatias sherwoodi</i>	(Archev, 1921)	Sherwood's dogfish	SHE	Non-QMS	DD	DD	SO?	NZ EEZ
Shark	Somniosidae	<i>Scymnodon macracanthus</i>	(Regan, 1906)	Plunket's dogfish	PLS	Non-QMS	VU	NCR	CR, DPS, TO	NZ EEZ
Shark	Somniosidae	<i>Scymnodon ringens</i>	Barbosa du Bocage & de Brito Capello, 1864	Knifetooth dogfish	SRI	Non-QMS	VU	DD	DPR, TO	NZ EEZ
Shark	Somniosidae	<i>Somniosus antarcticus</i>	Whitley, 1939	Southern sleeper shark	SSS	Non-QMS	LC	DD	DPS, SO	NZ EEZ
Shark	Somniosidae	<i>Somniosus longus</i>	(Tanaka, 1912)	Little sleeper shark	SOM	Non-QMS	DD	DD	DPR, S?O	NZ EEZ
Shark	Somniosidae	<i>Zameus squamulosus</i>	(Günther, 1877)	Velvet dogfish	ZAS	Non-QMS	LC	DD	DPR, SO	NZ EEZ
Shark	Oxynotidae	<i>Oxynotus bruniensis</i>	(Ogilby, 1893)	Prickly dogfish	PDG	Non-QMS	NT	NOT	CR, DPT, Sp, T?O	NZ EEZ
Shark	Dalatiidae	<i>Dalatias licha</i>	(Bonnaterre, 1788)	Seal shark	BSH	Non-QMS	VU	NOT	TO	NZ EEZ
Shark	Dalatiidae	<i>Euprotomicrus bispinatus</i>	(Quoy & Gaimard, 1824)	Pygmy shark	EBI	Non-QMS	LC	NOT	CR, DPS, SO	NZ EEZ
Shark	Dalatiidae	<i>Isistius brasiliensis</i>	(Quoy & Gaimard, 1824)	Cookie cutter shark	IBR	Non-QMS	LC	NOT	SO	NZ EEZ
Shark	Heterodontidae	<i>Heterodontus portusjacksoni</i>	(Meyer, 1793)	Port Jackson shark	PJS	Non-QMS	LC	VA	SO	NZ EEZ
Shark	Rhincodontidae	<i>Rhincodon typus</i>	Smith, 1828	Whale shark	WSH	Protected	EN	MI	CD, TO	NZ EEZ
Shark	Odontaspidae	<i>Odontaspis ferox</i>	(Risso, 1810)	Smalltooth sand tiger shark	ODO	Protected	VU	NOT	CD, DPR, DPS, DPT, TO	NZ EEZ
Shark	Pseudocarchariidae	<i>Pseudocarcharias kamoharai</i>	(Matsubara, 1936)	Crocodile shark	CRC	Non-QMS	LC	DD	SO	NZ EEZ
Shark	Mitsukurinidae	<i>Mitsukurina owstoni</i>	Jordan, 1898	Goblin shark	GOB	Non-QMS	DD	NOT	CR, DPS, DPT, SO	NZ EEZ
Shark	Alopiidae	<i>Alopias superciliosus</i>	Lowe, 1841	Bigeye thresher	BET	Non-QMS	VU	NOT	CR, DPR, DPT, TO	NZ EEZ
Shark	Alopiidae	<i>Alopias vulpinus</i>	(Bonnaterre, 1788)	Thresher shark	THR	Non-QMS	VU	DD	CR, DPR, DPS, DPT, TO	NZ EEZ
Shark	Cetorhinidae	<i>Cetorhinus maximus</i>	(Gunnerus, 1765)	Basking shark	BSK	Protected	EN	NCR	CD, CR, DPS, DPT, TO	NZ EEZ
Shark	Laminidae	<i>Carcharodon carcharias</i>	(Linnaeus, 1758)	White shark, white pointer, great white shark	WPS	Protected	VU	NE	CD, DPT, TO	NZ EEZ

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Group	Family	Species	Authority	Common name	Code	Management class	IUCN Red List status	NZTCS status	NZTCS qualifier	Location
