



Australian Government

Australian Fisheries Management Authority

 2006 - 2009

Data Summary

Norfolk Island Inshore Fishery



Preface

This Data Summary provides a broad outline of the catch taken by recreational and charter fishers within the area known as “the Box”. The NIIF spans 67 by 40 nautical miles around Norfolk Island and was designed to incorporate all shelf-waters which average around 40 metres depth.

Data on the fishery is collected from fishers who complete catch cards and also through interviews with fishers on shore. The data is compiled by the Norfolk Island Government before being provided to AFMA for inclusion in this Data Summary report. Fish names used in this Data Summary are those used on Norfolk Island, Australian standard fish names are also referenced for information.

This Data Summary for 2006-2009 is the first for a number of years and is designed to inform fishers and other interested persons about the fishery as well as to help identify areas where data collection practices might need to be further developed or revised.

Acknowledgments

Thanks must be given to all the fishers who took the time to provide information on the fishery to the Norfolk Island Fishing Association, Norfolk Island Government, including Mr Stephen (Cookie) Gardiner for their work collecting and reporting this information to AFMA.

Thanks also for the input of Phil Sahlqvist (Australian Bureau of Agricultural and Resource Economics and Sciences) for his advice and input.

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Introduction

DESCRIPTION OF THE NORFOLK ISLAND INSHORE FISHERY

Area of the fishery

Norfolk Island is located on the Norfolk Ridge and is surrounded by a shelf approximately 40 metres deep and extending offshore about 13 kilometres to the east and west, 30 kilometres to the north and 55 kilometres to the south.

The Norfolk Island Inshore Fishery (NIIF) was designed to encompass all shelf-waters around Norfolk Island, an area 67 by 40 nautical miles and defined by the coordinates:

28°38' South; 167°40' East

28°38' South; 168°20' East

29°45' South; 167°40' East

29°45' South; 168°20' East

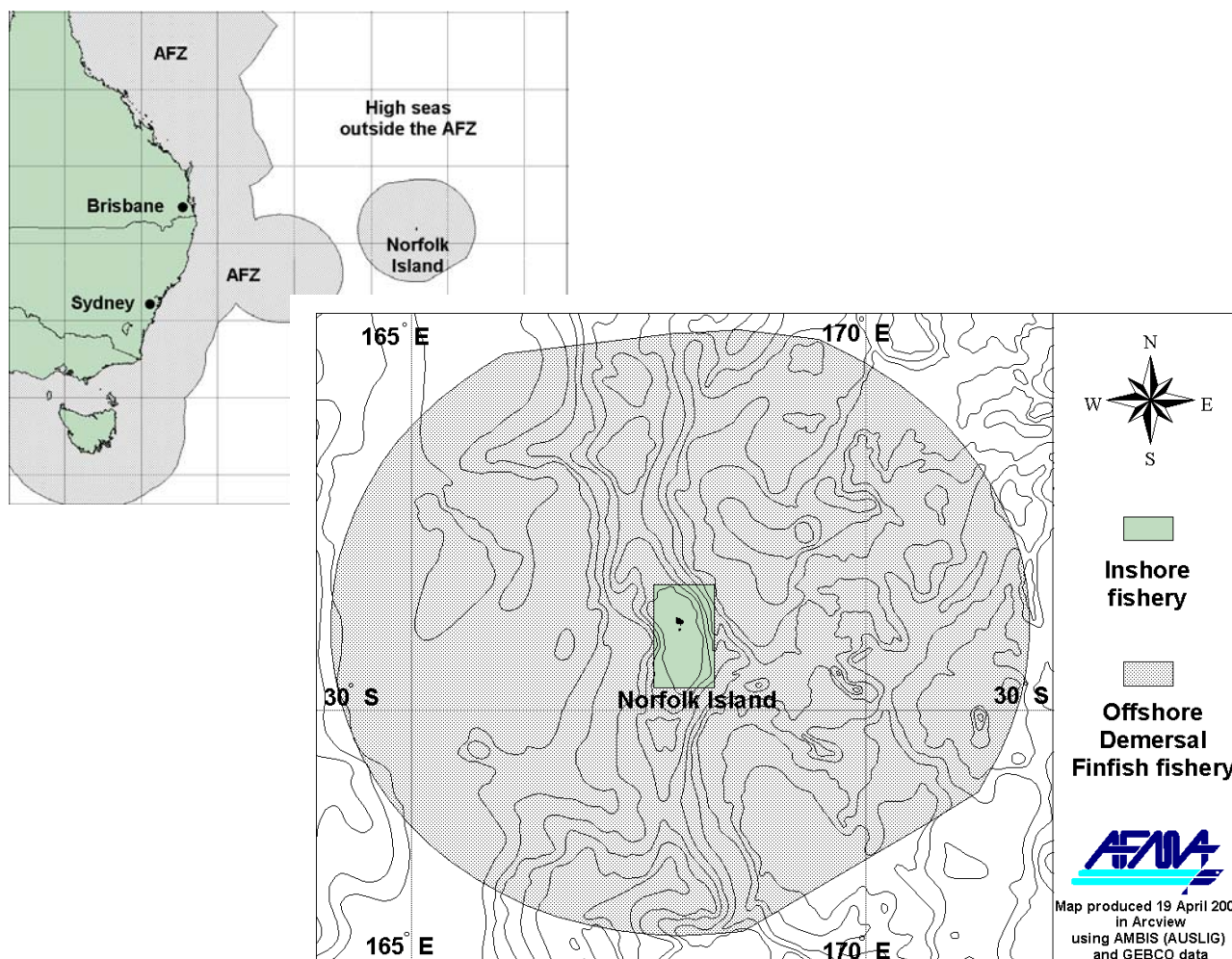


Figure 1. Norfolk Island Inshore Fishery Management Area.

FISHING METHODS

Fishing is undertaken from the shore or from boats lowered to the water by crane. There are two jetties, each with a crane system located at different places on the island. The prevailing winds dictate which jetty is used. Fishing times are influenced less by time and tide than by weather conditions.



Land-based fishing

Fishing from the rocks or jetties is done using a range of different fishing gear, from bamboo poles with a line attached to the end, to high speed spinning reels and light game tackle. Species like Yellowfin Tuna (*Thunnus albacares*), Yellowtail Kingfish (*Seriola lalandi*) and Ophie (Silver Trevally, *Pseudocaranx dentex*) are commonly targeted.

Baits, including live fish (Garfish and small Ophie) and lures are commonly used. Baits are fished under floats and lures cast to schools of fish as they can be seen moving around the coast.

Boat-based fishing

Fish and likely fish-holding areas are identified using depth-sounders. Global Positioning Systems (GPS) are also used in some cases to mark these places for subsequent fishing. Deck winches, handlines and rods and reels are commonly used when fishing from boats.

