



Northern Prawn Fishery Data Summary 2016

Author: Adrienne Laird



NPF Industry Pty Ltd

Producing the finest quality prawns from a sustainable marine ecosystem



Northern Prawn Fishery Data Summary 2016

NPF Industry Pty Ltd on behalf of the Australian Fisheries Management Authority (AFMA)

Adrianne Laird

Northern Prawn Fishery Data Summary 2016

April 2017

AFMA

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Northern Prawn Fishery Data Summary 2016

Preface

Scope of the Report

This document summarises catch and effort information for the Northern Prawn Fishery (NPF) in 2016, including data relating to interactions with threatened, endangered and protected (TEP) species. The data summary provides an important mechanism for providing feedback to stakeholders on logbook data received by AFMA. In addition, the process of data extraction and analysis assists in identifying data quality issues where they exist and also assists in ensuring that data needs for fisheries management continue to be met.

AFMA has produced data summary reports for the NPF on an annual basis since 1999. As part of the AFMA/NPF co-management arrangements in the NPF, this is the ninth year NPF Industry Pty Ltd has been responsible for development of the data summary.

Acknowledgements

Production of this report was made possible through the efforts of the skippers, vessel owners and Crew Member Observers of the NPF. Skippers supplied daily logbook information and vessel owners completed Season Landing Returns. Crew Member Observers supplied information on a voluntary basis whilst undertaking their daily duties, on interactions with TEP species and species identified as 'At-Risk' through the Ecological Risk Assessment process. Thanks to staff from Datafix Canberra for processing of log sheets and Season Landing Returns. Thanks also to staff from AFMA's Data Management section for their assistance with data management activities.

If you have any comments or queries on this, or any other data summaries, please do not hesitate to contact:

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Also note that this Data Summary is available on AFMA's website at
<http://www.afma.gov.au/fisheries/northern-prawn-fishery/data-summaries/>.

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Introduction

The Northern Prawn Fishery Data Summary 2016 contains catch and effort statistics by prawn species, area, time and fishery. Comprehensive byproduct information is also included for the information of stakeholders and to meet AFMA's obligations under Offshore Constitutional Settlement agreements with Queensland, the Northern Territory and Western Australia. Interactions with threatened, endangered and protected (TEP) species are also reported.

Description of the Northern Prawn Fishery

Area of Fishery

The Northern Prawn Fishery (NPF) is located off Australia's northern coast, and extends from the low water mark to the outer edge of the Australian Fishing Zone (AFZ) in the area between Cape York in Queensland and Cape Londonderry in Western Australia (Figure 1).

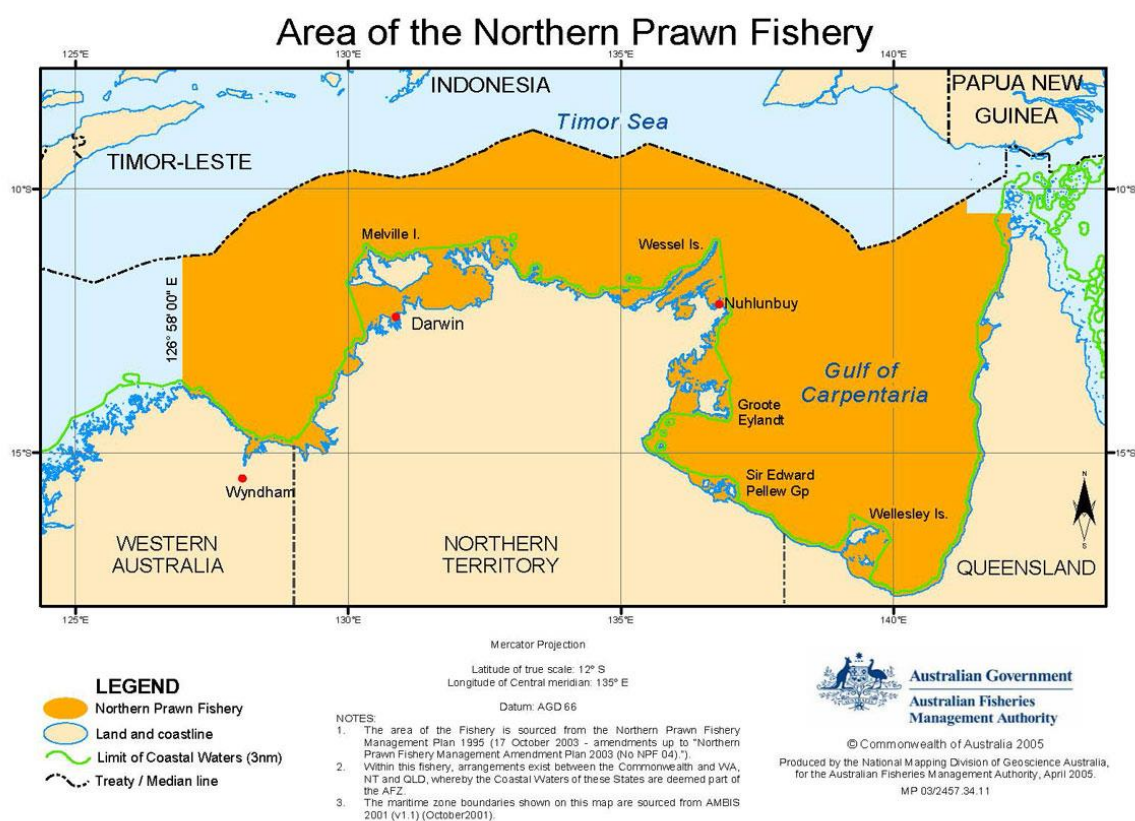


Figure 1: Northern Prawn Fishery Management Area.

Fishing Methods

Prawn trawling is an active fishing method which involves towing a conical-shaped net spread open by two or four steel or timber otter boards over the seabed, commonly called otter trawling. Ground chains are also used on the nets to stimulate prawns into the trawl mouth. Vessels in the NPF may tow a range of nets in a variety of configurations. These are regulated by the *Northern Prawn Fishery Management Plan 1995* (the Management Plan) and relevant Determinations and Directions. In addition to the main nets, a small 'try-net' is also used to test the potential catches for a given area. All trawl nets in the NPF (other than try-nets) are required to be fitted with approved Turtle Excluder Devices (TEDs) and Bycatch Reduction Devices (BRDs), however TEDs are not required if operators are fishing in waters deeper than 200m.

Most of the vessels in the NPF are purpose built from steel and range in length from 17 m to 28 m. All NPF boats have modern and sophisticated catch handling, packing and freezing capabilities as well as wet (brine) holding facilities. All vessels use electronic aids such as colour echo sounders, Global Positioning Systems (GPS) and plotters. Satellite phones and fax equipment are used by most vessels and most have introduced on-board computing facilities, electronic log books and Wi-Fi. All vessels are required to have a Vessel Monitoring System (VMS) installed.

Management Information

The NPF is managed through a combination of input controls (limited entry, seasonal closures, permanent area closures, gear restrictions and operational controls) that are implemented under the *NPF Management Plan 1995*.

The Management Plan provides for the granting of fully transferable Statutory Fishing Rights (SFRs) that determine the number of trawlers that may operate (Class B SFRs) and the amount of gear (gear SFRs) used in the Fishery. In 2001, the Management Plan was amended to allow the total gear pool to be set by a Determination. The gear SFR is set as an amount of headrope length, which can be varied depending on the stock status and economic indicators.

In 2002, measures were introduced to reduce effort by 40% on tiger prawn stocks. This was achieved by shortening the fishing seasons and a 15% reduction in the value (in centimetres) of a gear SFR. An additional 25% reduction in gear SFR value occurred in 2005, reducing the total number of Class B SFRs to 94.

In 2006/07, 43 Class B SFRs and 18,365 Gear SFRs (approximately 34% of the effective effort) were removed from the NPF through the Commonwealth Government's Structural Adjustment Package. The fishery is now comprised of 52 vessels - the optimal number estimated by the Australian Bureau of Agricultural and Resource Economics and Science (ABARES) to achieve Maximum Economic Yield (MEY) in the NPF.

In 2007, the industry formed 'NPF Industry Pty Ltd' (NPFIL), an industry representative body that incorporates approximately 95% of NPF SFR holders.

An 8% increase in effort was implemented in the 2008 tiger prawn season as recommended by the Northern Prawn Fishery Management Advisory Committee (NORMAC) in response to the smaller fleet size. This was effected by increasing the value of NPF gear SFRs from 5.625 cm to 7.481 cm and permitting concession holders to use quad gear (with a 10% penalty applied).

In 2009, the tiger prawn season was increased by four weeks based on the outputs of the 2008 tiger prawn stock assessment, resulting in the season commencing on 25 July and closing on 19 December. This was the

first time since the introduction of the mid-year closure in 1987 that the tiger prawn season commenced prior to 1 August.

In 2011, the banana prawn season was extended by two weeks to enable industry to make optimal use of an expected large available biomass of banana prawns resulting from favorable environmental conditions. Due to improvements in the tiger prawn stock assessment, it was also agreed that tiger prawns could be targeted in the banana prawn season from 1 May. An on-going decision rule was put in place to close banana fishing west of 138° and to prevent daylight trawling east of this location to protect banana prawns if average daily catches did not meet a trigger of 500 kg per boat/day during the two week reporting period. The tiger prawn season commenced on 1 August and concluded one week early on 20 November due to tiger prawn catch trigger limits not being met. The early tiger prawn season closure was implemented to protect stocks and prevent economic losses in the tiger prawn fishery.

In 2012, 2013, 2014 and 2015 the banana prawn season was open from 1st April to 15th June, and the tiger prawn season was open from 1st August to 30th November.

A Maximum Economic Yield (MEY) banana prawn catch trigger was implemented in 2014 as part of the future management regime for the banana prawn fishery. The decision rule closes the fishery west of 138°, and prohibits daylight trawling east of 138° if catches fall below the MEY trigger value which is calculated in-season based on catch, cost and price information provided by industry. There is also restriction placed on the trigger value to minimise large change in allowable effort, with a minimum MEY catch trigger of 425 kgs (per boat per day) in any two week catch reporting period.

In 2016, the decision rule was triggered in the third reporting period of the banana prawn season and the fishery was closed west of 138° from 9 June to protect the remaining banana prawn stocks. A daylight trawl ban east of 138° was also implemented until 15 June (when the season ended) to allow for tiger prawn fishing. The tiger prawn season operated from 1 August to 20 November, closing earlier than previous years due to lower catches and the early closure decision rule being triggered. There were 76 fishing days available during the first season and 112 during the second season (a total of 188).

Species

The NPF targets seven commercial species of prawns including white banana (*Penaeus merguensis*), red-legged banana (*P. indicus*), brown tiger (*P. esculentus*), grooved tiger (*P. semisulcatus*) (Ma *et al.* 2011), blue endeavour (*Metapenaeus endeavouri*), red endeavour (*M. ensis*) and king prawns (*Melicertus* sp.). Leader Prawns or Black Tigers (*P. monodon*), scampi, squid, scallops and bugs are also taken.

Data Collection Program

NPF operators are required to complete the 'Northern and Torres Strait Prawn Fisheries Daily Fishing Log' (NP16) paper log books or electronic logs (e-logs) on a daily basis. In 2016, 90% (47 operators) used e-logs in both fishing seasons. Both paper logbook and e-log data is included in this data summary.

Methods Used For Preparing Data Summary

The data used to prepare the Northern Prawn Fishery Data Summary is comprised of logbook information (NP16 and e-log) submitted by NPF skippers and the Seasonal Landing Returns (SLR-T01) completed by SFR holders. This information is stored by AFMA on the Northern Prawn, Kimberley Prawn and Torres Strait Prawn database.

The data used in this summary was extracted during January 2017 after making every effort to reconcile the data provided by skippers with that obtained from vessel owners. This was to ensure that the logbook data and the landings figures approximated each other as closely as possible.

On average logbook catches of banana prawns were underestimated by 0.02% when compared to Seasonal Landing Returns (SLR) for the banana prawn season, with the greatest discrepancy being 34% (one vessel) for the banana prawn season. On average the tiger prawn catches were within 0.73% of catches recorded in the SLR for the tiger prawn season, with the greatest discrepancy being a 17% underestimate (one vessel) in the logbook data for the tiger prawn season.

The catch and effort estimates in Table 1 and Figure 2 were derived from a combination of logbook and SLR figures. The remainder of the tables and figures in the Summary represent logbook data only. This may cause discrepancies between totals. Minor discrepancies may also occur due to rounding of values.

Banana and Tiger Prawn Fishery Components

Fishery statistics have been split into banana and tiger prawn fishery components according to the composition of the catch in logbook records. If half or more of a vessel's daily catch was banana prawns or there was no prawn catch and the vessel was fishing, the vessel was defined as operating in the banana prawn fishery on that day; otherwise it was defined as operating in the tiger prawn fishery.

Banana prawn fishery catch is the catch of all species (bananas + tigers + endeavours + kings) when a vessel is defined as fishing in the banana prawn fishery. Likewise, tiger prawn fishery catch is the catch of all species when a vessel is defined as operating in the tiger prawn fishery.

Catch and Effort Data for the Northern Prawn Fishery

Catch

The total NPF prawn catch for 2016 was 5,468 t compared to 7,789 t in 2015 (Table 1). The total catch of banana prawns in 2016 decreased 25% from the 2015 catch of 3,852 to 2,904 t (Figure 2, Table 1). The catch of tiger prawns decreased 35% from 3,295 t in 2015 to 2,158 t (Figure 2, Table 1). Catches of endeavour prawns decreased by 32% from 554 t in 2015 to 374 t in 2016 (Figure 2, Table 1). Catches of king prawns decreased from 38 t in 2015 to 32 t in 2016.

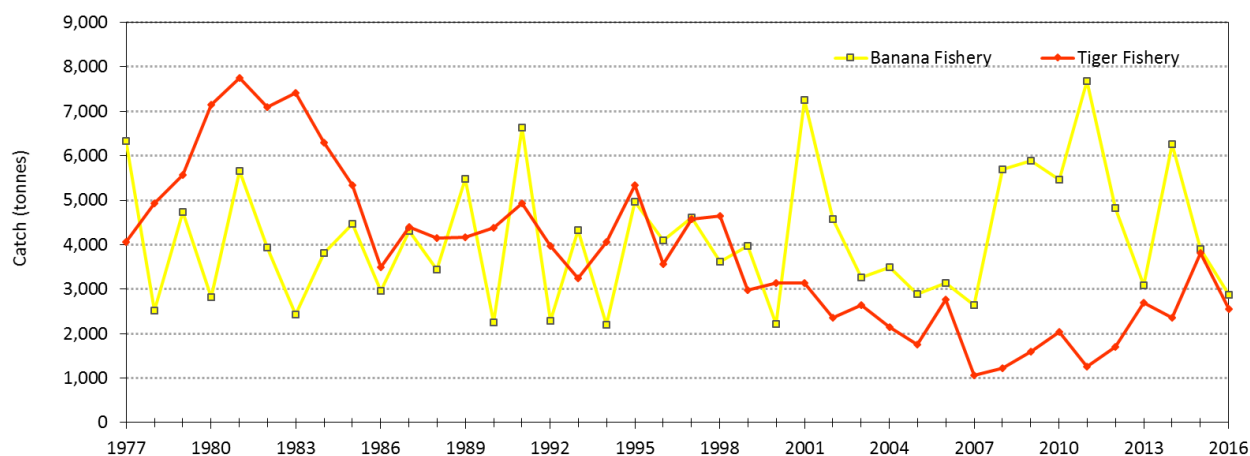


Figure 2: Catch in the banana and tiger prawn fisheries between 1977 and 2016.

Table 1: Annual reconciled landings, effort and vessel number in the NPF from 1970 to 2016.

Year	Banana (t)	Tiger (t)	Endeavour (t)	King (t)	Total Catch (t)	No. of Vessels	Banana Fishery Effort (days)	Tiger Fishery Effort (days)
1970	1,702	1,138	417	0	3,257	191	2,041	5,818
1971	7,364	1,183	400	0	8,948	169	5,571	6,057
1972	4,801	1,380	472	0	6,654	180	4,327	7,380
1973	4,226	1,672	594	0	6,492	217	4,917	7,362
1974	12,711	666	434	4	13,815	196	7,537	3,439
1975	3,160	973	444	6	4,583	107	5,361	6,010
1976	4,519	1,118	675	5	6,319	145	7,238	6,660
1977	6,345	2,900	1,125	28	10,398	193	7,257	11,673
1978	2,535	3,599	1,240	82	7,456	237	5,569	18,749
1979	4,775	4,218	1,213	94	10,300	240	7,328	17,791
1970-'79average	5,214	1,885	701	22	7,822	188	5,715	9,094
1980	2,835	5,124	1,891	111	9,964	269	8,391	30,594
1981	5,672	5,559	2,073	95	13,400	286	11,524	31,895
1982	3,875	4,891	2,124	144	11,036	271	8,751	32,956
1983	2,382	5,751	1,488	207	9,831	254	6,856	34,551
1984	3,770	4,525	1,714	83	10,095	252	5,932	32,447
1985	4,469	3,592	1,671	77	9,811	231	6,946	26,516
1986	2,935	2,682	748	85	6,451	238	7,132	26,669
1987	4,257	3,617	772	65	8,713	234	7,954	22,478
1988	3,381	3,458	669	81	7,591	222	6,655	26,264
1989	5,466	3,173	909	85	9,636	223	7,439	27,036
1980-'89average	3,904	4,237	1,406	103	9,653	248	7,758	29,141
1990	2,221	3,550	735	128	6,636	200	5,044	25,525
1991	6,605	3,987	879	81	11,554	172	6,515	20,744
1992	2,254	3,084	880	47	6,267	170	5,132	21,789
1993	4,292	2,515	733	35	7,572	127	6,299	16,019
1994	2,157	3,162	872	72	6,263	128	4,955	18,592
1995	4,961	4,125	1,150	58	10,294	125	4,880	16,834
1996	4,078	2,311	1,235	41	7,665	127	5,525	16,635
1997	4,587	2,694	1,870	51	9,202	129	5,476	15,385
1998	3,569	3,218	1,322	20	8,123	130	5,301	18,003
1999	3,904	2,136	885	21	6,947	129	5,639	12,675
1990-'99average	3,863	3,078	1,056	55	8,052	144	5,477	18,220
2000	2,195	2,190	958	13	5,335	121	3,697	12,736
2001	7,245	1,983	1,157	4	10,389	118	6,247	10,440
2002	4,577	1,943	411	5	6,936	114	4,148	8,718
2003	3,238	2,222	435	4	5,898	97	4,114	8,503
2004	3,520	1,767	396	3	5,686	96	3,985	7,793
2005	2,901	1,744	281	20	4,946	89	3,364	7,967
2006	3,117	1,802	363	28	5,310	77	3,283	6,983
2007	2,902	1,192	196	20	4,310	51	2,696	4,829
2008	5,816	1,021	213	7	7,058	53	3,347	4,556
2009	5,881	1,250	346	7	7,483	55	3,095	4,889
2000-'09average	4,139	1,711	476	11	6,335	87	3,798	7,741
2010	5,642	1,628	429	12	7,711	52	3,146	4,898
2011	7,141	749	437	8	8,335	55	3,440	4,143
2012	4,901	1,203	487	11	6,601	52	2,526	5,521
2013	3,050	2,215	508	29	5,802	52	2,005	5,908
2014	6,330	1,708	675	12	8,725	52	3,100	5,045
2015	3,852	3,295	554	38	7,739	52	2,197	6,036
2016	2,904	2,158	374	32	5,468	52	1,980	5,900

* Note: Catch data is extracted from Seasonal Landing Returns (SLRs).

Catch by week

Figures 3 (a), (b) and (c) show the catch of banana and tiger prawns by week during 2016, 2015 and 2014. Highest banana prawn catches were recorded in the first week of 2016 with 955 t. Banana prawn catches in the first fishing season of 2016 ('banana prawn season') experienced a steady decline over the 11 weeks, with the exception of an increase in week 5. Catches of tiger prawns in the second fishing season ('tiger prawn season') fluctuated, steadily declining from week 9. Tiger prawn catches peaked at 165 t in week 7.

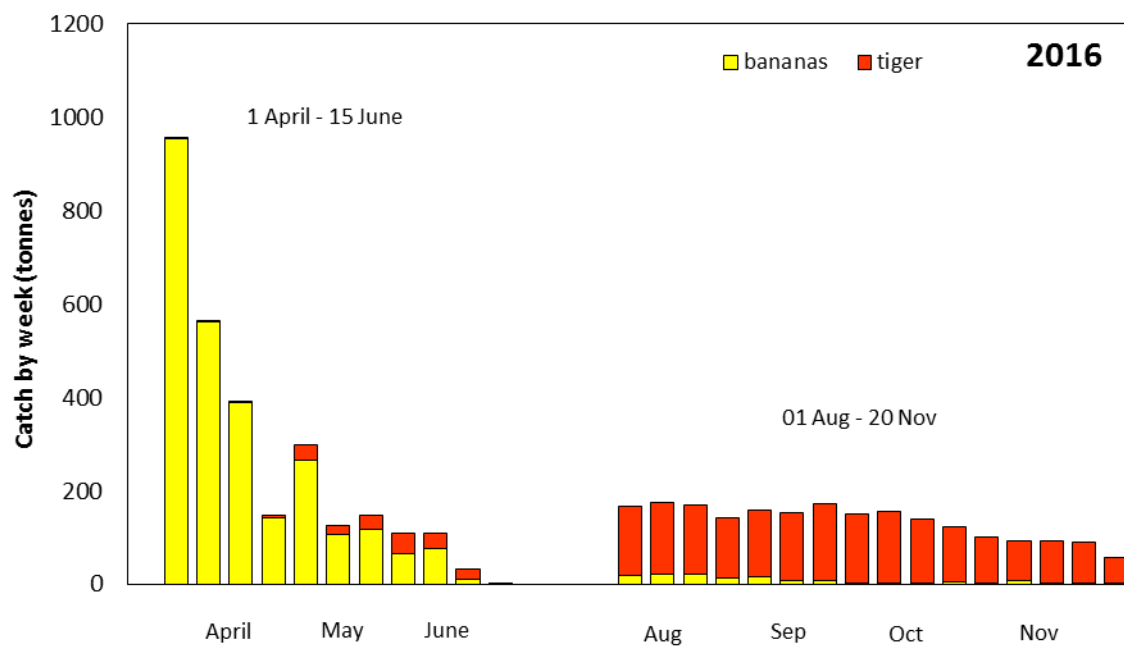


Figure 3a: Weekly catches of banana and tiger prawns (t) in the NPF in 2016.

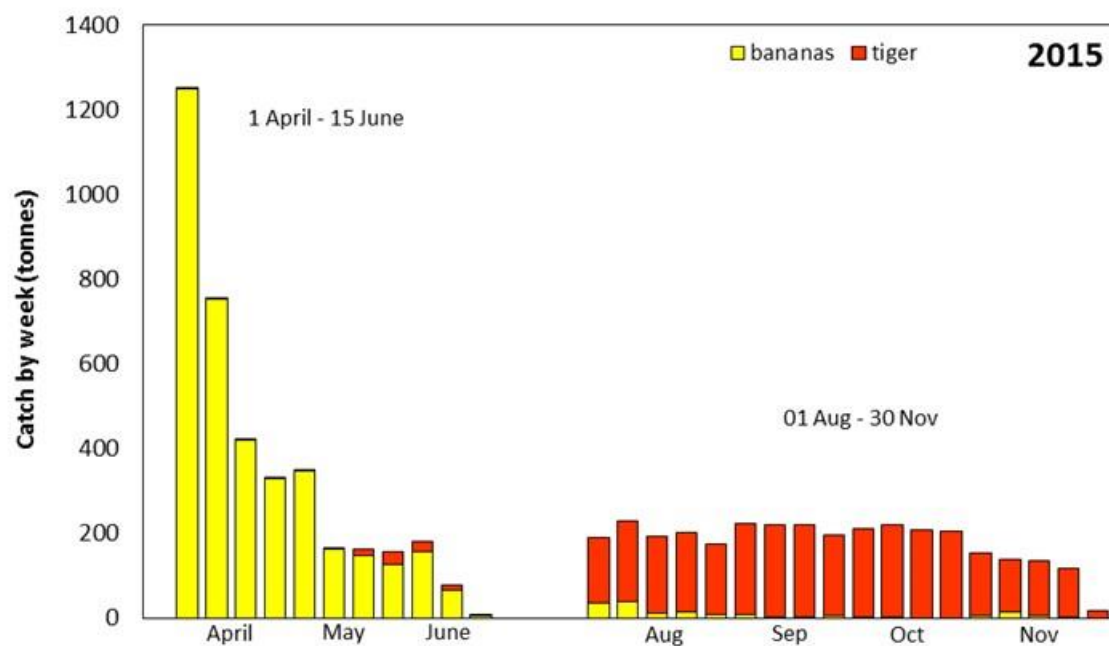


Figure 3b: Weekly catches of banana and tiger prawns (t) in the NPF in 2015.

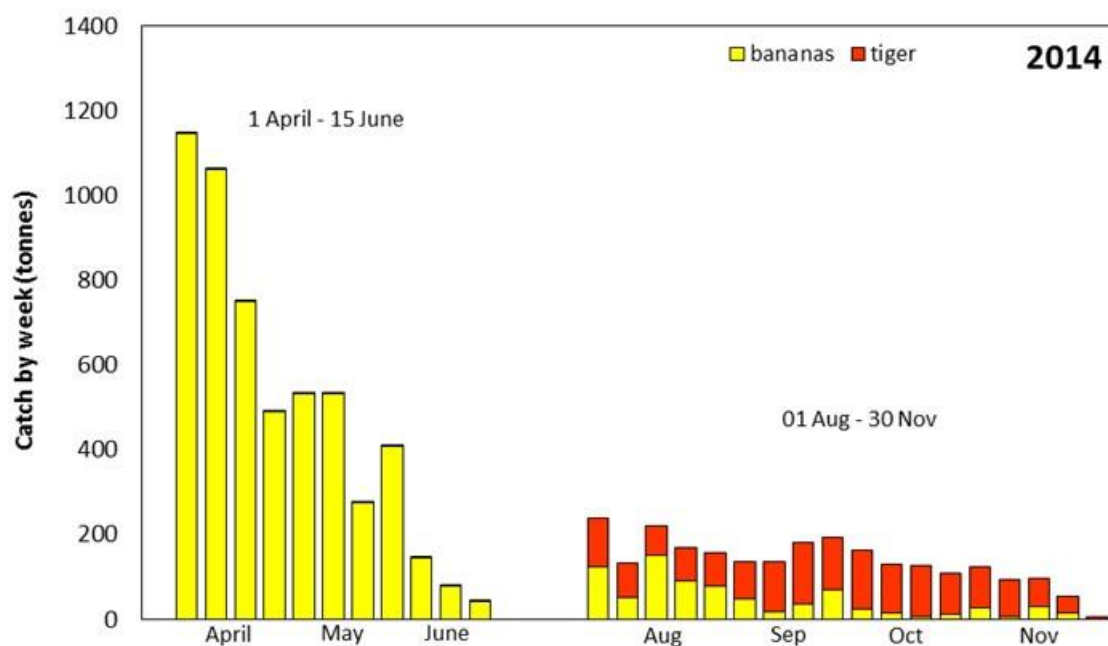


Figure 3c: Weekly catches of banana and tiger prawns (t) in the NPF in 2014.

Effort

Nominal and effective effort

Nominal effort is the number of days recorded by skippers in their logbooks. Effective effort applies only to the tiger prawn fishery and is based on the assumption that there has been an 'effort creep' (an increase in effectiveness of the gear utilised and fishing operations). A number of different approaches are being used by the Northern Prawn Fishery Resource Assessment Group (NPRAG) to account for effort creep, including using an average 5% per year as well as variable effort creep. As in previous years, for the purpose of preparing this report we have used 5%. Nominal effort in the banana prawn fishery decreased by 221 days (10%) in 2016 compared to 2015 (Figure 4). In the tiger prawn fishery, nominal effort decreased by 140 days (2%) in 2016 compared to 2015. Effective effort in the tiger prawn fishery increased by 453 days (3%) compared to 2015 (Figure 4).

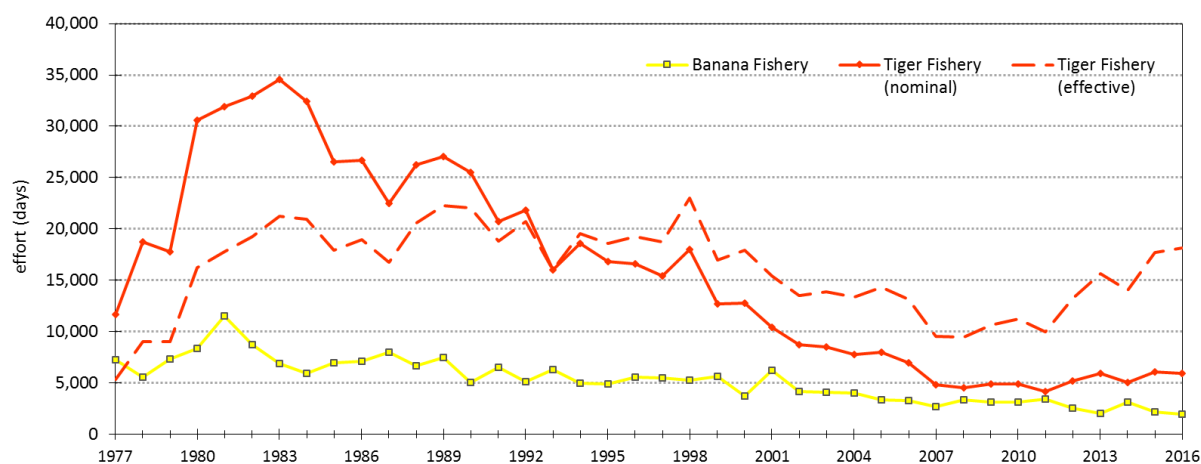


Figure 4: Effort in the banana and tiger prawn fisheries in the NPF between 1977 and 2016.

Catch Rate

It is worth noting that there have been a number of changes to headrope length implemented in the NPF over time. A reduction in headrope length of 25% came into effect at the start of the first fishing season in 2005. In 2008, an 8% increase in headrope length was implemented in the tiger prawn season. As a result “catch rate”, measured in terms of Catch per Unit Effort (CPUE) (tonnes per day), may be affected. It is also important to note that trends in CPUE don’t necessarily reflect trends in stock abundance.

The banana prawn fishery CPUE decreased from a daily rate of 1.769 t per day in 2015 to 1.447 t in 2016. The nominal CPUE for the tiger prawn fishery decreased from 0.630 t per day in 2015 to 0.433 t in 2016 and the effective CPUE also decreased from 0.215 t per day in 2015 to 0.141 t in 2016 (Figure 5).

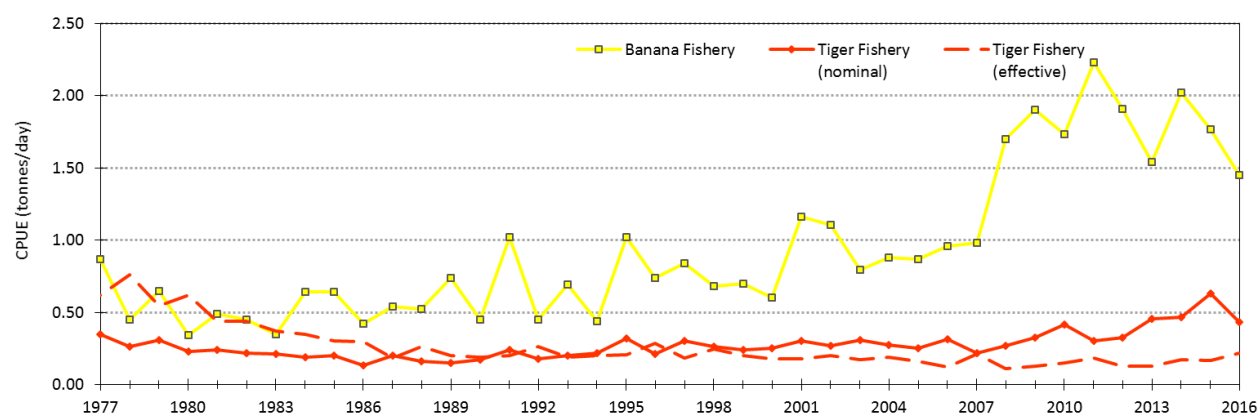


Figure 5: Catch rate in the banana and tiger prawn fisheries between 1977 and 2016.

Catch, effort and catch rate by month

The highest total prawn catches during the 2016 banana prawn season were obtained during April, whilst the highest total prawn catches during the 2016 tiger prawn season were obtained during August (Table 2).

Table 3 shows effort by month in the banana and tiger prawn seasons for 2016. Effort in the banana prawn season (1 April to 15 June) was highest in April and lowest in June. Tiger prawn season (1 August to 20 November) effort was highest in October and lowest in November (Table 3).

Monthly CPUE for banana prawns was highest in April during the banana prawn season (Table 4). Monthly CPUE for both nominal and effective effort for tiger prawns was highest in August.

Table 2: Monthly catch by species in 2016.

Catch (t)	April	May	June	Aug	Sep	Oct	Nov	Total
Banana	2,129.82	556.59	23.41	116.80	29.05	18.27	7.88	2,881.81
Tiger	8.85	127.81	30.90	610.64	641.77	500.83	217.88	2,138.67
Endeavour	0.55	8.34	1.31	143.44	99.74	74.59	45.36	373.32
King	0.01	1.13	0.31	18.43	5.99	0.47	0.20	26.54
Total	2,139.23	693.88	55.92	889.30	776.55	594.16	271.32	5,420.34

Table 3: Monthly effort in the banana and tiger prawn seasons in 2016.

Effort (days)	April	May	June	Aug	Sep	Oct	Nov	Total
Banana Fishery	1,075	632	38	102	16	30	16	1909
Tiger Fishery (nominal)	17	419	121	1,423	1,471	1,520	929	5,900
Tiger Fishery (effective)	52	1,287	372	4,371	4,518	4,669	2,853	18,122
Total	1,144	2,338	531	5,896	6,005	6,219	3,798	25,931

Table 4: Monthly catch rate for all species in the banana and tiger prawn seasons in 2016.

