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# Managing for Sustainability

Section Detail Report

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## Overview

The Fisheries Act 1996 (the Act) sets the framework for sustainable management of New Zealand's fisheries. The purpose of the Act, which is administered by the Ministry for Primary Industries (MPI) and Fisheries New Zealand (FNZ), is to provide for the utilisation of fisheries resources while ensuring sustainability. Ensuring sustainability includes maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations.

Under the Act, the Minister for Oceans and Fisheries sets and adjusts catch limits which enable fish stocks to remain above or move towards target levels of abundance. The statutory targets are consistent with New Zealand's international obligations to maintain stocks at or above a level that produces the maximum sustainable yield. Guidance on setting stock management targets is provided in the Harvest Strategy Standard, which describes default management targets and limits that can be applied to individual fish stocks and the management consequences of these limits – for example, if a fish stock falls below a specified 'soft' limit, a formal rebuilding plan is implemented. Changes to catch limits are based on peer reviewed scientific advice, which is developed using a transparent, inclusive process consistent with the requirements of the Research and Science Information Standard for New Zealand Fisheries.

A statutory catch balancing regime based on civil penalties (known as deemed values) provides incentives for commercial fishers to remain within their catch allocations. Comprehensive reporting requirements, electronic monitoring (cameras on vessels), targeted observer coverage and other MPI enforcement activities support the compliance regime.

This report outlines how these processes operate, and the requirements that the seafood industry must comply with for the purposes of sustainable management of fish stocks.

## Key statistics

- 98 species or species complexes and 643 separate fish stocks are managed in the QMS – each stock has a catch limit that is set and enforced under the Fisheries Act.<sup>1</sup>
- Out of a total FNZ annual fisheries research spend of around \$22 million the seafood industry contributes between \$11 and \$16 million.
- 12 Science Working Groups with inclusive membership provide peer review for all fisheries science that informs management decisions.<sup>2</sup>
- Stocks of known status (i.e., stocks for which there is sufficient information to determine stock status) accounted for 68% of the total landings by weight and 86% of the total landings by value in 2020, representing most of the main commercial fish species.<sup>3</sup>
- Of the stocks of known status, in 2020:<sup>4</sup>
  - 90.9% of the landings were made up of stocks above the 'soft limit' (i.e., the limit below which a rebuilding plan is required);
  - 99.8% of the landings were made up of stocks above the 'hard limit' (the limit below which a fishery is considered to be collapsed); and
  - 88.8% of the landings were made up of stocks above their management targets.

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<sup>1</sup> Fisheries New Zealand (2021a) lists 642 separate fish stocks in February 2021. The subdivision of PAU3 into two new stocks in October 2021 brings the total to 643.

<sup>2</sup> Ministry for Primary Industries (2014).

<sup>3</sup> Fisheries New Zealand (2021a)

<sup>4</sup> Ibid.

- In 2011, the Fisheries Centre at the University of British Columbia, Canada, rated New Zealand as the leading country among 41 surveyed for the quality of its fisheries monitoring, control and surveillance.<sup>5</sup>
- In a 2016 survey of 28 countries, including the top 20 countries in terms of total wild fisheries landings, New Zealand ranked fifth for healthy fish stocks.<sup>6</sup>

## Scope

This report covers the sustainability of fish stocks managed in New Zealand's Quota Management System (QMS) throughout New Zealand's marine zone, including:

- International obligations, domestic legislation and non-statutory guidelines which set the framework and high-level targets for sustainable management of fish stocks;
- For each stock, the establishment of specific or default stock management targets, the setting and adjustment of catch limits, and the scientific advice and consultation processes which inform these decisions; and
- Mechanisms to facilitate and ensure industry compliance with commercial catch limits, including catch balancing, reporting, compliance and enforcement regimes, as well as the sustainability and economic incentives provided by the QMS.

Species managed outside the QMS are out of scope of the report. Management and enforcement of catch limits for customary and recreational fishers is also out of scope. However, managing customary and recreational harvest is nevertheless a critical aspect of ensuring the sustainability of New Zealand's inshore fisheries. Broader sustainability considerations such as marine conservation measures and interactions between fishing and associated species are addressed in other Section Detail Reports.

