

# Annual status report 2011

## Gulf of Carpentaria Line Fishery



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## Fishery profile 2010

<b>Species targeted</b> Spanish mackerel and secondarily, demersal fin fish	<b>Total number of commercial licences in 2010</b> 47 as at December 2010
<b>Total harvest from all sectors</b> Approximately 233 t + Indigenous catch	<b>Commercial licences accessing the fishery in 2010</b> 22
<b>Commercial harvest</b> Approximately 183 t	<b>Fishery season</b> January to December
<b>Recreational harvest (2005)</b> 44 t	<b>Fishery symbols</b> L4
<b>Indigenous harvest (2000–01)</b> ~ 220 000 fish <sup>1</sup>	<b>Monitoring undertaken</b> Fishery dependent sampling, compulsory daily commercial fisher logbooks and voluntary charter logbooks.
<b>Charter harvest</b> 6 t	<b>FOP days monitored in 2010</b> 0
<b>Commercial Gross Value of Production (GVP)</b> \$1.3 million	<b>Accreditation under the EPBC Act</b> Yes—Expires: 30 August 2013 <sup>2</sup>
<b>Allocation between sectors<sup>3</sup></b> 79% commercial; 19% recreational; 2% charter	<b>Logbook validation</b> Nil
<b>Total exports</b> Nil	<b>Quota managed</b> No
<b>Key fish resources</b>	
<b>Stock status</b>	Uncertain
<p><b>Comments:</b> Only partially assessed in 2011 due to a lack of data demonstrating temporal trends in length or age frequencies. Commercial catch and catch rates increased slightly in 2010 and remain within historical harvest levels. The 'uncertain' stock status of Spanish mackerel is unchanged for 2011.</p>	

<sup>1</sup> Total North Queensland estimate only—includes Indigenous fishers outside the Gulf of Carpentaria.

<sup>2</sup> Wildlife Trade Operation approval granted 30 August 2010. Approved under Part 13 of the EPBC Act subject to conditions applied under section 303FT.

<sup>3</sup> Based on latest catch estimates of each sector—excludes the Indigenous catch.

## Introduction

The Gulf of Carpentaria Line Fishery (GOCLF) is a multi-species fishery which harvests a variety of pelagic (open water) and demersal (bottom-dwelling) fish. The pelagic Spanish mackerel accounts for the vast majority of the fisheries catch. Other pelagic species taken include trevally and small mackerels that are caught using surface trolling methods. Demersal fish include tropical snappers, cods and emperors that are primarily caught on coral and rocky reefs between 10 and 30 m deep using hand lines (Roelofs 2004). Product harvested from the GOCLF is sold predominantly on the Australian domestic market.

This report covers fishing activity during the 2010 calendar year.

## Fishery description

### 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 (Roelofs 2004).

The GOCLF commercial fishery operates under L4 fishery symbol endorsement. From May 2009 the L4 fishing grounds includes all tidal waters in the Queensland Gulf of Carpentaria from Slade Point near the tip of Cape York Peninsula to the Queensland–Northern Territory border (Figure 1). Commercial line methods are either troll lines (hailed, by hand or hand/electric/hydraulic winches) or heavy rod and reel lines depending on the target species and prevailing conditions. Recreational fishers use basic hook and line techniques to catch gulf line species. Recreational fishers are also permitted to spear fish without SCUBA. In addition to recreational fishing methods Indigenous fishers may also utilise traditional subsistence fishing practises.

### Key species

Spanish mackerel (*Scomberomorus commerson*) is a pelagic species that occurs in depths 15–200 m within the Indo-west Pacific Ocean (Carpenter & Neim 2001). The GOCLF shares the same genetic stock of this species with fisheries in Western Australia and the Northern Territory although it is considered that there are at least two meta-populations with a degree of integrity within the Gulf. Queensland east coast Spanish mackerel

