

Wildlife Trade Operations (WTO) Export Approval Submission

NT Offshore Net and Line Fishery

Acronyms	Full form
AFANT	Amateur Fishermen's Association of the Northern Territory
AFZ	Australian Fishing Zone
DITT	Department of Industry Tourism and Trade
ECNT	Environment Centre NT
EPBC	Environmental Protection and Biodiversity Conservation
ERA	Ecological Risk Assessment
FRDC	Fisheries Research and Development Corporation
FTO	Fishing Tour Operator
ITQ	Individual Transferrable Quota
QDAF	Queensland Department of Agriculture and Fisheries
NLC	Northern Land Council
NTGFIA	Northern Territory Guided Fishing Industry Association
NTSC	Northern Territory Seafood Council
ONLAG	Offshore Net and Line Advisory Group
ONLF	Offshore Net and Line Fishery
NESP	National Environmental Science Program
NTJFA	Northern Territory Joint Fishing Authority
TACC	Total Allowable Commercial Catch
TEPS	Threatened Endangered Protected Species
VMS	Vessel Monitoring Systems
WPS	Water Police Section
WTO	Wildlife Trade Operation

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1. Introduction

In January 2019 the former Northern Territory Department of Primary Industry and Resources, now known as the Department of Industry Tourism and Trade (DITT), applied for export approval for the NT Offshore Net and Line Fishery (ONLF). The application was assessed and declared an approved Wildlife Trade Operation until March 2022.

This report is a comprehensive overview of the fishery for the period since last assessment, and forms the basis of the fishery's Wildlife Trade Operation (WTO) assessment application against the Guidelines.

2. Description of the fishery

The Offshore Net and Line Fishery is a quota managed fishery. It operates in the Northern Territory (NT) waters from the low water mark to the boundary of the Australian Fishing Zone (AFZ). The area of the fishery is approximately 542,000 nm². The Fishery is managed via output (catch based) and input (gear based) controls. Primary gears include pelagic net and demersal longline. The NT and Commonwealth via the Northern Territory Fisheries Joint Authority (NTFJA) share responsibility for the management of the Fishery. The Fisheries Division of DITT undertakes the day-to-day management of the fishery.

Except for no-take species (as defined under Fishery Regulations), the Fishery can take any cartilaginous fish or any bony fish while targeting cartilaginous fish using approved methods. The key species taken are Grey mackerel, Blacktip sharks and Spot-tail sharks. Other retained species include other sharks and finfish.

2.1. Target/permitted/prohibited species

There are two target species for the ONLF, Grey mackerel (Western and Eastern zones) and Blacktip shark. Grey mackerel commonly occur in turbid tropical and subtropical waters, approximately 3-30m depth and are usually found in the vicinity of bottom structure include proximity to headlands and reefs on sandy and muddy sand substrates. Grey mackerel are fast growing and attain maximum size of 10kg and approximately 120cm fork length. Grey mackerel are also highly fecund producing approximately 250,000 oocytes per spawning. During spawning Grey mackerel often school together and can also form spatially and temporally predictable aggregations.

Blacktip sharks are found globally in tropical and warm temperate areas. They can occupy the whole water column but are mainly found close to the surface or in midwater. Blacktip sharks form large groups of similar size and sex which tend to remain within a local area and have a well-defined annual reproductive cycle with mating occurring in February and March with females bearing one to six pups after a 10 month gestation period. Blacktip sharks are generally less productive than other bony fish or invertebrates.

2.1.1. Secondary species

There are a large number of secondary species taken in the Offshore Net and Line fishery with group quota management arrangements in place, including:

- Spot-tail shark,
- combined shark species,
- combined other sharks group; and,
- combined finfish group.

Spot-tail sharks are found in the tropical Indo Pacific on continental and insular shelves to depths of 74m but potentially as deep as 140 metres. Spot-tail sharks give birth once per year to a litter of one

to eight live young and mature rapidly until their first year and then growth slows. Maximum life span is five to seven years.

The combined species shark group are made up of large, slow growing, longer lived shark species which have longer gestation periods and limited fecundity. Species include Bull Shark, Tiger Shark, Lemon Shark, Pigeye Shark and Grey Reef Shark.

Combined other sharks group include all other species of shark, known to inhabit predictable habitats and often school. They are primarily Whitecheek, Milkshark and Hardnose sharks and have slower growth rate.

The combined finfish group comprises all retained finfish apart from grey mackerel and no-take species, and is generally made up of fish that have predictable habitats, may form schools and they are often reef-associated fish. Species include Black pomfrets, trevallies, tuna and mackerels, Cobia and Batfish.

2.1.2. Prohibited Species

Under the Fisheries Regulations 1992 (Fisheries Regulations), an Offshore Net and Line Fishery licensee must not take barramundi, king threadfin or mud crab (each a no-take species) under the licence.

Interactions with marine protected species under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) must be reported in logbooks by commercial fishing operators.

2.2. Management arrangements employed in the fishery

The commercial sector of the ONLF is managed using a combination of input and output based management controls.

Table 1. Management arrangements for the Offshore Net and Line Fishery

Management tools	
Output/ Quota managed fishery	Total Allowable catch limits in place
Catch and effort data/ reporting	Daily logbook, observer coverage and catch disposal records within two days of unloading
Minimum trip holdings	Minimum trip holdings for pelagic net when targeting Grey Mackerel- total 5,000kg Dermal and pelagic long line- total 4,500kg Pelagic net when targeting shark- total 6500kg
Vessel monitoring requirements	Must be installed and operating at all times
Electronic monitoring requirements	Required for all longline vessels
Processing at sea	All shark must be landed with Fins Naturally Attached Hammerhead shark heads must remain attached once 37t of Scalloped hammerhead sharks have been taken in a licensing year
No take species	Threadfin salmon, Mud crab, Barramundi
Closed areas	Reef fish protection areas Marine parks
Permitted gear types	Demersal long line and gaff (maximum 15nm and 1,000 hooks) Pelagic longline (maximum 15nm and 1,000 hooks)

Management tools	
	Pelagic net
Unload location and reporting requirements	Fish must be unloaded at Darwin or Gove Operators can apply for exemptions

2.3. Fishing methods employed

Offshore Net and Line licences are entitled to use demersal or pelagic longlines or pelagic net gear. Bottom set gillnets are prohibited.

Pelagic nets are a near surface monofilament net that are placed vertically in the water column with the use of buoys and weight. The setting of the net is dependent on the current wind conditions and tidal flow. The net is shot from the stern of the fishing vessels either with or perpendicular to the wind and then attached to the bow of the boat, the boat and net then drift with the tide before being hauled in. The net is hauled onto a drum driven by a hydraulic winch and as the net comes over the bow the fish are removed. Gillnets can be used from two nautical miles from the low water mark to the boundary of the AFZ. Nets can be a maximum of 2000m long with a mesh size of 160mm to 185mm and a drop length of 50-100 meshes. Nets are weighted and must have a buoyed headline.

