



## 2011 Compliance Risk Profile of the West Coast/East Coast South Island Hoki Fisheries



## 1. Executive Summary

In line with the National Deep-water Plan the Ministry for Primary Industries (MPI) Operational Coordination team was tasked to deliver a risk profile on the 2011 West Coast South Island (WCSI) and East Coast South Island (ECSI) hoki fisheries. The profile is intended to provide MPI management, compliance and fishing industry participants with an assessment of compliance risks, as they relate to each fisheries area. The risk profile was not required to be delivered to an evidential standard. Where risks are identified quantification of that risk has been documented based on the data available. This includes an assessment of the severity of the risks in terms of fishing practice, occurrence and vessel/companies involved.

The hoki fishery has undergone significant reductions and changes in TACC levels since 2000. In 2000-01 the TACC was set at 250,000 tonnes. TACC reductions were made over preceding years because the hoki fishery was estimated to be below management target fishing levels. In 2010-11 the TACC was set at 120,000 tonnes increasing by 10,000 from the previous year. Because the hoki fishery is a high volume and a high value fishery it has continued to have significant commercial importance despite the reductions in the total allowable commercial catch.

To profile the WCSI hoki fishery an operation was commenced code named "Operation Bronto." The operation was coordinated to gather, examine and analyse data pertaining to the hoki fishery and a number of bycatch species. This was undertaken by Fishery Officers during 43 in port inspections and 20 at sea vessel inspections. In addition 11 vessel trips carried MPI observers who also collected data and carried out hoki length frequency work. The ECSI hoki fishery was profiled using MPI observer length frequency data and company hoki processing and grading specifications. Vessel TCEPR data was used and analysed for both MPI observed and unobserved vessels operating on the WCSI and ECSI hoki fisheries.

The 2011 hoki risk profile has identified a number of risks and issues in relation to: fisheries reporting, fishing practices, vessel electronic weighing and recording systems, carton weights, reporting of meal, vessel specific conversion factors, vessel processing specifications and undefined states, additional states and products, highgrading of hoki in both the WCSI & ECSI hoki fisheries, misreporting of bycatch, the misreporting of target species to circumvent the Deep Water Group Hoki Fishery Operational procedures in relation to HMAs.

It is estimated that the total greenweight of hoki unreported is between 3,414 t and 3,555 t (which equates to between 5.6% and 5.9% of the HOK1W sub-area TACC). It is worth noting that not all risks identified in this report have been able to be quantified due to insufficient data and for this reason the estimates provided are considered conservative.

A total of 44 recommendations have been made and are categorised according to where it is believed the risk can best be addressed: "Deep Water Group", "Working with the Company", "MPI Monitoring/Ongoing work", "Investigation and/or Fishery Officer Monitoring at District" and "Fact sheet".

## 2. Background

In collaboration with industry and environmental organisations, the Ministry for Primary Industries has developed a National Fisheries Plan for Deep-water and Middle-depth Fisheries. The Minister has approved this National Deep-water Plan. The National Deep-water Plan sets out the long-term goals and objectives for deep-water fisheries. It also sets the specific operational objectives that will be delivered annually for each key deep-water species, and establishes performance indicators to assess if the management strategy has been delivered.

The specific compliance services for 2011-12 contained in the National Deep-water Plan include the completion of risk profiles on the hoki fishery. These service requirements are in addition to the general monitoring and surveillance activities undertaken by the Compliance Directorate. A compliance overview is also provided within the National Deep-water Plan, as detailed below.

The hoki fishery is subject to an extensive range of regulatory measures aimed at improving the management of the entire fishery, including its effect on bycatch species. A number of compliance risks have been identified as being of particular relevance to the hoki fishery as listed in the Hoki Fisheries Plan. These risks are described below:

### 2.1 Discarding of Hoki and Bycatch Species

Discarding (returning of fish to the sea) is of particular concern in the hoki fishery and is prohibited under s 72 of the Fisheries Act 1996. There is no legal size limit for hoki and as such it is not a species which may be returned to the sea or other waters pursuant to the 6<sup>th</sup> Schedule of the Fisheries Act 1996.

Discarding enables fishers to increase their income by avoiding QMS related expenses such as purchase of annual catch entitlement (ACE) or paying deemed values. Hoki fishery bycatch species are especially vulnerable to this type of offending.

Fishers may also deliberately discard smaller, damaged or less valuable fish of a particular species to maximise their economic return. This practice is known as highgrading.