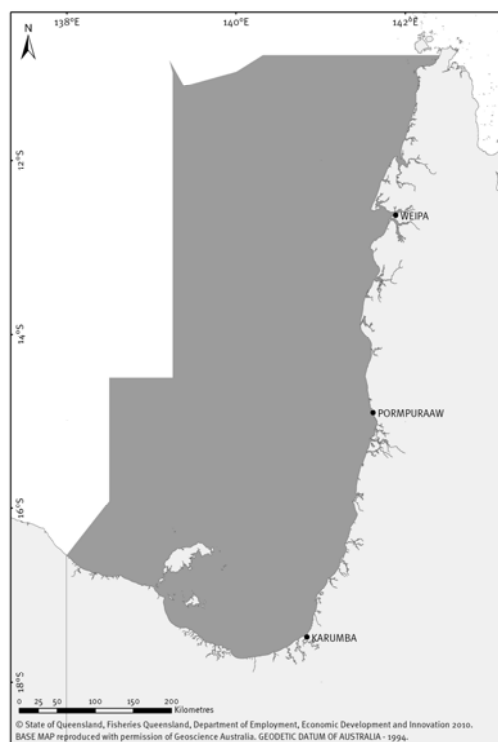


Figure 1: Fishing grounds of the Gulf of Carpentaria Line Fishery (Gulf of Carpentaria—Spanish mackerel and other fin fish).

belong to a separate stock (Buckworth et al. 2007; Newman et al. 2009; Sulaiman & Ovenden 2009). The Gulf of Carpentaria Inshore Fin Fish Fishery also harvests smaller quantities of Spanish mackerel (e.g. 48 t in 2010) (Fisheries Queensland 2009a).

### Main management methods used

The Queensland Fisheries Joint Authority (QFJA), through the *Fisheries Act 1994*, manages all targeted fishing for northern demersal and pelagic fin fish in waters adjacent to Queensland in the Gulf of Carpentaria.

During 2010 the GOCLF was managed by Fisheries Queensland, part of the Department of Employment, Economic Development and Innovation, in accordance with the Queensland *Fisheries Act 1994*, Fisheries Regulation 2008 and the Fisheries (Gulf of Carpentaria Inshore Fin Fish) Plan 1999. A range of input and output controls govern fishing activity within the GOCLF. For the commercial sector these include:

- limited entry
- closed area restrictions – South Mitchell River
- gear restrictions – including restrictions of the type of apparatus that can be used (numbers of lines and hooks) and size of the boat and number of tenders that can be used in the fishery

- species specific size and number regulations – size limits and number of fish regulations apply to a range of in-possession species
- prohibition on retaining barramundi (*Lates calcarifer*), black jewfish (*Protonibea diacanthus*), blue and king threadfin (*Eleutheronema tetradactylum* and *Polydactylus macrochii*), scaly jewfish (*Nibea squamosa*), giant queenfish (*Scomberoides commersonianus*) and silver javelin (*Pomodasys argenteus*).

## Catch statistics

### Commercial

Total harvest in the GOCLF decreased 5 t to 183 t in 2010 (Table 1). The majority of the harvest (>99%) comprised line caught Spanish mackerel (Table 2). Catch rates of the commercial line sector increased from the previous year (Figure 2).

The total catch of Spanish mackerel caught in Queensland GOC fisheries by both line and net methods (231 t) increased by 11 t in 2010 compared with 2009, however this was approximately 89 t less than the peak Spanish mackerel catch in 2008 (Table 2). The total catch is within historical catch levels. Proportionally, line catches of Spanish mackerel (79% of the total catch) were the lowest for the past 10 years and lower than the 10 year average of 88%. Spanish mackerel is considered

Table1: Total commercial catch (tonnes), effort (licences accessing the fishery and days fished), catch per unit effort (kg/day) and Gross Value of Production (GVP \$million) for the Gulf of Carpentaria Line Fishery 2000–10 (Source: Fisheries Queensland CFISH Database, 25 July 2011).

Fishery statistics	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Catch (t)	126	138	203	172	195	240	188	237	286	189	183
Licences	40	31	51	49	31	41	39	45	40	28	22
Effort (days)	742	757	1277	1211	909	1194	933	1230	1292	878	735
CPUE (kg/days)	170	182	159	142	215	201	202	193	221	215	249
GVP (\$million)	0.9	1.0	1.5	1.2	1.4	1.8	1.3	1.7	2.0	1.3	1.3

Table 2: Commercial catch (tonnes) of line-caught Spanish mackerel and by-product species in the GOCLF and net-caught Spanish mackerel in the GOCIFF, 2000–10 (Source: Fisheries Queensland CFISH Database, 25 July 2011).