Fishing is targeted close to, or on the bottom, however some trolling and fishing using lures, flies and baits is also done in mid-water.

The Norfolk Island Fishing Association has implemented a voluntary limit of 3 hooks per line since approximately 2003. In deep waters (>75m) more hooks are used to compensate for the time taken to wind up lines from these depths.

Baits include Australian Sardines (also referred to as pilchards), squid, locally caught fish species such as Coral Rockcod (*Cephalopholis miniata*), Scorpionfish (*Scorpaena sp.*), and other meats. Live fish such as Grey Knifefish (*Bathystethus cultratus*) and small Ophie are also sometimes used.

The principal target species, Trumpeter (Redthroat Emperor, *Lethrinus miniatus*) is a schooling fish, typically found around reef pinnacles which rise to between 20 to 25 metres depth. The best areas are considered to lie in the north-east and south-west where these pinnacles are common. Other areas are characterised by flat shale bottom covered in seagrass.

Fishing is usually done in moderately deep water, further than five nautical miles from shore. Deep waters are avoided where possible as winching fish from these greater depths requires more work. The majority of fish caught in the NIIF are retained.

Catching fish from deep waters often results in barotrauma in the fish. This occurs where the fish's swim-bladder expands (due to the reduced pressure at the surface compared to at depth). This can cause the eyes and stomach to protrude and can cause other physical damage to the fish. Methods such as 'venting' (technique involving piercing the swim bladder) or using release weights to lower the fish back to the bottom are used in other fisheries however the level of post-release survival is unclear.

Fishing trips are usually only a few hours long and are dependant on tides and weather conditions, particularly the wind. When winds are strong, drift speeds increase and this has been reported to significantly affect the types of species fishers catch.

Sharks are frequently encountered when fishing from boats as well as when fishing off the rocks or jetties. Shark species encountered in the NIIF include Tiger Shark (*Galeocerdo cuvier*), White Shark (*Carcharodon carcharias*, also known as white pointer), Hammerhead (*Sphyrna spp.*) and Bronze Whaler (*Carcharhinus spp.*). Bronze Whalers are the most commonly encountered shark species and when caught are generally released alive. Ray species are also found in the waters around Norfolk Island.





Figure 2. Jetty and crane used to deploy and retrieve boats from the water at Norfolk Island.

HISTORIC FISHING TRENDS

From *High Catch Rates in Norfolk Island Dropline Fishery*, Dr Colin Grant, Australian Fisheries vol. 40, No. 3, March 1981 pp10-13:

Historic catch rates

The Norfolk Island Inshore Fishery has a history of high catch rates although there has been some suggestion by Norfolk Island fishers that catch rates have declined.

A survey conducted by the South Pacific Commission in 1959 found catch rates were 23 kg per handline per hour. In a similar survey undertaken by the then Australian Fisheries Service (AFS, now AFMA) during November 1980, catch rates averaged 14 kg per line per hour.

Dr Colin Grant (AFS) writing about the survey conducted in 1980 noted that these catch rates were still relatively high by comparison to similar fisheries elsewhere. Surveys undertaken by the Great Barrier Reef Marine Park Authority of the Great Barrier Reef charter boat fishery for demersal reef fish, found that catches of 15 kg per person per day (each day comprising at least eight hours fishing) were considered good (*Grant, 1981*).

A single boat during the 1980 survey period landed 360 kg from six hours fishing, using three lines operated by two fishers. Norfolk Island fishers reported that catches of 450 kg a day were not uncommon (*Grant, 1981*).

Prior to the introduction of the voluntary three-hook per line limit in 2003, fishers reported often catching between seven and ten fish on a single line within three to four minutes of the line reaching the seabed.



Historic catch composition

The catch was dominated by Trumpeter which accounted for 90% of the catch by weight and number of fish. Other species in order of abundance included:

- Chinaman Rockcod (*Epinephelus rivulatus*, 5-10%)
- Amberjack (*Seriola dumerili*, 1-5%; first recorded as being captured on the island in 1980)
- Cook's Scorpionfish (*Scorpaena cookii*)
- Queensland Groper (*Promicrops lanceolatus*)
- Western Pigfish (*Bodianus vulpinus*)
- Giant Trevally (*Caranx ignobilis*)

Species composition was reported to change only slightly with season but was always the same relative order.

In Great Barrier Reef waters catches of Lethrinid species comprised between 5% and 40% of the catch depending on location. The dominance of Trumpeter (a Lethrinid species) in Norfolk Island waters was considered unusual, as tropical and subtropical demersal fish communities are usually characterised by high species diversity and few individuals of each species; the presence of relatively few species in higher numbers is more typical of temperate demersal fish communities. Norfolk Island is considered subtropical and Trumpeter is considered tropical and subtropical. The situation on Norfolk Island was also considered unusual amongst 14 other South Pacific Islands surveyed by the South Pacific Commission. These surveys were generally of deeper waters, but the total catch of all Lethrinids never exceeded 27% by weight in the catches, and on average was only 7%. The total handline catch rate from all islands surveyed also never exceeded 10 kg per line per hour.

Dr Grant did not believe the unusually high catch rate on Norfolk Island could be attributed to low fishing effort on the island relative to other locations; high catches of Trumpeter had been reported for at least 20 years prior to 1959, and were also noted in the Annual Report for Norfolk Island in 1914.

The largest Trumpeter catches from Norfolk Island occurred during summer months between November and February when the fish were spawning. Fish caught from waters north-east of Norfolk Island showed evidence of spawning slightly earlier than those caught in south-western grounds.

Fishing restrictions currently aim to protect spawning Trumpeter, allowing these fish to contribute to keeping stock levels healthy.

Gear used

In 1981, gear consisted of hand cranked reels with 68 kg (150 lb) breaking strain monofilament fishing line. A swivel was used to attach a 1 metre length of chain with a 1 kg sinker on the end.

Between four and 15 snoods were attached to the chain and the preferred hook size was 8/0, baited with pieces of flesh from less popular fish species taken from the area. The pre-baited trace assembly could be replaced rapidly using a snap-on connector.

There were a total of 50 to 60 boats in 1981, eight to ten of which were commercial or semi commercial in their operations and were fitted with echo sounders. The commercial boats typically had between three and four reels; this was considered the maximum a crew of two or three could operate. Trolling for Yellowtail Kingfish, Giant Trevally, Yellowfin Tuna and Skipjack Tuna occurred but was costly on fuel and consequently unpopular.

The two largest boats in the fishery were 8.5 metres long and weighed 3.5 tonnes, this was considered the maximum possible size for the boat launching equipment at the time.

