

# Annual status report 2009

## East Coast Spanish Mackerel Fishery



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## Fishery profile 2008–09

<b>Species targeted</b> Spanish mackerel	<b>Total number of commercial licences in 2008–09</b> 267
<b>Total harvest from all sectors</b> 335 tonnes + unquantified recreational catch.	<b>Commercial licences accessing the fishery in 2008–09</b> 127
<b>Commercial harvest</b> 308 tonnes	<b>Fishery season</b> Predominantly late spring/early summer.
<b>Recreational harvest estimate (2005)</b> Approximately 415 t	<b>Fishery symbols</b> SM and an L1, L2 or L3.
<b>Indigenous harvest</b> Considered negligible.	<b>Monitoring undertaken</b> Commercial logbooks (CFISH), collection of biological data (fishery-dependent sampling), at-sea observing.
<b>Charter harvest</b> 27 tonnes.	<b>At-sea observer days in 2008–09</b> 3
<b>Commercial Gross Value of Production (GVP)</b> Approximately \$2.8 million.	<b>Accreditation under the EPBC Act</b> Expires 31 October 2010.
<b>Allocation between sectors</b> No formal catch allocation.	<b>Logbook validation</b> Yes—completed August 2007.
<b>Total exports</b> Negligible—most product sold domestically.	<b>Quota managed</b> Yes—SM symbol required. Total allowable commercial catch (TACC) of 619,520 units. Approximately 10% of TACC held by Department of Environment, Water, Heritage and the Arts (DEWHA).
<b>Key fish resources</b>	<b>Stock status</b>
Spanish mackerel	Sustainably Fished
<b>Comments:</b> At current fishing levels the fishery is considered sustainably fished at upper levels. A new stock assessment commenced in late 2009 with results expected in early 2010, to help further clarify the status of the stock.	

## Introduction

The East Coast Spanish Mackerel Fishery (ECSMF) is a line fishery targeting the largest of the mackerel species in Queensland—*Scomberomorus commerson*. Spanish mackerel are highly sought after by both commercial and recreational fishers.

This report covers the financial year from July 2008–June 2009.

## Fishery Description

### Fishing area and methods

The ECSMF is a line-only fishery in which both commercial and recreational fishers are permitted to use a maximum of three lines and up to six hooks. Spanish mackerel are generally caught while trolling. The line (“L”) symbol attached to a commercial licence with an SM fishery symbol dictates the area in which the licence can operate (Figure 1).

The commercial harvest of Spanish mackerel in the Gulf of Carpentaria (GOC) is managed separately to the east coast and is reported in the GOC Line Fishery Annual Status Report. Spanish mackerel in the GOC are separate stocks from the east coast stock.

### Key Species

Growth of juvenile Spanish mackerel is rapid, reaching approximately 65cm fork length (FL) in the first year. They reach the current minimum legal size (75 cm FL) early in their second year of growth and attain approximately 80 cm FL by 2 years of age (Welch *et al.*, 2002). Differential growth between sexes occurs with females showing faster growth and higher longevity (McPherson, 1992). Sexual maturity for males and females occurs around 2 years of age from about 79 cm FL (McPherson, 1993).

Spanish mackerel are known to aggregate in large numbers to spawn. During the 1970’s aggregations of spawning fish on the east coast were reported to occur between Lizard Island and Townsville. In recent years aggregations of spawning fish have been reported to occur over a much smaller area on several reefs east of Ingham. Fish gather on these

reefs in large numbers during October and November each year. Spawning activity is believed to be determined by a combination of environmental factors, but can be observed over much of the two month period. Females in pre-spawning condition are common in troll catches during the morning hours of the day of spawning. Spawning appears to take place during late afternoon and early evening during which time the fish cease feeding. Feeding behaviour resumes immediately after spawning (McPherson, 1981).



Figure 1: Line fishery areas in Queensland.

