

# Annual status report

## Gulf of Carpentaria Line Fishery

November 2006



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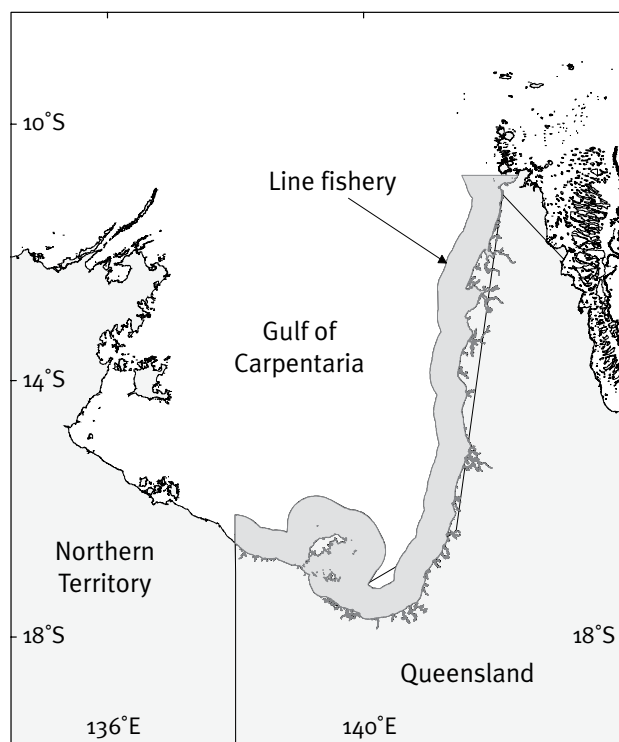
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## Introduction

The Gulf of Carpentaria Line Fishery (GOCLF) targets Spanish mackerel using surface troll lines. A small amount of demersal fish (bottom-dwelling) species including cods, tropical snappers, wrasses and sweetlip is also taken using set hand lines. Product from the GOCLF is predominantly sold on the Australian domestic market. No export product has been identified from the fishery although, with fishers constantly seeking new marketing opportunities, this may change in the future.

This report covers fishing activity during the 2005 calendar year.



### Fishery profile 2005

**Total harvest of all species:** 270 t + Indigenous and recreational

**Commercial harvest:** 246 t

**Recreational harvest:** No estimate of level of harvest for 2005

**Indigenous harvest:** No estimate of level of harvest for 2005. Approximately 220 000 fish in 2003 (north Queensland estimate only—includes communities outside the GOC)

**Charter harvest:** 24 t

**Commercial Gross Value of Product (GVP):** \$1.7 million

**Number of licences:** 47 primary licences—39 primary (L4), 7 primary (L5)

**Commercial fishing boats accessing the fishery in 2005:** 29

**Fishery season:** All year

## Description of the fishery

### Fishing methods

The commercial line fishery operates as a small boat fishery, with a number of tender boats operating from a mother boat (<20 m) or as small trolling boats targeting pelagic fish.

Commercial operators use hand-hauled, hand winch-hauled, electric/hydraulic winch-hauled lines, and heavy rod-and-reel lines. Combinations of these gears vary according to areas fished, weather conditions, frequency of catch and time of day.

Recreational fishers primarily use hook and line to catch target and byproduct species.

The Indigenous communities in the Gulf of Carpentaria (GOC) use traditional subsistence fishing methods for traditional and customary purposes, as well as recreational fishing practices. Traditional fishing methods include the use of spears, stone fish traps and nets, and are used to supply product solely for the community.

## **Fishery area**

The GOCLF area extends from Slade Point near the tip of Cape York Peninsula to the Queensland–Northern Territory border and includes all tidal waterways offshore to the 25 nm line. On 1 July 2006, the inshore fishery (L5—out to 3 nm from the coast) and the offshore fishery (L4—out to 25 nm from the coast) were amalgamated under the fishery symbol L4 to streamline management arrangements.

## **Main management methods used**

The Queensland Fisheries Joint Authority (QFJA), through the Queensland *Fisheries Act 1994*, manages all northern demersal and pelagic finfish in waters adjacent to Queensland in the GOC that are shared with the Northern Territory and Commonwealth.