### 2.2 Misreported Catch

Misreporting occurs when fishers report incorrect weights, quantities, species, or landed states. The primary motive behind this type of offence is minimising ACE and related deemed value expenses.

### 2.3 Deployment of Seabird Mitigation Devices

Regulations require that all deep-water trawl vessels operating in the hoki fishery deploy bird mitigation devices to ensure that fishing activity does not cause unnecessary risks to seabirds.

With the assistance of the fishing industry, MPI undertakes risk analysis of the hoki fishery. Some risks were identified as a result of previous investigations and prosecutions.



Risk analysis and information sharing between MPI and industry allows the Ministry to adapt compliance efforts to current risks. It helps minimise opportunities for offending and facilitates the development and monitoring of the compliance standards necessary to achieve the objectives of the National Deep-water Plan.

### 3. The Hoki Fishery

The hoki fishery is a high volume and a high value fishery. In 2008 the estimated total market value of hoki quota was \$730m<sup>1</sup>. Because of its commercial importance hoki is ranked as a Tier 1 fishery in the National Deep-water Plan.

#### 3.1 Hoki Biology

Hoki (*Macruronus novaezealandiae*) is widely distributed throughout New Zealand waters, with greatest abundance between depths of 200 m to 600 m. Hoki is a relatively fast growing, medium-lived species. Hoki juveniles reach about 27-30 cm total length (TL) at the end of their 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, as summarised in table 1 below.

Year	Total Length (cm)
1	27-30
2	40-45
3	50-55
4	60-65

Table 1 - Summary of total length by age

Males appear to mature at 60-65 cm TL at 4-5 years, while females mature at 65-70 cm TL. After the onset of maturity the growth rates of males and females differ. Males grow up to about 115 cm TL, while females grow to a maximum of 130 cm TL and up to 7 kg weight. The maximum age for hoki is between 20-25 years.

Hoki spawn for the first time between 3 and 5 years. Spawning occurs each year during the winter months at two main spawning grounds; the West Coast of the South Island (WCSI) and Cook Strait. The current hypothesis is that juveniles from both stocks mix on the Chatham Rise and recruit to their respective stocks as they approach sexual maturity (O'Driscoll, 2012). The hoki fishery is strongly recruitment driven and therefore vulnerable to large fluctuations in stock size. To manage the fishery and minimise potential risks, it is important to have some ability to predict recruitment into the fishery. Extensive sampling throughout the EEZ has shown that the Chatham Rise is the main nursery ground for hoki aged to 2 to 4 years (O'Driscoll, 2012).

The western stock of hoki lives mainly on the Southern Plateau and migrates to spawn off the WCSI in winter. The main hoki spawning fishery operates from mid-July to late-August on the WCSI, where hoki aggregate to spawn in depths of 300-700m around the Hokitika Canyon. A second major spawning fishery occurs in Cook Strait, where the season runs from late-June to mid-September, peaking in July and August. Small catches of spawning

---

<sup>1</sup> See [www.fish.govt.nz](http://www.fish.govt.nz)

hoki are taken from other spawning grounds off East Coast South Island (ECSI) and, late in the season, at Puysegur Bank.

Outside the spawning season there is a substantial fishery on the Chatham Rise and a smaller fishery in the Sub-Antarctic. The Chatham Rise fishery generally has constant catch levels across all months except July to September, when catches are lower because fishing vessels move to the spawning grounds. In the Sub-Antarctic, catches typically peak in April to June. There is also a small East Coast North Island (ECNI) hoki fishery.

26 key bycatch species (QMS) are typically taken as a consequence of the hoki target fishery. A number of non-QMS species are also caught. These are usually discarded or rendered to fishmeal and are of little commercial value.

### 3.2 Hoki Management

Since 2002-03 the hoki fishery has been managed as two stocks under a single total allowable commercial catch (TACC), HOK1. The two stocks, which are illustrated in figure 1 below, are defined as:

1. Western hoki stock: WCSI, Sub-Antarctic and Puysegur Bank.
2. Eastern hoki stock: Cook Strait, Chatham Rise, ECSI and East Coast North Island (ECNI).

