Chapter 10
East Coast Deepwater Trawl Sector

T Emery and R Curtotti

FIGURE 10.1 Area of the East Coast Deepwater Trawl Sector, 2020–21

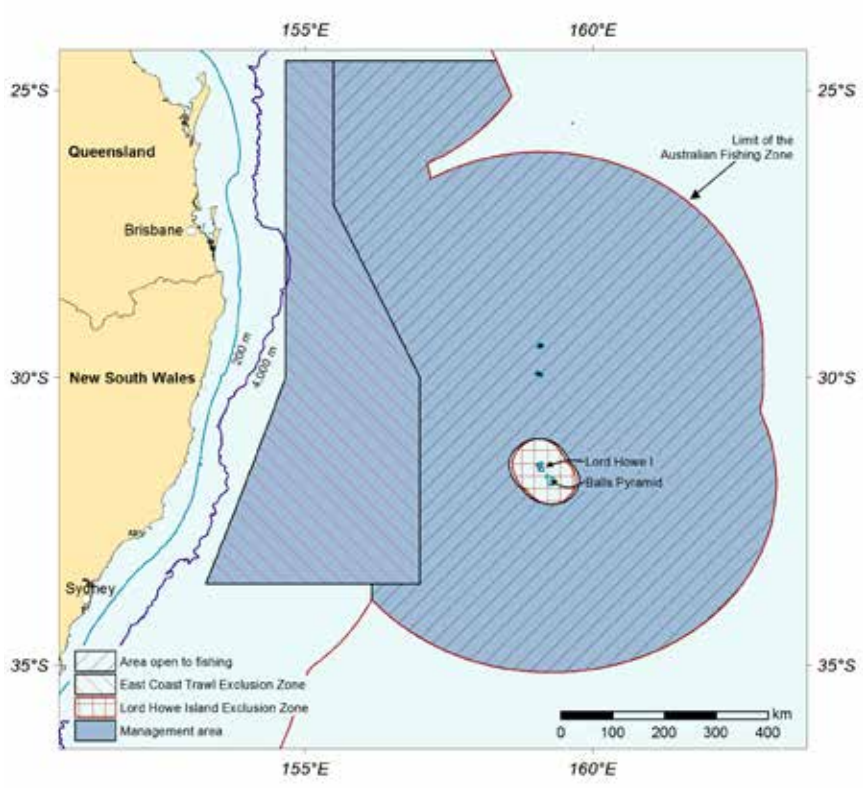


TABLE 10.1 Status of the East Coast Deepwater Trawl Sector

Biological status					
Stock	2019		2020		Comments
	Fishing mortality	Biomass	Fishing mortality	Biomass	
Alfonsino (*Beryx splendens*)					Catch in 2020-21 was below the RBC. And recent catches are unlikely to have reduced biomass below the limit reference point.
Economic status					
Very low fishing effort and high quota latency suggest NER are close to zero.					

Note: **NER** Net economic returns. **RBC** Recommended biological catch.

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

10.1 Description of the fishery

Area fished, fishing methods and key species

The East Coast Deepwater Trawl Sector (ECDTS) is located beyond the 4,000 m isobath of the continental margin off eastern Australia (Figure 10.1). The ECDTS began as an exploratory fishery in the early 1990s, primarily taking small quantities of orange roughy (*Hoplostethus atlanticus*) and other deepwater species near Lord Howe Rise (Figure 10.1). The northern part of the fishery became part of the Coral Sea Fishery in 1994, and the southern part was amalgamated with the Southern and Eastern Scalefish and Shark Fishery (SESSF) in 2000.

