Responsible Investing

OCTOBER 2025

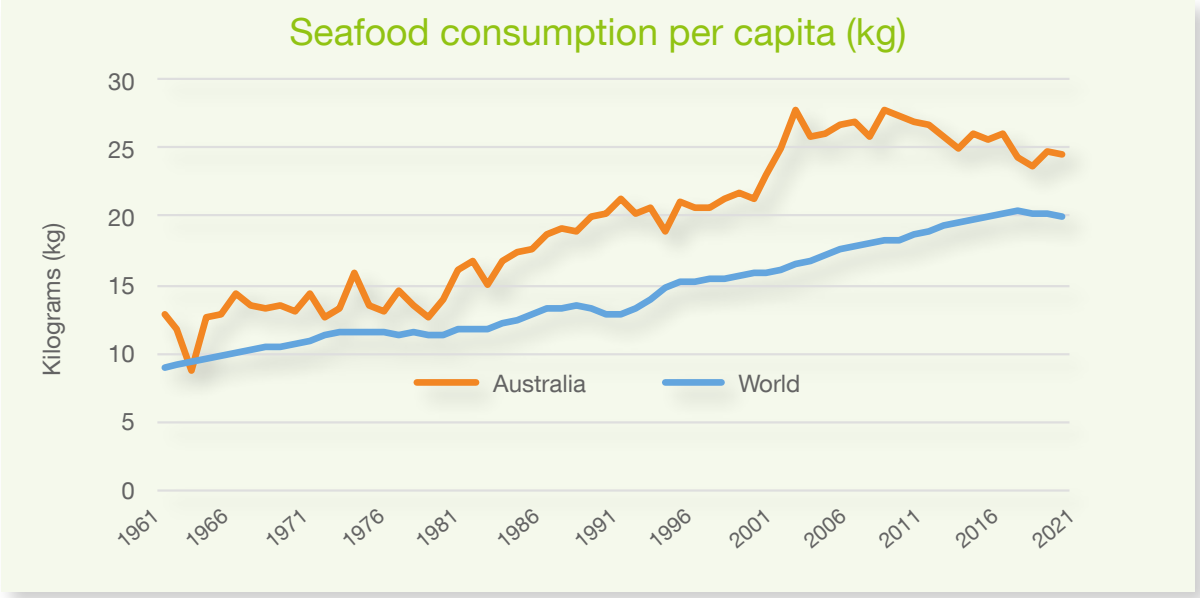
PLATYPUS
ASSET MANAGEMENT

Tasmanian Salmon

Supply and demand

The UN Food and Agriculture Organisation (2024) estimate that global fisheries and aquaculture production was 223.2 Mt in 2022, consisting of 185.4 Mt of aquatic animals and 37.8 Mt of algae. In terms of trends, per capita consumption of seafood is generally increasing across the globe.

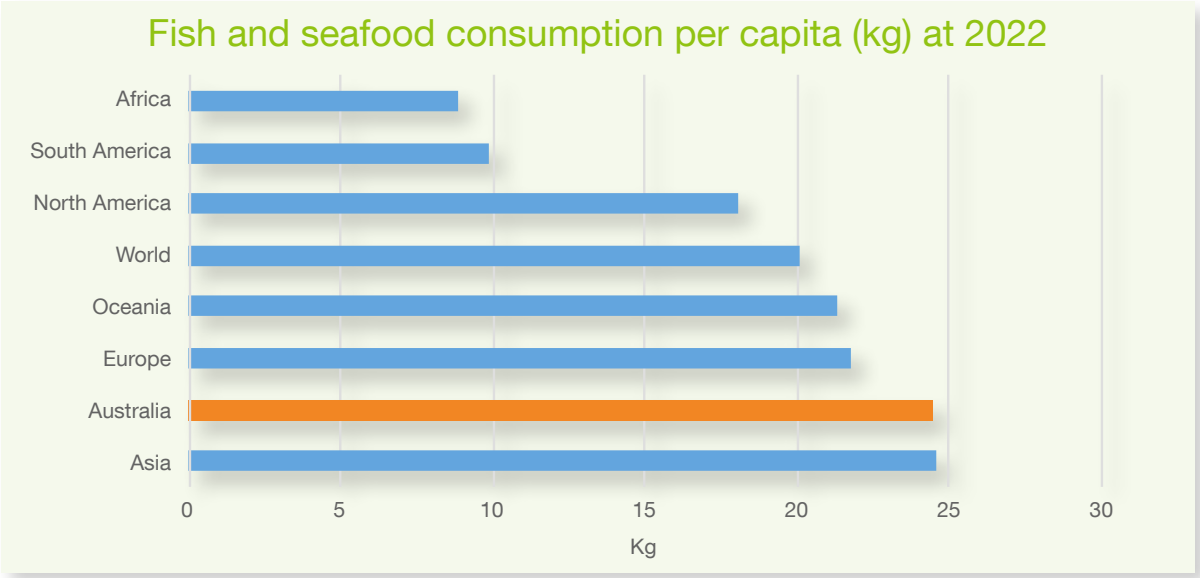
Exhibit 1: Seafood consumption per capita (kg). Data is inclusive of all fish species and major seafood commodities, including crustaceans, cephalopods and other mollusc species.



