Ecological Risk Assessment for Effects of Fishing

Report for the Line Sector of the Coral Sea Fishery

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Ecological Risk Assessment for the Coral Sea Fishery Line Sector

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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1   Summary

The Coral Sea Fishery (CSF) Line Sector is multi-species and multi-gear fishery that has historically targeted a range of species in deep tropical waters, including snappers (Family Lutjanidae), groupers and rockcods (Family Serranidae), trevallies (Family Carangidae), emperors (Family Lethrinidae) and whaler sharks (Family Carcharhinidae).

An Ecological Risk Assessment (ERA) was undertaken for the CSF Line Sector consisting of a level 1 scale, intensity and consequence analysis (SICA). SICA is a comprehensive but qualitative analysis that uses an exposure-effect risk assessment approach to the most vulnerable unit of an ecological component. The assessment was informed by the reported logbook catch and effort data, catch disposal records and observer reports from 2019-20 to 2025–2025, and expert opinion through a stakeholder workshop.

Out of the 32 possible hazards, 22 were identified to have the potential to occur in the CSF Line Sector, including 19 internal and 3 external. All but two fishing hazards were eliminated at Level 1 for all components, which were impacts of fishing (target species, secondary/discard species and protected species components) and direct impacts of fishing without capture (secondary/discard species component only). One external hazard (other anthropogenic activities - climate change) was assessed to have consequence scores of 3 or above for all components (target species, protected species, habitat and community).

Under the ERA process only components assessed in the SICA that have consequence scores of 3 or above for internal fishing activities should be examined at level 2. This is recommended for future work.

Summary table of the consequence scores for the activities that scored a 3 or above for consequences for all components for the Coral Sea Fishery Line Sector.

Direct Impact	Activity	Target Species	Secondary/Discard species	Protected Species	Habitat	Community
Capture	Fishing	3 (2)	3 (2)	3 (1)	2 (1)	2 (2)
Direct Impact without capture	Fishing	2 (2)	3 (2)	2 (1)	2 (1)	2 (1)
External hazards	Other anthropogenic activities	3 (1)	3 (1)	3 (1)	3 (2)	3 (2)

Note: Confidence scores are displayed in brackets, with low = 1 and high = 2. Grey cells indicate activity that scored 3 or above for consequence scores. External hazards are not considered at Level 2.

2   Introduction

2.1   Environmental Risk Assessment

Ecological Risk Assessment for the Effects of Fishing (ERAEF) framework evaluates the risks commercial fisheries may pose to the marine environment. ERAEF was designed to support ecological sustainable development objectives in Commonwealth fisheries and is used by decision makers to develop ecosystem-based management arrangements.

Ecological risk assessments (ERAs) considers the impacts of fishing on five key components of the marine environment, including commercial species, byproduct species and bycatch species, protected species, habitats, and communities. ERAs allows for a broad range of species to assessed under a single framework and for the rapid identification of high and low risk species, as well as those that are data deficient.

The ERA framework involves a hierarchical approach that begins with a scoping stage to establish the context and identify hazards for the fishery that then moves to a comprehensive and qualitative analysis of risk at level 1, and if required through to move a semi-quantitative analysis at level 2, and then to a highly focused and fully quantitative model-based analysis at level 3 (Hobday et al. 2007; Smith et al. 2007).

A high-level summary of these methods are documented in Appendix A of this report.

2.2   Coral Sea Fishery – Line Sector

The Coral Sea Fishery (CSF) is a multispecies, multi-gear fishery targeting a diverse variety of fish, sea cucumbers and crustaceans in the Coral Sea (Keller et al. 2025). The CSF extends from Cape York to Sandy Cape, Queensland (Map 1). It is bounded on the east by the Australian Fishing Zone and on the west by a line 0 to 100 nautical miles east of the eastern boundary of the Great Barrier Reef Marine Park (AFMA 2021).

Fishing methods include hand collection, demersal line, dropline, mechanised handline, rod and reel, and trotline. Since the Coral Sea Marine Park was established, use of traps and trawling is no longer permitted and there are specific gear restrictions for different zones (AFMA 2024). The sectors and fishing permits of the CSF are based on fishing techniques, which are:

- Line Sector (auto-longline, demersal longline, trotlines, droplines, setlines and handlines),

- Sea Cucumber Sector (hand collection),

- Lobster and Trochus Sector (hand collection),

- Aquarium Sector (hand collection, barbless hook and line, scoop, cast and seine nets).

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Map 1 Area fished within the Coral Sea Fishery, 2023–24 fishing season
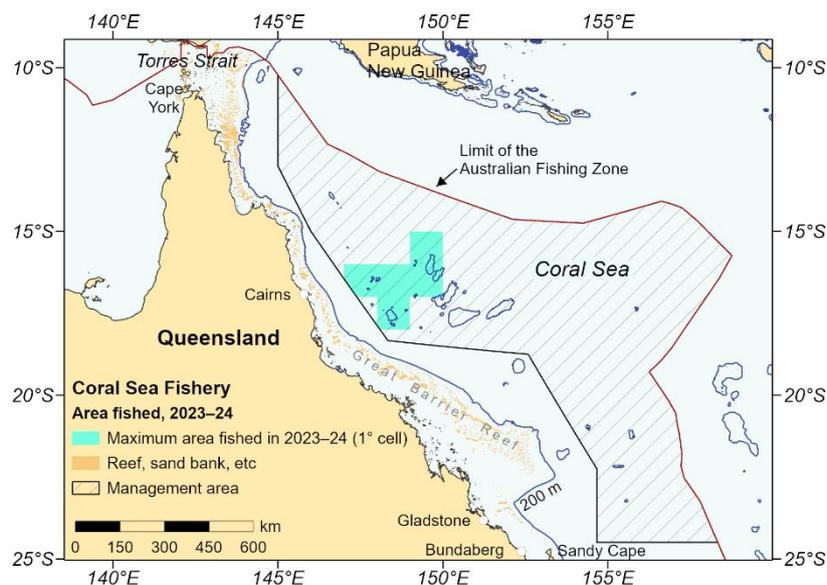
Source: ABARES Fishery Status Report 2025. Note: Effort is across all sectors of the Coral Sea Fishery, including Aquarium, Line and Sea cucumber Sectors.

There are over 250 species caught within the CSF Line Sector. Recently, the CSF Line Sector primarily targets teleosts, including flame snapper, ruby snapper, rosy snapper and bar rock cod. Historically the Line Sector also targeted chondrichthyans (sharks, rays and chimeras), including blacktip sharks, whitetip sharks and gummy sharks. Targeted fishing for chondrichthyans has declined in recent years, including the period following the establishment of the Coral Sea Marine Park in 2018.

Due to the vast number of species retained within this sector, no formal stock assessments have been conducted for these species in the Coral Sea.

The CSF Line Sector harvest strategy uses a variety of catch triggers designed to detect and react to changes in the fishery. These include species composition, catch-per-unit-effort (CPUE) and the spatial distribution of effort (AFMA 2008).

Further details on the general characteristics of the Line Sector can be found in Appendix B, including:

- current management arrangements (S1 General fishery Characteristics),
- units of analysis (S2 Unit of Analysis) for
    - species (target, secondary and discards, and protected species),
    - habitats, and
    - communities' components
- objectives of the fishery (S3 Identification of Objectives)
- hazard identification (S4 Hazard Identification).

2.2.1 Previous ERAs

The previous ERAs for the CSF Line Sector were completed in 2007 for the auto longline sub-fishery (Furlani et al. 2007a), demersal longline sub-fishery (Furlani et al. 2007b), and other line sub-fishery (Furlani et al. 2007c).

Across the three sub-fisheries, no ecological components (target species, bycatch/byproduct, protected species, habitat and community) were eliminated at the Level 1, and there was at least one risk score of moderate or above (Furlani et al. 2007a; Furlani et al. 2007b; Furlani et al. 2007c).

For the 2007 auto-longline fishery sub-fishery ERA, most hazards (fishing activities) were eliminated at Level 1 with risks scores of minor or below (Furlani et al. 2007a). The hazards that remained were fishing capture (impact on all components), fishing without capture (impact on habitat component), gear loss without capture (impact on target, bycatch/byproduct, protected species), translocation of species (impact on all components), provisioning (impact on protected species), and gear loss impact through addition of non-biological material (impact on target, bycatch/byproduct and protected species). One significant external hazard was included, which was other fisheries in the region (impact on habitat and community components) (Furlani et al. 2007a).

For the 2007 demersal longline sub-fishery ERA, most hazards (fishing activities) were eliminated at Level 1 with risks scores of minor or below (Furlani et al. 2007b). The hazards that remained were fishing capture (impact on all components), fishing without capture (impact on habitat component), translocation of species (impact on all components), and disturbing of physical process from fishing activities (impact on habitat component). One significant external hazard was included, which was other anthropogenic activities (impact on habitat component) (Furlani et al. 2007b).

For the 2007 other line sub-fishery ERA, most hazards (fishing activities) were eliminated at Level 1 with risks scores of minor or below (Furlani et al. 2007c). The hazards that remained were fishing capture (impact on all components), fishing without capture (impact on habitat component), translocation of species (impact on all components), and discarding catch (impact on bycatch/byproduct and protected species). Significant external hazards included other fisheries in the region (impact on target, bycatch/byproduct, habitat and community components) and other anthropogenic activities (impact on habitat component) (Furlani et al. 2007c).

A level 2 equivalent ERA, using a qualitative risk analysis methodology, was completed for CSF ETP and chondrichthyan species in 2009. This ERA found that marine turtles and bathyl, pelagic, reef and shelf sharks were high risk species for line fishing in the CSF.

2.2.2 Current ERA

The current wildlife trade operation (WTO) approval for the Coral Sea Fishery includes a condition requiring Australian Fisheries Management Authority (AFMA) to undertake and publish a risk assessment for the CSF Line Sector by 31 January 2026.

Since the introduction of the Coral Sea Marine Park in 2018, the primary line method has been demersal longlines (auto-longline and demersal longline; 97% of effort in no. hooks), followed dropline (3%). ABARES have undertaken an updated ERA for all line methods (auto-longline, demersal longline and other line) to evaluate the Line Sector as whole, and this report presents the findings of this work.

The scoping document required for the SICA was prepared by AFMA and provided to ABARES for this analysis. The scoping document is attached at Appendix B.

3 Results

The results presented below are for the combined methods (auto longline, demersal longline and other line) of the Line Sector of the Coral Sea Fishery for the level 1 SICA analysis only. The data assessed for this report includes the five most previous years where there was fishing effort (2019–20 to 2024–25). There was no fishing effort for the fishery in 2023–24. This time period captures the period following the introduction of the Coral Sea Marine Park, which resulted in influential zoning changes for the Line Sector.

Out of the 22 possible internal fishing hazards within the CSF Line Sector, 19 were identified to have the potential to occur in the fishery and were assessed with the SICA methodology. Three of the 6 external activities were identified for the sector.

A total of 32 activity-component scenarios were considered at level 1 (Appendix B – S4 Hazard Identification). This resulted in 110 total scenarios (of 160 possible) that were evaluated using the component lists for species, habitats and communities.

3.1 Species Component
3.1.1 Target species

Target species are considered as a species or group of species whose capture is the goal of a fishery, sub-fishery, or fishing operation.

There are over 250 species reported to be caught (including discarded species) within the CSF Line Sector from AFMA logbook catch, catch disposal records (CDR), and observer catch composition data. Due to various factors in the CSF Line Sector, including high levels of latency and annual inconsistency of vessels, operators and gear used, it can be difficult to distinguish the recent key target species from secondary/byproduct species. For the Line Sector, a species was considered to be a target species if the total catch was higher than 1 tonne (t) between 2015–16 to 2024–25 fishing seasons and based on logbook, CDR and observer data. Eleven target species also have some discards recorded.

A total of 17 target species across all line methods (auto-longline, demersal longline, other line) were identified by AFMA in the scoping documents (Appendix B S2: Ecological Unit of Analysis – Target, byproduct and discard species). For the SICA, the data assessed for this report include the five most recent years where there was fishing effort (2019–20 to 2024–25) (Table 1). There was no fishing effort for the fishery in 2023–24.

Of the 17 identified target species caught within the CSF Line Sector, the following were considered most vulnerable to identified fishing activities and assessed (Table 2):

- Flame snapper, *Etelis coruscans*

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Table 1 Reported landed catch (tonnes) for the target species in the CSF Line Sector for the five previous fishing seasons with fishing effort

Name	Scientific name	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25*
Flame Snapper	*Etelis coruscans*	22.84	16.55	3.43	7.21	--	0.22
Long Tail Rubies/Snapper	*Etelis spp*	1.68	0.84	--	--	--	--
Bar Rockcod	*Epinephelus ergastularius & E. septemfasciatus*	0.71	0.29	0.12	0.62	--	1.79
Ruby Snapper	*Etelis carbunculus*	0.01	0.04	0.44	1.60	--	0.73
Ornate Jobfish	*Pristipomoides argyrogrammicus*	0.82	0.50	0.15	0.44	--	--
Amberjack	*Seriola dumerili*	0.35	0.38	0.04	0.82	--	--
Blue-eye Trevalla	*Hyperoglyphe antarctica*	--	--	0.28	1.24	--	0.05
Sharks (mixed)	*Sharks - other*	--	--	--	--	--	0.89
Rosy Snapper	*Pristipomoides filamentosus*	0.08	0.35	0.18	0.13	--	0.07
Saddleback Snapper	*Paracaesio kusakarii*	--	0.05	--	0.03	--	--
Rusty Jobfish	*Aphareus rutilans*	--	--	0.03	--	--	--
Paddletail Seabream	*Gymnocranius euanus*	--	--	--	0.01	--	--
Comet Grouper	*Epinephelus morrhua*	--	--	--	0.02	--	--
Whitetip Reef Shark	*Triaenodon obesus*	--	--	0.03	0.21	--	--
Blacktip sharks (mixed)	*Carcharhinus, Loxodon & Rhizoprionodon spp*	--	--	0.08	0.12	--	--

Note: Not all the identified target species were recorded in the catch disposal records (CDRs) during the time period. ***** CDR records for 2024-25 are incomplete. Dashes indicate no reported catch. **Source:** AFMA 2025**.**

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Table 2 SICA results for the Target Species Component for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
Capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	3	3	2	**Hazard**: Capture of organisms due to actual fishing. Since the last ERA and across all methods, the largest catch in recent years have been of flame snapper, peaking at 50 t in 2016/17 and declining to less than 4 t in 2022-23. Flame snapper is considered to be slow growing and late maturing. In 2022-23 AFMA catch trigger report, the flame snapper was triggered under the CPUE trigger, as the flame snapper CPUE declined greater than 50 % over 3 years. Decline in the CPUE is more likely due to varied/low effort (changes in fishing grounds, distance to fishing grounds, weather events etc), rather than reduced stock levels. There was no fishing effort in 2023-24 and only fishing effort for dropline in 2024-25. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scales, or severe at local scale due to localised fishing on particular sites as fishing ground is limited in the CSF. **Consequence**: May be moderate. **Confidence**: High based on logbook/CDR/observer catch reports.	I
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing is not permitted or may occur rarely.	--
Direct impact without capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	3	2	2	**Hazard**: Direct impact without capture is likely, not all fish hooked are retrieved, may fall off hook, or be eaten while on the hook. Observer reports target species bitten or jerked off the line. Unknown post-release mortality for species that bite off/escape gear. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Moderate at broader spatial scales, or severe at local scale due to localised fishing on particular sites as fishing ground is limited in the CSF. **Consequence:** Minor with minimal impact on stock. **Confidence:** High based on observer reports.	I
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing is not permitted or may occur rarely.	I

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Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Gear loss	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	2	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals e.g. entanglement, take the hooks that interfere with future feeding. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Minor at broader spatial scales, or moderate at local scale due to localised fishing on particular sites as fishing ground is limited in the CSF. **Consequence:** Minor at broader spatial scales, or moderate at local scale. **Confidence:** High with gear loss reports from observer reports.	--
	Anchoring/ mooring	1	4	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	1	1	1	**Hazard**: Possible damage to animals, benthic habitats, and corals where anchor drops. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	1	1	2	**Hazard**: Steaming/navigation between fishing grounds may result in collisions (e.g. pelagic species). Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment, which both can affect the behaviour of fish. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: High, with research into the effects.	I
Addition/ movement of biological material	Translocation of species	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	1	1	1	**Hazard**: Could occur incidentally via boat hulls or use of imported bait (squid), involving introduced species, movement of species or introduced pathogens from coastal areas into the Coral Sea Fishery area. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	On board processing	1	5	3	Population size	Flame snapper (*Etelis coruscans)*)	1.1	2	2	1	**Hazard**: All fish must be landed whole or gilled, headed and gutted, with special conditions for sharks and rays. Offal and offcuts would be discharged when appropriate (not while hauling or setting gear). Offal/offcuts may attract higher level predators (e.g. sharks) to the area, higher number of sharks in the area may impact fish populations and number of fish taken by sharks. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Minimal impact on stock. **Confidence**: Low.	--

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Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Discarding catch	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	2	2	2	**Hazard**: Target and byproduct species are occasionally discarded, with bycatch species always discarded. Commercial fish are damaged by sharks are discarded. Discarding may attract higher level predators (e.g. large sharks) to the area, increase the chance of depredation, may impact fish populations and number of target species taken by sharks. For the identified target species, logbook records show only sharks (mixed) and ray's bream recorded as discarded between 2018-2019 and 2024-25. Majority of sharks not identified to species level. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at broader spatial scales, or moderate at local scale due to localised fishing on particular sites as fishing ground is limited in the CSF. **Consequence**: Minimal impact at broader scale, moderate at local scale, noting low reports of discards in observer reports. **Confidence**: High with discard reports from logbook and observer reports. Limited EM data available.	--
	Stock enhancement	0	--	--	--	--	--	--	--	--	Does not occur.	--
	Provisioning	0	--	--	--	--	--	--	--	--	Does not occur.	I
	Organic waste disposal	1	5	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	1	1	2	**Hazard**: Disposal of organic wastes, offal and catch may occur while at sea. MARPOL guidelines apply. Organic waste may attract sharks and impact behaviour. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Negligible - impact unlikely to be detectable at any scale. **Confidence**: High, regulated through MARPOL.	I
Addition of non-biological material	Debris	0	--	--	--	--	--	--	--	--	Rubbish not thrown overboard. MARPOL guidelines apply.	--
	Chemical pollution	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	1	1	2	**Hazard**: Oil spills, anti-fouling chemicals, MARPOL guidelines apply. Dishwashing liquids, shampoos etc. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: High, regulated through MARPOL.	I
	Exhaust	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	1	1	1	**Hazard**: Exhaust of diesel and other engines. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible.	I

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Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											Consequence: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	
	Gear loss	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	2	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at broader spatial scale or locally moderate. **Consequence**: Minor at broader scale with minimal impact on stock or moderate at local scale. **Confidence**: High confidence with gear loss reports from observer data	--
	Navigation/ steaming	1	5	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	1	1	1	**Hazard**: Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Activity/ presence on water	1	5	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	2	1	1	**Hazard**: The activity of the vessels will introduce noise and visual stimuli into the environment. May interact with wildlife such as dolphins riding bow wave, birds settling on boat. Lights at night may have an impact on bird life, likely minimal. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at broader scale or moderate at local scale. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	I
Disturb physical processes	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	2	2	1	**Hazard**: Fishing may disturb seabed sediments and structure by lines and weights coming into contact with benthos. Demersal fishing along the benthos may alter fish movement patterns. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at broader spatial scale or locally moderate. **Consequence**: Likely minor at broader scale or moderate at localised scale due to limited fishing locations in the CSF. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Boat launching	1	4	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*);	6.1	1	1	1	**Hazard**: Vessels in fishery come from designated ports that are outside the Coral Sea Fishery. Within the CSF, tenders may be launched from motherships. **Scale**: Occurs at	I

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Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	
	Anchoring/ mooring	1	4	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*);	6.1	2	1	1	**Hazard**: Anchoring may affect the processes where anchors and chains contact the seafloor. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at localised scale. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	2	1	2	**Hazard**: Navigation/steaming may affect the physical processes on the benthos and the pelagic by turbulent action of propellers or wake formation, however, impact is considered negligible. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: High, research into effects.	I
External hazards	Other fisheries	1	5	3	Population size	Flame snapper (*Etelis coruscans*)	1.1	3	2	2	**Hazard**: Other CSF Sectors (Sea Cucumbers, Lobster & Trochus, and Aquarium) and recreational fishing. Other fisheries are either inactive or subject to low levels of effort and overlap. Large predators such sharks may be targeted by recreational fishing in the Coral Sea. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scale or locally severe. **Consequence**: Likely minor. **Confidence**: High with overlap with other CSF fisheries, low, with no or little data to confirm or refute this for rec fishing.	E
	Aquaculture	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Coastal development	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Other extractive activities	0	--	--	--	--	--	--	--	--	At present, no current petroleum permits exist and no new leases have been granted for the CSF area.	--
	Other non-extractive activities	1	5	3	Behaviour/ movement	Flame snapper (*Etelis coruscans*)	6.1	1	1	1	**Hazard**: Commercial shipping common throughout the region. **Scale**: Potential area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely	E

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											Negligible. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	
	Other anthropogenic activities	1	6	6	Population size	Flame snapper (*Etelis coruscans*)	6.1	3	3	1	**Hazard**: Fishery covers a large area wide range of uses and so activities like commercial tourism (e.g. scuba diving charters) and recreational fishing activity may cause impacts in the same region. Otherwise too far offshore for overlap with the majority of other anthropogenic activities. Anthropogenic activities that increase the risk and impact climate change, which may increase biological, non-biological and physical disturbance factors. Climate change resulting in marine heatwaves and severe weather events (e.g. cyclones), impacting habitat and ecological processes. **Scale**: Potential area 500-1000 nm, 100-200 days per year. **Intensity**: Likely moderate, potential severe for localised effects. **Consequence**: Likely moderate potential severe for localised effects. **Confidence**: Low, uncertain of the impacts on the target species.	E

3.1.2 Secondary and discard (bycatch/byproduct) species

In the ERAEF method, the part of the target or bycatch that is discarded is included in the assessment of the target or byproduct species. Byproduct refers to any part of the catch that is kept or sold by fishers, but which is not a target species. Bycatch as defined in the Commonwealth Bycatch Policy refers to:

- The part of a fisher's catch which is returned to the sea either because it has no commercial value or because regulations preclude it being retained; and

- The part of the catch that does not reach the deck but is affected by interaction with the fishing gear.

Due to the method of determining a target species in Coral Sea Line Sector, the term 'byproduct' has not been used in this fishery and instead species are classified as target, secondary or discards. A species is considered to be a 'secondary species' if the catch was mostly retained but the total catch was less than 1 t, otherwise were considered discarded. All species that were classified as either secondary or discarded were assessed under the bycatch/byproduct component of the SICA methodology for the 2019–20 to 2024–25 fishing seasons.

A total of 144 secondary and 94 discard species across all line methods (auto-longline, demersal longline, other line) were identified by AFMA in the scoping documents (Appendix B S2: Ecological Unit of Analysis – Target, byproduct and discard species).

Of the total of 238 identified secondary and discarded species caught within the CSF Line Sector, the following were considered most vulnerable to identified fishing activities and assessed (Table 2):

- Imperador, *Beryx decadactylus*

- Whaler sharks, Family Carcharhinidae

- Dogfishes, Family Squalidae

Table 3 SICA results for the secondary and discard species Component for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
Capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Population size	Imperador (*Beryx decadactylus*) Whaler sharks (Family Carcharhinidae) Dogfishes (Family Squalidae)	1.1	3	3	2	**Hazard**: Capture of organisms due to actual fishing. Imperador is the highest secondary species reported for fishery over the time period in the CDRs, followed by whitetip reef shark. Bronze whaler sharks were second highest retained species in logbooks. However, this species doesn't occur in the Coral Sea and more likely dusky shark (*Carcharhinus obscurus*, endangered) - instead assessed whaler shark species as group. Dogfishes reported as highest discarded species in the logbooks during the time period, may include species like Harrison's dogfish. **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Moderate at broader spatial scales, or severe at local scale. **Consequence:** May be moderate. **Confidence:** High based on logbooks retained and discards.	--
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	--
Direct impact without capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Population size	Dogfishes (Family Squalidae)	1.1	3	3	2	**Hazard**: Direct impact without capture is likely, not all fish hooked are retrieved, may fall off hook, or be eaten while on the hook. Observer reports secondary and discard species bitten or jerked off the line. Also includes discarding. Dogfishes reported as highest discarded species in the logbooks during the time period, may include species like Harrison's dogfish. **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Moderate at broader spatial scales, or severe at local scale. **Consequence:** May be moderate. **Confidence:** Low, due to uncertainty in the species identification in logbooks.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	I
	Gear loss	1	5	3	Population size	Whaler sharks (Family Carcharhinidae)	1.1	2	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals e.g. entanglement, take the hooks that interfere with future feeding. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Minor at broader spatial scales, or moderate but local. **Consequence:** Minor. **Confidence:** High with gear loss reports from observer reports.	--
	Anchoring/ mooring	1	4	3	Behaviour/ movement	Imperador (*Beryx decadactylus*) Dogfishes (Family Squalidae)	6.1	1	1	1	**Hazard**: Possible damage to animals, benthic habitats, and corals where anchor drops at approximately 40 – 60 meters around the reef. **Scale:** Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely negligible. **Consequence:** Likely negligible. **Confidence:** Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	1	1	1	**Hazard**: Steaming/navigation between fishing grounds may result in collisions (e.g. pelagic species). Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment, which both can affect the behaviour of fish. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
Addition/ movement of biological material	Translocation of species	1	5	3	Population size	Imperador (*Beryx decadactylus*)	1.1	1	1	1	**Hazard**: Could occur incidentally via boat hulls or use of imported bait (squid), involving introduced species, movement of species or introduced pathogens from coastal areas into the Coral Sea Fishery area. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	On board processing	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	2	2	1	**Hazard**: All fish must be landed whole or gilled, headed and gutted, with special conditions for sharks and rays. Offal and offcuts would be discharged when appropriate (not while hauling or setting gear). Offal/offcuts may attract higher level predators (e.g. sharks) to the area, higher number of	--

