

**Submission to the Department of the Environment and Water Resources
on behalf of the NSW fishing industry seeking ongoing export approval for the
spanner crab component of the NSW Ocean Trap and Line Fishery
7 November 2007**

Introduction

This submission seeks to provide information based on the headings contained within Appendix B of the revised *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition* approved by the Minister for the Environment and Water Resources on 16 August 2007. The purpose of the submission is to seek export approval for the spanner crab component of the Ocean Trap and Line Fishery (OTLF) separate to the fish trapping and line fishing components.

The Environmental Impact Statement (EIS) for the OTLF¹, published in March 2006, provides a review of the existing operation of the fishery at that time, an assessment of the risks associated with its operation, and the measures proposed to address the risks, among other things.

This submission provides cross references to the sections of the EIS and to the approved Fishery Management Strategy (FMS)², published in November 2006, relevant to spanner crab activities and includes the relevant page numbers. Where applicable, fishery and catch information has been updated with the most recent available data and included within this submission. It also includes a report of the spanner crab sector against the performance indicators and trigger points set out in the FMS.

1. Description of the fishery

Species

Target: spanner crab (*Ranina ranina*). Refer to Table B2.14 (pp 112-113) and Appendix B1 (pg 533) of the EIS for biological information.

The *Fisheries Management (Ocean Trap and Line Share Management Plan) Regulation 2006*³ ("Share Management Plan") prescribes the use of a spanner crab net to take spanner crabs only from ocean waters that are north of Korogoro Point (near Hat Head). No other species are permitted to be landed using a spanner crab net.

Bycatch: see B2.4.4.2 (Risk to primary, key secondary and secondary species from discarding) (pp152-153) of the EIS.

¹ Available at www.fisheries.nsw.gov.au/commercial/commercial2/otl_-_eis

² Available at www.fisheries.nsw.gov.au/___data/assets/pdf_file/0017/101348/OTL-FMS.pdf

³ Available at [www.legislation.nsw.gov.au/summarize/inforce/s/1/?SRTITLE=%22Fisheries%20Management%20\(Ocean%20Trap%20and%20Line%20Share%20Management%20Plan\)%20Regulation%202006%22&nohits=y](http://www.legislation.nsw.gov.au/summarize/inforce/s/1/?SRTITLE=%22Fisheries%20Management%20(Ocean%20Trap%20and%20Line%20Share%20Management%20Plan)%20Regulation%202006%22&nohits=y)

Management Arrangements

The management arrangements applicable to the spanner crab sector are summarised in section 3 (The Harvest Strategy) (pp 9-20), section 4 (Management Controls and Administration) (pp 21-40) and section 9 (Goals, Objectives and Management Responses) (pp 41-69) of the FMS. Note in particular that a spawning closure applies to male and female spanner crabs through November to January each year (see 'Cross jurisdictional management arrangements' in section 2 of this submission).

Changes made to the management arrangements since the FMS was published are outlined in section 2 of this submission.

Fishing Method / Gear Type

See B1.3.1.2 (Spanner crab net) (pp 33-34) of the EIS and section 3.1.4 (Fishing gear used in the fishery) (pg 12) of the FMS.

Fishing Area

See section 1.2 (The Ocean Trap and Line Fishery) (pg 2), section 3.1.2 (Area of operation) (pg 9) and section 3.1.3 (Activities endorsed in the fishery) (pg 11) of the FMS, noting that spanner crabbing is only authorised north of Korogoro Point.

Number of Fishers

Access to the spanner crab fishery is limited to shareholders or their nominated fishers who hold a fishing licence with one of the two spanner crab endorsement types attached (see section 3.1.3 of the FMS (pg 11)).

As at October 2007, 46 fishing businesses held spanner crab northern zone shares, and 9 fishing businesses held spanner crab southern zone shares.

Since 2001/02, an average of 25 fishers have operated in the spanner crab northern zone, and 4 fishers in the southern zone.

Allocation between sectors

- See section 8 (Interaction with Other Fisheries) (pp 36-40) of the FMS, and in particular section 8.2.4 (pg 39).
- See B2.4.2.6 (Catches of ocean trap and line species in other fisheries) (pp 138-144) of the EIS with updated data provided in Table 1 below.
- Table B2.23 (page 140) of the EIS provides a comparison of estimates of catches of spanner crab taken by NSW and other commercial and recreational fisheries (based on 2001/02 data. Updated data for NSW commercial fisheries are provided in Table 1 below. The current record of spanner crab catches for all Commonwealth and Victorian fisheries remains at zero. There is no reliable quantitative estimate for the NSW recreational fishery catch of spanner crab, though it is thought to be negligible (refer to section 4 of this submission).

- See also Appendix B1 (Overview of the primary and key secondary species in the OTLF) (pp 533-534) of the EIS.

Table 1: Total reported landings (kg) of spanner crab taken by NSW commercial fisheries

Financial Year	Estuary General	Estuary Prawn Trawl	Ocean Hauling	Ocean Fish Trawl	Ocean Prawn Trawl	Ocean Trap and Line	Total NSW Commercial Production	% OTL of Total NSW Production
2002/03	-	-	-	-	16	228,165	228,181	99.9
2003/04	-	-	-	-	6	220,333	220,338	99.9
2004/05	-	-	-	-	27	120,812	120,839	99.9
2005/06	-	-	-	-	48	129,289	129,337	99.9
2006/07*	-	-	-	-	49	103,571	103,620	99.9

* Records not complete at this stage

Governing legislation/ fishing authority

See section 2 (Relevant Legislation and Policy) (pp 4-8), section 3.1.3 (Activities endorsed in the fishery) (pg 11), section 4.2 (Commercial fishing licences) (pp 22-23) and section 4.3 (Fishing boat licensing) (pp 23-24) of the FMS.

Relevant current legal instruments include:

- *Fisheries Management Act 1994*⁴
- *Fisheries Management (General) Regulation 2002*⁵
- *Fisheries Management (Supporting Plan) Regulation 2006*⁶
- *Fisheries Management (Ocean Trap and Line Share Management Plan) 2006*.

Status of export approval under the EPBC Act

The spanner crab fishery is currently a component of the approved WTO for the OTLF which is scheduled to expire on 14 December 2007.