Source: Platypus, Our World in Data, FAO

While there are geographic differences in consumption, there is not a strong relationship between wealth and increased seafood consumption. The largest consumers of seafood per capita are Iceland (85.4 kg) and the Maldives (80 kg). Japan (44.98 kg) and Norway (49.7 kg) are also large consumers. Low consuming countries include Pakistan (1.36 kg) and Haiti (4.94 kg).

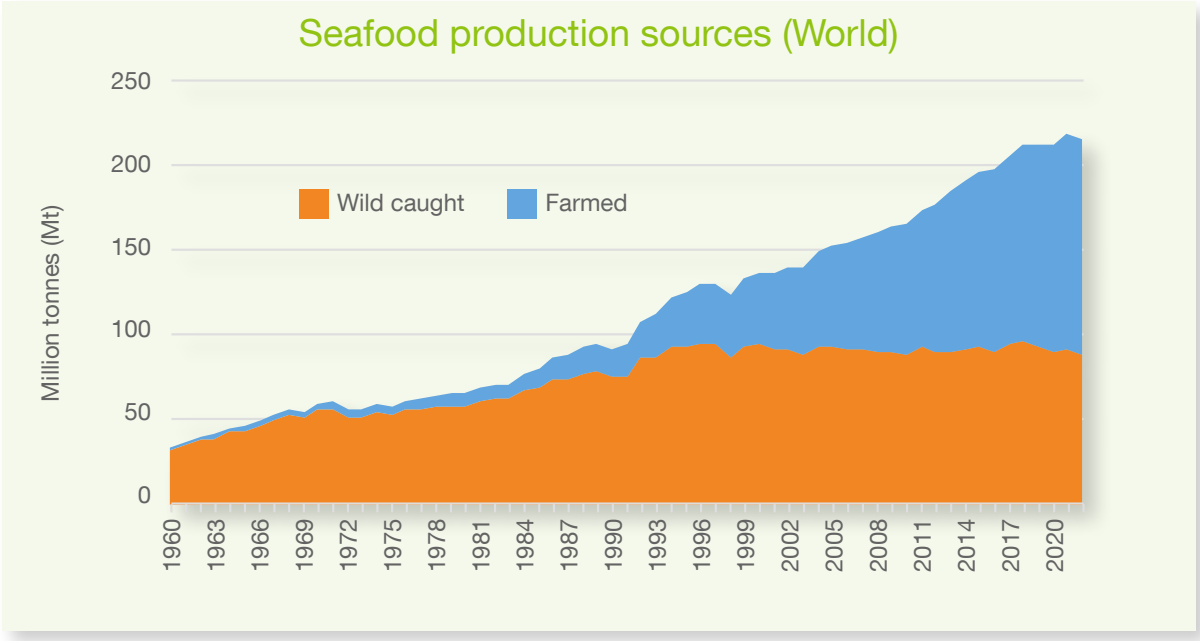
Exhibit 2: Seafood consumption per capita (kg) in 2022 by region



Source: Platypus, Our World in Data, FAO

The amount of wild caught fish has remained stable since the mid-1990s, while the amount of farmed fish (or aquaculture) has increased. The growth in aquaculture has helped reduce pressure on wild fish stocks, supporting more sustainable fishing.