CPUE (t/day)	Apr	May	Jun	Aug	Sep	Oct	Nov	Total
Banana Fishery	1.985	0.895	0.607	1.018	1.089	0.516	0.450	6.56
Tiger Fishery (nominal)	0.317	0.307	0.271	0.552	0.516	0.381	0.284	2.63
Tiger Fishery (effective)	0.103	0.100	0.088	0.180	0.168	0.124	0.093	0.86

Vessel and gear information

Vessel length

A maximum of 52 vessels can fish at any one time in the NPF. A total of 52 different vessels fished in 2016. As in 2015, the most common NPF vessel length in 2016 was between 22.0-22.9 m (Figure 6).

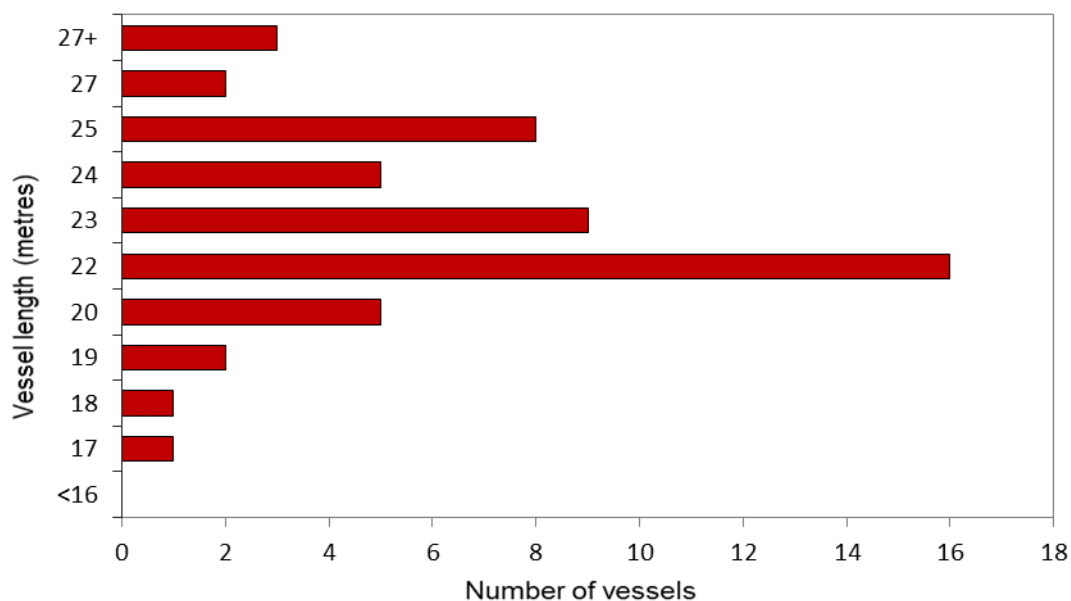


Figure 6: Frequency of vessel lengths in the NPF fleet in 2016.

Distribution of catch by vessel

In the 2016 banana prawn season, 18 vessels (35%) caught over 60 t (down from 33 vessels in 2015). Eight vessels (15%) caught 50-59t, 21 (40%) caught between 30 and 49 t and 5 (10%) caught less than 29 t (Figure 7a).

In the 2016 tiger prawn season the number of vessels with a total catch over 60 t decreased substantially from 42 vessels (81%) in 2015 to 11 (21%) in 2016. Twenty eight vessels (54%) caught between 40 and 59 t, 10 (19%) caught 30-39 t and 3 (6%) caught 20-29 t (Figure 7b).

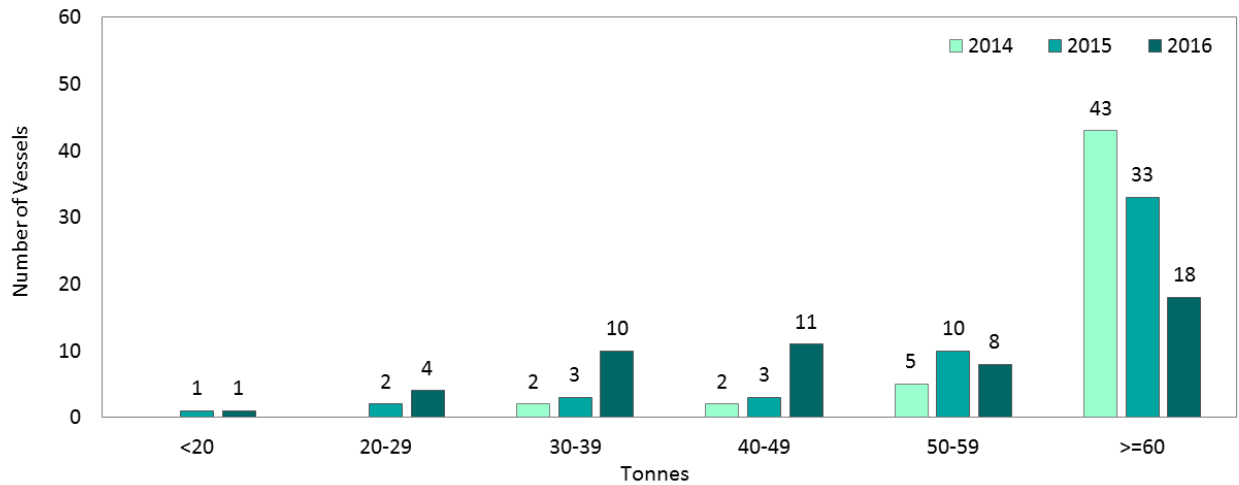


Figure 7a: Distribution of total catch in the banana prawn season, 2014-2016.

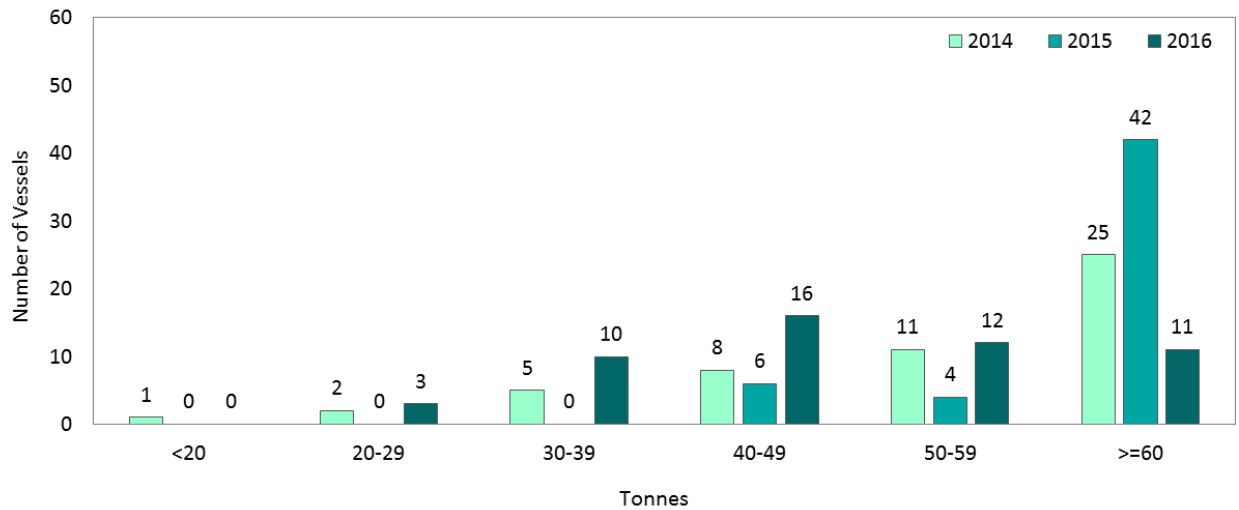


Figure 7b: Distribution of total catch in the tiger prawn season, 2014-2016.

Average catch per vessel

Average total prawn catch per vessel decreased from 148 t per vessel in 2015 to 102 t per vessel in 2016 (Figure 8a). The average catch per vessel for banana prawns decreased from 75 t per vessel in 2015 to 54 t per vessel in 2016 (Figure 8b). Average catch of tiger prawns per vessel also decreased from 61 t per vessel in 2015 to 40 t per vessel in 2016 (Figure 8c).

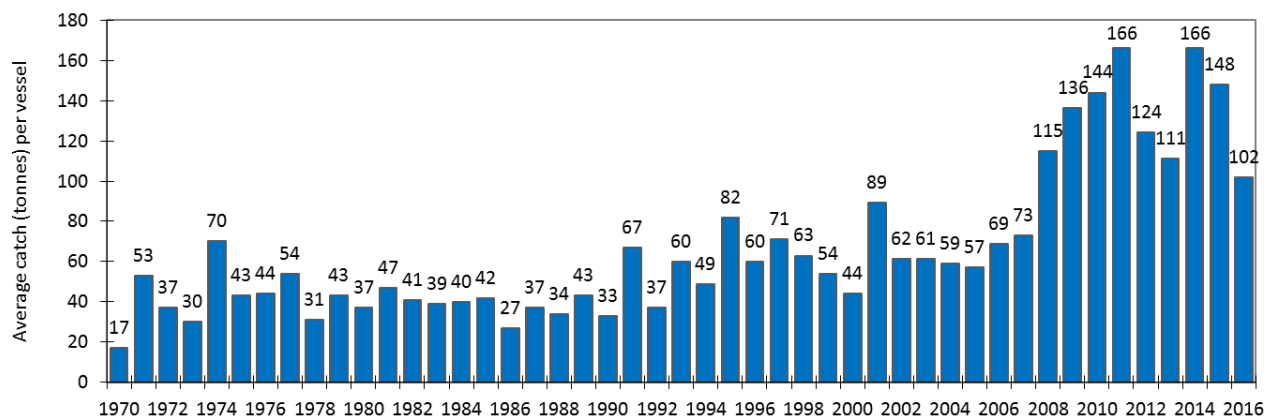


Figure 8a: Average total catch of all prawns per vessel in the NPF from 1970 to 2016.

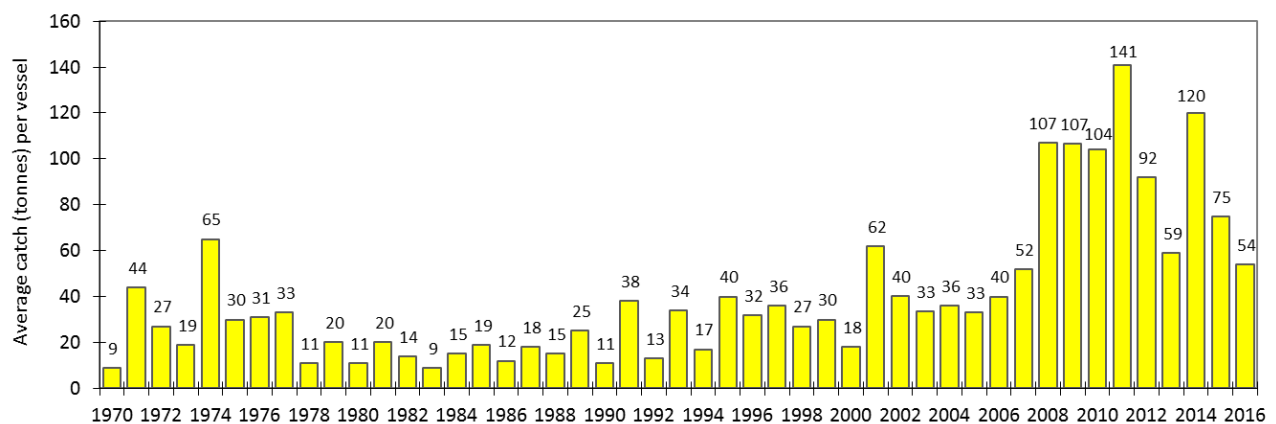


Figure 8b: Average total catch of banana prawns per vessel in the NPF from 1970 to 2016.

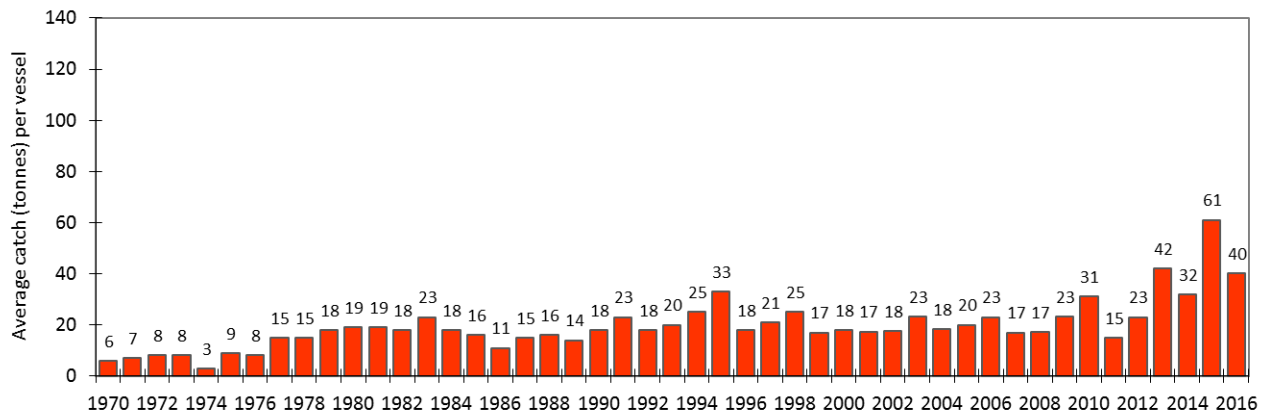


Figure 8c: Average total catch of tiger prawns per vessel in the NPF from 1970 to 2016.

Fishing Gear

Total tiger prawn headrope increased slightly from 1,500.17 fathoms (2.74 km) in 2015 to 1524.17 fathoms (2.79km) in 2016 (Figure 9). The mean headrope length in 2016 was 29.31 fathoms (53.6 m) compared with 28.85 fathoms (52.71 m) in 2015 (Figure 10).

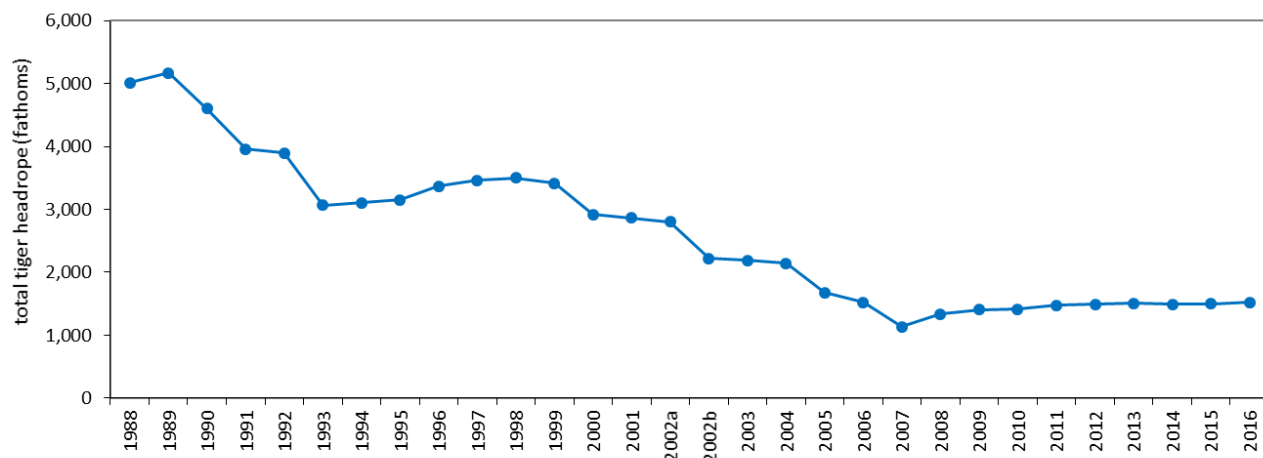


Figure 9: Total tiger prawn season headrope length in the NPF from 1988 to 2016.

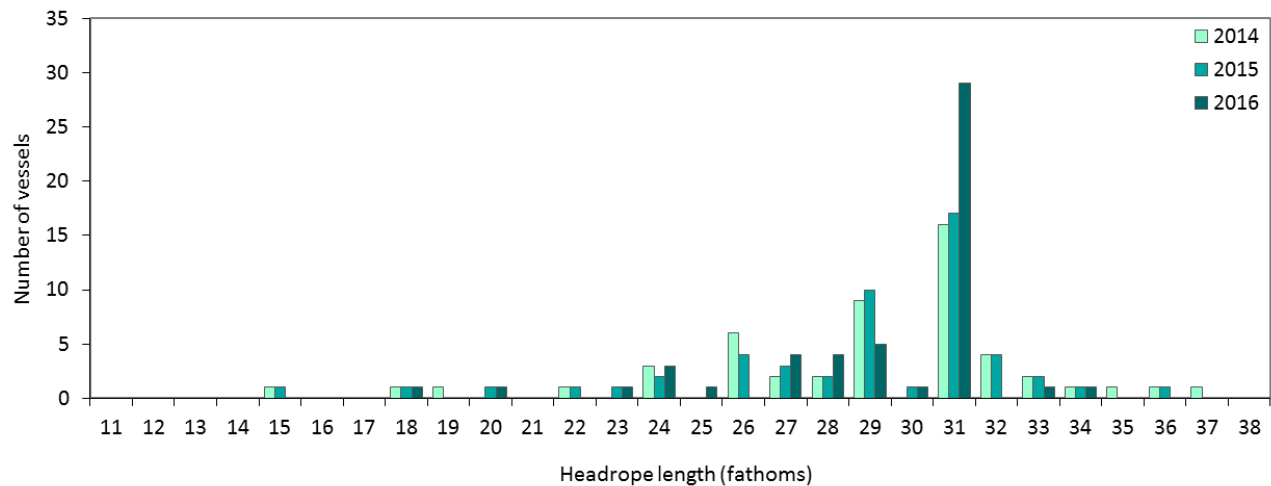


Figure 10: Frequency of headrope length for the tiger prawn season in the NPF from 2014 to 2016.

Catch and effort by statistical area in the Northern Prawn Fishery

All areas

Catch and effort has been partitioned into the 15 statistical areas illustrated below (Figure 11) and is detailed on the following pages for the years 1999 – 2016 (for the entire historical catch and effort of each area see Appendix 1). The highest banana prawn catches were recorded in the Bold area with 743 t (Figure 12), which was also the highest area for banana prawn catches in 2015 (742 t). As in previous years, the highest catches of tiger prawns were recorded in the Groote area with 597 t caught (Figure 13), a substantial decrease from 1,386 t in 2015.

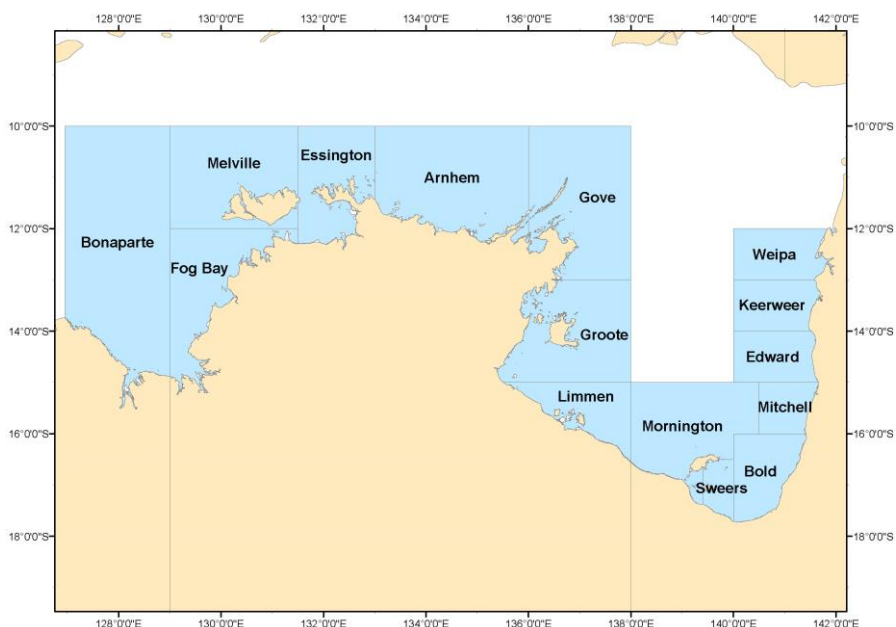


Figure 11: Statistical areas of the NPF.

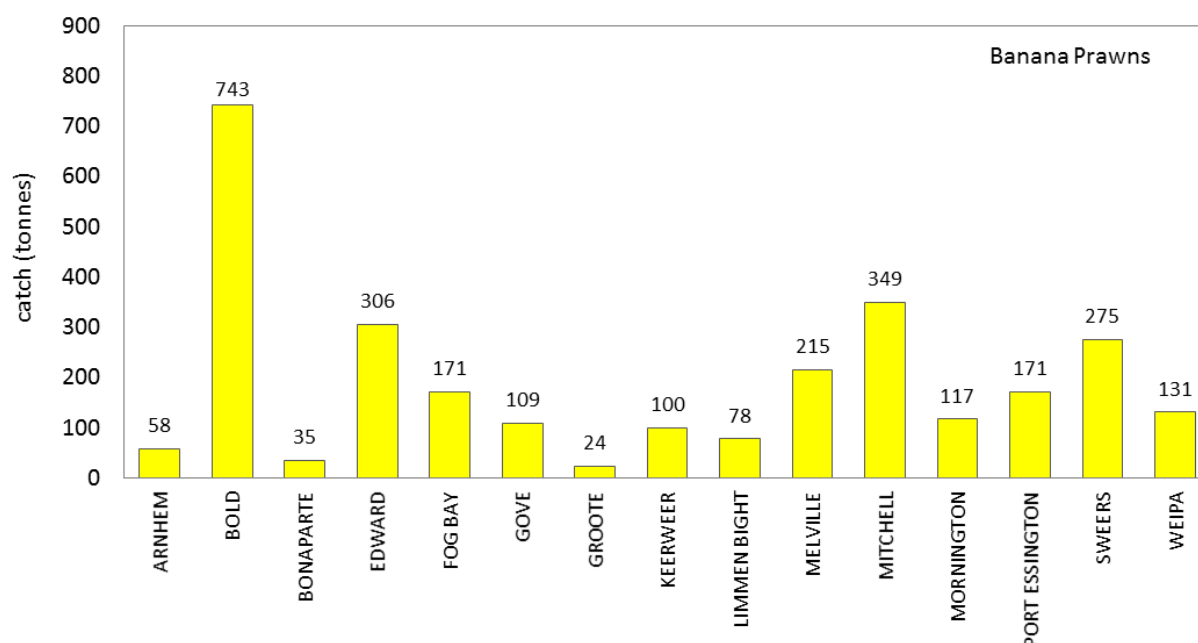


Figure 12: Total catch of banana prawns for each statistical area of the NPF in 2016.

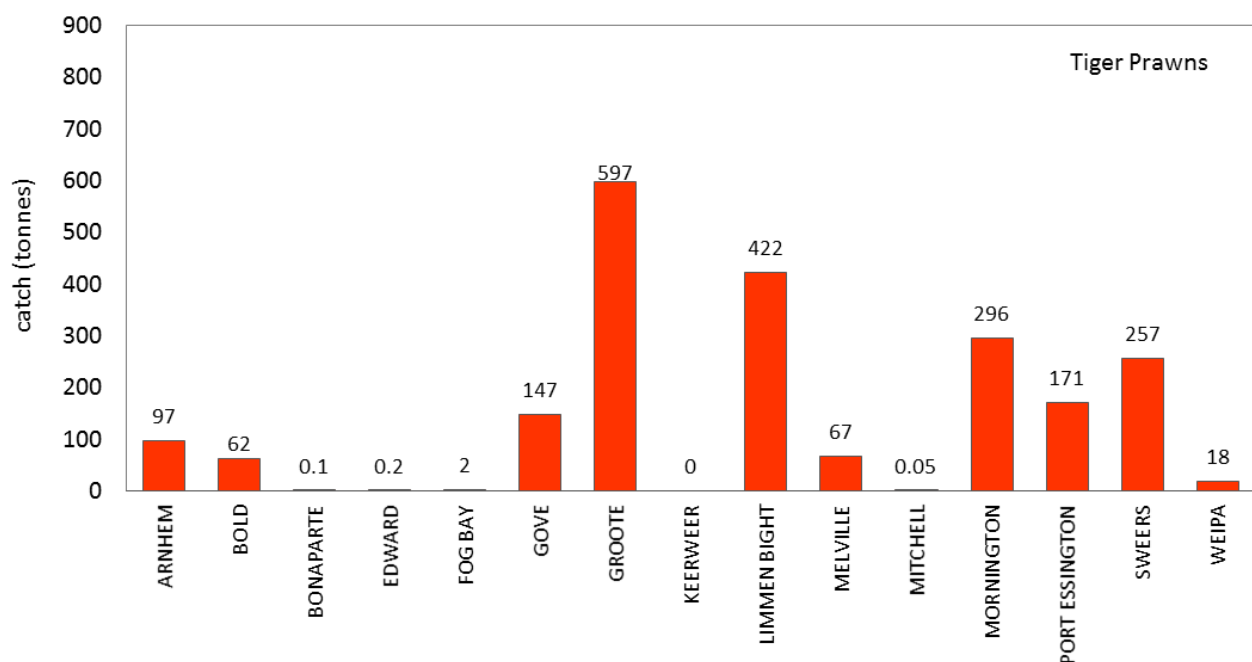


Figure 13: Total catch of tiger prawns for each statistical area of the NPF in 2016.

Weipa

Banana prawn catches in Weipa decreased from 394 t in 2015 to 131 t in 2016. Tiger prawn catches decreased from 92 t in 2015 to 18 t in 2016 and catches of endeavour prawns also decreased from 28 t in 2015 to 12 t in 2016 (Figure 14). Banana prawns again dominated the catches in Weipa during 2016, comprising 81%, with tiger prawns making up 11% and endeavor prawns 8% (Figure 15).

Effort in the banana prawn fishery decreased from 178 days in 2015 to 122 days in 2016 (Figure 16a). CPUE of banana prawns decreased 2.21 t per day in 2015 to 1.08 t per day in 2016 (Figure 16b). Effort in the tiger prawn fishery decreased from 298 days in 2015 to 101 days in 2016 (Figure 16a). Nominal and effective CPUE of tiger prawns decreased from 0.403 and 0.138 t per day, respectively, in 2015 to 0.301 and 0.098 t per day in 2016 (Figure 16c).

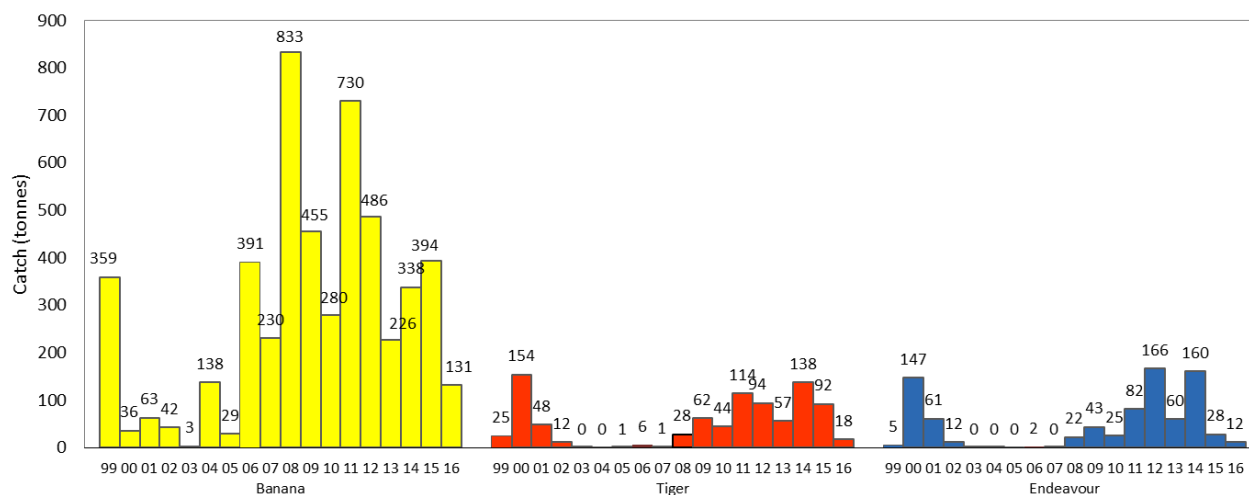


Figure 14: Catch by species in the Weipa area - 1999 to 2016.

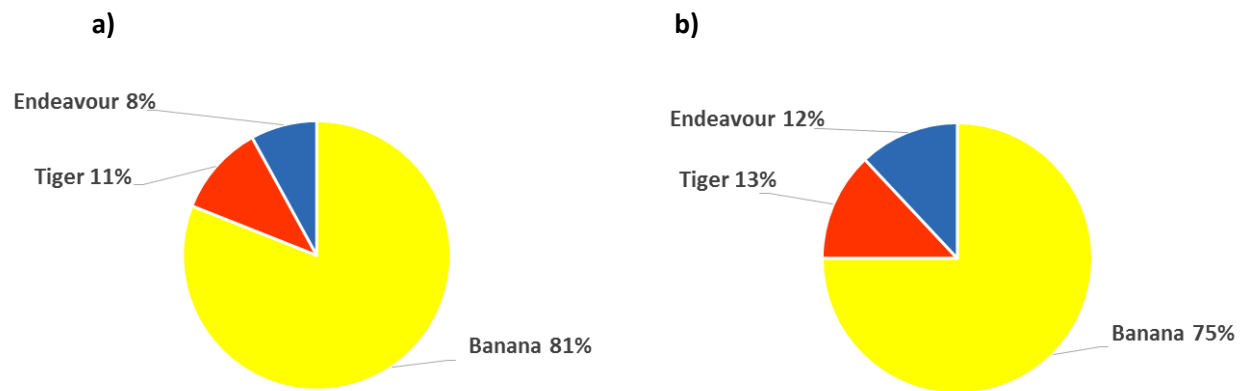


Figure 15: (a) Percentage catch of prawn species in the Weipa area during 2016, and (b) percentage catch of prawn species in the Weipa area - 1999 to 2016.

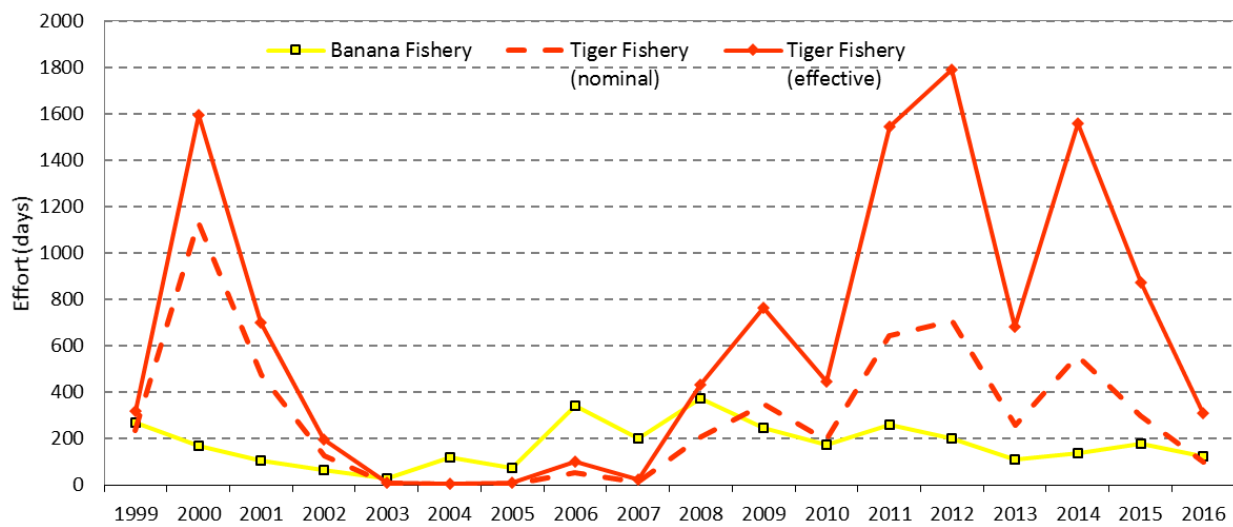


Figure 16a: Effort for the banana and tiger prawn fisheries in the Weipa area - 1999 to 2016.

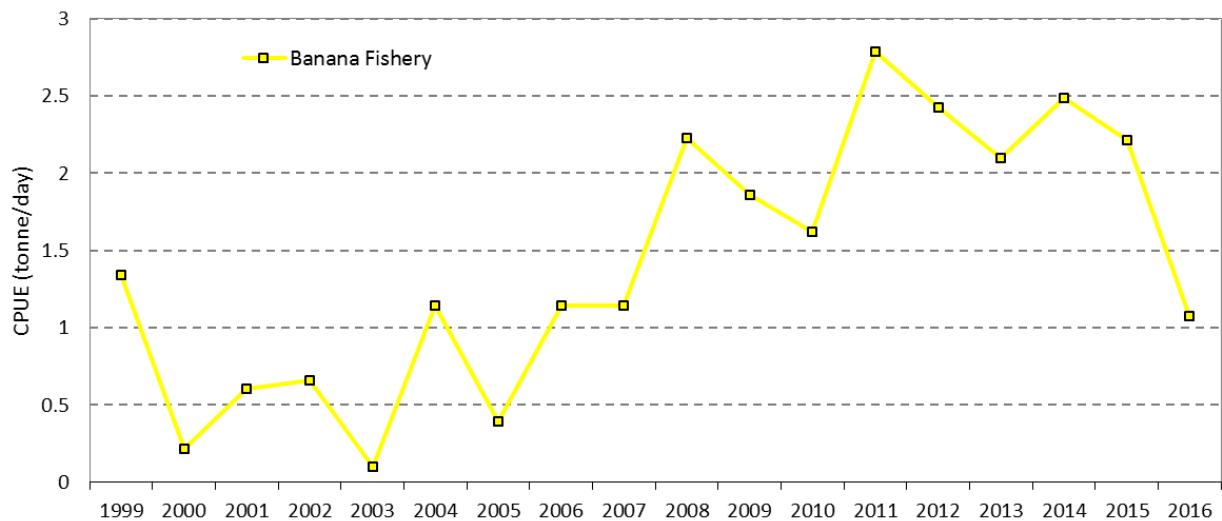


Figure 16b: Catch rate for the banana prawn fishery in the Weipa area - 1999 to 2016.

