



**Australian Government**

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**Department of the Environment and Heritage**

**Assessment of the Queensland  
Gulf of Carpentaria Line Fishery**

**Approvals and Wildlife Division**

**August 2004**

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Assistant Secretary  
Wildlife Trade and Sustainable Fisheries Branch  
Department of the Environment and Heritage  
GPO Box 787  
Canberra ACT 2601

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*This document is an assessment carried out by the Department of the Environment and Heritage of a commercial fishery against the Australian Government Guidelines for the Ecologically Sustainable Management of Fisheries. It forms part of the advice provided to the Minister for the Environment and Heritage on the fishery in relation to decisions under Parts 13 and 13A of the EPBC Act. The views expressed do not necessarily reflect those of the Minister for the Environment and Heritage or the Australian Government.*

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# Assessment of the ecological sustainability of management arrangements for the Queensland Gulf of Carpentaria Line Fishery

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## EXECUTIVE SUMMARY

### Background

The Queensland Department of Primary Industries and Fisheries (DPI&F) has submitted a document for assessment under Parts 13 and 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The draft document *Ecological Assessment of the Gulf of Carpentaria Line Fishery* (the submission) was received by the Department of the Environment and Heritage (DEH) in March 2004 after a period of discussion between DPI&F and DEH, during which preliminary drafts were refined. The submission was released for a 20 business day public comment period that expired on 8 April 2004. One (1) public comment was received and DPI&F provided a response to the issues raised. No changes were made to the submission as a result of public comment.

The submission reports on the Queensland Gulf of Carpentaria Line Fishery (GOCLF) against the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries* (the Guidelines). The DEH assessment considers the submission and associated documents, public comments and DPI&F's response to the comments.

**Table 1:** Summary of the Gulf of Carpentaria Line Fishery

Area	Slade Point near the tip of Caper York Peninsular to the Qld/NT boarder and all tidal waters out to 25 nm	
Fishery status	Effort at maximum levels	
Target Species	Spanish Mackerel	
Key Byproduct Species	Emperors (Red Throat Emperor, Red Emperor) Coral Trout Red Snapper ( <i>Lutjanus erythropterus</i> and <i>L. malabaricus</i> ) Sweet lip	Black Kingfish Trevally Shark Grey Mackerel Catfish
Gear	Troll lines (usually stainless steel wire cable or monofilament) or hand line (usually monofilament) with no more than 6 hooks	
Season	70% of Spanish Mackerel taken in August to November	
Commercial harvest 2002	L5 (inshore) – 2.95 tonnes L4 (offshore) –203.26 tonnes	
Commercial Tour Operators (Charter Operators)	Estimated 3 tonnes per year of main GOCLF fishery	
GVP 2002	\$1.65 million (Spanish Mackerel contributing \$1.5 million)	
Recreational harvest	No details provided in the DPI&F submission	
Commercial licences issued (as at August 2004)	L5 endorsement 7 primary and 14 tenders L4 endorsement 40 primary and 77 tenders	
Charter Licences	52 in the Gulf	
Management arrangements	Input and output controls (see Table 2) that include spatial and temporal closures, limited licensing, gear and vessel restrictions and fishery monitoring systems.	
Export	No export product has been identified however fishers are constantly seeking new marketing opportunities.	
Bycatch	Negligible	
Interaction with Protected Species	Nil based on current information sources	

The GOCLF operates in the Gulf of Carpentaria (GoC) out to 25 nautical miles (nm). The GOCLF comprises an inshore line component (L5 fishery symbol) that operates in tidal waters within 3 nm of the mainland or the shore of an island and the L4 component, which operates in tidal waters of the GoC within 25 nm (including the area of the L5). These symbols allow line fishers to access pelagic and demersal fish stocks within Queensland GoC waters. Overall, the fishery spans over 100 kilometres of coastal foreshores enclosing around 25 major river systems and numerous creeks. The L5 and L4 symbols were created when the Queensland Fisheries Joint Authority (QFJA) was established in 1995 under the Offshore Constitutional Settlement (OCS) agreement between the Commonwealth and Queensland.

The GOCLF operates as a small boat or dory fishery with a number of dories operating from a larger mother boat (up to a maximum of 20 m) or as small trolling boats set up to catch pelagic fish. In recent years depth sounders and Global Positioning Systems (GPS) have become more prevalent and potentially increased the efficiency of operators. Commercial fishing in the GoC dates back to the 1950's.

Operators in the fishery are permitted to take any finfish **other** than those listed below:

- Barramundi (*Lates calcarifer*);
- Black Jewfish (*Protonibea diacanthus*);
- Blue Threadfin (*Eleutheronema tetradactylum*);
- Jewel Fish (*Nibea squamosa*);
- King Threadfin (*Polydactylus macrochir*);
- Queenfish (*Scomberoides* spp.);
- Spotted Grunter Bream (Grunter) (*Pomodasys kaakan*).

The GOCLF is primarily a troll line fishery for Spanish Mackerel (*Scomberomorus commerson*) (50% in the L4 and 95% in the L5 by weight annually). The harvest of Spanish Mackerel is seasonal with 70% of the annual harvest taken in August to November. Spanish Mackerel is also harvested incidentally in the GoC by net boats targeting Grey Mackerel (*Scomberomorus semifasciatus*) and tropical shark (around 3% of total catch).

Limited catches of demersal fish species using hand lines occur at different times of the year throughout the geographic extent of the fishery. Byproduct species are listed as Red Snappers, Coral Trout and Red Throat and Red Emperors. However, the byproduct and target species list changes through the DPI&F report and is subject to a DEH recommendation for clarification (see **Recommendation 10**). Fishing for these species is limited to coral and rocky reef areas. Most of the target, byproduct and bycatch species in the GOCLF have a widespread tropical Indo-West Pacific distribution.<sup>1</sup> Shark and Grey Mackerel are also caught incidentally.

Spanish Mackerel is taken in northern continental shelf waters between Queensland and Western Australia (WA), extending to approximately 30°S on both coasts. Juvenile Spanish Mackerel exhibit rapid growth in their first year, typically reaching 65 cm and recruiting to the fishery at the end of their second year of growth usually reaching about 80 cm fork length (FL). Females reach sexual maturity at about 79 cm FL, slightly larger than the minimum legal size at which they can be harvested. The distribution and extent of spawning activity, and the major spawning sites are unknown for the GoC.

Red Snapper<sup>2</sup> is a general species group name for Lutjanid species that include schooling species such as *Lutjanus erythropterus* (scarlet seaperch) and *L. malabaricus* (saddletail seaperch). These species are commonly associated with submerged deeper reefs and shoals and feed mostly at night,

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<sup>1</sup> Kailola *et al.* 1993.

<sup>2</sup> Red Snapper is also termed Sea perch or Redfish.

primarily on fish with small amounts of benthic crustaceans, cephalopods and other invertebrates. Saddletail Seaperch can reach a maximum age of 31 years and 100 cm total length<sup>3</sup>. Both these species mature at approximately 300 mm standard length (SL) (Anon 2003b). The life characteristics of the three most commonly targeted large Red Snapper (Scarlet and Saddletail seaperch) and Red Emperor are long-lived species (up to 32 years) and grow slowly once reproductively mature (Newman *et al* 2000). These life history traits are characteristic of species with a low capacity to recover from over-fishing. Newman *et al.* (2000) also suggests that the slower growing Red Emperor may form a good indicator species for a monitoring program for this group of species. They recommended that a cost effective program could be implemented to determine the age of species using an otolith weight and age relationship, using samples obtained from the fisheries. Australian stocks of Red Snapper appear to be separate to Indonesia.

Red Emperor (*Lutjanus sebae*) occurs in coral reefs often over sand flats in water between 10 and 100 m in depth. Red Emperor feed on fishes, crabs, stomatopods other benthic crustaceans and cephalopods. They are estimated to live up to 12 years and can reach a maximum length of 100 cm but are common at 60 cm in length (Allen 1995).

The Australian distribution of Coral Trout is from the Abrolhos Islands in Western Australia to Brisbane in Queensland. Three main species are marketed under the banner of 'coral trout': the common coral trout (*Plectropomus leopardus*), bluespot trout (*P. laevis*) and the bar-cheeked trout *P. maculatus*.