Operators in the ECDTS of the SESSF are authorised by the Australian Fisheries Management Authority (AFMA) to fish using midwater trawl, demersal otter trawl, Danish-seine trawl and pair trawling gears. Fishing in the 1990s mostly targeted orange roughy around Lord Howe Rise. Since 2000, the fishery has targeted mostly alfonsino (*Beryx splendens*). Historically, important byproduct species have included blue-eye trevalla (*Hyperoglyphe antarctica*) and boarfish (Pentacerotidae). Boarfish has a catch limit of 200 t to regulate catch, and orange roughy has a 50 t incidental catch limit. If catches exceed these limits, the fishery would be closed for the remainder of the season, and AFMA would consider whether any further management or advice is necessary.

Management methods

The fishery operates in accordance with the SESSF harvest strategy framework (HSF) (AFMA 2020; see Chapter 8). Fishers must have statutory fishing rights for the Commonwealth Trawl Sector (CTS) to be granted access to the ECDTS. When the SESSF was established, AFMA established permanent trawl exclusion areas to protect the eastern Australian seamounts, and areas around Lord Howe Island and Ball's Pyramid (Figure 10.1).

The ECDTS area is adjacent to Australia's extended continental-shelf jurisdiction (recognised in 2008 under the United Nations Convention on the Law of the Sea). New Zealand and Australian vessels fish in adjacent high-seas waters of the South Pacific Regional Fisheries Management Organisation Convention area. The distributions of most deepwater species taken by this sector extend well beyond the Australian Exclusive Economic Zone (EEZ), into the high seas, and across Lord Howe Rise and Challenger Plateau to the New Zealand EEZ.

Fishing activity

Effort during the 1990s was low and variable, with small quantities of orange roughy and other species taken around Lord Howe Rise. Since 2000, when reliable records began, effort in the ECDTS has also been variable, with the number of active vessels peaking at 6 in 2001 (108 trawl-hours) and the level of effort in trawl-hours peaking in 2011 (160 trawl-hours), when only 1 vessel was active. There was no effort in the fishery between 2013–14 and 2017–18 or in 2020–21. A small amount of effort was reported during 2018–19 (9 trawl-hours) and 2019–20 (14 trawl-hours).

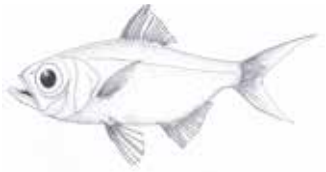
TABLE 10.2 Main features and statistics for the ECDTS

Fishery statistics a	**2019–20 fishing season**			**2020–21 fishing season**	
Stock	**TAC (t)**	**Catch (t)**	**GVP (2018–19)**	**TAC (t)**	**Catch (t)**
Alfonsino	1,017	Confidential	Confidential	1,017	0
Total fishery	**1,267** b	**Confidential**	**Confidential**	**1,267** b	**0**
Fishery-level statistics					
Effort (trawl-hours)	14			0	
Fishing permits	9			0	
Active vessels	1			0	
Observer coverage	7 days			0	
Fishing methods	Demersal and midwater trawl				
Primary landing ports	Formerly Sydney (NSW), Brisbane (Qld)				
Management methods	Input controls: limited entry, boat SFRs, permits Output controls: TAC and ITQ (alfonsino); catch or trigger limits (orange roughy and boarfish)				
Primary markets	Domestic: frozen or chilled				
Management plan	Southern and Eastern Scalefish and Shark Fishery Management Plan 2003				

a Fishery statistics are provided by fishing season, unless otherwise indicated. Fishing season is 1 May to 30 April. **b** Includes a 200 t non-tradeable catch limit for boarfish and a 50 t incidental catch limit for orange roughy.
Notes: **GVP** Gross value of production. **ITQ** Individual transferable quota. **SFR** Statutory fishing right. **TAC** Total allowable catch.