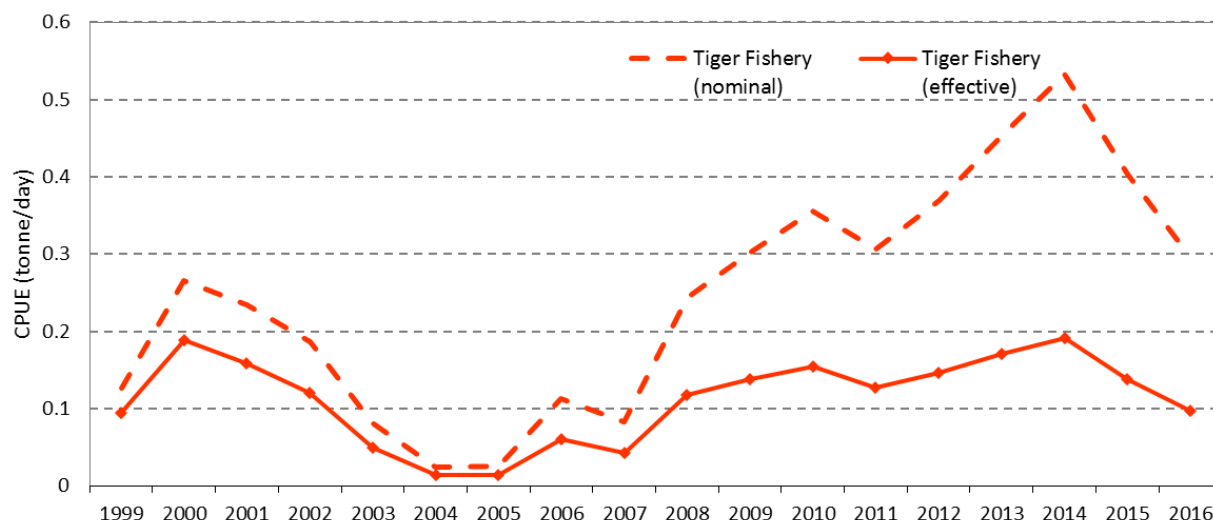


Figure 16c: Nominal and effective catch rate for the tiger prawn fishery in the Weipa area - 1999 to 2016.

Keerweer

Banana prawn catches in the Keerweer region decreased from 204 t in 2015 to 100 t in 2016 (Figure 17). Catches of tiger and endeavor prawns were both <2 t in 2016 (Figure 17). Banana prawns comprised 99% of the catch in 2016 (Figure 18).

Effort in the banana prawn fishery decreased from 82 days in 2015 to 62 days in 2016 (Figure 19a). CPUE for banana prawns also decreased from 2.49 t per day in 2015 to 1.61 t per day in 2016 (Figure 19b). Effort in the tiger prawn fishery decreased from 3 days in 2015 to less than 1 day in 2016 (Figure 19a). Nominal and effective CPUE of tiger prawns decreased from 0.600 and 0.226 t per day, respectively, in 2015 to 0.590 and 0.192 in 2016 (Figure 19c).

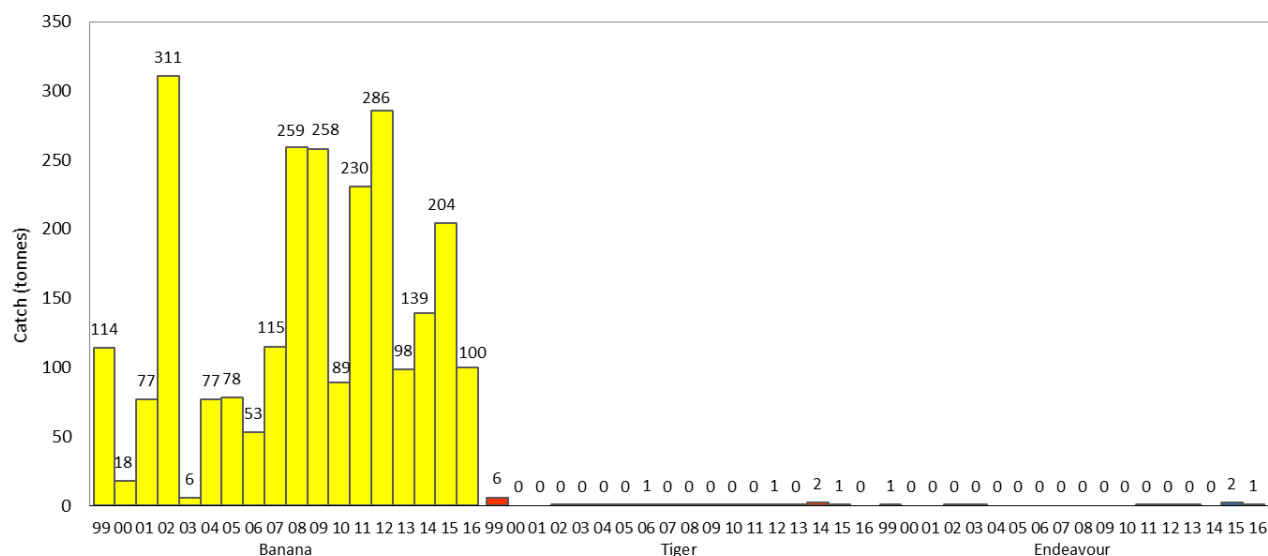


Figure 17: Catch by species in the Keerweer area - 1999 to 2016.

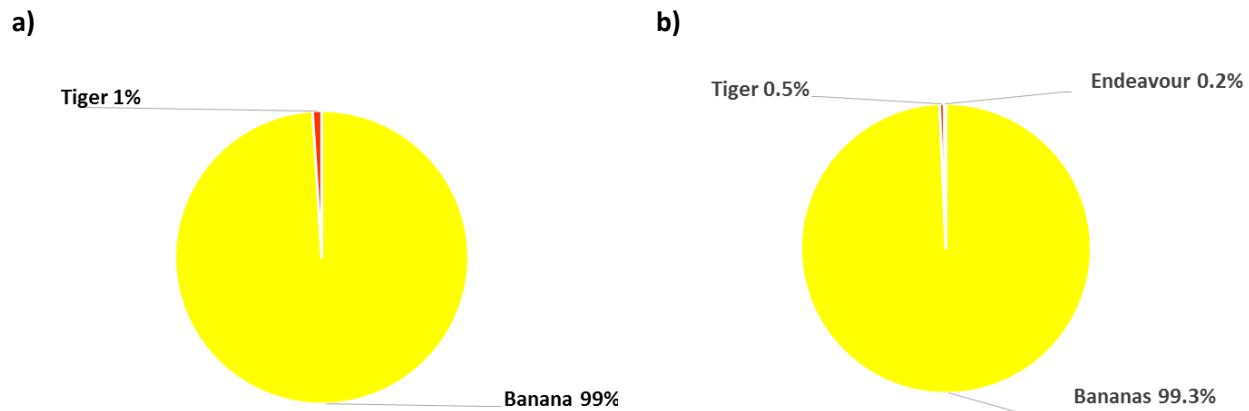


Figure 18: (a) Percentage catch of prawn species in the Keerweer area during 2016 and (b) percentage catch of prawn species in the Keerweer area - 1999 to 2016.

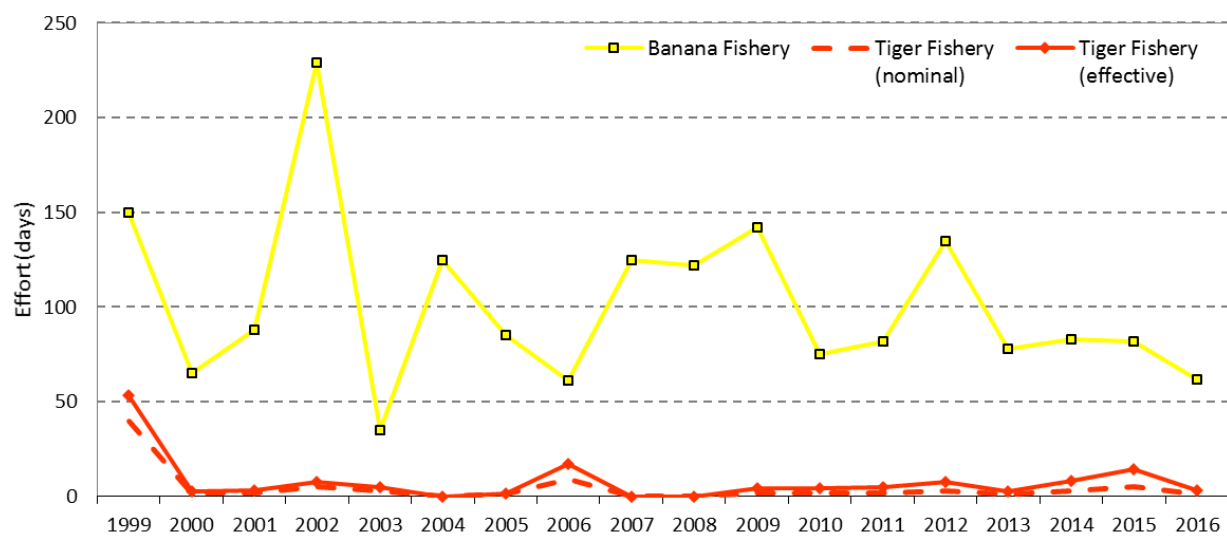


Figure 19a: Effort for the banana and tiger prawn fisheries in the Keerweer area - 1999 to 2016.

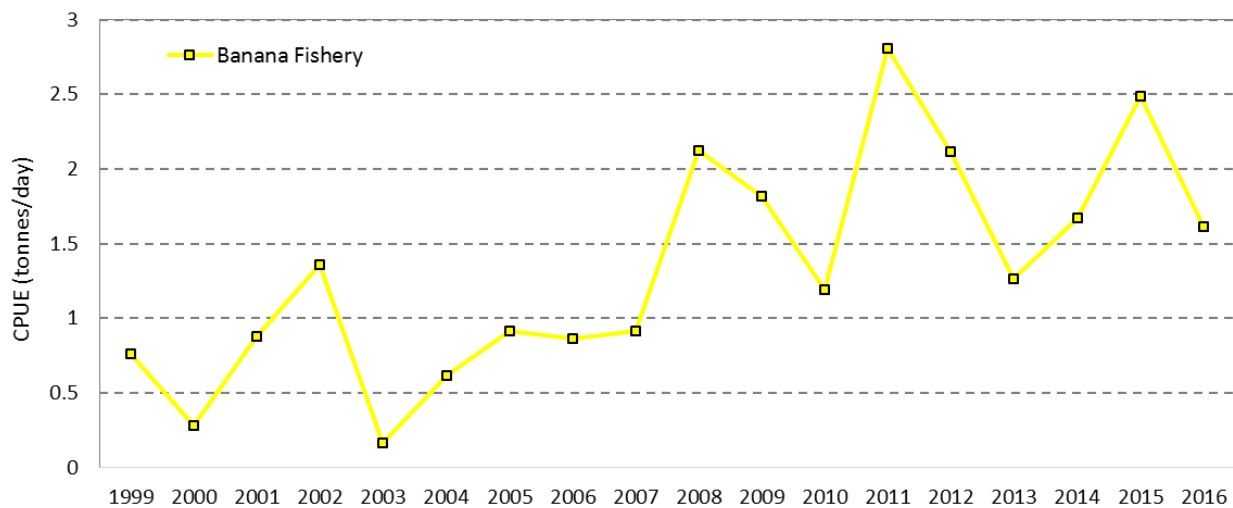


Figure 19b: Catch rate for the banana prawn fishery in the Keerweer area - 1999 to 2016.

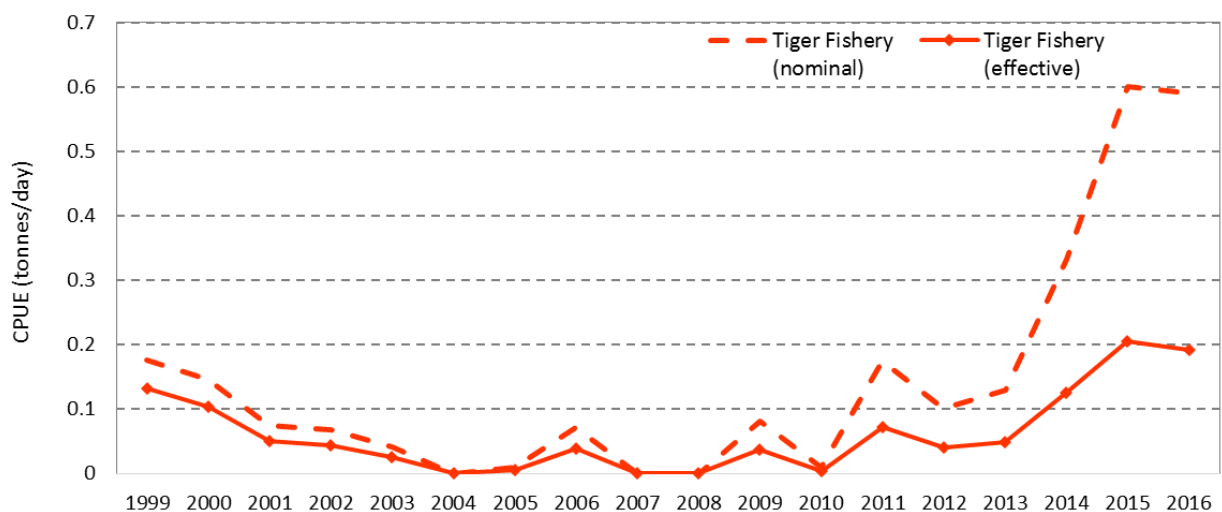


Figure 19c: Nominal and effective catch rate for the tiger prawn fishery in the Keerweer area - 1999 to 2016.

Edward

Banana prawn catches in the Edward area increased from 215 t in 2015 to 306 t in 2016 (Figure 20). Catches of tiger and endeavour prawns were less than 1 t in 2016. Banana prawns comprised 99.97% of the catch in 2016 (Figure 21).

Effort in the banana prawn fishery increased from 113 days in 2015 to 167 days in 2016 (Figure 22a). CPUE of banana prawns decreased from 1.90 t per day in 2015 to 1.83 t per day in 2016 (Figure 22b). Nominal and effective CPUE of tiger prawns were both zero for 2016 (Figure 22a, c).

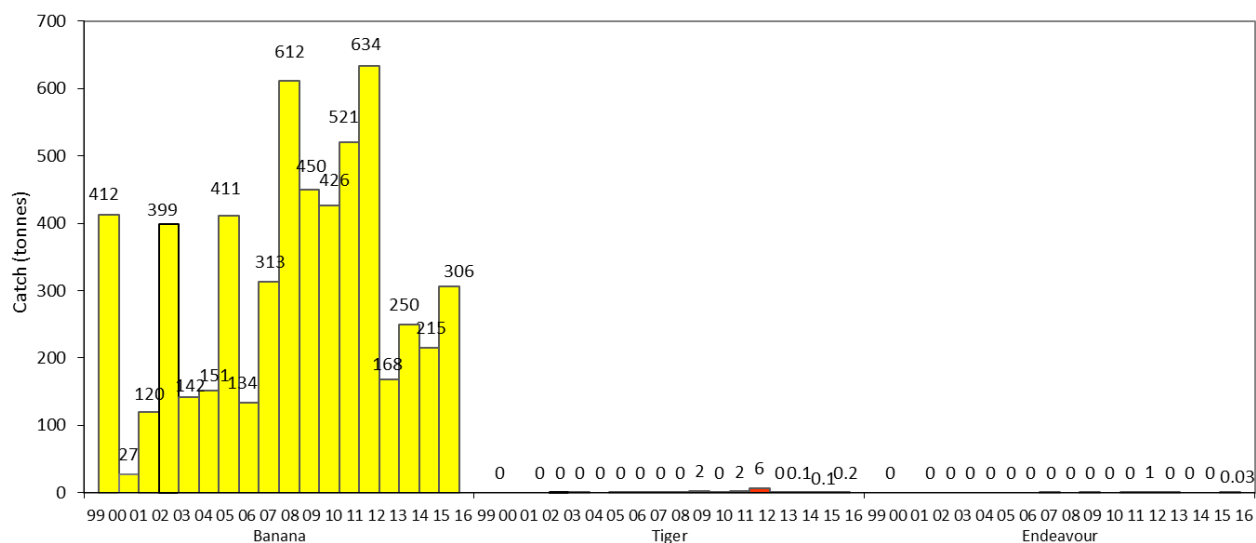


Figure 20: Catch by species in the Edward area - 1999 to 2016.

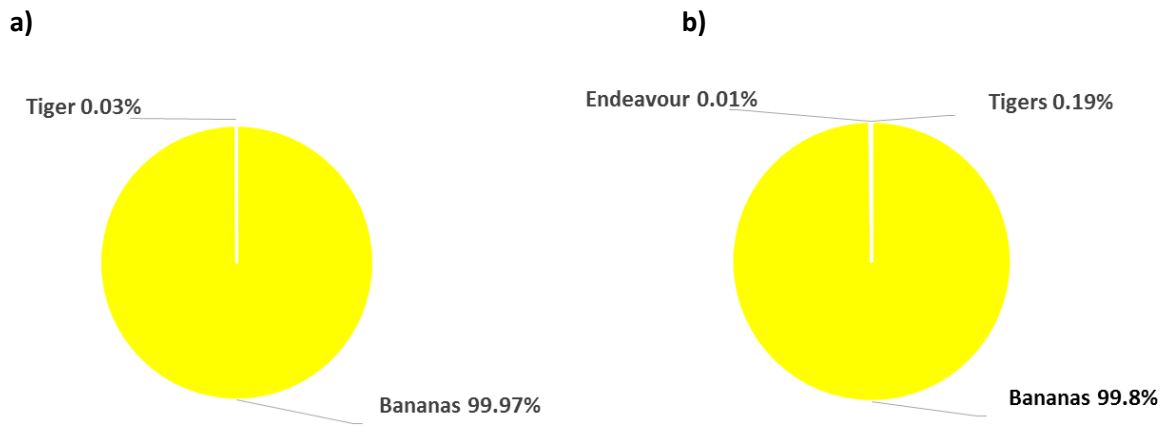


Figure 21: (a) Percentage catch of prawn species in the Edward area during 2016 and (b) percentage catch of prawn species in the Edward area - 1999 to 2016.

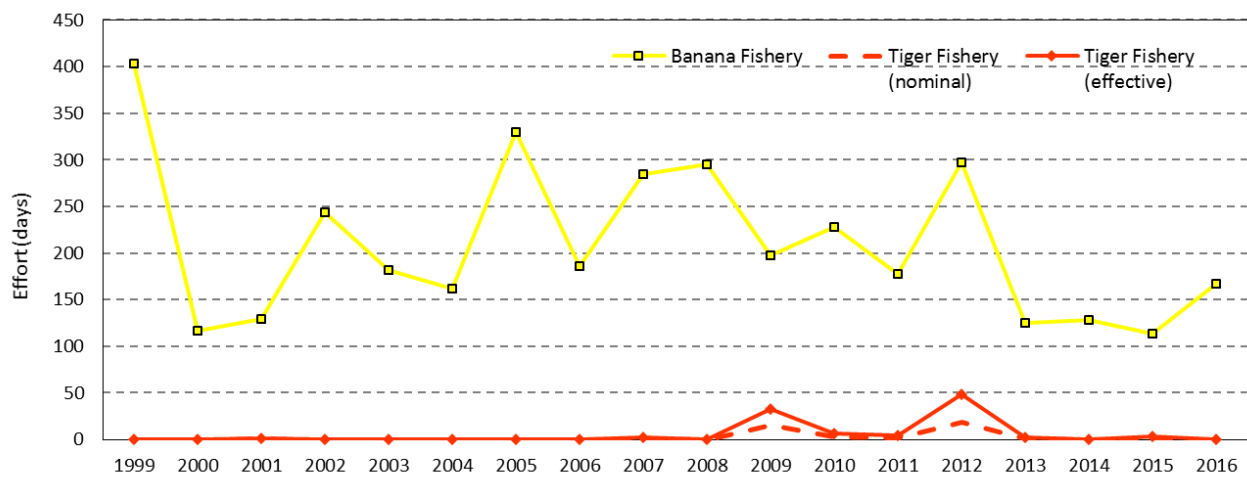


Figure 22a: Effort for the banana and tiger prawn fisheries in the Edward area - 1999 to 2016.

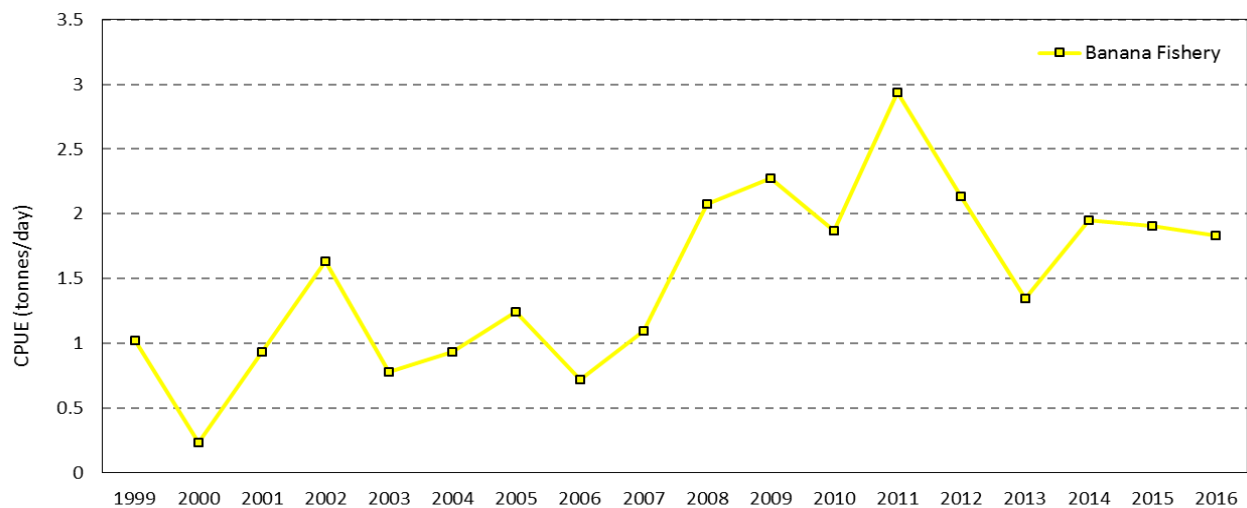


Figure 22b: Catch rate for the banana prawn fishery in the Edward area - 1999 to 2016.

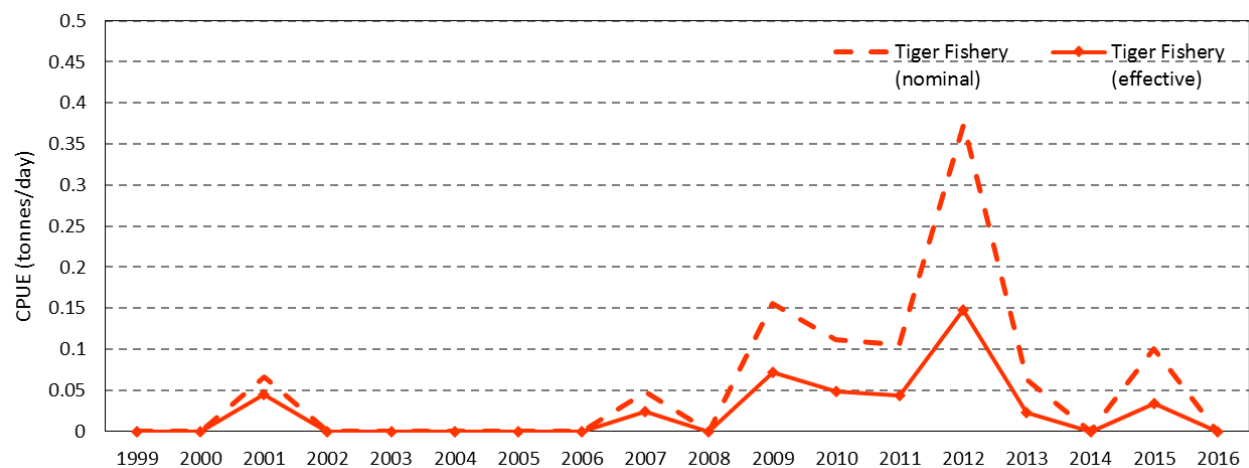


Figure 22c: Nominal and effective catch rate for the tiger prawn fishery in the Edward area – 1999 to 2016.

Mitchell

Banana prawn catches in the Mitchell area decreased from 480 t in 2015 to 349 t in 2016 (Figure 23). Tiger and Endeavour prawn catches were both zero, as has been the case for many years. Banana prawns comprised 100% of the catch in this area during 2016 (Figure 24).

Effort in the banana prawn fishery increased from 131 days in 2015 to 138 days in 2016 (Figure 25a). CPUE of banana prawns decreased from 3.66 t per day in 2015 to 2.532 t per day in 2016 (Figure 25b). Nominal and effective CPUE of tiger prawns remained at zero in 2016 (Figure 25a, c).

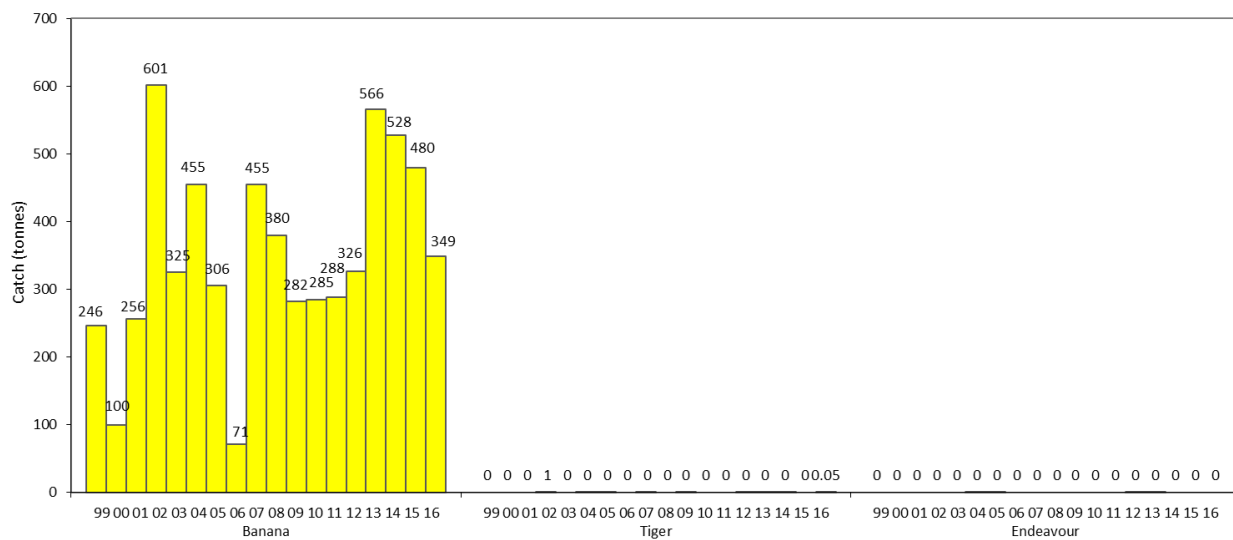


Figure 23: Catch by species in the Mitchell area - 1999 to 2016.

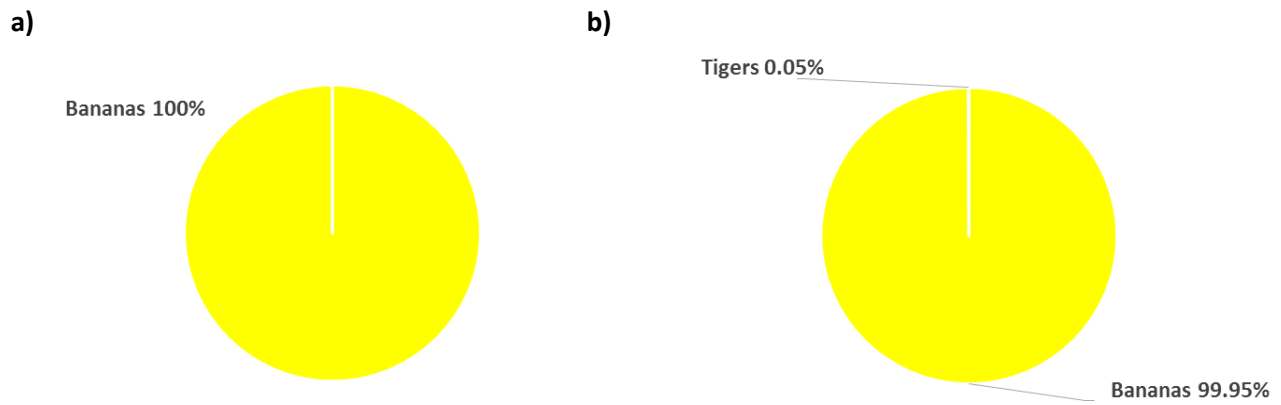


Figure 24: (a) Percentage catch of prawn species in the Mitchell area during 2016 and (b) percentage catch of prawn species in the Mitchell area - 1999 to 2016.

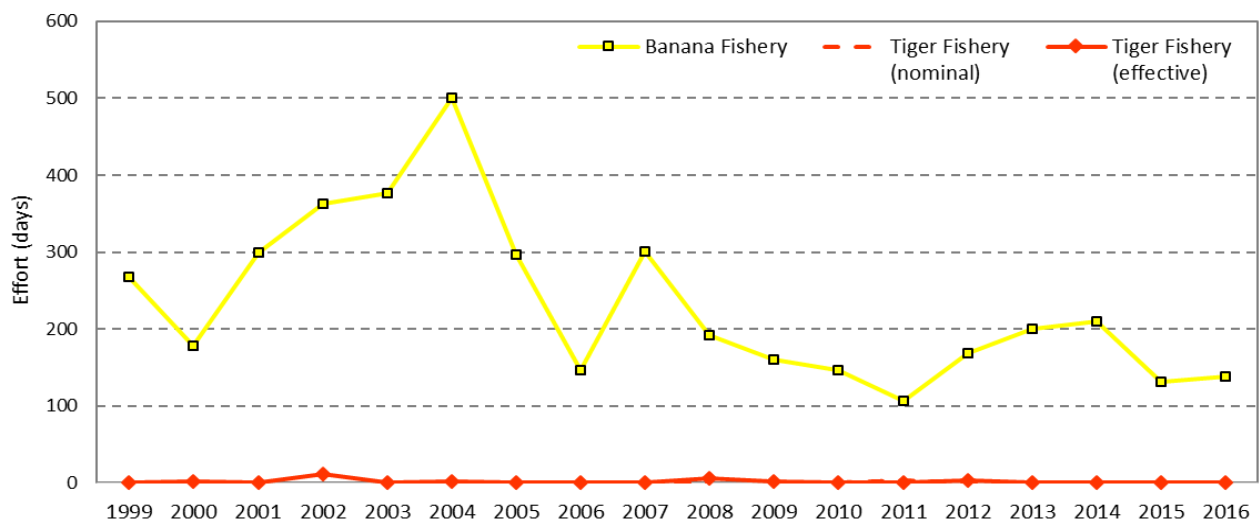


Figure 25a: Effort for the banana and tiger prawn fisheries in the Mitchell area - 1999 to 2016.

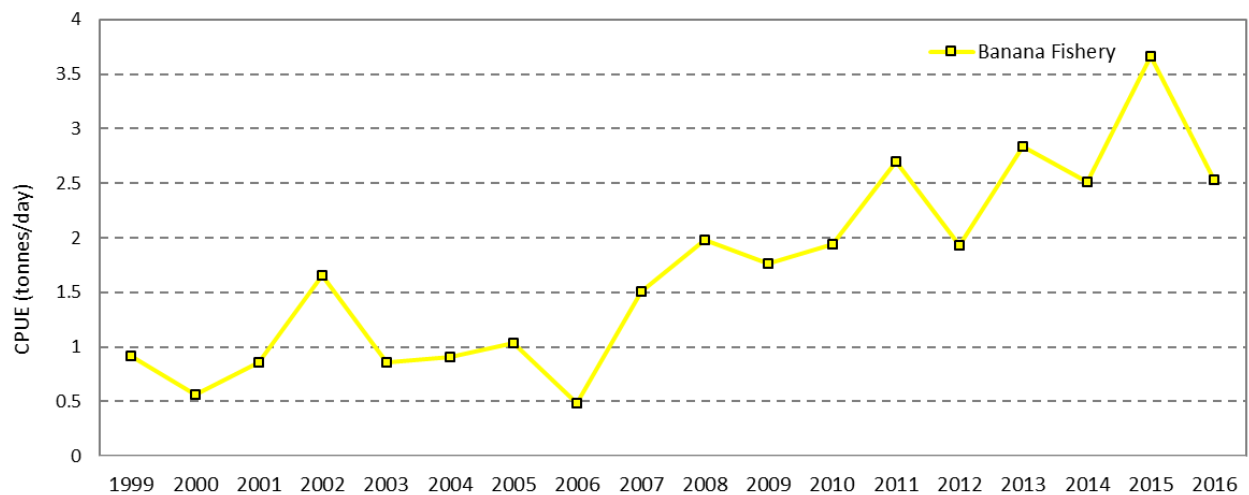


Figure 25b: Catch rate for the banana prawn fishery in the Mitchell area - 1999 to 2016.

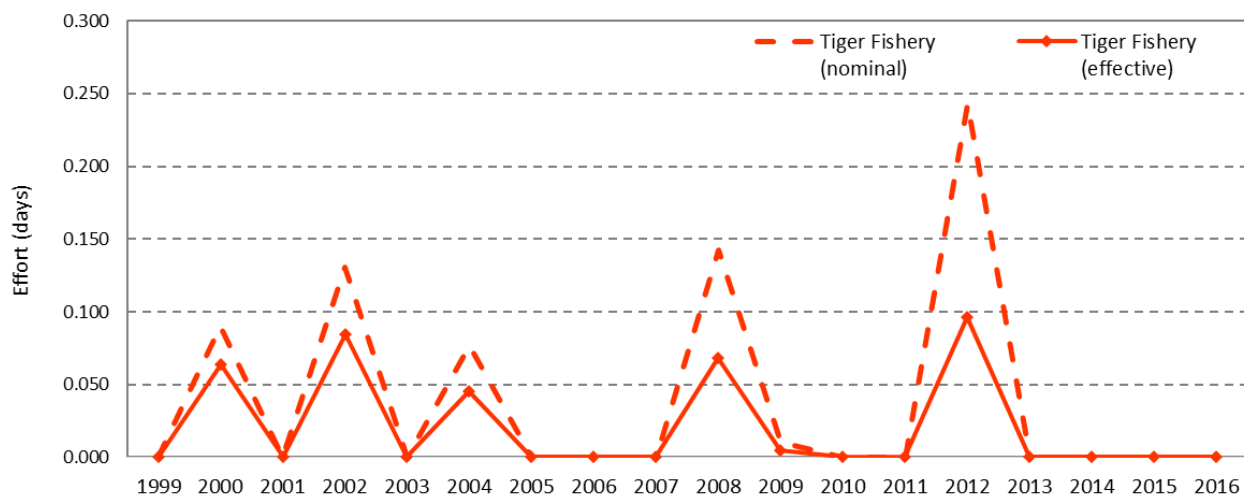


Figure 25c: Nominal and effective catch rate for the tiger prawn fishery in the Mitchell area - 1999 to 2016.

