

The Status of New Zealand's Fisheries 2016

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Ministry for Primary Industries
Manatū Ahu Matua



Introduction

This report summarises the status of New Zealand's fish stocks relative to the requirements of the "Harvest Strategy Standard for New Zealand Fisheries", which was finalised in October 2008 (<http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>).

In brief

By far the majority of New Zealand's fisheries are performing well

As of December 2016

83.1% of assessed stocks were above the 'soft limit', 94.1% were above the 'hard limit', 81.9% were below the 'overfishing threshold', and 70.9% were above their management targets.

97.0% of the assessed landings were made up of stocks above the 'soft limit', 99.5% of stocks above the 'hard limit', 94.2% of stocks below the 'overfishing threshold', and 93.6% of stocks above their management targets.

The Fisheries Act 1996, the Harvest Strategy Standard (HSS) for New Zealand Fisheries (2008), which aligns with the Fisheries Act, and various Fisheries Plans guide the management of our fish stocks. The HSS specifies four performance measures that are used to evaluate the status of New Zealand's fish stocks and fisheries, with the highest priority being given to the first three of these:

- the *soft limit* – a biomass¹ level below which a stock is deemed to be "overfished" or depleted and needs to be actively rebuilt;
- the *hard limit* – a biomass level below which a stock is deemed to be "collapsed", where fishery closures should be considered in order to rebuild a stock at the fastest possible rate;
- the *overfishing threshold* – a rate of extraction (percentage of a stock removed each year) that should not be exceeded as it will ultimately lead to the stock biomass declining below *management targets* and/or biomass limits, if this hasn't already happened; and
- the *management target* – usually a biomass level,² but sometimes a fishing mortality rate,³ that stocks are expected to fluctuate around, with at least a 50% probability of achieving the target.

¹ The biomass of a fish stock is the total weight, in tonnes, of a particular species of fish in a defined geographic area.

² Biomass targets are usually related to, or higher than, the biomass associated with the maximum sustainable yield (B_{MSY}).

³ Usually the fishing mortality (rate of extraction) associated with maximum sustainable yield (F_{MSY}) or a related reference point.

Figure 1 shows the relationship between the *management target* and the *soft* and *hard limits* for a stock that is fished perfectly at an optimal constant rate that tracks fluctuations in stock size. Fish stocks are expected to fluctuate around their targets with at least a 50% probability of achieving the target. This means that for well-managed fisheries, at any given point in time, approximately 50% of stocks should be above their *management targets* and 50% below.

The role of the *management target* is often misinterpreted. If a stock is below the *management target*, it does *NOT* mean it is ‘overfished’ or ‘in danger of extinction’. Stocks that are below biomass limits (the *soft* or the *hard limit*), or where *overfishing* is occurring, are in greater need of management intervention.

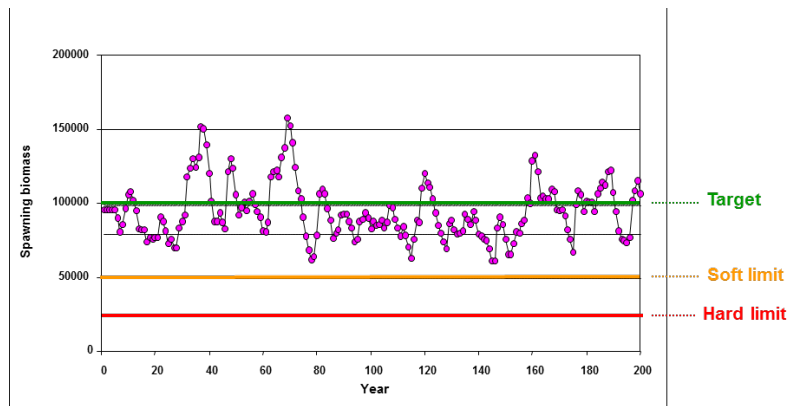


Figure 1. The relationship between the *management target* and the *soft* and *hard limits* for a stock that is fished perfectly at an optimal constant rate that tracks fluctuations in stock size.

“Fish stocks are expected to fluctuate around their management targets...this means that at any given point in time approximately 50% of stocks should be above their management targets and 50% below.” By the end of 2016, 70.9% of assessed fish stocks were at or above their targets – well beyond this performance measure. In terms of the volume of landings, 93.6% of the landings was made up of stocks that were at or above their management targets.