Catch component	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Spanish mackerel-line caught	121	137	197	167	193	229	185	228	285	189	183
By-product – line caught	4.3	0.5	6.0	4.4	1.9	11.5	2.8	9.8	1.3	0.1	<0.1
Spanish mackerel-net caught	25	21	24	18	29	33	17	41	35	31	48
Total Spanish mackerel	146	158	221	185	222	262	202	269	320	220	231

a by-product of the GOC net fishery (N3, N9). Apart from size limits, there are no restrictions on the amount of Spanish mackerel that commercial net fishers can land.

In 2010, the catch of other permitted species remained below 1% of total landings as in 2008 and 2009 (Table 2). The species reported as by-product in the 2008 ASR are slightly different than subsequent reports. The line catch of red snappers are now reported in the GOC Developmental Fish Trawl Fishery ASR where these are the key primary species harvested. Unspecified tropical snapper was the only reported by-product species in the GOCLF for 2010.

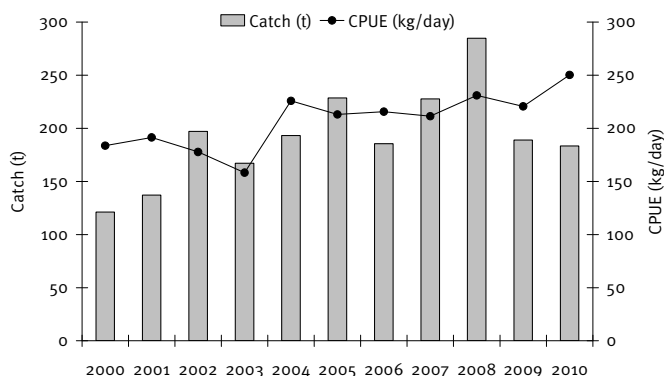


Figure 2: Total commercial catch (in tonnes) and (kg/day) of Spanish mackerel in the GOCLF 2000–10 (Source: Fisheries Queensland CFISH Database, 25 July 2011).

## Recreational

No new recreational catch estimates are available for the GOC region (refer to the 2009 report for catch estimates up to 2005). The latest statewide recreational fishing survey commenced in 2010 with results expected to be publicly available in 2012.

## Charter

The number of charter operators (14) in the Gulf of Carpentaria reporting harvest in 2010 has decreased since 2007 with a corresponding decrease in days fished of 20% to 361 days (Figure 3). Catch decreased by an estimated 1.6 t retained and 1.8 t released in 2010.

The charter fishery targets a range of species relating to the GOCLF (Table 3). Spanish mackerel (50% of total landings) was the largest component of the charter harvest.

The annual catch of Spanish mackerel decreased from a peak in 2006 and is likely to be a reflection of decreasing effort. Fishers retained more Spanish mackerel than they

released in 2010. In the Northern Territory recreationally caught Spanish mackerel has an estimated release mortality of 54% (Northern Territory Government 2009).

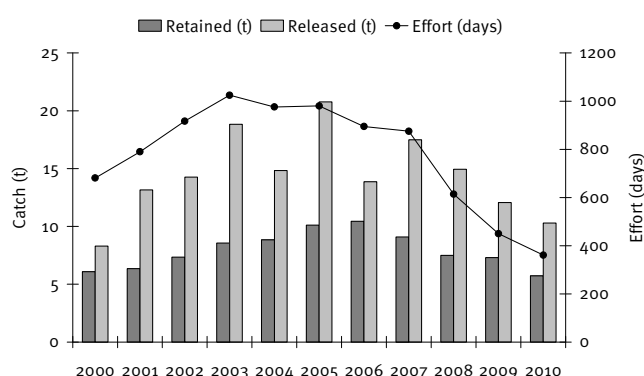


Figure 3: Total retained and estimated released catch weight and days fished reported by charter operators in the Gulf of Carpentaria Line Fishery 2000–10 (Source: Fisheries Queensland CFISH Database, 25 July 2011).

Table 3: Retained (and released) weight reported by charter operators of target and other permitted species caught in the GOCLF 2000–10. (Source: Fisheries Queensland CFISH Database, 25 July 2011).