Current Management Information

The Norfolk Island Inshore Fishery is located within the Australian Fishing Zone and is subject to the *Fisheries Management Act 1991* (the FMA) under AFMA's jurisdiction.



A *Norfolk Island Fishery Management Policy 2009* has been developed by the Norfolk Island Government in conjunction with the Norfolk Island Fishing Association and AFMA to guide the management of the fishery. The Norfolk Island community including the Norfolk Island Fishing Association and other fishers have an important role in the sustainable and effective management of the fishery by providing timely and accurate catch data.

The Norfolk Island Inshore Fishery has long been reserved as a strictly recreational and charter fishery for use by Norfolk Island residents, however AFMA, in conjunction with the Norfolk Island Government and in consultation with stakeholders, is currently investigating options for commercial fishing in this area. Commercial fishing will be managed under the provisions of the FMA.

Other fisheries in the region

Data from fisheries other than the Norfolk Island Inshore Fishery (NIIF) has not been considered in this report.

The Norfolk Island Offshore Demersal Finfish Fishery (NIOFFF) and Eastern Tuna and Billfish Fishery (ETBF) are located outside the NIIF and extend to the limit of the Australian Fishing Zone, approximately 200 nautical miles around Norfolk Island.

There was some exploratory fishing using demersal line and trawl methods undertaken in the NIOFFF during 2000-2003, but no commercial concessions authorising fishing in this fishery exist at this time. The ETBF is a commercial line fishery which targets tuna and billfish. The fishery has a limited number of concessions. The NIOFFF and ETBF overlap in their areas of water but there is a buffer zone between the ETBF and the NIIF.

Preparing the data summary

DATA COLLECTION PROGRAM

Catch cards

Catch cards are completed by recreational and charter fishers participating in the Norfolk Island Inshore Fishery. This information is collected by the Norfolk Island Government and reported to AFMA.

A total of 505 records were received from 206 fishing days between 13 August 2006 and 1 September 2009. These records relate to twelve species:

- | | |
|--|--|
| 1. Bar Cod (<i>Epinephelus ctofasciatus</i>) | 7. Red Cod (<i>Epinephelus rivulatus</i>) |
| 2. Cook's Scorpionfish (<i>Scorpaena cookii</i>) | 8. Salmon (Arripis spp.) |
| 3. Coral Rockcod (Cephalopholis miniata) | 9. Snapper (Pagrus auratus) |
| 4. Hapuka (Polyprion oxygeneios) | 10. Ophie (Psuedocaranx dentex) |
| 5. Queensland Grouper
(<i>Promicrops lanceolatus</i>) | 11. Trumpeter (Lethrinus miniatus) |
| 6. Yellowtail Kingfish (<i>Seriola lalandi</i>) | 12. Yellowfin Tuna (<i>Thunnus albacares</i>). |

Information on the depths fished was not collected but can be useful to help build a picture of where the fish are found, and caught. Re-designed catch cards will collect this and other useful information for future reports.

Interviews

The Norfolk Island Government employs a person to interview fishers. This usually occurs at boat launching points and at popular places where fishing from the shore occurs.

The results of the catch cards and interviews are outlined in this report.



HOW YOU CAN BE INVOLVED

For a copy of the latest catch card and information on how you can become involved please contact Mr Stephen (Cookie) Gardiner: PO Box 339, Norfolk Island; email cookiegee@yahoo.com; or phone 53252.

METHODS USED FOR PREPARING THE DATA SUMMARY

Data is provided to AFMA by the Norfolk Island Government for analysis.

Catch data is presented for each species and shows that catches vary both between species and over time.

Data summary

CATCH INFORMATION

In 2006 the NIIF recorded a total catch of 5,955.5 kilograms. This figure would likely have been higher and compared more favourably with the 8,589 kilograms caught in 2007 if catch data for the period August-December 2006 had been available.

In 2008 the NIIF recorded a total catch of 4,089 kilograms, 52.4% less than in 2007. This is largely due to the absence of Queensland Grouper in the 2008 catch (0 kilograms compared to 4,550 kilograms in 2007) and a reduced quantity of Trumpeter taken in 2008 (2,675 kilograms compared to 3,419 kilograms in 2007).

Table 1. Norfolk Island Inshore Fishery catch (kilograms) 2006-2009

Species	2006*	2007	2008	2009**
Bar Cod	760	16	426	1,447.5
Coral Rockcod	868	87	37	0
Queensland Grouper	20	4,550	0	0
Hapuka	0	0	0	9
Mixed fish	0	0	97.5	127.5
Yellowtail Kingfish	320	287	365	1,831.5
Red Cod	0	0	300	855
Salmon	4	0	0	0
Scorpionfish	10	0	0	0
Snapper	0	49	25.5	108
Ophie	184.5	181	163	645
Trumpeter	3,789	3,419	2,675	8,514
Total	5,955.5	8,589	4,089	13,537.5

* Excludes data for the period January-July 2006 (data not collected).

** Excludes data for the period January-September 2009 (data unavailable at the time report was prepared).



FREQUENTLY ENCOUNTERED SPECIES

The major species targeted in the fishery is Trumpeter. Trumpeter was caught in 95% of the 38 months on which data was reported. Yellowtail Kingfish and Ophie were also well represented, being caught in 82% and 71% respectively of all reported months. There are many other fish species encountered in the waters around Norfolk Island and a brief description of some of the species (taken from <http://fishbase.org/search.php>) is included in this report.

MONTHLY CATCH COMPOSITION

Trumpeter accounted for 57% of all catch weight reported for the period August 2006-August 2009.

Queensland Grouper was the species caught in greatest weight for any given month, although was only reported on 3 of the 38 months. The catches of Grouper over these three months accounted for 14% of the total catch weight for the 38 month period.

Yellowtail Kingfish and Bar cod were also prominent in the catch by weight, accounting for 9% and 8% of the total catch weight respectively.

The average monthly catch weight for the NIIF is 847kg although monthly catches range from a high of almost 3.5 tonnes (March 2007) to no catch (August-September 2008).

Data presented for analysis in this report did not allow determination of total catch per trip. Catch was split by species and reported for the given date. For example, a trip where Ophie, Salmon and Trumpeter was caught, would result in three entries for the given date; one for the quantity of each species. Despite not being able to determine total catch per trip, catches of single species on a single date still ranged as high as 1200kg, much higher than the historical figures of 450kg per day. The average catch of any species on any given date during the period 2006-2009 was approximately 63kg.

There is no seasonal pattern of fishing activity discernable from the reported catches.



