

Annual status report 2005

Queensland Gulf of Carpentaria Line Fishery

February 2006



Q106017

ISSN 0727-6273

The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland's primary industries on a sustainable basis.

This publication provides information on the Queensland Gulf of Carpentaria Line Fishery.

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Introduction

The Gulf of Carpentaria Line Fishery (GOCLF) is primarily a line fishery targeting Spanish mackerel. A small amount of demersal fish species is also taken using hand lines. Fish species groups in the GOCLF comprise pelagic species such as mackerels and trevallies and demersal (bottom-dwelling) species including cods, tropical snappers, wrasses and sweetlip. 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.

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 larger mother-boat (< 20 m) or as small trolling boats targeting pelagic fish.

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

Recreational fishers primarily use hook and line to catch target fish species as well as cast and seine nets to catch baitfish 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 to catch finfish. 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. The fishery has both an inshore (L5—out to 3 nm from the coast) and offshore (L4—out to 25 nm from the coast) component.

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 relevant 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 availability of licenses 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*¹ and can be downloaded from:

<http://www.deh.gov.au/coasts/fisheries/qld/line/pubs/line-fishery-submission.pdf>.

There is some overlap in finfish species caught by recreational, Indigenous and charter boat fishing tour sectors within 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 Regulations 1995* and the *Fisheries (Gulf of Carpentaria Inshore Finfish) Plan 1999*.

Approximate allocation between sectors

The GOCLF is considered mainly a commercial fishery. At present there is no estimate of the recreational harvest component of GOC Spanish mackerel resources.

Fishery accreditation under EPBC Act

The GOCLF was granted a Wildlife Trade Operation (WTO) approval under Part 13 of the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 13 October 2004. The WTO approval acknowledges that the fishery is being managed in an ecologically sustainable manner and allows the continued export of product caught in this fishery. The current approval expires in October 2007.

Fishery profile

Total harvest from all sectors 2004: 256 t plus Indigenous and recreational harvest

Commercial harvest for 2004: 225 t

Recreational harvest: no estimate available

Indigenous harvest: Approximately 220 000 fish (no estimate of weight at present)

Charter harvest for 2004: 31 t

Commercial gross value of product (GVP) for 2004: A\$1.5 million

Number of licences: Total 47 primary licences—40 primary and 7 tender (L4), 7 primary and 14 tender (L5)

Commercial fishing boats accessing the fishery in 2004: 21

¹Roelofs, A.J. (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, Queensland

Commercial catch and effort (target species)

Total harvest levels in the GOCLF in 2004 were the highest since 1997 (Table 1). The 2004 catch was mostly comprised of Spanish mackerel (206 t), however about 9 t of red snapper was also caught. There has been an increase since 2002 in the reported catch of red snapper species (including *Lutjanus malabaricus* and *L. erythropterus*), however only three dedicated Spanish mackerel fishers have reported any harvest of these species.

The majority of the reported take has been by operators (17 in total) that also hold a net fishing entitlement (N3 fishery symbol). One operator has contributed over 75% of the total red snapper take in 2003 and 2004.

L4 operators continue to target Spanish mackerel (Figure 1) while L5 operators have more variable catch compositions and catch fewer fish overall (Figure 2). Catch rates for Spanish mackerel were very high in 2004 (Figure 3).

Table 1: Species compositions of the total commercial catch in tonnes in the GOCLF (L4 and L5 combined) from 1990 to 2004.

Species group	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Spanish mackerel	41	55	131	183	183	191	139	239	152	170	139	161	206	173	206
Red snapper**					0.03		2	1	1	1	3	1	6	10	9
Grey mackerel	2	3	0.1	0.1	3	6	0.0	3	0.3	0.8	2	0.3	3	0.2	2
Shark—all	0.8	1.0	0.8	1.3	0.4	4	4	3	0.8	1	1	0.4	2	2	1
Red emperor					0.04	3			0.01	0.8	1	0.2	1	1	1
Snapper**						0.4		0.02			0.3	0.0	0.1	0.02	1
Queenfish	3	0.4	0.1	0.8	0.01	0.4	0.8		0.1	0.3	1	1	0.2	3	1
Catfish—fork		0.1	0.1			1	0.2			0.4	1		0.2	1	1
Other fish**	13	27	13	7	5	9	7	11	23	13	9	9	4	7	3
Total	59	86	145	192	192	214	153	256	177	188	156	173	222	198	225