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											sharks in the area may impact fish populations and number of fish taken by sharks. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Minimal. **Confidence**: Low, with no or little data to confirm or refute this.	
	Discarding catch	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	2	2	2	**Hazard**: Target and byproduct species are occasionally discarded, with bycatch species always discarded. Commercial fish are damaged by sharks are discarded. Discarding may attract higher level predators (e.g. large sharks) to the area, increase the chance of depredation, may impact fish populations and number of target species taken by sharks. For the identified secondary and discard species, logbook records show dogfishes (mixed) as highest discarded species between 2018-2019 and 2024-25. Majority of sharks not identified to species level. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at broader scales, or moderate at local scale. **Consequence**: Minimal impact, low reports of discards in observer reports. **Confidence**: High with discard reports from logbook and observer reports. Limited EM data available.	--
	Stock enhancement	0	--	--	--	--	--	--	--	--	Does not occur.	--
	Provisioning	0	--	--	--	--	--	--	--	--	Does not occur.	I
	Organic waste disposal	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	1	1	2	**Hazard**: Disposal of organic wastes, offal and catch may occur while at sea. MARPOL guidelines apply. Organic waste may attract sharks and impact behaviour. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: High, regulated through MARPOL.	I
Addition of non-biological material	Debris	0	--	--	--	--	--	--	--	--	Rubbish not thrown overboard. MARPOL guidelines apply.	--
	Chemical pollution	1	5	3	Population size	Dogfishes (Family Squalidae)	1.1	1	1	2	**Hazard**: Oil spills, anti-fouling chemicals, MARPOL guidelines apply. Dishwashing liquids, shampoos etc. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											negligible. **Consequence**: Likely negligible. **Confidence**: High, regulated through MARPOL.	
	Exhaust	1	5	3	Population size	Whaler sharks (Family Carcharhinidae)	1.1	1	1	1	**Hazard**: Exhaust of diesel and other engines. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Gear loss	1	5	3	Population size	Whaler sharks (Family Carcharhinidae)	1.1	2	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at broader spatial scale or moderate severe. **Consequence**: Minor with minimal impact on stock. **Confidence**: High confidence with gear loss reports from observer data.	--
	Navigation/ steaming	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	1	1	1	**Hazard**: Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Activity/ presence on water	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	2	1	1	**Hazard**: The activity of the vessels will introduce noise and visual stimuli into the environment. May interact with wildlife such as dolphins riding bow wave, birds settling on boat. Lights at night may have an impact on bird life, likely minimal. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	I
Disturb physical processes	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Behaviour/ movement	Dogfishes (Family Squalidae)	6.1	2	2	1	**Hazard**: Fishing may disturb seabed sediments and structure by lines and weights coming into contact with benthos. Demersal fishing along the benthos may alter fish movement patterns. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days).	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											Intensity: Minor at broader spatial scale or locally moderate. **Consequence**: Likely minor. **Confidence**: Low, with no or little data to confirm or refute this.	
	Boat launching	1	4	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	2	1	1	**Hazard**: Vessels in fishery come from designated ports that are outside the Coral Sea Fishery. Within the CSF, tenders may be launched from motherships. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Anchoring/ mooring	1	4	3	Behaviour/ movement	Imperador (*Beryx decadactylus*) Dogfishes (Family Squalidae)	6.1	2	1	1	**Hazard**: Anchoring may affect the processes where anchors and chains contact the seafloor. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	2	1	2	**Hazard**: Navigation/steaming may affect the physical processes on the benthos and the pelagic by turbulent action of propellers or wake formation, however, impact is considered negligible. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Minor. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: High, research into effects.	I
External hazards	Other fisheries	1	5	3	Population size	Whaler sharks (Family Carcharhinidae)	1.1	3	2	2	**Hazard**: Other CSF Sectors (Sea Cucumbers, Lobster & Trochus, and Aquarium) and recreational fishing. Other fisheries are either inactive or subject to low levels of effort. Large predators such sharks may be targeted by recreational fishing in the Coral Seas. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scale or severe at local scale. **Consequence**: Likely minor. **Confidence**: High for other CSF fisheries; Low, with no or little data to confirm or refute this for rec fishing.	E
	Aquaculture	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Coastal development	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Other extractive activities	0	--	--	--	--	--	--	--	--	At present, no current petroleum permits exist, and no new leases have been granted for the CSF area.	--
	Other non-extractive activities	1	5	3	Behaviour/ movement	Whaler sharks (Family Carcharhinidae)	6.1	1	1	1	**Hazard**: Commercial shipping common throughout the region. **Scale**: Potential area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	E
	Other anthropogenic activities	1	6	6	Population size	Dogfishes (Family Squalidae)	6.1	3	3	1	**Hazard**: Fishery covers a large area wide range of uses and so activities like commercial tourism (e.g. scuba diving charters) and recreational fishing activity may cause impacts in the same region. Otherwise too far offshore for overlap with the majority of other anthropogenic activities. Anthropogenic activities that increase the risk and impact climate change, which may increase biological, non-biological and physical disturbance factors. Climate change resulting in marine heatwaves and severe weather events (e.g. cyclones), impacting habitat and ecological processes. **Scale**: Potential impact area over 1000 nm, 300-365 days per year. **Intensity**: Likely moderate, potential severe for localised effects. **Consequence**: Likely moderate potential severe for localised effects. **Confidence**: Low	E

3.1.3 Protected species

Species that are listed as Endangered, Threatened, or Protected (ETP) under the Environmental Protection and Biodiversity Conservation Act (EPBC Act). ETP species are often poorly reported by fisheries due to the low frequency of direct interaction. Both direct (capture) and indirect (e.g. food source captured) interactions are considered in the ERAEF approach.

For each fishery, the list of ETP species is compiled by reviewing all available fishery literature. Species considered to have potential to interact with fishery (based on geographic range & proven/perceived susceptibility to the fishing gear/methods and examples from other similar fisheries across the globe) are included.

For further information, see CSF Line Sector Scoping Document (S2: Ecological Unit of Analysis – ETP Species Component; AFMA 2025).

Of the 167 ETP species identified for the Line Sector, the following species were considered the most vulnerable by certain fishing activities and hazards, and therefore assessed in the SICA were (Table 4):

- Oceanic whitetip shark (*Carcharhinus longimanus*)
- Terns (Family Laridae) and Shearwaters (Family Procellariidae)
- Harrison's dogfish (*Centrophorus harrissoni*)
- Hawksbill turtle (*Eretmochelys imbricata*)
- Oceanic manta ray (*Mobula birostris*)

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Table 4 SICA results for the Protected species Component for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
Capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Population size	Oceanic whitetip shark (*Carcharhinus longimanus*)	1.1	3	3	1	**Hazard**: Capture of organisms due to actual fishing. Previous retained catch and discards of scalloped hammerhead sharks in the fishery historically. Oceanic whitetip sharks historically recorded in fishery, and any catch of this species may be detrimental to population (DCCEEW, 2019). **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scales, or severe at local scale. **Consequence**: May be moderate**. Confidence**: Low due to uncertainty in species identification in logbooks retained and discards.	--
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	--
Direct impact without capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Interaction with fishery	Oceanic whitetip shark (*Carcharhinus longimanus*)	7.1	3	2	1	**Hazard**: Direct impact without capture is likely, not all fish hooked are retrieved, may fall off hook, or be eaten while on the hook. Observer reports secondary and discard species bitten or jerked off the line. Unknown post-release mortality for species that bite off/escape gear. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scales, or severe but local. **Consequence**: May be moderate at localised scale or minor at broader scale. **Confidence**: Low due to uncertainty in species identification in logbooks retained and discards.	I
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	I
	Gear loss	1	5	3	Population size	Oceanic whitetip shark (*Carcharhinus longimanus*)	1.1	3	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals e.g. entanglement, take the hooks that interfere with future feeding. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scales, or severe at local scale. **Consequence**: Likely minor. **Confidence**: High with gear loss reports from observer reports.	--

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Anchoring/ mooring	1	4	3	Behaviour/ movement	Harrison's dogfish (*Centrophorus harrissoni*)	6.1	1	1	1	**Hazard**: Possible damage to animals, benthic habitats, and corals where anchor drops. Anchoring may impact/disturb turtle behaviour. **Scale:** Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely negligible. **Consequence:** Likely negligible. **Confidence:** Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Behaviour/ movement	Oceanic manta ray (*Mobula birostris*)	6.1	2	1	2	**Hazard**: Steaming/navigation between fishing grounds may result in collisions (e.g. pelagic species). Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment, which both can affect the behaviour of species. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor. **Consequence**: Likely negligible with impact unlikely to be detectable. **Confidence**: High, with research into effects.	I
Addition/ movement of biological material	Translocation of species	1	5	3	Population size	Hawksbill turtle (*Eretmochelys imbricata*)	1.1	1	1	1	**Hazard**: Could occur incidentally via boat hulls or use of imported bait (squid), involving introduced species, movement of species or introduced pathogens from coastal areas into the Coral Sea Fishery area. Turtles may consume imported bait. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	On board processing	1	5	3	Behaviour/ movement	Terns (Family Laridae) & Shearwaters (Family Procellariidae)	6.1	2	2	1	**Hazard**: All fish must be landed whole or gilled, headed and gutted, with special conditions for sharks and rays. Offal and offcuts would be discharged when appropriate (not while hauling or setting gear). Offal/offcuts may attract higher level predators (e.g. sharks) to the area, higher number of sharks in the area may impact fish populations and number of fish taken by sharks. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Minimal impact on stock. **Confidence**: Low, with no or little data to confirm or refute this.	--
	Discarding catch	1	5	3	Behaviour/ movement	Oceanic whitetip shark (*Carcharhinus longimanus*)	6.1	2	2	2	**Hazard**: Target and byproduct species are occasionally discarded, with bycatch species always discarded. Commercial fish are damaged by sharks are discarded. Discarding may attract higher level predators (e.g. large sharks) to the area, increase the chance of depredation, may impact fish populations and shark behaviour. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58	--

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											days). **Intensity**: Minor at broader scales, or moderate at local scale. **Consequence**: Minimal impact, low reports of discards in observer reports. **Confidence**: High with discard reports from logbook and observer reports. Limited EM data available.	
	Stock enhancement	0	--	--	--	--	--	--	--	--	Does not occur.	--
	Provisioning	0	--	--	--	--	--	--	--	--	Does not occur.	I
	Organic waste disposal	1	5	3	Behaviour/movement	Terns (Family Laridae) & Shearwaters (Family Procellariidae)	6.1	2	2	2	**Hazard**: Disposal of organic wastes, offal and catch may occur while at sea. MARPOL guidelines apply. Organic waste may attract sea birds and impact behaviour. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Minor. **Confidence**: High, regulated through MARPOL.	I
Addition of non-biological material	Debris	0	--	--	--	--	--	--	--	--	Rubbish not thrown overboard. MARPOL guidelines apply.	--
	Chemical pollution	1	5	3	Population size	Hawksbill turtle (*Eretmochelys imbricata*)	1.1	1	1	2	**Hazard**: Oil spills, anti-fouling chemicals, MARPOL guidelines apply. Dishwashing liquids, shampoos etc. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: High, regulated through MARPOL.	I
	Exhaust	1	5	3	Interaction with fishery	Terns (Family Laridae) & Shearwaters (Family Procellariidae)	7.2	1	1	1	**Hazard**: Exhaust of diesel and other engines. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Gear loss	1	5	3	Interaction with fishery	Oceanic whitetip shark (*Carcharhinus longimanus*)	7.2	3	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor at broader spatial scale or locally moderate. **Consequence**: Minor with minimal impact on stock. **Confidence**: High confidence with gear loss reports from observer data.	--

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Navigation/ steaming	1	5	3	Behaviour/ movement	Oceanic manta ray (Mobula birostris)	6.1	1	1	1	**Hazard**: Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Activity/ presence on water	1	5	3	Behaviour/ movement	Terns (Family Laridae) & Shearwaters (Family Procellariidae)	6.1	2	1	1	**Hazard**: The activity of the vessels will introduce noise and visual stimuli into the environment. May interact with wildlife such as dolphins riding bow wave, birds settling on boat. Lights at night may have an impact on bird life, likely minimal. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	I
Disturb physical processes	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Behaviour/ movement	Harrison's dogfish (*Centrophorus harrissoni*)	7.1	3	2	1	**Hazard**: Fishing may disturb seabed sediments and structure by lines and weights coming into contact with benthos. Demersal fishing along the benthos may alter species movement patterns. Wedgefishes reported in historical catch, plausible that fishing operations may impact physical processes and impact behaviour. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scale or locally severe. **Consequence**: Likely minor. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Boat launching	1	4	3	Interaction with fishery	Hawksbill turtle (*Eretmochelys imbricata*)	7.1	2	1	1	**Hazard**: Vessels in fishery come from designated ports that are outside the Coral Sea Fishery. Within the CSF, tenders may be launched from motherships. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Likely negligible and impact unlikely to be detectable **Confidence**: Low, with no or little data to confirm or refute this.	I
	Anchoring/ mooring	1	4	3	Behaviour/ movement	Harrison's dogfish (*Centrophorus harrissoni*)	6.1	2	1	1	**Hazard**: Anchoring may affect the processes where anchors and chains contact the seafloor. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Navigation/ steaming	1	5	3	Behaviour/ movement	Oceanic manta ray (*Mobula birostris*)	6.1	2	1	2	**Hazard**: Navigation/steaming may affect the physical processes on the benthos and the pelagic by turbulent action of propellers or wake formation, however, impact is considered negligible. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Minor. **Consequence:** Likely negligible. **Confidence**: High, research into effects.	I
External hazards	Other fisheries	1	5	3	Behaviour/ movement	Terns (Family Laridae) & Shearwaters (Family Procellariidae)	6.1	3	2	1	**Hazard**: Other CSF Sectors (Sea Cucumbers, Lobster & Trochus, and Aquarium) and recreational fishing. Other fisheries are either inactive or subject to low levels of effort. Large predators such sharks may be targeted by recreational fishing in the Coral Seas. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at broader spatial scale or locally severe. **Consequence**: Likely minor. **Confidence**: Low, with no or little data to confirm or refute this for rec fishing.	E
	Aquaculture	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Coastal development	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Other extractive activities	0	--	--	--	--	--	--	--	--	At present, no current petroleum permits exist, and no new leases have been granted for the CSF area.	--
	Other non-extractive activities	1	5	3	Behaviour/ movement	Terns (Family Laridae) & Shearwaters (Family Procellariidae)	6.1	1	1	1	**Hazard**: Commercial shipping common throughout the region. **Scale**: Potential area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible and impact unlikely to be detectable. **Confidence**: Low, with no or little data to confirm or refute this.	E
	Other anthropogenic activities	1	6	6	Population size	Harrison's dogfish (*Centrophorus harrissoni*)	1.1	3	3	1	**Hazard**: Fishery covers a large area wide range of uses and so activities like commercial tourism (e.g. scuba diving charters) and recreational fishing activity may cause impacts in the same region. Otherwise too far offshore for overlap with the majority of other anthropogenic activities. Anthropogenic activities that increase the risk and impact climate change, which may increase biological, non-biological and physical disturbance factors. Climate change resulting in marine heatwaves and severe weather events (e.g. cyclones), impacting habitat and ecological processes. **Scale**: Potential impact area over 1000 nm, 300-365 days per year. **Intensity**: Likely	E

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											moderate, potential severe for localised effects. **Consequence**: Likely moderate potential severe for localised effects. **Confidence**: Low.	

3.2   Habitat Component

The risk assessment for the habitats includes demersal and pelagic habitats. Demersal or benthic habitats considers both the seafloor structure and its attached invertebrate fauna, such as corals. Pelagic habitat considers the water column that overlies the demersal habitat.

Habitat data used for assessment of the Coral Sea Fishery sectors were largely derived from geophysical and fishery data from a list of potential habitat types for the fishery, and is considered precautionary (Hobday et al, 2007).

A total of 264 benthic habitats and 4 pelagic habitats were identified to exist within the extent of the CSF Line Sector. For further information, see CSF Line Sector Scoping Document (Appendix 2 – S2: Ecological Unit of Analysis – Habitat Component).

Of the benthic habitats, the following were considered the most vulnerable by certain fishing activities and therefore assessed in the SICA were (Table 3):

- Slabs and boulders, low outcrop, octocoral for upper slope depths (200 – 700 m)
- Igneous rock (?), high outcrop, mixed faunal community
- Fine sediments, unrippled, mixed faunal community, inner shelf depths
- Rock/ biogenic matrix, low outcrop, mixed faunal community, inner shelf
- Fine sediments, unrippled, bioturbators

Of the pelagic habitats, the following were considered the most vulnerable by certain fishing activities and therefore assessed in the SICA were (Table 3):

- Northeastern pelagic province – plateau (0 – 600 m);
- Northeastern pelagic – seamount (0 – 600 m)

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Table 5 SICA results for the Habitat Component for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
Capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Habitat structure and function	Slabs and boulders, low outcrop, octocoral for upper slope depths (200 – 700 m)	5.1	2	2	1	**Hazard**: Capture of organisms due to actual fishing. Fishing on upper slope depths between 251 and 450 m, with an average fishing depth of 338 m (SD: 90 m; depth range: 50 - 507 m). Scoping document reports that longline doesn't touch the benthos but there are studies on the impact demersal longline gear can have an impact on benthic habitats. Benthic habitat (including stony corals) and fauna attached to the habitat (e.g. otocorals) may come in contact with gear during setting, retrieving and in high currents and may get damaged or removed. There are historical observer reports of stony corals in demersal longline catch for the CSF Line sector – 12 kg in total. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at local scales, particularly if sites are repeated fished - limits ability to recovery from fishing impact. **Consequence**: Minor at broader scale or moderate at localised scale - deepwater habitats are less productive and have slower recovery times. **Confidence**: Low, recovery times for deepwater tropical habitats unknown.	I
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	--
Direct impact without capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Habitat structure and function	Slabs and boulders, low outcrop, octocoral for upper slope depths (200 – 700 m)	5.1	2	2	1	**Hazard**: Direct impact without capture is likely, not all fish hooked are retrieved, may fall off hook, or be eaten while on the hook. Longlining is unlikely to impact benthic habitats and animals as the gear does not contact seafloor. There are studies on the impact demersal longline gear can have an impact on benthic habitats. Benthic habitat (including stony corals) and fauna attached to the habitat (e.g. otocorals) may come in contact with gear during setting, retrieving and in high currents and may get damaged or removed. There are historical observer reports of stony corals in demersal longline catch for the CSF Line sector -- 12kg in total. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Moderate at local scales, particularly if sites are repeated fished - limits ability to recovery from fishing impact. **Consequence**: Minor at broach scale or moderate at localised scale - deepwater habitats are less	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
											productive and have slower recovery times. **Confidence**: Low, recovery times for deepwater tropical habitats unknown.	
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	I
	Gear loss	1	5	3	Habitat structure and function	Igneous rock (?), high outcrop, mixed faunal community	5.1	2	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor, occurs in few restricted locations and detectability rare. **Consequence**: Likely minor, minimal impact on habitat structure or dynamics when occurs. **Confidence**: : High with gear loss reports from observer reports.	--
	Anchoring/ mooring	1	4	3	Habitat structure and function	Fine sediments, unrippled, mixed faunal community, inner shelf depths	5.1	2	2	1	**Hazard**: Possible damage to animals, benthic habitats, and corals where anchor drops. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor, occurs in few restricted locations and detectability rare. **Consequence**: Likely minor, minimal impact on habitat structure or dynamics when occurs. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Habitat structure and function	Northeastern pelagic province - oceanic (0 – 600 m)	5.1	1	1	2	**Hazard**: Steaming/navigation between fishing grounds may result in collisions (e.g. seabirds or whales vessel interactions). **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: High, research into effects.	I
Addition/ movement of biological material	Translocation of species	1	5	3	Habitat structure and function	Rock/ biogenic matrix, low outcrop, mixed faunal community, inner shelf	5.1	1	1	1	**Hazard**: Could occur incidentally via boat hulls or use of imported bait. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	I
	On board processing	1	5	3	Water quality	Northeastern pelagic province - plateau (0 – 600	1.1	1	1	1	**Hazard**: All fish must be landed whole or gilled, headed and gutted, with special conditions for sharks and rays. Offal and offcuts would be discharged when appropriate (not while hauling or setting gear). **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days	--

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
						m); Northeastern pelagic - seamount (0-600 m)					per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	
	Discarding catch	1	5	3	Water quality	Northeastern pelagic province - plateau (0 – 600 m); Northeastern pelagic - seamount (0-600 m)	1.1	1	1	1	**Hazard**: Target and byproduct species are occasionally discarded, with bycatch species always discarded. Commercial fish are damaged by sharks are discarded. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	--
	Stock enhancement	0	--	--	--	--	--	--	--	--	Does not occur.	--
	Provisioning	0	--	--	--	--	--	--	--	--	Does not occur.	I
	Organic waste disposal	1	5	3	Water quality	Northeastern pelagic province - plateau (0 – 600 m); Northeastern pelagic - seamount (0-600 m)	1.1	1	1	2	**Hazard**: Disposal of organic wastes, offal and catch may occur while at sea. MARPOL guidelines apply. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: High, regulated through MARPOL.	I
Addition of non-biological material	Debris	0	--	--	--	--	--	--	--	--	Rubbish not thrown overboard. MARPOL guidelines apply.	--
	Chemical pollution	1	5	3	Water quality	Northeastern pelagic province - plateau (0 – 600 m); Northeastern	1.1	1	1	2	**Hazard**: Oil spills, anti-fouling chemicals, MARPOL guidelines apply. Dishwashing liquids, shampoos etc. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: High, regulated through MARPOL.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
						pelagic - seamount (0-600 m)						
	Exhaust	1	5	3	Water quality	Northeastern pelagic province - plateau (0 – 600 m); Northeastern pelagic - seamount (0-600 m)	1.1	1	1	1	**Hazard**: Exhaust of diesel and other engines. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Gear loss	1	5	3	Habitat structure and function	Igneous rock (?), high outcrop, mixed faunal community, upper slope	5.1	2	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor, occurs in few restricted locations and detectability rare. **Consequence**: Likely minor, minimal impact on habitat structure or dynamics when occurs. **Confidence**: : High with gear loss reports from observer reports.	--
	Navigation/ steaming	1	5	3	Water quality	Northeastern pelagic province - plateau (0 – 600 m); Northeastern pelagic - seamount (0-600 m)	1.1	1	1	2	**Hazard**: Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: High, research into effects.	I
	Activity/ presence on water	1	5	3	Habitat structure and function	Northeastern pelagic province - plateau (0 – 600 m); Northeastern pelagic -	5.1	1	1	1	**Hazard**: The activity of the vessels will introduce noise and visual stimuli into the environment. May interact with wildlife such as dolphins riding bow wave, birds settling on boat. Lights at night may have an impact on bird life, likely minimal. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
						seamount (0 – 600 m)					**Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	
Disturb physical processes	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Substrate quality	Fine sediments, unrippled, bioturbators	3.1	2	2	1	**Hazard**: Fishing may disturb seabed sediments and structure by lines and weights coming into contact with benthos. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor, occurs in few restricted locations and detectability rare. **Consequence**: Likely minor, minimal impact on habitat structure or dynamics when occurs. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Boat launching	1	4	3	Water quality	Northeastern pelagic province - plateau (0 – 600 m); Northeastern pelagic - seamount (0-600 m)	1.1	1	1	1	**Hazard**: Vessels in fishery come from designated ports that are outside the Coral Sea Fishery. Within the CSF, tenders may be launched from motherships. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Anchoring/ mooring	1	4	3	Substrate quality	Fine sediments, unrippled, mixed faunal community, inner shelf depths	3.1	1	1	1	**Hazard**: Anchoring may affect the processes where anchors and chains contact the seafloor. frequent use of anchoring locations may impact habitat and coral structure and alter functions and ecological processes. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Water quality	Northeastern pelagic province - plateau (0 – 600 m); Northeastern pelagic -	1.1	1	1	2	**Hazard**: Navigation/steaming may affect the physical processes on the benthos and the pelagic by turbulent action of propellers or wake formation, however, impact is considered negligible. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: High, research into effects.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
						seamount (0-600 m)						
External hazards	Other fisheries	1	5	3	Habitat structure and function	Rock/ biogenic matrix, low outcrop, mixed faunal community, upper shelf depths	5.1	1	1	2	**Hazard**: Other CSF Sectors (Sea Cucumbers, Lobster & Trochus, and Aquarium) and recreational fishing. Other fisheries are either inactive or subject to low levels of effort. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: High for other CSF sectors; Low, with no or little data to confirm or refute this for rec fishing.	E
	Aquaculture	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Coastal development	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Other extractive activities	0	--	--	--	--	--	--	--	--	At present, no current petroleum permits exist, and no new leases have been granted for the CSF area	--
	Other non-extractive activities	1	5	3	Water quality	Northeastern Pelagic Province - Oceanic (0 – 600 m)	1.1	1	1	1	**Hazard**: Commercial shipping common throughout the region. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible, remote likelihood of detection at any spatial or temporal scale. **Consequence**: Likely negligible, impact unlikely to be detectable at the scale of habitat. **Confidence**: Low, with no or little data to confirm or refute this.	E
	Other anthropogenic activities	1	6	6	Habitat structure and function	Slabs and boulders, low outcrop, octocoral for upper slope depths (200 – 700 m)	5.1	3	3	2	**Hazard**: Fishery covers a large area wide range of uses and so activities like commercial tourism (e.g. scuba diving charters) and recreational fishing activity may cause impacts in the same region. Otherwise too far offshore for overlap with the majority of other anthropogenic activities. Anthropogenic activities that increase the risk and impact climate change, which may increase biological, non-biological and physical disturbance factors. Climate change resulting in marine heatwaves and severe weather events (e.g. cyclones), impacting habitat and ecological processes. **Scale**: Potential impact area over 1000 nm, 300-365 days per year. **Intensity**: Likely moderate, potential severe for localised effects. **Consequence**: Likely moderate potential severe for localised effects. **Confidence**: High.	E

3.3   Community Component

In the ERAEF context, communities on the Australian and sub-Antarctic islands continental shelves and slopes were defined as the species assemblage that occupy the large-scale provinces and biomes generally identified by the bio-regionalisation projects (Map 2). Community biota are classified as all mobile fauna, vertebrate or invertebrate, but not including sessile organisms such as coral that are largely structural and therefore classified as habitat.

The spatial boundaries for demersal communities are based on Integrated Marine and Coastal Regionalisation of Australia (IMCRA 3.0) boundaries for the shelf, and on slope bioregionalisations for the slope (IMCRA 1998; Last et al. 2005). The spatial boundaries for the pelagic communities are based on pelagic bioregionalisations and on oceanography (Condie et al. 2003; Lyne and Hayes 2004).

Map 2 Australian marine demersal communities and pelagic provinces based on the Integrated Marine And Coastal Regionalisation of Australia.
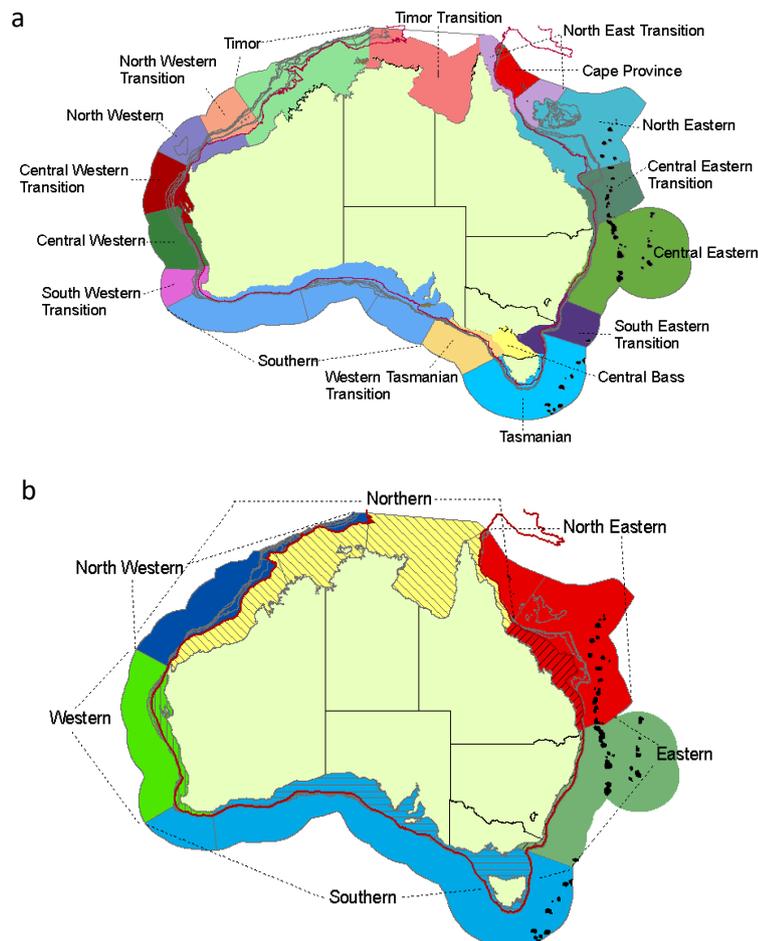
Note: For the (a) demersal communities around mainland Australia based on bioregionalisation schema, some inshore (0-110 m) communities comprise more than one community. For the (b) Australian pelagic provinces, the hatched areas indicate coastal epipelagic zones overlying the shelf. Offshore (oceanic) provinces comprise two or more overlaying pelagic zones. Seamounts (black) and plateaux (light green) are illustrated in the provinces. **Source**: Hobday et al. (2007).