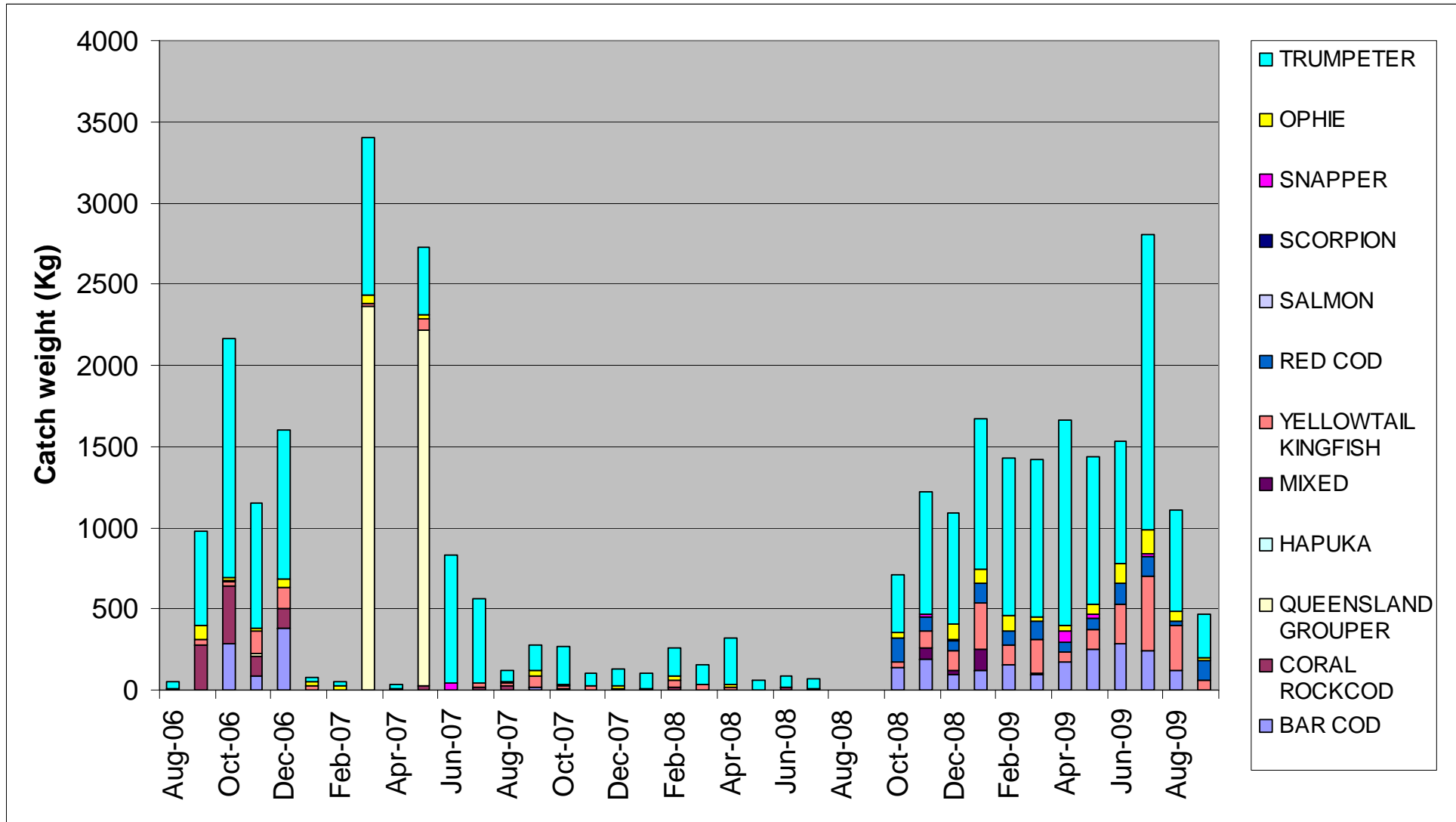


Figure 3. Monthly catch composition (Kilograms) from the Norfolk Island Inshore Fishery.

Fish species identification

Bar Cod (*Epinephelus octofasciatus* – also known as Eightbar Grouper or Buka)

Bar Cod are reported to grow to 130 cm long and as much as 80 kg. They are a deep water species inhabiting depths of 150-300 meters.

Bar cod are considered to have a very low resilience and very high vulnerability to overfishing, taking more than 14 years to double their population.

Reported catch of this species may also include similar looking species such as Hapuka (*Polyprion oxygeneios*, also known as Bass Grouper).



Figure 4. Bar cod

Image from Randall, J.E. on Fishbase.org.

Cook's Scorpionfish (*Scorpaena cookii*)

Cook's Scorpionfish is one of a number of Scorpionfish species which may occur in the Norfolk Island Inshore Fishery. They typically grow to a length of 26 cm and occupy relatively shallow waters, to a depth of about 50 metres.

Cook's Scorpionfish are considered to have a moderate to high vulnerability to overfishing and to have a low resilience, requiring up to 14 years to double their population size.



Figure 6. Cook's Scorpionfish

Image from Randall, J.E., 1997, Randall's tank photos, on Fishbase.org



Coral Rockcod (*Cephalopholis miniata*)

Coral Rockcod are reported to grow to 45cm and inhabit coral reefs in depths of between 2 and 150 metres. They are more commonly found in exposed rather than protected reef areas where they feed mainly on fish and crustaceans.

Coral Rockcod form harem groups with a dominant male and between 2 and 12 females. These groups occupy territories up to 475 square metres which are divided into smaller territories defended by single female fish. Although considered fairly common, they have a low resilience, taking between 4.5 and 14 years to double their population. They are considered highly vulnerable to overfishing.

Juveniles may be yellow with scattered faint blue spots.

Queensland Grouper (*Promicrops lanceolatus*)

Queensland Grouper are the largest of the world's coral reef dwelling bony-fishes, reported to grow to 270 cm long and as much as 400 kg. They inhabit coral reefs at between 4 and 100 metres depth.

Queensland Grouper are considered to have a very low resilience and very high vulnerability to overfishing, taking more than 14 years to double their population. They reach sexual maturity at between 105 and 110 cm and are listed as vulnerable under the [IUCN Redlist](#). Being such a large predator, they are rare even in unfished areas.

Juveniles have irregular black and yellow markings, while adults are green-grey to grey-brown with faint mottling. There are numerous small black spots on the fins.

Queensland Grouper are typically found in shallow waters, in caves or wrecks and also in estuaries. Juveniles are secretive and live amongst the reef or in the waters above the reef where they feed on spiny lobsters, fish, including small sharks, batoids, juvenile sea turtles and crustaceans.