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Spanish mackerel	1.2 (1.6)	1.9 (1.6)	1.5 (1.5)	2.5 (2.3)	2.6 (3)	3.4 (4.2)	4.8 (2.3)	4 (3.7)	3.9 (4.1)	3.3 (2.6)	2.9 (2.2)
Coral trout	0.6 (0.5)	0.8 (0.4)	2.2 (0.8)	2.1 (1.1)	2.6 (1)	3.2 (1.6)	3.1 (0.9)	3 (0.8)	1.9 (0.4)	2.3 (1.2)	1.7 (0.8)
Snapper - unspecified tropical	2 (3)	2.1 (3.6)	2 (3.4)	2.5 (3.6)	1.5 (2.9)	1.1 (2.5)	0.6 (2.1)	0.4 (1.7)	0.5 (0.9)	0.3 (0.4)	0.2 (0.2)
Tuna	0.2 (1.6)	0.5 (3.5)	0.6 (4.2)	0.6 (5)	1.2 (6)	1.5 (11)	1.5 (7.6)	1.5 (10.4)	1 (8.5)	1.1 (6.7)	0.7 (5.6)
Other species	2.1 (1.6)	1.2 (4.1)	1.1 (4.3)	1 (6.7)	1 (1.9)	0.9 (1.4)	0.3 (1)	0.1 (0.9)	0.1 (1.1)	0.3 (1.1)	0.3 (1.4)
Total	6.1 (8.3)	6.3 (13.2)	7.3 (14.3)	8.6 (18.8)	8.8 (14.8)	10.1 (20.8)	10.4 (13.9)	9.1 (17.5)	7.5 (14.9)	7.3 (12.1)	5.7 (10.3)

## Indigenous

Possession and size limits do not apply to traditional and customary fishing, but the indigenous sector is restricted to:

- personal, domestic and non-commercial communal use
- recreational fishing or prescribed traditional apparatus.

An application can be made for a general fisheries permit to use restricted catch methods for cultural and ceremonial events.

Available estimates for Indigenous harvest are not current or restricted to the GOC area. Harvest level of this sector is likely to be small as Indigenous fishers tend not

to target large pelagic fish such as Spanish mackerel (Henry & Lyle, 2003).

## Spatial issues / trends

The spatial trend in commercial harvest of Spanish mackerel in 2010 was similar to 2009. Highest catches were taken north of Weipa and in the southern GOC along the submerged reefs. Catch rates in these areas were also similar to previous years.

## Socio-economic characteristics and trends

There is no export trade from the GOCLF; harvest is sold for approximately \$12.50/kg for Spanish mackerel fillets and \$7.50/kg for whole fish product. The majority of catch is sold in Queensland and interstate (Lew Williams, Fisheries Queensland, pers. comm. 26 September 2010).

Gross Value of Production (GVP) in 2010 (approximately \$1.3 million) was similar to the previous year (Figure 4). The number of days fished decreased from 861 to 735 days and the number of active licences in the commercial sector decreased from 25 to 21 in 2010.

Fishing is the main draw card for Gulf of Carpentaria tourism which is a significant source of employment in the region (Greiner et al. 2004). Tourists represent the majority of charter fishers and those fishing independently. The number of days fished (20%) and the number of active licences (7%) in the charter sector decreased in 2010.

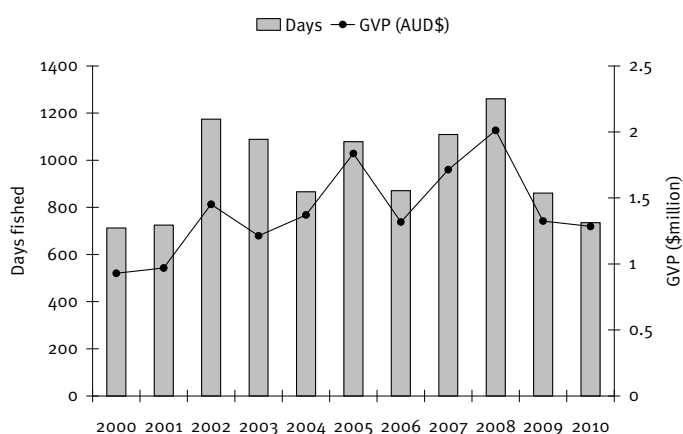


Figure 4: Gross Value of Production of the GOCLF 2000–10. (Source: Fisheries Queensland CFISH database, 25 July 2011).

