



MSC Fisheries Certification

Full Report

Certification body:	SGS Product & Process Certification PO Box 200, 3200 AE Spijkenisse, The Netherlands
Project number:	5004
Client:	Hoki Fishery Management Company Ltd.
Country:	New Zealand
Fishery title:	New Zealand's Commercial Hoki Fishery
Area:	New Zealand Exclusive Economic Zone
Authority:	Ministry of Fisheries, Wellington
Main species:	<i>Macruronus novaezelandiae</i>
Fishing methods:	Mid water and bottom-trawl
Recommended production limits:	2000 TACC is 250,000 tonnes
Assessment date:	30 th October – 11 th November 2000
Certificate number:	1102/5004/005
Date of issue:	14th March 2001
Duration:	5 years
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1. INTRODUCTION AND SCOPE

This report presents the results of the main assessment of the New Zealand hoki fishery in the New Zealand Exclusive Economic Zone (EEZ) waters, carried out through the period of October 2000 to January 2001. The assessment took place on-site during the period of 30th October to 11th November 2000. The main evaluation (main assessment) of the fishery was preceded by a preliminary analysis (pre-assessment) which took place earlier in 2000.

The purpose of the main assessment was to assess the hoki fishery against the requirements of the MSC Fishery Programme using the SGS Group's MSC Fishery Programme for which SGS Product and Process Certification (The Netherlands) has been accredited by the Marine Stewardship Council. This includes all requirements of the Marine Stewardship Council's Principles and Criteria (MSC P&C).

2. OVERVIEW OF THE FISHERY

2.1. Introduction

The hoki fishery is New Zealand's largest fishery and one of its most valuable. Historically, the main fishery for hoki has operated from late June to late August on the West Coast South Island (WCSI) where the hoki aggregate to spawn. The spawning aggregations begin to concentrate in depths of 300-700 meters around the Hokitika Canyon from late June, and further north later in the season. Fishing in these areas continues into September in some years. In 1988 another fishery developed in Cook Strait on large spawning aggregations of hoki. The spawning season in Cook Strait also runs from late June to mid September, peaking in July and August, like WCSI fishery.

Small catches of spawning hoki are taken from other spawning grounds off the East Coast South Island (ECSI) and late in the season at Puysegur Bank. There is also anecdotal evidence of spawning hoki being caught in other locations around the South Island. Since 1991-92, substantial fisheries have developed on the Chatham Rise and to some extent in the Sub-Antarctic. These fisheries are generally outside the spawning season when hoki disperse to their feeding grounds, and operate in depths of 400-800 meters. Other out of season catches are taken from Cook Strait and the east coast of the North Island (ECNI), but these are small by comparison (Ballara *et al*, 2000).

The fishery for New Zealand hoki was developed through the 1970s by foreign fishing fleets, primarily from the USSR and Japan. Reported catches increased to almost 100,000 tonnes by 1977 but the establishment of New Zealand's Exclusive Economic Zone in 1978 saw catches drop substantially. The numbers of licences granted to foreign vessels in the hoki fishery were restricted and catch limits were implemented. After 1977 reported catches by foreign licensed vessels did not exceed 13,000 tonnes and trawling for hoki by foreign licensed vessels in the EEZ was phased out by the late 1980s.

Through the 1980s most hoki was taken by foreign vessels chartered by New Zealand companies with total catches by domestic vessels not exceeding 10,000 tonnes (Figure 1).

Annual catches remained below about 50,000 tonnes until 1986/87 when the TACC was increased to 250,000 tonnes and catches increased to 216,000 tonnes in 1987/88. Between 1986 and 1990 surimi vessels took about 60% of the catch each year in the West Coast fishery. Since this period surimi vessels have taken a smaller proportion of the catch with most now being processed at sea or onshore into fillets and other added value products (HFMC Strategic Development Plan, 1997).

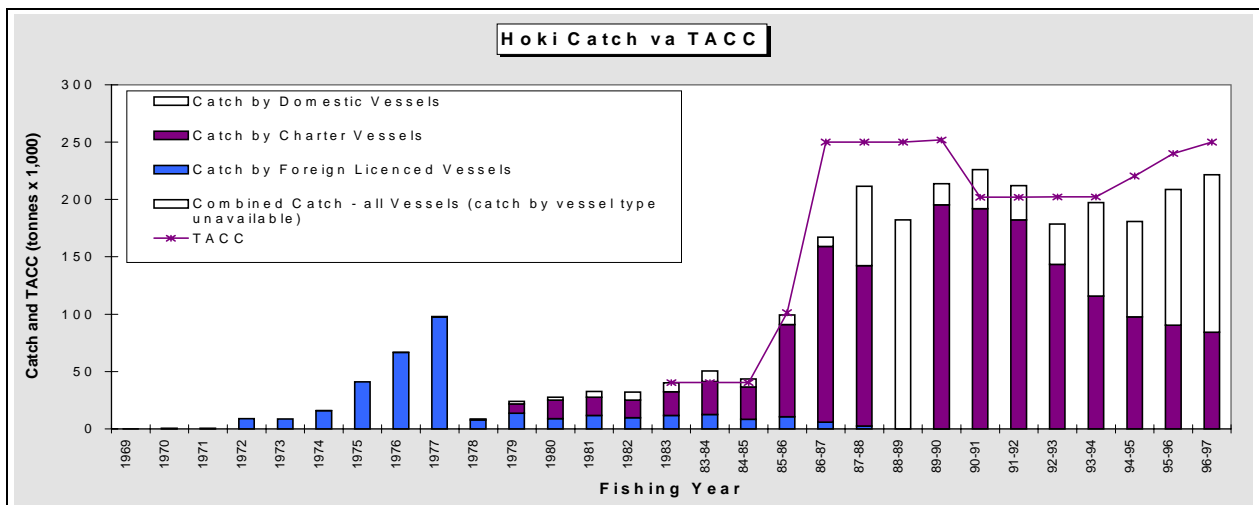


Figure 1 Hoki catch versus TACC (From: HFMC Strategic Development Plan, 1997)

In 1990/91, the TACC was reduced to 202,000 tonnes because the stock assessment suggested hoki biomass had reduced. A revision of stock assessment parameters and the recruitment into the fishery of strong year classes resulted in TACC increases to 220,000 tonnes in 1994/95, to 240,000 tonnes in 1995/96 and to 250,000 tonnes in 1996/97. Annual catches were between 90% and 106% of the TACC in each year between 1990/91 and 1993/94 declining to 79% of the TACC in 1994/95.

An increasing proportion of the hoki catch is now being landed by New Zealand-owned vessels rather than by New Zealand chartered foreign-owned vessels. The net result has been a major decrease in the amount of hoki caught on the west coast spawning grounds, and the virtual elimination of dumping of processing wastes. The amount of headed and gutted product has also declined to low levels compared to the peak in the early 90s. The industry has made major investment in modern trawlers (more than 14 fillet trawlers alone) equipped with fishmeal plants, that have resulted in a wider geographic and temporal spread of catch and substantial reduction in dumped fish waste (James Mace, pers. comm.).

The proportion taken by chartered vessels declined from 80% by volume in 1993 to 60% in 1994 and has declined still further since. There has been a corresponding increase in the amount of hoki processed to high value forms at sea or ashore, and very little semi-processed headed and gutted product is now exported.

2.2. Biology

Hoki (Figure 2) is an elongate fish with a long tapering body and tail, growing to an average length of 60 cm to 1 m and an average weight of 1.5 kgs. Hoki is one of two New Zealand species belonging to the Merlucciidae family; the other being hake. They are found all round New Zealand from shallow coastal bays to depths of 900 m with juveniles mostly found in shallower water and adults in water deeper than 400 m. Most of the commercial catch is taken in depths of 200 - 800 m. Hoki is also found off southern Australia and there is a similar species found off southern South America. They feed in mid-water with small fish, crustaceans and squid forming the bulk of the diet.

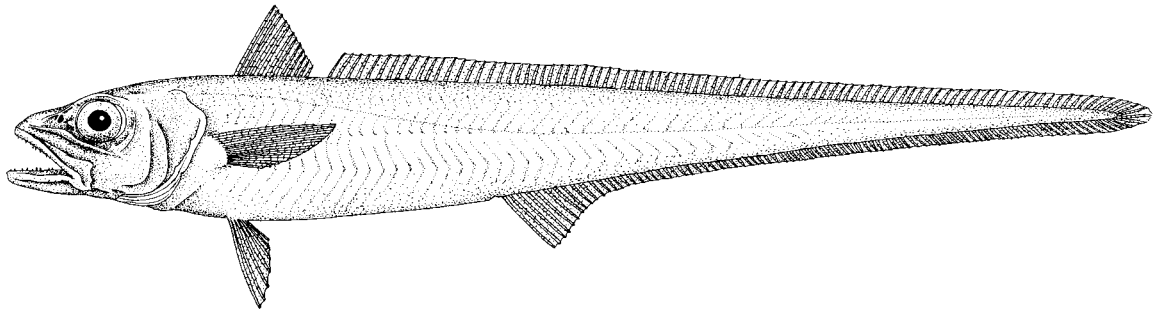


Figure 2 Hoki (*Macrurus novaezelandiae*) (from HFMC Strategic Development Plan, 1997)

Hoki migrate to spawning grounds in Cook Strait, WCSI (West Coast South Island) and Puysegur areas in the winter months. Throughout the rest of the year the adults are dispersed around the edge of the Stewart and Snares shelf, over large areas of the Southern Plateau and Chatham Rise, and to a lesser extent around the North Island. Juvenile fish (2–4 years) are found on the Chatham Rise throughout the year.

Hoki spawn from late June to mid-September, releasing multiple batches of eggs. They have moderately high fecundity with an average sized female of 90 cm Total Length (TL) spawning over 1 million eggs in a season. Not all hoki within the adult size range spawn in a given year. Winter surveys of both Chatham Rise and Southern Plateau have found significant numbers of large hoki with no gonad development, at times when spawning is occurring in other areas.

The main spawning ground is centred on the Hokitika Canyon off the WCSI. The planktonic eggs and larvae are dispersed north and south with the result that 0+ and one year old fish can be found in most coastal areas of the South Island. However the major nursery ground for juvenile hoki aged 2–4 years is along the Chatham Rise, in depths of 200 to 600 m. The older fish disperse to deeper water and are widely distributed on both the Southern Plateau and Chatham Rise. There is also strong circumstantial evidence from trawl surveys that hoki recruit to the Southern Plateau from the Chatham Rise. Analyses from the trawl surveys (1992–95) suggest that most year classes disperse to other areas between 4 and 8 years old.



Growth is fairly rapid with juveniles reaching about 27–30 cm TL at the end of the first year. There is some variability in growth rates, but hoki reach about 40–45, 50–55 and 60–65 cm TL respectively in the following three years. Males appear to mature at 60–65 cm TL at 4–5 years, while females mature at 65–70 cm TL. From the age of maturity the growth of males and females differs. Males grow up to about 115 cm TL, while females grow to a maximum of 130 cm TL and up to 7 kg weight. Fish from the eastern stock sampled in Cook Strait are smaller on average at all ages than fish from the WCSI. Maximum age is from 20–25 years, and the instantaneous rate of natural mortality in adults is about 0.25 to 0.3 per year (Annala *et al*, 2000).

2.3. Stock assessment

A wide variety of data are used in hoki stock assessment, including fishery catch and effort data, information from hydroacoustic and bottom trawl surveys, age and length composition, maturity information and information from studies about stock structure. Current stock assessment analysis carried out by NIWA (National Institute of Water and Atmospheric Research) under contract to the Ministry of Fisheries concludes that the stock is being sustainably fished. An independent report commissioned by the Ministry of Fisheries to review the hoki stock assessment research found that "the contracted research performed by NIWA generally meets contemporary stock assessment standards and is comparable to stock assessments performed around the world" (Quinn II and Sullivan, 1999).

In the scientific assessment process the term "stock" means either a biological population of fish that have been grouped together for stock assessment purposes, or if the boundaries of the biological stocks are not known for that species, a group of fish that have been managed as one unit.

In the stock assessment process the fish in each biological stock (breeding population) are assessed separately. A biological stock is made up of all the fish of one species that live together in one area of the ocean. Although the fishery is managed as one stock, morphometric and ageing studies have demonstrated that there are clearly two substocks of hoki (Figure 3). The 'western stock' covers the west coast of the North and South Islands down to Puysegur, Snares and the Southern Plateau. The 'eastern stock' is located from North Cape down the east coast of the North and South Islands, including Cook Strait, the Mernoo Bank and Chatham Rise. No genetic differences between the two stocks have been identified. It may be that the two stocks result from environmental (rather than genetic) differences. The exchange rate between stocks may be as low as two percent. The boundaries of these are shown below. Each of these different stocks has different biological characteristics (growth rates, mortality rates) and can be fished at different rates so each must be modelled separately.

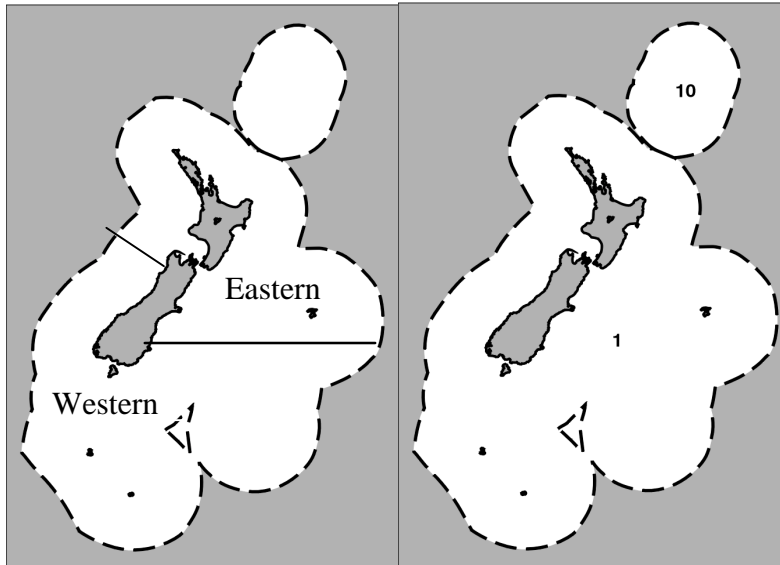


Figure 3 (a) Biological stocks for hoki (left); and (b) administrative fish stock boundaries for hoki (right) (Annala *et al*, 2000)

Assessments are carried out using research time series of abundance from trawl and acoustic surveys, catch and effort and catch at age information from the commercial fishery, and estimates of biological parameters.

Two alternative models are used to estimate the stocks. NIWA developed a model using the MIAEL estimation method specifically for the hoki fishery. The second estimation method is a Bayesian model. Both models are used in the stock assessment.

There are a number of important differences between the two estimation procedures:

- a. The MIAEL model uses a multi-area two-stock approach. The Bayesian model assesses each stock ('eastern' and 'western') separately.
- b. The MIAEL model assumes a deterministic equilibrium structure for the unfished population. The Bayesian model's initial age structure incorporates stochastic year class strength.
- c. The MIAEL model defines virgin biomass as the mid-season spawning biomass. The Bayesian model defines the virgin biomass as the mid-season mean mature biomass. Assuming that 77 percent of the mature hoki spawn annually, the MIAEL model estimates the mid-season spawning biomass at a level around 23 percent lower than the Bayesian estimate.

The Fisheries Act 1996 provides for maximum sustainable yield (MSY) as the management target for the sustainable management of fisheries. Currently the fishery is considered to have two stock units – Western and Eastern. The Western Chatham Rise is the common nursery ground for both stocks, as well as a fishing ground for adults from the eastern stock. The eastern stock is about one-third the size of the western stock but accounts for 40% of the current hoki catch. Model results indicate that this stock is also above B_{MSY} , but the risks of going below these levels over the next five years are much higher than for the western stock.

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The risks vary according to which data set is used in the model. The risk to the eastern stock would be decreased if a smaller proportion of the total catch was taken from this stock.

The 2000 Plenary Report (Annala *et al*, 2000) states that the assessment for the western stock is inconclusive because of the discrepancy between the acoustic and CPUE abundance indices. However, from the 2000 Plenary Report it appears that, under either data set the biomass is estimated to be above the biomass level that can support the maximum sustainable yield (B_{MSY}) and risks to the stock over the next five years of going below these levels are zero or low to moderate. Again the risks vary according to the data set used.

Hoki is New Zealand's largest fishery by volume and one of the most valuable. The Minister of Fisheries has indicated that he wants to manage it carefully, particularly when the assessment indicates a possible sustainability risk occurring in one or both of the stocks within the next five years. The Ministry of Fisheries notes that the risks to hoki in the next fishing year are low.

Recent or planned research on hoki stock abundance includes another acoustic survey of the West Coast South Island (winter 2000), and trawl surveys of the Sub-Antarctic area (December 2000) and Chatham Rise (January 2001). This research will help resolve the discrepancies that currently exist between the different data sets used in the modelling. Sampling of commercial catches in all the main fisheries will also provide catch at age data as inputs to the stock assessment.

This research will allow an improved assessment to be completed for hoki in 2001. The Ministry of Fisheries intends to undertake a full review of the management of the hoki fishery following the completion of the 2001 assessment. It is anticipated that this review will need to address redistribution of the proportion of catch between the western and eastern stocks, in addition to evaluation of appropriate catch limit. The Ministry is of the view that this review would best be undertaken in the context of a management plan for the fishery.

2.4. Structure of the fishery

Hoki is managed as a single quota stock, HOK 1 although catch data from different regions are available (Figure 2). HOK 10 is a nominal fishery only. Traditionally, the main fishery targeted the WCSI spawning aggregations between late June and early September. However, as shown in the figure below the relative importance of this fishery has declined since 1987/88 as fisheries in other areas have developed. Fisheries targeting pre-spawning fish have developed in the sub-Antarctic part of the EEZ and particularly on the Chatham Rise. Since 1988 a fishery targeting the Cook Strait spawning population has developed and is extending to a year-round fishery (Figure 4). The Cook Strait fishery comprises only domestic vessels and total catches have increased from an estimated 21,000 tonnes in 1991/92 to 67,000 tonnes in 1995/96.