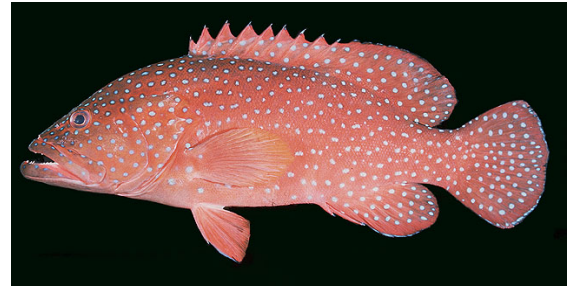


Figure 8. Coral Rockcod

Image from Randall, J.E., 1997. *Tank photos* on Fishbase.org.

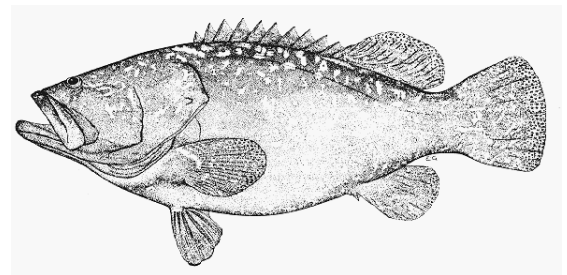


Figure 10. Queensland Grouper

Image from [Heemstra, P.C. and Randall, J.E., 1993. FAO species catalogue. Vol. 16. Groupers of the world \(family Serranidae, subfamily Epinephelinae\). An annotated and illustrated catalogue of the grouper, rockcod, hind, coral grouper and lyretail species known to date.](#)



Yellowtail Kingfish (*Seriola lalandi*) and Amberjack (*Seriola dumerili*)

Yellowtail Kingfish are reported to grow to a size of 250 cm and a weight of almost 100 kg; fish of this size may be as old as 12 years. Amberjack are slightly smaller, reaching a length of 190 cm and a weight of around 80 kg.

The two species can be differentiated by the number of hard spines in their dorsal fin (the fin on top of their back). Yellowtail Kingfish have between 2-3 hard spines while Amberjack have 8 hard spines.

They are found in coastal and oceanic waters between 1 and 825 metres depth, off kelp beds, rocky areas, reefs, islands and sometimes in estuaries.

They can be pelagic (mid-water) or demersal (associated with the bottom), solitary or occur in small schools. Schools of juveniles are generally found offshore, near or beyond the continental shelf. When offshore these fish associate with floating debris such as seaweed. They prefer warmer water (18 - 24°C) although are occasionally found in cooler waters. They feed on small fish, squid and crustaceans.

These fish are considered moderately resilient and moderately to highly vulnerable to overfishing, taking between 1.4 and 4.4 years to double their population.

Red Cod (*Epinephelus rivulatus* also known as Chinaman Rockcod or Red Snapper)

Red Cod are reported to grow to 39 cm and 1.4 kg. These fish inhabit coral reefs, areas with rocky bottoms, algal flats and seagrass beds where they feed on fish and crustaceans. They are typically found in waters between 1 and 150 metres depth.

Red Cod are protogynous hermaphrodites, which means the juveniles first develop female reproductive organs which may later change into male reproductive organs. They form spawning aggregations and are considered a highly resilient species with low to moderate vulnerability to overfishing.



Figure 12. Yellowtail Kingfish

Image from [Armitage, R.O., Payne, D.A., Lockley, G.J., Currie, H.M., Colban, R.L., Lamb, B.G. and Paul, L.J. Editors., 1994. Guide book to New Zealand commercial fish species. Revised edition.](#)

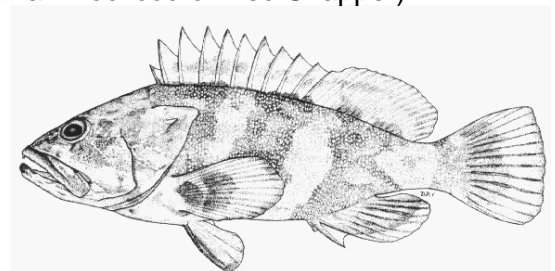


Figure 14. Red Cod

Image from Heemstra, P.C. and Randall, J.E., 1993. FAO species catalogue. Vol. 16. Groupers of the world (family Serranidae, subfamily Epinephelinae). An annotated and illustrated catalogue of the grouper, rockcod, hind, coral grouper and lyretail species known to date.



Eastern Australian Salmon (*Arripis trutta*) and Giant Kahawai (*Arripis xylabion*)

There are two species of Salmon found in the NIF; the Eastern Australian Salmon and the Giant Kahawai. Both these species are very similar in appearance.

The Eastern Australian Salmon is the larger of the two species, growing to 89 cm long and a weight of 9.4 kg. Fish of this size may be as old as 26 years.

Both species are pelagic which means they swim in the water column and aren't associated with the bottom.

Juveniles school in shallow coastal bays and estuaries while adults move in large schools along shores and over reefs. They form large surface aggregations in deep water, feeding mainly on fish but also on pelagic crustaceans, especially krill (*Nyctiphanes australis*). They also take food from the sea bed.

Both Eastern Australian Salmon and Giant Kahawai are considered moderately resilient, taking between 1.4 and 4.4 years to double their population. Eastern Australian Salmon are considered moderately to highly vulnerable to overfishing, while Giant Kahawai are considered highly vulnerable to overfishing.

Snapper (*Pagrus auratus*)

Snapper are reported to grow to a size of 130 cm and a weight of 20 kg; fish of this size may be as old as 35 years.

Snapper are considered to have a low resilience and high to very high vulnerability to overfishing. They are capable of doubling their population in between 4.5 and 14 years.

Snapper inhabit rocky reefs and also estuaries in waters up to 200 metres deep. Juveniles are mainly found in inlets, bays and other shallow, sheltered marine waters, often over mud and seagrass. Small fish measuring less than 30 cm are common inshore around reef areas often in groups of around 30 individuals. Larger fish are shy and are less frequently seen. Adults often live near reefs, but are also found over mud and sand substrates. They are relatively sedentary, moving to different parts in the ocean to spawn; tagging studies have shown them capable of substantial migrations. Crustaceans (crabs, shrimps, etc) form the basis of the snapper's diet, but marine worms, starfish, sea urchins, shellfish and fish are also important.

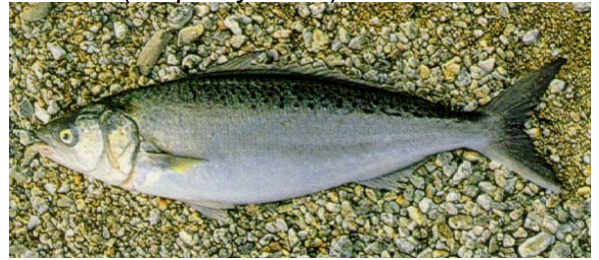


Figure 16. Eastern Australian Salmon

Image from McDowall, R.M., 1990. New Zealand freshwater fishes: a natural history and guide.



