Gulf of Papua Status Report 2012 REBYC-II CTI

NATIONAL FISHERIES AUTHORITY

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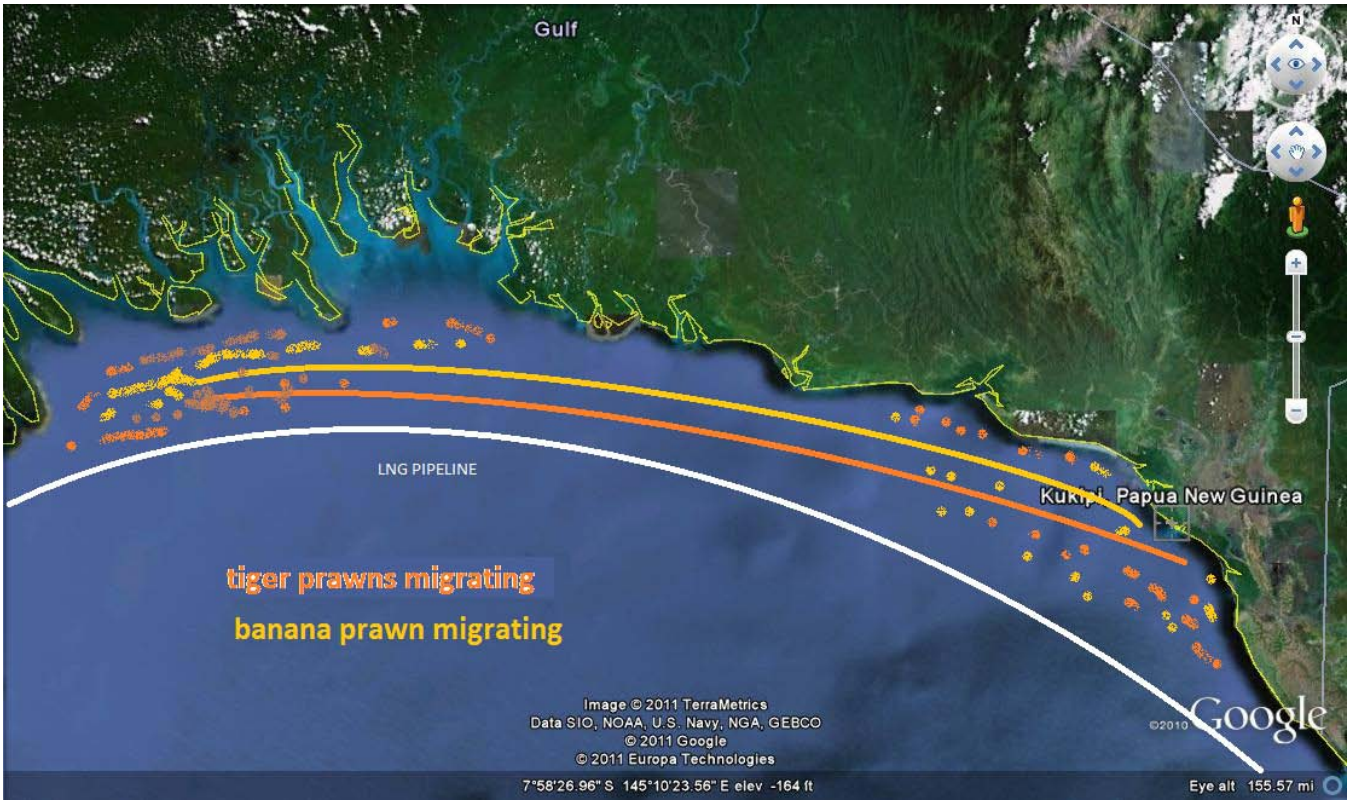
2012 Status Report

Gulf of Papua Prawn Fishery



By

Ian Liviko

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1.0. INTRODUCTION

This current status report of the Gulf of Papua Prawn Fishery is an information guide to the general public, prawn fishermen and other stakeholders. This report will highlight the various aspects of the fishery in terms of its biology and ecology, management arrangements, fishing methodology, fishing activities, its economics and issues affecting the fishery, and the necessary actions taken to address the issues.

1.1. Fishery

The Gulf of Papua Prawn Fishery (GOPPF) is located in the west of Port Moresby, near Kerema and extending west to the mouth of Fly River. It is one of Papua New Guineas important fishery that earns a revenue of around K10 million annually from prawn exports. The main prawns harvest is the banana prawns (*Fenneropenaeus merguiensis*) and Indian banana prawn (*F. indicus*) comprising 50-60 percent, whilst black-tiger prawns (*Penaeus monodon* and *P. semisulcatus*) comprising 15-20 percent and lesser value endeavour prawns (*Metapenaeus ensis, M. endeavouri*, and *M. demani*) makes up the remaining 10-15 percent.

Presently the fishery is limited to 15 licenses with no foreign involvement, except on joint venture arrangements (Table 1). Although, the 15 vessels trawling for prawns in the Gulf of Papua (GOP) fish intensively during the fishing season with an average of 22 hours per day, the catch rates were relatively less (<10 kg per hour) compared to banana prawns fishing in Gulf of Carpentaria, Australia. These numbers has never been fully utilized nor have the vessels been fishing consistently throughout the fishing season and this is because of a number of reasons. Firstly, the vessels are aging and in deteriorating conditions, thereby resulting in high operational costs of maintenance and repairing, and secondly the increasing costs of fuel coupled with the low export price. In general, the fishery is still under-utilized and not fully exploited to its maximum economic and sustainable yield. Unless new and more efficient vessels replace old vessels the efficiency and effectiveness in catching prawns will increase to realize its maximum economic yield (MEY).

Table 1. Prawn companies and details of vessels licensed to fish in the Gulf of Papua.

Company	Vessel Name	Overall Length (m)	Gross Registered Tonnage (GRT)	Main Aux. Eng. (kW or HP)
Gulf Papua Fisheries	Gulf Star 1	24.45	145.27	367.75 kw
	Gulf Star 2 – decommissioned	24.45	145.27	367.75 kw
Sengus Investment	FV Ipali	21.36	138.07	388.00 kw

	Charisma	21.36	138.07	388.00 kw
High Energy	Ma Mori	22.80	134.00	355.70 kw
	Lare Mori	22.80	160.00	388.00 kw
	Keauta	21.36	138.07	388.00 kw
United Seafood	Lavai No.1	27.83	150.07	420.00 kw
	Lou Aro	27.83	150.07	420.00 kw
	FV Siwi	29.30	113.67	540.00 hp
Elema Holdings	Elema – on sale	23.77	177.06	425.00 hp
Gensbelle Marine	FV Regina	26.50	149.00	425.00 hp
	Diana	25.60	233.00	420.00 kw
Yuwan Fisheries	FV Lopambo	23.36	211.02	
	FV Apurel	25.92	138.22	425.00 hp

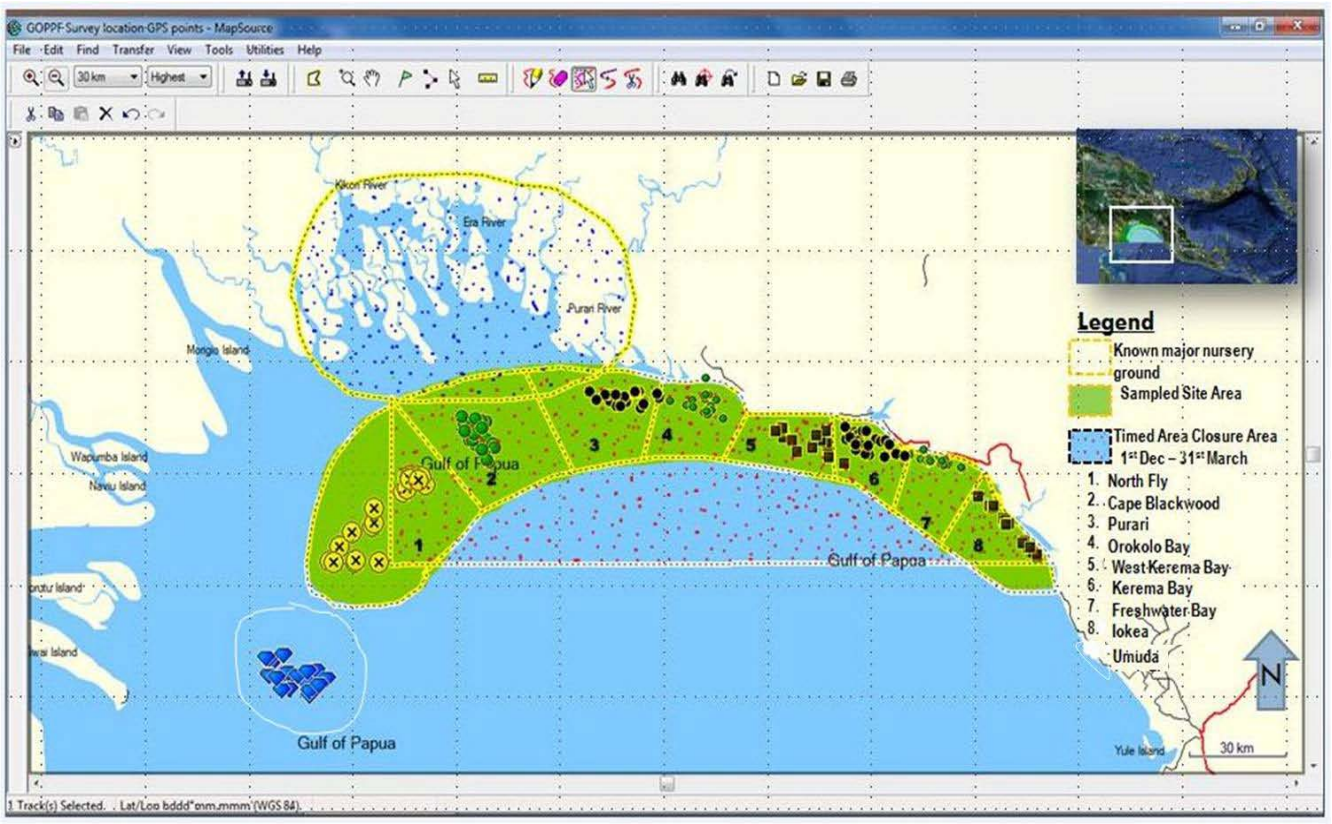
1.2. Description of the Fishery

The GOPPF runs parallel along the coast from the mouth of Fly River to the coast of Iokea in the east, and extending seaward to the 40m depth contour. Although, the trawlable area in the GOPPF is 9,603 square Kilometer, only 1,388 square kilometer receive more than 50 percent of the total fishing effort. Most fishing effort concentrates in inshore areas between Orokolo Bay, Kerema Bay, Freshwater Bay and the Lakekamu estuary, an area equal to 13.1 percent of the defined trawling area for the whole fishery (Fig. 1). The areas west of Kerema Bay are the major endeavour prawn grounds. Presence of higher stock densities and their more sheltered aspects make these areas more attractive to vessels. Banana prawns are mainly caught at Kerema Bay and Freshwater Bay.

The GOP fishery also covers Western Province and the Gulf Province, where separate licenses are issued for trawling in either province. This fishery is for larger vessels (c.24-30m length) because of the prevailing weather conditions, although smaller vessels occasionally fish.

The main season for catching banana prawn in the GOPPF is from February to August (which normally coincides with the period of highest rainfall) when catches average 96 metric ton (mt) per month, with well over 100 mt per year between April and July. From September to January catches averages about 10 mt per month lower. The total catch is about 1,200 mt/year with banana prawns (*Fenneropenaeus merguiensis*) being the target species (50-60 percent). *M. ensis* (majority), *M. eboracensis* comprises another 20 percent. Tiger prawns comprise 10-15 percent and command high prices. The reminder of the catch is made up of coral prawns. All of the catch of larger vessels is processed on board into frozen packs for export, while the catch of smaller vessels is either processed on board or chilled and packed onshore.

