

# SUSTAINABLE MANAGEMENT OF NEW ZEALAND HOKI

## MSC Certification of hoki in 2001 and 2007

The New Zealand hoki fishery was certified under the Marine Stewardship Council (MSC) programme in 2001 and re-certified in 2007.

MSC Certification offers an independent audit of the fisheries management processes in place for hoki, assessing our performance against a range of internationally accepted benchmarks of sustainability. The main focus of MSC assessments is whether or not the management practices are providing for sustainability through the collection and analyses of information from the hoki stocks and fishery, and the effectiveness of the resultant management actions.

MSC recognises that all fisheries stocks fluctuate in size as a natural occurrence, that managers need to adjust catches to ensure sustainability over time and that, recognising there will be times when the stock size is below the target reference point, it is the management response to these events that is important, not whether or the not stock is above or below the desired level.

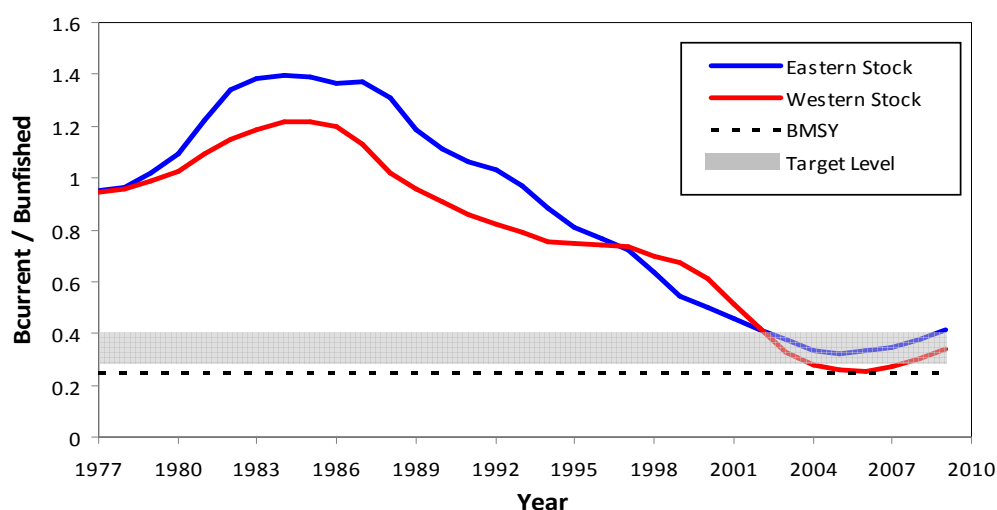
## Managed as two hoki stocks

The New Zealand hoki fishery is managed as two separate stocks, the western stock and the eastern stock. The Ministry of Fisheries contracts a range of research programmes to monitor and to independently measure the status of, and to undertake annual stock assessments for, both stocks. This process is open to all stakeholders and is actively supported by quota owners, who contract additional research and contribute to the assessment analyses.

A single Total Allowable Commercial Catch (TACC) is set by regulation, within which quota owners manage their catches under agreed limits for each of the western and eastern stocks. Compliance to these measures is monitored by DWG and MFish.

## Biomass of both stocks above $B_{MSY}$

Both stocks of hoki are assessed to be increasing in size, to be above  $B_{MSY}$  (i.e. the biomass that will provide the maximum sustainable yield over the long term) and to be within the target biomass level of 30-40%  $B_0$  ( $B_0$  is the spawning biomass that would exist in the absence of fishing over the long term). Biomass trajectories for the western stock and the eastern stock are shown below ( $B_{MSY}$  is shown as a dotted line; the grey band is the current management target).