## The New Zealand approach

The purpose of New Zealand's Fisheries Act is to provide for the utilisation of fisheries resources while ensuring sustainability. Ensuring sustainability means (a) maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and (b) avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment. Utilisation means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural well-being.<sup>7</sup>

Part 4 of the Act provides the statutory framework for the operation of the QMS, which was established over 35 years ago. Today 98 species or species complexes are managed in the QMS, including nearly all of the main commercially harvested species.<sup>8</sup> Each QMS species is divided into a number of fish stocks – typically anywhere between one and ten – for management purposes. In total, 643 separate stocks are managed in the QMS, each with its own unique code identifying the species and area – for example, snapper on the north east coast of the North Island is referred to as SNA 1 and Bluff oysters as OYU 5.

Every stock also has a catch limit known as a Total Allowable Catch (TAC) which is set by the responsible Minister – currently the Minister for Oceans and Fisheries. The TAC is the primary means for managing stock sustainability.<sup>9</sup> It is adjusted by the Minister when necessary for sustainability or utilisation reasons – for example, a review may be initiated if monitoring shows that a fish stock

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<sup>5</sup> Pramod, G (2011).

<sup>6</sup> Melnychuk et al (2016).

<sup>7</sup> Fisheries Act s8.

<sup>8</sup> Fisheries New Zealand (2021a).

<sup>9</sup> In the early days of the QMS the primary sustainability measure was the Total Allowable Commercial Catch (TACC) as there was no requirement to set a TAC. Over time, TACs have been set for most of these early stocks. However, there are a few exceptions for which TACs have not yet been set (e.g., because there has been no need to review the management settings for the stock). In these stocks, the TACC functions as the primary sustainability measure.

has declined or increased in abundance. The process for reviewing and adjusting TACs and other stock sustainability controls is administered by Fisheries New Zealand (FNZ).

When the Minister sets or adjusts a TAC, he or she also determines how to allocate the TAC among fisheries users. When allocating the available harvest of a stock, the Minister divides the TAC into a Total Allowable Commercial Catch (TACC) and allowances for recreational fishing, customary non-commercial fishing and all other mortality caused by fishing (e.g., fish that are damaged during the process of fishing and fish that are taken illegally).<sup>10</sup> Adjustments to the TAC, TACC and allowances come into effect at the beginning of the fishing year, which is 1 October for most species or 1 April for a few other species.

The seafood industry is required to comply with all commercial catch limits (explained in more detail in the Fishing Rules section) and help fund the scientific research that underpins the Minister's TAC decisions. Along with other fisheries stakeholders, the seafood industry is an active participant in the science and consultation processes associated with the review of catch limits and other sustainability measures.

## Legislative guidance for setting TACs

The Fisheries Act requires the Minister to set a TAC for each stock that will maintain the stock at or above a standardised target level known as BMSY.<sup>11</sup> BMSY is a fisheries management concept that refers to the level of biomass that will produce the maximum sustainable yield. The maximum sustainable yield is the greatest yield (i.e., harvest of the stock) that can be achieved over time while maintaining the stock's productive capacity. The maximum sustainable yield depends on factors related to the fish species itself (i.e., the population dynamics of the stock) as well as any environmental factors that might influence the stock.<sup>12</sup>

If the fish stock is below the target level (i.e., if the fishery has been depleted due to environmental or fishing pressures), the Minister reduces the TAC so that the stock, over an appropriate period of time, increases to the target level. Similarly, if a stock is more abundant than the target level, the Minister may increase the TAC in order to provide for utilisation of the available biomass while moving the stock down towards the target level.

The Minister considers a range of factors when setting or adjusting a TAC, including:

- the purpose of the Fisheries Act;
- the Act's environmental and information principles (for example, decision-makers should be cautious when information is uncertain, unreliable, or inadequate);<sup>13</sup>
- the interdependence of stocks (for example, the Minister may conclude that harvesting more of one stock could adversely affect other fish species that predate on that stock); and
- the biological characteristics of the stock and the environmental conditions affecting the stock.

