

Draft

**Characterisation of the New Zealand
Recreational Gamefish Fishery**

**Final Research Report
REC2004/02**

J. Holdsworth,¹ K. Walshe,² T. Sippel.¹

1. Blue Water Marine Research Ltd

PO Box 1043, Whangarei

2. Akroyd Walshe Ltd.

30 September 2005

This draft report is not for publication or release; it is presented for consideration by the Ministry of Fisheries and Fishery Assessment Working Groups. It may contain unpublished data, analyses, and/or conclusions that are subject to change. Data contained in this report should not be cited or used for purposes other than the work of the Ministry of Fisheries and its Working Groups without the written permission of the Ministry of Fisheries.

Characterisation of the New Zealand Recreational Gamefish Fishery

Final Research Report

1. **Date:** **30 September 2005**
 2. **Tenderer's Names:** **Blue Water Marine Research Ltd**
 3. **Project Title:** **Survey of marine recreational fishing in selected areas**
 4. **Project Code:** **REC2004/02**
 5. **Principle Investigator:** **John Holdsworth**
 6. **Start Date:** **06 December 2004**
 End Date: **30 September 2005**
-

7. Executive Summary

This report fulfills Reporting Requirement 3 for the Ministry of Fisheries project REC2004/02. The project aims to characterise the New Zealand recreational fishery for large pelagic species such as marlin, tuna and sharks. This is generally called the gamefish fishery.

The International Game Fish Association (IGFA) and New Zealand Big Game Fishing Council (NZBGFC) have established angling rules to promote ethical and sporting angling practices and provide uniform regulations for use in fishing tournaments and when claiming a national or world record catch. For the purposes of this report gamefish are defined as those species that are listed in the NZBGFC yearbook and are usually caught using gamefishing equipment and methods.

Data used to characterise the gamefish fishery and gamefish fishers came from existing sources including: gamefish club records; the gamefish tagging database; recreational harvest survey diarists and boat ramp interviews; and data collected for a NZ Marine Research Foundation project of the value of the billfish fishery. Also 10 focus group meeting were held around the North Island to capture some of the knowledge, attitudes and perceptions of gamefishers in 2005.

Most gamefish in New Zealand are large migratory oceanic species. They are usually only available in New Zealand waters for part of the year. The main gamefish season runs from late December to April and focuses, in the North Island, on striped marlin, yellowfin tuna and mako shark. Fishing for yellowtail kingfish and broadbill can extend the gamefish season beyond the warmest months.

A number of areas have an international reputation for world class fisheries. Probably the longest established is the Bay of Islands for striped marlin. More recently vessels have increased their fishing range and the King Bank and Middlesex Bank north of the Three Kings Islands have drawn fishers targeting striped marlin and swordfish from around the country and the world. Large kingfish can be found in many areas around the North Island but the fishery at White Island and Volkner Rocks has the best reputation for consistently producing big kingfish. Other areas identified as important for particular species targeted by gamefishers are identified. Marlin, tuna and sharks are highly mobile and their abundance in specific areas changes from year to year. Gamefishers are also mobile and tend to congregate in areas where there has been recent fishing success. A description of the fishery for each gamefish species is provided.

There is a broad mix of people involved in the gamefish fishery in New Zealand. Various surveys of fishers indicate that the typical gamefisher is a middle aged male with an above average income. The increased strength and reliability of trailer boats and improved electronics (communication, sounders and GPS) has led to an increase in the number of people involved in deep sea fishing over the last 20 years.

8. Overall Objectives:

- 1 To characterise the recreational fishery in selected areas for management purposes.

Specific Objectives:

- 1 To determine areas fished (including priority rankings of importance), species targeted and caught, methods used and the catch-per-unit-effort (if available) for the recreational gamefish fishery.
- 2 To profile the recreational gamefish fishing population.

9. Methods

The gamefish fishery varies considerably among geographic regions. Species targeted can vary depending on their regional and seasonal availability. There are many species available in New Zealand that could be considered gamefish. These could include species listed by the International Game Fish Association that qualify for IGFA world records (Anon. 2005). A subset of these is present in New Zealand waters and these species are recorded in fishing club records. We used the following criteria to select species that are considered gamefish in New Zealand for the purposes of this project.

1. The species is listed in the NZBGFC yearbook (Anon. 2004) and the IGFA world record book
2. The species is saltwater
3. The species is recorded in New Zealand gamefish club records
4. The species qualifies for prizes in some of the main gamefish tournaments
5. The species is caught using gamefishing methods

The main methods considered as gamefishing can also help define the species. These are:

1. Trolling lures or baits

2. Drifting live or dead baits
3. Using fishing line that is classified by breaking strain(eg. 15, 24, 37 kg)
4. Using high capacity reels and rods that can be used in a game chair or
5. Using fast tapered stand up rods that may be used with a gimble belt
6. Gamefish are not caught while the boat is at anchor

The main gamefish species in New Zealand are specifically targeted by fishers. Targeting can involve the selection of the fishing method and gear, area fished and fishing strategy. It is also more about the intention of those fishing rather than what is caught. Generally targeting gamefish involves:

1. Fishing with the intention of catching a large fish of the species suitable for presenting at a club weigh station.
2. Selecting a line weight most suitable for catching the species or increasing the points scored for an individual fish in contests.
3. Selecting a type or size of lure or bait thought to be suitable for the species
4. Fishing particular areas or structures known to produce fish of species targeted
5. Fishing where there are signs of bait fish such as surface schools, birds or dolphins feeding, or school fish on the depth sounder.
6. Seeking areas of specific water temperature or the edge of a temperature front.

Some gamefish species are not commonly caught using gamefish methods in New Zealand. While these may be highly regarded they are not specifically targeted and can be considered as recognised bycatch when targeting main gamefish species (see Table1).

Table 1. The main gamefish species and recognised bycatch species which are defined as gamefish species for the purposes of this report.

MAIN SPECIES	RECOGNISED BYCATCH	OTHER IGFA SPECIES
Billfish		
Striped marlin <i>Tetrapturus audax</i>	Shortbilled spearfish <i>Tetrapturus angustirostris</i>	
Blue marlin <i>Makaira nigricans</i>		
Black marlin <i>Makaira indica</i>		
Swordfish <i>Xiphias gladius</i>		
Tuna		
Yellowfin <i>Thunnus albacares</i>	Bigeye tuna <i>Thunnus obesus</i>	
Albacore <i>Thunnus alalunga</i>	Skipjack <i>Katsuwonus pelamis</i>	
Pacific bluefin <i>Thunnus orientalis</i>		
Southern bluefin tuna <i>Thunnus maccoyii</i>		
Sharks		
Mako <i>Isurus oxyrinchus</i>	Thresher (spp) <i>Alopias</i> spp	
Blue shark <i>Prionace glauca</i>	Porbeagle <i>Lamna nasus</i>	
Hammerhead <i>Sphyrna</i> spp	White pointer <i>Carcharodon carcharias</i>	
Bronze whaler <i>Carcharhinus brachyurus</i>	Tiger shark <i>Galeocerdo cuvier</i>	Tope <i>Galeorhinus galeus</i>
Other		
Yellowtail Kingfish <i>Seriola lalandi</i>	Mahimahi <i>Coryphaena hippurus</i>	Snapper <i>Pagrus auratus</i>
	Wahoo <i>Acanthocybium solandri</i>	Kahawai <i>Arripis trutta</i>

Gamefish clubs in New Zealand keep good records of the fish that cross their weigh station or are tagged and released. Typically these records include the date of capture, the species, weight of fish, vessel and angler name. Club and IGFA rules determine which fish qualify for inclusion in the records. These include minimum weights or lengths, and gear and handling restrictions. The minimum weight for marlin is generally 90kg. It varies between clubs for sharks between 40 and 70 kg and in many contests kingfish must exceed 1 metre (approximately 10kg). The total catch of smaller tuna, kingfish and sharks are probably under- represented in club records. Almost all billfish are recorded. Catch records for individual landed fish over the last 5 years from the main gamefish clubs have been collected and summarised by recreational fishing zone (Figure1). NZBGFC national catch records by species and season for the last 11 years have been summarised. Data from the cooperative gamefish tagging programme is summarised for the last 11 years by statistical area (Figure2) for fish tagged by recreational fishers in New Zealand waters. Recreational harvest surveys, which started in 1991, contain some information on the number of trips targeting gamefish, the species and number of fish caught and the demographics of diarists involved in the fishery. Extracts from the MFish *rec_data* database for the species regarded as gamefish target or recognised bycatch species were obtained and summarised.

To gather information about the characteristics, behaviours and motivations of gamefishers a focus group approach was used. Ten focus groups were held at locations based on coverage of regional gamefish groupings in the upper and middle North Island. A second factor in defining the focus group locations was the type of gamefishing undertaken. For example North Island East Coast focus groups were likely to have a higher percentage of charter operators than at other sites; West Coast focus groups were likely to have a greater proportion of small boat, beach launched, fishers. Relatively experienced fishers with good local knowledge were selected with the aid of gamefish clubs. Focus group participants were lead in a discussion of gamefishing methods, areas, and issues and completed a written questionnaire (Appendix 1).

N6 software (QSR International Pty Ltd, Australia) is used to group comments by key word for analysis. N6 is a qualitative research tool which facilitates identification, indexing and cross referencing of the participant's responses. The questionnaire was organised in two parts. The initial section covered the demographics, fishing methods and equipment, species fished, area fished and experience of the fishers. Four questions gathered information about the value of fishing equipment. The second section of the questionnaire gathered information for the specialisation classification. The questions on 'orientation' were used to develop the specialisation categories for subsequent questionnaire and focus group discussion analysis. Other question sets were provided on the 'relevance of gamefishing to me', 'why I gamefish', and 'attitudes to fisheries management'.

Focus group meetings were be taped and the transcript typed verbatim into a written record. The ten venues for focus group meetings were:
Kaitaia; Bay of Islands; Tutukaka; Auckland; Hamilton; Tauranga; Whakatane; Gisborne; Napier; New Plymouth.

The first meeting (Tutukaka) was also used as a pilot to check on the relevance and understanding of the focus group approach and questionnaire. Following this meeting changes were made to the process and questions to be used in the focus group and one change made to the questionnaire.

9. Results

Fishing club records provide a useful starting point for describing the quantum and trends in the catch of gamefish species. The annual tallies of clubs affiliated to the New Zealand Big Game Fishing Council (NZBGFC) are listed by species and club in the Council's yearbook. Fish landed are separated from fish tagged and released. The landed catch from NZBGFC records for 47,000 fish is summarised by species and season for 11 years since 1993–94 in Tables 2 and 3 and Figures 1 and 2.

The tagged and released catch for 30,000 fish is summarised by species and season for 11 years since 1993–94 in Table 4. Trends in the seasonal tallies of tagged fish are plotted in Figures 3 and 4. The 1994–95 season was exceptional with high tallies for a number of species, therefore an 11 year time series (commencing in 1993–94) is plotted to highlight this point.

Area specific information is available from catch records of individual fish (landed and tagged) from the main gamefish clubs for the 5 seasons 1999–00 to 2003–04. While not being a complete data set, it is indicative of the distribution of gamefish catch. In particular there is no data from Gisborne, Hawkes Bay and New Plymouth clubs. The average annual catch by species group (tuna, kingfish, billfish, shark) is plotted by the 40 national recreational fishing zones in Figures 5 to 8.

Information from the national recreational harvest surveys provides national landed catch estimates for a few gamefish species. The 1996 national recreational harvest survey estimated 74,000 kingfish were taken, while in 2000 170 diarists reported 393 kingfish for a harvest estimate of 135,000 (Boyd & Reilly 2002). In the 1999–00 season gamefish club and tagging records recorded 1,539 kingfish.

The national landed harvest for albacore in 1996 was estimated to be 51,000 fish, while in 2000 32 diarists caught 168 fish for an estimate of 62,000 fish. In the 1999–00 season gamefish club and tagging records recorded 477 albacore. The 2000 survey estimated 15,000 yellowfin, 4,000 marlin, and 1500 mako sharks were landed. Because the sample size was small for these species these estimates have a high uncertainty (high c.v.s). In the 1999–00 season gamefish club and tagging records recorded 1,112 yellowfin, 1,516 marlin, and 736 mako. Even though the 2000 harvest estimates are considered to be at the high end of the range these numbers clearly indicate that only a small proportion of the kingfish and smaller tuna are present in club records. However, the estimates of large shark and marlin catch, while higher than the catch recorded by clubs, are not too different (probably within the range of estimates if c.v.s were calculated)

FOCUS GROUP MEETINGS

Below is a summary of responses from gamefishers at focus group meetings. At each of the meetings the question was asked ‘What makes gamefishing different from other fisheries, and why do you gamefish?’ Most fishers progressed from general line fishing into gamefishing, seeing gamefishing as the ‘peak experience’ in recreational fishing. Fishers considered gamefishing was different from other types of fishing. The following five reasons were given:

1. Gamefishing is a very technical sport

The gear and fishing techniques used for gamefishing are more sophisticated than for say snapper fishing. The following quote identifies the difference in one fisher’s mind between snapper and gamefishing

“With snapper fishing you steam to the spot, drop the anchor, put down a line and wait. With gamefishing you are constantly on the move and constantly watching the sounder, the GPS, looking at the horizon and the water behind the boat and the water colour and conditions, if you say it is boring then you are doing the wrong things.”

2. Gamefish are more difficult to catch

The likelihood of catching a gamefish is much less than for other fisheries and therefore there is a greater level of planning, skill, and organisation required. Gamefishers at a number of meetings talked about the ‘adrenaline rush’ that occurs in the fisher when the gamefish strikes. The following quotes highlight the difficulties of catching gamefish:

“It’s an unknown factor, when you go snapper fishing you can be reasonably sure you will catch something – that is not so with marlin fishing. Gamefishing is a skill; it takes time to become a good fisherman – that’s part of its uniqueness.

“The challenge of landing a gamefish requires much more gear, planning, organization and luck than for say catching snapper. It is a life long learning experience.”

3. The visual aspect of the sport

Fishers often described their interest in gamefishing using visual images such as ‘seeing gamefish ‘jumping and tailing on the water’, looking for ‘tails’ on the surface, seeing marlin ‘light up’, describing the opportunity to observe birds, fish and mammals at sea as one of the highlights of fishing.

4. The camaraderie of gamefishing

Comments were made at a number of meetings about the camaraderie amongst gamefishers. Gamefishing is a team activity requiring the people on board the vessel to undertake a number of roles separate from the angler who is landing the fish. A number of fishers talked about the importance of choosing the right crew, particularly for fishing tournaments. However there is a second aspect to the camaraderie and that is the support

and information flow between vessels. One fisher described how if he had a secret rock lobster or snapper spot he wouldn't tell anyone where it is; but as part of the gamefish fleet he would tell other boats if they see a gamefish and are happy for other boats to join in.

5. Experienced gamefishers tend to tag and release their catch

Although line fishing (such as snapper or blue cod) is focused on taking the catch for food, gamefishers have a strong ethic of releasing fish. Reasons given include:

- As the gamefish resource is declining, releasing the fish allows for the fish to 'recycle' and be available for others to catch and to spawn again.
- Since the introduction of the Billfish Moratorium in the 1980's it has been illegal for commercial fishers to land marlin caught in New Zealand's EEZ or Territorial Sea. In introducing the moratorium, the Minister of Fisheries asked that the recreational sector set a target of tag and releasing 50% of the marlin caught. There has been strong peer pressure amongst recreational fishers to achieve or better the target. Tag and release also provides one of the few databases of gamefish catches and therefore releasing tagged fish is seen as a conservation and management measure.
- Gamefish are usually prepared for eating by the process of smoking. Given that gamefish are large, one fish will provide a lot of food. Fishers will often land their first gamefish, or the first fish of the season then release others they catch.
- On trips lasting several days the fish caught early in the trip would spoil and become inedible before the vessel returns to port.

Tag and release

Tag and release is one of the fishing practices which sets the gamefish fishery (and in particular marlin and shark fishing) apart from other New Zealand marine recreational fisheries. The Gamefish Tagging Programme was started by the Ministry of Agriculture and Fisheries in 1975. It is a cooperative project where NZBGFC and anglers buy tags and tag the fish. The gamefish tags used have a printed plastic streamer on a stainless steel anchor. On tagging the fish the angler/skipper completes a tag return giving information on the species, size of the fish, the location and date of release which is entered into a Ministry of Fisheries database. The return address and offer of a reward for reporting a recapture is printed on the tag.

In the last couple of years in New Zealand a number electronic tags have been attached to gamefish. These projects have been funded by NZBGFC, gamefish clubs and charitable trusts. There has been considerable support from gamefishers for these projects and interest in the results. These tags have provided detailed information of the temperature and depth preferences of striped marlin and estimates of location can be made every few days. Of 11 fish tagged and released, one died after being eaten by a shark, one tag failed to report but the other 9 are known to have survived tag and release.

The majority, and in some cases all, of the participants at the focus group meetings had tagged gamefish. All fishers, when asked whether tagging should be voluntary or mandatory stated that tagging should remain a voluntary activity.

