Fish Monetary Stock Account: 1996–2008

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Preface

The *Fish Monetary Stock Account 1996–2008* presents a time-series asset value of New Zealand's commercial fish resource, based on quota values. The time series shows trends in the total asset value of the fish resource, and trends in the asset values of selected species, which can be used for analysis by government and the wider community. The report also presents technical notes and a description of how fish stocks are valued.

We acknowledge the use of fisheries data and the advice and support provided by FishServe and the Ministry of Fisheries.

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Government Statistician

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(www.stats.govt.nz/analytical reports/ fish-monetary-stock-account-1996-2008)

Percentage changes
Percentage movements are, in a number of cases, calculated using data of greater precision than published. This could result in slight variations.

Rounding procedures
Figures have been rounded, and discrepancies may occur between sums of component items and totals. All percentages have been calculated using unrounded figures.

Source
All estimates of asset values are compiled by Statistics NZ, except where otherwise stated. Administrative data collected and supplied by FishServe has been used in compiling the estimates.

Values
All values are shown in New Zealand currency, except where otherwise stated. All export revenue values are given in New Zealand dollars, free on board (The value of export goods, including raw materials, processing, packaging, storage and transportation up to

the point where the goods are about to leave the country as exports.) FOB does not include storage, export transport or insurance cost to get the goods to the export market.

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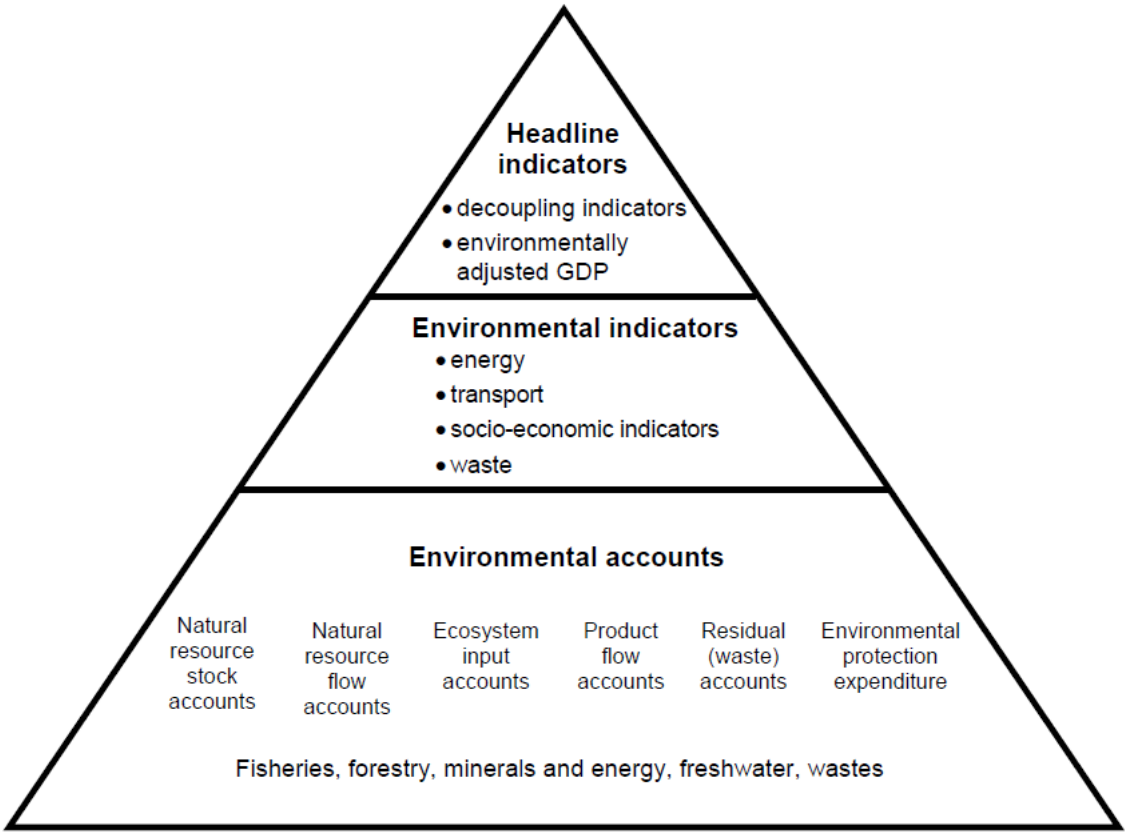
Abbreviations

ACE annual catch entitlement
EEZ exclusive economic zone
FOB free on board
ITQ individual transferable quota
NPV net present value
SEEA System of Environmental and Economic Accounts
QMS Quota Management System
SNA System of National Accounts
TAC total allowable catch
TACC total allowable commercial catch

1. Introduction to environmental accounts

Statistics New Zealand is working with several government departments and other agencies to produce a range of environmental statistics about the natural environment, its contribution to the economy, and the impact of the economy and social activities on the environment. As part of this work, Statistics NZ has developed environmental accounts for several natural resources: forestry, energy, fisheries, minerals, and freshwater. Environmental accounts consist of physical and monetary stock and flow accounts, referred to as natural resource accounts. They measure the physical stocks and flows of natural resources in units such as tonnes and joules. These quantities are valued, resulting in monetary figures that form environmental accounts and can be linked to economic statistics such as the gross domestic product (GDP).

Figure 1 Statistics New Zealand's Environmental Statistics Framework



The release of natural resource and environmental accounts reflects an international movement towards compiling information beyond the traditional measures of economic activity. The accounts show that the environment has a finite capacity to supply materials and absorb waste. The development of the fish monetary stock account is part of a wider programme of natural resource accounts and valuations produced by Statistics NZ. These series of environmental accounts can be used to assess trends over time as well as to gauge whether New Zealand's resources are being used in a sustainable manner.

For more information on the uses of natural resource and environmental accounts, see *Natural Resource Accounts for New Zealand: Overview document* (Statistics NZ, 2002) or chapter 11 of the *Handbook for Integrated Environmental and Economic Accounting* (SEEA) (United Nations et al, 2003). For more information on Statistics NZ's Environment Statistics Programme refer to the Statistics NZ website at: http://www.stats.govt.nz/environment/default.htm.

2. Concepts and conventions

Information included in this report is calculated using international best practice for environmental accounting, developed or under development in New Zealand and overseas. Statistics New Zealand produces environmental accounts using the framework recommended in the *Handbook for Integrated Environmental and Economic Accounting* (SEEA) (United Nations et al, 2003). The methodology used in producing this report was adopted following the recommendations of the *Handbook for Integrated Environmental and Economic Accounting for Fisheries* (SEEAF) (United Nations, 2004). The SEEA states that, where possible, asset values of natural resources should be based on market transactions. Since the majority of New Zealand's commercial fish resource is available for trading under the Quota Management System (QMS), the QMS provides a robust market value for fish resources.

Asset values in this report are derived from average values per tonne for transactions during the fishing year. These transactions are for the transfer of individual commercial fisheries quota managed under the QMS. The values are in market prices (current prices).[1]

The majority of fisheries quota have a fishing year that runs from 1 October to 30 September. There were 96 fish species with 629 quota management areas (QMAs) managed under the QMS in September 2008. Of these, 81 species in 492 QMAs had a fishing year ending 30 September. One species has one QMA (ANG13 – South Island freshwater eels) that has a year end of 31 January. For the purposes of this account, all fisheries quota ending in the same calendar year are aggregated into the total for that September year. For example, the 2002 fishing year includes fisheries quota with years ending on 31 January 2002 (one QMA only), 31 March 2002 and 30 September 2002. For a list of all species and QMAs managed under the QMS at 30 September 2008, including their fishing year and when each was added to the QMS, see the table "Species managed under the Quota Management System" on the Statistics NZ website (www.stats.govt.nz/analytical-reports/fish-monetary-stock-account-1996-2008.htm).

For comparing fisheries years, all export revenue figures, by weight and value, are given in September years.

Revision to *Fish Monetary Stock Account: 1996–2007*

Several items and estimates have been revised, for the following reasons:

Revised information for CRA7 and 8 for 2006 has led to a correction of the TACC figures used. The recalculated estimates reduce the asset value by $42 million.

SBW 6B and 6I information has been revised and the TACC figures corrected for 2003. The recalculated estimates increase the asset value by $12 million.

Finally, the estimates made in 2008 have increased the 2007 asset value by $4 million from that recorded in the Fish Monetary Stock Account: 1996–2007. The asset value increased because QMAs lacking transfer information in 2007 have now been modelled from 2008 figures, where available. Where both quota and annual catch entitlement (ACE) transfer information is missing, data is modelled using the subsequent year's

[1] Current prices are the actual or estimated recorded monetary value over a defined period for a group of industries or products. They show the value for each item expressed in terms of the prices of that period. A series in constant prices would value two or more time periods in the prices of a single year, removing the effects of inflation.

information first; if that is not available, then information from the previous year is used. For QMAs where quota and ACE trade information was missing in 2007 but quota information was available in 2008, asset values for the 2007 year have been modelled from the 2008 information. This change affected seven species in 19 QMAs. Because of the way missing figures are modelled first from the subsequent year, it can be expected that with every new release of this account, the previous year's figure may change slightly to reflect the updated data.

Other changes

In 2008, scampi had too few transactions to accurately estimate an asset value. The asset value for scampi in 2008 was therefore modelled from the average asset value for the previous three years.

Data confidence

Estimates of asset values for commercial fish stocks are deemed to be relatively robust, due to available data on quota and ACE transactions. Estimates for individual quotas have been modelled where there were gaps in the available information. Although trends in the figures are indicative, the use of absolute figures requires care. Section 6 contains further information on the methodology used and data limitations.

Future developments

Statistics NZ welcomes feedback on this report and its future direction. For any questions or comments please send an email to environment@stats.govt.nz.

3. Introduction

The fish monetary stock account presents a time series asset value of New Zealand's commercial fish resource, based on quota values. Asset values in this report are derived from the quota and annual catch entitlement (ACE) values of the resource, as managed under the Quota Management System (QMS).

The time series shows trends in the total asset value of New Zealand's commercial fish resource and trends in the asset values of selected species, which can be used for analysis by government and the wider community. The report also presents technical notes and a description of how fish stocks are valued.

Individual valuations are provided for the 20 fish species managed under the QMS with the highest monetary asset value in 2008. In 2008, these 20 species made up 90 percent of the total value of New Zealand's commercial fish resource: alfonsino, arrow squid, barracouta, blue cod, bluenose, hake, hāpuku and bass, hoki, ling, orange roughy, oreo, pāua, rock lobster, scallop, scampi, school shark, silver warehou, snapper, southern blue whiting and tarakihi.

The top 20 species by asset value are unchanged from 2007, although the ranking has changed for some species.

Highlights

In the September 2008 year, under the QMS:

- The calculated asset value of New Zealand's commercial fish resource was $3.97 billion.
- 20 species of fish contributed 90 percent of the value of New Zealand's commercial fish resource.
- Hoki contributed 18 percent of the total value of New Zealand's fish resource, being valued at $730 million.

Between the 1996 and 2008 September years:

- The asset value of the commercial fish resource increased by 45 percent, from $2.74 billion in 1996 to $3.97 billion in 2008.
- The value of the commercial fish resource varied between $2.28 billion and $3.97 billion.
- Hoki had the highest average value of all species, at an average of $651 million.

Background to fishing in New Zealand

New Zealand's Exclusive Economic Zone (EEZ) is over 14 times the size of its land mass. This zone extends 200 nautical miles from the New Zealand coastline and spans over 30 degrees of latitude, from northern subtropical Raoul Island to southern sub-Antarctic Campbell Island. The EEZ includes and extends eastward from the Chatham Islands. This marine environment contains many diverse ecosystems including estuaries, seamounts and reefs and more than 16,000 marine species, many of which are endemic to New Zealand (Ministry for the Environment, 2007).

New Zealand has the fourth-largest EEZ in the world. However, it contributes only approximately 1 percent of total global fish production (FAO, 2005; Newell et al, 2002). Two-thirds of the country's EEZ is considered to be commercially barren due to extreme depth and lack of nutrient-rich currents (Ministry for the Environment, 2007). In the year ending September 2008, total fish exports were 283,680 tonnes, a 24 percent increase from 228,512 tonnes in 2000. In 2008, fish exports contributed $1,267 million in earnings to the New Zealand economy, a 6 percent decrease from $1,344 million in 2000.

New Zealand has 35 different species of native freshwater fish, including eels – one of the few native freshwater species to be commercially exploited. There are also approximately 20 introduced species, including trout and salmon (*ibid*). Some species, such as salmon, are farmed commercially. Trout are bred and released into specified waterways for recreational purposes. With the exception of eels, freshwater species are not managed by the QMS and are therefore not included in this report.

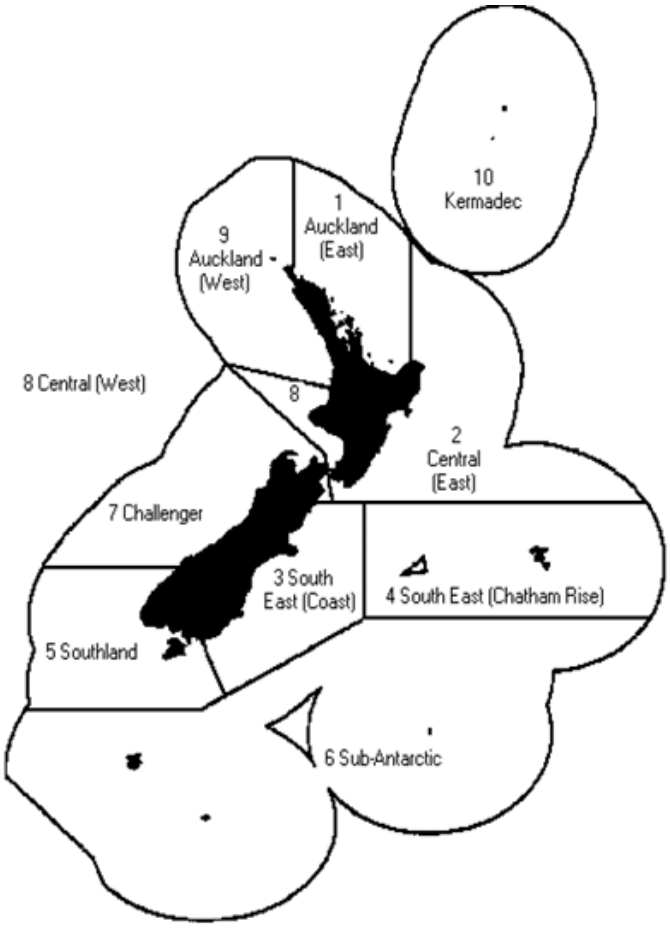
The Quota Management System

The QMS divides New Zealand's EEZ into 10 fisheries management areas (FMAs) (figure 2). For each quota management species, fish stocks have been identified for more effective management. Each fish stock is defined by a quota management area (QMA). This QMA may be the same as an FMA or a grouping of FMAs, depending on the geographical distribution of that fish stock. For example, the species john dory has one fish stock called JDO3 that incorporates FMAs 3, 4, 5 and 6, while snapper has a fish stock called SNA1 that matches FMA1.