If a fish stock is being moved to a new target level, then the Minister can vary the way and rate at which the stock size is increased or decreased. The rate of change may be gradual or rapid, depending on the social, cultural and economic factors that the Minister considers to be relevant.<sup>14</sup>

Sometimes information on the current level of a stock or the level that can produce the maximum sustainable yield is lacking or uncertain. In these cases, the Minister uses the best available information to set a catch limit that is "not inconsistent with" the

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<sup>10</sup> Fisheries Act s20 & s21.

<sup>11</sup> Fisheries Act s13.

<sup>12</sup> Fisheries Act s2.

<sup>13</sup> Environmental principles in Fisheries Act s9, information principles in Fisheries Act s10.

<sup>14</sup> Fisheries Act s13(3).

objective of maintaining the stock at or above the level that can produce the maximum sustainable yield.<sup>15</sup>

While many stocks have a TAC that is based on the default sustainability standard of BMSY, the management targets for several of New Zealand's major commercial stocks have, following consultation with quota owners, been set at biomass levels well above BMSY in order to produce higher catch rates and better economic yields. The Minister can also set an alternative TAC to achieve the purpose of the Act in special circumstances. For example an alternative (but still sustainable) TAC may be appropriate if:<sup>16</sup>

- the biological characteristics of the species mean that it is not possible to estimate the maximum sustainable yield (squid is an example of such a species);
- a national allocation for New Zealand has been determined as part of an international agreement;
- the stock is managed on a rotational or enhanced basis; or
- the stock is a highly migratory species that moves in and out of New Zealand's waters.

An alternative TAC may also be set for stocks that are taken primarily as an incidental catch during the taking of other stocks.<sup>17</sup> This provision has never been used and numerous checks and balances apply to make sure the stock in question stays above a level that ensures its long-term viability.

The Minister may, during the course of a fishing year, temporarily increase the TAC of certain stocks which have highly variable abundance. At the end of the year these stocks revert to the TAC that applied at the beginning of the year.<sup>18</sup>

## Keeping catch within the limits

Under the QMS, commercial harvest is intended to be constrained within the TACC set for each stock. The mechanism to achieve this is referred to as the catch balancing regime because it works by encouraging fishers to balance their catch against their Annual Catch Entitlement (ACE).

In most circumstances commercial fishers are not required to own ACE for the fish they expect to catch before they go fishing – such a requirement would be too rigid given the mix of different species that may be caught in a single fishing trip.<sup>19</sup> Instead, fishers are expected to balance their catch on an ongoing basis by buying and selling ACE throughout the year in order to obtain a mix of ACE that matches their catch.

Fishers who are unable to balance their catch by purchasing ACE must pay a deemed value, which is a monetary civil penalty for landing fish in excess of ACE. Interim and annual deemed value rates for each fish stock are adjusted from time to time by the Minister. The interim rates apply to fish landed in excess of a fisher's ACE holdings on a month-by-month basis whereas the higher annual rate applies at the end of the fishing year. In both cases the deemed value payment is returned to the fisher if he or she subsequently acquires the ACE to balance their catch within a set time after the end of the month or fishing year.<sup>20</sup>

Deemed value payments are intended to provide a financial incentive for individual fishers to acquire ACE so that the total level of commercial harvest remains within the TACC. The setting of effective deemed value rates is itself a balancing act – deemed value rates should be set so that it is not profitable for fishers to land catch they do not hold ACE for, but at the same time should not

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<sup>15</sup> Fisheries Act s13(2A).

<sup>16</sup> Fisheries Act s14.

<sup>17</sup> Fisheries Act s14A.

<sup>18</sup> Fisheries Act s13(7)&(8).

<sup>19</sup> Minimum ACE holdings apply for some single species target fisheries.

<sup>20</sup> Fisheries Act s75 to s79B.

encourage illegal discarding of excess fish. Deemed values, together with the setting of appropriate TACs and TACCs, are therefore a critical component of managing for sustainability.