In response to the question ‘What gamefish would you not tag?’ comments included:

- fish that were unlikely to survive if released, or in poor condition,
- possibly the first fish of the season or an angler’s first gamefish,
- possibly very large or trophy fish

In response to the question ‘What are the downsides of tag and release?’ comments included:

- Tag returns are low (less than 1%) which suggests that tags may fall out of the fish after a period of time, or there is a high mortality of fish (recent striped marlin satellite tagging results from New Zealand suggest mortality associated with recreational tag and release may not be significant).
- Fishers at several meetings believed that the tagged gamefish were likely to be caught by commercial longliners and the tag information lost.

Generally fishing practice does not vary according to whether the intent is to land or to tag the fish. However, some fishers mentioned if they intend to tag a fish they would attempt to bring it to the boat as quickly as possible (so as to reduce the stress on the fish) and one fisher mentioned using circle hooks instead of “J” hooks (because “J” hooks were more likely to ‘gut hook’ the fish).

Influences on the area to be fished

The most often cited determinant of where a vessel would fish was where the best fishing occurred in the previous day. This statement reflects the open information flow network that occurs in the gamefish fishery, whereby fishers are happy to give information to other fishers on their fishing history.

Other factors included:

- the weather (fishers were likely to fish into the weather on the way out and with the weather on the way back to port),
- the location of birds and bait schools,
- water temperature (through the use of sea surface temperature maps downloaded from the internet),
- water colour (coastal water is often green, true oceanic water is deep blue and the clearest and darkest is often described as purple).

Much of this information is gleaned from discussion with other gamefishers prior to leaving the harbour, or during the steaming out to the grounds.

Some of the best gamefish locations are a long way from where people live and trips may be organized weeks or months in advance. Some locations have a reputation that draws people from around the county or even from overseas. Focus group participants identified areas to identify some of the icon areas for gamefish species in New Zealand. These prime gamefish locations are listed in Table 11.

Competitions

Fishing tournaments are an important aspect of gamefishing. Competitions underpin the financial viability of a number of clubs.

Because the competition rules define the fishing practices, fishing practices in tournaments may differ from normal fishing practices. For example anglers are more likely to target larger trophy fish in a competition. Anglers may fish for longer or shorter period (depending on the rules) than they do normally, the fishing is likely to be more intense, and fishers are also likely to fish more extreme conditions. Some fishers spoke of a greater level of planning going into the preparation for competitions, such as a more critical review and check of equipment and choice of crew.

Tag and release has become an important part of tournament fishing; for example one Napier tournament has five times as many prizes for tagged marlin as it does for landed marlin. Tagging is likely to be more prevalent during competitions because of the scoring system and prizes encourage tag and release, and marlin weighing less than 90 kgs are disqualified. Tagging is also likely to increase because of the possibility of losing a gamefish along side the boat. It appears to be a common practice to tag the fish as soon as it comes close to the boat so that if the decision is made to keep the fish but it escapes the fish can still be claimed as a catch.

Changes in the fishery over the last two decades

All meetings identified a severe decline in the abundance in sharks, and attributed the change to the New Zealand commercial fishery for shark fins. The following comment from a fisher at the Gisborne meeting was typical of the comments at the meetings:

“You used to troll for a day, you could clearly see in the water at least six hammerheads. Now we are lucky to see a hammerhead once a month.”

Over the last two decades the gamefish resource in general was considered to be in decline particularly for tuna species and for kingfish. Conversely some fishers felt that the blue and striped marlin resource was likely to have increased since the introduction of the Billfish moratorium in the 1980s. The moratorium required marlin caught by commercial fishers to be released immediately.

A major change in the billfish fishery has been the switch from fishing predominantly with trolled baits (skip baits and swimmers) to trolling plastic skirted lures. Most of this change occurred in the late 1980s. Two main reasons are mentioned. The once reliable supply of kahawai bait diminished and as fishers accepted tag and release they could see that fish hooked deep after swallowing a bait were less likely to survive than lure caught fish hooked in the jaw.

The fishers at the meetings generally felt that over the last two decades, the ability of gamefishers to find fish had increased because of improved technology (e.g. reliability of engines, coverage of radio telephones, and weather forecasting predictions) and the development of new equipment (e.g. GPS and colour sounders).

Fishing vessel design had improved considerably allowing fishers to fish more extreme conditions, and increase the range and distance offshore they could fish. Particularly the development of the trailer-borne vessel has made a significant impact on gamefishing. As one fisher commented:

“Back in the 1970s you only went gamefishing on a charter vessel
– you didn’t think of doing it from your own boat.”

In most, but not all, meetings fishers believed the number of recreational vessels had increased over the last two decades.

Another change factor has been the improved knowledge of the gamefish species distribution and how to catch them in New Zealand. This knowledge has led to the identification of new fishing areas and fishing techniques (e.g. fishing for broadbill).

Constraints on gamefishing

In response to a hypothetical question about whether fishers would fish every day if they had a month off work in the height of the season, most fishers stated that the weather would be the major limiting factor stopping them fishing on any given day. Other factors were fuel costs and availability of crew. Increasing fuel costs would not stop fishing but would limit the activity to closer to port and/or limit the steaming time.

Distance fished offshore

At each meeting fishers were asked what percentage of their time they spent fishing outside of the Territorial Sea (TS). The distance fished off shore is likely to vary according to the species fished (for example fishers targeting blue marlin usually fish further offshore than when targeting striped marlin). Fishers at the West Coast meetings (Kaitia and New Plymouth) commented that they rarely fished (5 – 10 percent of the time) outside the TS. At the other extreme fishers at Whakatane, Hamilton and Napier fished at least 70% of their time outside of the TS. Fishers at the Auckland and Gisborne meetings stated that about half their time was spent fishing outside the TS.

Catch rates

Fishers were asked what factor influenced their catch rates. Three sets of factors were identified:

- 1. Physical conditions:** Weather and currents (with associated temperature and water colour) are the most significant factors affecting catch rates. A related factor was the availability of bait.
- 2. Equipment:** GPS, colour sounders, temperature gauges, and computers/internet with access to SST information has likely improved fishers catch rates, as has improved vessel design.
- 3. Individual experience and skill:** All the meetings identified that there was no substitute for time at sea to improve an individual’s catch rate. The make up of the crew was also mentioned as a catch rate factor at some meetings.

A factor influencing catch rate mentioned at some meetings was the commercial fishing activity in the immediate fishing area (particularly longliners and purse seiners). Also

mentioned was the impact elsewhere in the South Pacific of commercial fishing fleets targeting the tuna and marlin stocks as the fish migrated down to New Zealand.

Information sources and maintaining up to date knowledge about gamefishing.

All the meetings identified word of mouth contact (either by face to face or by VHF radio) as the most important information source. Other sources identified were magazines and books. The type of information source used may be influenced by the urgency of information need. Face to face communication provides immediate information, magazines/newsletter provided information on a regular (fortnightly /monthly) basis; books were used largely for historical information or a more comprehensive account than in magazines/newsletters. Magazines/newsletters were more likely to be used to keep the reader 'up-to-date' on issues. One fisher described the different communication channels as word of mouth providing 'where to' information and the magazines providing 'how to' information. Books were more often kept as reference materials where as magazines were usually discarded after a month or two

Magazines were considered by some to be a better 'more authoritative' source because the writers were fishers and knew they would be censured by readers if they provided misinformation. Whether or not newspaper articles were of value depended on whether the writer was a known knowledgeable entity in recreational fishing circles.

Some of the participants at meetings considered tackle shop/gear manufacturer staff to be a good source of information because of their perceived contact with a large number of fishers and their knowledge of new products.

The internet was not a major information source. At one meeting six of fifteen fishers regularly used the internet for fishing information, but at most meetings only one or two fishers stated they regularly used the internet. At least one participant at most meetings mentioned that they use the internet to get sea surface temperature (SST) information.

A second use of the internet was for email/ 'chat room' contact (particularly with overseas fishers). At least one club has an internet based database of fisher's catches, areas fished and other information which members 'usually on a weekly basis' interrogate and update.

The low use of the internet is consistent with the results of another recreational fisher survey. Walshe and Akroyd (2001) surveyed fishers in the MFish North region and found less than six percent of the fishers regularly used the internet to source fishing information.

Video and television programmes were not considered important sources of information. The programme content was considered too general or did not always demonstrate 'best practice'.

Information requirements to manage the fishery

Participants at the meetings were asked what information (in addition to information currently available) was required to manage the fishery.

The most often stated information need (raised at five of the ten meetings) was where, and how much, of the gamefish species were being caught by commercial fishers. Mention was also made of the need to understand the factors that influenced the catch levels. Participants at the meetings considered information was needed on commercial catches in the New Zealand EEZ and also commercial catches elsewhere in the South Pacific. There was concern about the availability and transparency of the information from the Ministry of Fisheries.

At three of the meetings the need for better statistics on the economic value of the recreational fishery was identified. The relative value of the recreational sector and the commercial sector was discussed at six of the meetings. The general view was that the government's fisheries management policies were driven by the economic return a sector provided to New Zealand and that the economic and tourism value of the gamefish sector was underestimated. A related issue raised at two of the meetings was the need for information on the financial value of certain species to the commercial sector; this was linked to the idea that some species would provide a greater economic return to the country if the fish were recreational take species only.

Gamefisher support for maintaining catch and effort records

At eight of the ten meetings the issue was raised of anecdotal information provided by recreational fishers not being considered seriously by the Ministry of Fisheries. Fishers felt that their concerns fell on 'deaf ears' and that this led fishers to think there was no point in participating in fisheries management initiatives with the Ministry of Fisheries. Some fishers commented that this situation was one reason for the apathy in the recreational sector. Two examples (quoted at several meeting) of lack of Ministry response to gamefisher concerns were the alleged targeting of striped marlin inside the EEZ, and the targeting of broadbill.

Fishers stated that collecting more quantitative information would help. Three ways of improving the quality of gamefish information were suggested at the meetings:

1. Gamefisher logbooks

Log books and 'Fish Report Cards' had been used with limited success in three of the clubs where facilitation meeting were held. A number of fishers spoke of their experience with information programmes which had not worked. The major problems identified with introducing a log book programme were:

- the general apathy about keeping fishing records,
- the attitudes of fishers who saw going fishing as an escape from the bureaucracy elsewhere in their lives,
- Scepticism about whether the result would be worth the effort given the apparent lack of interest in recreational issues by the Ministry.

- The difficulty of developing an appropriate regional or national logbook, the distribution and maintenance of the records/database, and the professionalism of the analysis and reporting of the information collected.
- Concern about how the information would be used. At several meeting members felt that information given to the Ministry would find its way to the commercial sector – the problem of perception and objectivity by the Ministry was a theme raised at several meeting about a range of issues.
- Problems would occur with standardizing the effort data given the wide range of effort used in the fishery.
- The lack of administrative, analysis, and funding capabilities to support the programme.

Participants at the meetings cited different databases which are providing quality information for recreational fishers and were also of value to fisheries managers. The most often quoted example was the tag-and-release database of gamefish, the second example was the national records of gamefish recorded at weigh stations of clubs affiliated to the NZBGFC. A problem with the weigh stations however was that non-members did not present their catches for weighing – several meetings mentioned that this was a particular problem on the North Island's West Coast fishery. At the Auckland meeting several of the members discussed a club based electronic catch and fishing location database which allows them to input their catch and effort data and interrogate the database.

At several meeting the issue of lack of effort data was discussed; many gamefishers keep records of their catches but few fishers record the associated time fishing - especially days where there were no fish caught. One solution suggested was that gamefishers with diesel engine vessels usually keep a record of vessel hours and that this data may provide surrogate effort information.

2. Boat ramp and access point surveys

Two meetings suggested that the catch and effort data should be collected by independent surveys at boat ramps and other access points as is currently being done for a range of Ministry of Fisheries' marine recreational fisheries research projects. One point of opposition to such surveys was that the administration costs of such surveys might lead to licensing of recreational fishers.

3. Public perception surveys

One option for improving the quality of gamefishers' anecdotal information would be to combine the information with objective third party surveys of public perception. At the Auckland meeting the suggestion was made that surveys of the general public perception of recreational fisheries and fisheries management could provide a yardstick of public concern about fisheries management. One advantage of such surveys is that the

perception surveys would provide objective evidence of whether the anecdotal concerns of fishers needed to be addressed¹.

Management of the commercial fishery

Fishers were asked about their perceptions of the management of the commercial fishery as it impacted on the New Zealand gamefish fishery.

Overall the fishers view was that the pelagic fisheries were managed as a commercial fishery; government policy was focused on the export value of fish with little if any consideration for the recreational sector's needs. Several fishers claimed that evidence of this approach was seen in the Minister's allocation decision on Kahawai - an important bait fishery for gamefishers.

Three concerns about the commercial fishery management summarize the views expressed at the meetings.

1. Inability of the management regime to constrain catches to sustainable levels

At all meeting fishers spoke of the dramatic decline in sharks, and the inability of the management system to constrain the catch. A second group of concerns related to alleged targeting of broadbill using cyalume light sticks, and the potential for that fishery to be overfished. Concern was expressed about the flow on effect of the QMS; as the quota holders fish up to quota levels they would then target and displace increasing catch and effort into non-ITQ species.

2. Commercial quota allocation decisions made on inadequate data

When fishers were asked "What management information they needed to manage", fishers at almost all of the meetings replied that there was insufficient information on commercial catches of gamefish. A follow on comment at several meetings was that there was so little research information on gamefish (such as shark and tuna species) that sustainable TAC and allocation decisions could only be guesswork.

The inability of gamefishers to source information about the level of commercial gamefish catch appeared to be perceived as an indicator of the lack of transparency in the decision process and the inadequacy of data on which sustainability decisions were made.

3. Inadequate enforcement of the commercial fishery.

At all the meeting fishers expressed their concern at the inability of the Ministry of Fisheries to provide adequate at-sea enforcement and on-board observers. Examples cited were the targeting of broadbill which fisher understood was being managed as a by-catch species, the alleged fishing of striped marlin within the EEZ and the catch being landed in New Zealand under the guise of catch taken outside of the EEZ, and billfish catches being transshipped at sea to Australian vessels or New Zealand vessels landing New

¹ In fact public perception surveys of the state of marine fisheries management and recreational fisheries have been undertaken for several years on behalf of the Commission for the Environment (Hughey et al 2001, 2003^A, 2003^B, Kerr et al 2003).

Zealand waters catch into Australian ports. Whether these allegations are true or not there was a belief at every meeting that these breaches were occurring. A second factor was that fishers believed the Ministry was ignoring the recreational sectors concerns about the lack of enforcement and investigation of the issues.

A related comment was that even if New Zealand's quota management system could effectively constrain the commercial catch of gamefish, there was a major problem with targeted commercial fishing of migratory pelagic species throughout the South Pacific.

Management of the recreational gamefishery.

All meeting had a consistent view about the management of the recreational gamefish fishery. The management of the gamefish species was dominated by commercial fishing controls. However, recreational fishers consider their fishery to be adequately managed. Although the Ministry has bag limits and size limits on only one gamefish (kingfish), there are a wide range of voluntary size and bag limits in place introduced by the NZBGFC, individual clubs and charter operators. The most often quoted controls were the minimum weight limits (90 kgs minimum limit for marlin and 40 kg limit for shark).

For the gamefishers we spoke to, there appears to be a high level of voluntary compliance with the minimum limits. One factor in this voluntary compliance seems to be the effectiveness of peer pressure in the gamefishing sector. For example at a number of meetings fishers spoke about how tag and release had become a norm in the fishery and maintained by peer pressure. Peer pressure was also mentioned in comments about the reduction in wastage in the recreational sector – the recent reduction in the practice of dumping sharks was an often quoted example.

When asked about what improvements were need in the recreational gamefish fishery the most common responses were:

- The recreational fishery can not be seen in isolation from the commercial fishery. If the commercial fishery (inside and outside New Zealand's waters) are not effectively managed and/or commercial fishers do not fish within sustainable limits, conservation and good practice within the recreational fishery is worthless.
- The gamefish fishery needs to establish survey methods that establish accurate estimates of the catch/effort/and financial benefit to the country of gamefishing. In parallel with this, accurate information about the level of catch and effort and financial benefit of gamefish species in the commercial sector needs to be provided to the recreational fishing sector.
- At two meetings the concept of 'recreational catch only' species was suggested i.e. where a species will generate a greater net revenue to the country if it is fished solely by recreational/tourist fishers, then commercial landing should be banned.

DESCRIPTION OF FISHERIES

Species group: TUNA

Gamefishers in different parts of New Zealand target four species of tuna, and take a number of other species as bycatch or occasional target. The main target species are yellowfin, albacore, and skipjack, while small numbers of bigeye and bluefin tuna (southern and Pacific) and slender tuna are caught as target or bycatch species.

Yellowfin tuna (*Thunnus albacares*)

Yellowfin is an important target species for food and sport, particularly in the Bay of Plenty and as far south as Hawke Bay on the North Island east coast. It is also a major bycatch species from the Bay of Plenty north and on the west coast of the North Island as far south as Kawhia. Club catch records from 1999–00 to 2003–04 list a wide range of popular locations as producing yellowfin from North Cape, Stevenson Island, Bay of Islands, Poor Knights to Waihou Bay, Whale Island and Mayor Island (Table 6).

Yellowfin catches are characterized by large fluctuations in abundance and size from year to year. Combined catch records of clubs affiliated to NZBGFC show over 2000 yellowfin landed per season in between 1994–95 and 1996–97 (Figure 1). Anecdotal information suggests that many more yellowfin are landed by non members or do not qualify to be weighed because they are ruled “underweight” considering the tackle used in capture. On average 1217 yellowfin are recorded as landed per year in club records over the last 11 years with a further 67 per year tagged and released. Yellowfin were not officially part of the tag and release programme until 2001/02.