There is a trend towards year round fishing for hoki with harvest strategies to optimise product quality although catches during the spawning season still remain the largest component of the total catch. The smaller catches taken outside the spawning periods are being increasingly used to produce value added products.

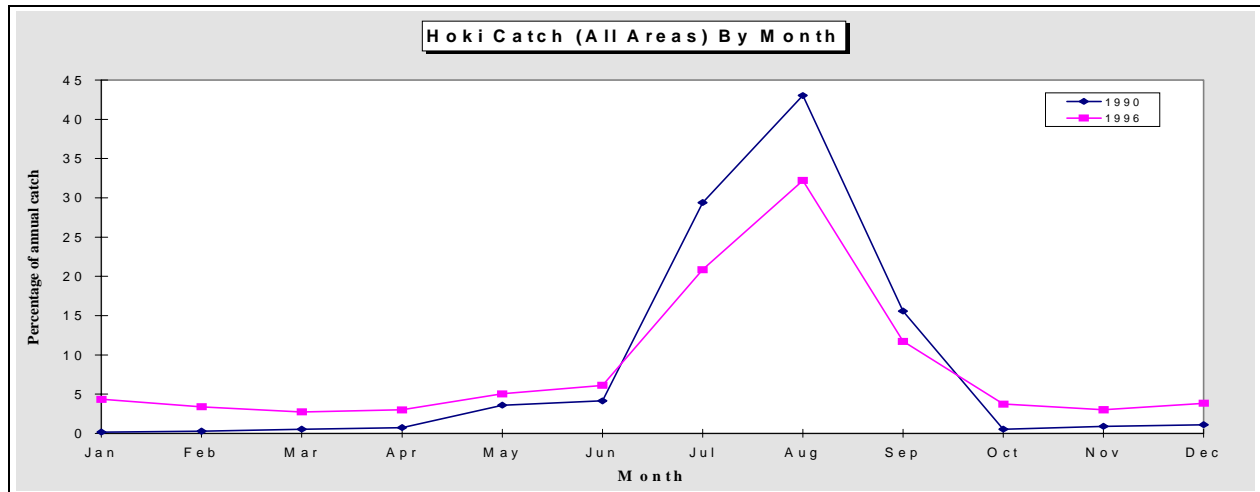


Figure 4 (From: HFMC Strategic Development Plan, 1997)

2.5. Fishing areas

The main fishing season has been from mid-July to late August but may run as late as September. The main fishing area has been the spawning grounds on the west coast of the South Island particularly the Hokitika Canyon and Westport. Since 1988 a fishery has developed in the Cook Strait on separate spawning aggregation to that on the West Coast. This fishery occurs in late June to mid September. Smaller spawning aggregations have been found on the east coast of the South Island and later in the season at Puysegur Bank (HFMC Strategic Development Plan, 1997).

Although the greater proportion of catch remains in the spawning areas, catches in non-spawning areas have increased since 1989 (Figure 5). A substantial fishery now occurs on the Chatham Rise peaking in December/January and May/June. A lesser fishery occurs in the Sub-Antarctic peaking in October/November and April/May. Smaller fisheries occur in Cook Strait and on the east coast of the North Island.

Vessel types have also changed in the last decade. Up until 1990 large (longer than 80m) surimi vessels dominated but during the early 1990s head and gutted product increased, but now fillets are the main product form. Since the mid 1990s vessel size has also changed, with the addition of several trawlers smaller than 45 meters to fish in waters inside the 12 mile territorial sea, and about 14 freezer fillet trawlers of about 60-70m in length.

Two types of trawl are used in this fishery, bottom and pelagic trawls. Bottom trawls are relatively small with a low headline height, and can only be fished on the seabed. Pelagic trawls are made of large mesh panels to enable high headline heights to be achieved. These nets are designed to fish in midwater, but are often in light contact with the seabed.

The hoki industry prefers to fish with pelagic trawls, but bottom trawls are preferred in some areas as the lower headline height reduces by-catch of non-target species.

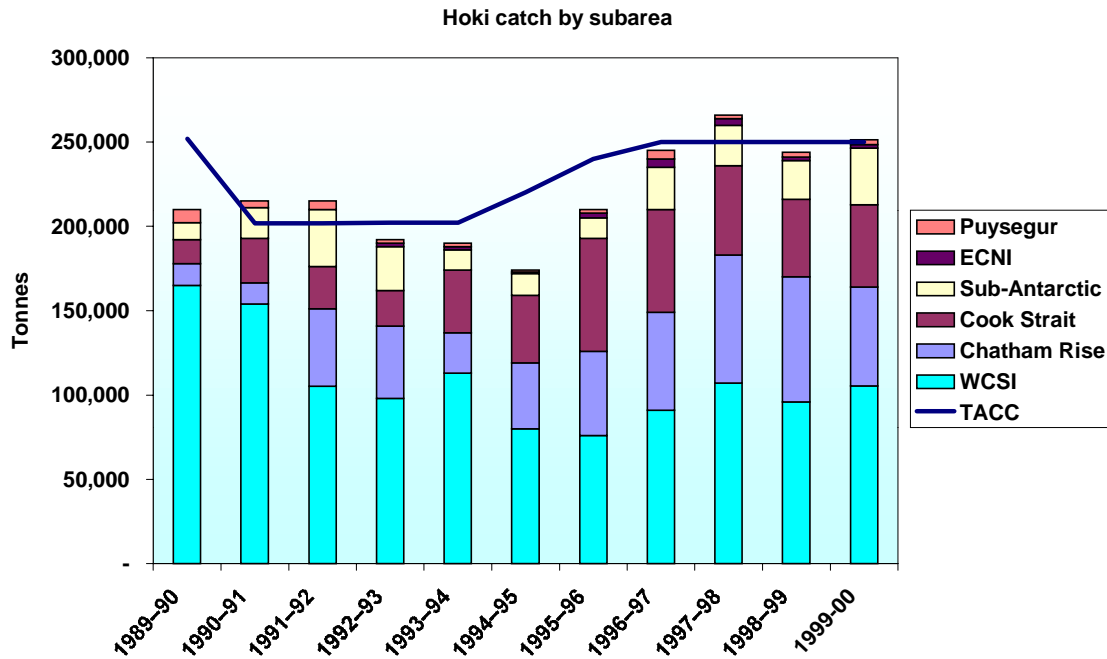


Figure 5 (From: HFMC Strategic Development Plan, 1997)

2.6. Catch

The Total Allowable Commercial Catch (TACC in tonnes) for management area HOK 1 (Figure 3), estimated catch and reported catches (t) since the introduction of the Quota Management System (QMS) (Annala *et al.*, 2000). The overrun in some years of the TACC is legitimate given the provision for 10% over-under catches under the New Zealand QMS.

Table 1 Hoki catch overview per year (From: Annala *et al.*, 2000)

Year	TACC	Estimated catch ¹	Reported catches
1986-87	250,000	175,000	158,171
1987-88	250,000	255,000	216,206
1988-89	250,000	210,000	208,500
1989-90	251,884	210,000	210,000
1990-91	201,897	215,000	215,000
1991-92	201,897	215,000	215,000
1992-93	202,155	195,000	195,000
1993-94	202,155	190,000	191,000
1994-95	220,350	168,000	174,000
1995-96	240,000	194,000	210,000
1996-97	250,000	230,000	246,000
1997-98	250,000	269,000	269,000



1998-99	250,000	-	245,000
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¹ From Trawl Catch Effort Processor returns and Catch Effort Landing returns data

2.7. By-catch

The dominant fish species appearing in the by-catch of the hoki fishing operations are hake, ling and silver warehou. Important occasional non-fish by-catch include seabirds and New Zealand fur seals.

2.7.1 Fish bycatch

Hake bycatch problems have occurred in the West Coast South Island hoki fishery. Hake caught in this area (quota management area HAK7) has generally consisted of bycatch taken within the much larger hoki fishery. In the fishing years 1986-87 to 1996-97 the HAK7 landing exceeded the TACC. A number of industry initiatives were taken to address this overfishing problem. These included changes in fishing practices (e.g. use of certain gear, and length of tows), fishing strategies (e.g. fishing area and season). In 1992 the Ministry increased the TACC for HAK 7. Landings in the last reported two years, '96 - '97 and '97 - '98, has been a net 3% below the TACC. However it is not known if the current TACC's for all hake fish stocks are sustainable (Annala *et al*, 1999).

In HAK7 in some years, notably in 1992 and 1993, there has been a hake target fishery in September after the peak of the hoki fishery is over; about 2500 tonnes of hake were taken in this target fishery during September 1993. Since then, however, there has been no significant target fishery in September.

Estimates of current and reference biomass are not available for HAK7. The TACC in HAK7 has been over-caught in recent years. It is not known if recent catch trends and the current TACC are sustainable, or will allow the stock to move towards B_{MSY} . However, the Ministry of Fisheries has no immediate sustainability concerns for HAK7 because the available information gives no signals that abundance is decreasing. In particular it was observed by the Ministry of Fisheries that the bycatch rate of hake in the hoki fishery has remained relatively consistent in recent years, fishers are still having to adjust fishing patterns to avoid hake, and the broad age-structure of the commercial catch has remained constant over recent years.

Other bycatch fish species include mainly ling and silver warehou. The most important of these is ling. Ling on the east coast South Island and in the southern areas (LIN 3,4,5 and 6) are considered to be only moderately fished and current stock sizes are estimated to be above the size that will support MSY (Annala *et al*, 1999). For ling stocks on the West Coast South Island and Cook Strait it is not known if recent catch levels are sustainable. In recent years the ling bycatch by hoki fleet on the west coast South Island has decreased, largely due to the move to midwater trawling. Bycatch in the Cook Strait is not considered to be an important issue.

The most recent assessment for ling in management area 7 (LIN7) suggests that the current biomass is just above B_{MSY} . However, the assessment is highly uncertain. It is driven by a longline catch-per-unit-effort (CPUE) series, which is the only relative abundance index available for this stock. Proportion-at-age data from the trawl fishery is available from the last three years. The next assessment of LIN7 will include proportion-at-age data from seven

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years, which will enable a better estimation of year class strengths and fishing selectivity, and should improve the overall assessment.

Given the above assessments, the Ministry of Fisheries (MoF) has not included HAK7 or LIN7 in the current (2000/01) annual review of sustainability measures. However, MoF does regularly assess the deemed values (over-catch penalty) for both fish stocks. The deemed values for both stocks is currently set at 90% of the port price as a result of over-catch of their respective TACC's. This high deemed value level has been set to provide a disincentive for fishers to take fish without the authority of quota.

The Ministry of Fisheries also has active research programmes operating for both LIN7 and HAK7 with aim of collecting data from the commercial fishery (catch-at-age, CPUE) to improve and regularly update the assessments of both stocks. A review of the HAK7 ageing data is due for completion at the end of 2000. In addition, the use of acoustic research techniques to assess the biomass of HAK7 has recently been evaluated and will be considered for use in the next hoki acoustic assessment on the west coast South Island in 2003.

2.7.2 Non-fish bycatch

There is an occasional, incidental bycatch of New Zealand fur seals and seabirds in the hoki fishery. Such by-catch is not illegal provided that catches are accidental and always declared to the competent Authority.

There is a formal programme to monitor, and legal means to control, such by-catch. All such captures are required to be reported to the Government, and Ministry of Fisheries observers provide independent verification of bycatch levels. A scientific working group (which includes industry scientists) meets regularly to estimate bycatch levels and review their effect on marine mammal and seabird populations.

The industry co-operates with such programmes and laws. The hoki industry has implemented a code of practice (and extra industry research) to minimise and mitigate the bycatch of marine mammals such as fur seals. This provides directions on fishing and other operational practices to minimise catch of these species as they forage around the net and behind the vessel.

The industry implemented the use of Sea Lion Excluder Devices in the squid fishery in 2001 to mitigate captures of sea lions in the Auckland Islands squid fishery, and similar excluders have been tested in the Tasmanian hoki fishery. The New Zealand hoki industry is currently evaluating the results of these trials.

The New Zealand Department of Conservation does not class the NZ fur seal as threatened. Three species of albatross were observed to be caught in the hoki fishery during 1997/1998. Under the revised IUCN criteria for identification of threatened taxa, these species were identified as vulnerable, but not endangered or threatened. Based on current information, the hoki fishery is not considered to pose a medium to long term threat to any threatened or endangered species.

The industry is also developing mitigation measures to reduce the accidental mortality of albatrosses by trawlers. The size of the New Zealand fur seal and most seabird populations are unknown (although populations of species which are believed to be vulnerable are monitored by

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the Department of Conservation), and it is thus not known if the hoki fishery poses any threat to these populations. However, there are no adverse signals from the fishery or from seal and seabird population bycatch monitoring to suggest that significant risk occurs.

The hoki fishery is not known to have any adverse effects (that are irreversible in the medium to long term) on associated and dependent species, although as discussed below, this is an area where there is little information.

2.8. Reporting of catch

The primary information source comes from the catching vessel's skipper who provides information on catches and related effort each time the catch is landed or on a monthly basis. The information is provided in a standardised Ministry of Fisheries form such as the Catch, Effort and Landing Returns or the Trawl Catch, Effort, and Processing Returns. These reports provide additional information about the landed weight and state of the fish, the quota against which the fish was caught, and the receiver of the fish.

Two other sources of information about catches are provided in the Quota Management Report and the Licensed Fish Receiver Report.

Fishers must sell their catch to a Licensed Fish Receiver. The Licensed Fish Receiver supplies monthly reports to the Ministry of Fisheries on the catch they receive and the quota holder the catch relates to. The Licensed Fish Receiver Return provides catch information in green weight tonnage. Standard conversion factor tables for the conversion of processed weights to green weights are provided by regulation.

The quota holder provides quota Management reports to the Ministry. These reports provide information on the catch taken against a quota holding and the vessel used to take the quota.

These requirements are specified in the Fisheries (Reporting) Regulations 1990 and amendments.

2.9. Post-harvest

Most of the product is exported as a further processed product, less than 15 percent of sales are of basic product (frozen, headed and gutted fish).

The United States of America, the European Union, Japan and Australia provide 80 percent of the markets for hoki. The major customers are the food service industry (e.g. hotels and restaurants) and food preparation businesses of branded products such as the ready-to-serve meals.



3. FISHERIES MANAGEMENT SYSTEM

3.1. Administrative context

The Ministry of Fisheries (MoF) is the Government agency responsible for the conservation and management of fisheries while the Department of Conservation is responsible for the sustainable management of the seabed within the 12 nM territorial waters. MoF is charged with consistently monitoring the fishery resource and making timely and appropriate policy advice on all aspects of fisheries management to the Government. The Ministry is also responsible for carrying out the Government's policies to manage and conserve fisheries, and to actively encourage compliance of fisheries regulations by all fishers.

The main statutes related to the management of the marine environment are as follows:

- Establishment of the 12 nautical mile (nM) territorial sea and the 200 nautical mile EEZ (Territorial Sea, Contiguous Zone and Exclusive Economic Zone Act 1977);
- Management of residual areas of the foreshore and territorial seabed so as to protect their natural and historic resources (Foreshore and Seabed Endowment Revesting Act 1991);
- Provision for mineral exploration of the continental shelf (Continental Shelf Act 1964);
- Establishment of mineral programmes for the allocation of Crown-owned minerals and petroleum beyond the 12 mile limit together with a framework for access to those minerals (Crown Minerals Act 1991);
- Management of environmental effects within the territorial sea (Resource Management Act 1991);
- Prevention of pollution from ships, marine oil spill planning and response, and granting of marine dumping permits. Most of the marine pollution provisions also apply beyond the territorial sea (Marine Transport Act 1994);
- Protection of seabirds together with provisions to manage sea bird deaths caused by fishing (Wildlife Act 1953);
- Protection of all marine mammals within the EEZ, control of marine mammal watching, and provision for the establishment of marine mammal sanctuaries (Marine Mammals Protection Act 1978);
- Recognition of Maori fishing rights secured by the Treaty of Waitangi (Maori Fisheries Act 1989);
- Allocation of fisheries resources, non-commercial traditional and customary rights and interests to tangata whenua (Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, Fisheries Act 1996);
- Management of unwanted organisms within the territorial sea (Biosecurity Act 1993);
- Sustainable utilisation of fisheries resources within the EEZ (Fisheries Acts 1983 and 1996);
- Management of recreational fishing (Fisheries (Amateur Fishing) Regulations 1986/221);
- Establishment and development of marine farming in New Zealand waters (Marine Farming Act 1971, the Resource Management Act 1991 and the Fisheries Act 1983);
- Conservation of marine ecosystems within the 12 mile limit for scientific purposes (Marine Reserves Act 1971);
- Protection of land or foreshore held for conservation purposes (Conservation Act 1987);



- Prohibition on the taking of any marine living resources in the area subject to the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) without a permit issued by New Zealand or another party to the convention (Antarctic Marine Living Resources Act 1981);
- Prohibition of mineral resource activities on Antarctica (including islands) or its continental shelf, and recognition of comprehensive protection of the Antarctic environment and recognition of areas designated as specially protected by the Consultative Parties to the Antarctic Treaty and implementation of the Protocol on Environmental Protection to the Antarctic Treaty 1991 (Antarctica (Environmental Protection) Act 1994)

There is a range of government agencies responsible for administering these Acts.

3.2. Management strategies

3.2.1 The Quota Management System

The Quota Management System (QMS) was introduced in 1986 to manage and conserve New Zealand's major commercial fisheries. It was introduced to prevent overfishing, which had reached dangerous levels in some inshore fisheries, and to improve the economic efficiency of the fishing industry.

The QMS controls the total commercial catch for all major fish stocks found within New Zealand's 200 nautical mile EEZ. Quota is allocated to fish stocks and within fish stocks to fisheries management areas. The management areas are defined within the Fisheries Act. Changes to management areas require an amendment to the Fisheries Act.