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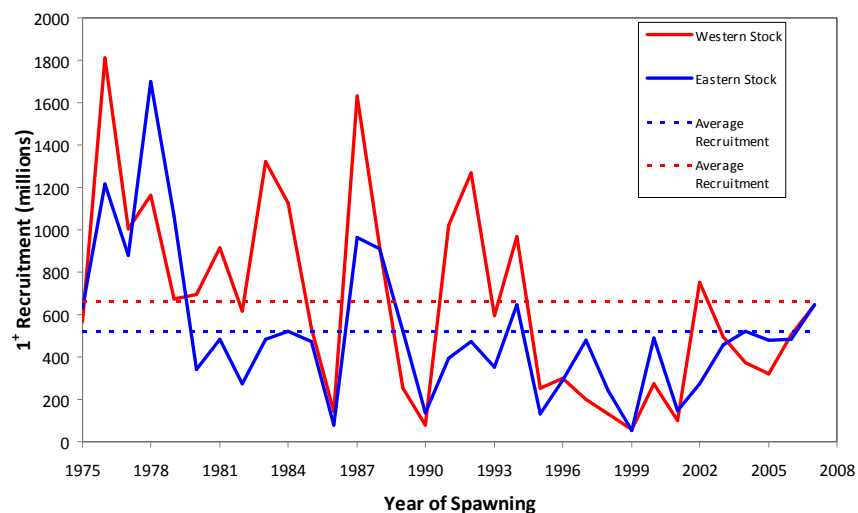
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### Hoki stock sizes fluctuate naturally

Like most finfish, hoki stock sizes fluctuate naturally, driven by variations in recruitment levels due to annual variations in year class strengths, predominantly caused by environmental factors. At times when low levels of recruitment occur, catches are reduced. Likewise, higher catches are available when stronger year classes are recruited into the fishery. This can be seen in the preceding graph when, due to abnormally high recruitment from year classes in the late 1970s, the biomass of both stocks increased well above the long term average size during the 1980s.

Catches from the western stock have fluctuated since the mid 1990s, partly in response to the variation in recruitment. Recruitment was above average between 1991-94, resulting in catches of 100,000 t to 140,000 t being sustained from 1997 to 2002. Between 1995-01 there was a period of sustained low recruitment, which resulted in a managed decline in catches to 29,000 t by 2007. Recent recruitment is estimated to have increased to near-average levels which, in combination with the lower exploitation rates, has resulted in an increased spawning biomass (see below).

The eastern stock has remained above  $B_{MSY}$  throughout the history of the fishery and current exploitation rates will maintain the stock above this level.



### Management changes since 2006

Since 2006, when SGS re-assessed the fishery as having met the MSC standards, the following management changes have been made to further improve sustainability outcomes:

- Partnership between Ministry of Fisheries and quota owners
- Further research and updated stock assessments
- TACC reduced
- Rebuilding strategy implemented for western stock
- Management Reference Points clarified
- Fisheries Plan development
- Improved Compliance
- Reduced interactions with seabirds
- Reduced interactions with marine mammals
- Benthic Protected Areas introduced

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### Partnership between Ministry of Fisheries and quota owners

In 2006 the Deepwater Group Limited (DWG) and the Ministry of Fisheries (MFish) entered into a formal partnership to enable collaboration in the management of New Zealand's deepwater fisheries, including the hoki fishery. DWG represents the interests 96% of hoki quota owners. This partnership has directly facilitated improved management of the hoki fishery in almost all respects through enabling:

- A close working relationship under a shared and agreed vision, agreed objectives and through a collaborative workplan
- Real-time open communication between DWG and MFish on information relevant to management measures, particularly from the MFish Scientific Observer Programme and from commercial catching operations
- Agreement on a strategic plan for the management of New Zealand's EEZ fisheries
- Development and implementation of clear and agreed management objectives for all New Zealand's EEZ fisheries, including hoki, through fisheries plans
- A constructive and regular dialogue with the Department of Conservation (DoC) and with environmental NGOs (eNGOs) interested in the sustainable management of resources in the New Zealand EEZ

### Continued research and updated stock assessments

MFish and DWG work together to ensure the fishery is adequately monitored and that research surveys and stock assessments are undertaken annually. Since 2006, research has been contracted by MFish and by DWG to estimate biomass size in all of the main fishing grounds. All of this research is funded by hoki quota owners.