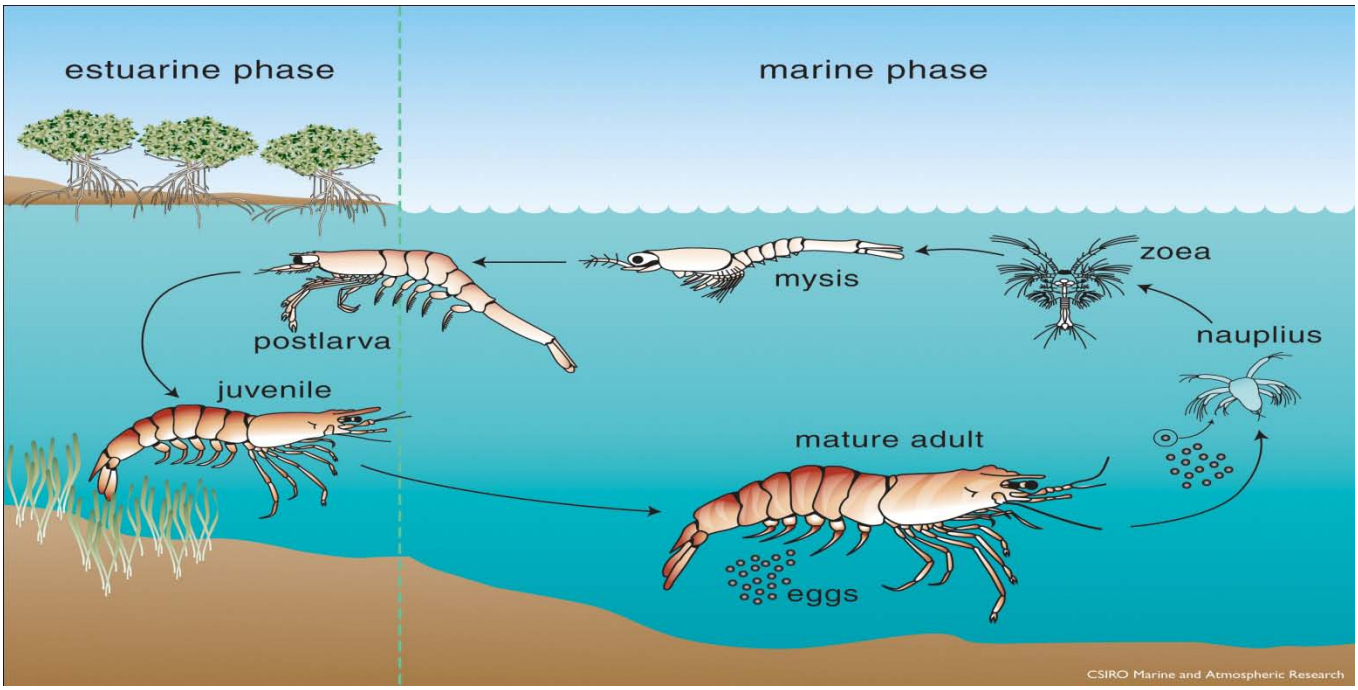
Figure 1 The Fishery Management Area



1.3. General Biology and Ecology of Penaeid Prawns

Prawns in these marine fisheries generally inhabit tropical and sub-tropical waters. They generally have an annual life cycle. They are fast growing and short-lived. Adults reproduce their eggs (spawn) in deeper near shore waters and uses estuary nursery areas for post-larval and juvenile growth. The wandering first stage of life after coming out of an egg (planktonic larvae) drift into mouth of rivers (estuarine areas), triangular patches of land accumulated at the mouth of rivers (deltas) and sea-grass where they grow to maturity through a succession of moult (growth periods). The period of time in the nursery areas takes about 3-4 months. The oceanic stage begins when the prawns move from the nursery areas to inshore waters, while after a period of growth, they move into deeper waters to reproduce. Different prawn species have different depths in which they go to spawn. The white banana prawn and green endeavour spawns at 10-20m, while Red endeavour and grooved tiger at 35-60m. Prawn movements occur during the wet season. Prawn exhibits tidal and diurnal (both day and night) rhythms. The size of prawn's movements can be related and influenced by rainfall, salinity, water temperature and other environmental factors.

Figure 2 A generalized life cycles of penaeid species in the Gulf of Papua prawn fishery



The peak abundance of the target species in the GOP occurred in April-May based upon a ten year average of monthly catch. During January through April, biomass in the fishing grounds increases from a low level to peak level. There is a secondary peak in December-January. The results inferred minor pulses to recruitment every three or four months. Peak catch rates for black-tiger prawns (*P. monodon*) also occurs in April-May (i.e., similar to the seasonality of *P. merguiensis*) but with the minor secondary peak in October, November, December or January. The results for *P. monodon* also inferred minor recruitment pulse every 3-4 months.

1.4. Management of the Fishery

GoPPF is managed by the prawn management plan, a legal framework that is drawn from Section 28 of the Fisheries Management Act 1998. The management plan principally regulates and controls the fishing activities and operations of all prawn vessels licensed to fish in the Gulf of Papua fisheries water and its principle objective is to manage the prawn resource at an equitable and sustainable level for future generations.

The current prawn management plan manages the fishery based on the management measures and these includes; licensing, fishing restrictions, performance target, time area closure, industrial prohibition of the 3-mile zone, market standards established by relevant authorities, and vessel tracking system and

surveillance. The objective of the management plan is based on targeting the Maximum Economic Yield (MEY), chiefly through control of fishing efforts and shifting away from Maximum Sustainable Yield (MSY). This is because of biological and economic reasons, but chiefly to maximize the profitability of the fishery and minimize the cost of harvest at MEY. To achieve the MEY a number of policy changes in the management measures were made (as per the prawn management plan) and most important of these was the accessing of 2-nauticle mile of the 3-mile restricted zone by commercial trawlers on joint venture agreement between resource owners. The whole idea was to enable resource owners the financial bases so they can venture into small-scale fishing business inside the 3-mile restricted zone. In this way, they can equally participate and benefit from the fishery. To facilitate the implementation of this change, awareness and consultative meetings between resource owners and stakeholders (such as NFA, Provincial Fisheries and prawn industry) have been undertaken and is currently in progress. The outcome of the meeting is anticipated to bring forth some tangible developments and benefits to the resource owners.

2.0. FISHING METHODOLOGY

The main fishing grounds of Kerema Bay and Orokolo Bay is about 18-20 hours of steaming from Port Moresby. Because of the lack of harbor facilities adjacent to the fishing grounds and poor communication facilities in the area have forced the prawn companies to establish base in Port Moresby. All vessels have freezers and on-board licensed processing facilities and storage. Most of the vessels are twin-rigged with 12 fathoms (24m) (footrope), except three vessels that are quad-rigged. Twin-rigged means towing two main nets, and quad-rigged meaning towing four main nets. The total width of the swept area is 60 meters, and this may be achieved by having two large main nets or four smaller size main nets. It has been shown that quad-rigged nets are more efficient over heavy silted bottom. The recent vessels introduced to the fishery are stern trawlers and these vessels have only one main net. This vessel is currently a concern to the industry and other stakeholders.

The prawn vessels remain at seas for extended period of time (about 4-5 weeks). Fishing takes place on a 24-hour basis for about 250 days per year during eight months open season. They may spend 4-5 days in port for unloading, provisioning and fueling. Trawling takes place mostly along the depth contour of 10-35 meters. Commercial quantities of prawns are searched and checked by a smaller net known as the “try net” across a certain depth range. This net is towed from the mid-ship and is checked every 15 minutes. When the try net brings up good catch, the vessel trawls back and forth along the depth contour until no more prawn show up on the try net or the Captain has estimated that there is a good size catch in the main nets. The duration per main net shot is about 4 hours, but varies accordingly to the abundance of banana prawns. If the catch is high, the duration is reduced to about 2 hours. Trawling speed is at an average of 3 knots. Approximately, three quarter of the catch is made up of by-catch. The prawns are separated from the by-catch, washed, graded by species and sizes, and packed in cartoons of 2kg, 5kg, or 10kg, depending on the company’s market requirements. The product is snap-frozen in freezer plates for 3 hours and then packed in master cartoons and stored in a store room. These prawns are ready packed for export. When the product is landed in Port Moresby, they are exported overseas, while the soft and broken pieces are sold domestically. Each trip lasts about four to six weeks.

3.0. CATCH DATA ANALYSIS

The prawn catch data for periods 1990-2011 were analyzed using excel 2007 to determine the trends in catch and fishing efforts, including the fishing activities, species composition, seasonality of prawns, and the fishery's export value.

3.1. Species composition

A total of 18 prawn species have been recorded in the Gulf of Papua prawn fishery during the period 1990-2011(Table 2). From this historical catch data, banana prawn (*Fenneropenaeus merguiensis*) and Indian prawn (*F. indicus*) consisted of around 50-60 percent, followed by tiger prawns (*P. monodon, P. semiculcatus, P. esculentus*) with 20-30 percent, endeavour prawn (*Metapenaeus demani, M. ensis,* and *M. endeavouri*) with 16-20 percent, while the remaining percentage makes up rest of the prawn species. The most preferred prawn is the banana prawn followed by black tiger and endeavour prawns, while others are least preferred because of their economic value (Figure 1).

Figure 3 Percentage composition of prawn species over the period 1990-2011

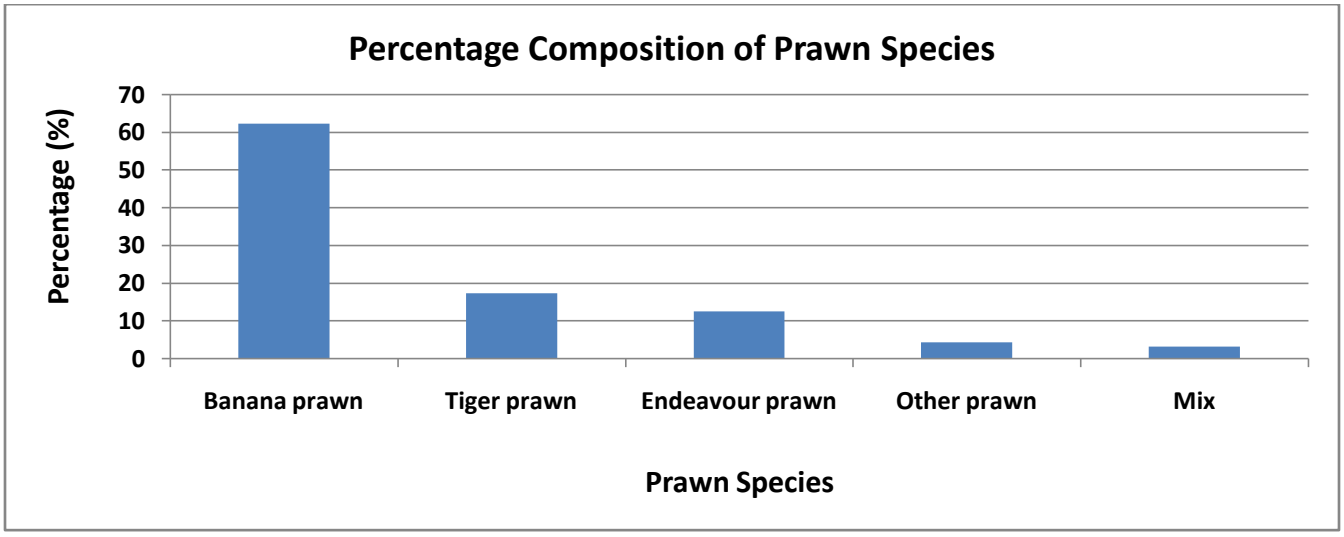


Table 2 The different prawn species recorded in the Gulf of Papua prawn

Common Names	Scientific Names
White banana	*Fenneropenaeus merguiensis*
Indian banana	*Fenneropenaeus indicus*

Giant tiger/Black tiger	*Penaeus monodon*
Brown tiger	*Penaeus esculentus*
Green endeavour/ demon	*Metapenaeus demani*
Blue endeavour	*Metapenaeus endeavouri*
Red endeavour/Greasy back	*Metapenaeus ensis*
York prawn	*Metapenaeus eboracensis*
Japanese tiger (Kuruma)	*Penaeus japonicus*
Green tiger	*Penaeus semisulcatus*
Flower	*Parapenaeiopsis sculptilis*
Coral	*Metapenaeopsis wellsi*
Mantis Shrimp	*Harpiosquilla raphidea*
Akaebi	?
Green endeavour	?
Shimaebi	?
White tiger	?
Leader prawn	*Penaeus monodon*