Stock assessments

Each year, the Ministry for Primary Industries convenes a large number of Fisheries Assessment Working Group meetings that are open to everyone who wishes to attend. In these meetings, we evaluate presentations made by contracted research providers that combine the results of scientific research with catch and effort reports from commercial fisheries, data from our on-board observer programme, and other information to produce assessments of the status of New Zealand’s fish stocks. This information is summarised in two annual Fisheries Assessment Plenary Reports, currently published in a massive 2,000 page document comprising five volumes, which has been available on-line for several years and also in hardcopy on request.

There are currently 642 fish stocks representing 98 species or species complexes in the Quota Management System (QMS). Of these, 292 stocks are considered to be “nominal” stocks (fish stocks for

which a significant commercial or non-commercial potential has not been demonstrated⁴), leaving 350 QMS stocks. For stock assessment purposes and this evaluation, some of these QMS stocks are further sub-divided, and five non-QMS Antarctic and Highly Migratory Species (HMS) that are managed via international regional fisheries management organisations are also included, for a total of 379 species, species complexes, stocks or sub-stocks.

The number of assessed stocks relative to the four harvest strategy standard performance measures varies because, for example, while it may not be possible to determine whether a stock is somewhat above or below its *management target*, it may be clear that it is above the *hard limit*. In 2016, relative to the *soft limit* (the premier fisheries management performance measure), assessed stocks accounted for 72% of the total landings by volume and 79% of the total landings by value,⁵ representing most of the main commercial fish species.

2016 evaluations

New results for 2016 and recent trends in the four performance measures have been compiled in terms of six variables:

- i) the number of fish stocks falling above and below each of the four measures in terms of raw numbers;
- ii) the number of fish stocks falling above and below each of the four measures as a percentage of the total number of fish stocks;
- iii) the weight of landings of the fish stocks falling above and below each of the four measures in terms of actual tonnes;
- iv) the weight of landings of the fish stocks falling above and below each of the four measures as a percentage of their combined weight;
- v) the value based on port price of the fish stocks falling above and below each of the four measures in terms of actual \$; and
- vi) the value based on port prices of the fish stocks falling above and below each of the four measures as a percentage of their combined value.

Evaluations relative to the *soft limit*, the *hard limit* and the *overfishing threshold* have been undertaken since 2009, while those relative to the *management target* have been conducted since 2008. The colour coding is as follows:

- Green – Good to excellent overall status; continue to monitor
- Yellow – acceptable status; continue to monitor
- Orange – develop a rebuilding plan

⁴ Many of these have actually been set up for administrative purposes only and may not exist, or not exist in commercially-viable quantities, in some geographic areas.

⁵ This excludes squid, which has a life cycle that is not amenable to management relative to the maximum sustainable yield benchmarks in the Fisheries Act 1996.

- Stippled orange – reduce the percentage of the fish stock that is harvested each year
- Red – consider closures (if they haven't already happened)

The graphs in **Figures 2, 3 and 4** illustrate the following points.

The top row in **Figure 2** shows that the number of assessed stocks with respect to each of the four HSS performance measures has continued to increase over the last 8–9 years. This represents a concerted effort by Fisheries Assessment Working Groups and research providers to bring more stocks from “unknown” to “known” status, as well as to keep the state of knowledge current for key species. Similar trends are also evident for most of the graphs in the top rows of **Figures 3 and 4**, although for Figure 4, results are almost identical for 2015 and 2016.

It is also evident, for all graphs in **Figures 2, 3 and 4**, that the amount of green far outweighs any other colour. In particular, there is relatively little orange and even less red. The yellow portions of the *management target* graphs are far less than 50%, even though a well-managed stock would be expected to fluctuate around the *target* and to be below it about 50% of the time.

Presenting the stock status results in terms of the corresponding percentages with “good” or “less good” status (bottom rows of **Figures 2, 3 and 4**) results in a considerable increase in the relative amount of green and a substantial reduction in the amount of all other colours. In particular, there is virtually no red in the bottom row of **Figure 3** (the percentage of landings below the *hard limit*), as most of the fisheries that are below the hard limit have either been closed or have had their Total Allowable Catches considerably reduced.