### Main management methods used

Management of the ECSMF is the responsibility of Fisheries Queensland, a service of Department of Employment, Economic Development and Innovation (DEEDI). The harvest of Spanish mackerel is managed by a range of input and output controls as set out in the *Fisheries Regulation 2008*. For a list of the main management arrangements used, refer to the 2008 annual status report for the fishery.

# Catch Statistics

## Commercial

The commercial catch per unit effort (CPUE) of Spanish mackerel (Figure 2) has historically exhibited a stable trend, despite inter-annual variability in total catch. In 2008–09 the catch increased for the first time since quota was introduced in 2004–05, from 209 t in 2007–08, to 308 t. In 2008–09, the number of vessels accessing the fishery increased from 161 to 173. The CPUE (kg/day) also increased from 61 kg/day to 67 kg/day.

As Spanish mackerel is a schooling species and known to aggregate for spawning, there is potential for catch rates to be hyperstable (i.e. declines in stock size without apparent changes in reported CPUE). The stock assessment for east coast Spanish mackerel undertaken by Fisheries Queensland uses an age-structured model developed from biological sampling combined with logbook reported CPUE to account for this potential.

## Recreational

Recreational line fishers are restricted to a maximum of three fishing lines and six hooks (total) in all Queensland waters. Fisheries Queensland estimates state-wide recreational catch using a telephone-diary methodology. The most recent state-wide data estimates were those collected during the 2005 effort year<sup>1</sup>. Fisheries Queensland plans to commence another state-wide recreational fishing survey in 2010 and an updated estimate of Spanish mackerel catch will be available by the end of 2011.

Fisheries Queensland conducted a survey of marine boat-based recreational fishing in south-eastern Queensland in 2007–08. A total of 7657 boat crews were interviewed of which 4559 (60%) were fishing. Spanish mackerel represented a very minor proportion of the catch with only 17 fish reported of which 82% were retained. Refer to the report [‘Survey of marine boat-based recreational fishing in south-eastern Queensland 2007–2008’](#) available on the

<sup>1</sup> Refer to the 2007 ECSMF Annual Status Report for previous figures and catch statistics related to recreational harvest.

DEEDI website [www.deedi.qld.gov.au](http://www.deedi.qld.gov.au) for more information.

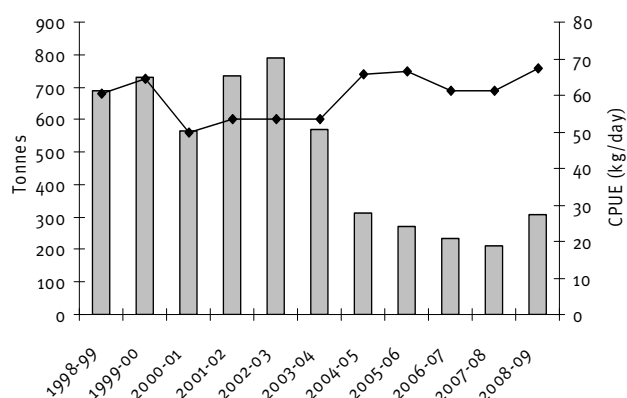


Figure 2: Catch and effort 1998–99 to 2008–09 (Source: Fisheries Queensland CFISH database, 2 December 2009).

## Charter

Annual reported charter catches of Spanish mackerel on the east coast have decreased from 30 t in 2007–08 to approximately 27 t in 2008–09 (Figure 4). The CPUE has also increased slightly from 17.9 kg/day<sup>2</sup> in 2007–08 to 18.1 kg/day in 2008–09. Following a logbook compliance run conducted in late 2009, the total catch estimate from 2007–08 increased by 8 t from that reported in the 2008 annual status report.