3.2. Fishing Activity

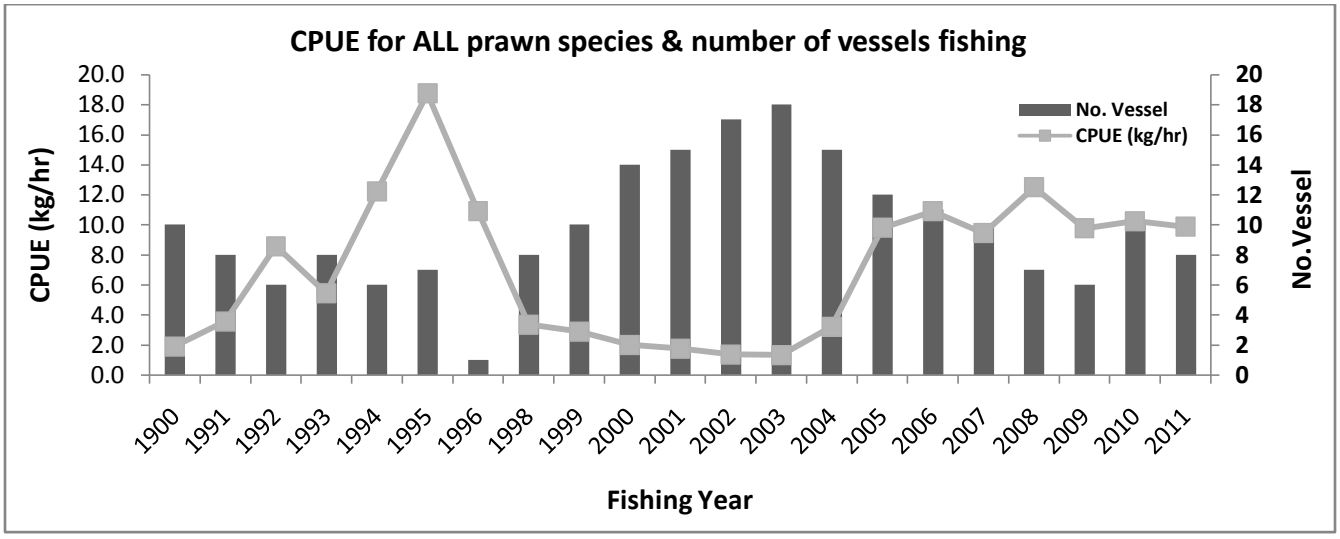
The fishing activities by 15 licensed prawn vessels in the GOP are never consistent throughout the years 1990-2011. The number of vessels fishing during this year's has been fluctuating with the lowest in 1996 with only and the highest in 2003 with 18 vessels. Other years recorded a variable number of vessels below the allocated 15 license vessels, except for 2002 and 2003 with 17 and 18 vessels respectively (Table 3) and this could have been chartered vessels from Western Province. The variability of prawn vessels in the GOP could have resulted from a number of factors and these could be related to; 1) the aging (+40 years) and deteriorating conditions of the vessels resulting in high operational costs through maintenance and repairing and, 2) the increasing costs of fuel coupled with the drop in export price at international markets discouraging vessel owners from undertaking fishing activity.

Table 3 Summary of catch data analysis for periods 1990-2011

Year	No. Vessel	Total Hours Fished	Weight (kg)	CPUE (kg/hr)
1990	10	278,445	527,185.5	1.9
1991	8	40,127	143,171.5	3.6
1992	6	102,727	880,814.8	8.6
1993	8	190,338	1,037,083	5.4
1994	6	11,000	134,334.5	12.2
1995	7	4,457	83,586	18.8
1996	1	64,679	704,928.1	10.9
1998	8	55,127	185,447.1	3.4
1999	10	140,257	405,735.7	2.9

2000	14	367,082	741,346.5	2.0
2001	15	362,409	642,264.5	1.8
2002	17	545,297	745,577.5	1.4
2003	18	617,905	824,792.5	1.3
2004	15	328,827	1056,635	3.2
2005	12	107,586	1055,482	9.8
2006	11	64,679	704,928.1	10.9
2007	10	67,483	637,994.1	9.5
2008	7	57,466	718,235.1	12.5
2009	6	45,231	442,090.3	9.8
2010	10	95,099	975,050.6	10.3
2011	8	50,313	497,164.4	9.9
TOTAL	**207**	**3,596,534**	**13,143,846**	**149.9**
AV	**9.8**	**171,263.5**	**625,897.4**	**7.1**

Figure 4 The catch per unit of fishing and efforts (CPUE) of ALL prawn species and the number of prawn vessels fishing in the GOP during periods 1990-2011.



3.3. Catch and Fishing Effort

Catch & Effort

The catch and effort for all prawn species during periods 1990-2011 recorded the lowest catch in 1996 with 15 mt and highest in 1993 with 1,000 mt. The average catch was 625.89 mt. The lowest fishing effort was recorded in 1995 with around 4,500 hours and the highest in 2003 with around 600,000 hours, while the average fishing efforts was 171,263.5 hours. The catch and fishing effort still remains below the maximum economic yield of 980 mt and the maximum fishing efforts of 708,750 hours respectively. This is due to the inconsistencies in fishing activities by prawn vessel in the GOP, therefore does not reflect the true yield or production of the fishery. Unless there is consistency in fishing activities by prawn vessels, the fishery cannot be considered underutilized.

Annual CPUE

The catch per unit of fishing efforts (CPUE) as a measure of abundance recorded the lowest annual catch in 2003 with 1.3 kg/hr from 18 prawn vessel and the highest in 1995 with 18.8 kg/hr from 7 prawn vessels. The second highest CPUE was in 1994 and 2008 with 12.2 kg/hr and 12.5 kg/hr from 6 and 7 vessels respectively, while other years recorded less than 11 kg/hr from a variable number of prawn vessels, especially from 1996-2011 (Figure 3). The decline in catch is probably associated with the global climatic changes and other bio-physical and environmental factors that will require further investigation.

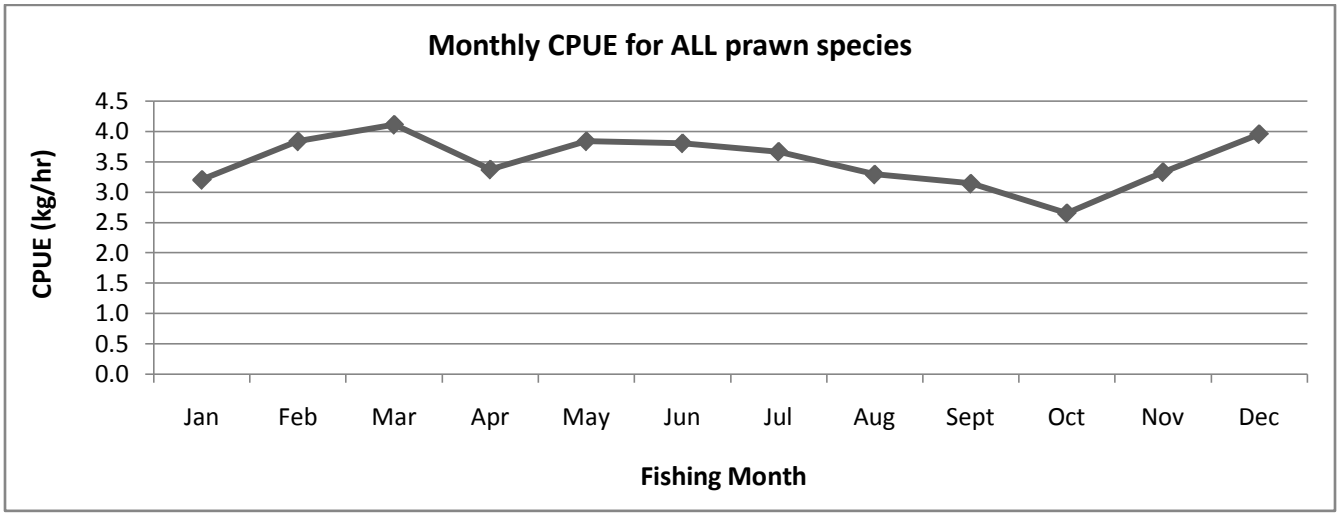
Monthly CPUE

Analyzes of monthly catch for ALL species from periods 1990-2011 indicated the lowest CPUE in October with 2.7 kg/hr and the highest in March with 4.1 kg/hr. The second highest CPUE was in December with 4.0 kg/hr, while other months maintain a constant CPUE at not less than 3 and equal to 4 kg/hr.

Table 4 Monthly CPUE for ALL prawn species in the GOP prawn fishery.

Month	Total Hours Fished	Weight (kg)	CPUE (kg/hr)
Jan	170581	545963.5	3.2
Feb	168118	644528.3	3.8
Mar	159569	655393.3	4.1
Apr	548348	1848337	3.4
May	508852	1951562	3.8
Jun	426249	1620552	3.8
Jul	419709	1537675	3.7
Aug	338734	1113838	3.3
Sept	268789	843579.1	3.1
Oct	211894	561837.4	2.7
Nov	182242	606635.5	3.3
Dec	128770	509017.5	4.0

Figure 5 Monthly CPUE FOR all prawn species in the GOP prawn fishery.



3.4. Performance Target

Catch and effort for banana prawns

Banana prawns of lowest catch were in 1995 with 51.4 mt and the highest in 1993 with 665.7 mt. The second highest catch was in 2005 with 665.3 mt, while other years with variable catches. Years with catches exceeding the MEY of 580mt were 1992, 1993, 2004 and 2005, while years with fishing efforts exceeding the 3,705 days allocated were 1990, 2000, 2001, 2002, 2003, 2004 and 2005.

Catch and fishing efforts for years 2006-2011 remains well below the performance target of 580mt (MEY) and 3,705 fishing days allocated to banana prawns- an indication of poor fishing performance in the fishery during the last 6 years.

Figure 6 Catch and effort with CPUE for banana prawn

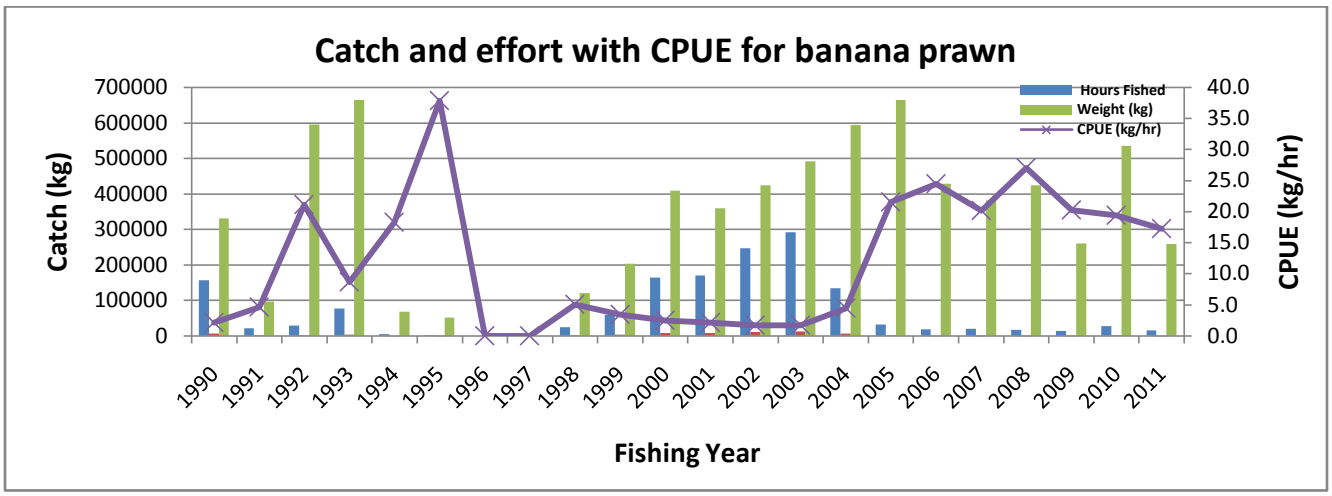


Table 5. Catch and efforts for Banana prawns (*Fenneropenaeus merguiensis* + *F. indicus*)

Year	Total Hours Fished	Days Fished	Weight (kg)	CPUE (kg/hr)
1990	156,360	6,515	331,391	2.1
1991	20,658	860.75	96,040	4.6
1992	28,154	1,173.083	595,724.5	21.2
1993	76,803	3,200.125	665,775	8.7
1994	3,735	155.625	68,310	18.3
1995	1,358	56.58333	51,432	37.9
1996	0	0	0	0.0
1997	0	0	0	0.0
1998	23,640	985	120,272.5	5.1
1999	59,138	2,464.083	203,838	3.4
2000	164,022	6,834.25	409,422.5	2.5
2001	169,798	7,074.917	359,788	2.1
2002	247,274	10,303.08	424,048	1.7
2003	292,355	12,181.46	492,528	1.7
2004	133,836	5,576.5	595,229.5	4.4
2005	30,911	1,287.958	665,307	21.5
2006	17,550	731.25	429,157	24.5
2007	18,954	789.75	383,103.5	20.2
2008	15,696	654	425,197	27.1
2009	12,871	536.2917	260,871.5	20.3
2010	27,628	1,151.167	536,184.5	19.4
2011	14,964	623.5	258,735.5	17.3

Catch and effort for Tiger prawns

Tiger prawn of lowest catch were in 1990 with 5.8 mt and highest in 2005 with 196.7mt. The second highest catch was in 2010 with 182.7 mt, while other years with variable catch. The years with catches exceeding the MEY of 110-120 mt for tiger prawn were 1993, 2004-2008, 2010-2011, while years with fishing efforts exceeding the allocated fishing days of 3,705 days were 1992-1993, 2000 and 2002-2011. Catch and fishing efforts were well above the performance target from 2004-2008 and 2010-2011 – an indication of overfishing the tiger prawns.