Adult Red Throat Emperor (*Lethrinus miniatus*) inhabit coral reefs during the day where they feed occasionally, and at night, move over the sandy sea floor to forage. Common food items are crustaceans, echinoderms, molluscs and fish, with crabs and sea urchins forming the majority of the diet. Adults are found in depths up to 100 m and they are capable of inter-reef migration (Carpenter and Allen 1989). The habitat of juvenile *L. miniatus* is poorly known however Williams and Russ (1994) suggest that they may be found amongst deeper rubble areas adjacent to reefs. *L. miniatus* is thought to form spawning aggregations in Palau, Micronesia (Russell 2001). Red Throat Emperor is an incomplete metagynous hermaphrodite which means that a portion of females eventually become males, but certainly not all. Red Throat Emperor are probably serial batch spawners (Sumpton and Brown, DPI AFFS, unpublished data). Most of the research for this species has been concentrated within the Great Barrier Reef (GBR) and there may be some differences to GoC stocks. The patterns of growth are likely to be similar between the two regions however and the GBR based information is presented here as a guide. In the GBR, fifty per cent of fish change sex by the age of six years, at about 45 cm FL. Age and size at first reproduction is around three years (38-44 cm) in the southern GBR (Carpenter and Allen 1989). In the southern regions of the GBR average maximum size is about 54 cm long, which is generally reached at 10 years of age. The average maximum size in the Northern Dry region of the GBR is only about 49 cm, which can be reached by about 5 years of age. The GoC Red Throat Emperor populations are more likely to be similar to the northern GBR given they are roughly from the same latitudes. In all regions of the GBR, Red Throat Emperor are of legal size at 2-3 years of age (Williams 2002). Analysis of the growth rings in the otoliths of Red Throat Emperor indicated that growth is rapid in autumn and winter (Brown and Sumpton 1998).

Commercial harvest of tropical sharks consists mainly of whaler sharks, in particular the Australian blacktip whaler (*Carcharhinus tilstoni*) and sorrah whaler (*Carcharhinus sorrah*). The sharks that dominate the GoC fisheries generally attain sexual maturity at over 1 metre total length at around 3-4 years of age. They are viviparous, generally producing three to five pups during summer months after a 7-12 month gestation. Tropical shark species in the GoC have an Indo-West Pacific distribution. Tropical shark harvest has been minimal in the GOCLF since 1996 (Williams 2002)

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<sup>3</sup> White and Sumpton, 2002.

however the take has been increasing in the GoC net fishery since 1990. Stock assessment for tropical shark resources has not been undertaken due to limited information on the catch composition and biology. Sustainability of the shark resource at current harvest levels is unknown. Until the species composition of tropical sharks inhabiting Queensland waters is understood, and logbooks modified to record the information, comprehensive stock assessments of Queensland tropical sharks will not be possible. These data deficiencies are being addressed through the net fishery onboard observers and a nationally coordinated Fisheries Research and Development Corporation (FRDC) project assessing the sustainability of sharks across northern Australia. The total commercial catch of tropical shark in the GOCLF in 2002 was 2 t.

Grey Mackerel (*Scomberomorus semifasciatus*) is a pelagic species endemic to waters across northern Australia and adjacent Papua New Guinea and larvae and juveniles are dependent on estuarine and inshore habitats (Cameron and Begg 2002). In the GoC, the vast majority of grey mackerel is harvested by commercial net fishers. They are a fast growing species with total length (TL) at first maturity for females of 75 cm TL and males of 65 cm TL at between one and two years of age (Cameron and Begg 2002). The total commercial catch of grey mackerel in the GOCLF in 2002 was 3 t. An average of 0.1 t has been taken each year during charter tour operations since 1999.

DPI&F acknowledges the biological and distributional data for Grey Mackerel are limited and is developing a desktop study in collaboration with the Northern Territory (NT) Department of Business, Industry & Resource Development (DBIRD) to collate existing biological data and to undertake preliminary assessment of the status of Grey Mackerel across northern Australia. Grey Mackerel is being managed in Queensland waters with a precautionary approach by the DPI&F until this information is compiled.

There is some overlap in finfish species caught by recreational, indigenous and charter boat fishing tour sectors within the GOCLF however these species are managed separately under the *Fisheries (Gulf of Carpentaria Inshore Finfish) Plan 1999*. A commercial net fishery (N3 principally targeting barramundi within 7 nm and N9 targeting shark and grey mackerel between 7 and 25 nm), Developmental Finfish Trawl Fishery and the Commonwealth managed Northern Prawn Fishery also operates within the area of the GOCLF.

Product from the GOCLF is sold on the Australian domestic market with a combined Gross Value of Production of \$1.65 million for 2002. Bycatch in the fishery is negligible due to highly selective targeting techniques. A Bycatch Action Plan (BAP) is being developed by stakeholders and DPI&F as a strategic plan to manage bycatch in the GoC.<sup>4</sup> DPI&F advise that the Plan is due for implementation in 2005 and applies to all inshore fisheries in the GoC including the Net, Bait, Line and Crab Commercial Fisheries, Recreational Fishery and Indigenous Fisheries and developmental fisheries including the Developmental Finfish Trawl Fishery.

## **Overall assessment**

The material submitted by DPI&F demonstrates that the management arrangements for the GOCLF meet most of the requirements of the Australian Government *Guidelines for the ecologically sustainable management of fisheries*.

While the fishery is relatively well managed, DEH has identified a number of risks that must be managed to ensure that their impacts are minimised including:

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<sup>4</sup> A draft copy is provided in Appendix 1 of the DPI&F submission.

- Absence of fishery specific objectives, performance indicators and performance measures for target, byproduct, bycatch, protected species and ecosystem impacts;
- Absence of a clear process for when a performance measures is breached;
- Limited level of collection and reliability of fishery dependent data due to multiple species being listed under a single commercial species grouping;
- Lack of fishery independent data collection;
- Absence of validation of commercial catch information;
- No stock assessments of target species;
- Lack of a fishery status report;
- Paucity of information on recreational and indigenous take; and
- Lack of information on composition and abundance of bycatch.

Recommendations to address these issues have been developed to ensure that the risk of impact is minimized in the longer term. Through the implementation of the recommendations and the continuation of a responsible attitude to the management of the fishery, management arrangements are likely to be sufficiently precautionary and capable of controlling, monitoring and enforcing the level of take from the fishery while ensuring the stocks are fished sustainably.

The management regime aims to ensure that fishing is conducted in a manner that does not lead to over-fishing and for fishing operations to be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem. On balance, the fishery is being managed in an ecologically sustainable manner and is working to address existing problems and minimise environmental risks.

The operation of the fishery is consistent with the objects of Part 13A of the EPBC Act. Given the management arrangements specified in the management regime for the GOCLF, DEH considers that the fishery will not be detrimental to the survival or conservation status of the taxon to which it relates in the short term. Similarly, it is not likely to threaten any relevant ecosystem in the short term. DEH therefore recommends that the fishery be declared an approved Wildlife Trade Operation (WTO) with the actions specified in the recommendations to be undertaken by DPI&F to contain the environmental risks in the long term. DEH considers that the fishery, as managed in accordance with the management regime is not likely to cause serious or irreversible ecological damage over the period of the export decision. Specifically, the WTO declaration would allow the export of product from the fishery for a period of 3 years. The WTO declaration will require annual reporting on the progress of implementing the recommendations of this report and other managerial commitments. The implementation of the recommendations will be monitored and reviewed as part of the next DEH review of the fishery in 3 years time.

As the official fishery area encompasses Commonwealth as well as State waters, consideration under Part 13 of the EPBC Act is required regarding the impact of the fishery on listed threatened species, listed migratory species, cetaceans and listed marine species.

Protected species occurring in the fishery area include marine turtles, dugong and seabirds. The fishery has no recorded interaction with these species groups. The actual and potential impact on Part 13 species under the management arrangements is considered negligible and adequate protection is provided. There are no listed threatened ecological communities in the fishery area.

DEH recommends that the management regime as described in the *Fisheries Act 1994* and the *Fisheries Regulation 1995* be declared an accredited management plan under Sections 208A, 222A, 245 and 265 of the EPBC Act. In making this judgement, DEH considers that the fishery to which

the regime relates does not, or is not likely to, adversely affect the survival in nature of listed threatened species or population of that species, or the conservation status of a listed migratory species, cetacean species or listed marine species or a population of any of those species. DEH also considers that the regime requires that all reasonable steps are taken to avoid the killing or injuring of protected species, and the level of interaction under current fishing operations is nil based on current information sources. On this basis, DEH considers that an action taken by an individual fisher, acting in accordance with the management regime, would not be expected to have a significant impact on a listed threatened species or listed migratory species protected by the EPBC Act.