Bold

Banana prawn catches in the Bold area increased slightly from 742 t in 2015 to 743 t in 2016 (Figure 26). Catches of tiger prawns increased from 55 t in 2015 to 62 t in 2016. Endeavour prawn catches decreased from 9 t in 2015 to 2 t in 2016. Banana prawns dominated the catch in this area in 2016, comprising 92% of the catch, with tiger prawns (7.7%) and endeavour prawns (0.3%) making up the remainder (Figure 27a).

Effort in the banana prawn fishery increased from 271 days in 2015 to 373 days in 2016 (Figure 28a). CPUE of banana prawns decreased from 2.73 t per day in 2015 to 1.99 t per day in 2016 (Figure 28b). Effort in the tiger prawn fishery increased from 112 days in 2015 to 168 days in 2016 (Figure 28a). Nominal and effective CPUE of tiger prawns decreased from 0.491 and 0.169 t per day, respectively, in 2015 to 0.384 and 0.125 t per day in 2016 (Figure 28c).

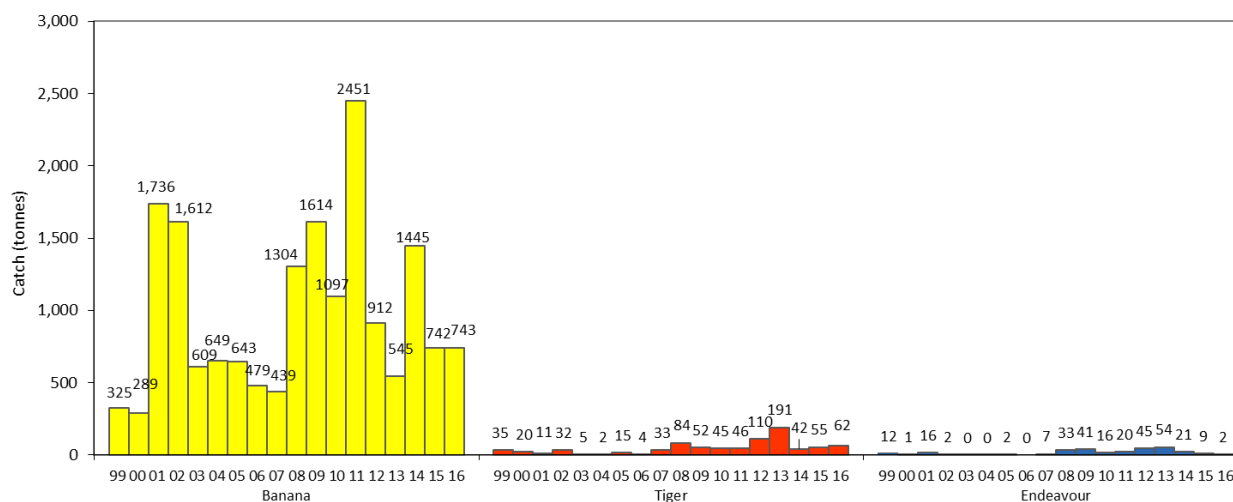


Figure 26: Catch by species in the Bold area - 1999 to 2016.

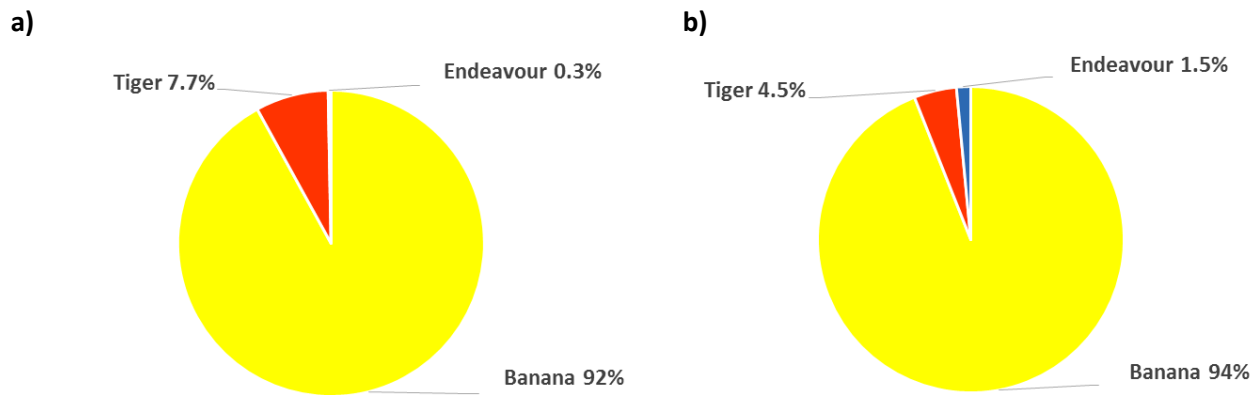


Figure 27: (a) Percentage catch of prawn species in the Bold area during 2016 and (b) catch of prawn species in the Bold area - 1999 to 2016.

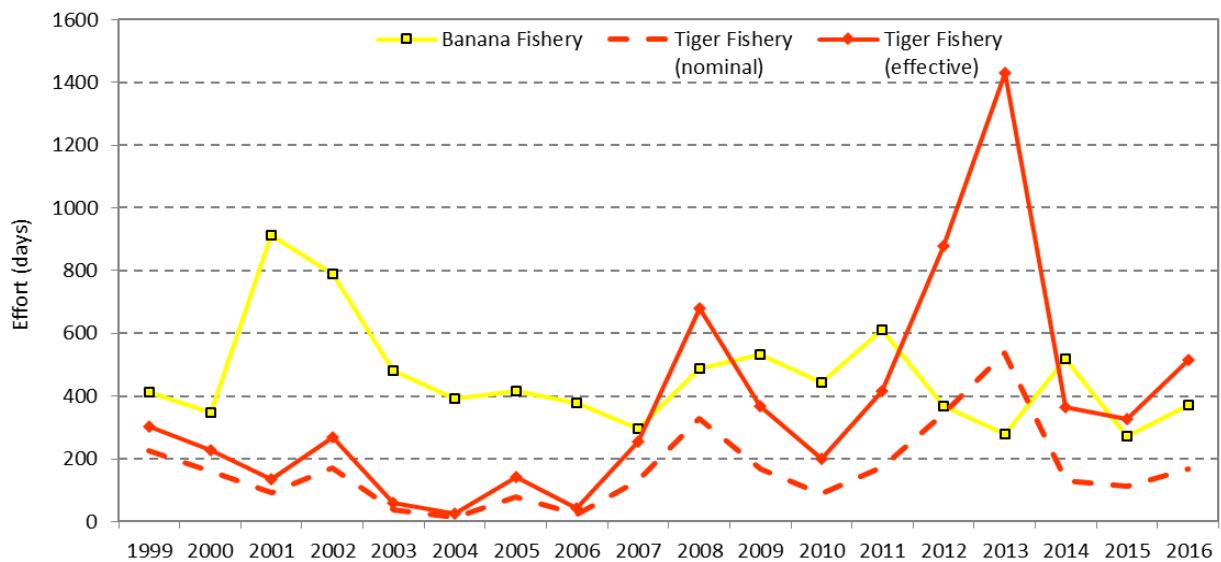


Figure 28a: Effort for the banana and tiger prawn fisheries in the Bold area - 1999 to 2016.

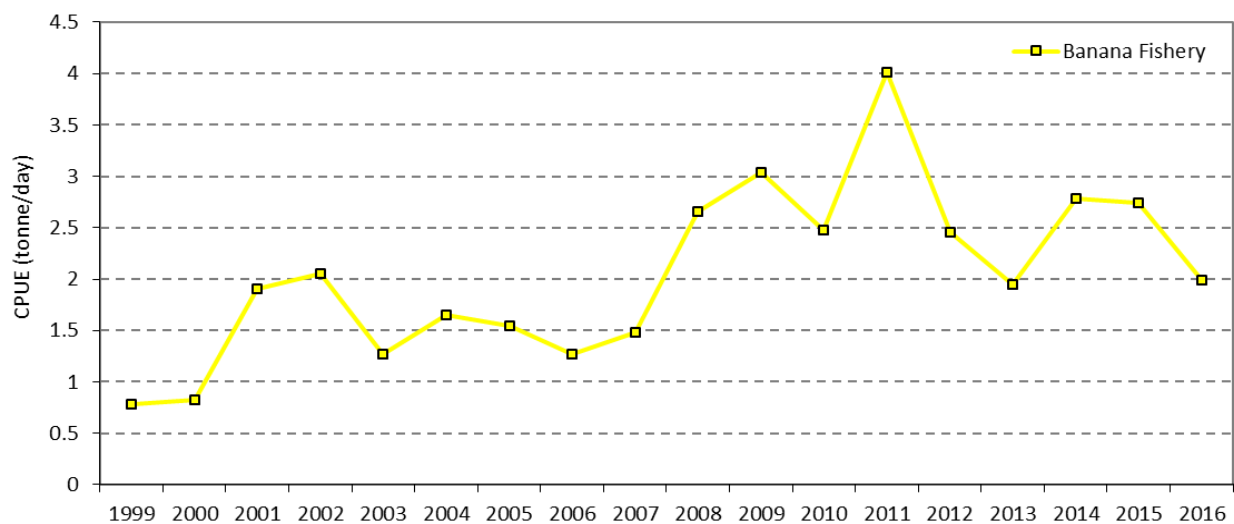


Figure 28b: Catch rate for the banana prawn fishery in the Bold area - 1999 to 2016.

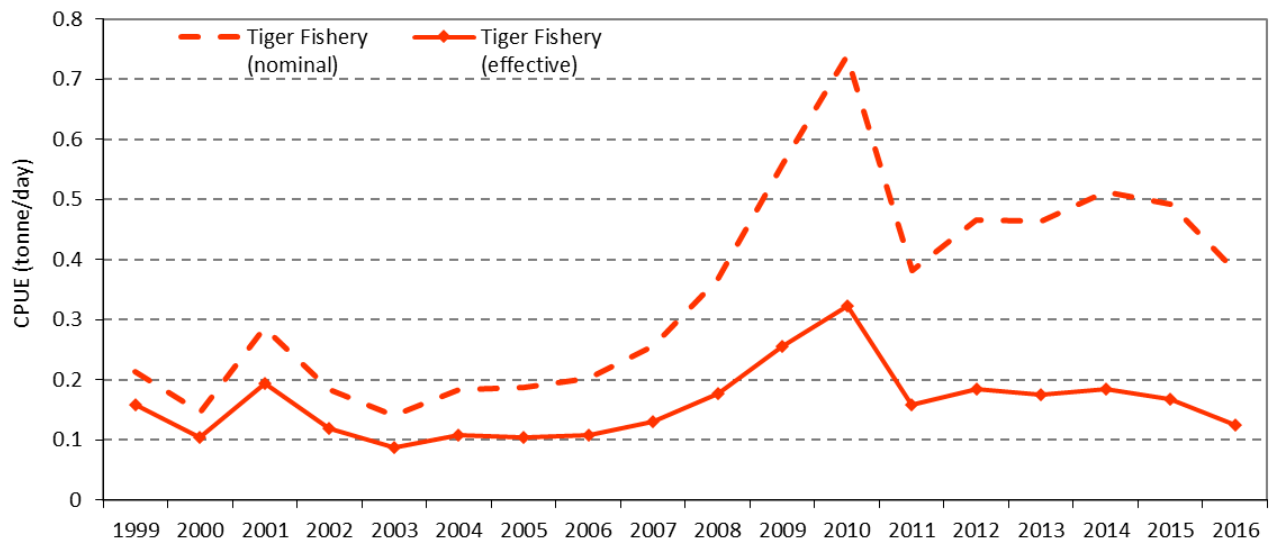


Figure 28c: Nominal and effective catch rate for the tiger prawn fishery in the Bold area - 1999 to 2016.

Sweers

Banana prawn catches in the Sweers area increased from 120 t in 2015 to 275 t in 2016 (Figure 29). Catches of tiger prawns increased from 202 t in 2015 to 257 t in 2016. Endeavour prawns decreased from 66 t in 2015 to 52 t in 2016. Banana prawns comprised 47% of the catch in 2016 compared to 31% in 2015. Tiger and endeavor prawns comprising 44% and 9%, respectively, compared to 52% and 17% in 2015 (Figure 30a).

Effort in the banana prawn fishery increased from 56 days in 2015 to 122 days in 2016 (Figure 31a). CPUE of banana prawns increased from 2.09 t per day in 2015 to 2.17 t per day in 2016 (Figure 31b). Effort in the tiger prawn fishery increased from 374 days in 2015 to 518 days in 2016 (Figure 31a). Nominal and effective CPUE of tiger prawns decreased from 0.757 and 0.259 t per day, respectively, in 2015 to 0.633 and 0.206 t per day in 2016 (Figure 31c).

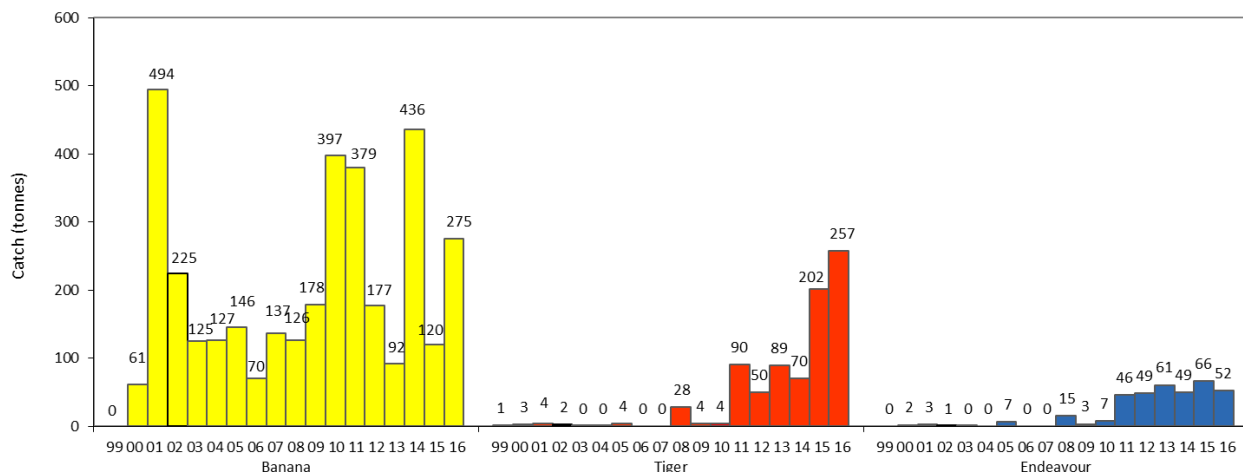


Figure 29: Catch by species in the Sweers area - 1999 to 2016.

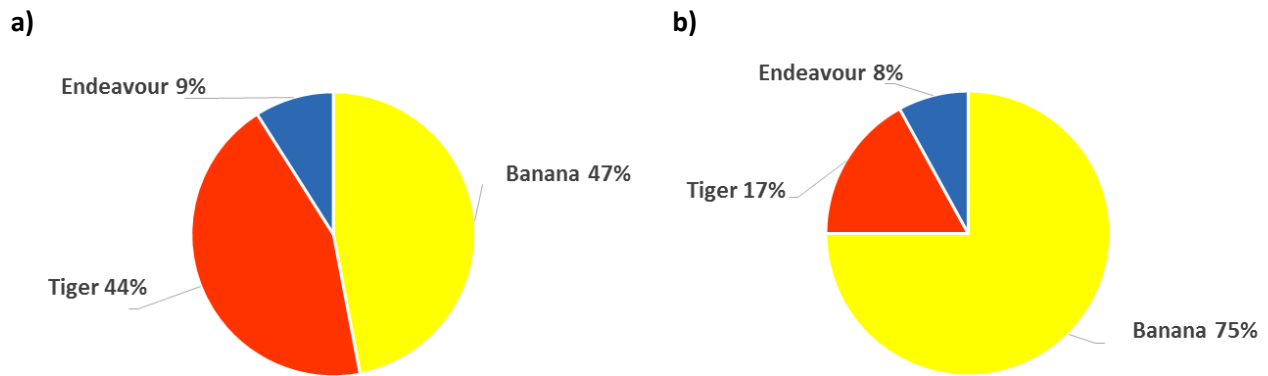


Figure 30: (a) Percentage catch of prawn species in the Sweers area during 2016, and (b) percentage catch of prawn species in the Sweers area - 1999 to 2016.

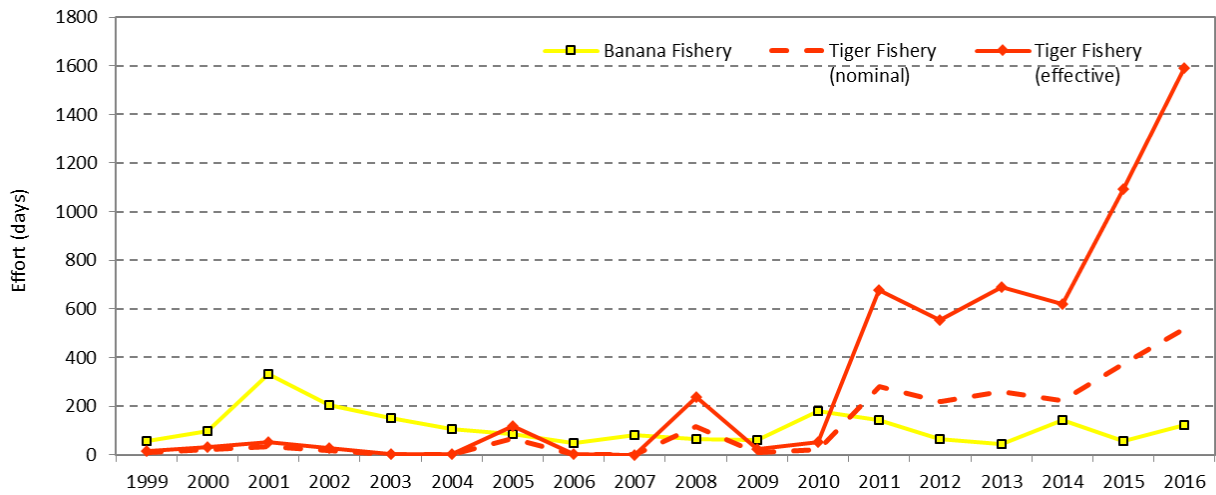


Figure 31a: Effort for the banana and tiger prawn fisheries in the Sweers area - 1999 to 2016.

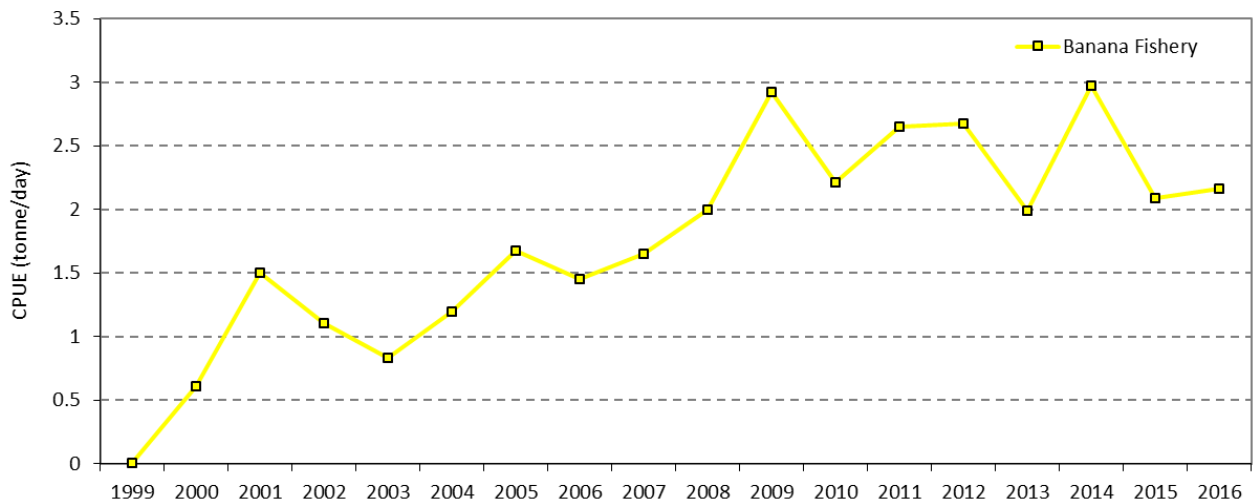


Figure 31b: Catch rate for the banana prawn fishery in the Sweers area - 1999 to 2016.

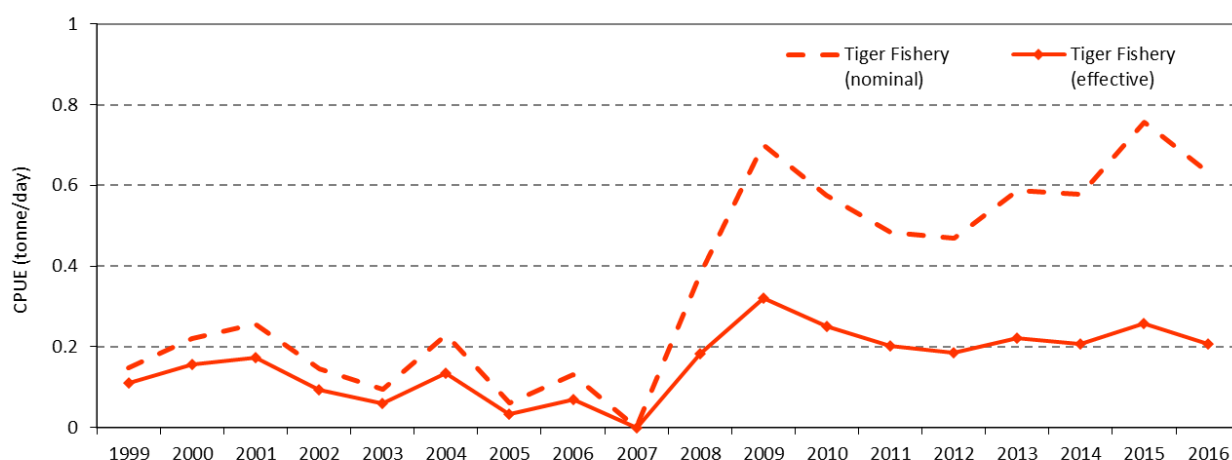


Figure 31c: Nominal and effective catch rate for the tiger prawn fishery in the Sweers area - 1999 to 2016.

Mornington

Banana prawn catches in the Mornington area decreased from 184 t in 2015 to 117 t in 2016 (Figure 32). Catches of tiger prawns increased again, from 266 t in 2015 to 296 t in 2016. Endeavour prawn catches decreased slightly from 43 t in 2015 to 40 t in 2016. As in 2015, tiger prawns dominated the catch in this area, contributing 65% of the catch in 2016 (an increase from 54% in 2015), with banana and endeavor prawns contributing 26% and 9% to the total catch, respectively (Figure 33a).

Effort in the banana prawn fishery increased from 75 days in 2015 to 92 days in 2016 (Figure 34a). CPUE of banana prawns decreased from 2.40 t per day in 2015 to 1.239 t per day in 2016 (Figure 34b). Effort in the tiger prawn fishery increased from 567 days in 2015 to 941 days in 2016 (Figure 34a). Nominal and effective CPUE of tiger prawns decreased from 0.580 and 0.198 t per day, respectively, in 2015 to 0.377 and 0.123 t per day in 2016 (Figure 34c).

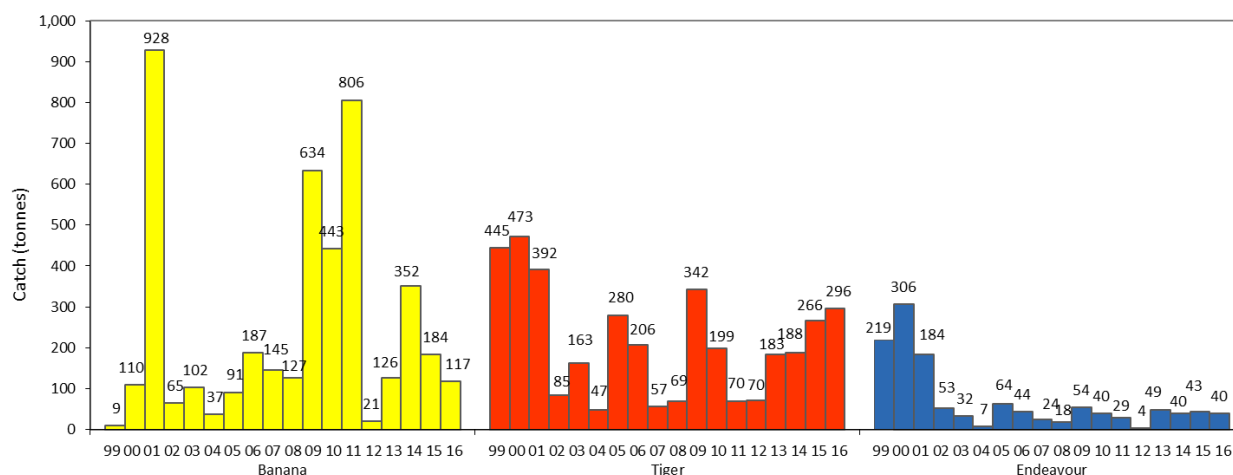


Figure 32: Catch by species in the Mornington area - 1999 to 2016.

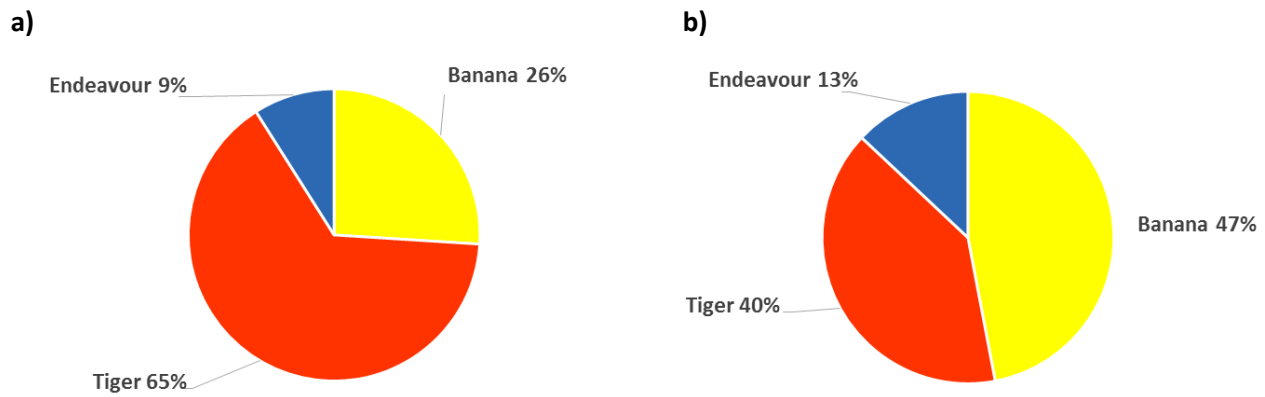


Figure 33: (a) Percentage catch of prawn species in the Mornington area during 2016 and (b) percentage catch of prawn species in the Mornington area - 1999 to 2016.

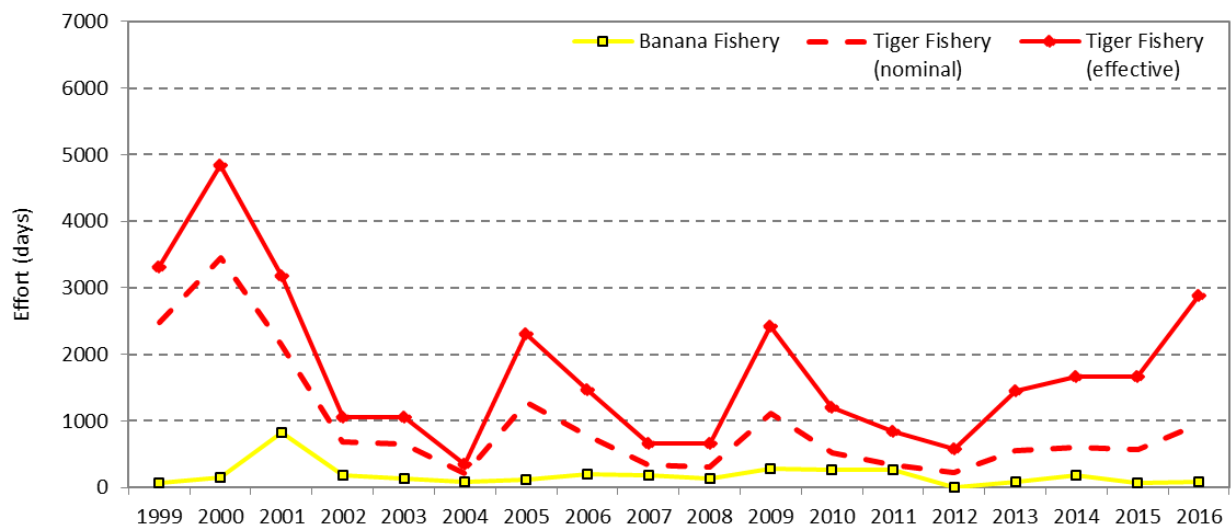


Figure 34a: Effort for the banana and tiger prawn fisheries in the Mornington area - 1999 to 2016.

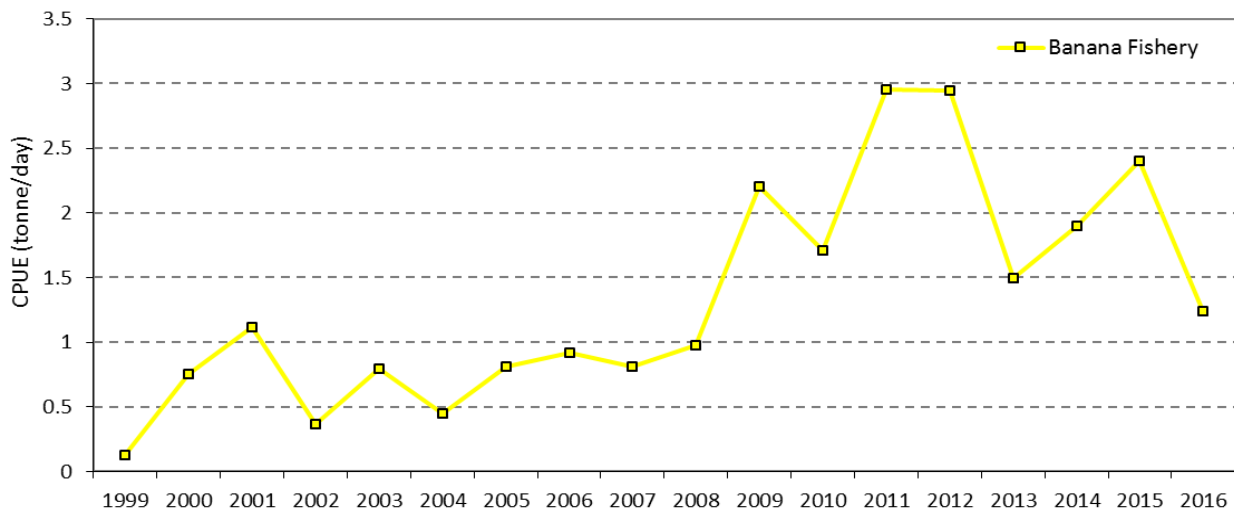


Figure 34b: Catch rate for the banana prawn fishery in the Mornington area - 1999 -2016.

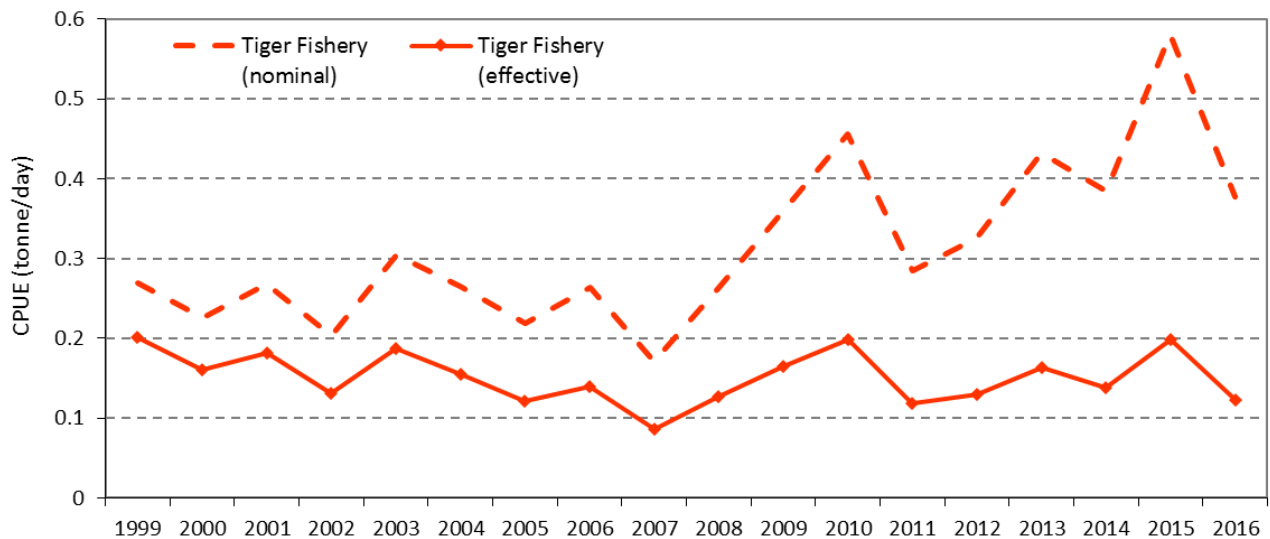


Figure 34c: Nominal and effective catch rate for the tiger prawn fishery in the Mornington area - 1999 to 2016.

