

ADDENDUM (13 October 2023) to [Scottish Salmon is Dead in the Warming Water](#) (2 October)

A new Scottish Government report – ‘[Scottish Fish Farm Production Survey 2022](#)’ – published on 4 October 2023 detailed an 18% fall in salmon farming production (p23):

Table 24: Annual production of salmon (tonnes) 2002-2022 and projected production in 2023

Year	Tonnes	Percentage difference	Year	Tonnes	Percentage difference
2002	144,589	4	2013	163,234	1
2003	169,736	17	2014	179,022	10
2004	158,099	-7	2015	171,722	-4
2005	129,588	-18	2016	162,817	-5
2006	131,847	2	2017	189,707	17
2007	129,930	-1	2018	156,025	-18
2008	128,606	-1	2019	203,881	31
2009	144,247	12	2020	192,129	-6
2010	154,164	7	2021	205,393	7
2011	158,018	3	2022	169,194	-18
2012	162,223	3	2023	187,725*	

*Industry estimate of projected tonnage based on stocks currently being on-grown.

The total production of Atlantic salmon during 2022 was 169,194 tonnes, a decrease of 36,199 tonnes (18%) on the 2021 total.



It's official - Scottish salmon is dead in the warming water! Data published today @scotgov shows an 18% fall in salmon farming production in Scotland: dropping from 205,393 tonnes in 2021 to 169,194 tonnes in 2022 @ScotGovMarine @ScotlandSalmon gov.scot/publications/s...

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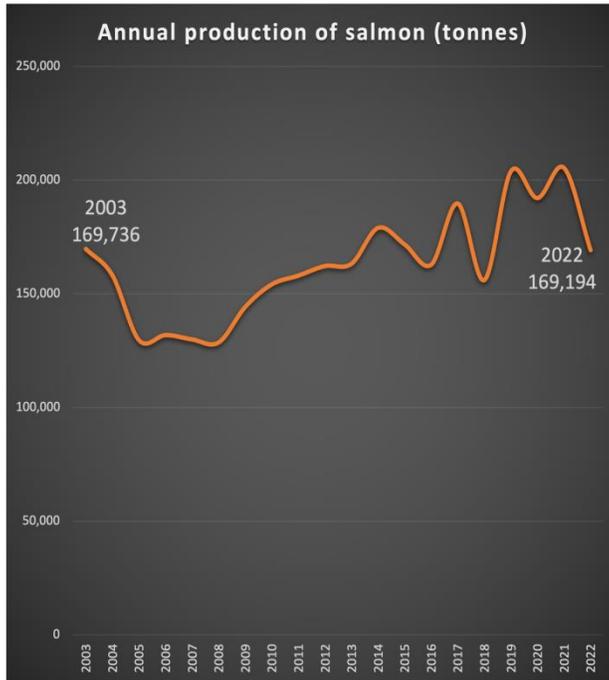
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The total production of Atlantic salmon during 2022 was 169,194 tonnes, a decrease of 36,199 tonnes (18%) on the 2021 total.

BBC Scotland News and 9 others

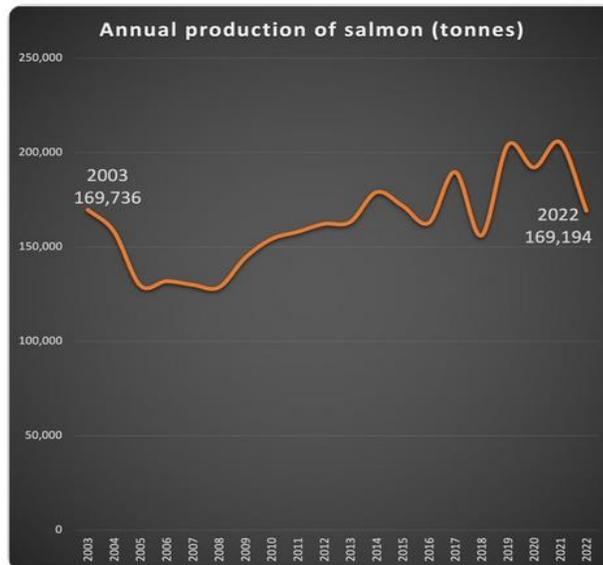
9:41 AM · Oct 4, 2023

A closer examination of '[Scottish Fish Farm Production Survey 2022](#)' shows that salmon farming production in 2022 was at a lower level than two decades previously in 2002:



