

Chapter 6

North West Slope Trawl Fishery

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FIGURE 6.1 Area fished in the North West Slope Trawl Fishery, 2016–17

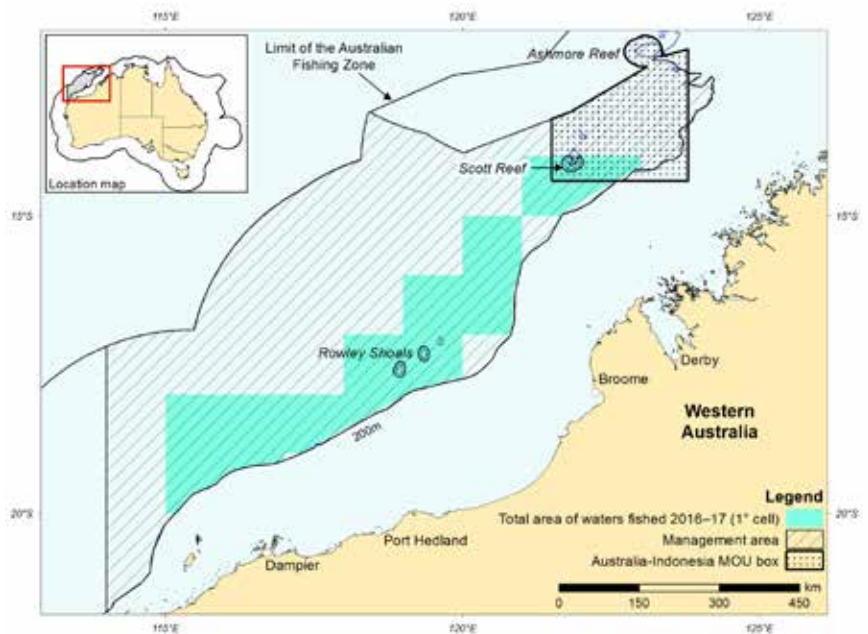


TABLE 6.1 Status of the North West Slope Trawl Fishery

Status	2016		2017		Comments
Biological status	Fishing mortality	Biomass	Fishing mortality	Biomass	
Scampi (<i>Metanephrops australiensis</i> , <i>M. boschmai</i> , <i>M. velutinus</i>)					Trawl effort is low compared with historical levels, and nominal catch-per-unit-effort is relatively high.
Economic status	Estimates of NER are not available for the fishery, although the high degree of latent effort in the fishery indicates that NER are likely to be low.				

Note: NER Net economic returns.

Fishing mortality	<div></div> Not subject to overfishing	<div></div> Subject to overfishing	<div></div> Uncertain
Biomass	<div></div> Not overfished	<div></div> Overfished	<div></div> Uncertain



Hauling the gear
AFMA

6.1 Description of the fishery

Area fished

The North West Slope Trawl Fishery (NWSTF) operates off north-western Australia from 114°E to 125°E, roughly between the 200 m isobath and the outer boundary of the Australian Fishing Zone. A large area of the Australia–Indonesia MOU Box (an area off north-western Western Australia where Indonesian fishers may operate using only traditional methods) falls within the NWSTF (Figure 6.1). There have been recent changes to the boundary of this fishery to more closely align with the 200 m isobath.

Fishing methods and key species

The NWSTF has predominantly been a scampi fishery in recent years, using demersal trawl gear. The key species is Australian scampi (*Metanephrops australiensis*). Smaller quantities of velvet scampi (*M. velutinus*) and Boschma's scampi (*M. boschmai*) are also harvested. Mixed snappers (Lutjanidae) have historically been an important component of the catch. At the height of the fishery, in the late 1980s and early 1990s, deepwater prawns, particularly red prawn (*Aristaeomorpha foliacea*), were targeted and dominated the total catch. However, difficulties in maintaining markets for deepwater prawns led to a decline in the number of vessels operating in the fishery and a return to primarily targeting scampi.

Management methods

In 2011, the Australian Fisheries Management Authority (AFMA) updated the harvest strategy for the western trawl fisheries (NWSTF and Western Deepwater Trawl Fishery—WDTF; AFMA 2011). Given the relatively low levels of catch, the purpose of the harvest strategy is to allow fishing at current levels without additional management costs. The revised strategy uses historical catches and catch rates from 2000 to 2010 as the basis for triggers for further management actions, if fishing activity increases. An annual review determines whether these catch triggers have been reached. It is not clear whether the maximum catch over the chosen reference period (2000–2010) is a valid indicator of sustainable harvest levels, given the nearly 30 years of exploitation in this fishery, or whether catch rates over the reference period are representative of unfished biomass levels. Given the recent boundary amendments to the Western Australian Offshore Constitutional Settlement arrangement, AFMA has commenced a review of the current harvest strategy, with a focus on the triggers for mixed snapper species.