In productive years the first yellowfin are caught in the Bay of Plenty in November or early December and the season runs into March (Figure 9). The early season yellowfin are often large fish of 50-60kg, with more abundant “school” tuna of 15-30kg fish moving inshore several weeks after the first arrivals. The season off Gisborne and Hawke Bay is shorter, commencing later and ending earlier, generally around the end of February, depending on water temperature. Off east and west Northland, although the catch is generally more sporadic and mostly a bycatch of the billfish fishery, the season is longer, commencing in December and lasting through April. From Kaipara south to Kawhia, the season is shorter, running from January through March.

Except in the eastern Bay of Plenty, the predominant method is trolled lures. However, when the tuna form “meatballs” of anchovy, pilchard and other bait fish in the eastern Bay of Plenty, yellowfin are targeted by various methods including live bait, cubing – in which cut baits are drifted into the meatballs – spinning and jigging are all common methods. In this situation, where the tuna are closely aggregated, multiple hookups and captures are common.

Albacore (*Thunnus alalunga*)

Albacore is an important target species on the whole west coast of both North and South Islands, as well as off the east coast of the North island from the Bay of Plenty to Wairarapa and the northern east coast of the South Island. Club records list Castle Point,

and Jackson Bay as key areas (Table 6). Large albacore (10-20kg in weight) are targeted with trolled lures in these areas. They are pursued both for food and sport. Small albacore are commonly caught for bait or as a bycatch off the northern coast of the North Island. These are predominantly juvenile fish of 1-3kg.

Combined catch records of clubs affiliated to NZBGFC show relatively stable annual catches of albacore, between 500 and 1000 fish (Figure 1). Anecdotal information also suggests that many more albacore are landed but not weighed at clubs. On average 734 albacore per year are recorded as landed in club records over the last 11 years. Fishers have been actively discouraged from tagging albacore with the large gamefish tags issued in New Zealand.

The recreational season for albacore is from November to May with peak catches in February and March according to NZBGFC records (Figure 9). The seasonality of landing may reflect the amount of fishing effort rather than availability. Small numbers of 10-20kg albacore are caught in April/May off east Northland, but these fish are a bycatch of the billfish fishery. Numerically, the recreational catch of small tunas, albacore and skipjack, may be greater than all other gamefish species in New Zealand.

Skipjack (*Katsuwonus pelamis*)

Skipjack is important as a light tackle sport fish and for bait. It is available throughout the summer and autumn, ranging south as far as the lower North Island on both coasts. Club records list Castle Point, the Bay of Plenty and east Northland locations as important (Table 6). Abundance of skipjack is variable between years and although most fish are between 1 and 3kg, individuals are frequently caught up to 10kg or more in weight. Skipjack are less important for food than the other tunas caught in New Zealand. Most are utilized for live bait in billfish fishing, or as cut bait for bottom species. As such, target fishing for skipjack is wherever they are abundant using heavy gear for their size (handlines and paravanes) so most skipjack do not qualify to be weighed or recorded by gamefish clubs, although the numbers recorded have increased since the 1995 (Figure 1).

On average 365 skipjack per year are recorded as landed in club records over the last 11 years. Fishers have been actively discouraged from tagging skipjack with the large gamefish tags issued in New Zealand. As with albacore, skipjack are generally landed from December through to May but are known to be present in northern New Zealand for much of the year (Figure 9). Unlike the other tunas, skipjack are often encountered in surface schools which are highly visible. In these circumstances, they are often targeted only until immediate or anticipated bait requirements are met.

Southern bluefin (*Thunnus maccoyii*)

Southern bluefin tuna have been targeted off Fiordland. Catches have largely comprised juvenile fish taken on trolled lures close to shore. However, in recent years a small winter fishery for large fish has been developed off Westland. These tuna are targeted using lures and bait, and fishing takes place offshore among the hoki trawl fleet, where tuna aggregate to feed on the offal dumped from the trawl vessels. These large adult fish are prized catches, often well in excess of 100kg in weight, although at this time the numbers

caught are small. It is anticipated that the recreational fishery in this area may expand if the fishery proves to be regular enough. Very small numbers of southern bluefin have also been taken by recreational fishers in the eastern Bay of Plenty, as a bycatch in the yellowfin/billfish troll fishery. New Zealand anglers hold a number of IGFA world records including the three heaviest fish and the all tackle record of 158 kg caught in the Bay of Plenty in 1981.

Bigeye (*Thunnus obesus*)

Small numbers of bigeye tuna are taken as a bycatch of the tuna troll fishery in the Bay of Plenty, of the billfish troll fishery off Northland, and of the night fishery for swordfish off Northland. Targeting of bigeye is difficult because these fish spend limited time at the surface whereas anglers mostly troll surface lures and baits. The catches of bigeye mainly occur from January through April (Figure 9). Five bigeye tuna per season have been recorded in club records on average over the last 5 years.

Pacific Bluefin (*Thunnus orientalis*)

Pacific bluefin tuna are a rare bycatch in northern waters, usually taken on baits set for swordfish or trolled lures. Identification of some historical catches of large tunas by recreational fishers in New Zealand is problematic. However, the size of some tuna in the records indicates that they are too large to be southern bluefin, and several positive identifications of *T. orientalis* in recent years indicates that these catches were almost certainly of that species. As with southern bluefin, a recent development in the recreational fishery is the targeting of bluefin tunas behind the hoki boats off the South Island West Coast. Reportedly pacific bluefin are targeted (see section on southern bluefin above).

Species group: BILLFISH

Five species of billfish are commonly caught by New Zealand anglers. These are striped marlin, blue marlin, black marlin, shortbill spearfish and swordfish. The main target fisheries exist for striped marlin, blue marlin and swordfish.

Striped marlin (*Tetrapturus audax*)

New Zealand has an international reputation for striped marlin fishing, with the largest striped marlin in the world. Virtually all of the line-class world records are held in New Zealand, and a charter fishery has existed since the 1920's. Striped marlin are targeted around the North Island from Taranaki on the west coast to Poverty Bay on the east coast. However, the most concentrated effort is expended off Northland, including the banks around the Three Kings Islands. The Three Kings area has been developed as a relatively recent fishery, since the mid-1980's, and now contributes over half of the national catch of striped marlin. It is accessed by long-distance charter and private vessels operating out of east Northland ports. The traditional base of the striped marlin fishery (east Northland from Tutukaka in the south to North Cape in the north) continues to be a major fishing ground (Table 7). The west coast of Northland, from Ahipara to Kaipara Harbour and further south, is a fast-developing trailer boat fishery accessed from the west coast harbours or directly off the beach in suitable conditions. The west coast fishery is less

consistent than the east coast fishery, and more subject to adverse weather conditions due to the lack of all-weather access. However, in years when the conditions allow, catch rates are superior to those on the east coast, and the mean size of striped marlin caught is also larger.

Catches of striped marlin further south are highly variable from year to year. Historically, very good catches were made in the western Bay of Plenty but generally in recent years the striped marlin fishery has been overshadowed by the tuna fishery. In the 2001 billfish economic survey it was estimated that 93% of striped marlin caught by recreational fishers are recorded in club records. Combined catch records of clubs affiliated to NZBGFC show a relatively stable and slightly declining trend in striped marlin landed catch over the last 11 seasons (Figure 1). The annual average in these records is 600 striped marlin landed per year. The majority of striped marlin are tagged and released. The number tagged per season is more variable than the landed catch, peaking at 1526 in 1998–99 and was lowest at 671 in 2002–03 (Figure 3). On average 990 striped marlin are tagged and released per year over the last 11 seasons.

The fishing season varies according to latitude south. It ranges from January through June in the far north, from January through April/May off east and west Northland, from January through March for the Bay of Plenty, and is restricted to the warmest part of the summer months further south. Nationally the peak catches have been in February and March (Figure 10). In particularly warm years, striped marlin have been caught off the South Island as far south as Jackson Bay, West Coast (44° S) but such catches are extremely rare.

The main fishing method is trolled lures, although a minority of anglers prefer to slow-troll live baits, or alternatively use a method known as “tease and switch”, where lures are trolled until a marlin is attracted, then a live or dead bait is presented to the fish. Regardless of the fishing method, around 65% of striped marlin are tagged and released. The remainder are landed and utilized for food.

Striped marlin are caught from shallow coastal waters of 50 metres or less, out to depths of in excess of 2000 metres. Most fishing occurs within 25 nautical miles of shore. Water colour and temperature are regarded as important factors influencing the distribution of striped marlin. Areas of importance to participants in the focus group meeting are given in Table 11. In New Zealand sea surface temperatures between 20 and 23° C are believed to be ideal for this species (Holdsworth and Kopf 2005).

Blue marlin (*Makaira nigricans*)

The catch of blue marlin, while much less than striped marlin, is important because of the greater size of the individual fish. Blue marlin are a highly migratory, oceanic species, which are targeted further offshore than striped marlin. Most blue marlin caught by New Zealand anglers are taken between East Cape and the Three Kings Islands. A noted “hot spot” is located out from Waihou Bay in most years (Table 7). The season is restricted to the time when the water temperatures are at their warmest – generally between late January and the end of March (Figure 10). Blue marlin are seldom found in the coastal

blue/green waters, regardless of temperature, preferring the deep blue offshore environment. Most catches of this species are made in water deeper than 200m. Most blue marlin are taken on trolled lures.

Combined catch records of clubs affiliated to NZBGFC show a significant increase in blue marlin landed catch which peaked at 234 fish in 1999–00 and has declined since (Figure 2). The annual average in these records is 82 blue marlin landed per year. The number tagged per season shows a similar trend, peaking at 52 in 1999–00 (Figure 4). On average 17 blue marlin are tagged and released in New Zealand waters per year.

The catch of blue marlin has increased considerably since the advent of lure fishing in the 1980's. This is believed to be mainly due to the fact that vessels are venturing further offshore since that time. This in turn is due to the greater speed of lure fishing compared to trolling baits (6-10kn as opposed to 3-5kn) which allows a much greater distance to be covered in a fishing day. Also, the knowledge that blue marlin are more abundant offshore entices more effort to be expended in deep water, particularly during contests, where the biggest prizes are generally allocated to the largest fish caught.

Black marlin (*Makaira indica*)

Black marlin have formed a small proportion of the recreational catch since the inception of the gamefish fishery in the 1920s. This is because, unlike blue marlin, black marlin tend to be found in shallow water, over reefs close to shore. While this implies that they are more available to anglers, the proportion of black marlin in the recreational catch has decreased over time. It is believed that the same factors that have increased the blue marlin catch – namely lure fishing and the tendency to fish further offshore – have served to decrease the black marlin catch by removing effort from the areas where they are most abundant. Even so, the large size attained by black marlin, and their relative scarcity, make them particularly prized catches in New Zealand waters.

Combined catch records of clubs affiliated to NZBGFC show few black marlin landed catch over the last 11 years. The annual average is 9 black marlin landed per year and just one tagged and released per year. Black marlin have a much wider temperature tolerance than blue marlin. Consequently, they may be caught over a more prolonged season, from December to May (Figure 10). Black marlin are often caught on live baits fished over reefs, as well as on trolled lures. However, they are seldom targeted in New Zealand waters.

Shortbill spearfish (*Tetrapturus angustirostris*)

The shortbill spearfish is smaller than other billfish in New Zealand (mean weight 20 kg, s.d. 5.0 kg). It is a bycatch species that is quite commonly caught when targeting marlin or tuna, predominantly on the east coast of the North Island south to East Cape. It is a species that frequents deep water like the blue marlin, and like that species is generally caught in depths greater than 200 metres. Spearfish are almost exclusively caught on lures.

The number landed per season varies from 16 to 87 according to NZBGFC records, with an average of 40 per year (Figure 2). Nine a year are tagged and released on average,

though as yet no recaptures have been reported. In eastern Northland, shortbill spearfish are most commonly caught early in the season, in December or January, with catches peaking in February, but may occur at any time until April (Figure 10). A number of IGFA line class world records are held by New Zealand anglers including the four heaviest fish and all-tackle record of 33.8 kg.

Swordfish (*Xiphias gladius*)

In recent years, recreational catches of swordfish have increased due to the discovery of new grounds and the adoption of new fishing methods. Night fishing with chemical light sticks, using live or dead baits and also slow-trolled lures, has seen the establishment of a target fishery that has seen world record-sized swordfish landed and international attention focused on the New Zealand recreational fishery. Of 85 swordfish in club records in recent years the average weight was 164 kg (s.d. 68.1).

Swordfish are known to exist right around New Zealand, and recreational catches have been made all around the North Island. However, the majority of catches have been achieved up to 50 nautical miles off east Northland and within 50 nautical miles of the Three Kings Islands (Table 7). Fishing effort is targeted on offshore sea mounts, canyons and reefs. Most fishing takes place at night, during the months of January through June with catches peaking in May (Figure 10). Swordfish have also been caught during the day, both after being sighted on the surface and by an alternative method, deep drifting baits at depths of up to 500 metres. This latter method was responsible in 2004 for the catch of the current 37kg line class world record swordfish, which weighed 369kg.

The number landed per season has increased since the mid 1990s according to NZBGFC records, with an average of 17 per year (Figure 2). Two a year are tagged and released on average. Some small swordfish were tagged and released from commercial vessels and two recaptures have been reported. Although relatively small in comparison to the striped marlin catch, the catch of such record sized swordfish in New Zealand is of great significance internationally. There are few places in the world where swordfish of this size may still be successfully targeted. The developing swordfish fishery would therefore rank above other billfish fisheries in New Zealand, apart from the long-established striped marlin fishery.

Species group: SHARK

New Zealand anglers target at least four species of large shark, and take another four species as bycatch. Sharks are primarily targeted in areas where other gamefish are either scarce, present over a very restricted season, or not present at all. Sharks are also targeted in special circumstances, such as in contests, where prizes might be available. Secondly, individual sharks might be targeted on an opportunistic basis; for example, if a large shark was seen on the surface an attempt might be made to catch it, even if the anglers were actively pursuing other species at the time. Areas of importance to shark fishers at the focus group meetings are listed in Table 11.

Regardless of whether sharks are target species or bycatch, the vast majority are tagged and released, or simply released. Catch tallies are therefore likely to underestimate the actual recreational catch of sharks.

Mako shark (*Isurus oxyrinchus*)

Mako sharks are a significant species for New Zealand anglers, who hold four current world records. Large, predominantly female mako sharks are taken quite regularly throughout the fishery. Over the past forty years, a mako was the heaviest gamefish recorded annually in New Zealand on nineteen occasions, the largest weighing 489kg.

Mako sharks are found all around New Zealand but are more abundant off the North Island. Club records list the Three Kings area, Poor Knights, North Cape and Otago Heads as important areas (Table 8). Small numbers of mako are found off the North Island all year round, although the co-operative gamefish tagging programme has demonstrated seasonal movements towards the Equator by considerable numbers of this species. The period of peak abundance is similar to that for striped marlin; with a peak in summer and autumn in the north, and a restricted summer season south of East Cape and Kawhia (Figure 11).

Makos are targeted by small numbers of anglers throughout the fishery, but most importantly on the east coast of the North Island from Poverty Bay to the Wairarapa coast. From the Bay of Plenty northwards, mako form a sometimes substantial bycatch in the billfish and tuna fisheries. However, this bycatch has decreased very substantially over the past five years (Figure 1). The landed catch reported by clubs peaked at 455 in 1997–98 and had declined to 82 in 2003–04. The annual average is 273 mako sharks landed per season. The majority of mako caught by recreational anglers are released, and often tagged. The number tagged per season has also shown a steady decline, peaking at 1529 in 1994–95 and was lowest at 185 in 2003–04 (Figure 3). Over the last 11 seasons an average 633 mako sharks are tagged and released per season.

Target methods are use of live and dead baits, while the majority of bycatch is made on trolled lures. Mako can also be a substantial and often problematic bycatch of the night fishery for swordfish, and sometimes prey on hooked swordfish before they can be boated.

Blue shark (*Prionace glauca*)

Blue sharks are primarily targeted off the lower North Island east coast from Poverty Bay south, and off Otago Heads (Table 8). The latter fishery accounts for the vast majority of blue shark caught annually, the catch being made almost exclusively in February, and almost all are tagged and released (Figures 8 and 11). Small numbers of blue sharks are taken as bycatch or in contests in the north, but abundance of this species has fallen markedly in the last 10 years according to anglers and club records (Figure 2). The landed catch reported by clubs peaked at 235 in 1994–95 and had declined to 20 in 2003–04. The annual average is 107 blue sharks landed per year. The majority of blue sharks caught by recreational anglers are released, and often tagged. The number tagged per

season has also declined, peaking at 721 in 1997–98 and was lowest at 78 in 2002–03 (Figure 3). On average 244 blue sharks are tagged and released per year.

The target method is to use dead or live baits in association with burley, while drifting. New Zealand anglers hold four world line class records for this species.