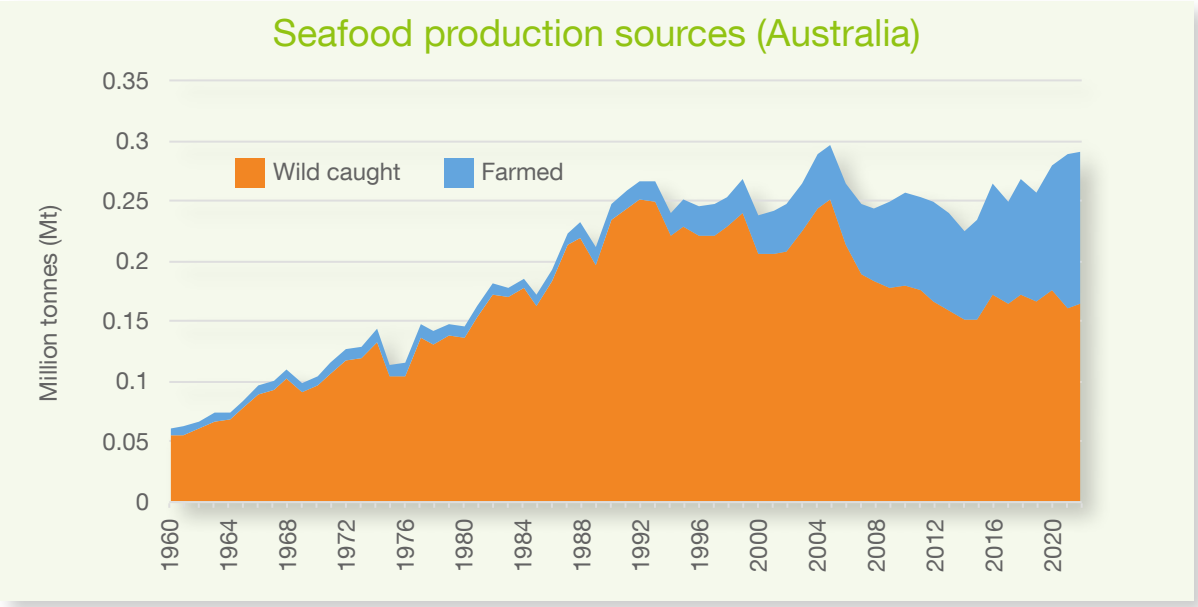
Exhibit 3: Seafood production sources through time for the world



Source: Platypus, Our World in Data, FAO

Using 2022 data from the Food and Agriculture Organisation, in terms of concentration of supply, 76.6% of global fish production originates from 10 countries, with 41.4% originating from China. Within China, only 14.9% is wild caught, with the rest being farmed. This is not the case for the top 10 producers, for which the average percentage of wild caught fish is 57.3%. Australia produces 1.36% of global seafood, with 56.8% being wild caught.

Exhibit 4: Seafood production sources through time for Australia



Source: Platypus, Our World in Data, FAO

Using data from the Department of Agriculture, Fisheries and Forestry that includes all fisheries under Commonwealth jurisdiction, the total quantity of Australian production is 301,909 tonnes.

Fish population sustainability

In this instance, we take sustainability to be defined as maintaining healthy numbers in wild fish populations. If the population is established and does not need to increase in numbers, this means catching the amount of fish that avoids depleting the population.

Maximum sustainable yield (MSY) is defined as the highest possible annual catch that can be sustained over time. Overfished is where the amount taken is greater than the population can support, maximally sustainably fished (equal to achieving MSY) is where as many fish as possible are caught that do not reduce the population, and under fished is where less is taken than the population can support. These terms—underfished, maximally sustainably fished (MSY), and overfished—are defined in line with the FAO's fisheries stock classifications, as presented in its State of World Fisheries and Aquaculture report.

By catch, and adjusted by weight of fish in each stock, Ritchie et al., 2019 estimate that at 2022, 79% of wild fish catch is sustainable, meaning 21% is unsustainable. In the 1970s, the amount of unsustainable wild fish catch was ~10%.

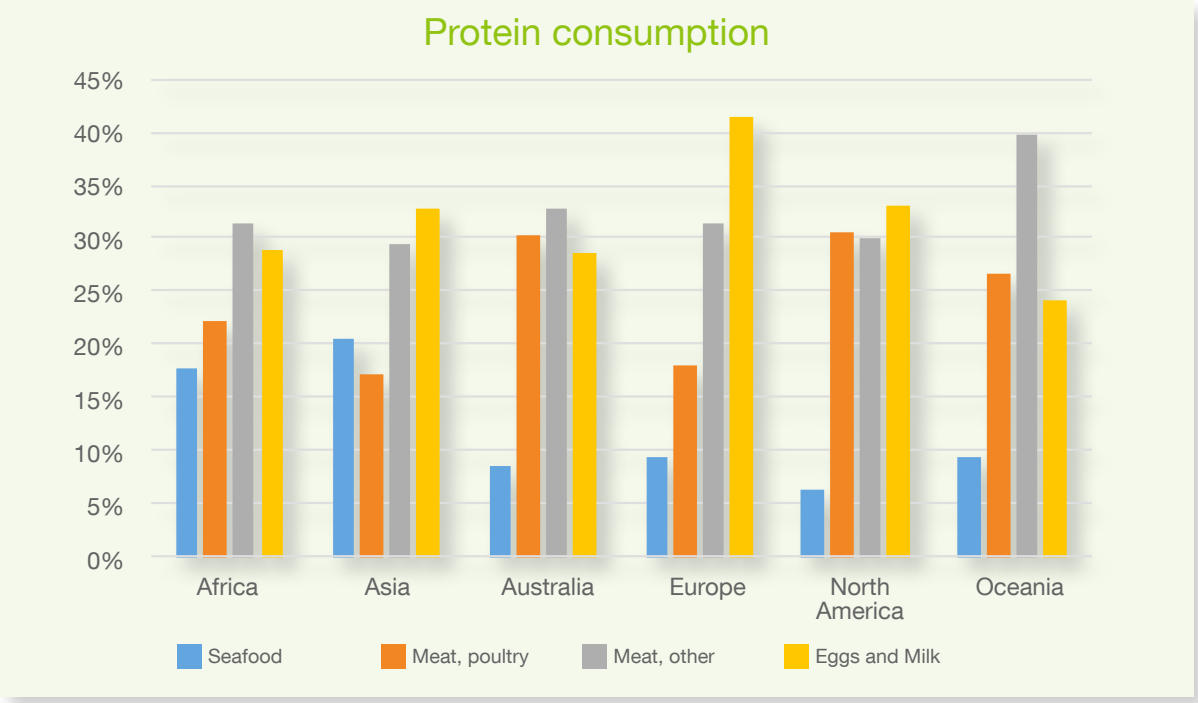
The World Bank, however, estimate that 90% of global marine fish stocks are now fully exploited or overfished, which using the definitions above implies that 10% are under fished (Ritchie et al., 2019, estimate this number to be 6%). The World Bank does not separate this into MSY and overfished.