Figure 7 Total catch and effort with CPUE for tiger prawns

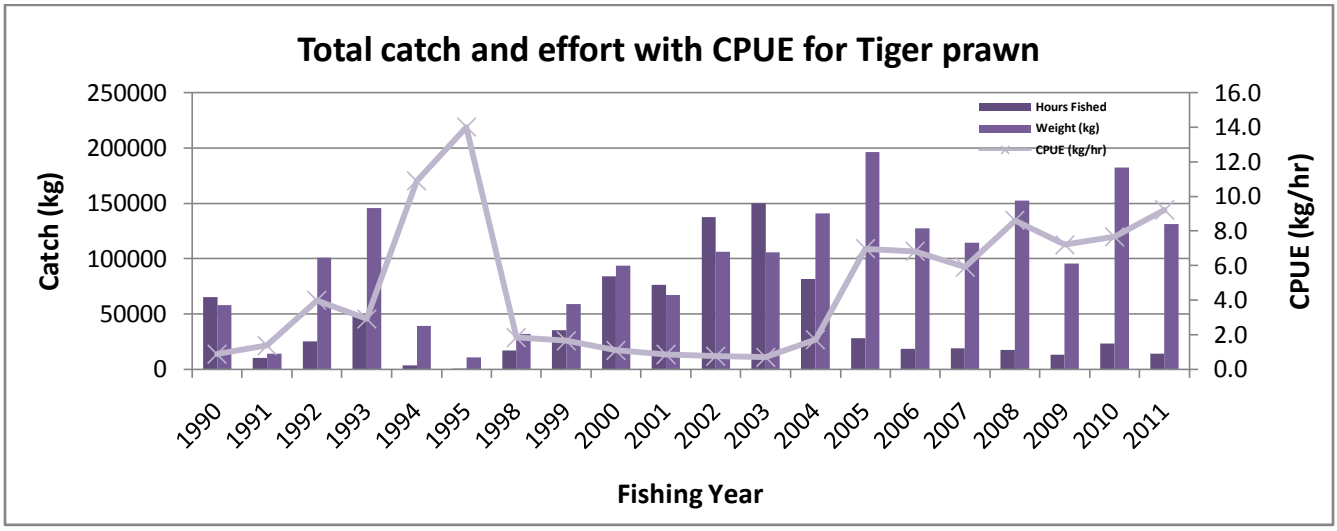


Table 6 Catch and efforts for Tiger prawns (*Penaeus monodon*)

Year	Total Hours Fished	Days Fished	Weight (kg)	CPUE (kg/hr)
1990	65,329	2,424.5	5,8187.04	0.9
1991	10,534	602.2	14,452.02	1.4
1992	25,361	4,218.5	101,244.8	4.0
1993	49,925	6,080.0	145,920.7	2.9
1994	3,616	1,642.8	39,427	10.9
1995	798	465.8	11,179.5	14.0
1998	17,332	1,342.5	32,219.56	1.9
1999	35,762	2,467.8	59,226.2	1.7
2000	84,058	3,914.6	93,951	1.1
2001	76,821	2,801.8	67,242.5	0.9
2002	137,732	4,438.0	106,512.5	0.8
2003	150,289	4,422.1	106,131.5	0.7
2004	81,700	5,881.0	141,144.5	1.7
2005	28,212	8,197.9	196,748.5	7.0
2006	18,693	5,313.0	127,512.1	6.8
2007	19,369	4,774.6	114,590.1	5.9

2008	17,710	6,353.3	152,478.1	8.6
2009	13,268	3,988.4	95,721.8	7.2
2010	23,827	7,613.4	182,720.6	7.7
2011	14,261	5,479.3	131,502.9	9.2

3.5. Monitoring Reference Limits

The CPUE of 9.2 kg/hr for banana prawns is well above the monitoring reference limit of 7.0kg/hr. The banana prawn (*F. merguiensis* + *F. indicus*) catch composition of 50-60 percent is above the 45 percent monitoring reference limit.

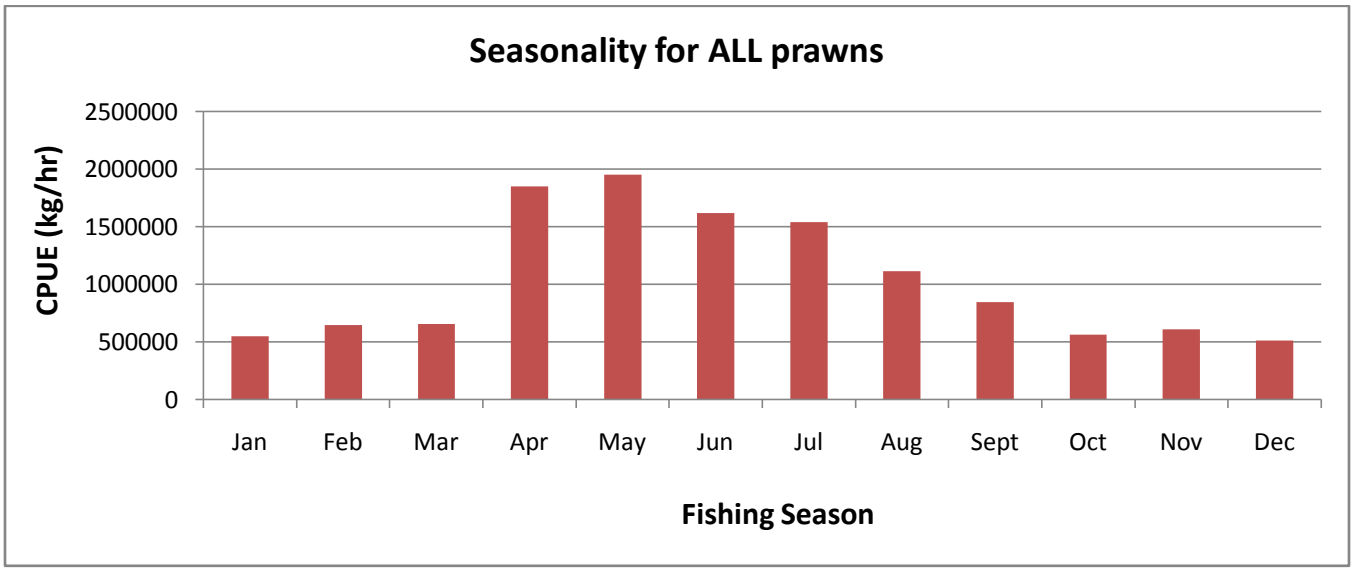
3.6. Seasonality of Prawn Species

The 21 years of catch data from 1990-2011 was analyzed to determine the seasonality of ALL prawns and the 8 targeted prawn species (Banana prawn=*Fenneropenaeus merguiensis*, Indian banana prawn=*F. indicus*, Tiger prawn=*Penaeus monodon*, Green tiger prawn=*P. semisulcatus*, Greasy-back (Red endeavour=*Metapenaeus ensis*, Blue endeavour=*M. endeavouri*, and Endeavour (Demon) =*M. demani*), including other minor prawn species of lesser economic value (Table 2).

ALL prawns

The main season for ALL prawn is from April to August with an average catch of 294,321.3 kg (249.3 mt) per month. The peak season is May and gradually declining to March (Fig 8).

Figure 8 Seasonality of ALL prawns in the GOP

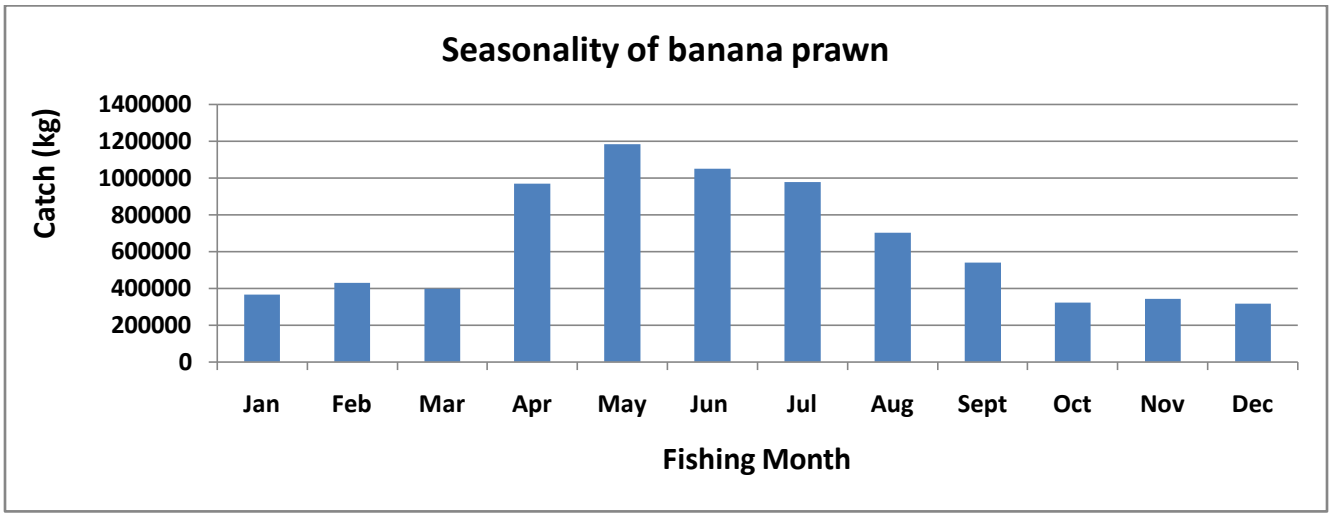


Targeted Species

1. Banana prawn (*Fenneropenaeus merguiensis*)

The main season for banana prawn is from April to August (which normally coincides with the period of highest rainfall) with an average catch of 633.8 mt per month. The peak of the season is May with lowest catch in October (Fig 9).

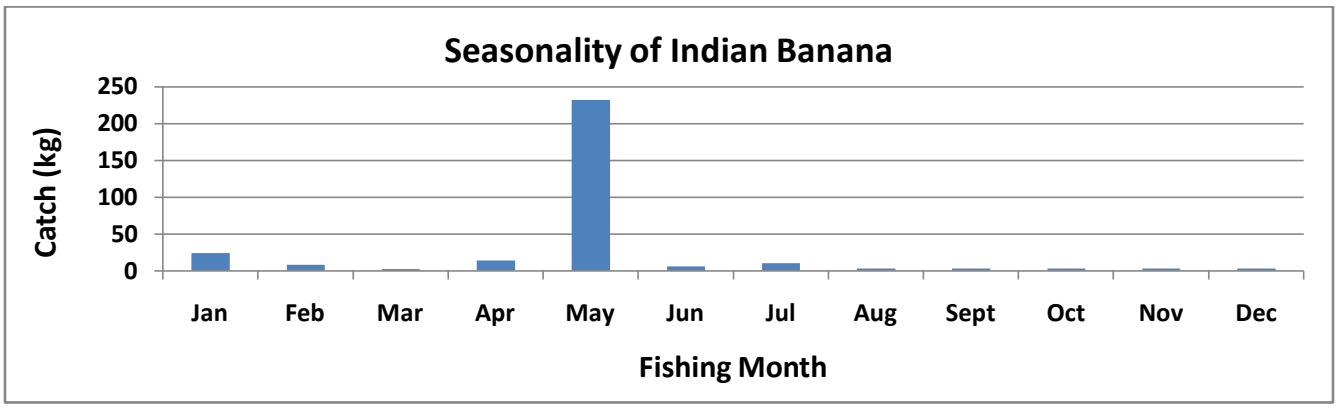
Figure 9 Seasonality of banana prawn



2. Indian banana prawn (*Fenneropenaeus indicus*)

The main season for Indian banana prawn is May with average catch of 42.3 kg per month, while other months with traceable amount.