Management measures used in the GOCLF are a combination of input and output controls that include limited access and gear and vessel restrictions. The full description of input controls can be found in the Department of Primary Industries and Fisheries (DPI&F) report *Ecological Assessment of the Gulf of Carpentaria Inshore Finfish Fishery*<sup>4</sup> and can be downloaded from:

[www.deh.gov.au/coasts/fisheries/qld/line/pubs/line-fishery-submission.pdf](http://www.deh.gov.au/coasts/fisheries/qld/line/pubs/line-fishery-submission.pdf)

There is limited overlap in the finfish species caught by GOC recreational, Indigenous and charter boat fishing tour sectors with commercial operators in the GOCLF.

DPI&F manages the GOCLF with advice from the Gulf Management Advisory Committee (GulfMAC) in accordance with the Queensland *Fisheries Act 1994*, Queensland *Fisheries Regulation 1995* and the *Fisheries (Gulf of Carpentaria Inshore Finfish) Plan 1999*.

## **Approximate allocation between sectors**

The GOCLF is mainly a commercial fishery. At present the estimated participation of the Indigenous and recreational sector in the fishery is considered minor.

## **Fishery accreditation under *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)***

A Wildlife Trade Operation (WTO) approval was granted in 2004 under Part 13A of the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and expires in October 2007.

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<sup>4</sup>Roelofs, A 2003, *Ecological Assessment of the Gulf of Carpentaria Line Fishery—A report to Environment Australia on the sustainable management of a multi-species tropical line fishery*, Unpublished report to Environment Australia, Department of Primary Industries and Fisheries, Brisbane, Australia.

# Catch statistics

## Commercial

Total harvest levels and catch rates in the GOCLF were comparable to recent years (Table 1). Spanish mackerel catches increased in 2005 to be the highest recorded since 1997 (Figure 2). About 90% of the total GOCLF harvest since 1992 has been Spanish mackerel (Figure 1). Mesh net and finfish trawl commercial fisheries and the Northern Prawn Fishery (NPF) also harvests Spanish mackerel in the Queensland GOC (mesh net fisheries 31 t, finfish trawl 13 t, 0.1 t NPF). In possession limits in the NPF reduce the potential harvest by this fishery of Spanish mackerel (and red snappers). The annual take in finfish trawl fisheries is expected to reduce following the implementation of an in possession limit in the fishery<sup>2</sup>.

Table 1: Total commercial catch (in tonnes), effort information (number of boats in the fishery and days fished), catch rates (kilograms/day) and GVP (\$ million) for the GOCLF (L4 and L5 combined) from 1990 to 2005 (Source: DPI&F CFISH database. Data correct as at 16 January 2007).

	1990	1991	1992	1993	1994	1995	1996	1997
Catch (t)	32	45	81	128	131	191	141	235
Boats	14	19	16	16	23	33	37	36
Days	530	305	645	725	1022	1485	1286	1491
kg/day	76	155	132	202	137	140	110	157
GVP (\$)	0.21	0.29	0.54	0.87	0.91	1.28	0.96	1.61
	1998	1999	2000	2001	2002	2003	2004	2005
Catch (t)	134	160	136	148	214	189	207	246
Boats	28	31	24	30	35	30	26	29
Days	934	1155	819	863	1225	1177	920	1086
kg/day	143	138	170	171	174	160	225	227
GVP (\$)	0.93	1.11	0.97	1.01	1.50	1.28	1.43	1.83

Catches of red snapper (*Lutjanus malabaricus* and *L. erythropterus*) were lower than in previous years (Table 2). Red snappers are a minor byproduct species in the fishery (Table 2), although there had been unusually higher catches made in 2003 and 2004. Logbook records indicated that a single operator contributed over 75% of the red snapper harvest during those years. Targeting of red snapper to this extent is not to be considered normal fisher activity in the GOCLF.

<sup>2</sup>Permit conditions for the Developmental Finfish Trawl Fishery now prescribe possession limits for Spanish and grey mackerels of 20 per species per trip. This will significantly reduce the number of mackerel taken by this fishery.