10.2 Biological status

Alfonsino (*Beryx splendens*)



Line drawing: William Murray

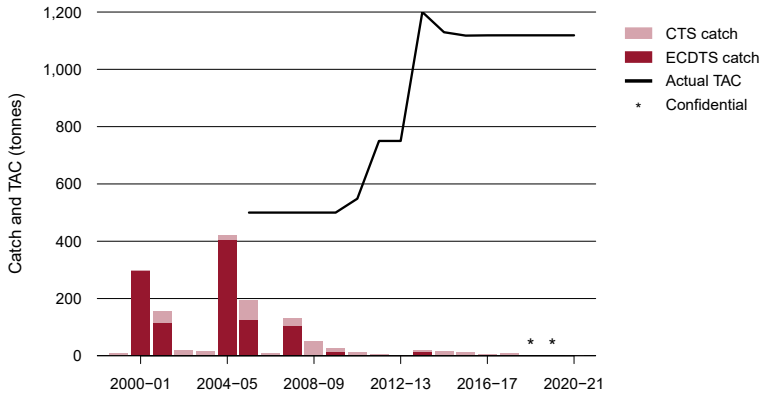
Stock structure

Alfonsino is a widely occurring benthopelagic species that aggregates around seamounts and features on the upper continental slope. Alfonsino in Australia's EEZ is managed as a single management unit across the CTS and the ECDTS, with a single total allowable catch (TAC) that applies only within the EEZ. Alfonsino is caught along the continental-shelf break in the SESSF and the East Coast Deep Water Zone (ECDWZ). The alfonsino catch in the ECDWZ has largely been taken in an area south-east of Lord Howe Island – approximately half of this area is outside the Australian Fishing Zone (AFZ), effectively straddling both the ECDWZ and the high seas (Morison et al. 2013). The biological stock structure of alfonsino fished in the ECDTS is unknown. It is likely that alfonsino on the northern Lord Howe Rise constitutes a straddling stock, extending from within the Australian EEZ out into the high seas.

Catch history

Fishing in the ECDTS has been intermittent. Catch and catch-per-unit-effort data are sporadic, fluctuating without any clear trend. Catches of alfonsino, the main target species, have been low in most years, usually below 100 t. Catches peaked at 407 t in the 2004–05 fishing season (Figure 10.2). Zero catch was taken in the ECDTS between the 2013–14 and 2017–18 fishing seasons, as well as in the 2020–21 fishing season (Figure 10.2).

FIGURE 10.2 Catch and TAC for alfonsino in the ECDTS and the CTS, 1999–2000 season to 2020–21 season



Notes: **CTS** Commonwealth Trawl Sector. **TAC** Total allowable catch.

Stock assessment

Alfonsino in Commonwealth fisheries is managed as a tier 3 stock under the SESSF HSF (AFMA 2020). The 2013 tier 3 analysis (Klaer 2013) informed the management of the stock for the 2020–21 fishing season.

The limited, patchy and highly variable nature of catch-and-effort data for alfonsino in the ECDTS resulted in the Deepwater Resource Assessment Group rejecting early attempts at a tier 4 analysis in 2007 and recommending that alfonsino be assessed using a tier 3 analysis. A 2011 tier 3 analysis (Klaer 2012) used age-frequency data (derived from length frequencies) and otoliths collected in 2007 and 2009. Catch-curve analyses estimated a lower total mortality than previous analyses and indicated that fishing mortality was less than F_{48} (the fishing mortality that would be expected to result in a spawning stock biomass of 48% of the unfished level [$0.48SB_0$; the target reference point], on average, in the long term).

The tier 3 analysis was updated in 2013 (Klaer 2013), using catch-at-age data up to 2010 and New Zealand data from the high-seas fishery on northern Lord Howe Rise. The 2013 analysis estimated current fishing mortality at $F_{CURR} = 0.022$, which was well below the estimated $F_{RBC} = 0.149$ (Klaer 2013). This produced a total alfonsino recommended biological catch (RBC), including the high seas, of 1,228 t. The AFZ RBC, which was calculated as the total RBC minus the expected future high-seas catch based on average catch for the past 4 years, was 1,070 t. After applying the tier 3 discount factor (5%; AFMA 2019), AFMA implemented a 3-year TAC of 1,017 t from the 2014–15 to 2016–17 fishing seasons, with 10% overcatch and undercatch provisions. This TAC has been subsequently rolled over each year due to negligible catches.