Under the QMS, commercial catch limits (in tonnes) are set annually for each fish stock by the Minister of Fisheries, as total allowable commercial catch (TACC). These catch limits are based on advice from the Ministry of Fisheries and submissions from the fishing industry and other interested groups. The TACC may be altered from the previous year if assessments of stock numbers show change. For most fish stocks, the fishing year is from 1 October, to 30 September of the following year. About 130 species are commercially fished within New Zealand's EEZ, 96 of which are managed under the QMS.

This account estimates the value of the 96 species in the QMS at 30 September 2008.

Figure 2 New Zealand Fisheries Management Areas



Source: Ministry of Fisheries
Note: Management areas may vary between species.

Individual transferable quota

Commercial fishers own individual transferable quota (ITQ).[2] Quota is the property right representing the shares owned in a fish stock that can be bought and sold. Quota itself cannot be fished against.

The ACE is the catching right generated each year from the share of the TACC the quota holding represents. Therefore, a person or enterprise that owns quota cannot fish for that quota unless they hold ACE, but a person or enterprise that holds ACE may fish for that stock regardless of whether they hold or own quota. Quota for fish stocks are expressed as shares that are whole numbers. The sum of that quota is always 100,000,000 shares for each stock. The value of one share is equal to one hundred-millionth of the total quota shares for that fish stock.

On the first day of every fishing year that entity's quota shares generate an ACE, which is expressed in kilograms. On allocation, the quota and ACE separate so the ACE can be

[2] Under the current QMS system, only New Zealand residents can own quota (unless permission is granted by the Minister of Finance and the Minister of Fisheries). However, quota owners can contract overseas companies to harvest fish.

traded independently of quota. All quota and ACE transfers must be registered with FishServe, a company that provides administrative services to the New Zealand commercial fishing industry. ACE can be transferred up to 15 days after the end of a fishing year, to allow catch to be 'balanced' up to the end of the year.

As an example:

JMA7 has 100 million quota shares.
▼
J Fisher owns 10,000 quota shares or 0.01 percent of the JMA7 fish stock.
▼
On 1 October, J Fisher's shares generate ACE.
▼
The TACC for JMA7 is set at 50,000 tonnes (50 million kg), therefore 1 share = 0.5kg.
▼
J Fisher's 10,000 quota shares generate 5,000kg of ACE.
▼
J Fisher can catch 5 tonnes (5,000kg) of JMA7 in that year.

Before 1 October 2001, under the Fisheries Act 1983, quota could be leased by the quota owner to another party. For these transfers the term 'lease' is used. These leases could be for varying periods, as determined by the two parties to the transaction. After 1 October 2001, under the Fisheries Act 1996, the quota holdings split into two property rights. It is now the ACE that can be purchased by a second party for the term of the fishing year. When referring to transactions that occurred during or after the year ending September 2002, the term 'ACE transfer' is used to describe the transfer of catch entitlement between two parties. The ACE can be sold multiple times before it is actually fished.

Recreational fishing

Recreational catch is the catching of fish for non-commercial and non-customary purposes. It is an important aspect of New Zealand fisheries, which is recognised in the Government's setting of allowable catch levels. The total allowable catch (TAC) takes into account recreational and customary fishing needs, as well as commercial requirements.

The Ministry of Fisheries administers the recreational fishing regulations. New Zealand is divided into three recreational management areas: north, central and south. Each area has specific regulations that apply to different fish stocks. These regulations govern, for example, catch limits and fish/shellfish size. Fishery officers monitor recreational catch, which cannot be sold. Fishing tours, or trips that are run by a commercial venture, are categorised as recreational fishing.

There is no requirement to report recreational catch, but occasionally surveys are conducted to help estimate its level. The Ministry of Fisheries Shared Fisheries Project[3] is focused on improving management of New Zealand's shared fisheries – those fisheries where customary, amateur and commercial uses overlap. Most shared fisheries are inshore fisheries (including snapper, blue cod, kahawai, rock lobster and pāua) but also include offshore fisheries such as game fish and freshwater fisheries such as eels.

[3] For more information on the Shared Fisheries Project please see: www.fish.govt.nz/en-nz/Shared+Fisheries/default.htm

At this stage there is insufficient information to produce an asset valuation for recreational fisheries; however, it is acknowledged that for some fish stocks the recreational catch is a large proportion of the total catch.

Customary fishing

In 1992, the Fisheries Settlement Act provided a two-part legislated settlement of fishing claims with Māori, addressing the right of Māori to a commercial stake in New Zealand's fishing industry and the right to non-commercial customary fishing.

Customary fishing regulations were developed by the Crown and Māori. The aim of the regulations is to provide for the traditional rights of customary fishing and the sustainability of the fisheries. The regulations were first introduced in April 1998, with the cooperation of South Island iwi (tribes), and cover only non-commercial customary fishing. Those given permission to take fish under customary fishing rights cannot trade or sell the fish for any form of payment. These regulations apply to marine fish and not to freshwater fish.

The customary fishing regulations also provide for the establishment of mātaitai reserves, where Māori can manage all non-commercial fishing in their traditional fishing grounds. These areas are administered by tangata kaitiaki/tiaki, individuals or groups who can authorise customary fishing within their rohe moana (area of water). The tangata kaitiaki/tiaki can issue anyone a permit to catch fish in their area, for customary use. They also provide catch statistics to the Ministry of Fisheries, to allow for customary use when catch limits are set (Ministry of Fisheries, 2006a).

Aquaculture

Aquaculture is the fisheries equivalent of agriculture. The United Nations Food and Agriculture Organisation defines aquaculture as:

> the farming of aquatic organisms: fish, molluscs, crustaceans, aquatic plants, crocodiles, alligators, turtles, and amphibians. Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Farming also implies individual or corporate ownership of the stock being cultivated. For statistical purposes, aquatic organisms which are harvested by an individual or corporate body which has owned them throughout their rearing period contribute to aquaculture, while aquatic organisms which are exploitable by the public as a common property resource, with or without appropriate licences, are the harvest of capture fisheries.

Aquaculture is based in both salt water and fresh water, and takes place in natural waterways and artificial enclosures. Information on the scale and value of the New Zealand aquaculture industry can be found at the Aquaculture New Zealand website (www.aquaculture.org.nz) and on the Seafood Industry Council website (www.seafood.co.nz/n68.html).

Marine aquaculture

Marine aquaculture occurs in the sea, generally in calm waters of coastal areas. The main marine aquaculture species are green-lipped mussels (*Perna canaliculus*), Pacific oysters (*Crassostrea gigas*), and king (or quinnat) salmon (*Oncorhynchus tshawytscha*).

Before 1 January 2005, marine aquaculture was governed by a combination of the Resource Management Act 1991 (RMA) and the Fisheries Act 1983. Marine farming

applicants had to obtain resource consent from the relevant local council before getting a marine farming permit from the Ministry of Fisheries. The Aquaculture Reform Act 2004, enacted on 1 January 2005, streamlined this operation so there is now a single process for aquaculture planning and consent granting through the RMA.

Land-based aquaculture

Land-based aquaculture typically involves growing fish in hatchery tanks and outdoor ponds. Presently, the main marine and freshwater species farmed include salmon, pāua and rock lobster. Potential growth in the land-based aquaculture industry involves species such as eels, whitebait, snapper and seahorses. The Ministry of Fisheries manages land-based aquaculture under the provisions of the Freshwater Fish Farming Regulations 1983. The regulations cover both freshwater and marine species. A list of species that are permitted to be farmed on land is on the Ministry of Fisheries website (www.fish.govt.nz/en-nz/Commercial/Aquaculture/Land-based+Aquaculture).

4. Results

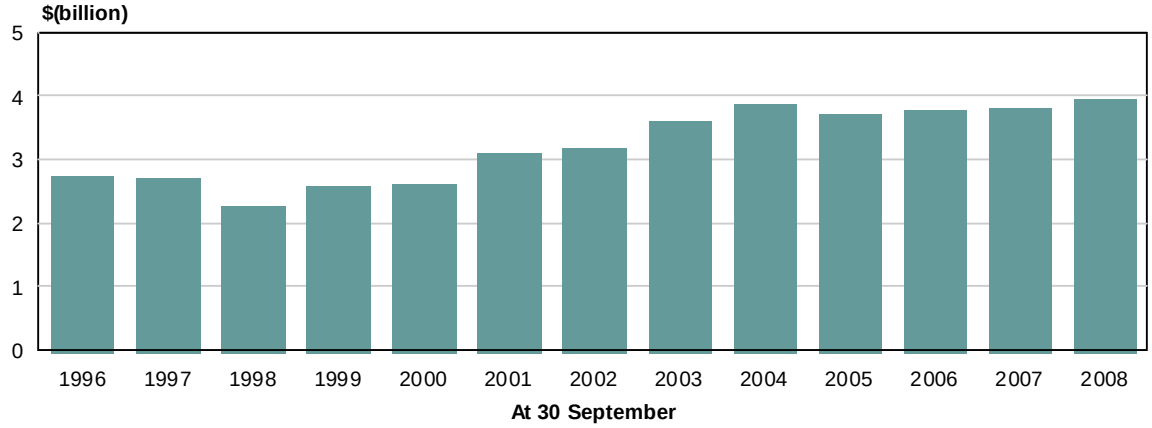
Total fish stock in monetary terms

In the year ending September 2008[4], the total asset value of New Zealand's commercial fish resource under the Quota Management System (QMS) was $3.97 billion, an increase of 45 percent from the 1996 value of $2.74 billion (figure 3).

Figure 3

Total Asset Value of New Zealand's Commercial Fish Resource

1996–2008



Increases in value are caused by increasing quota and annual catch entitlement (ACE) prices, and/or increases in the total allowable commercial catch (TACC) of any QMS species. Increasing export prices are a major factor influencing quota and ACE price rises. In the year to September 2008, the depreciation of the New Zealand dollar against most of the major currencies, combined with rising world food prices, led to increases in export revenues (Sanford, 2008; Stuff, 2008a), which impacted on quota prices and therefore the asset value of a number of species.

The total asset value has increased slightly (by 2.6 percent) from the previous high in 2004. The 2004 asset value of $3.87 billion followed a period of steady growth, after a low value of $2.29 billion in 1998. Total asset value fell slightly after 2004 despite several valuable species being introduced to the QMS on 1 October 2004. These species included scampi, southern bluefin tuna, bigeye tuna, pacific bluefin tuna, and green-lipped mussel. The increase to the total asset value from the addition of these species in the 2005 fishing year was offset by significant decreases in the value of hoki, arrow squid and rock lobster, and smaller reductions in the value of orange roughy, snapper and hake in that year.

In 2008 the total asset value increased for the third year in a row, driven by increases in the value of hoki, rock lobster, orange roughy, snapper, ling, hake, bluenose, and southern blue whiting. TACC increases contributed to asset value increases in the rock lobster and southern blue whiting fisheries.

[4] Most fish stocks have a 1 October to 30 September fishing year but some have a year ending in February or April. All fish stocks with a year ending in any given calendar year are counted towards that year's total.

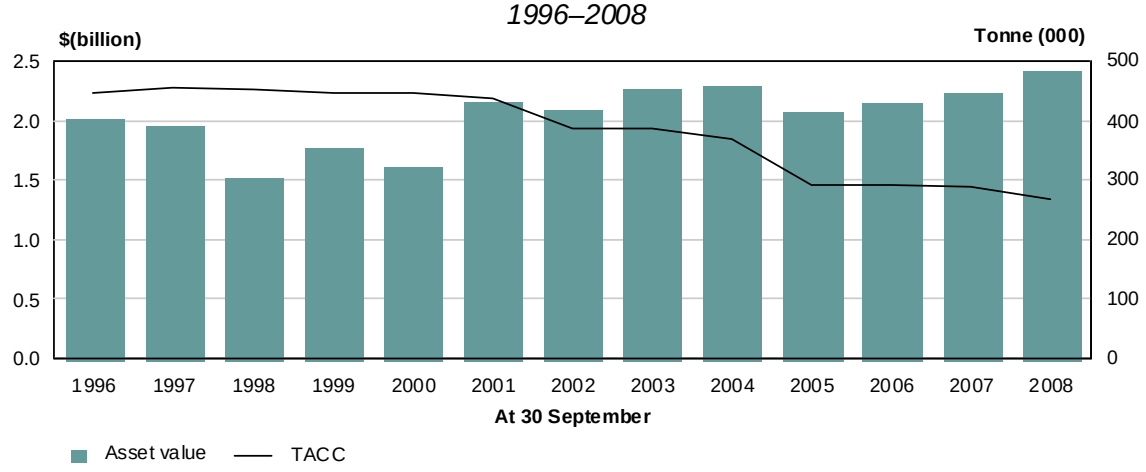
The New Zealand fishing industry is a significant primary industry, contributing almost $1.3 billion in export earnings to the economy each year, and providing direct employment for more than 7,000 New Zealanders (Ministry of Fisheries, 2008a). Refer to the appendix for a summary of New Zealand fish exports volumes and values.

The theoretical benefits of individual transferable quota (ITQ)-based management systems, such as New Zealand's QMS, include sustainable use of the resource and increased economic efficiency (Lock and Leslie, 2007). With that aim in mind it is interesting to note the time series for the initial 26 species[5] introduced into the QMS on 1 October 1986 (figure 4). The asset value for these species has increased by 20 percent, to $2.4 billion, over the period 1996–2008. This is less than the 45 percent increase estimated for the entire commercial fish stock. However, this increase has occurred despite a 40 percent decrease in the total TACC for those species, 83 percent of which, at 150,000 tonnes, was in the hoki fishery.

Figure 4

QMS[(1)] Original Species Asset Value, and TACC[(2)]

1996–2008



(1) Quota Management System.
(2) Total allowable commercial catch.