## Complying with the New Zealand approach

### Setting stock management targets

Practical guidance on implementing the statutory requirement to manage stocks at or above BMSY is set out in the Harvest Strategy Standard.<sup>21</sup> The Ministry of Fisheries (FNZ's predecessor) prepared the Harvest Strategy Standard as a non-statutory policy statement of best practice for setting fishery and stock targets and limits. Although it is not binding in a legal sense, the Standard has a major influence on FNZ's advice to the Minister on most stock sustainability decisions. For each fishery or fish stock, the Standard requires three core targets and limits (together referred to as biological reference points) to be specified. Default targets and limits are included in the Standard, but higher targets and limits may be set for specific stocks. The three types of biological reference points are:

- a management target about which a fishery or stock should fluctuate;
- a soft limit below which a stock is considered to be depleted or overfished; and
- a hard limit below which a stock is considered to be collapsed.

The Harvest Strategy Standard and associated operational guidelines describe various ways in which management targets – referred to as MSY-compatible reference points – may be set for a stock.<sup>22</sup> These targets are normally expressed as either a biomass level (i.e., the tonnage of the stock in a defined area) or a fishing mortality rate (i.e., the rate of extraction of fish). Fish stocks are expected to fluctuate around their targets with at least a 50% probability of achieving the target. If a stock is below the management target, it does not mean it is overfished or in danger of extinction, and a well-managed stock can be expected to be below the target at least some of the time.<sup>23</sup> The crucial distinction from a management perspective is that stocks that are below the soft or the hard limit are in greater need of management intervention than stocks that are fluctuating around their management target.

If a stock declines to below the soft limit, a formal, time-constrained rebuilding plan is implemented. This plan, although non-statutory, guides the Minister's TAC decisions for the stock. Fisheries that fall below the hard limit may be closed so that they can be rebuilt at the fastest possible rate.

In practice, the management targets and soft and hard limits are set out in fisheries plans for each fish stock (or groups of similar stocks). Fisheries plans may be prepared by FNZ or by any other party and may be approved by the Minister following a statutory public consultation process. The Minister has approved national fisheries plans prepared by FNZ for deepwater and middle-depth fisheries, highly migratory species, and inshore finfish fisheries.<sup>24</sup> Draft (unapproved) national fisheries plans are in place for inshore shellfish and freshwater fisheries. The Minister has also approved industry-prepared fisheries plans – for example, for pāua fisheries PAU 3 and PAU 4. If no management targets are set for a stock, then the default settings in the Harvest Strategy Standard are used.

### Planning and purchasing fisheries research

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<sup>21</sup> Ministry of Fisheries (2008).

<sup>22</sup> Ministry of Fisheries (2011).

<sup>23</sup> Fisheries New Zealand (2021a).

<sup>24</sup> Fisheries plans are approved under s11A of the Fisheries Act. See Fisheries New Zealand (2019a) and (2019b).

Fisheries research planning identifies the research that is necessary to inform the Minister's decisions on TACs and other sustainability measures – for example, fisheries characterisations, biological studies, stock assessments, or resource abundance surveys.

Research planning processes differ across different types of fisheries. In general, responsibility for research planning is shared between FNZ's fisheries managers and scientists, based on the requirements of national fisheries plans and associated annual operational plans. The annual operational plans specify the management actions and services to be carried out in the following year, including research requirements. Deepwater fisheries research is informed by a medium-term research plan developed by FNZ and the industry following a series of meetings of science advisory groups.<sup>25</sup> For inshore research, FNZ uses a scoring system to rank proposed research projects in order of priority within each research area. Rock lobster fisheries research is discussed annually at the National Rock Lobster Management Group (a multi-stakeholder advisory group). FNZ also consults annually with inshore stakeholder groups to determine research requirements for inshore finfish, eel and shellfish projects.<sup>26</sup>

Research for highly migratory species is undertaken in support of international obligations.

Research planning culminates in the production of an annual Fisheries Research Plan that includes all the new projects to be contracted in the next year. The majority of fisheries research is purchased by FNZ from external approved research providers using a competitive tender or panel process. Some projects are contracted for multiple years to reduce administration costs. Research may also be purchased directly by third parties, including the seafood industry. All research is subject to quality assurance standards discussed below.

