

# The Status of New Zealand's Fisheries 2014

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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>). This evaluation replaces the 2014 interim update on pages 55-59 of Mace and Vignaux (2014), which can be found in:

<http://fs.fish.govt.nz/Doc/23649/Fisheries%20Assessment%20Plenary%202014%20Supplement%20V2.pdf.ashx>.

## In brief

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

*By the end of 2014, 83.6% of our fish stocks of known status were above the 'soft limit', 94.3% were above the 'hard limit', 86.0% were below the 'overfishing threshold', and 72.3% were above their management targets.*

*When considering the tonnage of landings of fish stocks of known status in 2014, 96.4% of the landings was made up of stocks above the 'soft limit', 99.5% was of stocks above the 'hard limit', 95.9% was of stocks below the 'overfishing threshold', and 90.3% was of stocks above their management targets.*

## The Harvest Strategy Standard

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:

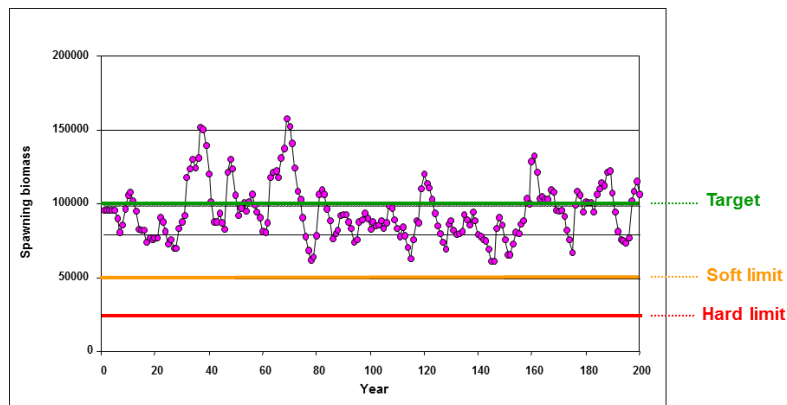
- the *soft limit* – a biomass<sup>1</sup> level below which a stock is deemed to be "overfished" or depleted and needs to be actively rebuilt;
- the *hard limit* – a biomass level below which a stock is deemed to be "collapsed", where fishery closures should be considered in order to rebuild a stock 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

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

- the *management target* – usually a biomass level,<sup>2</sup> but sometimes a fishing mortality rate,<sup>3</sup> that stocks are expected to fluctuate around, with at least a 50% probability of achieving the target.

**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. Therefore these stocks are more relevant for reporting on fisheries management issues that need to be addressed.



**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 2014, 72.3% of the fish stocks of known status were at or above their targets – well beyond this performance measure. In terms of the tonnage of landings, 90.3% 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

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

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

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 many years (although somewhat smaller in previous years, as it reflects the accumulation of knowledge as time goes on), and also in hardcopy on request.

There are currently 638 fish stocks 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 demonstrated<sup>4</sup>), leaving 346 QMS stocks or sub-stocks, plus 16 Highly Migratory Species (HMS) that are managed via international regional fisheries management organisations, for a total of 364 species, stocks or sub-stocks that are included in this evaluation.

The number of stocks of known status 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 2014, stocks of known status relative to the *soft limit* (the premier fisheries management performance measure) accounted for 80% of the total landings by weight and value,<sup>5</sup> representing most of the main commercial fish species.

## 2014 evaluations

New results for 2014 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.

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<sup>4</sup> 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.

<sup>5</sup> 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.

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 – continue to monitor
- Orange – develop a rebuilding plan
- 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 stocks of known status with respect to each of the four HSS performance measures has continued to increase over the last 5–6 years. This represents a concerted effort by Fisheries Assessment Working Groups and research providers to bring more stocks from “unknown” to “known” status. Similar trends are also evident for most of the graphs in the top rows of **Figures 3 and 4**.

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 is 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.

Aside from the increase in the number of stocks of known status, there is little overall trend in stock status for most performance measures over the years 2009–14 (for the *soft limit*, *hard limit* and *overfishing threshold*) or 2008–14 (for the *management target*). Comparing the results for 2014 with those for 2013, the biggest differences in stock status are marked improvements in the percentage of stocks where *overfishing* is not occurring (increasing from 82.1% to 86.0%) and the percentage of stocks