## Biological and ecological information

### Monitoring programs

#### *Fishery dependent monitoring*

Since 2007, Fisheries Queensland has collected fishery-dependent data including the length, sex and age of line caught Spanish mackerel retained by commercial and recreational fishers (including charter fishers) in the Gulf of Carpentaria. These data assist with assessing the status of the Spanish mackerel stock, evaluating management strategies, and in addressing the Australian

Government's recommendation to improve fisheries management by developing sustainable yield estimates of target species to determine sustainable levels, particularly for Spanish mackerel. Detailed information on monitoring program sampling methods is available in Fisheries Queensland (2009b).

In 2010, fish sampled from the commercial sector ranged from 77 cm to 150 cm in total length<sup>4</sup> with a peak at around 100 to 104 cm (Figure 5). There were a greater proportion of fish in larger size classes in 2009 compared to 2008 and 2010, shifting the distribution to the right. However, the sample size in 2009 was lower than in 2008 and 2010.

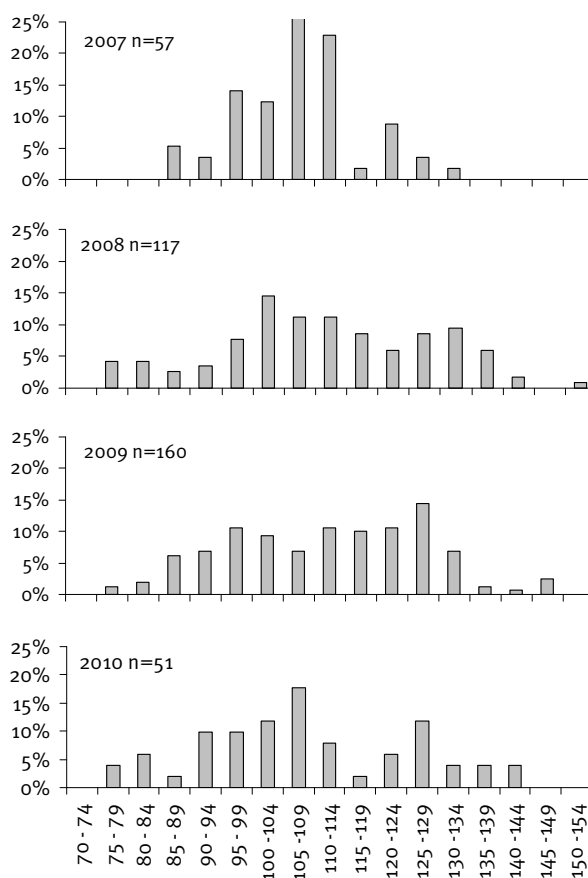


Figure 5: Length distribution of Spanish mackerel sampled from the commercial sector in the Southern Gulf of Carpentaria in 2007–10. Note: Lengths have been converted from fork length.

<sup>4</sup> Length measurements were measured as fork length and converted to total length.

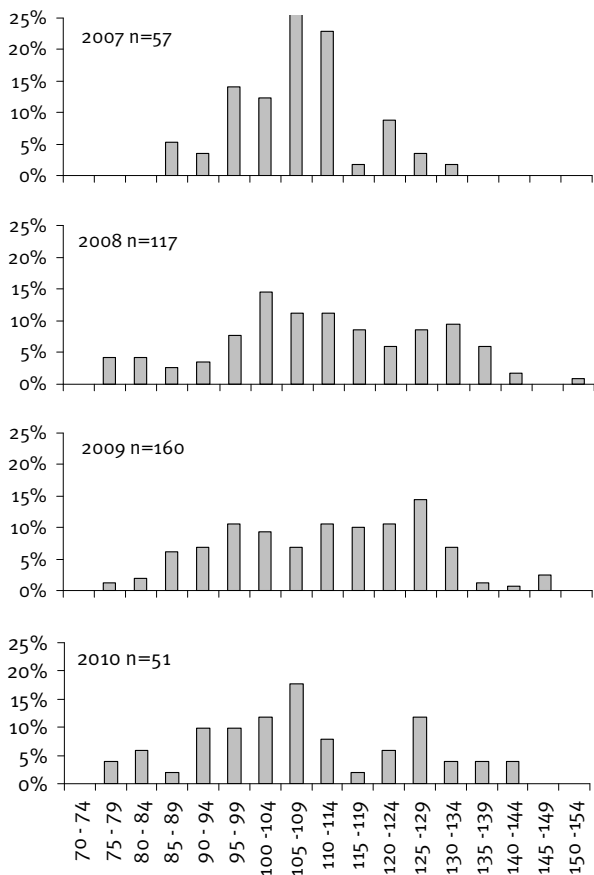


Figure 6: Length distribution of Spanish mackerel sampled from the recreational sector in the Southern Gulf of Carpentaria 2007–09. Note: Lengths have been converted from fork length.