New Zealand is not the first country to bring in quotas, but it is the first to use them on such a broad scale in a multi-species fishery. Most countries manage fisheries by controlling inputs, such as the number of boats, the size of boats, mesh size of the nets and so on.

The QMS is based on an output management regime (commonly known as quota). The approach used in the QMS is to directly limit the total quantity taken by the commercial fishing industry so that there are sufficient fish available for non-commercial uses and for the conservation of the resource. In New Zealand, the quotas are divided up and allocated to fishing operations. These individual quotas can be bought, sold or leased and are known as Individual Transferable Quotas (ITQs).

Within the commercial catch limit, ownership of quota determines access. Quota is a right to harvest a particular species in a defined area. Quota can be traded (bought, sold or leased). The QMS is designed to ensure sustainable use of the fisheries resources while allowing economic efficiency in the industry. The quota system is also being used to deal with aboriginal (Maori) claims to commercial fisheries.

Commercial fishers with ITQs do not own the fish in the sea but they do own a right to catch fish. Because their rights are secure and tradeable, fishers can make long-term plans. They

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can also spread their catching programme throughout the year to determine when best to catch "their" quota. They can also fine tune their quota. For example, if they find they're catching fish they don't have quota for, they can buy or lease quota to cover the catch. On the other hand, if they're not catching their full quota of a species, they can sell or lease some of it.

The Government has a responsibility to ensure that 20% quota for species added to the QMS since the 1992 settlement act is transferred Maori in recognition of the indigenous Maori rights to the commercial fishery. The quota is allocated to the Treaty of Waitangi Fisheries Commission responsible for the distribution of quota to tribes (iwi).

3.2.2 Governmental Management of Hoki Stocks

The fishery for each species within the QMS is divided into a number of different management units (defined as fish stocks). The boundaries for the biological stocks may not necessarily line up with the Quota Management Area boundaries. For example, there are two hoki fish stocks (HOK 1 and HOK 10 shown in Figure 3(b)), but one of these Fish stock boundaries (HOK 1) is a huge area which contains both the Western and Eastern biological stocks described above. TACs are set for each Quota Management Area rather than each biological stock.

Species that are managed outside the QMS are administratively managed within fish stock boundaries that line up with ten generic Fishery Management Areas (Figure 6). Non-harvested species that are taken as a bycatch of harvested species and are not managed have no administrative boundaries.

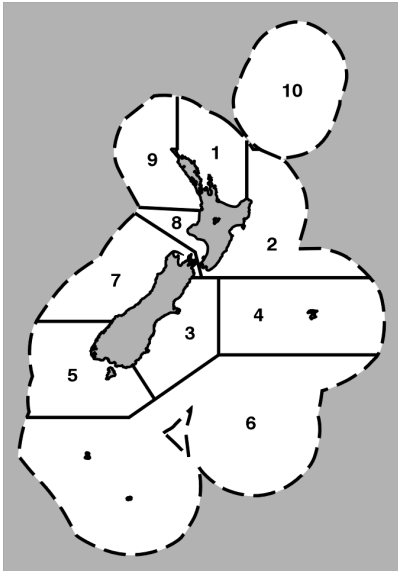


Figure 6: Fishery Management Areas for non-QMS species (Annala *et al*, 2000)

3.2.3 Hoki Fishery Management Company's Management

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Within the last twenty years the New Zealand deepwater fishery, including hoki, has progressed from a fishery dominated by distant water fishing nations to one in which all catching rights are owned by domestic companies. For the last 15 years, the hoki fishery has been managed under the QMS and thus has provided an effective mechanism for safeguarding the hoki stock, increased economic efficiencies in the fishery and improved incentives for fishery participants fishery to utilise the fishery in a sustainable manner. The next step is for quota owners to increase self management in the fishery (HFMC Strategic Development Plan, 1997).

Notwithstanding the allocation of property rights and implementation of targeted cost recovery (the Government charges the commercial fishing industry for the cost of research and management) in the fishery, to date hoki quota owners have had only limited influence over the management of the fishery and over the services provided in their fishery. Management of all significant aspects of the hoki fishery has remained under the controls of the Ministry of Fisheries which has also directly provided most fisheries management services, and has directly contracted fisheries research on a non-contestable basis. Levels of consultation by the Ministry of Fisheries have increased but opportunities for self management by quota owners have not significantly improved (HFMC Strategic Development Plan, 1997).

The establishment of the Hoki Fishery Management Company in 1997 and the subsequent preparation of the Hoki Fishery Development Plan occur at a time when the Government has indicated its support for increased self-management by fishery rights holders. The degree to which self management occurs will depend in part on political decisions and in part on the willingness of hoki quota owners to take responsibility for management of the fishery.

The management goal of the HFMC is to improve the management and economics of the hoki fishery by collaborative actions among shareholders in research, management, organisation and advocacy. The relevant strategies listed below are those which shareholders of the Hoki Fishery Management Company (HFMC) believe the HFMC should pursue on their behalf as it takes greater responsibility for managing the hoki fishery. There are other aspects of the fishery which shareholders will pursue on an individual or co-operative basis.

The overall management strategy to achieve fisheries goal is that the HFMC will:

- Manage the Fishery; maximise quota owner responsibility for managing the hoki fishery;
- Determine Services Required; work with the Ministry of Fisheries to determine specifications and standards for the services required in the hoki fishery;
- Obtain Cost Effective Services; pursue cost effective provision of all services in the hoki fishery;
- Purchase Services Directly; purchase services for the hoki fishery directly from providers to approved specifications and standards;
- Advocate Management Actions; advocate management actions which will best serve the sustainability of the stocks, the economics of the fishery and the well being of participants;
- Cooperate in Registry and Administration Services; Cooperate with other quota owner companies in registry services and related fisheries administrative services.

3.2.3.1 Harvest Strategy

The HFMC will promote a stable catch limit harvest strategy that maximises the economic yield from the fishery. Catch limits will normally be increased only where the proposed increase is

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assessed to be sustainable for a minimum of three years and the rate of change of catch limits will normally be restricted to plus or minus ten percent, every second year.

The tactics to achieve the harvest strategy are that the HFMC will:

- Support Management by QMS; supports continued management of the fishery under the QMS with the catch limit being the primary sustainability control;
- Minimise Management Controls; Minimise management controls in the hoki fishery consistent with sustainable and equitable management. Where controls are required, they will be implemented wherever possible through voluntary mechanisms agreed between shareholders;
- Recognise Economic Factors When Setting Catch Limits; key factors to be taken into account when determining catch limits are those that will maximise economic yields over time, including:
 - maintenance of high catch rates;
 - maintenance of a year round fishery;
 - optimum fish sizes for processing requirements;
 - costs of required stock assessment research;
 - market returns for hoki;
- Manage the Fishery as a Single Quota Management Stock; advocate management of the hoki fishery as a single quota management stock with any necessary area-specific catch limits to be co-ordinated by the HFMC;
- Manage Special Areas; implement management plans for areas of the fishery requiring additional management measures. The first of these is a management plan for the Cook Strait Hoki Fishery which proposes a maximum spawning season catch of 42,000 tonnes;
- Encourage Avoidance of Small Hoki; encourage all fishers not to fish in areas and at times where a significant portion of the catch comprises small hoki which can only be utilised for fishmeal;
- Review Hoki Fishery Regulations; review all controls relating to the hoki fishery at regular intervals. In particular:
 - provision should be made as soon as is practicable for the electronic transmission of catch and effort data;
 - provision should be made for setting of processing machine-specific conversion factors; and
 - regulations concerning handling of small and damaged fish;
- Support Retention of 43 m Exclusion Zones; support of retention of current regulations excluding trawling by vessels larger than 43 m overall length from particular areas. All fishing controls and regulations will be reviewed at regular intervals.

3.2.3.2 Compliance Strategy

The HFMC will:

- Ensure High Levels of Compliance with Fishery Controls; ensure high levels of compliance with controls in the hoki fishery to protect the value of investments in the fishery;
- Take a Greater Role in Compliance; maximise the extent to which the hoki industry takes responsibility for compliance in the fishery consistent with the availability of suitable self-compliance systems and the support of shareholders;



- Support the Development of Alternative Compliance Regimes; support the development of alternatives to the criminal law compliance regime by which Industry can take an increased role in managing compliance and ensure high levels of compliance in the fishery;
- Retain Key Fishery Controls as Criminal Law; retain controls which directly affect the value of the QMS fishing right under the criminal law regime until alternative compliance regimes such as contract or administrative law are suitably developed and proven;
- Implement New Compliance Programmes; continue to implement cost-effective compliance programmes by which Industry can take responsibility for aspects of compliance in the fishery. These include codes of practice, observer programmes and the management of area catch limits such as proposed for the Cook Strait Fishery;
- Maximise Voluntary Compliance; maximise voluntary compliance with fishery controls by ensuring controls are necessary, reasonable and practicable and by educating participants about the need for the controls;
- Use Appropriate Commercial Mechanisms; encourage shareholders to use commercial mechanisms to improve compliance in the fishery;
- Obtain Cost Effective Compliance Services; pursue options to obtain cost effective provision of all compliance services, where appropriate through the contestable supply of services.

3.2.3.3 Environmental Strategy

The HFMC will:

- Proactively Address Environmental Concerns; support appropriate research and management of environmental issues affecting the fishery. Current recognised issues include the by-catch of fur seals, discharging of factory vessel fish waste on fishing grounds and impacts to the seabed benthos of trawl operations;
- Monitor Within-Season Incidental Non-Fish By-Catch; maintain a within-season reporting system to provide accurate and timely data on levels of incidental non-fish by-catch in the fishery;
- Continue Research into Non-Fish By-Catch Mitigation Measures; support appropriate research into measures designed to reduce the incidental non-fish by-catch in the hoki fishery including improved codes of practice, marine mammal excluder devices and seal scaring devices;
- Manage Non-Fish By-Catch Issue; develop a strategy to manage issues related to non-fish by-catch in the hoki fishery including dissemination of information concerning the fishery, mitigation measures and by-catch populations;
- Support Independent Assessments; support efforts to obtain independent assessments of the impact of fishing related mortalities on seal populations;
- Maintain Seal By-Catch Code of Practice; maintain the West Coast Hoki Fishery Code of Practice designed to minimise incidental by-catch of seals;
- Investigate Impacts of Trawling on Seabed Benthos; support appropriate research to identify the extent of any impacts of trawl operations on the seabed benthos, in Cupertino with other quota owner companies;
- Control the Discharge of Waste on Fishing Grounds; prohibit the dumping at sea of all non-biodegradable ships waste, including plastics and other inorganic waste, and discourage the discharge of organic material including fish processing waste on the fishing grounds;
- Monitor Fish By-Catch; implement within-season monitoring of catches of fish by-catch species, where necessary, to help ensure catches of by-catch species are not excessive.

3.2.3.4 Stock Assessment Research Strategy

The HFMC will:

- Co-ordinate a Comprehensive Research Plan; co-ordinate the process to develop and regularly review a comprehensive plan for stock assessment and other required research in consultation with MoF and stakeholders and identify annual research activities required to implement the plan;
- Determine Appropriate Frequency of Abundance Assessments; determine the appropriate frequency of abundance assessments of the main hoki spawning aggregations based on the current exploitation rate;
- Directly Purchase Required Research; identify and purchase the research required to provide confidence that hoki fishery catch limits are sustainable, predict future stock sizes and provide input to catch limit decision rules;
- Improve Stock Assessment Models; seek agreements on the use of a single informative stock assessment model using an independent evaluation of the current models if required;
- Support Development of Abundance Assessment Methodology; the HFMC will support the development of abundance assessment methods which can be undertaken in conjunction with commercial fishing operations.
- Support Research on Stock Structure; support research and modelling to verify hoki stock structure;
- Support Regular Catch Sampling; the HFMC will facilitate appropriate levels of catch sampling from commercial fisheries to provide necessary size and age information;
- Identify and Assess Other Spawning Aggregations; support research to identify spawning aggregations other than the West Coast South Island and Cook Strait aggregations and support abundance assessments of these aggregations where they are of significant size;
- Facilitate Recruitment Prediction; Facilitate recruitment strength predictions based on industry information or special surveys as required.
- Determine the Maximum Economic Yield; support research to define and determine the maximum economic yield from the hoki fishery.

3.2.3.5 Other Research Strategy

The HFMC will:

- Support Relevant Research; support research into improved harvesting, processing, transport and storage of hoki. Research into specific product development will be left to individual shareholders.
- Develop a Research Plan; prepare and regularly update a plan prioritising research into hoki harvesting, processing, transport and storage to provide guidance on which research projects to support;
- Seek Additional Sources of Research Funding; support research providers in their attempts to obtain funding for appropriate hoki-related research from the Foundation for Research, Science and Technology and other sources.
- Facilitate Dissemination of Research Results; work with research providers to ensure effective dissemination of the results of new research and to co-ordinate input from shareholders in the provision of advice on what research should be undertaken.

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3.3. Monitoring, control, surveillance and enforcement

The Ministry of Fisheries is responsible for the monitoring of compliance of the fisheries management regime. For this purpose, the Ministry of Fisheries has developed an observer programme covering all hoki fishery operations.

The industry also has an observer programme which monitors catches and vessel behaviour at sea in the Cook Strait. In recent years this programme has been contracted out to an independent organisation "Fisheries Audit Services (NZ) Ltd".

The penalty regime for breaches of the Fisheries Act and regulations is severe, and includes:

- Severe fines
- Confiscation of catch and vessel plus related fishing gear,
- Possible forfeiture of quota and,
- Possible prohibition from the industry for repeated offences.

Since April 1994 vessels of greater than 42 metres and other vessels as specified by the Ministry of Fisheries must operate an Automatic Location Communicator (ALC) which report to the Ministry of Fisheries the position of the vessel via a satellite communication link. This requirement covers most of the hoki fleet. Additionally, ships and planes of NZ Defence Forces make occasional routine sweeps to identify and report vessels sighted within the NZ EEZ. The Ministry of Fisheries considers that there is an effective vessel monitoring system operating in the fishery.

The HFMC and its member companies are responsible for much of the day-to-day management of the New Zealand hoki resource and have developed Sustainable Management Criteria. Member Companies are shareholders in the HFMC and have executed a voluntary agreement to comply in all respects with the requirements of the Sustainable Management Criteria. SGS New Zealand is contracted to audit the member companies against these Sustainable Management Criteria which can be grouped into the following categories:

International Agreements

- Adherence to relevant international fisheries agreements
- Adherence to relevant international environmental agreements
- Adherence to other relevant international agreements

Sustainable Use and Management Principles

- Sustainable fisheries and environmental principles
- Sustainable fishery management principles
- Rightsholder's principles and incentives

Food Safety, Social Responsibility and Open Market Principles

- Sound business principles
- Food safety and quality principles
- Trade and market access principles
- Human rights principles

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Of necessity, some of the criteria apply at the national level, others apply to the fisheries management regime in general, and others are specific to the individual fishery.

3.4. Environmental issues

A well-managed fishery will have a management system in place that is based on a broad planning framework, contains policies, plans and activities that identify the key aspects of environmental issues, and implements actions to reduce or remove threats, or to remediate any unavoidable impacts. The planning framework, and any supporting research, will integrate matters of public interest across the various responsibilities of a range of government agencies, together with those of the fishery, to ensure that important environmental issues (often known as ‘cross-sectoral’ issues) are effectively addressed. The responsibilities for implementation (and funding) of corrective or preventative actions should be negotiated across the range of stakeholders.

The medium to long term impacts of hoki fishing on the ecosystem or habitats are not well understood at this time. The major areas for consideration that are of potential environmental concern in the context of the hoki fishery are:

- the impacts of bottom trawling on the seabed;
- ecological effects of the fishery on midwater ecosystems;
- effects of incidental capture of seals and seabirds;
- the lack of a fisheries planning and management framework that is capable of identifying, and responding to, environmental issues in an effective manner.

Impacts of bottom trawling on seabed

The Ministry of Fisheries considers that the hoki fishery impact on biodiversity is not a significant issue, although there is limited evidence to support this view. The majority of the hoki is taken by pelagic trawl with minimal impact on the seabed. However, bottom trawling for hoki has occurred for a number of years, with suggestions that up to 40% of trawls may use bottom trawling gear, but the impact that this has had on the biodiversity of bottom fauna is unknown.

Lack of a clear management framework in regarding environmental issues

In terms of the planning framework, the Ministry of Fisheries’ responsibilities are reasonably clear. In the event that adverse impacts are identified, the Fisheries Act 1996 requires that action is taken to avoid, remedy or mitigate any adverse effects of fishing on the aquatic environment. Section 10 of the 1996 Fisheries Act requires that when undertaking any action under the Act in relation to utilisation and sustainability of fisheries, the precautionary approach should be adopted. Although the 1996 Fisheries Act encompasses an ecosystem management approach, fisheries regimes to achieve such management are in their infancy. Managing incidental and accidental bycatch of seabirds and marine mammals by commercial fishing is part of ecosystem management. However, in such matters, the roles of other government agencies, and the integration of their responsibilities into mechanisms to control the fishery are unclear. In addition, government responsibilities for control and management of ecosystems outside the 12 nM territorial waters (but within the EEZ) appear unclear.

In addition to the legal requirements, the HFMC has an environmental strategy requiring members to proactively address environmental concerns by supporting appropriate research



and management of environmental issues affecting the fishery (New Zealand Hoki Fishery Strategic Development Plan December 1997). For example there is an Industry Code of Practice for the Cook Strait Hoki Fishery (a distinct fishery within the overall New Zealand hoki fishery) to reduce the incidence of excess catch, and dumping of fish, fish waste and ship's refuse (Cook Strait Hoki Fishing Observer Programme 1999). The HFMC also introduced a code of practice in late 2000 to reduce the catch of small hoki from the Chatham Rise fishing grounds in order to improve yield per recruit from the fishery.