Longlines can be set for pelagic or demersal fishing. Demersal longlines may be utilised in all regions of the fishery, while pelagic longlines may only be used seaward of three nautical miles from the baseline to the outer bounds of the Fishery. Demersal longlines are main lines that are anchored and to which hooks or branch lines with hooks are attached. Demersal longlines are anchored to the seabed at both ends and at intervals along its length. A boat may use up to 15nm of longlines with a maximum of 1000 snoods. No auto baiting devices are allowed. The line can include monofilament, multi filament and synthetic material.

2.4. Fishing area

Within the Fishery area there are two management zones relating to Grey mackerel, the Western Grey Mackerel Management Zone and the Eastern Grey Mackerel Management Zone that make up the waters of the fishery area. The Western Grey Mackerel Management Zone lies west of a line commencing at the low water mark at Cape Arnhem at the point where the meridian of longitude 136°58.767 East meets the coast and extending due north until it intersects with the outer boundary of the AFZ (Figure 1).

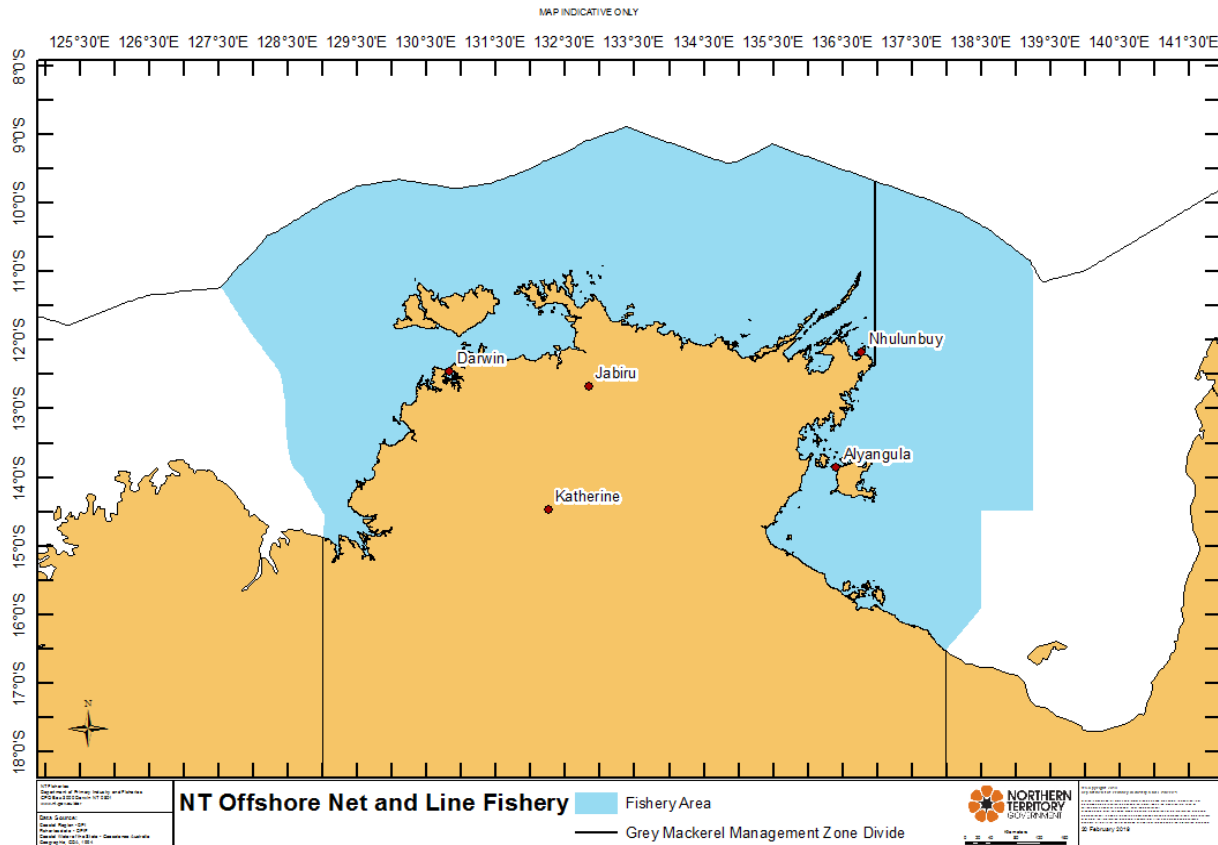


Figure 1: Map showing the boundary of the Offshore Net and Line Fishery

2.5. Reef Fish Protection Areas

Five temporary reef fish protection areas aid in the protection and recovery of at risk reef fish as defined in the Fisheries Regulations. Some of the areas protect known healthy stocks of reef fish, while others allow reefs that have been depleted by overfishing to recover, such as by protecting spawning aggregations and removing any form of fishing related fish mortality. They are located near Bathurst Island, Melville Island, Charles Point Wide, Lorna Shoal and Moyle/port Keats (Figure 2). These areas apply to the recreational, fishing tourism and offshore net and line commercial sector.