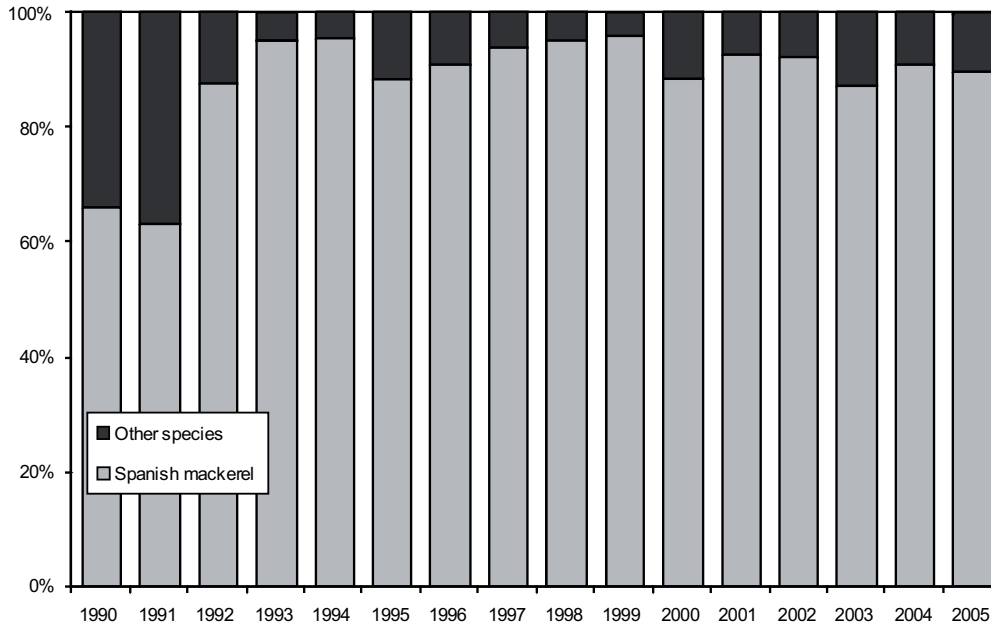


Figure 1: Contribution of Spanish mackerel to the total commercial catch compared with other species (all species combined) in the GOCLF (L4 and L5 combined) from 1990 to 2005 (Source: DPI&F CFISH database. Data correct as at 16 January 2007).

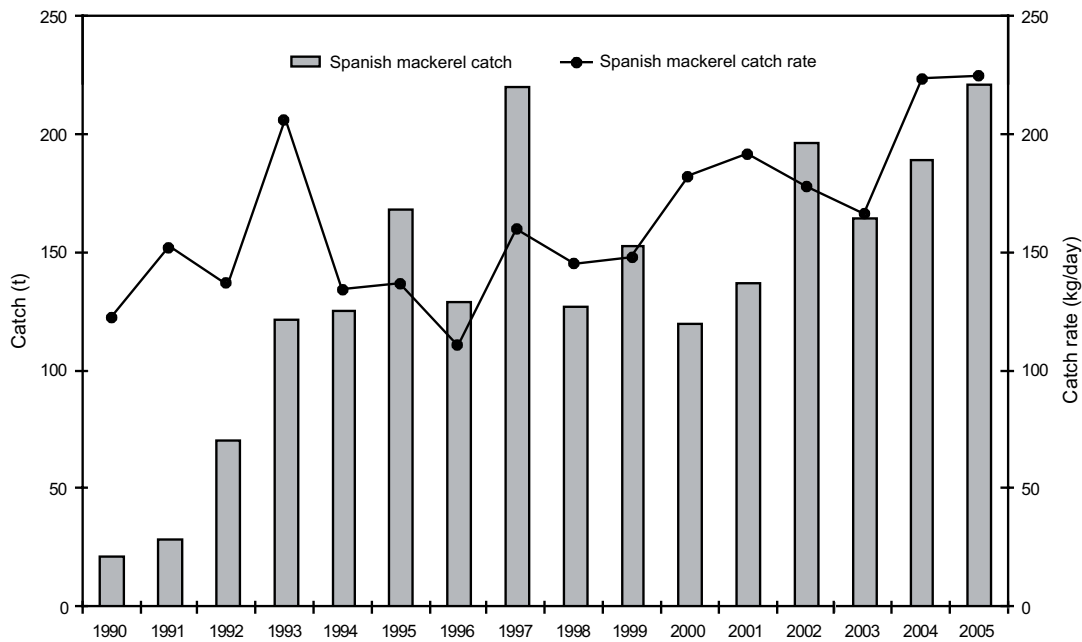


Figure 2: Total commercial catch (t) and catch rate (kg/day) of Spanish mackerel in the GOCLF from 1990 to 2005. (Source: DPI&F CFISH database. Data correct as at 16 January 2007).