The same community lists are used for all fisheries, and those communities with spatial overlaps with effort in the fishery are selected as relevant for the analysis. The spatial boundaries to identify relevant communities also include depth. The depth range of the effort in the CSF Line Sector varies depending on the gear type. Dropline (depth range: 11 – 1550 m) and demersal longline methods (depth range: 8 – 1200 m) are usually set deeper than hand line (both hand operated and mechanised; combined depth range: 15 – 650 m) and trotlines (depth range: 28 – 450 m).

There has been an update to the IMCRA boundaries (IMCRA 4.0), which includes changes to the demersal communities (DEH, 2006). However, due to time constraints, the demersal communities that were assessed in this SICA were determined using the IMCRC v3.0.

A total of 12 demersal communities across two provinces (northeastern transition and central eastern transition) were identified for the areas where fishing activity occurs in the CSF Line Sector (Map 2a; Table 6). Of these 12 demersal communities, the following were considered the most vulnerable by certain fishing activities and hazards, and therefore assessed in the SICA were:

- Northeastern plateau 250 – 565 m

- Northeastern seamount 250 – 565 m

- Eastern central transition seamount 250 – 565 m

A total of five pelagic communities in the northeastern transition province were identified for the areas where fishing activity occurs in the CSF Line Sector, including one province (oceanic 1, 0 – 600 m) where only navigation and no fishing effort occurs (Map 2a; Table 6). Of these 5 pelagic communities, the following were considered the most vulnerable by certain fishing activities and hazards, and therefore assessed in the SICA were:

- Northeastern plateau (1) 0 – 600m

- Northeastern seamount (1) 0 – 600m

- Northeastern oceanic (1) 0 – 600 m

There were no listed threatened ecological communities in the CSF area. For further information, see CSF Line Sector Scoping Document (S2: Ecological Unit of Analysis – Community Component; AFMA 2025).

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Table 6 SICA results for the Community Component for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
Capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Species composition	Demersal - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	1.1	3	2	2	**Hazard**: Capture of organisms due to actual fishing. Fishing effort and gear over the past 5 years has been primarily demersal longline (longline and autolongline), with some dropline fishing effort in 2019-20 and 2024-25. During the assessment time period, effort occurs mostly between 251 and 450 m, with an average fishing depth of 338m (SD: 90m; depth range: 50 - 507 m). Fishing occurs in two areas - seamounts and plateaus. Effort is highly variable and declining in recent years for both demersal longline and dropline since 2017. Fishing effort looks at mostly on the seamounts and plateau. **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Minor at broader spatial scales, or moderate at local**. Consequence:** May be moderate. **Confidence:** High based on logbook records.	I
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	--
Direct impact without capture	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Species composition	Demersal - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	1.1	2	2	1	**Hazard**: Direct impact without capture is likely, not all fish hooked are retrieved, may fall off hook, or be eaten while on the hook. Longlining is unlikely to impact benthic habitats and animals as the gear does not contact seafloor. Effort decreasing in recent years. Species escaping from fishing gear unlikely to impact species composition. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor at local scales. **Consequence**: May be moderate. **Confidence**: Low.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Incidental behaviour	0	--	--	--	--	--	--	--	--	No activities that result in capture while not fishing. Recreational fishing not permitted or may occur rarely.	I
	Gear loss	1	5	3	Species composition	Demersal - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	1.1	1	1	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats. **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely negligible with remote likelihood of detection at spatial and temporal scale. **Consequence:** Likely negligible**. Confidence:** : High with gear loss reports from observer reports.	--
	Anchoring/ mooring	1	4	3	Species composition	Pelagic - Northeastern plateau (1) 0-600 m; Northeastern seamount (1) 0 - 110 m;	1.1	1	1	1	**Hazard**: Possible damage to animals, benthic habitats, and corals where anchor drops. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely minor on localised scale. **Consequence:** Likely negligible. **Confidence:** Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Species composition	Pelagic - Oceanic (1) 0 - 600 m	1.1	1	1	2	**Hazard**: Steaming/navigation between fishing grounds may result in collisions (e.g. seabirds or whales vessel interactions). **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely minor on localised scale. **Consequence:** Likely negligible**. Confidence:** High, with research into the effects.	I
Addition/ movement of biological material	Translocation of species	1	5	3	Species composition	Demersal - Northeastern plateau 250 - 565 m;	1.1	1	2	1	**Hazard**: Could occur incidentally via boat hulls or use of imported bait. Possible translocation of pathogens could affect species composition of the reef community via hull fouling, ballast water, imported bait. **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely minor on localised	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
						Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m					scale. **Consequence:** Likely minor. **Confidence:** Low, with no or little data to confirm or refute this.	
	On board processing	1	5	3	Distribution of the community	Demersal - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	3.1	2	1	1	**Hazard:** All fish must be landed whole or gilled, headed and gutted, with special conditions for sharks and rays. Offal and offcuts would be discharged when appropriate (not while hauling or setting gear). Waste expected to attract species to the vessel and to be taken quickly by opportunistic scavengers either at the surface or sink to the benthos. **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely minor. **Consequence:** Likely negligible. **Confidence:** Low, with no or little data to confirm or refute this.	--
	Discarding catch	1	5	3	Species composition	Demersal - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	1.1	1	1	1	**Hazard:** Target and byproduct species are occasionally discarded, with bycatch species always discarded. Commercial fish are damaged by sharks are discarded. Discarded catch expected to attract species to the vessel and to be taken quickly by opportunistic scavengers either at the surface or sink to the benthos and scavenged by benthos species. **Scale:** Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity:** Likely negligible on community scale. **Consequence:** Likely negligible. **Confidence:** Low, with no or little data to confirm or refute this.	--

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
	Stock enhancement	0	--	--	--	--	--	--	--	--	Does not occur.	--
	Provisioning	0	--	--	--	--	--	--	--	--	Does not occur.	I
	Organic waste disposal	1	5	3	Distribution of the community	**Demersal** - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	3.1	1	1	2	**Hazard**: Disposal of organic wastes, offal and catch may occur while at sea and attract species to the vessel and temporarily alter local community and abundance. MARPOL guidelines apply. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: High, regulated through MARPOL.	I
Addition of non-biological material	Debris	0	--	--	--	--	--	--	--	--	Rubbish not thrown overboard. MARPOL guidelines apply.	--
	Chemical pollution	1	5	3	Species composition	**Pelagic** - Northeastern plateau (1) 0-600 m; Northeastern seamount (1) 0 - 110 m;	1.1	1	1	2	**Hazard**: Oil spills, anti-fouling chemicals, MARPOL guidelines apply. Dishwashing liquids, shampoos etc. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: High, regulated through MARPOL.	I
	Exhaust	1	5	3	Species composition	**Pelagic** - Northeastern plateau (1) 0-600 m;	1.1	1	1	1	**Hazard**: Exhaust of diesel and other engines. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
						Northeastern seamount (1) 0 - 110 m;						
	Gear loss	1	5	3	Species composition	Demersal - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	1.1	2	2	2	**Hazard**: Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor at local scales. **Consequence**: May be moderate. **Confidence**: : High with gear loss reports from observer reports.	--
	Navigation/ steaming	1	5	3	Species composition	**Pelagic** - Oceanic (1) 0 - 600 m	1.1	1	1	1	**Hazard**: Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Activity/ presence on water	1	5	3	Species composition	**Pelagic** - Oceanic (1) 0 - 600 m	1.1	2	1	1	**Hazard**: The activity of the vessels will introduce noise and visual stimuli into the environment. May interact with wildlife such as dolphins riding bow wave, birds settling on boat. Lights at night may have an impact on bird life, likely minimal. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
Disturb physical processes	Bait collection	0	--	--	--	--	--	--	--	--	Bait is purchased rather than collected.	--
	Fishing	1	5	3	Species composition	**Demersal** - Northeastern	1.1	2	2	1	**Hazard**: Fishing may disturb seabed sediments and structure by lines and weights coming into contact with benthos. Effort highly variable. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
						plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m					minor or moderate at localised scale. **Consequence**: Likely minor. **Confidence**: Low, with no or little data to confirm or refute this.	
	Boat launching	1	4	3	Distribution of the community	**Pelagic** - Northeastern plateau (1) 0-600 m; Northeastern seamount (1) 0 - 110 m;	3.1	1	1	1	**Hazard**: Vessels in fishery come from designated ports that are outside the Coral Sea Fishery. Within the CSF, tenders may be launched from motherships. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely negligible. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Anchoring/ mooring	1	4	3	Species composition	**Pelagic** - Northeastern plateau (1) 0-600 m; Northeastern seamount (1) 0 - 110 m;	1.1	2	1	1	**Hazard**: Anchoring may affect the processes where anchors and chains contact the seafloor. **Scale**: Occurs at lower spatial scale, 100-500 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor at local scale. **Consequence**: Likely negligible. **Confidence**: Low, with no or little data to confirm or refute this.	I
	Navigation/ steaming	1	5	3	Species composition	**Pelagic** - Oceanic (1) 0 - 600 m	1.1	2	1	2	**Hazard**: Navigation/steaming may affect the physical processes on the benthos and the pelagic by turbulent action of propellers or wake formation, however, impact is considered negligible. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely minor. **Consequence**: Likely negligible. **Confidence**: High, research into effects.	I

Ecological Risk Assessment for the Coral Sea Fishery Line Sector

Direct impact of Fishing	Fishing Activity	Hazard (1/0)	Spatial scale (1-6)	Temporal scale (1-6)	Sub-component	Unit of analysis	Objective	Intensity Score (1-6)	Consequence (1-6)	Confidence (1-2)	Rationale	Internal/External
External hazards	Other fisheries	1	5	3	Species composition	Pelagic - Northeastern plateau (1) 0-600 m; Northeastern seamount (1) 0 - 110 m;	1.1	2	2	2	**Hazard**: Other CSF Sectors (Sea Cucumbers, Lobster & Trochus, and Aquarium) and recreational fishing. Other commercial fisheries are either inactive or subject to low levels of effort and interact with communities at depths around 0-110 m. Recreational fishing more likely to overlap with fishing effort in the Line Sector - unknown level of effort for rec fishing. **Scale**: Potential fishing area 500-1000 nm, 1 - 100 days per year (trip length range: 12-58 days). **Intensity**: Likely moderate or severe at localised scale **Consequence**: Likely minor due to the low effort of other fisheries in the area. **Confidence**: High for other CSF sectors; Low, with no or little data to confirm or refute this for rec fishing.	E
	Aquaculture	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Coastal development	0	--	--	--	--	--	--	--	--	Fishery is located offshore and not impacted.	--
	Other extractive activities	0	--	--	--	--	--	--	--	--	At present, no current petroleum permits exist, and no new leases have been granted for the CSF area.	--
	Other non-extractive activities	1	5	5	Species composition	Pelagic - Oceanic (1) 0 - 600 m	1.1	2	2	1	**Hazard**: Commercial shipping common throughout the region. **Scale**: Potential fishing area 500-1000 nm, 200-300 days per year. **Intensity**: Likely minor. **Consequence**: Likely minor. **Confidence**: Low, with no or little data to confirm or refute this.	E
	Other anthropogenic activities	1	6	6	Species composition	Demersal - Northeastern plateau 250 - 565 m; Northeastern seamount 250-565 m; Central eastern transition seamounts 250-565 m	1.1	3	3	2	**Hazard**: Fishery covers a large area wide range of uses and so activities like commercial tourism (e.g. scuba diving charters) and recreational fishing activity may cause impacts in the same region. Otherwise too far offshore for overlap with the majority of other anthropogenic activities. Anthropogenic activities that increase the risk and impact climate change, which may increase biological, non-biological and physical disturbance factors. Climate change resulting in marine heatwaves and severe weather events (e.g. cyclones), impacting communities, species composition and supporting habitats. **Scale**: Potential impact area over 1000 nm, 300-365 days per year. **Intensity:** Likely moderate, potential severe for localised effects**. Consequence:** Likely moderate potential severe for localised effects. **Confidence:** High**.**	E

3.4 Stakeholder workshop

SICA relies on expert judgement and stakeholder input to evaluate the risk to ecological components resulting from the stakeholder-agreed set of activities.

A stakeholder workshop was held in person on Wednesday 3rd December 2025 to discuss and provide feedback on the SICA analysis conducted by ABARES (Table 1). In attendance were representatives from ABARES, DCCEEW, AFMA, CSF Industry and fisheries scientists (Appendix C).

The workshop participants discussed and provided feedback on the draft results of the SICA that was conducted by ABARES. This included providing feedback on the species, habitat and community components of the SICA that are initially compiled by the AFMA and the selection of the most vulnerable unit of ecological component by ABARES, and input on the draft scale and intensity scores and overall ranking, including appropriate rationale.

Table 7 Level 1 SICA summary table of the stakeholder involvement regarding CSF Line Sector.

ERA Stage	Date	Format received	Stakeholders	Summary of outcome
Scoping	Sep 2025	Email	AFMA; ABARES	Provision of scoping document to ABARES
SICA	Nov 2025	Email	AFMA; Workshop participants	ABARES draft report for comment
	Dec 2025	In person workshop	Workshop participants	Review and discussion of SICA results
	Jan 2025	Email	AFMA	ABARES final draft report for comment

3.5 Summary of the SICA results

In summary, for the target species, protected species, habitat and community components, only an external activity scored 3 or higher for the consequence scores (Table 8).

Table 8 Summary table of the consequence scores for all components for the Coral Sea Fishery Line Sector and highlighting activities that scored a 3 or above.

Direct impact	Activity	Target Species	Secondary/Discard species	Protected Species	Habitat	Community
Capture	Bait collection	--	--	--	--	--
	Fishing	**3 (2)**	**3 (2)**	**3 (1)**	2 (1)	2 (2)
	Incidental behaviour	--	--	--	--	--
Direct impact without capture	Bait collection	--	--	--	--	--
	Fishing	2 (2)	**3 (2)**	2 (1)	2 (1)	2 (1)
	Incidental behaviour	--	--	--	--	--
	Gear loss	2 (2)	2 (2)	2 (2)	2 (2)	1 (2)
	Anchoring/ mooring	1 (1)	1 (1)	1 (1)	2 (1)	1 (1)
	Navigation/ steaming	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)
Addition/ movement of biological material	Translocation of species	1 (1)	1 (1)	1 (1)	1 (1)	2 (1)
	On board processing	2 (1)	2 (1)	2 (1)	1 (1)	1 (1)
	Discarding catch	2 (2)	2 (2)	2 (2)	1 (1)	1 (1)
	Stock enhancement	--	--	--	--	--
	Provisioning	--	--	--	--	--
	Organic waste disposal	1 (2)	1 (2)	2 (2)	1 (2)	1 (2)
Addition of non-biological material	Debris	--	--	--	--	--
	Chemical pollution	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)
	Exhaust	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
	Gear loss	2 (2)	2 (2)	2 (2)	2 (1)	2 (2)
	Navigation/ steaming	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
	Activity/ presence on water	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
Disturb physical processes	Bait collection	--	--	--	--	--
	Fishing	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
	Boat launching	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
	Anchoring/ mooring	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
	Navigation/ steaming	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)
External hazards	Other fisheries	2 (2)	2 (2)	2 (1)	1 (2)	2 (2)
	Aquaculture	--	--	--	--	--
	Coastal development	--	--	--	--	--
	Other extractive activities	--	--	--	--	--
	Other non-extractive activities	1 (1)	1 (1)	1 (1)	1 (1)	2 (1)
	Other anthropogenic activities	**3 (1)**	**3 (1)**	**3 (2)**	**3 (2)**	**3 (2)**

Note: Confidence scores are displayed in brackets, with low = 1 and high = 2. Grey cells with bold text indicate activity that scored 3 or above for consequence scores. External hazards are not considered at Level 2.

4 Discussion and recommendations

4.1 General discussion

Out of the 32 possible hazards, 22 were identified to have the potential to occur in the CSF Line Sector, including 19 internal and 3 external.

All five components assessed in the Level 1 analysis contained at least two moderate consequence scores and therefore found to significant hazard to the components. The hazards (fishing activities) involved are:

- Fishing capture (target, secondary/discard species and protected species)

- Fishing without capture (secondary/discard species)

- Other anthropogenic activities for climate change (all five components)

4.1.1 Target species, secondary and discard species component

The direct impact of capture from fishing was identified as a medium risk to target and secondary species within the CSF Line Sector.

Historically, the CSF Line Sector has primarily targeted shark species, and the fishery has now shifted to targeting various deepwater snapper species, with sharks considered a secondary or discard species. The lack of defined target species over time results in difficulties observing or inferring trends in catch or biomass over time. In addition, there are no stock assessments conducted for any species within the CSF Line Sector.

The changes in fishing practises and target species has been attributed the annual inconsistency of vessels and gear used, and high levels of latency, rather than stock declines. However, without stock assessments for the fishery, it is difficult to confirm. Furthermore, fishing areas and reduction in effort have also been influenced by a recent restructure of the CSF with the implementation of the Coral Sea Marine Park in 2018. The reduction in effort, and the reduction in areas available to be fished as a result of the Marine Park has resulted in the decline of the spatial scale assessed in this ERA, compared to previous assessments.

Whilst low effort and relative remoteness may offer some protection to deepwater fisheries resources in the CSF Line Sector, localised overexploitation of many stocks is still considered a potential risk. This is due to current concentration of automatic demersal longline effort on a small number of relatively small seamounts and plateaus, while dropline fishing may occur at a larger spatial scale. It will be important to monitor any increases in fishing effort and pressure on these areas to avoid localised depletion.

Many secondary and discard species, as well as some target species are reported to genus or family level in logbooks and in some cases in CDRs. Dogfishes as a family grouping were reported as highest discarded species in the logbooks during the assessment period. This is concerning as it may include catches of Harrison's dogfish, which are listed as Conservation Dependent under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). Harrison's dogfish distribution includes

parts of the CSF, and it is possible they are being caught and reported as dogfishes. To understand and assess the impact of fishing and potential localised depletion for target, secondary and discard species, future catch, discards and effort reporting for the fishery logbook should be conducted to species level.

4.1.2   Protected species component

The direct impact of capture from fishing was identified as a risk to ETP species within the CSF Line Sector, particularly for scalloped hammerhead sharks and oceanic whitetip sharks due to historical levels of catch.

Logbook reported catches of scalloped hammerhead sharks peaked in 2005–06 (12.4 t) and have since declined to 33 kg in 2013-14 and catch of this species has not been reported since. Both scalloped hammerhead shark and oceanic whitetip shark have been assessed as Critically Endangered by the International Union for Conservation of Nature (IUCN) Red List of Threatened Species due to substantial declines in populations from fishing pressure (Rigby et al. 2019a; Rigby et al. 2019b). The impact of the historical fishing pressure by the CSF Line Sector on both species is unknown, but given the life history (slow growth, late maturing) and susceptibility to fishing pressure, population declines are likely. Any further catch or interaction with these species may be detrimental to the population (DCCEWW, 2019).

Species identification of shark species in both logbooks and CDRs is an issue, with operators misidentifying species and/or reporting to genus or family level grouping. For example, landed catch of oceanic whitetip shark was reported in 2024-25, despite the species being a no-take species under the CSF permit conditions. Upon investigation, it was identified that this CDR record was misreported and corrected to whitetip reef shark. The workshop discussed shark species identification and AFMA has created a shark species identification guide that can be used for the fishers and CDR operators.

In regard to the seabird interactions in the fishery, none has been reported to date. Seabird deterrents such as tori lines, are a requirement for automatic longline fishing in the CSF Line Sector.

4.1.3   Habitat component

The impact of direct fishing activities from the CSF Line Sector represented a minor risk to habitats, with the exception of climate change as an external hazard to the fishery. Deepwater demersal longline and dropline fishing has been found to have a minor impact on benthic communities, including vulnerable marine ecosystems (VME) due low bycatch and in situ damages, compared to other demersal fishing methods (Kilpatrick et al. 2011; Pham et al. 2014; SPRFMO 2023).

The overall minor scores accounts for several factors that moderate risk, particularly the current low effort as well as management and mitigation measures applied to vessels in the CSF Line Sector. The management measures include limits on the amount of fishable area available and ongoing monitoring and compliance. In addition, there was no reported interactions or catch of VMEs, including coral bycatch, during the assessment period for the CSF Line Sector.

However, there is potential for localised damage due to repeated fishing within the same area, which would reduce the ability of habitat communities to recover. Regeneration times for deepwater

habitat structures are thought to be relatively long, and specific information for tropical waters is not available. Any increase in effort may increase the impact of fishing on habitats.

4.1.4   Community component

For the community component, the impact of direct fishing activities represented a minor risk within the CSF Line Sector, with the exception of climate change as an external hazard to the fishery. While the CSF logbooks report catches from over 250 species, catch and effort has been declining in recent years, reducing the impact of fishing on communities.

4.1.5   External hazards

The current ERA framework does not have an identified hazard for the impacts of anthropogenic climate change. Given the high potential impact on demersal ecosystems in the CSF, climate change was assessed under external hazards for all components and considered to be major impact with the potential for widespread and long-term effects.

Over the last 7 years, marine heatwaves as a result of anthropogenic climate change have increased in the Coral Sea and led to a series of observed bleaching events on deep mesophotic coral reefs (50–100 m) between 2020 and 2022 (Huang et al. 2024), as well as shallow coral reefs (0–25 m; Hoey et al. 2021, 2022, 2023, 2024) between 2016–2023. In deepwater ecosystems (below 100 m), increased water temperatures can also cause decreases in oxygen concentration and particular organic matter and increased thermal stratification and thus impact habitat and ecosystem function (Soltwedel et al., 2005; Mora et al. 2013; Keeling et al. 2010; Stramma et al. 2012; Bopp et al., 2013; Sweetman et al. 2017; Datta et al. 2024).

The extent of climate change impacts on deepwater ecosystems is more uncertain than shallow water ecosystems due to less observations. Recent habitat suitability and species distribution modelling has predicted that climate-induced changes in environmental conditions can cause shifts in ranges of deepwater benthic organisms and communities between 500 – 2000 m due to warming in the upper 1000 m (Rakka et al. 2025). Thermal tolerances will impact how teleost and chondrichthyan species in the Coral Sea respond to warming in the ecosystem (Datta et al. 2024). Species may adapt through range contraction or expansion. For example, one of the target species blue-eye trevalla occurs in the Coral Sea as the most northern extension of the species distribution and may reduce their northern distribution in response to increasing temperatures. Some species may be able to adapt to a limited degree through accelerating growth and reaching maturity at earlier ages (Koslow et al. 2000), however the majority of deepwater species have slow population growth rates and long generation times that will limit their adaptation to stress (Sweetman et al. 2017; Datta et al. 2024). Further information and observation will be required to understand the impacts of climate change on commercial species, habitats and community assemblages in the Coral Sea.

4.2   Components to be examined at Level 2

Under the ERAEF process, only components assessed in the SICA that have consequence scores of 3 or above for internal fishing activities are recommended to be examined at level 2.

Two internal hazards were assessed to have a consequence score of 3 or above, direct impacts of fishing (target species, secondary/discard species and protected species) and impacts without capture (secondary/discards species).

One external hazard (other anthropogenic activities – climate change) was assessed to have consequence scores of 3 or above. Because external hazards are not considered at level 2 in the PSA analysis no level 2 analysis was undertaken, but ABARES understands AFMA's climate risk framework will be applied to this fishery.

4.3   Recommendations

To further understand the risk of fishing pressure on species and reduce uncertainty in the assessment of the CSF Line Sector, it is recommended to:

- Conduct a level 2 assessment on direct impacts of fishing (target species, secondary/discard species and protected species) and impacts without capture (secondary/discards species);

- Improve species level reporting of catch in fishery logbooks and CDRs;

- Undertake a review of the Line Sector Harvest Strategy to account for recent changes in the fishery, including the substantial spatial changes after the introduction of Marine Parks in 2018.

5   References

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6   Appendix

Appendix A: Overview of Environmental risk assessments

Ecosystem based fisheries management (EBFM) is being used to address the direct and indirect impacts of fishing on marine species, habitat and ecosystems. The Ecological Risk Assessment for the Effects of Fishing (ERAEF) framework involves a hierarchical approach through four stages:

(1) scoping,

(2) an expert based comprehensive but qualitative analysis of risk at Level 1 (SICA – scale, intensity consequence analysis),

(3) an empirically and semi-quantitative based Level 2 analysis (Sustainability Assessment for Fishing Efforts [SAFE] or Productivity susceptibility analysis [PSA]),

(4) and fully quantitative "model based" Level 3 analysis

The amount of information required increases through the hierarchy and allows application in data-limited situations.

6.1.1   Scoping

The aim of the Scoping stage is to develop a profile of the fishery being assessed, including into sub-fisheries on the basis of fishing method and/or spatial coverage. This provides information needed to complete Level 1 and 2 analysis and inform discussions at the stakeholder workshops.

Scoping involves six key steps, and five corresponding scoping documents as documented below. These steps are described in more detail in Hobday et al. (2007) and Smith et al. (2007).

(1) Documenting the general fishery or sector characteristics using information from sources such as the Fishery Management Plan, Assessment Reports, Bycatch Action Plans and other relevant background documentation (scoping document s1: general fishery characteristics).

(2) Generation units of analysis lists by species (key commercial, byproduct, bycatch and protected species), habitat types (e.g. benthic, pelagic) and community types (e.g. demersal and pelagic) (scoping document s2: ecological unit of analysis).

(3) Identification of objectives for the five ecological components (key commercial, bycatch/byproduct, and protected species, habitat and communities) and sub-components (scoping document s3: operational objectives).

(4) Hazard identification for activities undertaken in the process of fishing and any external activities that have the potential to lead to harm (scoping document s4: hazard identification).

(5) Bibliography and references for all documents (scoping document s5: bibliography).

(6) Decision rules on the hazards (internal and external), components and scenarios to move to level 1 SICA analysis.

6.1.2 Level 1 Scale Intensity and Consequence Analysis

SICA is a comprehensive but qualitative analysis that uses an exposure-effect risk assessment approach to the most vulnerable unit of an ecological component.