The original 26 QMS species made up 61 percent of the total asset value of the commercial fish resource at September 2008, compared with 73 percent of the total in 1996. The values of fish stocks, as estimated by integrated environmental and economic asset accounts, provide useful information not only useful to fisheries managers, but also to others interested in a measure of national wealth. One of the fundamental macro-economic indicators of a country's well-being is its wealth over time (SEEAF, 2004). Another major reason for producing asset accounts is to better monitor resource use by accounting for depletion of natural assets. The simplest expression of sustainability is that fish catch is held equal to net growth so that the size of the stock at the beginning period is maintained, under the condition that the stock size was within safe or precautionary limit reference points at the beginning period (*ibid*). Although the non-declining asset value of these stocks is not in itself a guarantee of sustainable use, any more than the setting of TACC limits is, the monetary value of the resource (as estimated

[5] Initial QMS species are: alfonsino, barracouta, blue cod, blue moki, blue warehou, bluenose, elephant fish, flats, gemfish, grey mullet, gurnard, hake, hāpuku and bass, hoki, john dory, ling, orange roughy, oreo, red cod, rig, school shark, silver warehou, snapper, stargazer, tarakihi and trevally.

by the asset account) provides valuable information for those monitoring the resource and its use.

Species valuations

For the September 2008 year, 20 species contributed 90 percent of the total value of New Zealand's commercial fish resource as managed under the QMS: alfonsino, arrow squid, barracouta, blue cod, bluenose, hake, hāpuku and bass, hoki, ling, orange roughy, oreo, pāua, rock lobster, scallop, scampi, school shark, silver warehou, snapper, southern blue whiting, and tarakihi. Table 1 shows the value of the 2008 top 20 species over the period 1996–2008.

In 2008, hoki had the highest asset value of all fish species ($730 million) followed by rock lobster ($634 million) and pāua ($384 million). These three species made up 44 percent of the value of New Zealand's commercial fish resource. All other species (other than the top 20) had a total asset value of $394 million.

There may be variability in the estimates of asset value for some species in the 'all other species' grouping, particularly for species that have only recently been brought into the QMS. This variability may be associated with factors such as uncertainty about the stock levels or management of a species, resulting in a wider range of values in transfer price information than would be expected. In addition, quota transfer information may be absent. This may be the case where the Ministry of Fisheries has allocated quota directly to the industry. Since 2005, all species introduced into the QMS (aside from some limited exceptions) are now subject to a tender process, where all new quota is sold by the Crown to successful bidders.[6]

Transfer information may also be absent, for any quota, where the deemed values[7] for that quota are perceived by the industry to be set at a low enough level not to necessitate the acquisition of ACE. To see the individual asset values of all species managed under the QMS over the 1996–2008 time series, see the table "Asset Value of Species Managed under the Quota Management System" on the Statistics NZ website (www.stats.govt.nz/analytical-reports/fish-monetary-stock-account-1996-2008.htm).

[6] For more information about the introduction of species into the QMS please see: www.fish.govt.nz/en-nz/Commercial/Quota+Management+System/introduction+of+species+into+qms.htm

[7] Where a fisher does not hold sufficient ACE, they incur a financial cost for taking the fish – in being required to pay a 'deemed value'. The system of deemed values is designed to encourage fishers to cover all their catch of QMS fish stocks with ACE. For further information see:

www.fish.govt.nz/en-nz/Commercial/Quota+Management+System/Full+QMS+Details/default.htm

Table 1

New Zealand's Commercial Fish Resource
1996–2008

	September year												
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Species	NZ$ million												
Hoki	642	556	398	580	512	973	700	815	695	541	627	693	730
Rock lobster	368	376	407	374	465	447	591	689	644	585	570	621	634
Paua	143	195	208	193	255	245	260	328	355	379	366	390	384
Orange roughy	233	262	194	208	197	157	237	225	324	300	277	250	319
Snapper	289	272	191	185	197	249	282	298	282	258	226	252	265
Ling	143	162	153	185	141	155	201	172	196	219	197	231	248
Hake	110	102	100	112	109	106	108	141	147	123	188	141	157
Scampi[1]	…	…	…	…	…	…	…	…	…	116	125	117	118
Arrow squid	167	140	76	136	132	81	52	103	240	138	298	170	95
Oreos	80	86	59	71	65	64	60	59	68	68	72	85	87
Tarakihi	47	58	47	54	49	56	40	63	65	62	94	79	85
Silver warehou	44	52	36	40	31	31	56	55	71	71	63	83	83
Bluenose	30	37	37	38	32	49	49	73	43	50	43	58	69
Southern blue whiting[2]	…	…	…	…	78	47	54	57	52	59	62	53	64
Blue cod	19	21	16	15	20	22	28	33	39	45	57	46	47
School shark	31	29	27	26	24	36	35	37	42	50	45	45	44
Barracouta	46	35	29	39	39	28	36	33	37	43	41	38	40
Hapuku & bass	28	26	24	22	21	29	23	32	25	32	36	35	37
Alfonsino	20	33	31	31	18	18	21	35	28	29	30	36	33
Scallop	31	39	36	38	26	37	55	50	48	18	36	31	30
All other species	269	245	217	251	231	268	298	315	464	544	344	370	394
Total	2,740	2,726	2,285	2,599	2,641	3,097	3,185	3,614	3,866	3,730	3,794	3,823	3,965

(1) Scampi was introduced to the Quota Management System (QMS) on 1 October 2004.
(2) Southern blue whiting was introduced to the QMS on 1 November 1999.
Symbol:
… not applicable

Hoki

In the September 2008 year, hoki[8] had an asset value of $730 million. From 1996 to 2008, the value of hoki increased by 14 percent (figure 5). Over the same period, hoki's value as a percentage of the total commercial fish resource asset value decreased from 23 percent to 18 percent. Recorded catch has been relatively stable in this fishery, averaging 97 percent of the total TACC for hoki in the period September 1996 to 2008 (Clement, 2008).

In 1996, hoki had an asset value of $642 million. Following a low of $398 million in 1998, the value of hoki increased substantially, to $973 million in 2001. This increase was associated with a high total TACC of 250,000 tonnes and a low New Zealand dollar, which contributed to export earnings of $244 million in 2001. TACC dropped to 200,000 tonnes in 2002 and 2003; 180,000 tonnes in 2004; and 100,000 tonnes in 2005, in measures aimed at rebuilding the fishery to a sustainable level (Ministry of Fisheries, 2004). As seen in the appendix, from 2000 to 2007 hoki exports declined, both in quantity and average earnings per tonne.

Hoki is widely distributed throughout New Zealand waters, from latitude 34 degrees south to 54 degrees south; from depths of 10 metres to over 900 metres, with the greatest

[8] For further information on this fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=HOK&list=name

abundance between 200 and 600 metres. Under the QMS, hoki is managed as one fishery, HOK1, but is considered to consist of two stocks. The two-stock sub-areas are HOK1W and HOK1E. Catch limits are managed in these areas by agreement between the quota owners and the Minister of Fisheries. Stock assessments in 2007 indicated that the western stock was below maximum sustainable yield but that the eastern stock was at or above this level (Ministry of Fisheries, 2007a)

For 2008 the Minister reduced the hoki TACC from 100,010 tonnes to 90,000 tonnes, and also requested a near 50 percent reduction of catch from the western stock to a 25,000-tonne limit. The limit in the eastern stock increased by 5,000 tonnes, but the Minister requested that this increase in catch occur in the Cook Strait rather than the Chatham Rise areas to protect juvenile aggregations. In order to reduce the likelihood that catch limits would be exceeded, the Minister also raised the deemed values in the hoki fishery (Scoop, 2007).

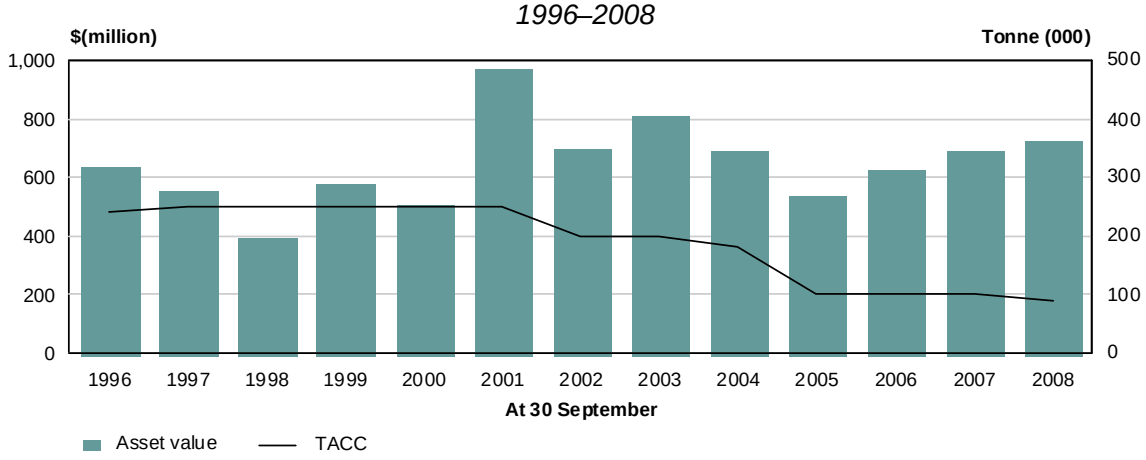
In 2008, the total export revenue earned for hoki was higher than in the previous two years. Rising world food prices and a declining New Zealand dollar contributed to a rise in the export price ($/tonne), and improved earnings in the second half of the year for exporters (Sanford, 2008; Stuff, 2008a).

In 2008, the majority of hoki was exported to China (36 percent) and Australia (28 percent).

Figure 5

Hoki Asset Value and TACC[1]

1996–2008



(1) Total allowable commercial catch.

Rock lobster

In the September 2008 year, rock lobster had an asset value of $634 million. From 1996 to 2008 the value increased by 73 percent, and in 2008 rock lobster contributed 16 percent of the total commercial fish resource asset value, compared with 13 percent in 1996 (figure 6).

The high value in 2003 ($689 million) was followed by three years of declining values, before the rock lobster asset value rose again in 2007. The decline occurred despite a slight increase in TACC for rock lobster, from 2,726 tonnes in 2003 to 2,807 tonnes in 2007 and 2008, indicating a drop in the average value of traded quota and a decrease in ACE prices.

The decline in value since 2003 was associated with a fall in export revenue for rock lobster after 2002 (see appendix). Export revenues have recovered in recent years, which is likely to have influenced the increase in asset value since 2006. Total export revenue for rock lobster was $162 million in 2008.

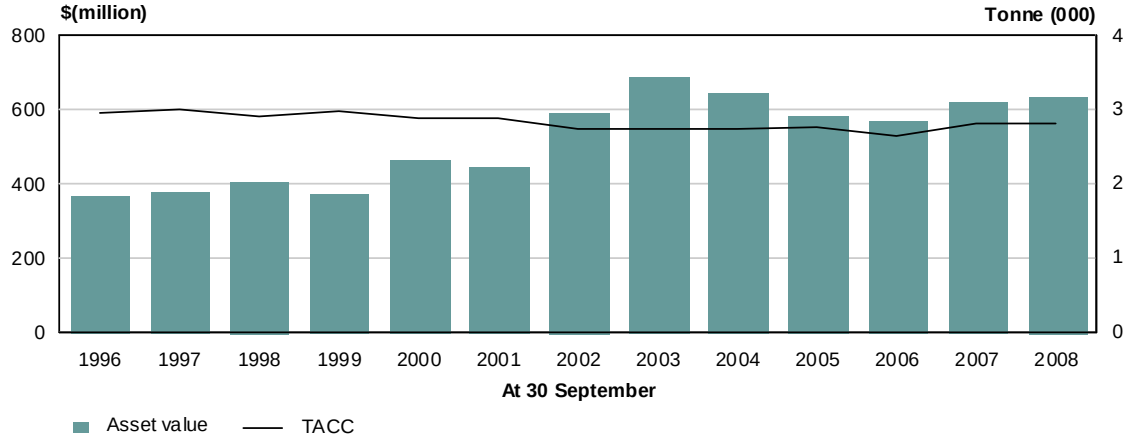
Rock lobster combines two species quotas – spiny red rock lobster[9] (*Jasus edwardsii*), and packhorse rock lobster[10] (*Jasus verreauxi*). Spiny rock lobster has the quota code CRA, with 10 quota management areas. In 2008, spiny rock lobster had a value of $633 million and a TACC of 2,767 tonnes. Packhorse rock lobster has one quota management area, PHC1. Packhorse rock lobster had a value of $1.7 million and a TACC of 40 tonnes in 2008. Recorded catch for spiny rock lobster averaged 95 percent of total TACC for 1996 to 2008, while for packhorse rock lobster the catch averaged 42 percent of total TACC (Clement, 2008).

In 2008, exported rock lobster was mainly sent to Hong Kong (92 percent).

Figure 6

Rock Lobster Asset Value and TACC(1)

1996–2008



(1) Total allowable commercial catch.

Pāua

In the September 2008 year, the asset value for pāua[11] was $384 million, an increase of 169 percent from the 1996 value of $143 million (figure 7).

Pāua's contribution to the total value of New Zealand's commercial fish resource increased from 5 percent in 1996 to 10 percent in 2008. Total TACC for pāua decreased 16 percent over the period, to 1,058 tonnes. Recorded catch for 1996 to 2008 averaged 96 percent of total TACC for pāua (Clement, 2008).

[9] For further information on the spiny rock lobster fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=CRA&list=name

[10] For further information on the packhorse lobster fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=PHC&list=name

[11] Pāua is managed under the quota code PAU with nine quota management areas. For further information on this fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=PAU&list=name

The high dollar value per tonne of exported pāua and the relatively stable TACC in the pāua fishery are likely contributors to the high value. In addition, industry initiatives, such as the formation of the Pāua Industry Council and associated pāua management companies, may have influenced the asset value of pāua. Such initiatives allow quota owners to collectively engage in projects to improve the return from their fishery, such as pāua reseeding (Pāua Industry Council, 2005).

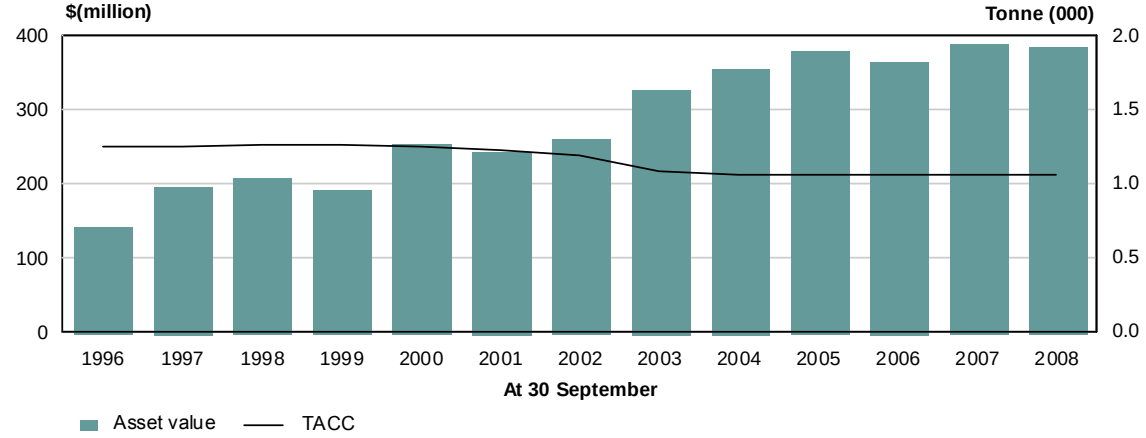
The number of trades for pāua quota has not declined markedly since October 2001, when the Fisheries Act 1996 created the annual catch entitlement (ACE). Therefore the asset value for pāua is based mainly on an analysis of quota rather than ACE transfers. In contrast, the number of quota trades for many other species managed under the QMS has decreased substantially. In estimating the asset value for pāua, in instances where quota trade information was absent, the asset value was (in some cases) produced by using modelled quota information from the subsequent and previous year's quota trade values, rather than being based on ACE transfers. This was because an analysis of the data revealed that in some cases the ACE values for pāua were considered to be outliers (see section 5, methodology). This may result from ACE transactions including other considerations, such as transfers between related parties.