The implementation of the following recommendations and other commitments made by DPI&F in the submission will be monitored and reviewed as part of the next DEH review of the fishery in 3 years time.

### **Recommendations:**

**Recommendation 1:** *DPI&F to inform DEH of any intended amendment to the management arrangements that may affect the sustainability of the target species or negatively impact on byproduct, bycatch, protected species or the ecosystem.*

**Recommendation 2:** *By the end of 2006 DPI&F to develop fishery specific objectives linked to performance indicators and performance measures for target, byproduct, bycatch, protected species and impacts on the ecosystem.*

**Recommendation 3:** *DPI&F to monitor the status of the fishery in relation to the performance measures once developed. Within 3 months of becoming aware that a performance measure has not been met, DPI&F to finalise a clear timetable for the implementation of appropriate management responses.*

**Recommendation 4:** *From 2005, DPI&F to report publicly on the status of the fishery on an annual basis, including explicitly reporting against each performance measure, once developed.*

**Recommendation 5:** *Within 18 months, DPI&F to undertake a risk assessment, in conjunction with other relevant jurisdictions where possible, to identify target, byproduct and bycatch species most at risk from the fishery. Actions seeking to reduce risk to be implemented as appropriate within a further 12 months.*

**Recommendation 6:** *DPI&F to implement a commercial catch data validation mechanism in the GOCLF by the end of 2006.*

**Recommendation 7:** *Within 18 months, DPI&F to develop a process to improve estimates of recreational and Indigenous take and factor these into stock assessments and management controls to ensure overall catch levels are sustainable.*

**Recommendation 8:** *DPI&F to continue to seek out alternative cost effective fishery independent sampling techniques, particularly for target species, and report outcomes in the annual status report from 2005.*

**Recommendation 9:** *DPI&F to continue to work towards developing sustainable yield estimates of target species to determine sustainable harvest levels, particularly for Spanish Mackerel and Red Snapper.*

**Recommendation 10:** *DPI&F to develop a species-specific target list. DPI&F to develop a clear process for the inclusion of any additional species on the list.*

**Recommendation 11:** *By the end of 2006 DPI&F to implement a program to collect information on the composition and abundance of bycatch.*

## PART I - MANAGEMENT ARRANGEMENTS

The GOCLF which occurs within Queensland (Qld) state waters and out to 25 nm, is managed by the State government through DPI&F and the Queensland Fisheries Joint Authority (QFJA) operating under the *Queensland Fisheries Act 1994* and the *Queensland Fisheries Regulation 1995*. The *Fisheries Management Act 1991* (Commonwealth) provides for the Commonwealth to establish Joint Authorities comprised of the Commonwealth and the relevant State ministers.<sup>5</sup> A corresponding subsection<sup>6</sup> is also found in the *Fisheries Act 1994* (Queensland).<sup>7</sup> The recreational and Indigenous fishing sectors in the GoC are managed under the *Fisheries (Gulf of Carpentaria Inshore Finfish) Management Plan 1999*.

The management regime is described in the following documents, all of which are publicly available:

- *Fisheries Act 1994 (Qld)*
- *Fisheries Regulation 1995 (Qld)*
- *Fisheries (Gulf of Carpentaria Inshore Finfish) Management Plan 1999* (for recreational, indigenous, charter and commercial net fisheries)

All Queensland legislation is available from the web.<sup>8</sup> The QFJA produces an annual report for the previous financial year documenting the condition of the fishery in terms of harvest levels of the principle and other species, number of licences and permits to operate granted by the authority, the financial arrangements for the QFJA and any legislation amendments that have occurred during the reporting period. These are publicly available through DPI&F bookshops. Ultimately DPI&F envisages that the fishery will be managed by the QFJA under a formal management plan, however a timeframe for this process has not yet been determined for the GOCLF.

DEH considers it important that management arrangements remain flexible to ensure timely and appropriate managerial decisions. Due to the importance of the management regime and documents referred to above to DEH's assessment of the fishery, an amendment could change the outcomes of our assessment and decisions stemming from it.

**Recommendation 1:** *DPI&F to inform DEH of any intended amendment to the management arrangements that may affect the sustainability of the target species or negatively impact on byproduct, bycatch, protected species or the ecosystem.*

Since 1995, a Gulf Management Advisory Committee (GulfMAC - previously Tropical Finfish MAC) has provided advice to the fishery management agency on development of a Management Plan and other matters for strategic management of the GOCLF. GulfMAC includes members with expertise in commercial and recreational fishing, processing/marketing, conservation, enforcement, Indigenous fishing and fisheries science and is led by an independent Chair. The Cape York Land Council and the Carpentaria Land Council also have observers attend meetings. GulfMAC meetings are held a minimum of 2 times a year. Specialist scientific and technical advice is provided to fishery management through a number of sub-committees. External scientific input to management decisions is provided through the scientific advisors who provide relevant scientific information and assessments to GulfMAC. Assessments of the fishery have benefited from a range of externally recognised scientific expertise with scientists from DPI&F and also the Commonwealth Scientific and Industrial Research Organisation (CSIRO), James Cook University,

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<sup>5</sup> s 61(1)

<sup>6</sup> s 126(1)

<sup>7</sup> See arrangement details published in the Australian Government Gazette 8 February 1995 and the Queensland Government Gazette on 10 February 1995.

<sup>8</sup> <http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/F/>

the NT Government, the Australian National University, the University of Miami and the University of British Columbia.

DEH considers that the GOCLF provides adequate mechanisms to ensure that the management regime takes into account management arrangements for the GOCLF species in adjacent fisheries jurisdictions. Ideally, management arrangements for fisheries affecting a single stock should be under a single jurisdiction or at least be complementary. If this is not achievable, management arrangements should as a minimum take into account the harvest and management regime in other jurisdictions fishing the same population, particularly when assessing stock status and availability for harvest. A *Memorandum of Understanding* (MOU) was developed in 1995 between the NT and Qld governments to facilitate the co-operative management of GoC demersal and pelagic stocks. The MOU provides for consultation and co-operation about:

- (a) catch and effort data;
- (b) results of scientific research;
- (c) monitoring and surveillance; and
- (d) proposed management regimes.

To maintain cooperation and coordination of these initiatives between the Queensland and the NT governments, a representative from the NT government is present at GulfMAC to help ensure an awareness of complimentary management arrangements that are in place or being considered.

Fisheries managers and researchers from Queensland, NT, the Australian Fisheries Management Authority (AFMA) and WA meet annually at a Northern Australia Fisheries Managers meeting to discuss future directions for management and resources assessment. Spanish Mackerel has been identified as a species that may require complementary management between States/NT if the stocks are shown to be shared.

Management of the fishery incorporates a sound range of consultative mechanisms and a clear commitment to effective consultation with a variety of stakeholders. DEH considers the level of consultation to be adequate and is confident that the management agency will continue to ensure interested parties are consulted appropriately.

The *Fisheries Act 1994* has broad objectives for the management of Queensland fisheries but there is little in the way of fishery specific operational objectives in relation to target, byproduct, bycatch, protected species and ecosystem impacts. There are currently no fishery specific performance indicators and precautionary performance measures by which the effectiveness of the management arrangements are measured. DEH suggests that DPI&F incorporate into the management regime, an objective to minimise protected/listed species interactions, to minimise or maintain at sustainable levels the take of other bycatch and to minimise impacts on the marine environment.

**Recommendation 2:** *By the end of 2006 DPI&F to develop fishery specific objectives linked to performance indicators and performance measures for target, byproduct, bycatch, protected species and impacts on the ecosystem.*

DEH suggests that along with the development of fisheries specific objectives, linked to performance indicators and performance measures, DPI&F need to develop a defined process to respond to a breach of a reference point, eg: there will be a review of the breach, including consultation; a report to the Minister within 3 months of the breach, including reasons for the breach and recommendations for remedial action; and that the report is made public.