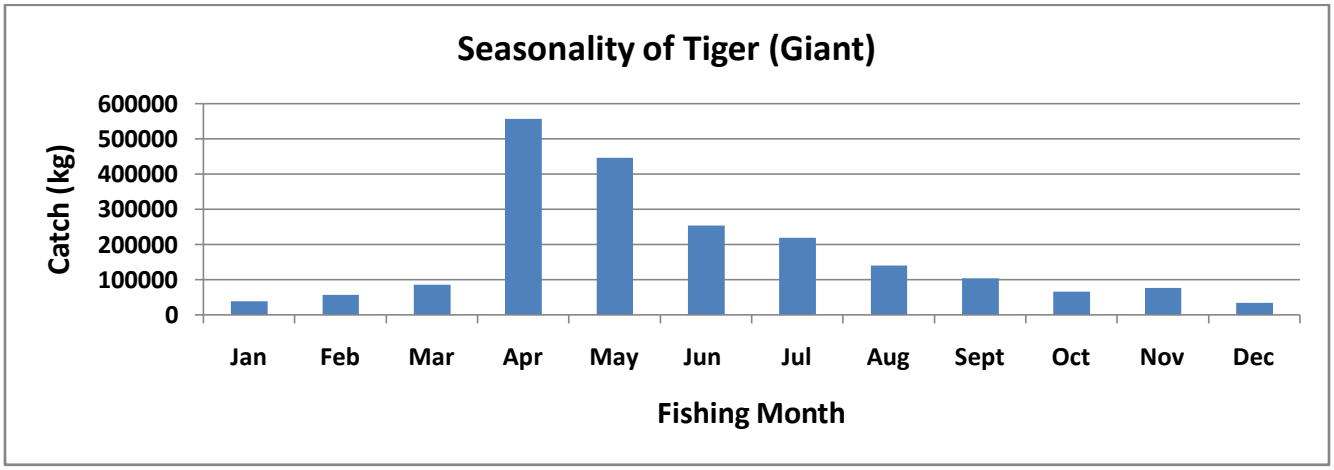
Figure 10 Seasonality of Indian banana prawn



3. Tiger (Giant) Prawn (*Penaeus monodon*)

The main season for tiger prawn is April to July with an average catch of 173.7 mt per month. The peak of the season is April followed by May other months with a gradual decline to March in the seasonal closure (Fig 11).

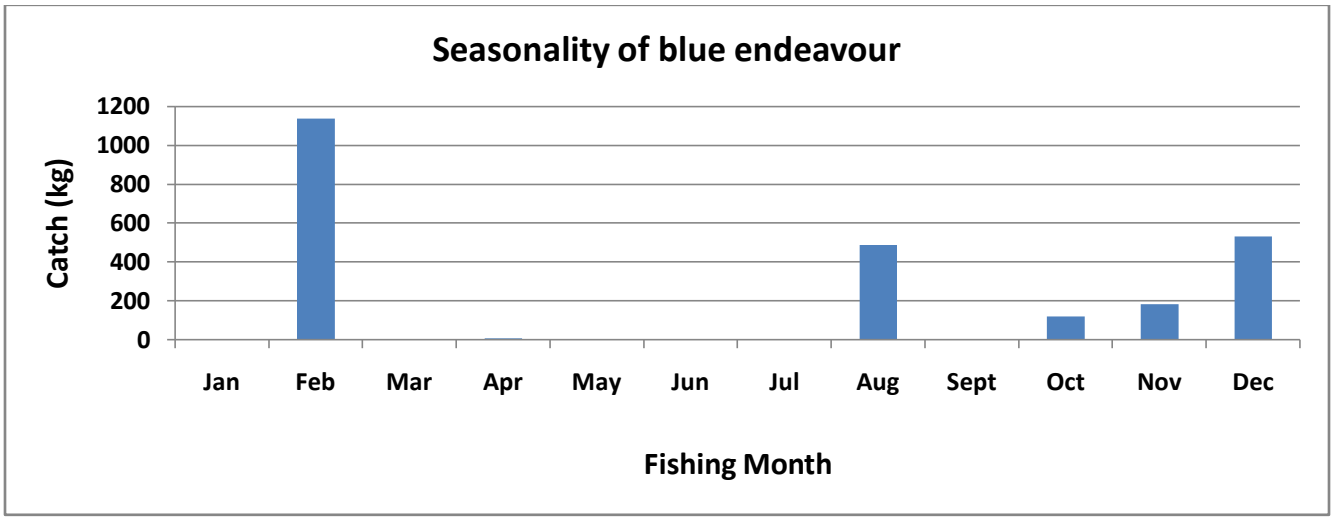
Figure 11 Seasonality of Tiger (Giant) prawn



4. Blue endeavour (*Metapenaeus endeavouri*)

The main season is February, August and December with the average catch of 718.7 kg per month. The peak of the season occurred in February (Fig 12), while other months with traceable amount.

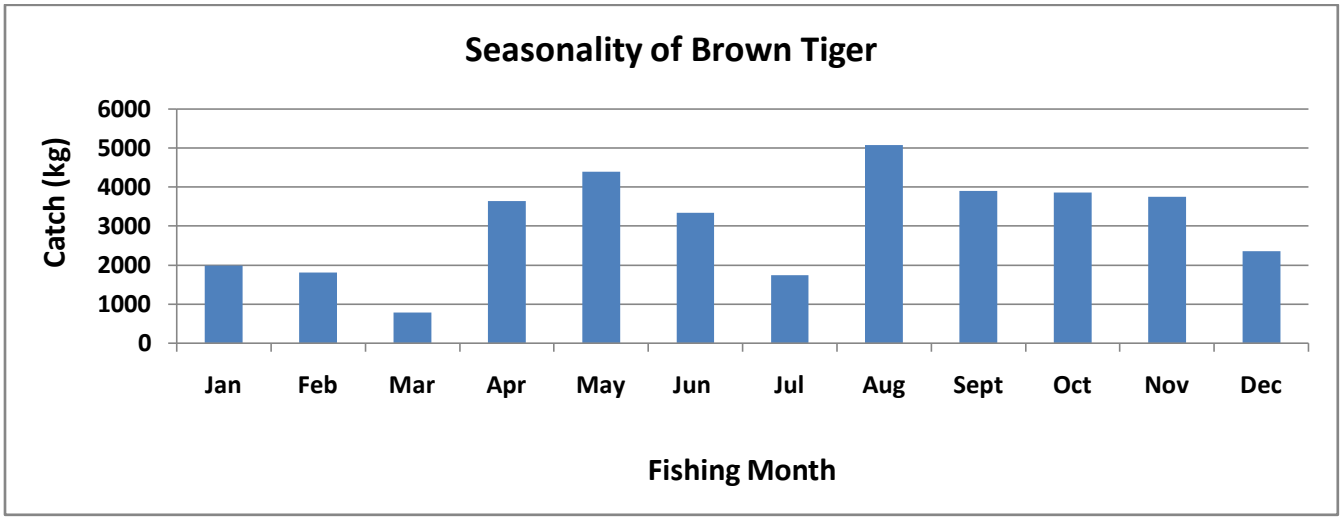
Figure 12 Seasonality of blue endeavour (*Metapenaeus endeavouri*)



5. Brown tiger (*Penaeus esculentus*)

The main season is April to June and August to December with an average catch of 3.0 mt per month. The peak of the season occurred in August with a minor peak in May. The season with lowest catch was March (Fig 13).

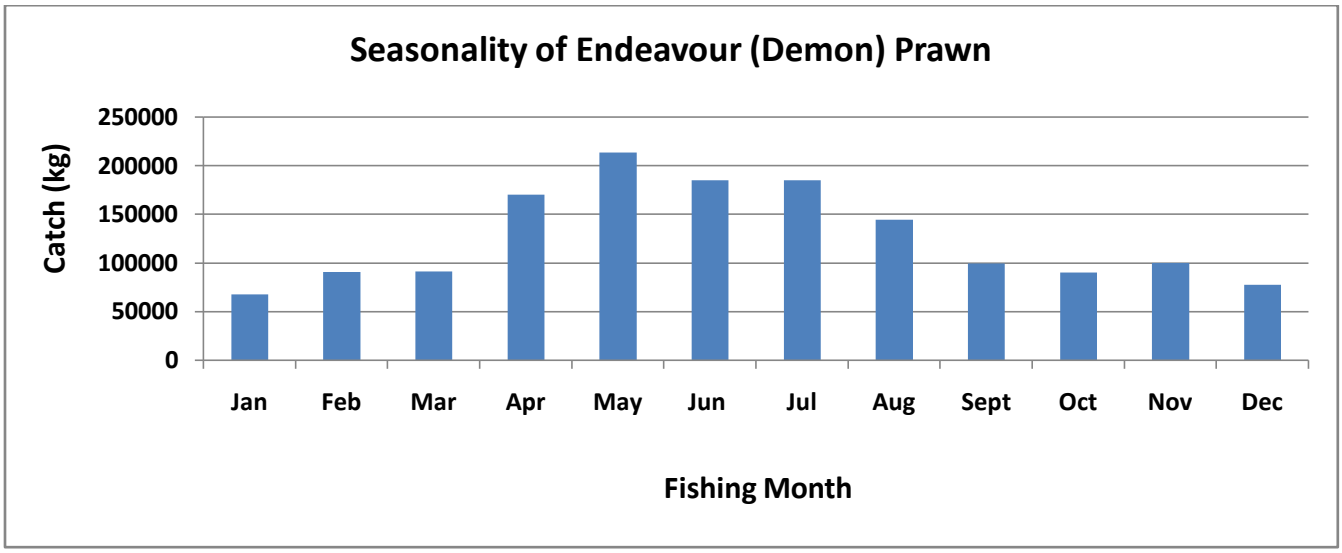
Figure 13 Seasonality of brown tiger (*Penaeus esculentus*)



6. Endeavour (Demon) prawn (*Metapenaeus demani*)

The main season is April to August with an average catch of 126.3 mt per month. The peak of the season is in May (Fig 14).

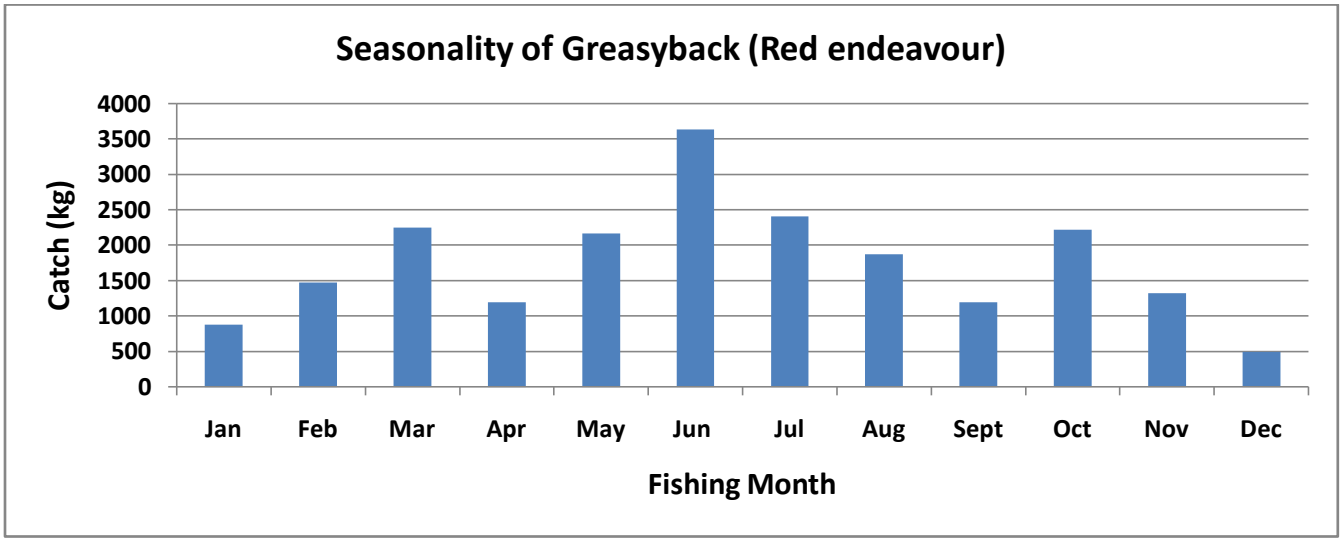
Figure 14 Seasonality of endeavour (Demon) prawn (*Metapenaeus demani*)



7. Greasy-back (Red endeavour) prawn (*Metapenaeus ensis*)

The main season is March, May, June, July and October with an average catch of 1.8 mt per month. The peak season is in June with minor peak March and October (Fig 15).