In 2008, most exported pāua was sold to Hong Kong (50 percent) and Singapore (33 percent).

Figure 7

Pāua Asset Value and TACC[1)]

1996–2008



(1) Total allowable commercial catch.

Orange roughy

In the September 2008 year, the asset value for orange roughy[12] was $319 million, a 37 percent increase on the 1996 value of $233 million (figure 8). The increase in asset value since 2007 is driven by increases in the price of orange roughy quota in ORH 1, 2B, 3A and 3B.

[12] Orange roughy is managed under the quota code ORH with eight quota management areas. For further information on the fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=ORH&list=name

This increase in quota price is associated with a slight increase in export earnings. In 2008, export prices rose to $9,358 a tonne, up from the 2007 low of $8,975 a tonne. Orange roughy export revenues were $63 million in 2008, up from $58 million in 2007. This is still lower than the 2002 export revenue high of approximately $121 million.

Over the 1996 to 2001 period the value of orange roughy declined 33 percent, to $157 million. By 2000, recorded catch was 70 percent of total TACC (Clement, 2008) A 23 percent reduction in TACC followed in 2001 (Minister of Fisheries, 2000). From 2001 to 2004 the asset value increased by 107 percent, which may have been a result of high export earnings at the time, and a stable TACC. Over the period 2004 to 2007, the asset value for orange roughy steadily decreased, which may have reflected uncertainty over stock levels. For 2007 the TACC was reduced to 14,721 tonnes. In 2008, the TACC was further reduced to 13,612 tonnes, the lowest level since orange roughy was introduced into the QMS (figure 8).

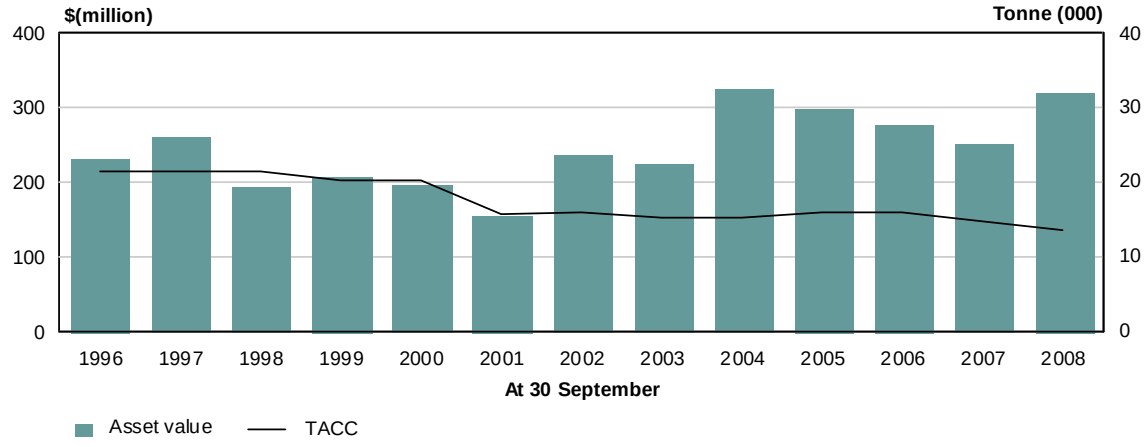
Orange roughy fisheries, like all other fisheries, are managed with the intention of producing the maximum sustainable yield of fish. Over the years, reductions in total allowable catch limits have been made to try and achieve this yield, by allowing more mature fish to be left to breed to help populations rebuild. Information on the stock status of orange roughy, and the corrective actions taken by the Minister of Fisheries, is available at: www.fish.govt.nz/en-nz/SOF/StockStatus.htm?DataDomain=Species&DataClass=ORH

In 2008, most exported orange roughy went to the United States (69 percent) and Australia (18 percent).

Figure 8

Orange Roughy Asset Value and TACC(1)

1996–2008



(1) Total allowable commercial catch.

Snapper

In the September 2008 year, the asset value of snapper[13] was $265 million, an 8 percent decrease from the 1996 asset value of $289 million (figure 9). In 1996, snapper made up

[13] Snapper is managed under the quota code SNA with five quota management areas. For further information on this fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=SNA&list=name

11 percent of the total value of New Zealand's commercial fish resource; by 2008 it had dropped to 7 percent. Over the 1996 to 2008 period, total TACC for snapper declined by around 8 percent. Recorded catch for 1996 to 2008 remained stable, at around 101 percent of the total TACC for snapper (Clement, 2008).

In 1999 the value of snapper dropped to a low of $185 million. This may have reflected a reduction in exports to Asia due to an economic downturn in Asia (Moore, 1999), particularly as Asian economies took a considerable proportion of snapper exports (over 50 percent in 2000). The low value in the late 1990s may also have been influenced by proposed TACC cuts, eventually overturned in the Court of Appeal (Court of Appeal of New Zealand, 1997). The drop in value was followed by a recovery, to a high of $298 million in 2003.

After 2003, snapper again declined in value. This decline occurred in the SNA1 fishery which is significantly larger, in both TACC and value, than the other snapper quota management areas. It is possible that this decline was related to conflicts of interest between the commercial and recreational fisheries in the area. The SNA1 fishery (East Northland/Hauraki Gulf/Bay of Plenty) management area has a high population of recreational fishers. It is likely that proposals announced in 2006 (Ministry of Fisheries, 2006c) aimed at improving the management of New Zealand's shared fisheries[14] resulted in further industry speculation about future TACC cuts.

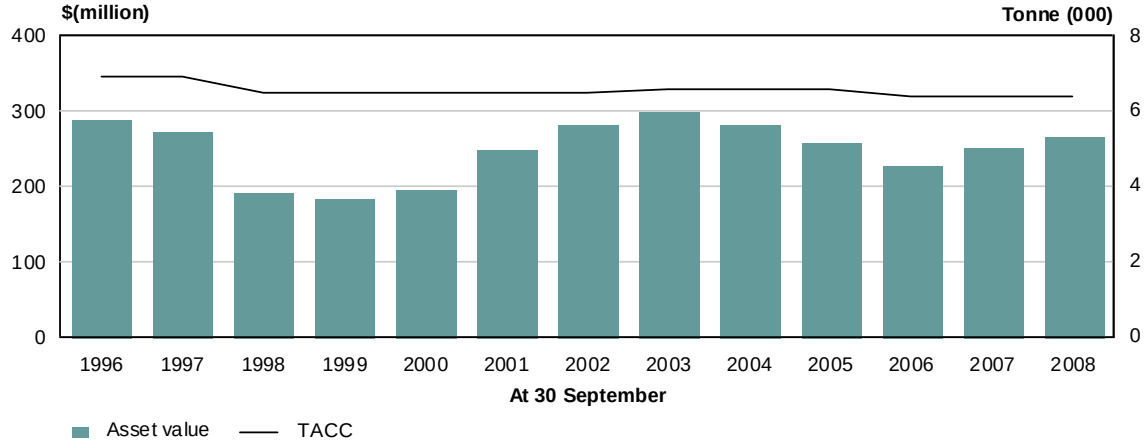
The asset value of snapper continues to show signs of recovery with two consecutive years of growth. In 2008, the highest export price per tonne since 2001 indicated that increasing commodity prices for food are influencing the exported prices received for snapper. In 2008, exported snapper went to Australia (61 percent), the United States (17 percent), Europe (12 percent), and Asia (10 percent).

Snapper are found in New Zealand's warmer coastal waters, especially the northern North Island. Long-lining and trawling at shallow depths are the most common commercial fishing methods used (Seafood Industry Council, 2002).

Figure 9

Snapper Asset Value and TACC(1)

1996–2008



(1) Total allowable commercial catch.

[14] For further information about shared fisheries management see: www.fish.govt.nz/en-nz/Shared+Fisheries/default.htm

Ling

In the September 2008 year, the asset value of ling[15] was $248 million, a 73 percent increase from the 1996 value of $143 million (figure 10) and the highest asset value for this species to date. The value of ling in 2008 was 6 percent of the total value of New Zealand's commercial fish resource.

There was a 10 percent reduction in the ling TACC in 2001, but total TACC returned to its pre-2001 level of around 22,000 tonnes in 2005. Recorded catch for 1996 to 2004 remained stable, at around 100 percent of total TACC. Catch then declined, to an average of 72 percent from 2005 to 2008 (Clement, 2008).

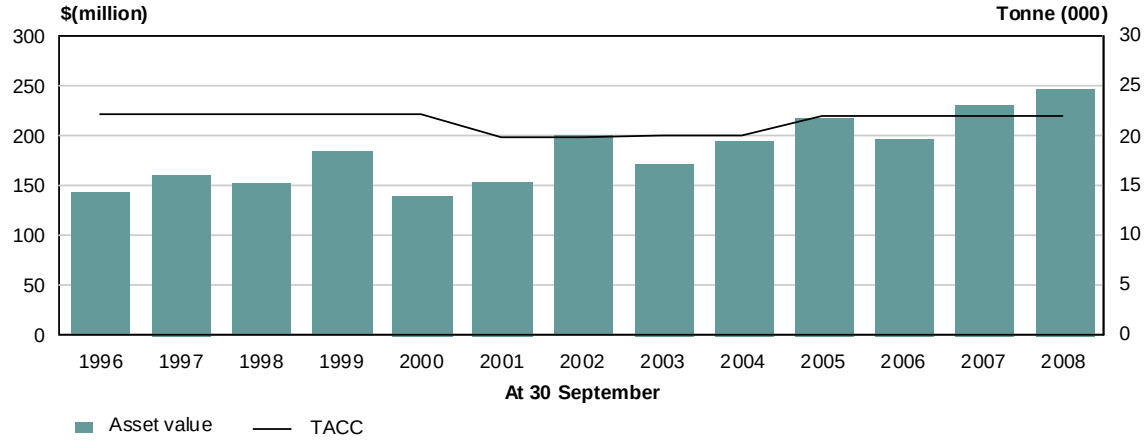
There were fluctuations in the asset value of ling between 1996 and 2008, with decreases occurring in 1998, 2000, 2003 and 2006, possibly due to events in overseas markets. Since a large proportion of exported ling goes to Asian markets, economic conditions and events affecting exports to Asia may be reflected in fluctuating asset values for ling. Ling products are mainly exported to Asia (34 percent), Spain (24 percent), Australia (19 percent) and South Africa (7 percent).

Ling is also known as hokarari, kingclip, pink cusk-eel, pink ling, and northern ling. It is a member of the cusk eel family – a group of marine fish named for their eel-like appearance. They are marine fish and not eels.

Figure 10

Ling Asset Value and TACC(1)

1996–2008



(1) Total allowable commercial catch.

[15] Ling is managed under the quota code LIN with seven quota management areas. For further information on this fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=LIN&list=name

Hake

In the September 2008 year, the asset value of hake[16] was $157 million, an increase of 43 percent from the 1996 value of $110 million (figure 11). In both 1996 and 2008, hake contributed 4 percent of the total asset value of New Zealand's commercial fish resource.

Total TACC for hake remained stable until 2004 at around 14,000 tonnes. In 2005, the HAK4 TACC was cut from 3,500 tonnes to 1,800 tonnes, resulting in a total TACC of 12,366 tonnes. In 2006, total TACC increased to 13,211 tonnes when the TACC for HAK7 increased from 6,855 tonnes to 7,700 tonnes. The hake TACC has been unchanged since then. Total recorded catch fluctuated between a high of 115 percent of TACC in 1996, and a low of 45 percent in 2008 (Clement, 2008).

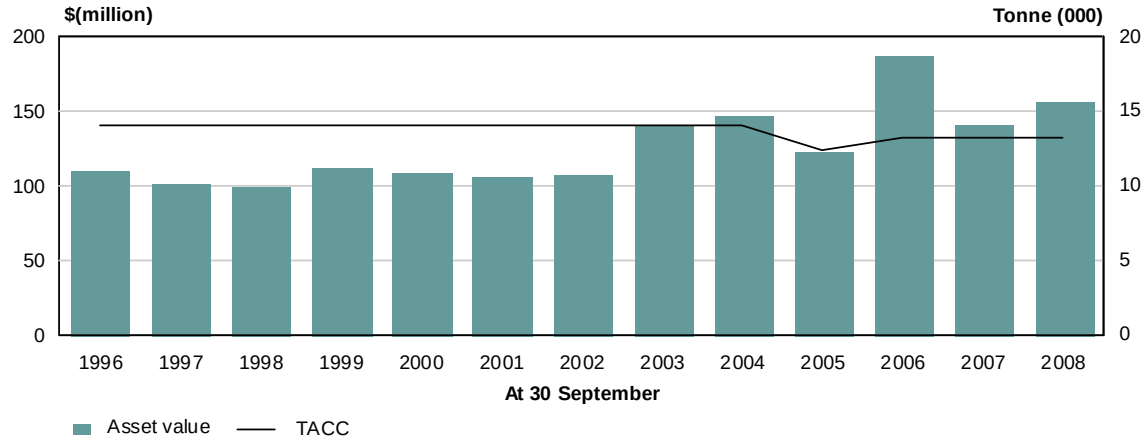
The decline in the value of hake in 2005 may be associated with the TACC reductions for hoki in the same year. Although some fishing operations do target hake specifically, hake is usually caught as bycatch by mid-water trawlers targeting hoki (Seafood Industry Council, 2008). Research by Motu Economic and Public Policy Research (2004) found that when TACC for hoki is reduced, the value of hake quota falls. The increase in value in 2006 was associated with the high value of quota trades in the HAK7 quota management area. The asset value for hake decreased by 25 percent in 2007, which may have been associated with reductions in the export price for hake and conditions in the hoki fishery (see the hoki section earlier).