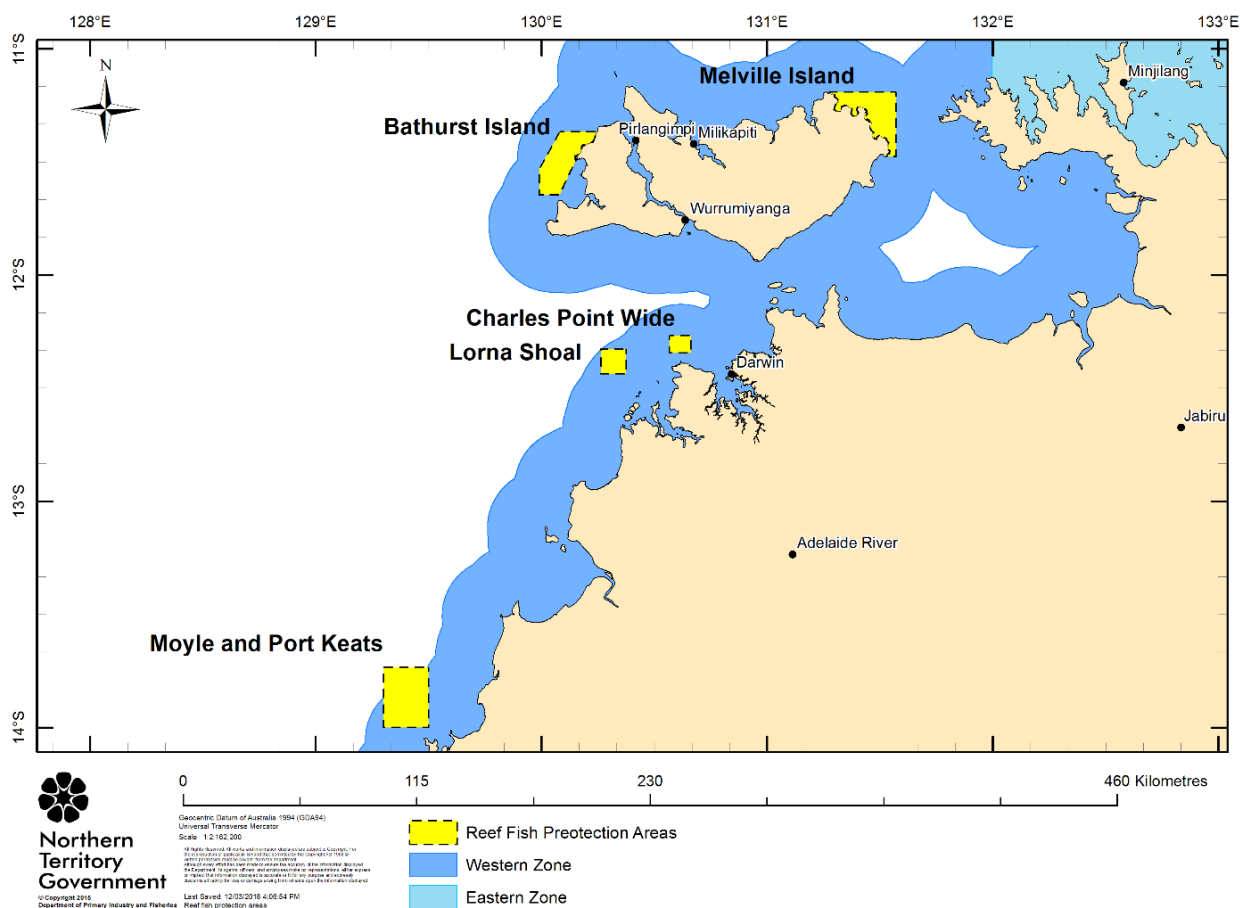


Figure 2: Map showing the location of the five temporary Reef Fish Protection Areas

2.5.1. Marine Parks

There are 8 marine parks off the coast of the Northern Territory, Queensland and Western Australia that collectively make up the North Network. Established in 2012, the marine parks protect examples of the region's marine ecosystems and biodiversity. The North Network is located in Commonwealth waters, between three nautical miles and 200 nautical miles offshore and cover an area of 157,480 km². A map of the North Marine Parks Network can be accessed here:

<https://parksaustralia.gov.au/marine/pub/factsheets/factsheet-north-management-plan.pdf>

2.6. Allocation between sectors

2.6.1. Commercial

Commercial access to the resource is restricted to licence holders and managed through a range of legislated controls species within the Fisheries Act 1988 (Fisheries Act), (and its subordinate legislation). Access arrangements for the commercial sector are defined by explicit fishery boundaries. A harvestable part of the resources is determined through a Total Allowable Commercial Catch (TACC), of which the commercial part is approved and allocated annually in the commercial sector to fishery unit holders as Individual Transferrable Quota (ITQ) units.

2.6.2. Fishing Tour Operator (FTO)

Sharks are rarely targeted by FTO fishers but are caught during other targeted fishing activities. The FTO sectors are managed through a combination of input and output management controls. These include spatial and temporal closures, personal and vessel possession limits with a maximum of three sharks (excluding protected species). Grey mackerel is caught in the FTO sector and is managed through personal and vessel possession limits.

2.6.3. Recreational Sector

Sharks are rarely targeted by recreational fishers but are caught during other targeted fishing activities. The recreational sector is managed through a combination of input and output management controls. These include spatial and temporal closures, personal and vessel possession limits with a maximum of three sharks (excluding protected species). Grey mackerel is caught by the recreational sector and is managed through personal and vessel possession limits.

2.6.4. Aboriginal Traditional

Under the Fisheries Act, the Aboriginal sector is entitled to use the resources of an area of land or water in a traditional manner, and that regulation under the Fisheries Act will not diminish that right. This does not include the ability to use this entitlement to engage in commercial activity.

2.7. Governing legislation/fishing authority

The Offshore Net and Line Fishery is declared as a managed fishery under section 22 of the NT Fisheries Act 1988 by notice published in special Gazette S106 dated 14 December 2018. Responsibility for the management of the Fishery is shared by the NT and Commonwealth via the Northern Territory Fisheries Joint Authority, whilst the NT Fisheries Division undertakes day-to-day management of the fishery.

2.8. Status of export approval/accreditation

The current WTO export approval for the ONLF, under the Environment Protection and Biodiversity Conservation Act 1999, is due to expire on 27 March 2022.

The fishery was previously assessed and declared an approved WTO in 2019, which included five reporting conditions and two recommendations. Since accreditation was received NT Fisheries Division has continued to report against the WTO conditions and recommendations as per requirements.

3. Management

3.1. Changes to management arrangements and outcomes of review processes

A Harvest Strategy was introduced with a suite of management reforms in 2018. NT Fisheries Harvest Strategy Policy notes that all harvest strategies must be periodically reviewed, particularly in their early implementation, to be adaptive enough to allow for improvements and to address deficiencies or exceptional circumstances. Each assessment of the fishery's performance since has provided opportunities to monitor the effectiveness of the indicators and triggers contained within the strategy.

An Ecological Risk Assessment (ERA) was recently undertaken which provided further guidance in the effectiveness of performance indicators and trigger levels. The ERA and results of each fishery performance review were used to inform recent adjustments to the Harvest Strategy, which was finalised in November 2020.

The ONLF Management Framework and Harvest Strategy, in place since 2018, is in the process of being amended to reduce extraneous information without changing any existing management arrangements. Amendments were identified in consultation with the Offshore Net and Line Advisory Group (ONLAG) and will be presented for further consideration in November.

The Research and Monitoring Plan contained within the Framework, describes the necessary information required to assess sustainability performance indicators of the Harvest Strategy. The plan is being updated to reflect recent changes to the Harvest Strategy and to better identify the future research needs of the fishery. It is intended that these research needs will identify projects that facilitate the fishery achieving its long-term goals, reduce uncertainty and mitigate risk.

The ONLF Management Framework, with Research and Monitoring Plan and Harvest Strategy can be accessed online here: https://industry.nt.gov.au/_data/assets/pdf_file/0017/620432/mgt-arrangements-offshore-net-line-fishery.pdf

3.2. A statement of the performance of the fishery against objectives, performance indicators and performance measures

The Offshore Net and Line Fishery Harvest Strategy includes a number of performance indicators by which the fishery's performance is monitored. To provide certainty for stakeholders performance indicators have a number of reference points and associated decision rules, which are predetermined actions that dictate agreed management responses.

The performance of the fishery against the Harvest Strategy for 2020/2021 is set to be assessed by the Offshore Net and Line Advisory Group (ONLAG) at their next meeting scheduled for November 2021. Background documents for the meeting have been prepared and the fishery's performance has not triggered any management actions with regard to quantitative reference points in the Harvest Strategy.

3.3. Compliance risks present in the fishery and actions taken to reduce these risks

Compliance risk assessments are undertaken by the NT Fisheries Division in liaison with Australian Fisheries Management Authority (AFMA) and the NT Department of Police, Fire and Emergency Services through the Water Police Section (WPS), and reviewed on a risk basis for the fishery. Risk assessments identify and prioritise the compliance risks in the fishery. Risks are ranked according to the likelihood and consequence of the risk occurring, and be based on a variety of factors including the current levels of non-compliance being observed or reported and the impact that this activity may have on the sustainability of the target species or the ecosystem.