One thing to note is that both the World Bank and Our World in Data speak to the challenge of insufficient data on fishing and fish stocks.

Protein source

Seafood contains protein and other nutrients important for overall health. However, seafood does not supply the majority of humanities protein needs.

Exhibit 5: Protein consumption by source



Source: Platypus, Our World in Data, FAO

Environmental impact

Using averages, we compare farmed salmon to chicken, generally considered a low impact source of meat protein.

Exhibit 6: Comparison between farmed salmon and chicken

Metric	Salmon (farmed)	Chicken
GHG emissions CO_2-e per kg	5.1 kg	8.34 kg
Land use per kg	4.86 sqm	14.53 sqm
Water use per kg	0.16 cbm	0.45 cbm
Nitrogen emissions per kg	0.11 kg	0.20 kg
Phosphorous emissions per kg	0.27 kg	0.31 kg

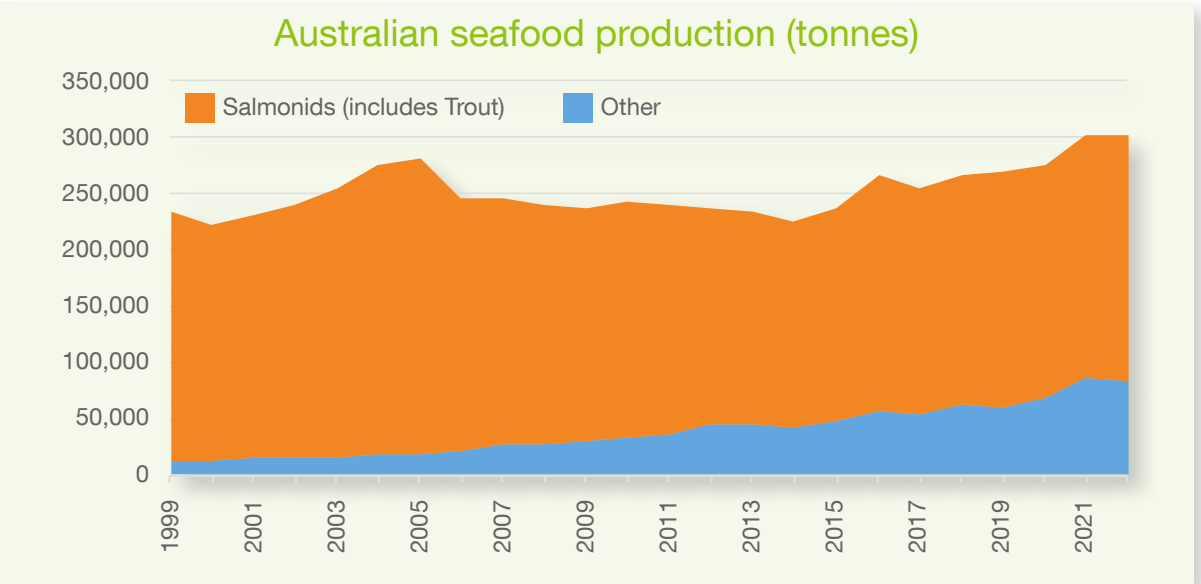
Source: Platypus, Our World in Data

In terms of broad metrics, salmon is lower impact than chicken. Note however, that these metrics do not take into account how e.g., nitrogen or phosphorous enters the local ecosystem and its impact on the environment.

Australian supply and demand

Salmonids have increased as a proportion of seafood production in Australia. Note that Atlantic salmon are not native to waters in the Southern Hemisphere and were first introduced in 1864 from the United Kingdom (Cadwallader, 1996).