In 2008, less hake was exported than in the previous seven years, although hake prices appear to have been recovering with the price per tonne increasing to its highest level since 2001. Hake is mostly exported to Spain (73 percent), Japan (13 percent) and Australia (6 percent).

Figure 11

Hake Asset Value and TACC(1)

1996–2008



(1) Total allowable commercial catch.

[16] Hake is managed under the quota code HAK with three quota management areas. For further information on this fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=HAK&list=name

Scampi

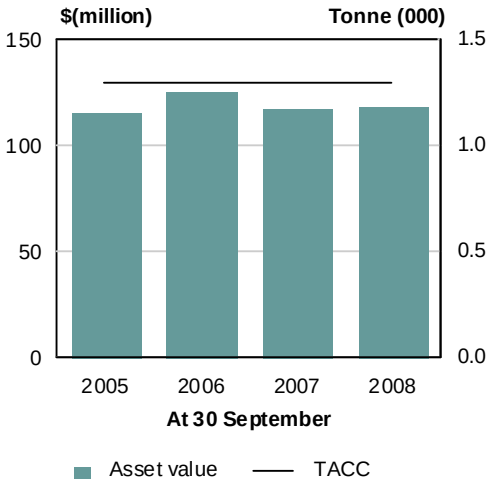
In the September 2008 year, the asset value of scampi[17] was $118 million. This is 3 percent of the total asset value for New Zealand's commercial fish resource.

In 2008 there were insufficient trades with which to estimate an asset value, so the asset value has been modelled using data from the previous three years.

Recorded catch in the scampi fishery has averaged 71 percent of TACC since 2001. Total TACC for scampi has been set at 1,291 tonnes since 2005 (figure 12). Target trawl fisheries for scampi have existed since the late 1980s. The fishery was managed with catch limits until scampi was introduced into the QMS on 1 October 2004.

Figure 12

Scampi Asset Value and TACC(1)
1996–2008



(1) Total allowable commercial catch.

Arrow squid

In the September 2008 year, the asset value of arrow squid[18] was $95 million, a decrease of 43 percent from the 1996 value of $167 million (figure 13). Arrow squid represented 6 percent of the total value of New Zealand's commercial fish resource in 1996 and 2 percent in 2008.

Between 1996 and 1999, total TACC for arrow squid increased slightly, from 123,332 tonnes in 1996 to 127,332 tonnes in 1999. It has remained constant since then, aside from in-season TACC increases in 2004 and 2006 (Clement, 2008). In-season TACC increases are made by the Minister of Fisheries when there is an abundance of squid in the fishery and the industry wishes to catch it. The TACC reverts back to its default value

[17] Scampi is managed under the quota code SCI with 10 quota management areas. For further information on this fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=SCI&list=name

[18] Arrow squid is managed under the quota code SQU with three quota management areas. For further information on this fishery and its stock assessments please see: www.fish.govt.nz/en-nz/SOF/Species.htm?code=SQU&list=name

at the end of the fishing year. Recorded catch has fluctuated from a low of 16 percent of TACC in 2000, to a high of 68 percent in 2005 (Clement, 2008). The catch average from 1996 to 2008 was 44 percent.

The high asset value in 2006 was associated with an abundance of squid in the water, which led to a 20 percent in-season TACC increase in the SQU1T fishery (FishServe, 2006) and a catch of 92 percent of TACC (Clement, 2008). From 1 October 2006, the SQU1T TACC reverted to 44,741 tonnes for 2007.

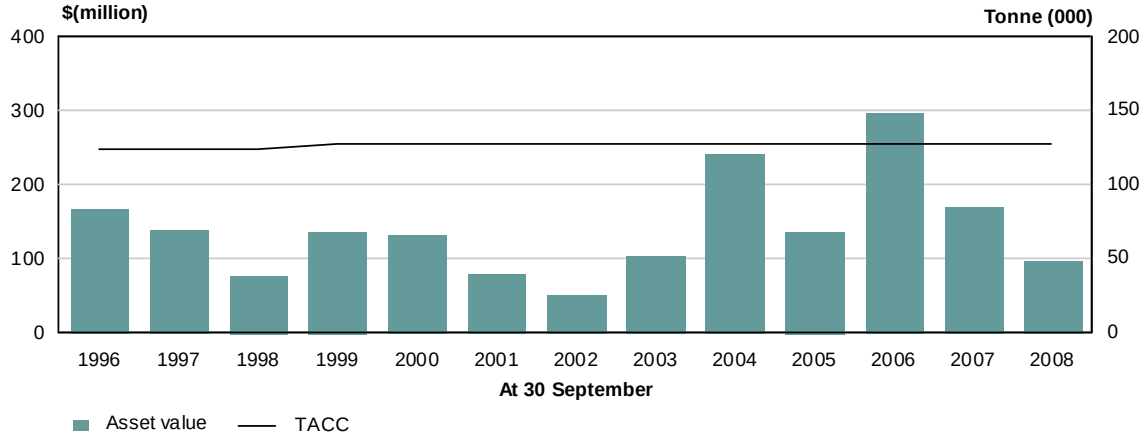
Fluctuations in the asset value of arrow squid are associated with a number of factors, including the fishery itself. The arrow squid fishery is variable; arrow squid live for about a year before spawning and the number of squid present every year is dependent on environmental conditions, especially those affecting the survival rate of juvenile squid (Wassilieff and O'Shea, 2007; Ministry of Fisheries, 2008c). Also, the Southern Islands SQU6T fishery may be closed early once a pre-set maximum number of sea lions are unintentionally killed as a result of squid fishery operations. The New Zealand sea lion is a threatened species, and the population in the Southern Islands is listed as being in decline by the International Union for Conservation of Nature (IUCN, 2008; Scoop, 2008). This represents an additional constraint on the fishery beyond that of TACC (Ministry of Fisheries, 2006d). Since 1996, the fishery-related mortality limit set for sea lion deaths has been reached in 9 of 11 fishing years. As a result, it is not uncommon for catch to reach only 45–60 percent of quota (Ministry of Fisheries, 2008c) Finally, the world market has been dominated by South Atlantic squid from the mid-1990s to the mid-2000s, reducing the attractiveness of the New Zealand fishery to potential operators (Seafood Industry Council, 2005).

Squid accounts for just under 70 percent of the total catch in the target trawl fishery, with bycatch species including barracouta, jack mackerel, silver warehou and spiny dogfish. (Ministry of Fisheries, 2008c) Most exported arrow squid is sold to China, Australia, Ukraine and Greece.

Figure 13

Arrow Squid Asset Value and TACC[1]

1996–2008



(1) Total allowable commercial catch.

Oreo

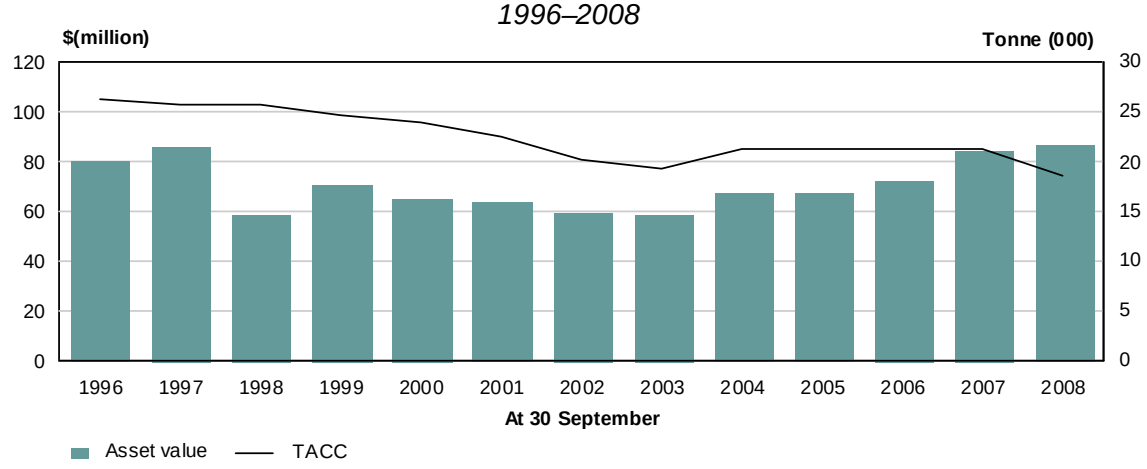
In the September 2008 year, the asset value of oreo[19] was $87 million, an increase of 8 percent from the 1996 value of $80 million (figure 14) and the highest asset value for the oreo fishery to date. In 2008, oreo contributed 2 percent of the asset value of New Zealand's total commercial fish resource. Total TACC for oreo was 26,160 tonnes in 1996, but by 2008 this had been cut by 29 percent to 18,610 tonnes. Recorded catch for 1996 to 2008 averaged 89 percent (Clement, 2008).

The value of oreo fell during 1999 to 2003, but has risen since 2003. This increase may be associated with a shift in the industry, as fishing capacity transferred from the orange roughy (and perhaps hoki) fisheries to oreo (Ministry of Fisheries, 2008b). The asset value increase may also be driven by increased competition for quota because of recent TACC cuts in both orange roughy and oreo fisheries. Oreo is a target fishery but it is also often a bycatch species in the orange roughy fisheries.

The oreo fishery is made up of four species of oreo: black oreo (*Allocyttus niger*), smooth oreo (*Pseudocyttus maculates*), spiky oreo (*Neocyttus rhomboidalis*) and the warty oreo (*Allocyttus verrucosus*). Oreos are slow-growing, late to mature and aggregate around underwater features. One of the most important oreo fisheries is on the Chatham Rise (Scoop, 2007).

Figure 14

Oreo Asset Value and TACC(1)
1996–2008



(1) Total allowable commercial catch.

[19] Oreo is managed under the quota code OEO with four quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=OEO+(BOE)&list=name

www.fish.govt.nz/en-nz/SOF/Species.htm?code=OEO+(SSO)&list=name

Tarakihi

In the September 2008 year, the asset value of tarakihi[20] was $85 million, an 82 percent increase from the 1996 value of $47 million (figure 15). Tarakihi contributed 2 percent of the total asset value of New Zealand's commercial fish resource in 2008.

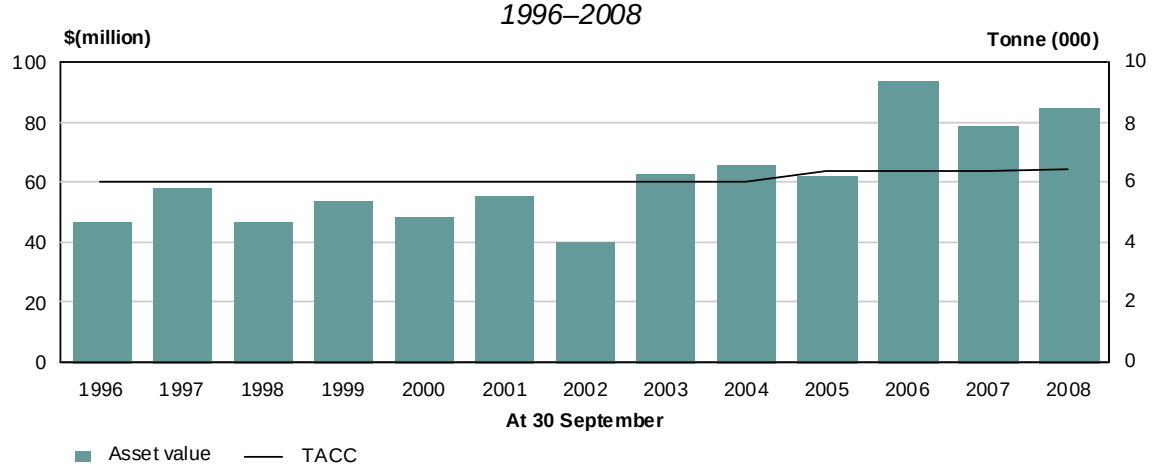
In 2008, a 3 percent TACC increase in the northern tarakihi stock TAR1 increased the total TACC for this species to a high of 6,439 tonnes (Ministry of Fisheries, 2008d; Scoop, 2007). This is the highest tarakihi TACC level in its history in the QMS. Recorded catch remained stable, at around 94 percent of total TACC from 1996 to 2008 (Clement, 2008). There is a significant amount of customary and recreational catch in TAR 1, 2 and 3 (Ministry of Fisheries, 2008d).

Australia receives 73 percent of exported tarakihi and China 18 percent.

Figure 15

Tarakihi Asset Value and TACC(1)

1996–2008



(1) Total allowable commercial catch.

Silver warehou

In the September 2008 year, the asset value of silver warehou[21] was $83 million, an 89 percent increase from the 1996 value of $44 million (figure 16). Silver warehou contributed 2 percent of the total asset value of New Zealand's commercial fish resource in 2008.

From 1996 to 2003, total TACC for silver warehou increased by 5 percent, to 10,380 tonnes, and has since remained stable. Healthy stock numbers, reflected in the increase in TACC for 2003, may be driving the increase in asset value for silver warehou. Recorded catch averaged 106 percent of total TACC from 1996 to 2008 (Clement, 2008).

[20] Tarakihi is managed under the quota code TAR with seven quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=TAR&list=name

[21] Silver warehou is managed under the quota code SWA with four quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=SWA&list=name

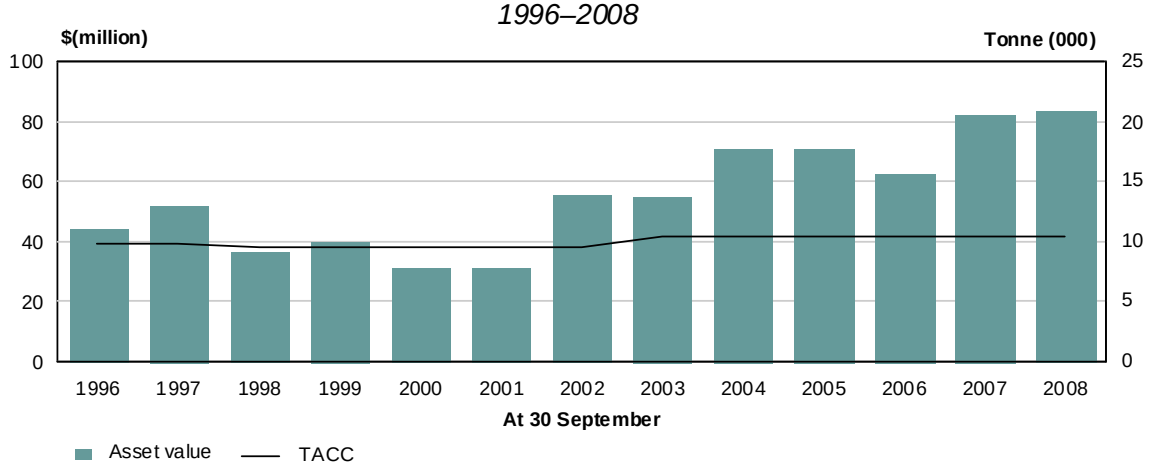
As a result, ACE prices have risen in all quota management areas, except for SWA1. Silver warehou is closely associated with the hoki fishery as a bycatch species. For example, catches in SWA1 increased significantly following the development of the west coast South Island hoki fishery (Ministry of Fisheries, 2008e). The 2008 TACC cuts in the western hoki fishery will therefore be expected to have had some effect on ACE prices in SWA1. Recently, most silver warehou catch has been taken as bycatch in the hoki, squid, barracouta and jack mackerel trawl fisheries (*ibid*).

