Chapter 17
Torres Strait Finfish Fishery (Spanish mackerel and reef line)

N Marton and M Skirtun

FIGURE 17.1 Area of the Torres Strait Finfish Fishery

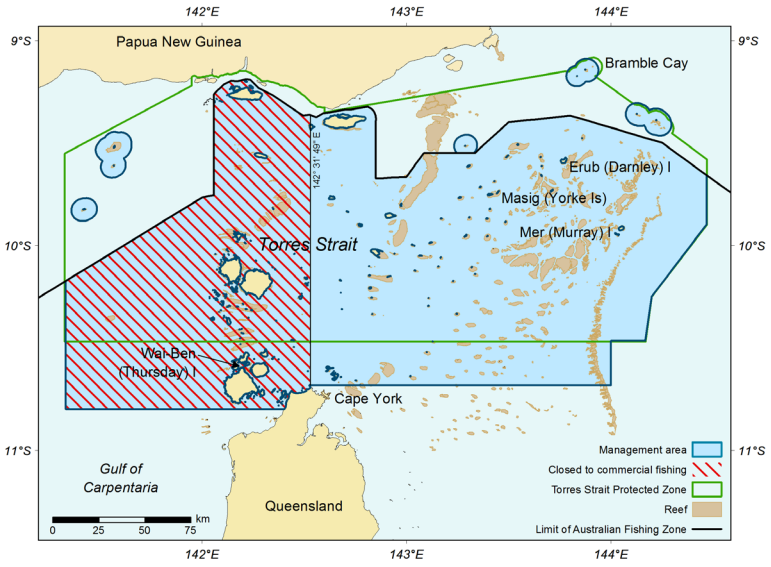


Table 17.1 Status of the Torres Strait Finfish Fishery

Status	2011		2012		Comments
Biological status	**Fishing mortality**	**Biomass**	**Fishing mortality**	**Biomass**	
Coral trout (*Plectropomus* spp., *Variola* spp.)					Catches in recent years have been below catch scenarios that led to increased biomass in a recent MSE. Most recent biomass estimate indicated a biomass above $0.6B_0$.
Spanish mackerel (*Scomberomorus commerson*)					Recent catches have been below MSY. No scenarios in most recent stock assessment saw biomass reduced to below $0.2B_0$.
Economic status	Positive NER are likely in the TVH sector. The leasing of quota to TVH operators also provides funding for economic development. While these outcomes meet the fishery's objectives of providing opportunities for fishery participation and economic development, it is uncertain whether its optimum utilisation objective is being met.				

Notes: B_0 Unfished biomass. **MSE** Management strategy evaluation. **MSY** Maximum sustainable yield. **NER** Net economic returns. **TVH** Transferable Vessel Holder.

Fishing mortality	Not subject to overfishing	Subject to overfishing	Uncertain
Biomass	Not overfished	Overfished	Uncertain

Mackerel mothership and tenders
James Woodhams, ABARES

17.1 Description of the fishery

The Torres Strait Finfish Fishery (TSFF) has two components: the Torres Strait Reef Line Fishery (TSRLF) and the Torres Strait Spanish Mackerel Fishery (TSSMF). The TSRLF is a multispecies fishery mainly targeting coral trout, with smaller catches of tropical snappers, emperors and rock cods. Most commercial fishing activity takes place in the north-eastern region of the Torres Strait (Figure 17.1). A large area of the fishery west of 142°32'E is closed to commercial fishing. Commercial operations are subject to many of the restrictions that apply in Queensland's east-coast commercial reef line fishery (the Coral Reef Fin Fish Fishery); however, red bass (*Lutjanus bohar*) and barramundi cod (*Cromileptes altivelis*), which are no-take species on the east coast of Australia, may be harvested in the Torres Strait.

The TSSMF targets Spanish mackerel, primarily by trolling. The catch is highly seasonal, with most catch taken around Bramble Cay in the far north-east of the Torres Strait (Figure 17.1).