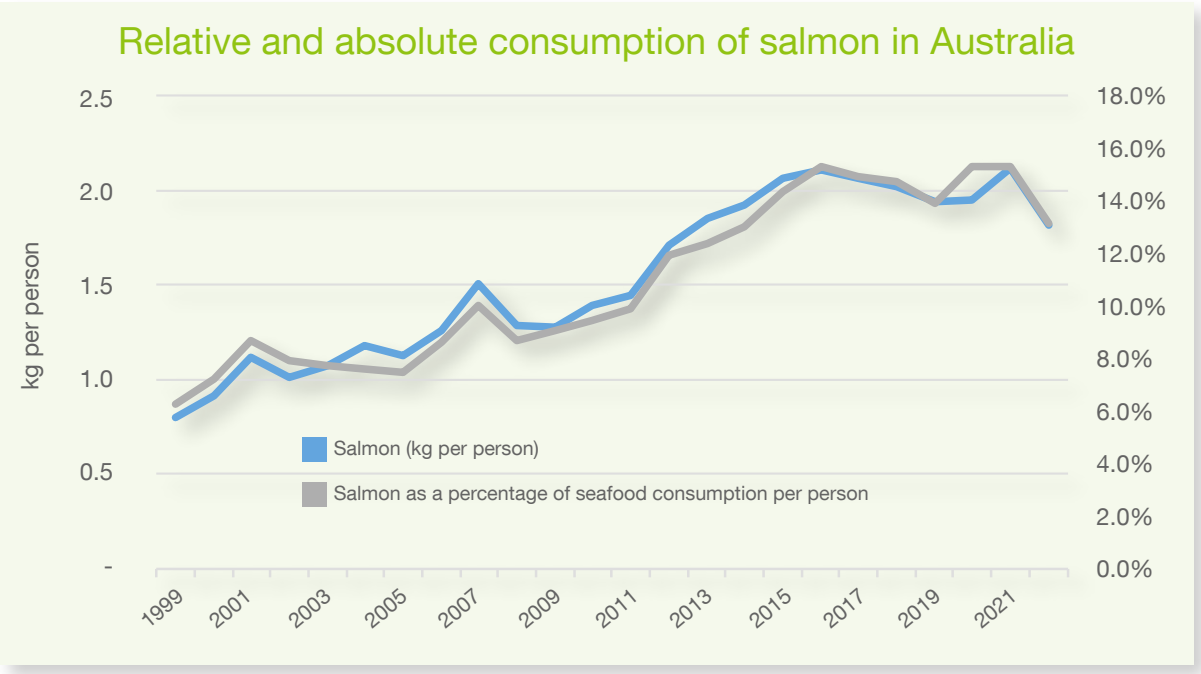
Exhibit 7: Salmonid production in Australia



Source: Platypus, Department of Agriculture, Fisheries and Forestry

Consumer demand for salmon has grown as a percentage of seafood consumption in Australia (data at 2022). Recently, the amount of salmon consumed per person has returned to 2014 levels. However, given the population increase since 2014, the amount of salmonids (including trout) produced has increased from 41,846 tonnes in 2014 to 81,279 tonnes in 2022.

Exhibit 8: Salmon consumption in Australia by kg and as a percentage of total seafood consumption



Source: Platypus, Department of Agriculture, Fisheries and Forestry

These statistics are important for framing consumer demand conversations with listed companies Coles and Woolworths.

Tasmanian salmon industry

The three private companies that farm salmon in Tasmania are Tassal, Petuna, and Huon. Tassal was acquired by Cooke, a private Canadian seafood company, in 2022. Huon was acquired by JBS, a Brazilian meat processing company in 2021. Petuna, founded in 1949 by Tasmanians Peter and Una Rockliff, was acquired by Sealord, a New Zealand seafood company in 2020.

Exhibit 9: Tasmanian salmon production in tonnes

Company	FY2021	FY2022	FY2023
Tassal	38,721	38,956	37,425
Huon	37,264	30,277	31,314
Petuna	7,071	8,713	5,916
Total	**83,056**	**77,946**	**74,655**

Source: Platypus, Salmon Farming Tasmania

Comparing data in Exhibit 9 to Department of Agriculture, Fisheries and Forestry data for 2022 implies that ~94% of Australian salmon production originates from Tasmania.

Huon, Tassal, and Petuna together directly employ ~1700 people in Tasmania. Indirect numbers are estimated to be higher. Note that employment is often cited by both supporters and detractors of the Tasmanian salmon industry. For example, Salmon Tasmania estimate the industry supports over 5,000 FTE, while Neighbours of Fish Farming thinks this is an overestimate. For context, the population of Tasmania is ~574,000 people.

In 2022, Salmon Tasmania reported that the salmon industry contributed $770 million to the Tasmanian economy. From a revenue perspective, at ~$25 per kg for a whole salmon, Huon, Tassal and Petuna together received ~$1,866 million in FY2023.