In summary, estimates from annual stock assessments since 2006, based on then current information for each stock, are:

- The 2007 stock assessment reported the spawning biomass for the eastern stock to be between 37-51%  $B_0$  (above  $B_{MSY}$ ), and for the western stock to be between 15-24%  $B_0$  (below  $B_{MSY}$ ). The western stock experienced an extended period of poor recruitment from 1995 to 2001. Model projections estimated the biomass of the western stock would not increase unless future recruitment improved over recent years, or catches from the western stock were reduced; and that catches from the eastern stock could be increased.
- The 2008 stock assessment reported the spawning biomass for the eastern stock to be between 42-45%  $B_0$  (above  $B_{MSY}$ ), and for the western stock to be between 28-30%  $B_0$  (around  $B_{MSY}$ ). Model projections estimated the eastern stock biomass would remain near current levels at the current catch of 65,000 t, and the western stock biomass would increase at the current catch of 25,000 t.
- Preliminary results from the 2009 stock assessment estimate the spawning biomass for the eastern stock to be around the same as in 2008 (above  $B_{MSY}$ ). The western stock size is estimated to have increased to around 34-42%  $B_0$  (above  $B_{MSY}$ ), attributable to increased recruitment, increased adult stock abundance (measured by trawl surveys), and lower exploitation rates since catches were reduced in 2007. Final results will be available in May 2009 and may vary from the above.

### TACC reduced in response to low western stock biomass

As a result of the 2007 stock assessment results, managers in MFish and DWG agreed to reduce the TACC to aid rebuilding of the western stock.

From 1 October 2007 (i.e. the start of the 2007-08 fishing year), the TACC was reduced from 100,000 t to 90,000 t. Within this, the catch limit for the eastern stock was increased from 60,000 t to 65,000 t and that for the western stock was reduced from 40,000 t to 25,000 t.

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### Rebuilding strategy implemented in 2007

The reduction of the TACC and western stock catch limit in 2007 was the first step in an agreed strategy to:

- Reduce the fishing mortality on the western stock
- Develop and implement a formal rebuild strategy; and
- Assess the performance of the western stock against the rebuild strategy

A rebuilding strategy was developed and implemented with the objective of determining the catch that will ensure the projected stock biomass is at least 50% of the biomass that would exist in the absence of fishing at the end of a five year period. It was agreed to annually model the rebuild strategy against the current stock assessment for the western stock.

The catch limit of 25,000 t from the western stock, set in 2007, meets this criterion.

In 2008, the rebuild strategy was modelled against the 2008 stock assessment and 25,000 t catch limit in place, resulting in the projection that the western stock would rebuild to be within the target biomass range of 30-40%  $B_0$  by 2010.

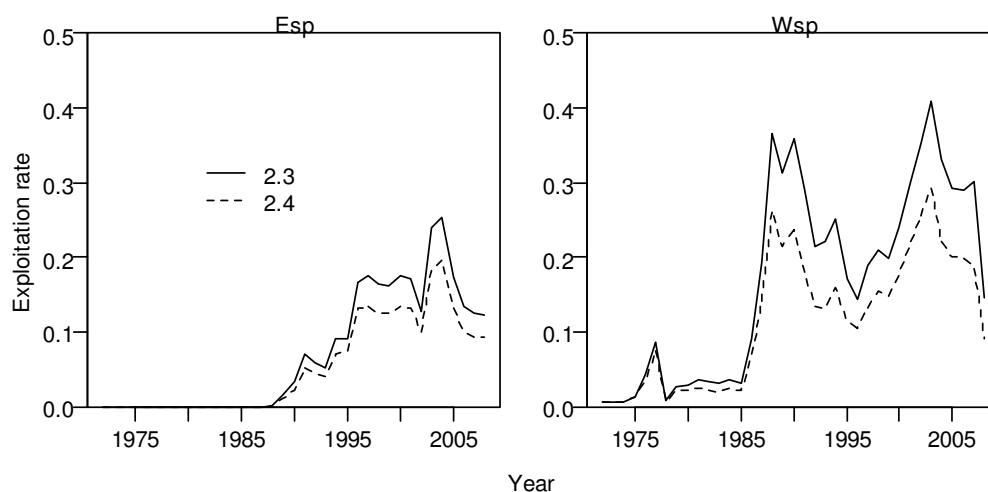
### Management reference points clarified

Prior to 2007, the target reference biomass for hoki was 30-40%  $B_0$  (in reference to spawning biomass). In 2007, one of the conditions of MSC certification was for managers to determine appropriate reference points, in agreement with stakeholders, in terms of both biomass and fishing mortality.

MFish and DWG will complete this as required by 30 April 2009, including agreement on optimum economic yields, to maintain the biomass at levels above  $B_{MSY}$ .

Further reference points, based on exploitation rate, are now also reported as annual outputs from the stock assessment.