A key compliance tool in the commercial fishery is the Vessel Monitoring System (VMS). All ONLF fishers use an AFMA approved vessel tracking unit and comply with the installation and maintenance standard when configuring, installing and maintaining a VMS. Further information about VMS in NT Fisheries is available at: <https://industry.nt.gov.au/publications/fisheries-publications>.

The administration, operation and day-to-day monitoring of VMS equipment is undertaken by AFMA and NT Fisheries Division. Effective deterrence is created through the presence of AFMA officers, who are responsible for compliance in the fishery on a fee for service basis, and promoting an awareness of compliance and monitoring operations, as well as through detection and prosecution of illegal activity by AFMA and the WPS.

3.4. Consultation processes

All matters related to the operation and function of the ONLF, including on matters relating to the sustainable harvest of sharks, grey mackerel, and any other species associated with the Fishery, are directed through the Offshore Net and Line Advisory Group (ONLAG) for consultation. As a non-statutory advisory group, ONLAG provide coordinated, expert advice to the Director of Fisheries, and provide a forum for discussion and information sharing.

The ONLAG Chair must be independent of any fishery, with a high level of facilitation expertise and experience in the field of natural resource management.

Membership of ONLAG is based on expertise in the commercial, recreational, Indigenous, tourism or marine conservation sectors, and drawn from nominations from the following peak representative bodies:

- Amateur Fishermen's Association of the Northern Territory (AFANT)
- Northern Territory Guided Fishing Industry Association (NTGFIA)
- Northern Territory Seafood Council (NTSC)
- Environment Centre NT (ECNT)
- Northern Land Council (NLC)

Membership requires members act in the best interests of the fishery, provide objective and impartial advice and must not pursue personal agendas or self-interest. NT Fisheries Division is not a member of the ONLAG and attends in an ex officio basis.

NT Fisheries Division also provide advice and updates to the ONLF Licensee Committee at the Committee's invitation. Targeted consultation with other stakeholders, including Government agencies, non-government organisations, statutory advisory committees and other affected/interested parties is undertaken by NT Fisheries Division as required.

In accordance with the Fisheries Act, management plans and subsequent amendments are subject to public consultation processes to provide transparency and opportunity for comment.

3.5. Cross-jurisdictional management arrangements

The Department continues to work closely with its neighbouring jurisdictions.

3.6. Threat Abatement Plans and Recovery Plans

As protected species under the EPBC Act, ongoing monitoring and management of interactions with species that are the subject of a Threat Abatement Plan or Recovery Plan are captured under the existing management arrangements in place.

The take or possession of *Pristis* sawfish and *Glyphis* northern river sharks is prohibited under the Fisheries Regulations, of which both species are subject to a Recovery Plan.

Protected species interactions in the fishery are monitored in the Harvest Strategy to ensure that fishery impacts do not cause irreversible harm to populations. Observer, logbook and electronic monitoring is utilised to quantify interaction levels whilst additional assessments will be undertaken in the Ecological Risk Assessment process to ensure the management of the Fishery is effective and efficient in achieving Ecological Sustainable Development (ESD) outcomes.

Reviewed periodically, the management frameworks in place can ensure that management arrangements continue to support the relevant Threat Abatement Plans and Recovery Plans.

4. Research and Monitoring

4.1. Results of any research completed relevant to the fishery, including how results will be incorporated into management of the fishery

The Fisheries Division actively participated in the development of the 2020 *Status of key Australian Fish Stocks* report. The stock status for NT stocks of the Blacktip shark species complex (*C. tilstoni*, *C. limbatus* and *C. sorrah*) and Grey mackerel were determined to be sustainable. The results of these were used to undertake an ERA of the ONLF and as part of the monitoring program for the Harvest Strategy. A copy of these reports can be found here: <https://www.fish.gov.au/>.

The Fisheries Division contributed to a number of projects in the first phase of the National Environmental Science Program (NESP). Projects included research into the population status of northern river sharks and the connectivity of hammerheads in Northern Australia.

New information generated by northern river shark research was incorporated into the species' status assessment as part of the Marine Biodiversity Hub Shark Action Plan, and informed the risk assessment for Glyphis species in the ONLF ERA. The *Action Plan For Australian Sharks and Rays* presents the status of all 329 sharks, rays, and chimaeras occurring in Australian waters. This publication can be accessed here: https://www.nespmarine.edu.au/system/files/Shark_Action_Plan_FINAL_Sept7_2021_WEB_RGB.pdf

A collaborative NESP project designed to determine the connectivity of hammerhead sharks, informed a draft stock assessment for Australian populations of scalloped hammerhead, and it is anticipated the results will be used to inform an evidence based Total Allowable Catch of scalloped hammerhead to support a Conservation Dependant listing under the EPBC Act. As the conservation listing is currently under review, should the species be listed as Endangered, scalloped hammerhead will be managed as a Threatened, Endangered and Protected Species (TEPS) in our Harvest Strategy, and total mortalities will be reported each year.

Please refer to the Draft National Scalloped Hammerhead Shark Management and Draft Stock Assessment for Scalloped Hammerhead in Attachments 8 and 9.

The NESP publication can be accessed here:

https://www.nespmarine.edu.au/system/files/Heupel%20et%20al_%20A5_Examination%20of%20connectivity%20of%20hammerhead%20sharks_Final%20Report.pdf

NT Fisheries Division has secured funding from the Fisheries Research and Development Corporation (FRDC) to undertake research to:

- Assess biological and catch dynamics of hammerhead sharks species within the NT using currently available fisheries observer data.
- Collect additional genetic samples, vertebrae and catch data as a scoping study to assess the utility of close kin genetics.
- Refine regional species-specific life-history relationships, catch demographics and reproductive parameters for hammerhead sharks.

This research will improve the understanding of hammerhead sharks in Northern Territory waters and assess the feasibility of more in depth close kin studies. To support this research, on-board observers have and continue to collect vertebrate, biological and genetics samples from hammerhead and other species of

shark. This repository of samples and information will contribute to the proposed hammerhead research and will form the basis of future research projects as need and resources arise.

4.2. Results of any collaborative research undertaken for the fishery

The Department continues to actively identify opportunities to collaborate with other partners, particularly to address the aims and objectives of the National Plan of Action for the Conservation and Management of Sharks 2012 (Shark-plan 2).

Recent and current collaborative projects include;

- Collaborative science for monitoring of Northern Territory marine megafauna.
<https://researchers.mq.edu.au/en/projects/collaborative-science-for-monitoring-of-northern-territory-marine>
- NESP A12 Seascapes Project (CDU, CSIRO, Department of Environment)
<https://www.nespmarine.edu.au/northern-seascapes>
- Biology of carcharhinidae by-catch species caught in Offshore Snapper Fisheries, PhD (CDU)

4.3. Description of monitoring programs used to gather information on the fishery

4.3.1. Logbooks

All ONLF fishers are required to complete daily catch and effort logbooks. This information is used to determine harvest for each species and to calculate CPUE. CPUE is recognised by industry and managers as a measure of relative abundance that is reliable and well-understood.