 Don Staniford ✓
@TheGAAIA

RIP Scottish Salmon - new data published @scotgov shows that salmon farming production in Scotland was less last year than two decades ago in 2003! [gov.scot/publications/s...](#) @TavishScott @ScotlandSalmon @MowiScotlandLtd @scotseafarms @Folketrygdfond @MairiGougeon @1edmountain



 Compassion in World Farming and 9 others

12:53 PM · Oct 4, 2023 · 34 Views

Mortality data for August 2023 - [published on 4 October 2023 by Salmon Scotland](#) - reveals shocking death rates at salmon farms across Scotland with 82.3 cumulative mortality at Bakkafrost's Druimyeon Bay salmon farm and 56.4% cumulative mortality at Greanamul:



Monthly Mortality Rate: August 2023

Published: October 4th, 2023

DOWNLOAD 

Company	Farm	Monthly mortality (%)	Notes	Cumulative mortality over full production cycle (%)
Bakkafrost Scotland	Druimyeon Bay	0.3 (Farm fallowed in Aug.)		82.3
Bakkafrost Scotland	Greanamul	29.8 (Farm fallowed in Aug.)	Jellyfish / plankton, Viral disease	56.4
Scottish Sea Farms Ltd	Eday	1.7 (Farm fallowed in Aug.)		43.2
Scottish Sea Farms Ltd	North Papa	5.8 (Farm fallowed in Aug.)	Viral disease	41.3
Scottish Sea Farms Ltd	Kishorn A (South)	17.7 (Farm fallowed in Aug.)	Jellyfish / plankton, Gill health related	40.5
Organic Sea Harvest Ltd	Invertote	0.0 (Farm fallowed in Aug.)		40.1
Scottish Sea Farms Ltd	West of Burwick	15.4 (Farm fallowed in Aug.)	Viral disease	37.1
Bakkafrost Scotland	Maaey	21.7 (Farm fallowed in Aug.)	Jellyfish / plankton, Viral disease	35.0
Bakkafrost Scotland	Maragay Mor	26.0 (Farm fallowed in Aug.)	Jellyfish / plankton, Viral disease	33.5
Mowi Scotland Limited	Ornish	0.4 (Farm fallowed in Aug.)		27.4
Scottish Sea Farms Ltd	Holms Geo	2.8 (Farm fallowed in Aug.)		22.6
Mowi Scotland Limited	Greshornish	8.1 (Farm fallowed in Aug.)	Jellyfish / plankton	19.0

Published online on 4 October 2023 by Salmon Scotland via:

<https://www.salmonscotland.co.uk/reports/monthly-mortality-rate-august-2023>

14 cases [reported by Salmon Scotland in August 2023](#) cited jellyfish/plankton as the reason(s) for mortalities headed by 38.2% monthly mortality at Bakkafrost's Lamlash salmon farm off the Isle of Arran, 29.8% at Bakkafrost's Greanamul and 28.7% at Bakkafrost's Geasgill off the Isle of Mull:



Monthly Mortality Rate: August 2023

Published: October 4th, 2023

DOWNLOAD 

Company	Farm	Monthly mortality (%)	Notes	Cumulative mortality over full production cycle (%)
Bakkafrost Scotland	Lamlash	38.2	Jellyfish / plankton, Viral disease	In production
Bakkafrost Scotland	Greanamul	29.8 (Farm followed in Aug.)	Jellyfish / plankton, Viral disease	56.4
Bakkafrost Scotland	Geasgill	28.7	Jellyfish / plankton, Viral disease	In production
Bakkafrost Scotland	Maragay Mor	26.0 (Farm followed in Aug.)	Jellyfish / plankton, Viral disease	33.5
Scottish Sea Farms Ltd	Kishorn C (West)	23.5	Jellyfish / plankton, Gill health related	In production
Bakkafrost Scotland	Gravir Outer	23.1	Jellyfish / plankton	In production
Bakkafrost Scotland	Maey	21.7 (Farm followed in Aug.)	Jellyfish / plankton, Viral disease	35.0
Bakkafrost Scotland	Portree	19.6	Jellyfish / plankton	In production
Scottish Sea Farms Ltd	Kishorn A (South)	17.7 (Farm followed in Aug.)	Jellyfish / plankton, Gill health related	40.5
Scottish Sea Farms Ltd	Kishorn B (North)	17.6	Jellyfish / plankton, Gill health related	In production
Scottish Sea Farms Ltd	West of Burwick	15.4 (Farm followed in Aug.)	Viral disease	37.1
Mowi Scotland Limited	Camas Glas	15.0	Bacterial disease	In production
Mowi Scotland Limited	Loch Hourn	10.7	Gill health related	In production
Mowi Scotland Limited	Rum	10.7 (farm followed in Aug.)	Gill health related	6.1
Scottish Sea Farms Ltd	Langa	10.0	Viral disease	In production
Bakkafrost Scotland	Kyles Vuia	9.9	Bacterial disease	In production
Bakkafrost Scotland	Gometra	8.9	Jellyfish / plankton, Viral disease	In production
Mowi Scotland Limited	Greshornish	8.1 (Farm followed in Aug.)	Jellyfish / plankton	19.0
Scottish Sea Farms Ltd	Setter	7.1	Viral disease	In production
Bakkafrost Scotland	West Strome	6.6	Jellyfish / plankton	In production
Mowi Scotland Limited	Bagh Dail Nan Cean	6.5	Gill health related	In production
Scottish Sea Farms Ltd	Score Holms	6.1	Viral disease	In production
Cooke Aquaculture (Scotland)	Carness Bay	5.9	Predation, Gill health related	In production
Scottish Sea Farms Ltd	North Papa	5.8 (Farm followed in Aug.)	Viral disease	41.3
Scottish Sea Farms Ltd	Westerbister	5.7	Environmental	In production
Mowi Scotland Limited	Ardnish	5.3	Jellyfish / plankton	In production

Published online on 4 October 2023 by Salmon Scotland via:

<https://www.salmonscotland.co.uk/reports/monthly-mortality-rate-august-2023>

 **Don Staniford** ✓
@TheGAAIA

Jellyfish are killing off Scottish salmon - read & weep at mortality data published @ScotlandSalmon [salmonscotland.co.uk/reports/monthly...](https://salmonscotland.co.uk/reports/monthly-mortality-rate-august-2023) @Folketrygdfond @scotseafarms @MowiScotlandLtd #Jellyfish



**Monthly Mortality Rate:
August 2023**

Published: October 4th, 2023

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Scottish Sea Farms Ltd	Langa	10.0	Viral disease	In production
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Scottish Sea Farms Ltd	Score Holms	6.1	Viral disease	In production
Cooke Aquaculture (Scotland)	Carness Bay	5.9	Predation, Gill health related	In production
Scottish Sea Farms Ltd	North Papa	5.8 (Farm followed in Aug.)	Viral disease	41.3
Scottish Sea Farms Ltd	Westerbister	5.7	Environmental	In production
Mowi Scotland Limited	Ardnish	5.3	Jellyfish / plankton	In production

Published online on 4 October 2023 by Salmon Scotland via:
<https://www.salmonscotland.co.uk/reports/monthly-mortality-rate-august-2023>

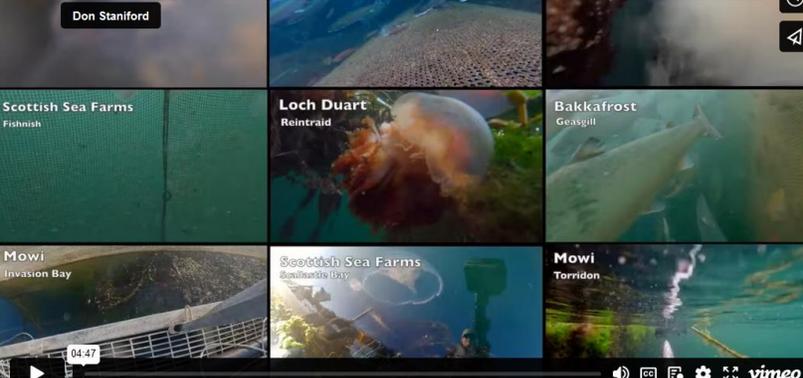
9:41 AM · Oct 5, 2023 · 31 Views



Silent Sting - the jellyfish, microjellies & deadly medusas killing off Scottish salmon! [with commentary by Don Staniford]



