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Australia's report on its exploratory toothfish fishery CMM 14f-2024

Australia

Australian Government
Department of Agriculture, Fisheries and Forestry

ABARES

Update on the Exploratory Toothfish Fishery in the Macquarie Ridge Continuation Research Block

Delegation of Australia

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Acknowledgement of Country

We acknowledge the continuous connection of First Nations Traditional Owners and Custodians to the lands, seas and waters of Australia. We recognise their care for and cultivation of Country. We pay respect to Elders past and present, and recognise their knowledge and contribution to the productivity, innovation and sustainability of Australia's agriculture, fisheries and forestry industries.

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Executive Summary

The Australian Fishing Vessel Antarctic Discovery conducted exploratory fishing in the Macquarie Ridge Continuation Research Block (MR-CRB) from 16-23 August 2024. Seventeen lines of approximately 5,000 hook each were set. A total of 4.68t of toothfish were caught, and the majority of the catch was Patagonian Toothfish (*Dissostichus eleginoides*), with one Antarctic toothfish (*Dissostichus mawsoni*) caught. Twenty-eight Patagonian toothfish were tagged and released (6 tags per tonne). Otolith and length frequency data were collected. No tagged fish were caught.

With the exception of tagged toothfish, no other catch was discarded or released. The major other species caught were hake and grenadiers. There was 19.8 kg of vulnerable marine ecosystems (VME) indicator taxa caught. There were no interactions with marine mammals, marine reptiles, seabirds or other species of concern.

Fishing was conducted in full accordance with Conservation and Management Measure (CMM) for Exploratory Fishing for Toothfish by Australia in the SPRFMO Convention Area (CMM 14f-2024).

1 Introduction

Australia submitted an exploratory fishing application to fish for Toothfish in an area known as the Macquarie Ridge Continuation Research Block (MR-CRB) in the South Pacific Regional Fisheries Management Organisation (SPRFMO) Convention Area, at the eleventh meeting of the SPRFMO Scientific Committee (SC11) in 2023 (SC11-DW03rev3). Fishing occurred immediately prior to the Scientific Committee last year and Australia undertook to report on the results of fishing to the thirteenth meeting of the SRPFMO Scientific Committee (SC13) in 2025.

The Antarctic Discovery conducted exploratory fishing in the MR-CRB from 16-23 August 2024. Fishing occurred at the end of a fishing trip to the adjacent Macquarie Island Toothfish Fishery, within the Australian Economic Exclusive Zone (EEZ). Two observers were on board, achieving 100% observer coverage of fishing operations.

2 Data Collection

Data was collected for all fishing operations as outlined in CMM 14f-2024 and Australia's exploratory fishing application (SC11-DW03_rev3). Two observers were present for the entirety of the trip. Data was collected using the same forms as the Australian commercial toothfish fishery, which are consistent with the forms used for the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) new and exploratory fisheries.

Fishing was undertaken using the autoline method using integrated weighted line, with between 3,960 and 4,980 hooks set per shot.

Observers recorded the following details for each fishing operation

- Set number
- Date and time set start
- Date and time set finish
- Set start location (Decimal minutes)
- Set end location (Decimal minutes)
- Set start depth (m)
- Set end depth (m)
- Bait type
- Mainline length
- Number of Hooks set
- Wildlife observations
- Streamer line details
- Haul number
- Date and time haul start
- Date and time haul finish
- Haul start location (Decimal minutes)
- Haul end location (Decimal minutes)
- Haul start depth (m)
- Haul end depth (m)
- Haul interruption (hours, decimal
- Number of hooks lost attached to line
- Number of hooks lost other
- Length of line lost.
- Wildlife observations

For each observed haul, the following catch details were recorded:

- Haul number
- Species (FAO code)
- Retained Green weight (kg)
- Retained number without tags
- Retained number with tags
- Discarded Green weight (kg)
- Discarded number
- Released alive number with tags
- Released alive number without tags
- Number lost / dropped off at the surface

- Incidental catch alive
- Incidental catch dead or injured
- Evidence of predation
- Conversion factor tests on target species
- Thaw /glaze tests
- IUU gear
- Otolith samples

For tagged fish the following details were recorded:

- Haul number
- Species (FAO code)
- Tag release location (decimal minutes)
- Person tagging (observer/crew)
- First tag number
- Second tag number
- Fish length (mm)
- Released fate (successful / not successful).

Forms to collect tag recoveries recording similar information to the above were provided to observers but not used on this trip as no tagged fish were recaptured. Vulnerable marine ecosystems (VME) data sheets consistent with CCAMLR were also provided to observers to record VME indicator taxa observed in fishing operations.

3 Results

3.1 Catch and effort

3.1.1 Toothfish

A total of 4.68 t of toothfish was caught during fishing operations. Of the toothfish catch, one fish was an Antarctic toothfish and 448 were Patagonian toothfish, of which 28 fish were tagged and released, and 419 was retained. Catch details are included in Table 1 below.