Shark	Laminidae	<i>Isurus oxyrinchus</i>	Rafinesque, 1810	Mako shark, shortfin mako	MAK	QMS	EN	NOT	CD, TO	NZ EEZ
Shark	Laminidae	<i>Lamna nasus</i>	(Bonnaterre, 1788)	Porbeagle	POS	QMS	VU	NOT	CD, TO	NZ EEZ
Shark	Pentanchidae	<i>Apristurus albisoma</i>	Nakaya & Seret, 1999	Grey roundfin catshark		Non-QMS	LC	DD	SO	NZ EEZ
Shark	Pentanchidae	<i>Apristurus ampliceps</i>	Sasahara, Sato & Nakaya, 2008	Roughskin catshark	AAM	Non-QMS	LC	DD	DPR, SO	NZ EEZ
Shark	Pentanchidae	<i>Apristurus exsanguis</i>	Sato, Nakaya & Stewart, 1999	Pale catshark	AEX	Non-QMS	LC	DD	DPR	NZ EEZ
Shark	Pentanchidae	<i>Apristurus garricki</i>	Sato, Stewart & Nakaya, 2013	Garrick's catshark	AGK	Non-QMS	LC	DD	DPR	NZ EEZ
Shark	Pentanchidae	<i>Apristurus melanoasper</i>	Iglésias, Nakaya & Stehmann, 2004	Fleshynose catshark	AML	Non-QMS	DD	DD	DPR, SO	NZ EEZ
Shark	Pentanchidae	<i>Apristurus pinguis</i>	Deng, Xiong & Zhan, 1983	Bulldog catshark	APN	Non-QMS	LC	DD	DPR, SO	NZ EEZ
Shark	Pentanchidae	<i>Apristurus</i> cf. <i>sinensis</i>	Chu & Hu, 1981	Freckled catshark	ASI	Non-QMS	NE	DD	DPR, SO?	NZ EEZ
Shark	Pentanchidae	<i>Parmaturus macmillani</i>	Hardy, 1985	McMillan's catshark	PCS	Non-QMS	DD	DD	DPR, DPS, DPT, Sp	NZ EEZ
Shark	Dichichthyidae	<i>Dichichthys satoi</i> (previously <i>Parmaturus</i> sp.)	White, Stewart, O'Neill & Naylor, 2024	Roughback bristle shark		Non-QMS	DD	DD	DPS, DPT	NZ EEZ
Shark	Scyliorhinidae	<i>Bythaelurus dawsoni</i>	(Springer, 1971)	Dawson's catshark	DCS	Non-QMS	LC	DD		NZ EEZ
Shark	Scyliorhinidae	<i>Cephaloscyllium isabellum</i>	(Bonnaterre, 1788)	Carpet shark	CAR	Non-QMS	LC	NOT		NZ EEZ
Shark	Scyliorhinidae	<i>Cephaloscyllium</i> sp. 2	Not yet resolved	Banded swellshark		Non-QMS	NE	DD	CR, DPR	NZ EEZ
Shark	Pseudotriakidae	<i>Gollum attenuatus</i>	(Garrick, 1954)	Slender smooth hound	SSH	Non-QMS	LC	DD	CR, DPR, SO	NZ EEZ
Shark	Pseudotriakidae	<i>Pseudotriakis microdon</i>	de Brito Capello, 1868	False catshark	PMI	Non-QMS	LC	DD	SO	NZ EEZ
Shark	Triakidae	<i>Galeorhinus galeus</i>	(Linnaeus, 1758)	School shark	SCH	QMS	CR	NOT	CD,TO	NZ EEZ
Shark	Triakidae	<i>Mustelus lenticulatus</i>	Phillipps, 1932	Rig	SPO	QMS	LC	NOT	CD	NZ EEZ
Shark	Triakidae	<i>Mustelus</i> sp. 2	Not yet described	Norfolk Island smoothhound		Non-QMS	NE	DD	CR, DPR, DPS, DPT, S?O	NZ EEZ