Figure 15 Seasonality of Greasy-back (Red endeavour) prawn (*Metapenaeus ensis*)

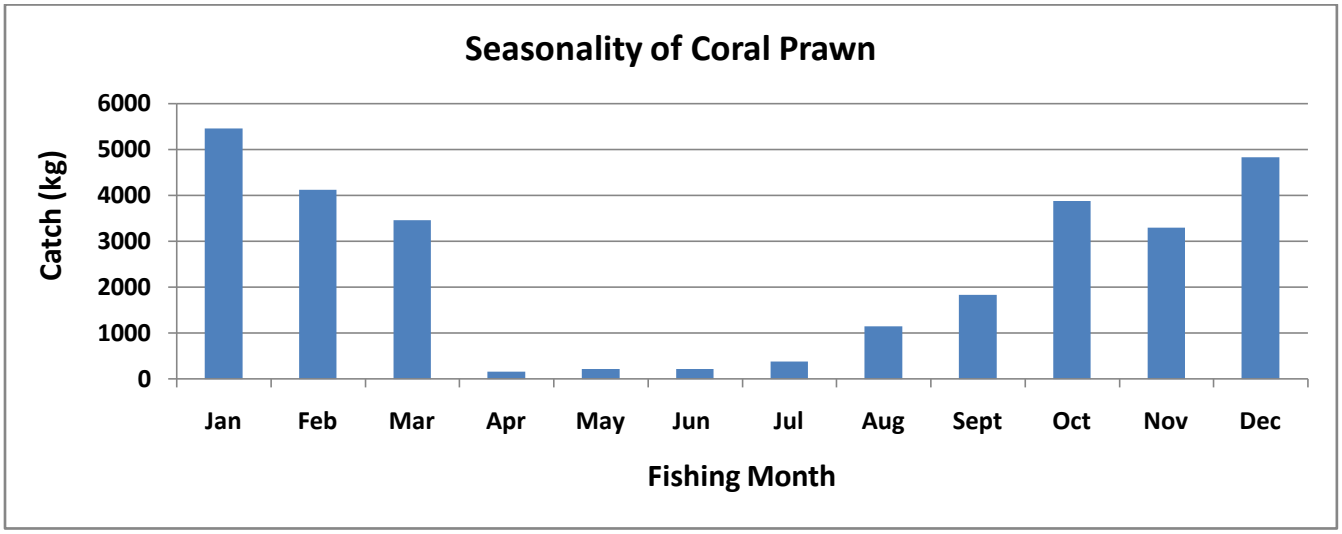


Non Targeted Species

8. Coral Prawn (*Metapenaeopsis wellsi*)

The main season is October to March with an average catch of 2.4 mt per month. The peak of the season is January with lowest catch from April to July (Fig 16).

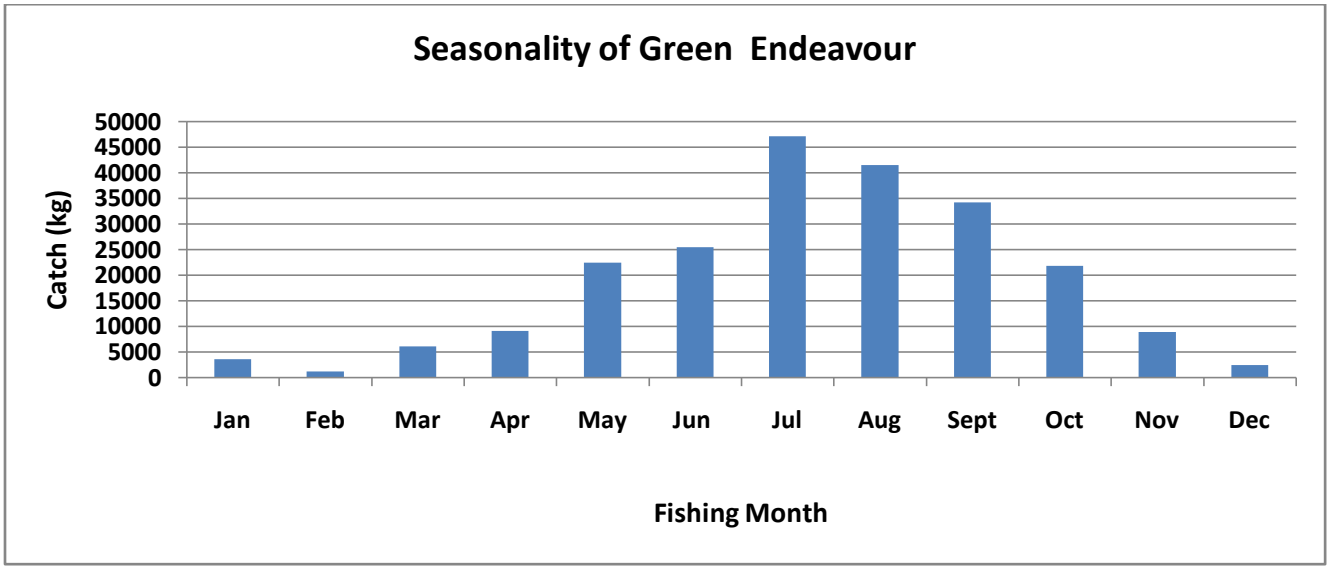
Figure 16 Seasonality of Coral Prawn



9. Green Endeavour (Metapenaeus spp)

The main season is from July to September with an average catch of 18.7 mt per month. The peak of the season is July with lowest catch from November to April (Fig 17).

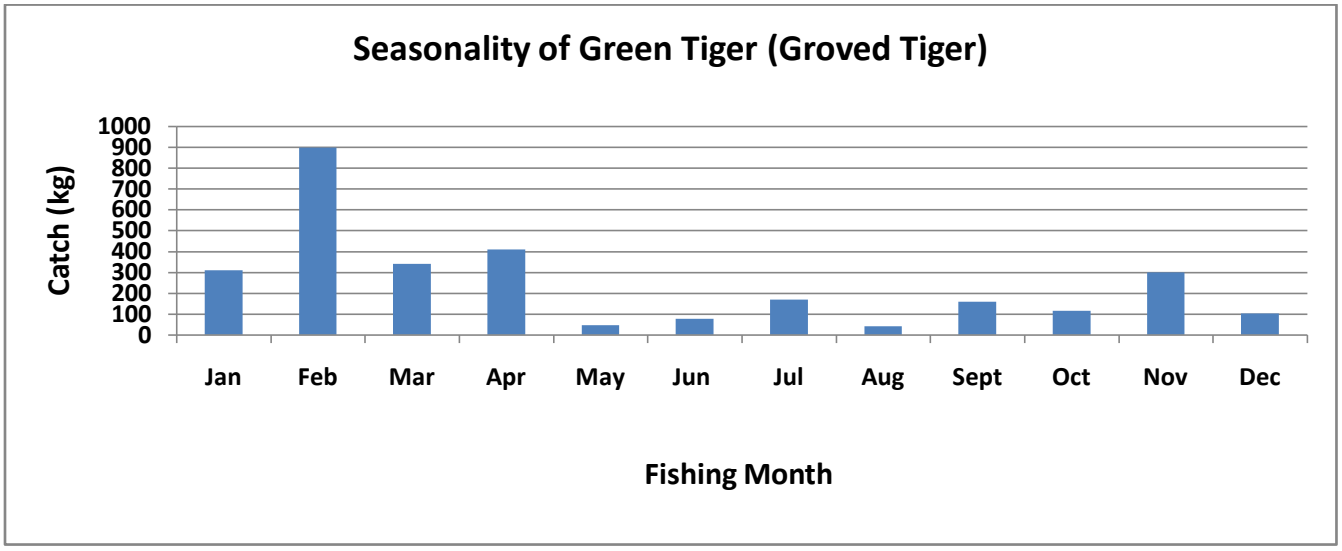
Figure 17 Seasonality of Green Endeavour



10. Green Tiger (Groved Tiger) (*Penaeus semisulcatus*)

The main season is January to April with an average catch of 246 kg per month. The peak of the season is February, while months with the lowest catch were May to October and December (Fig 18).

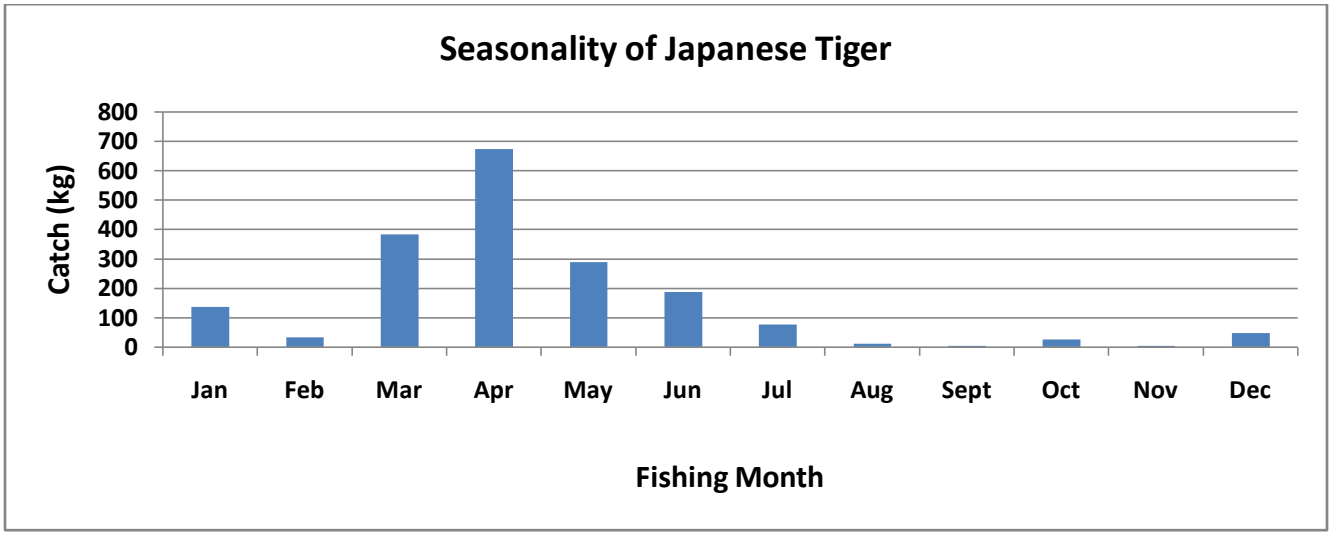
Figure 18 Seasonality of Green Tiger (Grover Tiger)



11. Japanese Tiger (*Marsupenaeus japonicus*)

The main season is March to May with an average catch of 185 mt per month. The peak season is April (Fig 19).

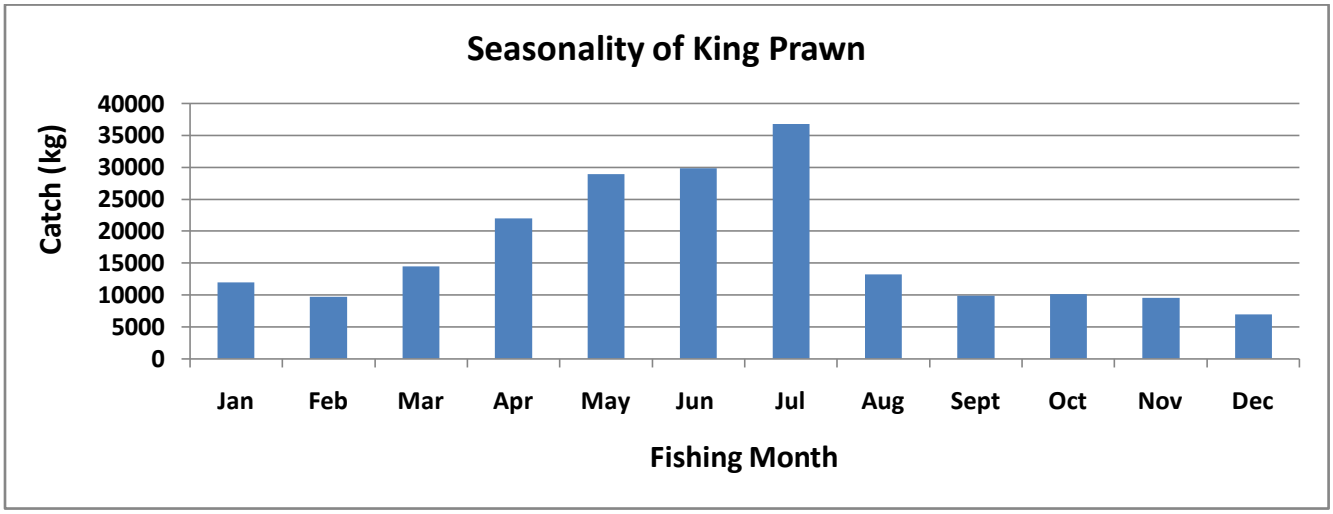
Figure 19 Seasonality of Japanese Tiger



12. King Prawn (*Melicertus latisulcatus*)

The main season is April to July with an average catch of 16.9 mt per month. The peak of the season is July (Fig 20).