Ecological effects of the fishery on midwater ecosystems

The ITQ management of multispecies fisheries has created a number of difficulties. Bycatch issues can arise because fish species living in close association with each other have different TACC levels, and species are caught at differing rates. However, overcatch of quota species is kept relatively low by use of financial penalties (payment of deemed values, which represent most of the value of the catch). These deemed values encourage fishers to either develop strategies to avoid overcatch, or to lease quota from others to cover their catch.

While the QMS manages the amount of biomass taken from the fish stock, it does not manage the potential biodiversity or ecosystem impact issues in an equivalent manner. For example, for the hoki, retention of a range of ages, sizes, genetic composition, and spatial distribution of the population are not used in the QMS to any great extent. Parameters used for both types of hoki stock assessment models are focused on production and management of hoki biomass, and do not, for example, take into account the issue of retaining a range of size/age classes across the spatial range of the Hoki populations in New Zealand waters, a key factor in maintaining the biodiversity of natural fish populations.

The fisheries management system that has been developed for the hoki is implemented by the Ministry of Fisheries and involves a range of environmental and ecosystem-based management measures, with some implemented by other government agencies. The ecosystem management measures include, for example, measures to protect endangered species that may be caught as incidental catch in the hoki fishery. Such measures typically have been designed to respond to a range of threats, or to rebuild populations of rare species, and are implemented in the hoki fishery as part of a nation-wide process. Their relevance to the hoki fishery varies with the extent to which the fishery is considered to be contributing to threats, or preventing recovery. An important issue that has yet to be resolved is the way in which the mixture of fishery-specific management measures (including the QMS) interact with the broader ecosystem or icon species management measures to influence or exert control over operations in the fishery. The range of ecosystem and environmental controls that apply to the hoki fishery do not appear to be effectively integrated into a management plan for the fishery.

Seal and seabird by-catch

See section 2.7.2.

3.5. Other fisheries activities

The recreational fishing for hoki is negligible and the level of Maori customary fishing is believed to be negligible (SGS Hoki Fishery MSC Pre-Assessment Report, 2000). Other commercial fisheries occur within the area of commercial hoki fishing. Some examples include trawl fisheries for hake, ling and silver warehou. Some non-hoki commercial fisheries do

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overlap in time and area with the fisheries being evaluated (see section 2.2). There appears to be little structural impact on non-hoki species by the hoki fishery. Similarly, although there is some bycatch of hoki in the large offshore trawl fisheries, the non-hoki fisheries do not appear to significantly impact the operation of the hoki fisheries.

4. STANDARDS

4.1. General MSC Principles & Criteria

Recognizing that market incentives have the potential to improve fisheries management and to turn chronic over-fishing into recovery, sustainability and economic stability; the Marine Stewardship Council (MSC) was established in 1997. The goal of the MSC is to harness these incentives in such a way as to provide the fishers, processors and retailers with greater security of supply and employment than has been possible to date.


The MSC is an independent, charitable, not-for-profit, and non-governmental international organisation working to achieve sustainable marine fisheries by promoting responsible, environmentally appropriate, socially beneficial and economically viable fisheries practices, while maintaining the biological diversity, productivity and ecological processes of the marine environment.

To accomplish its objectives, the MSC proposed a new approach to change the incentive structure so that benefits accrue to the fishers, fish processors, traders, retailers and consumers in adopting a more responsible and sustainable approach to fisheries exploitation. At the center of the MSC is a set of *Principles and Criteria for Sustainable Fishing* which are used in an independent assessment as a standard by which an independent assessment team evaluates a fishery. In this project these standards were used in the evaluation of New Zealand's commercial Hoki fishery.

The MSC Principles and Criteria (P&Cs) were developed by means of an extensive, international consultative process through which the views of stakeholders in many fisheries have been gathered from around the world. Further international consultations will take place through 2001 at which time the MSC will revise the P&Cs as necessary. The P&Cs reflect a recognition that a sustainable fishery should be based upon:

- The maintenance and re-establishment of healthy populations of targeted species (Principle 1);
- The maintenance of the integrity of ecosystems (Principle 2);
- The development and maintenance of effective fisheries management systems, taking into account all relevant biological, technological, economic, social, environmental and commercial aspects (Principle 3); and
- Compliance with relevant local and national laws and standards and international understandings and agreements (Principle 3).

The Principles and Criteria are further designed to recognise and emphasise that management efforts are most likely to be successful in accomplishing the goals of conservation and sustainable use of marine resources when there is full co-operation among the full range of

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fisheries stakeholders, including those who are dependent on fishing for their food and livelihood.

The scope of the MSC Principles and Criteria relates to marine fisheries activities up to but not beyond the point at which the fish are landed. The MSC Principles and Criteria apply at this stage only to marine fishes and invertebrates (including, but not limited to shellfish, crustaceans and cephalopods). Aquaculture, freshwater fisheries, and the harvest of other species are not currently included. Issues involving allocation of quotas and access to marine resources are considered to be beyond the scope of these Principles and Criteria.

For further information about the MSC Principles and Criteria or about other aspects of the Marine Stewardship Council, information can be found at the MSC website (<http://www.msc.org>).

4.2. Developing the Hoki Scoring Guideline

The MSC Principles and Criteria are general statements describing what aspects need to be present in fisheries to indicate that they are moving toward sustainable management. The certification approach or methodology adopted by the MSC requires that any assessment of a fishery or fisheries move beyond a management verification programme that provides third-party assurances that a company's stated management policies and procedures are being implemented. The MSC's approach is designed to be an evaluation of a fishery's performance to determine if the fishery is being managed consistent with emerging international standards of sustainable fisheries. In particular, the requirements of the MSC are to bring to bear evaluation criteria or performance indicators that are consistent with emerging international standards of environmentally responsible fisheries management and the MSC Principles and Criteria.

Using its expertise, the assessment team developed a set of performance indicators to be consistent with the intent and extent of the MSC Principles and Criteria. Specifically, each MSC Principle and its associated Criteria were translated into a specific set of indicators that could be used by the assessment team either quantitatively or qualitatively to measure performance (see <http://www.msc.org> and look for the Hoki fishery scoring guideline).

To the extent possible, the assessment team tried to avoid overlap in performance indicators between the criteria within the three MSC principles. This was accomplished by recognizing that the three MSC principles for use in certification can be broadly classified in the following manner:

- Principle 1 is concerned with maintaining the target species at productive levels and is therefore concerned with outcomes of a management system that provide documentation that the resource is being maintained at the appropriate levels.
- Principle 2 is concerned with restraining the impact of the fishery on ecological systems (including the target species), and therefore is also concerned with documented outcomes of a management system showing that the fishery has or is moving toward an understanding of its impact on the environment.
- Principle 3 is concerned with sound management systems, and is therefore focused on processes. The intent is to show that all the processes necessary for moving toward and attaining a sustainable fishery are in place. In addition, Principle 3 includes standards for management of fishing operations.



In determining the performance indicator ratings, the team adopted the following categories:

- Minimum: being the minimum level for a fishery to be considered for certification,
- Pass: being the level required to pass; and
- Perfect: being the perfect fishery.

The associated minor and major corrective actions to be taken by the fishery resulting from the achieved scores on the MSC criteria are described in section 5.4.6 and in section 8.

4.3. Summary of the Hoki Performance Indicators

Below is a summary of the MSC Principles, Criteria and Hoki Performance Indicators and in a separate document the Hoki Scoring Guideline can be found.

MSC Principle	MSC Criterion	Hoki Performance Indicator
<u>Principle 1</u> A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery	<u>Criterion 1.1</u> The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.	<u>Indicator 1A</u> : There is adequate knowledge about the target stock being fished <u>Indicator 1B</u> : There is adequate knowledge about the fishery <u>Indicator 1C</u> : There is a robust assessment of the stocks <u>Indicator 1D</u> : There is a well-defined and effective strategy to manage the target stocks <u>Indicator 1E</u> : Stocks are not depleted and harvest rates are sustainable
	<u>Criterion 1.2</u> Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame	Not used for hoki assessment as this criterion was found not applicable and thus weighted to zero.
	<u>Criterion 1.3</u> Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.	<u>Indicator 1F</u> : There is adequate knowledge about the target stock being fished <u>Indicator 1G</u> : There is adequate knowledge about the fishery <u>Indicator 1H</u> : There is a well-defined and effective strategy to manage the target stocks.
<u>Principle 2</u> Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.	<u>Criterion 2.1</u> The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.	<u>Indicator 2A</u> : There is adequate knowledge of the ecosystem and its value where the fishery operates <u>Indicator 2B</u> : The fishery is conducted in a manner that does not have unacceptable impacts on protected, threatened, endangered or highly valued icon species <u>Indicator 2C</u> : An ecological risk assessment has been conducted to determine the potential impacts of the fishery on the environment <u>Indicator 2D</u> : The impact of lost fishing gear or lost



		<p>consumables or disposed waste on target or non-target species is not unacceptable</p> <p><u>Indicator 2E</u>: The fishery does not have unacceptable impacts on the ecosystem structure or function, on habitats or on the populations of dependent or otherwise associated species</p> <p><u>Indicator 2F</u>: Precautionary strategies are employed in the fisheries management system to address and restrain the impacts of the fishery on the ecosystem</p>
	<p><u>Criterion 2.2</u> The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.</p>	<p><u>Indicator 2G</u>: There is adequate knowledge of the ecosystem and its value where the fishery operates in relation to protected, endangered, threatened or icon species</p> <p><u>Indicator 2H</u>: An ecological risk assessment has been conducted to determine the potential impacts of the fishery on the genetic, species and population level biodiversity of the protected, endangered, threatened or icon species</p> <p><u>Indicator 2I</u>: The impact of lost fishing gear or lost consumables or disposed waste on endangered, threatened, protected or icon species is not unacceptable</p> <p><u>Indicator 2J</u>: The fishery does not have unacceptable impacts on the endangered, threatened, protected or icon species and the associated ecosystem</p> <p><u>Indicator 2K</u>: Strategies are employed in the fisheries management system to address and restrain the impacts of the fishery on the endangered, threatened, protected or icon species</p>
	<p><u>Criterion 2.3</u> Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.</p>	<p>Not used for hoki assessment as this criterion was found not applicable and thus weighted to zero.</p>
<p><u>Principle 3</u> The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</p>	<p><u>Criterion 3A</u> Management System Criteria</p>	<p><u>Indicator 3A</u>: The management system recognises use rights</p> <p><u>Indicator 3B</u>: The management system has a clearly defined scope designed for a well-managed fishery</p> <p><u>Indicator 3C</u>: The management system has a comprehensive scope of planning</p> <p><u>Indicator 3D</u>: The management system is implemented</p> <p><u>Indicator 3E</u>: The management system has compliance and enforcement procedures</p> <p><u>Indicator 3F</u>: The management system has an effective monitoring system</p> <p><u>Indicator 3G</u>: The management system has an effective review system</p>
	<p><u>Criterion 3B</u></p>	<p><u>Indicator 3H</u>: Make use of fishing gear and</p>



	Operational Criteria	practices designed to avoid the capture of non-target species (and non-target size, age and/or sex of the target species); minimise mortality of this catch where it cannot be avoided and reduce discards of what cannot be released alive. <u>Indicator 3I</u> : Implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas <u>Indicator 3J</u> : Minimise operational waste <u>Indicator 3K</u> : The fishery operations are conducted in compliance all legal and administrative requirements <u>Indicator 3L</u> : The fishery operation assists and co-operates with management authorities in the collection of catch, discard and other information of importance for the effective management of the resource and and the associated ecosystem
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5. ASSESSMENT PROCESS

5.1. Schedule

The main assessment was carried out over the period of October 2000 to January 2001. The assessment took place on-site during the period of 30th October to 11th November 2000. The main evaluation (main assessment) of the fishery was preceded by a preliminary analysis (pre-assessment) which took place earlier in 2000.

5.2. Team

One of the key aspects of conducting an independent evaluation of a fishery using the requirements and methods outlined by the Marine Stewardship Council, is forming a team of experts to review information about the fishery and make final judgements regarding the fishery's ability to meet the MSC Principles and Criteria. A team approach has been adopted to limit internal bias and to ensure appropriate understanding and review of the widely varied sets of information needed to prove that fisheries meet all the MSC requirements. To select members of the assessment team, SGS used the following determinants: technical expertise in fisheries management, ecosystem management or management systems; specific knowledge of the New Zealand hoki fishery and the ability to provide an objective assessment. Ultimately, SGS formed an assessment team of four experts to evaluate the extent to which the commercial hoki fishery in New Zealand complied with the MSC Principles and Criteria as listed below:

Lead Assessor and Team Leader:

- Mr. Edwin Aalders – Management System Expert
MSC Fishery Programme Director
SGS AgroControl
The Netherlands

Assessors:



- Mr. Aldin Hilbrands – Management System Expert
MSC Fishery Programme Manager
SGS AgroControl
The Netherlands
- Mrs. Jo Akroyd – Fisheries Management & Research Expert
Director
Akroyd Walshe Ltd. Consultants in Marine Research & Fisheries and Quality Management
New Zealand
- Dr. Trevor Ward – Marine Ecosystem and Fishery Impacts Expert
Institute for Regional Development
University of Western Australia
Australia

While each team member participated in all discussions regarding the performance of the fishery, individuals also had specific roles in facilitating the team's overall understanding of the information provided. Each team member's role was based on their respective expertise.

Mr. Edwin Aalders (M.Sc.) filled the role of team leader, providing process control to ensure that all MSC procedures and methods were properly followed and completed. He also acted as the primary liaison with the HFMC in organising the project and with the stakeholders initiating the consultations. Mr. Aalders has around 10 years experience in environmental auditing for the purpose of certification and ecolabelling, as well as technical training and experience in these fields.

Mr. Aldin Hilbrands (M.Sc.) filled the role of assistant team leader and acted as the secondary liaison with the HFMC in organising the project and with the stakeholders initiating the consultations. Mr. Hilbrands has about 5 years experience in project development and auditing for the purpose of standard setting, certification and ecolabelling in the aquaculture and fisheries sector, as well as technical training and experience in these fields.

The two external experts hired to perform the independent evaluation provided control over the content used by the team in evaluating the fisheries. Each of the respective team members helped facilitate the collection, evaluation, and discussion of information in their respective areas of expertise.

Mrs. Jo Akroyd (M.Sc.) facilitated the evaluation of the fisheries management and stock assessment system utilised by the Hoki Fisheries Management Company. Mrs. Akroyd has more than 25 years experience in fisheries research and management from both a practical standpoint being the executive director of Akroyd Walshe Ltd. and from a government policy perspective as the past Director of Fisheries Policy & Research with the Ministry of Fisheries in New Zealand.

Dr. Trevor Ward facilitated the discussions on the ecological impacts associated with fishing based on his extensive experience with coastal and deepwater ecosystems, and assessment and management of the environmental impacts of fisheries in Australia and the Asia-Pacific region. Dr Ward has been involved as an ecosystem expert during the evaluation process of

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the Australian Western Rock Lobster for MSC certification. Dr. Ward spent over 20 years at CSIRO (Australia) working on ecosystem impacts and ecosystem management prior to taking his current position at the University of Western Australia.

5.3. Peer Review

A further important aspect of conducting an independent evaluation of a fishery, using the requirements and methods outlined by the Marine Stewardship Council, is having the assessment team report peer-reviewed by three independent experts. The peer review is to review the presented information and the conclusions drawn for recommending the hoki fishery for MSC certification. A team approach has been adopted to limit internal bias and to ensure appropriate understanding and review of the widely varied sets of information needed to prove that fisheries meet all the MSC requirements, ranging from good management practices to ecosystem impacts. SGS selected three peer-reviewers for the peer-review team using the following determinants: technical expertise in fisheries management, ecosystem management or management systems; scientific credibility; knowledge of the deep-water fisheries and the ability to provide an objective assessment.


5.4. On-Site Process

5.4.1. Preparation

The MSC Principles and Criteria are by their very nature general statements that are meant to apply to all fisheries. The MSC Principles and Criteria are intended to be used in conjunction with a specified methodology that requires the development of practical measures of fisheries performance that embody the intent of the MSC Principles and Criteria. Following the MSC specific process, measurable performance indicators are established for each Principle and its associated set of Criteria and provided to accredited certifiers by the MSC. Each evaluation team must then determine if the set of indicators and performance measures are appropriate for the specific fishery under evaluation. Where the evaluation team feels that the set of performance indicators and measures needs to be modified, the team must submit its recommendations to the MSC for approval before continuing with the evaluation process.

In the case of the New Zealand hoki fishery, a completed set of performance measures was not available from the MSC prior to the on-site visits. Therefore, the evaluation team was given permission to develop a specific hoki Scoring Guideline using, as a guide, the MSC approved scoring guidelines used during earlier evaluations of fisheries against the MSC P&C's. Approval for this was given under the condition that the specific hoki Scoring Guideline developed would be submitted to the MSC for approval prior to rating the fishery. The hoki Scoring Guideline approved by the MSC for use in the evaluation of the New Zealand Hoki Fishery can be found on the MSC website. In addition, the consulted stakeholders were also provided with a copy of the draft hoki Scoring Guideline to comment on.

5.4.2. Opening meeting

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An opening meeting was held with the Hoki Fishery Management Company at the office of Sealord, in Nelson on 03rd November 2000. The scope of the assessment was explained and time schedules were determined.

5.4.3. Document review

The document review aimed to determine how closely the fishery management practice complied with documented procedures and the MSC P&C requirements. Interviews with the responsible managers of the HFMC were conducted to determine their familiarity with, and their application of, policies, procedures and practices that are relevant to their activities. A randomly-selected sample of documents were audited to evaluate whether practices met the required performance levels.

5.4.4. Field assessments

Site assessments aimed to determine how closely the fishery management complied with documented procedures and the MSC P&C requirements. Interviews with staff, operators and contractors were conducted to determine their familiarity with, and their application of, policies, procedures and practices that are relevant to their activities. A randomly-selected sample of operations were audited to evaluate whether practices met the required performance levels.