** A number of species comprise the harvest

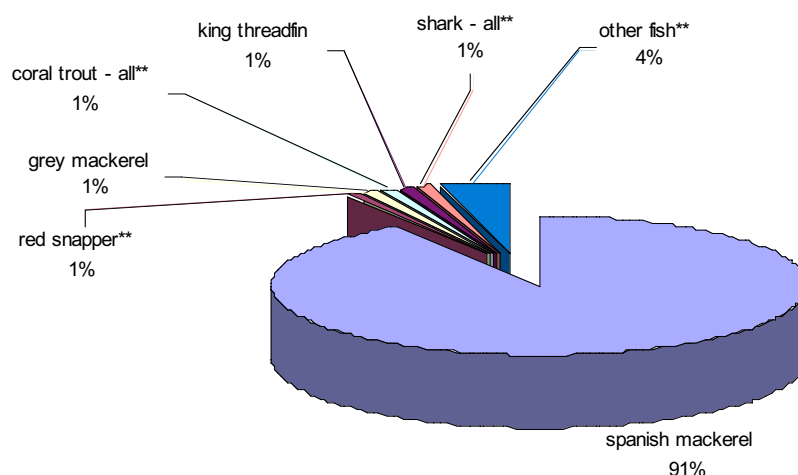


Figure 1: Species composition of total catches from the L4 sector of the GOCLF from 1990 to 2004 (total catch = 2586 t).

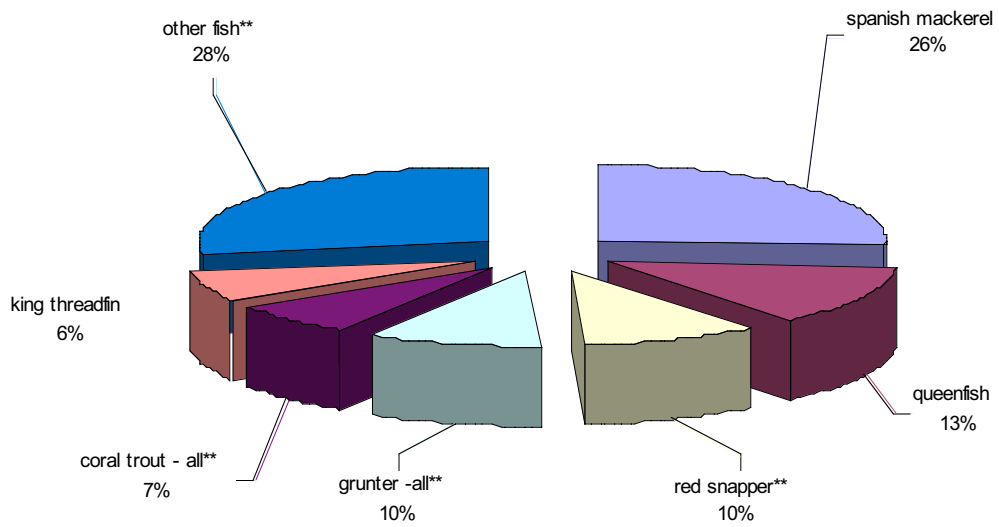


Figure 2: Species composition of total catches from the L5 sector of the GOCLF from 1990 to 2004 (total catch = 50 t).