A management plan for the TSFF was finalised in 2013. The plan provides for the setting of a total allowable commercial catch. This is an Indigenous fishery, and non-Indigenous fishers (holders of Transferable Vessel Holder [TVH] licences) are required to operate through the leasing of a 'sunset licence' and quota in the TSFF. These operators lease quota for coral trout and Spanish mackerel on an annual basis through the Torres Strait Regional Authority (TSRA).

A survey of byproduct and bycatch in the TSRLF found that coral trout made up more than 65 per cent of the retained catch (by weight) for both the traditional and non-traditional sectors (Williams et al. 2008); mackerel (Scombridae) and snapper (Lutjanidae) contributed 23 per cent for both sectors. In contrast to previous studies, Williams et al. (2008) found that both sectors discarded more than half their total catch as bycatch. The Traditional Inhabitant Boat (TIB) sector retained a wider range of species than the TVH sector. Byproduct makes up a relatively minor component of catch in the TSSMF. Most of the byproduct is other mackerel species (grey, school, spotted and shark mackerel), but small quantities of reef fish, including coral trout, are also retained (AFMA 2005; Begg et al. 2006).

A study of Islander subsistence catch (non-commercial) found that subsistence fishing yielded similar quantities of fish to the traditional and non-traditional commercial sectors combined (Busilacchi 2008). However, the species composition of the subsistence and commercial catches differs: traditional subsistence fishing takes predominantly jacks (Carangidae; 31 per cent by weight) and mullet (Mugilidae; 20 per cent by weight), whereas the commercial sector predominantly catches coral trout (Serranidae; 19 per cent by weight), jacks (Carangidae; 18 per cent by weight) and mackerel (Scombridae; 16 per cent by weight). Since traditional subsistence fishing does not take large quantities of coral trout and Spanish mackerel, it is unlikely that it is having a large impact on the fish stocks targeted by commercial fisheries.

The Commonwealth Fisheries Harvest Strategy Policy (HSP; DAFF 2007) does not prescribe management arrangements for fisheries jointly managed by the Australian Government and other (domestic or international) management agencies, such as the fisheries in the Torres Strait. Although the Torres Strait Protected Zone Joint Authority has asked its management forums to provide advice on the application of the HSP to the Torres Strait fisheries, no formal harvest strategies are currently in effect in the TSFF.

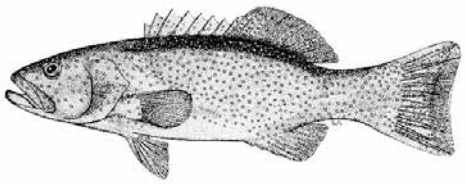
TABLE 17.2 Main features and statistics for the TSFF

Fishery statistics a	2010–11 fishing season			2011–12 fishing season		
Stock	**Leased quota**	**Catch (t)**	**Real value (2010–11)**	**Leased quota**	**Catch (t) b**	**Real value (2011–12)**
Coral trout	54	43	$0.76 million	50	37.8	$0.52 million
Spanish mackerel	85	74.7	$0.61 million	89	78	$0.58 million
Other	–	3.6	$0.04 million	–	3.9	$0.03 million
Total fishery	**139**	**121.3**	**$1.41 million**	**139**	**119.7**	**$1.13 million**
Fishery-level statistics c						
Effort (operation days): Spanish mackerel Reef line	TVH: 352 TIB: 0 TVH: 152 TIB: 14			TVH: 407 TIB: 20 TVH: 184 TIB: 43		
Fishing licences or endorsements	TVH: 7 mackerel and/or line licences TIB: 148 mackerel endorsements and 129 line endorsements			TVH: 5 mackerel and/or line licences TIB: 150 mackerel endorsements and 134 line endorsements		
Active vessels	Spanish mackerel, TVH: 5 Spanish mackerel, TIB: 0 Reef line, TVH: 2 Reef line, TIB: 6			Spanish mackerel, TVH: 4 Spanish mackerel, TIB: not available Reef line, TVH: 1 Reef line, TIB: not available		
Observer coverage	0			0		
Fishing methods	Coral trout and mixed reef species: handline Spanish mackerel: trolled baits and lures, handlines					
Primary landing ports	Cairns, Torres Strait Island fish receivers on Erub (Darnley) and Masig (Yorke) Islands					
Management methods	Input controls: limited entry, vessel restrictions, prohibited species Output controls: size limits, amount of leased quota					
Primary markets	Domestic: frozen International: frozen					
Management plan	A draft management plan is in development.					