When summarising overall stock status in terms of the actual numbers (or percentages) of stocks, a large number of small fish stocks will have a disproportionate influence on the overall result. For this reason, it is probably more appropriate to consider stock status in terms of the contribution to the landings (or value of the landings). However, in this case, a single stock with very high landings (or value) can be highly influential. For example, the large reduction in the percentage of the landings made up of stocks below the *management target* between 2008 and 2009 (bottom row of **Figure 3**) is the result of the abundance of the western hoki stock increasing from below to above the *management target* between those years.

Following early improvements in stock status for most performance measures, improvements appear to be plateauing for most measures in recent years, possibly due to a declining research budget.

The main conclusion from these results is that by far the majority of New Zealand's fisheries are performing well.

STOCK AND FISHERY STATUS INFORMATION BY NUMBER OF STOCKS: 2008-16

SOFT LIMIT

HARD LIMIT

OVERFISHING

MANAGEMENT TARGET

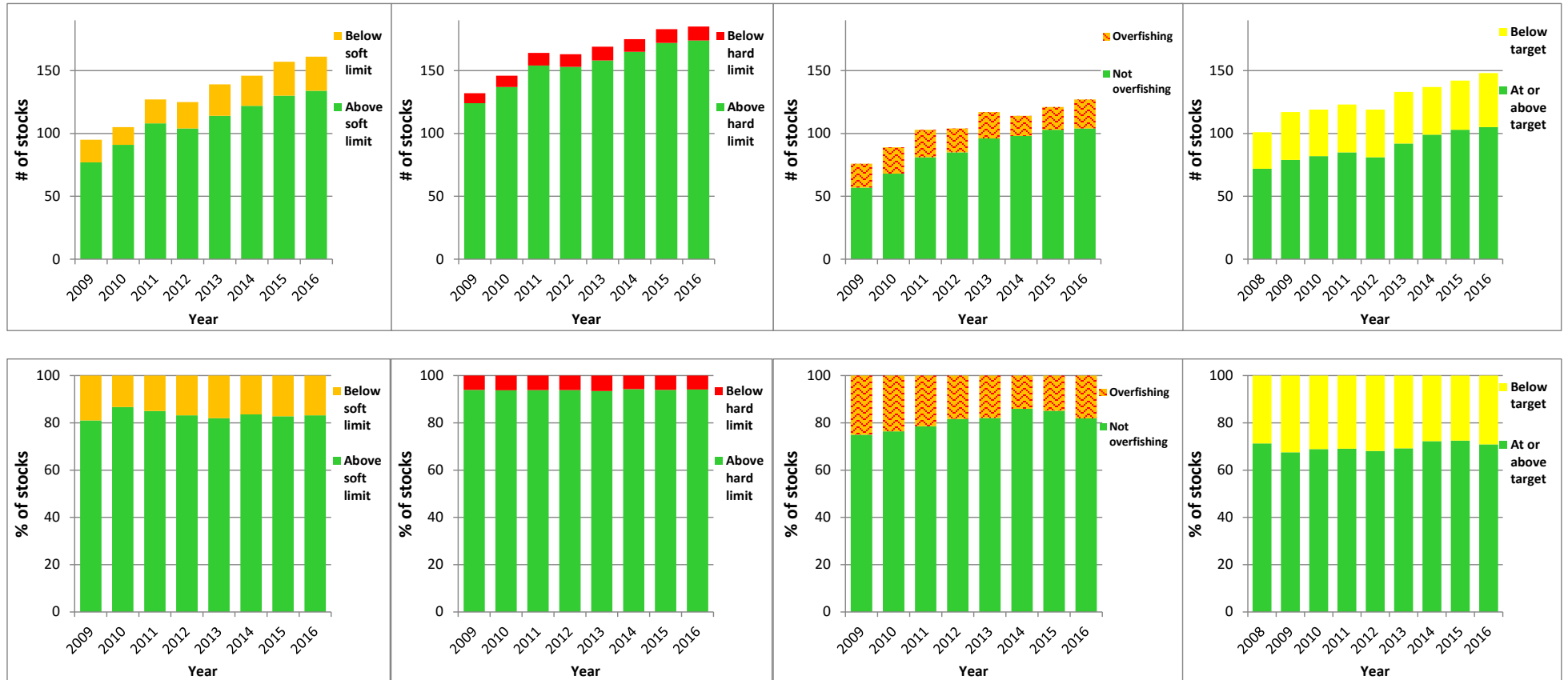


Figure 2. Stock and fishery status by number of stocks and percentage of stocks, 2008-16.