Limmen Bight

Banana prawn catches in the Limmen Bight area decreased from 199 t in 2015 to 78 t in 2016 (Figure 35). Catches of tiger prawns decreased from 455 t in 2015 to 422 t in 2016. Endeavour prawn catches increased from 21 t in 2015 to 40 t in 2016. In contrast to 2015 tiger prawns dominated catches for 2016 in this area, comprising 78% of the total catch (compared to 56% banana prawns in 2015). Banana and Endeavour prawns contributed 15% and 7%, respectively (Figure 36)

Effort in the banana prawn fishery decreased from 106 days in 2015 to 72 days in 2016 (Figure 37a). CPUE of banana prawns decreased from 1.877 t per day in 2015 to 1.111 t per day in 2016 (Figure 37b). Effort in the tiger prawn fishery increased from 814 days in 2015 to 1197 days in 2016 (Figure 37a). Nominal and effective CPUE of tiger prawns decreased from 0.587 and 0.201 t per day, respectively, in 2015 to 0.385 and 0.125 t per day in 2016 (Figure 37c).

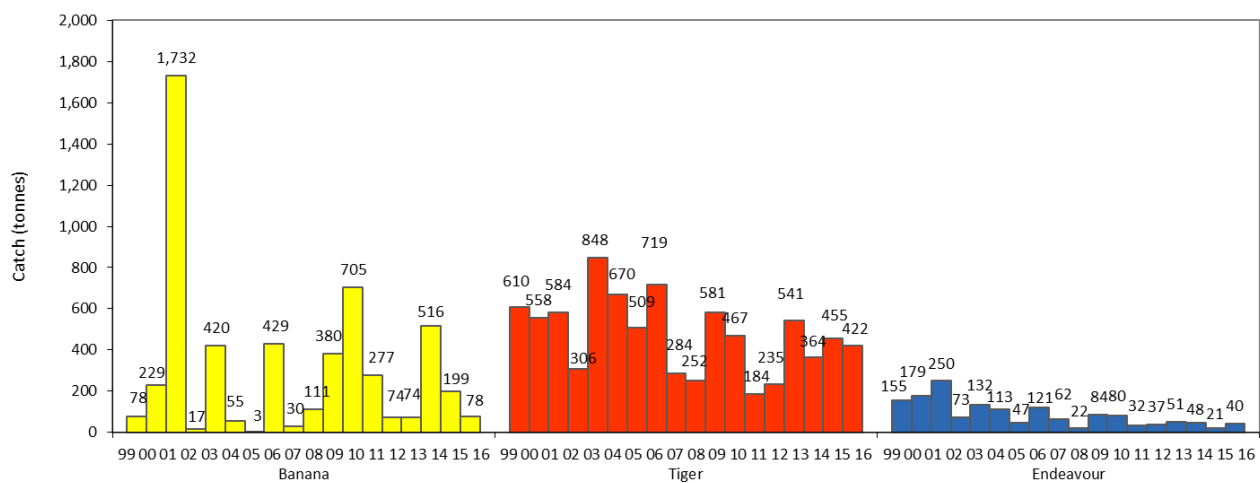


Figure 35: Catch by species in the Limmen Bight area - 1999 to 2016.

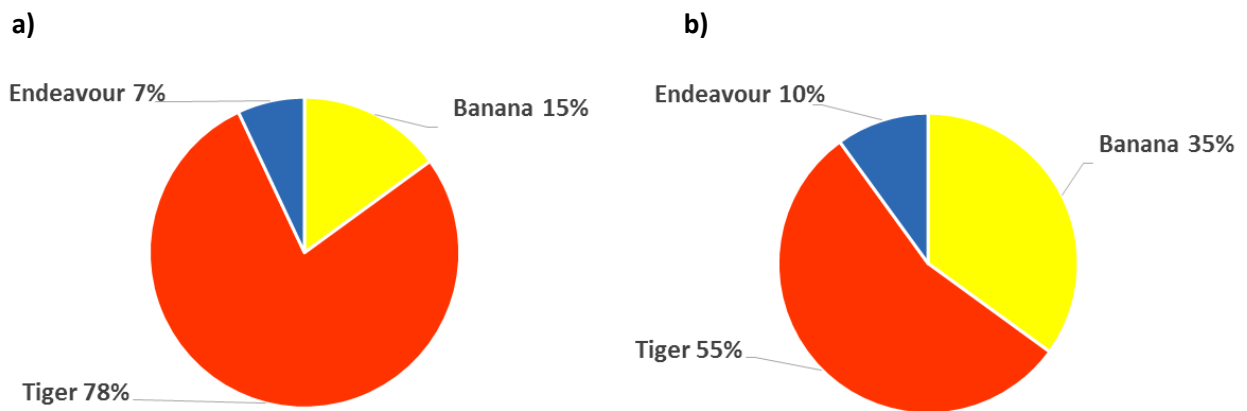


Figure 36: (a) Percentage catch of prawn species in the Limmen Bight area during 2016 and (b) percentage catch of prawn species in the Limmen Bight area - 1999 to 2016.

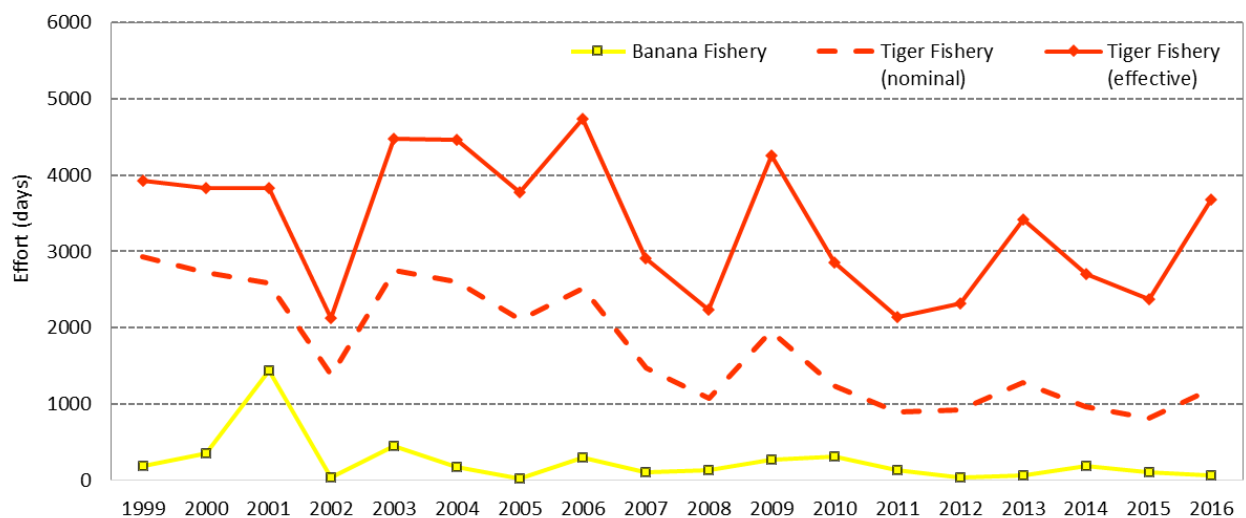


Figure 37a: Effort for the banana and tiger prawn fisheries in the Limmen Bight area - 1999 to 2016.



Figure 37b: Catch rate for the banana prawn fishery in the Limmen Bight area - 1999 to 2016.

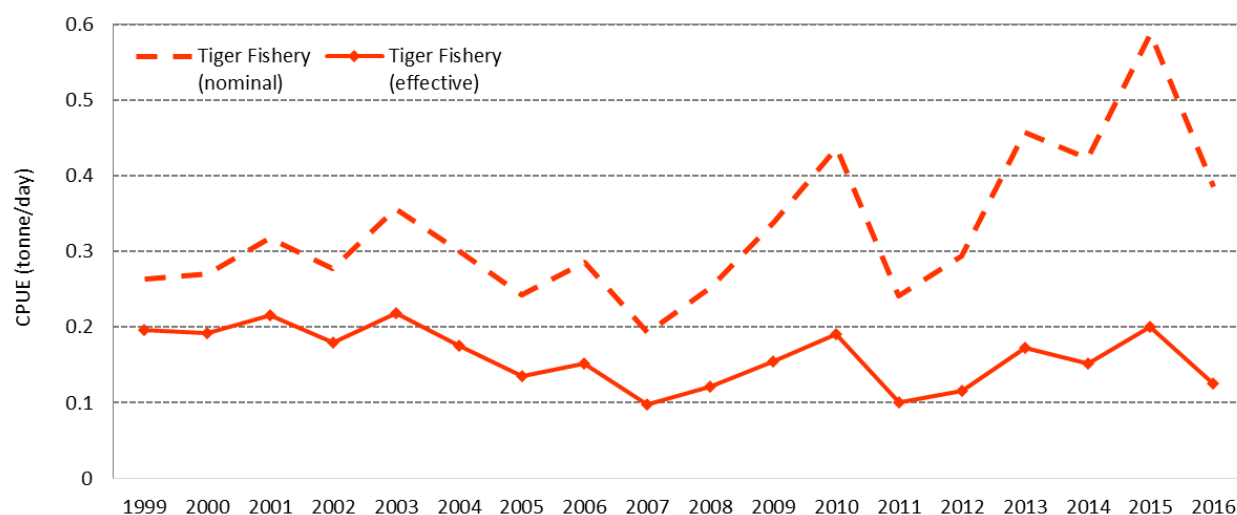


Figure 37c: Nominal and effective catch rate for the tiger prawn fishery in the Limmen Bight area - 1999 to 2016.

Groote

Banana prawn catches in the Groote area decreased from 200 t in 2015 to 24 t in 2016 (Figure 38). Catches of tiger prawns decreased considerably from 1,386 t in 2015 to 597 t in 2016. Endeavour prawn catches also decreased, from 214 t in 2015 to 127 t in 2016. In 2016, prawn catch comprised of 80% tiger prawns, 3% banana prawns and 17% endeavour prawns (Figure 39).

Effort in the banana prawn fishery decreased from 101 days in 2015 to 45 days in 2016 (Figure 40a). CPUE of banana prawns decreased from 1.653 t per day in 2015 to 0.422 t per day in 2016 (Figure 40b). Effort in the tiger prawn fishery decreased from 2,538 days in 2015 to 1,759 days in 2016 (Figure 40a). Nominal and effective CPUE of tiger prawns decreased from 0.644 and 0.220 t per day in 2015 to 0.415 and 0.135 t per day, respectively, in 2016 (Figure 40c).

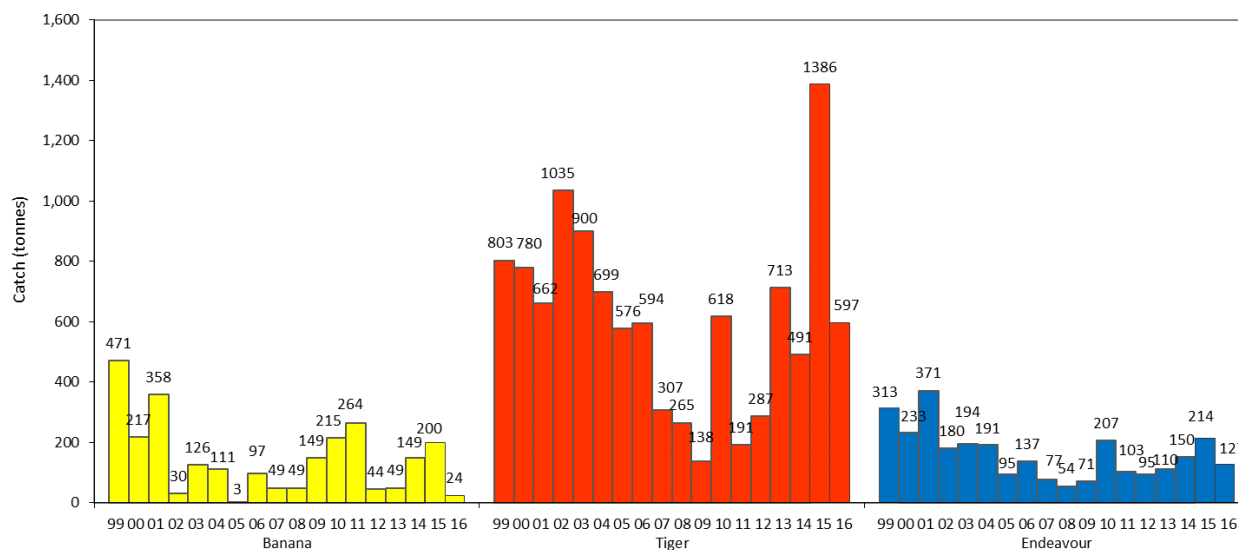


Figure 38: Catch by species in the Groote area - 1999 to 2016.

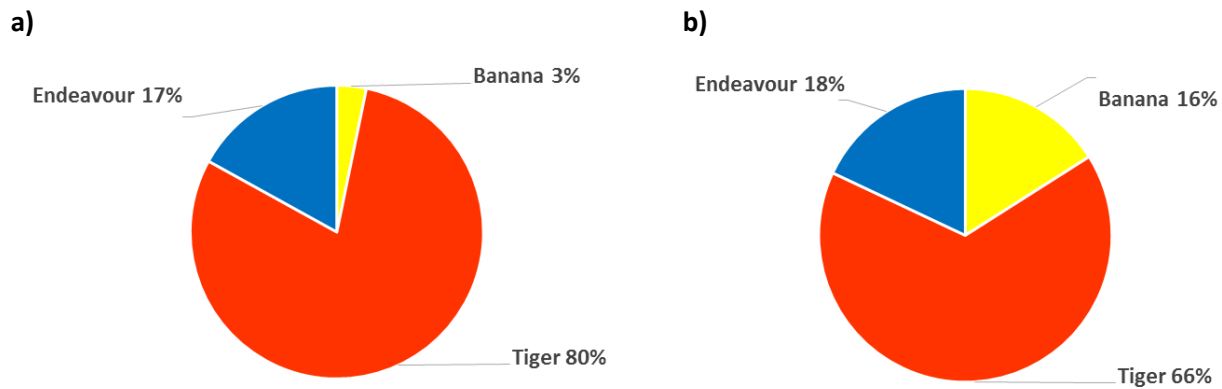


Figure 39: (a) Percentage catch of prawn species in the Groote area during 2016 and (b) percentage catch of prawn species in the Groote area - 1999 to 2016.

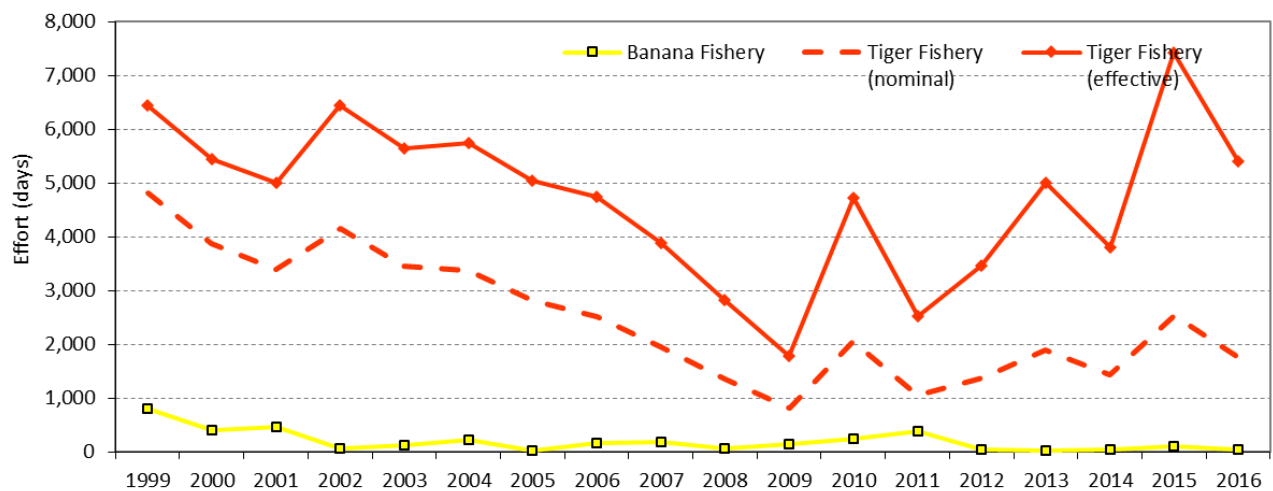


Figure 40a: Effort for the banana and tiger prawn fisheries in the Groote area - 1999 to 2016.

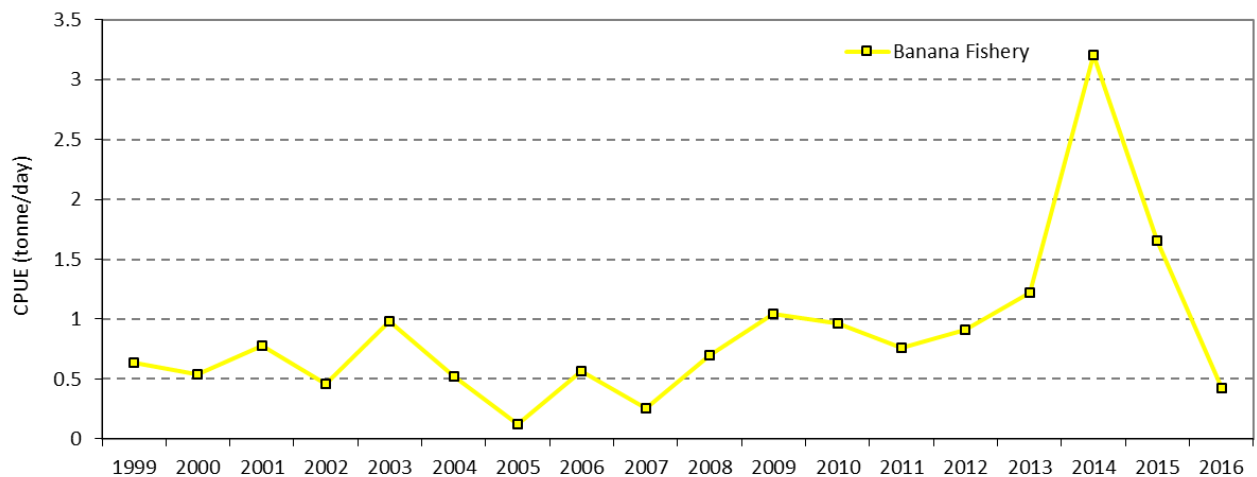


Figure 40b: Catch rate for the banana prawn fishery in the Groote area - 1999 to 2016.

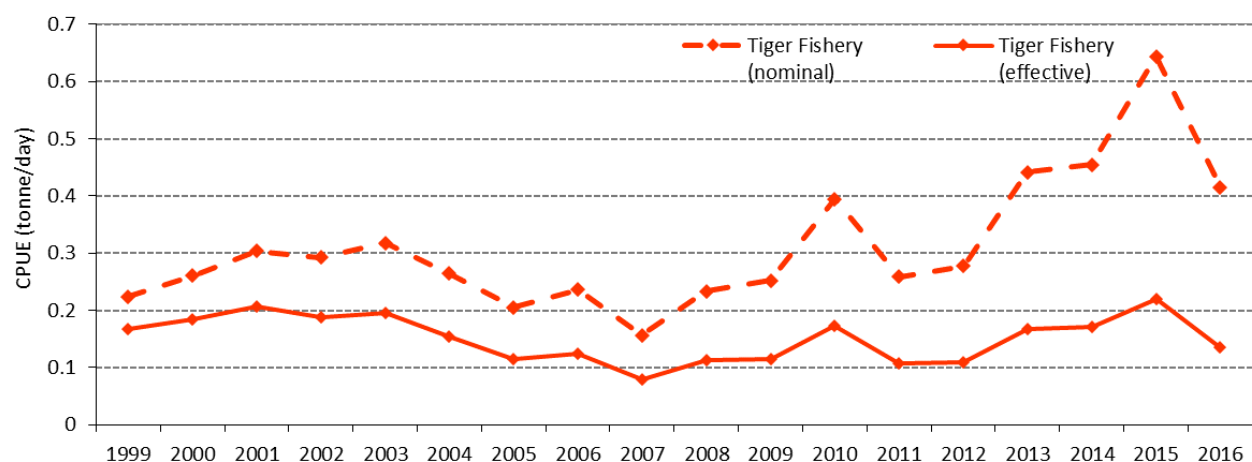


Figure 40c: Nominal and effective catch rate for the tiger prawn fishery in the Groote area - 1999 to 2016.

Gove

Banana prawn catches in the Gove area decreased from 143 t in 2015 to 109 t in 2016 (Figure 41). Catches of tiger prawns decreased 493 t in 2015 to 147 t in 2016. Endeavour prawn catches also decreased from 72 t in 2015 to 19 t in 2016. Tiger prawns dominated the catch from this area, comprising 53% of the catch, with banana prawns making up 40% and endeavour prawns the remaining 7% (Figure 42).

Effort in the banana prawn fishery decreased from 150 days in 2015 to 89 days in 2016 (Figure 43a). CPUE of banana prawns increased from 0.973 t per day in 2015 to 1.243 t per day in 2016 (Figure 43b). Effort in the tiger prawn fishery decreased from 905 days in 2015 to 471 days in 2016 (Figure 43a). Nominal and effective CPUE for tiger prawns decreased from 0.621 and 0.202 t per day in 2015 to 0.352 and 0.115 t per day, respectively, in 2016 (Figure 43c).

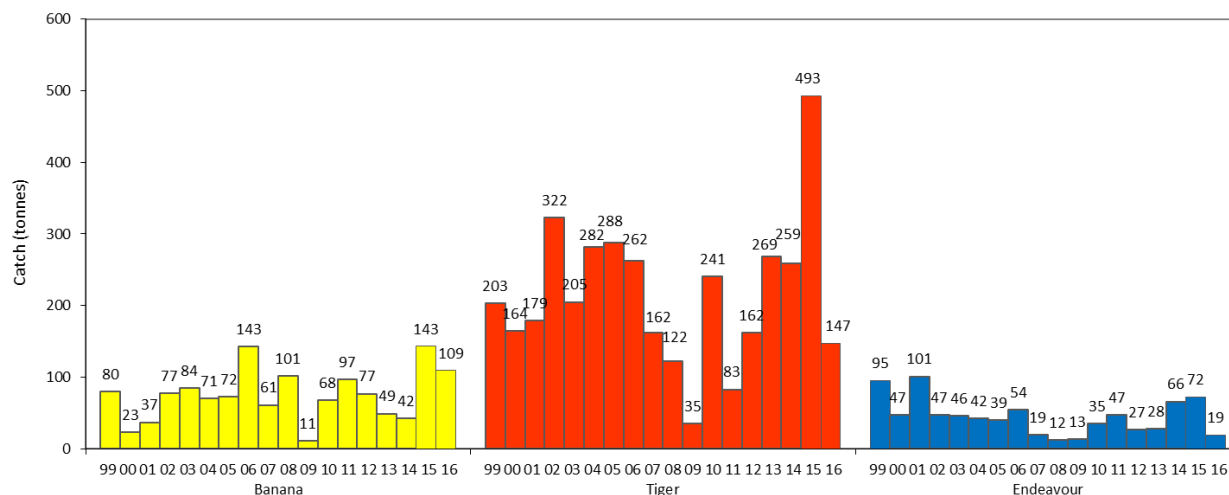


Figure 41: Catch by species in the Gove area - 1999 to 2016.

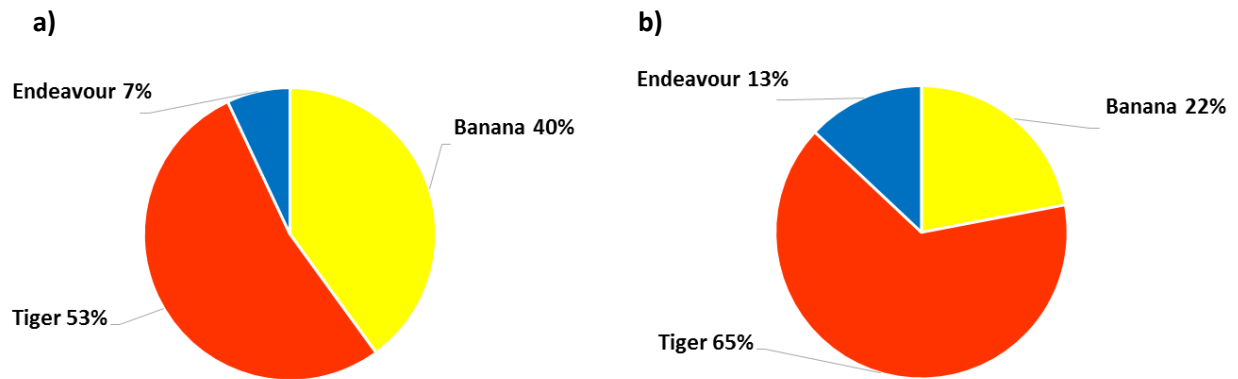


Figure 42: (a) Percentage catch of prawn species in the Gove area during 2016 and (b) percentage catch of prawn species in the Gove area - 1999 to 2016.

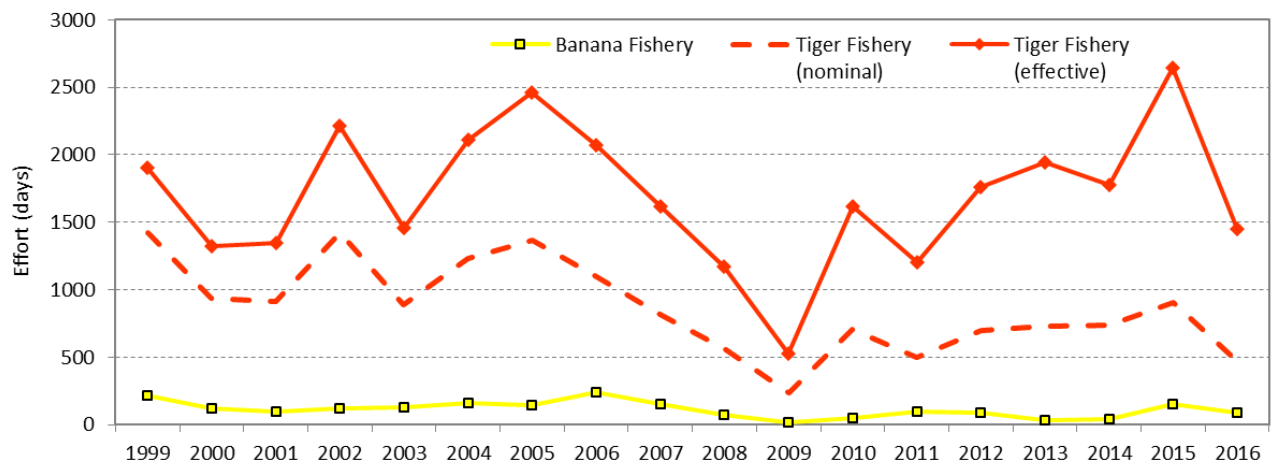


Figure 43a: Effort for the banana and tiger prawn fisheries in the Gove area - 1999 to 2016.

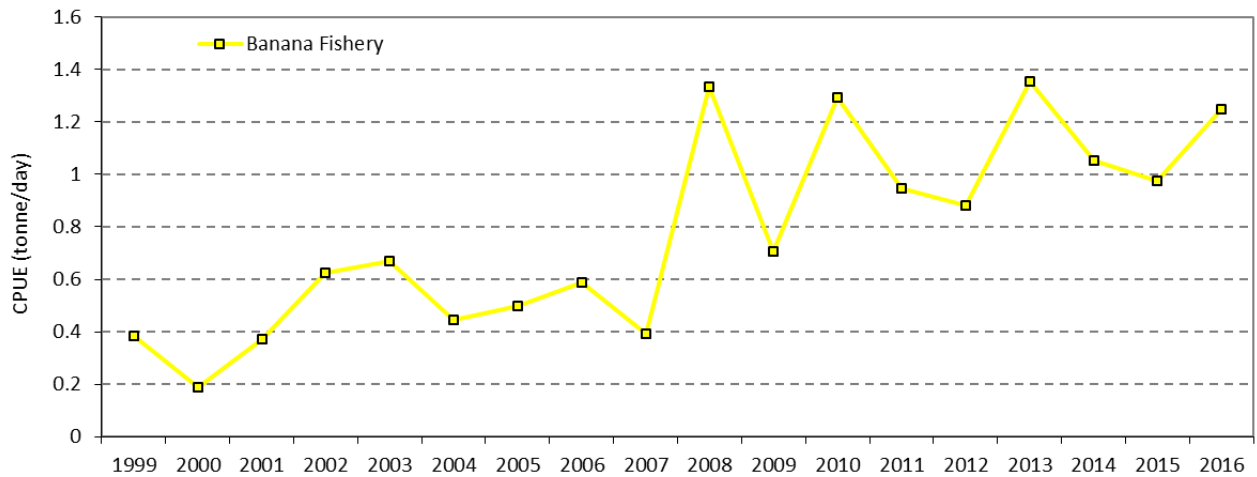


Figure 43b: Catch rate for the banana prawn fishery in the Gove area - 1999 to 2016.

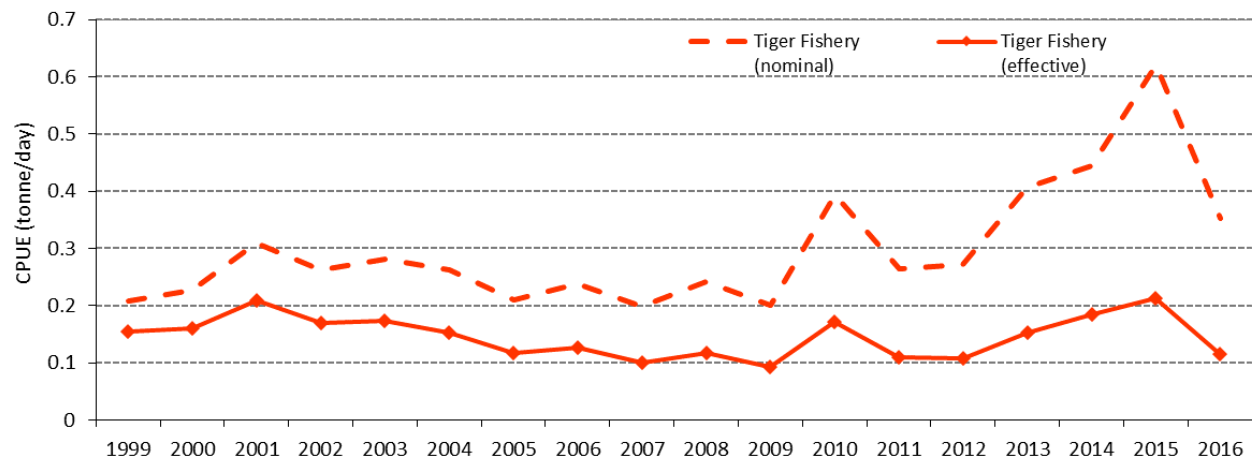


Figure 43c: Nominal and effective catch rate for the tiger prawn fishery in the Gove area - 1999 to 2016.

Arnhem

Banana prawn catches in the Arnhem area decreased from 173 t in 2015 to 58 t in 2016. Catches of tiger prawns increased from 35 t in 2015 to 97 t in 2016. Catch of endeavour prawns increased slightly from 3 t in 2015 to 5 t in 2016 (Figure 44). In contrast to 2015, tiger prawns dominated the catch in 2016, comprising 61% of the catch compared to 82% banana prawns in 2015 (Figure 45). The remaining catch comprised 36% banana prawns and 3% endeavour prawns.

Effort in the banana prawn fishery decreased from 153 days in 2015 to 50 days in 2016 (Figure 46a). CPUE of banana prawns increased from 1.131 t per day in 2015 to 1.152 t per day in 2016 (Figure 46b). Effort in the tiger prawn fishery increased from 62 days in 2015 to 239 days in 2016 (Figure 46a). Nominal and effective CPUE of tiger prawns decreased from 0.613 and 0.200 t per day in 2015 to 0.427 and 0.139 t per day, respectively, in 2016 (Figure 46c).

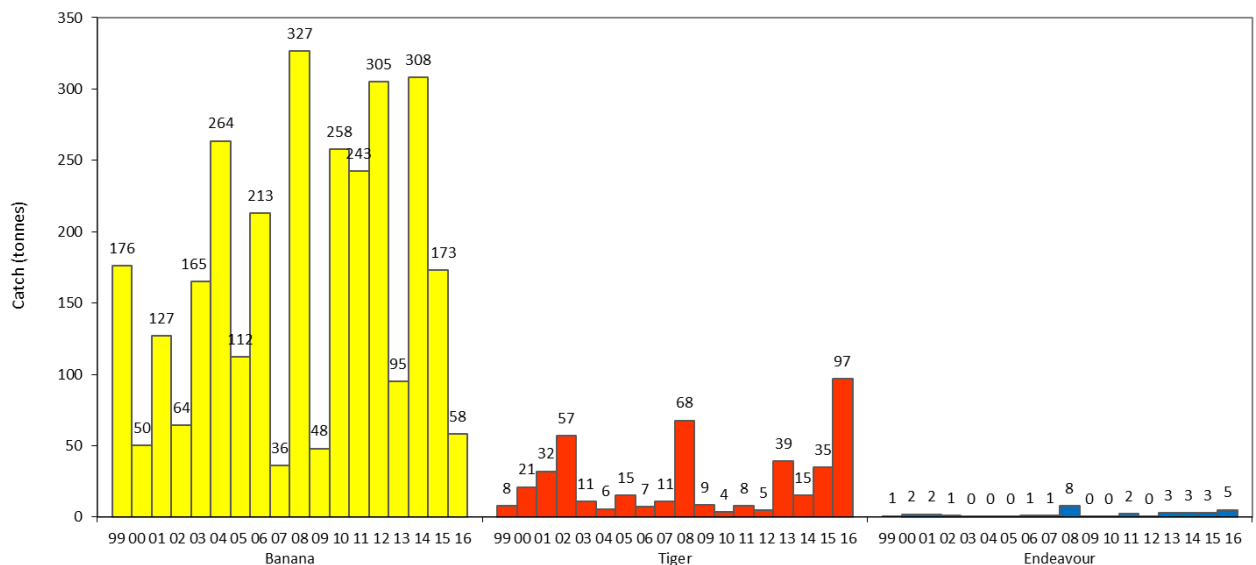


Figure 44: Catch by species in the Arnhem area - 1999 to 2016.