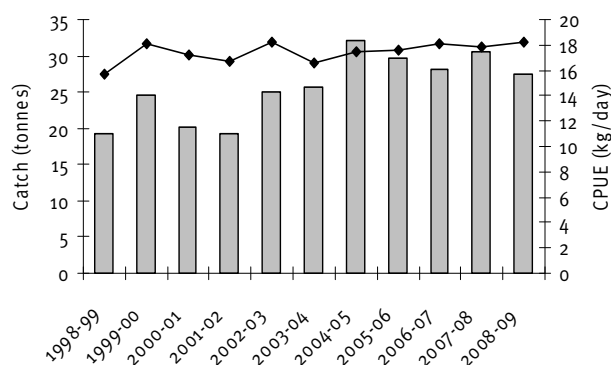


Figure 3: East coast charter catch & effort for Spanish mackerel 1998–99 to 2008–09 (Source: Fisheries Queensland CFISH database, 2 December 2009).

## Indigenous

The NRIFS estimated that 2382 mackerel were harvested by indigenous fishers in northern Australia

<sup>2</sup> In last years Annual Status Report, the CPUE was reported as 16.5kg/day. With the subsequent inclusion of late logbook returns, the catch and CPUE for the 2006–07 period has changed slightly.

in 2000. This estimate includes all species of mackerel, not just Spanish mackerel. Further research is required to include catches from all Queensland indigenous fishers and provide improved estimates of catches of individual species.

## Spatial issues / trends

Commercial fishing effort was spread along the east coast in 2008–09, with high CPUE grids reported from both south east and far north Queensland (Figure 4). The largest area of effort is still focussed around several grids from Bowen to Ingham where Spanish mackerel aggregate in large numbers to spawn. These spawning grids that have historically reported the highest catches during October and November.

## Socio-economic characteristics and trends

The price paid to the fisher for Spanish mackerel has remained relatively stable at approximately \$7/kg for whole fish over the 2008–09 period. Competition from imported product establishes the base price offered to commercial fishers. Given current imports of Spanish mackerel the price is unlikely to increase in the near future. Also access to labour has been difficult given that dory fishers are making a limited income from harvesting Spanish mackerel and there are higher paying employment opportunities in other non-fishing sectors. Consequently Spanish mackerel quotas have not been caught in recent years.