SICA employs the precautionary principle through a "plausible worst-case scenario" approach to identify and evaluate hazards on spatial, temporal and intensity scales that lead to a significant impact to whole components (key commercial; bycatch and byproduct; protected species; habitat; and communities) and assign consequence scores. This results in a rapid and efficient screening process of low-risk components, as those assessed to be low risk will be documented, but not considered for further analysis in level 2. In addition, where judgements about risks are uncertain, the highest level of risk that is still regarded as plausible is selected. The rationale for the choices must be documented in detail.

The steps for the SICA are summarised below with the associated scoping document. The first 10 steps are performed for each fishery for each activity and component and correspond to the columns of the SICA table. The final three steps summarise the results for each component.

(1) Record the hazard identification score (absence [0], presence [1] scores)

(2) Score the spatial scale of the activity (Table A1)

Table A1 Spatial score of the activity for Step 2 of SICA

Spatial Scale (nm)	Score
<1	1
1 – 10	2
10 – 100	3
100 – 500	4
500 – 1000	5
>1000	6

(3) Score the temporal scale of the activity (Table A2)

Table A2 Temporal score of the activity for Step 3 of SICA

Temporal Scale	Description	Score
Decadal	1 day every 10 years or so	1
Every several years	1 day every several years	2
Annual	1 – 100 days per year	3
Quarterly	100 – 200 days per year	4
Weekly	200 – 300 days per year	5
Daily	300 – 365 days per year	6

(4) Chose the sub-component most likely to be affected by the activity

(5) Chose the most vulnerable unit of analysis for the component (e.g. species, habitat type of community assemblage)

(6) Select the most appropriate operational objective

(7) Score the intensity of the activity for that subcomponent (Table A3)

Table A3 Intensity score of the activity for Step 7 of SICA

Intensity Scale	Description	Score
Negligible	Remote likelihood of detection at any spatial or temporal scale	1
Minor	Occurs rarely or in few restricted locations and detectability even at these scales is rare	2
Moderate	Moderate at broader spatial scales, or severe but local	3
Major	Severe and occurs reasonably often at broad spatial scales	4
Severe	Occasional but very severe and localised or less severe but widespread and frequent	5
Catastrophic	Local to regional severity or continual and widespread	6

(8) Score the consequence resulting for the intensity for that subcomponent (Table A4)

Table A4 Consequence score of the activity for Step 8 of SICA

Intensity Scale	Description	Score
Negligible	Impact unlikely to be detectable at the scale of stock/habitat/community	1
Minor	Minimal impact on stock/habitat/community structure or dynamics	2
Moderate	Maximum impact that still meets an objective (e.g. sustainable level of impact such as full exploitation rate for a target species)	3
Major	Wider and longer-term impacts (e.g. long-term decline in CPUE)	4
Severe	Very serious impacts now occurring, with relatively long time period likely to be needed to restore to an acceptable level (e.g. serious declines in spawning biomass limiting population increase)	5
Intolerable	Widespread and permanent/irreversible damage or loss will occur – unlikely to ever be fixed (e.g. extinction)	6

(9) Record the confidence/uncertainty for the consequence scores (Table A5)

Table A5 Confidence score of the consequence scores for Step 9 of SICA

Confidence	Rationale	Score
Low	Data exists, but is considered poor or conflicting No data exists Disagreement between experts	1
High	Data exists and is considered sound Consensus between experts Consequence is constrained by logical consideration	2

(10) Document the rationale for each of the above steps

(11) Summary of the SICA results

(12) Evaluation/discussion of level 1

(13) Components to be examined at level 2

SICA relies on expert judgement and stakeholder input to evaluate the risk to ecological components resulting from the stakeholder-agreed set of activities. Once the draft SICA has been conducted, the stakeholders provide feedback on the three key components of the SICA that are initially compiled by the assessor, selection of the most vulnerable unit of ecological component, and input on the draft scale and intensity scores and overall ranking, including appropriate rationale.

Detailed methodology for level 1 SICA is described in Hobday et al. (2007) and Smith et al. (2007).

6.1.3   Level 2 Semi-quantitative and quantitative methods

When the risk of an activity at level 1 SICA on a species component is moderate or higher (i.e. consequence score 3 or greater) and no planned management interventions that would remove this risk is identified, an assessment is required at level 2.

There are various tools available at level 2 that have been designed to measure risk from direct impacts of fishing only (i.e. risk of overfishing, leading to overfished fishery). These tools include SAFE (base SAFE and enhanced SAFE [eSAFE]) as the preferred method where there is sufficient spatial and biological data available, and PSA when there is not sufficient data or species biological characteristics are insufficient to support SAFE analyses. At level 2, either PSA or SAFE methods should be applied to any given species, not both. For high-risk species, it is a management choice whether to progress to eSAFE, pursue a level 3 fully quantitative stock assessment, or to take more immediate management action to reduce the risk. The types of considerations required in making that choice (i.e. moving up the ERAEF assessment hierarchy or taking direct management action) are outlined in Chapter 5.5 of the AFMA ERM Guide (AFMA 2017).

It is also recognised that a number of additional tools, including some of the "data poor" assessment tools that are used to inform harvest strategies, could potentially be included within the level 2 toolkit. They are distinguished from level 3 quantitative tools (i.e. stock assessment models) that are more data rich and able to quantify uncertainty more precisely.

6.1.4   Level 3 Fully Quantitative assessment

This stage of the risk assessment is fully quantitative and relies on in-depth scientific studies on the units identified as at medium or greater risk in the level 2. It will be both time and data intensive. Individual stakeholders are engaged as required in a more intensive and directed fashion. Results are presented to the stakeholder group and feedback incorporated, but live modification is not considered likely.

Appendix B: Coral Sea Fishery Line Sector Scoping Documents for Ecological Risk Assessment

Australian Government

Australian Fisheries Management Authority

Coral Sea Fishery Line Sector

Environmental Risk Assessment Scoping Documents

2025

Securing Australia's fishing future

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Contents

DISCLAIMER

While every effort has been taken to ensure the accuracy of the information contained in this report, the accuracy of AFMA logbook data cannot be assured. AFMA would like to recognise the work of Furlani et al. (2007a, 2007b, 2007c), which was largely relied upon to develop these scoping documents.

Minor changes were made to the scoping documents to make corrections or following recommendations made by the December stakeholder workshop participants. Changes included:

- Updating the hazard documentation for direct impact without capture (incidental behaviour) to be absent in the fishery following advice that recreational fishing is rare.
- Corrections made for references to oceanic whitetip sharks, noting that they do not possess a positive non-detriment finding.
- Removed references to Harrison's Dogfish and Endeavour Dogfish as a discard species, noting that they are classified as endangered, threatened, or protected species.
- Inclusion of a new figure visualising temporal changes in fishing fleet composition.

1   Scoping Document S1 General Fishery Characteristics

1.1   General Fishery Characteristics

1.1.1   Fishery name

Coral Sea Fishery (CSF)

1.1.2   Sub-fisheries

There are four sectors in the CSF:

1. Line Sector – demersal longline, trotlines, droplines, setlines and handlines (6 permits).
2. Sea Cucumber Sector – hand collection (2 permits).
3. Aquarium Sector – hand collection, barbless hook and line, scoop, cast and seine nets (2 permits).
4. Lobster and Trochus Sector – hand collection.

1.1.3   Sub-fisheries assessed

Line Sector (all methods).

Note: The previous ERA for the Line Sector was split into three assessments (auto-longline, demersal longline and other line). For efficiency and practical purposes this ERA will use all available information to the Line Sector as a whole.

1.1.4   Start date/history

Prior to the creation of the CSF, fisheries activity occurred within the East Coast Deepwater Crustacean Trawl Fishery (ECDTF) and North East Demersal Line Fishery (NEDLF). The ECDTF Development Plan was established in 1988, and conditions were rolled over annually until 1993. The NEDLF Development Plan came into effect in 1991 and continued annually until 1997. Under the NEDLF, access was restricted to those operating within arrangements in place prior to 1990.

Following a 1991 discussion paper, *Draft management arrangements for the East Coast Offshore Line Fishery,* the ECDTF was divided into several jurisdictions. Operators failed to meet performance criteria, and no permits were regranted. In 1997, management was rationalised, and the CSF was established under Offshore Constitutional Settlement (OCS) arrangements. The implementation of the *AFMA Interim Policy* in 1997 limited the number of operators to 13, enforced annual criteria, and established non-transferable permits.

In 2000, amendments to the policy allowed for permits to be transferable. In 2002, access was split into sectors, with performance criteria established to enable review processes and ensure adequate data collection.

The *Coral Sea Fishery Line, Trawl and Trap Sector Sub-fisheries Harvest Strategy* (CSF Line Sector Harvest Strategy) came into effect in 2007 and further developed management arrangements for the line sub-fishery. This framework provides general triggers to detect changes in species composition, changes in

spatial fishing patterns, declines in overall catch per unit effort (CPUE), and total catch levels. Separate triggers for vulnerable species were also included.

As of the 2025/2026 fishing season there are 6 existing fishing permits in the CSF line sector, which is subject to a high degree of latency. Fishing effort is spatially and temporally variable (**Error! Reference source not found.**).
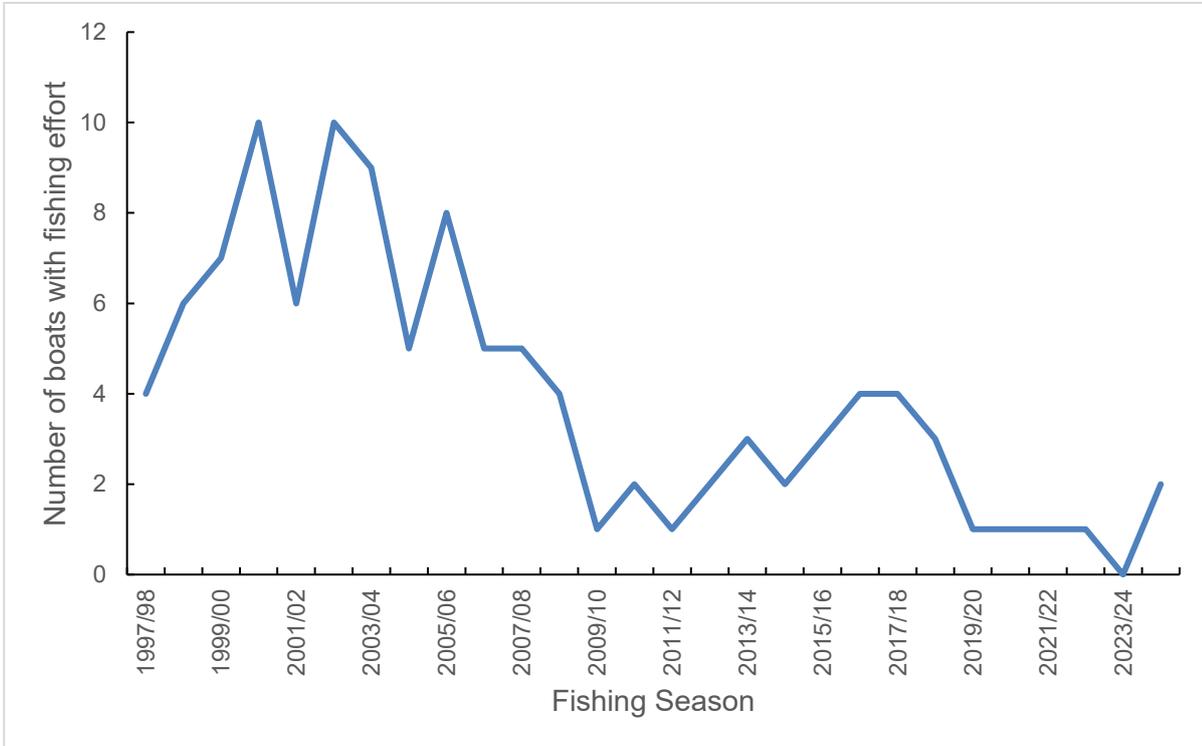
Figure 1: Temporal variation in the number of fishing boats participating in the CSF Line Sector.

1.1.5   Geographic extent of fishery

The CSF extends from Cape York to Sandy Cape, Queensland. It is bounded on the east by the Australian Fishing Zone and on the west by a boundary line (red line in Figure 2 below) 0 to 100 nm east of the eastern boundary of the Great Barrier Reef Marine Park (Figure 2).
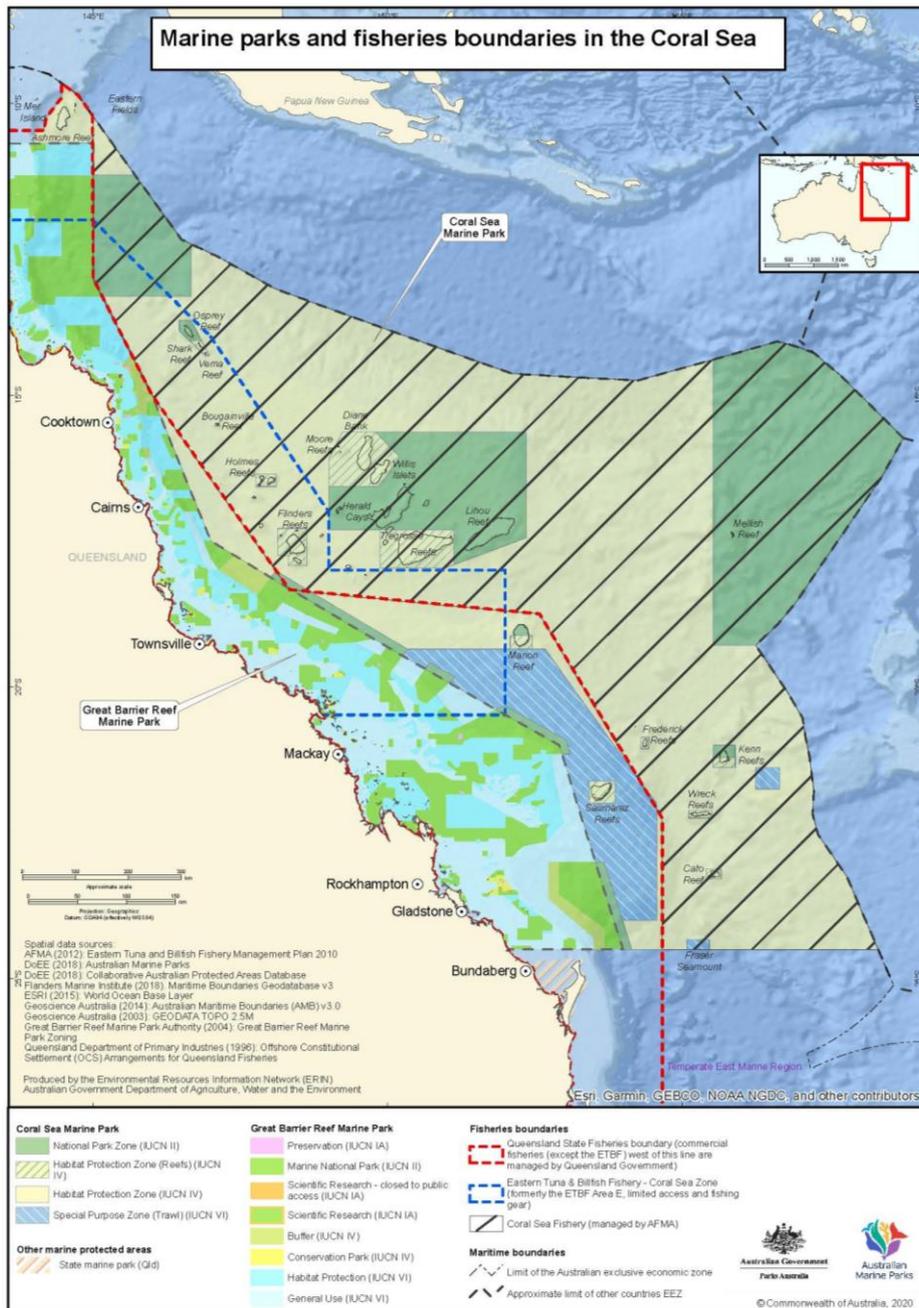
Figure 2: Marine parks and fisheries boundaries in the Coral Sea.

1.1.6   Regions or zones within the fishery

The CSF Line Sector is not subject to prescribed regions or zones for management purposes. It is, however, subject to the zoning imposed by the Coral Sea Marine Park (CSMP) and provisions of the *Coral Sea Marine Park Management Plan 2018*. This spatially limits what forms of line fishing can take place within the CSF (Table 9).

Table 9: Summary of prescriptions for commercial line fishing methods in the CSMP. Adapted from Director of National Parks (2018).

Commercial fishing activity	Special purpose zone (trawl) VI	Habitat Protection Zone IV	Habitat Protection Zone (Reefs) IV	National Park Zone II
Dropline	✓	✓	✓	✗
Longline (demersal, auto-longline)	✓	✗	✗	✗
Minor line (handline, rod and reel, trolling, squid jig, poling)	✓	✓	✗	✗
Trotline	✓	✗	✗	✗

1.1.7   Fishing season

The CSF fishing season runs for 12 months, starting on 1 July.

1.1.8   Key/secondary commercial species and stock status

Catch composition in the CSF Line Sector varies temporally and by fishing method (Figure 3, Figure 4). Target species include:

- Cartilaginous fishes (Chondrichthys), including blacktip sharks, whitetip sharks, and gummy sharks.
- Bony fishes (Osteichthyes), including flame snapper, ruby snapper, rosy snapper, and bar rock cod.

The 2024 Fishery Status Report (FSR)[1], assessed fishing mortality and biomass in the CSF Line Sector as uncertain (Butler et al. 2024). This uncertainty was attributed to temporal variability in species catch composition (Butler et al. 2024).

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[1] *Produced by the Australian Bureau of Agricultural Resource Economics and Science (ABARES)*

Coral Sea Fishery Line Sector Environmental Risk Assessment Scoping Documents
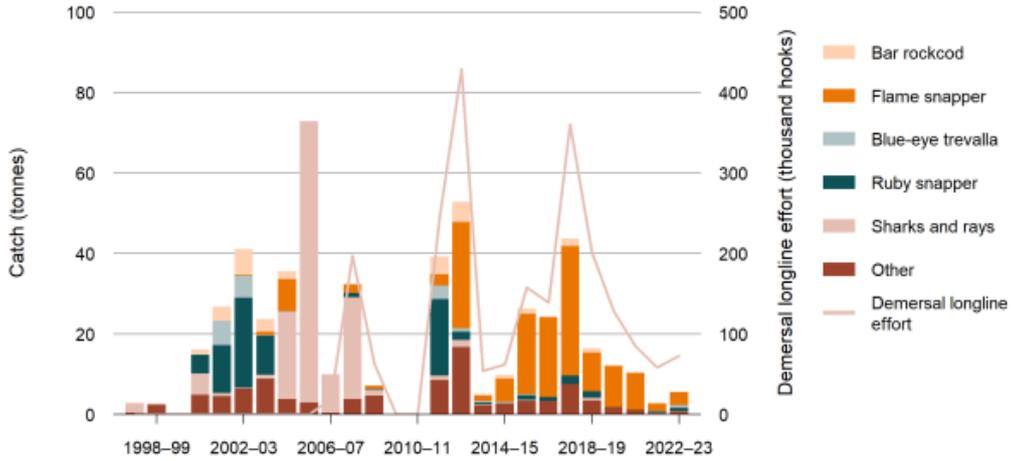
Source: AFMA logbooks

Figure 3: Demersal longline catch and effort in the CSF line sector between 1997-98 season to 2023-24 season. Source: Keller et al. (2025).
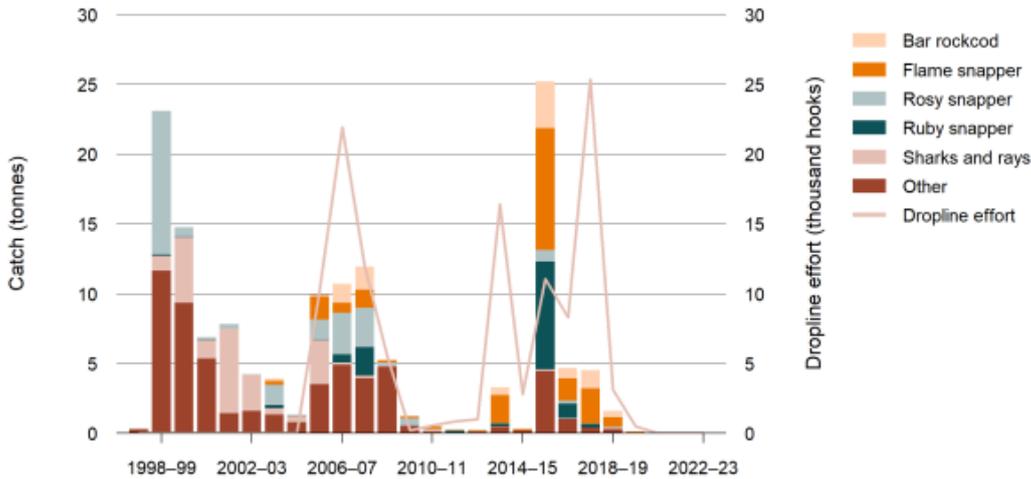
Source: AFMA Logbooks

Figure 4: Dropline catch and effort in the CSF line sector between 1997-98 season to 2022-23 season. Source: Butler et al. (2024).

Table 10: Biological status of the CSF Line Sector. Source: Butler et al. (2024).

Stock	Fishing mortality 2022	Biomass 2022	Fishing Mortality 2023	Biomass 2023
Line Sector (numerous finfish and shark species)	Uncertain	Uncertain	Uncertain	Uncertain

1.1.9   Bait collection and usage

No bait collection occurs. Bait must be purchased.

1.1.10 Current entitlements

There are currently 6 permits in the CSF Line Sector, with only one permit allowing the use of auto-longline equipment.

1.1.11 Current and recent total allowable catches, quota trends by method

No TACs or quota exist within the CSF Line Sector. Through the operation of the Harvest Strategy, the following catch trigger limits are in place:

- All Species
  - Level 1: 450 tonnes
  - Level 2: 1000 tonnes
- Whitetip reef shark
  - Level 1: 2.5 tonnes
  - Level 2: 5 tonnes
- Grey reef shark
  - Level 1: 13 tonnes
  - Level 2: 26 tonnes

1.1.12 Current and recent fishery catch trends by method

Total retained catch for the previous three fishing seasons is shown in Table 11.

Table 11: Catch (tonnes, t) in the CSF Line Sector for the previous three fishing seasons. Note that only auto-longline fishing was undertaken in 2022/23 and only dropline fishing was undertaken in 2024/25. No fishing in the Sector occurred in 2023/24. Source: AFMA Catch Disposal Records.

Species	2022/23 Catch (kg)	2023/24 Catch (kg)	2024/25 Catch (kg)	Total Catch (kg)
Flame Snapper	7,211	0	222	7,432
Bar Rockcod	616	0	1,792	2,408
Ruby Snapper	1,604	0	738	2,342
Blue-eye Trevalla	1,243	0	50	1,293
Sharks (mixed)	0	0	891	891
Amberjack	819	0	0	819
Ornate Jobfish	436	0	0	436
Rosy Snapper	131	0	161	292
Red Emperor	0	0	273	273
Imperador	257	0	0	257
Whitetip Reef Shark	211	0	0	211
Barramundi Cod	0	0	143	143
Rusty Jobfish	0	0	142	142
Blacktip sharks (mixed)	119	0	0	119
Robinson's Seabream	0	0	116	116
Conger eels	96	0	0	96
Mozambique Seabream	0	0	63	63
Samson Fish	0	0	63	63
Goldeneye Snapper	0	0	62	62
Comet Grouper	4	0	44	48
Sweetlips	0	0	45	45
Saddleback Snapper	28	0	0	28

Species	2022/23 Catch (kg)	2023/24 Catch (kg)	2024/25 Catch (kg)	Total Catch (kg)
Boarfishes	25	0	0	25
Rockcod (Epinephelus & Cephalopholis)	0	0	22	22
Gemfish	10	0	2	12
Alfonsino	0	0	10	10
Paddletail Seabream	10	0	0	10
Fish (mixed)	7	0	2	9
Coral Trout (mixed)	0	0	7	7
Blackfin armour gurnard	4	0	0	4
Deepsea Scorpionfish	4	0	0	4
Blotched Bigeye	1	0	0	1
Total	**12,835**	**0**	**4,846**	**17,681**

1.1.13 Current and recent value of fishery

The gross value of production (GVP) of the CSF is confidential due to the small number of operators. Given high levels of latency in the Line Sector, the net economic returns (NER) for this sector of the fishery are likely low.

1.1.14 Relationship with other fisheries

The CSF borders or shares common resources with Commonwealth, State and recreational fisheries, although direct competition for common resources is negligible.

1.1.14.1 Commonwealth fisheries

- Eastern Tuna and Billfish Fishery
- Torres Strait Fisheries
- Southern and Eastern Scalefish and Shark Fishery

1.1.14.2 Queensland fisheries

- Blue Swimmer Crab Fishery
- East Coast Mud Crab Fishery
- Spanner Crab Fishery
- Coral Fishery
- Marine Aquarium Fishery
- Sea Cucumber Fishery
- Crayfish and Tropical Rock Lobster Fishery
- East Coast Inshore Fishery
- East Coast Spanish Mackerel Fishery
- Reef Line Fishery

1.1.14.3 Recreational fisheries

Interactions with recreational fisheries are insignificant.

1.2 Gear

1.2.1 Fishing methods and gear

Fishing methods and gear used in the CSF line sector include:

- Demersal longline
- Auto-longline
- Dropline
- Setline
- Handline
- Trotline

The average length of a fishing trip in the CSF line sector is approximately 6 days, with a maximum length of 32 days[2].

1.2.2 Fishing gear restrictions

1.2.2.1 Auto-longline

- On transfer of a CSF Line Permit or change of nominated boat, permission for the use of automatic baiting equipment must be sought from AFMA.
- The boat must only be fit with an AFMA approved automatic baiting system.
- The boat must carry tori line and seabird excluder device (brickle curtain) on board. Tori lines must be deployed at each point where hooks enter the water and a seabird excluder device must be deployed during line hauling.
- If a seabird mortality occurs during fishing operations, demersal longlines must only be set at night for the remainder of the _Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (2018)_ (TAP) season.
- If the observed mortality rate of seabirds within the TAP season exceeds 0.01 seabirds per 1000 hooks on the nominated boat, longlines must only be set at night for the remainder of the TAP season.
- Baits used must be unfrozen.

1.2.2.2 All gear types

- No more than 15,000 hooks may be used, stowed, or secured onboard a nominated boat at any time.
- Automatic or random baiting equipment must not be used unless expressly authorized.

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[2] _Only effort data with a valid trip identification number was used to determine average and maximum trip length._

1.2.3   Selectivity of fishing methods

Line methods select for demersal finfish and shark species in the CSF. However, dropline and setline methods may also be selective for pelagic species due to their vertical set.

1.2.4   Spatial gear zone set

Use of line methods is spread across the CSF fishing area. Effort is concentrated on the Queensland Plateau, with southern reefs and seamounts also being targeted. Tregosse Reef, Willis Islets, Diamond Islets and Diane Bank are key fishing areas. There is some fishing activity in the northern CSF near Shark Reef, but this is limited compared to other areas. The use of dropline and handline methods is more spread than other line methods, which may be influenced by CSMP zoning.