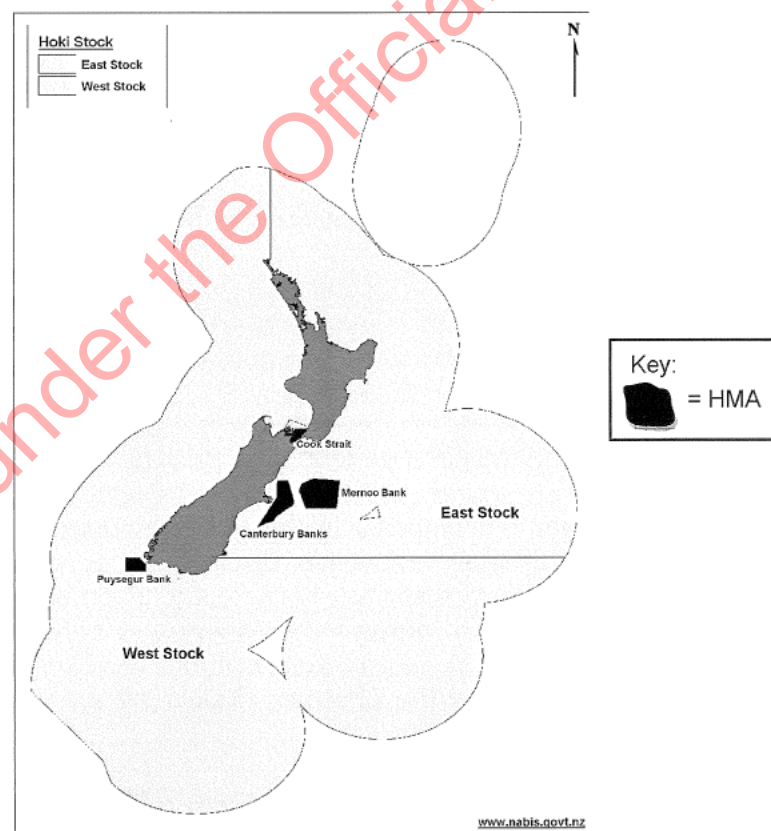


Figure 1 - Hoki fishery illustrating eastern and western stock boundaries in HOK1

Historically the WCSI hoki fishery was the largest with over 90% of the total hoki catch taken there during the spawning period. Catches from the WCSI fishery declined steadily from 1988 to 1996. Further declines in catches were also reported between the years 2001 to

2009. In 2001, quota owners implemented agreed catch limits within the TACC to manage catches from both the eastern and western stocks.

The proportions of the TACC taken from each stock were set according to annual stock assessments. From 2004 to 2007 the limits required that 60% of the TACC be taken from the eastern stock and 40% from the western stock. To provide for the rebuild of the western stock these proportions were adjusted in 2007 to 72% from the eastern stock and 28% from the western stock. During the period 2004 to 2009, quota owners also agreed to the closure of the Hokitika Canyon spawning ground as a precautionary measure. This closure has since been lifted because the western hoki stock is no longer estimated to be below management target fishing levels<sup>2</sup>.

In 2009-10, the permissible catch from the western fishing grounds was increased to 50,000t, within an overall TACC of 110,000 t. For the 2010-11 fishing year the permissible catch for the western and eastern stocks was 60,000 t from each area, within an overall TACC of 120,000 t. By agreement, quota owners manage the recommended catch limits for the western and eastern stocks, which are respectively designated areas HOK1W and HOK1E.

Quota owners have implemented other non-regulatory management measures to improve stock recruitment by reducing catches of juvenile hoki. These measures are currently administered by the Deepwater Group. The measures include the closure to target hoki fishing of four areas known to contain significant proportions of juvenile hoki. These areas, the Hoki Management Areas (HMAs), are still accessible to trawlers targeting other species such as scampi, ling, silver warehou and squid. See figure 1 above for location of HMAs.

### 3.3 Hoki TACC Changes

Between 2000-01 and 2008-09, substantial reductions in the hoki TACC meant that the TACC was reduced from 250,000 t to 90,000 t. These reductions were largely attributed to environmental factors. In 2009-10 the TACC was raised by 20,000 t to 110,000 t, and then by a further 10,000 t in 2010-11 to 120,000 t. For the 2011-12 fishing year, the Total Allowable Commercial Catch (TACC) for hoki was again increased by 10,000 t, from 120,000 to 130,000 t.

### 3.4 Stock Assessment – Allowance for Illegal Catch

The 2006 stock assessment stated that there may be some dumping of small fish, but the level was unknown. In 2005 “A length based analysis of highgrading in the NZ WCSI hoki fishery” (unpublished report)<sup>3</sup>, provided a reliable estimate of the level of discarding, but was never incorporated in later hoki stock assessments. The 2011 stock assessment simply states that “no information is available about illegal catch”. It was noted that under “other sources of fishing mortality” there may have been some discarding of small fish due to the prevalence of small hoki on the west coast of the South Island in recent years.