Spanish mackerel sampled from the recreational sector in 2010 (n=51) ranged from 75 cm to 144 cm in total length (Figure 6). The size distribution of the recreational sector is similar to that of the commercial sector despite the lower sample sizes. The size range, medians and means of the commercial and recreational sectors size distribution for 2010 are shown in Table 4.

The age structure of Spanish mackerel sampled in the Gulf of Carpentaria will be calculated during 2011.

Table 4: Summary statistics of length data (in cm) for commercially and recreationally caught Spanish mackerel samples collected by the Long Term Monitoring Program in the GOC in 2010.

Sector	min	max	median	mean
Commercial	74	150	105	106
Recreational	75	144	107	109

### Fisheries Observer Program

No observations were scheduled for the GOCLF in 2010. Scheduling of the Fisheries Observer Program is developed on a priority needs basis across all Queensland fisheries.

### Bycatch

The fishing gear and methods employed in the GOCLF limits bycatch by precise targeting of legal sized desirable species (Roelofs 2004). Fishers actively attend to the fishing gear allowing quick retrieval of the catch and immediate live release of unwanted fish. The Fishery Observer Program data (from 2009) confirmed the small percentage of bycatch. Recreational (including charter) fishers have relatively high levels of released fish due to the popularity of fishing as a sport and to comply with legal size and bag limits. Little is known of the long-term survival of these released fish.

### Interactions with protected species

No interactions with endangered, threatened or protected species have been reported by the GOCLF since the Species of Conservation Interest (SOI) was introduced in 2006. The lack of interactions is supported by the experience of fisheries observers in both the Queensland and Northern Territory Gulf Line Fishery (who also reported no interactions, Northern Territory Government 2009).

### Ecosystem impacts

Significant physical impacts to the habitat or changes to the ecosystem are unlikely due to the low impact of the line harvest method (Roelofs 2004).

### Sustainability Assessment

Fisheries Queensland held a workshop in June 2011 to determine the exploitation status of key line caught species. Spanish mackerel was only partially assessed due to a lack of data demonstrating temporal trends in length or age frequencies. The workshop panel noted that commercial catch and catch rates increased slightly



in 2010 while remaining within historical harvest levels. The 'uncertain' stock status of Spanish mackerel was unchanged from 2010. The next assessment of stock status for Spanish mackerel in the GOC is planned for mid 2012 when it is expected that age frequency data will be available from 2007 through to 2010. The status of Northern Territory Spanish Mackerel fishery is considered to be at or nearing sustainable levels (Handley 2010). The total commercial catch of Spanish mackerel in the Northern Territory (NT) was approximately 70% of the estimated sustainable yield in 2009 (Handley 2010). An update to the Ecological Risk Assessment in 2011 determined that NT Spanish mackerel was at low ecological risk. A subsequent assessment (to be published) of the Spanish mackerel resource also determined the species was being fished within sustainable limits across NT and GOC waters.

Other species are harvested in the GOCLF at low levels and are therefore considered to be at negligible risk of overfishing (Zeller & Snape 2006).

The ecological risk of fishing activities in the GOCLF impacting on the sustainability of Spanish mackerel was assessed as moderate in 2004 (Zeller & Snape 2006).

Fisheries Queensland reviewed the ERA for all GOC fisheries in 2010. The review determined that there have been no significant changes to the management arrangements in the GOCLF or new knowledge of the species to warrant a change to the risk rankings made in 2004.