Hammerhead shark (*Sphyrna spp.*)

Hammerhead sharks have formed a small part of the recreational catch since the inception of gamefishing. However, hammerheads are targeted less actively than either mako or blue sharks. Targeting occurs mostly in contests. Target methods include presenting a dead or live bait to a hammerhead seen swimming at the surface. Bycatch primarily occurs while live-baiting for billfish. Hammerhead sharks are present around the North Island – but much more common in the north - in summer and autumn (Figure 11). The numbers landed and recorded by clubs have been relatively consistent between seasons but also have been declining from 57 in 1993–04 to 12 in 2003–04 (Figure 2). The average landed catch per season over this time has been 40 while the number tagged averaged 13 per season.

Bronze whaler (*Carcharhinus brachyurus*)

The IGFA recognizes whaler sharks as a group, due to the difficulties of species identification. It is likely that New Zealand anglers catch more than one species as other whaler sharks are known to be present in coastal waters over the peak SST period of late summer/Autumn (Figure 11). However, *C. brachyurus* is present year-round and the term bronze whaler is generally applied to all whaler shark captures by anglers. *C. brachyurus* is abundant in summer/autumn in most northern harbours, making it very accessible to anglers in the smallest of boats (Table 8). This allows targeting to take place, but this is generally only the case when bad weather prevents vessels from putting to sea after more attractive species. The species grows to substantial size, of 300 kg or more.

The season reflects the peak of gamefish fishing effort in summer and autumn. The landed catch of bronze whalers has been stable with a peak of 32 in 2002–03 and an average of 24 per season (Table 2). The number tagged is increasing with a peak in 2003–04 of 32 and an average of 13 per season.

Thresher shark (*Alopias spp.*)

At least two species of thresher shark are caught by New Zealand anglers but all records are grouped together. Threshers form part of the shark fishery off Otago Heads and are a bycatch, mostly in the marlin and swordfish fisheries, but are valued because they often reach a very large size. New Zealand anglers hold world records for the five heaviest thresher sharks, all over 300 kg, including the all-tackle record of 363 kg. Thresher sharks are distributed throughout New Zealand waters and smaller specimens are commonly found in shallow inshore waters in the vicinity of baitfish schools such as pilchards, anchovy and mackerel. The larger individuals are generally captured in deep water. The season reflects fishing effort in the billfish fisheries but threshers have been landed throughout the year (Figure 11). The landed catch of thresher sharks has been

relatively stable with a peak of 18 in 2000–01 and an average of 10 per season (Table 3). The number tagged and release averages seven per season.

Porbeagle (*Lamna nasus*)

The porbeagle, a southern species that is caught off the South Island and lower North Island, is largely a bycatch of the blue shark fishery off Otago Heads. New Zealand anglers hold two world records for this species both for fish about 60 kg caught on light line (3 kg and 6 kg). The largest porbeagle are found in the north Atlantic, including the all-tackle record of 230 kg. Porbeagle sharks listed in the NZBGFC records were caught between December and June with catch peaking in the southern fishery in February (Figure 11). As with other sharks they are most often caught when drifting with berley and dead or live baits. In 2000–01 catch peaked with 28 porbeagles landed and 41 tagged. Just one was landed (Table 3) and none tagged and released in 2003–04.

White pointer (*Carcharodon carcharias*)

White sharks are seldom caught by anglers in New Zealand waters and have not been targeted except in the Kaipara and Manukau harbours, from which all the existing line class records were caught. White sharks enter these harbours in summer, reportedly to feed on school sharks. The largest white shark taken on rod and reel in New Zealand was a 263kg specimen caught in the Manukau Harbour in February 2003. There have been four white pointers caught on rod and reel and tagged in the last 11 years. NZBGFC annual records do not list white pointers. The all-tackle record for a white shark caught on rod and reel was caught in South Australia in 1959 and weighed 1208 kg.

Tiger shark (*Galleocerdo cuvier*)

Tiger sharks are an extremely rare bycatch in the billfish fishery. The largest on record weighed 429 kg and was caught near Mayor Island in 1963. Another weighing 376 kg was caught off Cape Karikari in March 2004.

Species group: KINGFISH and OTHERS

Yellowtail kingfish (*Seriola lalandi*)

The yellowtail kingfish is New Zealand's premier small gamefish species. New Zealand has a reputation for the largest yellowtail in the world, and 21 of 22 world records are held by New Zealand anglers (the woman's 1kg line class record was caught in Australia). The all-tackle record is shared by two Bay of Plenty anglers who caught 52 kg specimens in 1984 and 1987. New Zealand records are held by anglers from almost all parts of the geographic extent of the fishery from Gisborne to the Middlesex Bank.

Yellowtail are widely distributed around the North Island and also occur at the top of the South Island in summer. They occur inside harbours, at harbour mouths, near exposed headlands and offshore islands, and over isolated reefs offshore. The season from East Cape north reflects fishing effort rather than availability. There are varying seasonal peaks in effort in different geographic locations that reflect in part the availability of other, larger species. Thus, in Northland the peak season tends to be autumn and winter,

when the migratory species have largely deserted coastal waters. In Cook Strait, yellowtail are encountered only in summer. From East Cape to Hawke Bay, most fishing occurs in summer also.

In the Bay of Plenty there are a number of “hot spots” of yellowtail abundance that are of considerable importance to the charter and recreational fisheries. These in particular include White Island, Volkner Rocks, and their associated reef systems where tag and release over many years has shown extremely limited inward and outward migration, and many multiple recaptures/releases of individual fish. It is worth noting that a large proportion of kingfish tagged and released in the White Island area do not get captured in the club records used in Table 6 and Figure 6. The eastern Bay of Plenty “season” runs from October through March, a period that has been promoted by the local charter fleet. Fishing trips are often made that target kingfish in association with other species such as hapuku, bass and bluenose. In recent years the Ranfurly Banks, off East Cape, have proven to be a newer location for large yellowtail, accessed by large charter vessels from Whakatane and Tauranga in particular. Also in the Bay of Plenty areas like the penguin shoals off Tauranga and Mayor Island feature in catch records (Table 6). The Cavalli Islands, Cape Brett and nearby Bird Rock and Waiwiri rock also feature along with areas in the far North and around the Three Kings Islands including the King Bank and Middlesex Bank are all important recreational fishing locations (Table 6). On the west coast Gannet Island off Raglan and Kapiti Island are important locations.

Combined catch records of clubs affiliated to NZBGFC show that kingfish reported landings have been quite consistent from one year to the next but have nearly halved over the last 10 years (from 995 in 1994–95 to 508 in 2003–04) (Figure 1). Anecdotal information suggests that many more kingfish are landed by non members or are not weighed in by club members. On average 752 kingfish are recorded as landed per year in club records over the last 11 years with a further 696 per year tagged and released. There was a decline in the number of kingfish tagged in the mid 1990s which resulted from a change in the objectives of the tagging programme. Annual tag tallies for kingfish have been stable for the last 5 years (Figure 3)

Methods for targeting yellowtail are many and varied. In the eastern Bay of Plenty many anglers favour weighted lines with live or dead baits, fished at depths of up to 150 metres. Throughout the fishery, live baits of various sorts are used and may be slow-trolled or drifted at shallow or medium depths. Jigging with a wide variety of metal lures is another widely-employed method. Trolled lures, either on the surface or deep-swimming types, are also commonly used. Live baits are sometimes slow-trolled off downriggers. Dead baits such as piper and pilchards are cast and retrieved or allowed to sink over reef systems. Even cut baits are successful in many areas, especially for smaller fish.

Many fishing clubs and some charter boat associations have adopted personal and boat limits that are more restrictive than the national bag and size limits. Charter vessels working the White Island area impose a bag limit of one yellowtail per day on their customers, and many clubs have a minimum size of one metre rather than the minimum legal size of 75cm. The Bay of Islands Swordfish Club allows anglers fishing its

International Tournament a personal limit of two fish per day and a boat limit of six, as opposed to the national bag limit of three per person.

Other species

Three other species occur as a notable bycatch. The most common of these is the mahimahi, *Coryphaena hippurus*, which in unusually warm seasons is a regular incidental catch in the billfish troll fishery. New Zealand mahimahi are generally small, ranging from 2-10kg. Mahimahi are highly valued for food but their abundance is uncertain and irregular.

The wahoo, *Acanthocybium solandri*, is an occasional visitor to northern New Zealand waters by anglers in warmer than average seasons such as 1999 (Table 3). Most are relatively small, around 10-15kg, although the New Zealand record is 40kg. Wahoo are taken as bycatch on trolled lures.

Slender tuna, *Allothunnus fallai*, has been taken by gamefishers on the South Island east coast, Wairarapa and occasionally in the Bay of Plenty. Twenty three were weighed by clubs in 2000–01 (Table 3).

GAMEFISHER POPULATION

Focus Groups

Focus group participants were generally experienced or keen gamefishers with good local knowledge. They commented on nine statements about the reasons why they go gamefishing. All statements produced positive scores. The most important were related to the adventure and excitement aspects of gamefishing, being outdoors/experiencing natural surroundings and new/different things, and comradeship.

Participants commented on six statements about the relevance of gamefishing to them. The highest scoring statement was ‘I’m just as happy if I release the gamefish I catch’ suggesting that although catching fish is important, landing them is not. Although the ‘experience of the catch’ was the second highest scoring statement, the third and fifth highest scoring statements (‘a gamefishing trip can be successful even if no fish are caught’ and ‘A gamefishing trip can be successful even if no fish are caught’), suggest that there are a number of factors (apart from catching fish) that make up a successful days fishing.

Most participants had more than 10 years general fishing experience and more than 5 years gamefishing. Few (15%) of the focus group members began their fishing history as gamefishers. Most of the participants were between 36 and 65 years of age with over a third in the 46 to 55 age class (Table 12).

Billfishers

During the summer of 2001 a survey of recreational fishers who were targeting billfish was undertaken to estimate the economic contribution of the billfish fishery in New

Zealand. Face to face and telephone interviews were conducted on one crew member per vessel selected at random. Respondents were asked a number of questions that provide a useful picture of the demographics of billfish fishers. It was found that billfishers are overwhelmingly male and aged in their 30's, 40's and 50s (Figure 12). Over 90% of respondents were male (Boyd et al 2002).

Figure 13 breaks down respondents by income category. Overall, billfishers fell into the higher income categories with two thirds of all billfishers having annual personal gross incomes of \$40,000 or higher. Nearly a quarter of billfishers had annual incomes of \$80,000 or more (Boyd et al 2002).

The main occupational groups of respondent billfishers is shown in Figure 11. Nearly 60% of respondents fell into the professional/technical/self employed categories. This is consistent with the high average incomes in Figure 9.

Overall, the demographic survey results show that billfish fishers are predominantly males aged 30 to 50 and relatively well off and are more likely than not to be self employed or working as executives or professionals.

The 1999-2000 national recreational harvest survey recruited 3700 diarist to record their marine fishing activity for a year. Only 7 billfish were reported by these fishers, 3 by females and 4 by males all aged between 35 and 65 years old with the mode in the early 50s (Table 13).

Tuna fishers

To some degree there is extensive overlap between tuna fishers and billfish fishers and tuna fishers especially North of Auckland. Diarists in the 1999-2000 national recreational harvest survey reported catching 56 tuna of various species spread through 6 FMAs. Seventeen percent of reports came from females and the age spread of the genders combined was 25 years to 60 years old with a mode in the late 30s (Table 14)

Shark fishers

The gamefish shark catch by diarists in the 1999-2000 national recreational harvest survey is spread over 6 FMAs and a wide age group 20 to 70 years old with a mode around 40 years (Table 15). There were 43 game sharks reported with 28% taken by females.

Kingfish fishers

More diarists reported catching kingfish than any other gamefish species in the 1999-2000 national recreational harvest survey. A total of 259 kingfish were reported with 203 coming from FMA1. There was a wide spread of age group involved from 15 to 70 years old. This may in part be due to the larger sample size with this species. The mode was at the early 40s age group (Table 16).

Europeans were the majority ethnic group catching gamefish according to the 1999-2000 national recreational harvest survey, followed by Maori. Over one third of billfishers in 2001 said they had less than 5 years experience in the fishery while 23 % said that they had 15 years of experience or more.

10. Discussion

New Zealanders generally have good access to a marine or fresh water recreational fishery. The quality of some of these fisheries has an international reputation as world class. The deep sea gamefish experience can be expensive. International tourists may pay a considerable amount on airfares, accommodation and charter fees and fish for days or weeks to catch one special fish. However, many New Zealand fishers participate in deep sea fishing by adapting the gear that they have or by fishing with friends. Gamefishing is usually not a solo activity and teamwork between skipper, angler and deckie is required.

New Zealand has world class fisheries for some high profile gamefish species, notably striped marlin and yellowtail kingfish, but also New Zealand-caught fish hold significant IGFA world records for broadbill swordfish, shortbill spearfish, thresher shark, tope (school shark), blue shark, and southern bluefin tuna. The fishery for many of the pelagic species is seasonal, targeting areas and times that they occur in New Zealand waters. The main gamefish season runs from late December to April and focuses in the North Island on striped marlin, yellowfin tuna and mako shark. Kingfish and broadbill are available for more of the year and fishing for these species can extend the gamefish season well beyond the warmest months.

Yellowfin tuna is one of the most frequently landed gamefish, with a major target fishery in the Bay of Plenty. However, recreational catches fluctuate. For example the mid 1990s were very good (in excess of 2000 fish weighed in) and 2001–02 and 2002–03 were very poor (less than 300 fish weighed in nationally). While there were fewer yellowfin tuna caught from 1998–99 to 2000–01, the same period produced many more blue marlin for recreational fishers than usual (more than 170 per season landed and tagged). While warmer than usual water temperatures are generally regarded as good seasons for bringing migratory pelagic fish to New Zealand this is not always the case. The example above shows that even in warm years the abundance or availability of tuna and billfish may not show similar trends.

While gamefish clubs have quite complete records for the recreational catch of billfish many of the smaller tuna and kingfish do not qualify to for inclusion in club records, or the anglers choose not to weigh those fish. The national recreational harvest surveys probably give some idea of the proportions of each gamefish species caught, although the c.v.s are high. The 2000 survey estimated four times more yellowfin tuna than marlin were caught and four times more albacore than yellowfin were caught. The estimated number of kingfish was 33 times the number of marlin and over twice the number of albacore in the 2000 national survey.

Total number of gamefish landed or tagged in combined club records have decreased since the 1990s (Tables 2 and 4). This is due largely to a decline in the number of sharks caught and the poor seasons for yellowfin mentioned above.

All ten focus group meetings identified a severe decline in the abundance in sharks, and attributed the change to the year round operation of New Zealand surface longliners

catching and finning sharks. Over the last two decades participants felt that the gamefish resource in general was in decline particularly for tuna species and for kingfish. Conversely some fishers felt that the blue and striped marlin resource was likely to have increased since the introduction of the Billfish Moratorium in the 1980s. The moratorium required marlin caught by commercial fishers to be released immediately.

While gamefish clubs keep good records of recreational catch for the larger gamefish species, catch per unit effort (CPUE) information is harder to come by. There is a good time series of striped marlin CPUE from northland gamefish charter boats that starts in 1977. This has been collected using annual end of season postal surveys of charter skippers started by MAF and continued by the New Zealand Marine Research Foundation. The sample size is not large and catch and effort are averaged over the whole season, to give an average catch per day marlin fishing for each season. The results of this survey are detailed in the characterisation of the striped marlin fishery (Holdsworth and Kopf 2005).

The striped marlin CPUE series is useful because it spans the introduction of the Billfish Moratorium in 1987 but with the development of the fishery at the Three Kings it has proved harder to collect data just for the original area fished – east Northland. The Ministry of Fisheries is proposing to establish a gamefish logbook programme to collect more detailed catch and effort information for striped marlin and potentially other gamefish species (STM2005/01).

Some CPUE information was collected from a gamefish logbook scheme and interview surveys at fishing contests in the early 1990's but limited participation and high variability in the data meant the results were of limited value (Todd Sylvester, MFish pers. com.).

A number of New Zealand locations have an international reputation for world class fisheries. Probably the longest established is the Bay of Islands for striped marlin. More recently vessels have increased their fishing range and the King Bank and Middlesex Bank north of the Three Kings Islands have drawn fishers targeting striped marlin and swordfish from around the country and the world. Large kingfish can be found in many areas around the North Island but the fishery at White Island and Volkner Rocks has the best known reputation for consistently producing big kingfish. Marlin, tuna and sharks are highly mobile and their abundance in specific areas changes from year to year. Gamefishers are also mobile and tend to congregate in areas where there has been recent fishing success.

Focus group members did identify prime areas for catching particular species. Often fishers would identify the broad areas they fish rather than specific locations. A number of fishers in all areas stated that they fish outside the 12 nautical mile territorial limit, at times regularly. Often when fishing well offshore specific banks or seamounts are the destination. The Middlesex and King Bank, the 60 mile ground, garden patch, Poor Knights Rise, Rangatira Knoll and Ranfurly Bank are most often mentioned.

In 1989 Derek Shaw undertook a survey of gamefishers through club mailing lists. He found that most anglers were aged between 30 and 50 years old with an average age of 43. This is similar to the more recent surveys, as is the reported level of gamefishing experience, with over a third of anglers having less than 5 years experience and 30% with 15 years or more. Shaw also found that anglers with less experience tended to be younger, they fished fewer days during the season, spent less money, and had fewer gamefishing related assets (Shaw 1989). Shaw also estimated about 1000 overseas gamefish anglers fished in New Zealand in 1988/89. These anglers came mainly from Australia, Europe, Asia, and North America (Shaw 1990).