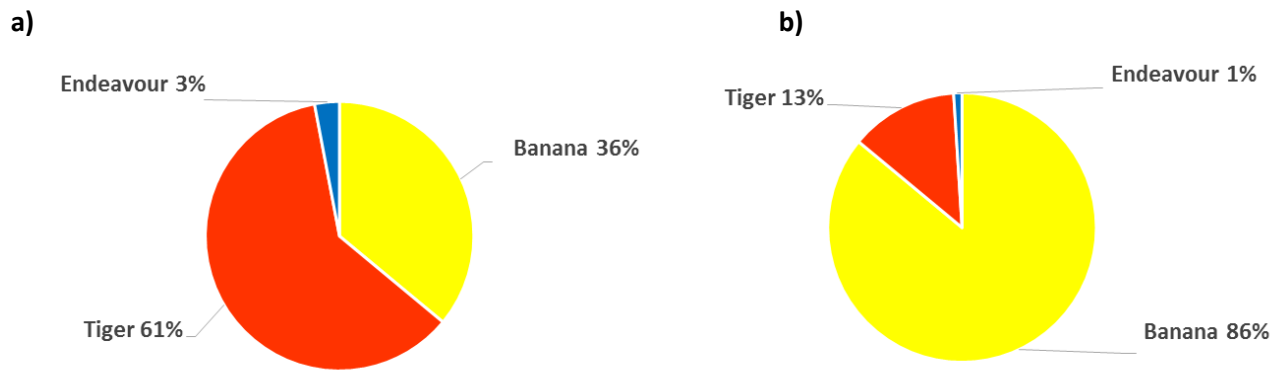


Figure 45: (a) Percentage catch of prawn species in the Arnhem area during 2016 and (b) percentage catch of prawn species in the Arnhem area - 1999 to 2016.

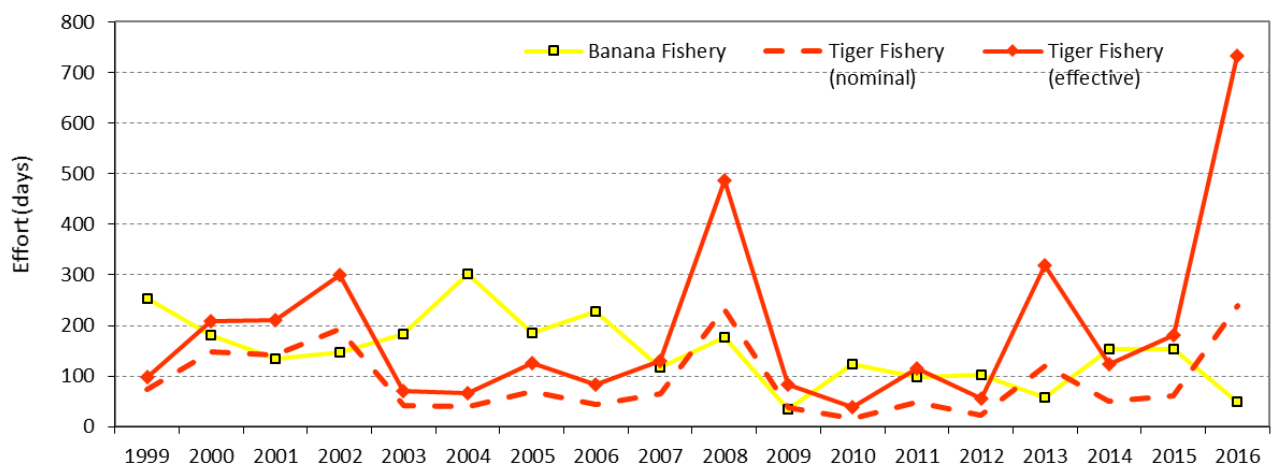


Figure 46a: Effort for the banana and tiger prawn fisheries in the Arnhem area - 1999 to 2016.

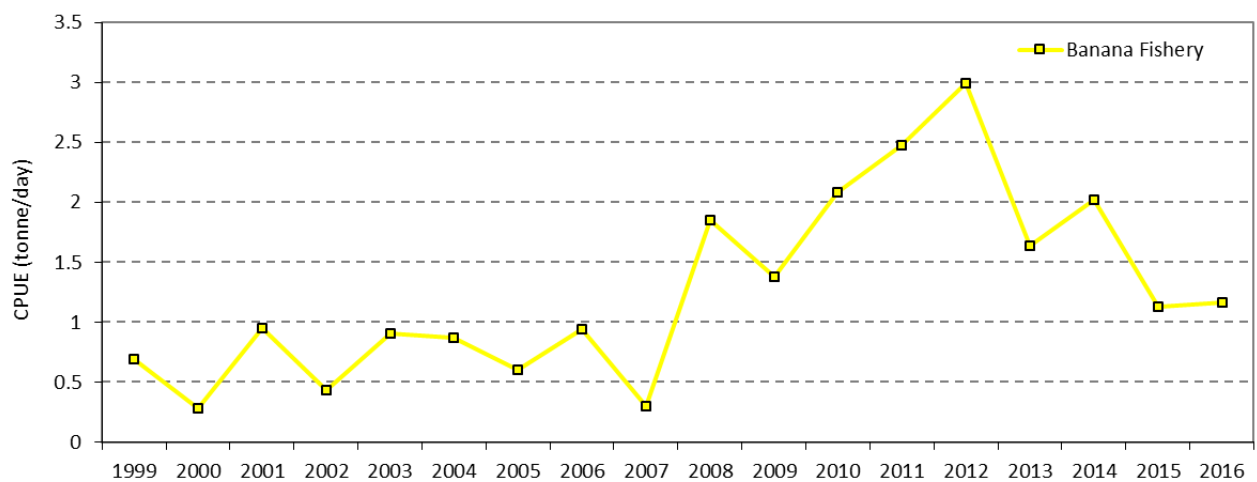


Figure 46b: Catch rate for the banana prawn fishery in the Arnhem area - 1999 to 2016.

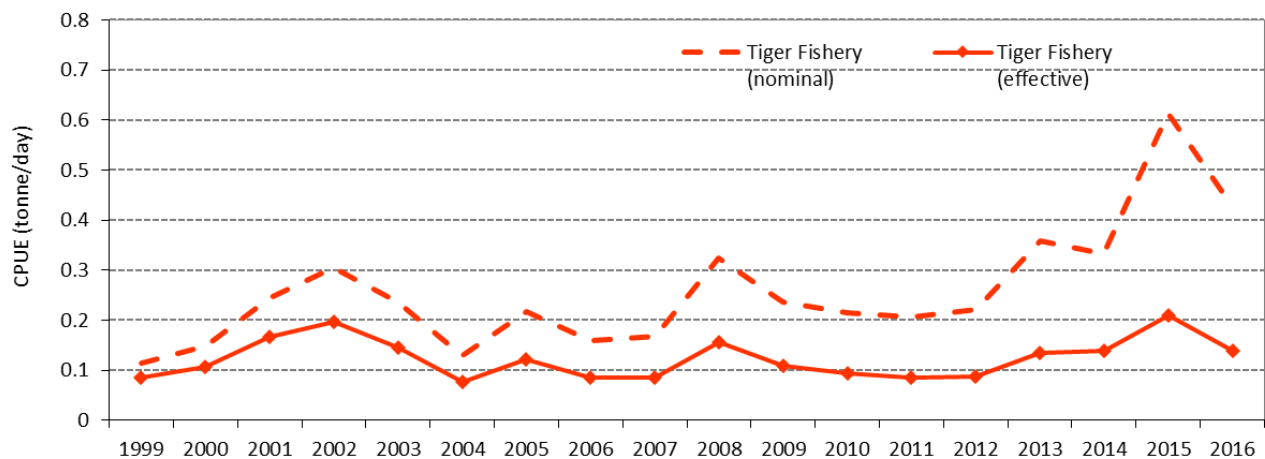


Figure 46c: Nominal and effective catch rate for the tiger prawn fishery in the Arnhem area - 1999 to 2016.

Port Essington

Banana prawn catches in the Port Essington area decreased from 264 t in 2015 to 172 t in 2016 (Figure 47). Tiger prawn catches increased from 85 t in 2015 to 171 t in 2016. Endeavour prawn catches decreased from 37 t in 2015 to 31 t in 2016. Banana and tiger prawns equally dominated catches in 2016, comprising 46% each of prawn catches from the Port Essington area. Endeavour prawns made up the remaining 8% (Figure 48).

Effort in the banana prawn fishery decreased from 240 days in 2015 to 161 days in 2016 (Figure 49a). CPUE of banana prawns decreased from 1.092 t per in 2015 to 1.006 t per day in 2016 (Figure 49b). Effort in the tiger prawn fishery increased from 152 days in 2015 to 344 days in 2016 (Figure 49a). Nominal and effective CPUE of tiger prawns decreased from 0.816 and 0.279 t per day in 2015 to 0.616 and 0.201 t per day, respectively, in 2016 (Figure 49c).

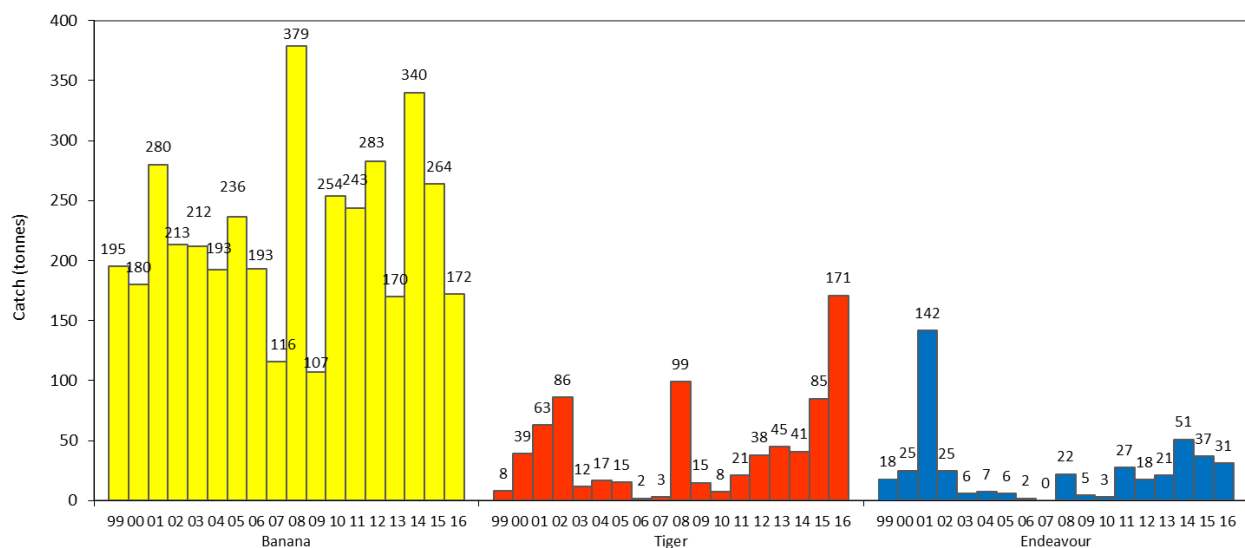


Figure 47: Catch by species in the Port Essington area - 1999 to 2016.

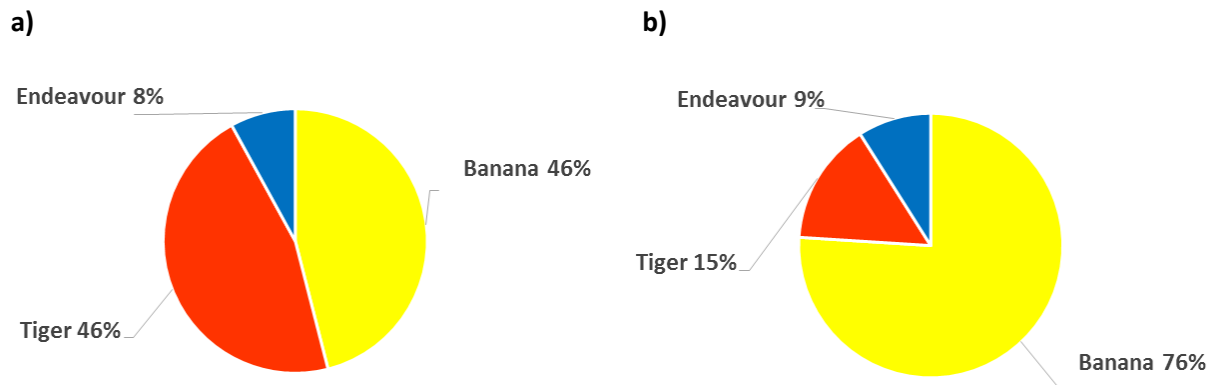


Figure 48: (a) Percentage catch of prawn species in the Port Essington area during 2016, and (b) percentage catch of prawn species in the Port Essington area - 1999 to 2016.

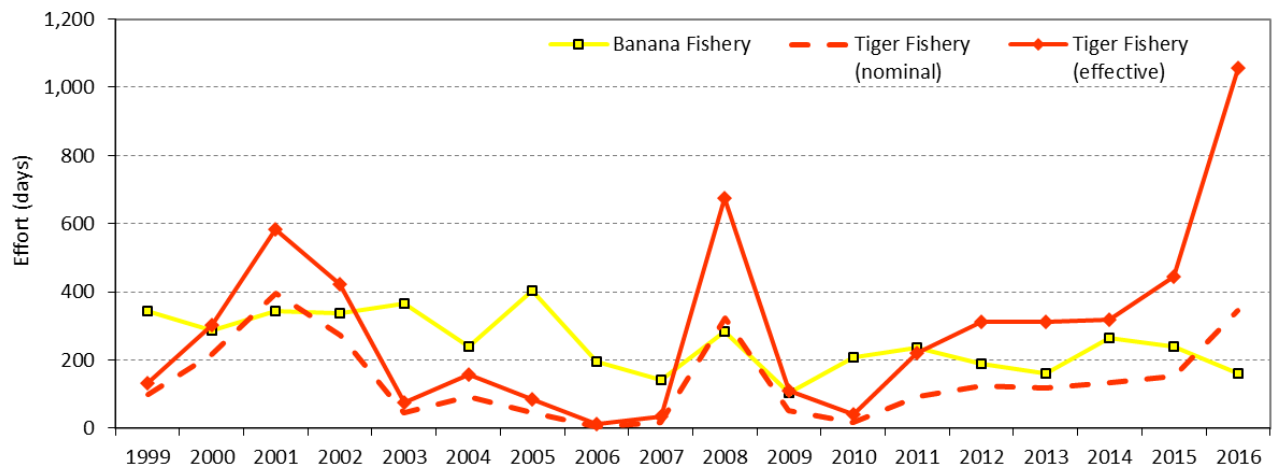


Figure 49a: Effort for the banana and tiger prawn fisheries in the Port Essington area - 1999 to 2016.

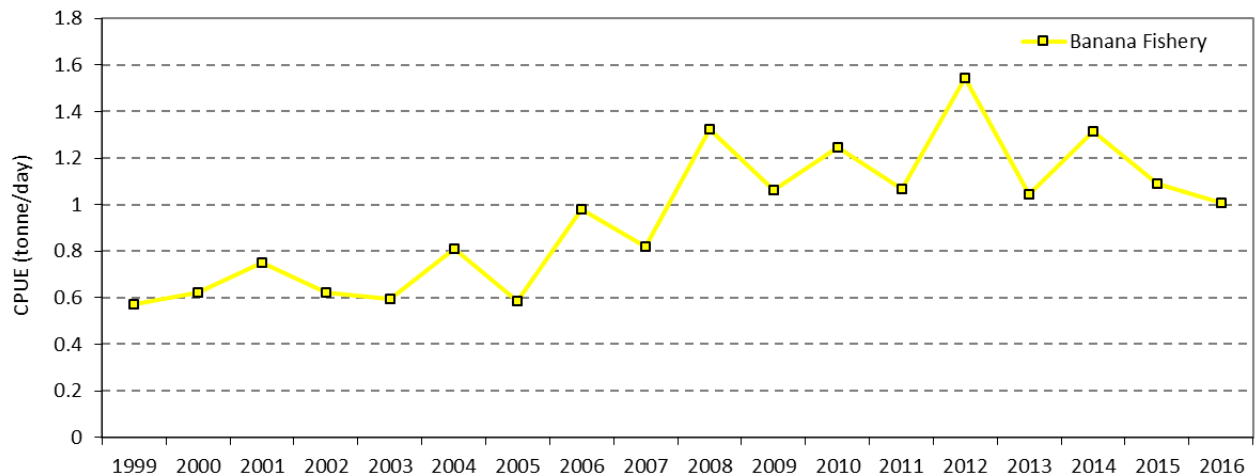


Figure 49b: Catch rate for the banana prawn fishery in the Port Essington area - 1999 to 2016.

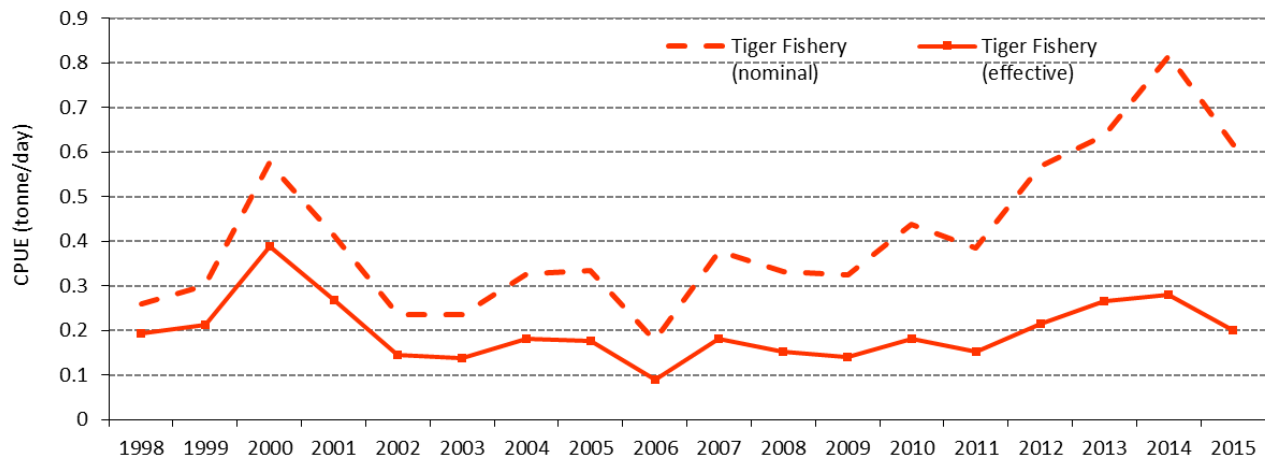


Figure 49c: Nominal and effective catch rate for the tiger prawn fishery in the Port Essington area - 1999 to 2016.

Melville

Banana prawn catches in the Melville area decreased from 416 t in 2015 to 215 t in 2016 (Figure 50). Catches of tiger prawns decreased from 112 t in 2015 to 70 t in 2016. Endeavour prawn catches decreased from 64 t in 2015 to 43 t in 2016. Banana prawns comprised 66% of the catch in 2016, with tiger prawns making up 21%, and endeavor prawns, 13% (Figure 51).

Effort in the banana prawn fishery decreased from 329 days in 2015 to 237 days in 2016 (Figure 52a). CPUE for banana prawns decreased from 1.292 t per day in 2015 to 0.937 t per day in 2016 (Figure 52b). Effort in the tiger prawn fishery decreased from 206 days in 2015 to 152 days in 2016 (Figure 52a). Nominal and effective CPUE for tiger prawns decreased from 0.811 and 0.264 t per day in 2015 to 0.678 and 0.221 t per day, respectively, in 2016 (Figure 52c).

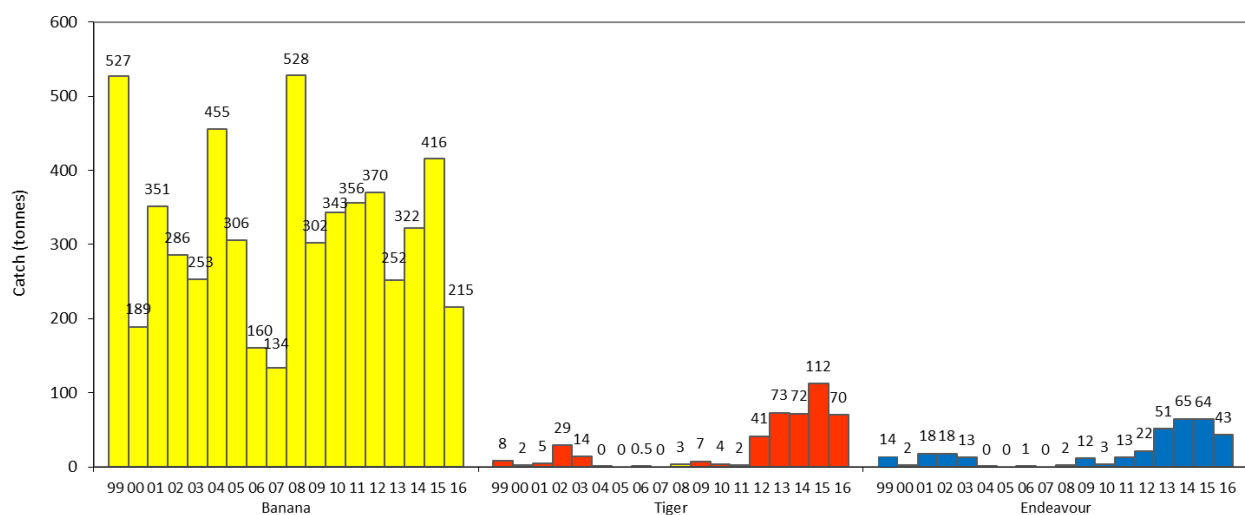


Figure 50: Catch by species in the Melville area - 1999 to 2016.

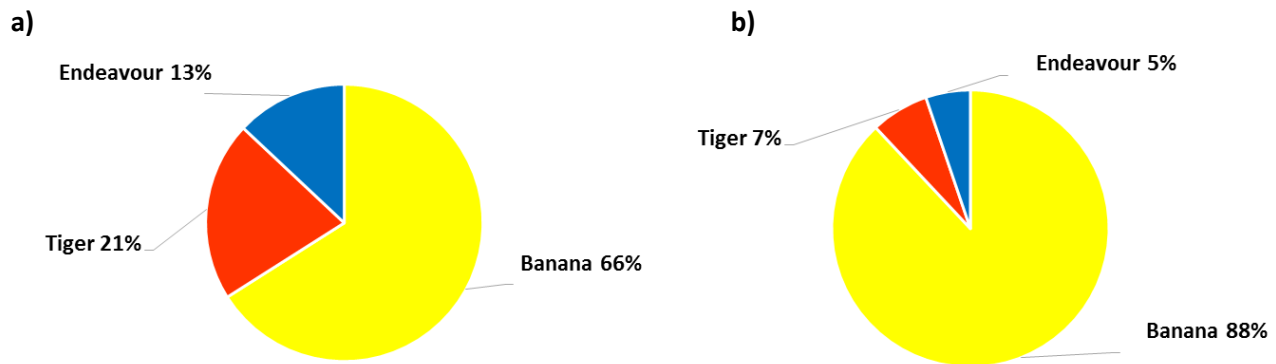


Figure 51: (a) Percentage catch of prawn species in the Melville area during 2016 and (b) percentage catch of prawn species in the Melville area -1999 to 2016.

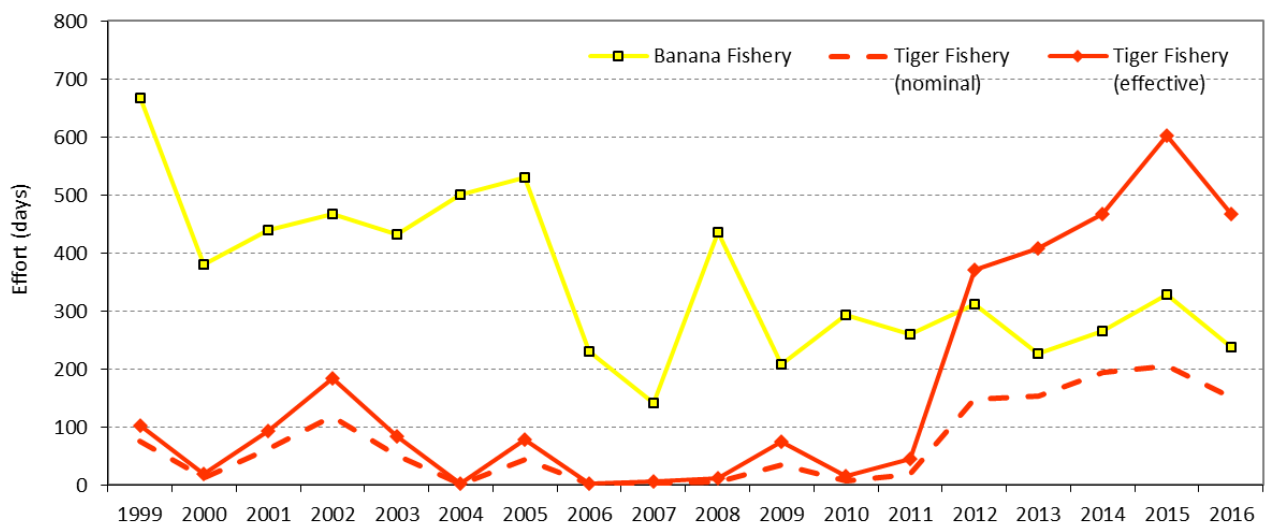


Figure 52a: Effort for the banana and tiger prawn fisheries in the Melville area - 1999 to 2016.

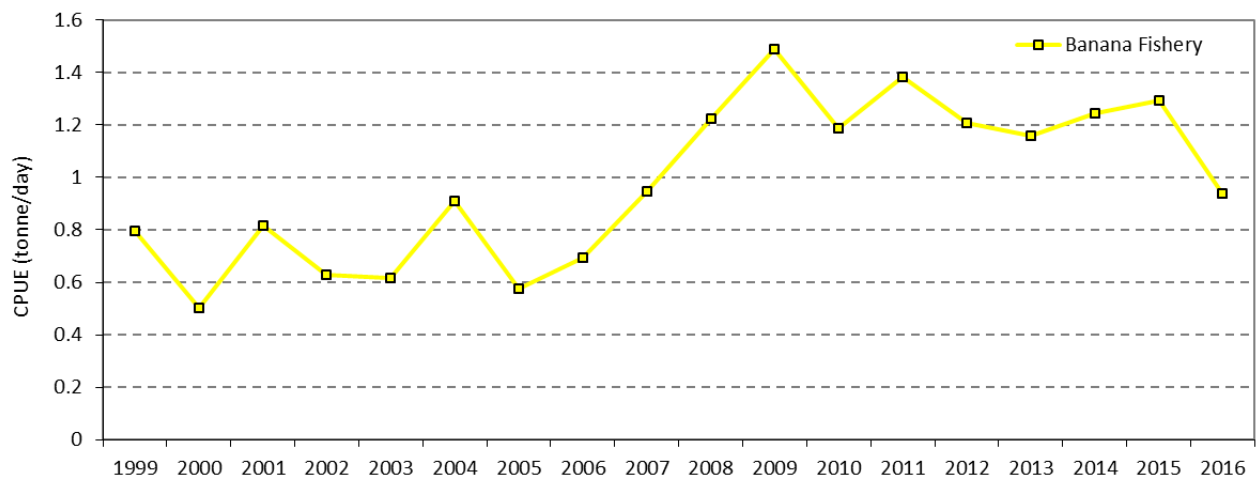


Figure 52b: Catch rate for the banana prawn fishery in the Melville area - 1999 to 2016.

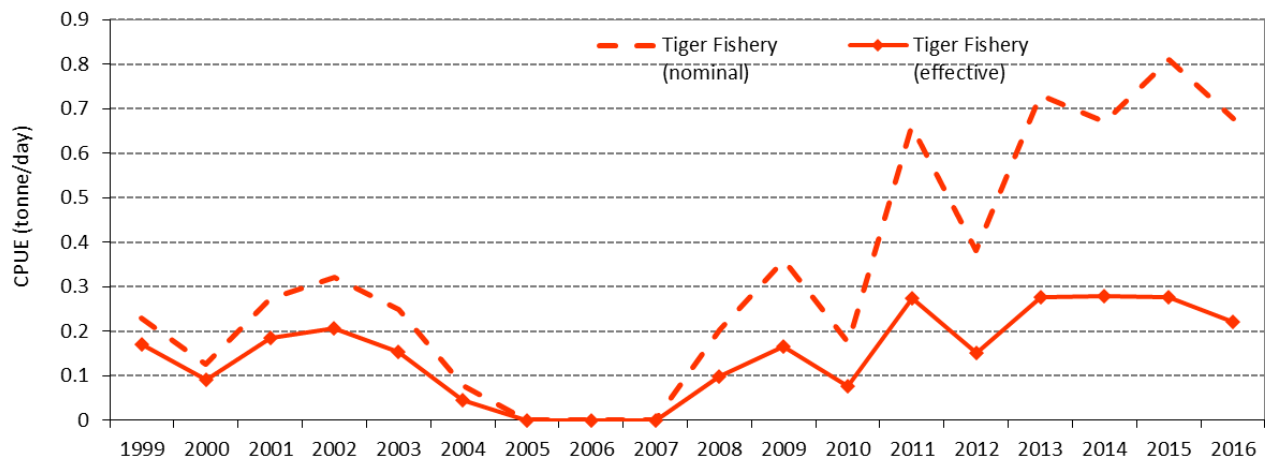


Figure 52c: Nominal and effective catch rate for the tiger prawn fishery in the Melville area - 1999 to 2016.

Fog Bay

Banana prawn catches in the Fog Bay area increased from 156 t in 2015 to 171 t in 2016 (Figure 53). Catches of tiger prawns increased from 0.01 t in 2015 to 2 t in 2016 and endeavour prawn catch increased from zero in 2015 to 0.3 t in 2016. Banana prawns comprised 98.7% of the catch taken during 2016 in this area, with the remainder comprising 1.2% tiger prawns and 0.1% endeavour prawns. (Figure 54).

Effort in the banana prawn fishery increased slightly from 110 days in 2015 to 114 days in 2016 (Figure 55a). CPUE for banana prawns increased from 1.418 t per day in 2015 to 1.500 t per day in 2016 (Figure 55b). Two days of effort were expended in the tiger prawn fishery in 2016 for this area (Figure 55a). Nominal and effective CPUE for tiger prawns was 0.848 and 0.276, respectively, in 2016 (up from zero in 2015) (Figure 55c).

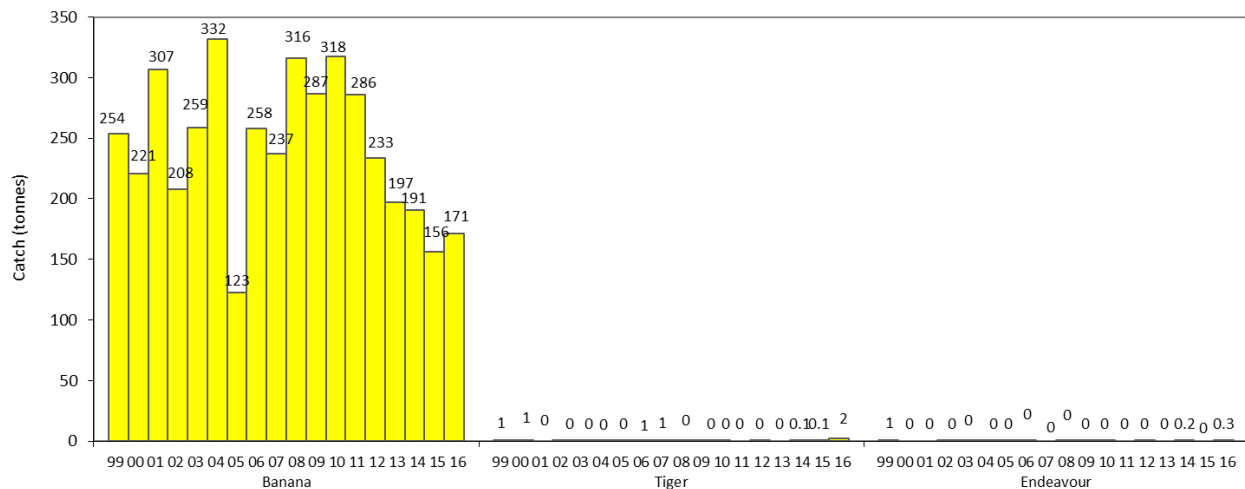


Figure 53: Catch by species in the Fog Bay area - 1999 to 2016.

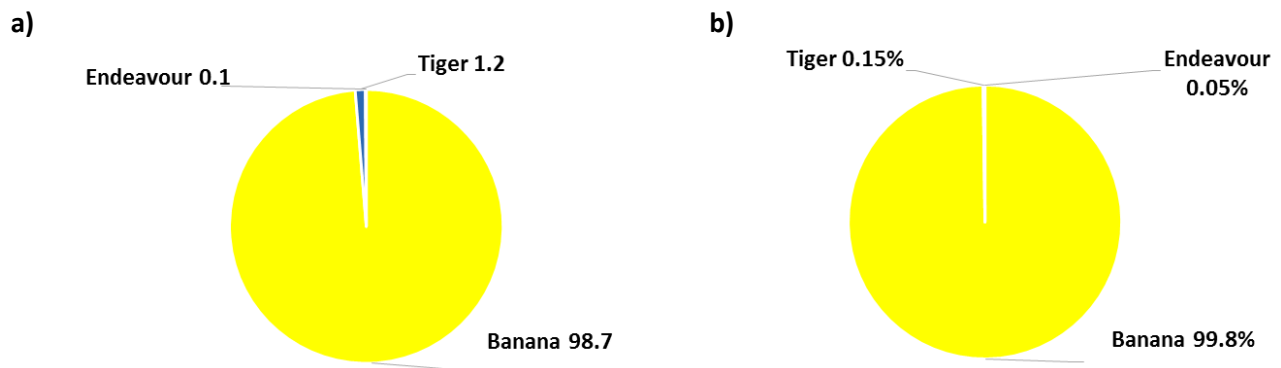


Figure 54: (a) Percentage catch of prawn species in the Fog Bay area during 2016 and (b) percentage catch of prawn species in the Fog Bay area - 1999 to 2016.