### Performance against fishery objectives

The Performance Measurement System (PMS) for the GOC Fin Fish Fisheries (DPI&F 2008), which includes the GOCLF, provides a series of measures against which the performance of the fishery can be assessed and reported (Table 5). Full details of the PMS can be found at [http://www.dpi.qld.gov.au/documents/Fisheries\\_SustainableFishing/GOC-PMS-09.pdf](http://www.dpi.qld.gov.au/documents/Fisheries_SustainableFishing/GOC-PMS-09.pdf)

The target species indicator triggered in 2009 with a 31% decrease in the aggregate landings by all sectors (note: this figure has been updated with new logbook data). This corresponded with a similar decrease in fishing effort (24%<sup>5</sup>). With catch per unit effort remaining similar over the same period, Fisheries Queensland determined there were no sustainability concerns behind the decrease and no remedial action required. Catch per unit increased in 2010.

Table 5: Performance measures and outcomes for the GOCLF in 2010.

Performance Measure	Performance
<p><b>Spanish mackerel</b></p> <p>Estimated catch by all sectors exceeds the estimated sustainable yield of Spanish mackerel.</p> <p>Aggregate landings by all sectors reach 90% of the sustainable yield (by whole weight) and/or total fishery catch declines by 30% over the calendar year (by whole weight).</p>	<p><i>Not measured</i></p> <p>A sustainable yield for Spanish mackerel has not yet been determined. A review of the PMS, including the development of a suitable sustainable yield indicator, is planned for 2012.</p> <p><i>Not triggered</i></p> <p>The combined commercial and charter Spanish mackerel catches increased by 5% between the 2009 and 2010 calendar years. This contrasted the number of days fished which decreased by 10%. Catch per unit of effort in 2010 increased by an overall 21% (all sectors combined).</p>
<p><b>By-product</b></p> <p>By-product in the GOCLF increases by 20% of the total landings of the calendar year (by whole weight).</p>	<p><i>Not Triggered</i></p> <p>The commercial catch of by-product species is less than 1 % for 2010.</p>
<p><b>Bycatch</b></p> <p>Bycatch in the GOCLF increases by 10% of the total catch over the calendar year (whole weight).</p>	<p><i>Not measured</i></p> <p>Data subsequent to baseline data in 2009 have not been collected.</p>

Performance Measure	Performance
<p><b>Protected species</b></p> <p>Level of interaction with endangered/ threatened/ protected species in the GOCLF increases significantly.</p>	<p><i>Not Triggered</i></p> <p>There have been no reported interactions in 2010 between fishing activity in the GOCLF and protected, endangered and threatened species and/or communities.</p>

## Current sustainability status and concerns

This GOCLF is regarded as sustainable, based on current management arrangements and levels of effort.

## Research

### Recent research and implications

A genetic mark-recapture project (GENTAG) for real-time harvest rate focusing on northern Australian Spanish mackerel was completed in 2009. The project was a collaboration between state and territory authorities including Fisheries Queensland. Recent publications on the genetic stock structure of Spanish mackerel include Sulaiman and Ovenden (2009) and Newman et al. (2009).

## Fishery management

### Compliance report

During 2010, eight commercial fishing vessels were inspected in the GOCLF. One Fisheries Infringement Notice was issued to a fisher during the period for failing to give required information (logbook) to the Chief Executive in the stated way or by the stated time.

### Changes to management arrangements in the reporting year

No changes to management arrangements for this fishery were implemented during 2010.

### Communication and education

The regulation of the harvest of Spanish mackerel in the Gulf of Carpentaria is under the control of the QFJA, which undertakes consultation on the management of the fishery on a needs basis. The Queensland Boating and Fisheries Patrol (QBFP) perform a communication and education role as part of their general compliance program.

The department continues to directly consult with industry members through attendance at industry association meetings, port visits, newsletters and other means. As well as required consultation, such as Regulatory Impact Statements, if any significant changes in management arrangements are proposed.

### Complementary management

Fisheries researchers and managers from Queensland, the Northern Territory and Western Australia and the Commonwealth meet annually at the Northern Australia Fisheries Management 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.

The Australian Government is developing bioregional plans for marine areas including the Gulf. The process will result in new marine conservation areas which include restrictions to fishing. Draft plans were released in August 2011 and can be found at <http://www.environment.gov.au/coasts/mbp/north/index.html>

Fisheries Queensland is contributing to a whole of Queensland government response to the impacts of the draft planning.

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## Information compiled by

Anthony Roelofs

## Acknowledgements

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## Front cover image

Spanish mackerel (*Scomberomorus commerson*)