There is a broad mix of people involved in the gamefish fishery in New Zealand. Data collected to date suggests that the typical gamefisher is a middle aged male with an above average income. The survey of billfishers shows that participants were predominantly males aged 30 to 50 who are relatively well off, and are more likely than not to be self employed or working as executives or professionals. The demographics for tuna, shark and kingfish fishers from the national recreational harvest survey showed a broader range of participants from 15 to 70 years of age with up to 28% of fish caught by female anglers. Possibly more fishers find tuna and kingfish accessible even with trailer boats and minimal specialist tackle.

11. Acknowledgements

We wish to thank all the fishers that attended focus group meetings and contributed to an honest discussion of the issues raised. Peter Saul and Jo Akroyd also made a significant contribution to the focus group discussions and Peter has assisted in reviewing this report.

12. References

- Anon. (2004). Official year book of the New Zealand Big Game Fishing Council, 2004. Available from NZBGFC, PO Box 93, Whangarei, New Zealand. 144 p.
- Anon. (2005). 2005 World Record Game Fishes. Available from IGFA Dania Beach, Florida 33004, USA. 400 p.
- Boyd, R.; Holdsworth, J.; Saul, P. (2002). The economic contribution of the New Zealand recreational billfish fishery in 2000–2001. Unpublished report held by NZ Marine Research Foundation. 57 p.
- Boyd, R.; Reilly J.L. (2002). 1999/2000 National marine recreational fishing survey: harvest estimates. Final Research Report for Ministry of Fisheries Research Project REC9803. 28 p.
- Holdsworth, J.; Kopf, R.K. (2005). Characterisation of striped marlin fisheries in New Zealand. *New Zealand Fisheries Assessment Report 2005/31*. 63 p.
- Hughey, K.F.D.; Kerr, G.N.; et al. (2003). New Zealanders' perceptions of the state of marine fisheries and their management. IIFET 2003, Wellington, IIFET.
- Hughey, K.F.D., Cullen, R., Kerr, G.N., Cook, A. (2001). Perceptions of the State of New Zealand's Environment: Findings from the first biennial survey undertaken in 2000. Christchurch, Lincoln University.
- Hughey, K.F.D.; Kerr, G. N.; et al. (2003). New Zealanders' perceptions of the state of marine fisheries and their management, Environment, Society and Design Division, Lincoln University, New Zealand.
- Kerr, G.N.; Hughey, K.F.D.; et al. (2003). Marine Recreational Fishing: Perceptions and Contingent Behaviour. Commerce Division Discussion Paper No. 99. Christchurch, Lincoln University.: 21.
- Shaw, D.J. (1989). An Investigation of the Economic Importance, Characteristics and Other Factors of Big Game Fishing in NZ during the 1988-89 Fishing Season. D. J. Shaw & Associates. Rotorua
- Shaw, D.J. (1990). Overseas Anglers Big Game Fishing in New Zealand. D. J. Shaw & Associates. Rotorua
- Walshe, K.A.R.; Akroyd J.A. (2001). Recreational fishers' understanding of fisheries regulations in the upper north island. Final Report. Wellington, Ministry of Fisheries.

Table 2. NZBGFC national landed catch tallies for the main gamefish species by season, largest tallies sorted to the left, does not include tag and release.

Season	Yellowfin	Kingfish	Albacore	Striped marlin	Mako	Blue shark	Blue marlin	Hammer Head	Bronze whaler	Swordfish	Black marlin	Total
1993/94	996	645	703	663	220	96	41	57	30		3	3 454
1994/95	1 997	995	617	910	288	235	28	49	20	5	9	5 153
1995/96	2 187	862		705	424	198	40	44	22	8	7	4 497
1996/97	2 325	767	803	619	352	114	17	44	26	10	7	5 084
1997/98	1 268	927	993	543	455	177	76	47	29	12	10	4 537
1998/99	1 235	788	599	823	320	70	140	36	10	6	15	4 042
1999/00	1 085	752	453	398	338	79	234	50	24	27	24	3 464
2000/01	988	693	803	422	255	54	142	40	29	25	9	3 460
2001/02	262	628	576	430	155	100	112	39	20	22	8	2 352
2002/03	211	709	1005	495	109	30	26	24	32	17	3	2 661
2003/04	838	508	789	592	82	18	47	12	20	33	8	2 947
Total	13 392	8 274	7341	6 600	2 998	1 171	903	442	262	165	103	41 651

Table 3. NZBGFC national catch tallies for the recognised bycatch gamefish species by season, largest tallies sorted to the left, does not include tag and release.

Season	Skipjack	Mahi mahi	Shortbill spearfish	Porbeagle	Thresher	Tope	Wahoo	Slender Tuna	Big Eye	Total
1993/94		159	71		6					236
1994/95	48	83	87		14					232
1995/96	373	38	27		5		1			444
1996/97	138	2	16	9	9	9				183
1997/98	367	41	19	25	13	4				469
1998/99	236	103	62	14	11	5	35			466
1999/00	765	23	17	16	11	15	7	8	5	867
2000/01	702	96	28	28	18	7		5	3	887
2001/02	377	115	35	12	14	16		23	2	594
2002/03	167	39	41	18	9	25			8	307
2003/04	479	53	38	1	4	10		2	8	595
Total	3 652	752	441	123	114	91	43	38	26	5 280

Table 4. Gamefish tagging records by species by season in New Zealand waters, largest tallies sorted to the left.

Season	Striped marlin	Kingfish	Mako	Blue shark	Yellowfin	Blue marlin	Hammer head	Bronze whaler	Porbeagle	Shortbill spearfish	Thresher	Albacore	Swordfish	Black marlin	Total
1993-94	914	975	665	160	92	5	10	3	1	16	3	27			2 880
1994-95	1	1 279	1 529	174	199	4	10	1	1	26	7	5	3		4 390
1995-96	1	633	1 157	163	85	7	13	6		12	5		2	3	3 106
1996-97	1	291	415	915	341	29	6	12	8	2	6	7	2	5	3 043
1997-98	891	363	518	721	2	8	20	8	12	2	9	1		1	2 561
1998-99	1	526	311	753	276	15	36	13	7	11	6	7	1	1	2 967
1999-00	786	787	398	305	27	52	19	24	23	2	8	24	1	3	2 462
2000-01	851	606	277	203	17	34	8	12	41	1	10		6		2 068
2001-02	766	778	351	162	7	22	16	18	11	13	9	2	2	2	2 174
2002-03	671	736	215	78	76	6	5	21	14	14	7	1	3	1	1 865
2003-04	1	043	771	185	106	184	8	19	34	8	7	2	2		2 373
Total	10 893	7 654	6 963	2 689	733	188	145	142	114	102	78	70	21	16	29 889

Table 5. Ministry of Fisheries species codes for gamefish

ALB	albacore tuna	POS	porbeagle shark
BEM	blue marlin	SSF	shortbill spearfish
BKM	black marlin	SKJ	skipjack tuna

BWS	blue shark	STM	striped marlin
KIN	kingfish	SWO	broadbill swordfish
MAK	mako shark	YFN	yellowfin tuna

Table 6. Tuna and kingfish catch (landed and tagged) by named area from club records of the main gamefish clubs 1999–00 to 2003–04.

Tuna				Kingfish			
Albacore	N	Yellowfin	N	Skipjack	N	Kingfish	N
CASTLE POINT	227	NORTH CAPE	139	CASTLE POINT	42	CAVALLI IS	264
JACKSON BAY	226	WAIHAU BAY	128	WHALE IS	31	CAPE BRETT	214
WAIHAU BAY	66	NINE PIN	113	POOR KNIGHTS	23	KING BANK	187
RAGLAN	48	POOR KNIGHTS	107	PLATE IS	22	THREE KINGS	162
MAYOR	27	STEPHENSON IS	106	STEPHENSON IS	20	PENGUIN SHOALS	135
KAWHIA	22	CAPE BRETT	104	CAPE BRETT	17	BIRD ROCK	89
STEPHENSON IS	19	MAYOR	91	MAYOR	17	MIDDLESEX	84
ALBATROSS	17	WHALE IS	73	WEST COAST	14	MAYOR ISLAND	82
ALDERMAN IS	15	CAPE KARIKARI	64	BERGHANS PT	9	CAPE KARIKARI	80
NINE PIN	15	CAVALLI IS	61	RAGLAN	9	VOLKNER ROCKS	62
MANUKAU	12	KING BANK	50	NINE PIN	7	NORTH CAPE	60
WEST COAST	11	GARDEN PATCH	46	WAIHAU BAY	6	GANNET IS	56
GANNET IS	10	CAPE RUNAWAY	44	KUMARA PATCH	5	ROCKY PT	46
ASTROLABE REEF	9	BERGHANS PT	40	MOTITI	5	WHITE ISLAND	46
KAIKOURA	6	ALDERMAN IS	39	PENGUIN SHOALS	5	ASTROLABE REEF	33
NORTH CAPE	6	FLAT IS	37	TAURANGA	5	MOKO HINAUS	33
RANGITERIA	6	RANGITERIA	35	ALBATROSS	4	STEPHENSON IS	31
MARAKOPA	5	WEKARUA	32	ALDERMAN IS	4	WAIWIRI	29
ORUI	5	DOUBTLESS BAY	31	CAVALLI IS	4	NORTH REEF	27
MIDDLESEX	4	WEST COAST	24	DOUBTLESS BAY	4	MOTITI	21

Table 7. Billfish catch (landed and tagged) by named area from club records of the main gamefish clubs 1999–00 to 2003–04.

Billfish									
Black marlin	N	Blue marlin	N	Striped marlin	N	Shortbill spearfish	N	Swordfish	N
POOR KNIGHTS	4	WAIHAU BAY	56	NORTH CAPE	528	WAIHAU BAY	24	MIDDLESEX	33
CAVALLI IS	3	CAVALLI IS	49	KING BANK	521	POOR KNIGHTS	12	THREE KINGS	29
STEPHENSON IS	3	CAPE BRETT	40	MIDDLESEX	384	CAVALLI IS	10	KING BANK	10
KING BANK	2	NORTH CAPE	38	POOR KNIGHTS	269	STEPHENSON IS	7	CAPE KARI	8
WEST COAST	2	NINE PIN	30	STEPHENSON IS	258	NORTH CAPE	5	GARDEN PATCH	5
ASTROLABE REEF	1	STEPHENSON IS	30	THREE KINGS	238	NINE PIN	5	NORTH CAPE	4
BIRD ROCK	1	POOR KNIGHTS	30	CAVALLI IS	236	ALDERMAN IS	5	CAPE	3
CAPE BRETT	1	CAPE KARI	26	CAPE KARI	209	MID GRD	4	RUNAWAY	3
CAPE KARIKARI	1	GARDEN PATCH	19	CAPE BRETT	197	MAYOR	4	CAPE BRETT	2
CAVALLI								ASTROLABE REEF	1
SEAMOUNT	1	LOCAL	15	NINE PIN	176	THREE KINGS	3	GREAT BARRIER	1
MATAI BAY	1	FLAT IS	13	BERGHANS PT	95	MATAI BAY	3	MANUKAU	1
MAYOR	1	KING BANK	13	WAIHAU BAY	94	CAPE KARI	3	MAYOR	1
MIDDLESEX	1	BERGHANS PT	10	GARDEN PATCH	81	WHANGAROA	2	NIAGARA	1
NINE PIN	1	MID GRD	8	MAYOR	78	WEKARUA	2	NINE PIN	1
NORTH CAPE	1	MIDDLESEX	8	FLAT IS	70	RANGITERIA	2		
POOR KN	1	THREE KINGS	6	MID GRD	66	LOTTIN	2		

SHALLOW PATCH	1	ROCKY PT	5	WEKARUA	61	LOCAL	2
				DOUBTLESS		CAVALLI	
TAHAKO REEF	1	TAKAU BAY	5	BAY	57	SEAMOUNT	2
TAHEKE REEF	1	WHANGAROA	5	WHANGAROA	41	CAPE BRETT	2
THREE KINGS	1	ALDERMAN IS	4	TOM BOWL	36	505	2

Table 8. Shark catch (landed and tagged) by named area from club records of the main gamefish clubs 1999–00 to 2003–04.

Shark									
Mako	N	Blue shark	N	Thresher	N	Porbeagle	N	Bronze whaler	N
POOR KNIGHTS	99	OTAGO HD	758	OTAGO HD	18	OTAGO HD	146	MANUKAU HARB	11
THREE KINGS	71	POOR KNIGHTS	8	BLACK ROCKS	4	TAIERI MOUTH	6	KING BANK	9
NORTH CAPE	66	ALBATROSS	6	NORTH CAPE	3	KAIKOURA	1	WHANGAROA	9
OTAGO HD	66	CAVALLI IS	4	TIRI	3	MOERAKI	1	HBR	7
MAYOR	55	GANNET IS	4	CAPE BRETT	2	SHAG PT	1	MIDDLESEX	7
						SMALLS BEACH		THREE KINGS	7
KING BANK	52	MATAPOURI	4	CAPE KARI	2		1	CAPE KARI	4
MIDDLESEX	47	TAHAROA BAY	4	KING BANK	2			CAROUSO ROCK	4
STEPHENSON IS	46	ASTROLABE REEF	3	MID GRD	2			HOUHORA	3
								MAHURANGI	
CAVALLI IS	44	CASTLE POINT	3	NINE PIN	2			HARB	3
WEST COAST	44	KAIKOURA	3	PLATE IS	2			MANUKAU	3
CASTLE POINT	41	KAWHIA	3	RUAHINE	2			MATAKANA	3
		MANUKAU							
CAPE KARI	40	HARB	3	TAPEKA	2			NINE PIN	3
CAPE BRETT	35	PINNACLES	3	THREE KINGS	2			NORTH CAPE	3
KAWHIA	33	CAPE BRETT	2	60 MILE GRD	1			PARENGARENGA	3
NINE PIN	25	CAPE KARI	2	ALBATROSS	1			RAGLAN	3

RAGLAN	24	MANUKAU	2	BIRD ROCK	1	RED HEAD	3
ALBATROSS	22	MAYOR	2	CAVALLI IS	1	TAURANGA	3
				DOUBTLESS			
GANNET IS	22	MID GRD	2	BAY	1	WHANGAROA	3
GARDEN		NORTH		HAURAKI			
PATCH	19	GROUND	2	CANYON	1	BAILEYS BEACH	2
FLAT IS	14	NORTH REEF	2	HAURAKI GULF	1	BERGHANS PT	2

Table 9. Gamefish target species (1° & 2°) identified by gamefish focus group participants listed by meeting location.

Group	Blue marlin	Black marlin	Striped marlin	Marlin	Swordfish	Shark	Yellowfin	Tuna	Kingfish	Total
KAITAIA	3		8				2	3	1	17
BOI	2		2	7	1	1		2	3	18
TUTUKAKA	3		3	7			1	1	4	19
AUCKLAND			1	4	1			3		9
HAMILTON				15	1	1		8	7	32
TAURANGA	2	2	1	11	1		1	10		28
WHAKATANE				9			2	8	1	20
GISBORNE	1		1	8	2		1	6	1	20
NAPIER				9	1	1	7	4	1	23
NEW PLYMOUTH			2	3	1		2	2		10
Total	11	2	18	73	8	3	16	47	18	196

Table 10. Gamefish bycatch species by venue identified by gamefish focus group participants.

Group	Billfish			Marlin	Shark		Tuna				Kingfish		Other		Total
	Black marlin	Striped marlin	Shortbill spearfish		Blue shark	Mako	Shark	Skipjack	Albacore	Yellowfin	Tuna	Kingfish	Mahimahi	Kahawai	
KAITAIA		1					1	5	3		2	1	1	1	15
BOI	1		2			1	5	2	1	1	4	1	2		20
TUTUKAKA							4	3	2	1	3	1		2	16
AUCKLAND							5	2	3						10
HAMILTON							10	2	2		4	1		5	24
TAURANGA			8			1	6	3	2	1	3	1	7		32
WHAKATANE				1			5		1		2	1		1	11
GISBORNE							2	2	4		1	1		2	12
NAPIER						2	4	2	4		1	3		4	20
NEW PLYMOUTH		1		1	1	1			1	2	1				8
Total	1	2	10	2	1	5	42	21	23	5	21	10	10	15	168

Table 11. Prime gamefish locations and seasons identified by focus group participants. The heading for each box is the focus group venue.