a Fishery statistics are provided by fishing season, unless otherwise indicated. Fishing season is 1 July to 30 June. Real-value statistics are by financial year and are in 2011–12 dollars. **b** Catch figures include both TVH and TIB catch. **c** Figures for effort, licences/endorsements and active vessels are for the 2010 and 2011 calendar years.
Notes: **TIB** Traditional Inhabitant Boat. **TVH** Transferable Vessel Holder. – Not applicable

17.2 Biological status

17.2.1 Coral trout



Line drawing: FAO

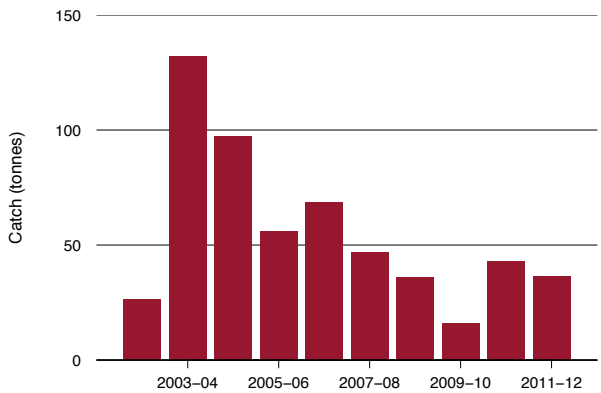
Stock assessment

No formal stock assessment has been conducted for coral trout in the TSRLF. However, a management strategy evaluation (MSE) has been undertaken for the stock (Williams et al. 2007). Four constant-catch scenarios, ranging from 80 t to 170 t, were tested. All achieved a biomass of at least 70 per cent of the assumed unfished levels by 2025. The MSE also tested the effects of seasonal closures, minimum size limits and effort reductions.

Stock status determination

Results of the MSE, combined with a comparison of the 2011–12 catch with the historical catch record (Figure 17.2), form the basis of the classification of this stock. The biomass in 2004 was estimated to be more than 60 per cent of unfished levels (Williams et al. 2007). Catch in recent years has been below the historical catch levels and well below the lowest catch level simulated in the MSE (80 t per year). The results of the 80 t catch simulation indicated that the stock would increase to more than 80 per cent of the unfished biomass within 20 years at that catch level (Williams et al. 2007). On this basis, the stock is classified as **not overfished** and **not subject to overfishing**.