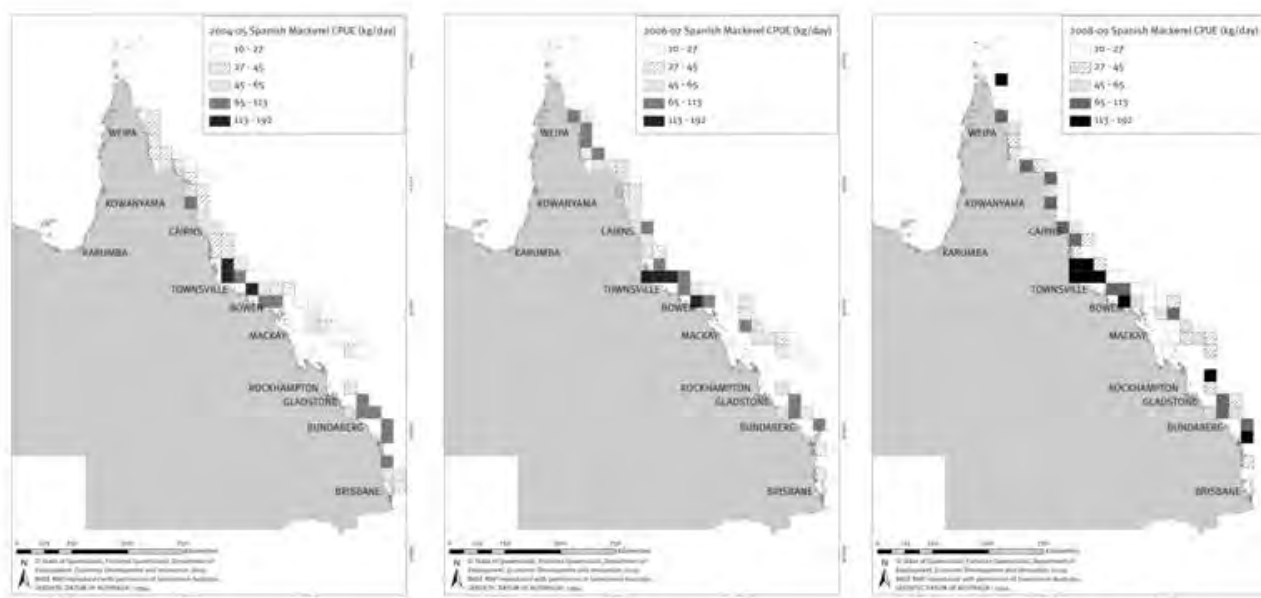


Figure 4: Distribution of commercial Spanish mackerel CPUE in the 2004–05, 2006–07 and 2008–09 financial years.

## Biological and ecological information

### Monitoring Programs

Fisheries Queensland collects fishery-dependent biological data including length, sex and age (from interpretation of otoliths) of Spanish mackerel harvested from the east coast of Queensland by commercial and recreational fishers. This monitoring program involves collecting representative data within four regions along the Queensland east coast, and is stratified so that more samples are

collected from the commercial sector in areas where commercial landings are higher. The monitoring program data are used to help assess the status of the Spanish mackerel stock on the east coast of Queensland.

Results from sampling Queensland east coast catches in 2008–09 (Table 1) include:

- 3,248 fish measured from the commercial sector,
- 629 fish measured from the recreational and charter sectors.

Table 1: Number of Spanish mackerel measured and aged for the four regions sampled for commercial and recreational catches

Region	Sector	No. measured	No. aged
Townsville	Commercial	1 938	475
	Recreational	161	155
Mackay	Commercial	239	65
	Recreational	100	89
Rockhampton	Commercial	298	275
	Recreational	83	50
South east	Commercial	773	21
	Recreational	285	199

\* Charter and recreational fishers are grouped under Recreational.

An age-length key was developed using the 2008–09 data. The key was applied to the length data for all fish to estimate the age structure of Spanish mackerel for each sector per year (Figure 5).

Strong recruitment of fish in the 1-year age group for both recreational and commercial sectors characterised the 2008–09 sampling year (Figure 5). This recruitment identified in the age distribution data was stronger in the South East Queensland (Bundaberg to the Queensland-New South Wales border) and Rockhampton (Serena to Bundaberg) regions than for the other regions. This result is supported by reports from recreational and commercial fishers in the south-east that large numbers of small (just legal-sized) fish were being caught early in 2009.

A strong cohort of fish in the 2-year age group in 2005–06 persisted through to the 5-year age group in 2008–09.

Future monitoring will focus on increasing the number of samples collected from recreational fishers across all regions, and increasing commercial fisher participation in selected regions.

## At-sea observing

Unlike most other Queensland fisheries that target a range of species, the ECSMF is a species-specific fishery in which commercial line operators with an SM fishery symbol are permitted to take Spanish mackerel. The difference in how this fishery is defined was identified as a major challenge to at-sea observing because on any fishing day, this target species (which defines the fishery) may not be the major species targeted. Fisheries Queensland attempted to observe this fishery on three occasions in 2008. On each trip, spotted mackerel were targeted instead of Spanish mackerel which effectively transferred observer ‘coverage’ from the ECSMF to the East Coast Inshore Fin Fish Fishery (ECIFFF) and meant that annual targets in the number of observer days in the ECSMF were not met. In response to these shortcomings, Fisheries Queensland initiated a review of the statewide operational plan for the Fisheries Observer Program in 2009 with the outcomes recently implemented<sup>3</sup>.

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<sup>3</sup> The previous three year rolling program was restructured to provide information to align better with management plan reviews, afford better opportunities to address specific concerns of fisheries managers, and meet export approval conditions. As part of the revised schedule, in 2011, the observer focus will be on east coast line fisheries to obtain Spanish mackerel catch data across all line fisheries and from ECIFFF net fishers.