**Recommendation 3:** *DPI&F to monitor the status of the fishery in relation to the performance measures once developed. Within 3 months of becoming aware that a performance measure has not*

been met, DPI&F to finalise a clear timetable for the implementation of appropriate management responses.

Management of the commercial sector of the line fishery is through control of effort rather than control of harvest. A range of input and output controls are used in the fishery (see Table 2) as well as a range of monitoring approaches which are discussed in more detail under Principle 1.

**Table 2:** Input and output controls in the Gulf of Carpentaria Line Fishery

<b>Input Controls</b>	
<b>Limited entry</b>	Limited to the number of vessels operating within the fishery
<b>Closed area</b>	South Mitchell River
<b>Gear Restrictions</b>	<ul style="list-style-type: none"> <li>• Fish may only be taken by using hand held fishing lines and fishing rods with hand or mechanically operated reels and lines.</li> <li>• Each fishing line must have not more than 6 hooks attached to it.</li> <li>• A fishing line may have lures attached to it.</li> <li>• The person in control of a boat must ensure that a person does not use more than 3 fishing apparatus from the boat at a time.</li> <li>• Boat replacement and licence surrender/transfer provisions</li> </ul>
<b>Output Controls</b>	
<b>Size and number regulations</b>	A range of regulations for size and number of fish that may be retained.
<b>Permitted Species</b>	GOCLF authorised to take all fish other than Barramundi, Black Jewfish, Blue Threadfin, Jewel Fish, King Threadfin, Queenfish and Spotted Grunter.

The DPI&F Queensland Boating and Fisheries Patrol (QBFP) is responsible for ensuring compliance with officers stationed at district offices at Karumba, Weipa and Thursday Island. There are six officers in total covering over 1000 kilometres of coastal foreshores enclosing around 25 major river systems. Queensland officers liaise and coordinate with NT Fisheries Officers when cross border incidents occur.

Shore-based officers conduct compliance inspections with commercial fishers at wharves and unloading facilities. Unattended product is inspected during transport to and from wholesale or retail outlets and processing plants. Shore-based product inspections are supported by inspections at-sea of catching apparatus. Field inspections include the monitoring of logbooks, licences and possession limits on permitted species regulated by number, size, and volume. DPI&F advise that there have been no fisheries regulation breaches with respect to the GOCLF regulations since the fishery commenced in 1995.

Additionally the QBFP provides a compliance report detailing breaches of the *Fisheries Act 1994* and prosecutions broken down in to each fishing sector within the fishery for the period leading up to each GulfMAC meeting. Enforcement priorities in the GOCLF are discussed by GulfMAC members at each meeting and forwarded to the QBFP representative for consideration in future operations. DEH considers that these compliance measures contain the means of enforcing critical aspects of the management arrangements.

Statewide summaries on the status of GOCLF resources are released publicly in regular 'Fisheries Resource Condition and Trend Reports' which contain interpreted catch rate trends for the major fished species/species groups derived from CFISH (Daily Fisher Logbook Program) catch and

effort data.<sup>9</sup> DPI&F advise that changing catch rates, both regionally and Statewide are highlighted, and assessments about potential sustainability problems reported to fishery managers and the public. Fishery resource status reports, annual catch statistics, licensing information and updates on fishery and habitat management changes are available on the DPI&F Fishweb site.<sup>10</sup> Catch and fishing effort information for line fishery resources are presented in printable map form available from the Coastal Habitat Resource Information System (CHRIS) web site.<sup>11</sup>

DEH notes that while the Condition and Trend Reports provide valuable information about the status of fish resources under Queensland management, public reporting of performance on a fishery-by-fishery basis would be beneficial. It is also unclear if the existing reporting framework is intended to be ongoing. DEH suggests that for each fishery, DPI&F publicly report against each fishery performance measure on an annual basis.

**Recommendation 4:** *From 2005, DPI&F to report publicly on the status of the fishery on an annual basis, including explicitly reporting against each performance measure, once developed.*

An analysis of the fishery's capacity for assessing, monitoring and avoiding, remedying or mitigating any adverse impacts on the wider marine ecosystem in which the target species lives and the fishery operates is contained under Principle Two of this report.

DEH considers that the current management arrangements comply with all relevant threat abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under that policy. DEH expects that DPI&F will also ensure compliance with any future plans or policies as they are developed.

No regional or international management regimes, to which Australia is a party, are of direct relevance to the fishery. The prime international regime affecting the fishery is the United Nations Convention on the Law of the Sea (UNCLOS). The management regime essentially complies with this. Other international regimes are applicable to fisheries management but do not explicitly involve this fishery, for example the 1992 Convention on Biological Diversity and in particular the 1995 Jakarta Mandate requiring that, in relation to the sustainable use of marine and coastal biological diversity, the precautionary principle should apply in efforts to address threats to biodiversity. While these agreements are not specifically addressed in the Submission, the fishery's compliance with their requirements can be assessed by examination of Part Two of this report. The application of the International Convention for the Prevention of Pollution from Ships (MARPOL) to vessels operating in the fishery is explicitly discussed under Principle 2, Objective 3.

DEH considers it is incumbent on all authorities to develop a thorough understanding of the framework of national, regional and international agreements and their applicability to export-based fisheries for which they are responsible.

## Conclusion

DEH considers that the GOCLF management regime is documented, publicly available and transparent, and is developed through a consultative process. The management arrangements are adaptable, however, it lacks appropriate objectives, performance indicators and performance measures by which the effectiveness of the management arrangements can be measured, enforced and reviewed.

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<sup>9</sup> see Appendix 5 of the DPI&F submission.

<sup>10</sup> <http://www.dpi.qld.gov.au/fishweb/>

<sup>11</sup> [www.chrisweb.dpi.qld.gov.au/CHRIS/](http://www.chrisweb.dpi.qld.gov.au/CHRIS/)

The management arrangements are capable of controlling the harvest through a combination of input and output controls appropriate to the size of the fishery. Periodic review of the fishery is provided for, as are the means of enforcing critical aspects of the management arrangements.

The management regime takes into account arrangements in other jurisdictions, and adheres to arrangements established under Australian laws and international agreements.

DEH considers that there is scope to further refine the management arrangements and has provided a number of recommendations for improvements in the longer term.

## **PART II – GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES**

### **Stock Status and Recovery**

Principle 1: *‘A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover’*

### **Maintain ecologically viable stocks**

Objective 1: *‘The fishery shall be conducted at catch levels that maintain ecologically viable stock levels at an agreed point or range, with acceptable levels of probability’*

### **Information requirements**

Data collection systems in use in the GOCLF include the CFISH Daily Fisher Logbook Program, the RFISH Recreational Fishing Surveys and Fishing Diaries, DPI&F Long Term Monitoring Program (LTMP) and historic and ongoing DPI&F fishery research projects.

Fishery dependent data are collected through the compulsory daily logbook program introduced in 1988.<sup>12</sup> Logbooks, recorded daily and reported monthly, require reporting of activity date, activity code (non fishing or fishing activities), location, number of dories, number of fishing lines, kilograms of each of a number of key species and the opportunity for fishers to report catches for the less commonly caught species. The GOCLF fishery logbook reports numbers of fish as well as weight (estimated whole weight), increasing the value of the catch data in stock assessments. Fishing location information is based on the location at which the majority of the catch is landed for the fishing day. Thirty nautical mile report grids (squares of 55 by 55 kilometres) are the minimum locational reporting standard. To facilitate accurate and straight forward locational reporting by fishers, the report grids are provided as a series of charts within each logbook. Fishers may also report their fishing activity within six nautical mile report grids (squares of approximately 11 by 11 kilometres) or latitude and longitude of the fishing location.

DPI&F advise that information provided by commercial fishers is for the most part not validated, although there are checks in place to monitor data provision compliance and data irregularities. Quarterly compliance runs on the CFISH database allow checks to be made on lodgement of logbook returns by fishers. Comprehensive range checks are conducted of the data prior to CFISH data analysis to detect anomalies in the logbook entries. Anomalous data that cannot be adequately verified from original logbook records or the fisher are omitted from the analysis dataset.