4.3.2. Observer Coverage

Independent observation of fishing operations is undertaken using a combination of human observers and electronic monitoring. Information from observer coverage and electronic monitoring is used to assess (and validate):

- catch and effort data
- the type and amount of bycatch
- TEPS that are interacted with during fishing operations and
- catch data for conservation dependant species.

On board observer trips are conducted in the ONLF to collect information that will assist with the assessment of the environmental impacts in the fishery. The observer's main on-board duties are to monitor, record and evaluate the operations impact on the environment, collect information to verify logbook details, record operating procedures and collect bycatch and biological information from the catch.

4.3.3. Electronic monitoring

The Department's electronic monitoring program uses video and sensor data from approved systems to monitor and record fishing activities. Relevant fishing activity data is stored on a removable data drive for later review and used to validate catch and effort logbook data.

NT Fisheries Division requires that e-monitoring systems must be installed on:

- Offshore Net and Line boats using longline gear
- Offshore Net and Line boats that are seeking to process at sea.

E-monitoring systems must be able to identify when a boat engages in fishing activity, including:

- the date and time of fishing activity
- the species being caught
- the quantity, both retained and discarded of each species
- any interactions with TEPS
- the type of fishing gear used.

Electronic monitoring footage is reviewed to validate reporting of TEPS interactions catch composition.

The data obtained assists in:

- validating e-logs total catch and discards for all commercial species and bycatch
- total fishery interactions with TEPS
- fishing operation assessments.

This program provides accurate fisheries data, which is incorporated into fisheries management decisions and can be used as a tool to monitor compliance within the fishery. For further information please see Attachments 1 and 2; NT Fisheries Electronic Monitoring Program, NT Fisheries Electronic Monitoring Standard Operating Procedure.

5. Catch data (should be based on data no more than 2 years old)

5.1. Total catch of target species

Table 2: Total catch of target species in the Offshore Net and Line Fishery (tonnes).

COMMON NAME	2019/2020	2020/2021
Blacktip Sharks	110t	118t
Grey Mackerel	409t	460t
Spot-tail Shark	36t	35t

5.2. Total catch of target species taken in other fisheries

Table 3: Catch of target species in other Northern Territory commercial fisheries (tonnes).

COMMON NAME	2019/2020	2020/2021
Blacktip Sharks	2.3t	2.8t

Grey Mackerel	6.5t	0.1t
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5.3. Total catch of byproduct and bycatch species

Secondary species taken in the Offshore Net and Line fishery include byproduct species recorded under the combined shark species, combined other sharks group, and the combined finfish group.

Table 4: Catch of secondary species (byproduct and bycatch) in the Offshore Net and line Fishery (tonnes).

COMMON NAME	2019/2020		2020/2021	
	Harvest	Discard	Harvest	Discard
Batfishes	0.2	0.1	0.6	0.0
Black Jewfish	0.3	0.0	0.2	0.0
Black Marlin	0.3	0.2	0.0	0.5
Black Pomfrets	1.9	0.0	0.6	0.1
Blacktip Reef Shark	0.0	0.0	0.0	0.2
Blue Threadfin	1.2	0.2	0.4	0.2
Bull shark	10.6	0.6	11.4	0.4
Catfishes	0.1	0.0	0.2	0.1
Cobia	0.4	0.0	0.3	0.0
Cod - Marine (Groupers)	0.0	0.0	0.2	0.0
Creek Whaler	1.3	0.0	0.7	0.0
Dusky Whaler	6.3	0.0	0.8	0.0
Fossil Shark	0.0	0.1	0.0	0.1
Giant Trevally	0.6	0.5	0.3	0.4
Golden Snapper	1.1	0.0	0.9	0.0
Golden Trevally	0.2	0.2	0.4	0.1
Great Hammerhead	34.5	9.7	29.1	5.3
Grey Reef Shark	0.5	0.0	0.3	0.1
Guitarfishes	0.0	0.0	0.2	0.0
Hardnose Shark	0.0	0.1	0.0	0.1
Lemon Shark	6.4	0.3	5.3	0.6
Longtail Tuna	15.2	1.6	3.8	3.2
Mackerel Tuna	1.5	0.7	0.9	0.3
Milk Shark	0.0	2.4	0.1	2.3
Milkfish	0.0	0.0	0.0	0.4
Pigeye Shark	27.9	0.1	12.8	0.1
Queenfish	0.3	0.9	1.0	0.9
Sailfish	0.0	0.0	0.0	0.2
Scalloped Hammerhead	10.5	2.4	5.8	1.4
School Mackerel	0.0	0.0	0.4	0.0
Shortfin Batfish (moonfish)	0.1	0.1	0.2	0.7
Spanish Mackerel	19.2	1.4	17.4	1.6
Spinner Shark	0.0	0.0	0.0	0.1
Spotted Mackerel	0.1	0.0	0.2	0.0
Stingrays	0.1	0.4	0.1	0.4

Tawny Shark	1.8	1.3	1.1	1.0
Tiger Shark	14.7	0.8	14.5	0.6
Trevallies - Scad	0.2	0.2	1.3	0.9
Winghead Shark	7.6	1.4	4.6	0.8

5.4. Harvest by each sector

5.4.1. Fishing Tour Operators

The FTO sector is required to provide log book returns for all its catch and release data. Grey Mackerel are not targeted by this sector, but is often caught while targeting Spanish Mackerel and is retained more frequently than sharks (Table 5).

Whilst sharks are not a targeted species within the sector they are caught during normal targeted fishing operations. Sharks in the FTO sector are mostly encountered as bycatch when bait fishing for reef species and are released in most instances (Table 6).

Table 5: Fishing Tour Operator Grey Mackerel catch (number of fish).

Grey Mackerel	2019-20	2020-21
Total catch	311	238
Percentage released	53%	22%

Table 6: Fishing Tour Operator shark catch (number of fish).

Shark	2019-20	2020-21
Total catch	4,874	8,966
Percentage released	99%	96%

5.4.2. Recreational

The NT undertakes annual surveys at boat ramps in the greater Darwin region to quantify recreational fishing catch. Results for 2016 have been finalised and survey data for 2017 and 2018 is currently being analysed.

In 2015 it is estimated that recreational anglers in the greater Darwin region caught approximately 2569 Grey Mackerel, 60.2% of which were released.

In 2016 it is estimated that recreational anglers in the greater Darwin region caught approximately 1720 (± 341) individual Grey Mackerel, 43% of which were released.

Northern Territory recreational fishing surveys only identify elasmobranchs to a generic “sharks and rays” category, consequently there is no species-specific catch estimates for sharks by the recreational sector. However, recreational fishers release approximately 97% of all sharks and rays captured in the Northern Territory.