The exploitation rates, as reported in the 2008 stock assessment, have declined due to a managed catch reduction for the eastern stock from around 22% in 2004 to around 11% in 2007; and for the western stock from around 35% in 2004 to around 10% in 2007, as shown in the figure below (2.3 and 2.4 refer to different model runs for the eastern Esp, and western Wsp stocks).



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### **Fisheries Plan development**

MFish and DWG, in conjunction with eNGOs, have developed a draft Fisheries Plan for hoki. We have taken the view that fisheries plans should outline management objectives, timelines, performance criteria and review processes - essentially this will be an enabling framework. The fisheries plan will have a life of 5 years between reviews.

The actual management measures will be specified in an operational plan, which will be reviewed and updated annually.

The Fisheries Plan specifies that the hoki fishery will be assessed against agreed reference points for the management of hoki harvest, both in terms of biomass and fishing mortality. It prescribes a range of objectives and measures for by-catch management and for the mitigation of incidental interactions with protected species (such as marine mammals and seabirds).

The Hoki Fisheries Plan will be a statutory document, approved by the Minister of Fisheries, and we plan for him to release a draft for public comment before the end of April 2009. The final plan will be implemented at the commencement of the next fishing year, on 1 October 2009.

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### **Compliance charter between MFish and DWG**

Within the partnership between MFish and DWG, agreement has been reached on a Compliance Charter, which provides an active programme to enhance compliance performance.

The purpose is to achieve improved compliance in deepwater fisheries through a model of informed and assisted compliance through:

- Building on the successful collaborative relationship that currently exists in deepwater fisheries with respect to fisheries management issues so as to deliver improved levels of compliance
- Establishing a relationship and creating improved understandings between industry operators and MFish on issues of compliance in deepwater fisheries
- Ensuring reliable and up-to-date information is available to all parties (internal and external) for assessing performance of the deepwater sector in terms of compliance

A joint MFish/DWG Deepwater Compliance Group has been established and tasked with achieving the following outputs through the implementation of an agreed work programme:

- Agreement on shared compliance rates and measures, and regular benchmarking and reporting of performance against these measures
- Informing and promoting compliance by improving the ability of shore-based vessel operators to monitor at sea performance of vessels through retrospective analysis of catch, effort and other available information
- Active improvement of existing compliance relationships between deepwater companies and MFish
- Identifying current areas of legislation and management measures which may, inadvertently, be contributing to levels of non-compliance and identifying ways to address these

The focus of this group is to improve operator compliance with both regulatory and non-regulatory measures (such as adherence to Vessel Management Plans (VMPs) for seabird mitigation).

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### Improved compliance

In the hoki fisheries there are a mix of regulated (e.g. the TACC) and non-regulated management measures, the latter by industry agreement with the Minister of Fisheries and MFish (e.g. separate catch limits for eastern and western stocks within the TACC; vessel-specific measures to mitigate incidental interactions with seabirds).

Since 2007, MFish and DWG have worked together to ensure that commercial catches are aligned with the agreed catch limits through the implementation of catch plan forecasting, in-season progress reports against these, and adjustments to the Deemed Value charges to disincentivise catches being taken without quota.

Total catches taken in 2006-07 and 2007-08 were within the TACC and are closely aligned with catch limits for eastern and western stocks.

The partnership between DWG and MFish has also led to better procedures for managing the non-regulatory measures, including an independent auditing and monitoring regime.

The partnership has also led to the revision and update of the processes and protocols for these, resulting in a number of agreed Operational Procedures with the objectives of reducing fishing mortality of juvenile hoki, providing a period during the spawning season when no fishing occurs, and ensuring procedures are in place to minimise and to monitor the incidental interactions with seabirds and marine mammals (particularly the New Zealand fur seal).

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### Reduced interactions with seabirds

Improved seabird mitigation measures, through a mix of targeted regulatory and non-regulatory measures, have significantly reduced incidental interactions between seabird and hoki fishing operations. These non-regulatory controls are audited by MFish.

Numbers of observed seabird captures peaked in 2000-01 at 8.73 captures per 100 observed tows and have reduced to 1.31 captures per 100 observed tows in 2006-07, when an estimated 123 (range 84–173) seabirds of all species were captured. Numbers of captured birds are based on independent observer data and provide an index of the level of interactions for the fleet, rather than the total number of interactions.