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<sup>12</sup> s118 of the *Fisheries Act* and s 109 of the *Fisheries Regulations*

DPI&F advise that the level of collection and reliability of fishery dependent data are still limited for the principal harvest species in the GOCLF because of the multiple numbers of species that can be listed under a single commercial species grouping. The DPI&F submission also states that catch and effort information on byproduct species may be unreliable due to the lack of accuracy in species identification and reporting by fishers. DEH has concerns regarding the combining of species into groupings, such as Red Snapper, cod species and shark, for reporting and stock assessment purposes and the risk that some species in these groupings may be more vulnerable or susceptible to fishing pressure. DEH suggests that a risk assessment be undertaken of the species in these groupings to determine if there are any variations in fishing susceptibility and vulnerability of the individual species in the groupings. Management responses could include a more species specific logbook reporting requirement coupled with education of fishers on species identification.

**Recommendation 5:** *Within 18 months, DPI&F to undertake a risk assessment, in conjunction with other relevant jurisdictions where possible, to identify target, byproduct and bycatch species most at risk from the fishery. Actions seeking to reduce risk to be implemented as appropriate within a further 12 months.*

Despite a commitment by fishery operators through the Gulf of Carpentaria Commercial Fishermen Code of Conduct (CoC)<sup>13</sup> to comply with fisheries regulations, DPI&F recognises that a greater emphasis on validation of on-board catch information is required to ensure logbook data accurately represent catches in the GOCLF and is investigating the possibility of on board observer programs and implementing total catch validation through buyers returns. DEH is concerned that no timeframe has been provided for implementation of the validation program. DEH considers data validation in this fishery is particularly important given that the fishery dependent data are currently the best available sources of information for management of the fishery.

**Recommendation 6:** *DPI&F to implement a commercial catch data validation mechanism in the GOCLF by the end of 2006.*

Charter fishers are compulsorily required to fill out logbooks. Catch information gathered from this sector has been incorporated with the recreational fishery catch data from the RFISH database into the total catch estimates for the target and byproduct species in the GOCLF.

Information on recreational catch in Queensland waters is derived primarily through DPI&F recreational fishing RFISH surveys. Surveys have been conducted in 1997, 1999 and 2002 and comprise information submitted by recreational fishers by phone and through diary returns. However, DPI&F advise that, to date, only recreational catches of barramundi and mud crabs are reported in RFISH survey summaries.

Information is also derived from the 2001 National Recreational and Indigenous Fishing Survey (NRIFS). The data from this survey has been released in a limited format and only presents whole of Queensland data for recreational fishers and north Queensland regional data for Indigenous fishers. This data has limited scope for inclusion in GoC stock assessments in its present format. Further analysis of the data will provide valuable additional catch information to aid future stock assessments of the GOCLF primary species. Very little of the survey information specifically relates to recreational fishing in the Gulf region.<sup>14</sup>

DEH recognizes previous initiatives in consulting and collecting information on Aboriginal and Torres Strait Islander fishing activity across QLD fisheries and the challenges the remoteness of the

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<sup>13</sup> See appendix 3 of the DPI&F submission.

<sup>14</sup> Bycatch Action Plan 2004 p. 17.

GoC presents in those endeavours. Although the level of Indigenous take is assumed to be small, there is very little information on the type and extent of Indigenous fishing in the area of operation of the GOCLF. With no sound estimates on the level of take it is not possible to factor Indigenous impact into overall stock assessment.

Recreational fishing is increasing with no commensurate increase in data collection or analysis. There is no firm understanding of the nature and degree of impact on fish stocks. With no accurate knowledge on the level of take it is not possible to factor Indigenous and recreational impacts into overall stock assessment. Therefore, it is necessary to establish a process seeking to improve estimates of the take by both these sectors.

**Recommendation 7:** *Within 18 months, DPI&F to develop a process to improve estimates of recreational and Indigenous take and factor these into stock assessments and management controls to ensure overall catch levels are sustainable.*

In 1999, DPI&F initiated a state-wide Long Term Monitoring Program (LTMP) in response to the needs for collection of long term trend data for the stock assessment of target fish species. The LTMP has a fisheries dependent and fisheries independent monitoring component. Information collected in the program will be linked to existing data sets from DPI&F studies and contributes to the development of stock assessment models that explain how and why changes occur in Queensland's fisheries resources. Research on Spanish Mackerel to date has concentrated on the Queensland east coast populations. The DPI&F LTMP is at present considering Spanish Mackerel in the GoC as a priority species to monitor and is awaiting more definitive research outcomes of the species' genetic distribution in GoC waters. Catch data to be collected for Spanish Mackerel and incidental bycatch/byproduct would include numbers caught, length, weight sex and maturity. Age studies of priority species will be conducted, comprehensive bycatch and byproduct species lists are compiled, and survival of bycatch discards is monitored. The observer program would also assist with validation of catch data provided by commercial logbooks. DPI&F advise that any observer program would need to be industry funded. DEH strongly supports the extension of the LTMP program to Spanish Mackerel in the GOCLF. DPI&F advise that preliminary monitoring of Spanish Mackerel around Weipa will occur in 2004/05.

The fishery is primarily based on troll lining for Spanish Mackerel and research is progressing towards understanding the biological, ecological and genetic distribution for this species across northern Australia (which includes the GoC) through the FRDC Project *Stock Structure of the northern and Western Australian Spanish Mackerel (98/159)*. DPI&F advise that a stock assessment for Spanish Mackerel is not feasible until basic information on the stock distribution of the species is understood.

DEH considers that this fishery dependent information system is generally reliable and appropriate to the scale of the fishery. DEH has concerns at the current lack of fishery independent monitoring in the fishery.

**Recommendation 8:** *DPI&F to continue to seek out alternative cost effective fishery independent sampling techniques, particularly for target species, and report outcomes in the annual status report from 2005.*

## Assessment

Basic assessment of the catch rate and effort data from fisher logbooks reported as major fished species/species groups is undertaken and reported in the Fisheries Resources Condition and Trend Report. Changing catch rates, both regionally and State wide are highlighted, and assessment about potential sustainability problems reported to fishery management and the public. As mentioned previously there is no assessment of the GOCLF specifically (see **Recommendation 4**).

Data on the distribution and biology of Spanish Mackerel across northern Australia is being collected through collaborative research between Western Australia, the NT and Queensland through the FRDC-funded project *Stock Structure of Northern and Western Australian Spanish Mackerel (98/159)*. The project aims to identify the spatial distribution of Spanish Mackerel stocks and the degree of mixing between stocks. Preliminary results suggest that there may be separate Spanish Mackerel sub stocks across northern Australia and that movement between these stocks appears minimal. Results suggest genetically discrete stocks between Indonesia and northern Australia.

Two genetic stocks of Spanish Mackerel are thought to occur in Queensland waters<sup>15</sup> with fish in the Torres Strait thought to comprise a separate genetic stock to the GoC and north-east Australian stock. In the Gulf the distribution, extent of spawning activity and major spawning sites are unknown. DPI&F advise that until the genetic boundaries and spawning locations are fully understood they consider that there is little value in conducting a formal stock assessment for Spanish Mackerel in the Gulf.

Given that the stock distribution of Spanish Mackerel is not understood, DPI&F advise that a stock assessment is currently not feasible and as such a precautionary management approach of controlling the excess capacity in the fishery has been adopted. DPI&F advise that this capacity, if combined with the potential for effort transfer once new management arrangements in the East Coast Spanish Mackerel and Coral Reef Finfish Fisheries are introduced in 2004, may cause significant effort displacement resulting in the take up of existing excess capacity in the GOCLF.

Species such as the common Coral Trout and some Parrot Fish are relatively robust to fishing pressure due to their life cycle and behavioural characteristics. The majority of species targeted, such as Cods and Tropical Snappers, however, may be vulnerable to anything other than low levels of fishing pressure due to their biological characteristics of early growth to maximum size, long life, relatively large size at reaching sexual maturity, and low natural mortality. Further, most species taken in the fishery coming from deeper waters are likely to have poor post-release survival rates. Consequently, DPI&F advise that they have implemented a cautious approach to harvesting these fish to ensure sustainability. DPI&F advise that they considered that Coral Trout, Emperors and Red Snapper are not caught in sufficient quantities to warrant a stock assessment at this point in time.

Grey mackerel exploitation levels are of concern because of the current limited biological and spatial information for this species in the GoC and across northern Australia. There are concerns whether the combined net and line catches for grey mackerel is sustainable.