## STOCK AND FISHERY STATUS BY NUMBERS AND PERCENTAGES OF STOCKS: 2008-14

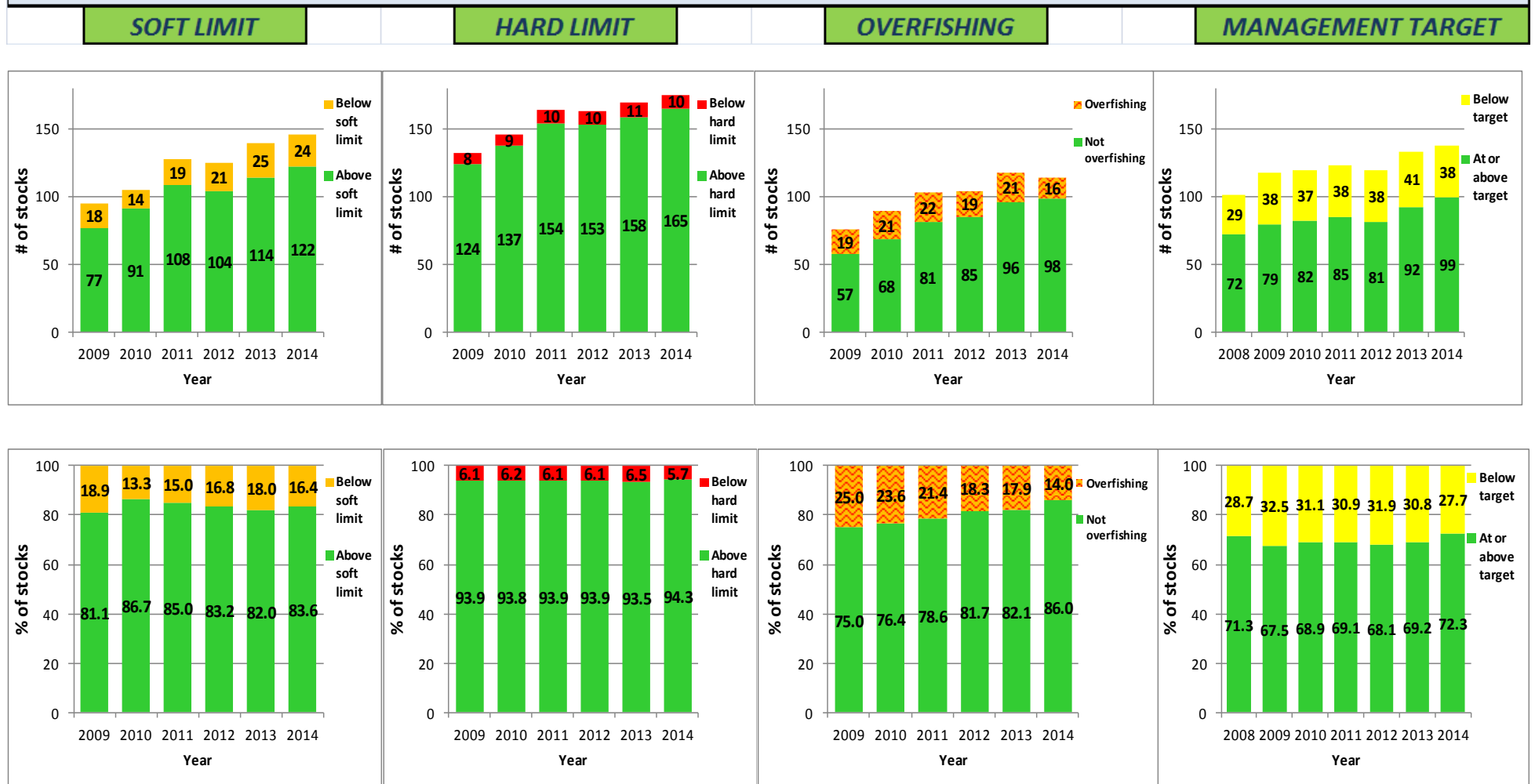


Figure 2. Stock and fishery status by number of stocks and percentage of stocks, 2008-14.