2. Management

Changes to management arrangements

The arrangements have progressed since publication of the FMS with the commencement of category 1 share management arrangements in the Ocean Trap and Line Fishery, including the spanner crab sector. This involved implementation of the Share Management Plan, the Supporting Plan encompassing rules that apply to multiple commercial fisheries, and a range of changes to the Act and General Regulation to complement the introduction of share management. The Share Management Plan and

⁴ Available at www.legislation.nsw.gov.au/summarize/inforce/s/1/?TITLE=%22Fisheries%20Management%20Act%201994%20No%2038%22&nohits=y

⁵ Available at [www.legislation.nsw.gov.au/summarize/inforce/s/1/?SRTITLE=%22Fisheries%20Management%20\(General\)%20Regulation%202002%22&nohits=y](http://www.legislation.nsw.gov.au/summarize/inforce/s/1/?SRTITLE=%22Fisheries%20Management%20(General)%20Regulation%202002%22&nohits=y)

⁶ Available at [www.legislation.nsw.gov.au/summarize/inforce/s/1/?SRTITLE=%22Fisheries%20Management%20\(Supporting%20Plan\)%20Regulation%202006%22&nohits=y](http://www.legislation.nsw.gov.au/summarize/inforce/s/1/?SRTITLE=%22Fisheries%20Management%20(Supporting%20Plan)%20Regulation%202006%22&nohits=y)

associated regulatory amendments took effect on 5 February 2007 and were explained in a document sent to DEWR at the time titled '*Information Paper: New commercial fishery licensing and management arrangements commencing on 5 February 2007*⁷.

Access to the fishery is limited to shareholders in the fishery and/or their nominated fishers who hold a fishing licence with the appropriate endorsement. The Share Management Plan stipulates the minimum number of shares that a shareholder must hold to be eligible for an endorsement in the OTLF, including either of the two spanner crab endorsements. Of note is that the Share Management Plan (at clause 6) requires all existing shareholders to hold the minimum shareholding level within 2½ years from the commencement of the Plan on 5 February 2007, thus reducing the total number of available endorsements over time.

For relevant licensing arrangements, see sections 4.2 (Commercial fishing licences) & 4.3 (Fishing boat licensing) (pp 22-23) of the FMS, noting that significant reforms to the commercial fisheries licensing arrangements occurred in February 2007 as described in the publicly available Information Paper issued at that time⁷.

In accordance with Management Response 2.1(i) in the FMS (pg 51), NSW DPI has undertaken a preliminary assessment of the feasibility of implementing a quota system for the fishery and is currently drafting a shareholder consultation paper.

Management actions foreshadowed in the approved FMS

See Management Response 2.1(i) (pg 51) and Appendix 3 (pp 102-103) of the FMS. Regulation amendments to implement changes to the dilly frame size, boat limits and dilly identification are currently being drafted. The anticipated commencement date, subject to the workload and priorities of the Parliamentary Counsel's Office, is March 2008.

Performance monitoring and review

- Refer to section 10 (Performance Monitoring and Review) (pp 70-82) of the FMS and see Attachment 1 of this submission for a spanner crab centric assessment against the relevant performance indicators and trigger points.
- Part 2 of the Share Management Plan lists the objectives, performance indicators and triggers for review for the plan.
- The spanner crab fishery is monitored annually as part of the NSW DPI Resource Assessment Process. This process is an annual review and interpretation of data available for each primary/target and key secondary/conditional target/byproduct species (or species complex) by fisheries scientists in accordance with the Resource Assessment Framework. See section 5 of this submission for additional information.

⁷ Also available at www.fisheries.nsw.gov.au/__data/assets/pdf_file/0015/106512/information-paper.pdf

Compliance

- See B1.6.17 (Compliance) (pp 64-66) of the EIS and section 5 (Compliance) (pp27-28) of the FMS.
- For the 2006/07 period, the compliance rate was 89% in the OTLF.

Consultation processes

- See section 7 (Consultation) (pp 35-36) of the FMS.
- Section 284 of the Act identifies the type of items for which NSW DPI is required to consult with the public, and the public consultation procedure.

Cross jurisdictional management arrangements

- A seasonal closure prohibits the taking and landing of spanner crabs in both NSW and Queensland waters for the period 20 November to 20 December each year. NSW further prohibits the taking and landing of female spanner crabs from 20 October each year to 20 January in each succeeding year to protect ovigerous females from any discard mortality impacts (see Chapter B2.4.4.2 (Risk to primary, key secondary and secondary species from discarding) (pp 151-153) of the EIS.
- Researchers from NSW DPI and the Queensland Department of Primary Industries and Fisheries (QDPI&F) continue to work jointly on the Long Term Monitoring Program (LTMP), a fishery independent monitoring program for the east coast spanner crab fishery. Monitoring has been undertaken simultaneously in both jurisdictions from 2005 and is planned to continue.

Compliance with TAPs, recovery plans etc and relevant domestic and international agreements

None of direct influence in the spanner crab fishery.

3. Research and Monitoring

Results of any research completed relevant to the fishery

- See section 6 (Research) (pp 28-34) of the FMS and note that, while not specific to spanner crabs, a strategic plan for primary industry research in NSW is available: *NSW Department of Primary Industries Science and Research Strategy 2005–08*⁸.
- It should be noted that a significant amount of research has been conducted on spanner crabs in NSW in the late 1980's, through the 1990's and in the early 2000's which set the basis for the existing fishery input controls, including: Kennelly *et al*

⁸ Available at www.dpi.nsw.gov.au/aboutus/resources/majorpubs/corporate-publications/pi-sr-strategy-2005-08

(1990)⁹, Kennelly (1992)¹⁰, Kennelly & Watkins (1994)¹¹, Kennelly & Scandol (1999)¹² and Kennelly & Scandol (2002)¹³.

- A collaborative Queensland/NSW FRDC funded research project "*Reducing uncertainty in the assessment of the Australian Spanner Crab Fishery*" (FRDC Project Number 2003/046) is in progress and due to be completed shortly. The project is summarised in the QDPI&F's Annual Report¹⁴ for the fishery as follows:

Fisheries in Queensland and NSW exploit the same genetic stock, however the differing monitoring and assessment strategies in the two states made it difficult to evaluate the performance of the stock as a whole.

A project was developed in 2003 to further investigate growth rates and age at recruitment, and work towards a unified approach to assessing and monitoring the Queensland and NSW spanner crab fisheries. The aims of the project and progress as reported in the QDPI&F 2006 Annual Report are:

Aim 1: To determine whether a new chemical lipofuscin assay technique can be used to estimate the age of spanner crabs

During the process of ageing, most animals accumulate a metabolic waste product called lipofuscin. The project seeks to correlate the concentration of lipofuscin with the age of spanner crabs, then to compare lipofuscin concentrations of wild-caught crabs to a laboratory population to determine the age of the wild-caught animals.