DEH considers that monitoring and maintaining catch at sustainable levels of Cod, Tropical Snappers and Grey Mackerel should be strengthened through the development of performance indicators and precautionary and transparent performance measures (see **Recommendation 2**).

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<sup>15</sup> Ovenden *et al* 2003.

Many of the demersal and pelagic stocks harvested in the GOCLF are shared with the NT and the Commonwealth including tropical shark, Grey and Spanish Mackerel. An action of the Bycatch Action Plan is to establish a process for data collection and sharing between the states and ensure that data from the three jurisdictions are included in future risk or stock assessments from 2005.

Commercial tour operators remove on average an estimated 3 tonnes of fish per year from the main species in the GOCLF (Spanish Mackerel, Coral Trout and Red Snapper).

There is currently no estimate of the potential productivity or the proportion that could be harvested of the fishes stocks in the GOCLF. DEH strongly supports the development of precautionary reference points based on sustainable yield estimates for target and byproduct species and suggests that precautionary reference points be set in the interim (see **Recommendation 2**).

**Recommendation 9:** *DPI&F to continue to work towards developing sustainable yield estimates of target species to determine sustainable harvest levels, particularly for Spanish Mackerel and Red Snapper.*

Estimates of annual sustainable yields for Red Snapper (Seaperch) in the Gulf of Carpentaria are between 2900 and 9000 t.<sup>16</sup> CFISH data from all GoC Queensland commercial fishing sectors indicates catches are still quite low. DPI&F advise that the maximum catch of nearly 136 t in 2003 is still less than 7% of the annual minimum sustainable yields suggested for the combined species of red snappers for the Gulf of Carpentaria.

### **Management response**

The current GOCLF fishery management regime aims to maintain ecologically viable stock levels through a range of input controls and output controls as detail in Table 2. Additionally, DPI&F may make an Emergency Fisheries Declaration effecting an emergency closed season, closed waters declaration or regulated fish declaration.<sup>17</sup> Such a declaration may be made only if the DPI&F is satisfied that urgent action is needed to meet a significant threat to fisheries resources, a fish habitat, or another emergency. The DPI&F must publish the declaration but is not required to enter into consultation about the declaration. The declaration expires within 2 months of its gazettal unless earlier repealed. Where the declaration is inconsistent with a Regulation or Management Plan unless earlier repealed, the declaration expires 21 days after gazettal. There have been no emergency fisheries declarations for the GOCLF.

There are no review events specific to the GOCLF, however the QFJA recognises its responsibilities as a management authority to;

- keep constantly under consideration the fishery's condition;
- formulate policies and plans for the fishery's management;
- exercise for the fishery's management powers conferred on the Joint Authority under the *Fisheries Act* ;
- co-operate and consult with other entities on issues of common interest.<sup>18</sup>

Harvest rates of Spanish Mackerel are most likely at maximum sustainable levels.<sup>19</sup> Juvenile Spanish Mackerel and Grey Mackerel are dependent on estuarine and coastal waters. 21 GoC locations are closed to commercial netting and four Fish Habitat Areas (FHAs) have been declared in wetland nursery areas.

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<sup>16</sup> Bureau of Rural Sciences (BRS) *Fishery Status Reports* 2000-2001.

<sup>17</sup> s.46 of the *Fisheries Act 1994*.

<sup>18</sup> under Section 135 of the *Fisheries Act 1994*.

<sup>19</sup> Walters and Buckworth 1997.

Target and byproduct species for the GOCLF have not been clearly defined in the DPI&F submission. DEH believes that management of the fishery should include a clear definition of target species. Having a clearly defined target species list will assist in refining the development of stock assessment and monitoring programs. The final list should be determined in consultation with relevant stakeholders and there should be a clear developmental process for moving a species onto the target species list.

**Recommendation 10:** *DPI&F to develop a species-specific target list. DPI&F to develop a clear process for the inclusion of any additional species on the list.*

The QFJA has adopted a cautious approach to the exploitation of byproduct species including restricted availability of licences and gear restrictions due to a lack of current knowledge of the fishery.

A byproduct in possession limit of no shark will be considered at the next QFJA meeting towards the end of 2004. Given the concerns expressed regarding the sustainability of shark resources DEH strongly supports the proposed in possession limit.

DPI&F advise that operators in the GOCLF are authorised to take Grey Mackerel, although catches are relatively small (2.96 tonnes in 2002). Given the concerns expressed regarding the sustainability of Grey Mackerel DEH has recommended the development of precautionary performance measures for byproduct (see **Recommendation 2**).

DEH consider that the combination of input and output controls should ensure adequate protection of the target and byproduct stocks but considers that the management would be further strengthened with the development of performance indicators linked to precautionary reference points (see **Recommendation 2**).

The QFJA recognises that there is excess capacity in the fishery. In the GOCLF, more than half the licences are unused or have been rarely used since their issue. To reduce this excess capacity the QFJA have implemented new policy arrangements including the non-renewal of licences to operators that cannot demonstrate the required historical levels of participation in the fishery and the issuing of no new licences.<sup>20</sup> This process has resulted in a reduction in primary licences from around 150 to around 40 (as at July 2004). DPI&F advise that all but 12 of these licences have an N3 fishery symbol (Gulf Of Carpentaria Inshore Finfish Fishery). From an operational perspective, these licences operate predominantly in the N3 fishery.

All fish other than Spanish Mackerel are considered to be byproduct species in the GOCLF. There is however confusion in the DPI&F submission as to what species are target and byproduct. DEH has recommended that this be clarified (see **Recommendation 10**). Historical information on byproduct species is held in the DPI&F CFISH database. DPI&F advise that catch and effort data on the byproduct species may be unreliable due to the lack of accuracy in species identification and reporting by the fisher. DPI&F advise that the reduction in excess effort, which is mainly aimed at reducing the effort for the harvest of Spanish Mackerel, should also benefit other species harvested in the fishery. The total commercial catch of Red Snapper is considered to be within exploitable levels. No estimate of the available biomass or specific reference points that trigger management actions exist for any byproduct species in the GOCLF. DEH recommends that DPI&F develop a specific byproduct species reference point (see **Recommendation 2**).

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<sup>20</sup> See Policy for Management of the L4 and L5 Line Fisheries in the Gulf of Carpentaria. QFJA 2 May 2003.

DPI&F advise that given the management already includes substantial restrictions on fishing efficiency due to limits on fishing gear and effort reductions, the risk of over fishing in the GOCLF at current levels are minimal.

## **Conclusion**

DEH considers that the management regime in the GOCLF is appropriately precautionary and provides for the fishery to be conducted in a manner that does not lead to over-fishing. DEH considers that the information collection system and stock assessment and management arrangements generally are sufficient to ensure that the fishery is conducted at catch levels that maintain ecologically viable stock levels with acceptable levels of probability.

DEH considers that there is scope to further refine some of the existing information collection, assessment and management responses and has provided a number of recommendations for improvements in the longer term.

## **Promote recovery to ecologically viable stock levels**

Objective 2: *'Where the fished stock(s) are below a defined reference point, the fishery will be managed to promote recovery to ecologically viable stock levels within nominated timeframes'*

DPI&F believes that no species currently taken in the GOCLF require a precautionary recovery strategy. DPI&F undertakes to manage the GOCLF in a sustainable manner with sufficient precautionary management measures in place where information for a particular species may be deficient. DPI&F advise that in the unlikely event that stocks are assessed to be over-fished or below a biological bottom line, emergency fisheries declarations made under the *Fisheries Act 1994* can be evoked to effect appropriate recovery management strategies.

## **Conclusion:**

DEH considers that the GOCLF fish stocks are not currently below a defined reference point but should that occur in the future, the fishery is conducted such that there is a high degree of probability the stock would recover to ecologically viable stock levels within nominated timeframes.

## **Ecosystem impacts**

Principle 2: *'Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem'*

## **Bycatch protection**

Objective 1: *'The fishery is conducted in a manner that does not threaten bycatch species'*

## **Information requirements**

Although DPI&F advise that there is scope in commercial fisher logbooks for recording of bycatch species other than those listed as protected or species of conservation concern no bycatch data was provided in the submission. As outlined in the draft Bycatch Action Plan it is essential that data obtained through logbook programs be validated and that to date this information collection is

considered incomplete, its accuracy has not been verified and it may be of limited use for scientific analysis.<sup>21</sup>

Charter operators are required under their permits to return logbook information on the number of fish discarded, which is entered into the CFISH database.