5.4.5. Scoring the fishery

The MSC methodology for fishery evaluations utilises a decision support process known as AHP (Analytic Hierarchy Process) to assist the team weight and score sets of performance indicators and criteria within each individual Principle. Using this method, compliance with each MSC Principle was evaluated independently. It is important to note that while the criteria and performance indicators associated with each Principle were weighted based on importance, there was no such attempt made to rank and prioritise the three MSC Principles. Each Principle is considered independent of the others and, to be certified, a fishery must obtain a rating consistent with meeting compliance with the MSC Principles and Criteria (see section 4.2). If the fishery does not meet compliance on any one of the three MSC Principles, the fishery is not recommended for certification.

In determining the performance indicators, the team used the following guidance on their interpretation of the *Minimum*, *Pass* and *Perfect* levels:

- *Minimum*: being the minimum level for a fishery to be considered for certification,
- *Pass*: being the level required to pass; and
- *Perfect*: being the perfect fishery.

The ratings for each performance indicator of the Hoki Scoring Guideline were determined by a team process. To reduce potential bias, each team member made their own individual evaluation and rating after an introductory discussion on each indicator. Discussions on the indicators in each MSC Principle were led by the team member of the most relevant expertise and experience. Where team member scores varied widely (inconsistency ratio greater than 0.2 or coefficient of variation greater than 5%), the team engaged in further discussion to explore

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the nature of differences in scores, and where appropriate scores were revised to take account of different views about performance.

The arithmetic mean of all 4 team member scores was used as the final rating for each indicator. The weighted mean of the ratings for each indicator were used to determine the final ratings for each criterion. The weighted mean of the ratings for each criteria were used to calculate the score for each MSC Principle.

5.4.6. **Summing up and closing meeting**

At the conclusion of the main assessment, findings were presented to the HFMC management at the closing meeting on Saturday 11th November 2000. Any areas of non-conformance with the MSC Principles & Criteria were raised as one of two types of Corrective Action Request (CAR):

- **Major CARs** which must be addressed and re-assessed before certification can proceed, indicate a rating under *Pass* for one of the MSC Principles or a rating of under *Minimum* for one of the Criteria;
- **Minor CARs** which do not preclude certification, but should preferably be addressed and will be checked at the next surveillance visit. A CAR indicates a rating between *Minimum* and *Pass* for one of the MSC Criteria and under *Pass* for one of the performance indicators.

In addition to these mandatory Corrective Actions the team presented a number of Observations which the team had identified as possible gaps during the assessment. Observations have no consequences on the current overall assessment decision but will be used during the next audit as areas of special attention. Although HFMC is formally not required to undertake any actions against these Observations they can, if not addressed by HFMC can result in future CAR's.

5.5. **Sampling**

In order to determine how closely the fishery management of the HFMC and its member companies complied with documented procedures and the MSC P&C requirements, interviews were conducted with staff and operators of the HFMC and its member companies were conducted to determine their familiarity with, and their application of, policies, procedures and practices that are relevant to their activities. A randomly-selected sample of management and operations were sampled to be audited whether practices met the required performance levels.

Within the HFMC, the executive director Mr. James Mace was extensively interviewed on the hoki fishery day-to-day management in co-operation with the HFMC member companies. The HFMC chairman, Mr. Ross Tocker was present during the opening and closing meetings and participated in discussions

Of the HFMC member companies, two of the largest quota holders were interviewed and inspected on fishing operations: Sealord Ltd. and Amaltal Ltd. With these two companies, the responsible operations managers were interviewed and/or skippers of hoki trawlers. Additionally, a skipper of a private, smaller hoki trawler was also interviewed.

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5.6. Stakeholder consultation

SGS New Zealand has identified the major stakeholders in the hoki fishery in the MSC pre-assessment report produced earlier in 2000. This list was completed in conjunction with additional stakeholder contacts suggested by WWF-NZ and Forest & Bird.

Within the budget and scope of the project, it was impossible for the evaluation team to contact and interview every single group individually. However, the team tried to allow for and foster the widest possible stakeholder participation and viewpoint. We chose a course of action that embodied a number of approaches to getting the word out to stakeholders so they would be aware we were conducting an evaluation and would value any and all input. This was done through various approaches such as:

1. Before interviews with stakeholders took place, SGS New Zealand sent out a stakeholder notification letter in which the MSC certification process was outlined. In this way, the assessment team informed the particular stakeholder in advance on general MSC related matters associated with the audit. Even if stakeholders did not respond themselves to the notification letter, they were actively approached by the assessment team to obtain their views on the hoki fishery management;
2. While interviewing stakeholders, other stakeholders were identified or suggested which were contacted if relevant.
3. An announcement of the project and a request for stakeholder participation was placed on both MSC and SGS websites instructing all interested parties to contact the SGS MSC Fishery Programme Director, Mr. Edwin Aalders.

In section 6.2, the issues raised by the stakeholders are described in detail.

6. ASSESSMENT RESULTS

6.1. Findings related to the MSC Principles & Criteria

6.1.1. Introduction

The assessment results have been summarised below following a certain standard format. Per indicator, a description of the current status of the fishery is given based on each of the individual considered elements (Findings related to the elements considered) as given in the Hoki Scoring Guideline (see www.msc.org). Following the summary of the team's findings, an indication is given whether a Corrective Action has been raised against the Indicator (Corrective Action Request Raised).

Where Minor CARs have been issued, these become part of the certification conditions and will be required to be addressed in order to maintain the certification. If a Major CAR has been raised, the close-out (satisfactory resolution) of this CAR will become an immediate prerequisite prior to certification approval. Although a CAR can be issued at Indicator level, it is normally true that it will require a company to take action at both Criteria as well as Principle level.



Under the heading Observations the report describes areas where the company may need to undertake further work in order to safeguard any future certification as new CARs can arise from them in future surveillance audits.

6.1.2. **Principle 1: Sustainable Stock Exploitation**

Criterion 1.1

The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.

Indicator 1A: There is adequate knowledge about the target stock being fished.

Findings related to the elements considered

There is adequate knowledge of the identity of the identity of the target species, and its range and stock structure

Hoki (*Macruronus novaezelandiae*) cannot be confused with any other species within New Zealand. The species also occurs in Australian waters (Tasmania), however the New Zealand stock is genetically distinct from the Australian stock.

Within New Zealand, there is evidence of two sub-populations that have different morphological features, different growth rates and that live as mature fish in different areas. These sub-populations do not appear to be genetically distinct. Stock fidelity and the extent of mixing between stocks is unknown. The latter are modelled under a range of scenarios in stock assessment. Although the TACC is set for one fish stock (HOK1) the sub-populations of hoki are assessed as 2 stocks (eastern and western).

There is adequate knowledge of the life history (fecundity, growth, natural mortality) and behaviour of the target species

The fecundity at size has been estimated for the western stock. Individual hoki do not spawn every year. There are two estimates of the annual proportion of female hoki developing to spawn in the western stock.

Growth rates of hoki in different areas of the EEZ have been well documented.

Natural mortality is assumed (0.25 females, 0.3 males) and is held constant across all age classes.

Existing fishery and fishery independent data have been explored extensively to derive the current view of the life cycle. However migration pathways and cues, and stock movements are not well understood.

There is adequate information on trends in abundance of spawning stock, larval recruitment, and fishery recruitment

The seasonal patterns of movement and availability to the fishery are well understood. Fishery independent abundance surveys on spawning stocks (west coast, Cook Strait), pre-recruits



(Chatham Rise) and mature fish during their resting phase (Chatham Rise, Sub-Antarctic) have been carried out extensively over the past 10 years using acoustic and trawl survey methods.

Corrective Actions Raised

None

Indicator 1B: There is adequate knowledge about the fishery

Findings related to the elements considered

There is adequate monitoring of Catch and Effort

There is an extensive catch and effort monitoring system in place for all quota species, including hoki.

There is adequate monitoring of landings, discards and incidental mortalities

There is an independent at-sea observation programme that measures bycatch, discards, samples the hoki catch to obtain length and age data, and documents fishing practices.

There is adequate information on fishing methods and fishing patterns

The total annual catch and effort by fishing methods are known for major spatial zones of the fishery. This has been analysed on a fine spatial and temporal scale for the spawning fisheries.

There is adequate information on gear selectivity and on changes in catchability over time.

There is some understanding on gear selectivity and catchability through information available from the catch and effort system and from the at sea observer programme.

Corrective Actions Raised

None

Indicator 1C: There is a robust assessment of the stocks

Findings related to the elements considered

The assessment models used are appropriate to the biology of the species and the nature of the fishery

Two modelling approaches to stock assessment of hoki are used: one models the two sub-populations separately using a Bayesian estimation procedure. The other uses a model tailored specifically to take into account current knowledge of the life-cycle of hoki, its stock structure and uses all historical sources of abundance data, irrespective of inconsistencies in sampling. The later uses a MIAEL estimation technique.

The methods used to fit the models to date are statistically rigorous



Both the models used are statistically rigorous and take into account all known and significant impacts of the fishery on the target species (Quinn and Sullivan, 1999).

The sensitivity of the assessment to major uncertainties in data and assumptions has been evaluated and is reflected in management advice

The assessment takes into account key uncertainties and predicts future consequences of different harvesting strategies on the stocks, as requested by the Ministry of Fisheries

The assessment evaluated current stock status relative to prescribed reference points and future consequences of current harvest strategies

Current stock size and harvest rates have been estimated and evaluated against appropriate reference points.

Corrective Actions Raised

None

Indicator 1D: There is a well-defined strategy to manage the target stocks

Findings related to the elements considered

Fishing effort is contained

Total catch, and therefore fishing effort, is restrained by the TACC, although this is not spatially explicit at the level beyond the two management zones (Figure 6).

Management tools are specified and appropriate

Management measures are set appropriately making use of the best scientific information, taking into account uncertainty.

The relationship between assessment advice and subsequent decisions is clear, and have been evaluated and action is timely

There is an annual review of the TACC by the Ministry of Fisheries. All stakeholders have an opportunity to be involved in the review process. Any decisions are brought into effect at the commencement of the next fishing year. However, the process in which assessment advice is processed internally by the HFMC and ultimately results into management decisions, is not well-defined.

Corrective Action Raised

MINOR CAR No. 001

Action is needed to correct the following weaknesses:

1. There is insufficient recognition of spatial structure of the fishery, as current strategy does not sufficiently address the requirements for spatially explicit management.
2. The relationship between MoF assessment advice and subsequent HFMC management decisions and implementation is not well defined.



Indicator 1E: Stocks are not depleted and harvest rates are sustainable

Findings related to the elements considered

The assessment indicates that stocks are above specified limit reference points and that harvest rates are below specified limit reference points

The assessment indicates that the western stock is above B_{MAY} for both acoustics and CPUE (catch per unit effort) model runs, but B_{MAY} is only above for the acoustic runs, not CPUE runs. The status of the eastern stock is far less certain. It is likely however that if rates of harvesting this stock continue at the current level, biomass will fall below 20% B_0 in the next 5 years. The situation is being reviewed on an annual basis, but present indications are that corrective actions is required to reduce harvest from the eastern stock.

The limit reference points used meet acceptable international standards

The limit reference points used (B_{MAY} and B_{MAY}) meet acceptable international best practice (Quinn and Sullivan, 1999).

Corrective Action Raised

MINOR CAR No. 002

Action is needed to correct the following weaknesses:

1. There is a high probability that the Eastern hoki stock will not remain above the limit reference point (B_{MSY}).
2. Insufficient recognition of spatial structure of the fishery as current strategy does not sufficiently address the requirements for spatially explicit management.

Criterion 1.3

Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

Indicator 1F: There is adequate knowledge about the target stock being fished

Findings related to the elements considered

There is adequate knowledge of the age, genetic structure and sex composition of the stock

There is comprehensive knowledge about the age class, sex composition and genetic structure of the population.

There is adequate knowledge about the reproductive capacity of the target species

There are fishery independent estimates of spawning stock size for both stocks since 1987. The fecundity of hoki at age has been estimated for the western stock.

Corrective Actions Raised

None



Indicator 1G: There is adequate knowledge about the fishery

Findings related to the elements considered

There is adequate spatial and temporal monitoring of catch, effort, age and sex composition

There is considerable spatial and temporal monitoring of catch, effort, age and sex composition in the spawning fisheries. Monitoring of these variables in the non-spawning fisheries is currently being improved.

There is adequate spatial and temporal information on fishing patterns and fishing methods

There is considerable spatial and temporal information on fishing patterns and fishing methods used.

Corrective Actions Raised

None

Indicator 1H: There is a well-defined and effective strategy to manage the target stocks

Findings related to the elements considered

Age, sex and genetic structure are involved in the stock assessment

Age, sex and stock structure are all involved in the stock assessment.

Reproductive capacity and spawning stock are involved in the stock assessment

Spawning stock size and proportion of fish that spawn are considered in the stock assessment.

Management tools are specified and appropriate

The management tool is the TACC

Corrective Action Raised

MINOR CAR No. 003

Action is needed to correct the following weakness:

1. Management tools dealing with the Eastern stock are not clearly specified and appropriate to the management of the stocks

6.1.2. Impact of Fishing Operations on the Ecosystem

Criterion 2.1



The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.

Indicator 2A: There is adequate knowledge of the ecosystem and its values where the fishery operates

Findings related to the elements considered

Information on the distribution of habitats and the major assemblage types and their distribution is available to the fishery

There is some knowledge of the major habitats and assemblage types found in the areas where the fishery operates; however knowledge of the distribution of mid-water assemblages is limited, and knowledge of the benthic habitats is very limited. Much of the benthic system has been mapped by acoustic technology, but this has provided little biological information. The information support system for the fishery has the capacity to increase this knowledge-base, although research projects have so far been very limited in scope.

Information on the species diversity, populations structures and the natural functions and trophic relationships among species throughout the fishery areas is available

There is only limited information on the natural functional relationships of hoki and its ecologically associated species. This is weakest in the deepwater benthic habitats. The information support system for the fishery has the capacity to expand this knowledge, although research projects so far have been very limited in scope.

The distributions of protected species are well-known, together with the nature and distributions of their critical habitats

The identity of the protected species that interact with the fishery are known, their distributions are generally well understood, and their critical habitats defined.

Knowledge of the natural variability in the ecosystem is adequate, including the natural physical forcing factors such as dominant currents, and seasonal patterns in oceanographic conditions

There is an adequate level of knowledge of the broad-scale physical forcing factors in the ecosystem where the fishery operates, but the finer scale patterns in shallower waters, in the benthic habitats and in diurnal/seasonal vertical migrations are poorly understood.

Corrective Action Raised

MINOR CAR No. 004

Action is needed to correct the following weakness:

- Information is not sufficient on the distribution of habitats, major assemblage types and the natural functions and trophic relationships among species in the midwater and benthic ecosystems where the fishery operates.

Indicator 2B: The fishery is conducted in a manner that does not have unacceptable impacts on protected, endangered, threatened species or highly valued icon species.



Findings related to the elements considered

Information on the direct interactions of the fishery with protected, threatened, endangered or highly valued icon species, such as through by-catch, entrainment, effects on behaviour, or physical disruption of seabird and sea mammal populations is available

There is considerable information on the direct interactions of the fishery with protected or icon species, including seabirds and marine mammals, and activities designed to avoid or mitigate interactions. This includes codes of practice used by the fishery. The direct information covers incidental catch of a range of important species derived from the independent observer programme operated by the Ministry of Fisheries.

Information on the extent of interruptions, removals, mortalities of protected threatened or endangered, or highly value icon species caused by the fishery is available

Generally speaking, much of this information is available for the most important species, but for some seabirds the statistical analyses are based on highly limited samples, and the underlying statistical models are questionable. The reliable direct information is derived from the observer programme operated by the Ministry of Fisheries.

Levels of incidental mortality of protected, threatened, endangered and highly valued icon species do not have unacceptable impacts on their populations

The impact of the incidental mortality amongst the seal populations and some seabirds is not clear. For the seabirds this relates to the statistical sampling issues and models, and the lack of an effective risk assessment; for the seals the uncertainty relates to the lack of a clear understanding of the fishery cause-effect relationships and to the lack of reliable seal population estimates determined in an appropriate time and space scale.

Corrective Actions Raised

None

Indicator 2C: An ecological risk assessment has been conducted to determine the potential impacts of the fishery on the environment.

Findings related to the elements considered

There have been studies of, or assessment of, the impacts in space and time of the fishery on the ecosystem

There is little available knowledge about the impacts of the fishery on the ecosystem, habitats and non-commercial biodiversity other than formally protected species in the areas of fishery operation.

Impact detection and assessment is based on appropriate ecological understanding, on assumptions, sampling designs and inferential models that are appropriate, and uses space and time scales that are ecologically important

There have been no comprehensive attempts to evaluate the impact of the fishery on the ecosystem.



The cause-effect models used in experimental studies to evaluate the nature of fishery impacts are appropriate, including their ecological, toxicological and statistical basis;

There have been no comprehensive attempts to evaluate the impact of the fishery on the ecosystem.

The natural dynamics of the ecosystem is adequately accounted for in determining the fishery-based impacts

There have been no comprehensive attempts to evaluate the impact of the fishery on the ecosystem.

Factors outside the fishery management system that can have an impact on the fishery or the ecosystem are adequately considered in determining fishery-based impacts

There is some information on the interaction of the fishery with climate variability, but the interactions with other fisheries are poorly studied, including the ecological interactions.

There is knowledge of the potential for effects of the type of gear, or fishery operations on the ecosystem, habitats and species that occur within the fished areas

The types of impact that the gear can cause are reasonably understood, but there is no compiled information on the potential for impacts because there is no analysis of the distribution of bottom trawling that uses demersal fishing gear (as opposed to near-bottom fishing with pelagic gear).

There is adequate knowledge of potential for ecosystems, habitats and species that occur within the fished areas to recover after fishing (or the fishery activity) has been removed

This is unknown. However, for deepwater benthic habitats, if they are damaged by demersal trawling, recovery within a reasonable time scale is unlikely.

Corrective Action Raised

MINOR CAR No. 005

Action is needed to correct the following weakness:

- A full ecological risk assessment has not been conducted.