Progress

The age determination process is in progress. A large sample of spanner crab eyestalks have been sent to the Melbourne University Veterinary Laboratory (Werribee, Vic.) for histological processing prior to being assayed for lipofuscin at the Central Ageing Facility (Queenscliff, Vic.). These samples will hopefully provide evidence of lipofuscin concentration frequency modes that can be assigned to age classes, and thus indicate how many age classes there are in the exploited stock.

⁹ Kennelly, S.J., Watkins, D. and Craig, J.R. (1990). Mortality of discarded spanner crabs *Ranina ranina* (Linnaeus) in a tangle-net fishery - laboratory and field experiments. *Journal of Experimental Marine Biology and Ecology* **140**(1-2), pp. 39-48.

¹⁰ Kennelly, S.J. (1992). Distributions, abundances and current status of exploited populations of spanner crabs *Ranina ranina* off the east coast of Australia. *Marine Ecology Progress Series* **85**(3), pp. 227-235.

¹¹ Kennelly, S.J. and Watkins, D. (1994). Fecundity and reproductive period, and their relationship to catch rates of spanner crabs, *Ranina ranina*, off the east coast of Australia. *Journal of Crustacean Biology* **14**, pp. 146-150.

¹² Kennelly, S.J. and Scandol, J.P. (1999). Relative Abundances of Spanner Crabs and the Development of a Population Model for Managing the NSW Spanner Crab Fishery. FRDC Project No. 96/135. NSW Fisheries Final Report Series No. 21. ISSN 1440-3544. NSW Fisheries Research Institute, Cronulla NSW.

¹³ Kennelly, S.J. and Scandol, J.P. (2002). Using a fishery independent survey to assess the status of a spanner crab (*Ranina ranina*) fishery: univariate analysis and biomass modelling. *Crustaceana*. **75**(1), pp. 13-39.

¹⁴ Queensland Department of Primary Industries and Fisheries (2006) Annual Status Report: Queensland Spanner Crab Fishery - December 2006.

Aim 2: To integrate monitoring and assessment procedures for the east coast spanner crab stock

The project will evaluate differences in existing monitoring arrangements between Queensland and NSW, particularly the cost-effectiveness of the two methodologies, then use field trials in both states to compare monitoring and assessment procedures.

Progress

A coordinated cross-border fishery-independent survey protocol has been developed by researchers and fishery managers from Queensland and NSW following a technical workshop held in December 2005. The new protocols were used in the 2006 survey in both states.

Aim 3: To improve the design of fishery-independent spanner crab surveys through a better understanding of the reasons for fluctuating commercial CPUEs

Information on seabed characteristics will be compared with estimates of crab abundance and bottom water temperature data will be collected by interested commercial fishers using a data-logger. These data will be analysed, along with sea surface temperature and weather patterns, to determine whether spanner crab catch rates are influenced in a predictable manner by sea temperatures.

Progress

A change has been detected in the fishing behaviour of the spanner crab fleet through an analysis of fishery-dependent logbooks and independent data (sourced from LTMP annual surveys). The change in behaviour was confirmed by information sourced from temperature data-loggers deployed by interested commercial crabbers.

Despite previously published information, soak time has been found to have an impact on catches. This may affect the interpretation of catch rates or CPUE from current logbooks (which only record daily catches) over time.

Sporadic bottom temperature records have been obtained over the past two years, but these data are yet to be fully analysed to determine whether there is a relationship between water temperature and catch rate.

The ecological effect of seabed type on spanner crab catches is being investigated using a SeaScan system on the QDPI&F research vessel Tom Marshall. QDPI&F has recently developed a system for multiplexing data streams from shipboard instrumentation, which will provide the seabed information and concurrent time and location data needed for spatial analysis.

Monitoring programs

- See section 6.3 (Catch monitoring) (pp 34-35) of the FMS.
- The Queensland Long Term Monitoring Program (LTMP), a fishery independent monitoring program for spanner crabs, has now been extended in NSW waters.

Monitoring has been undertaken simultaneously in both jurisdictions from 2005 and is planned to continue. See www.dpi.qld.gov.au/fisheriesmonitoringprogram for further information.

- Queensland DPI&F is undertaking a re-analysis of the harvest control rules used to set the TACC for the Queensland spanner crab fishery using the LTMP data. The new analysis will include both the LTMP data and landings data for both jurisdictions. When complete, these updated harvest control rules will generate recommended catches for both the NSW and QLD spanner crab fisheries.

4. Catch Data

Total catch of target species taken in the spanner crab sector and other fisheries

- See Appendix B1 (Descriptions and 30 Year Catch Trends of the Primary and Key Secondary Species) (pp 533-534) of the EIS.
- Refer to Table 1 and Figure 1 included in this submission for updated data.

Catch of byproduct species

- The spanner crab fishery is species specific and does not harvest byproduct species.
- Although B2.4.2.5 (Production by fishing method within the OTLF for 2001/02) (pp 133-137) of the EIS indicates that the spanner crab fishery reported approximately 6.4 tonnes of blue swimmer and sand crab as byproduct in 2001/02, recent investigations confirm this as a data entry error which has since been rectified.

Total catch of bycatch species

The gear used in the fishery is known to be highly selective. The LTMP undertaken by QDPI&F routinely collects bycatch data during fishery-independent surveys using standard commercial fishing gear from chartered commercial vessels. Observations of fishery bycatch in Queensland regions (using similar methods to NSW) during 2002, 2003 and 2005 show very low catch rates with approx. 70% of the recorded bycatch being echinoderms (sea urchins, starfish etc.), which could be released with high survival expectancy¹⁴.

Bycatch, defined in the EIS (page 151) as that part of the total catch that is captured and not retained for sale (ie. discarded), is not reported by commercial fishers on monthly catch records.

Harvest by each sector (commercial, recreational, Indigenous and illegal)

- While there are no current estimates of the recreational catch of spanner crabs in NSW. The Queensland Government reports¹⁴ that "Anecdotal evidence suggests that recreational fishers rarely target spanner crabs, and that spanner crabs are most likely taken as incidental catch by fishers targeting blue swimmer crabs". The most recent estimate of recreational catch in the larger Queensland spanner crab fishery is

5 t (in 2002) compared to the total commercial harvest 1452 t (in 2005). Given the comparative size of the commercial fisheries and the resource base between areas, the NSW recreational catch is likely to be small in comparison to the Queensland recreational catch.