STOCK AND FISHERY STATUS INFORMATION BY VOLUME OF LANDINGS: 2008-16

SOFT LIMIT

HARD LIMIT

OVERFISHING

MANAGEMENT TARGET

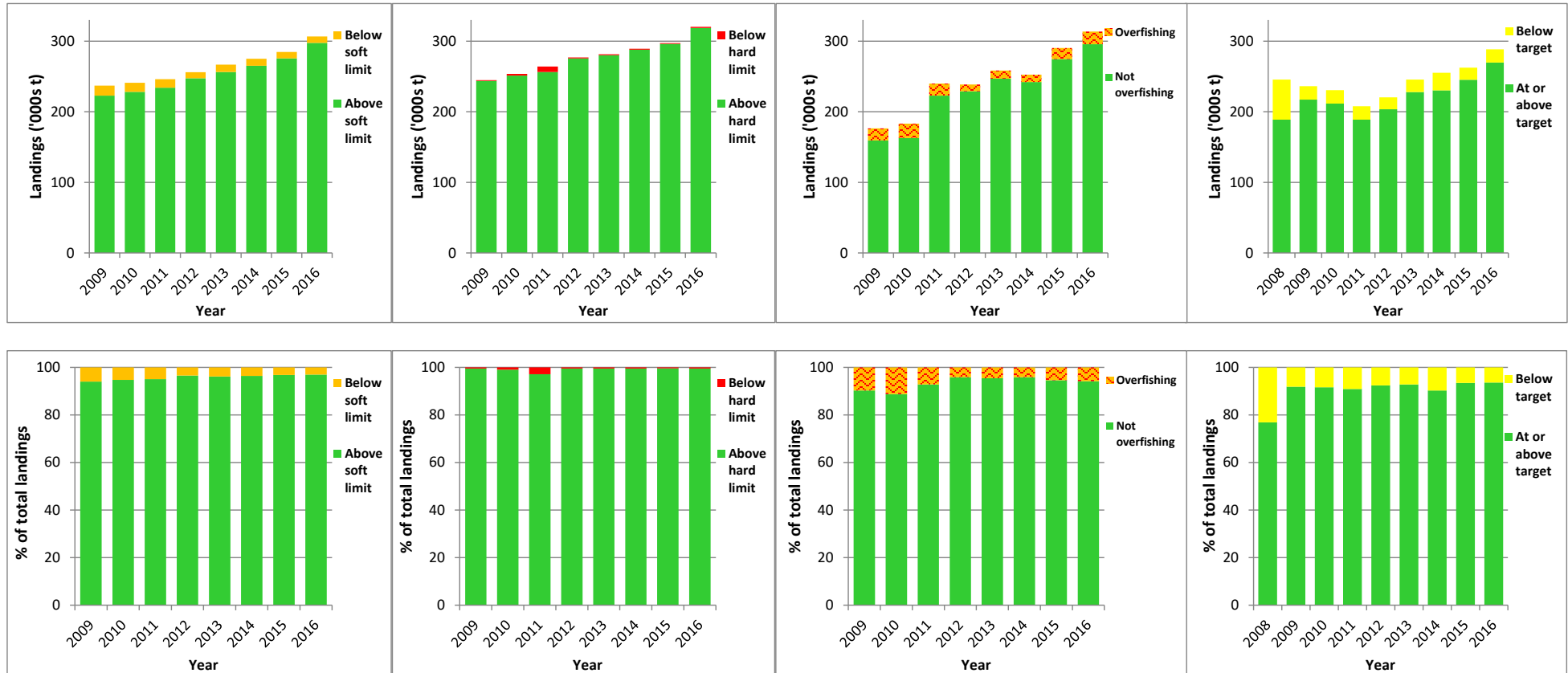


Figure 3. Stock and fishery status by volume of landings (in thousands of tonnes) and percentage of total volume of landings, 2008-16.