DEH notes that an action of the BAP requires the collection and assessment of bycatch data with the view to producing a scientifically validated data set for future risk to stock assessments. DEH has concerns that there is currently no collection of reliable information, appropriate to the scale of the fishery, collected on the composition and abundance of bycatch for the GOCLF. DEH understands that through the proposed LTMP, with the observer and research program, bycatch information would be collected on an opportunistic basis.

**Recommendation 11:** *By the end of 2006 DPI&F to implement a program to collect information on the composition and abundance of bycatch.*

DPI&F consider that due to the low level of bycatch in the GOCLF a formal risk assessment of bycatch species with respect to their vulnerability to commercial fishing is not considered warranted at present. DEH suggest that once bycatch information is collected through the implementation of **Recommendation 11** that DPI&F considers undertaking a risk assessment.

### Assessment

DPI&F advise that little work has been conducted specifically on bycatch in the GOCLF. The submission states that bycatch in the GOCLF is negligible due to the fact that the fishing gear and species targeting practises limit the take of species other than Spanish Mackerel and the main demersal fish species. The troll lines and hand lines are always tended allowing fishers to release any unwanted species alive. Bycatch in the GOCLF is composed mainly of target species below the minimum size restrictions.

The National Strategy for the Survival of Released Line Caught Fish, an initiative of the FRDC, is a collaborative research, development and extension program ultimately aimed at increasing the post-capture survival of released line-caught fish including:

- Determining the current level of knowledge among fishers on the survival of released line caught fish;
- Identifying key species and survival issues on which to focus R&D;
- Increasing use of best practices and gear types for catching, handling and releasing fish; Measure survival rates for key species using current gear and practices; and,
- Determining gear, method and behaviour changes that when implemented will improve the survival rate of released fish (ANSA 2002).

DPI&F advise that strategies resulting from this project aimed at increasing the post-capture survival of released line caught fish will be applied to the commercial recreational and Indigenous components in the GOCLF. As part of the strategy, McLeay *et al.* (2002) conducted a preliminary risk assessment for the major line-caught fish species for each state. The project 'Investigating the Survival of Fish Released in Australia's Tropical and Subtropical Line Fisheries' will relate to the species identified by McLeay *et al.* (2002) as being potentially susceptible to post release mortality. DPI&F has strongly endorsed the project proposal, as the results will provide significant information on the risks to bycatch species in Queensland line fisheries.

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<sup>21</sup> Draft Bycatch Action Plan 2004 at p. 18.

## Management response

DPI&F advise that a reference point for bycatch levels has not been set for the GOCLF. DEH has recommended that a clear fishery specific objective, performance measures and reference point be developed for bycatch in the GOCLF (see **Recommendation 2**).

Level of cryptic mortality through discards of bycatch in the GOCLF is not fully known and may be of concern. DEH is satisfied that DPI&F are committed to implementing the strategies resulting from the National post-capture survival project as outlined above.

DPI&F advise that as present bycatch levels are low to negligible, an indicator group of bycatch species has not been identified for the commercial, recreational or Indigenous fisheries in the GOCLF.

A BAP is being developed by stakeholders and DPI&F as a strategic plan to manage bycatch in the GoC.<sup>22</sup> The Plan is due for implementation in 2005 and applies to all inshore fisheries in the GoC including the Net, Bait, Line and Crab Commercial Fisheries, Recreational Fishery and Indigenous Fisheries and developmental fisheries including the Developmental Finfish Trawl Fishery. The Bycatch Action Plan aims to:

- 1) reduce impacts of fishing on populations of bycatch species and the marine environment by:
  - a. minimising the interaction in all fisheries with protected and other bycatch species
  - b. increasing the opportunity for survival of bycatch species
  - c. minimising the waste of marine species
- 2) improve social acceptability and community and fishers' awareness and support for the activities taken to address bycatch in the GoC by increasing education and awareness of bycatch issues
- 3) identify which actions each sector can take to achieve 1) and 2) above.

The *BAP* is strategic Queensland Government policy and has no legislative powers. Actions in the *BAP* can be implemented through legislation via changes to the *Gulf Management Plan* and/or through fisheries permit conditions. DPI&F advise that the implementation and effectiveness of the *BAP* will be reviewed against performance indicators in association with the planned review of the Gulf of Carpentaria Inshore Finfish Management Plan from 2005.

DPI&F advise that the low levels of bycatch in the GOCLF at present is unlikely to significantly impact on the populations or the biodiversity of bycatch.

## Conclusion

DEH considers that there is a high likelihood the fishery is conducted in a manner that does not threaten bycatch species. Should this situation change, or a risk assessment process indicate otherwise, DEH expects that DPI&F would undertake appropriate actions to ensure that bycatch species are not threatened by this fishery.

A recommendation has been developed to ensure that the risk of unacceptable impact on bycatch species is detected and minimised in the longer term.

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<sup>22</sup> A draft copy is provided in Appendix 1 of the submission.

## Protected species and threatened ecological community protection

Objective 2: *'The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities'*

### Information requirements

DPI&F advise that no interactions of endangered, threatened or protected species have been reported in the fishery. DPI&F advise that a 'Species of Conservation Interest' (SOCI) reporting logbook or protected species logbook (SOCI01) is currently in draft form<sup>23</sup>, and is proposed for distribution to fishers in all Queensland commercial fisheries from 2004. The logbook will require reporting of date and time of capture, location of interaction, fishing gear, species (using species codes), release condition, tag or band details.

There are no threatened ecological communities (current, past or proposed) that are affected by the GOCLF.

### Assessment

DPI&F advise that given the very low reported interactions of endangered, threatened or protected species reported in fisheries dependent or independent research, no more detailed assessment has been conducted or is considered warranted.

DPI&F advise that there have been no recorded interactions of cetaceans, dugong or sea turtles with fishing gear used in the GOCLF.

Sawfish that may be caught while hand lining are likely to be released straight away to minimise damage to the sawfish, the vessel and the operators. Sawfishes and all other shark species in northern Australia are undergoing a formal risk assessment through the collaborative Shark Phase II as outlined previously. GoC commercial fishers are actively involved in implementing practices aimed at minimising the interaction of sawfishes and fishing gears. The Karumba branch of the Queensland Seafood Industry Association has adopted a 'Handling and Release Procedures Document for Sawfishes' in response to growing national and international concern over the sustainable management of sawfishes. The document was incorporated into the GOCCFA Code of Conduct, and fishers are participating in a tag and release program steered by DPI&F and endorsed by DEH, World Wide Fund for Nature, SUNFISH and ECOFISH.

DEH notes that the management strategies to address catch of protected species include the development of a code of practise to encourage fishers to consider potential impacts on protected species and other management measures outlined in this report. DEH supports the development of the code of practise but believes adoption and implementation of the code needs to be monitored and complemented by mandatory management measures.

### Management response

Currently, all commercial fishers are required to complete an Endangered Species Awareness Course and it is proposed that the course be compulsory for other forms of commercial fishing. The course aids in the identification, handling and release of protected species. The course is currently a one off course and there are no refresher courses.

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<sup>23</sup> See Appendix 6 of the Submission.

Given the low recorded interaction between the fishery and endangered, threatened or protected species or threatened ecological communities, DPI&F consider that there is no specific management response to be implemented in this fishery and that the fishery has a very high chance of achieving the objective. DEH recommend that an objective, performance measure and precautionary reference point be developed for protected species interactions in the fishery (see **Recommendation 2**)

## Conclusion

DEH notes that there are minimal interactions with protected species in this fishery and considers that the fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities. Should this situation change, or the risk assessment process indicate otherwise, DEH suggests that appropriate actions be undertaken to ensure the fishery avoids mortality, injury to these species and avoids or minimises impacts on threatened ecological communities.

A recommendation has been developed to ensure that the risk of unacceptable impact on protected species is minimised in the longer term.

## Minimising ecological impacts of fishing operations

Objective 3: *'The fishery is conducted, in a manner that minimises the impact of fishing operations on the ecosystem generally'*

## Information requirements

The GoC catchment area has 21 nationally important wetlands, lakes and springs covering about 3900 km<sup>2</sup>.