Catches of other coral reef demersal species were also higher in 2005 than 2004 (Table 2). Notable increases from previous year's harvest levels include coral trout (*Plectropomus* species), red throat emperor (*Lethrinus miniatus*) and other snapper species. Bottom fishing for demersal species is generally opportunistic and overall catches are small in the GOCLF, with fishers usually opting for coral reef species outside of the peak Spanish mackerel season, or when trolling is not productive due to weather conditions.

Table 2: Commercial catch (in tonnes) of minor species in the GOCLF (L4 and L5 combined) from 1990 to 2005 (Source: DPI&F CFISH database. Data correct as at 16 January 2007).

	1990	1991	1992	1993	1994	1995	1996	1997
Red snapper*							2.1	0.9
Coral trout*	0.3	0.1	0.2	0.1	0.3	0.3	0.6	0.4
Red throat emperor	0.2				0.1		1.4	0.1
Snapper*						0.4		
Red emperor						2.9		
Grey mackerel	2.0	1.7	0.1	0.1	3.0	5.3		2.7
Shark*	0.4	0.4	0.3	0.4	0.2	3.5	3.7	2.9
Queenfish*	0.1	0.1		0.3		0.6	0.8	
Other fish*	8.0	14.2	9.1	5.1	2.0	9.4	4.0	7.1
<b>Total</b>	<b>10.9</b>	<b>16.6</b>	<b>9.8</b>	<b>6.0</b>	<b>5.6</b>	<b>22.5</b>	<b>12.5</b>	<b>14.1</b>
	1998	1999	2000	2001	2002	2003	2004	2005
Red snapper*	1.3	1.4	2.6	1.1	5.9	8.4	8.9	0.7
Coral trout*	0.3	0.4	2.2	0.2	1.6	0.7	0.2	6.2
Red throat emperor	0.4	0.1	0.3	0.1	0.2	0.3	0.2	4.9
Snapper*			0.3		0.1		0.9	4.3
Red emperor			0.9	0.2	0.9	0.6	1.2	2.2
Grey mackerel	0.3	0.8	1.9	0.3	2.8	0.3	1.7	2.1
Shark*	0.5	1.1	0.9	0.4	2.1	2.7	1.4	1.1
Queenfish*	0.1	0.3	0.9	1.1	0.2	3.3	0.9	0.7
Other fish*	3.3	2.0	5.7	7.1	2.2	7.3	2.6	2.5
<b>Total</b>	<b>6.2</b>	<b>6.2</b>	<b>15.6</b>	<b>10.5</b>	<b>16.1</b>	<b>23.6</b>	<b>17.9</b>	<b>24.6</b>

\*The harvest includes a number of species

## Recreational

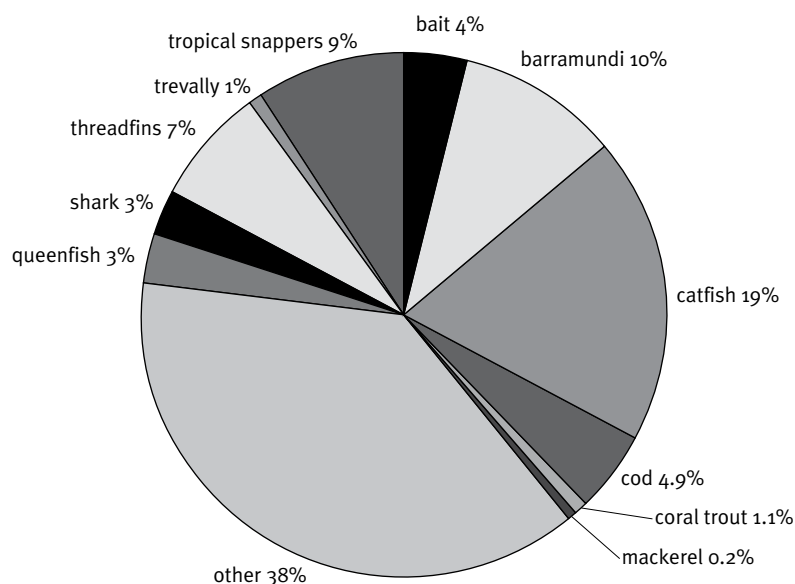


Figure 3: Indicative species composition of the total recreational catch for the GOC region based on expanded RFISH diary information selected by nearest town to fishing location (1997, 1999 and 2002 diary round data combined). Species in the 'other' category include mangrove jack, whiting, crabs, flathead, jewfish, parrotfish, grunter, tuna and bream.