Shark	Carcharhinidae	<i>Carcharhinus brachyurus</i>	(Günther, 1870)	Bronze whaler	BWH	Non-QMS	VU	NOT	CR, DPS, DPT, TO	NZ EEZ
Shark	Carcharhinidae	<i>Carcharhinus galapagensis</i>	(Snodgrass & Heller, 1905)	Galapagos shark	CGA	Non-QMS	LC	NOT	CD,SO	NZ EEZ

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Group	Family	Species	Authority	Common name	Code	Management class	IUCN Red List status	NZTCS status	NZTCS qualifier	Location
Shark	Carcharhinidae	<i>Carcharhinus longimanus</i>	(Poey, 1861)	Oceanic whitetip shark	OWS	Protected	CR	MI	CD, TO	NZ EEZ
Shark	Carcharhinidae	<i>Carcharhinus obscurus</i>	(Le Sueur, 1818)	Dusky shark	DSH	Non-QMS	EN	DD	DPR, TO	NZ EEZ
Shark	Carcharhinidae	<i>Carcharhinus plumbeus</i>	(Nardo, 1827)	Sandbar shark	CAP	Non-QMS	EN	DD	TO	NZ EEZ
Shark	Carcharhinidae	<i>Galeocerdo cuvier</i>	(Péron & Lesueur, 1822)	Tiger shark	TIS	Non-QMS	NT	MI	S?O	NZ EEZ
Shark	Carcharhinidae	<i>Prionace glauca</i>	(Linnaeus, 1758)	Blue shark	BWS	QMS	NT	NOT	CD, S?O	NZ EEZ
Shark	Carcharhinidae	<i>Triaenodon obesus</i>	(Rüppell, 1837)	Whitetip reef shark	TRB	Non-QMS	VU	VA	TO	NZ EEZ
Shark	Sphyrnidae	<i>Sphyrna zygaena</i>	(Linnaeus, 1758)	Hammerhead shark, smooth hammerhead	HHS	Non-target	VU	NOT	CD, CR, DPS, DPT, TO	NZ EEZ
Batoid	Narkidae	<i>Typhlonarke aysoni</i>	(Hamilton, 1902)	Blind electric ray	TAY	Non-QMS	LC	DD	DPS, DPT	NZ EEZ
Batoid	Torpedinidae	<i>Tetronarce nobiliana</i>	(Bonaparte, 1835)	Electric ray	ERA	Non-QMS	DD	DD	SO	NZ EEZ
Batoid	Torpedinidae	<i>Tetronarce cf. tokionis</i>	(Tanaka, 1908)	Slender electric ray		Non-QMS	NE	DD	DPR, DPS, DPT	NZ EEZ
Batoid	Arhynchobatidae	<i>Arhynchobatis asperimus</i>	Waite, 1909	Longtail skate	LSK	Non-QMS	DD	DD	CR, DPR	NZ EEZ
Batoid	Arhynchobatidae	<i>Bathyraja cf. eatonii</i>	(Günther, 1876)	Antarctic allometric skate	BEA	Non-QMS	NE			Southern Ocean
Batoid	Arhynchobatidae	<i>Bathyraja maccaini</i>	Springer, 1971	McCain's skate	MCS	Non-QMS	LC			Southern Ocean
Batoid	Arhynchobatidae	<i>Bathyraja pacifica</i>	Last, Stewart & Seret, 2016	Pacific blond skate		Non-QMS	LC	NOT	DPR, DPS, DPT	NZ EEZ
Batoid	Arhynchobatidae	<i>Bathyraja richardsoni</i>	(Garrick, 1961)	Richardson's skate	RIS	Non-QMS	LC	NOT	DPS, DPT	NZ EEZ
Batoid	Arhynchobatidae	<i>Bathyraja shuntovi</i>	Dolganov, 1985	Longnose deepsea skate	PSK	Non-QMS	DD	NOT		NZ EEZ
Batoid	Arhynchobatidae	<i>Bathyraja arctowski</i>	(Dollo, 1904)	Antarctic dwarf skate	BHY	Non-QMS	LC			Southern Ocean