Cape York Peninsula mangrove, saltpan and marine swamp areas have been mapped<sup>24</sup> providing valuable habitat information for the fish species that use these habitats as nursery and feeding areas. This information assists planning for habitat protection.

The seagrass distribution of the GoC region was mapped by DPI&F from 1984 to 1986.<sup>25</sup> The DPI&F has also conducted fine-scale seagrass surveys of the Ports of Weipa, Karumba and Skardon River and the Kirke and Love Rivers.<sup>26</sup> These are comprehensive surveys from which changes in seagrass distribution and composition can be accurately measured and conclusions on the ecosystem health of each area can be drawn.

DPI&F consider that the continual improvement of knowledge of the distribution, composition and status of marine plant communities and their associated faunal communities is vital for identifying and characterizing key high productivity areas that may require special fisheries management attention (e.g., fisheries closures).

DPI&F advise that no specific studies have been implemented to determine the impacts of the GOCLF on the ecosystem and the environment generally because the apparatus used in this fishery are considered relatively benign to the environment. Lost line is unlikely to cause problems, such

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<sup>24</sup> Maps are available through the DPI Coastal Habitat Resources Information System website [chrisweb.dpi.qld.gov.au/chris](http://chrisweb.dpi.qld.gov.au/chris).

<sup>25</sup> Maps are available through the DPI Coastal Habitat Resources Information System website [chrisweb.dpi.qld.gov.au](http://chrisweb.dpi.qld.gov.au) and the Ports Corporation of Queensland website, [www.pcq.com.au](http://www.pcq.com.au).

<sup>26</sup> Roelofs *et al.* 2002a, Rasheed *et al.* 2002, Roelofs *et al.* 2002b, and Sheppard *et al.* 2001.

as entanglement, for reef fish species that are accustomed to working around the complex reef habitat.

DEH is concerned at the lack of information collection and research covering the fisheries impact on the ecosystem and environment generally. However, DEH understands that this lack of information is the case across a range of Australian and International fisheries and until appropriate research techniques and programs are developed and implemented this will continue to be the case. DEH strongly supports research in this area.

### **Assessment**

Gear types used in the GOCLF have little physical impact on the environment. Troll lines are fished near the surface of the water and do not interact with benthic habitats. Handlines have lead weights and hooks attached and can occasionally contact bottom habitats but this is generally avoided by fishers to minimise loss of gear.

DPI&F considered that the removal of Spanish Mackerel from the ecosystem at current levels will pose no measurable impact on any associated species.

DPI&F advise that no specific studies have been implemented to determine the impacts of the GOCLF on the ecosystem and environment generally due to the relatively environmentally benign apparatus used in the fishery.

Beyond the removal of fish, the submission states that there is no evidence to suggest that the GOCLF impacts significantly on other components of the benthic or pelagic communities in the area that the GOCLF operates.

The only activities assumed to impact on benthic ecological communities are associated with anchor damage from the primary and tender vessels. Tender anchoring devices work effectively to anchor small dories and at the same time do limited damage to benthic communities. The majority of commercial fishing is conducted from moving dories (which has no impact) although hand lining is done at anchor. The fishers hand lining anchoring employ practices include releasing sufficient anchor chain to prevent the dragging of the anchor across the substrate, and selection of anchoring sites that prevent the swinging of anchor chains into deepwater outcrops of coral and coralline rubble. The impact of anchor damage may be an issue for future recreational and commercial vessel operations in the GOCLF although at present levels of activity it is not considered a significant impact.

DPI&F consider that water quality is unlikely to be affected by the fishery due to the low number of participants, the unlikely concentration of potential impact sources, and the vast area of GoC fishery operations.

Processing of fish, involving gutting or filleting of fish, with waste thrown overboard from the primary vessel while at sea occurs in the GOCLF. Most of this waste is dispersed by water currents and consumed by a variety of large reef associated predators including sharks, large cods, trevallies and red bass. Food safety standards prohibit the use of additives to either process fish or live fish held on board live boats.

The *Transport Operations (Marine Pollution) Act 1995* requires vessels to be maintained and not discharge any materials into the water. The Department of Transport is responsible for checking vessel maintenance and safety, by annual survey inspections and inspects vessels wharfside and at sea for their compliance and sea worthiness.

DPI&F consider that the removal of Spanish Mackerel from the ecosystem at current levels will pose no measurable impact on any associated species.

## **Management response**

All marine plants and hence, all marine plant communities, are protected under Queensland law from damage through the provisions of the *Fisheries Act 1994*. There are four declared Fish Habitat Areas in the GoC region that serve to protect marine plant and fisheries habitat from irresponsible development and habitat destruction while still allowing access to fishing by all sectors. These are located at the Nassau River, the Staaten-Gilbert Rivers, Morning Inlet-Bynoe River, and at Eight Mile Creek and cover approximately 39,000 ha of wetland nursery areas.

Operators who are part of the GoC Commercial Fishermen's Association (GOCCFA) are committed to preserving the environment in which they fish through their Code of Conduct (COC).<sup>27</sup> The COC is to be incorporated into the GOCCFA Environment Management Plan (EMP). The EMP illustrates the safeguards that are in place involved in mitigating any environmental and ecological damage caused by the commercial fishing practices in the GoC. The GOCCFA intend that the EMP will be a step towards achieving international recognised Marine Stewardship Council Certification for their fishery. DEH commends the GOCCFA for their active involvement providing better and sustainable management of the fishery through these two initiatives.

DPI&F advise that no evidence has emerged that the GOCLF impacts significantly on benthic or pelagic communities in the fishery area. If such a threat was identified either from DPI&F or from other sources of information made available to the DPI&F, an appropriate management response is capable of being developed by the DPI&F through the QFJA.

DEH has recommended that DPI&F develop a fishery specific objective, performance measure and precautionary reference point relating to ecosystem impacts of the fishery (see **Recommendation 2**).

The National Oceans Office is currently leading a regional marine planning process in the area of the fishery. The planning process aims to ensure the ecologically sustainable use of the resources in the planning area and will help to integrate management across jurisdictions and sectors. It will also identify potential candidate areas for the National Representative System of Marine Protected Areas (NRSMPA). The regional marine planning process is a potential vehicle for pursuing sustainable fisheries objectives, particularly where cross-sectoral or cross jurisdictional approaches are required. DPI&F should continue to engage in the process as far as practical. More information is available at [www.oceans.gov.au](http://www.oceans.gov.au).

## **Conclusion**

DEH considers that the fishery is conducted in a sufficiently precautionary manner to minimise the impact of fishing operations on the ecosystem generally. Recommendations have been developed to ensure that the risk of significant impact by the fishery on the marine environment generally is minimised in the longer term.

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<sup>27</sup>See Appendix 3 of the submission.

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**Table 3:** List of acronyms

AFMA	Australian Fisheries Management Authority
BAP	Bycatch Action Plan
CFISH	Daily Fisher Logbook Program
CHRIS	Coastal Habitat Resource Information System
COC	Code of Conduct
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DBIRD	Department of Business Industry and Research Development
DEH	Department of the Environment and Heritage
DPI&F	Queensland Department of Primary Industries and Fisheries
EMP	Environment Management Plan
EMS	Environmental Management Strategy
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESD	Ecologically Sustainable Development
FHA	Fish Habitat Area
FL	Fork Length
FRDC	Fisheries Research and Development Corporation
GBR	Great Barrier Reef
GoC	Gulf of Carpentaria
GOCCFA	GoC Commercial Fishermen's Association
GOCLF	Gulf of Carpentaria Line Fishery
GPS	Global Positioning System
GulfMAC	Gulf of Carpentaria Management Advisory Committee
GVP	Gross Value of Production
LTMP	Long Term Monitoring Program
MAC	Management Advisory Committee
MARPOL	International Convention on Marine Pollution
MOU	Memorandum Of Understanding
NRIFS	National Recreational and Indigenous Fishing Survey
NRSMPA	National Representative System of Marine Protected Areas
NT	Northern Territory
OCS	Offshore Constitutional Settlement
QBFP	Queensland Boating and Fisheries Patrol
QFJA	Queensland Fisheries Joint Authority
QLD	Queensland
RFISH	Recreational Fishing Surveys and Fishing Diaries
SL	Standard Length
SOCI	Species of Conservation Interest
TL	Total Length
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vessel Monitoring System
WA	Western Australia
WTO	Wildlife Trade Operation