1.2.5   Depth range gear set

The depth range of line methods in the CSF vary depending on gear type. Dropline and Auto-longline methods are usually set deeper on average (Table 12). If using auto-longline gear, shots must be set in waters deeper than 200m unless an observer is onboard. In this case, 50% of hooks must be set in waters deeper than 200m.

Table 12: Depth ranges for different gear types in the CSF Line Sector. Note that all values of 0m and 9999m were removed from data as they are most likely errors. Source: Logbook catch data.

Gear type	Average depth (m)	Minimum depth (m)	Maximum depth (m)
Dropline	284	11	1550
Handline (hand operated)	59	15	300
Handline (mechanised)	215	22	650
Set autolongline (demersal longline)	341	50	560
Set longline (demersal longline)	250	8	1200
Trotline	167	28	450

1.2.6   How gear is set

1.2.6.1 Auto-longline

Sinking mainline is set horizontally on the ocean floor and anchored, with baited hooks attached to the longline by short snood lines. Each snood carries a hook at one end. Baiting of hooks occurs before deployment, as it is automated. Gear is divided into several sets. Longlines may be kilometres in length and typically carry 1,000 hooks per set. Demersal longlines can be set in deep waters on the continental slope and in areas of strong tidal currents.

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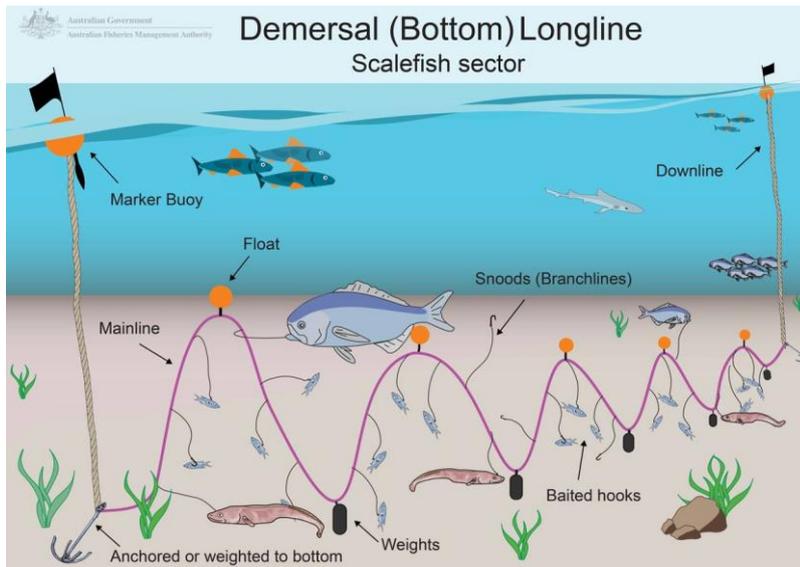
Figure 5: Example of a set demersal longline. Source: AFMA (2023)

Figure 6: Example of auto-longline equipment. Source: Mustad Autoline (2025).

1.2.6.2 Demersal longline

Gear for demersal longline is set similarly to auto-longline, with the main difference being that hook baiting is manual.

1.2.6.3 Trotline

Trotlines are like demersal longline methods, however, the mainline is suspended off the seabed to avoid snagging and snoods are weighted to hand vertically under the mainline.

1.2.6.4 Dropline

Float dropline

Float droplining involves setting a vertical mainline with a bottom weight and a top float, with between 10 and 100 snoods off the mainline and a series of hooks attached to the snoods at the deeper end of the line.

Reel dropline

Reel droplines are deployed in a similar configuration to float droplining, however there are no top floats and lines remain attached to the boat.

1.2.6.5 Handline (setline)

Handlining (also known as setlining), involves a line to which 1 or more lures or baits are attached. Handlines are set and retrieved manually but may use a motor to reduce labour.

1.2.7 Area of gear impact per set or shot

The area of gear impact per set or shot is associated with gear type. Longline gear impact area can be extensive, with a maximum longline length of approximately 25 kilometres (Table 13). The spatial extent of gear impact for other line methods is likely minimal because gears are predominantly set vertically in the water column.

Table 13: Average and maximum longline length (m) for shots in the CSF line sector. Source: AFMA logbook effort data.

Gear type	Average length of longline (m)	Maximum length of longline (m)
Set auto-longline (demersal longline)	7,117	25,353
Set longline (demersal longline)	17,823	24,300

1.2.8 Capacity of gear

Gear capacity is associated with gear type, with auto-longline methods using the greatest number of hooks (Table 14). All operators using line methods are limited to using and carrying a maximum of 15,000 hooks through CSF permit conditions. The capacity of other line methods is considerably less than auto and demersal longline.

Table 14: Gear capacity associated with longline methods in the CSF Line Sector (all years with logbook data available). Source: AFMA logbook effort data.

Gear type	Average number of hooks	Maximum number of hooks
Set auto-longline (demersal longline)	5,026	15,000

Gear type	Average number of hooks	Maximum number of hooks
Set longline (demersal longline)	1,521	8,000

1.2.9   Effort per annum all boats

Fishing effort in the CSF Line Sector for the past three fishing seasons has been variable, with no fishing taking place in the 2023/24 fishing season (Table 15).

Table 15: Effort in the CSF Line Sector for the past three fishing seasons.

Fishing season	Gear type	Number of hooks set
2022/23	Auto-longline	73,000
2023/24	Nil	0
2024/25	Dropline	14,881

1.2.10 Lost gear and ghost fishing

Lost fishing gear, particularly line, is a potential issue in the CSF line sector. Early data from the CSF Line Sector suggested that there was a loss of line from approximately 50% of fishing trips, with snagging a challenge for droplining gear (Furlani et al. 2007a, b, c). Gear loss can also be attributed to interactions with wildlife. For example, an individual observer report from 2019 indicated that approximately 1000m of line was lost in an event where sharks bit through a demersal longline at both ends. However, there is limited recent data on the extent of the issue in this sector, noting the recent fishing activity has been variable and limited.

1.3   Issues

1.3.1   Key/secondary commercial species issues and interactions

Changes in species catch composition over time make it difficult to determine biomass status and fishing mortality in the CSF Line Sector (Butler et al. 2024). These factors can largely be attributed to inconsistency in vessels and operators fishing and high levels of latency. This makes it challenging to identify specific issues associated with key commercial species. More generally, the most recent ABARES FSR suggests that is unlikely that the primary commercial finfish species in 2023 were overfished (Butler et al. 2024). Nonetheless, ABARES registered concern about historical effects of fishing on low-productivity shark and finfish species (Butler et al. 2024). Key target species, based on the past three fishing seasons, are shown below (

Table 16).

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Table 16: Top ten species with the highest catch for the past three fishing seasons. Source: AFMA Logbook Catch Data.

Ranking	2022/23	2023/24	2024/25
1	Flame Snapper (*Etelis coruscans*)	No fishing effort.	Bar Rockcod (*Epinephelus ergastularius, Ep. septemfasciatus*)
2	Ruby Snapper (*Et. carbunculus*)		Flame Snapper (*Et. coruscans*)
3	Blue-eye Trevalla (*Hyperoglyphe antarctica*)		Ruby Snapper (*Et. carbunculus*)
4	Amberjack (*Seriola dumerili*)		Rockcod (*Ep. and Cephalopholis spp.*)
5	Bar Rockcod (*Ep. ergastularius, E. septemfasciatus*)		Rosy Snapper (*P. filamentosus*)
6	Ornate Jobfish (*Pristipomoides argyrogrammicus*)		Long Tail Rubies/Snapper (*Et. spp.*)
7	Imperador (*Beryx decadactylus*)		Bronze Whaler (*Carcharhinus brachyurus*)
8	Whitetip Reef Shark (*Triaenodon obesus*)		Sweetlips (*Plectorhinchus spp.*)
9	Alfonsino (*B. splendens*)		Sharks (mixed)
10	Rosy Snapper (*P. filamentosus*) / Southern Conger (*Conger verreauxi*)		Robinson's Seabream (*Gymnocranius gradoculis*)

1.3.2   Byproduct and bycatch issues and interactions

The *Coral Sea Fishery Bycatch and Discarding Workplan* was introduced in 2010. It notes that the three main groups identified as at risk due to discarding/bycatch were:

- Turtles
- Bathyl sharks >200m
- Reef sharks.

Bycatch mitigation measures identified included the design and implementation of best practice protocols for handling of sharks and other species of concern. In 2024, AFMA developed the *Shark Identification Guide for Commercial Fisheries in Northern Australia* to assist commercial fishers to identify sharks listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). For further information about byproduct and bycatch species in the CSF line Sector, see Section 2.1.

1.3.3   Protected species issues and interactions

Fishers are required to report all interactions with endangered, threatened or protected (ETP) species in their daily fishing logbooks, with all reported logbook interactions published quarterly on AFMA's website: https://www.afma.gov.au/protected-species/endangered-and-threatened-species-reporting. See Section 2.2 for further information about ETP species in the CSF line Sector.

1.3.4   Habitat issues and interactions

The Coral Sea reef system comprises 6 main habitats:

- Outer reef slope
- Reef crust
- Back reef
- Leeward slope or lagoon
- Pinnacle
- Inter-reef channels.

There is a lack of information which could be used to determine habitat issues and interactions. Area closures under the CSMP apply and protect significant extents of the CSF from habitat impacts of demersal longline fishing (Table 9, Figure 2).

1.3.5   Community issues and interactions

Insufficient data is available to determine the impact of the CSF Line Sector on the food chain and broader community. There are no EPBC Act listed Threatened Ecological Communities in the CSF area (Commonwealth of Australia, 2024).

1.3.6   Discarding

Based on logbook data, there is a level of discarding in the CSF Line Sector for a range of species. Adopting the definition used by the *Guidelines for the Implementation of the Commonwealth Fisheries Bycatch Policy*, discarding is defined as *the practice of returning any part of the catch to the sea*. A full list of species subject to discarding can be found in Scoping Document S2.

1.4   Current and planned management measures

1.4.1   Management objectives

- Avoid recruitment impairment of the key/secondary commercial, byproduct, bycatch, and protected species.
- Avoid negative consequences for the above species, including to population size, geographic range, genetic structure, age/size/sex structure, reproductive capacity, behaviour and movement.
- Take measures to minimise interactions with protected species; ensure protected species survival is maximised and that interactions do not affect the viability of the population or its ability to recover.
- Avoid negative impacts on environmental quality including water, air, substrate quality, habitat types, structure, and function.
- Avoid negative impacts on the community, including species and functional group composition, distribution, and trophic structure.

1.4.2 Input controls

Input controls that apply to the CSF Line Sector include:

- Limited number of permits allowed (6 permits).
- Maximum of 15,000 hooks may be used, stowed or secured on a vessel.
- Gear limitations, including limited authorisation of the automatic baiting equipment. Allowed gear types include
  - Auto-longline
  - Demersal longline
  - Dropline
  - Trotline
  - Setlines
  - Handlines
- Depth limitations for auto-longlining, with all shots to be set in waters deeper than 200m unless an observer is on-board. If an observer is present, only 50% of all hooks using auto-longline gear must be set in waters deeper than 200m.
- Spatial restrictions through the CSMP.

1.4.3 Output controls

Output controls that apply to the CSF Line Sector include:

- Trigger limits:
  - All species
    - Level 1: 450 tonnes
    - Level 2: 1000 tonnes
  - Whitetip reef shark
    - Level 1: 2.5 tonnes
    - Level 2: 5 tonnes
  - Grey reef shark
    - Level 1: 13 tonnes
    - Level 2: 26 tonnes
- Seabird mortality rate limits under the TAP.
- Prohibitions on the take or retention of the following species:
  - Fish of the family Scombridae (tuna and tuna like species) and of the family Bramidae (commonly known as pomfrets or ray's bream) except fish of the genera *Scomberomorus*, *Scomber*, *Acanthocybium*, *Grammatorcynus* and *Rastrelliger* (commonly known as mackerels).
  - Fish of the Families Istiophoridae (commonly known as marlins) and *Xiphiidae* (commonly known as billfish).
  - *Cheilinus undulatus* (commonly known as Humphead Maori Wrasse)
  - Deepwater dogfishes of the following species - Harrisson's Dogfish (*Centrophorus harrissoni*), Endeavour Dogfish (*C. moluccensis*), Southern Dogfish (*C. zeehaani*) and Greeneye Spurdog (*Squalus chloroculus*).

1.4.4   Technical measures

Gear mitigation measures, including tori lines and brickle curtains (seabird excluder devices) must be used when undertaking auto-longline fishing. Thawed baits must also be used when auto-longline fishing.

1.4.5   Regulations

CSF vessels are required to comply with _International Convention for the Prevention of Pollution from Ships_ (MARPOL) regulations. Operators must also comply with the provisions of the _Fisheries Management Act 1991_, _Fisheries Management Regulations 2019_ and CSF Permit Conditions.

1.4.6   Initiatives, strategies and incentives

The zoning of the CSMP limits the spatial extent and forms of line fishing that may take place in the CSF (Figure 2, Table 9).

1.4.7   Enabling processes

It is compulsory for fishers in the CSF Line Sector to use the E-Line electronic logbook (e-log) with catches verified using Commonwealth Catch Disposal Record (SESS2B).

Observer requirements also apply in the CSF Line Sector as follows:

- Auto-longline
  - Boats must carry an AFMA approved observer for the first trip of the season (or after installing automatic baiting equipment) and every fourth trip thereafter if using a "Mustad" system or every third trip if using a "Best Fishing Gear" system thereafter).
- Other line
  - Boats must carry an AFMA observer on the first trip of the season and every fourth trip, thereafter.

1.4.8   Other initiatives or agreements

By means of measures such as limited entry provisions within the CSF, catch levels have been capped at precautionary levels to ensure sustainability of commercial species.

Parks Australia conducted Coral Sea Marine Park Health Surveys annually from 2021 to 2024[3]. These reports assess the status of ecological communities across various reefs, as well as the impacts of coral bleaching events. While these reports could provide benefit to the sustainable management of the CSF, they are not currently incorporated into the CSF's management. Additionally, due to the broader reef health objectives of these surveys within the marine park, they do not focus on all habitats and target stocks impacted of the CSF sectors

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[3] _Ongoing funding for these surveys has yet to be confirmed._

1.5 Data

1.5.1 Logbook data

Logbooks are used to collect catch and effort data for fishing activity in the Line Sector. Details include species, weight of fish retained, weight of fish discarded, spatial and temporal data, type of gear used, number of hooks set, and catch/release of protected species. Trigger reports of CSF catch and effort by species and sector within the fishery are produced annually and available on the AFMA website.

1.5.2 Observer data

Observer requirements apply in the CSF Line Sector (see 1.4.7) with data being collected when fishing activity occurs. Data collected includes:

- Biological data including length
- Catch composition
- Wildlife interactions
- Wildlife abundance

1.5.3 Other data

Limited electronic monitoring data has been collected in the CSF Line Sector. Additional data has been incidentally collected within the CSF area through other research projects undertaken (e.g. annual reef health surveys).

2 Scoping Document S2 Unit of Analysis

2.1 Target, byproduct and discard species

Various factors in the CSF Line Sector, including high levels of latency and annual inconsistency of vessels, operators, and gear used, made it harder to distinguish the recent key target species from the secondary/byproduct species[4]. Table 17 below provides a list of target, secondary, and discarded species in the CSF Line Sector. Based on available AFMA logbook and observer data between the 2015/16 fishing season to the 2024/25 fishing season, a species was considered a "target species" if total catch was over 1 tonne over this period, a "secondary species" if mostly retained but total catches were below 1 tonne, otherwise were considered discards (Table 17).

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[4] *Due to this variation, the term 'byproduct' hasn't been used, instead species are classified as target, secondary or discarded.*

Table 17: List of target, secondary and discarded species in the CSF Line Sector. Sourced from AFMA logbook catch and observer catch composition data. An asterixis (*) indicates species with some recorded discarding. Arrows (^) indicate ETP species listed as migratory under the EPBC Act, with a positive non-detriment finding (NDF) currently in place.

CAAB	Standard Name	Scientific Name	Status
37311151	Comet Grouper	*Epinephelus morrhua*	Target Species
37311152	Eightbar grouper	*Epinephelus octofasciatus*	Target Species
37311910	Bar Rockcod	*Epinephelus ergastularius & Epinephelus septemfasciatus*	Target Species
37346914	Long Tail Rubies/Snapper	*Etelis spp*	Target Species
37445001	Blue-eye Trevalla	*Hyperoglyphe antarctica*	Target Species
37337025	Amberjack	*Seriola dumerili*	Target Species*
37342001	Ray's Bream	*Brama brama*	Target Species*
37346001	Rusty Jobfish	*Aphareus rutilans*	Target Species*
37346014	Ruby Snapper	*Etelis carbunculus*	Target Species*
37346027	Green Jobfish	*Aprion virescens*	Target Species*
37346032	Rosy Snapper	*Pristipomoides filamentosus*	Target Species*
37346038	Flame Snapper	*Etelis coruscans*	Target Species*
37346054	Ornate Jobfish	*Pristipomoides argyrogrammicus*	Target Species*
37346060	Saddleback Snapper	*Paracaesio kusakarii*	Target Species*
37351022	Paddletail Seabream	*Gymnocranius euanus*	Target Species*
37990003	Sharks (mixed)	Sharks - other	Target Species*
28711044	Brown Tiger Prawn	*Penaeus esculentus*	Secondary Species
28786002	Boschma's Scampi	*Metanephrops boschmai*	Secondary Species
37010001	Shortfin Mako	*Isurus oxyrinchus*	Secondary Species^
37013000	Blind, Nurse, Carpet and Zebra Sharks -	Brachaeluridae & related families - undifferentiated	Secondary Species
37013001	Ornate Wobbegong	*Orectolobus ornatus*	Secondary Species
37017008	School Shark	*Galeorhinus galeus*	Secondary Species
37018001	Bronze Whaler	*Carcharhinus brachyurus*	Secondary Species
37018901	Blacktip sharks (mixed)	*Carcharhinus, Loxodon & Rhizoprionodon spp*	Secondary Species
37042000	Ghostsharks	Chimaeridae - undifferentiated	Secondary Species
37067007	Southern Conger	*Conger verreauxi*	Secondary Species
37210003	Butler's frogfish	*Tathicarpus butleri*	Secondary Species
37224002	Ribaldo	*Mora moro*	Secondary Species
37224006	Red Cod	*Pseudophycis bachus*	Secondary Species
37224900	Southern rock cod	*Lotella & Pseudophycis spp*	Secondary Species
37255004	Darwin's roughy	*Gephyroberyx darwinii*	Secondary Species
37255009	Orange Roughy	*Hoplostethus atlanticus*	Secondary Species
37258003	Redfish	*Centroberyx affinis*	Secondary Species
37258004	Bight Redfish	*Centroberyx gerrardi*	Secondary Species
37261001	Red Squirrelfish	*Sargocentron rubrum*	Secondary Species
37261003	Giant Squirrelfish	*Ostichthys japonicus*	Secondary Species
37261020	Roughscale Soldierfish	*Plectrypops lima*	Secondary Species
37287001	Reef Ocean Perch	*Helicolenus percoides*	Secondary Species
37287949	Ocean Perch Family	*Sebastidae - undifferentiated*	Secondary Species
37288006	Latchet	*Pterygotrigla polyommata*	Secondary Species
37311000	Seabasses and Rockcods - unspecified	Percichthyidae, Serranidae - undifferentiated	Secondary Species
37311001	Eastern Orange Perch	*Lepidoperca pulchella*	Secondary Species
37311009	Areolate grouper	*Epinephelus areolatus*	Secondary Species
37311011	Highfin Grouper	*Epinephelus maculatus*	Secondary Species
37311017	Sixbar Grouper	*Epinephelus sexfasciatus*	Secondary Species
37311021	Flowery Rockcod	*Epinephelus fuscoguttatus*	Secondary Species
37311040	Longfin Rockcod	*Epinephelus quoyanus*	Secondary Species
37311044	Barramundi Cod	*Cromileptes altivelis*	Secondary Species
37311057	Greasy grouper	*Epinephelus tauvina*	Secondary Species

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37311063	Honeycomb grouper	*Epinephelus merra*	Secondary Species
37311083	Coral Rockcod	*Cephalopholis miniata*	Secondary Species
37311095	Longfin Perch	*Caprodon longimanus*	Secondary Species
37311142	Flagtail rockcod	*Cephalopholis urodeta*	Secondary Species
37311145	Purple Rockcod	*Epinephelus cyanopodus*	Secondary Species
37311165	Oval Rockcod	*Triso dermopterus*	Secondary Species
37311166	Yellowedge Coronation Trout	*Variola louti*	Secondary Species
37311170	Bass groper	*Polyprion americanus*	Secondary Species
37311190	Redtip Grouper	*Epinephelus retouti*	Secondary Species
37311902	Hapuku and Bass Groper	Polyprion americanus & Polyprion oxygeneios	Secondary Species
37311905	Coral Trout (mixed)	*Plectropomus spp* & *Variola spp*	Secondary Species
37311908	Groupers (Rockcod)	Serranidae subfamily Epinephelinae	Secondary Species
37311909	Rockcod (Epinephelus & Cephalopholis)	*Epinephelus* & *Cephalopholis spp.*	Secondary Species
37326002	Longfinned bullseye	*Cookeolus japonicus*	Secondary Species
37326005	Lunartail Bigeye	*Priacanthus hamrur*	Secondary Species
37326008	Blotched Bigeye	*Heteropriacanthus cruentatus*	Secondary Species
37326901	Red Bullseye (mixed)	*Priacanthus spp*	Secondary Species
37335001	Cobia	*Rachycentron canadum*	Secondary Species
37337006	Yellowtail Kingfish	*Seriola lalandi*	Secondary Species
37337007	Samson Fish	*Seriola hippos*	Secondary Species
37337029	Rainbow Runner	*Elagatis bipinnulata*	Secondary Species
37337037	Yellowspotted trevally	*Carangoides fulvoguttatus*	Secondary Species
37337039	Bigeye Trevally	*Caranx sexfasciatus*	Secondary Species
37337052	Highfin Amberjack	*Seriola rivoliana*	Secondary Species
37337057	Island Trevally	*Carangoides orthogrammus*	Secondary Species
37337062	Silver Trevally	*Pseudocaranx georgianus*	Secondary Species
37337064	Brassy Trevally	*Caranx papuensis*	Secondary Species
37337901	Scad (mixed)	*Decapterus spp.*	Secondary Species
37338001	Mahi Mahi	*Coryphaena hippurus*	Secondary Species
37345900	Rubyfish (mixed)	*Plagiogeneion spp*	Secondary Species
37345901	Redbait (mixed)	*Emmelichthys spp*	Secondary Species
37346000	Tropical Snappers unspecified	Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated	Secondary Species
37346002	Goldbanded Jobfish	*Pristipomoides multidens*	Secondary Species
37346004	Red Emperor	*Lutjanus sebae*	Secondary Species
37346005	Crimson Snapper	*Lutjanus erythropterus*	Secondary Species
37346011	Stripey Snapper	*Lutjanus carponotatus*	Secondary Species
37346016	Maori Snapper	*Lutjanus rivulatus*	Secondary Species
37346019	Sharptooth Snapper	*Pristipomoides typus*	Secondary Species
37346028	Paddletail	*Lutjanus gibbus*	Secondary Species
37346030	Golden Snapper	*Lutjanus johnii*	Secondary Species
37346031	Tang's Snapper	*Lipocheilus calipocheilus carnolabrum*	Secondary Species
37346033	Hussar	*Lutjanus adetii*	Secondary Species
37346045	Onespot Snapper	*Lutjanus monostigma*	Secondary Species
37346049	False Fusilier	*Paracaesio xanthura*	Secondary Species
37346058	Pale Ruby Snapper	*Etelis radiosus*	Secondary Species
37346059	Goldflag Snapper	*Pristipomoides auricilla*	Secondary Species
37346064	Lavender Snapper	*Pristipomoides sieboldii*	Secondary Species
37346069	Vanuatu Snapper	*Paracaesio gonzalesi*	Secondary Species
37346901	Goldband snappers	*Pristipomoides multidens* & *Pristipomoides typus*	Secondary Species
37346905	Sea Perch	*Lutjanus spp*	Secondary Species
37350003	Painted Sweetlip	*Diagramma labiosum*	Secondary Species
37350903	Sweetlips	*Plectorhinchus spp.*	Secondary Species
37351005	Robinson's Seabream	*Gymnocranius grandoculis*	Secondary Species
37351006	Grass Emperor	*Lethrinus laticaudis*	Secondary Species
37351007	Redspot Emperor	*Lethrinus lentjan*	Secondary Species
37351008	Spangled Emperor	*Lethrinus nebulosus*	Secondary Species

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37351009	Redthroat Emperor	*Lethrinus miniatus*	Secondary Species
37351020	Yellowlip Emperor	*Lethrinus xanthochilus*	Secondary Species
37351026	Humpnose big-eye bream	*Monotaxis grandoculis*	Secondary Species
37351027	Mozambique Seabream	*Wattsia mossambica*	Secondary Species
37351901	Sea Bream Snapper	*Gymnocranius spp.*	Secondary Species
37351902	Emperor	*Lethrinus spp*	Secondary Species
37353000	Breams - unspecified	Sparidae - undifferentiated	Secondary Species
37355999	Goatfishes (Upeneus)	*Upeneus spp.*	Secondary Species
37367000	Boarfishes	Pentacerotidae - undifferentiated	Secondary Species
37367004	Bigspine Boarfish	*Pentaceros decacanthus*	Secondary Species
37367009	Pelagic Armourhead	*Pseudopentaceros richardsoni*	Secondary Species
37369002	Knifejaw	*Oplegnathus woodwardi*	Secondary Species
37377002	Grey Morwong	*Nemadactylus douglasii*	Secondary Species
37381000	Mullets	Mugilidae - undifferentiated	Secondary Species
37384001	Western Blackspot Pigfish	*Bodianus vulpinus*	Secondary Species
37384007	Goldspot Pigfish	*Bodianus perditio*	Secondary Species
37384043	Eastern Blue Groper	*Achoerodus viridis*	Secondary Species
37384061	Eastern blackspot pigfish	*Bodianus unimaculatus*	Secondary Species
37384904	Pigfishes	*Bodianus spp.*	Secondary Species
37386000	Parrotfishes unspecified	Scaridae - undifferentiated	Secondary Species
37441024	Wahoo	*Acanthocybium solandri*	Secondary Species
37445005	Blue Warehou	*Seriolella brama*	Secondary Species
37445014	Ocean Blue-eye Trevalla	*Schedophilus labyrinthicus*	Secondary Species
37990084	Scorpionfishes, Gurnards & Latchets	Scorpaenidae, Triglidae & Peristediidae - undifferentiated	Secondary Species
37017001	Gummy Shark	*Mustelus antarcticus*	Secondary Species*
37018036	Blacktip Reef Shark	*Carcharhinus melanopterus*	Secondary Species*
37018038	Whitetip Reef Shark	*Triaenodon obesus*	Secondary Species*
37018039	Blacktip Shark	*Carcharhinus limbatus*	Secondary Species*
37023002	Common Sawshark	*Pristiophorus cirratus*	Secondary Species*
37085922	Herrings (mixed)	Clupeidae - undifferentiated	Secondary Species*
37253002	Busakhin's beardfish	*Polymixia busakhini*	Secondary Species*
37258001	Imperador	*Beryx decadactylus*	Secondary Species*
37258002	Alfonsino	*Beryx splendens*	Secondary Species*
37261005	Deepwater Squirrelfish	*Ostichthys kaianus*	Secondary Species*
37287901	Ocean & Coral Perch	*Helicolenus barathri & Helicolenus percoides*	Secondary Species*
37311014	Blacktip Rockcod	*Epinephelus fasciatus*	Secondary Species*
37311042	Radiant Rockcod	*Epinephelus radiatus*	Secondary Species*
37311045	Tomato Rockcod	*Cephalopholis sonnerati*	Secondary Species*
37311078	Common Coral Trout	*Plectropomus leopardus*	Secondary Species*
37311103	Sharphead perch	*Lepidoperca magna*	Secondary Species*
37311901	Rockcod (Aethaloperca & Anyperodon)	*Aethaloperca & Anyperodon spp*	Secondary Species*
37311911	Grouper	*Epinephelus spp*	Secondary Species*
37337000	Trevallies and Scads - unspecified	Carangidae - undifferentiated	Secondary Species*
37337027	Giant trevally	*Caranx ignobilis*	Secondary Species*
37337053	Black Trevally	*Caranx lugubris*	Secondary Species*
37346055	Goldeneye Snapper	*Pristipomoides flavipinnis*	Secondary Species*
37346056	Oblique-banded Snapper	*Pristipomoides zonatus*	Secondary Species*
37351004	Longnose Emperor	*Lethrinus olivaceus*	Secondary Species*
37351012	Spotcheek Emperor	*Lethrinus rubrioperculatus*	Secondary Species*
37353001	Snapper	*Chrysophrys auratus*	Secondary Species*
37439001	Barracouta	*Thyrsites atun*	Secondary Species*
37439002	Gemfish	*Rexea solandri*	Secondary Species*
37439008	Escolar	*Lepidocybium flavobrunneum*	Secondary Species*
37999999	Fish (mixed)	Mixed fish	Secondary Species*
11290000	Stony corals	Order Scleractinia - undifferentiated	Discard
25400000	Holothurians	Class Holothuroidea - undifferentiated	Discard