The costs of FNZ's fisheries research programme are recovered in part from the seafood industry using fisheries cost recovery levies. Rules for determining the proportion of different categories of research funded by the government and the industry are set out in regulations made under the Fisheries Act.<sup>27</sup> The industry's contribution to the cost of government fisheries research varies from year to year but is typically between \$11 and \$16 million annually.<sup>28</sup> In addition, quota owners invest directly in fisheries research commissioned by the fishing industry

## Quality assurance for fisheries research

All fisheries research that contributes to fisheries management decisions, irrespective of who purchases or provides it, must comply with the Research and Science Information Standard for New Zealand Fisheries.<sup>29</sup>

The Research Standard is a policy statement of best practice for quality assurance of fisheries research and science. Under the standard, all fisheries research must demonstrate attributes such as relevance, integrity, objectivity and reliability. Peer review is the primary, internationally-accepted mechanism for evaluating the quality of research and science information, and this focus on peer review is reflected in the Standard. Other aspects of the Standard cover responsibilities of different participants, ranking of different types of science information quality, storage of data and research reports, and documentation and communication of science results. FNZ is responsible for ensuring that all research purchasers and providers comply with the Standard.

For research that informs stock sustainability decisions, peer review is undertaken primarily by Science Working Groups (in particular, by Fisheries Assessment Working Groups). Standing working groups are the norm for peer reviewing this type of research because, over time, the groups build up considerable expertise and have a long history of addressing similar questions using

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<sup>25</sup> Fisheries New Zealand (2021b).

<sup>26</sup> Ministry for Primary Industries (2014).

<sup>27</sup> Fisheries (Cost Recovery) Rules 2001.

<sup>28</sup> Ministry for Primary Industries (2021).

<sup>29</sup> Ministry for Primary Industries (2011).

established and tested technical protocols or agreed methods.<sup>30</sup>

Eight Science Working Groups cover different clusters of species, and a further four groups cover other relevant issues such as stock assessment methods and fisheries data.<sup>31</sup> The science working groups have an inclusive membership made up of:

- a FNZ fisheries science chair;
- research providers;
- other scientists to act in a peer review capacity;
- representatives of relevant FNZ fisheries management teams; and
- any interested party, including representatives of the industry, other fisheries users and environmental groups, who agree to the specified standards of participation.

The key responsibilities in the Fisheries Assessment Working Groups' terms of reference are to:<sup>32</sup>

- assess the status of fisheries and fish stocks relative to MSY-compatible reference points and other relevant indicators of stock status;
- evaluate projections of stock size under alternative management scenarios; and
- review results from relevant research projects.

The Groups meet regularly from January to May (for stocks with a 1 October fishing year) and September to November (for stocks with a 1 April fishing year). They combine the results of scientific research with catch and effort reports from commercial fisheries, data from FNZ's Observer Programme, and other information to produce assessments of the status of New Zealand's fish stocks. This information is summarised and made publicly available in two annual Fisheries Assessment Plenary Reports, one published in May and one in November.<sup>33</sup> In these plenary reports, summary tables describe current stock status and future stock projections and are used to evaluate fisheries performance relative to the Harvest Strategy Standard and other management targets.

The working groups meet annually as a plenary (also open to the public) to discuss any major changes in stock status. One plenary is held in May (for stocks with a 1 October fishing year) and another in November (for stocks with a 1 April fishing year). However, the working groups and plenary do not make management recommendations or decisions – this responsibility lies with FNZ fisheries managers and the Minister, based on information provided by the working groups.

The working groups have a respected reputation for ensuring that managers are provided with information that they can trust and which will withstand scrutiny and criticism.<sup>34</sup> For key species, or for novel or contentious science, the working group peer review process is strengthened by secondary reviews which may be undertaken by invited international reviewers or panels of independent experts at special meetings.<sup>35</sup>

## **Making management decisions**

With over 600 stocks in the QMS, it is not possible to review and adjust the sustainability measures for every stock every year. FNZ

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<sup>30</sup> Ministry for Primary Industries (2014).

<sup>31</sup> Ibid.

<sup>32</sup> For terms of reference, see Fisheries New Zealand (2021c).

<sup>33</sup> See, for example, Fisheries New Zealand (2021c).

<sup>34</sup> Ministry for Primary Industries (2014).

<sup>35</sup> Ibid.



uses an internal prioritisation process to decide which stocks will be reviewed every year. The information and evaluations provided by the Working Groups are key inputs for determining priorities.