The majority of silver warehou exported (95 percent) goes to Japan, China, Russia and Ukraine.

Figure 16

Silver Warehou Asset Value and TACC(1)

1996–2008



(1) Total allowable commercial catch.

Bluenose

In the September 2008 year, the asset value of bluenose[22] was $69 million, a 127 percent increase from the 1996 value of $30 million (figure 17). Bluenose contributed 2 percent of the total asset value of New Zealand's commercial fish resource in 2008.

From 1996 to 2005, total TACC for bluenose increased by 49 percent, to 3,233 tonnes, which may have contributed to the increase in the valuation for bluenose. The TACC has remained unchanged since then, while the recorded catch averaged 98 percent of total TACC from 1996 to 2008 (Clement, 2008).

The high asset value for bluenose in 2003 was associated with a high value of quota, rather than ACE trades in that year.

Bluenose is a target fishery as well as a bycatch species, especially in BNS2, where it is caught by trawl fisheries targeting alfonsino and gemfish. In BNS3 the majority of landings are as bycatch in the hoki bottom trawl, and ling long-line fisheries (Ministry of Fisheries, 2008f).

[22] Bluenose is managed under the quota code BNS with five quota management areas. For further information on this fishery and its stock assessments please see:

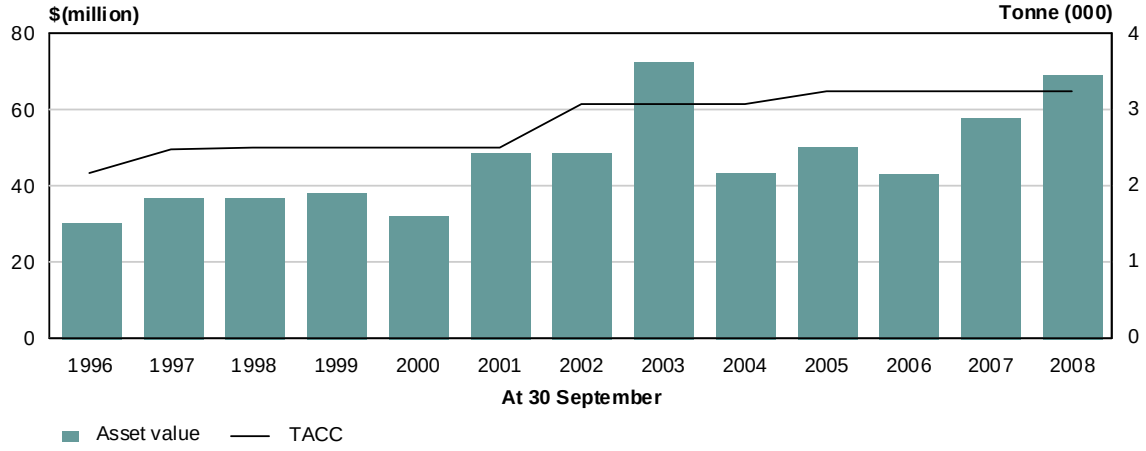
www.fish.govt.nz/en-nz/SOF/Species.htm?code=BNS&list=name

Most exported bluenose is sold to Australia and the United States.

Figure 17

Bluenose Asset Value and TACC[(1)]

1996–2008



(1) Total allowable commercial catch.

Southern blue whiting

In the September 2008 year, the asset value of southern blue whiting[23] was $64 million, a 19 percent decrease from the 2000 value of $78 million (figure 18). It is likely that this decline in value reflects concerns over the sustainability of stock numbers and the associated TACC reductions. Southern blue whiting was introduced into the QMS on 1 November 1999, and it contributed 2 percent of the total asset value of New Zealand's commercial fish resource in 2008.

From 2000 to 2008, total TACC for southern blue whiting decreased by 47 percent, to 30,648 tonnes. In 2007, the TACC for the SBW6I quota management area was reduced by 20 percent in an effort to continue reducing the pressure on stock numbers (Ministry for the Environment, 2007; Ministry of Fisheries, 2008g). On average, for 2000–07, SBW6I had accounted for just over 60 percent of both the asset value and TACC for southern blue whiting. SBW6B TACC is set to increase by 6,300 tonnes for the 2009 fishing year, increasing total TACC for southern blue whiting to 36,948 tonnes. Recorded catch averaged 77 percent of total TACC from 2000 to 2008 (Clement, 2008).

Stocks of southern blue whiting are almost entirely restricted to sub-Antarctic waters, and the majority of the catch is taken by Japanese surimi and Ukrainian-dressed vessels (Ministry of Fisheries, 2008h). As these vessels are under contract to the New Zealand-resident quota owners, the valuation for southern blue whiting is estimated almost entirely from the value of ACE transfers after 2002. The low value of these trades reflects the relatively low value of the product, the timing of aggregations of the fish, and difficulties experienced by operators in locating those aggregations (*ibid*).

[23] Southern blue whiting is managed under the quota code SBW with five quota management areas. For further information on this fishery and its stock assessments please see:

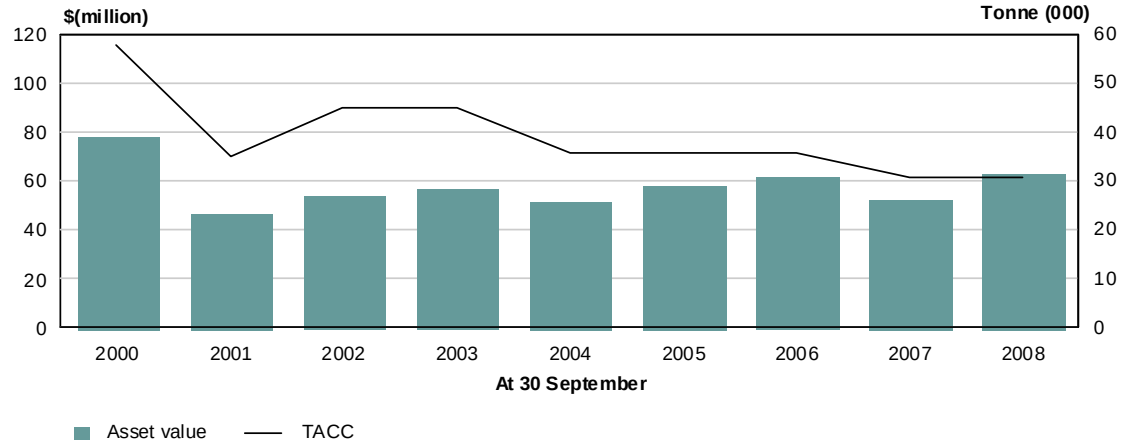
www.fish.govt.nz/en-nz/SOF/Species.htm?code=SBW&list=name

The majority of exported catch goes to China and Japan, usually in the form of surimi.

Figure 18

Southern Blue Whiting Asset Value and TACC[(1)]

1996–2008



(1) Total allowable commercial catch.

Blue cod

In the September 2008 year, the asset value of blue cod[24] was $47 million, a 139 percent increase from the 1996 value of $19 million (figure 19). Blue cod contributed 1 percent of the total asset value of New Zealand's commercial fish resource in 2008.

From 1996 to 2002, total TACC for blue cod increased slightly, from 2,665 tonnes to 2,681 tonnes. Recorded catch remained stable, at around 86 percent of TACC, over the same period (Clement, 2008).

Higher quota prices led to increases in the asset value until 2006. These increases in quota prices may be due to increasing export prices for blue cod. The average export value per tonne increased 141 percent from 1996 to 2006. Export values have dropped since 2006, by as much as 41 percent, which may explain the recent drop in asset values.

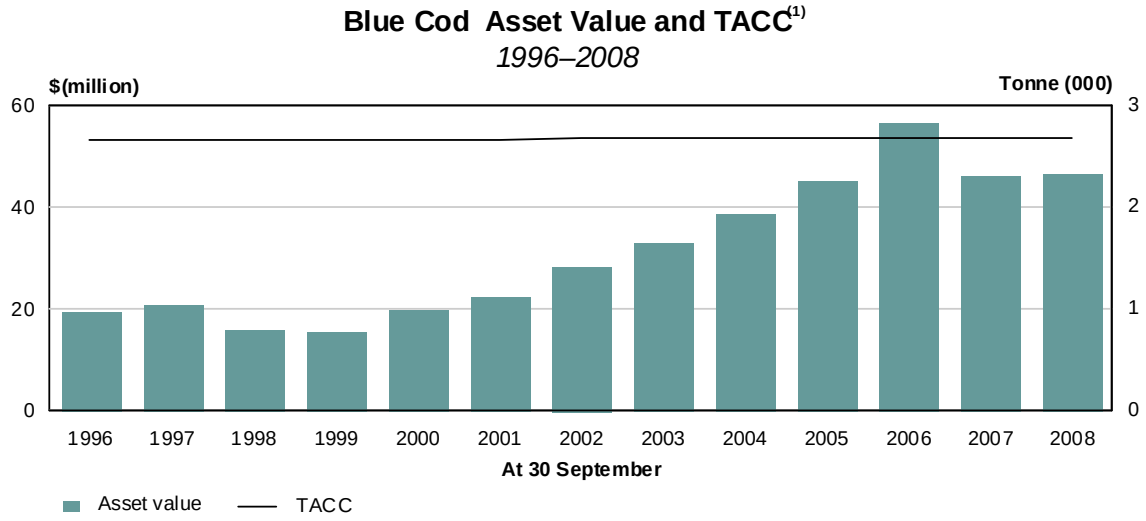
Blue cod fisheries are often associated with rock lobster fisheries, with pots often targeting cod or having a cod bycatch that is then used as bait (Ministry of Fisheries, 2005).

Most blue cod exported goes to Australia (69 percent).

[24] Blue cod is managed under the quota code BCO with eight quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=BCO&list=name

Figure 19



(1) Total allowable commercial catch.

School shark

In the September 2008 year, the asset value of school shark[25] was $44 million, a 43 percent increase from the 1996 value of $31 million (figure 20). School shark contributed 1 percent of the total asset value of New Zealand's commercial fish resource in 2008. From 1996 to 2008, total TACC for school shark increased by 11 percent, to 3,436 tonnes. Recorded catch averaged 100 percent of total TACC for this period (Clement, 2008).

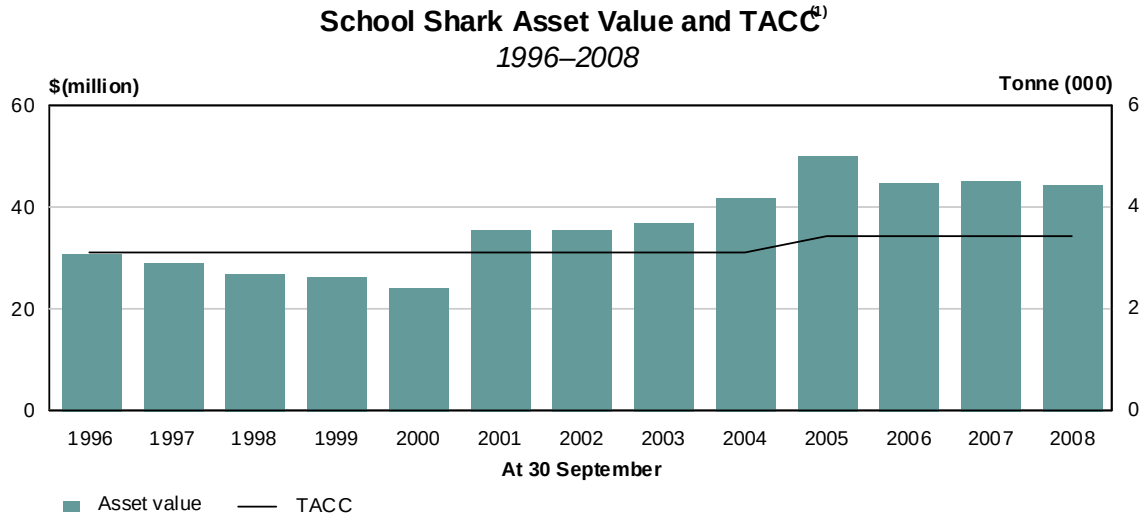
School shark is usually caught at shallower depths in most fisheries, although they are also caught at depths of 400 metres or more in the ling and bluenose long-line fisheries, and hoki trawl fisheries.

In 2008, nearly all school shark exported went to Australia, Hong Kong, Singapore, and the Philippines.

[25] School shark is managed under the quota code SCH with seven quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=SCH&list=name

Figure 20



(1) Total allowable commercial catch.

Barracouta

In the September 2008 year, the asset value of barracouta[26] was $40 million, a 13 percent decrease from the 1996 value of $46 million (figure 21). Barracouta contributed 1 percent of the total asset value of New Zealand's commercial fish resource in 2008.

From 1996 to 2008, total TACC for barracouta decreased 2 percent, to 32,672 tonnes. Recorded catch fluctuated between 66 and 91 percent of total TACC over this period, and the average catch was 76 percent (Clement, 2008).