With respect to Tassal, we think this is an underestimate, because part of the salmon is used for higher margin pet food products. We understand that presently only ~0.5% of a farmed salmon becomes waste, down from ~10% a few years ago.

Environmental concerns underpinning social license to operate

There are a number of issues raised that are relevant to the social license to operate of salmon farming.

Exhibit 10: Summary of environmental concerns

Concern	Comments
Salmon farming has been or will be banned in Argentina, Washington State in the US, and British Columbia in Canada.	In addition to pollution and nutrient imbalances, a major concern was disease and lice in farmed salmon populations infecting wild salmon. In 2017 in Washington State, Atlantic salmon, not native to the Pacific Northwest, escaped after a commercial pen owned by Cooke failed. Concerns raised by environmental groups included competing for resources with wild salmon. This provided impetus to ban farmed salmon. In Tasmania, there are no wild salmon, meaning there is no transfer of disease between wild and farmed salmon.
Antibiotics	Salmon farms use antibiotics to maintain fish health. We spoke to Tassal about antibiotic usage, so these comments are specific to Tassal. Tassal administer antibiotics via medicated feed, and report usage to the EPA. They are required to monitor treatments, including sediment and wild fish analysis at a range of distances from the site. Tassal calculate antibiotic use as the proportion of fish that received treatment compared to the total number of fish Tassal produced over that period. For CY2024, this ratio was 0.4%, which is 1 in every 250 fish. They have a vaccination program which helps minimise this number. Tassal are investigating ways in which farmed fish can remain in tanks for a longer portion of their lives, which will further reduce reliance on antibiotics.
Impact on seals	Of particular interest to conservationists is the impact of fish farming on seals. Salt water pens contain concentrations of seal feedstock generally not found in the wild. This attracts seal colonies and can lead to lead to unwanted interactions between wild seals and salmon farm employees. For information, the salmon pens are ~18 metres deep and ~33 metres across. ***Exhibit 10a: Salmon saltwater pen, containing approx. 70,000 salmon that weigh ~200g on arrival to the pen from the hatchery.***  ***Source***: Platypus From discussions with Tassal, seals find a weakness in the underwater netting, create an opening that is large enough for their heads, and catch the salmon as they swim past. They then consume the salmon elsewhere, making it difficult for the operator to locate the weakness in the pen.

Concern	Comments
Impact on seals (cont.)	***Exhibit 10b: Automatic feeding station controlled remotely, with seals in the centre of the picture***  ***Source***: Platypus In some instances, seals can become aggressive and present a risk to employees. Salmon farmers use seal crackers (underwater charges), bean bags (non-lethal ammunition), and darts (sometimes containing a sedative, allowing for seal removal). As pens have improved and companies have invested in infrastructure, cracker use and seal deaths have declined. In 2016, total cracker usage by Huon, Tassal, and Petuna was nearly ~30,000. By 2023 this had declined to ~5,000. Seal deaths reported between January and June 2024 totalled six across all sites and companies.

Source: Platypus, Tassal

Certification

There are three independent seafood certification organisations.

- Aquaculture Stewardship Council (ASC),
- Best Aquaculture Practices (BAP), and
- GLOBALG.A.P.

ASC is generally seen as the gold standard with only 3% of seafood companies globally achieving ASC certification. Consumers identify certification through labels, which is a revenue source for ASC. Note that ASC require the whole supply chain to be traceable to remain certified.