<i>Kaitaia, Paihia, Tutukaka</i>			
Species	Location	Fishing period	Peak
Marlin	Three Kings, Ahipara, North cape to Cape Karikari, Whangaroa, Cavallis, Nine Pin, Cape Brett, Poor Knights	December - May	February - April
Tunas – Blue fin	not a fishery up here		
Tunas - Others	Three Kings, Ahipara, North cape to Cape Karikari, Cape Brett - North Cape	December - May	December - March
Shark	bycatch throughout fishery	December - May	December - March
Kingfish	Three Kings, Ahipara, North Cape, Cape Karikari, Cavallis, Hen & Chicks, Mokohinaus, the coast from Bream Head to Cape Brett	All year	January - April
Broadbill	Three Kings, North Cape, Cape Karikari-Garden Patch, Poor Knights Rise	October - July	April - June

<i>Auckland, Hamilton</i>			
Species	Location	Fishing period	Peak
Marlin	Three Kings, North East coast and West Coast North Island, Raglan, Kawhia, Bay of Plenty, East Northland	East Coast –Late December to late May, West Coast – Mid January to April	January to March
Tunas – Blue fin	West Coast South Island	August - October	September
Tunas - Others	Eastern Bay of Plenty, Raglan, Kawhia, Bay of Plenty, East Northland	December to May	December January
Shark	None	Bycatch	
Kingfish	Volkner Rocks , Three Kings and Cape Maria Van Diemen, East Cape, Doubtless Bay, Gannet Rock, east coast Northland	December to July	December to June
Broadbill	North East Coast	October - July	April - June

<i>Tauranga, Whakatane</i>			
Species	Location	Fishing period	Peak
Marlin	Three Kings, Bay of Islands, Mayor Island, Blue marlin off Waihou Bay.	December - April	January - March
Tunas – Blue fin	West Coast South Island	August - October	September
Tunas - Others	Eastern Bay of Plenty, Whakatane	Mid December - March	January - March
Shark	Hawkes Bay, Otago	January to March	
Kingfish	White Island, Volkner Rocks, Ranfurly Banks, and the Three Kings Islands	All year	October - January
Broadbill	Three Kings, Cape Karikari, Gisborne and outer Great Barrier Island	October - July	Full moon

Table 11. Continued....

<i>Gisborne, Napier</i>			
Species	Location	Fishing period	Peak
Marlin	Three Kings, Bay of Islands	Late January – Mid April	February to Mid March
Tunas – Blue fin	West Coast South Island	August - October	September
Tunas - Others	Bay of Plenty, East Coast, Hawkes Bay	January – Mid April	February to Mid March
Shark	Hawkes Bay	January - May	February to Mid March
Kingfish	Volkner Rocks, Bay of Plenty, Hawkes Bay	January - May	April - May
Broadbill	Three Kings	May - July	May - July

<i>New Plymouth</i>			
Species	Location	Fishing period	Peak
Marlin	Northern Taranaki - Cape Egmont	January - May	March - April
Tunas – Blue fin	South Island West Coast		
Tunas - Others	Bay of Plenty	January - May	March - April
Shark	Bottom of the South Island, few caught in the New Plymouth area	None	None
Kingfish	Bay of Plenty	All year	March to June
Broadbill	No specific areas locally, but the prime area would be the Three Kings Islands	October - July	June - July

Table 12. Age and sex of participants in gamefish focus group meetings.

Age Group	Female	Male	Total
15 – 25	0	2	2
26 – 35	0	8	8
36 – 45	2	19	21
46 - 55	4	33	37
56 - 65	3	24	27
Older than 65		7	7
Total	9	93	102

Table 13. National harvest survey 2000 number of diarists catching billfish species by FMA.

Age Group	Fisheries Management Areas		Total
	1	9	
35-39 yrs	1	0	1
40-44 yrs	1	1	2
50-54 yrs	2	1	3
60-64 yrs	1	0	1
Total	5	2	7

Table 14. National harvest survey 2000 number of diarists catching tuna species by FMA.

Age Group	Fisheries Management Areas						Total
	1	2	3	7	8	9	
18-19 yrs	1	0	0	0	0	0	1
20-24 yrs	0	0	1	0	0	0	1
25-29 yrs	0	0	0	5	0	0	5
30-34 yrs	2	0	0	0	2	2	6
35-39 yrs	5	3	0	0	0	6	14
40-44 yrs	4	4	0	0	2	1	11
45-49 yrs	5	1	0	0	0	0	6
50-54 yrs	4	0	0	0	0	0	4
55-59 yrs	0	2	0	0	7	0	9
60-64 yrs	1	0	0	0	0	0	1
65-69 yrs	1	0	0	0	0	0	1
Total	23	10	1	5	11	9	59

Table 15. National harvest survey 2000 number of diarists catching shark species by FMA.

Age Group	Fisheries Management Areas						Total
	1	2	3	7	8	9	
20-24 yrs	4	0	1	0	0	0	5
25-29 yrs	1	0	0	0	0	0	1
30-34 yrs	4	0	0	1	0	0	5
40-44 yrs	4	1	2	1	0	0	8
35-39 yrs	4	1	1	1	0	1	8
45-49 yrs	4	0	1	0	1	0	6
50-54 yrs	3	0	0	0	0	1	4
55-59 yrs	1	0	0	1	0	1	3
60-64 yrs	1	0	0	0	0	0	1
65-69 yrs	2	0	0	0	0	0	2
Total	28	2	5	4	1	3	43

Table 16 . National harvest survey 2000 number of diarists catching kingfish by FMA.

Age Group	Fisheries Management Areas					Total
	1	2	7	8	9	
15-17 yrs	0	2	0	0	0	2
18-19 yrs	6	1	0	0	0	7
20-24 yrs	10	1	0	0	1	12
25-29 yrs	26	4	0	0	0	30
30-34 yrs	24	3	1	1	3	32
35-39 yrs	29	5	2	1	3	40
40-44 yrs	44	6	2	1	0	53
45-49 yrs	25	4	1	0	2	32
50-54 yrs	18	4	0	0	3	25
55-59 yrs	9	2	0	0	0	11
60-64 yrs	8	0	0	0	0	8
65-69 yrs	4	0	0	0	1	5
70-74 yrs	0	2	0	0	0	2
Total	203	34	6	3	13	259

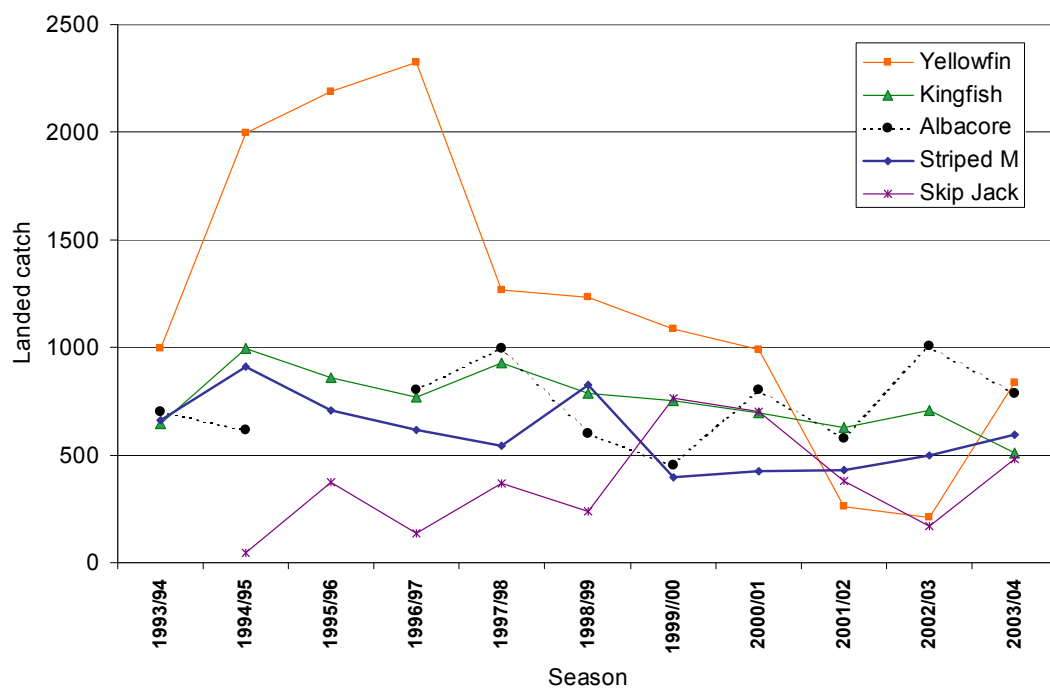


Figure 1. NZ Big Game Fishing Council national catch records for landed fish by species and season.

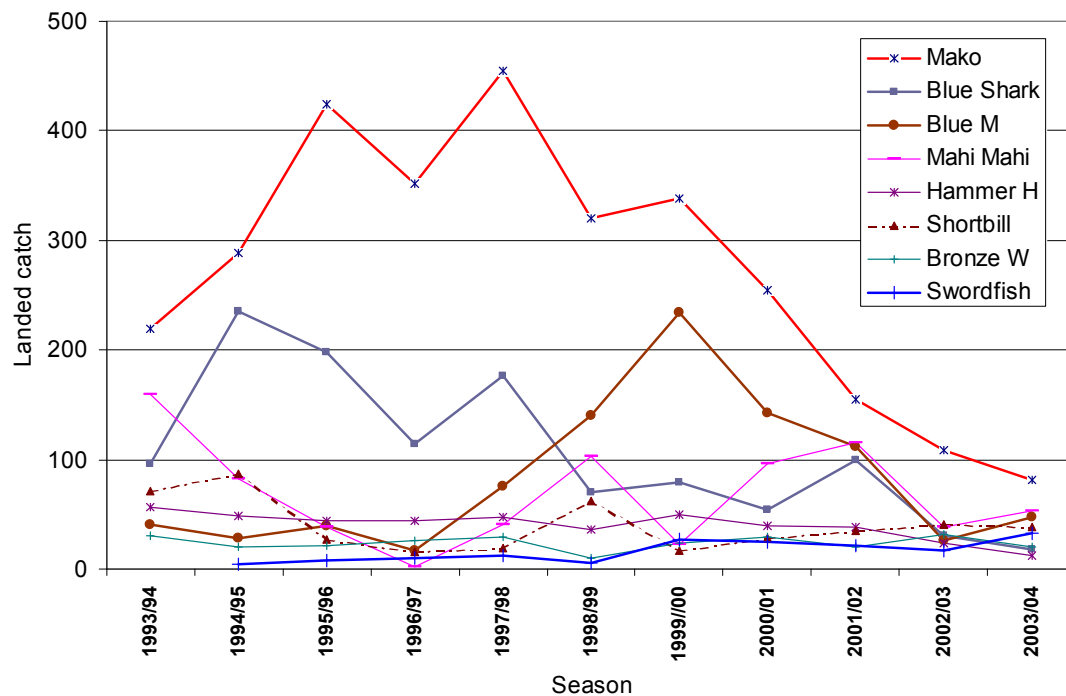


Figure 2. NZ Big Game Fishing Council national catch records for landed fish by species and season.

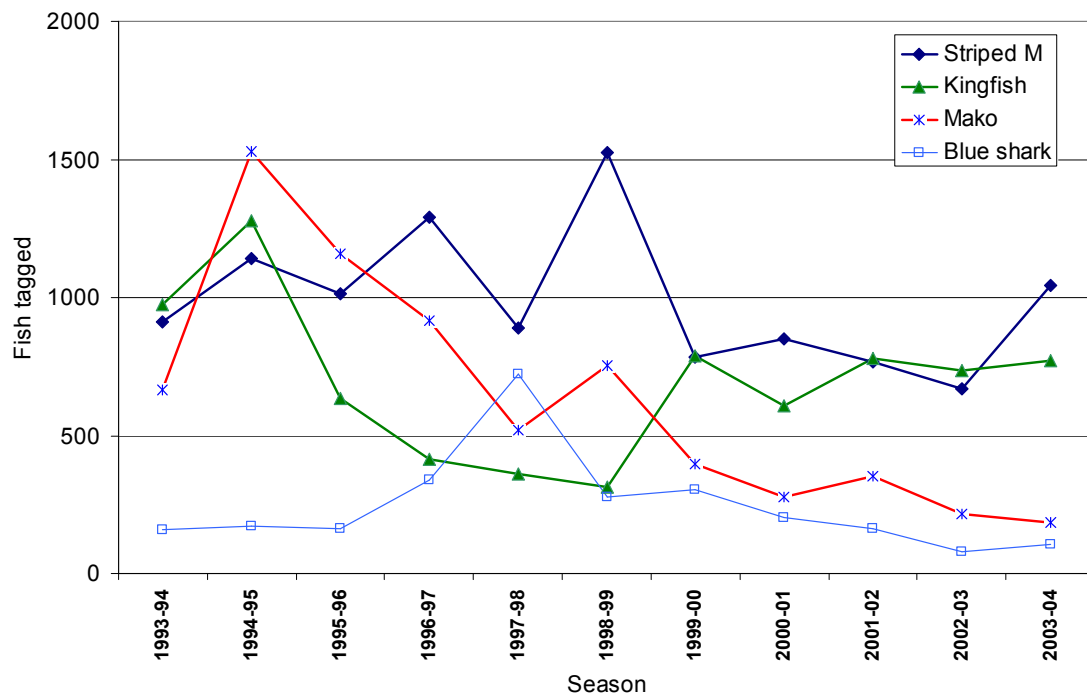


Figure 3. Gamefish tagged and released in New Zealand waters for the main species by season from the gamefish tagging database.

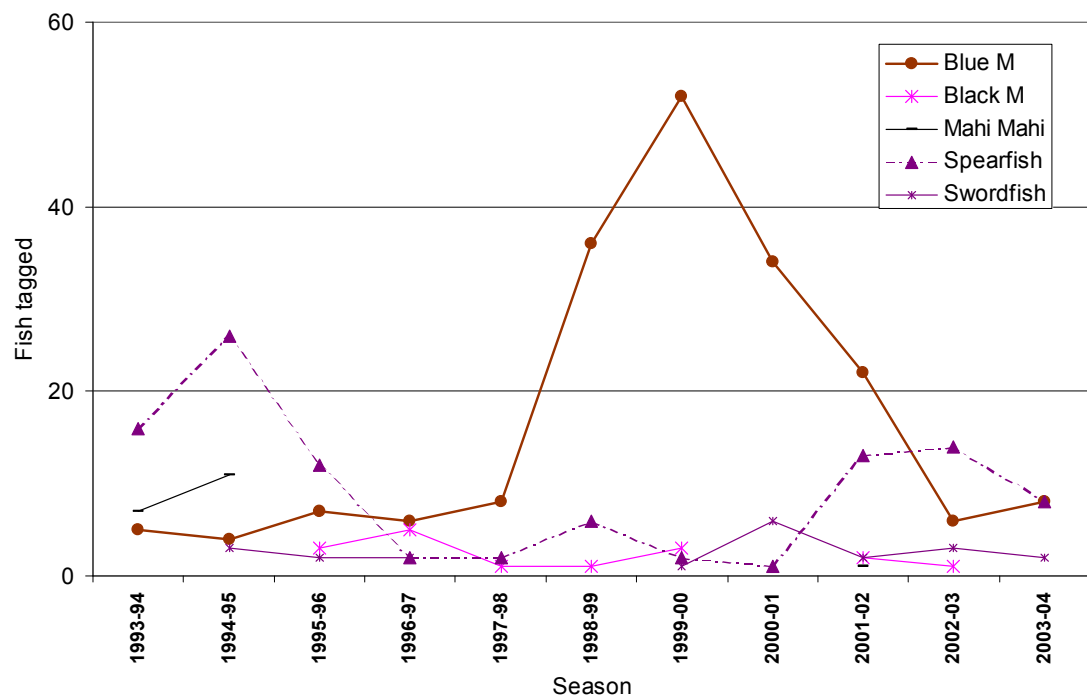


Figure 4. Gamefish tagged and released in New Zealand waters by species and season from the gamefish tagging database.

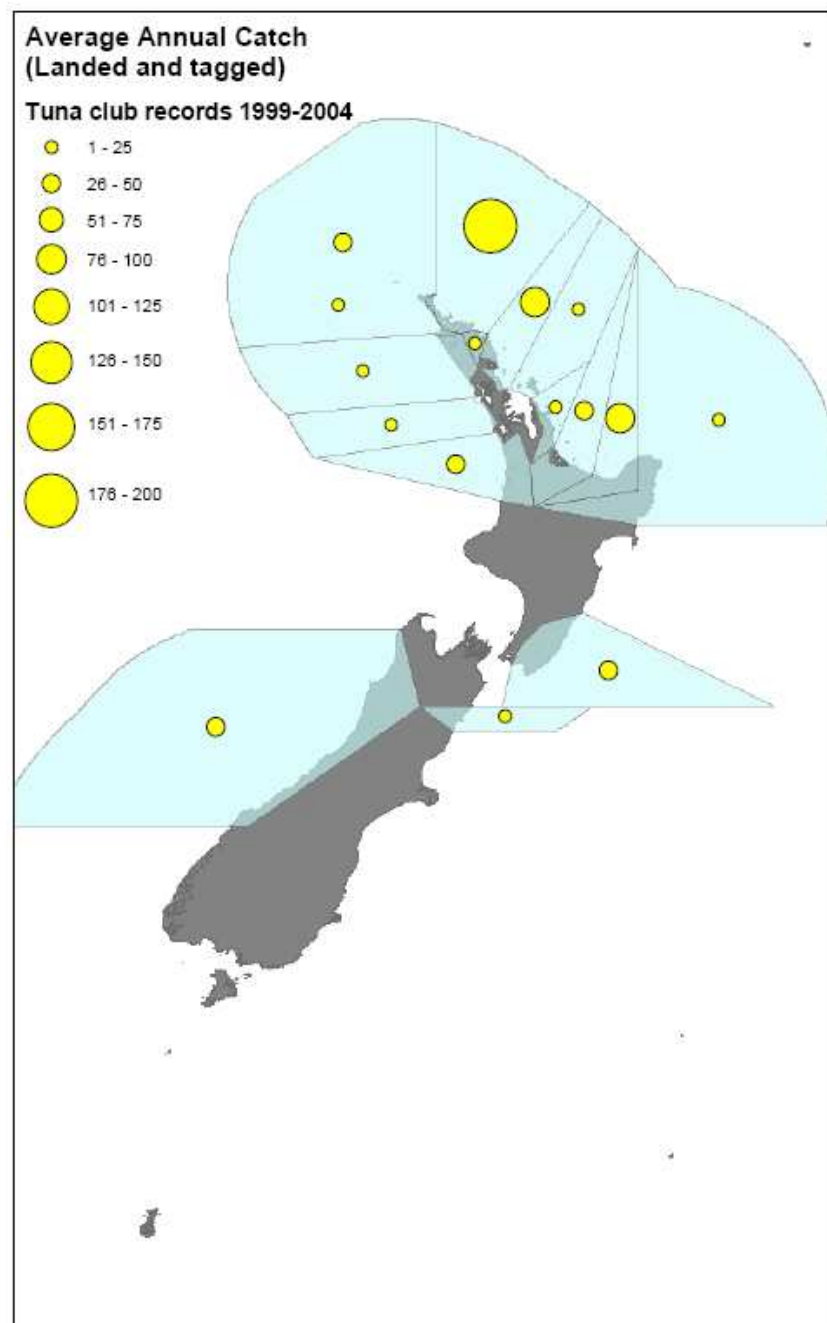


Figure 5. Tuna (albacore, bigeye, bluefin, slender and yellowfin) average annual catch by recreational fishing zone from club records.