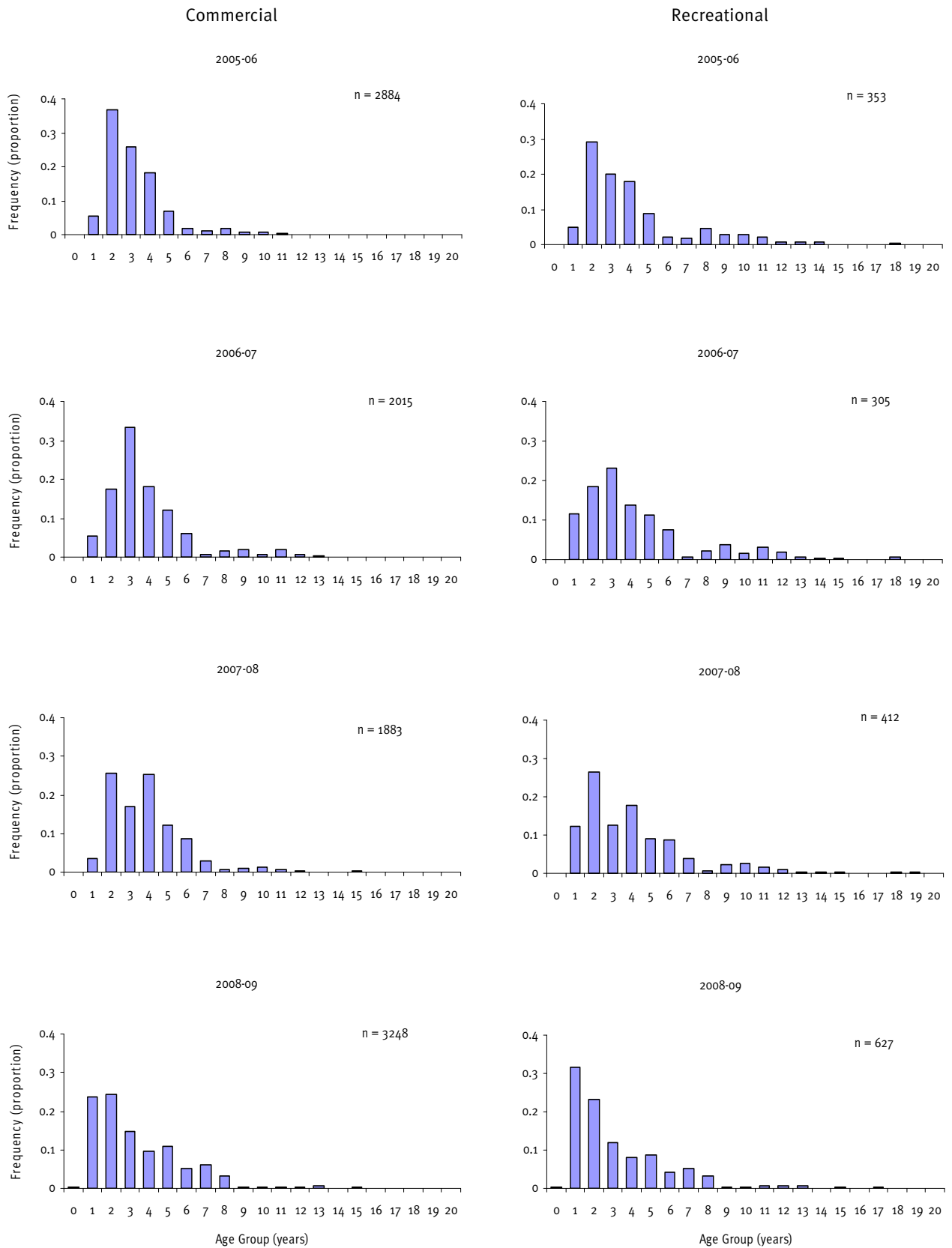


Figure 5: Age distribution of Spanish mackerel samples from the commercial and recreational catch for the 2005-06 to 2008-09 financial year periods.