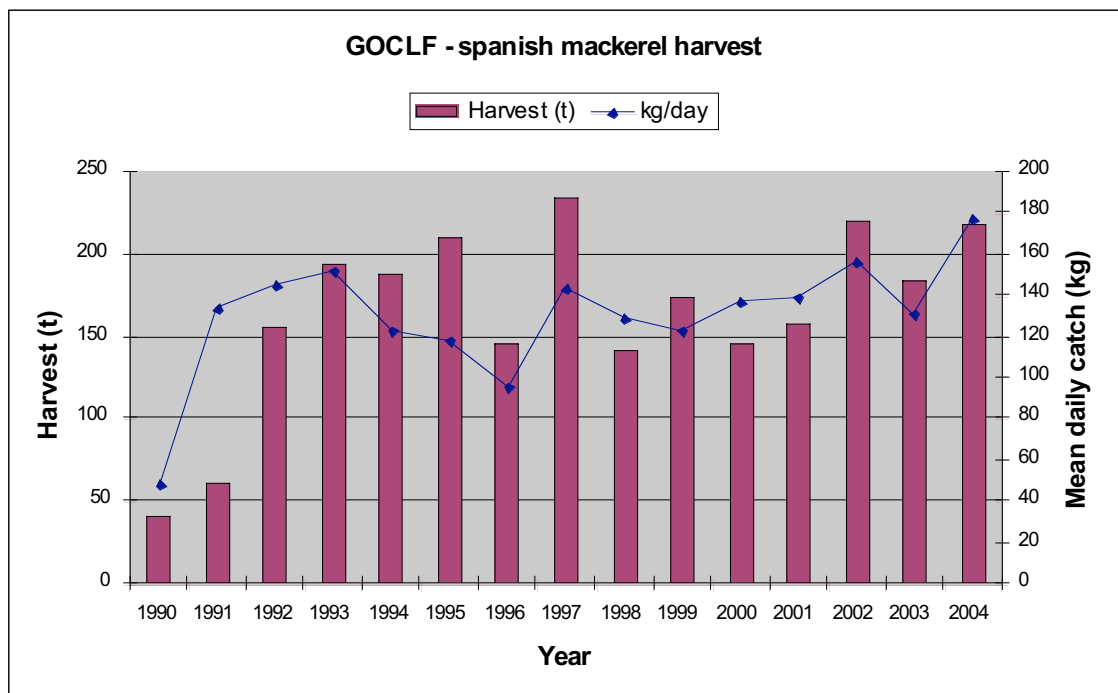


Figure 3: Total harvest (t) of Spanish mackerel in the GOCLF from 1990 to 2004.

Recreational, charter and Indigenous catch

Since 1995, commercial tour operators have removed on average an estimated 19 t of fish per year (mostly comprised of blue threadfin (4 t), grunter (1.7 t), Spanish mackerel (1.2 t) and red emperor (1.2 t)) from stocks of commercially harvested species in the GOCLF.

Charter operations release substantially more fish than they retain, especially for species such as queenfish and grey mackerel (which are target species in the Gulf of Carpentaria Inshore Fin Fish Fishery²) so the actual number of fish caught is much higher than the yearly retained average.

Harvest estimates derived from the National Recreational and Indigenous Fishing Survey indicate the Indigenous sector potentially contribute a substantial amount (approximately 220 000 fish) to the total take of GOCLF fish species in northern Queensland.³ From this take, the species most commonly harvested by Indigenous fishers are sea perch/snappers (38 200 fish) and coral trout (7004 fish). Only 2382 mackerels were harvested.

Non-retained species/bycatch

Bycatch in the GOCLF is 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 tended 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.

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

Interactions with protected species

DPI&F has reported that the level of capture and/or mortality of, or injuries to, endangered, threatened or protected species in the GOCLF is nil¹. A Species of Conservation Interest (SOCI) logbook has now been developed to provide more detailed information on the level of interactions with protected species in the GOC. DPI&F plan to implement the SOCI logbook along with new catch logbooks during the 2006 season. Fishers are still, however, legally required to report interactions with whales, dolphins and dugongs to the Environmental Protection Agency (EPA) and the Department of Environment and Heritage (DEH).

² Roelofs, A.J. (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, Queensland: 87 pp.

³ Henry, G.W. and Lyle, J.M., Eds. (2003). National Recreational and Indigenous Fishing Survey (FRDC Project No. 99/158), NSW Fisheries: 187 pp.

¹ *ibid*

Foreign and illegal fishery activities

The recent reported increase in foreign fishing vessel (FFV) incursions into GOC waters is being viewed by Australian fisheries managers as a serious threat to sustainability of northern Australian fisheries. FFVs appear to be targeting sharks and other pelagics, however inshore finfish are also being taken in GOC waters. There are also concerns over the observed take of protected species and SOCI.

While FFV harvest levels from GOC waters are not known at present, the illegal take is likely to influence the accuracy of resource assessments which in turn will influence the effectiveness of sustainable management practices in the region. Mitigating the risks of illegal fishing activity represents major enforcement and political challenges to the Australian Government.

The capture of tropical shark species by FFV was a major focus of the Northern Australian Fisheries Managers (NAFM) workshops in 2004 and 2005.

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.

Socio-economic characteristics and trends

The GOCLF is a small fishery with only a small number of dedicated Spanish mackerel boats operating throughout the GOC. These operators are economically reliant on good catches of Spanish mackerel and not so much on the harvest of by-product species such as red snappers. Many of the L4/L5 licences are held as multiple endorsements on predominantly N3 and N9 net fishing boats and these harvest most of the by-product species. The good catches of Spanish mackerel in 2004, therefore, brought a welcome financial relief to the small number of dedicated Spanish mackerel boats in the fishery who suffered lower catches in 2003.