The 2010 stock assessment of scampi in the NWSTF (Chambers & Larcombe 2015) may provide information for refining catch and catch-rate triggers for these species.

Fishing effort

Fishing commenced in the NWSTF in 1985. The number of active vessels peaked at 21 vessels in 1986–87 and declined through the 1990s before increasing to 10 vessels in 2000–01 and 2001–02. Vessel numbers have since decreased to stabilise at one or two vessels each year since 2008–09 (Table 6.2). Historical effort, in trawl-hours, increased slightly in the 2016–17 fishing season and largely follows the same trend as the number of active vessels (Figure 6.2). Fishing effort often increases when boats cease to operate in the Northern Prawn Fishery.

TABLE 6.2 Main features and statistics for the NWSTF

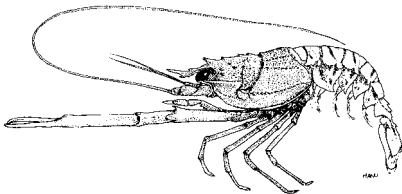
Fishery statistics a		2015–16 fishing season		2016–17 fishing season		
Stock	TAC (t)	Catch (t)	Real value (2014–15)	TAC (t)	Catch (t)	Real value (2015–16)
Scampi (<i>Metanephrops australiensis</i> , <i>M. boschmai</i> , <i>M. velutinus</i>)	–	33.0	Confidential	–	37.6	Confidential
Total fishery	–	54.8	Confidential	–	57.8	Confidential
Fishery-level statistics						
Effort	117 days; 2,241 trawl-hours			114 days; 2,869 trawl-hours		
Fishing permits	5			4		
Active vessels	2			2		
Observer coverage	16 days (14%)			12 days (9%)		
Fishing methods	Demersal trawl					
Primary landing ports	Darwin (Northern Territory), Point Samson (Western Australia)					
Management methods	Input controls: limited entry, gear restrictions Output controls: harvest strategy contains catch trigger for scampi, deepwater prawns and some finfish (redspot emperor and saddletail snapper)					
Primary markets	Domestic: Brisbane, Sydney, Perth—frozen International: China, Hong Kong, Japan, Singapore—frozen					
Management plan	North West Slope Trawl Fishery and Western Deepwater Trawl Fishery: statement of management arrangements (AFMA 2012)					

a Fishery statistics are provided by fishing season, unless otherwise indicated. Fishing season is 1 July–30 June. Real-value statistics are by financial year.

Notes: TAC Total allowable catch. – Not applicable.

6.2 Biological status

Scampi (*Metanephrops australiensis*, *M. boschmai* and *M. velutinus*)



Line drawing: FAO

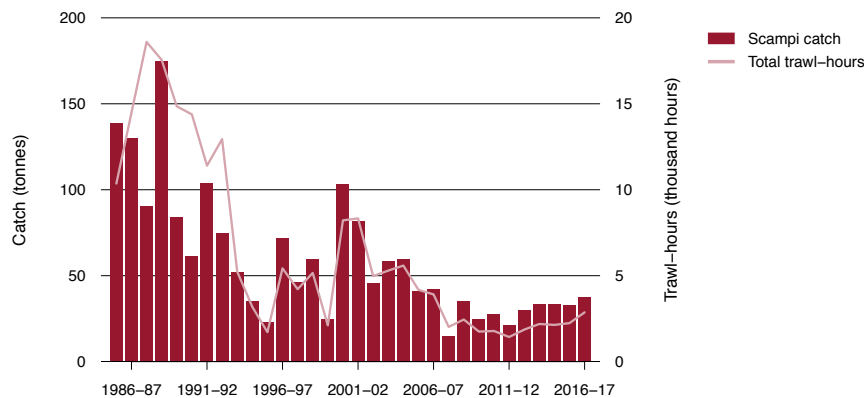
Stock structure

The NWSTF targets several species of scampi. The stock structure of these species (predominantly *M. australiensis*, *M. boschmai* and *M. velutinus*) is not known, and they are grouped into a multispecies stock for management and assessment purposes. Scampi in the NWSTF are therefore assessed as a single stock.

Catch history

Trends in total catch have largely followed trends in active vessels and fishing effort (Figure 6.2). Scampi catch in recent years has increased slightly from a relatively stable 30 t in 2012–13 to 37.6 t for the 2016–17 fishing season. Total catch has primarily consisted of scampi, with the exception of 2011–12, when mixed snapper accounted for a large proportion of the catch (32 t of snapper and 21 t of scampi).

FIGURE 6.2 Catch and effort for scampi in the NWSTF, 1985–86 to 2016–17



Source: Australian Fisheries Management Authority

Stock assessment

In 2010, the scampi stock (predominantly *M. australiensis*, *M. boschmai* and *M. velutinus*) was assessed using surplus production models (Chambers & Larcombe 2015). This assessment indicated that scampi biomass at the end of 2008 was most likely between 65 per cent and 85 per cent of unfished biomass. The fishing mortality rate in recent years was estimated to have been well below the rate that would achieve maximum sustainable yield.