- Likewise, QDPI&F notes¹⁴ that while no formal estimates exist, anecdotal information suggests that the Indigenous catch negligible and this is very likely to also be the case in NSW. See Appendix B4 Chapter 2.1 (Contemporary Indigenous Fishing Practices and Preferences) in Volume 3 of the EIS, which shows that spanner crabs are not a significant species traditionally harvested by Aboriginal people.
- Information relating to the illegal catch of spanner crabs is unavailable. The Report on Illegal Fishing for Commercial Gain or Profit in NSW¹⁵ identified crab theft and the theft of crab pots a significant problem in estuarine waters, relating mainly to mud crabs. No issues relating to the spanner crab fishery were highlighted in this report.

Fishing effort data

See Table 2 and Figure 2 included in this submission.

There is some evidence of decreasing catch rates over recent years, although the 2005/06 figures are within the lower limit of historical commercial catch rate levels (see Table 2). Despite this, the 2007 NSW DPI Resource Assessment Workshop noted that spanner crab catch rates are generally stable and results from fishery-independent surveys (LTMP) do not indicate any concerns for the stock (see section 5 of this submission).

It should be noted that in 2006 the NSW Government completed a buyout program of fishers most affected by the Cape Byron Marine Park zoning plan. A total of 21 NSW fishing businesses were bought out, resulting in the removal of 10 spanner crab (northern zone) endorsements from the fishery. Anecdotal information suggests that those fishers removed as part of the buyout program were the older, more experienced fishers, and loss of these fishers from the fishery could be contributing to the latest decline in commercial catch rate.

¹⁵ Available at www.fisheries.nsw.gov.au/___data/assets/pdf_file/0004/4819/Black-Market-Report.pdf - 2007-08-03

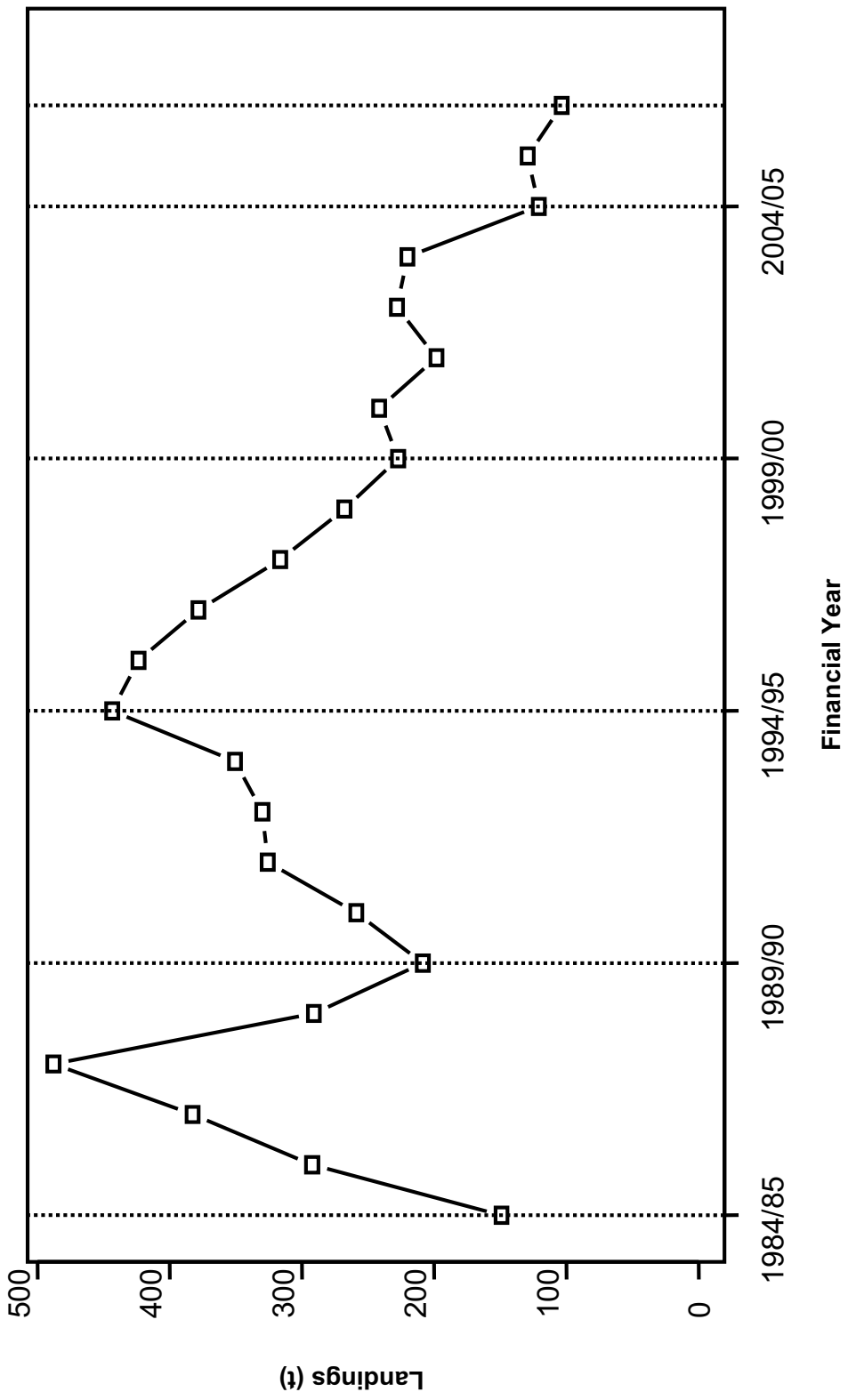


Figure 1: Landings (including available historical records) of spanner crab for NSW from 1984/85 to 2006/07 for all commercial fishing methods.

Table 2: Information used to calculate commercial catch rates of spanner crab harvested using spanner crab nets for NSW. Records with a zero catch rate (i.e. no catch recorded) are not included in these results.