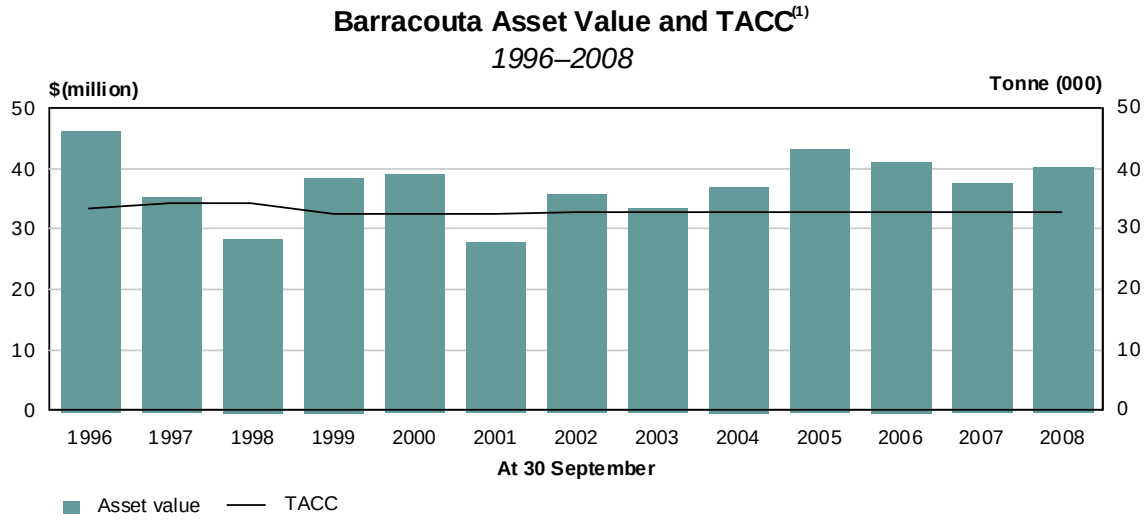
Almost all recorded catch is taken by trawlers, and barracouta also makes up a large part of the bycatch in the west coast North Island jack mackerel (JMA7) and the Snares squid fisheries (SQU1T) (Ministry of Fisheries, 2008i).

Barracouta is exported to South Africa, China, Papua New Guinea, Japan, Australia, Mauritius, Mozambique, and the Republic of Korea.

[26] Barracouta is managed under the quota code BAR with four quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=BAR&list=name

Figure 21



(1) Total allowable commercial catch.

Hāpuku and bass

In the September 2008 year, the asset value of hāpuku and bass[27] was $37 million, which was a 33 percent increase from the 1996 value of $28 million (figure 22). Hāpuku and bass contributed 1 percent of the total asset value of New Zealand's commercial fish resource in 2008.

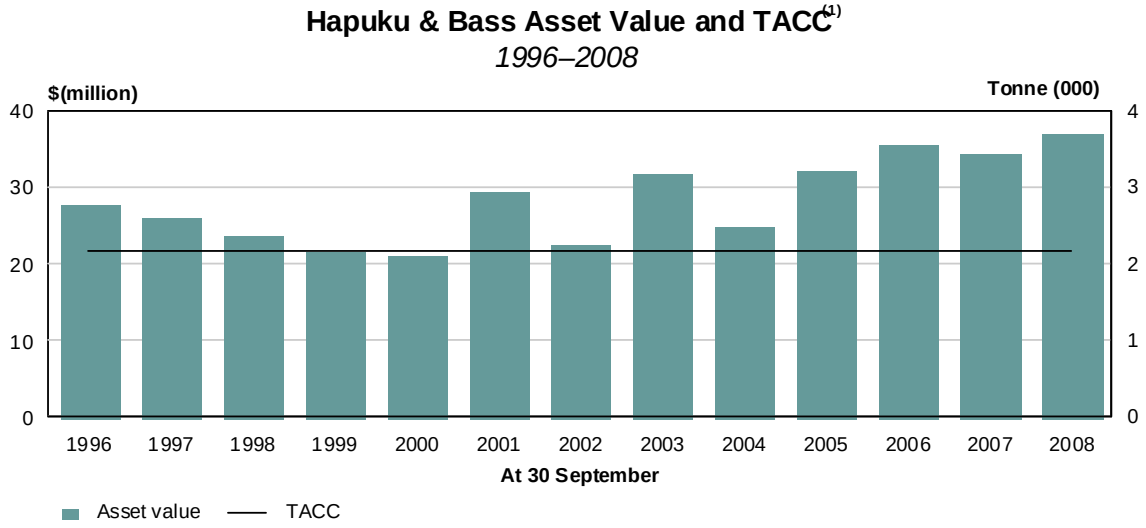
From 1996 to 2008, total TACC for hāpuku and bass increased slightly, from 2,179 tonnes to 2,182 tonnes. Recorded catch fluctuated over the same period, between a low of 63 percent of TACC in 1998 and a high of 80 percent in 2005 (Clement, 2008). The average catch for 1996 to 2008 was 73 percent.

In 2008, most of the exported hāpuku and bass (90 percent) went to Australia and the United States.

[27] Hāpuku and bass is managed under the quota code HPB with seven quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=HPB&list=name

Figure 22



(1) Total allowable commercial catch.

Alfonsino

In the September 2008 year, the asset value of alfonsino[28] was $33 million, a 65 percent increase from the 1996 value of $20 million (figure 23). Alfonsino contributed 1 percent of the total asset value of New Zealand's commercial fish resource in 2008.

From 1996 to 2002, total TACC for alfonsino increased by 10 percent, from 2,722 tonnes to 2,996 tonnes. It has remained constant since then. Recorded catch averaged 98 percent over the same period (Clement, 2008).

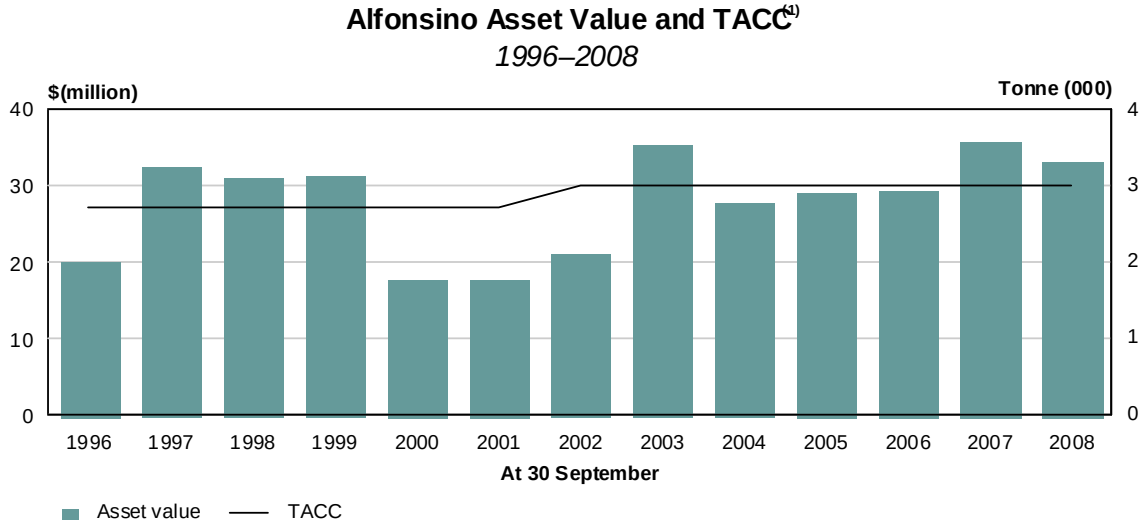
China and Japan received 92 percent of exported alfonsino in 2008.

Alfonsino target trawl fisheries usually catch the splendid alfonsino (*Beryx splendens*) species. Landings of red bream (*Beryx decadactylus*) make up less than 1 percent of the catch, mainly from the BYX1 fishery. The target fishery in BYX3 has an associated bycatch of bluenose (Langley & Walker 2002). In turn, alfonsino is sometimes a bycatch species in the gemfish, orange roughy, hoki, and hake target trawl fisheries.

[28] Alfonsino is managed under the quota code BYX with five quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=BYX&list=name

Figure 23



(1) Total allowable commercial catch.

Scallop

In the September 2008 year, the asset value of the scallop fishery[29] was $30 million (figure 24). Scallop contributed 1 percent of the total asset value of New Zealand's commercial fish resource in 2008.

From 1996 to 2006, total TACC for scallop increased 17 percent, to 841 tonnes. It has remained constant since then. Recorded catch fluctuated considerably from 1996 to 2006, ranging between 26 percent of total TACC in 1997 and 2005, and 95 percent in 2002 (Clement, 2008).

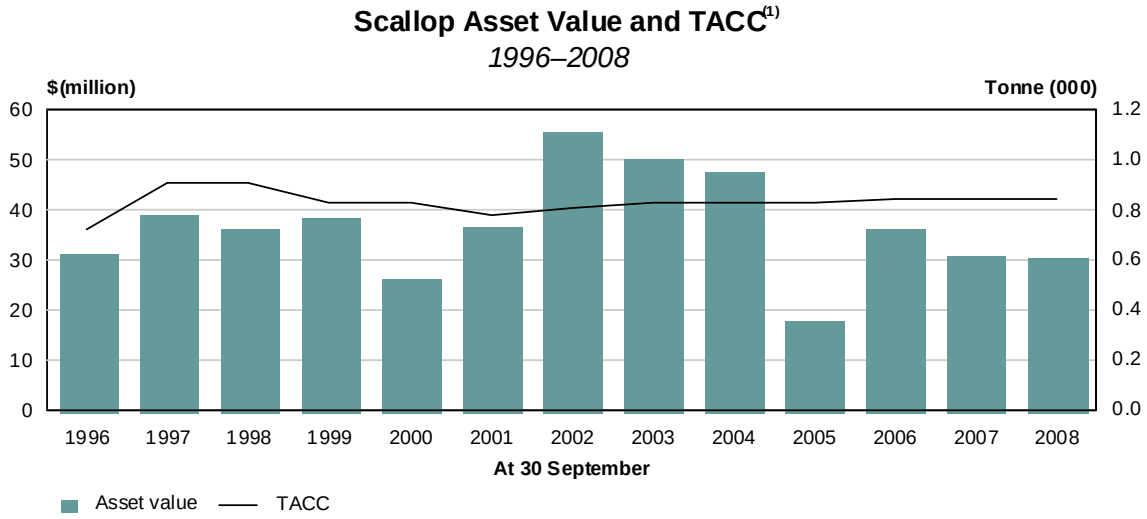
Scallop populations can naturally vary greatly from year to year, independent of fishery activity (Ministry of Fisheries, 2008j). This natural variation can affect the quantity of scallops harvested each year, and therefore the asset value. Years with good catches will often result in higher asset values.

Export prices increased from $12,113 per tonne in 2007 to $18,054 per tonne in 2008 (up 49 percent). Poor catches, and the resulting lower volume of exports in 2008, may have offset the influence of export price increases. The result was a lower asset value in 2008.

[29] Scallop is managed under the quota code SCA with 13 quota management areas. For further information on this fishery and its stock assessments please see:

www.fish.govt.nz/en-nz/SOF/Species.htm?code=SCA&list=name

Figure 24



(1) Total allowable commercial catch.

5. Methodology

Scope

This report presents an asset value for New Zealand's commercial fish resource. The account values non-produced assets (wild stocks) and does not include produced assets (aquaculture). In theory, market prices for the sale of produced assets are available and can be used to estimate the value of live fish owned by an establishment (United Nations et al, 2003). In practice, the value of the fish resources is not readily separated from the capital involved in the industry. As such, the asset value of aquaculture stocks is not able to be calculated at this time, but is an area for future development.

Asset values in this report are derived from the quota and annual catch entitlement (ACE) values of the fish resource under the Quota Management System (QMS). It was assumed that the value of fish stocks was equal to the value of stocks managed under the QMS. This assumption is made since species making up over 95 percent of the total commercial catch, by weight, are managed under the QMS (Ministry of Fisheries, 2007b). Of about 130 commercial species, 96 were managed under the QMS in the year ending September 2008.

Method employed previously

The *Fish Monetary Stock Account: 1996–2003* used a quota valuation methodology which is explained below. The *Fish Monetary Stock Account: 1996–2006* and the *Fish Monetary Stock Account: 1996–2007* altered this initial methodology, in order to incorporate the values for ACE transfers.

When the *Fish Monetary Stock Account: 1996–2003* was produced, calculating the asset value of fish resources was relatively straightforward, using a quota valuation method. This approach follows the guidelines in the handbook of *Integrated Environmental and Economic Accounting* (SEEA) (United Nations et al, 2003), which states that an asset value for fish stocks can be produced through the value of licences and quotas where realistic market values are available.

The asset value based on quota valuations methodology is equal to the average value of the traded quota (dollars per tonne) multiplied by the total allowable commercial catch (TACC). Where no quota trades were available for any individual quota, modelled figures were generated by using the average value of that quota's trades in the previous year. Where these were unavailable, quota trade information from the following year was used.

Declining quota trades

Over time, the amount of modelling within the valuation increased from less than 5 percent (on average for 1996–2001) to the point where, had the valuation been produced in the same manner in 2004, over 50 percent of the valuation would have been derived from modelled figures.

From 1996 the number of quota trades generally declined, from around 1,500 transfers in 1996 to fewer than 1,000 in 2002 and 2004. At the same time the number of ACE transfers steadily increased. Newell et al (2005) found an average of 9,300 lease transactions[30] per year for the period 1986 to 2000. For 2002 to 2007, the average

[30] Prior to October 2001, 'lease' would be an appropriate term as quota could be leased for a period determined by the two parties to the transaction. After this, quota holdings split into two

number of ACE transfers per year increased by over 50 percent, from around 45,000 to over 70,000. Since the introduction of the QMS in 1986, operators with higher overheads may have chosen to dispose of their quota, letting it settle in the hands of those who can use it most efficiently. It may also be a sign of a maturing market that operators are choosing to maximise their capital gain over time, by retaining ownership of their asset while extracting an economic return from that asset.

Current approach

The SEEA states that where quota trade information is not available, then another method available to produce the asset value is to base it on the net present value (NPV) of the resource rent of the fish stock.

This has led to the adoption of a supplementary method using the value of ACE transfers.[31] ACE is the catching right generated each year from the share of the TACC that the quota holding represents. The NPV method uses the value of ACE transfers as an approximation for the resource rent for the asset in that year, and discounts the sum of the future net income stream (or rent) in order to express its value at the present time. This approach requires assumptions to be made, including the choice of discount rate.

> The value of the quota represents the NPV of the owner's expected income using the quota over its period of validity. If the fishery is managed with such quotas and the quotas are valid in perpetuity, the value of all quotas, at the market price, should be equal to the value of the use of the fish stock. If the quotas are valid for a single year only, the total should give an approximation to the resource rent in that year. (United Nations et al, 2003)

A dual approach was taken in updating this account. Where quota trade figures exist, the quota valuation method is used as a preference, but where quota trade information was unavailable then the NPV method, using ACE transaction values, was used in order to avoid reliance on modelled figures.

Before 1 October 2001, the QMS had not created the two distinct property rights of quota shares and ACE. Previously, quota holders could lease their quota holding directly. These leases may have varied in duration and are therefore excluded from the analysis. ACE transaction figures (which are effectively a one-year lease) are used for the 2002–08 years only.

A small amount of modelling was still required (less than 2 percent of all total value in 2002–08). For the *Fish Monetary Stock Account 1996–2003* report, missing data was modelled from the previous year's information, and where this was also not available, the next year's data was used. To reflect more recent market activity, this process has been reversed for the last two reports. Missing quota trade information is now modelled using the subsequent year's information first, and then information from the previous year. The existence of quota trade information for the 2004 to 2008 years has allowed modelling, where it does occur, to reflect more recent market activity.