Since 2006, all vessels over 28 metres in the hoki fishery have implemented individual VMPs, which prescribe agreed offal management measures with the sole objective of reducing the risk of injury or death to foraging seabirds. We expect the interaction rates with seabirds will have been reduced further as a consequence. These are closely monitored by MFish.

DWG is working with MFish and eNGOs on the development of national standards for seabird mitigation.

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### Reduced interactions with marine mammals

All vessels over 28 metres in the hoki fishery are required to comply with agreed Marine Mammal Operational Procedures. These have been developed collaboratively by industry, MFish and eNGOs to minimise the interactions with marine mammals and vessel performance against these standards are audited by MFish.

Numbers of observed New Zealand fur seal captures peaked in 2004-05 at 5.72 captures per 100 observed tows and have reduced to 1.65 captures per 100 observed tows in 2006-07, when an estimated 246 (range 159–345) were captured.

In early 2008 MFish, DoC and DWG combined resources to undertake the first census of the New Zealand fur seal population along the west coast of the South Island – the area identified by SGS to be of potential concern because of possible incidental interactions between hoki trawlers and foraging New Zealand fur seals. The results are due by mid-2009.

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### Benthic Protection Areas introduced

In 2007, after receiving a proposal from DWG, the New Zealand Government closed 17 Benthic Protection Areas (BPAs) to bottom trawling and dredging by regulation. In total, BPAs close 30% of the New Zealand Exclusive Economic Zone (EEZ). When combined with the existing “seamount” closures, this provides protection under law to 33% of the benthic habitat within the EEZ from trawling and dredging, or a total area of more than 1.1 million square kilometres. This is the largest area protected for benthic marine biodiversity in the world.

The objective of these large closed areas is to protect a broadly representative range of benthic habitats and the biodiversity of faunal communities they contain, most of which are pristine.

These closures comprise an area close to four times the total area that has been fished by bottom trawl in the EEZ (i.e. only 8.5% of the EEZ has been trawled once or more, calculated from trawl door spread and statutory records on fishing locations).

The selection of BPA locations was based on the government’s Marine Environment Classification (MEC) scheme, completed in 2005. The MEC was produced by a multi-disciplinary assessment of the available information on marine habitats by governmental departments and scientists. MEC categories were the best available at the time and, although the categories in the EEZ are based predominantly on physical variables (i.e. depth, sea surface temp, seabed slope, solar radiation) and are not expressly predictive of benthic fauna, they do include factors likely to influence benthic fauna (such as depth, substrate type, oceanographic conditions, geographic location). DWG and the Government accepted that while the MEC requires further refinement, it could be used to provide a basis for delineating and implementing BPAs as a first major step in marine conservation in the EEZ.

The BPA closures were selected under the following key criteria:

- **Large areas** – to ensure widespread protection at the broad ecosystem level
- **Broadly representative** of benthic habitats in the EEZ – based on the MEC and WWF-NZ’s report “Shining a spotlight on the biodiversity of New Zealand’s marine ecoregion”
- **Simple boundaries** - to facilitate ease of compliance
- **Unmodified** - areas that are largely pristine (i.e. never contacted by bottom trawls)

In addition, selection of areas were made on consideration of:

- Knowledge of habitats rich in corals and sponges
- Closure of not less than 10% of each MEC oceanic class within the EEZ
- For each oceanic class, closures are spread among two or more BPAs
- Closures are evenly spread east and west of the tectonic boundary, which runs through the middle of the NZ EEZ
- Closures are evenly spread north and south within the EEZ, which runs from sub-tropical waters to sub-Antarctic waters
- These closures include 11% of all hoki habitats (i.e. depths of 200 to 750 m).

Industry has committed to assist the government to further explore and to establish the nature and extent of marine benthic ecosystems within the EEZ with the objective of ensuring adequate protection is afforded to benthic ecosystems and communities.

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### **In summary**

In summary, hoki quota owners, in collaboration with MFish and eNGOs, have implemented a range of improved measures to ensure that the New Zealand hoki stocks continue to be managed sustainably to international standards. These improved measures encompass all the elements of responsible management prescribed by the Marine Stewardship Council certification process.

New Zealand hoki is a sustainable seafood resource, the harvesting of which is demonstrably undertaken with due regard for, and stewardship of, the greater marine environment.

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