Year	N	Catch (t)	Effort (days)	Mean U (kg/day)	Median U (kg/day)	Max U (kg/day)	1st Quartile U (kg/day)	3rd Quartile U (kg/day)	90th Percentile U (kg/day)	Catch/Effort (kg/day)
1984/85	33	22.643	272	96.5	99.6	252	67.2	131	138.7	83.2
1985/86	84	77.48	815	98.3	92.1	280.5	61.9	123.3	170	95.1
1986/87	118	112.235	1189	92.1	78.2	462.5	48.4	119.8	173.2	94.4
1987/88	137	208.633	1462	148	124.3	1712	71.4	194.1	246.6	142.7
1988/89	83	102.995	827	112.9	109	253.1	71	151.4	203.6	124.5
1989/90	50	66.246	483	117.3	96.6	373.2	61.3	160	237	137.2
1990/91	99	110.46	684	143.4	139.8	502	58.5	205.4	252.9	161.5
1991/92	112	157.841	1000	151.3	147.3	353.4	85.5	211.4	254.4	157.8
1992/93	74	123.336	696	172.7	160.3	360.8	119.2	232.2	275.5	177.2
1993/94	172	191.854	1370	129.4	123.8	581.2	79.7	153.3	204.4	140
1994/95	196	260.139	1518	161.5	163.8	915	87.8	213.9	267.5	171.4
1995/96	193	252.632	1337	173.8	181.3	357.7	103.3	238.6	286.9	189
1996/97	207	252.698	1529	159.5	159.4	397	106	201.6	242.8	165.3
1997/98	384	310.756	2462	118.4	118.4	425.4	53.8	168.1	214.4	126.2
1998/99	318	262.755	1631	149.7	137.2	2185.5	66	200.7	267.7	161.1
1999/00	265	224.326	1530	133.3	118.2	630	41.5	199	266	146.6
2000/01	273	241.339	1606	143.8	114	2815.9	49.5	179.3	289.1	150.3
2001/02	255	198.14	1614	105.7	87.9	685.8	37.5	144.2	215.1	122.8
2002/03	253	227.914	1718	126.3	102.8	540.5	49	171.4	257.8	132.7
2003/04	226	220.299	1509	137.5	108.5	1122	43.3	192.4	285.2	146
2004/05	177	117.991	949	113.8	97.1	765.2	51	158.8	232.8	124.3
2005/06	191	128.499	1164	103.8	77.5	651	39.3	144.1	205	110.4
2006/07	165	103.26	964	90.3	70.2	372.9	36	125.9	183.3	107.1

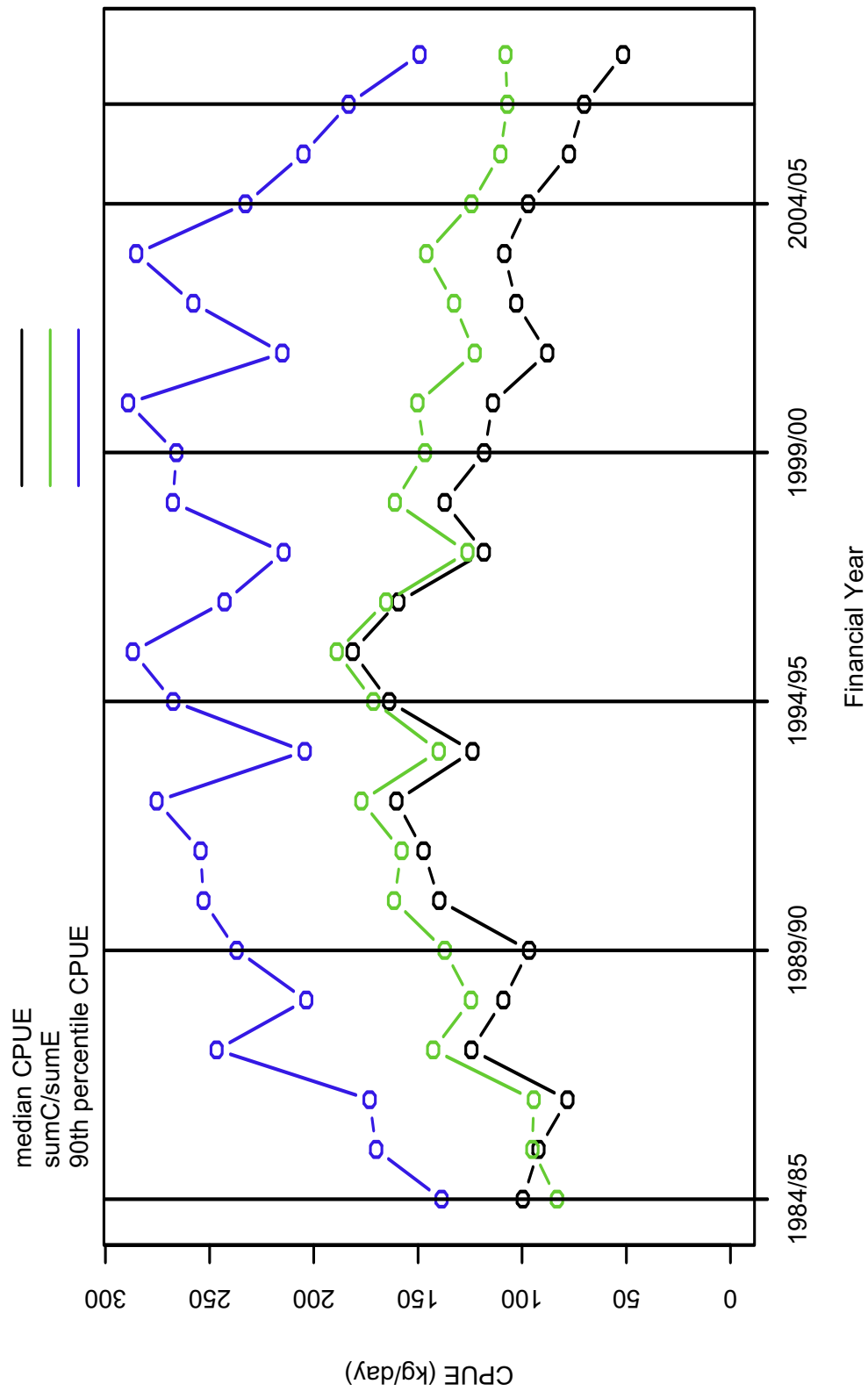


Figure 2: Commercial catch rates of spanner crab harvested using spanner crab nets for NSW. Three indicators are provided: (1) median catch rate from available monthly records; (2) sum of the catch divided by the sum of the effort; and (3) 90th percentile of the catch rate from available monthly records. Records with a zero catch rate (ie. no catch recorded) are not included in these analyses.