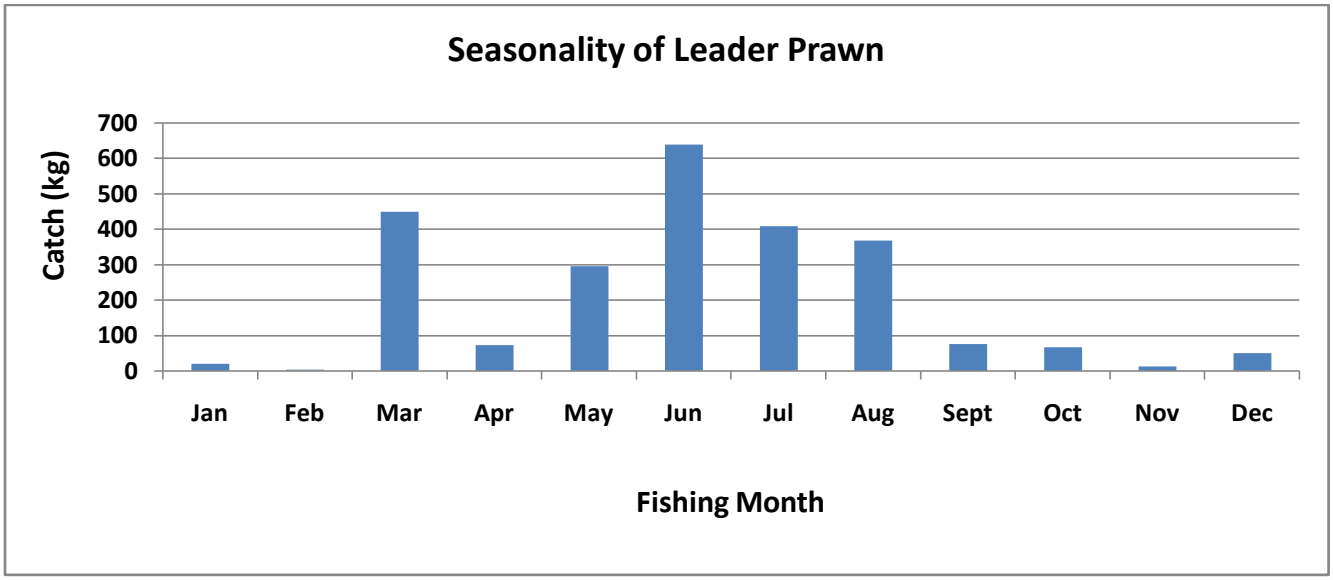
Figure 20 Seasonality of King Prawn



13. Leader Prawn

The main season is March and June to August with an average catch of 223 kg per month. The peak of the season is June with a minor peak in March (Fig 21).

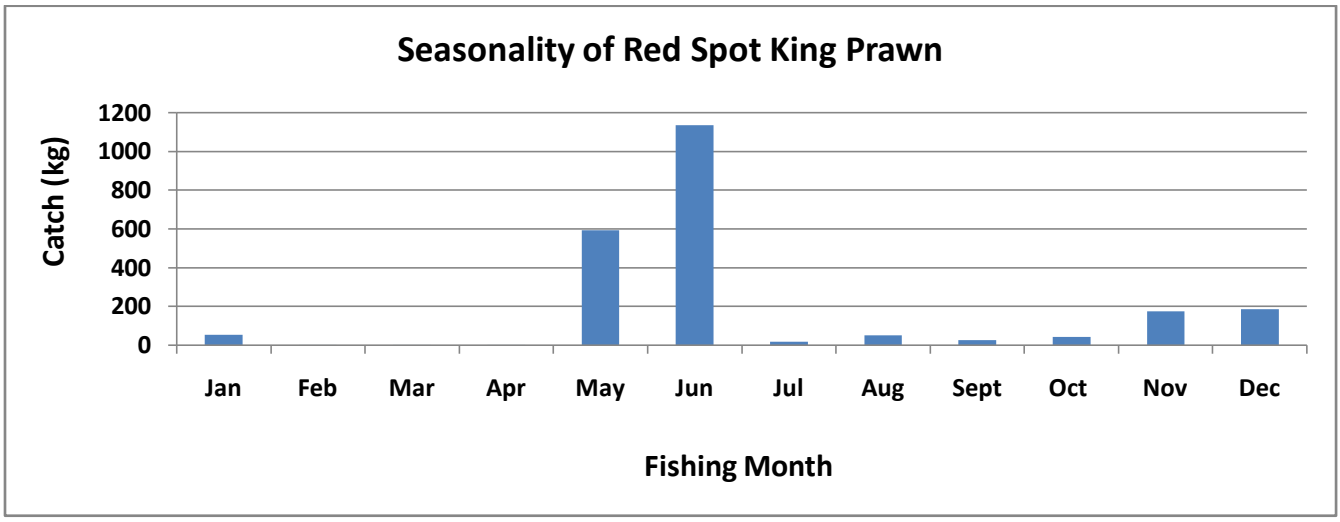
Figure 21 Seasonality of Leader Prawn



14. Red Spot King Prawn (*Melicertus longistylus*)

The main season is May and June with an average catch of 230kg per month. The peak of the season is June (Fig 22).

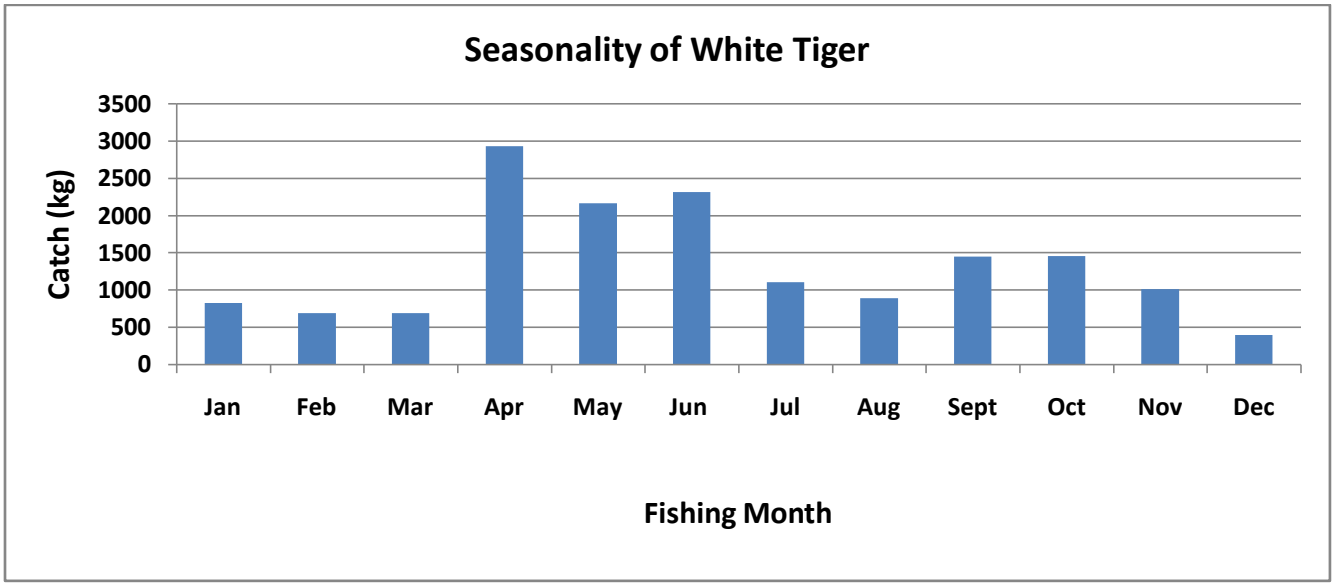
Figure 22 Seasonality of Red Spot King Prawn



15. White Tiger Prawn

The main season is April to June with an average catch of 1.3 mt per month. The peak of the season is April (Fig 23).

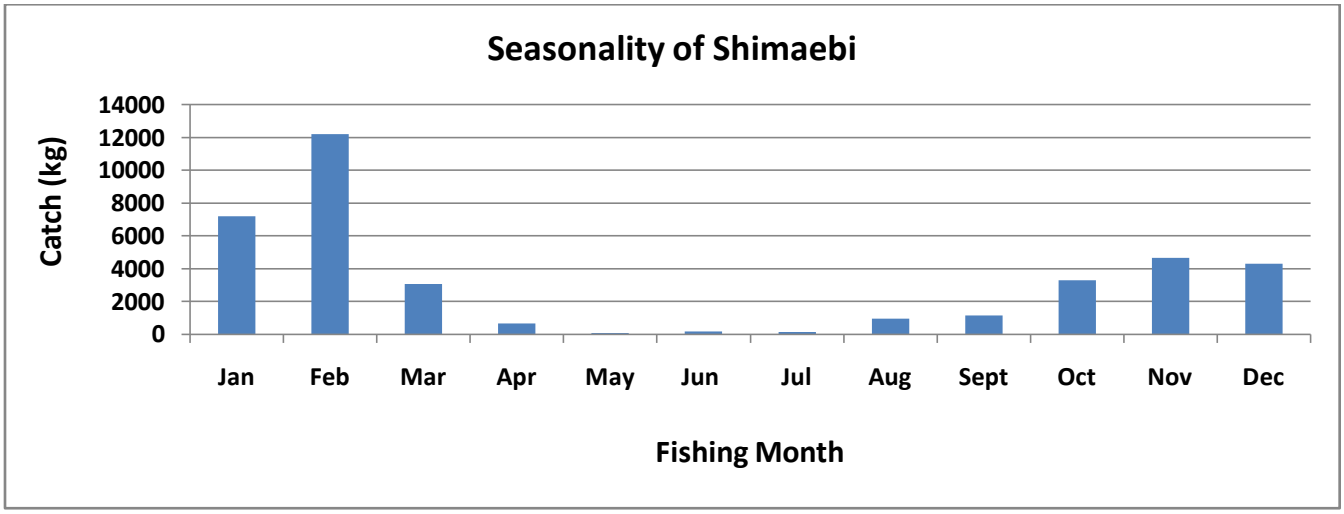
Figure 23 Seasonality of White Tiger Prawn



16. Shimaebi

The main season January to February with an average catch of 3.1 mt per month. The peak of the season is February (Fig 24).

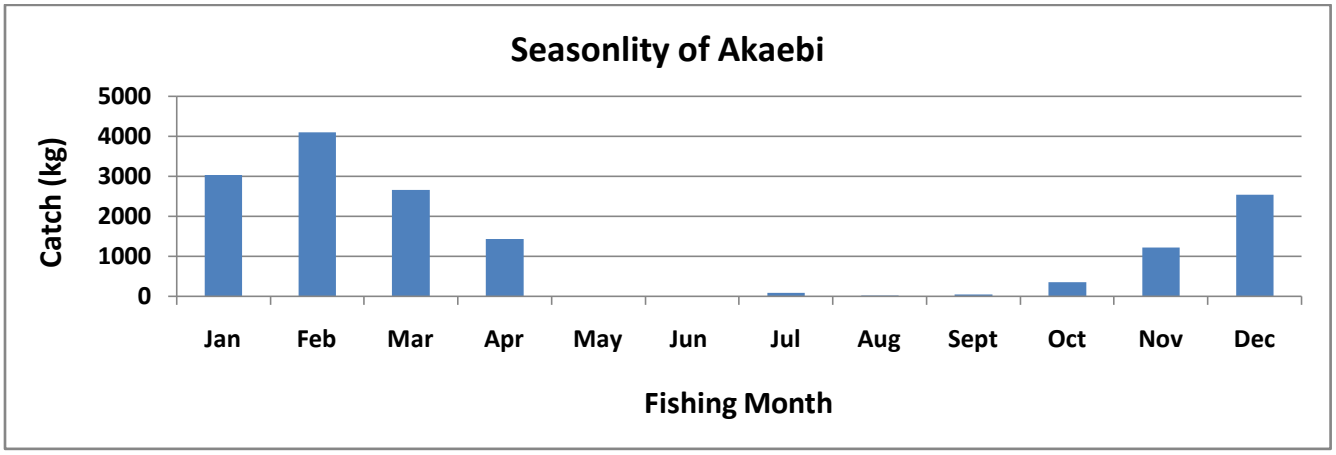
Figure 24 Seasonality of Shimaebi prawn



17. Akaebi

The main season is from December to March with an average catch of 1.3 mt per month. The peak season is February with lowest catch from May to October (Fig 25).