Figure 18. Snapper

Image from Randall, J.E., 1997. Randall's tank photos. Collection of 10,000 large-format photos (slides) of dead fishes. Unpublished.



Ophie (*Pseudocaranx dentex* - also known as Silver Trevally)

There are many Trevally species in a number of different genera. Ophie is the predominant species caught around Norfolk Island. It grows to 122 cm and over 18 kg and at this size can be as old as 50 years.

Ophie form schools, generally around reef and rough bottoms at a wide range of depths, from the surface to as deep as 238 metres. Juveniles inhabit estuaries, bays and shallow continental shelf waters while adults school near the sea bed on the continental shelf.

Schools can also contain Scad (*Decapterus spp.*) and Salmon (*Arripis spp.*) as these fish are also plankton feeders. Ophie also feed on invertebrates associated with the bottom.

Ophie are considered moderately resilient but very highly vulnerable to overfishing. They have a population doubling time of between 1.4 and 4.4 years.

Trumpeter (*Lethrinus miniatus* – also known as Redthroat Emperor)

Trumpeter are reported to grow to 90 cm and a weight of 9.6 kg, the age of such fish may be in excess of 20 years.

These fish inhabit coral reefs during the day where they feed occasionally in sand and rubble areas between coral heads. At night, they move out over the sandy sea floor to forage. They usually occur in small schools and feed mainly on crustaceans, echinoderms, molluscs and fish, with crabs and sea urchins predominating. Trumpeter are typically found in depths between 5 and 30 metres and do not migrate. They are considered a moderately resilient fish, able to double their population size in 1.4 - 4.4 years, but are considered highly vulnerable to overfishing.

This species can be found around reef pinnacles in 20-25 metres of water around Norfolk Island.



Figure 20. Ophie

Image from Wirtz, P. on Fishbase.org.

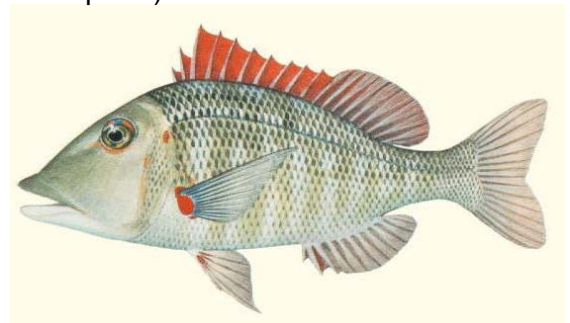


Figure 22. Trumpeter

Image from Carpenter, K.E. and Allen, G.R., 1989. FAO Species Catalogue. Vol. 9. Emperor fishes and large-eye breams of the world (family Lethrinidae). An annotated and illustrated catalogue of lethrinid species known to date.



Catch trends in the fishery

MONTHLY CATCH TRENDS

The total reported catch for each month was calculated and then used to calculate the average total reported catch for each month over the years 2006-2009. This data is presented in the *Average monthly catch* graph below. There is no clear seasonal pattern of catch evident from this graph.

The total reported catch for each month was also graphed for each year (2006-2009), this is presented in the *Total monthly catch* graph below. This graph indicated much more consistent and generally higher catches in 2009 than in previous years.

Peak catches for 2006 were in October and December. This shifted in 2007 to March and May. In 2008 reported catches were generally lower throughout the year, peaking in November. In 2009 the peak catch occurred in July. The peak catches for 2007 reflect the high catches of Queensland Grouper during the months of March and May.



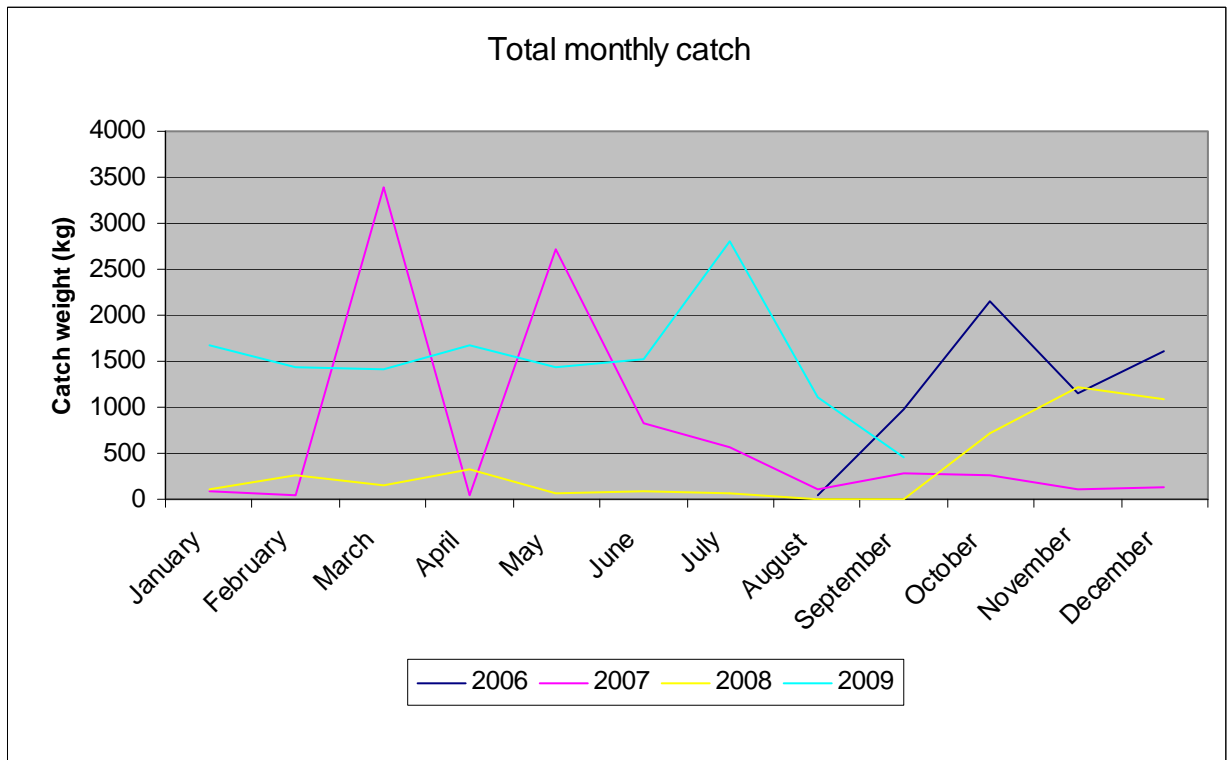
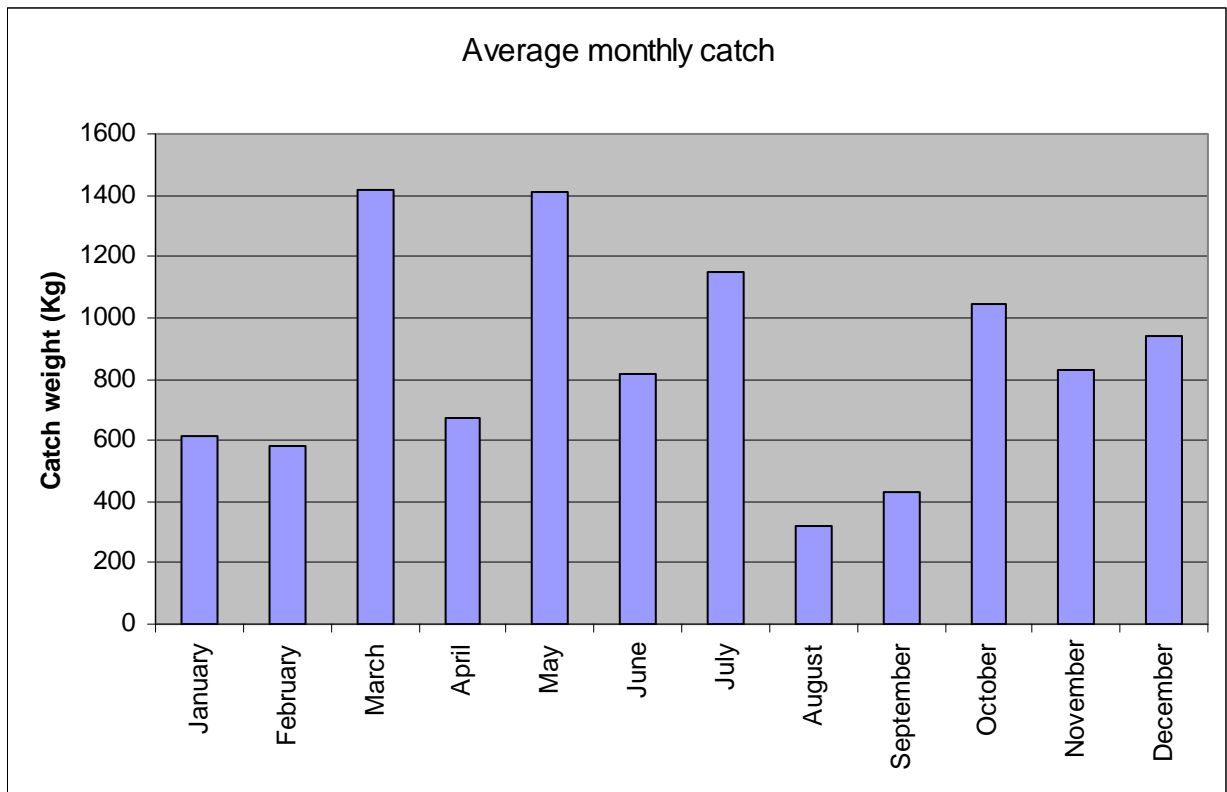