5. Status of target stock

NSW DPI has developed and implemented a Resource Assessment Framework for the assessment of marine fish species harvested in NSW. The framework incorporates a standardised method of reporting on the exploitation status of fish stocks across all commercial fisheries¹⁶, including an annual review and interpretation of available data by fisheries scientists.

The notes from the 2007 NSW DPI Resource Assessment Workshop* for spanner crab:

Resource assessment class

Target: 2, Current: 2

Exploitation status and comment

Considered to be fully fished.

Notes

Proposal being developed to continue the joint fishery-independent monitoring of the shared (QLD/NSW) stock. Both the Queensland and NSW stocks have been fished down but catch rates are now stable in both fisheries. Results from fishery-independent surveys do not indicate any concerns for the stock.

* The 2007 NSW DPI Resource Assessment Workshop Report will be publicly available in February 2008.

6. Interaction with threatened or protected species

- The risk analysis of threatened and protected species in the EIS did not identify direct risks associated with spanner crabbing and the risk of interaction is thought to be negligible. See B2.5 (pp 160-172) and Appendix B2 (Detailed Information Supporting Risk Assessments for Threatened Species) (pp 570-647) of the EIS. See also E1.5 (Species Impact Statement) (pp328-385) and Table E1.13 (page 370) in particular of the EIS which concludes spanner crab netting as having a negligible risk to grey nurse sharks in both the 'direct threat to sharks' and 'threat to food resource' categories. Note also that in its recent decision, the Administrative Appeals Tribunal found that the catching of spanner crabs presents no danger to grey nurse sharks.
- 'Threatened Species Interaction Reporting Forms' and 'Threatened and Protected Species Identification Guide for Fishers' have been distributed to all OTL fishers. The reporting form is required to be completed and submitted to NSW DPI following any interaction with a species of conservation interest during any commercial fishing

¹⁶ Scandol, J.P. (2004) A Framework for the Assessment of the Harvested Fish Resources in NSW. NSW DPI. Fisheries Resource Assessment Series No. 15, ISSN 1449- 9940. 96pp.

operations. No reports of threatened species interactions have been reported by endorsement holders pursuant to the mandatory reporting requirement.

7. Impacts of the fishery on the ecosystem in which it operates

Results of any Ecological Risk Assessments

- There are a range of sections within the EIS which examined the ecological risk of the fishery and identified that spanner crab fishing has only a moderate-low risk to the ecosystem, including: B2.1 (Outline of the Risk Analysis) (pp 74-86); B2.2 (Risk Analysis of the Current Operation of the Fishery - Broad Ecosystem) (pp 87-99); B2.3 (Risk Analysis for Ecological Processes Biodiversity and Species Assemblages) (pp 100-108); B2.4 (Risk Analysis for Primary, Key Secondary and Secondary Species) (pp 109-159); B2.5 (Risk Analysis of Threatened and Protected Species) (pp 160-172). Specific references to spanner crabs are located on pages 112-113 and 151-153.

Nature of the impacts on the ecosystem including impacts on any key conservation values

- As above

Management action taken to reduce the impacts

- The FMS includes a range of fishing controls and actions which constrain the impact of spanner crab fishing on the ecosystem (see Goals 1-3 (pp 43-58) and Appendix 3 (pp 102-103)).

8. Consolidated detailed information outlining progress in implementing recommendations and conditions

Refer to Attachment 1 of this submission.

**Attachment 1: Progress report against Ocean Trap and Line Fishery WTO conditions and recommendations
as it relates to the spanner crab sector: as at November 2007**

Condition/Recommendation	Progress
<p>Condition 1. Operation of the fishery will be carried out in accordance with the restricted entry management regime in force under the <i>NSW Fisheries Management Act 1994</i>.</p>	<p>Commercial spanner crab fishing is subject to a restricted entry management regime in force under the <i>Fisheries Management Act 1994</i>, with access arrangements being managed pursuant to the <i>Fisheries Management (Ocean Trap and Line Share Management Plan) 2006</i>.</p>
<p>Condition 2. NSW DPI to advise DEH of any material change to the OTLF management arrangements that could negatively affect the assessment of the fishery against the criteria of the EPBC Act, within three months of that change being made.</p>	<p>No significant changes have been made to the management arrangements for the spanner crab fishery since the WTO was issued that could negatively affect the assessment. [Note that information relating to the introduction of the share management plan and associated commercial fishery licensing reforms were forwarded to DEWR within three months of the commencement of those arrangements on 5 February 2007].</p>
<p>Condition 3. A report to be produced and presented to DEH by 16 November 2007, and to include:</p> <ul style="list-style-type: none"> a. information sufficient to allow assessment of the progress of NSW DPI in implementing the conditions and recommendations made; and b. the status of the OTLF performance indicators compared to the trigger points. 	<ul style="list-style-type: none"> a. This report seeks to satisfy this sub-condition. b. A further table incorporating the status of the Fishery Management Strategy performance indicators compared to the trigger points for the spanner crab sector follows.
<p>Condition 4. The FMS for the NSW Ocean Trap and Line Fishery to be finalised and approved by end of November 2006.</p>	<p>The FMS was approved by the NSW Minister for Primary Industries on 22 November 2006.</p>
<p>Condition 5: NSW DPI to develop and implement, within 12 months of the approval of the FMS:</p> <ul style="list-style-type: none"> a. further measures that provide an effective cap on active effort in the OTLF; and b. a strategy, including effort targets, milestones and associated trigger points, for achieving an ecological sustainable level of fishing effort for each sector of the fishery. 	<ul style="list-style-type: none"> a. The Share Management Plan provides for an increase to the minimum shareholding requirement within 2½ years from the commencement of the Plan on 5 February 2007. For the spanner crab sector, this means that existing shareholders will need to hold 40 shares at that time in order to continue to be eligible for an endorsement, thus reducing the number of available endorsements in the sector. b. Management response 2.1(i) of the FMS provides for the investigation of the feasibility of a quota system to manage the harvest of spanner crabs. NSW DPI has undertaken a preliminary assessment of the feasibility of implementing a quota system for the fishery and is currently drafting a shareholder consultation paper. The current collaborative FRDC project will also assist in setting sustainable catch and/or effort levels for the Queensland and NSW sectors of the fishery.