Table 1 Summary of catch and effort details for the exploratory fishing on MR-RBC in 2024

Year	Fishing period	Days fishing	Lines set	Mean line length (m)	Mean hooks per line	Toothfish green weight (kg)
2024	16 -24 August	9	17	6745.59	4818	4646.63*

MR-CRB Macquarie Ridge Continuation Research Block. ***** This figure does not include tagged fish.

3.1.2 Bycatch

A total of 3186.4 kg of bycatch was caught during fishing operations. The most common bycatch species caught were blue antimore, *Antimora rostrata* (ANT) and mixed grenadiers, *Macrourid sp*. (GRV). A complete list of bycatch species recorded by the observer is included in Table 2.

Table 2 Bycatch species, catch (kg) and number caught during the exploratory fishing on MR-CRB in 2024

FAO Code	Scientific name	Catch (kg)	Number
ANT	*Antimora rostrata*	1748.63	1081
AQZ	*Antipatharia*	0.02	1
ATX	*Actiniaria*	0.11	1
CKH	*Coryphaenoides armatus*	48.74	71
CSS	*Scleractinia*	2.28	13
CWD	*Crinoidea*	0.03	1
DMO	Demospongiae	4.23	7
GGW	*Gorgoniidae*	12.74	18
GRV	*Macrourus spp*	921.08	418
HXY	*Hexactinellida*	0.13	2
KCX	*Lithodidae*	2.86	7
LEV	*Lepidion spp*	153.20	22
OPH	*Ophiddiae*	303.03	46
SHL	*Etmopterus spp*	3.42	2
SSX	*Ascidiacae*	0.12	1

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3.2 Biological data and analysis

A total of 590 biological sample of catch, including toothfish and some bycatch species were collected during fishing operations.

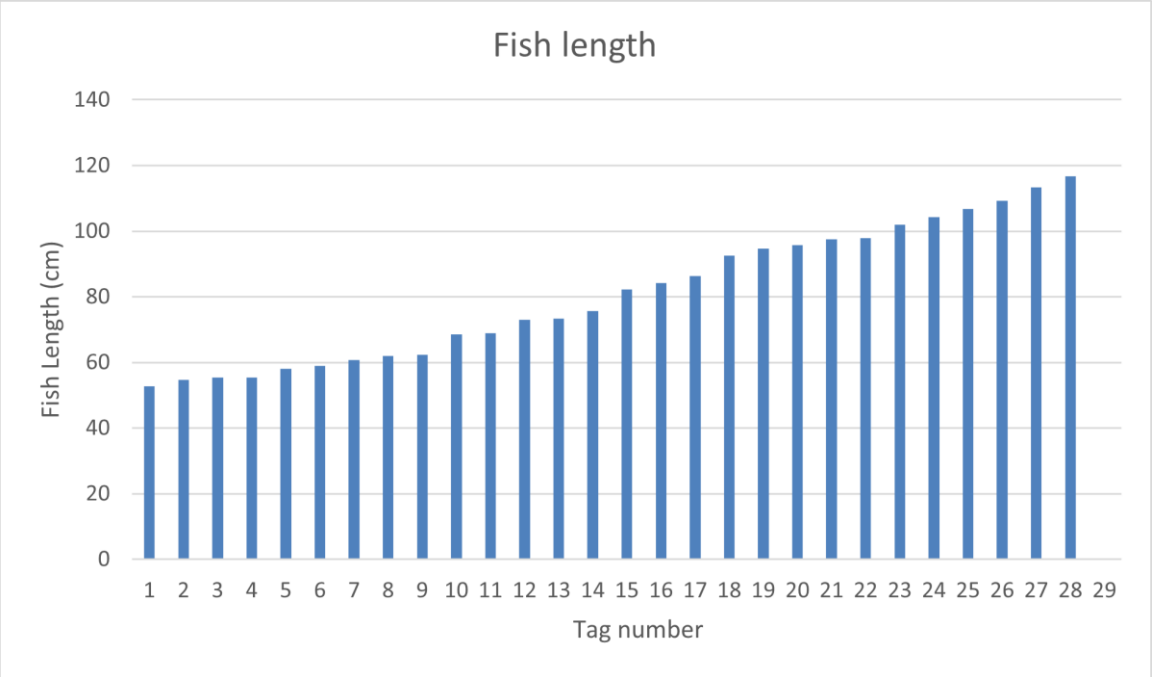
The collected biological data for toothfish and bycatch species has not yet been analysed.

3.2.1 Tagging

A total of 28 Patagonian toothfish were successfully tagged and released from 11 fishing operations, resulting in an overlap statistic of 75.48% being achieved for the voyage, at a rate of 5.6 tags per tonne. There was no tag recaptures recorded during the exploratory fishing.

The lengths of tagged fish ranged between 52.8 cm to 116.8 cm, and lengths of individual tagged fish can be seen in Figure 1.