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property rights; it is the annual catch entitlement (ACE) that can be purchased by a second party for the term of the fishing year. When not referring to pre-2001 transactions, the terms 'ACE transactions' or 'transfers' is used. ACE can be sold many times before being actually fished.

[31] Before 2001 there was no ACE; the quota itself could be leased, and lease periods were often varied. ACE was first used from October 2001. Because lease transactions before 2001 may have been for variable periods, this account uses only ACE transactions from the September 2002 year onwards in the calculation of the asset value for fisheries.

Using the NPV method to incorporate ACE transfers into the valuation

This account makes the assumptions that under the QMS, fish stocks have stabilised at current levels and that the current rent will continue into the future. Although these assumptions may not hold true for individual fish stocks on a year-to-year basis, they are made because the sustainable use of the fisheries resource is a major objective of the QMS. Under these assumptions, the NPV formula becomes the resource rent divided by the discount rate. The expanded formula is given below.

The NPV method discounts the sum of the future net income stream (or rent) in order to express its value at the present time. The general formula for calculating the asset value of a resource is:

$$V_0 = \sum_{t=0}^{T_0} \frac{p_t Q_t}{(1+r)t}$$

$$p_t = \frac{R_t}{Q_t}$$

$$T_0 = \frac{S_0}{Q_0}$$

where

V_t value of the asset at time t

p_t unit rent price of fish at time t

Q_t quantity of fish catch during time t

r the discount rate

R_t total resource rent at time t

T_0 the remaining lifespan of the resource computed at time 0

S_t volume of stock at the end of the accounting period t.

In the case of a renewable resource like fisheries, which is being harvested at a constant and sustainable rate, the lifetime is infinite and the formula reduces to:

$$V_t = \frac{p_t Q_t}{r}$$

Choice of discount rate

A discount rate is a time preference for money, reflecting the fact that income received in the future is not as valuable as income received today. Discounting is reflected in observed behaviour in that producers will prefer to invest where the productivity of capital is positive.

By discounting future income so that it is comparable with income earned today, an asset's value, based on future income, can be estimated. The choice of the discount to be used in estimating an asset's value is a pivotal variable and is often the subject of considerable debate (United Nations, 2000).

The SEEA (United Nations et al, 2003) lists the discount rates used in different economies when preparing their fisheries asset values. The rates varied from a low of 3.5 percent in Norway to a high of 10 percent in Namibia. The New Zealand account uses a discount rate of 9 percent and is chosen because it is consistent with the return on similar assets in the New Zealand economy over the period measured. The rate is also consistent with the range of discount rates used in fisheries accounting in other countries.

Data limitations

While estimates are based on quota and ACE trade values, in some years the trading of individual quota is low or even non-existent. Trades (quota and ACE) for nominal amounts, possibly between economically related parties, are not uncommon and these are removed by the data supplier. In addition, a few ACE values (2 percent over the 2002–06 period) supplied by FishServe were not used, and were replaced with imputed figures. These values were replaced as they were unreasonably high, and would have resulted in severe distortions to both the asset values and trends estimated in this account. It is likely that these trades contained other assets, or were for periods of more than one year.

All quota and ACE transfers must be registered with FishServe, and the total price of any transfer is collected on quota and ACE share transfer forms. Even after removing unreasonably high or low values, as described above, there is still some variation in transfer information (particularly ACE transfer information) that is difficult to explain.

Further variation may be caused by using the NPV method to produce an asset value estimate for a species quota management area, in any year where quota trade information is absent, and using the quota valuation method in the subsequent or previous year. The existence of both quota and ACE trade values for part of the stocks across the 2002–06 period meant that the choice of discount rate could be tested. The NPV method discounts future resource rent (ACE values) in order to express its value at the present time. Therefore, where the value of the asset equals the resource rent divided by the discount rate, then the discount rate can be given by dividing the resource rent by the asset value of the fishery. While the 9 percent discount rate adopted was appropriate on average across the fish stocks and the 2002–06 period, for some stocks ACE values are lower or higher than would be expected in relation to quota transfer values. This may be because the prices recorded against ACE transactions are determined by other considerations, such as transfers between related parties.

Every effort has been made to evaluate the accuracy of the time series estimates included in this report. While trends in the figures are indicative, the use of absolute figures requires care.

Glossary

Annual catch entitlement (ACE): Under the 1996 Fisheries Act, the annual catch entitlement system was introduced in October 2001. This system separates the property right of the quota from the harvesting right. On the first day of each fishing year, an individual transferable quota (ITQ) generates a harvesting right – ACE. Ownership of ACE provides the harvesting right, and this can be traded separately from quota during the fishing year. For example, if a fisher owns 1,000 quota shares, having the quota weight equivalent of 10 tonnes of ITQ, those quota shares will generate 10 tonnes of ACE at the beginning of each new fishing year. The ITQ may be traded separately at any time during the fishing year, but has no fishing rights attached to it (new fishing rights will be generated by the ITQ at the beginning of each fishing year). During each year, ACE can be used to balance catch, or satisfy or obtain a remission of deemed value liability.

Exclusive economic zone (EEZ): Within its exclusive economic zone, which extends 200 nautical miles from the coast, New Zealand has sovereign rights over the management of the resources of the seabed and water column. New Zealand also has jurisdiction in respect of construction of artificial islands, marine scientific research, and protection and preservation of the marine environment, subject to the rights of other states, including: freedom of navigation, overflight, and laying of submarine cables.

Deemed value: if a fisher does not hold sufficient ACE, they incur a financial cost for taking the fish – being required to pay a deemed value. The deemed value is set at a rate that eliminates any financial benefit that the fisher may receive from landing the fish.

Free on board (FOB): The value of export goods, including raw materials, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport, or insurance cost to get the goods to the export market.

Individual transferable quota (ITQ): The individual transferable quota system divides the commercial catch among fishers. An ITQ permits the holder to catch a specified percentage of the total allowable commercial catch (TACC) for a particular stock. Fishing companies and independent fishers buy or sell their ITQs in the same way property is bought or sold. They are owned in perpetuity unless sold. In 1986, provisional quotas were allocated to fishers in proportion to their catch history. To reduce the provisional quotas, in order to insure that the total quota issued equalled the desired TACC for each fish stock, the Government bought up provisional quotas from commercial fishers by a tender system. Initially, quotas were issued in tonnage, but in 1990 the Government moved to proportional quotas. Quotas are now a percentage of the TACC for each species. Foreign ownership of ITQs within New Zealand's EEZ is not allowed, unless granted by the Minister of Finance and the Minister of Fisheries.

Net present value (NPV): Net present value is the value of an asset, based on the summed value of discounted future earnings from the use of the asset.

Quota Management System (QMS): The quota management system has been in place since 1986. Catch limits for each stock are set by the Minister of Fisheries, and the commercial allocation is provided to commercial fishers through the annual catch entitlements.

System of Environmental and Economic Accounts (SEEA): The SEEA was developed by the United Nations Statistical Division as a satellite system to the System of National Accounts, to incorporate environmental concerns (costs, benefits and assets)

in a country's national accounts. The SEEA is intended to be a system with global application and standards suitable for all countries and all aspects of the environment.

System of National Accounts (SNA): The System of National Accounts is an international accounting framework consisting of a coherent, consistent and integrated set of macro-economic accounts, balance sheets and tables. The SNA is based on agreed concepts, definitions, classifications and accounting rules. It provides a framework within which economic data can be compiled and presented for the purposes of economic analysis, and decision and policy making.

Total allowable catch (TAC): The total allowable catch is a catch limit, set each year by the Minister of Fisheries. It covers total removals from the stock, including commercial, recreational, and Māori customary fishing.

Total allowable commercial catch (TACC): The total allowable commercial harvest of fish. This is set once each year by the Minister of Fisheries.

Appendix

Table 2

Export Revenue[1][2] and Quantity
2000–08

Fish type	Unit	September year 2000	2001	2002	2003	2004	2005	2006	2007	2008
Alfonsino	tonnes	923	1,065	1,210	1,340	1,492	2,300	1,447	1,253	1,484
	$(000)	6,324	5,986	5,629	6,480	6,286	10,076	8,971	8,164	8,734
	$/tonne	6,854	5,622	4,653	4,836	4,213	4,380	6,200	6,515	5,885
Barracouta	tonnes	8,939	8,615	10,338	11,422	8,962	14,362	17,377	17,734	17,311
	$(000)	12,544	11,480	11,828	11,241	9,035	15,252	19,121	22,562	26,920
	$/tonne	1,403	1,333	1,144	984	1,008	1,062	1,100	1,272	1,555
Blue cod	tonnes	181	100	109	43	35	64	24	105	108
	$(000)	1,003	833	732	336	360	548	321	831	921
	$/tonne	5,531	8,368	6,711	7,774	10,375	8,573	13,337	7,882	8,537
Bluenose	tonnes	1,242	1,063	1,383	1,579	1,521	1,581	1,481	1,395	1,333
	$(000)	11,926	10,918	12,546	13,791	12,131	13,017	13,003	13,454	14,502
	$/tonne	9,601	10,267	9,075	8,731	7,974	8,232	8,780	9,645	10,879
Hake	tonnes	5,539	6,258	6,238	5,868	7,521	7,384	5,710	6,899	3,904
	$(000)	34,606	39,827	35,173	31,849	39,873	40,039	36,984	42,566	26,817
	$/tonne	6,248	6,364	5,638	5,428	5,302	5,422	6,477	6,170	6,869
Hāpuku & bass	tonnes	490	472	559	633	538	561	595	546	447
	$(000)	4,484	4,800	5,606	5,412	4,388	4,412	5,312	4,917	4,451
	$/tonne	9,145	10,166	10,035	8,551	8,153	7,864	8,931	9,000	9,957
Hoki	tonnes	46,164	54,540	50,320	49,296	39,081	31,504	24,807	29,799	29,232
	$(000)	206,933	243,743	200,220	177,650	133,156	108,234	94,770	93,808	103,213
	$/tonne	4,483	4,469	3,979	3,604	3,407	3,436	3,820	3,148	3,531
Ling	tonnes	7,838	9,160	7,521	8,030	9,342	8,177	6,593	7,120	7,173
	$(000)	66,385	86,233	68,749	51,702	49,999	44,254	43,604	56,339	56,601
	$/tonne	8,470	9,414	9,140	6,439	5,352	5,412	6,614	7,913	7,891
Orange roughy	tonnes	4,689	4,376	7,549	6,442	5,555	5,159	7,089	6,500	6,680
	$(000)	89,924	79,897	120,593	87,784	80,601	76,666	85,521	58,337	62,511
	$/tonne	19,179	18,260	15,975	13,628	14,508	14,859	12,064	8,975	9,358
Oreo	tonnes	5,466	4,242	4,734	4,706	4,024	4,815	4,656	5,486	6,054
	$(000)	29,272	29,628	26,569	23,758	20,006	20,958	19,321	20,844	18,791
	$/tonne	5,355	6,984	5,613	5,048	4,972	4,353	4,150	3,799	3,104

Note: For footnotes see end of table.

Table 2
continued

Export Revenue[(1)(2)] and Quantity
2000–08

Fish type	Unit	September year 2000	2001	2002	2003	2004	2005	2006	2007	2008
Pāua	tonnes	770	749	807	702	769	794	743	793	761
	$(000)	64,541	79,827	65,965	57,154	51,321	55,807	51,968	54,895	49,834
	$/tonne	83,854	106,544	81,773	81,379	66,742	70,294	69,989	69,248	65,525
Rock lobster	tonnes	2,310	2,168	2,220	2,232	2,067	2,388	2,430	2,298	2,617
	$(000)	125,357	124,343	132,559	116,404	99,650	112,392	127,653	123,973	161,785
	$/tonne	54,261	57,361	59,702	52,148	48,216	47,059	52,543	53,943	61,811
Scallop	tonnes	564	261	566	338	149	101	150	85	56
	$(000)	14,917	6,800	16,072	8,068	3,290	2,300	3,110	1,034	1,018
	$/tonne	26,444	26,086	28,401	23,865	22,028	22,843	20,675	12,113	18,054
Scampi	tonnes	879	621	854	748	668	679	466	162	285
	$(000)	26,421	19,780	27,788	21,320	18,212	19,966	11,968	1,912	6,717
	$/tonne	30,051	31,862	32,523	28,506	27,259	29,420	25,690	11,767	23,611
School shark	tonnes	459	317	435	647	596	676	608	607	435
	$(000)	3,963	3,076	4,157	5,950	5,591	6,363	6,359	6,523	5,875
	$/tonne	8,632	9,700	9,555	9,197	9,381	9,409	10,457	10,740	13,521
Silver warehou	tonnes	5,377	5,864	4,664	5,055	5,796	5,900	6,912	7,785	4,632
	$(000)	19,893	25,091	18,265	11,960	12,585	13,380	21,417	24,156	16,868
	$/tonne	3,699	4,279	3,917	2,366	2,171	2,268	3,099	3,103	3,641
Snapper	tonnes	4,393	4,029	4,121	4,058	4,059	3,898	4,361	3,787	3,473
	$(000)	38,210	38,669	37,163	31,616	28,951	25,079	29,233	29,718	31,379
	$/tonne	8,698	9,597	9,018	7,792	7,132	6,433	6,703	7,847	9,034
Southern blue whiting	tonnes	7,735	5,628	10,384	9,609	6,116	10,410	11,823	10,949	11,130
	$(000)	15,182	16,644	31,477	18,731	11,442	15,046	20,956	20,731	19,145
	$/tonne	1,963	2,957	3,031	1,949	1,871	1,445	1,772	1,893	1,720
Squid	tonnes	11,969	19,283	42,964	35,806	69,859	66,737	60,139	55,710	48,131
	$(000)	37,898	57,280	90,514	68,658	170,611	162,557	122,441	85,837	73,179
	$/tonne	3,166	2,970	2,107	1,918	2,442	2,436	2,036	1,541	1,520
Tarakihi	tonnes	217	256	254	180	98	43	116	128	100
	$(000)	1,243	1,642	1,292	1,100	632	244	650	522	498
	$/tonne	5,724	6,406	5,084	6,126	6,430	5,698	5,616	4,087	5,005
Total all fish species	tonnes	228,512	239,686	285,589	275,364	299,624	306,450	300,162	302,341	283,680
	$(000)	1,344,119	1,475,376	1,509,959	1,238,270	1,216,710	1,223,239	1,280,549	1,251,388	1,266,985
	$/tonne	5,882	6,155	5,287	4,497	4,061	3,992	4,266	4,139	4,466

(1) New Zealand dollars.
(2) Free on board.

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