Condition/Recommendation	Progress
<p>Condition 6: NSW DPI to develop and implement, by 16 November 2007:</p> <ul style="list-style-type: none"> a. fishery closures of appropriate area for grey nurse sharks as required under the Preferred Strategy Report; and b. a targeted monitoring program, to help evaluate the effectiveness of the grey nurse shark fishery closures. 	<p>Not relevant to spanner crab fishing. In its recent decision the Administrative Appeals Tribunal found that the catching of spanner crabs presents "no danger to grey nurse sharks".</p>
<p>Recommendation 1: NSW DPI to implement finer scale temporal and spatial logbook reporting in the OTLF to improve the robustness of resource assessments and allow for enhanced cross-jurisdictional cooperation.</p>	<p>A major project is currently underway which aims to develop a new catch information management system and related processes which will, among other things:</p> <ul style="list-style-type: none"> • introduce and cater for finer scale spatial and temporal reporting, • improve the Department's ability to interrogate, analyse and report on high quality data, and • improve the Department's ability to plan research, compliance and management activities.
<p>Recommendation 2: NSW DPI to develop and implement a robust system to validate catch and effort logbook data.</p>	<p>See above.</p>
<p>Recommendation 3: NSW DPI to develop and implement a system to improve the identification and recording of elasmobranchs species taken in the OTLF.</p>	<p>Not relevant to spanner crab fishing as elasmobranchs are not harvested by the fishing gear.</p>
<p>Recommendation 4: NSW DPI to develop a robust and regular fishery assessment that provides a basis for management decisions, which are precautionary and recognise uncertainty and level of risk. The assessment process will examine the exploitation status of the primary and key secondary species using resource assessment tiers.</p>	<p>A formal Resource Assessment Framework has been developed and is used to carry out fisheries assessments in NSW. This framework is a well-defined, accessible program for the resource assessment of all marine fish species harvested in State waters. The type of assessment carried out for each species (or species complex) takes account of the needs identified in each FMS, levels of risk identified in each EIS, the commercial and recreational importance of the species and its biology.</p> <p>Refer to 'A Framework for the Assessment of Harvested Fish Resources in NSW'¹⁶ and 'Determining the Biological Sustainability of Wild Fisheries in NSW: Concepts and Definitions'¹⁷.</p>

¹⁷ Scandol, J.P. 2006. Determining the Biological Sustainability of Wild Fisheries in NSW: Concepts and Definitions. Cronulla, NSW DPI.

Condition/Recommendation	Progress
<p>Recommendation 5: NSW DPI to institute programs to provide appropriate estimates of the harvest rates of OTLF primary and key secondary species by the recreational and Indigenous sectors and incorporate these data into the fishery resource assessment process.</p>	<p>Results from the National Recreational and Indigenous Fishing Survey (2000/01) continue to be used as part of the resource assessment process, noting that the recreational and Indigenous catch of spanner crabs is thought to be negligible. Note also that NSW DPI is currently investigating the feasibility and costing structure for a further NSW survey.</p>
<p>Recommendation 6: NSW DPI to review the effectiveness of size limits, fish trap escape panels, fishery closures and other relevant management measures for snapper stocks and implement any changes required to further promote the rebuilding of stocks to ecologically sustainable levels.</p>	<p>Not relevant to the spanner crab sector.</p>
<p>Recommendation 7: NSW DPI, within 12 months of approval of the FMS, to consult with the Australian Fisheries Management Authority (AFMA) and implement compatible management measures to limit the take of deep water dog fish and other deepwater shark species of concern and support rebuilding of the relevant shark species.</p>	<p>Not relevant to the spanner crab sector.</p>
<p>Recommendation 8: NSW DPI to cooperate with other relevant jurisdictions to pursue complementary management and research of shared stocks for all relevant primary and key secondary OTLF species. In particular, NSW DPI will consult with AFMA in relation to setting compatible harvest measures for shared target stocks such as silver trevally, eastern gemfish, blue-eye trevalla and gummy shark in the Southern and Eastern Scalefish and Shark Fishery and with the Queensland Department of Primary Industries and Fisheries in relation to spanner crab and snapper.</p>	<p>Researchers from NSW DPI and QDPI&F continue to work jointly on the LTMP (fishery independent monitoring program for the east coast spanner crab fishery). Monitoring has been undertaken simultaneously in both jurisdictions from 2005 and is planned to continue. QDPI&F is undertaking a re-analysis of the harvest control rules used to set the TACC for the QLD spanner crab fishery using the LTMP data. The new analysis will include both the LTMP data and landings data for both QLD and NSW jurisdictions. When complete, these updated harvest control rules will generate recommended catches for both the QLD and NSW spanner crab fisheries.</p>
<p>Recommendation 9: NSW DPI to develop and implement a recovery strategy for all OTLF primary and key secondary species classified as recruitment overfished, within 6 months of the species being so classified. For species categorised as growth overfished, the status of the stocks will be reviewed and specific measures implemented, as required, within 12 months to prevent the stocks from becoming recruitment overfished.</p>	<p>Not relevant to the spanner crab sector.</p>

Condition/Recommendation

Recommendation 10: By the end of November 2007, NSW DPI to develop and implement a system sufficient to identify changes in the composition and quantity of bycatch over time and establish more robust estimates of interactions with threatened and protected species in the OTLF.

Progress

A cross-fishery scientific observer program is underway to, among other things, identify the composition and quantity of bycatch of fishing methods and measure interactions with threatened and protected species. The cross-fishery program (previously discussed with DEWR) determines priority methods for observer work taking account of a range of factors including potential environmental risks. In the initial analysis, spanner crab netting has been ranked 21st on the priority list, due in part to the perceived low risks to bycatch and threatened species. The program is currently focussing on line fishing methods.

There is also a mandatory requirement for commercial fishers to report any interactions with threatened or protected species.