Indicator 2D: The impact of lost fishing gear or lost consumables or disposed waste on target or non-target species is not unacceptable.

Findings related to the elements considered

Information on the extent of lost fishing gear and its effects on the populations of target and non-target species, and any physical habitat damages is available

There is some information on the rate of loss of fishing gear; gear loss is reportedly limited, and of minor ecological consequence.

Information on the loss of processing and consumable wastes, their effects on the populations of target and non-target species is available, and any physical habitat damage is available



There is some information about the losses of these wastes, although a code of practice and the fishery operations operate to reduce these losses to low levels that will be of minor ecological consequence.

Corrective Actions Raised

None

Indicator 2E: The fishery does not have unacceptable impacts on the ecosystem structure or function, on habitats, or on the populations of dependent or otherwise associated species.

Findings related to the elements considered

The effects of the removal of target species biomass on populations of species that depend on it as food source

There is limited understanding of ecological interactions of hoki with other species and there is limited information about predator-prey relationships.

The effect of the removal of target species biomass on populations of species that it consumes as food

There is limited understanding of the ecological interactions of hoki with other species and there is limited information about predator-prey relationships.

The effects of the fishery on the habitat structure, productivity and species diversity/interactions in fished areas

There is limited information about the effects of the fishery on habitats or their composition or productivity in fished areas.

The effects of bycatch (including quota species) and discarded species (including the target species) on trophic structure and dynamics, species diversity, and productivity in fished areas

There is limited understanding and documentation of bycatch effects from demersal trawling. Bycatch from midwater trawling is limited, and effects are probably minor other than possible impacts on predators and on quota species. There is limited understanding of the impacts of the fishery on hake and ling.

Corrective Action Raised

MINOR CAR No. 006

Action needs to be taken to correct the following weaknesses:

- The impact of the hoki fishery on non-target quota species is not well defined.
- Research programmes are mainly limited to aspects of setting the TACC for hoki.
- The information availability is not adequate to comply with the requirements for full implementation of the Fisheries Act.

Indicator 2F: Precautionary strategies are employed in the fisheries management system to address and restrain the impacts of the fishery on the ecosystem.



Findings related to the elements considered

Ecological objectives for habitats and populations have been developed and acted upon

No ecological objectives or targets for habitats or ecosystems are in place in the fishery management system. The responsibility for setting and implementing such ecosystem-based objectives is not clear.

The levels of unacceptable impact have been identified for a range of habitats and non-target species in fished areas

No targets have been developed and implemented for levels of unacceptable impact on non-target species.

Monitoring programmes designed to assess fishery impacts are operational

Monitoring programmes are limited to stock issues and to issues related to formally protected species. There are no habitat or ecosystem monitoring systems in place.

Fishery management measures are in place to enable adjustment of fishery practices where unacceptable impacts have been identified

Both industry and government measures are available to alter fishing practices where unacceptable impacts are identified. However, the responsibility for management of non-commercial species that are not also formally protected under legislation—the bulk of the marine biodiversity—and marine habitats is not clear.

Corrective Actions Raised

See Minor CAR 006.

Criterion 2.2

The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.

Indicator 2G: There is adequate knowledge of the ecosystem and its values where the fishery operates in relation to protected, endangered, threatened or icon species.

Findings related to the elements considered

The distribution and conservation status of protected, endangered, threatened or icon species are well-known, together with the nature and distributions of their critical habitats

There is considerable information on the status and the distribution of seabirds and seals, and their habitats, in relation to the fishery. There is little information about other potentially important species, including sharks.



Knowledge of the natural variability in the ecosystem is adequate, including the natural physical forcing factors such as dominant currents, seasonal patterns in oceanographic conditions

There is an adequate level of knowledge of the large scale variability in ocean conditions.

Information on the direct interactions of the fishery with protected, threatened, endangered or highly valued icon species, such as through by-catch, entrainment, effects on behaviour, or physical disruption of seabird and sea mammal populations is available

There is considerable information on the direct interactions of the fishery with protected or icon species, including seabirds and marine mammals, and activities designed to avoid or mitigate interactions. The direct information covers incidental catch of a range of important species derived from the independent observer programme operated by the Ministry of Fisheries.

Information on the extent of interruptions, removals, mortalities of protected threatened or endangered, or highly value icon species caused by the fishery is available.

Considerable information is available for seals and a number of species of seabird, but for some seabirds the data is limited. The statistical analyses are based on a limited number of captures/incidents, and the underlying statistical models are questionable. The most reliable direct information is derived from the observer programme operated by the Ministry of Fisheries.

Corrective Actions Raised

None

Indicator 2H: An ecological risk assessment has been conducted to determine the potential impacts of the fishery on the protected, endangered, threatened or icon species.

Findings related to the elements considered

There have been studies of, or assessment of, the impacts in space and time of the fishery on the endangered, threatened, protected or icon species

There is an adequate knowledge of the impacts of the fishery on many of the potentially affected species, although more knowledge is needed for some seabirds and for the seal population. Only cursory attention has been given to other icon species, such as sharks.

Impact detection and assessment is based on appropriate ecological understanding, on assumptions, sampling designs and inferential models that are appropriate, and uses spaces and time scales that are ecologically important

The approaches used to determine the importance of the impacts of the fishery on seal and seabird populations are limited, and advanced models of population dynamics have not been used to set population-level objectives to assess the fishery impacts.

The cause-effect models used in experimental studies to evaluate the nature of fishery impacts are appropriate, including their ecological and statistical basis

The cause-effect models are limited in scope and derived from a limited knowledge base.



The natural dynamics of the endangered, threatened, protected or icon species is adequately accounted for in determining the fishery-based impacts

Natural dynamics are generally adequately accounted for in existing assessments, although in more developed assessments better information on natural dynamics will be required.

Factors outside the fishery management system that can have an impact on the fishery or the ecosystem are adequately considered in determining fishery-based impacts

The models used to evaluate seal and seabird populations are narrow and take only limited account of external factors, such as incidental capture by other fisheries, migratory behaviour, or climate variability.

There is knowledge of the potential for effects of the type of gear, or fishery operations on the habitats and endangered, threatened, protected or icon species

The potential for effects of the gear types and fishery operations on seabirds and seals are mostly understood, although the potential for effects of demersal trawling on sedentary icon species if they are impacted by the fishery (such as deepwater corals) is not well understood.

There is adequate knowledge of potential for endangered, threatened, protected or icon species that occur within the fished areas to recover after fishing (or the fishery activity) has been removed (reversibility of the effects)

This is not well understood except for some seabirds where models of population recovery have been developed.

Corrective Action Raised No. 007

MINOR CAR No. 007

Action needs to be taken to correct the following weaknesses:

- The risks to seabirds have been assessed but the assessment of the risks to seals is insufficient.

Indicator 21: The impact of lost fishing gear or lost consumables or disposed waste on endangered, threatened, protected or icon species is not unacceptable.

Findings related to the elements considered

Information on the extent of lost fishing gear and its effects on endangered, threatened, protected or icon species, and any physical habitat damages is available

There appears to be only limited gear loss in the fishery, and effects on icon species are therefore likely to be minor.

Information on the loss of processing and consumable wastes, their effects on endangered, threatened, protected or icon species is available, and any physical habitat damage is available

Discards and process wastes are limited across the fishery, and effects on icon species, such as entrainment of seabirds from this source, is likely to be minor. Critical habitats for icon species are unlikely to be affected by the small amount of wastes or losses from the hoki fishery. Information on this is most limited for the shallow water components of the fishery.



Corrective Actions Raised

None.

Indicator 2J: The fishery does not have unacceptable impacts on the endangered, threatened, protected or icon species and their ecosystems.

Findings related to the elements considered

The effects of the removal of target species biomass on endangered, threatened, protected or icon species that depend on hoki as a food source

There is limited information on the effects of the removal of hoki biomass on icon species. This may be particularly important for the seal populations where interaction with environmental variability may cause an additional stress.

The effects of the fishery on the structure and productivity of habitats of endangered, threatened, protected or icon species, and their diversity/interactions in fished areas

There is little information on habitat effects of the fishery, but there are unlikely to be any major direct or indirect consequences for the critical habitats of the icon species

The interaction of bycatch, discarded species, including the target species, with the behaviour, dynamics, and species diversity of the endangered, threatened, protected or icon species

There is considerable evidence that seals and seabirds are entrained on the vessels in the hoki fleet, and that this results in these species being incidentally caught during fishing operations. Codes of practice adopted by the fishery limit the catch and mortality, and mitigation procedures have been used to limit the catch of such species. Additional mitigation techniques are under development for both seabirds and seals.

Corrective Actions Raised

None

Indicator 2K: Strategies are employed in the fisheries management system to address and restrain the impacts of the fishery on the endangered, threatened, protected or icon species.

Findings related to the elements considered

Area-based ecological objectives for populations of endangered, threatened, protected or icon species and their habitats have been developed and acted upon

Objectives for populations of icon species are broadly established, although not in area-specific terms that could be used by the fishery to manage bycatch on a spatial basis.

The levels of unacceptable impact have been identified for endangered, threatened, protected or icon species and their habitats in fished areas

The levels of unacceptable impact have been established for a number of seabird species, but not for seals, and not for any other potentially impacted icon species (deepwater corals, sharks).



Monitoring programmes designed to assess fishery impacts on endangered, threatened, protected or icon species are operational

Both fishery-based and independent (Ministry of Fisheries) monitoring programmes are in place to document the incidental capture of icon species in the fishery.

Fishery management measures are in place to enable adjustment of fishery practices where unacceptable impacts on endangered, threatened, protected or icon species have been identified

At the fishery level, the fishery management system has an appropriate set of strategies and measures in place to restrain the recognised impacts on icon species. At the government level, the strategies are broadly in place, although there is only limited support for impact-related research on icon species, and this results in only a limited basis for recognition and interpretation of the fishery catch of icon species.

Corrective Actions Raised

None

6.1.3. Fishery Management System

Criterion 3.1: Fishery Management System

Indicator 3A: The management system recognises use rights

Findings related to the elements considered

Observe the legal and customary rights and long term interest of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability

In 1992 Maori and New Zealand government completed negotiations on a package that is a full and final settlement of Maori claims to commercial fisheries. This package included inter alia delivery to Maori of:

- 10% of all quotas initially allocated (this included 10% hoki);
- assistance to purchase the assets and business of a major NZ fishing company (including further quota and involvement in hoki);
- 20% of any quota created for new fisheries by their future introduction into the QMS.

A recognition of treaty partnership between Maori and NZ government for the protection of customary harvest rights in fisheries.

Te Ohu Kai Moana (The Treaty of Waitangi Fisheries Commission) was created to hold temporarily in trust the hoki quota and property delivered to Maori. Te Ohu Kai Moana is a shareholder in the HFMC.

Discrimination is addressed in the Employment Contracts Act 1991 and the Human Rights Act 1993. As commented earlier in this report, these issues are included within employment contracts by Member Companies.

Employment relationships are controlled by the Employment Contract Act 1991. Member Companies are required to have either a site "collective employment contract" or "individual



employment contracts" covering all employees. Member Companies are complying with these requirements.

Employees are protected by the Minimum Wage Act 1983 to ensure an adequate minimum wage, currently set at \$7.00 per hour, compared to the New Zealand average wage of \$17.64 per hour. (Ref. NZ Government Department of Statistics). Actual wage rates (generally in excess of the NZ average wage) are negotiated and agreed between employee and employer and embodied within "Employment Contracts". Member Companies are complying with these requirements.

The fishery shall not be conducted under a controversial unilateral exemption to an international agreement

No controversial unilateral exemptions to international agreements in relation to the New Zealand hoki fishery are operational.

The fishery shall be conducted in a manner consistent with International Conventions and Agreements

New Zealand is a signatory to a range of international agreements which have been implemented in the management of New Zealand hoki fishery, and are complied with by member Companies. External audits by SGS New Zealand against the HFMC Sustainable Management Criteria have assessed this compliance. There is a thorough briefing document for skippers in part focusing on fisheries law used by the various HFMC's member companies. Requirements resulting from international conventions and agreements are reflected in this document.

Corrective Actions Raised

None.

Indicator 3B: The management system has a clearly defined scope designed for a well-managed fishery

Findings related to the elements considered

Clear short and long-term objectives, including ecosystem objectives, consistent with a well-managed fishery

In the HFMC's 'New Zealand Hoki Fishery Strategy Development Plan' (1997) and 'Hoki Sector Foresight Strategy – Our Vision to 2010 and Beyond' (1998), strategies are described including ecosystem objectives for the short and long-term consistent with a well-managed fishery (see 3.3).

A consultative process that is transparent and open to all interested and affected parties

The Ministry of Fisheries has a number of forums that provide for interested parties participation in the assessment and management of the fishery. All stakeholders are actively encouraged to participate in the meetings or to provide submissions. These forums include specific working groups on hoki management and research issues. Commercial, recreational, customary and environmental fishery interests, participate in each of these processes. In addition interested



groups representing environmental and wildlife interests, along with local community interests are given every opportunity to participate in these discussions or provide submissions.

Section 12 of the Fisheries Act 1996 requires the Minister to consult with interested parties before making decisions on utilisation and sustainability of fisheries. The Ministry of Fisheries has a number of forums that provide for all interested parties to participate in the assessment and management of the fishery. All stakeholders are actively encouraged to participate in the meetings or at least to provide submissions. Disclosure of information can be requested from the Ministry, under the Official Information Act. Information is released except when it is decreed by the Minister to be commercially sensitive or breaches confidentiality between the parties.

The consultative process of the Ministry of Fisheries is transparent and open to all interested and affected parties as described above. The HFMC actively participates in this process. However, in the development of the HFMC's 'New Zealand Hoki Fishery Strategy Development Plan' (1997) and 'Hoki Sector Foresight Strategy – Our Vision to 2010 and Beyond' (1998), were developed through consultation of a selective group of stakeholders.

An appropriate mechanism for the resolution of disputes arising within the system

There are two mechanisms in operation for dispute resolution. The first is a mechanism described in the Fisheries Act and executed by the Ministry of Fisheries by means of a court proceedings. The second one is a mechanism in place as described in the constitution of the HFMC whereby both an internal mechanism as well as court proceedings are used to resolve disputes.

Provide economic and social incentives that contribute to unsustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing

The New Zealand government does not support any subsidy programmes which could form economic and social incentives contributing to unsustainable fishing. Part grants are in place for some support activities (e.g. training and public good research programmes generic to all fisheries).

Specific measures and strategies that demonstrably control the degree of exploitation of the resource in the light of the natural variation in ecosystems

The Ministry of Fisheries is responsible for the monitoring of compliance of the fisheries management regime. The industry also has an observer programme which monitors catches and vessel behaviour at sea in the Cook Strait. In recent years this programme has been contracted out to an independent organisation "Fisheries Audit Services (NZ) Ltd".

The penalty regime for breaches of the Fisheries Act and regulations is severe, and includes:

- Severe fines
- Confiscation of catch and vessel plus related fishing gear,
- Possible forfeiture of quota and,
- Possible prohibition from the industry for repeated offences.



The Marine Reserves Act (1971) administered by the Dept of Conservation, provides for the establishment and management of marine reserves. Commercial fishing is prohibited in these areas. There are currently no marine reserve areas that impact on hoki fishing grounds.

Since April 1994 vessels of greater than 42 metres and other vessels as specified by the Ministry of Fisheries must operate an Automatic Location Communicator (ALS) which report to the Ministry of Fisheries the position of the vessel via a satellite communication link. This requirement covers most of the hoki fleet. Additionally, ships and planes of NZ Defence Forces make occasional routine sweeps to identify and report vessels sighted within the NZ EEZ. The Ministry of Fisheries considers that there is an effective vessel monitoring system operating in the fishery.

The New Zealand QMS is primarily based on “output controls” (i.e. a total allowable commercial catch from a fishery), rather than on “input controls”(i.e. there are no regulations to compel any change in fishing effort or vessel numbers). Industry members adjust the size of their respective hoki fishing fleets based on individual company business decisions, having regard to their individual hoki quota.

There is a clear strategy established by the HFMC to maintain the level of extraction of Hoki at 250,000 tonnes per annum in spite of assessment advice to increase the TACC.

The extent to which the fishery is supported by research that is adequate and appropriate for the needs of a well-managed fishery

The fishery is well supported by research, in particular by research in support of stock assessments. Environmental research is somewhat limited, although there is increasing emphasis in this area at present. The process for reviewing and prioritising research is adequate, although for environmental research, a more independent process will provide the outcomes with greater levels of credibility with stakeholders.

Corrective Actions Raised

None

Indicator 3C: The management system has a comprehensive scope of planning

Findings related to the elements considered

Management plan is consistent with the spatial scale and intensity of the fishery

Under the current HFMC organisation, there is no single coherent management plan for the fishery. Each individual member company is responsible for developing its own management plan consistent with the spatial scale and intensity of the fishery according to the overall HFMC strategies.

The planning is appropriate to the cultural, social and environmental context of the fishery and is of precautionary nature

The TACC is being set conservatively in the case of scientific uncertainty applying the precautionary approach for this purpose. Long-term planning to integrate environmental



impacts of the fishery is inadequate due to the focus on target species extraction in an output controlled fishery as the hoki fishery. However, the cultural and social context of the fishery is planned through the earlier described legally binding quota settlement with the Treaty of Waitangi Fisheries Commission representing the New Zealand Maori community.

Corrective Action Raised

MINOR CAR No. 008

Action is needed to correct the following weakness:

- Long-term planning is insufficient to integrate environmental impacts in relation to in/output control measures in the hoki fishery.

Indicator 3D: The management system is implemented

Findings related to the elements considered

Does the fishery have a procedures manual/handbook

Individual HFMC member companies do have operate procedures manual/handbooks. Skippers are provided with 'Briefing Documents' prior to each trip.

Are the procedures being implemented

There was limited evidence shown of effective implementation of the HFMC agreed procedures. The link between the HFMC and its members is weak to compel compliance in part due to the voluntary nature of membership.