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37005001	Sharpnose Sevengill Shark	*Heptranchias perlo*	Discard
37005002	Broadnose Shark	*Notorynchus cepedianus*	Discard
37005004	Bigeyed Sixgill Shark	*Hexanchus nakamurai*	Discard
37005005	Bluntnose Sixgill shark	*Hexanchus griseus*	Discard
37008003	Sandtiger Shark	*Odontaspis ferox*	Discard
37012000	Thresher Sharks	Alopiidae - undifferentiated	Discard
37012001	Thresher Shark	*Alopias vulpinus*	Discard
37012002	Bigeye Thresher	*Alopias superciliosus*	Discard
37013900	Wobbegong (mixed)	Orectolobidae	Discard
37015028	Australian Marbled Catshark	*Atelomycterus macleayi*	Discard
37015906	Draughtboard Sharks (mixed)	*Cephaloscyllium spp.*	Discard
37017000	Hound Sharks	Triakidae - undifferentiated	Discard
37018004	Blue Shark	*Prionace glauca*	Discard
37018007	Sandbar Shark	*Carcharhinus plumbeus*	Discard
37018008	Silky Shark	*Carcharhinus falciformis*	Discard
37018012	Bignose Shark	*Carcharhinus altimus*	Discard
37018022	Tiger Shark	*Galeocerdo cuvier*	Discard
37018027	Silvertip Shark	*Carcharhinus albimarginatus*	Discard
37018029	Lemon Shark	*Negaprion acutidens*	Discard
37018030	Grey Reef Shark	*Carcharhinus amblyrhynchos*	Discard
37019000	Hammerhead Sharks - unspecified	Sphyrnidae - undifferentiated	Discard
37019001	Scalloped Hammerhead	*Sphyrna lewini*	Discard^
37019002	Great Hammerhead	*Sphyrna mokarran*	Discard
37019902	Hammerhead Sharks (mixed)	*Sphyrna spp.*	Discard
37020000	Gulper Sharks, Sleeper Sharks, Dogfishes	Centrophoridae, Dalatiidae, Squalidae, Somniosidae & Etmopteridae - undifferentiated	Discard
37020005	Blackbelly Lanternshark	*Etmopterus lucifer*	Discard
37020006	Piked Spurdog	*Squalus megalops*	Discard
37020007	Greeneye Dogfish (obsolete)	*Squalus mitsukurii* (obsolete)	Discard
37020023	Gulper Shark	*Centrophorus granulosus*	Discard
37020026	Mandarin Shark (obsolete)	*Cirrhigaleus barbifer* (obsolete)	Discard
37020038	Eastern Highfin Spurdog	*Squalus albifrons*	Discard
37020041	Eastern Longnose Spurdog	*Squalus grahami*	Discard
37020047	Philippine Spurdog	*Squalus montalbani*	Discard
37020049	Mandarin Shark	*Cirrhigaleus australis*	Discard
37020901	Greeneye Dogfishes (mixed)	*Squalus spp*	Discard
37020904	Roughskin Dogfishes (mixed)	*Centroscymnus & Deania spp*	Discard
37020908	Gulper Sharks (mixed)	*Centrophorus spp.*	Discard
37020923	Dogfishes (mixed)	Squalidae - undifferentiated	Discard
37022002	Prickly Shark	*Echinorhinus cookei*	Discard
37031000	Skates	Rajidae - undifferentiated	Discard
37031005	Skate sp A	*Dipturus confusus*	Discard
37031034	Weng's skate	*Dipturus wengi*	Discard
37035000	Stingrays - unspecified	Dasyatidae - undifferentiated	Discard
37035004	Blue-spotted stingray	*Neotrygon kuhlii*	Discard
37043001	Elephantfish	*Callorhinchus milii*	Discard
37056001	Short-finned eel	*Anguilla australis*	Discard
37060000	Moray eels	Muraenidae - undifferentiated	Discard
37060900	Moray eels	*Gymnothorax spp.*	Discard
37063002	Daggertooth pike conger	*Muraenesox cinereus*	Discard
37067000	Conger eels	Congridae, Colocongridae - undifferentiated	Discard
37067001	Eastern conger	*Conger wilsoni*	Discard
37067015	Blacklip Conger	*Conger cinereus*	Discard
37067900	Conger eel (mixed)	*Conger verreauxi & Conger wilsoni*	Discard

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37068000	snake eels	Ophichthidae - undifferentiated	Discard
37120001	Blacktip Cucumberfish	*Paraulopus nigripinnis*	Discard
37120014	Piedtip cucumberfish	*Paraulopus okamurai*	Discard
37253000	Beardfishes	Polymixiidae - undifferentiated	Discard
37253001	Berndt's beardfish	*Polymixia berndti*	Discard
37287008	Southern Red Scorpionfish	*Scorpaena papillosa*	Discard
37287115	Largescale Scorpionfish	*Neomerinthe megalepis*	Discard
37287900	Coral Perch	Scorpaenidae	Discard
37287904	Scorpionfishes - Scorpaenid	*Scorpaena spp*	Discard
37288000	Searobins & armour gurnards	Triglidae & Peristediidae - undifferentiated	Discard
37288001	Red Gurnard	*Chelidonichthys kumu*	Discard
37327000	Cardinalfishes	Apogonidae, Dinolestidae - undifferentiated	Discard
37337003	Yellowtail Scad	*Trachurus novaezelandiae*	Discard
37337060	Rough-ear Scad	*Decapterus tabl*	Discard
37337072	Black Pomfret	*Parastromateus niger*	Discard
37342000	Pomfrets - unspecified	Bramidae - undifferentiated	Discard
37342015	Sickle Pomfret	*Taractichthys steindachneri*	Discard
37342900	Pomfrets	*Brama spp.*	Discard
37346029	Red Bass	*Lutjanus bohar*	Discard
37349000	Silverbiddies	Gerreidae - undifferentiated	Discard
37378000	trumpeters	Latridae - undifferentiated	Discard
37382008	Great barracuda	*Sphyraena barracuda*	Discard
37382901	Barracudas	*Sphyraena spp*	Discard
37439003	Oilfish	*Ruvettus pretiosus*	Discard
37439013	Singleline Gemfish	*Promethichthys prometheus*	Discard
37439016	Black Snoek	*Thyrsitoides marleyi*	Discard
37439918	Gemfishes & Snake Mackerels (mixed)	Gempylidae - undifferentiated	Discard
37441002	Yellowfin Tuna	*Thunnus albacares*	Discard
37441006	Striped Bonito	*Sarda orientalis*	Discard
37465900	Triggerfishes, durgons nei.	Balistidae - undifferentiated	Discard
37467000	Toadfishes unspecified	Tetraodontidae - undifferentiated	Discard
37468001	Threetooth puffer	*Triodon macropterus*	Discard
37469013	Three-barred porcupinefish	*Dicotylichthys punctulatus*	Discard
37990020	Fish Oceanic (mixed)	Fish Oceanic (mixed)	Discard
37990030	Skates and Rays (mixed)	Order Rajiformes - undifferentiated	Discard
99000001	Benthos	Various bits of the sea floor which may be alive	Discard
99000001	Benthos	Various bits of the sea floor which may be alive	Discard

2.2 ETP species

Consistent with the Memorandum of Understanding (MoU) between AFMA and DCCEEW, ETP species refer to all listed threatened, migratory and marine species and cetaceans consistent with the EPBC Act. ETP species with ranges that overlap with the CSF were identified using the DCCEEW Protected Matters Search Tool (Table 18).

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Table 18: List of ETP species with ranges that overlap with the CSF. Data source: DCCEEW (2024).

Species ID	Scientific Name	Common Name	Class	Presence	ETP Category
28	*Dugong dugon*	Dugong	Mammal	Known	Migratory, Listed
29	*Stenella longirostris*	Long-snouted Spinner Dolphin	Mammal	May	Cetacean
30	*Steno bredanensis*	Rough-toothed Dolphin	Mammal	May	Cetacean
33	*Balaenoptera acutorostrata*	Minke Whale	Mammal	May	Cetacean
34	*Balaenoptera borealis*	Sei Whale	Mammal	Likely	Vulnerable, Migratory, Cetacean
35	*Balaenoptera edeni*	Bryde's Whale	Mammal	Likely	Migratory
36	*Balaenoptera musculus*	Blue Whale	Mammal	May	Endangered, Migratory, Cetacean
37	*Balaenoptera physalus*	Fin Whale	Mammal	Likely	Vulnerable, Migratory, Cetacean
38	*Megaptera novaeangliae*	Humpback Whale	Mammal	Known	Migratory, Cetacean
40	*Eubalaena australis*	Southern Right Whale	Mammal	May	Endangered, Migratory (as *Balaena glacialis australis*), Cetacean
41	*Lagenodelphis hosei*	Fraser's Dolphin, Sarawak Dolphin	Mammal	May	Cetacean
46	*Orcinus orca*	Killer Whale, Orca	Mammal	May	Migratory, Cetacean
47	*Peponocephala electra*	Melon-headed Whale	Mammal	May	Cetacean
48	*Pseudorca crassidens*	False Killer Whale	Mammal	Likely	Cetacean
51	*Stenella attenuata*	Spotted Dolphin, Pantropical Spotted Dolphin	Mammal	May	Cetacean
52	*Stenella coeruleoalba*	Striped Dolphin, Euphrosyne Dolphin	Mammal	May	Cetacean
56	*Ziphius cavirostris*	Cuvier's Beaked Whale, Goose-beaked Whale	Mammal	May	Cetacean
57	*Kogia breviceps*	Pygmy Sperm Whale	Mammal	May	Cetacean
59	*Physeter macrocephalus*	Sperm Whale	Mammal	May	Migratory, Cetacean
60	*Delphinus delphis*	Common Dolphin, Short-beaked Common Dolphin	Mammal	May	Cetacean
61	*Feresa attenuata*	Pygmy Killer Whale	Mammal	May	Cetacean
62	*Globicephala macrorhynchus*	Short-finned Pilot Whale	Mammal	May	Cetacean
64	*Grampus griseus*	Risso's Dolphin, Grampus	Mammal	May	Cetacean
72	*Indopacetus pacificus*	Longman's Beaked Whale	Mammal	May	Cetacean
74	*Mesoplodon densirostris*	Blainville's Beaked Whale, Dense-beaked Whale	Mammal	May	Cetacean
799	*Sterna striata*	White-fronted Tern	Bird	May	Listed
800	*Sterna sumatrana*	Black-naped Tern	Bird	Known	Migratory, Listed
800	*Sterna sumatrana*	Black-naped Tern	Bird	Known	Migratory, Listed
824	*Anous minutus*	Black Noddy	Bird	Known	Listed
825	*Anous stolidus*	Common Noddy	Bird	Known	Migratory, Listed
847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew	Bird	May	Critically Endangered, Migratory, Listed
849	*Numenius phaeopus*	Whimbrel	Bird	Likely	Migratory, Listed
851	*Tringa brevipes*	Grey-tailed Tattler	Bird	Likely	Migratory, Listed (as *Heteroscelus brevipes*)
855	*Calidris canutus*	Red Knot, Knot	Bird	May	Vulnerable, Migratory, Listed – overfly marine area
856	*Calidris ferruginea*	Curlew Sandpiper	Bird	May	Critically Endangered, Migratory, Listed – overfly marine area
858	*Calidris melanotos*	Pectoral Sandpiper	Bird	May	Migratory, Listed – overfly marine area
872	*Arenaria interpres*	Ruddy Turnstone	Bird	Likely	Vulnerable, Migratory, Listed
874	*Calidris acuminata*	Sharp-tailed Sandpiper	Bird	May	Vulnerable, Migratory, Listed
879	*Charadrius mongolus*	Lesser Sand Plover, Mongolian Plover	Bird	Likely	Endangered, Migratory, Listed
952	*Pandion haliaetus*	Osprey	Bird	May	Migratory, Listed
994	*Phaethon rubricauda*	Red-tailed Tropicbird	Bird	Known	Migratory, Listed

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1012	*Fregata ariel*	Lesser Frigatebird, Least Frigatebird	Bird	Known	Migratory, Listed
1013	*Fregata minor*	Great Frigatebird, Greater Frigatebird	Bird	Known	Migratory, Listed
1014	*Phaethon lepturus*	White-tailed Tropicbird	Bird	May	Migratory, Listed
1021	*Sula dactylatra*	Masked Booby	Bird	Known	Migratory, Listed
1022	*Sula leucogaster*	Brown Booby	Bird	Known	Migratory, Listed
1023	*Sula sula*	Red-footed Booby	Bird	Known	Migratory, Listed
1060	*Macronectes giganteus*	Southern Giant-Petrel, Southern Giant Petrel	Bird	May	Endangered, Migratory, Listed
1075	*Phoebetria fusca*	Sooty Albatross	Bird	May	Vulnerable, Migratory, Listed
1077	*Calonectris leucomelas*	Streaked Shearwater	Bird	Likely	Migratory, Listed
1092	*Laticauda colubrina*	Yellow-lipped Sea Krait	Reptile	May	Listed
1093	*Laticauda laticaudata*	a sea krait	Reptile	May	Listed
1104	*Hydrophis elegans*	Elegant Sea Snake, Bar-bellied Sea Snake	Reptile	May	Listed
1109	*Hydrophis melanosoma*	Black-banded Robust Sea Snake	Reptile	May	Listed
1111	*Hydrophis ornatus*	Spotted Sea Snake, Ornate Reef Sea Snake	Reptile	May	Listed
1116	*Aipysurus duboisii*	Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake	Reptile	May	Listed
1120	*Aipysurus laevis*	Olive Sea Snake, Olive-brown Sea Snake	Reptile	May	Listed
1125	*Emydocephalus annulatus*	Eastern Turtle-headed Sea Snake	Reptile	May	Listed
1763	*Caretta caretta*	Loggerhead Turtle	Reptile	Known	Endangered, Migratory, Listed
1765	*Chelonia mydas*	Green Turtle	Reptile	Known	Vulnerable, Migratory, Listed
1766	*Eretmochelys imbricata*	Hawksbill Turtle	Reptile	Known	Vulnerable, Migratory, Listed
1767	*Lepidochelys olivacea*	Olive Ridley Turtle, Pacific Ridley Turtle	Reptile	Likely	Endangered, Migratory, Listed
1768	*Dermochelys coriacea*	Leatherback Turtle, Leathery Turtle, Luth	Reptile	Likely	Endangered, Migratory, Listed
1774	*Crocodylus porosus*	Salt-water Crocodile, Estuarine Crocodile	Reptile	Likely	Migratory, Listed
25545	*Pluvialis fulva*	Pacific Golden Plover	Bird	Likely	Migratory, Listed
25556	*Mesoplodon layardii*	Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale	Mammal	May	Cetacean
25927	*Hydrophis vorisi*	Estuarine Sea Snake	Reptile	May	Listed
59257	*Natator depressus*	Flatback Turtle	Reptile	Known	Vulnerable, Migratory, Listed
59309	*Actitis hypoleucos*	Common Sandpiper	Bird	May	Migratory, Listed
59564	*Mesoplodon ginkgodens*	Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale	Mammal	May	Cetacean
59642	*Pterodroma cervicalis*	White-necked Petrel	Bird	May	Listed
60756	*Pristis pristis*	Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish	Shark	May	Endangered, Migratory
64438	*Fregetta grallaria grallaria*	White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)	Bird	Likely	Vulnerable
64450	*Pterodroma neglecta neglecta*	Kermadec Petrel (western)	Bird	May	Vulnerable
64459	*Thalassarche impavida*	Campbell Albatross, Campbell Black-browed Albatross	Bird	May	Vulnerable, Migratory, Listed
64462	*Thalassarche steadi*	White-capped Albatross	Bird	May	Vulnerable, Migratory, Listed
64463	*Thalassarche salvini*	Salvin's Albatross	Bird	May	Vulnerable, Migratory, Listed
64464	*Thalassarche carteri*	Indian Yellow-nosed Albatross	Bird	May	Vulnerable, Migratory, Listed
64469	*Carcharias taurus*	Grey Nurse Shark	Shark	May	Migratory
64470	*Carcharodon carcharias*	White Shark, Great White Shark	Shark	Known	Vulnerable, Migratory
66183	*Solenostomus cyanopterus*	Robust Ghostpipefish, Blue-finned Ghost Pipefish,	Fish	May	Listed
66187	*Acentronura tentaculata*	Shortpouch Pygmy Pipehorse	Fish	May	Listed
66190	*Bulbonaricus davaoensis*	Davao Pughead Pipefish	Fish	May	Listed
66194	*Choeroichthys brachysoma*	Pacific Short-bodied Pipefish, Short-bodied Pipefish	Fish	May	Listed
66195	*Choeroichthys cinctus*	Barred Short-bodied Pipefish, Girdled Pipefish	Fish	May	Listed

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66197	*Choeroichthys sculptus*	Sculptured Pipefish	Fish	May	Listed
66198	*Choeroichthys suillus*	Pig-snouted Pipefish	Fish	May	Listed
66199	*Corythoichthys amplexus*	Fijian Banded Pipefish, Brown-banded Pipefish	Fish	May	Listed
66200	*Corythoichthys flavofasciatus*	Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish	Fish	May	Listed
66202	*Corythoichthys intestinalis*	Australian Messmate Pipefish, Banded Pipefish	Fish	May	Listed
66203	*Corythoichthys ocellatus*	Orange-spotted Pipefish, Ocellated Pipefish	Fish	May	Listed
66204	*Corythoichthys paxtoni*	Paxton's Pipefish	Fish	May	Listed
66205	*Corythoichthys schultzi*	Schultz's Pipefish	Fish	May	Listed
66209	*Cosmocampus maxweberi*	Maxweber's Pipefish	Fish	May	Listed
66210	*Doryrhamphus dactyliophorus*	Banded Pipefish, Ringed Pipefish	Fish	May	Listed
66211	*Doryrhamphus excisus*	Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish	Fish	May	Listed
66212	*Doryrhamphus janssi*	Cleaner Pipefish, Janss' Pipefish	Fish	May	Listed
66213	*Doryrhamphus negrosensis*	Flagtail Pipefish, Masthead Island Pipefish	Fish	May	Listed
66214	*Festucalex cinctus*	Girdled Pipefish	Fish	May	Listed
66215	*Festucalex gibbsi*	Gibbs' Pipefish	Fish	May	Listed
66219	*Halicampus brocki*	Brock's Pipefish	Fish	May	Listed
66220	*Halicampus dunckeri*	Red-hair Pipefish, Duncker's Pipefish	Fish	May	Listed
66221	*Halicampus grayi*	Mud Pipefish, Gray's Pipefish	Fish	May	Listed
66222	*Halicampus macrorhynchus*	Whiskered Pipefish, Ornate Pipefish	Fish	May	Listed
66223	*Halicampus mataafae*	Samoan Pipefish	Fish	May	Listed
66224	*Halicampus nitidus*	Glittering Pipefish	Fish	May	Listed
66225	*Halicampus spinirostris*	Spiny-snout Pipefish	Fish	May	Listed
66226	*Haliichthys taeniophorus*	Ribboned Pipehorse, Ribboned Seadragon	Fish	May	Listed
66228	*Hippichthys cyanospilos*	Blue-speckled Pipefish, Blue-spotted Pipefish	Fish	May	Listed
66229	*Hippichthys heptagonus*	Madura Pipefish, Reticulated Freshwater Pipefish	Fish	May	Listed
66231	*Hippichthys penicillus*	Beady Pipefish, Steep-nosed Pipefish	Fish	May	Listed
66232	*Hippichthys spicifer*	Belly-barred Pipefish, Banded Freshwater Pipefish	Fish	May	Listed
66236	*Hippocampus histrix*	Spiny Seahorse, Thorny Seahorse	Fish	May	Listed
66237	*Hippocampus kuda*	Spotted Seahorse, Yellow Seahorse	Fish	May	Listed
66238	*Hippocampus planifrons*	Flat-face Seahorse	Fish	May	Listed
66239	*Hippocampus spinosissimus*	Hedgehog Seahorse	Fish	May	Listed
66241	*Hippocampus zebra*	Zebra Seahorse	Fish	May	Listed
66253	*Micrognathus andersonii*	Anderson's Pipefish, Shortnose Pipefish	Fish	May	Listed
66254	*Micrognathus brevirostris*	thorntail Pipefish, Thorn-tailed Pipefish	Fish	May	Listed
66256	*Micrognathus natans*	Offshore Pipefish	Fish	May	Listed
66257	*Microphis brachyurus*	Short-tail Pipefish, Short-tailed River Pipefish	Fish	May	Listed
66263	*Nannocampus pictus*	Painted Pipefish, Reef Pipefish	Fish	May	Listed
66266	*Phoxocampus diacanthus*	Pale-blotched Pipefish, Spined Pipefish	Fish	May	Listed
66270	*Siokunichthys breviceps*	Softcoral Pipefish, Soft-coral Pipefish	Fish	May	Listed
66271	*Solegnathus dunckeri*	Duncker's Pipehorse	Fish	May	Listed

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66272	*Solegnathus hardwickii*	Pallid Pipehorse, Hardwick's Pipehorse	Fish	May	Listed
66275	*Solegnathus spinosissimus*	Spiny Pipehorse, Australian Spiny Pipehorse	Fish	May	Listed
66279	*Syngnathoides biaculeatus*	Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish	Fish	May	Listed
66280	*Trachyrhamphus bicoarctatus*	Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish	Fish	May	Listed
66281	*Trachyrhamphus longirostris*	Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish	Fish	May	Listed
66472	*Thalassarche melanophris*	Black-browed Albatross	Bird	May	Vulnerable, Migratory, Listed
66680	*Rhincodon typus*	Whale Shark	Shark	May	Vulnerable, Migratory
66721	*Hippocampus bargibanti*	Pygmy Seahorse	Fish	May	Listed
66973	*Pterodroma heraldica*	Herald Petrel	Bird	Likely	Critically Endangered
67812	*Balaenoptera bonaerensis*	Antarctic Minke Whale, Dark-shoulder Minke Whale	Mammal	Likely	Migratory, Cetacean
68417	*Tursiops truncatus s. str.*	Bottlenose Dolphin	Mammal	May	Cetacean
68418	*Tursiops aduncus*	Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin	Mammal	May	Cetacean
68442	*Pristis zijsron*	Green Sawfish, Dindagubba, Narrowsnout Sawfish	Shark	Known	Vulnerable, Migratory
68444	*Centrophorus harrissoni*	Harrisson's Dogfish, Endeavour Dogfish, Dumb Gulper Shark, Harrison's Deepsea Dogfish	Shark	Likely	Conservation Dependent
68448	*Anoxypristis cuspidata*	Narrow Sawfish, Knifetooth Sawfish	Shark	Likely	Migratory
75601	*Hydrophis macdowelli*	MacDowell's Sea Snake, Small-headed Sea Snake,	Reptile	May	Listed (as *Hydrophis mcdowelli*)
79073	*Isurus oxyrinchus*	Shortfin Mako, Mako Shark	Shark	Likely	Migratory, positive NDF
81322	*Orcaella heinsohni*	Australian Snubfin Dolphin	Mammal	May	Vulnerable, Migratory, Cetacean
82404	*Ardenna carneipes*	Flesh-footed Shearwater, Fleshy-footed Shearwater	Bird	May	Migratory, Listed (as *Puffinus carneipes*)
82453	*Glyphis glyphis*	Speartooth Shark	Shark	May	Critically Endangered
82651	*Ardenna grisea*	Sooty Shearwater	Bird	May	Vulnerable, Migratory, Listed (as *Puffinus griseus*)
82947	*Isurus paucus*	Longfin Mako	Shark	Likely	Migratory
83000	*Thalasseus bergii*	Greater Crested Tern	Bird	Known	Migratory, Listed (as *Sterna bergii*)
83288	*Lamna nasus*	Porbeagle, Mackerel Shark	Shark	May	Migratory, positive NDF
84108	*Carcharhinus longimanus*	Oceanic Whitetip Shark	Shark	Likely	Migratory
84292	*Ardenna pacifica*	Wedge-tailed Shearwater	Bird	Known	Migratory, Listed (as *Puffinus pacificus*)
85043	*Kogia sima*	Dwarf Sperm Whale	Mammal	May	Migratory, Cetacean
85267	*Sphyrna lewini*	Scalloped Hammerhead	Shark	Likely	Conservation Dependent
87136	*Balaenoptera omurai*	Omura's Whale	Mammal	Likely	Migratory, Cetacean
87261	*Aipysurus mosaicus*	Mosaic Sea Snake	Reptile	May	Listed (as *Aipysurus eydouxii*)
87375	*Microcephalophis gracilis*	Graceful Small-headed Sea Snake, Slender Sea Snake	Reptile	May	Listed (as *Hydrophis gracilis*)
87942	*Sousa sahulensis*	Australian Humpback Dolphin	Mammal	Known	Vulnerable, Migratory (as *Sousa chinensis*), Cetacean
89224	*Thalassarche cauta*	Shy Albatross	Bird	May	Endangered, Migratory, Listed
90033	*Mobula alfredi*	Reef Manta Ray, Coastal Manta Ray	Shark	Known	Migratory (as *Manta alfredi*)
90034	*Mobula birostris*	Giant Manta Ray	Shark	Likely	Migratory (as *Manta birostris*)
93509	*Hydrophis peronii*	Horned Sea Snake	Reptile	May	Listed (as *Acalyptophis peronii*)
93510	*Hydrophis stokesii*	Stokes' Sea Snake	Reptile	May	Listed (as *Astrotia stokesii*)
93511	*Hydrophis kingii*	Spectacled Sea Snake	Reptile	May	Listed (as *Disteira kingii*)
93512	*Hydrophis major*	Olive-headed Sea Snake	Reptile	May	Listed (as *Disteira major*)
93514	*Hydrophis zweifeli*	Australian Beaked Sea Snake	Reptile	May	Listed (as *Enhydrina schistosa*)
93516	*Hydrophis hardwickii*	Spine-bellied Sea Snake	Reptile	May	Listed (as *Lapemis hardwickii*)
93746	*Hydrophis platura*	Yellow-bellied Sea Snake	Reptile	May	Listed (as *Pelamis platurus*)

2.3 Benthic habitats

Risk assessment for benthic habitats considers both the seafloor structure and its attached invertebrate fauna. Because data on the types and distributions of benthic habitat in Australia's Commonwealth fisheries are generally sparse, and because there is no universally accepted benthic classification scheme, the ERAEF methodology has used the most widely available type of data – seabed imagery – classified in a similar manner to that used in bioregionalisation and deep seabed mapping in Australian Commonwealth waters. Using this imagery, benthic habitats are classified based on an SGF score, using sediment, geomorphology, and fauna. Where seabed imagery is not available, a second method (Method 2) is used to develop an inferred list of potential habitat types for the fishery. For details of both methods, see Hobday et al. (2007).