For each stock requiring a sustainability review (including adjustments to a TAC and/or the deemed value rate), FNZ prepares a consultation paper setting out the issues and potential management options. Anyone may participate in this consultation process – but the Minister is obliged by law to consult representatives of Māori, environmental, commercial and recreational interests, and to provide for the input and participation of customary fishing interests.<sup>36</sup> FNZ's fisheries managers consider the submissions that have been made and prepare a final advice paper with recommendations to the Minister.

If the Minister decides to adjust a TAC or a deemed value rate for a stock, the decision is implemented by way of a notice in the New Zealand Gazette, and takes effect at the beginning of the next fishing year for the stock. For example, for the 1 October 2021 fishing year, adjustments were made to the TACs of 15 stocks and deemed value rates for 12 stocks.<sup>37</sup>

## Sustainability incentives provided by the QMS

The operational design of New Zealand's QMS influences the sustainability of fish stocks, as it affects the perspectives and behaviour of quota owners as they engage in the processes described above.

When the QMS was first established in 1986, TACs were based on government estimates of sustainable catch and fishers were allocated quota, in the form of a tonnage of catch, based on their catch history. The government was required to pay quota owners full compensation in the event of any TAC reduction but was able to sell any additional quota generated through a TAC increase. However, since 1990 quota shares (formally known as Individual Transferable Quota or ITQ) have been proportional to the total commercial rights for the stock – in other words, a quota owner now has rights in perpetuity to a fixed proportional share of a stock, irrespective of whether the TAC moves up or down.

This fundamental evolution in the design of the QMS shifted all stock sustainability risk (and, with it, all economic risk and benefit) from the government to the quota owners. Quota value is now related at least in part to the current abundance of the stock and its perceived future abundance. As a result, quota owners have a strong incentive to participate in FNZ's stock sustainability processes so as to protect their long-term investment in the health of New Zealand's fish stocks.

## Current initiatives

In line with best international practice, New Zealand fisheries are increasingly adopting a management strategy approach using pre-agreed frameworks for adjusting TACs or TACCs. A management strategy (sometimes referred to as a harvest strategy) generally includes a monitoring programme, a stock assessment method, reference points (or other fishery indicators), and harvest control rules (i.e., a rule that says "if indicator x changes in a prescribed way, the TAC will be adjusted in a prescribed way"). Management strategy evaluation (MSE), a procedure based on simulation modelling, helps compare the likely performance of various strategies and guides the process of developing a management strategy.

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<sup>36</sup> Fisheries Act s12.

<sup>37</sup> FNZ website <https://www.mpi.govt.nz/consultations/review-of-sustainability-measures-2021-october-round/>

## Conformance and verification measures

### Conformance and verification for the seafood industry

Regulations made under the Act specify the record keeping and reporting requirements that the seafood industry must comply with.<sup>38</sup> Reporting requirements are a key component of compliance with catch limits and also provide a documentation trail of the harvest and product flow process. This reduces opportunities for potential offending and enables anomalies to be detected by comparing the information provided at different stages.

Commercial fishing permit holders must ensure that all vessels fishing under their permit complete the relevant catch, effort and landing returns detailing how and where fish is caught, together with species and quantities taken. These returns are provided to FNZ within timeframes specified in fisheries regulations. The regulations require all commercial fishing vessels to report their catch and position electronically, in real time.<sup>39</sup> The information from the returns is used by scientists for input into stock assessments and by fisheries managers to make management decisions including recommended changes to TACs.

All permit holders also complete a monthly harvest return (MHR) which summarises all their catch by fish stock. This information is used in the catch balancing regime – i.e., if the MHR records that the permit holder has caught fish for which they do not hold ACE, then a deemed value invoice is generated for that permit holder. When cross-checked with catch effort reports, the information on MHRs enables FNZ to verify these two sets of information.

Licensed fish receivers (LFRs) must also complete monthly returns detailing species and quantities of fish received from each permit holder during that month, providing a further independent source of information against which the permit holder's reports can be verified.<sup>40</sup>

Reporting requirements are supported and augmented by the progressive implementation of FNZ's electronic vessel monitoring system (i.e., cameras on specified types of fishing vessels), and also by the placement of FNZ observers on selected fishing vessels and vessel inspections by FNZ compliance staff.