## STOCK AND FISHERY STATUS BY VOLUME AND PERCENTAGE OF TOTAL VOLUME OF LANDINGS: 2008-14

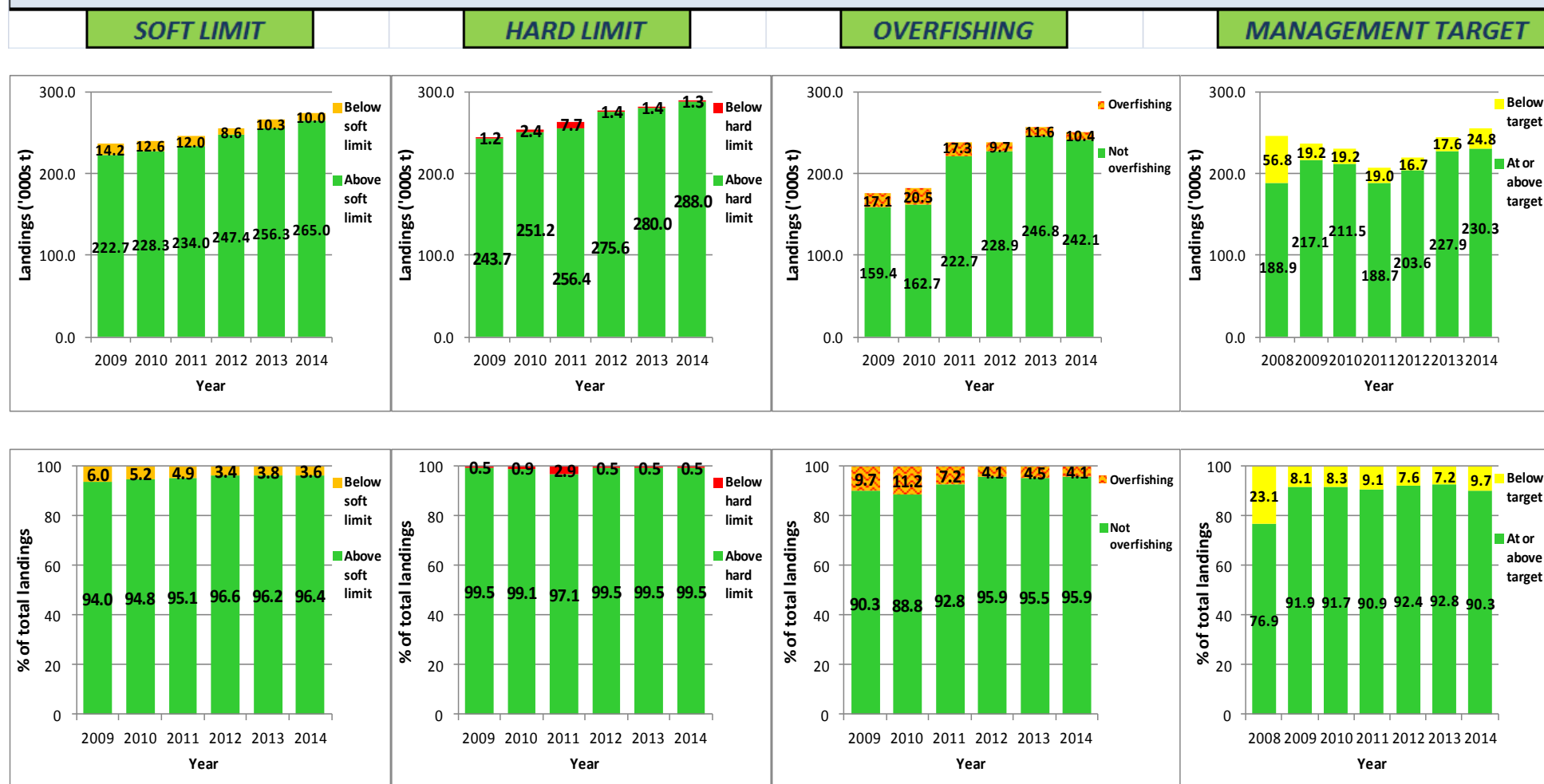


Figure 3. Stock and fishery status by volume of landings (in thousands of tonnes) of landings and percentage of total volume of landings, 2008-14.