Habitat data used for assessment of the Coral Sea sub-fisheries were largely derived from geophysical and fishery data using Scoping method 2, as few seabed image data were available. Data were available only for the NE seamount chain from a deep-sea biodiversity survey undertaken in 2003 (Williams et al., 2006).

Table 19: List of benthic habitats within the extent of the CSF line sector subject to fishing effort. Table adapted from and combined from Furlani et al. (2007a, 2007b, 2007c).

ERAEF Habitat No.	Sub-biome	Feature	Habitat type	SGF Score	Depth (m)	Image available	Reference image location
001	inner shelf	shelf	gravel, current rippled, mixed faunal community	313	25- 100	Y	SE Image Collection
002	inner shelf	shelf	Sedimentary rock, outcrop, large sponges	691	25- 100	Y	SE Image Collection
003	inner shelf	shelf	Sedimentary rock, outcrop, mixed faunal community	693	25- 100	Y	SE Image Collection
004	inner shelf	shelf	Sedimentary rock, outcrop, large sponges	671	25- 100	Y	SE Image Collection
005	inner shelf	shelf	cobble, debris flow, large sponges	441	25- 100	Y	SE Image Collection
006	inner shelf	shelf	coarse sediments, subcrop, large sponges	251	25- 100	Y	SE Image Collection
007	inner shelf	shelf	gravel, debris flow, mixed faunal community	343	25- 100	Y	SE Image Collection
009	inner shelf	shelf	coarse sediments, wave rippled, sedentary	227	25- 100	Y	SE Image Collection
010	inner shelf	shelf	coarse sediments, current rippled, no fauna	210	25- 100	Y	SE Image Collection
011	inner shelf	shelf	coarse sediments, wave rippled, large sponges	221	25- 100	Y	SE Image Collection
012	inner shelf	shelf	fine sediments, unrippled, large sponges	101	25- 100	Y	SE Image Collection
013	inner shelf	shelf	coarse sediments, unrippled, large sponges	201	25- 100	Y	SE Image Collection
014	inner shelf	shelf	fine sediments, wave rippled, large sponges	111	25- 100	Y	SE Image Collection
016	inner shelf	shelf	fine sediments, unrippled, mixed faunal community	103	25- 100	Y	SE Image Collection
017	outer shelf	shelf	fine sediments, subcrop, large sponges	151	100- 200	Y	SE Image Collection
018	outer shelf	shelf	Sedimentary rock, outcrop, encrustors	696	100- 200	Y	SE Image Collection
019	outer shelf	shelf	coarse sediments, subcrop, large sponges	251	100- 200	Y	SE Image Collection
020	outer shelf	shelf	cobble, outcrop, crinoids	464	100- 200	Y	SE Image Collection
022	outer shelf	shelf	Sedimentary rock, subcrop, mixed faunal community	653	100- 200	Y	SE Image Collection
023	outer shelf	shelf	Sedimentary rock, outcrop, large sponges	671	100- 200	Y	SE Image Collection
024	outer shelf	shelf	gravel, irregular, encrustors	336	100- 200	Y	SE Image Collection

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025	outer shelf	shelf	coarse sediments, wave rippled, no fauna	220	100- 200	Y	SE Image Collection
026	outer shelf	shelf	coarse sediments, unrippled, encrustors	206	100- 200	Y	SE Image Collection
027	outer shelf	shelf	coarse sediments, current rippled, no fauna	210	100- 200	Y	SE Image Collection
028	outer shelf	shelf	cobble, unrippled, large sponges	401	100- 200	Y	SE Image Collection
029	outer shelf	shelf	coarse sediments, irregular, large sponges	231	100- 200	Y	SE Image Collection
030	outer shelf	shelf	coarse sediments, unrippled, mixed faunal community	203	100- 200	Y	SE Image Collection
032	outer shelf	shelf	cobble, subcrop, crinoids	454	100- 200	Y	SE Image Collection
033	upper slope	slope	Sedimentary rock, subcrop, mixed faunal community	653	200- 700	Y	SE Image Collection
034	upper slope	slope	Sedimentary rock, outcrop, encrustors	696	200- 700	Y	SE Image Collection
035	upper slope	slope	Sedimentary rock, outcrop, encrustors	666	200- 700	Y	SE Image Collection
036	upper slope	slope	Sedimentary rock, subcrop, encrustors	656	200- 700	Y	SE Image Collection
039	upper slope	slope	Sedimentary rock, outcrop, crinoids	684	200- 700	Y	SE Image Collection
040	upper slope	slope	fine sediments, subcrop, sedentary	157	200- 700	Y	SE Image Collection
041	upper slope	slope	fine sediments, irregular, bioturbators	139	200- 700	Y	SE Image Collection
043	upper slope	slope	coarse sediments, unrippled, low mixed encrustors	206	200- 700	Y	SE Image Collection
044	upper slope	slope, canyon	fine sediments, unrippled, bioturbators	109	200- 700	Y	SE Image Collection
045	upper slope	slope	coarse sediments, unrippled, sedentary	207	200- 700	Y	SE Image Collection
046	upper slope	slope	fine sediments, unrippled, no fauna	100	200- 700	Y	SE Image Collection
049	mid-slope	slope	Igneous rock, high outcrop, crinoids	594	700- 1500	Y	SE Image Collection
050	mid-slope	slope	cobble, debris flow, encrustors	446	700- 1500	Y	SE Image Collection
051	mid-slope	slope	cobble, outcrop, no fauna	460	700- 1500	Y	SE Image Collection
052	mid-slope	slope	Sedimentary rock, outcrop, octocorals	675	700- 1500	Y	SE Image Collection
053	mid-slope	slope	Igneous rock, low outcrop, sedentary	567	700- 1500	Y	SE Image Collection
054	mid-slope	slope	Sedimentary rock, outcrop, crinoids	694	700- 1500	Y	SE Image Collection
055	mid-slope	slope	Sedimentary rock, unrippled, sedentary	607	700- 1500	Y	SE Image Collection
056	mid-slope	slope, canyons, seamounts	Sedimentary rock, outcrop, mixed faunal community	673	700- 1500	Y	SE Image Collection
057	mid-slope	slope	fine sediments, subcrop, bioturbators	150	700- 1500	Y	SE Image Collection
058	mid-slope	slope	cobble, unrippled, small sponges	402	700- 1500	Y	SE Image Collection
059	mid-slope	slope	coarse sediments, irregular,low encrusting	236	700- 1500	Y	SE Image Collection
060	mid-slope	slope	cobble, outcrop, crinoids	464	700- 1500	Y	SE Image Collection
061	mid-slope	slope	fine sediments, irregular, bioturbators	139	700- 1500	Y	SE Image Collection
062	mid-slope	slope	coarse sediments, unrippled, octocorals	205	700- 1500	Y	SE Image Collection
063	mid-slope	slope	fine sediments, unrippled, octocorals	105	700- 1500	Y	SE Image Collection
064	mid-slope	slope	Sedimentary slab and mud boulders, outcrop, crinoids	464	700- 1500	Y	SE Image Collection
065	outer shelf	canyon	Sedimentary rock, outcrop, small sponges	672	100- 200	Y	SE Image Collection
066	upper slope	canyon	Sedimentary rock, outcrop, crinoids	694	200- 700	Y	SE Image Collection

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067	upper slope	canyon, slope	Sedimentary rock, subcrop, large sponges	651	200- 700	Y	SE Image Collection
069	upper slope	canyon	cobble, outcrop, crinoids	464	200- 700	Y	SE Image Collection
070	upper slope	canyon	Sedimentary rock, subcrop, small sponges	652	200- 700	Y	SE Image Collection
071	upper slope	Shelf break	Sedimentary, low outcrop, small encrustors	676	200- 700	3	WA Image Collection
072	upper slope	canyon, slope	coarse sediments, irregular, bioturbators	239	200- 700	Y	SE Image Collection
073	upper slope	canyon	fine sediments, irregular, encrustors	136	200- 700	Y	SE Image Collection
076	upper slope	canyon, slope	coarse sediments, irregular, low mixed encrustors	236	200- 700	Y	SE Image Collection
077	upper slope	canyon, slope	fine sediments, subcrop, small sponges	152	200- 700	Y	SE Image Collection
078	upper slope	slope, canyon	fine sediments, unrippled, sedentary	107	200- 700	Y	SE Image Collection
080	mid-slope	seamount	Sedimentary rock, outcrop, encrustors	676	700- 1500	Y	SE Image Collection
081	mid-slope	seamount	Sedimentary rock, unrippled, no fauna	600	700- 1500	Y	SE Image Collection
084	mid-slope	seamount	Sedimentary rock, outcrop, sedentary	677	700- 1500	Y	SE Image Collection
085	mid-slope	seamount	Sedimentary rock, unrippled, encrustors	606	700- 1500	Y	SE Image Collection
089	inner shelf	shelf	coarse sediments, irregular, encrustors	236	25- 100	N	SE Image Collection
090	inner shelf	shelf	coarse sediments, current rippled, bioturbators	219	25- 100	N	SE Image Collection
091	inner shelf	shelf	fine sediments, irregular, large sponges	131	25- 100	N	SE Image Collection
092	inner shelf	shelf	fine sediments, irregular, small sponges	132	25- 100	N	SE Image Collection
093	inner shelf	shelf	fine sediments, unrippled, bioturbators	109	25- 100	N	SE Image Collection
094	inner shelf	shelf	Fine sediments, unrippled, small sponges	102	25- 100	Y	Norfanz Image Collection
095	inner shelf	shelf	fine sediments, wave rippled, no fauna	120	25- 100	N	SE Image Collection
096	inner shelf	shelf	fine sediments, wave rippled, small sponges	122	25- 100	N	SE Image Collection
097	inner shelf	shelf	gravel, wave rippled, bioturbators	329	25- 100	Y	SE Image Collection
098	inner shelf	shelf	gravel, wave rippled, no fauna	320	25- 100	Y	SE Image Collection
099	inner shelf	shelf	Igneous rock, high outcrop, large sponges	591	25- 100	N	SE Image Collection
100	outer shelf	shelf	mud, unrippled, sedentary	007	100- 200	Y	SE Image Collection
101	outer shelf	shelf	coarse sediments, subcrop, small sponges	252	100- 200	N	SE Image Collection
102	outer shelf	shelf	coarse sediments, wave rippled, encrustors	226	100- 200	N	SE Image Collection
103	outer shelf	shelf	coarse sediments, wave rippled, small sponges	222	100- 200	N	SE Image Collection
104	outer shelf	shelf	fine sediments, current rippled, bioturbators	119	100- 200	Y	SE Image Collection
105	outer shelf	shelf	fine sediments, irregular, large sponges	131	100- 200	N	SE Image Collection
106	outer shelf	shelf	fine sediments, irregular, no fauna	130	100- 200	N	SE Image Collection
107	outer shelf	shelf	fine sediments, irregular, small sponges	132	100- 200	N	SE Image Collection
108	outer shelf	shelf	fine sediments, subcrop, mixed faunal community	153	100- 200	N	SE Image Collection
109	outer shelf	shelf	fine sediments, subcrop, small sponges	152	100- 200	Y	SE Image Collection
110	outer shelf	shelf	fine sediments, unrippled, bioturbators	109	100- 200	Y	SE Image Collection
111	outer shelf	shelf	fine sediments, unrippled, large sponges	101	100- 200	Y	SE Image Collection

112	outer shelf	shelf	fine sediments, unrippled, no fauna	100	100- 200	Y	SE Image Collection
113	outer shelf	shelf	Fine sediments, unrippled, small sponges	102	100- 200	Y	Norfanz Image Collection
114	outer shelf	shelf	fine sediments, wave rippled, bioturbators	129	100- 200	Y	SE Image Collection
115	outer shelf	shelf	fine sediments, wave rippled, encrustors	126	100- 200	N	SE Image Collection
116	outer shelf	shelf	fine sediments, wave rippled, large sponges	121	100- 200	N	SE Image Collection
117	outer shelf	shelf	fine sediments, wave rippled, no fauna	120	100- 200	N	SE Image Collection
118	outer shelf	shelf	fine sediments, wave rippled, sedentary	127	100- 200	N	SE Image Collection
119	outer shelf	shelf	fine sediments, wave rippled, small sponges	122	100- 200	N	SE Image Collection
120	outer shelf	shelf	gravel, current rippled, bioturbators	319	100- 200	N	SE Image Collection
121	outer shelf	shelf	gravel, wave rippled, bioturbators	329	100- 200	Y	SE Image Collection
122	outer shelf	shelf	gravel, wave rippled, encrustors	326	100- 200	N	SE Image Collection
123	outer shelf	shelf	gravel, wave rippled, large sponges	321	100- 200	N	SE Image Collection
124	outer shelf	shelf	gravel, wave rippled, no fauna	320	100- 200	N	SE Image Collection
125	outer shelf	shelf	mud, subcrop, small sponges	052	100- 200	Y	SE Image Collection
126	outer shelf	shelf	Sedimentary rock, subcrop, large sponges	651	100- 200	Y	SE Image Collection
127	outer shelf	shelf	Sedimentary rock, subcrop, small sponges	652	100- 200	Y	SE Image Collection
128	upper slope	slope	Bryozoan based communities	XX6	200- 700	Y	Norfanz Image Collection
129	upper slope	slope	cobble, debris flow, encrustors	446	200- 700	Y	SE Image Collection
130	upper slope	slope	cobble, debris flow, no fauna	440	200- 700	Y	SE Image Collection
131	upper slope	slope	cobble, debris flow, octocorals	445	200- 700	N	SE Image Collection
132	upper slope	slope	cobble, debris flow, small sponges	442	200- 700	Y	SE Image Collection
133	upper slope	slope	fine sediments, current rippled, no fauna	110	200- 700	N	SE Image Collection
134	upper slope	slope	fine sediments, subcrop, large sponges	151	200- 700	N	SE Image Collection
136	upper slope	slope	fine sediments, unrippled, encrustors	106	200- 700	Y	SE Image Collection
137	upper slope	slope	Fine sediments, unrippled, small sponges	102	200- 700	Y	Norfanz Image Collection
138	upper slope	slope	gravel, debris flow, encrustors	346	200- 700	Y	SE Image Collection
139	upper slope	slope	gravel, debris flow, no fauna	340	200- 700	N	SE Image Collection
140	upper slope	slope	mud, irregular, bioturbators	039	200- 700	Y	SE Image Collection
141	upper slope	slope	mud, unrippled, bioturbators	009	200- 700	Y	SE Image Collection
142	upper slope	slope	mud, unrippled, encrustors	006	200- 700	Y	SE Image Collection
143	upper slope	slope	mud, unrippled, large sponges	001	200- 700	N	SE Image Collection
144	upper slope	slope	mud, unrippled, sedentary	007	200- 700	Y	SE Image Collection
145	upper slope	canyon, slope	Sedimentary rock, low outcrop, large sponges	671	200- 700	N	SE Image Collection
146	upper slope	slope	Sedimentary rock, low outcrop, small sponges	672	200- 700	Y	SE Image Collection
148	upper slope	slope	Sedimentary rock, subcrop, octocorals	655	200- 700	N	SE Image Collection
150	mid-slope	slope	coarse sediments, current rippled, no fauna	210	700- 1500	N	SE Image Collection
151	mid-slope	slope	coarse sediments, current rippled, octocorals	215	700- 1500	N	SE Image Collection
152	mid-slope	slope	Coarse sediments, current rippled, sedentary	217	700- 1500	Y	Norfanz Image Collection
153	mid-slope	slope	coarse sediments, unrippled, no fauna	200	700- 1500	N	SE Image Collection

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154	mid-slope	slope	cobble, debris flow, crinoids	444	700- 1500	N	SE Image Collection
155	mid-slope	slope	slabs/ boulders, debris flow, octocorals	445	700- 1500	Y	SE Image Collection
156	mid-slope	slope	Fine sediments, unrippled, no fauna	100	700- 1500	Y	Norfanz Image Collection
156	mid-slope	slope	fine sediments, unrippled, no fauna	100	700- 1500	N	SE Image Collection
156	mid-slope	slope	fine sediments, unrippled, no fauna	100	700- 1500	N	SE Image Collection
157	mid-slope	slope	Igneous rock, high outcrop, octocorals	595	700- 1500	N	SE Image Collection
158	mid-slope	slope	mud, current rippled, bioturbators	019	700- 1500	N	SE Image Collection
159	mid-slope	slope	mud, irregular, bioturbators	039	700- 1500	N	SE Image Collection
160	mid-slope	slope	mud, irregular, sedentary	037	700- 1500	N	SE Image Collection
161	mid-slope	slope	mud, unrippled, small sponges	002	700- 1500	N	SE Image Collection
162	mid-slope	slope	Sedimentary rock, debris flow, crinoids	644	700- 1500	N	SE Image Collection
163	mid-slope	slope	Sedimentary rock, high outcrop, octocorals	695	700- 1500	Y	SE Image Collection
164	mid-slope	slope	Sedimentary rock, subcrop, crinoids	654	700- 1500	Y	SE Image Collection
165	mid-slope	slope	Sedimentary rock, subcrop, octocorals	655	700- 1500	Y	SE Image Collection
166	outer shelf	shelf-break	Bryozoan based communities	XX6	100- 200	Y	Norfanz Image Collection
167	outer shelf	shelf-break	fine sediments, irregular, bioturbators	139	100- 200, 200- 700	N	SE Image Collection
168	outer shelf	shelf-break	fine sediments, irregular, small sponges	132	100- 200, 200- 700	N	SE Image Collection
169	outer shelf	shelf-break	fine sediments, unrippled, bioturbators	109	100- 200, 200- 700	N	SE Image Collection
170	outer shelf	shelf-break	fine sediments, unrippled, no fauna	100	100- 200, 200- 700	N	SE Image Collection
171	outer shelf	shelf-break	fine sediments, unrippled, octocorals	105	100- 200, 200- 700	N	SE Image Collection
172	outer shelf	shelf-break	Igneous rock, high outcrop, no fauna	590	100- 200, 200- 700	N	SE Image Collection
173	outer shelf	shelf-break	mud, unrippled, no fauna	000	100- 200, 200- 700	N	SE Image Collection
174	outer shelf	shelf-break	mud, unrippled, sedentary	007	100- 200, 200- 700	N	SE Image Collection
175	outer shelf	shelf-break	Sedimentary rock, subcrop, crinoids	654	100- 200, 200- 700	N	SE Image Collection
176	outer shelf	shelf-break	Sedimentary rock, subcrop, small sponges	652	100- 200, 200- 700	N	SE Image Collection
177	outer shelf	shelf	mud, unrippled, low encrusting sponges	002	100- 200	N	SE Image Collection
178	outer shelf	shelf	mud, unrippled, bioturbators	009	100- 200	N	SE Image Collection
179	outer shelf	shelf	mud, subcrop, erect sponges	051	100- 200	N	SE Image Collection
180	outer shelf	shelf	mud, subcrop, low encrusting mixed fauna	056	100- 200	N	SE Image Collection
181	outer shelf	shelf	fine sediments, unrippled, encrustors	106	100- 200	N	SE Image Collection
183	outer shelf	shelf	fine sediments, current rippled, no fauna	110	100- 200	N	SE Image Collection
184	outer shelf	shelf	fine sediments, current rippled, low/ encrusting sponges	112	100- 200	N	SE Image Collection
185	outer shelf	shelf	fine sediments, irregular, low encrusting mixed fauna	136	100- 200	N	SE Image Collection
187	outer shelf	shelf	fine sediments, irregular, bioturbators	139	100- 200	N	SE Image Collection
188	outer shelf	shelf	fine sediments, rubble banks, low encrusting sponges	142	100- 200	N	SE Image Collection
189	outer shelf	shelf	fine sediments, subcrop, mixed low fauna	156	100- 200	N	SE Image Collection
190	outer shelf	shelf	coarse sediments, unrippled, no fauna	200	100- 200	N	SE Image Collection

191	inner shelf	shelf	coarse sediments, wave rippled, small sponges	222	25- 100	N	SE Image Collection
192	outer shelf	shelf	gravel/ pebble, current rippled, large sponges	311	100- 200	N	SE Image Collection
193	outer shelf	shelf	gravel/ pebble, current rippled, mixed low fauna	316	100- 200	N	SE Image Collection
194	outer shelf	shelf	gravel/ pebble, wave rippled, low encrusting sponges	322	100- 200	N	SE Image Collection
195	outer shelf	shelf	gravel, wave rippled, encrustors	326	100- 200	N	SE Image Collection
196	outer shelf	shelf	gravel, wave rippled, encrustors	346	100- 200	N	SE Image Collection
197	outer shelf	shelf	cobble, unrippled, low/ encrusting mixed fauna	406	100- 200	N	SE Image Collection
198	outer shelf	shelf	cobble, current rippled, low/ encrusting mixed fauna	416	100- 200	N	SE Image Collection
199	inner shelf	shelf	cobble, wave rippled, low/ encrusting mixed fauna	426	25- 100	N	SE Image Collection
200	inner shelf	shelf	coarse sediments, wave rippled, encrustors	226	25- 100	N	SE Image Collection
201	inner shelf	shelf	fine sediments, wave rippled, encrustors	126	25- 100	N	SE Image Collection
202	upper slope	Slope	mud, unrippled, no fauna	000	200- 700	Y	WA Image Collection
205	inner shelf	Shelf	Coarse sediments, current swept, mixed low epifauna	206	25-100	Y	WA Image Collection
213	mid-slope	Seamount	Igneous rock (?), outcrop, octocoral	575	700-1500	Y	WA Image Collection
219	outer shelf	Shelf	mud, unrippled, small or large sponges	001	100- 200	Y	WA Image Collection
220	outer shelf	Shelf	Mud, flat, octocorals	005	100- 200	Y	WA Image Collection
221	mid-slope	Slope	Mud, irregular (bioturbators), crinoids/ featherstars on whip	005	700-1500	Y	WA Image Collection
222	mid-slope	Slope	Mud, flat, solitary	007	700-1500	Y	WA Image Collection
223	outer shelf	Shelf	mud, current rippled, bioturbators	019	100- 200	Y	WA Image Collection
224	outer shelf	Shelf	mud, wave rippled, no fauna	020	100- 200	Y	WA Image Collection
225	outer shelf	Shelf	Mud, irregular, bioturbators	039	100- 200	Y	WA Image Collection
226	outer shelf	Shelf	Mud, subcrop, mixed faunal community	053	100- 200	Y	WA Image Collection
227	upper slope	Slope	Fine sediments, unrippled, sponges	101	200- 700	Y	WA Image Collection
228	mid-slope	Slope	Fine, unrippled, solitary	107	700-1500	Y	WA Image Collection
229	inner shelf	Canyon	Fine sediments, current rippled, no fauna	110	25-100	Y	WA Image Collection
230	mid-slope	Slope	fine sediments, irregular, no fauna	130	700-1500	Y	WA Image Collection
231	upper slope	Slope	Fine sediments, irregular, glass sponge (stalked)	137	200- 700	Y	WA Image Collection
232	mid-slope	Slope	Fine sediments, subcrop, octocorals	155	700-1500	Y	WA Image Collection
233	outer shelf	Shelf	Coarse sediments, unrippled, octocoral/ and bryozoans??	205	100- 200	Y	WA Image Collection
234	inner shelf	Shelf	Coarse sediments, unrippled, solitary epifauna	207	25-100	Y	WA Image Collection
235	upper slope	Slope	Coarse sediments, rippled, no fauna	210	200- 700	Y	WA Image Collection
236	upper slope	Slope	Coarse sand, rippled, solitary epifauna	217	200- 700	Y	WA Image Collection
237	upper slope	Slope	Coarse sand, wave rippled, bryozoan turf	226	200- 700	Y	WA Image Collection
238	upper slope	Slope	Coarse sediments, irregular, octocorals (matrix of solsomalia – dead corals)	235	200- 700	Y	WA Image Collection
238	upper slope	Slope	Coarse sediments, irregular, octocorals	235	200- 700	Y	WA Image Collection
239	upper slope	Slope	Coarse sediments, subcrop, large (?) sponges	251	200- 700	Y	WA Image Collection
240	upper slope	Slope	Sedimentary, subcrop, octocorals	255	200- 700	Y	WA Image Collection