Because of the regulatory nature of commercial fisheries reporting, conformance and verification is primarily external (i.e., undertaken by FNZ). However, seafood companies also undertake their own internal verification processes using information provided on the various reporting forms and internal company data.

### Status of stocks

The status of fish stocks is regularly assessed in relation to the stock management targets and limits set out in the Harvest Strategy Standard which are consistent with the Fisheries Act and New Zealand's international obligations. FNZ's latest update summarises stock status at the end of 2020. The stocks for which there was sufficient information to determine their status (referred to as stocks of known status) accounted for 68% of the total landings by weight and 86% by value, representing most of the main commercial fish species. At the end of 2020:<sup>41</sup>

- in terms of the numbers of stocks of known status:
  - 82.4% of New Zealand's fish stocks were above the 'soft limit';
  - 95.3% were above the 'hard limit'; and

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<sup>38</sup> Refer to Fishing Rules Section Detail Report for further detail.

<sup>39</sup> Fisheries (Reporting) Regulations 2017, Fisheries (Geospatial Position Reporting) Regulations 2017.

<sup>40</sup> Ministry for Primary Industries (2015).

<sup>41</sup> Fisheries New Zealand (2021a).

- 72.7% were above their management targets.
- in terms of the volume of landings of stocks of known status:
  - 90.9% of the landings were made up of stocks above the 'soft limit';
  - 99.8% of the landings were made up of stocks above the 'hard limit'; and
  - 88.8% of the landings were made up of stocks above their management targets.

## Comparability to international best practice

### Overarching measures

New Zealand's Fisheries Act requires fish stocks to be managed at or above a level that produces the maximum sustainable yield. This requirement is consistent with New Zealand's obligations under:

- the United Nations Convention on the Law of the Sea 1982 (UNCLOS);
- the United Nations Fish Stocks Agreement (UNFSA); and
- the Food and Agriculture Organisation (FAO) Code of Conduct for Responsible Fisheries.

UNCLOS, which New Zealand ratified in 1996, is an international agreement that defines the rights and responsibilities of nations with respect to their use of the world's oceans. It is a broadly-worded agreement that establishes guidelines for developing, protecting and managing marine resources. Among other matters, UNCLOS requires coastal states to determine the allowable catch of living resources in their EEZs so as to "maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors".<sup>42</sup>

Identical obligations are set out in the UN Fish Stocks Agreement which governs how countries should co-operate to manage highly migratory and straddling stocks (i.e., fish species that range across the jurisdictional boundaries of coastal states).<sup>43</sup> The UN Fish Stocks Agreement is incorporated directly into New Zealand's Fisheries Act in Schedule 1A. The non-binding FAO Code of Conduct for Responsible Fisheries, adopted in 1995, contains similar guidance on stock management targets.<sup>44</sup>

When developing the Harvest Strategy Standard and the Research and Science Information Standard, FNZ examined the best-practice approaches of other countries and international fisheries organisations and adapted those practices to suit New Zealand's management system.<sup>45</sup>

### International recognition

New Zealand's performance in managing fish stocks sustainably has been backed up by international studies. A 2020 review identified New Zealand as one of several regions in the world where fish stock biomass has been retained near or above BMSY as a result of conservative fisheries management practices.<sup>46</sup> In 2016 a survey of 28 countries, including the top 20 countries in terms of total wild fisheries landings, found a strong correlation between good management regimes and healthy fish stocks. Three characteristics were particularly important to good outcomes, all of which are central to New Zealand's approach: (1) the scientific

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<sup>42</sup> UNCLOS (1982). See Article 61, Conservation of living resources.

<sup>43</sup> UN Fish stocks agreement (1982).

<sup>44</sup> UN FAO (1995), see clause 7.2.1.

<sup>45</sup> Ministry of Fisheries (2008) and Ministry for Primary Industries (2011).