Specific measures and strategies that demonstrably control the degree of exploitation of the resource

The hoki fishery is managed under the Quota Management regime which provides for individual property rights to be held in perpetuity by quota holders. The quota can be traded and as such has an asset value which can be effected by the health of the fishery. The industry estimates that the asset value of the fishery is of the order of NZ\$1.5 billion. Annual earnings for the latest reported year was NZ\$300 million. If stocks are over-fished and the TACC reduced, quota holders will have their quota reduced without compensation. This provides a strong incentive for quota holders to conserve and enhance their fishery.

The HFMC's strategic development plan has adopted amongst others the following guiding principles: "Quota owners will take the responsibility for long term sustainable management of the fishery" and "Co operation between quota owners and other stakeholders will be promoted". Evidence that the participants take a conservative approach to exploitation of the fishery is also contained in the stated "Harvest strategy" which states "The HFMC will promote a stable catch limit harvest strategy that maximises the economic yield from the fishery. Catch limits will normally be increased only where the proposed increase is assessed to be sustainable for a minimum of three years and the rate of change of catch limits will normally be restricted to plus or minus ten per cent, every second year." (Strategic Development Plan, 1997). The above Harvest Strategy has been reflected in recent submissions made to the Minister when he has



contemplated (and consulted over) any TACC change. There is a clear strategy and associated measures to maintain the level of extraction of hoki at 250,000 tonnes per annum in spite of favourable assessment advice that would increase the harvest level.

The formation of the HFMC has provided a means for Cupertino and collective action by quota holders in the hoki fishery. The strategic development plan states that its goal is "...to improve the management and economies of the hoki fishery by collaborative actions among shareholders in research, management, organisation and advocacy". The HFMC has been active in supporting hoki interests in a range of forums with the Ministry of Fisheries and the Department of Conservation.

Corrective Action Raised

MINOR CAR No 009

Action is needed to correct the following weakness:

- The effective implementation of a comprehensive management system is not sufficient.

Indicator 3E: The management system has compliance and enforcement procedures

Findings related to the elements considered

Are the procedures being adhered to

The hoki fishing operation is a heavily regulated one both by the obligatory governmental regulations as well as the voluntary Sustainable Management Criteria. Both frameworks are formulated in compliance with the fishery management system and its associated legal and administrative requirements.

There is evidence from the HFMC's observer programme that management procedures are being adhered to. In addition, the observer programme run by the Ministry of Fisheries shows compliance with the Fisheries Act requirements related to target stock sustainability.

Contains procedures for effective compliance and enforcement which ensure that management system controls are not violated and appropriate corrective actions are taken

The management system does contain procedures for effective monitoring, control, surveillance and compliance. However, procedures for effective enforcement are partially in place since the HFMC's membership is voluntary and no binding member agreements are in place.

Corrective Action Raised

MINOR CAR No 10

Action is needed to correct the following weakness:

- There is insufficient evidence of enforcement procedures and practices.



Indicator 3F: The management system has an effective monitoring system

Findings related to the elements considered

The monitoring programme of the fishery

The HFMC has an internal effective monitoring (observer) programme in place including various Codes of Conduct. Independent from this, an effective governmental monitoring (observer) programme is implemented by the Ministry of Fisheries.

The monitoring procedures of the fishery

There is evidence from the HFMC's observer programme that there are effective monitoring procedures in place outlined in the various Codes of Conduct. In addition, the observer programme run by the Ministry of Fisheries also shows effective monitoring procedures in relation to Fisheries Act requirements focusing on target stock sustainability.

The monitoring results of the fishery

There is evidence of annual data synthesis and feedback into the management system from the Ministry of Fisheries or HFMC's observer programme. No long-term trend analysis based on these data is systematically conducted, documented and feed back into the management system.

Corrective Actions Raised

None

Indicator 3G: The management system has an effective review system

Findings related to the elements considered

Programme of internal assessment and review

There is a limited internal assessment and review programme within the HFMC itself. For example no evidence was found that data of the HFMC's observer programme are regularly reviewed against the data of the Ministry of Fisheries observer programme for each individual member of the HFMC.

Programme of external assessment and review

Assessments of the biological status of the hoki stocks and impacts of the fishery have been and are periodically conducted by National Institute of Water and Atmosphere (NIWA) under contract of the Ministry of Fisheries.

The stock assessment modelling process has recently been externally assessed and reviewed. The Fisheries Act involves environmental sustainability requirements to the both the Ministry of Fisheries and the private NZ fisheries sector (and thus also to the HFMC) which was



highlighted in the external assessment and review report of the Fisheries Act by the Auditor General.

Guidelines for acting on assessment outcomes

There is assessment and review within the HFMC's management system though no evidence was found of clear guidelines for acting on assessment outcomes.

Research needs and funding

The Ministry of Fisheries manages a process (Nature and Extent of Required Services) which provides for industry and other stakeholders to have input into the proposed research and monitoring programmes. The final decision on these programmes is made by the Minister of Fisheries after considering the comment and submissions from interested parties. The HFMC actively participates in this process and supports additional research on hoki and related impacts associated with hoki fishing.

There is an effective process in place by the HFMC which reviews their research needs. An example of effective review and use of research occurred when NIWA research indicated that too many small fish were being caught by trawlers in a certain part of the Cook Strait. This resulted in an industry agreed Code of Practice ('Hoki Target Trawling') to prevent the catch of more than 10% of small fish in tows conducted in a defined area of the Cook Strait.

Corrective Actions Raised

None

3.2 Criterion Fishery Operations

Indicator 3H: Make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age and/or sex of the target species); minimise mortality of this catch where it cannot be avoided and reduce discards of what cannot be released alive

Findings related to the elements considered

Type of fishing gear

Incorporated into the HFMC's Sustainable Management Criteria, is the implementation of appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning zones and nursery areas.

In addition, the HFMC's individual member companies have a thorough procedures manual/handbook (called 'Briefing Document') which is used by skippers. This document briefs the skipper in detail about the operational practices during fishing including the type of fishing gear to be used, incident reports and discard reports (procedures for discarding quota and non-quota species). Other elements that may be included are: the skipper's responsibility for the briefing of the people on-board, New Zealand fisheries laws, New Zealand fisheries waters, New Zealand fisheries management system, fishing activities, marine obstructions, vessel registration, marking and gear, reporting to the vessel manager and the Ministry of Fisheries,



satellite vessel monitoring system, marine mammals, processing at sea and emergency contact procedures for shore and sea-going staff.

The operational practices

See above.

Incident reports

See above.

Discards reports

See above and below.

In the New Zealand hoki fishery, the catches of major bycatch species are controlled by the QMS. The status of each fish stock is reported on each year and, if there are concerns about a stock, recommendations to adjust the TACC and / or amend other fishing controls are made. Law prohibits discarding of legal size fish covered by the QMS.

Corrective Actions Raised

None.

Indicator 3I: Implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas

Findings related to the elements considered

The impacts of the various fishing techniques used by the fishery

As the majority of hoki is caught with mid water trawls and some with bottom trawls, no destructive fishing practices (such as fishing with poisons or explosives) takes place. Since the hoki fishery is an output controlled one, there is only limited research conducted on the improvement of e.g. gear selection, catchability, etc. primarily by the individual HFMC member companies. The effect of the hoki fishing techniques (i.e. mid water and bottom trawling) and the associated impact is not known since no habitat maps are available to demonstrate effects. However, exclusion zones have been established, e.g. in some areas of the Cook Strait, where no bottom-trawling is possible due to the construction of cables on the seabed, and these may form de facto refuges for hoki.

Records on the distribution of critical or sensitive habitats in the fishery

There is some knowledge of the major habitats and assemblage types found in the areas where the fishery operates; however knowledge of the distribution of mid-water assemblages is limited, and knowledge of the benthic habitats is very limited. Much of the benthic system has been mapped by acoustic technology, but this has provided little biological information on critical and sensitive habitats in the fishery. The information support system for the fishery has



the capacity to increase this knowledge-base, although research projects have so far been very limited in scope.

Controls and guidelines on fishery operations

There are several controls and guidelines on the hoki fishery's operations such as the earlier mentioned skipper's Briefing Document focusing on fishery operation practice while the HFMC and the Ministry of Fisheries' observer programmes focus on fisheries controls.

Corrective Actions Raised

None

Indicator 3J: Minimise operational waste

Findings related to the elements considered

Type, quantity, location and frequency of lost fishing gear, oil spills, operational waste, sewage, plastics, etc.

As required under the Marine Pollution Rules, Member Companies have implemented procedures which comply with these rules. These rules address all aspects of pollution control and waste disposal from fishing vessels.

Concern has been raised about offal or waste discharged as a by-product of at-sea processing. Many of the at-sea hoki processing vessels now have meal plants which process the waste previously dumped. Any waste not processed in this way is controlled and disposed of in accordance with Marine Pollution Rules Part 170.

Under the Pesticides Act 1979, regulations controlling the use of antifouling materials have been gazetted. Member Companies must abide by these regulations and from this audit appear to be doing so. These regulations are further reinforced by the requirements of the Resource Management Act 1991 and its regulations. Regional Councils administer this Act. Where any activity may impact significantly on the environment, a "Resource Consent" must be obtained from the Regional Council.

The HFMC member companies have developed Codes of Practice for the handling of non-biodegradable Wastes at sea, for the handling of biodegradable wastes at sea and for Vessel Discharge.

Management of unwanted catch of target species

There is a skipper's briefing document detailing the management of unwanted catch of target species. All catch of target species must be recorded and is counted against quota.

Management of unwanted catch of non-target species



All catch of non-target species must be recorded and for quota species must be held or obtained to cover any catch. There is a skipper's briefing document detailing the management of unwanted catch of non-target species.

Corrective Actions Raised

None

Indicator 3K: The fishery operations are conducted in compliance all legal and administrative requirements

Findings related to the elements considered

Legislation requirements of all relevant acts

The skipper's Briefing Document provides operational guidelines and practice to comply with all legislative and administrative requirements of the relevant acts for fishing. However, the environmental requirements of the Fisheries Act are not fully dealt with.

Codes of Practice

There are various industry agreed Codes of Practice included in the skipper's Briefings Documents such as those for the handling of (non)-biodegradable wastes at sea, bulk fisheries, fishing operations, factory vessel discharge, minimising accidental fur seal and sea lion bycatch, minimising accidental seabird bycatch, hoki target trawling and hoki catch sampling programme.

Corrective Actions Raised

None

Indicator 3L: The fishery operation assists and co-operates with management authorities in the collection of catch, discard and other information of importance for the effective management of the resource and the associated ecosystem

Findings related to the elements considered

Data collection by the fishery

Most HFMC's member companies are involved in the collection of fishery data through the Ministry of Fisheries observer programme and the HFMC's own observer programme of which the results are used as data in the stock assessment process.

Distribution of collected data to appropriate authorities

The collected data, focused around fish and non-fish by-catch, is distributed by the HFMC's individual member companies to the appropriate authority which is the Ministry of Fisheries. However, debriefing of the Ministry of Fisheries observers occurs on a regular basis by the Department of Conservation.

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Corrective Actions Raised

None

6.2 Stakeholder consultation

6.2.1 Stakeholder identification

The evaluation team strongly believes to have accomplished coverage of the most important stakeholder groups. An earnest attempt through multiple channels was conducted to attempt to obtain the best possible input into the evaluation process. Lack of response by contacted persons and agencies is not included in this report as either lack of concern or approval of the commercial New Zealand hoki fishery management; however, the assessment team believes strongly that any stakeholders with significant concerns have been given the opportunity to express those concerns and provide supporting documentation.

The significant stakeholder groups in the New Zealand commercial hoki fishery that were identified and contacted are:

Commercial fishery agencies

- Hoki Fishery Management Company Limited (HFMC) - NELSON
- National Institute for Water and Atmospheric Research (NIWA) - WELLINGTON
- NZ Federation of Commercial Fisherman – WELLINGTON
- Sea Food Industry Council (SEAFIC) - WELLINGTON
- Seafood Consortium Ltd – LYTTLETON
- Clement & Associates Ltd. – NELSON
- Sealord Group Ltd – NELSON
- Amaltal Fishing Company Ltd. – NELSON
- Private skipper of small ship – NELSON

Recreational/customary fishery agencies

- Treaty of Waitangi Fisheries Commission - WELLINGTON
- NZ Recreational Fishing Council (Inc) - WELLINGTON
- Ngai Tahu Development Corporation Ltd - CHRISTCHURCH
- Ngai Tahu Fisheries - CHRISTCHURCH

Non-governmental organisations

- NZ Marine Sciences Society – WARKWORTH
- Parliamentary Commissioner for the Environment - WELLINGTON
- Royal Forest and Bird Protection Society of NZ Inc - WELLINGTON
- TRAFFIC Oceania Marine/Fisheries Officer - AUSTRALIA
- WWF New Zealand - WELLINGTON
- WWF Australia - AUSTRALIA
- Friends of Golden Bay - COLLINGWOOD
- Environment and Conservation Organisations of NZ (ECO) - WELLINGTON
- Greenpeace New Zealand - AUCKLAND

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Government agencies

- Ministry of Fisheries - WELLINGTON
- Ministry for the Environment - WELLINGTON

6.2.2 Stakeholder issues

The most important issues raised during the stakeholder consultation by the contacted stakeholders are listed below.

Lack of a spatial structure for quota

The need to have a spatial structure in the existing system of management of Hoki was raised to be an issue. There is a current threat of over-exploitation of the Eastern stock indicated by the latest stock assessment plenary (Annala *et. al.*, 2000). This is due to insufficient recognition of spatial structure of the fishery as the current management strategy (setting an overall TAC) does not sufficiently address the requirements for spatially explicit management. The assessment team considered this non-compliance seriously which resulted in a minor Corrective Action Request (CAR) 002 as a non-compliance against Principle 1, Criterion 1.1, Indicator 1E. Related observations raised are described in section 6.1.1 under indicator 1E.

Over-fishing of the East coast stock of Hoki

It was considered that over-fishing of the East coast hoki stock was a controversial issue and there was concern about overfishing of the east coast hoki stock. The virgin biomass of the eastern stock was estimated to have been, in 1999, 10% or 20% of the total virgin biomass.

The probability of the stock being below 20% B_0 in 2004 was estimated at 30% under the current catch levels. This stock is expected to remain above B_{MSY} over the period of projection under the current catch levels although there is a 66% probability of the stock declining in size over the next 5 years.

Eastern stock fish account for about 40% of the current hoki catch. The risk to the eastern stock could be decreased if a smaller proportion of the total catch was taken from this stock. Given the current assumptions about hoki stock structure and if the eastern stock size is at the lower end of biomass estimates, then the current distribution of catches at the present TACC may cause the eastern stock to decline to unacceptably low levels.

The assessment team considered the probability that the Eastern hoki stock will not remain above the limit reference point (B_{MSY}) as a non-compliance against Principle 1, Criterion 1.1, Indicator 1E. This non-compliance resulted in a minor Corrective Action Request (CAR) 002. The raised observations are described in section 6.1.1 under indicator 1E.

Implementing environmental aspects of the Fisheries Act

The limited nature of the implementation of the various environmental aspects of the Fisheries Act 1996 and its subsequent amendments was pointed out. This was considered by stakeholders to be a controversial issue in relation to the environmental implications of sustainability of ecosystems and biological diversity beyond the target species, in the face of fishing pressures. Examples used to highlight the implementation problems included the limited amount of research support provided to fisheries sustainability issues that involve non-stock

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matters, including the effects of fishing on ecosystems. The Auditor-Generals report of 1999 on fisheries was perceived to be highly critical of the implementation of the environmental aspects of the Fisheries Act.

The assessment team considered the information availability not adequate to comply with the requirements for full implementation of the Fisheries Act in particular those dealing with environmental impacts of the fishery as research programmes are mainly limited to aspects of setting the TACC for hoki. Therefore, this non-compliance against Principle 2, Criterion 2.1, Indicator 2E resulted in a minor Corrective Action Request (CAR) 006. Detailed arguments and the observations raised are described in section 6.1.2 under indicator 2E.

Confused responsibilities for managing the environmental effects of fishing

It was considered that there was no clear management system that deals with the management of the environmental impacts of fishing. In particular roles and responsibilities in government in relation to the impacts of fishing on various aspects of marine ecosystems were considered to be uncertain. Issues raised were the responsibilities for managing non-commercial species, benthic habitats where fishing may operate and species that may be considered at risk but not formally protected under government legislation.

The assessment team considered the information availability not adequate to comply with the requirements for full implementation of the Fisheries Act. The basis for this decision was the harsh Auditor General's report addressing the responsibility issue for full implementation of the 1996 Fisheries Act. In addition, from discussions with both the Ministry of Fisheries as well as the HFMC, it became clear that both parties have not appropriately addressed this issue as yet. Therefore, this non-compliance against Principle 2, Criterion 2.1, Indicator 2E resulted after rating in a minor Corrective Action Request (CAR) 006. The raised observations are described in section 6.1.2 under indicator 2E.

Seal by-catch

It was considered that the by-catch of seals was a controversial issue and a major ecological and public perception problem for the fishery. Concerns were raised that the fishing industry was moving too slowly to design and implement effective seal excluder devices in the Hoki fishery. The assessment team was made aware of the preliminary results of a research project which indicated a decline in seal pup numbers on the west coast. However, this research could as yet demonstrate no relationship between the observed decline and the hoki fishery operations.

Since the assessment team found that the effects of fur seal by-catch on the total fur seal population are not yet known to the HFMC, a minor CAR No. 007 was issued. This CAR indicates the non-compliance against Principle 2, Criterion 2.2, Indicator 2H as the fishery risks to seabirds have been assessed but the assessment of the risks to seals is insufficient. The raised observations are described in section 6.1.2 under indicators 2B, 2G, 2H and 2J.

Seabird by-catch

It was considered that the by-catch of seabirds was a controversial issue and there was concern about the reliability of data on bycatch of seabirds by Hoki fishery trawlers, because affected birds may not be retrieved with the catch, and hence not included in observer data. Also concerns were raised about the lack of Cupertino of some parts of the fishery in relation to return of seabirds for autopsy/examination that were killed in trawling operations.