5.4.3. Aboriginal

Sharks are considered to be an important group of fish caught by Indigenous people in the NT. There are no contemporary estimates for customary catch of target species in the Northern Territory.

5.5. Effort data including information on any trends

Gillnet effort targeting Grey Mackerel has been reasonably consistent over the last decade, with no great shifts in effort or harvests. Longlining effort, which is typically used to target sharks, has been sporadic since 2012, with some effort in the last two financial years (Table 5).

Table 5: Total fishery effort for each gear type used in the Offshore Net and Line Fishery.

METHOD	2019/2020	2020/2021
Pelagic Gillnet (km net hours)	7872	7539
Longline (100 hook hours)	6898	6214

There have been no large-scale spatial shifts in fishing activity since the last WTO assessment for this fishery.

6. Status of target stock

6.1. Resource concerns

There are no resources of concern for this fishery.

6.2. Results of any stock assessments

All target species (Grey Mackerel, Australian and Common Blacktip Shark, and Spot-tail Shark) were assessed under the most recent Status of Australian Fish Stocks (SAFS) Report <https://www.fish.gov.au/>. The results of these assessments are summarised in Table 6 below.

Table 6: Status of Australian Fish Stocks outcomes for Offshore Net and Line Fishery target species

Species	Region	Status
Grey Mackerel	North West Northern Territory	Sustainable
	Gulf of Carpentaria	Sustainable
Australian Blacktip Shark	North Western Australia	Sustainable
	Gulf of Carpentaria	Undefined
Common Blacktip Shark	North and West Coast	Sustainable
	Gulf of Carpentaria	Undefined
Spot-tail Shark	Northern Australia	Sustainable

The underlying stock assessments that supported the status findings are provided in Attachments 3-7.

6.3. Results of any stock recovery strategies (if applicable)

N/A.

7. Interactions with protected species

Threatened, Endangered and Protected Species interactions in the fishery are monitored in the Harvest Strategy to ensure that fishery impacts do not cause irreversible harm to TEPS populations. Observer and logbook reporting, and electronic monitoring is utilised to quantify interaction levels with TEPS in the fishery.

7.1. Frequency and nature of interactions

Table 7: Threatened, Endangered and Protected Species interactions in the ONLF 2018 - 2021

Fishing Season	Species	Released Alive	Mortalities	Total
2018-19	Sea Turtles	18		18
	Narrow Sawfish	7	7	14
	Green Sawfish	9	1	10
	Giant Manta Ray	3		3
	Dwarf Sawfish	1		1
	Green Turtle	1		1
2019-20	Pygmy Devilray	84	4	88
	Narrow Sawfish	20	0	20
	Sea Turtles	12		12
	Giant Manta Ray	10		10
	Green Sawfish	9		9
	Green Turtle	5	0	5
	Hawksbill Turtle	4	0	4
	Bottlenose Dolphin	1	2	3
	Flatback Turtle	3		3
	Pipefish, Seahorses, Seadragons	2		2
	Largetooth Sawfish	1		1
2020-21	Common Dolphin	0	3	3
	Dwarf Sawfish	3	0	3
	Flatback Turtle	6	0	6
	Giant Manta Ray	33	18	51
	Green Sawfish	27	0	27
	Green Turtle	1	0	1
	Hawksbill Turtle	20	0	20
	Narrow Sawfish	21	1	22
	Pacific Ridley Turtle	3	0	3
	Pygmy Devilray	166	11	177
	Sea Turtles	8	1	9
	Snubfin Dolphin	0	1	1

7.2. Management action taken to reduce interactions and results of such action

Threatened, Endangered and Protected Species are managed through triggers in the NT ONLF Harvest Strategy but also through:

- Specific management arrangements for protected species:
 - Draft National Scalloped Hammerhead Management Strategy (See Attachment 8)
- Increased electronic / human observer coverage - utilising a risk based approach
- Identification of any hot spots for species interactions
- Development of an interaction reduction plan to reduce serious injury and death to below level of significant impact
- Threatened Endangered and Protected Species of Northern Territory Identification booklet that improves accuracy of protected species interactions in the fishery, distributed across all of NT Fisheries and relevant user groups. Available here: https://industry.nt.gov.au/_data/assets/pdf_file/0006/960603/marine-protected-species-in-the-northern-territory-identification-guide.pdf
- Education of fishers by on-board observers continually in the identification of shark species encounters in the ONLF.
- Hammerhead sharks and Sawfish Identification Sheets distributed to all vessels and approved operators in the ONLF

The Harvest Strategy contains clear performance measures and management actions surrounding data accuracy. All operators must take reasonable steps to avoid interactions with TEPS however should an interaction occur, the operator must record the information in the relevant logbook.

Increased observer coverage and electronic monitoring requirements are legislated for those that use longlining gear or that undertake activities considered high-risk. The ONLF electronic monitoring program uses independently approved video data to validate catch and effort logbook data and monitor and record any TEPS interactions. Electronic monitoring is now mandatory on all Pelagic and Demersal longline vessels and 100% of TEPS interactions and 10% of catch composition is reviewed.

The program provides accurate fisheries data, which can be incorporated into fisheries management decisions. For the electronic monitoring requirements of ONLF Licence holders, please refer to Attachment 1. NT Fisheries Electronic Monitoring Program.

7.2.1. Specific management arrangements for protected species

The most prominent of TEPS species has been Scalloped Hammerhead, which is currently listed as Conservation Dependant under the EPBC Act. Since its listing, research has been undertaken to determine the population structure and connectivity for Scalloped Hammerhead in Northern Australia.

A national stock assessment for Scalloped Hammerhead has been drafted and provides a significant advance in the understanding of the status of Scalloped Hammerhead in Northern Australian waters. For more information please see Attachment 9 Draft Scalloped Hammerhead Stock Assessment.

NT Fisheries Division and the Queensland Department of Agriculture and Fisheries (QDAF) have developed a Draft National Management Strategy for Scalloped Hammerhead Sharks (Attachment 8) to better align and jointly manage the joint stock of Hammerhead sharks.

The ONLF Harvest Strategy includes specific trigger points for scalloped and great hammerhead that ensures harvest remains within specified limits outlined in the Non-Detriment Finding for these species. In response to scalloped hammerhead cryptic mortality concerns, monitoring in the ONLF has been increased through the introduction of electronic monitoring requirements and increased observer coverage.

8. Impacts of the fishery on the ecosystem in which it operates

8.1. Results of Ecological Risk Assessment (ERA)

In consultation with stakeholders and expert panel an ERA was undertaken in 2020 in accordance with the revised National ESD reporting framework and associated Harvest Strategy for the ONLF. The ERA is available here: https://nt.gov.au/_data/assets/pdf_file/0011/975584/nt-offshore-net-and-line-fishery-ecological-risk-assessment-2020.pdf

There were 43 species and impacts assessed in the ERA. The majority of issues were assessed to represent “low risk” with 15 as “moderate risk: and one issue identified as “high risk”. Moderate and high risks are outlined in Table 2.