<sup>46</sup> Hilborn, R et al (2020).

assessment of the status of the stocks, (2) limiting fishing pressure, and (3) enforcing regulations. In this survey New Zealand ranked fifth in the world for healthy fish stocks.<sup>47</sup>

In 2011, the Fisheries Centre at the University of British Columbia, Canada, rated New Zealand as the leading country among 41 surveyed for the quality of its fisheries monitoring, control and surveillance.<sup>48</sup>

Approximately 70% of the deepwater fisheries catch, or around half of New Zealand's wild-caught seafood, has been independently verified against the Marine Stewardship Council Fisheries Standard,<sup>49</sup> including fisheries catching albacore tuna, hake, hoki, ling, orange roughy, skipjack tuna, and southern blue whiting.<sup>50</sup>

## Terms and definitions

**ACE** – Annual Catch Entitlement, an annual harvest right derived from quota shares. At the beginning of the fishing year each quota share generates a tonnage of ACE which varies depending on the TACC for the stock.

**Biological Reference Point** – a benchmark against which the biomass or abundance of the stock, or the fishing mortality rate (or exploitation rate), or catch itself can be measured in order to determine stock status. These reference points can be targets, thresholds or limits depending on their intended use [MPI (2008)].

**Biomass** – the size of a fish stock in units of weight. Often, biomass refers to only one part of the stock (e.g., spawning biomass, recruited biomass or vulnerable biomass) [MPI (2008)].

**BMSY** – The average stock biomass that results from taking an average catch of MSY under various types of harvest strategies. Often expressed in terms of spawning biomass, but may also be expressed as recruited or vulnerable biomass [MPI (2008)].

Customary fishing – fishing undertaken not for the purpose of sale and in accordance with Māori customary non-commercial fishing regulations.

**Deemed value** – a monetary civil penalty paid by a commercial fisher for landing fish in excess of ACE held by the fisher.

**Exclusive Economic Zone (EEZ)** – the sea, seabed, and subsoil that are beyond and adjacent to the territorial sea of New Zealand, having as their outer limits a line 200 nautical miles seaward from the coastal baseline.

**Fish stock** – a fisheries management unit comprising a species (or group of species) in a specified geographic area.

**Hard limit** – a biomass limit below which fisheries should be considered for closure (specified in the Harvest Strategy Standard) [MPI (2008)].

**Harvest Strategy Standard** – a non-statutory statement of best practice in relation to setting stock management targets and associated reference points.

**ITQ** – Individual Transferable Quota, also referred to as quota shares. Each fish stock in the QMS has 100 million quota shares. ITQ provides its owner with a fixed proportion of the available commercial harvest of the stock. For example, a person who owns 10 million quota shares will every year receive ACE equivalent to 10% of the TACC of that stock.

**Marine zone** – the combined territorial sea and EEZ.

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<sup>47</sup> Melnychuk et al (2016).

<sup>48</sup> Pramod, G. (2011).

<sup>49</sup> [www.msc.org](http://www.msc.org)

<sup>50</sup> Refer to individual species profile pages for more detail.

**Management Strategy** – also known as a harvest strategy, a systems approach that links together a stock assessment process and management and monitoring controls, and sometimes also includes research and enforcement needs [MPI (2008)].

**Management Strategy Evaluation (MSE)** – a procedure whereby alternative management strategies are tested and compared using simulations of fishery and stock dynamics [MPI (2008)].

**Management target** – in relation to a fish stock, a biomass or fishing mortality level that management actions are designed to achieve with at least a 50% probability [MPI (2008)].

**Maximum sustainable yield** – the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock [Fisheries Act s2].

**MPI** – Ministry for Primary Industries.

**QMS** – Quota Management System, established in Part 4 of the Fisheries Act 1996.

**Recreational fishing** – fishing undertaken not for the purpose of sale and in accordance with amateur fishing regulations.

**Soft limit** – a biomass limit below which the requirement for a formal, time-constrained rebuilding plan is triggered (specified in the Harvest Strategy Standard) [MPI (2008)].

**Sustainability** – (a) maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and (b) avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment [Fisheries Act s8].

**TAC** – Total Allowable Catch, set under section 13 or 14 of the Fisheries Act 1996, comprising the sum of the TACC, allowances for recreational and customary fishing, and an allowance for other sources of fishing related mortality.

**TACC** – Total Allowable Commercial Catch.

**Territorial sea** – those areas of the sea between the coastal baseline and a line 12 nautical miles seaward from that baseline.

**UNCLOS** – United Nations Convention on the Law of the Sea 1982.

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**Report Details**

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