The TAC has a built-in allowance for “other sources of fishing mortality”, which may include unreported burst bags, loss of catch, discarding of small fish and mortality of escapees from the net. In 2010-11 this allowance was set at 1,200 t<sup>4</sup>.

---

<sup>2</sup> Plenary Report 2011

<sup>3</sup> Bremner, Johnstone & Bateson

<sup>4</sup> Plenary Report 2011

### 3.5 The Hoki Fleet

The WCSI hoki fleet is made up of foreign chartered limited processing factory vessels (LPFVs<sup>5</sup>) and New Zealand factory fillet vessels<sup>6</sup> (producing fillet products) which are > 46m in overall length. These vessels are prohibited from fishing inside the 12 mile Territorial Sea as well as a 25 mile restricted fishing zone that closes much of the hoki spawning area in the Hokitika Canyon and most of the area south to the Cook Canyon to all vessels > 46 m in overall length. The primary reason for the 25 mile restricted fishing zone was to protect hoki spawning aggregations in the head of the Hokitika Canyon.

In recent years there has been an increase in the number of 'fresher' vessels (< 46 m in total length) operating in the WCSI hoki fishery and landing catches for onshore processing. These vessels generally operate within the 25 mile restricted fishing zone.

### 3.6 Marine Stewardship Council (MSC) Certification

In March 2001, the hoki fishery became the world's first large whitefish stock to achieve Marine Stewardship Council (MSC) certification. This eco-label gives endorsement that New Zealand hoki meets the MSC's guiding principles and criteria for a healthy, well managed sustainable fishery. The fishery was reassessed and recertified in 2006, and is currently undergoing a third assessment before the current certificate expires in November 2012.

### 3.7 Hoki Management Areas (HMAs)

In 2001 an industry "Code of Practice" (COP) was implemented for hoki target trawling with the aim of protecting small hoki less than 60 cm. The main components of this COP were:

1. A restriction on fishing in waters shallower than 450 m;
2. A rule requiring vessels to 'move on' if there are more than 10% small hoki in the catch;
3. Seasonal and area closures in spawning fisheries.

In 2009, the Deep-Water Group significantly revised the COP. By then the Group represented 95% of quota owners. The COP is intended to manage and monitor fishing effort within the four HMAs, which contain high abundances of juvenile hoki.

The HMAs are: the Narrows Basin of Cook Strait, Canterbury Banks, Mernoo Bank, and Puysegur Bank. These HMAs are closed to hoki target trawling by vessels greater than 28m. There is increased monitoring when targeting species other than hoki, but the HMA are still accessible to trawlers targeting other species such as scampi, ling, silver warehou and squid, but there is also a general recommendation that vessels move from areas where catches of juvenile hoki (now defined as less than 55 cm total length) comprise more than 20% of the hoki catch by number.

There is currently no industry code of practice in place regarding the catching of juvenile hoki in the Hokitika Canyon spawning ground (WCSI fishery).

---

<sup>5</sup> LPFVs are restricted to the following primary processing activities: washing, scaling, gutting; deheading, tubing and tailing; chilling and freezing; storage, packing and transport.

<sup>6</sup> Fillet vessels are required to have a Regulatory Management Plan for processing at sea.



### 3.8 Bird Mitigation Devices and Vessel Management Plans (VMPs)

Seabirds are killed or injured by trawl gear because they are either struck by the trawl warps (particularly larger seabirds such as albatross) or caught in the net when it is on the surface during deployment and retrieval (particularly smaller seabirds such as shearwaters and petrels). Regulations gazetted in 2005 require trawl vessels to deploy bird mitigation devices, such as tori lines, to scare the birds away from the danger zone around the stern of the vessel.

In addition to the mandatory requirement to deploy bird mitigation devices, all trawlers over 28 metres in length are required to have and comply with a Vessel Management Plan (VMP). VMPs specify the measures that must be followed onboard the vessel to reduce the risk of incidental seabird captures. These measures include storing offal while shooting and hauling fishing gear, and making sure all fish is removed from the net before it is put back in the water. Vessels capable of producing fishmeal are better able to control offal, as they are able to process most offal into fishmeal. LPFVs, with no meal plant, may have several tonnes of offal and fish waste per day to manage and discard (Albert Times, 2007). The Ministry monitors vessels' performance against their VMPs. If a vessel is not complying with its VMP the Chief Executive of MPI has the option of imposing vessel-specific regulations to control offal management practices.