FIGURE 17.2 Catch history for coral trout in the TSRLF, 2002–03 to 2011–12



17.2.2 Spanish mackerel

Line drawing: FAO

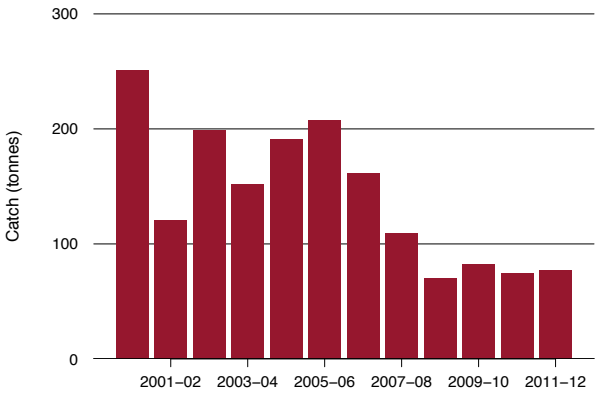
Stock assessment

The only formal stock assessment of Spanish mackerel in the Torres Strait was published in 2006, informed by data to 2003 (Begg et al. 2006). An MSE that was conducted as part of this assessment examined, among other things, the effects of various catch levels on the stock over a 20-year projection period to 2023. The base-case estimate of maximum sustainable yield (MSY) for Spanish mackerel in the Torres Strait was 169 t. The stock assessment concluded that the stock was probably harvested at levels near or exceeding this level up to 2003. Results of the MSE indicated that annual catches of around 150 t per year, or less, would achieve a fishing mortality target of half natural mortality (noting that no formal target or limit reference points have been set for this fishery) and result in a lower risk to the stock (Begg et al. 2006). Although there is significant uncertainty in the 2006 assessment outputs, none of the constant-catch scenarios examined in the MSE resulted in the estimated biomass falling below 20 per cent of the unfished biomass ($0.2B_0$). The base-case simulation estimated biomass at $0.37B_0$ (range: $0.26–0.67B_0$). Although there is no formal target or limit reference point for the fisheries, $0.2B_0$ is the proxy specified in the HSP and is used in the absence of an agreed limit reference point. The potential for hyperstability, where catch rates are maintained while the biomass is declining, was raised as a concern for the TSSMF by Begg et al. (2006). In this case, hyperstability might be expected to result from fishing operations focusing on spawning aggregations around Bramble Cay. Begg et al. (2006) standardised catch rate based on a number of variables, including dory (fishing boat) day as the unit of effort, and noted that standardisation at a finer temporal scale could give a better index of abundance. However, data were not available to conduct such analyses.

Stock status determination

Since none of the model sensitivities in the stock assessment resulted in biomass declining below $0.2B_0$, the stock is classified as **not overfished**. Catches from 2007–08 to 2011–12 (Figure 17.3) have been below both the basecase (169 t) and the lower risk estimate (150 t) of MSY in the 2006 stock assessment. On this basis, the stock is classified as **not subject to overfishing**.

FIGURE 17.3 Catch history for Spanish mackerel in the TSSMF, 2000–01 to 2011–12



Notes: **TSSMF** Torres Strait Spanish Mackerel Fishery.

17.3 Economic status

17.3.1 Key economic trends

From 2003–04 to 2006–07, the gross value of production (GVP) for the TSFF averaged $3.37 million (2011–12 dollars). In 2007–08, real GVP fell by $1.41 million (48 per cent) to $1.54 million (Figure 17.4). This fall was largely attributed to substantial declines in catches of coral trout (by 72 per cent) and Spanish mackerel (by 57 per cent). The move to sunset licences for non-Indigenous fishers in 2008 may have contributed to these declines, as could the vessel buyback during this time. In 2011–12, GVP for the TSFF was $1.13 million, 20 per cent lower than in 2010–11, mainly as a result of a fall in the average unit price received in the fishery. The TSRLF contributed approximately $0.56 million, and the TSSMF contributed approximately $0.58 million to the TSFF GVP in 2011–12.

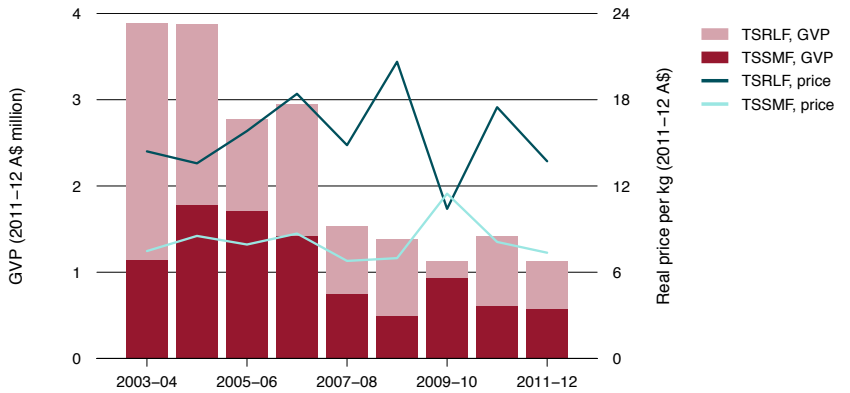
Quota leasing arrangements were introduced in 2008. The amount of quota leased out for each fishing season is determined between the TSRA and TVH sunset licence holders, based on the licence holders' level of interest (TSFFWG 2010).