Macquarie Harbour

Location and salmon farming

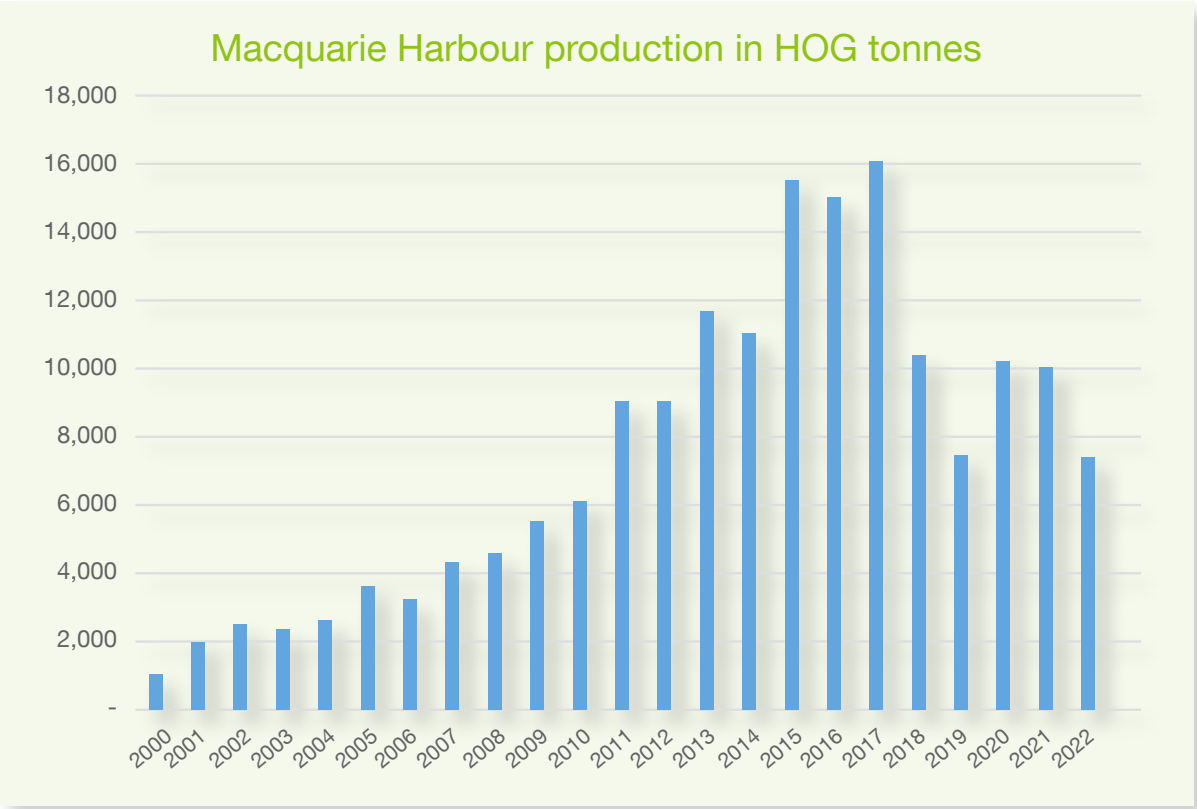
Macquarie Harbour (MH) is located on the western side of Tasmania and is about ~6x the size of Sydney Harbour. It consists of brackish water with low oxygen content at depth. Salmon has been farmed there since 1987. Presently, about 9,500 tonnes of salmon are farmed in MH from 11 different sites, or about ~13% of Tasmania's total salmon tonnage.

Exhibit 11: Macquarie Harbour location with salmon pens

Source: Department of Natural Resources and Environment

From the perspective of salmon farmers, one positive from using MH is that the salmon do not need washing in freshwater every 6 to 8 weeks. This is a requirement of saltwater pens and is done to remove amoeba from the salmon gills. Not needing to wash the fish saves ~$1.8 per fish to the cost of production.

Exhibit 12: Macquarie Harbour production in HOG tonnes



Source: Salmon Tasmania, Department of Natural Resources and Environment

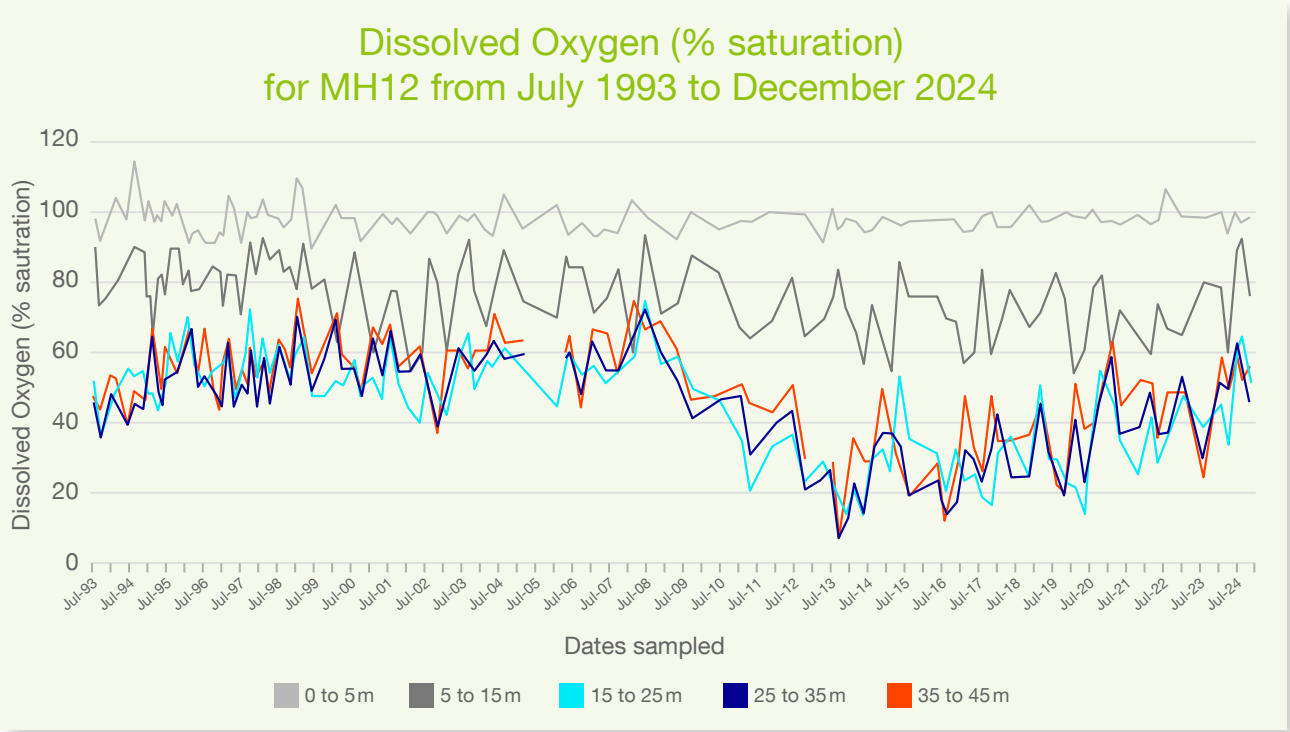
In the early 2000s, salmonid production (which includes trout) in MH was under 1,000 tonnes. This increased to more than 20,000 tonnes by 2015. Given declines in the oxygen content of MH, as at today maximum permissible biomass limits in MH are 9,500 tonnes.