Report on performance indicators in the Ocean Trap and Line Fishery FMS (as at October 2007)

Performance indicator	Trigger point	Status	Comments
1.1 The estimated quantity of the ocean trap and line catch (by method) which is discarded	The quantity of discards for any observed method increases between consecutive observer surveys.	-	Observer data not available for the spanner crab sector.
1.2 Species composition (for all retained and bycatch species) for fishing methods used within the fishery.	Significant shift in species composition detected between consecutive observer surveys for any method.	-	Observer data not available for the spanner crab sector.
1.3 Response of the fishery to marine pest and disease incursions.	Guidelines specified in any Marine Pest and Disease Management Program are not adopted by the OTLF.	✓	All relevant guidelines adhered to in the fishery.
1.4 Areas closed to commercial ocean trap and line fishing in NSW managed waters.	Areas closed to commercial ocean trap and line fishing become open after the commencement of the FMS	✓	No areas closed to spanner crab fishing have become open since November 2006.
2.1 Changes in the exploitation status of primary or key secondary species to 'overfished' or 'recruitment overfished'.	The exploitation status of a primary or key secondary species is changed to 'overfished' or 'recruitment overfished' by NSW DPI	✓	The status of the spanner crab resource remains as 'Fully fished'.
2.2 Total annual landings of all secondary species (other than key secondary species) taken in the fishery as a percentage of the total annual landings in the fishery.	Contribution of secondary species to total trap and line landings exceeds 15% in any two consecutive years.	-	Not applicable to the spanner crab sector as no byproduct (secondary) species are taken.

Performance indicator	Trigger point	Status	Comments
3.1 Interactions between the fishery and any threatened species, population or ecological community that are likely to threaten the survival of that threatened species, population or ecological community.	Any interactions between the fishery and a threatened species, population or ecological community reported by endorsement holders in the fishery or observed during the an observer survey that are likely to threaten the survival of that threatened species, population or ecological community, as determined by the Director-General of NSW DPI on advice from relevant threatened species experts.	✓	No reports of interactions have been reported by spanner crab fishers. Observer data not available for the spanner crab sector.
3.2 Interactions between the fishery and protected species that are likely to threaten the survival of a protected species.	A biennial review undertaken by NSW DPI of interactions between the fishery and a protected species reported by endorsement holders in the fishery or observed during an observer survey that are likely to threaten the survival of that protected species, as determined by the Director-General of NSW DPI on advice from relevant threatened species experts.	✓	No reports of interactions have been reported by spanner crab fishers. Observer data not available for the spanner crab sector.
3.3 Number of grey nurse sharks caught by the OTLF.	Trigger point to be determined once baseline data collected.	-	To be determined.
4.1 Change in the distribution of landings between the commercial sector and the non-commercial sector (combining recreational and Indigenous) for each OTLF primary species	Maximum absolute difference in the distribution of landings between the commercial and non-commercial sectors is greater than 25 percentage points when compared every five years	-	First five year period yet to expire.
4.2 Change in the distribution of landings among the NSW commercial fisheries for each OTLF primary species	Maximum absolute difference in the distribution of landings between the assessment and reference years is greater than 15 percentage points	✓	No significant change in the distribution landings of spanner crab among other NSW commercial fisheries. Reported landings in the Ocean (Prawn) Trawl Fishery are negligible and remain at only 0.01% of the total catch.

Performance indicator	Trigger point	Status	Comments
4.3 Change in the distribution of landings among the OTLF endorsement types for each OTLF primary species	Maximum absolute difference in the distribution of landings between the assessment and reference years is greater than 25 percentage points	✓	The relative catches between spanner crab businesses holding northern zone versus southern zone spanner crab endorsements has remained within the 25 percentage point limit.
5.1 Net economic returns to the fishery	The Director-General of NSW DPI is satisfied that the gross value of production of the fishery has not exceeded the sum of indicative industry operational costs and government management costs relevant to the fishery for 3 consecutive years.	-	First three year period yet to expire.
5.2 Average market value of ocean trap and line shares when traded	Trigger to be determined within two years of the commencement of the share management plan	-	To be determined.
6.1 Percentages of total annual inspections in the OTLF which result in the detection of minor or major offences.	Percentage of inspections resulting in the detection of offences exceeds either of the following: (i) 20% for minor offences; (ii) 10% for major offences	✓	Differentiation between major and minor offences will be determined during the development of the penalty point scheme. In the interim, an overall compliance rate of less than 85% will be used as a trigger point. For the 2006/07 period the compliance rate was 89% in the OTLF (including spanner crab fishers).
6.2 Number of Ocean Trap and Line MAC meetings held each year.	Number of OTLMAC meetings is less than 2 in any calendar year, unless otherwise agreed to by the MAC	✓	Two OTLMAC meetings have been held in 2007 - on 24 July and 5 November.
6.3 Reviews and outcomes of strategic plans for research and compliance in the OTLF	The research or compliance strategic plans expire without being reviewed by NSW DPI, or the strategic plans are not modified consistent with the approved outcomes of a review.	✓	The Department of Primary Industries Science and Research Strategy 2005–08 is yet to expire. Compliance strategic plans for NSW commercial and recreational fisheries and aquaculture, including the overarching Statewide Compliance Plan are currently under review. The aim of the review is to align the plans with the National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IUU).

Performance indicator	Trigger point	Status	Comments
7.1 Number of primary and key secondary species in the OTLF with an 'uncertain' or 'undefined' exploitation status	The number of primary and key secondary species with an 'uncertain' or 'undefined' exploitation status has not decreased between two consecutive odd-numbered years	-	Not applicable to the spanner crab sector alone, however, the exploitation status of spanner crabs remains as 'Fully fished'.
7.2 The difference between the current and target resource assessment class for primary and key secondary species of the OTLF	The sum of the difference between the current and target assessment class for the primary and key secondary species has not decreased between two consecutive odd-numbered years	✓	The target resource assessment class for spanner crab is 2. At the 2007 NSW DPI Resource Assessment Workshop the current resource assessment class was determined as 2.
7.3 The number of research projects underway which have a flow of benefits to the OTLF and fill information gaps identified in the EIS	The number of relevant research projects relevant to identified information gaps falls to less than two during any one year	✓	Two relevant projects are currently underway with respect to the spanner crab sector alone: (1) FRDC project: Reducing uncertainty in the assessment of the Australian spanner crab fishery (FSC 2003/139) is currently being finalised. This report includes the results comparing NSW and QLD survey designs and the results of a workshop (December 2005) which recommended the adoption of the Queensland Long Term Monitoring Program (LTMP) protocols in NSW waters; (2) the LTMP, a fishery independent monitoring program for spanner crabs, has now been extended in NSW waters.
7.4 Accuracy of catch return data (in terms of quantity of product, record of completeness and species identification)	The percentage of species records with poor reporting does not decline after 1 year of operation of new reporting procedures	-	NSW DPI is currently undertaking a major project to develop a new catch information management system and related processes, including catch reporting information requirements and procedures.