# STOCK AND FISHERY STATUS BY VALUE AND PERCENTAGE OF TOTAL VALUE OF LANDINGS: 2008-14

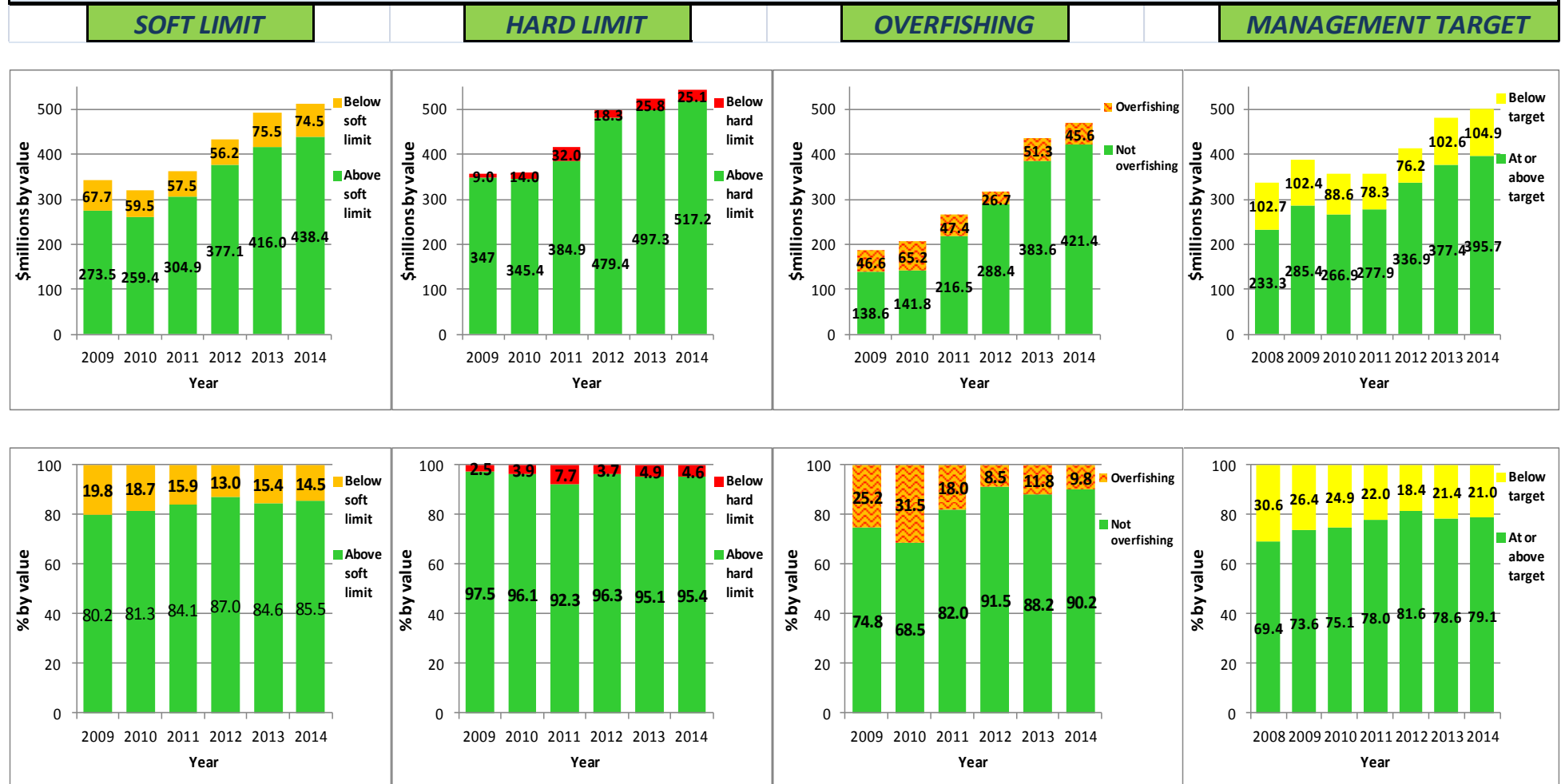


Figure 4. Stock and fishery status by value of landings (\$millions, based on port price information) and percentage of total value of landings, 2008-14.

at or above the target (increasing from 69.2% to 72.3%). In all other cases, the direction of the differences is more mixed, or of smaller magnitude.

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

## **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***

- 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. As a result, the hoki TACC has been progressively increased from 90,000 metric tonnes to 160,000 metric tonnes over the period 2008-2014.
- Four new 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*.
- The Campbell Island Rise southern blue whiting stock was estimated to be well above its *management target* and is currently near historically high levels.
- An international assessment of yellowfin tuna in 2014 showed that it is performing well relative to all harvest strategy standard performance measures.
- New assessments for almost all rock lobster stocks show that all are performing well relative to all harvest strategy standard performance measures. Rock lobsters in the Bay of Plenty are an exception as they are estimated to be below their *management target* (but well above biomass limits). The Chatham Rise rock lobster stock has not been assessed.
- New assessments for two paua stocks along the east and south coasts of the South Island (areas PAU 3 and PAU 5B) show that both stocks are at or above their *management targets*.
- New stock assessments in 2013 and 2014 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).
- Tarakihi on the west coast of the South Island were assessed to be performing well in 2014 relative to their *management targets* and biomass limits.
- Stargazer around the south and west coasts of the South Island were assessed to be performing well relative to all harvest strategy standard performance measures in 2014.



- An assessment of blue cod in the south of the South Island in 2013 indicated that the stock is performing well relative to all harvest strategy standard performance measures.
- Elephantfish around the east and south coasts of the South Island appear to have substantially rebuilt from the low levels experienced in the late 1980s.

### ***Management of stocks below biomass limits***

At the time of their most recent assessment, 24 (of 146) 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 scallops; and
- one stock or sub-stock each of oyster, paua, John dory and rig.

Ten of these 24 stocks were also considered to be below the *hard limit* (collapsed). *Overfishing* was documented for 16 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 fisheries 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, and the Golden Bay scallop commercial fishery has been voluntarily closed since 2011.

Bluenose stocks were identified as being in need of rebuilding in May 2008, and three TACC reductions have subsequently taken place been implemented in 2008, 2011 and 2012 to ensure the stocks rebuild 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.