Table 8. Offshore Net and Line Fishery ERA moderate and high risk rating outcomes

Species assessed	Consequence	Likelihood	Risk Rating
Longtail Tuna (Indian Ocean)	3 (severe)	2 (rare)	6
Longtail Tuna (Pacific Ocean)	2 (moderate)	3 (possible)	6
Scalloped Hammerhead	2 (moderate)	3 (possible)	6
Combined shark species (Bull Shark, Tiger Shark, Lemon Shark, Pigeye Shark, Grey Reef Shark)	2 (moderate)	3 (possible)	6
Winghead Shark	4 (major)	4 (occasional)	16
Creek Whaler	2 (moderate)	3 (possible)	6
Great Hammerhead	2 (moderate)	4 (occasional)	8
Golden Snapper	3 (severe)	3 (possible)	9
Olive Ridley Turtle	3 (severe)	2 (rare)	6
Loggerhead Turtle	3 (severe)	2 (rare)	6
Leatherback Turtle	3 (severe)	2 (rare)	6
Green Sawfish	3 (severe)	3 (possible)	9
Narrow Sawfish	3 (severe)	3 (possible)	9
Dwarf Sawfish	4 (major)	2 (rare)	8
Large-toothed Sawfish	4 (major)	2 (rare)	8
Devil and Manta Rays	4 (major)	2 (rare)	8
Ecosystem impacts			
Boat strike	0 (negligible)	2 (rare)	0
Bycatch	1 (minor)	2 (rare)	2

Discards	1 (minor)	2 (rare)	2
Bait	1 (minor)	2 (rare)	2
Additional biological material	1 (minor)	2 (rare)	2
Other environmental factors	1 (minor)	2 (rare)	2
Habitat	1 (minor)	1 (remote)	1

8.2. Nature of impacts on the ecosystem including impacts on any key conservation values

NT Fisheries Division conducts Ecological Risk Assessments that identify risks posed by fishing to the ecological sustainability of species, habitats, communities and ecological processes with which the Fishery interacts. ERA's are undertaken every five years and are developed by a group of experts and stakeholders. The most recent ERA, conducted in 2020, found that the fishery presented a low risk to both habitat disturbance and ecological process.

Habitat impact by the fishery is also measured yearly within the ONLF Harvest Strategy. This indicator overlays the fishery's 'effort footprint' on a spatial distribution of marine habitats in NT waters. The most recent Harvest Strategy assessment found that every habitat type had a level of impact less than 5% of the total habitat area (within target levels for the fishery). It is to be noted that this measure provides a conservative estimate of habitat impacts by the ONLF when considering the gear types used in the fishery. Gillnets are suspended in the water column and must not come within 2m of the seabed. Longlines are made from single lines to which snoods are attached. Longlines are anchored at each end and are typically weighted at regular intervals along the main line. This single line gear type presents a small footprint that has limited interaction with the bottom when compared to other gear types, such as trawl nets.

8.3. Management action taken to reduce impacts and results of such action

Please refer to the ONLF Management Framework and Harvest Strategy here:

https://industry.nt.gov.au/_data/assets/pdf_file/0017/620432/mgt-arrangements-offshore-net-line-fishery.pdf

Strategies used to mitigate impacts include:

- mandatory logbook reporting (including electronic logbooks)
- electronic monitoring (EM) and human observer coverage
- liaison with industry on the development of bycatch mitigation devices and education on bycatch management
- monitoring bycatch levels
- monitoring TEPS interactions
- compliance action (which may include charges laid for breach of Fisheries Regulations).

9. Implementation of WTO recommendations and conditions

Progress towards implementing WTO Fishery Conditions	
Condition 1	Operation of the Northern Territory Offshore Net and Line Fishery (the Fishery) will be carried out in accordance with the Northern Territory Department of Primary Industry and Resources fisheries management arrangements in force under the Northern Territory of Australia Fisheries Act 1988 and Northern Territory of Australia Fisheries Regulations 1992
DITT Response	The Department of Industry Tourism and Trade (DITT) (previously the Department of Primary Industry and Resources) reports that the Fishery continues to be managed in accordance with the management regime made under the NT Fisheries Regulations 1992 and the Fisheries Act 1988.
Condition 2	The Northern Territory Department of Primary Industry and Resources inform the Department of any intended material changes to the Northern Territory Offshore Net and Line Fishery management arrangements that may affect the assessment against which Environment Protection and Biodiversity Conservation Act 1999 decisions are made.
DITT Response	No material changes have been made to the Fishery management that would negatively impact on resource sustainability. The Harvest Strategy for the Fishery and contemporary harvest rules implemented in 2018 provides a regulatory framework to the quota management system.
Condition 3	The Northern Territory Department of Primary Industry and Resources to produce and send reports to the Department annually as per Appendix B of the guidelines for the Ecologically Sustainable Management of Fisheries – 2nd edition.
DITT Response	Since WTO accreditation was received in 2019, the Department of Industry Tourism and Trade has continued to report against the WTO conditions and recommendations annually as per requirements.
Condition 4	<p>The Northern Territory Department of Primary Industry and resources to:</p> <ul style="list-style-type: none"> a) Provide the Department of the Environment and Energy a review of the current e-monitoring auditing protocols b) Ensure that these protocols are appropriate for managing the level of take by individual operators who trigger e-monitoring requirements; and c) Provide this review within 12 months after introduction of the e-monitoring auditing protocols. <p>This is to ensure that individual operators' catch is being sufficiently monitored and audited, and is appropriate for managing the level of take in the fishery under the new management regime. Performance against this condition must be included in annual reports specified at Condition 3.</p>

DITT Response	<p>a) Please see attached finalised documents:</p> <ul style="list-style-type: none"> • NT Fisheries Electronic Monitoring Program (Attachment 1) • NT Fisheries Electronic Monitoring Standard Operating Procedure (Attachment 2) <p>b) Licence holders in the ONLF Fishery are required to install electronic monitoring if:</p> <ul style="list-style-type: none"> • a vessel is using longlining gear; • the operator is seeking an exemption to: <ul style="list-style-type: none"> o process shark at sea (land sharks with fins not naturally attached); or o unload in a port other than Gove or Darwin; • a compliance risk has been identified; or • at any other time when notified by the Joint Authority. <p>Additionally where the licence holder has committed an offence or has been issued a Fishery Infringement Notice, electronic monitoring may be required.</p> <p>c) DITT is confident the current level of footage review is sufficient to validate the data. A comparison review of electronic monitoring and logbook data is ongoing to ensure correct identification and reporting of TEPS and species of concern, including hammerhead shark species (<i>Sphyrna lewini</i>, <i>Sphyrna mokarran</i> and <i>Eusphyra blochii</i>).</p>
Condition 5	<p>The Northern Territory Department of Primary Industry and Resources to continue to improve the species-based management of hammerhead sharks in the Offshore Net and Line Fishery through:</p> <p>a) Continuing to support fishers to identify accurately and record sharks at the species level to improve catch composition reporting (in particular of the hammerhead shark complex), and to ensure that catch levels of individual shark species are ecologically sustainable; and</p> <p>b) Reviewing and providing catch data for Scalloped Hammerhead (<i>Sphyrna lewini</i>), Great Hammerhead (<i>Sphyrna mokarran</i>) and Winghead Sharks (<i>Eusphyra blochii</i>) to the Department of Environment and Energy for Australia's Threatened Species Scientific Committee's consideration. The data should be in a form that facilitates a comparison of catch levels between the three species, and provide advice on the level of confidence in the various data collected by the Northern Territory Department of Primary Industry and Resources.</p> <p>c) Provide annual reports to the Department (as per Condition 3) on the performance of management arrangements, including actions undertaken as part of this condition, and which comprise the 'plan of management' for the purposes of subparagraph 179(6)(b)(ii) of the EPBC Act for Scalloped Hammerhead Sharks.</p>