Research and monitoring

Recent research and implications

Queensland leads a multi-state, multi-agency collaboration in an FRDC-funded project on grey mackerel which commenced in July 2005. This approach has already benefited fisheries for northern Spanish mackerel and red snappers, with jurisdictions pursuing an integrated 'across-the-top' strategy for fishery management under the NAFM umbrella.

Monitoring programs and results

The DPI&F Long Term Monitoring Program (LTMP) is undertaking a feasibility study that will lead to the development of a monitoring strategy for Spanish mackerel in the GOC by June 2006. Historical data on length and sex of Spanish mackerel has been collected from commercial fishers. This data, along with the collection of age data, will be used to develop fisheries assessment models for the fishery. The use of observers is also being considered to improve our understanding of catch 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 research projects are outlined in the DPI&F ecological assessment of the GOCLF¹. The stock structure of Spanish mackerel throughout northern Australia was studied using genetic examination, chemical analysis of otoliths and parasite distributions.

This research shows there are separate Spanish mackerel sub-stocks across northern Australia and that movement between these stocks appears minimal. Other research relevant to the GOCLF in which DPI&F is a partner includes a three-year FRDC-funded project that will provide a *Determination of management units for grey mackerel fisheries in Queensland and the Northern Territory (FRDC Project 2005/010)*. The project commenced in 2005 and will assist Queensland and Northern Territory fisheries agencies in developing appropriate management measures for grey mackerel across northern Australia.

Fishery management

Compliance report

The Queensland Boating and Fisheries Patrol (QBFP) reported that a total of 48 inspections were conducted on commercial line, recreational and fishing charter boat operations across the 2003 to 2005 financial years. There were two cautions issued in the period.

A new Compliance Activity System has recently been implemented by DPI&F that will record detailed information on activities performed by the QBFP. The new system records:

1. breach reports issued (including offences and court outcomes)
2. unattended breach reports
3. fisheries infringement notices (FINS) issued
4. all field activities (from new field occurrence logs)
5. complaints made via the Fishwatch hotline (including follow up actions).

All offences and field activities are recorded to 6 nm commercial fishing grids. This will allow enforcement activities and offences to be represented spatially and to guide reviews of compliance strategies. Progress to date includes the development of the new system to record breach reports, unattended breach reports and FINS. The new field occurrence logs were trialled in Cairns and implemented across Queensland in July 2005.

Changes to management arrangements in the reporting year

No significant changes to management arrangements were made during the reporting year.

¹ ibid

Consultation, communication and education

Promotion of regulations applying to both commercial and recreational fishers is an ongoing role of DPI&F. Approximately 160 000 recreational fishing brochures containing size and possession limit information were distributed in 2004. In addition, approximately 500 stakeholders were sent copies of the fisheries newsletter 'Fish' four times during 2004. The newsletter highlights recent achievements, the latest research and proposed changes to management arrangements. DPI&F also introduced 'FishFlash' in February 2004, an email based newsletter with links to the latest fisheries news. Approximately 300 stakeholders subscribe to FishFlash, which is now up to its 19th issue.

Consultation also occurs through GulfMAC, with meetings generally held at least twice a year. GulfMAC provides an opportunity for stakeholders to advise 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 decide on management strategies and catch quotas to ensure that these shared resources are used in a sustainable manner.

DPI&F convened a stakeholder workshop in November 2004 to undertake an ecological risk assessment (ERA) of all retained and non-retained species in the Queensland GOC fisheries. Harvest levels for Spanish mackerel in the GOCLF were determined to be a moderate risk to the species sustainability. Management actions were proposed to ensure the risk was mitigated. The impact on the sustainability from the GOCLF on by-product species was ranked as a negligible risk.

Queensland has been the lead agency during the development of operational plans for northern fisheries for shark and grey mackerel, and their ratification by stakeholder jurisdictions. The shark operational plan gives substance to the initiatives agreed to by signatories to the National Plan of Action—Sharks. Operational plans for Spanish mackerel and red snapper are likely to be the next in line for development. The operational plans help to better align research and compliance initiatives and direction with management priorities.

Fishery performance

Appraisal of fishery in regard to sustainability

Recent stock analysis for mackerels in northern Australia suggests the fishery is being fully exploited at sustainable levels. The level of harvest of stocks of red snapper in the GOCLF is presently well below maximum sustainable levels. Other commonly caught species—although full stock assessments have not been made—are also 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.

Progress in implementing DEH recommendations

The recommendations made by DEH in regard to addressing any uncertainties or risks that were identified can be found at:

<http://www.deh.gov.au/coasts/fisheries/qld/east-coast-beche-de-mer/report.html>.