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Since the assessment team found the effects of seabird by-catch on the relevant seabird populations have been assessed and mitigated in an appropriate way, no CAR was issued. However there were a number of observations raised as described in section 6.1.2 under indicators 2B, 2G, 2H and 2J.

Lack of ecosystem, habitat and species assemblage knowledge

A basic lack of ecological knowledge of mid-water and benthic ecosystems was identified as an issue in developing a better understanding of the environmental effects of the fishery.

The assessment team considered this knowledge gap as a serious shortcoming resulting in insufficient long-term planning to integrate environmental impacts in relation to in/output control measures in the hoki fishery. This non-compliance against Principle 3, Criterion 3.1, Indicator 3C resulted in a minor Corrective Action Request (CAR) 008. The raised observations are described in section 6.1.3 under indicator 3C.

Lack of an integrated management plan for the fishery

It was considered that the lack of an integrated management plan for the fishery was an issue for some stakeholders. This was considered to be particularly important for managing aspects of the stock, interactions with other quota species (such as hake and ling), and the environmental interactions of the fishery with the ecosystem.

The assessment team considered the lack of an integrated management plan for the fishery as an overriding activity covering most CARs raised. Since the HFMC has commenced developing an holistic management plan based on the currently required fisheries plans, no specific CAR was raised. Moreover, there is a hoki strategic management plan including some environmental issues addressed by the fishery. However, when it comes down to the stakeholder issues raised in this context, the requirements for (spatial) managing aspects of the stock are raised in CAR 002 and CAR 003, the interactions with other quota species in CAR 006 and the environmental interactions of the fishery with the ecosystem in CAR 008.

Industry-based catch observer programme

The industry-based programme of observers was considered unreliable, and not enough effort was being committed to proceed to standardisation between the industry and government observer programmes.

The assessment team did not consider this a serious issue as currently the HFMC is increasing the reliability (credibility) of the data by independent third-party audits carried out on hoki vessels of HFMC companies. Moreover, the Ministry of Fisheries has indicated considering the industry observer programmes potentially delivering reliable data. This could lead to a replacement of the current governmental observer programme, such as the case with the New Zealand lobster fishery, but only after a period of several years of successful third party verification.

Data reliability for stock assessment

Concern was raised about the reliability of the data used as input to the stock assessment process. The assessment team did not consider this a serious issue as currently the governmental observer programme yields reliable, fishery independent data while the HFMC is

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currently increasing the reliability (credibility) of the industry data by independent third-part audits carried out on hoki vessels of HFMC companies.

Stakeholder participation process flawed

The process for involving stakeholders in management decisions of the fishery is considered flawed and ineffective. Examples were considered to be the strong influence of the fishing industry on the research support working group process, on the stock assessment process, and on the nature and implementation of the Fisheries Act, not meeting the interests of other stakeholders.

The assessment team considered two elements to stakeholder consultation. First, here is the governmental stakeholder consultation through various working groups. This process is open to all interested parties in New Zealand. Second, there is the stakeholder consultation process employed by the HFMC in developing its Strategic Management Plan (HFMC, 1997/2000) which has been open to a selected number of stakeholders only. Thus the assessment team did consider this issue not of serious importance after rating this issue did not result into a CAR. However, one observation was raised in section 6.1.3 under indicator 3B suggesting a truly open stakeholder consultation process to the HFMC management to comply better with the MSC P&C.

Marine protected areas

The establishment of closed areas, marine protected areas and no-take zones for commercial fisheries and the marine ecosystem was suggested. Benefits included reportedly real time analysis of stock distribution, abundance, movement and the availability of specific areas for fishing, are all techniques that can be developed with modern integrated adaptive management tools and incorporated as key facets of the fishery management plan. The specific design key objective being: managing for the sustainability of the genetic diversity of the hoki stocks.

Since no objective evidence of the benefits of creating marine protected areas in the light of ecosystem sustainability, the assessment team thus did not consider this issue of major importance and no CAR was issued nor any observations were made.

Hoki Scoring Guideline

The stakeholder comments on the hoki Scoring Guideline have been considered while it should be noted that some comments and/or proposed changes were not shared by the assessment team while others were taken up seriously and considered valuable input.

6.3 Scoring outcome

Using the methodology prescribed by the Marine Stewardship Council (see 4.2), the assessment team found that the New Zealand commercial hoki fishery met all three MSC Principles and Criteria independently. For each Principle, the assessment team rated the fishery as follows:

- Principle 1 – Well-managed hoki resource: Pass;
- Principle 2 – Minimizing ecosystem impacts: Pass;
- Principle 3 – The management system: Pass.



Underneath, the ratings for each of the MSC Principles, Criteria and hoki Performance Indicators are given.

MSC Principle	MSC Criterion	Hoki Performance Indicator
<u>Principle 1</u> – Pass	<u>Criterion 1.1</u> – Pass	<u>Indicator 1A</u> – Pass <u>Indicator 1B</u> – Pass <u>Indicator 1C</u> – Pass <u>Indicator 1D</u> – Minimum <u>Indicator 1E</u> – Minimum
	<u>Criterion 1.2</u> – Not used for hoki assessment as this criterion was found not applicable and thus weighted to zero.	
	<u>Criterion 1.3</u> – Pass	<u>Indicator 1F</u> – Pass <u>Indicator 1G</u> – Pass <u>Indicator 1H</u> – Minimum
<u>Principle 2</u> – Pass	<u>Criterion 2.1</u> – Minimum	<u>Indicator 2A</u> – Minimum <u>Indicator 2B</u> – Pass <u>Indicator 2C</u> – Minimum <u>Indicator 2D</u> – Pass <u>Indicator 2E</u> – Minimum <u>Indicator 2F</u> – Pass
	<u>Criterion 2.2</u> – Pass	<u>Indicator 2G</u> – Pass <u>Indicator 2H</u> – Minimum <u>Indicator 2I</u> – Pass <u>Indicator 2J</u> – Pass <u>Indicator 2K</u> – Pass
	<u>Criterion 2.3</u> – Not used for hoki assessment as this criterion was found not applicable and thus weighted to zero.	
<u>Principle 3</u> – Pass	<u>Criterion 3A</u> – Pass	<u>Indicator 3A</u> – Pass <u>Indicator 3B</u> – Pass <u>Indicator 3C</u> – Minimum <u>Indicator 3D</u> – Minimum <u>Indicator 3E</u> – Minimum <u>Indicator 3F</u> – Pass <u>Indicator 3G</u> – Pass
	<u>Criterion 3B</u> – Pass	<u>Indicator 3H</u> – Pass <u>Indicator 3I</u> – Pass <u>Indicator 3J</u> – Pass <u>Indicator 3K</u> – Pass <u>Indicator 3L</u> – Pass

7. STRENGTHS AND WEAKNESSES

7.1. Strengths

Some of the observed strengths of the hoki fishery are:

- Strong, fisheries independent government observer programme;

- Dedicated HFMC observer programme, additional but independent from the governmental observer programme;
- Stock assessment process with an exceptional hoki research capacity;
- Pro-active role of the HFMC towards some environmental issues;
- Strong, truly transparent and open governmental working group process in establishment of research agenda;
- Good information availability on seabirds populations;
- Utilisation and waste system regulations on-board vessels are strong;
- Briefing document for skippers with operational practice guidelines is thorough.

7.2. Weaknesses

Ten minor Corrective Action Requests (CARs) were raised which are summarised in the table below. In the following table the requirement number refers to the indicator used in the MSC Fisheries Programme to test each criterion from the MSC P&C. The HFMC is required to address the minor CARs by presenting action plans to SGS Product & Process certification, 6 months after the certificate is issued.

CAR No	MSC P&C	Description
001	P 1, C 1.1, I 1D	<ul style="list-style-type: none"> • Insufficient recognition of spatial structure of the fishery as current strategy does not sufficiently address the requirements for spatially explicit management • The relationship between fishery assessment advice and subsequent management decisions and implementation is not well-defined.
002	P 1, C 1.1, I 1E	<ul style="list-style-type: none"> • There is a high probability that the Eastern hoki stock will not remain above the limit reference point (B_{MSY}) • Insufficient recognition of spatial structure of the fishery as current strategy does not sufficiently address the requirements for spatially explicit management
003	P 1, C 1.3, I 1H	<ul style="list-style-type: none"> • Management tools dealing with the Eastern hoki stock are not clearly specified and appropriate to the management of the stocks.
004	P 2, C 2.1, I 2A	<ul style="list-style-type: none"> • Information is not sufficient on the distribution of habitats, major assemblage types and the natural functions and trophic relationships among species in the midwater and benthic ecosystems where the hoki fishery operates.
005	P 2, C 2.1, I 2C	<ul style="list-style-type: none"> • An ecological risk assessment of the hoki fishery has not been conducted.



CAR No	MSC P&C	Description
006	P 2, C 2.1, I 2E	<ul style="list-style-type: none">• The impact of the hoki fishery on non-target quota species is not well defined.• Research programmes are mainly limited to aspects of setting the TACC for hoki.• The information availability is not adequate to comply with the requirements for full implementation of the Fisheries Act.
007	P 2, C 2.2, I 2H	<ul style="list-style-type: none">• The hoki fishery risks to seabirds have been assessed but the assessment of the risks to seals is insufficient.
008	P 3, C 3.1, I 3C	<ul style="list-style-type: none">• Long-term planning is insufficient to integrate environmental impacts in relation to in/output control measures in the hoki fishery.
009	P 3, C 3.1, I 3D	<ul style="list-style-type: none">• The effective implementation of a comprehensive management system is not sufficient.
010	P 3, C 3.1, I 3E	<ul style="list-style-type: none">• There is insufficient evidence of enforcement procedures and practices.

8. CERTIFICATION RECOMMENDATION

There being no Major CARs, the assessment team recommends certification of the New Zealand Hoki fishery management by the HFMC against the MSC P&C.

The outstanding Minor CARs do not preclude certification, but the HFMC is required to present an action plan and commence the agreed actions before 14 September 2001. These will be verified by SGS Product & Process Certification at the first surveillance to be carried out about 6 months from the date of the issuance of the certificate. If satisfactory actions have been taken the CARs will be 'closed out' (i.e. satisfactory resolution); otherwise Minor CARs will be raised to Major CARs. A public summary of each surveillance visits will be published on the MSC website.

CARs will be closed-out by SGS when a programme of action is provided in sufficient (auditable) detail to fully address the intent of the CAR or evidence of direct action. Where a programme is provided this would include a description of intended activities, expected outcomes and a clear timetable that falls within the audit period of this certification (5 years). Close-out of the CARs involves an assessment of the likely effectiveness of this programme or action in meeting the intent of the CAR.



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Date: 12 March 2001

Date: 12 March 2001



APPENDIX

I. LITERATURE INDEX

Author	Publisher	Title
NA	Clement & Associates Ltd.	New Zealand Hoki Fishery Strategic Development Plan (December 1997)
NA	Hoki Fisheries Management Co.	Statutes of Hoki Fisheries Management Company
NA	NA	Minutes of Board Meeting 16/08/00 Hoki Fisheries Management Company
NA	NA	Shareholders list of Hoki Fishery Management Co. Ltd
NA	Hoki Fishery Management Co.	Hoki Sector Strategy: Our vision for 2010 and beyond
NA	NA	Briefing notes on fisheries laws
Annala, J.H., Sullivan, K.J & O'Brien, C.J.	Ministry of Fisheries, May 00	Fishery Assessment Plenary: Stock Assessments and Yield Estimates (held at NIWA)
Baird, S.J	New Zealand Fisheries Assessment	Estimation of the incidental capture of seabird and marine mammal species in commercial fisheries in New Zealand
Baird, S.J.	National Institute of Water and Atmospheric Research Ltd, Sep 99	Estimation of nonfish bycatch in commercial fisheries in New Zealand Waters, 1997-98
Baird, S.J., Bardford, E.	NIWA Technical Report 92	Factors that may have influenced the capture of New Zealand Fur Seals in the west coast South Island Hoki Fishery.
Ballara, S.L., Livingston, M.E., Cordue, P.L	NIWA, Jan 98	A review of the 1995-96 hoki fishery and assessment of hoki stocks for 1997.
Ballara, S.L., Cordue, P.L., Livingston, M.E	Ministry of Fisheries 2000	A review of the 1997-98 hoki fishery and assessment of hoki stocks for 1999.
Ballara, S.L., Cordue, P.L., Livingston, M.E	NIWA, Oct 98	A review of the 1996-87 hoki fishery and assessment of hoki stocks for 1998.



Bess, R., Harte, M.	Elsevier Science 2000	The Role of Property Rights in the development of New Zealand's Seafood Industry.
Bull, B.	Ministry of Fisheries 2000	An acoustic study of the vertical study of hoki on the Chatham Rise.
Bull, B, Livingston, M	The Hoki Management Company	Hoki Migration Patterns: an analysis of commercial catches in NZ waters
Chapman Trip Sheffield Young	Ministry of Fisheries	New Zealand Fisheries Act 1996
Cooper, R., Gebbie, E., James, G., Pugsley, C	Parliamentary Commissioner for the Environment 1999	Setting Course for a Sustainable Future
Cordue, P.L., Ballara, S.L.	NIWA, Oct 98	Acoustic surveys of spawning hoki off the west coast of South Island and in Cook Strait During Winter 1997
Cordue,P.L.	NIWA, May 98	An evaluation of alternative stock reduction estimators of year class strength and an assessment of the frequency of Chatham Rise trawl surveys of juvenile hoki required for stock assessment.
Cordue,P.L.	Ministry of Fisheries 2000	MIAEL estimation of biomass and fishery indicators for the 1999 assessment of hoki stocks
Department of Conservation	Department of Conservation, Feb 00	The New Zealand Biodiversity Strategy
Francis, R.I.C.C	Fisheries Assessment Research, 1992	Recommendations concerning the calculation of maximum sustainable yield (msy) and constant yield (cay).
Francis, R.I.C.C	Fisheries Assessment Research, 1999	Moving Towards Bmsy.
Haist. V, Starr P.J, Parma, A	Ministry of Fisheries	NZ Fisheries Assessment Report 2000
Harte, M.	New Zealand Seafood Industry Council	Collaborative Research: Innovations and Challenges for Fisheries Management in New Zealand.
Harte, M.	Public Sector, Vol 21, No 4,	Guarding the consensus: Stakeholder Participation in the Management of New Zealand's Fisheries Resource.
Hoki Fishery Management	Hoki Fishery	Hoki Target Trawling



Company	Management Company	
Horn, P.L.	National Institute of Water and Atmospheric Research Ltd, Dec 98	The stock affinity of hake from Puysegur Bank, and catch at age data and revised productivity parameters for Hake stock HAK 1,4 and 7
Kearney, R.E	NZ Fisheries	Review of Orange Roughy Assessments
Layley, A	HMC Ltd	An Investigation of the distribution and catch of hoki on the Chatham Rise.
Mace, J	Quota Services Ltd, Oct 00	Selected Quota Owners
Manly, B.F.J., Seyb, A. & Fletcher, D.J	University of Otago, Sep 99	Accidental and Incidental Captures of Fur Seals and Official Observer Coverage in Fisheries in New Zealand Waters for Fishing Seasons 1990/91, with an assessment of the Observer Cover Required for the future Monitoring of Fisheries.
Mattlin, R.H	MAF, NZ Fisheries, 99	Seals & Seabirds – Filtering Interactions
Ministry for the Environment	Ministry for the Environment	Application/Contract for Project Grant Delivery
Ministry of Fisheries	Ministry of Fisheries, Oct 2000	Medium Term Research – Aquatic Environment
Ministry of Fisheries	Ministry of Fisheries, Aug 97	Medium Term Research Plan – Hoki & Middle Depth Fisheries
Ministry of Fisheries & Dept. Of Conservation.	Ministry of Fisheries & Dept. Of Conservation.	Seabird Interaction with Fisheries In New Zealand Exclusive Economic Zone - A review and national plan of action, Jun 00
NIWA	2000/70	The coverage of Scientific Observer Programme sampling of the hoki commercial fishery
NZ Fishing Industry Board	NZ Fishing Industry Board	Non-fish incidental catch reporting form
NZ Seafood Industry Council Science Unit	NZ Seafood Industry Council Science	Research Proposal: For the Hoki Management Company



ORMC		Initial Position Paper: Seamounts
Pascual, M, Edwards, A.E	NZ Hoki Fishery Management Company	Detecting Trends in Albatross Populations
Quinn,T.J., Sullivan,P.	Ministry of Fisheries, August 99	Review of Hoki Stock Assessment Research
Reid, J.	Fisheries Audit Services (NZ) Ltd	Cook Strait Observer and On Shore Audit Programme, Jul-Sep 00
Robertson,G., Gales,R.	Surrey Beatty & Sons Pty Ltd, Jun 98	Albatross Biology and Conservation
Rothery,P.	Prince P.A. 1990	Survival and Breeding Frequency in albatrosses
Science Policy Group	Ministry of Fisheries	Proposed Fisheries Research Services for 2001-2002
Seafic	Hoki Fishery Management Co,	Hoki Catch Sampling Programme
Sinner,J.	Consultant	Environmental Effects of the New Zealand Seafood Industry: A Preliminary Assessment (November 2000)
Starr, P	New Zealand Seafood Industry Council	Opinion on the Long Term Sustainability and Future Prospects of NZ Hoki
Starr, P.	New Zealand Seafood Industry Council	Fishery Management Innovations in New Zealand
Taylor,G.A.	Biodiversity Recovery Unit. DoC	Action Plan for Seabird Conservation in New Zealand. Part B: Non-threatened Seabirds
Taylor, R, Smith, I	Ministry for the Environment	The state of NZ's Environment 1997.
The Fisheries (reporting) Regulations 1990	Brooker's electronic Legislation and Regulations	The Wildlife Act 1953 and Amendments
Wade, P.R.	Alaska Fisheries Science Centre, 1996	Calculating thresholds of the human-caused mortality of cetaceans and pinnipeds.