Figure 1 Lengths of Patagonian toothfish tagged during the exploratory fishing on MR-CRB in 2024



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3.3 Seabirds and Marine Mammals

The vessel used two CCAMLR compliant streamer lines during setting for the duration of the voyage, and these proved effective at deterring seabird feeding activity.

The Brickle curtain consisted of a string of purse seine floats sitting approximately 2 metres out from the vessel, suspended from two booms at deck level above the hauling window. The Brickle curtain was effective at deterring birds from accessing the line being hauled.

There were no interactions with marine mammals, marine reptiles, seabirds or other species of concern, with fishing gear during exploratory fishing in 2024.

There were 38 wildlife observations made by observers in 2024.

3.4 Benthic Habitats and VME

A total of 19.8 kg of VME indicator taxa was caught during exploratory fishing operations in 2024. These weights were accurately recorded by the observers. The most common VME species recoded were soft corals (Family Gorgoniidae) and sponges (Class Demospongiae). No trigger limits were reached.

Table 3 Vulnerable marine ecosystem indicator taxa recorded by observers during the exploratory fishing on MR-CRB in 2024

Set_ID	FAO code	Scientific name	Quantity estimate	Quantity unit (g)
1	GGW	*Gorgoniidae*	4	400
3	DMO	*Demospongiae*	1	100
3	AQZ	*Antipatharia*	1	20
3	CSS	*Scleractinia*	1	370
4	DMO	*Demospongiae*	2	180
4	GGW	*Gorgoniidae*	1	10
4	SSX	*Ascidiacea*	1	120
5	GGW	*Gorgoniidae*	1	20
6	HXY	*Hexactinellida*	2	130
6	GGW	*Gorgoniidae*	7	6860
6	ATX	*Actiniaria*	1	110
7	CSS	*Scleractinia*	1	120
9	GGW	*Gorgoniidae*	1	2420
10	DMO	*Demospongiae*	1	30
10	ATX	*Actiniaria*	1	40
11	DMO	*Demospongiae*	1	20
11	GGW	*Gorgoniidae*	1	190
12	GGW	*Gorgoniidae*	1	10
12	CSS	*Scleractinia*	1	260

13	GGW	*Gorgoniidae*	1	1560
13	CSS	*Scleractinia*	1	310
14	DMO	*Demospongiae*	1	90
14	CSS	*Scleractinia*	1	60
15	CWD	*Crinoidea*	1	30
15	GGW	*Gorgoniidae*	-	1380
15	CSS	*Scleractinia*	-	130
16	DMO	*Demospongiae*	1	3810
16	CSS	*Scleractinia*	7	1000
17	CSS	*Scleractinia*	1	80

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3.5 Conversion factor tests

Conversion factor tests on *Dissostichus spp* were conducted once a week on a randomly selected sample of 25 fish or 200kg of fish (whichever is the greatest), per processing type, method.

Conversion factor tests were conducted on 46 Patagonian toothfish (Table 1), resulting in an observer calculated conversion factor of 1.475.

Table 4 Summary of the fish samples used in the conversion factor tests for the exploratory fishing on MR-CRB in 2024

FAO Code	Scientific name	Processing Code	Number of individuals	Green Weight (kg)	Processed Weight (kg)	Cut Type
TOP	*Dissostichus eleginoides*	HGT	25	246.08	167.8	V cut - hand
TOP	*Dissostichus eleginoides*	HGT	21	205.81	138.56	V cut - hand

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3.6 Otolith collection

There were 78 Patagonian toothfish otolith pairs collected.

4 Discussion

The first year of exploratory fishing in the MR-CRB was relatively successful, although catches were lower than anticipated. Confirming that the vast majority of toothfish in this area are Patagonian toothfish is an important outcome of the first year of exploratory fishing. Very high tag rates of 5.6 tags per tonne were achieved and this should help resolve questions about population size in the area and connectivity to the stock that is fished in the adjacent Australian fishery at Macquarie Island.

Further exploratory fishing is anticipated to occur in 2025, and this fishing should add to the information gained through this initial exploratory fishing.

Glossary

Common and scientific names of species

Common name	Scientific name
Abyssal grenadier	*Coryphaenoides armatus*
Antarctic toothfish	*Dissostichus mawsoni*
Black corals	Order Antipatharia
Blue antimora	*Antimora rostrata*
Feather stars and sea lilies	Order Crinoidea
Glass sponges	Class Hexactinellida
Grenadiers	*Macrourus spp*
Hard/stony corals	Family Scleractinia
King crabs	Family Lithodidae
Lanternfishes	Family Myctophidae
Lanternsharks	*Etmopterus spp*
Lepidion codlings	*Lepidion spp*
Patagonian Toothfish	*Dissostichus eleginoides*
Sea anemone	Family Actiniaria
Sea fans	Order Gorgoniidae
Sea pen	Family Pennatulacea
Sea squirts	Family Ascidiacea
Soft corals	Order Alcyonacea
Sponges	Order Porifera
Starfishes	Order Asteroidea
Hydrozoans	Family Stylasteridae
Toothfishes	*Dissostichus spp.*