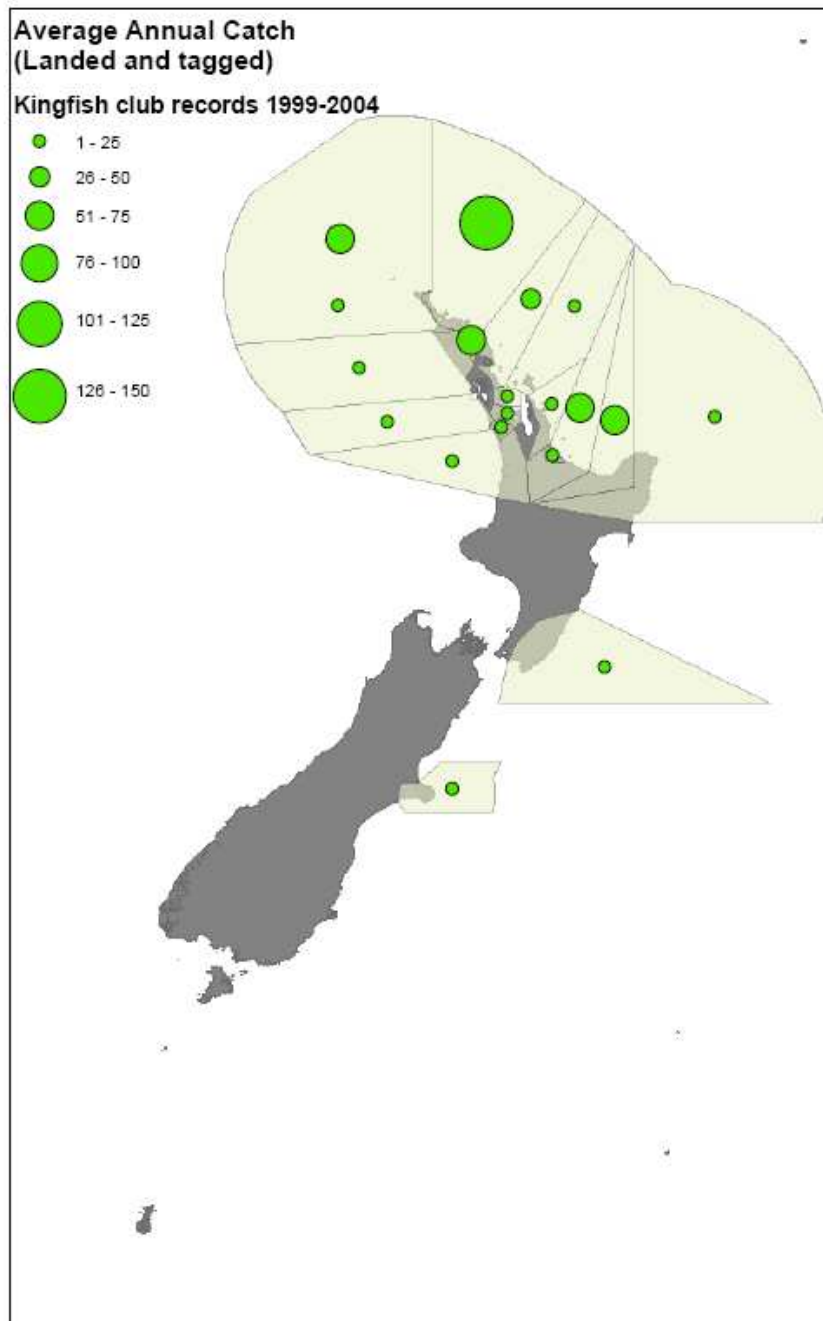


Figure 6. Kingfish average annual catch by recreational fishing zone from club records.

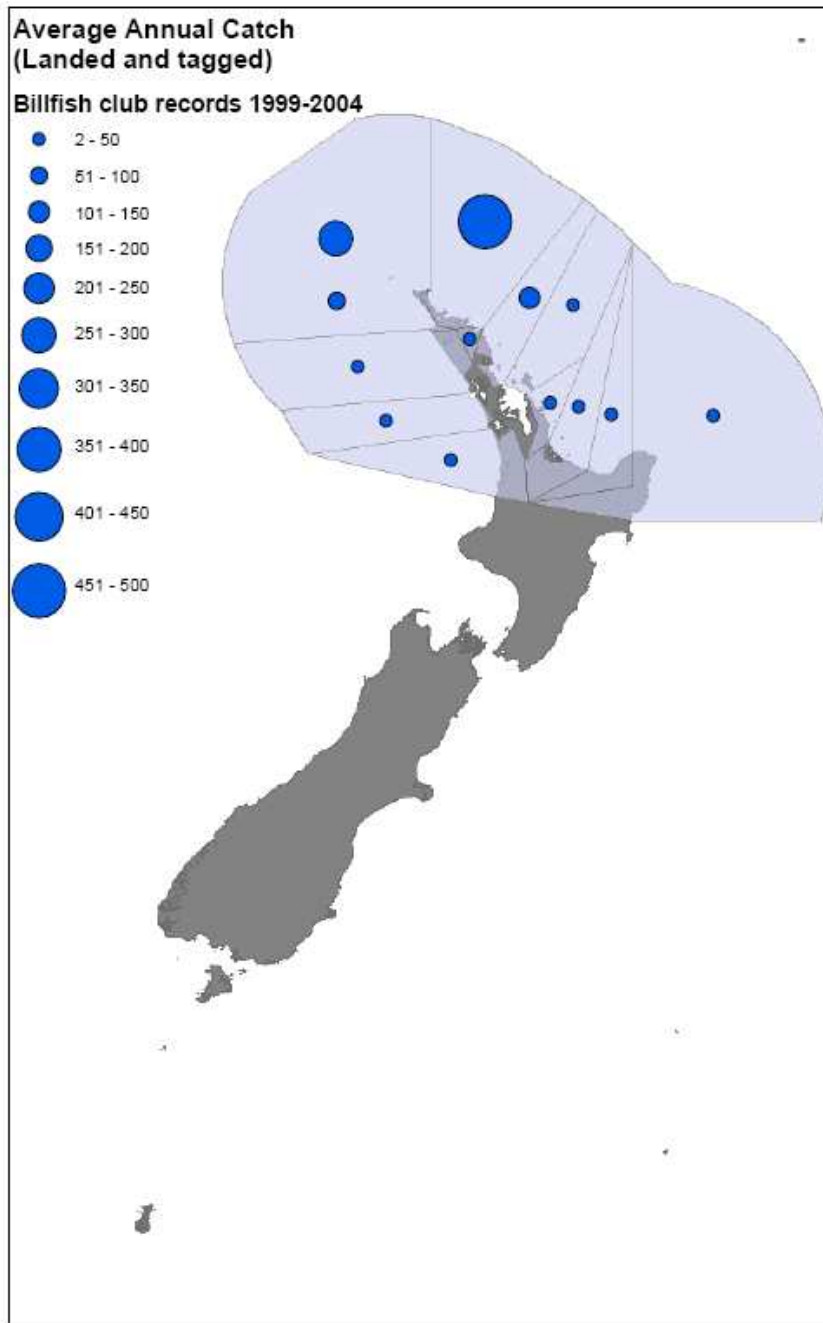


Figure 7. Billfish average annual catch by recreational fishing zone from club records.

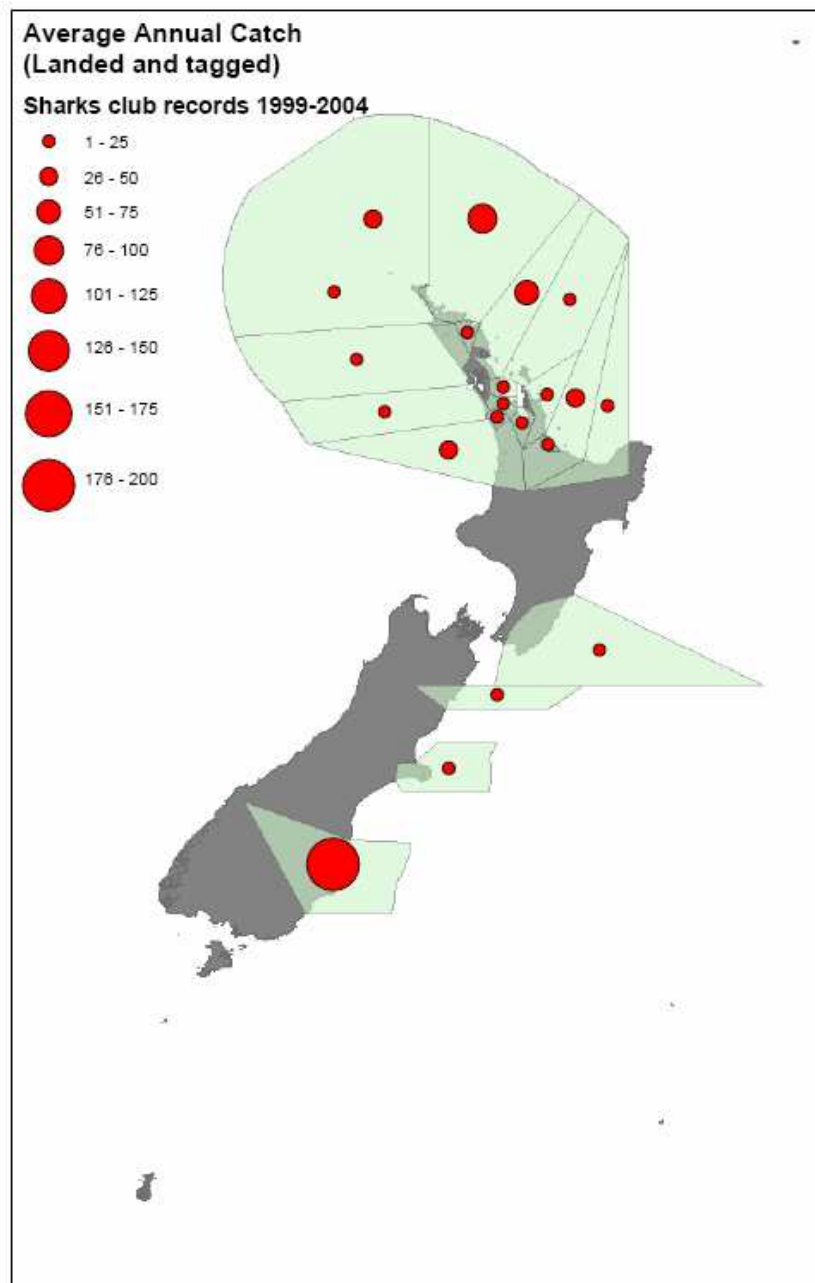


Figure 8. Shark average annual catch by recreational fishing zone from club records.

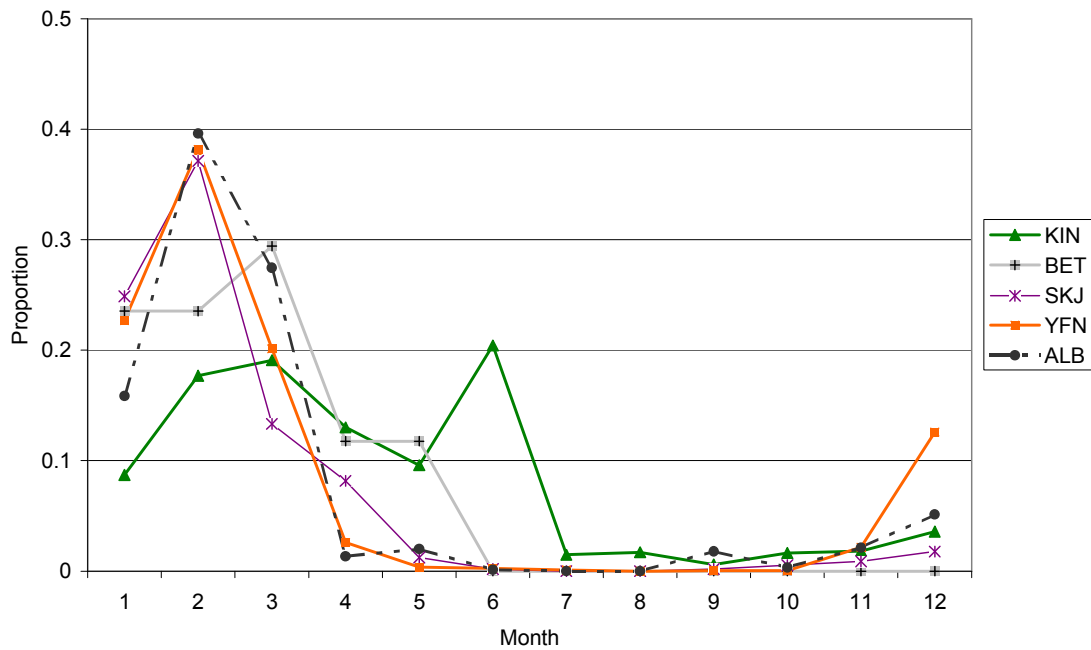


Figure 9. Proportion of catch by month for kingfish and tuna species from NZBGFC club records 1999-00 to 2003-04 (landed and tagged combined). See Table 5 for key to species codes.

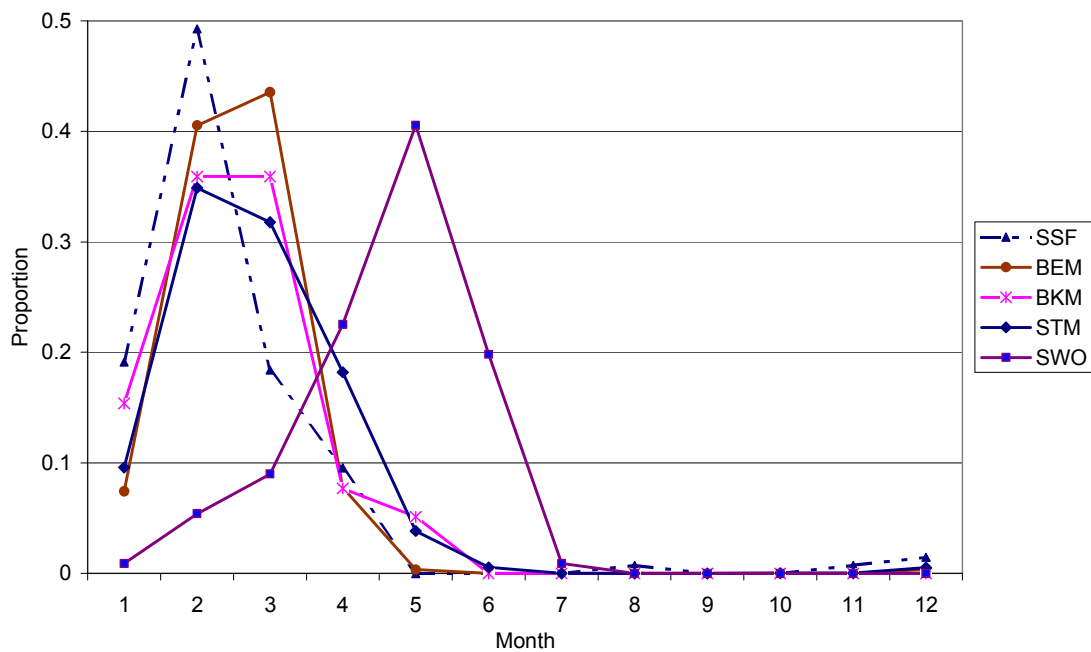


Figure10. Proportion of catch by month billfish species from NZBGFC club records 1999-00 to 2003-04 (landed and tagged combined). See Table 5 for key to species codes.