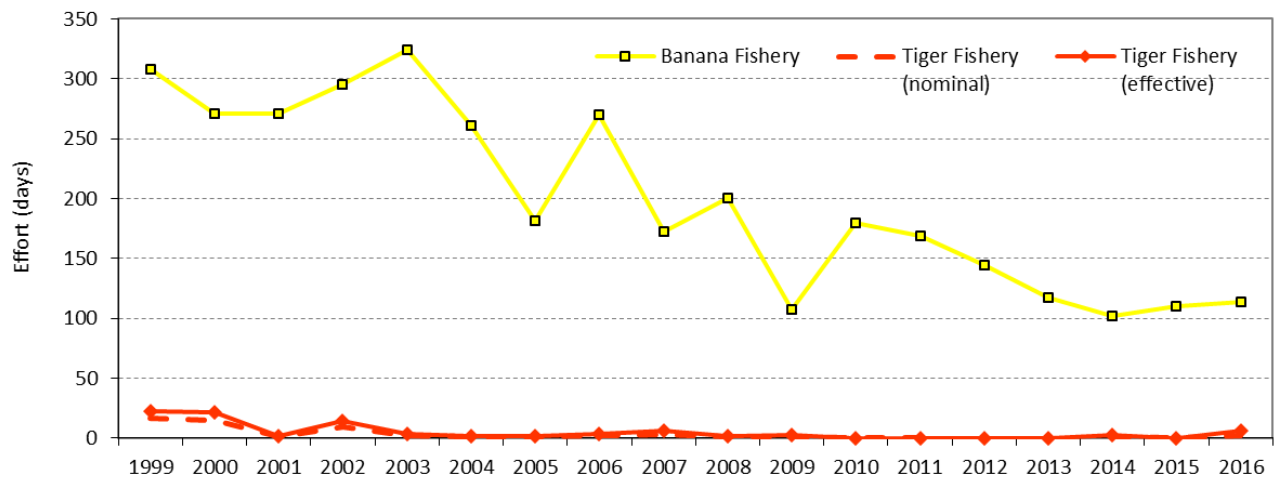


Figure 55a: Effort for the banana and tiger prawn fisheries in the Fog Bay area - 1999 to 2016.

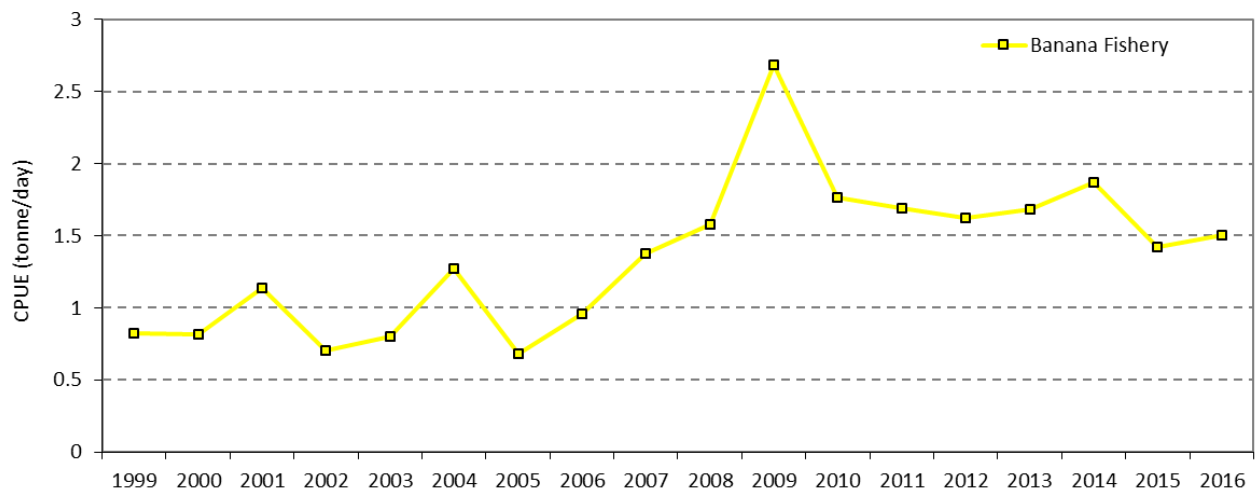


Figure 55b: Catch rate for the banana prawn fishery in the Fog Bay area - 1999 to 2016.

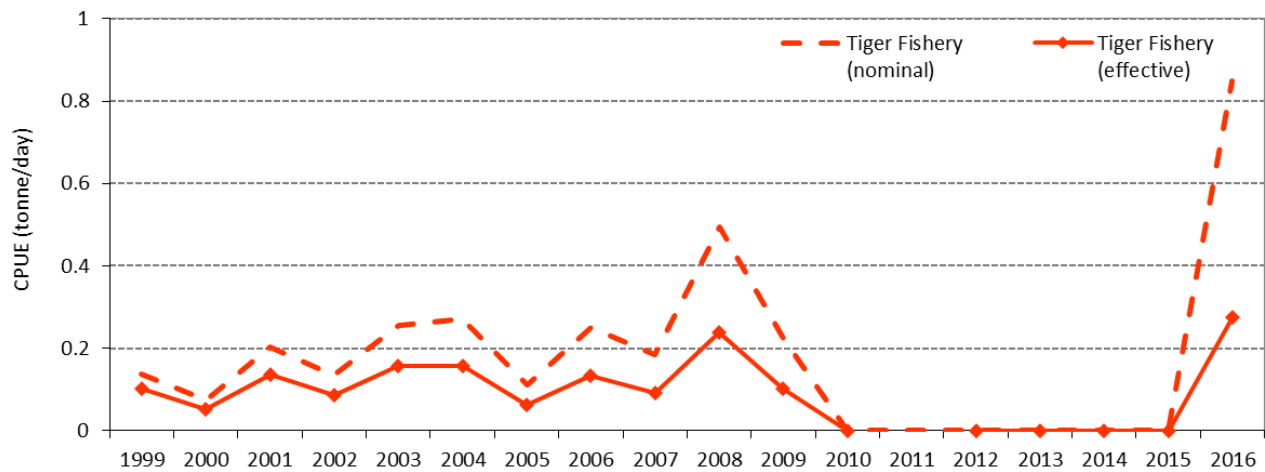


Figure 55c: Nominal and effective catch rate for the tiger prawn fishery in the Fog Bay area - 1999 to 2016.

Bonaparte

Banana prawn catches in the Bonaparte area increased slightly from 30 t in 2015 to 35 t in 2016 (Figure 56). Tiger and endeavour prawn catches were both less than 1 t in 2016. Banana prawns made up 98.6% of the catch for 2016 (Figure 57).

Effort in the banana prawn fishery increased from 57 days in 2015 to 59 days in 2016 (Figure 58a). CPUE of banana prawns increased from 0.526 t per day in 2015 to 0.600 t per day in 2016 (Figure 58b). Effort in the tiger prawn fishery remained the same as 2015 with 1 day in 2016 (Figure 58a). Nominal and effective CPUE of tiger prawns decreased from 0.429 and 0.140 t per day in 2015 to 0.045 and 0.015 t per day, respectively, in 2016 (Figure 58c).

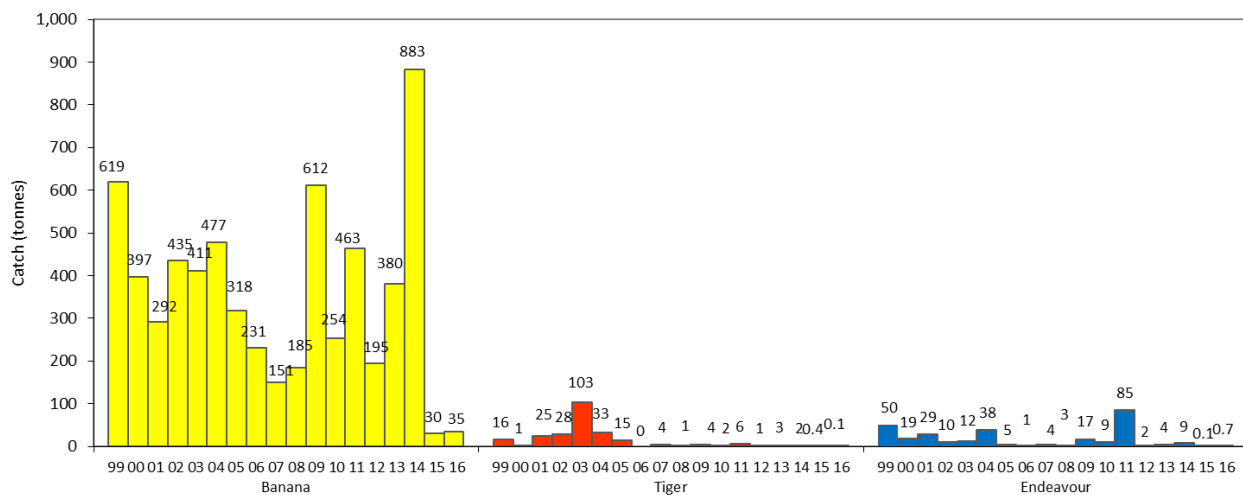


Figure 56: Catch by species in the Bonaparte area - 1999 to 2016.

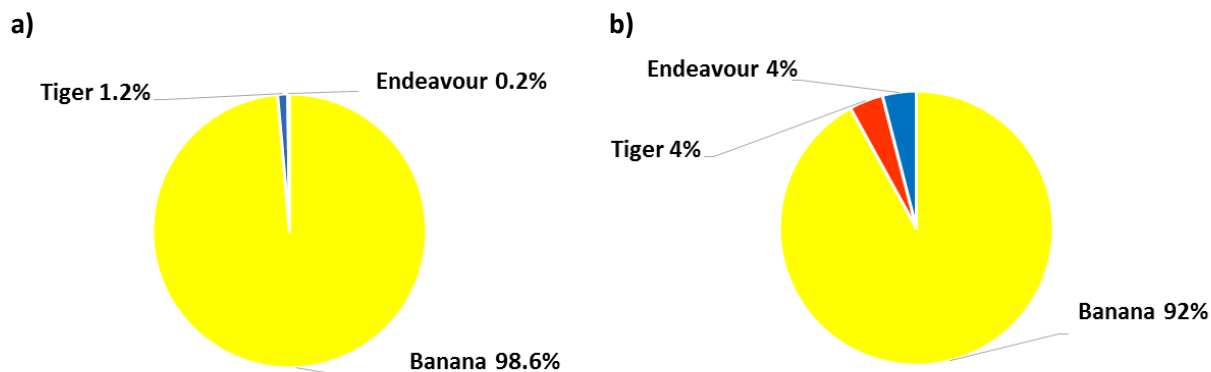


Figure 57: (a) Percentage catch of prawn species in the Bonaparte area during 2016, and (b) percentage catch of prawn species in the Bonaparte area - 1999 to 2016.

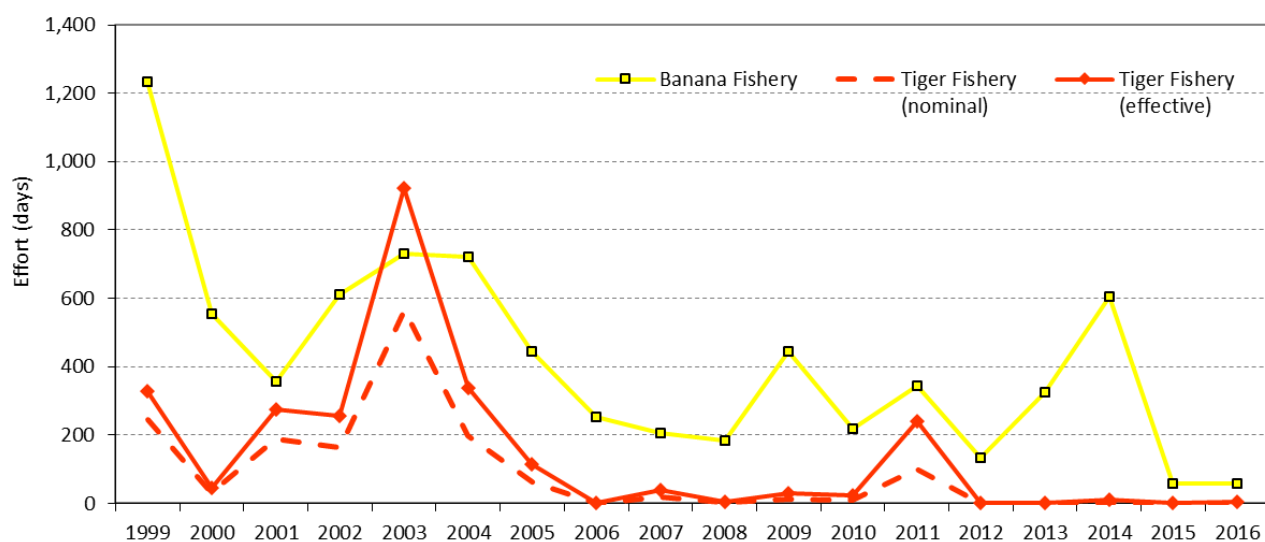


Figure 58a: Effort for the banana and tiger prawn fisheries in the Bonaparte area - 1999 to 2016.

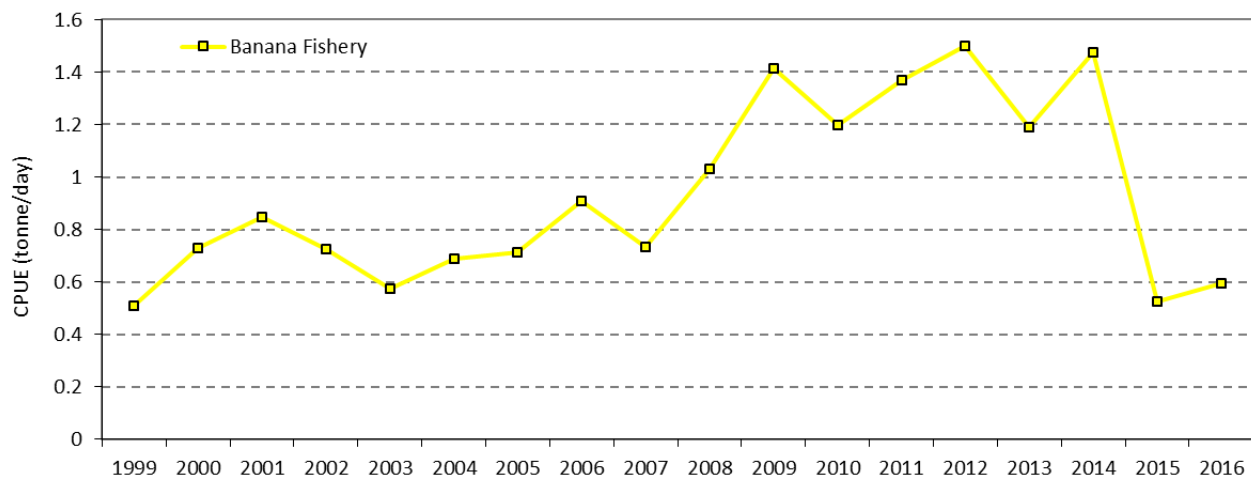


Figure 58b: Catch rate for the banana prawn fishery in the Bonaparte area - 1999 to 2016.

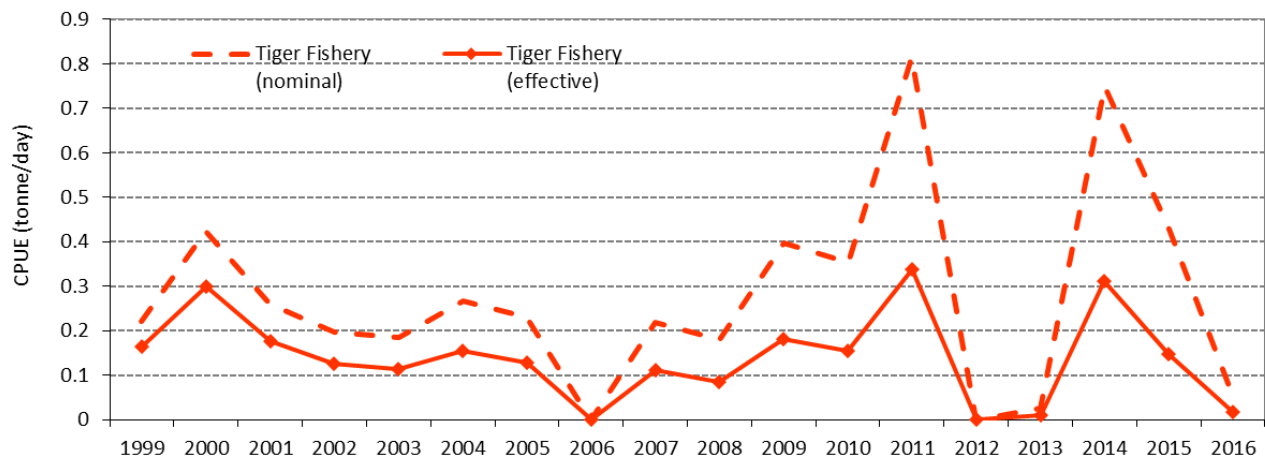


Figure 58c: Nominal and effective catch rate for the tiger prawn fishery in the Bonaparte area - 1999 to 2016.

Interactions with TEP species in the Northern Prawn Fishery

Turtle interactions

A total of 55 turtle interactions were reported in the NPF during 2016 (Table 5). This is 13% less than 2015 when there were 63 interactions. Turtles of undetermined species were the most numerous (43 interactions) followed by Green turtles (6 interactions). Four interactions occurred with Pacific (Olive) Ridley turtles and two with Flatback turtles (Figure 59). All turtles were released alive. Turtle interactions were highest in the Limmen Bight region, which was also one of the areas which experienced the most fishing effort (Figure 60).

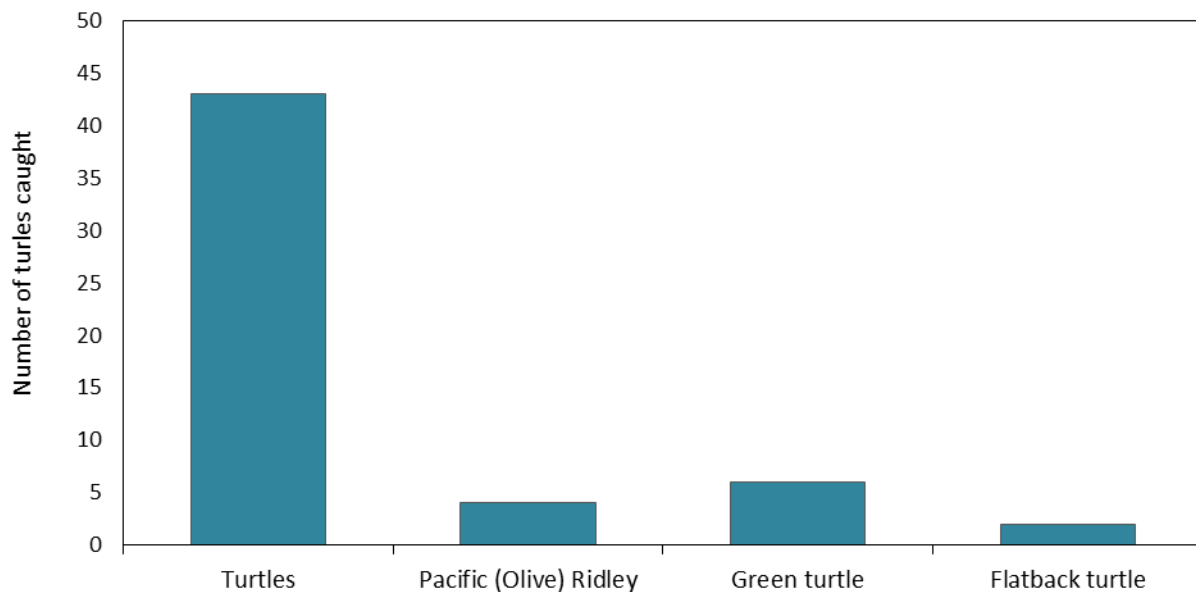


Figure 59: Turtle interactions in the NPF by species in 2016.

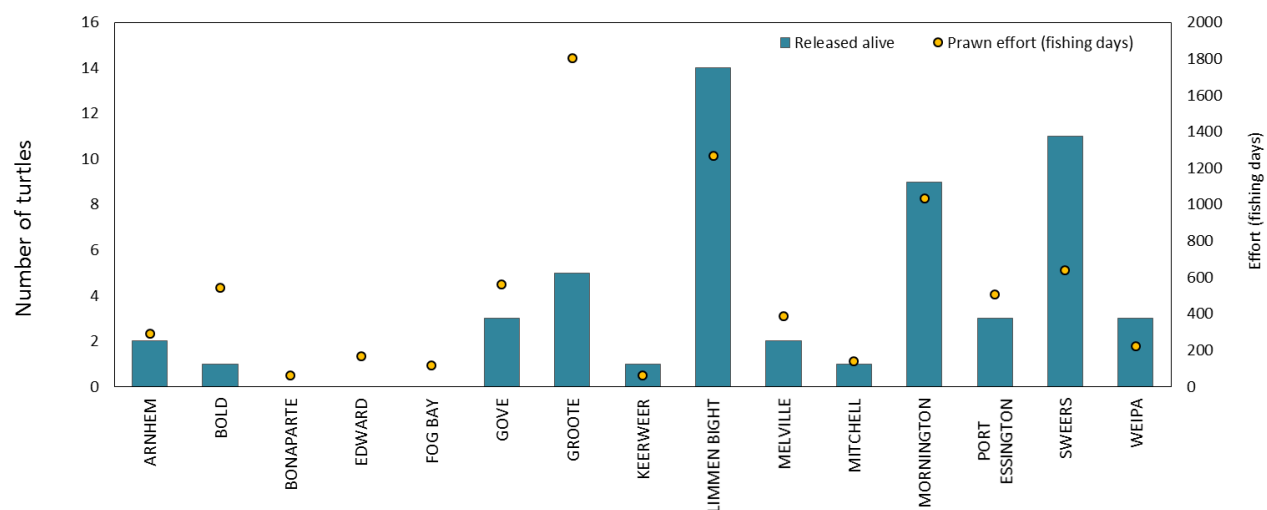


Figure 60: Turtle interactions in the NPF by area in 2016.

Table 5: Turtle interactions by species, for each area between 2012 and 2016.

Statistical Area	Turtle Species	Released Alive					Perished					Condition Unknown				
		12	13	14	15	16	12	13	14	15	16	12	13	14	15	16
ARNHEM	Flatback		3			2										
	Green															
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species					1										
BOLD	Flatback		1					1								
	Green	4	1													
	Hawksbill															
	Leatherback															
	Loggerhead	2														
	Pacific Ridley	1	1			1										
	Unidentified species		4	5												
BONAPARTE	Flatback		1													
	Green															
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species			5												
EDWARD	Flatback		1													
	Green															
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species															
FOG BAY	Flatback															
	Green															
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species															

Statistical Area	Turtle Species	Released Alive					Perished					Condition Unknown				
		12	13	14	15	16	12	13	14	15	16	12	13	14	15	16
GOVE	Flatback															
	Green	3	1	2	1											
	Hawksbill															
	Leatherback															
	Loggerhead	1	2													
	Pacific Ridley		1													
	Unidentified species			1	8	3										
GROOTE	Flatback	1		2	2	1										
	Green	5	5	2	4											
	Hawksbill	1			1											
	Leatherback				1											
	Loggerhead		1													
	Pacific Ridley	4	3	1	1			1								
	Unidentified species	8	3	10	20	4										
LIMMEN BIGHT	Flatback		2	2	2											
	Green	4	3	2		4										
	Hawksbill		1	1												
	Leatherback															
	Loggerhead		2		1											
	Pacific Ridley	1	2		1	1										
	Unidentified species		9	6	3	9										
MELVILLE	Flatback															
	Green	1														
	Hawksbill							1								
	Leatherback															
	Loggerhead															
	Pacific Ridley		4					1								
	Unidentified species		1		3	2										
MITCHELL	Flatback															
	Green					1										
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley		1													
	Unidentified species															
MORNINGTON	Flatback	2		1	1											
	Green	8		3	1	1										
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley	1			1											
	Unidentified species	3		2	8	8										
PORT ESSINGTON	Flatback	2	1													
	Green	1	3													
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species					3		1								
SWEERS	Flatback															
	Green	2	5	1												
	Hawksbill	1														
	Leatherback															
	Loggerhead	3	3													
	Pacific Ridley		1													
	Unidentified species	2	3	5	1	11										

Statistical Area	Turtle Species	Released Alive					Perished					Condition Unknown				
		12	13	14	15	16	12	13	14	15	16	12	13	14	15	16
WEIPA	Flatback	1														
	Green			3												
	Hawksbill															
	Leatherback	1														
	Loggerhead		1													
	Pacific Ridley					2										
	Unidentified species	1		2	1	1										
TOTAL ALL AREAS	Flatback	6	9	5	5	2	1									
	Green	28	18	13	6	6										
	Hawksbill	2	1	1	1		1									
	Leatherback	1			1											
	Loggerhead	6	9		1											
	Pacific Ridley	7	13	1	3	4	2									
	Unidentified species	14	20	36	46	43	1									
GRAND TOTAL	ALL SPECIES	64	70	56	63	55	0	5	0	0	0	0	0	0	0	0

Sea snake interactions

A total of 8,498 sea snake interactions were recorded during 2016. The majority of sea snakes (6,527 individuals, representing 76.8% of the total) were released alive. 1,961 (23%) perished, 5 (<0.1%) were released injured, and 5 (<0.1%) of sea snakes caught were released with condition unknown (Table 6). Sea snake interactions were highest in the Groote area (2,080 individuals), followed by Sweers (769 individuals), and lowest in the Keerweer area (38). The number of sea snakes interactions recorded in 2016 was up 970 compared to 2015 (7,528 individual interactions were reported in 2015). The percentage of sea snakes released alive in 2016 was higher (76.8%) compared to 2015 (66%).

Table 6: Sea snake interactions by area in the NPF in 2016.

Statistical area	Released alive	Perished	Released injured	Condition unknown	Total
ARNHEM	180	79			259
BOLD	299	80		1	380
BONAPARTE	54	29			83
EDWARD	41	7			48
FOG BAY	77	15			92
GOVE	218	58			276
GROOTE	2,080	664	3	2	2,749
KEERWEER	34	4			38
LIMMEN BIGHT	930	279	1		1,210
MELVILLE	598	146			744
MITCHELL	37	6			43
MORNINGTON	319	83		2	404
PORT ESSINGTON	626	173			799
SWEERS	769	120	1		890
WEIPA	265	218			483
Total	6,527	1,961	5	5	8,498

Sawfish Interactions

A total of 342 sawfish interactions were recorded during 2016 with unidentified species being the most numerous (Figure 61), representing 87% of the total interactions (up from 79% in 2015). This was followed by the Narrow Sawfish with 44 interactions (12.8%) and Dwarf Sawfish with one interaction (0.2%). Of the 342 animals caught in 2016, 188 individuals (55%) were released alive.

Sawfish interactions were highest in the Port Essington area (92 individuals) which did not have the highest fishing effort (Figure 62). The Mitchell area had the lowest number of interactions with sawfish (1 individual) but not the lowest fishing effort.

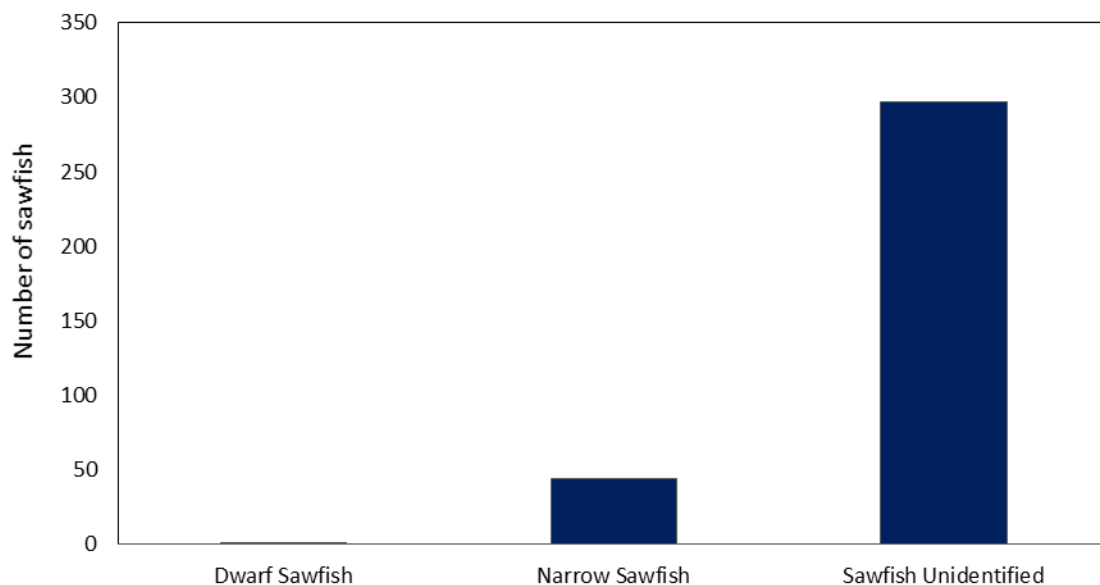


Figure 61: Sawfish interactions in the NPF by species in 2016.

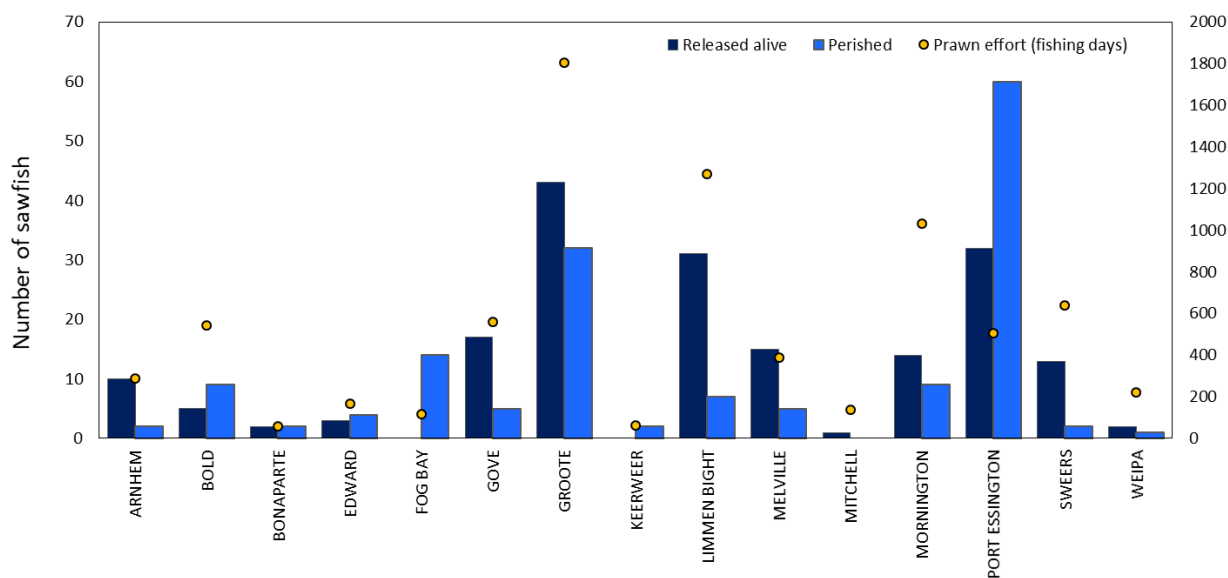


Figure 62: Sawfish interactions in the NPF by area in 2016.

Syngnathid Interactions

A total of 93 Syngnathid (seahorses and pipefish) interactions were recorded during 2016 (Table 7). Of these, 20 (22%) were released alive and 73 (78%) perished. Syngnathid interactions were highest in the Mornington area (24 individuals), followed by Groote (20 individuals). Eight of the statistical areas of the fishery recorded no interactions with Syngnathids.

Table 7: Syngnathid interactions by area in the NPF in 2016.

Statistical area	Released alive	Perished	Released injured	Condition unknown	Total
ARNHEM	0	0	0	0	0
BOLD	4	6	0	0	10
BONAPARTE	0	0	0	0	0
EDWARD	0	0	0	0	0
FOG BAY	1	0	0	0	1
GOVE	1	5	0	0	6
GROOTE	4	16	0	0	20
KEERWEER	0	0	0	0	0
LIMMEN BIGHT	1	10	0	0	11
MELVILLE	0	0	0	0	0
MITCHELL	0	1	0	0	1
MORNINGTON	5	19	0	0	24
PORT ESSINGTON	0	6	0	0	6
SWEERS	4	10	0	0	14
WEIPA	0	0	0	0	0
Total	20	73	0	0	93

Scientific Observer and Crew Member Observer coverage

Tables 8 and 9 enable comparison of recorded interactions with TEP species within the Crew Member Observer (CMO), Scientific Observer and logbook datasets.

The number of fishing days from logbook returns decreased from 8,233 in 2015 to 7,880 in 2016. This was due to a reduction in the available fishing grounds during the banana prawn season and a reduction in the length of the tiger prawn season. The number of days observed by CMOs decreased to 893 in 2016 from 1,058 in 2015. The number of days observed by Scientific Observers decreased to 103 days in 2016 from 159 days in 2015.

The frequency of sea snake interactions per fishing day was highest in the CMO dataset (2.197) compared to the Scientific Observer dataset (1.621) and the NPF logbook dataset (1.078). Turtles were also reported more frequently in the CMO dataset (0.011) followed by the Scientific Observer dataset (0.010) and logbook dataset (0.007). The frequency of Syngnathid interactions was highest in the Scientific Observer dataset (0.252) compared to the CMO dataset (0.137) and logbook dataset (0.012). The frequency of sawfish interactions was higher in the Scientific Observer dataset (0.107) than in the CMO dataset (0.071) - both were higher than the logbook dataset (0.046).

Table 8: Comparison of TEP species interactions reported by Scientific Observers, CMOs and in logbooks in the NPF in 2016.

	Vessel Returns	Fishing Days*	Total Sea Snakes	Total Turtles	Total Syngnathids	Total Sawfish	Dolphins
Logbook Returns	52	7,880	8,498	55	93	363	0
Crew Member Observers	12	893	1,962	10	122	63	0
Scientific Observers**	6	103	167	1	26	11	0

*Days fishing practices were observed.

**Scientific observer data includes data collected during gear trials.

Table 9: Comparison of TEP species interactions reported by Scientific Observers, CMOs and in logbooks per boat day during in the NPF in 2016.

	Sea Snakes per Fishing Day	Turtles per Fishing Day	Syngnathids per Fishing Day	Sawfish per Fishing Day
Logbook Returns	1.078	0.007	0.012	0.046
Crew Member Observers	2.197	0.011	0.137	0.071
Scientific Observers**	1.621	0.010	0.252	0.107

**Scientific observer data include data collected during gear trials.

State or Territory specific data

Total prawn catch in Queensland (QLD) waters of the NPF decreased from 3,131 t in 2014/15 to 2,878 t in 2015/16 (Table 10a). In the Northern Territory (NT), prawn catches increased from 3,255 t in 2014/15 to 3,796 t in 2015/16 (Table 10b). Total prawn catch in Western Australia (WA) decreased from 528 t in 2014/15 to 25 t in 2015/16 (Table 10c).