## Bycatch

The level of bycatch in the fishery is low and mainly comprised of undersized Spanish mackerel. A large proportion of the other species caught whilst targeting Spanish mackerel are retained as by-product for sale and consumption.

## Interactions with protected species

Spanish mackerel commercial fishers record interactions with protected species in their Species of Conservation Interest (SOI) logbook. No interactions have been reported in the 2008–09 quota year. Results of a by-product and bycatch risk assessment conducted in 2005 indicated that the risk to protected species associated with the fishery is low as a result of the targeted nature of the fishery and the constant attendance at troll lines while fishing.

## Ecosystem impacts

Juvenile Spanish mackerel are known to inhabit inshore waters along the entire Queensland coast.

Population expansion and urban development that can influence water quality and habitat availability in inshore and estuarine areas may influence the health of Spanish mackerel populations.

## Sustainability Assessment Performance against fishery objectives

The Performance Measurement System (PMS) for the ECSMF was finalised in July 2008. The PMS functions as a reporting framework that is a transparent, defensible set of criteria for evaluating the performance of the fishery against management objectives (Table 2). Within three months of becoming aware that a performance measure has been triggered, Fisheries Queensland is required to finalise a clear timetable for implementation of appropriate management responses. For the 2008–09 quota year, an assessment in December 2009 has indicated that two performance measures have been triggered.

Table 2: Performance measures and outcomes for the Spanish mackerel fishery in 2008–09.

Performance Measure	Performance
<i>Target species</i>	
Annual commercial catch per unit effort (CPUE) of Spanish mackerel shows a decrease of at least 10% in each consecutive year over three years for the whole fishery and/or specified grids OR decreases by 20% from the preceding year.	<p><i>Not triggered</i> – Total catch The CPUE increased by 9% from last year.</p> <p><i>Not triggered</i> – Specified grid catch The CPUE increased in all specified spawning grids in 2008–09.</p>
Average commercial catch per unit effort (CPUE) at identified spawning reefs in the months of October and November falls below the 25 <sup>th</sup> percentile or above the 75 <sup>th</sup> percentile thresholds of CPUE calculated between 1990–2004.	<i>Triggered</i> The CPUE for spawning grid J20 was higher (161 kg/day) than the 75 <sup>th</sup> percentile threshold (128 kg/day).
There is a 20% decrease in recreational CPUE between consecutive surveys.	<i>Not measured</i> The last statewide recreational fishing survey was conducted in 2005, and prior to that, 2002. The CPUE between these surveys did not trigger this performance measure. Fisheries Queensland is undertaking the next statewide survey in 2010.

Performance Measure	Performance
Total mortality (Z) exceeds 1.5 times estimate of natural mortality (M).	<i>Not triggered</i> The Z estimate calculated in the 2007 stock assessment was <1.5 M.
Estimates of exploitable biomass fall below 40% of the estimated virgin biomass.	<i>Not triggered</i> The 2008 stock assessment found that the exploitable biomass range was between 30-60% of virgin biomass.
<i>Bycatch and protected species</i>	
Observer information [for a three year collection period] shows the amount of bycatch exceeds 10% of the total catch taken by commercial fishers with an SM fishery symbol when targeting Spanish mackerel (by numbers of fish).	<i>Not measured</i> The observer program has not yet collected data in this fishery as a part of the three year collection period. The Spanish mackerel fishery will be observed again in 2011.
The percentage of animals released (alive) from each category falls below 90%.	<i>Not triggered</i> There have been no reported interactions with protected species in this fishery.
<i>Social</i>	
That the rate of compliance falls below 95% in the commercial fishery and/or 95% in the recreational fishery.	<i>Not triggered</i> The compliance rate for both the commercial and recreational sectors in this fishery for the 2008–09 period was above 95%.
<i>Economic</i>	
The proportion of the available TACC landed in any year is <80%.	<i>Triggered</i> The proportion of the TACC landed in 2008–09 was approximately 60%.