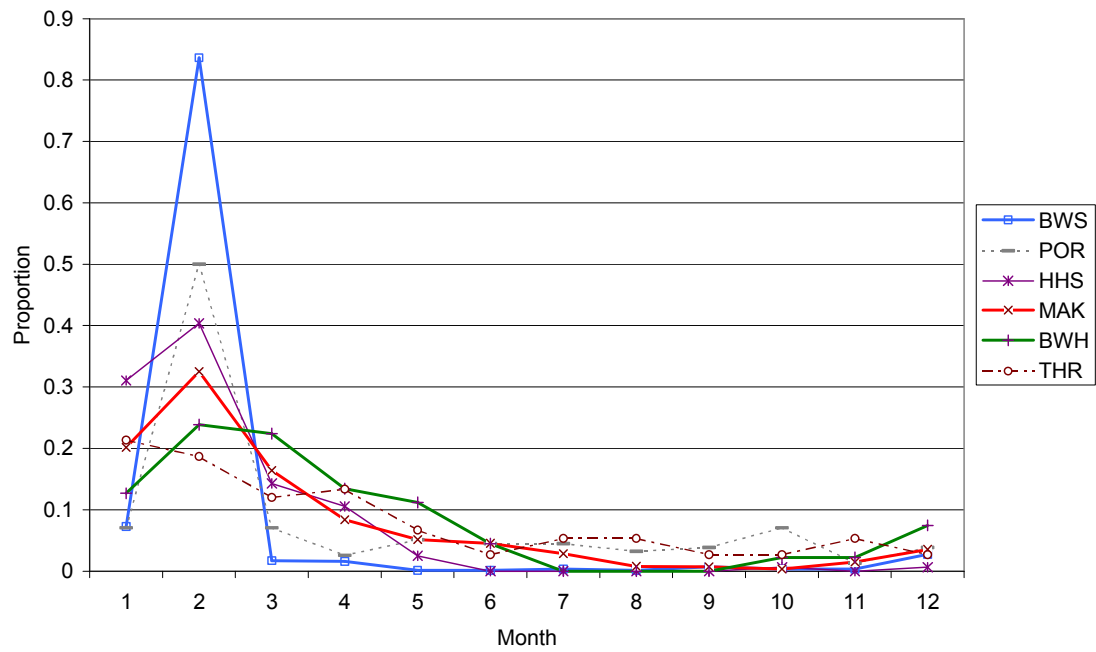


Figure 11. Proportion of catch by month for shark species from NZBGFC club records 1999-00 to 2003-04 (landed and tagged combined). See Table 5 for key to species codes.

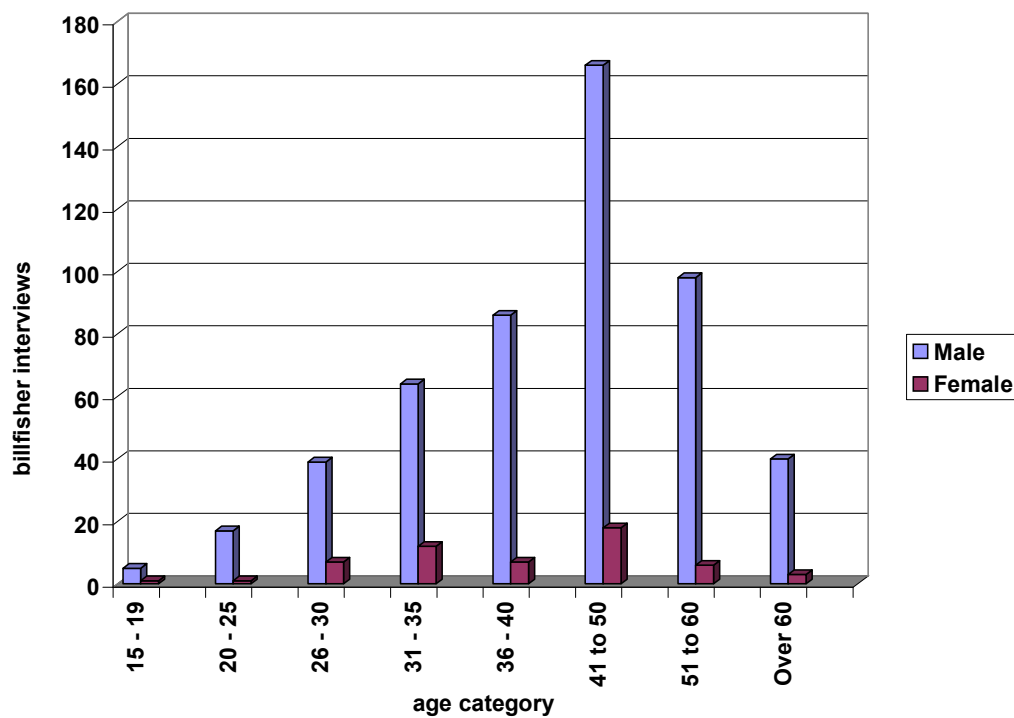


Figure 12. Age and sex of respondents from the 2001 billfish economic survey.

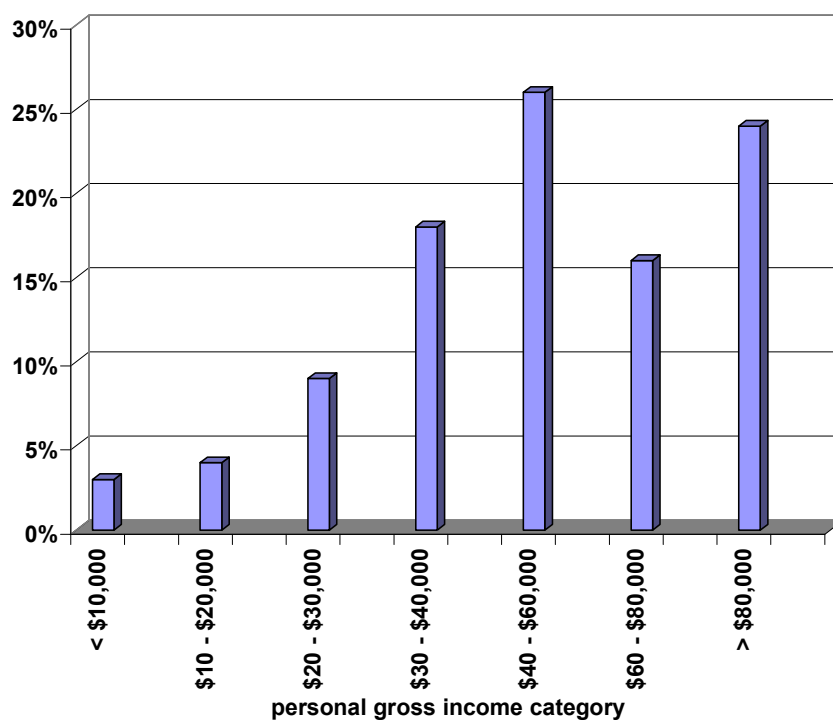


Figure 13. Incomes of respondents from the 2001 billfish economic survey.

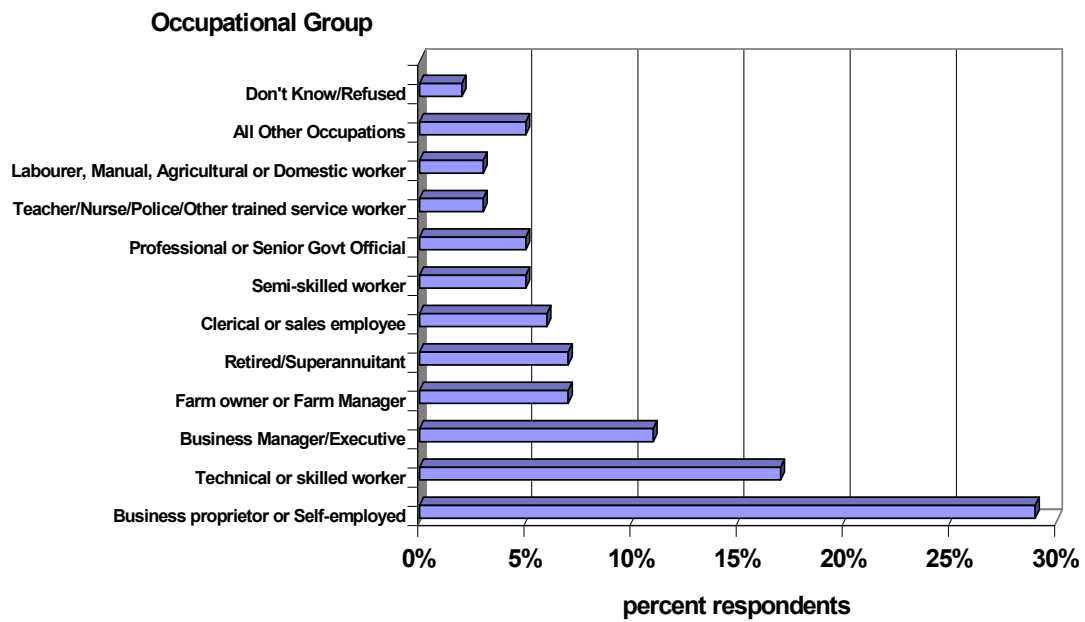


Figure 14. Occupation grouping of respondents from the 2001 billfish economic survey.

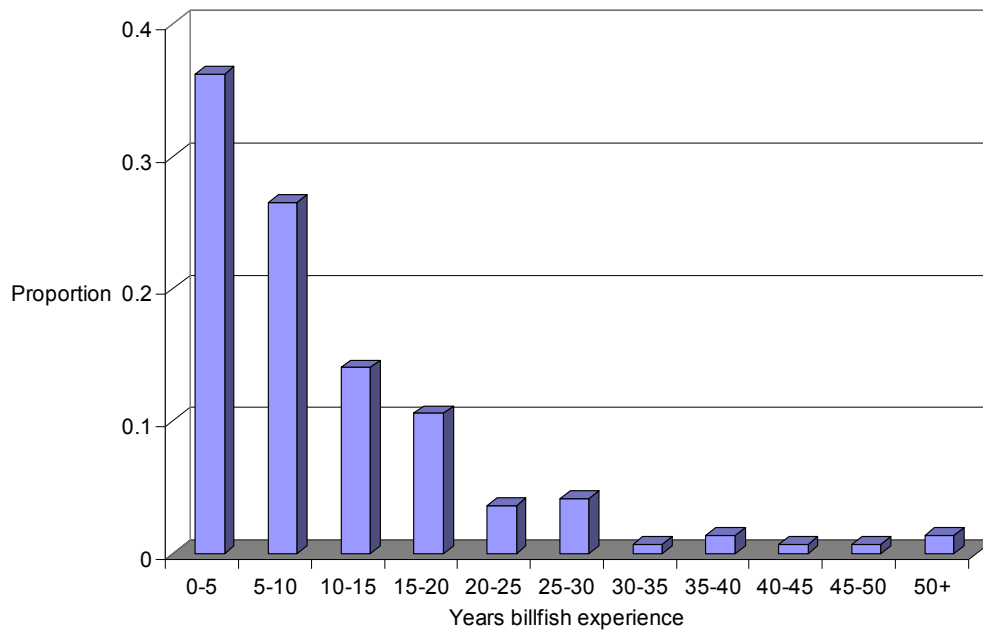


Figure 15. Years of billfish experience of respondents from the 2001 billfish economic survey.

Appendix 1. Focus group written questionnaire.

Gamefishing written questionnaire

PG 1

Blue Water Marine Research Ltd

PO Box 1043, Waiwera

09 434 3383

Name (Optional) _____

Arroyd Walshe Ltd

PO Box 28814, Auckland

The city/area I live in is _____

My age is..	
<15	
15 - 25	
26 - 35	
36 - 45	
46 - 55	
56 - 65	
Older than 65	

I have been fishing for yrs.

Are you currently a member of a fishing/boating club?

Yes	No
-----	----

OR

Have you ever been a member of a fishing/boating club?

Yes	No
-----	----

The gamefish tackle I use I....

Own	
charter from the skipper	
Borrow from friends	

The breaking strain of gear I use is....?

24	37	other	kgs
----	----	-------	-----

The species I aim to catch in NZ (in order of priority) are....?

A

The other species I catch while gamefishing (in order of frequency) are...?

Fishing Experience

I have been gamefishing for

	Years
--	-------

In the previous 12 months I game fished for

	days
--	------

What type of gamefishing vessel do you use?

Own vessel	
Charter vessel	
Friend's vessel	
Fish from shore	

What is the size of the vessel you use for gamefishing?

Trailer boat	
< 10m	
> 10m	

Gamefisher specialisation index

RELEVANCE OF GAMEFISHING TO ME

Please indicate which category of gamefisher best describes your involvement?

	Charter skipper
	Deckie
	Recreational gamefisher
	Other - please specify

Q. Please indicate which option best describe the relevance of gamefishing to you

I go gamefishing for the experience of the catch.

Not at all important	Slightly important	Moderately important	Very important	Extremely important

I go gamefishing for the sport of fishing, not to obtain food to eat

Not at all important	Slightly important	Moderately important	Very important	Extremely important

I 'm just as happy if I release the gamefish I catch

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

A gamefishing trip can be successful even if no fish are caught

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

When I go gamefishing, I'm just as happy if I don't catch a fish.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

I go gamefishing to obtain fish for eating, and not for sport

Not at all important	Slightly important	Moderately important	Very important	Extremely important

Gamefisher specialisation index

COSTS RELATED TO GAMEFISHING

Q. Please indicate the replacement value of the gear you use for gamefishing

\$	Replacement cost of reels
\$	Replacement cost of tackle
\$	Replacement cost of rods
\$	Replacement cost of electronic equipment

Gamefisher specialisation index

For each question please indicate which option best expresses you as a gamefisher

Question and response

ORIENTATION

Q. Please indicate your general *orientation* to the sport of game fishing?

	I am an outsider. I am uncomfortable when I go fishing, and don't really feel like I am part of the gamefishing scene.
	I am an observer or irregular participant. Sometimes it is fun, entertaining, or rewarding to go fishing
	I am a habitual and regular participant in the sport of gamefishing
	I am an insider to the sport of gamefishing. Fishing is an important part of what I am

Q. Please indicate how you would best describe yourself during a gamefishing *experience* ?

	I am often uncertain. I am unsure about what I can or cant not do while gamefishingor how to do it.
	I have some understanding of gamefishing, but I am still in the process of learning more about gamefishing. I am becoming more familiar and comfortable with gamefishing.
	I have become comfortable with gamefishing. I have regular, routine and predicatble experiences. I have a good understanding about what I can do while gamefishing, and how to do it.
	I am a facilitator in the sport. I encourage, teach and enhance opportunities for others who are interested in gamefishing

Q. Please indicate how you would best describe your *relationship* with other gamefishers?

	Superficial. I really don't know any other gamefishers.
	Very limited. I know some other anglers but sight and sometimes talk with them, but I don't know their names.
	One of familiarity. I know the names of other gamefishers, and often speak with them.
	Close. I have personal and close relationships with other anglers. These friendships often revolve around gamefishing.

Q. Please indicate how you would best describe your *commitment* to gamefishing

	Almost nonexistent. I am basically indifferent about going gamefishing
	Moderate commitment. I will continue to go gamefishing as long as it is entertaining and provides the benefit I want
	Fairly strong commitment. I have a sense of being a member of the activity, and it is likely that I will continue to gamefish for a long time
	Very strong commitment. I am totally committed to to gamefishing. I encourage others to go gamefishing and seek to ensure the activity continues into the future.

Gamefisher specialisation index
WHY I GAMEFISH

Q. Please indicate which option best describes why you gamefish

To experience adventure and excitement

Not at all important	Slightly important	Moderately important	Very important	Extremely important

To be close to the water

Not at all important	Slightly important	Moderately important	Very important	Extremely important

To be with friends

Not at all important	Slightly important	Moderately important	Very important	Extremely important

To experience natural surroundings

Not at all important	Slightly important	Moderately important	Very important	Extremely important

To experience new and different things

Not at all important	Slightly important	Moderately important	Very important	Extremely important

To get away from the demands of other people

Not at all important	Slightly important	Moderately important	Very important	Extremely important

To be outdoors

Not at all important	Slightly important	Moderately important	Very important	Extremely important

To get away from the regular routine

Not at all important	Slightly important	Moderately important	Very important	Extremely important

For family recreation

Not at all important	Slightly important	Moderately important	Very important	Extremely important

Gamefisher specialisation index
ATTITUDES TO FISHERIES MANAGEMENT

Q. Please indicate which option best describes your views on management of the gamefish fishery

Bag limits should be in place for my primary target species

Strongly oppose	oppose	Neutral	Support	Strongly support

There should be a maximum size limit on my primary target species

Strongly oppose	oppose	Neutral	Support	Strongly support

There should be a minimum size limit on my primary target species

Strongly oppose	oppose	Neutral	Support	Strongly support

For my primary target species, there should be restricted fishing areas in place for the commercial sector

Strongly oppose	oppose	Neutral	Support	Strongly support

For my primary target species, there should be restricted fishing areas in place for the recreational sector

Strongly oppose	oppose	Neutral	Support	Strongly support

For my primary target species, there should be compulsory catch and release

Strongly oppose	oppose	Neutral	Support	Strongly support

For my primary target species, catch and release should be voluntary

Strongly oppose	oppose	Neutral	Support	Strongly support

For my primary target species, there should be a prohibition on certain gear used by recreational gamefishers

Strongly oppose	oppose	Neutral	Support	Strongly support