Figure 25 Seasonality of Akaebi prawn



4.0. PRAWN EXPORT

4.1. Country of export

Prawns in the GOP have been exported to 15 countries of the world since the last 21 years (1990-2011) and these includes; Australia, China, Fiji, Guam, Hongkong, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Solomon Island, Taiwan, Vanuatu, and Vietnam. The main country of export is Japan followed by Australia, Vanuatu and Korea, whilst other countries being occasional buyers.

4.2. Revenue from export

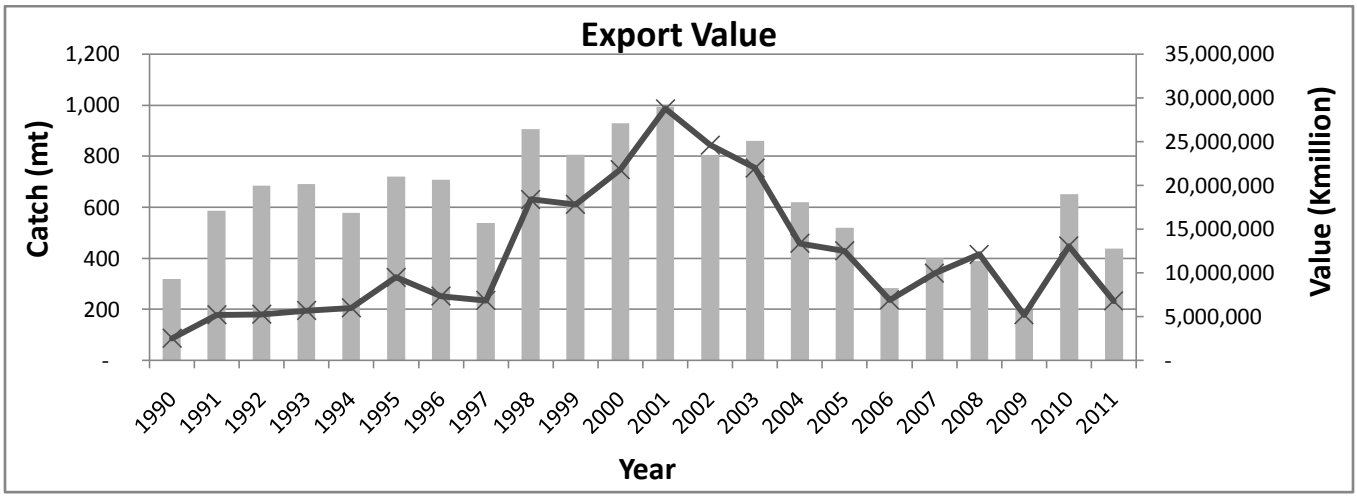
The revenue generated from the export indicated good export value was from 1998-2003, while other years with variable amount of money (Figure 21). The lowest amount of money from the export was in 1990 with K2 million and the highest in 2003 with K28 million.

Table 6. Prawn Export Volume (mt) and Value (USD & PGK) by years 1990 – 2011

Year	Qty (kg)	Qty (mt)	Value (USD)	Value (Kina)	Country of Export
1990	320,084	320	2,662,835	2,552,236	Japan
1991	586,239	586	5,470,767	5,209,530	Japan, Australia, Guam
1992	684,834	685	5,473,712	5,285,768	Australia, Hongkong, Guam, Japan, New Zealand, Vanuatu
1993	689,740	690	5,847,688	5,717,237	Australia, Hongkong, Japan, Korea, Vanuatu,
1994	577,608	578	6,008,264	6,003,077	Australia, Japan, Solomon Is, Vanuatu, Vietnam
1995	720,483	720	7,284,995	9,532,392	Australia, Japan, Malaysia, New Zealand, Solomon Is, Vanuatu
1996	708,410	708	5,639,436	7,359,716	Australia, Japan, Korea, Malaysia, Taiwan, Vanuatu
1997	537,405	537	4,807,953	6,876,792	Australia, Japan, Korea, Singapore, Taiwan, Vanuatu
1998	905,592	906	8,703,967	18,424,518	Australia, Japan, Philippines, Singapore, Vanuatu
1999	806,338	806	6,928,693	17,828,815	Australia, Fiji, Japan, Vanuatu
2000	929,183	929	8,134,705	21,806,919	Australia, China, Fiji, Hongkong, Solomon Is,

					Vanuatu
2001	992,778	993	8,509,232	28,770,367	Australia, Japan, Vanuatu
2002	803,795	804	6,344,185	24,629,541	Australia, Japan, Korea, Vanuatu
2003	859,611	860	6,143,671	22,014,540	Australia, Japan, Vanuatu
2004	619,384	619	4,163,854	13,393,992	Australia, Japan, Korea, Vanuatu
2005	520,581	521	4,038,831	12,538,943	Australia, Japan, Korea, Solomon Is, Vanuatu
2006	284,579	285	2,281,002	6,948,431	Australia, Japan, Korea
2007	401,711	402	3,371,809	9,996,683	Australia, Japan, Korea
2008	389,614	390	4,522,757	12,135,071	Japan
2009	198,471	198	1,931,772	5,239,870	Japan
2010	651,263	651	4,800,007	13,077,781	China, Japan, Korea, Taiwan
2011	439,264	439	2,952,173	6,831,343	China, Japan, Taiwan

Figure 21. Prawn Export Value from 1990-2011



5.0. ISSUES AFFECTING THE FISHERY AND ACTIONS TAKEN

5.1. Issues

The main issue affecting the fishery is the continuous conflict amongst resource owners with prawn industry over the use and benefits from the fishery. The resource owners claim to have not benefited from the fishery since its inception in the early 1960s, except the prawn industry and National Government through the sale of prawns and collection of licenses fees and export levies respectively. The resource owners have been merely spectators than participators in the fishery. Although 3 commercial prawn licenses were allocated to resource owners through the Gulf Papua Fisheries (business arm of the Provincial Government) for the benefit of the people, no financial benefits have trickled down to the coastal communities in the GOP in terms of delivery of goods and services. Even the 10 licenses allocated to resource owners to utilize the 3-mile zone for small-scale fishing operations were never taken up because of financial constrain and the prevailing rough sea conditions in the 3-mile zone. Since then resource owners have never benefited anything to date. As a result resource owners are now demanding for compensation and royalty payments. The central question now is on whom to take the responsibility in addressing the issues.

5.2. Remedial Actions

Since NFA is not mandated by the Fisheries Management Act of 1998 to pay compensation or royalty payments, in its wisdom have made allowance for commercial trawling in the 2-mile of the 3-mile zone on conditional arrangements between resource owners and the prawn vessels intending to fish on joint venture agreements so people can have the means and capital to develop the 3-mile zone. NFA has already taken the initiative of meeting and discussing with resource owners on what should be done to help resource owners benefit from the fishery. The outcome of the meeting has resulted in the Provincial Government taking onus in formulating a project documentation, which NFA will make their inputs before final submission to Department of National Planning and Monitoring for funding with NFA counter funding**.**

FISH SPECIES IDENTIFICATION

NATIONAL FISHERIES AUTHORITY

P.O. Box 2016, Port Moresby, National Capital District, Papua New Guinea

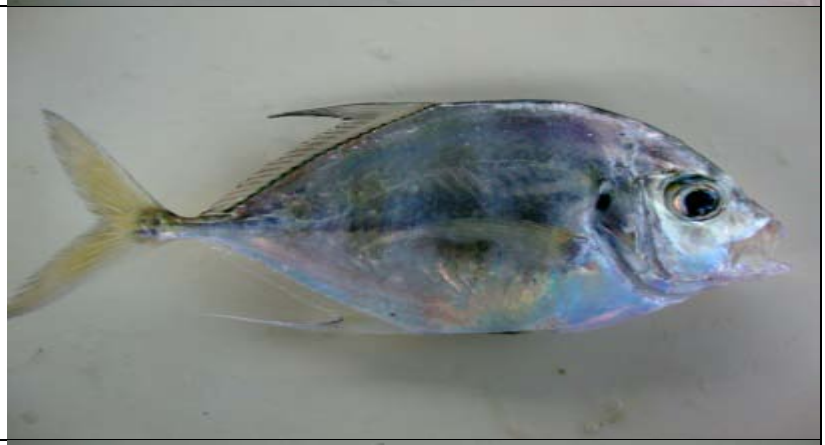
Telephone: 3212643, Facsimile: 320 2061, Email: nfa@fisheries.gov.pg

FISH SPECIES IDENTIFICATION

GULF OF PAPUA PRAWN FISHERY

Local Name: **Moonfish/Opah** (MOO) Scientific Name: *Mene maculates*	
Local Name: **Common Javlin** (KAH) Scientific Name: *Pomadasys kaakan*	
Local Name: **Spotted Sicklefish** (SPS) Scientific Name: *kaakan Drepane punctata*	
Local Name: **Banded grunter/Doctorfish** (AQH) Scientific Name: *Acanthurus chirurgus*	

Local Name: **Toadfish** (TDF) *Scientific Name:* *Batrachoides spp*	
Local Name: **Golden Trevally** (GLT) Scientific Name: *Gnathanodon specisus*	
Local Name: **Barded mackerel** (ASM) Scientific Name: *Scomberomorus munroi*	
Local Name: **Silvertoothed Ponyfish** (LGE) Scientific Name: *Leiognathus equulus*	

Local Name: **Snake mackerel** (GES) Scientific Name: *Gempylus serpens*	
Local Name: **Sea pike** (YRB) Scientific Name: *Sphyraena obtusata*	
Local Name: **Threadfin Trevally** (LTD) Scientific Name: *obtusata Alectis indicus*	
Local Name: **Glassy-eyes/ Bully-eyes** (PRI) Scientific Name: *Priaeanthidae*	

Local Name: **Common Silverbiddy** (GEJ) Juvenile Scientific Name: *Gerres oyena*	
Local Name: **Tripod fish** (NUI) Scientific Name: *Triacanthus biaculeatus*	
Local Name: **Brushtooth Lizardfish** (LIB) Scientific Name: *Saurida undosquamis*	
Local Name: **Sunrise/Yellowstrip Goatfish** (MUV) Scientific Name: *Mulloidichtys flavolineatus*	

Local Name: Arrowhead **soap fish** (BPH) Scientific Name: *Belonoperca chabanaudi*	
Local Name: **Sole tongue** (GSJ) Scientific Name: *Paraplagusia japonica*	
Local Name: **Flounder** (PLZ) Scientific Name: *Pleuronectidae*	
Local Name: **Rudder fish** **Scientific Name:** *Centrollophus niger*	

Local Name: **Spotted Stingray** (STT) Scientific Name: *Dasyatis spp*	
Local Name: **Black Pomfret** (POB) Scientific Name: *Parastromaterus*	
Local Name: B**lackspotted Puffer fish** (OTK) Scientific Name: *Arothron nigropunctatus*	
Local Name: **Silver/goldsilk/pinky bream** (MLB) Scientific Name: *Acanthurus berda*	

Local Name: **Crocker** (CRX) Juvenile Scientific Name: *Micropogonias spp*	
Local Name: **Giant Trevally** (NXI) Scientific Name: *Caranx ignobillis*	
Local Name: **Common Javlin** (KAH) Scientific Name: *Pomadasys kaakan*	
Local Name: **Rudder fish** (CEO) Scientific Name: *Centrollophus niger*	

Local Name: **Red Sea peach** (SNA) Scientific Name: *Lutjanus spp*	
Local Name: **Crystal cardinal** (CDL) Scientific Name: *Epigonus spp*	
Local Name: **Red cardinal** (APO) Scientific Name: *Apogonidae spp*	
Local Name: **Sea pike** (YRB) Scientific Name: *Sphyraena obtusata*	

Local Name: **Giant Trevally** (NXI) Scientific Name: *Caranx ignobillis*	
Local Name: **Rhino shark** Scientific Name: *Priaeanthidae*	
Local Name: **Glassy-eyes/ Bully-eyes** (PRI) Scientific Name:	

BY-CATCH SPECIES

By-catch Species

Guitarfish (ray)

Saw shark (ray)

Stingray

Sharks

Hammerhead shark

EELS

Turtles

Sea Crates