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241	upper slope	Slope	Coarse sediments, subcrop, low encrusting community (ascidians)	256	200- 700	Y	WA Image Collection
242	inner shelf	Shelf	Gravel, irregular, no fauna	330	25-100	Y	WA Image Collection
243	mid-slope	Slope	Gravel, irregular, low encrustings	336	700-1500	2	WA Image Collection
244	mid-slope	Slope	Igneous rock/boulder, rubble bank, none	440	700-1500	Y	WA Image Collection
245	mid-slope	Slope	boulders and slabs, subcropping, octocorals	455	700-1500	Y	WA Image Collection
246	outer shelf	Shelf	cobble/boulder (slab), outcrop, mixed low encrustors	466	100- 200	Y	WA Image Collection
247	upper slope	slope	Boulders, low outcrop, no fauna	470	200- 700	Y	Norfanz Image Collection
248	mid-slope	Slope	Igneous rock, rubble bank, no fauna	540	700-1500	Y	WA Image Collection
249	mid-slope	Seamount	Igneous rock, rubble bank, octocorals	545	700-1500	Y	WA Image Collection
250	mid-slope	Seamount	Igneous rock, low outcrop, no fauna	570	700-1500	Y	WA Image Collection
251	upper slope	Slope	Sedimentary rock, subcrop, no fauna	650	200- 700	Y	WA Image Collection
252	mid-slope	Slope	Sedimentary, subcrop, small encrustors	656	700-1500	2	WA Image Collection
253	mid-slope	Slope	rock (conglomerate/ sedimentary), subcrop, bioturbators	659	700-1500	Y	WA Image Collection
254	outer shelf	Shelf	Sedimentary rock (?), low outcrop, large erect sponges	661	100- 201	Y	WA Image Collection
255	outer shelf	Shelf	Sedimentary rock (?) low outcrop, mixed faunal community	663	100- 200	Y	WA Image Collection
256	upper slope	Slope	Sedimentary rock, outcrop, octocorals	665	200- 700	Y	WA Image Collection
257	upper slope	Shelf break	Sedimentary rock, low outcrop, no fauna	670	200- 700	3	WA Image Collection
258	outer shelf	Shelf	Sedimentary rock (?), low outcrop, mixed faunal community	673	100- 200	Y	WA Image Collection
259	outer shelf	Shelf	Rock (sedimentary?), outcrop (low, holes and cracks etc), encrustors	676	100- 200	Y	WA Image Collection
260	outer shelf	Shelf	Rock (sedimentary?), outcrop, solitary	677	100- 200	Y	WA Image Collection
261	upper slope	Slope	Sedimentary, outcrop, sedentary (anemones)	677	200- 700	Y	WA Image Collection
262	mid-slope	Slope	sedimentary/mudstone, high outcrop, no fauna	680	700-1500	Y	WA Image Collection
263	outer shelf	Shelf	Rock (sedimentary?), high outcrop, ?small sponges	682	100- 200	Y	WA Image Collection
264	upper slope	Slope	Sedimentary, high outcrop, octocoral	683	200- 700	Y	WA Image Collection
265	upper slope	Slope	Sedimentary rock (mudstone?), high outcrop, no fauna	690	200- 700	3	WA Image Collection
266	outer shelf	Shelf	Rock (sedimentary?),, high outcrop, large sponges	691	100- 200	Y	WA Image Collection
267	upper slope	Slope	Sedimentary rock (mudstone?), high outcrop, small sponges	692	200- 700	Y	WA Image Collection
268	outer shelf	Shelf	Sedimentary rock (?), high outcrop, mixed faunal community	693	100- 200	Y	WA Image Collection
269	upper slope	Slope	Sedimentary, outcrop, octocorals	695	200- 700	Y	WA Image Collection
270	upper slope	Slope	Sedimentary, high outcrop, solitary epifauna	697	200- 700	Y	WA Image Collection
271	inner shelf	Shelf	Rock/ biogenic matrix, high outcrop, large sponges	719	25-100	Y	WA Image Collection
272	inner shelf	Shelf	Rock/ biogenic matrix, Wave rippled, No fauna	720	25-100	Y	WA Image Collection

| 273	inner shelf	Shelf	Rock/ biogenic matrix,subcrop, large sponges	751	25-100	3	WA Image Collection
274	inner shelf	Shelf	Rock/ biogenic matrix, subcrop, small encrustors	756	25-100	Y	WA Image Collection
275	inner shelf	Shelf	Rock/ biogenic matrix, low outcrop, mixed faunal community	763	25-100	Y	WA Image Collection
276	inner shelf	Shelf	Rock/ biogenic matrix, low outcrop, octocorals	765	25-100	Y	WA Image Collection
277	inner shelf	Shelf	Rock/ biogenic matrix, low outcrop (with holes/cracks), mixed faunal community	773	25-100	Y	WA Image Collection
278	inner shelf	Shelf	Rock/ biogenic matrix, high outcrop, mixed faunal community	793	25-100	Y	WA Image Collection
279	outer shelf	Shelf	mud, current rippled, no fauna	010	100- 200	Y	WA Image Collection
280	outer shelf	Shelf	Rock (sedimentary?), high outcrop, solitary	681	100- 201	Y	WA Image Collection
281	outer shelf	Shelf	Rock/ biogenic matrix, low outcrop, mixed faunal community	763	100-200	Y	WA Image Collection
282	inner shelf	shelf	coarse sediments, subcrop, mixed faunal community	253	25-100	Y	Norfanz Image Collection
283	inner shelf	shelf	Bryozoan communities	XX6	25- 100	Y	Norfanz Image Collection
284	upper slope	slope	Coarse sediments, unrippled, large sponges	201	200- 700	Y	Norfanz Image Collection
285	upper slope	slope	Coarse sediments, unrippled, octocorals	205	200- 700	Y	Norfanz Image Collection
286	upper slope	slope	Cobble/ boulder, debris, sedentary	447	200- 700	Y	Norfanz Image Collection
287	upper slope	slope	slabs and boulders, low outcrop, octocorals	475	200- 700	Y	Norfanz Image Collection
288	upper slope	slope	Igneous Rock (?), low outcrop, octocorals	565	200- 700	Y	Norfanz Image Collection
289	upper slope	slope	Igneous Rock (?), low outcrop, mixed faunal community	573	200- 700	Y	Norfanz Image Collection
290	upper slope	slope	Igneous Rock (?), high outcrop, no fauna	590	200- 700	Y	Norfanz Image Collection
291	upper slope	slope	Igneous Rock (?), high outcrop, mixed faunal community	593	200- 700	Y	Norfanz Image Collection
292	upper slope	slope	Sedimentary Rock (?), subcrop, sedentary (with trawl marks)	657	200- 700	Y	Norfanz Image Collection
293	upper slope	slope	Rock/ biogenic matrix, low outcrop, mixed faunal community	763	200- 700	Y	Norfanz Image Collection
294	mid-slope	slope	Fine sediments, unrippled, bioturbators	109	700- 1500	Y	Norfanz Image Collection
295	mid-slope	slope	Fine sediments, subcrop, encrustors	156	700- 1500	Y	Norfanz Image Collection
296	mid-slope	slope	Coarse sediments, irregular, no fauna	230	700- 1500	Y	Norfanz Image Collection
297	mid-slope	slope	Coarse sediments, subcrop, no fauna	250	700- 1500	Y	Norfanz Image Collection
298	mid-slope	slope	Coarse sediments, low outcrop, no fauna	260	700- 1500	Y	Norfanz Image Collection

2.4 Pelagic and demersal provinces
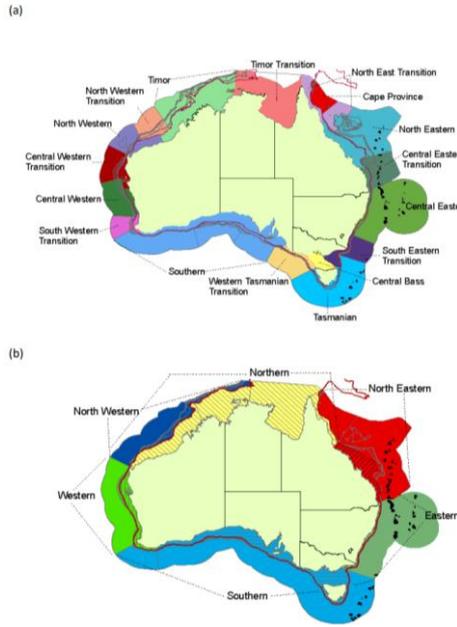
Figure 7: (a) Demersal communities around mainland Australia based on bioregionalisation schema. Some inshore (0-110 m) communities comprise more than one community e.g. Timor Transition comprises 4 distinct communities. (b) Australian pelagic provinces. Hatched areas indicate coastal epipelagic zones overlying the shelf. Offshore (oceanic) provinces comprise two or more overlaying pelagic zones. Seamounts (black) and plateaux (light green) are illustrated in their demersal or pelagic provinces

2.5 Pelagic habitats

Table 20: A list of the pelagic habitats for the CSF Line Sector. Table adapted from and combined from Furlani et al. (2007a, 2007b, 2007c)

ERAEF Habitat No.	Pelagic Habitat type	Depth (m)	Comments	Reference
P4	North Eastern Pelagic Province - Oceanic	0 –> 600	this is a compilation of the range covered by Oceanic Community (1) & (2)	dow167A1, A2, A4
P5	Northern Pelagic Province - Coastal	0 – 200		dow167A1, A2, A4
P15	North Eastern Pelagic Province - Plateau	0 –> 600	this is a compilation of the range covered by the Northeastern Plateau Community (1) & (2)	dow167A1, A2, A4
P16	North Eastern Pelagic Province - Seamount Oceanic	0 –> 600	this is a compilation of the range covered by Seamount Oceanic Communities (1) & (2)	dow167A1, A2, A4

2.6 Demersal and pelagic communities

In ERA, communities are defined as the set of species assemblages that occupy the large-scale provinces and biomes identified from national bioregionalisation studies. The biota includes mobile fauna, both vertebrate and invertebrate, but excludes sessile organisms such as corals that are largely structural and are used to identify benthic habitats. The same community lists are used for all fisheries, with those selected as relevant for a particular fishery being identified on the basis of spatial overlap with effort in the fishery. The spatial boundaries for demersal communities are based on IMCRA boundaries for the shelf, and on slope bioregionalisations for the slope (IMCRA 1998; Last et al. 2005). The spatial boundaries for the pelagic communities are based on pelagic bioregionalisations and on oceanography (Condie et al. 2003; Lyne and Hayes 2004). Fishery and region-specific modifications to these boundaries are described in detail in Hobday et al. (2007).

Table 21: Demersal communities in which fishing activity occurs in the CSF Line Sector (x). Shaded cells indicate all species within the province. Table adapted from and combined from Furlani et al. (2007a, 2007b, 2007c).

Demersal community	Cape	North Eastern Transition	North Eastern	Central Eastern Transition	Central Eastern	South Eastern Transition	Central Bass	Tasmanian	Western Tas Transition	Southern	South Western Transition	Central Western	Central Western Transition	North Western	North Western Transition	Timor	Timor Transition	Heard & McDonald Is	Macquarie Is
Inner Shelf 0 – 110m [1,2]																			
Outer Shelf 110 – 250m [1,2,]																			
Upper Slope 250 – 565m [3]																			
Mid–Upper Slope 565 – 820m [3]																			
Mid Slope 820 – 1100m [3]																			
Lower slope/ Abyssal > 1100m [6]																			
Reef 0 -110m [7,8]																			
Reef 110-250m [8]																			
Seamount 0 – 110m																			
Seamount 110- 250m			x	x															
Seamount 250 – 565m			x	x															
Seamount 565 – 820m			x	x															
Seamount 820 – 1100m			x	x															
Seamount 1100 – 3000m																			
Plateau 0 – 110m			x																
Plateau 110- 250m [4]			x																
Plateau 250 – 565m [4]			x																
Plateau 565 – 820m [5]			x																

| Plateau 820 – 1100m[5] | | | | | | | | | | | | | | | | | | | |

Table 22: Pelagic communities that overlie the demersal communities in which fishing activity occurs in the CSF Line Sector (x). Shaded cells indicate all communities that exist in the province. *Fishing does not occur in this, or the underlying community, but navigation occurs through the community. Table adapted from and combined from Furlani et al. (2007a, 2007b, 2007c).

	North Eastern	Eastern	Southern	Western	Northern	North Western	Heard and McDonald Is	Macquarie Is
Coastal pelagic 0-200m								
Oceanic (1) 0 – 600m	x *							
Oceanic (2) >600m								
Seamount oceanic (1) 0 – 600m	x							
Seamount oceanic (2) 600–3000m	x							
Oceanic (1) 0 – 200m								
Oceanic (2) 200-600m								
Oceanic (3) >600m								
Seamount oceanic (1) 0 – 200m								
Seamount oceanic (2) 200 – 600m								
Seamount oceanic (3) 600–3000m								
Oceanic (1) 0-400m								
Oceanic (2) >400m								
Oceanic (1) 0-800m								
Oceanic (2) >800m								
Plateau (1) 0-600m	x							
Plateau (2) >600m	x							
Heard Plateau 0-1000m								
Oceanic (1) 0-1000m								
Oceanic (2) >1000m								
Oceanic (1) 0-1600m								
Oceanic (2) >1600m								

3   Scoping document S3 identification of objectives

Component	Core Objective	Sub-component	Operational objectives	Indicators	Rationale
Target species	Avoid recruitment failure of the target species. Avoid negative consequences for species or population sub-components.	1. Population size	1.1 No trend in biomass 1.2 Maintain biomass above specified level 1.3 Maintain catch at specified level 1.4 Species do not approach extinction or become extinct	Biomass, numbers, density, catch per unit effort, yield	1.1 Increases in biomass of the key/secondary commercial species would be acceptable. 1.2. To ensure that population biomass is above acceptable level. 1.3. Catch limits/triggers are specified. Annual review of target species catch (trigger report). 1.4. This is a general objective for all AFMA fisheries as per *Fisheries Management Act 1991* (objective (b): ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development).
		2. Geographic range	2.1 Geographic range of the population, in terms of size and continuity, does not change outside acceptable bounds	Presence of population across CSF	2.1 Spatial fishing effort triggers specified, not species specific. Annual review of changes to fished area (trigger report).
		3. Genetic Structure	3.1 Genetic diversity does not change outside acceptable bounds	Frequency of genotypes in the population, effective population size, number of spawning units	3.1 Not currently monitored. No specific management objective based on the geographic range of key/secondary commercial species.
		4. Age/size/sex structure	4.1 Age/size/sex structure does not change outside acceptable bounds (e.g. more than X% from reference structure)	Biomass, numbers or relative proportion in age/size/sex classes; Biomass of spawners; Mean size, sex ratio	4.1 Not currently monitored.

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		5. Reproductive capacity	5.1 Fecundity of the population does not change outside acceptable bounds (e.g. more than X% of reference population fecundity)	Egg production of population; Abundance of recruits	5.1 This objective is covered by 1.2 above.
			5.2 Recruitment to the population does not change outside acceptable bounds		5.2 This objective is covered by 1.2 above.
		6. Behaviour/ Movement	6.1 Behaviour and movement patterns of the population do not change outside acceptable bounds	Presence of population across space, movement patterns within the population (e.g. attraction to bait, lights)	6.1. Changes to behaviour that are deleterious to the species and populations are to be avoided.
Byproduct/secondary and bycatch species.	Avoid recruitment failure of the target species. Avoid negative consequences for species or population sub-components.	1. Population size	1.1 No trend in biomass	Biomass, numbers, density, catch per unit effort, yield	1.1 Increases in biomass of the key/secondary commercial species would be acceptable.
			1.2 Maintain biomass above specified level		1.2. To ensure that population biomass is above acceptable level.
			1.3 Maintain catch at specified level		1.3. Catch limits/triggers are specified. Annual review of target species catch (trigger report).
			1.4 Species do not approach extinction or become extinct		1.4. This is a general objective for all AFMA fisheries as per *Fisheries Management Act 1991* (objective (b): ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development).
		2. Geographic range	2.1 Geographic range of the population, in terms of size and continuity, does not change outside acceptable bounds	Presence of population across CSF	2.1 Spatial fishing effort triggers specified, not species specific. Annual review of changes to fished area (trigger report).

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3. Genetic Structure	3.1 Genetic diversity does not change outside acceptable bounds	Frequency of genotypes in the population, effective population size, number of spawning units	3.1 Not currently monitored. No specific management objective based on the geographic range of key/secondary commercial species.
4. Age/size/sex structure	4.1 Age/size/sex structure does not change outside acceptable bounds (e.g. more than X% from reference structure)	Biomass, numbers or relative proportion in age/size/sex classes; Biomass of spawners; Mean size, sex ratio	4.1 Not currently monitored.
5. Reproductive capacity	5.1 Fecundity of the population does not change outside acceptable bounds (e.g. more than X% of reference population fecundity)	Egg production of population; Abundance of recruits	5.1 This objective is covered by 1.2 above.
	5.2 Recruitment to the population does not change outside acceptable bounds		5.2 This objective is covered by 1.2 above.
6. Behaviour/Movement	6.1 Behaviour and movement patterns of the population do not change outside acceptable bounds	Presence of population across space, movement patterns within the population (e.g. attraction to bait, lights)	6.1. Changes to behaviour that are deleterious to the species and populations are to be avoided.
ETP species	Avoid recruitment failure of ETP species	Avoid negative consequences for ETP species or population sub-components	Avoid negative impacts on the	1. Population size	1.1 No trend in biomass	Biomass, numbers, density, catch per unit effort, yield	1.1 This is a general objective for all AFMA fisheries as per *Fisheries Management Act 1991* objective (1b): ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development); and objective (2): ensuring, through proper conservation and management measures, that the living resources of the AFZ are not endangered by over-exploitation;

Note: The ETP species row spans the following columns — "ETP species" / "Avoid recruitment failure of ETP species / Avoid negative consequences for ETP species or population sub-components / Avoid negative impacts on the" / "1. Population size" / "1.1 No trend in biomass" / "Biomass, numbers, density, catch per unit effort, yield" / "1.1 This is a general objective for all AFMA fisheries as per *Fisheries Management Act 1991* objective (1b): ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development); and objective (2): ensuring, through proper conservation and management measures, that the living resources of the AFZ are not endangered by over-exploitation;"

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population from fishing				therefore, the fishery is conducted in a manner that avoids mortality of, or injuries to, ETP species.
		1.2 Maintain biomass above specified level		1.2 A positive trend in biomass is desirable for protected species.
		1.3 Maintain catch at specified level		1.3 Maintenance of protected species biomass above specified levels not currently a fishery operational objective.
		1.4 Species do not approach extinction or become extinct		1.4 The above management objective states 'must avoid mortality/injury' to protected species.
	2. Geographic range	2.1 Geographic range of the population, in terms of size and continuity, does not change outside acceptable bounds	Presence of population across CSF	2.1 Change in geographic range of protected species may have serious consequences e.g. population fragmentation and/or forcing species into sub-optimal areas.
	3. Genetic Structure	3.1 Genetic diversity does not change outside acceptable bounds	Frequency of genotypes in the population, effective population size, number of spawning units	3.1 Because population size of protected species is often small, protected species are sensitive to loss of genetic diversity. Genetic monitoring may be an effective approach to measure possible fishery impacts.
	4. Age/size/sex structure	4.1 Age/size/sex structure does not change outside acceptable bounds (e.g. more than X% from reference structure)	Biomass, numbers or relative proportion in age/size/sex classes; Biomass of spawners; Mean size, sex ratio	4.1 Monitoring the age/size/sex structure of protected species populations is a useful management tool allowing the identification of possible fishery impacts and that cross-section of the population most at risk.
	5. Reproductive capacity	5.1 Fecundity of the population does not change outside acceptable bounds (e.g. more than X% of reference population fecundity)	Egg production of population; Abundance of recruits	5.1 Fishery induced changes in reproductive capacity may have immediate impact on the population size of protected species.
		5.2 Recruitment to the population does not change outside acceptable bounds		5.2 Fishery induced changes to recruitment may have immediate impact on the population size of protected species.

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		6. Behaviour/ Movement	6.1 Behaviour and movement patterns of the population do not change outside acceptable bounds	Presence of population across space, movement patterns within the population (e.g. attraction to bait, lights)	6.1 Fishing operations may attract protected species and alter behaviour. Subsequently this could increase the risk of injury/mortality by collision, entrapment or entanglement with a vessel or fishing gear.
		7. Interactions with fishery	7.1 Survival after interactions is maximised 7.2 Interactions do not affect the viability of the population or its ability to recover	Survival rate of species after interactions; Number of interactions, biomass or numbers in population	7.1, 7.2 – The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species. Includes gear restrictions and reduced lighting levels to minimise interactions and attraction of the vessel to protected species.
Habitats	Avoid negative impacts on the quality of the environment Avoid reduction in the amount and quality of habitat	1. Water quality	1.1 Water quality does not change outside acceptable bounds	Water chemistry, noise levels, debris levels, turbidity levels, pollutant concentrations, light pollution from artificial light	1.1 MARPOL regulations prohibit discharge of oils, discarding of plastics.
		2. Air quality	2.1 Air quality does not change outside acceptable bounds	Air chemistry, noise levels, visual pollution, pollutant concentrations, light pollution from artificial light	2.1 Not currently perceived as an important habitat sub-component, fishing operations not believed to strongly influence air quality.
		3. Substrate quality	3.1 Sediment quality does not change outside acceptable bounds	Sediment chemistry, stability, particle size, debris, pollutant concentrations	3.1 General objective for all AFMA fisheries as per Fisheries Management Act 1991 (objective 1b): ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development. The fishery is conducted, in a manner that minimises the impact of fishing operations on benthic habitat.

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		4. Habitat types	4.1 Relative abundance of habitat types does not vary outside acceptable bounds	Extent and area of habitat types, % cover, spatial pattern, landscape scale	4.1 Fishing methods in CSF Line Sector may result in changes to the local habitat types on fishing grounds.
		5. Habitat structure and function	5.1 Size, shape and condition of habitat types does not vary outside acceptable bounds	Size structure, species composition and morphology of biotic habitats	5.1 Fishing methods in CSF Line Sector may result in local disruption to pelagic and benthic processes.
Communities	Avoid negative impacts on the composition/function /distribution/structure of the community	1. Species composition	1.1 Species composition of communities does not vary outside acceptable bounds	Species presence/absence, species numbers or biomass (relative or absolute); Richness; Diversity indices; Evenness indices	1.1 General objective for all AFMA fisheries as per *Fisheries Management Act 1991* (objective 1b): ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development) in particular the need to have regard to the impact of fishing activities on non-target species and the long-term sustainability of the marine environment.
		2. Functional group composition	2.1 Functional group composition does not change outside acceptable bounds	Number of functional groups, species per functional group (e.g. autotrophs, filter feeders, herbivores, omnivores, carnivores)	2.1 The presence/abundance of 'functional group' members may fluctuate widely, however in terms of maintenance of ecosystem processes it is important that the aggregate effect of a functional group is maintained.
		3. Distribution of the community	3.1 Community range does not vary outside acceptable bounds	Geographic range of the community, continuity of range, patchiness	3.1 CSF Line Sector operations have unknown impacts on the benthos in the fishing grounds. The current MPA and conservation areas reserve large areas of the known habitat types from fishing disturbance.
		4. Trophic/size structure	4.1 Community size spectra/trophic structure does not vary outside acceptable bounds	Size spectra of the community; Number of octaves, Biomass/number in each size class; Mean	4.1 Fishing activities for key/secondary commercial species have the potential to remove a component of the either prey or predator functional group. Increased abundance of either prey or predator functional groups

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		trophic level; Number of trophic levels	may then allow shifts in relative abundance of higher trophic level organisms.
5. Bio- and geo-chemical cycles	5.1 Cycles do not vary outside acceptable bounds	Indicators of cycles, salinity, carbon, nitrogen, phosphorus flux	5.1 CSF Line Sector fishing operations not perceived to have a detectable effect on bio- and geo-chemical cycles.

4 Scoping document S4 hazard identification

Direct Impact of fishing	Fishing Activity	Score (0/1)	Documentation of Rationale
Capture	Bait collection	0	Bait is purchased rather than collected.
	Fishing	1	Capture of organisms due to actual fishing.
	Incidental behaviour	0	Recreational fishing not permitted or may occur rarely.
Direct impact without capture	Bait collection	0	Bait is purchased rather than being collected.
	Fishing	1	Direct impact without capture is likely, not all fish hooked are retrieved, may fall off hook, or be eaten while on the hook. Longlining is unlikely to impact benthic habitats and animals as the gear does not contact seafloor.
	Incidental behaviour	0	Recreational fishing is rare in the CSF Line Sector. Lights at night may have an impact on bird life, likely minimal.
	Gear loss	1	Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats.
	Anchoring/mooring	1	Possible damage to animals, benthic habitats, and corals where anchor drops.
	Navigation/steaming	1	Steaming/navigation between fishing grounds may result in collisions (e.g. seabirds or whales vessel interactions).
Addition/movement of biological material	Translocation of species (boat launching, ballasting)	1	Could occur incidentally via boat hulls or use of imported bait.
	On board processing	1	All fish must be landed whole or gilled, headed and gutted, with special conditions for sharks and rays. Offal and offcuts would be discharged when appropriate (not while hauling or setting gear).
	Discarding catch	1	Target and byproduct species are occasionally discarded, with bycatch species always discarded. Commercial fish are damaged by sharks are discarded.

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	Stock enhancement	0	Does not occur in this fishery.
	Provisioning	0	Does not occur in this fishery.
	Organic waste disposal	1	Disposal of organic wastes, offal and catch may occur while at sea. MARPOL guidelines apply.
Addition/movement of non-biological material	Debris	0	Rubbish not thrown overboard. MARPOL guidelines apply.
	Chemical pollution	1	Oil spills, anti-fouling chemicals, MARPOL guidelines apply. Dishwashing liquids, shampoos etc.
	Exhaust	1	Exhaust of diesel and other engines.
	Gear loss	1	Gear is lost in the CSF Line Sector, as evidenced by observer reports. Lost gear may interact with animals, including benthic species and habitats.
	Navigation/steaming	1	Navigation and steaming of the vessels will introduce noise (engine noise and echo-sounders) and visual stimuli into the environment.
	Activity/presence on water	1	The activity of the vessels will introduce noise and visual stimuli into the environment. May interact with wildlife such as dolphins riding bow wave, birds settling on boat. Lights at night may have an impact on bird life, likely minimal.
Disturb physical processes	Bait collection	0	Bait is purchased rather than being collected.
	Fishing	1	Fishing may disturb seabed sediments and structure by lines and weights coming into contact with benthos.
	Boat launching	1	Vessels in fishery come from designated ports that are outside the Coral Sea Fishery. Within the CSF, tenders may be launched from motherships.
	Anchoring/mooring	1	Anchoring may affect the processes where anchors and chains contact the seafloor.
	Navigation/steaming	1	Navigation /steaming may affect the physical processes on the benthos and the pelagic by turbulent action of propellers or wake formation, however, impact is considered negligible.
External Hazards	Other capture fishery methods	1	Other CSF Sectors (Sea Cucumbers, Lobster & Trochus, and Aquarium) and recreational fishing. Other fisheries are either inactive or subject to low levels of effort.
	Aquaculture	0	Fishery is located offshore and not impacted.

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Coastal development	0	Fishery is located offshore and not impacted.	
Other extractive activities	0	At present, no current petroleum permits exist, and no new leases have been granted for the CSF area.	
Other non-extractive activities	1	Commercial shipping common throughout the region.	
Other anthropogenic activities	1	Fishery covers a large area wide range of uses and so activities like commercial tourism (e.g. scuba diving charters) and recreational fishing activity may cause impacts in the same region. Otherwise too far offshore for overlap with the majority of other anthropogenic activities.	

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Appendix C: SICA Workshop participants

Table A6 Attendees of the SICA Workshop for Coral Sea Fishery Line Sector held on 3rd December 2025.

Name	Organisation	Sector
Trent Timmiss	ABARES Fisheries Science Program Manager	Government
Brooke D'Alberto	ABARES Fisheries Researcher	Government
Darci Wallis	AFMA Manager Northern Trawl Fisheries	Government
Kelvin Montanaro	AFMA Senior Management Support Officer	Government
Tim Hall	AFMA Observer	Government
Peter Chai	PXYY Pty Ltd	Industry
Brett Lally	PXYY Pty Ltd	Industry
Jonathan Smart	Stock Assessment Scientist - Smarter Fisheries Consulting	Independent Scientist
Rik Buckworth	Director – Sea Sense Australia Pty Ltd	Independent Scientist
Neil Garbutt	DCCEEW Observer	Government
Gretta Chaplin	DCCEEW Observer	Government