DPI&F collected data on recreational fishers in Queensland under the RFISH program in 1997, 1999 and 2002. A fourth RFISH telephone survey and diary round was undertaken during 2004–2005, although the results are not yet available.

The species catch composition for target and byproduct species by recreational fishers in the GOCLF is provided in Figure 2. Mackerel species (0.2% of total catch) appear to be a minor component of the recreational catch overall. Demersal species such as tropical snappers, coral trout and cod are more important recreational species and represent about 15% of the total catch.

## Charter

Table 3: Total retained harvest by commercial tour operators of target and byproduct species in the GOCLF from 2003 to 2005 (Source: DPI&F CFISH database. Data correct as at 16 January 2007).

Species name	2003	2004	2005
Cod—all*	1519	1061	1416
Coral trout*	2060	2531	2989
Emperor—grassy	1213	1507	1855
Emperor—red	3437	4640	5969
Emperor—red throat	31		170
Emperor—unspecified*	235	277	369
Mackerel—grey	126	93	122
Mackerel—school	276	778	1402
Mackerel—shark			13
Mackerel—Spanish	2318	1989	2794
Mackerel—spotted	110	64	
Mackerel—unspecified*	368	397	486
Mixed Reef—unspecified*	356	262	177
Queenfish—unspecified	1463	1687	2583
Sea Perch—hussar unspecified*			6
Sea perch—Moses	1533	681	571
Red snapper—nannygai large mouth	989	1201	1693
Red snapper—nannygai small mouth	4	31	
Red snapper—nannygai unspecified*	62	94	200
Sea perch—stripey	60	35	27
Sea perch—mangrove jack	251	397	239
Shark—unspecified*	523	925	1,054
<b>Total</b>	<b>16 933</b>	<b>18 647</b>	<b>24 132</b>

\* The harvest comprises a number of species

Commercial tour operators harvested an estimated 24 t of fish in 2005 (Table 3), more than the previous two years, and dominated by red emperor (6 t), coral trout (3 t), Spanish mackerel (3 t) and queenfish (2.5 t). Charter operations release substantially more fish than they retain, especially for species such as queenfish and grey mackerel (these are target species in the Gulf of Carpentaria Inshore Fin Fish Fishery<sup>3</sup>).

<sup>3</sup>Roelofs, A 2003, *Ecological Assessment of the Gulf of Carpentaria Inshore Finfish Fishery—a report to Environment Australia on the sustainable management of a multi-species tropical gillnet fishery*, Department of Primary Industries and Fisheries, Brisbane, Australia, 87 pp.

## **Indigenous**

Harvest by Indigenous fishers solely within the bounds of the GOCLF has not been estimated. The 2003 National Recreational and Indigenous Fishing Survey (NRIFS) collected data on Indigenous fishing across northern Australia but presented results only for north Queensland (from communities between Cairns and the NT border)<sup>4</sup>. The survey results indicate that sea perch/snappers and emperors (about 11% of the total catch composition) are one of the more commonly harvested species by the Indigenous sector while mackerels are relatively minor (about 0.6%).

## **Spatial issues/trends**

The Spanish mackerel fishery in the GOC has shown similar annual spatial harvest patterns since 2003. The highest Spanish mackerel catches continue to be centred around Weipa and Mornington Island.

## **Socio-economic characteristics and trends**

Participation rates in the commercial fishery were higher in 2005 than 2004 with three more boats accessing the GOCLF. Increased catches of Spanish mackerel in 2005 resulted in an increase in estimated GVP from \$1.4 to \$1.7 million.

## **Fishery performance**

### **Appraisal of fishery in regard to sustainability**

An assessment of Spanish mackerel stocks in Northern Australia in 1997<sup>5</sup> suggested the GOCLF was fully exploited at sustainable levels. The level of harvest of other commonly caught species—although full stock assessments have not been made—are being harvested at very low levels and considered to be at negligible risk of overfishing.