STOCK AND FISHERY STATUS INFORMATION BY VALUE OF LANDINGS: 2008-16

SOFT LIMIT

HARD LIMIT

OVERFISHING

MANAGEMENT TARGET

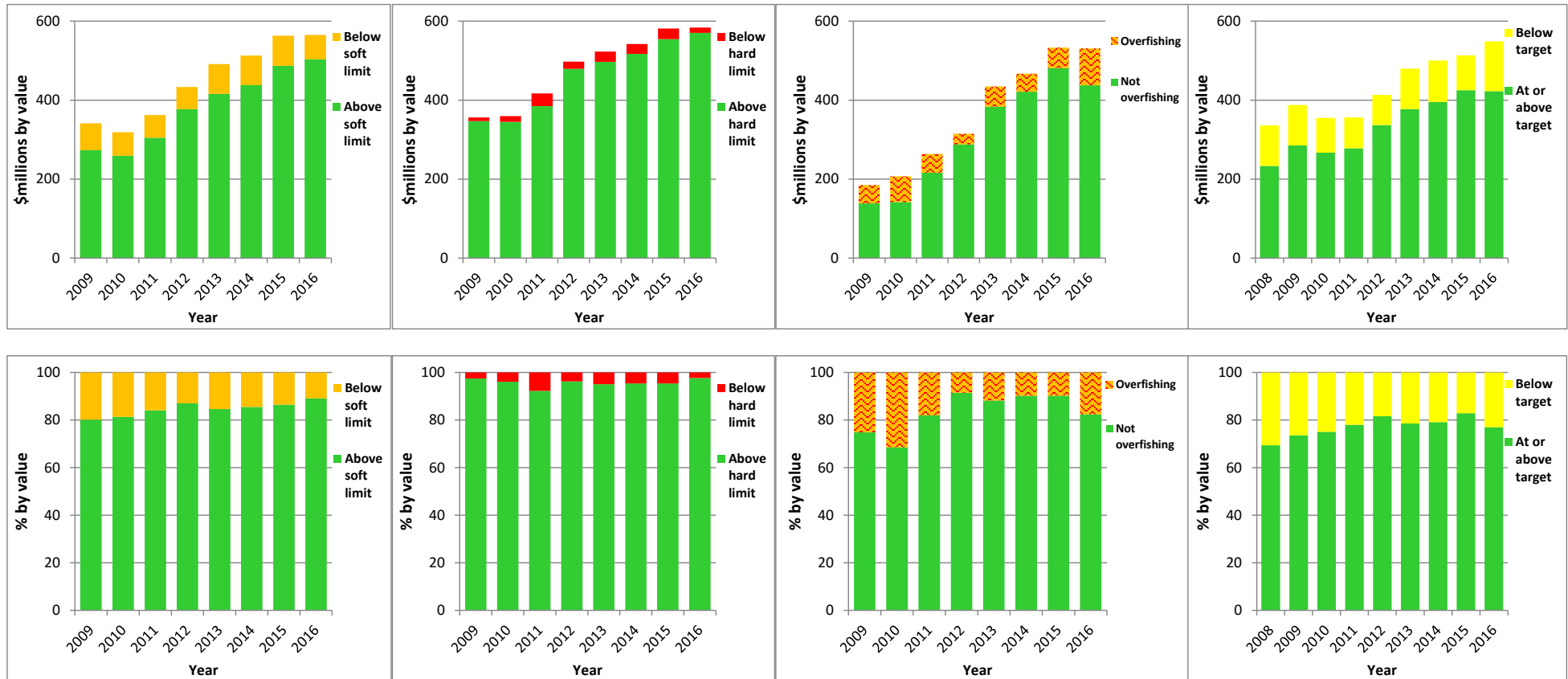


Figure 4. Stock and fishery status by value of landings (\$millions, based on port price information) and percentage of total value of landings, 2008-16.

Fisheries management responses

The main fisheries management mechanism used to take advantage of utilisation opportunities for high performing fish stocks, or to reduce sustainability risks for fish stocks that are not meeting their performance measures, is to modify the Total Allowable Catch (TAC) or Total Allowable Commercial Catch (TACC) appropriately.