DITT Response	<p>a) The following measures have been implemented in the ONLF and are ongoing;</p> <ul style="list-style-type: none"> • A Threatened Endangered and Protected Species of Northern Territory Identification booklet has been distributed across all fisheries and relevant user groups and improves accuracy of protected species interactions in the fishery (Available here: https://industry.nt.gov.au/_data/assets/pdf_file/0006/960603/marine-protected-species-in-the-northern-territory-identification-guide.pdf) • All existing and new operators receive Hammerhead Shark and Sawfish Identification Sheets for use on vessels • On-board observers continually educate fishers in the identification and handling of shark species encounters in the ONLF. <p>b) A Stock Assessment of Scalloped Hammerhead (<i>Sphyrna lewini</i>) in Australian waters was submitted to the Threatened Species Scientific Committee (TSSC) in February 2021 (Attachment 9).</p> <p>In August 2021, the Fisheries Division in conjunction with Queensland Department of Agriculture and Fisheries, developed and submitted a Draft National Scalloped Hammerhead Shark Management Strategy to the TSSC (Attachment 8).</p> <p>DITT has secured funding from the Fisheries Research and Development Corporation (FRDC) to undertake research to:</p> <ul style="list-style-type: none"> • Assess biological and catch dynamics of hammerhead sharks species within the NT using currently available fisheries observer data. • Collect additional genetic samples, vertebrae and catch data as a scoping study to assess the utility of close kin genetics. • Refine regional species-specific life-history relationships, catch demographics and reproductive parameters for hammerhead sharks. <p>This research will improve the understanding of hammerhead sharks in Northern Territory waters and assess the feasibility of more in depth close kin studies. To support this research on board observers have and continue to collect vertebrate, biological and genetics samples from hammerhead and other species of shark. This repository of samples and information will form the basis of future research projects as need and resources arise.</p> <p>c) DITT continues to be a strong advocator for hammerhead research and will continue to actively participate in decisions affecting the sustainable management of these species. DITT has and will continue to report on the arrangements in place for managing hammerhead sharks annually as per requirements.</p>
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Progress towards implementing WTO Recommendations

- Recommendation 1 The Northern Territory Department of Primary Industry and Resources to, in conjunction with other relevant jurisdictions, continue to improve the species based management of sharks in the Offshore Net and Line Fishery through:
- a) Continuing to support fishers to accurately identify and record sharks at the species level;
 - b) Improving catch composition knowledge; and
 - c) Improving knowledge of species biology and ecology.
- Reporting of sharks, in particular of the Blacktip and Hammerhead shark complex, should be sufficient to ensure that catch levels of individual shark species remain ecologically sustainable.

DITT Response

DITT continues to be committed to species-specific management in the Fishery, as demonstrated through:

Logbook Data

- All species (including hammerhead species and excluding *Carcharhinus tilstoni* and *C. limbatus*) are required to be reported in numbers and kilograms for each shot.
- DITT's spatial and temporal understanding of catch composition in the Fishery is enabled through mandatory detail in logbook reporting, including date, time, amount of gear and latitude and longitude of each shot.

Data Validation

- Electronic monitoring of longline gear and Threatened, Endangered and Protected Species identification, including hammerhead sharks.
- Observer coverage alongside electronic logbook reporting and Vessel Monitoring Systems greatly improves confidence in species reporting.
- The proportion of Common blacktip to Australian blacktip sharks is a 1:5 catch ratio, routinely determined by Observers.
- The Johnson et.al (2017) study (available here: <https://bit.ly/31lfzvB>) on field methods to distinguish between cryptic carcharinid sharks on genetic analyses of cryptic blacktip species further supports the 1:5 ratio.

Harvest Strategy

- Contains species specific performance indicators and trigger reference points.
- Performance indicators and trigger reference points for each species are based on the best knowledge available surrounding appropriate harvest rates.
- The next assessment for Common blacktip sharks, and Spot-tail sharks, is scheduled to take place in early 2022.
- DITT is currently working with QDAF to develop a joint Gulf of Carpentaria stock assessment model for Grey mackerel, due to be completed in 2022.

Legislation

- Strong confidence in species identification of all shark species through fishery specific legislation to land sharks with fins naturally attached

Whilst the species specific management currently in place for Great and Scalloped Hammerheads includes a 50 t limit and 37.5 t harvest trigger, this is subject to the updated conservation listing advice for Scalloped Hammerheads, due in early 2022. Should the species no longer be listed as conservation dependent, existing arrangements to manage all TEPS interactions will apply.

DITT are committed to actively participating with research organisations and other jurisdictions which contribute to the knowledge of this fishery and support ongoing implementation of species specific management the Fishery.

	<p>DITT has continued its efforts to improve species biology and ecology understanding following its participation in the NESP Hammerhead shark stock connectivity project, to produce draft Scalloped Hammerhead stock assessment. A project assessing the feasibility to use Close-Kin techniques to provide an ongoing and accurate measure of abundance of Scalloped hammerheads will begin in 2022.</p>
Recommendation 2	<p>The Northern Territory Department of Resources to:</p> <ol style="list-style-type: none"> Initiate a program to review and update the ecological risk assessment for the Offshore Net and Line Fishery on a regular basis; and Publish the results of future ecological risk assessments
DITT Response	<ol style="list-style-type: none"> <p>The ERA technical panel of experts met in May 2020 and was finalised following presentation to stakeholders of the Fishery in August 2020. It is scheduled for review in 2025.</p> <p>The issue identification, risk assessment, and reporting process and the final report format is based on the National ESD Framework How To Guide (see www.fisheries-esd.com.au) and the Department of Fisheries Western Australia ESD performance reports pioneered by Dr Rick Fletcher and others.</p> <p>The ERA outlines the risk assessment methodologies used, as well as the rationale behind assigned risk levels in the fishery. Risk ratings informed the review of the Fishery Management Framework and Harvest Strategy, with the aim of continued ecologically sustainable development of the resource.</p> <p>The ERA is published and available online here: https://nt.gov.au/_data/assets/pdf_file/0011/975584/nt-offshore-net-and-line-fishery-ecological-risk-assessment-2020.pdf</p>