Given the low numbers of operators allowed in the fishery, the vast geographic area and remoteness of the fishery, and that the major target species (Spanish mackerel) is a highly migratory pelagic fish, DPI&F believes the GOCLF is presently being managed in a sustainable manner with no risk of localised depletions or overfishing.

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<sup>4</sup>Henry, GW, and Lyle, JM Eds 2003, National Recreational and Indigenous Fishing Survey (FRDC Project No. 99/158), NSW Fisheries, 187 pp.

<sup>5</sup>Walters, CJ, and Buckworth, RC 1997, Shark and Spanish mackerel stocks assessed, Northern Territory Fishing Industry News, July 1997, 8: 14–15.

## Progress in implementing Department of Environment and Heritage (DEH) recommendations

Recommendation	Progress
DPI&F to inform DEH of any intended amendments to the management arrangements that may affect sustainability of the target species or negatively impact on protected species or the ecosystem.	<i>Ongoing</i> DEH advised of amalgamation of L4 and L5 fisheries. Fisheries amalgamated on 1 July 2006. There have been no further amendments to GOCLF management arrangements during the reporting period. A number of amendments are proposed.
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.	<i>In progress</i> Ecological Risk Assessment completed for all protected, bycatch, byproduct and target species for the GOC. Performance measures endorsed by Gulf MAC—awaiting DPI&F implementation.
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.	<i>In progress</i> Performance measures developed—GOCLF fishery performance will be measured against PMS in 2006 season.
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	<i>Ongoing</i> This annual status report is the second to be completed.
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.	<i>Completed</i> ERA covering all GOC fisheries species completed. Report published June 2006. Species identified as high risk are being managed appropriately.
DPI&F to implement an appropriate catch data validation mechanism in the GOCLF by the end of 2006.	<i>In progress</i> Proposed logbook will enable fishers to record target and non-target species. At-sea observers to validate logbook data.
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.	<i>In progress</i> DPI&F are assessing methodologies and designs of pilot studies to collect Indigenous fishers' data and to improve the spatial scale of collection of RFISH data.
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.	<i>In progress</i> DPI&F are continuing to seek out alternative cost effective fishery independent sampling/monitoring techniques, particularly for target species in the GOCLF.
DPI&F to continue to work towards developing sustainable yield estimates of target species to determine sustainable harvest levels, particularly for Spanish mackerel and seaperch.	<i>In progress</i> Information collection systems for Spanish Mackerel are being implemented through DPI&F Long Term Monitoring Program in 2006. Seaperch size and age composition data collected in the GOC Developmental Finfish Trawl Fishery in 2006 (observers and LTMP). Commercial fisher participation in providing samples etc is being investigated. Viewed as the most cost effective way of collecting information.

Recommendation	Progress
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.	<i>Completed</i> Management has adopted the list of target and by-product species developed at ERA. This list will be included in future descriptions of this fishery.
By the end of 2006 DPI&F to implement a program to collect information on the composition and abundance of bycatch.	<i>In progress</i> At-sea observers to collect information on the composition and abundance of bycatch.

## Management performance

From its assessment of the GOCLF management arrangements, DEH recommended that the triggers in the review events and subsequent management actions could be better defined. By the end of 2006, new performance measures and/or reference points will be developed for the GOCLF in consultation with GulfMAC.

## Resource concerns

This fishery is sustainable based on current management arrangements and harvest levels.

## Ecosystem

### Non-retained species/bycatch

Bycatch in the GOCLF has been assessed as negligible. The fishing gear and species targeting practices limit the take of species other than Spanish mackerel and the main demersal fish species. GOCLF fishing methods include the use of troll lines and hand lines, which are always attended during fishing operations. This allows fishers to release any unwanted species alive.

Recreational fisheries have high levels of bycatch due to a growing movement towards the practice of catch and release of fish for sporting reasons, and to comply with regulated fish sizes and species. The fate of fish species discards in the recreational fishery is not known; however, survival is likely to be high for average size fish that are not unduly harmed during the handling and release stages. A joint DPI&F/CRC FRDC project is currently investigating post-release survival of line caught reef species and should provide a better indication of the impact of line fishing on bycatch.

No data on the level of bycatch in the Indigenous subsistence sector of the fishery are available, although the level is thought to be very low.