Figure 25. Average monthly catch weight for the period 2006-2009 from the Norfolk Island Inshore Fishery.



MONTHLY TRIP DURATION TRENDS

A total of 78% of all catch records between 2006 and 2009 had associated trip duration information. Figure 26 below shows the months where the greatest number of trip duration records were reported. It should be noted that because catch records are split by species, there is likely to be a bias towards months where catches comprised more species. Figure 26 does not necessarily correspond to the amount of fishing effort or the number of trips.

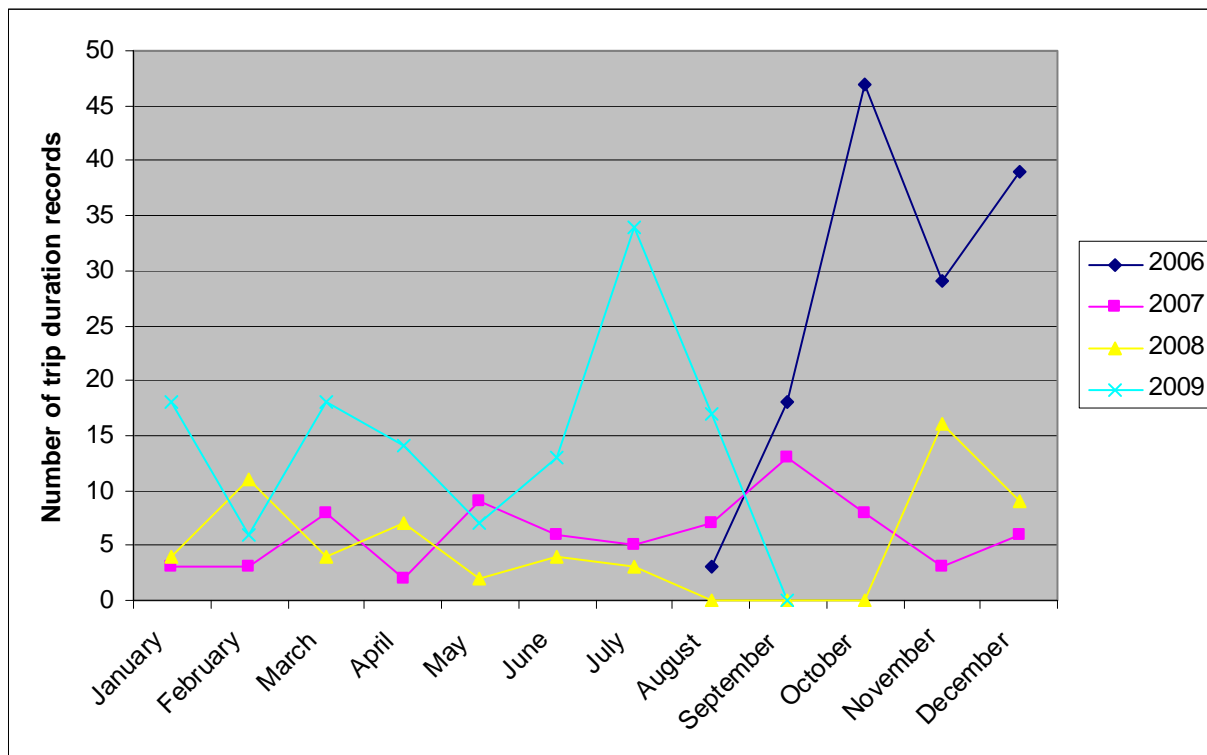


Figure 26. Total number of hours on which fishing was reported for the period 2006-2009 from the Norfolk Island Inshore Fishery.



