June 2021

FISH FEED INGREDIENTS

- All feed ingredients are approved under the Australian Stockfeed and Petfood Regulations, governed by the Australian Pesticides and Veterinary Medicines Authority (APVMA).
- The ingredients in salmon feed, like all stock feed in Australia, are rigorously controlled and audited.
- Our feeds are formulated to meet a specification that changes with each stage of the salmon's growth, and our suppliers manufacture to this specification. In Australia, feed companies are legally required to disclose ingredient details which is why Tasmanian farmed salmon is a safe, nutritious, healthy, and sustainable food.
- Equally as important as what is in our feed, is what we leave out—our feed does not contain ingredients of genetically modified (transgenic) origin. We never feed our fish growth hormones or growth promoters, nor does it contain pork or pork by-products. In addition, the Tasmanian Government has a ban on the use of genetically-modified organisms (GMOs) in any product within the state until 2029. This ban has been in place since 2001.
- A small component of salmon feed comes from the marine environment, specifically fish meal and fish oil. These ingredients are sourced from responsibly managed fisheries and are often by-products of fish that are caught for direct human consumption.
- We report our feed ingredients on our Sustainability Dashboard (post year class harvest).

WHAT'S IN OUR FISH FEED?

Our feed is made up of a range of ingredients including:

- Vegetable ingredients such as wheat, soya derivatives, corn gluten, and vegetable oils. Huon has been steadily increasing the percentage of vegetable ingredients. In 2015, the percentage was 31 per cent; compared with our 2020 Year Class of salmon which were fed a diet comprised of 62 per cent vegetables.
- Vitamins and minerals and Astaxanthin (Astaxanthin is a powerful antioxidant that salmon need for healthy muscle growth and egg production and which also provides the salmon the signature orange hue to the flesh). Astaxanthin is highly sought after and available at health food shops as a high-potency human antioxidant.
- Meat and chicken meal, blood meal, and poultry oil. By using land-animal by-products in our feed, we are helping to utilise 'waste' from other farming, which improves the sustainability of both land-based and sea-based aquaculture farming production. Our use of land animal by-products has significantly reduced; in 2015, our fish were fed a diet which comprised 45 per cent land animal by-products; in 2020 that had reduced to just 18 per cent - a 60% decline! The use of land-animal by-products sourced outside of Australia is strictly controlled by national biosecurity laws.
- Fish meal and fish oil, which is sourced from certified wild fisheries (typically small, bony pelagic fish that aren't used for human consumption) and the off-cuts from other fish species. Salmon farmers world-wide have been working on a fish oil and fish meal substitute for many years and during this

time Huon has reduced our use by around 20 per cent (total feed composition) down to the current range of between 15-18 per cent. Algae oil is becoming commercially available and while Huon is examining the merits of that form of oil, a key issue will be the impact on the nutritional quality of farmed fish. That is, as the nutrient composition of farmed fish is altered (ie less fish meal) there could be consequences for human nutrition – including reduction in essential minerals, such as iodine and selenium; vitamins, such as vitamin D; and most significantly in the beneficial omega-3 fatty acids.

BioMar (our primary feed supplier) continues to work hard to improve the sustainability profile of its sourced fisheries including the introduction of DNA testing of marine ingredients (to determine the species composition of marine ingredients).

The percentage of some components (like fish meal) can vary depending on the season and fish catches etc. Prior to its use for salmon farm feed, fish meal was primarily used for pig and poultry production. As the level of fishmeal in salmon feed is reduced, primary industry feed manufacturers will continue to use sustainably created fish meal as a key ingredient.

- The preservative, ethoxyquin, can be added to livestock feed, including salmon feed. Its use in Australia is approved by Australian Stockfeed and Petfood Regulations, governed by the Australian Pesticides and Veterinary Medicines Authority (APVMA). It is estimated you would need to eat 4kgs of farmed salmon every day to get ethoxyquin levels in your system anywhere near the World Health Organisation SAFE limit. The majority of Huon feed does not include ethoxyquin.

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Our fish are fed heat-treated diets which cannot and do not contain live worms/larvae.

OUR FEED SUPPLIERS

Our feed suppliers disclose the species, origin and conservation status of marine feed ingredients in their respective sustainability reports/online reporting.

Our feed suppliers only source raw materials from responsible suppliers that meet strict social and environmental standards. They do not source species that are endangered or from illegal fishing operations. All suppliers to our feed suppliers sign up to codes of conduct which stipulate social and environmental expectations, and these same suppliers are regularly audited against the code of conduct to ensure they can demonstrate compliance against the supplier agreement. Our feed suppliers purchase fish meal and fish oil from countries with full traceability throughout the supply chain – from fishing ground to customer farm site. Suppliers are required to give species % inclusion and catching area for each delivery of fishmeal and fish oil. The majority of fish used to produce fish meal and fish oil are small bony species for which there is little or no demand for human consumption.

Our two major global suppliers (BioMar and Skretting) require suppliers to sign codes of conduct and both companies regularly audit their suppliers against the codes of conduct. These audit checklists incorporate a number of evaluations about human rights issues such as child and freely chosen labour, as well as environmental criteria.

BioMar (September 2021) announced it had reached an important milestone; producing 1 million tonnes of feed incorporating microalgae as an alternative to fishmeal.

Check out the websites of our major feed suppliers; BioMar and Skretting. Search for each company's Sustainability Report to read about their ethical sourcing practices.

FISH-IN/FISH-OUT (FIFO) RATIO

Does our salmon feed deplete scarce marine resources? NO.

Fish-in/fish-out (FIFO) outlines the amount of wild fish it takes to produce one kilogram of salmon.

An ideal FIFO ratio should be less than 1.0 (meaning more fish protein is produced than utilised). As outlined previously, the species used in fish meal and fish oil production are from trimmings or reduction fisheries that are not used for human consumption.

Huon's forage fish FIFO ratio (fish-in/fish-out) is 0.87 (for 2020 Year Class), meaning that for every 1kg of salmon grown, 870g of forage fish is utilised; in effect, the salmonid industry produces more farmed fish than it uses as fish feed.

This statistic is comparable with the global salmon farming average of 0.82 (last calculated in 2015). https://www.fishfarmingexpert.com/article/fish-in-fish-out-record-for-salmon-farming/

This is because our feed includes alternative proteins and starch (such as vegetable and land-animal by-products) which increases the sustainability of our operations.

The Food and Agriculture Organisation of the United Nations in its recent report, *The State of World Fisheries and Aquaculture 2020* – stated: "A significant but declining proportion of world fisheries production is processed into fishmeal and fish oil. Fishmeal and fish oil are still considered the most nutritious and most digestible ingredients for farmed fish, and fish oil represents the richest available source of long-chain polyunsaturated fatty acids (PUFAs), which perform a wide range of critical functions for human health. However, their inclusion rates in compound feeds for aquaculture have shown a clear downward trend.