### Interactions with protected species

CFISH logbook data indicates that there were no interactions with endangered, threatened or protected species in the GOCLF for 2005. A Species of Conservation Interest (SOI) logbook has now been developed to provide more detailed information on the level of interactions with protected species across all Queensland fisheries. The new SOI logbook is to be implemented with new catch logbooks for the GOCLF during the second half of 2006.

## **Fishery impacts on the ecosystem**

It is unlikely that there is any significant physical impact on the ecosystem from the fishery due to the relatively benign line fishing method used.

## **Other ecosystem impacts**

### **Foreign and illegal fishery activities**

The recent reported increase in illegal, unreported and unregulated (IUU) fishing vessel incursions into GOC waters is a serious threat to the sustainability of northern Australian fisheries. IUU activities appear to be targeting sharks and other pelagics as well as demersal finfish. Concerns are also held for the observed take of protected species and other species of conservation interest.

While IUU harvest levels are not well known at present, the lack of accurate information may affect the accuracy of resource assessments and in turn may influence the effectiveness of sustainable management practices in the region.

## **Research and monitoring**

### **Recent research and implications**

DPI&F is collaborating on a multi-state, multi-agency FRDC-funded project determining stock boundaries for grey mackerel which commenced in July 2005. This approach has already benefited fisheries for northern Spanish mackerel and red snapper, with jurisdictions pursuing an integrated 'across-the-top' strategy for fishery management.

### **Monitoring programs and results**

The DPI&F Long Term Monitoring Program (LTMP) have completed a feasibility study for the development of a Spanish mackerel monitoring strategy in the GOC.

A meeting in 2006 of fisheries managers, stock assessment biologists from Queensland and Northern Territory, sustainability audit staff and Long Term Monitoring Program staff developed a Spanish mackerel monitoring program for the Gulf of Carpentaria. DPI&F are assessing the logistics and resources required for implementing this new program in 2006.

The use of observers is also being considered to improve our understanding of catch and bycatch composition and to validate a species-specific target list for the GOCLF.

### **Collaborative research**

Due to the shared nature of harvested species with adjoining jurisdictions, many of the research projects on species in the GOCLF are collaborative. Past collaborative research projects are outlined in the DPI&F ecological assessment of the GOCLF<sup>6</sup>.

The stock structure of Spanish mackerel throughout northern Australia was studied recently using genetic material examination, chemical analysis of otoliths and parasite distributions. The research showed there are separate Spanish mackerel sub-stocks across northern Australia and that movement between these stocks appeared minimal.

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<sup>6</sup>ibid

# **Fishery management**

## **Compliance report**

Compliance and enforcement in the GOCLF is the responsibility of the DPI&F, Queensland Boating and Fisheries Patrol (QBFP). A new Compliance Activity System was implemented on 1 July 2005 that records detailed information on activities performed by QBFP.

During 2005, 1126 inspections were conducted on commercial and recreational units in the GOCLF with 14 offences detected during the period. The majority of offences (eight fisheries infringement notices (FINs), three successful prosecutions and one caution) were associated with recreational fishers taking/possessing fish regulated by size. One FIN was issued to a commercial operator for possessing fish regulated by size and one FIN was issued to a recreational fisher for possessing barramundi during the closed season. In addition to the above inspections several marketer premises were inspected during the period.

## **Changes to management arrangements in the reporting year**

The L4 and L5 fisheries symbols were combined as the L4 fishery symbol on 1 July 2006. There have been no further amendments to GOCLF management arrangements during the reporting period.

## **Consultation, communication and education**

Consultation with stakeholders in the GOCLF mainly occurs through Gulf Management Advisory Committee (GulfMAC). One meeting was held in 2005. GulfMAC provides advice to the QFJA and DPI&F on management measures for the GOCLF.

## **Complementary management**

Fisheries researchers and managers from state, territory and Commonwealth jurisdictions meet annually at the NAFM Forum to review current research, set research priorities and consider management strategies to facilitate the development and implementation of complementary management for shared fisheries resources. A recent focus of the Forum has been the risks associated with IUU fishing on northern Australian fisheries. An outcome of these discussions was the development of a research strategy and a list of short term projects designed to assess the impacts of IUU fishing on fish stocks targeted by northern Australia's domestic fishing industry and species at high risk. Project implementation will be discussed at the 2006 NAFM.

### **Information compiled by**

Anthony Roelofs.

### **Acknowledgements**

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### **Front cover image**

Spanish mackerel (*Scomberomorus commerson*).

