# Scottish salmon farming faces mounting scrutiny over environmental and economic challenges



# The Complex Reality of Scottish Salmon Farming: Balancing Demand with Environmental Concerns

When purchasing Scottish salmon in a supermarket or fishmonger, most people remain unaware that they are buying farmed fish. Unlike wild-caught salmon from other regions, all salmon produced in the UK is cultivated under controlled conditions, a practice that began in the 1960s. Since then, salmon farming has transformed into a significant commercial enterprise, currently supporting over 200 farms in Scotland and raising around 75 million fish annually. This surge in production has turned salmon from a luxury item into a staple, with an astonishing 1 million meals featuring salmon consumed daily across the UK. However, this booming demand raises critical questions about the broader implications of such intensive farming practices.

### Understanding the Farming Process

Salmon farming involves multiple stages, starting in hatcheries before transitioning to land-based tanks or freshwater lakes, eventually moving to open-net farms in coastal waters. Here, the fish spend approximately 18 to 24 months in densely populated cages, where millions of fish may coexist in a single pen. This crowded environment poses significant challenges, including heightened vulnerability to diseases and parasites, particularly sea lice. Andrew Graham-Stewart from WildFish explains the dire consequences of this infestation: “Infestation by more than ten or so lice usually has fatal consequences for wild fish – they are eaten alive.”

Despite the industry’s efforts to manage sea lice, the presence of these parasites in farmed stocks has been linked to increasing infestations in wild salmon populations. While farms record their sea lice counts, conservation organisations have raised concerns about the accuracy of self-reported data, highlighting a need for more stringent monitoring and regulation.

### Economic Impact and Ownership Structures

The salmon farming sector is not just significant for its environmental footprint; it also serves as a vital economic engine for Scotland. The industry generated £581 million in exports in 2022, making it Scotland's largest food export by value. However, ownership of the farms is concentrated among a handful of international corporations, with only one independent farm remaining. This consolidation, which began in earnest in the 1990s, has led to worries about local employment and community sustainability. Ailsa McLellan, a local resident, laments the decline in job numbers due to increased automation, stating, “The biggest change has been a drive towards automation with the associated loss of jobs.”

The effects of Brexit have compounded these challenges. Salmon Scotland reported up to £100 million in losses annually due to increased regulatory burdens and paperwork delays, reducing exports significantly. The trade body advocates for a veterinary agreement with the EU, but the UK government remains steadfast against any arrangements that might compromise national sovereignty.

### Environmental and Health Concerns

Beyond economic implications, the environmental impact of salmon farming raises a myriad of issues. The concentration of fish in farms leads to substantial waste, which can spur harmful algal blooms in surrounding waters. According to the Scottish government, the rapid accumulation of fish faeces and uneaten feed necessitates urgent attention to the local ecosystems. Additionally, the industry has faced criticism for the mortality rates of farmed salmon, which reached alarming levels in 2023, with reports indicating up to 27.7% of fish lost due to factors including disease outbreaks and rising sea temperatures.

A parliamentary inquiry recently scrutinised these high mortality rates, questioning the effectiveness of current regulations and calling for stronger governance from the Scottish government. Although the inquiry resisted recommendations for a moratorium on new farms, it recognised the urgent need for a comprehensive strategy to address systemic issues within the industry.

### Shifting Towards Sustainable Practices

In light of these challenges, there is a growing push for improved sustainability in salmon aquaculture. Initiatives like the Off The Table campaign urge restaurants to reconsider serving farmed salmon in favour of more sustainable seafood options. Michelin-starred chef Jan Wilson articulated her restaurant’s stance, stating, “When we were shown the condition of what the fish were living in and how deformed they were, it was pretty disgusting.”

Emerging technologies promise to enhance sustainability within the sector. Innovations such as closed-containment systems and integrated multi-trophic aquaculture (IMTA) aim to minimise environmental impact while maintaining productivity. These cutting-edge practices are increasingly seen as vital in addressing the pressing issues raised by traditional open-net farming methods, which are under fire for their environmental and ethical implications.

### Conclusion

Scottish salmon farming is at a crossroads, balancing active consumer demand with the imperative of environmental stewardship and social responsibility. As the industry grapples with its substantial challenges—ranging from economic pressures to ecological concerns—the path forward will require a concerted effort to implement more sustainable practices. Whether the industry can pivot towards a model that ensures both profitability and environmental integrity remains to be seen, but the stakes are high for Scotland's economic future and ecological health alike.

## Reference Map:

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Source: [Noah Wire Services](https://www.noahwire.com)