Batoid	Arhynchobatidae	<i>Brochiraja albilabiata</i>	Last & McEachran, 2006	Whitemouth skate		Non-QMS	DD	DD		NZ EEZ
Batoid	Arhynchobatidae	<i>Brochiraja asperula</i>	(Garrick & Paul, 1974)	Smooth deepsea skate	BTA	Non-QMS	DD	DD	DPR, DPT	NZ EEZ
Batoid	Arhynchobatidae	<i>Brochiraja heuresa</i>	Last & Seret, 2012	Eureka skate		Non-QMS	DD	DD		NZ EEZ
Batoid	Arhynchobatidae	<i>Brochiraja leviveneta</i>	Last & McEachran, 2006	Blue skate	BRL	Non-QMS	DD	DD	DPT	NZ EEZ
Batoid	Arhynchobatidae	<i>Brochiraja microspinifera</i>	Last & McEachran, 2006	Dwarf skate	BMI	Non-QMS	DD	DD		NZ EEZ

Appendices

Group	Family	Species	Authority	Common name	Code	Management class	IUCN Red List status	NZTCS status	NZTCS qualifier	Location
Batoid	Arhynchobatidae	<i>Brochiraja spinifera</i>	(Garrick & Paul, 1974)	Prickly deepsea skate	BTS	Non-QMS	DD	DD	DPT	NZ EEZ
Batoid	Arhynchobatidae	<i>Brochiraja vittacauda</i>	Last & Seret, 2012	Ribbontail skate		Non-QMS	DD	DD	DPT	NZ EEZ
Batoid	Arhynchobatidae	<i>Notoraja alisae</i>	Seret & Last, 2012	Velcro skate	NAL	Non-QMS	LC	NOT	SO?	NZ EEZ
Batoid	Arhynchobatidae	<i>Notoraja sapphira</i>	Seret & Last, 2009	Sapphire skate		Non-QMS	DD	DD	NS, SO	NZ EEZ
Batoid	Rajidae	<i>Amblyraja georgiana</i>	(Norman, 1938)	Antarctic starry skate	SRR	Non-QMS	DD			Southern Ocean
Batoid	Rajidae	<i>Amblyraja cf. hyperborea</i>	(Collett, 1879)	Deepwater spiny skate	DSK	Non-QMS	LC	NOT	CI, SO	NZ EEZ
Batoid	Rajidae	<i>Dipturus innominatus</i>	(Garrick & Paul, 1974)	Smooth skate	SSK	QMS	LC	NOT	CD	NZ EEZ
Batoid	Rajidae	<i>Zearaja nasuta</i>	(Müller & Henle, 1841)	Rough skate	RSK	QMS	LC	NOT	CD	NZ EEZ
Batoid	Dasyatidae	<i>Bathytoshia brevicaudata</i>	(Hutton, 1875)	Shorttail stingray	BRA	Non-QMS	LC	NOT	CR, DPR, DPT, SO	NZ EEZ
Batoid	Dasyatidae	<i>Bathytoshia lata</i> (previously <i>Dasyatis thetidis</i>)	(Garman, 1880)	Longtail stingray	WRA	Non-QMS	VU	NOT	DPR, DPT, TO	NZ EEZ
Batoid	Dasyatidae	<i>Pteroplatytrygon violacea</i>	(Bonaparte, 1832)	Pelagic stingray	DAS	Non-QMS	LC	DD	SO	NZ EEZ
Batoid	Myliobatidae	<i>Myliobatis tenuicaudatus</i>	Hector, 1877	Eagle ray	EGR	Non-QMS	LC	NOT	CR, DPT, SO	NZ EEZ
Batoid	Mobulidae	<i>Mobula birostris</i>	(Walbaum, 1792)	Manta ray	RMB	Protected	EN	NV	CD, CR, DPS, DPT, TO	NZ EEZ
Batoid	Mobulidae	<i>Mobula mobular</i>	(Bonnaterre, 1788)	Spinetail devil ray	MJA	Protected	CR	DD	CD, CR, DPS, DPT, TO	NZ EEZ