In terms of head on gutted (HOG) tonnes of salmon, which are salmon with heads and guts removed, 2022 production levels were at 2011 levels (Exhibit 12).

Oxygen levels

The EPA reduced biomass limits in MH to reduce pressure on the ecosystem. Dissolved oxygen content declined from 2009 to 2014 at depths below 15 metres and are yet to fully recover.

Exhibit 13: Macquarie Harbour oxygen levels at different depths



Source: Dissolved Oxygen Mitigation Plan

There is a Macquarie Harbour Oxygenation Project (MHOP) that is a partnership between the salmon industry, the IMAS, and Fisheries Research and Development Corporation. This is trialling the use of micro bubbles in the MH bottom waters to restore oxygen content.

The MHOP is taking care to restore oxygen levels slowly in order to limit any unwanted impacts.

Maugean Skate

The Maugean skate is listed as endangered by both the Tasmanian government and the Australian government. It exists only in MH.

Exhibit 14: Maugean skate

Source: IMAS

While the Maugean skate can survive at low oxygen levels, as the oxygen levels in MH decreased, reproductive levels of the skate dropped. The skate has a lifetime of ~10 years, so with ~8 years of little to no reproduction, population numbers are at increased risk.

Initial results from an IMAS breeding program show promise. Two things are especially interesting about the skate. First, while the skate population has low genetic diversity, it has evolved such that deleterious effects from lack of diversity is not observed in the population. Second, in the skate, low oxygen produces lipid products rather than toxins, which can then be used as an energy source by the skate. Understanding these mechanisms in more detail could lead to new scientific knowledge.

Coles (COL) and Woolworths (WOW)

SIX resolution, 2024

Possible species extinction in supply chains brings attention. The Sustainable Investment exchange in collaboration with Environment Tasmania put forward a shareholder resolution for COL and WOW in 2024:

> **'Identify and report on the impacts of farmed seafood procured for Own Brand products on threatened species under Australia's EPBC Act.'**

For WOW, this received 30.42% support and for COL 39.11%. For COL, this was the highest supported nature resolution globally in 2024, and the 7th highest in the world for an environmental resolution (out of 550 resolutions tracked by the UNPRI).

COL has acknowledged stakeholder concerns regarding the impact of salmon farming on the Maugean skate and point to the complexity of the intersection between climate, nature, and social considerations. However, as a consumer, it is not possible to choose salmon that has not been farmed in MH. Salmon from MH cannot achieve ASC certification.

COL have reduced the amount of salmon sourced from MH, but it is unclear whether this is simply because production has reduced or because COL are actively sourcing from elsewhere.

SIX resolution, 2025

SIX has submitted resolutions for COL and WOW for 2025. For WOW, there are two Resolutions (see here):

Resolution 2 - Ordinary resolution

Shareholders request that Woolworths identify and report on the impacts of farmed seafood it procures for its Own Brand products on endangered species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) List of Threatened Fauna in its 2026 Sustainability Report.

Resolution 3 - Ordinary resolution

Shareholders request that Woolworths aligns its Group Seafood Sourcing Policy with a global best practice standard, such as the Conservation Alliance for Seafood Solutions Guidance for Companies, and report to shareholders on progress in meeting these best practice guidelines in its 2026 Sustainability Report.

For COL, only Resolution 3 will be filed. Through 2025, COL responded to stakeholder pressure and, among other actions, has removed the "responsibly sourced" label from home-brand salmon. See **here** for more details.

Comments

While both COL and WOW are dedicating resources to sustainable sourcing, we think that making it known to COL and WOW that shareholders care about sustainable sourcing is important.

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