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2. <https://www.ft.com/content/0f88f85a-9a80-4866-a9cb-5401e1d81d42> - Scottish salmon producers have lost up to £100 million annually in exports to the EU due to Brexit-related red tape and increased costs, according to Salmon Scotland. The volume of exports dropped 17% in 2023 compared to 2019, with a decline in export value despite strong global demand. The trade body claims that exports could have reached £430 million if pre-Brexit growth rates had continued. Salmon Scotland is urging the next UK government to reduce the regulatory burden on exporters, suggesting a veterinary agreement with the EU to align sanitary regulations. Defra, however, states it is not seeking such an alignment that could compromise UK sovereignty. Other issues contributing to the export decline include paperwork delays, upcoming border control changes, and outdated health export certificate systems costing farmers £3 million annually. Despite these challenges, salmon remains Scotland's second most economically beneficial maritime industry after oil and gas, with international sales rising slightly last year. The Scottish government, where a majority rejected Brexit, aims to rejoin the EU to support economic sustainability.
3. <https://time.com/6957610/farmed-salmon-dying/> - A recent study has revealed that mass die-offs have killed 865 million farmed salmon over the past decade, driven by factors such as climate change, the overuse of antibiotics and pesticides, and the increasing demand for salmon production. The salmon farming industry, now a $20 billion-a-year sector, faces significant challenges, including the adverse effects of crowded cages, disease spread, and pollution. Salmon are especially vulnerable to warming ocean temperatures, which reduce oxygen levels, facilitate parasite and viral outbreaks, and trigger harmful algal blooms. These conditions have caused significant mortality rates, costing the industry billions but leading to increased production and profits. Environmentalists and animal rights activists are calling for the removal of ocean-based salmon farms, advocating for land-based alternatives. However, despite growing concerns and occasional regulatory actions, such as Washington State's ban on non-native fish farms, the transition away from ocean cages remains contentious and complex.
4. <https://scottishseafarms.com/about-us/value-added/> - The Scottish farmed salmon sector provides significant benefits at local, national, and UK levels. Locally, it is often a key employer, offering well-paid, highly skilled jobs year-round, with each direct job supporting an estimated four to five additional jobs across Scotland. Nationally, farmed salmon is Scotland’s largest food export by value, with sales reaching £581 million in 2022. The sector also contributes millions of pounds to the public purse in terms of corporation tax, income tax, and national insurance contributions. At the UK level, farmed salmon is among the UK's most valuable food exports, positively influencing the nation’s balance of trade. The sector regularly has an annual turnover in excess of £1 billion, contributing millions of pounds to the public purse in terms of corporation tax, income tax, and national insurance contributions.
5. <https://www.theguardian.com/environment/2025/jan/17/scottish-government-must-do-more-to-control-salmon-farming-inquiry-finds> - The Scottish government has been criticised for its “slow progress” on regulating the salmon farming industry by a parliamentary inquiry that took evidence for five months before reaching its conclusion. The report reveals that MSPs “seriously considered” calling for a moratorium on new farms and expansion of existing sites due to concerns over persistently high salmon mortality rates but did not do so due to uncertainties over the impact on jobs and communities. The report called for “stronger leadership” and an immediate timetable from the Scottish government to address concerns over the long-term viability of salmon farming in Scotland, and for this to be overseen by a minister within a year. Farmed Scottish salmon is the UK’s biggest global food export, worth £645m a year. The industry provides 2,500 direct jobs in sparsely populated islands and rural communities and estimates suggest it supports 10,000 further jobs in the wider supply chain. The inquiry comes amid a record level of mortalities at Scottish salmon farms, which has fuelled increased scrutiny over fish welfare and environmental pollution. In 2023, an unprecedented 17.4 million salmon died on farms before harvesting, exceeding 2022’s 17.2 million mortalities. In the same year, salmon farming had the lowest production for decades, according to the Scottish government fish farm production survey, published in October. The industry has blamed excessive deaths on factors outside its control, including unusually large numbers of micro jellyfish, potentially linked to global heating. Campaigners blame welfare issues such as overcrowding. The investigation, which took place from April to October, followed a previous damning report into the sector in 2018, which cited high mortalities, “light touch” regulation and environmental concerns, concluding that any expansion of the industry required urgent action and regulatory reform.
6. <https://www.salmonscotland.co.uk/news/scottish-salmon-is-named-uks-top-food-export-for-2023> - Scottish salmon was today named as the UK’s top food export in 2023, following the publication of annual HMRC figures. Sales of the nutritious fish grown in the waters off the Highlands and islands increased by 0.5 per cent to £581 million in the calendar year – equivalent to £1.6 million every day. France once again led the global demand, however the US and Asian markets saw sharp growth, with the popularity of premium high-quality Scottish salmon increasing among chefs, restaurants, and consumers. Scottish salmon exports were far higher than the UK's second largest food export, Cheddar cheese, as well as other popular British products like lamb and beef. Salmon is also by far the most popular fish among UK shoppers, with sales running at around £1.25 billion a year. But while the market demand is soaring, the sector is facing several business challenges. Values rose in 2023 given the high demand, yet export volumes were down 11 per cent compared to the previous year. The increased red tape following Brexit continues to add costs and delays for Scottish salmon farmers, while the UK’s recession has dampened the economic environment.
7. <https://www.scottishsalmon.co.uk/industry-news/> - The Scottish salmon industry is celebrating a banner year, with exports reaching an all-time high in 2023. According to recent figures from the Scottish Salmon Producers Organisation (SSPO), the value of Scottish salmon exports surpassed £1 billion for the first time. Major markets driving this growth include the United States, China, and the European Union. This surge in demand highlights the global appreciation for Scotland’s premium salmon, renowned for its quality and sustainability. In a significant move towards more sustainable aquaculture, several Scottish salmon farms have adopted new technologies to reduce their environmental impact. Innovations such as closed-containment systems, which minimize interactions with wild fish populations, and integrated multi-trophic aquaculture (IMTA), which combines salmon farming with seaweed and shellfish cultivation, are gaining traction. These practices aim to enhance environmental stewardship while maintaining high production standards.