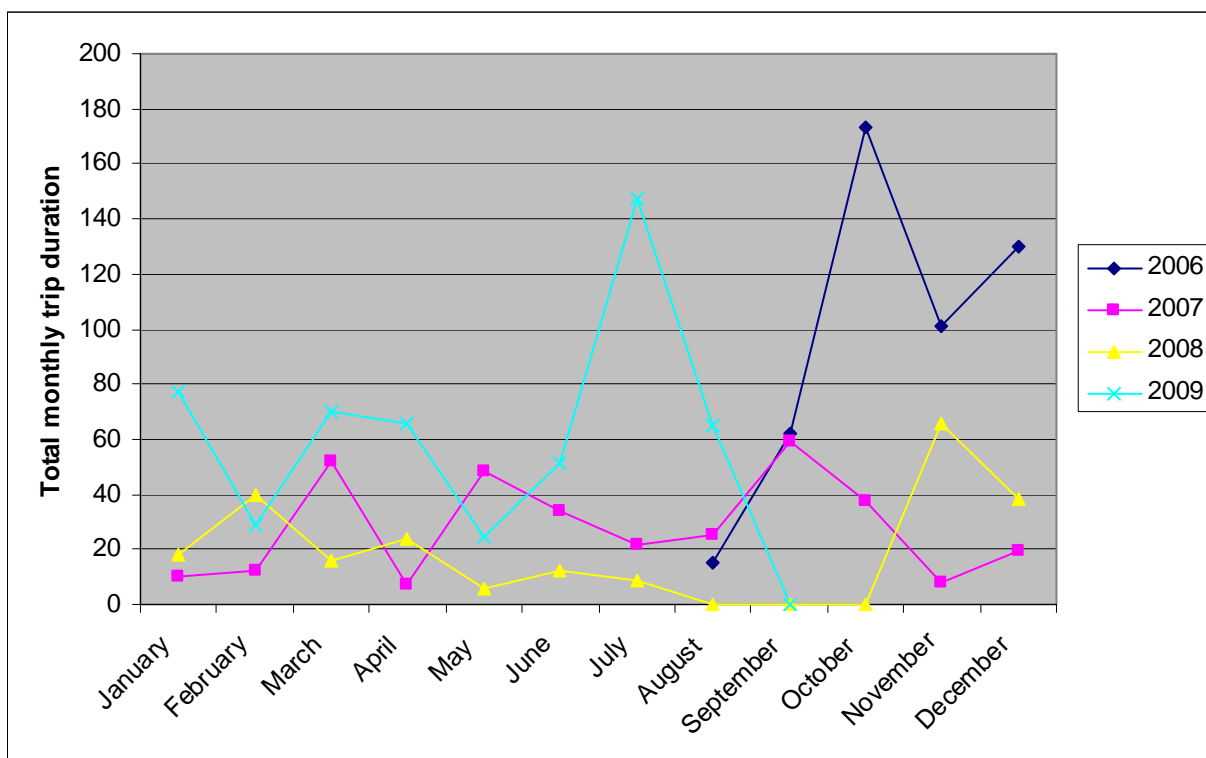


Figure 27. Number of hours (total trip duration) reported fishing per month for the period 2006-2009 from the Norfolk Island Inshore Fishery.

BOATS AND OTHER GEAR USED

Vessel participation

Records were provided for 90 boats, including two jet skis. The lengths and engine capacities of these jet skis have not been used in calculating the following boat statistics.

The boats used in the Norfolk Island Inshore Fishery ranged from three to nine metres (10 – 30 feet), but averaged 5.5 metres (18 feet). Engine capacity ranged from 15 horsepower to 500, averaging 150 horsepower.

In 1980, Norfolk Island’s two largest boats were 8.5 metres long; it is unclear how the nature of the boats has changed over time. There are between 30 and 40 more boats today than there were in 1980; an increase of between 50 and 80%.

The majority (>93%) of boats had an echo sounder fitted, and almost 81% also had global positioning systems (GPS). Only five boats had no GPS or echo sounder, or did not report this information. In 1980, only eight to ten boats had echo sounders, and none had GPS. This significant increase in the use of technology has allowed more people to more quickly and easily find fish and likely fish habitat and return to these areas on future fishing trips; this is likely to have influenced how effective and efficient people can be at catching fish.

CATCH

For the period of available data (August 2006-September 2009) there was a total of 32.2 tonnes of fish reported by fishers from the Norfolk Island Inshore Fishery; Trumpeter comprised more than half of this total catch by weight.



CATCH RATES (CPUE)

Catch rates, also referred to as catch per unit effort (CPUE) look at the quantity of fish (individuals and/or weight) and how long it took to catch these fish. Calculating CPUE also requires information on the type and quantity of fishing gear used. It has been noted that the NIFA advocate a 3 hook limit, with more hooks used in deep waters, and that between 4 and 15 hooks were used historically. Despite this general information, catch rates were not assessed because information on the type and quantity of gear used was unavailable.

Catch of each species by month

The largest recorded catches of any species were of Queensland Grouper which occurred during March and May 2007. Trumpeter also showed relatively high catches. No clear seasonal patterns were evident in catches of any species.

CATCH COMPOSITION

In 1980, Trumpeter accounted for 90% of the catch by weight and number of individual fish. Today's records show that Trumpeter now comprise less than 57% of the total catch. This may be due to closures protecting spawning fish which were not in force during 1980.

The next most prevalent species in 1980 was Coral Rockcod, comprising between 5-10% of the total catch. This species comprised 3% of the catch in the period 2006-2009, but significantly more Yellowtail Kingfish (9%), Grouper (14%) Bar Cod (8%) and Ophie (4%) were reported in the catch during 2006-2009. The increased focus on these species may also account for the lower representation of Trumpeter in the catch.

The shift in catch composition may be due to people's preferences for different species, different baits and or fishing techniques being used, or may be attributable to changes in species abundance. This cannot easily be determined from the available data.

LOCATION

Catch cards for the Norfolk Island Inshore Fishery include a map with four numbered quadrants. These quadrants represent North West, North East, South West and South East. Reporting of the areas fished included reference to North, South, East or West or was not included. Benefits may result from dividing the fishery map into smaller parts and assessing against other information such as bathymetric (depth profile) maps. This would allow much better determination of the types of places where catches are occurring.

HOW WE CAN IMPROVE OUR UNDERSTANDING OF THE FISHERY

The catch cards used in the Norfolk Island Inshore Fishery have been reviewed and redesigned to collect more useful information. Information needs identified through this data review include:

- Depth fished;
- Time fished and number of hooks used to calculate catch per unit of effort;
- Information to allow catches from different trips to be more easily differentiated;
- Other information such as provision to report interactions with protected species, a requirement under law.

To find out more about the data collection program, what happens to the information you supply, or for a copy of the latest catch card and information on how you can become involved, please contact Mr Stephen Gardiner: PO Box 339 Norfolk Island; email cookiegee@yahoo.com; or phone 53252.