DPI&F has made significant progress in implementing a number of these recommendations. These include:

Annual status report

DPI&F has reported publicly on the status of the GOCLF through this report and will continue to do so annually.

Protected species education

DPI&F has recently delivered a comprehensive education program to commercial and recreational fishers promoting protected species and the need to adopt appropriate fishing practices to help minimise the number of interactions. Education material has been mailed to all licensed commercial fishers, numerous recreational fishing clubs, and bait and tackle stores. The education material includes a brochure for recreational anglers, a waterproof summary guide for commercial fishers and a DVD on seabird care and handling. In addition, the endangered and threatened species course, which new master fisherman must undertake before they are issued a licence, has been updated with information contained in the new *Looking after protected species in Queensland—a comprehensive guide for commercial fishers*. A Memorandum of Understanding (MOU) has also been developed between DPI&F and DEH in order to streamline the protected species reporting process.

Performance measurement systems

As part of its obligations under the EPBC Act, DPI&F is required to develop fishery specific objectives linked to performance indicators and performance measures for target, bycatch, protected species and impacts on the ecosystem for the GOC fisheries. DPI&F has recently developed an information paper regarding development of performance measures to help guide fisheries managers and Management Advisory Committees in establishing consistent and appropriate fishery objectives, performance indicators, performance measures and management responses. Performance measures for the L4 and L5 fisheries must be in place by mid 2006. The recently completed ERA of GOC fisheries will inform the performance measures development process.

Ecological risk assessment

DPI&F conducted an ERA workshop in November 2004 that met the DEH recommendation to identify target, by-product and bycatch species most at risk from the fishery. Workshop attendees included representatives from the Indigenous and recreational fishing sectors; commercial gillnet, line and finfish trawl fishing sectors; the EPA and Parks and Wildlife Service; local conservation groups; and the Northern Territory and Queensland fisheries research and management sections. Actions will be developed from the ERA that will reduce the risk to species identified as requiring further management responses. Outcomes from the ERA will also assist the development of performance measures and review events for all GOC fisheries.

Improving our knowledge of Indigenous and recreational harvest

Under the Recreational Fishing Information System (RFISH) program, DPI&F conducts a regular recreational fishing phone survey coupled with a recreational fishing diary system. Traditionally, the RFISH data has been used to establish state-wide participation rates for recreational fishing as well as providing limited spatial estimates of harvest for the major/popular recreational fish species. In 2005, a feasibility study was undertaken on the statistical capacity of data collected under RFISH to provide finer scale spatial estimates (e.g. at a regional level) of recreational harvest than has been previously reported on. The outcomes of the feasibility study will be considered as DPI&F develops a process to improve estimates of recreational take across all of Queensland's fisheries.

DPI&F are investigating methods to improve estimates of harvest by the Indigenous sector in the GOC. The capacity of processes such as 'sea country planning' and the use of Indigenous Subsistence Fishing Survey Kits are being considered at present.

Protected species interactions

DEH have recommended that DPI&F need to develop a mechanism to improve knowledge of the level of interactions with protected species in the GOCLF. The SOCI logbook was developed to provide this information. DPI&F plan to implement the SOCI logbook along with the new catch logbooks during the 2006 season. The new logbooks will provide information on the location of protected species interactions and will identify if there are any interaction 'hot spots'.

Fishery-independent monitoring

DPI&F are continuing to seek out alternative cost effective fishery independent sampling/monitoring techniques, particularly for target species for the GOC line.

The DPI&F LTMP is undertaking a feasibility study that will lead to the development of a monitoring strategy for Spanish mackerel in the GOC by June 2006. The use of observers is also being considered to improve our understanding of catch composition and to validate a species-specific target list for the Spanish mackerel fishery.

Management performance

In its assessment of the GOCLF, DEH believes the triggers for the review events and subsequent management actions could be better defined. DEH has recommended that DPI&F develop fishery-specific objectives linked to performance indicators and performance measures for target, bycatch, protected species and impacts on the ecosystem.

New performance measures and/or reference points will be developed for the GOCLF in consultation with GulfMAC by the end of 2006.

Resource concerns

There are no resource concerns at the present level of harvest effort.

Information compiled by

Anthony Roelofs.

Acknowledgements

Rod Garrett, Mark Doohan, Amanda Luxford, Lew Williams, Malcolm Dunning, Sue Helmke, Darren Rose, Lennard Olyott and Claire Andersen.

Front cover image

Spanish mackerel (*Scomberomorus commerson*)