Wallner and Phillips (1995) noted that scampi catch rates in the NWSTF tended to decline quickly in response to fishing but recovered after grounds were rested for relatively short periods. They suggested that scampi might spend a greater proportion of time in burrows after the grounds have been trawled, temporarily reducing their catchability. If scampi respond to fishing in this way, catch-per-unit-effort (CPUE) should decline more quickly than abundance. Stock assessments based on CPUE would tend to be precautionary (that is, the stock would be less depleted than indicated by CPUE).

Scampi CPUE has been close to historical highs since the 2010 stock assessment, suggesting that biomass remains high. Trawl effort has been low over the same period (Figure 6.2), which suggests low levels of fishing mortality during this time.

The possible conservative nature of CPUE indices used in stock assessments suggests that, provided scampi remain a primary target for the fishery, use of nominal (unstandardised) CPUE and annual catch is probably adequate for assessment purposes. Standardised CPUE series should be produced every 3–5 years, and assessment models fitted to periodically update relative biomass estimates. Analysis of the mean carapace length of Australian scampi measured by observers could provide a comparative indicator of total mortality.

Stock status determination

Chambers and Larcombe (2015) assessed the scampi stock as not overfished and not subject to overfishing in 2008–09. Since then, catch and effort have remained low (Figure 6.2), and nominal catch rates are reasonably high compared with historical levels. Based on these indicators and information from the previous stock assessment, scampi in the NWSTF are classified as **not overfished** and **not subject to overfishing**.

6.3 Economic status

Key economic trends

Economic surveys of the NWSTF have not been undertaken. The gross value of production for the fishery has been confidential since 2006–07 because five or fewer vessels have been active in the fishery. Four fishing permits were issued for the 2016–17 fishing season, and two vessels were active in the fishery. The low number of active vessels compared with the number of permits issued indicates that there is latent effort in the fishery and suggests potentially low net economic returns (NER), because fishers are not fully using their right to fish. The volume landed of the high-value scampi species increased by 14 per cent in 2016–17, greater than overall fishery catch, which increased by 5 per cent. The increase in catch and the change in composition of the catch towards high-value scampi suggest that there may have been some improvement in NER from 2015–16 to 2016–17. However, this needs to be balanced against an overall increase in trawl-hour effort, which increased by 28 per cent in the season, indicating an increase in fishing costs. As a result, any change in NER that may have occurred in the 2016–17 season is unlikely to have changed the overall economic performance of the fishery.

Management arrangements

Under the harvest strategy, the fishery is managed through input controls and catch triggers. As higher catch triggers are reached, the harvest strategy may require more sophisticated stock assessment techniques to be applied (AFMA 2011). Such stock assessments would inform potential changes to management arrangements for the fishery, including a change to output controls, if catch increased sufficiently to justify such measures.

Performance against economic objective

The fishery's performance against the economic objective is uncertain because there is no explicit economic target or supporting analyses. However, the relatively low value of the fishery justifies the low-cost management approach currently applied, given the low levels of effort.

6.4 Environmental status

The NWSTF is included in the List of Exempt Native Specimens under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is exempt from export controls until 18 December 2020.

Chondrichthyans and teleosts caught in the NWSTF and the WDTF have been assessed to level 3 of the AFMA ecological risk assessment framework (Zhou, Smith & Fuller 2009). None of the species assessed were found to be at high risk at the current level of fishing effort.

AFMA publishes quarterly logbook reports of interactions with protected species on its website. No interactions with species protected under the EPBC Act were reported in the NWSTF in 2017.

6.5 References

AFMA 2011, *Harvest strategy for the Western Deepwater Trawl Fishery and North West Slope Trawl Fishery 2011*, Australian Fisheries Management Authority, Canberra.

—— 2012, *North West Slope Trawl Fishery and Western Deepwater Trawl Fishery statement of management arrangements*, AFMA, Canberra.

Chambers, M & Larcombe, J 2015, 'North West Slope Trawl Fishery scampi assessment', in J Larcombe, R Noriega & I Stobutzki (eds), *Reducing uncertainty in fisheries stock status*, ABARES research report, Canberra.

Wallner, BG & Phillips, BF 1995, 'Development of a trawl fishery for deepwater metanephropid lobsters off the northwest continental slope of Australia: designing a management strategy compatible with species life history', *ICES Marine Science Symposium*, vol. 199, pp. 379–90.

Zhou, S, Smith, T & Fuller, M 2009, *Rapid quantitative risk assessment for fish species in seven Commonwealth fisheries*, report to AFMA, Canberra.