In 2015/16, banana prawn catch decreased in QLD, the NT and WA from that caught in the 2014/15 financial year. QLD decreased from 2,372 t to 2,010 t, the NT from 1,664 t to 839 t and WA from 519 t to 23 t (Table 10).

Tiger prawn catches increased in QLD from 495 t in 2014/15 to 696 t in 2015/16 and in the NT from 1,204 t in 2014/15 to 2,556 t in 2015/16. Tiger prawn catches in WA remained the same at 1 t.

Catches of endeavour prawns decreased in QLD from 258 t in 2014/15 to 143 t in 2015/16. In the NT catches increased from 384 t in 2014/15 to 398 t in 2015/16 and in WA endeavour catch decreased from 8 t in 2014/15 to 1 t in 2015/16.

King prawn catches increased in QLD from 6 t in 2014/15 to 30 t in 2015/16. As in 2014/15, 3 t was caught in NT and none in WA.

Table 10: Prawn catch for a) Queensland, b) Northern Territory and c) Western Australia for the 1994/95 to 2015/16 financial years.

a) Queensland

<i>Financial Year</i>	<i>Banana (t)</i>	<i>Tiger (t)</i>	<i>Endeavour (t)</i>	<i>King (t)</i>	<i>Total Catch (t)</i>
1994/95	2,540	1,883	346	24	4,793
1995/96	2,562	1,570	761	23	4,916
1996/97	2,050	1,259	817	15	4,141
1997/98	1,986	1,318	878	11	4,193
1998/99	1,548	634	335	5	2,522
1999/00	637	629	348	1	1,615
2000/01	3,651	553	352	4	4,560
2001/02	3,286	372	211	1	3,870
2002/03	1,307	97	54	1	1,459
2003/04	1,639	152	14	0	1,805
2004/05	1,700	70	7	0	1,777
2005/06	1,374	310	71	13	1,768
2006/07	1,839	195	47	8	2,089
2007/08	3,587	126	32	8	3,753
2008/09	3,917	202	88	0	4,207
2009/10	2,968	473	143	0	3,584
2010/11	5,454	279	88	1	5,822
2011/12	3,198	368	179	1	3,746
2012/13	1,867	575	299	3	2,744
2013/14	3,454	347	216	0	4,017
2014/15	2,372	495	258	6	3,131
2015/16	2,010	696	143	30	2,878

b) Northern Territory

<i>Financial Year</i>	<i>Banana (t)</i>	<i>Tiger (t)</i>	<i>Endeavour (t)</i>	<i>King (t)</i>	<i>Total Catch (t)</i>
1994/95	1,536	1,855	423	19	3,833
1995/96	1,072	1,615	434	6	3,127
1996/97	1,472	1,184	387	9	3,052
1997/98	1,241	1,466	490	9	3,206
1998/99	1,549	2,141	778	6	4,474
1999/00	1,247	1,564	586	11	3,408
2000/01	2,323	1,546	489	3	4,361
2001/02	1,789	1,561	892	1	4,243

2002/03	1,509	1,797	333	2	3,641
2003/04	1,437	1,985	390	1	3,813
2004/05	838	1,683	368	2	2,891
2005/06	1,389	1,423	205	6	3,023
2006/07	783	1,635	308	20	2,746
2007/08	1,550	1,100	164	12	2,826
2008/09	1,288	809	121	0	2,218
2009/10	2,229	788	189	0	3,207
2010/11	1,738	1,337	325	0	3,401
2011/12	1,544	490	228	0	1,230
2012/13	867	775	199	0	1,841
2013/14	1,792	1,676	266	0	3,734
2014/15	1,664	1,204	384	3	3,255
2015/16	839	2,556	398	3	3,796

c) Western Australia

<i>Financial Year</i>	<i>Banana (t)</i>	<i>Tiger (t)</i>	<i>Endeavour (t)</i>	<i>King (t)</i>	<i>Total Catch (t)</i>
1994/95	414	2	16	0	432
1995/96	713	18	65	0	796
1996/97	1,079	5	38	0	1,122
1997/98	756	66	686	1	1,509
1998/99	519	23	17	0	559
1999/00	329	2	38	0	369
2000/01	281	16	23	0	320
2001/02	345	23	28	0	396
2002/03	509	75	8	0	592
2003/04	461	49	13	0	523
2004/05	293	29	36	0	358
2005/06	399	13	4	0	416
2006/07	108	0	1	0	109
2007/08	151	5	4	0	160
2008/09	287	1	3	0	291
2009/10	616	10	19	0	645
2010/11	371	2	9	0	383
2011/12	4,426	52	5	0	4,484
2012/13	420	3	3	0	426
2013/14	526	1	4	0	531
2014/15	519	1	8	0	528
2015/16	23	1	1	0	25

Retained Byproduct in the Northern Prawn Fishery by State or Territory waters

Total byproduct retained in the NPF by State or Territory in 2016 was 374,667 kg (Table 11). The highest retained byproduct level was observed in NT waters (308,802 kg) and the lowest in WA waters (49 kg). Squid was the largest component of byproduct catches, with 214,303 kg retained. This was a substantial increase from 2015 in which 24,981 kg of squid was retained (Table 11).

Table 11: Retained byproduct in the NPF by State/Territory in 2016 (kilograms).

Species	NT	QLD	WA	Total
Australian scampi	27,853			27,853
Bugs - Shovel nosed and slipper lobsters	19,986	25,312		45,298
Champagne lobster - Spear lobster	5,400			5,400
Cuttlefishes	6,984	1,804		8,788
Mackerels	60			60
Moreton Bay bugs	36,813	27,207	30	64,050
Octopuses	130	148		278
Painted rock lobster - Green cray	80		5	85
Pomfret	440	25		465
Scallops	7,937			7,937
Squids	203,031	11,258	14	214,303
Sea Mullet	25	10		35
Whitings	63	52		115
Total	308,802	65,816	49	374,667

References

Ma, K. Y., Chan, T. -Y & Chu, K. H. (2011). *Refuting the six-genus classification of Penaeus s.l. (Dendrobranchiata, Penaeidae): a combined analysis of mitochondrial and nuclear genes.* — Zoologica Scripta, 40, 498–508.

Appendix 1 Historical Catch and Effort by Area

Table 12: Weipa

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
				Fishery	Fishery						
1994	208	201	49	230	228	455	1164	1222	0.504	0.196	0.187
1995	596	198	174	591	377	443	1396	1539	1.335	0.270	0.245
1996	1073	137	207	1072	345	676	1830	2118	1.585	0.188	0.163
1997	696	252	273	699	523	519	1844	2241	1.346	0.284	0.233
1998	165	46	13	165	59	233	388	495	0.709	0.151	0.119
1999	359	25	5	359	30	268	237	318	1.341	0.126	0.094
2000	36	154	147	37	301	170	1134	1596	0.218	0.265	0.188
2001	63	48	61	64	111	105	475	702	0.606	0.234	0.158
2002	42	12	12	42	24	64	127	197	0.661	0.186	0.120
2003	3	0	0	3	0	28	6	10	0.100	0.081	0.050
2004	138	0	0	138	0	120	3	5	1.147	0.024	0.014
2005	29	1	0	30	0	75	5	9	0.395	0.025	0.014
2006	391	6	2	391	6	342	53	100	1.143	0.113	0.060
2007	230	1	0	230	1	201	12	24	1.144	0.083	0.042
2008	833	28	22	833	51	374	208	432	2.226	0.244	0.117
2009	455	62	43	455	106	245	350	764	1.859	0.302	0.138
2010	280	44	25	280	69	173	194	445	1.619	0.355	0.155
2011	730	114	82	729	197	262	642	1545	2.784	0.306	0.127
2012	486	94	166	485	261	200	708	1789	2.426	0.369	0.146
2013	226	57	60	226	117	108	258	685	2.096	0.452	0.170
2014	338	138	160	338	298	136	559	1557	2.485	0.533	0.201
2015	394	92	28	394	120	178	298	872	2.213	0.403	0.138
2016	131	18	12	131	30	122	101	310	1.077	0.297	0.097

Table 13: Keerweer

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
				Fishery	Fishery						
1994	76	3	0	76	3	202	23	24	0.376	0.134	0.127
1995	107	2	0	108	1	123	8	9	0.874	0.100	0.090
1996	184	162	115	177	285	297	1097	1270	0.595	0.260	0.225
1997	123	88	18	119	113	164	463	563	0.726	0.244	0.201
1998	107	1	0	107	2	145	15	19	0.740	0.103	0.081
1999	114	6	1	114	7	150	40	54	0.761	0.176	0.131
2000	18	0	0	18	0	65	2	3	0.281	0.146	0.103
2001	77	0	0	77	0	88	2	3	0.878	0.075	0.050
2002	311	0	0	311	0	229	5	8	1.356	0.067	0.043
2003	6	0	0	6	0	35	3	5	0.168	0.042	0.026
2004	77	0	0	77	0	125	0	0	0.616	0.000	0.000
2005	78	0	0	78	0	85	1	2	0.917	0.010	0.006
2006	53	1	0	53	1	61	9	17	0.862	0.072	0.038
2007	115	0	0	115	0	125	0	0	0.916	0.000	0.000
2008	259	0	0	259	0	122	0	0	2.124	0.000	0.000
2009	258	0	0	258	0	142	2	4	1.818	0.082	0.038
2010	89	0	0	89	0	75	2	5	1.190	0.010	0.004
2011	230	0	0	230	0	82	2	5	2.811	0.175	0.073
2012	286	1	0	286	0	135	3	8	2.119	0.102	0.040
2013	98	0	0	99	0	78	1	3	1.263	0.130	0.049
2014	139	2	0	139	1	83	3	8	1.675	0.333	0.126
2015	204	1	2	204	3	82	5	15	2.488	0.600	0.226
2016	100	0	1	100	1	62	1	3	1.612	0.590	0.192

Table 14: Edward

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana Fishery	Tiger Fishery	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
1994	161	1	0	161	1	335	6	6	0.481	0.134	0.127
1995	245	0	0	245	0	179	3	3	1.369	0.070	0.063
1996	248	1	0	248	1	253	4	5	0.979	0.179	0.154
1997	148	0	0	148		178	0	0	0.833	0.000	0.000
1998	317	0	0	317	0	276	4	5	1.148	0.032	0.025
1999	412	0	0	412		403	0	0	1.022	0.000	0.000
2000	27	0	0	27		117	0	0	0.233	0.000	0.000
2001	120	0	0	121	0	129	1	1	0.936	0.066	0.045
2002	399	0	0	399		244	0	0	1.635	0.000	0.000
2003	142	0	0	142		182	0	0	0.779	0.000	0.000
2004	151	0	0	151	0	162	0	0	0.932	0.000	0.000
2005	411	0	0	411	0	330	0	0	1.244	0.000	0.000
2006	134	0	0	134	0	186	0	0	0.721	0.000	0.000
2007	313	0	0	313	0	285	1	2	1.098	0.048	0.024
2008	612	0	0	612	0	295	0	0	2.074	0.000	0.000
2009	450	2	0	450	2	198	15	33	2.274	0.156	0.071
2010	426	0	0	426	0	228	3	7	1.869	0.112	0.049
2011	521	2	0	523	0	178	2	5	2.935	0.105	0.044
2012	634	6	1	634	7	297	19	48	2.135	0.374	0.148
2013	168	0	0	168	0	125	1	3	1.344	0.062	0.023
2014	250	0	0	250	0	128	0	0	1.953	0.000	0.000
2015	215	0	0	215	0	113	1	3	1.903	0.100	0.034
2016	306	0	0	306	0	167	0	0	1.833	0	0

Table 15: Mitchell

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana Fishery	Tiger Fishery	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
1994	180	2	0	180	2	406	3	3	0.442	0.708	0.675
1995	433	0	0	433	0	308	0	0	1.406	0.000	0.000
1996	433	0	0	433	0	468	1	1	0.926	0.135	0.117
1997	274	0	0	274	0	289	0	0	0.949	0.000	0.000
1998	188	2	0	188	2	244	7	9	0.772	0.305	0.239
1999	246	0	0	246	0	268	0	0	0.918	0.000	0.000
2000	100	0	0	100	0	178	1	1	0.563	0.090	0.064
2001	256	0	0	257	0	300	0	0	0.856	0.000	0.000
2002	601	1	0	601	1	363	7	11	1.657	0.131	0.084
2003	325	0	0	325	0	377	0	0	0.862	0.000	0.000
2004	455	0	0	455	0	500	1	2	0.911	0.077	0.045
2005	306	0	0	306	0	296	0	0	1.034	0.000	0.000
2006	71	0	0	71	0	147	0	0	0.483	0.000	0.000
2007	455	0	0	455	0	301	0	0	1.512	0.000	0.000
2008	380	0	0	380	0	192	3	6	1.980	0.142	0.068
2009	282	0	0	282	0	160	1	2	1.761	0.010	0.005
2010	285	0	0	285	0	147	0	0	1.940	0.000	0.000
2011	288	0	0	288	0	107	0	0	2.695	0.000	0.000
2012	326	0	0	326	0	169	1	3	1.932	0.243	0.096
2013	566	0	0	567	0	200	0	0	2.833	0.000	0.000
2014	528	0	0	528	0	210	0	0	2.514	0.000	0.000
2015	480	0	0	480	0	131	0	0	3.664	0.000	0.000
2016	349	0	0	349	0	138	0	0	2.532	0	0

Table 16: Bold

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana Fishery	Tiger Fishery	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
1994	244	115	22	241	143	542	553	581	0.444	0.258	0.246
1995	646	416	89	643	516	571	1187	1309	1.127	0.435	0.394
1996	393	86	24	393	112	429	457	529	0.917	0.246	0.212
1997	570	53	49	570	102	332	274	333	1.716	0.373	0.307
1998	574	104	22	579	125	628	460	587	0.922	0.271	0.213
1999	325	35	12	324	48	413	227	304	0.786	0.213	0.159
2000	289	20	1	287	23	349	161	227	0.823	0.145	0.103
2001	1736	11	16	1739	26	912	91	134	1.907	0.286	0.193
2002	1612	32	2	1614	32	788	172	267	2.048	0.183	0.118
2003	609	5	0	610	5	480	37	60	1.271	0.141	0.087
2004	649	2	0	649	3	392	15	26	1.654	0.183	0.107
2005	643	15	2	643	15	417	79	142	1.542	0.186	0.104
2006	479	4	0	479	4	378	22	41	1.268	0.202	0.107
2007	439	33	7	439	33	297	129	255	1.477	0.256	0.129
2008	1304	84	33	1302	120	489	327	680	2.662	0.366	0.176
2009	1614	52	41	1614	94	531	168	367	3.040	0.559	0.256
2010	1097	45	16	1094	64	442	87	199	2.475	0.739	0.323
2011	2451	46	20	2451	66	611	173	416	4.011	0.381	0.158
2012	912	110	45	905	162	368	347	877	2.459	0.466	0.185
2013	545	191	54	541	250	278	539	1430	1.946	0.464	0.175
2014	1445	42	21	1442	67	518	131	365	2.784	0.511	0.184
2015	742	55	9	742	55	271	112	328	2.738	0.491	0.168
2016	743	62	2	744	64	373	168	516	1.994	0.384	0.125

Table 17: Sweers

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana Fishery	Tiger Fishery	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
1994	16	49	33	17	82	95	288	302	0.178	0.286	0.272
1995	336	357	126	331	498	213	1249	1377	1.553	0.398	0.361
1996	162	167	146	161	316	147	980	1134	1.097	0.323	0.279
1997	127	145	104	127	251	101	713	867	1.257	0.352	0.290
1998	473	41	60	486	88	532	305	389	0.914	0.290	0.227
1999	0	1	0	0	1	56	10	13	0.004	0.147	0.110
2000	61	3	2	60	5	98	22	31	0.612	0.221	0.157
2001	494	4	3	494	9	330	34	50	1.498	0.258	0.174
2002	225	2	1	225	3	204	19	29	1.105	0.146	0.094
2003	125	0	0	125	0	150	2	3	0.836	0.096	0.059
2004	127	0	0	127	0	106	1	2	1.198	0.230	0.134
2005	146	4	7	146	4	87	65	117	1.678	0.062	0.034
2006	70	0	0	70	0	48	1	2	1.454	0.130	0.069
2007	137	0	0	137	0	83	0	0	1.649	0.000	0.000
2008	126	28	15	126	43	63	115	239	2.001	0.378	0.182
2009	178	4	3	178	8	61	11	24	2.924	0.702	0.322
2010	397	4	7	396	13	179	22	50	2.213	0.576	0.251
2011	379	90	46	379	136	143	281	676	2.653	0.485	0.201
2012	177	50	49	174	103	65	219	553	2.673	0.468	0.185
2013	92	89	61	90	153	45	260	690	1.990	0.587	0.221
2014	436	70	49	428	129	144	223	621	2.972	0.578	0.208
2015	120	202	66	117	283	56	374	1094	2.089	0.757	0.259
2016	275	257	52	264	328	122	518	1591	2.166	0.633	0.206

Table 18: Mornington

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana	Tiger Fishery	Tiger Fishery
				Fishery	Fishery				Fishery	(nominal)	(effective)
1994	4	760	306	2	1085	50	4813	5054	0.036	0.225	0.215
1995	126	1531	283	110	1840	141	5243	5780	0.779	0.351	0.318
1996	105	640	405	104	1052	148	4571	5292	0.702	0.230	0.199
1997	62	690	347	62	1046	72	3867	4700	0.857	0.271	0.223
1998	233	919	464	226	1394	323	4795	6120	0.699	0.291	0.228
1999	9	445	219	9	665	72	2474	3315	0.123	0.269	0.201
2000	110	473	306	110	780	147	3445	4847	0.752	0.226	0.161
2001	928	392	184	926	578	827	2157	3187	1.120	0.268	0.182
2002	65	85	53	65	139	177	680	1055	0.365	0.204	0.132
2003	102	163	32	101	197	127	645	1051	0.798	0.305	0.187
2004	37	47	7	37	54	82	205	351	0.446	0.265	0.155
2005	91	280	64	91	280	113	1281	2300	0.807	0.219	0.122
2006	187	206	44	187	206	204	780	1471	0.915	0.264	0.140
2007	145	57	24	145	57	179	333	659	0.810	0.171	0.086
2008	127	69	18	131	83	134	315	655	0.975	0.264	0.127
2009	634	342	54	630	401	286	1111	2425	2.202	0.361	0.165
2010	443	199	40	441	241	258	528	1210	1.711	0.456	0.199
2011	806	70	29	806	99	273	347	835	2.952	0.285	0.119
2012	21	70	4	21	74	7	227	574	2.945	0.326	0.129
2013	126	183	49	124	236	83	546	1449	1.492	0.432	0.163
2014	352	188	40	353	230	186	599	1669	1.898	0.384	0.138
2015	184	266	43	180	329	75	567	1659	2.400	0.580	0.198
2016	117	296	40	114	355	92	941	2890	1.235	0.377	0.123

Table 19: Limmen Bight

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana	Tiger Fishery	Tiger Fishery
				Fishery	Fishery				Fishery	(nominal)	(effective)
1994	9	716	107	5	842	68	3515	3691	0.073	0.240	0.228
1995	326	448	68	330	515	327	1856	2046	1.009	0.277	0.252
1996	201	555	174	201	737	252	3175	3675	0.797	0.232	0.200
1997	28	472	115	28	593	91	2100	2553	0.311	0.282	0.232
1998	273	748	122	274	870	307	3003	3833	0.891	0.290	0.227
1999	78	610	155	79	773	183	2933	3931	0.429	0.264	0.197
2000	229	558	179	232	737	348	2725	3834	0.666	0.270	0.192
2001	1732	584	250	1744	825	1440	2594	3833	1.211	0.318	0.215
2002	17	306	73	14	381	37	1373	2130	0.381	0.278	0.179
2003	420	848	132	420	981	449	2749	4478	0.935	0.357	0.219
2004	55	670	113	55	784	173	2607	4459	0.319	0.301	0.176
2005	3	509	47	3	509	25	2103	3777	0.120	0.242	0.135
2006	429	719	121	429	719	303	2516	4744	1.416	0.286	0.152
2007	30	284	62	30	284	101	1470	2910	0.299	0.193	0.098
2008	111	252	22	112	273	128	1079	2243	0.878	0.253	0.121
2009	380	581	85	386	659	272	1951	4259	1.419	0.338	0.155
2010	705	467	80	708	544	317	1245	2854	2.232	0.437	0.191
2011	277	184	32	278	215	139	891	2144	2.003	0.241	0.100
2012	74	235	37	75	271	43	919	2322	1.756	0.294	0.117
2013	74	541	51	77	589	63	1288	3417	1.222	0.457	0.172
2014	516	364	48	519	411	191	972	2708	2.717	0.423	0.152
2015	199	455	21	199	478	106	814	2381	1.877	0.587	0.201
2016	78	422	40	80	461	72	1197	3677	1.112	0.385	0.125

Table 20: Groote

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana Fishery	Tiger Fishery	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
1994	26	930	243	25	1176	49	5669	5952	0.503	0.207	0.198
1995	60	722	202	56	930	81	3554	3918	0.686	0.262	0.237
1996	62	418	131	61	550	109	3134	3628	0.560	0.175	0.152
1997	74	662	186	72	849	129	3279	3986	0.559	0.259	0.213
1998	75	951	449	73	1404	147	6051	7723	0.494	0.232	0.182
1999	471	803	313	509	1079	795	4810	6446	0.640	0.224	0.167
2000	217	780	233	222	1008	412	3870	5445	0.539	0.260	0.185
2001	358	662	371	363	1030	469	3387	5004	0.774	0.304	0.206
2002	30	1035	180	29	1216	63	4152	6441	0.457	0.293	0.189
2003	126	900	194	119	1100	121	3459	5634	0.984	0.318	0.195
2004	111	699	191	112	889	214	3363	5752	0.522	0.264	0.155
2005	3	576	95	3	576	25	2811	5048	0.120	0.205	0.114
2006	97	594	137	97	594	171	2516	4744	0.566	0.236	0.125
2007	49	307	77	49	307	190	1958	3877	0.257	0.157	0.079
2008	49	265	54	50	318	71	1361	2829	0.702	0.234	0.112
2009	149	138	71	152	206	146	818	1786	1.044	0.252	0.116
2010	215	618	207	227	813	235	2059	4719	0.965	0.395	0.172
2011	264	191	103	288	270	380	1045	2515	0.759	0.259	0.108
2012	44	287	95	47	379	51	1369	3459	0.915	0.277	0.110
2013	49	713	110	38	834	31	1888	5009	1.221	0.442	0.167
2014	149	491	150	138	652	43	1435	3807	3.209	0.454	0.171
2015	200	1386	214	167	1634	101	2538	7424	1.653	0.644	0.220
2016	24	597	127	19	730	45	1759	5401	0.4222	0.415	0.135

Table 21: Gove

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana Fishery	Tiger Fishery	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)
1994	42	225	71	43	296	116	1439	1511	0.370	0.206	0.196
1995	47	345	53	48	398	125	1522	1678	0.383	0.261	0.237
1996	18	111	21	18	133	131	775	897	0.140	0.171	0.148
1997	45	228	54	47	281	136	1032	1254	0.346	0.272	0.224
1998	39	266	113	37	383	98	1769	2258	0.374	0.216	0.170
1999	80	203	95	83	296	216	1423	1907	0.384	0.208	0.155
2000	23	164	47	23	212	122	939	1321	0.188	0.226	0.161
2001	37	179	101	37	281	99	911	1346	0.374	0.309	0.209
2002	77	322	47	74	374	119	1426	2212	0.624	0.262	0.169
2003	84	205	46	85	251	127	893	1455	0.669	0.281	0.172
2004	71	282	42	72	324	161	1234	2111	0.446	0.262	0.153
2005	72	288	39	72	288	145	1370	2460	0.497	0.210	0.117
2006	143	262	54	143	262	243	1099	2072	0.588	0.238	0.126
2007	61	162	19	61	162	156	816	1616	0.393	0.199	0.100
2008	101	122	12	100	136	75	562	1168	1.335	0.242	0.116
2009	11	35	13	11	48	15	240	524	0.706	0.201	0.092
2010	68	241	35	66	278	51	706	1618	1.292	0.393	0.172
2011	97	83	47	95	133	100	501	1206	0.947	0.265	0.110
2012	77	162	27	77	189	87	697	1761	0.881	0.271	0.107
2013	49	269	28	49	297	36	732	1942	1.356	0.406	0.153
2014	42	259	66	41	327	39	737	1774	1.051	0.444	0.184
2015	143	493	72	146	562	150	905	2647	0.973	0.621	0.212
2016	109	147	19	111	166	89	471	1447	1.247	0.352	0.115

Table 22: Arnhem

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana	Tiger Fishery	Tiger Fishery
				Fishery	Fishery				Fishery	(nominal)	(effective)
1994	42	90	11	44	100	178	526	552	0.245	0.190	0.181
1995	160	19	1	160	21	132	109	120	1.211	0.188	0.171
1996	90	37	3	90	40	210	252	292	0.430	0.158	0.137
1997	87	17	2	87	18	178	105	128	0.490	0.174	0.143
1998	94	49	2	95	52	225	231	295	0.422	0.223	0.175
1999	176	8	1	176	8	253	74	99	0.695	0.113	0.085
2000	50	21	2	50	22	181	148	208	0.278	0.149	0.106
2001	127	32	2	128	35	135	142	210	0.950	0.245	0.166
2002	64	57	1	63	59	147	193	299	0.432	0.304	0.196
2003	165	11	0	166	10	183	43	70	0.908	0.237	0.145
2004	264	6	0	265	5	303	39	67	0.873	0.129	0.076
2005	112	15	0	112	15	186	70	126	0.603	0.217	0.121
2006	213	7	1	213	7	227	44	83	0.938	0.159	0.084
2007	36	11	1	36	11	118	66	131	0.302	0.168	0.085
2008	327	68	8	326	76	176	234	486	1.854	0.324	0.156
2009	48	9	0	48	9	35	38	83	1.374	0.236	0.108
2010	258	4	0	258	4	124	17	39	2.079	0.215	0.094
2011	243	8	2	242	10	98	48	116	2.473	0.207	0.086
2012	305	5	0	305	5	102	22	56	2.994	0.221	0.087
2013	95	39	3	95	43	58	120	318	1.641	0.358	0.135
2014	308	15	3	309	17	153	51	123	2.020	0.333	0.139
2015	173	35	3	173	38	153	62	181	1.131	0.613	0.210
2016	58	97	5	58	102	50	239	734	1.160	0.427	0.139

Table 23: Port Essington

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana	Tiger Fishery	Tiger Fishery
				Fishery	Fishery				Fishery	(nominal)	(effective)
1994	132	26	9	136	31	378	176	185	0.361	0.176	0.167
1995	257	63	57	253	124	363	359	396	0.697	0.344	0.312
1996	177	14	4	180	15	332	96	111	0.543	0.154	0.133
1997	302	16	54	302	69	478	186	226	0.632	0.372	0.306
1998	175	74	34	173	109	358	415	530	0.485	0.262	0.205
1999	195	8	18	196	25	343	98	131	0.570	0.259	0.193
2000	180	39	25	180	65	288	216	304	0.624	0.301	0.214
2001	280	63	142	258	227	345	395	584	0.749	0.576	0.390
2002	213	86	25	212	113	339	273	424	0.624	0.414	0.267
2003	212	12	6	219	11	367	47	77	0.595	0.236	0.145
2004	193	17	7	195	22	241	92	157	0.810	0.235	0.137
2005	236	15	6	236	15	403	47	84	0.586	0.327	0.182
2006	193	2	2	193	2	197	6	11	0.980	0.333	0.177
2007	116	3	0	116	3	141	18	36	0.820	0.178	0.090
2008	379	99	22	378	122	285	324	674	1.326	0.377	0.181
2009	107	15	5	109	17	103	51	111	1.062	0.332	0.152
2010	254	8	3	259	6	208	18	41	1.246	0.323	0.141
2011	243	21	27	252	40	236	92	221	1.066	0.437	0.182
2012	283	38	18	291	48	188	124	313	1.546	0.385	0.152
2013	170	45	21	169	67	162	118	313	1.042	0.568	0.214
2014	340	41	51	347	85	264	133	320	1.314	0.639	0.266
2015	264	85	37	262	124	240	152	445	1.092	0.816	0.279
2016	171	171	31	162	212	161	344	1057	1.006	0.617	0.201

Table 24: Melville

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana	Tiger Fishery	Tiger Fishery
				Fishery	Fishery				Fishery	(nominal)	(effective)
1994	168	14	12	169	26	453	131	138	0.373	0.196	0.187
1995	493	20	56	502	67	628	186	205	0.799	0.361	0.327
1996	289	7	27	294	29	557	126	146	0.529	0.228	0.197
1997	554	41	111	574	132	842	312	379	0.682	0.424	0.349
1998	235	46	49	237	93	519	312	398	0.457	0.298	0.233
1999	527	8	14	531	17	667	76	102	0.796	0.229	0.171
2000	189	2	2	191	2	380	13	18	0.502	0.126	0.089
2001	351	5	18	358	17	439	63	93	0.816	0.273	0.185
2002	286	29	18	295	38	468	118	183	0.630	0.321	0.207
2003	253	14	13	267	13	432	51	83	0.618	0.249	0.153
2004	455	0	0	455	0	500	1	2	0.911	0.077	0.045
2005	306	0	0	306	0	530	44	79	0.577	0.000	0.000
2006	160	1	1	160	0	230	1	2	0.696	0.000	0.000
2007	134	0	0	134	0	141	3	6	0.947	0.000	0.000
2008	528	3	2	532	1	435	6	12	1.223	0.203	0.097
2009	302	7	12	309	12	208	34	74	1.488	0.358	0.164
2010	343	4	3	349	1	294	7	16	1.186	0.173	0.075
2011	356	2	13	359	13	259	19	46	1.384	0.660	0.274
2012	370	41	22	377	56	312	147	371	1.209	0.381	0.151
2013	252	73	51	263	113	227	154	409	1.160	0.731	0.275
2014	322	72	65	330	130	265	194	467	1.245	0.670	0.278
2015	416	112	64	425	167	329	206	603	1.292	0.811	0.277
2016	215	67	43	222	103	237	152	467	0.937	0.675	0.220

Table 25: Fog Bay

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana	Tiger Fishery	Tiger Fishery
				Fishery	Fishery				Fishery	(nominal)	(effective)
1994	210	6	2	211	8	393	76	80	0.536	0.101	0.096
1995	251	5	1	251	6	346	40	44	0.726	0.144	0.130
1996	147	4	0	147	4	227	43	50	0.648	0.096	0.083
1997	448	10	3	452	10	464	61	74	0.974	0.158	0.130
1998	307	11	10	308	22	420	118	151	0.733	0.184	0.144
1999	254	1	1	254	2	308	17	23	0.824	0.137	0.103
2000	221	1	0	221	1	271	15	21	0.817	0.074	0.053
2001	307	0	0	308	0	271	1	1	1.136	0.202	0.137
2002	208	0	0	208	1	295	9	14	0.704	0.135	0.087
2003	259	0	0	259	1	324	2	3	0.798	0.255	0.157
2004	332	0	0	332	0	261	1	2	1.271	0.270	0.158
2005	123	0	0	123	0	181	1	2	0.679	0.110	0.061
2006	258	1	0	258	1	270	2	4	0.956	0.250	0.133
2007	237	1	0	237	1	172	3	6	1.375	0.183	0.093
2008	316	0	0	316	0	200	1	2	1.580	0.494	0.238
2009	287	0	0	287	0	107	1	2	2.682	0.225	0.103
2010	318	0	0	318	0	180	0	0	1.765	0.000	0.000
2011	286	0	0	286	0	169	0	0	1.692	0.000	0.000
2012	233	0	0	233	0	144	0	0	1.621	0.000	0.000
2013	197	0	0	197	0	117	0	0	1.685	0.000	0.000
2014	191	0	0	191	0	102	1	2	1.873	0.000	0.000
2015	156	0	0	156	0	110	0	0	1.418	0.000	0.000
2016	171	2	0	171	2	114	2	6	1.500	0.848	0.276

Table 26: Bonaparte

Year	Catch (tonnes)					Effort (days)			CPUE (tonnes/day)		
	Banana	Tiger	Endeavour	Banana	Tiger	Banana Fishery	Tiger Fishery (nominal)	Tiger Fishery (effective)	Banana	Tiger Fishery	Tiger Fishery
				Fishery	Fishery				Fishery	(nominal)	(effective)
1994	590	4	21	610	5	1125	28	29	0.542	0.182	0.173
1995	736	11	64	763	49	900	129	142	0.848	0.380	0.345
1996	546	10	36	569	23	1284	93	108	0.443	0.242	0.209
1997	1000	30	623	1010	643	1502	1147	1394	0.673	0.561	0.461
1998	262	25	7	265	29	846	125	160	0.313	0.230	0.180
1999	619	16	50	630	54	1235	246	330	0.511	0.221	0.165
2000	397	1	19	404	14	554	32	45	0.729	0.423	0.300
2001	292	25	29	303	49	358	187	276	0.847	0.259	0.176
2002	435	28	10	441	32	610	164	254	0.723	0.196	0.126
2003	411	103	12	422	105	732	566	922	0.576	0.185	0.113
2004	477	33	38	495	53	720	198	339	0.688	0.266	0.155
2005	318	15	5	318	15	445	64	115	0.715	0.230	0.128
2006	231	0	1	231	0	254	0	0	0.909	0.000	0.000
2007	151	4	4	151	4	206	20	40	0.732	0.220	0.111
2008	185	1	3	189	0	183	2	4	1.031	0.179	0.086
2009	612	4	17	628	5	444	13	28	1.415	0.397	0.182
2010	254	2	9	261	4	218	10	23	1.199	0.353	0.154
2011	463	6	85	472	81	345	100	241	1.369	0.815	0.338
2012	195	1	2	198		132	0	0	1.499	0.000	0.000
2013	380	3	4	387	0	325	1	3	1.191	0.025	0.009
2014	883	2	9	891	3	604	4	10	1.475	0.750	0.312
2015	30	0	0	30	0	57	1	3	0.526	0.429	0.147
2016	35	0	1	35	0	59	1	3	0.600	0.045	0.015