## Current sustainability status and concerns

The fishery quota continues to be under-caught, however commercial catch during the 2008–09 quota year increased to 60% of available quota. Catch rates remain stable.

The 2008 stock assessment for the fishery concluded that, at the levels of fishing effort in 2007, the fishery is sustainable. Although commercial harvest has increased since the assessment was completed, other performance measures do not indicate that there is any immediate risk to the stock. Fisheries Queensland will be commencing a review of management arrangements for the fishery,

the first stage of which is an update of the 2008 stock assessment to incorporate updated fishery and additional biological monitoring data which is hoped will reduce uncertainty in the results of the analysis. The updated assessment commenced in late 2009 and will be completed in early 2010. A report will be prepared by DEEDI which will detail the findings of both the 2008 and the 2010 stock assessments.

## Resource concerns

Based on the 2007 level of harvest in the fishery, Fisheries Queensland considers that the ECSMF is managed in a sustainable and precautionary manner. Fisheries Queensland is aware that the stock assessment outcomes point to sustainability

issues if increased take of Spanish mackerel were to occur, and also notes the level of uncertainty surrounding the results. A consultation paper is currently being developed which will outline several options for amendments to management arrangements of the fishery. Fisheries Queensland is continuing to closely monitor the commercial catch through the quota reporting system and is undertaking a statewide recreational fishing survey in 2010–11.

## Research

### Recent research and implications

There have been no new research findings during the period.

### Collaborative research

The ECSM stock is considered to be a separate genetic stock from Torres Strait and GOC Spanish mackerel stocks. Fisheries Queensland scientists are collaborating with Northern Territory Fisheries in refining the Spanish mackerel monitoring program in Queensland waters of the GOC only. There is currently no collaborative research occurring on the east coast stock.

## Fishery management

### Compliance report

During the 2008–09 quota year a total of 1296 fishing units were inspected in the ECSMF. Of these, 133 were commercial vessel inspections. The majority of the remaining inspections were of recreational fishers, of which 24 offences were detected. By sector, 99.5% of commercial operations were compliant and 98% of recreational activities compliant. A summary of offences is provided in Table 3. Offences are reported as either a Fisheries Infringement Notice (FIN); Caution (FIN Caution or official written caution); or Prosecution (to proceed by complaint summons).

A compliance risk assessment was conducted for this fishery in May 2007 in order to determine compliance priorities and allow the most effective use of Queensland Boating and Fisheries Patrol (QBFP) resources.

Table 3: Offences recorded in the ECSMF.

Offence	FIN	Caution
Contravened a quota	1	2
Take/possess/sell regulated fish	12	5
Contravened a regulated fishing apparatus declaration	0	1
Contravened a condition of an authority involving quota requirements	1	0
Failed to have a document required to be available for immediate inspection	1	0
Failed to comply with an information requirement	1	0
<b>TOTAL</b>	<b>16</b>	<b>8</b>

### Changes to management arrangements in the reporting year

There have been no changes to management arrangements in the 2008–09 financial year.

### Communication and education

Promotion of regulations applying to both commercial and recreational fishers, including those relating to Spanish mackerel, is an ongoing role for Fisheries Queensland. Approximately 950 recreational fishing survey identification guides containing pictures and other biological information were sent out to diary program participants, as well as a regular recreational fishing update newsletter which is distributed to approximately 500 stakeholders each quarter.

Consultation with stakeholders in the fishery mainly occurred through the ReefMAC with meetings generally held twice a year. From 2010, this committee has been replaced by the Queensland Fisheries Advisory Committee. Consultation with stakeholders also occurred as part of the PMS development process.

## Complementary management

There is no update for complementary management in the 2008–09 period.

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### Information compiled by

Bonnie Holmes

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### Image

Spanish mackerel (*Scomberomorus commerson*)