Stock status determination

The 2013 tier 3 analysis (Klaer 2012) estimated that the fishing mortality rate was below the target fishing mortality rate that would achieve a spawning biomass of $0.48SB_0$. There is no evidence to suggest the stock has been reduced to below the limit reference point given the negligible level of fishing since this analysis was undertaken. The stock is therefore classified as **not overfished**.

For the 2020–21 fishing season, total catch and discards were zero. The stock is therefore classified as **not subject to overfishing**.

10.3 Economic status

Key economic trends

Estimates of net economic returns are not available for the ECDTS, and estimates of the sector's gross value of production are confidential. The long distance to fishing grounds for the CTS fleet and use of trawl gear for targeting this species means that fuel costs are likely to make up a higher proportion of total fishing costs in the ECDTS than for the key CTS fishing grounds. Higher expected profit in the CTS and other fisheries that permit holders operate in may be a key driver of low levels of activity in the ECDTS.

Performance against economic objective

The fishery's performance against the economic objective is uncertain. The high level of latency, in terms of the proportion of the TAC uncaught, and sporadic catch, suggests that expected profit in the sector is insufficient to justify fishing effort, indicating low net economic returns. Given these characteristics, low-cost management arrangements are appropriate. However, management structures may require review if catch begins to trend upwards.

10.4 Environmental status

The ECDTS has not been assessed separately under AFMA's ecological risk assessment process. Orange roughy was declared conservation-dependent in 2006. The Orange Roughy Conservation Programme (AFMA 2006) was replaced by the Orange Roughy Rebuilding Strategy in 2014 (AFMA 2015). There is no targeted fishing for this species in the ECDTS, and there has been no reported catch in the fishery since 2003.

In accordance with accreditation under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act; see Chapter 1, 'Protected species interactions'), AFMA publishes and reports quarterly on interactions with protected species on behalf of Commonwealth fishing operators to the Department of Agriculture, Water and the Environment (DAWE). No interactions with species protected under the EPBC Act were reported in the ECDTS for 2020. Interactions with protected species and impacts on benthic habitats are unlikely to be of concern because of low effort in the fishery in recent years.

These reported interactions with protected species form part of the ongoing monitoring by DAWE of the performance of fisheries within their accreditation under the EPBC Act.

10.5 References

AFMA 2006, *Orange Roughy Conservation Programme*, Australian Fisheries Management Authority, Canberra.

——2015, *Orange roughy (*Hoplostethus atlanticus*) rebuilding strategy 2014*, Australian Fisheries Management Authority, Canberra.

——2020, *Harvest strategy framework for the Southern and Eastern Scalefish and Shark Fishery,* 2009 amended 2020, Australian Fisheries Management Authority, Canberra.

Klaer, N 2012, 'Yield, total mortality values and tier 3 estimates for selected shelf and slope species in the SESSF 2011', in GN Tuck (ed.), *Stock assessment for the Southern and Eastern Scalefish and Shark Fishery 2011*, part 2, Australian Fisheries Management Authority, Canberra, & CSIRO Marine and Atmospheric Research, Hobart.

——2013, 'Yield, total mortality values and tier 3 estimates for selected shelf and slope species in the SESSF 2012', in GN Tuck (ed.), *Stock assessment for the Southern and Eastern Scalefish and Shark Fishery 2012*, part 2, Australian Fisheries Management Authority, Canberra, & CSIRO Marine and Atmospheric Research, Hobart.

Morison, AK, Knuckey, IA, Simpfendorfer, CA & Buckworth, RC 2013, *South East Scalefish and Shark Fishery: draft 2012 stock assessment summaries for species assessed by GABRAG, ShelfRAG & Slope/DeepRAG*, report for the Australian Fisheries Management Authority, Canberra.