Highlights from recent assessments

- As a consequence of substantial reductions in hoki quotas over the period 2001-2007, both stocks of hoki (eastern and western) have increased in size for the last eight consecutive years, and both are now well within or above their *management target* range. The stocks are currently at their highest levels this century.
- Four stock assessments for orange roughy were completed in 2014, with three of the stocks – two on the Chatham Rise and one on the Challenger Plateau – showing moderate to substantial increases in biomass since the late 1980s to early 2000s, with the current biomass being within the *management target* range in all three cases. The fourth assessed orange roughy stock – on the mid-east coasts of the North and South Islands – appears to be rebuilding slowly but is below the *management target*.
- A 2015 assessment for snapper along the north and west coasts of the South Island showed that it has increased substantially in size in recent years and is now well above its biomass *limits* and approaching its *management target*.
- Two blue cod stocks assessed in 2015 (east coast South Island and Chatham) were shown to be above their *management targets* and *soft* and *hard limits*, although overfishing may be occurring.
- Four rig stocks were assessed in 2015 and all were found to be at or above their *management targets* and well above the *soft limit*, although *overfishing* was identified in one instance.
- Two barracouta stocks were newly assessed in 2016 indicating that both are well above the *soft limit* with one also being well above the *management target*.
- Two scampi stocks were re-assessed in 2016 and found to be performing near or above the favourable levels indicated at the time of their last assessment in 2013.
- New assessments for rock lobster (crayfish) stocks show that almost all are performing well relative to all harvest strategy standard performance measures. Rock lobsters in the Bay of Plenty and in the Hawkes Bay – Wairarapa area are exceptions as they are both estimated to be below their *management targets* (but well above biomass limits). The Chatham Islands and Westland-Taranaki rock lobster stocks do not have current assessments.
- New stock assessments in 2014 and 2015 show that red gurnard are at or above their *management targets* in virtually all areas where they occur (although *overfishing* may be occurring in some South Island areas).
- Trevally on the west coasts of the North and South Islands and kahawai on the east coast of the northern half of the North Island were assessed to be performing well relative to all harvest strategy standard performance measures in 2015.

Management of stocks below biomass limits

At the time of their most recent assessment, 27 (of 160) stocks were considered to be below the *soft limit* (and therefore overfished):

- southern bluefin tuna, Pacific bluefin tuna and bigeye tuna (highly migratory species that are seasonally present in New Zealand waters and are managed by Regional Fisheries Management Organisations);
- three stocks of black cardinalfish;
- five stocks of bluenose;
- four stocks or sub-stocks of orange roughy;
- three stocks or sub-stocks of snapper;
- two stocks or sub-stocks of John dory;
- two stocks or sub-stocks of scallops; and
- one stock or sub-stock each of flatfish, oyster, paua, pipi and freshwater eels.

Eleven of these 27 stocks were also considered to be below the *hard limit* (collapsed). *Overfishing* was documented for 23 stocks. (For further details see the Status of Stocks page at <http://fs.fish.govt.nz/Page.aspx?pk=16&tk=478>).

In all cases where stocks are below the *soft* or *hard limit*, corrective management action has been, or is being, put in place to rebuild the stocks. For example, the fisheries on two orange roughy stocks or sub-stocks have been closed (they effectively have a TACC or voluntary catch limit of zero) to maximise the rate of rebuilding. A TACC reduction was implemented for the orange roughy stock on the mid-east coasts of the North and South Islands in 2014.

The Tasman Bay scallop fishery has been voluntarily closed to all commercial fishing since 2006, with the Golden Bay scallop commercial fishery following in 2011. Both of these sub-areas, along with the Marlborough Sounds sub-area were formally closed in 2016.

Bluenose stocks were identified as being in need of rebuilding in May 2008, and three TACC reductions have subsequently been implemented in 2008, 2011 and 2012 to ensure that the stocks are restored to target levels.

The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) has adopted a management procedure designed to rebuild the stock to interim and long-term target levels. Conservation measures have also been adopted for bigeye tuna by the Western and Central Pacific Fisheries Commission (WCPFC). New Zealand is an active member of both of these Commissions.

These changes demonstrate the responsiveness of New Zealand's fisheries management system to the intrinsic fluctuating nature of wild fish stocks and our contributions to the management of international fish stocks.