Most of the quota leased out by the TSRA for the TSRLF and TSSMF has been caught in recent years. For coral trout, 43 t of the 54 t of quota leased out in 2010–11 was caught; in 2011–12, 37.8 t of the 50 t leased quota was caught. For Spanish mackerel, 74.7 t of the 85 t of leased quota was caught in 2010–11, and 78 t of the 89 t of leased quota was caught in 2011–12. Because of the approach to leasing quota in these fisheries, comparing catches with the amount of quota available is not necessarily consistent with the analyses of quota latency undertaken in other fisheries. However, uncaught quota may still reflect a decision by fishers not to catch their full quota allocation because of profit expectations.

Leasing arrangements are likely to generate some positive economic returns to the Torres Strait community, since revenue from leasing activity is invested in capacity building for TIB fishers (TSFMAC 2009). Revenue from leasing quota amounted to around $146 000 in 2010–11 and around $224 000 in 2011–12 (TSFMAC 2012; TSRA, pers. comm., 2012).

Complications with supply logistics (consistent supply of product to a point of landing) are likely to have negatively affected profitability in both the TSRLF and the TSSMF. Because fishers have limited access to freezing capacity, supply to processors has been inconsistent, leading to a negative impact on marketability and, in turn, prices and catches. The closure of a freezing facility on Murray Island in late 2010 contributed further to this problem (TSRA, pers. comm., 2011). Difficulties in employing crew, restrictions on the landing of live coral trout (since removed, see below), remoteness of the fishery and cost pressures (particularly high fuel prices) have also been cited as factors that may have constrained fishing effort and profitability in both fisheries in past seasons (TSFMAC 2009).

FIGURE 17.4 Real GVP and average price per kilogram for the TSRLF and the TSSMF, 2003–04 to 2011–12



Notes: **GVP** Gross value of production. **TSRLF** Torres Strait Reef Line Fishery. **TSSMF** Torres Strait Spanish Mackerel Fishery.

Handlining
Fisheries Research Centre, JCU

17.3.2 Management arrangements

The switch from TVH endorsements to the new leasing arrangements aims to increase community revenue to Traditional Inhabitants of the Torres Strait. The new arrangements allow quota to be leased to TVH sunset licence holders. Although total allowable catches are not applied to the fishery, the leasing of quota to TVH sunset licence holders allows some control over harvest levels and sustainability. However, no formal economic or biological targets are in place.

In September 2011, the ban on catching coral trout for live export (in place since December 2002) was removed (TSFMAC 2012). This may improve profitability in the fishery if price premiums on live fish can be achieved, and if these exceed the additional costs associated with handling live fish.

17.3.3 Performance against economic objective

Key economic management objectives for the TSFF include to manage the resource to optimise its use and to maximise opportunities for Traditional Inhabitant participation in the commercial fishery (TSPZJA 2013). The quota leasing arrangements in the fishery also provide a means to fulfill objectives under the Torres Strait Treaty, to promote economic development and employment for Traditional Inhabitants (TSFMAC 2012).

Leasing revenue is intended to provide investment funding to build the capacity of Traditional Inhabitant fishing industries. The Finfish Quota Trust account had a balance of $550 000 in March 2012, excluding revenue generated from 2011–12 leasing agreements (TSFMAC 2012). While current arrangements are generating revenues for Traditional Inhabitants, use of the resource may be impeded by a number of factors, including a lack of freezer facilities and low local demand for fishery products (TSFMAC 2012). This in turn may be constraining quota leasing revenues.

17.4 Environmental status

Strategic reassessment of the TSFF by the Australian Government Department of the Environment was still under way at the time of preparation of this report. The TSFF was last assessed under Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999* in November 2008, and under Part 13A in November 2012. Export approval was granted by including species taken in the TSFF on the List of Exempt Native Species.

No ecological risk assessments have been conducted for the TSFF. The strategic assessment report assumes that the impacts of fishing on the ecosystem are restricted to anchoring, mooring and other anthropogenic activities; vessel accidents, leading to pollution such as oil spills; and potential translocation of species via hull and anchor fouling. The report concludes that direct impacts on the environment are likely to be minimal, because of the nature of the hook-and-line fishing methods used in the fishery.

The Australian Fisheries Management Authority publishes quarterly logbook reports of interactions with threatened, endangered and protected species on its website. No interactions were reported in the TSFF in 2012.

17.5 Literature cited

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Bramble Cay
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