Don Staniford







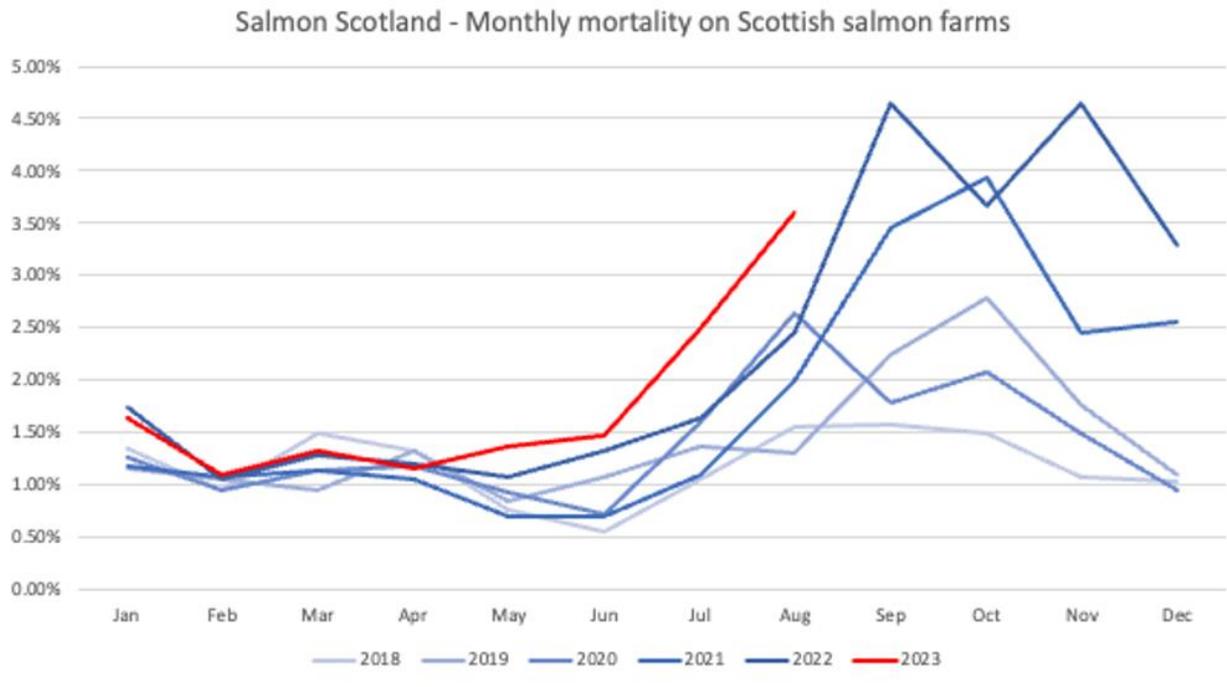


04:47






The August 2023 mortality data [published on 4 October 2023 by Salmon Scotland](#) shows how 2023 is shaping up to be the worst year on record for mortalities:



Data via monthly mortality reports published by Salmon Scotland via <https://www.salmonscotland.co.uk/reports>

Sourced via <https://www.salmonscotland.co.uk/reports/monthly-mortality-rate-august-2023>

August 2023

Notes to support the table

The industry is committed to reporting as quickly as practically possible, some one month in arrears.

"Monthly mortality (%)" = the percentage of fish lost on each farm within each month. This is reported as a percentage of the total number of fish on the farm each month. This is the measure of mortality used by the Scottish Government's Fish Health Inspectorate when assessing the health of the fish on the farm.

Further analysis shows that the overall monthly mortality for the industry was:

1.35% in Jan. 2018	1.03% in Dec. 2018	1.76% in Nov. 2019	2.07% in Oct. 2020	3.46% in Sept. 2021	2.46% in Aug. 2022	2.49% in Jul. 2023
0.94% in Feb. 2018	1.15% in Jan. 2019	1.10% in Dec. 2019	1.48% in Nov. 2020	3.93% in Oct. 2021	4.65% in Sept. 2022	3.61 in Aug. 2023
1.49% in Mar. 2018	1.05% in Feb. 2019	1.26% in Jan. 2020	0.94% in Dec. 2020	2.45% in Nov. 2021	3.66% in Oct. 2022	
1.32% in Apr. 2018	0.95% in Mar. 2019	0.95% in Feb. 2020	1.17% in Jan. 2021	2.55% in Dec. 2021	4.64% in Nov. 2022	
0.76% in May 2018	1.33% in Apr. 2019	1.13% in Mar. 2020	1.08% in Feb. 2021	1.73% in Jan. 2022	3.28% in Dec. 2022	
0.54% in Jun. 2018	0.83% in May 2019	1.17% in Apr. 2020	1.14% in Mar. 2021	1.05% in Feb. 2022	1.64% in Jan. 2023	
1.05% in Jul. 2018	1.06% in Jun. 2019	0.92% in May 2020	1.04% in Apr. 2021	1.28% in Mar. 2022	1.09% in Feb. 2023	
1.55% in Aug. 2018	1.36% in Jul. 2019	0.72% in Jun. 2020	0.69% in May 2021	1.19% in Apr. 2022	1.32% in Mar. 2023	
1.57% in Sept. 2018	1.30% in Aug. 2019	1.59% in Jul. 2020	0.70% in Jun. 2021	1.06% in May 2022	1.16% in Apr. 2023	
1.49% in Oct. 2018	2.24% in Sept. 2019	2.64% in Aug. 2020	1.09% in Jul. 2021	1.33% in Jun. 2022	1.37% in May 2023	
1.07% in Nov. 2018	2.79% in Oct. 2019	1.78% in Sept. 2020	1.99% in Aug. 2021	1.63% in Jul. 2022	1.46% in Jun. 2023	

 **Don Staniford** 
@TheGAAIA

Salmon farming in Scotland is dead in the water - new mortality data published today @ScotlandSalmon is the last nail in the coffin of Scottish salmon greenwashed via @rspcaassured @ASC_aqua @SoilAssociation
salmonscotland.co.uk/reports/monthl... @TavishScott @Folketrygdofnd @MowiScotlandLtd



Salmon Scotland Monthly Mortality Rate: August 2023
Published: October 4th, 2023

Farm	Monthly mortality (%)	Notes	Cumulative (%)
Drummen Bay	0.3 (Farm followed in Aug.)		
Greenanul	29.8 (Farm followed in Aug.)	Jellyfish / plankton, Viral disease	
Eday	3.7 (Farm followed in Aug.)		
North Page	5.8 (Farm followed in Aug.)	Viral disease	
Kilbrann & South	17.7 (Farm followed in Aug.)	Jellyfish / plankton, Gill health related	
Inverlathie	0.2 (Farm followed in Aug.)		
West of Burreck	15.4 (Farm followed in Aug.)	Viral disease	
Maary	23.7 (Farm followed in Aug.)	Jellyfish / plankton, Viral disease	
Managly Mir	26.0 (Farm followed in Aug.)	Jellyfish / plankton, Viral disease	
Ornish	0.4 (Farm followed in Aug.)		
Holms Geo	2.8 (Farm followed in Aug.)		
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Published online on 4 October 2023 by Salmon Scotland via:
<https://www.salmonscotland.co.uk/reports/monthly-mortality-rate-august-2023>

OneKind and 9 others

9:34 AM · Oct 4, 2023 · 11 Views

 **Don Staniford** 
@TheGAAIA

Please stop greenwashing Scottish salmon - by certifying Scottish salmon as 'responsible' certifiers & supermarkets are sponsoring cruelty, suffering & mass mortalities across Scotland! @rspcaassured @ASC_aqua @SoilAssociation @ScotlandSalmon



donstaniford.typepad.com

Scottish Salmon is Dead in the Warming Water!

A new Scottish Government report – 'Scottish Fish Farm Production Survey 2022' – published on 4 October 2023 detailed an 18% fall in salmon farming ...

1:16 PM · Oct 4, 2023 · 30 Views

The Herald [reported \(4 October 2023\)](#):

Salmon farm deaths keep rising as 2022 harvest drop revealed

4th October

SALMON FARMING ENVIRONMENT



By Vicky Allan
Senior features writer

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1 Comment



A Scottish Government survey has revealed that salmon farming production dropped by a massive 18% last year. The publication coincides with the release of the latest mortality figures for August 2023 which dwarf mortalities from last year's record-breaking year.

The Scottish Fish Farm Production Survey showed that the total weight produced in 2022, at 169,194 tonnes, was not only less than it had been in 2021, but also less than production in 2003, in spite of all the intervening years of expansion.

It was also a much bigger drop than the 8% that had been projected in last year's 2021 production survey. The huge drop of 2022, however, took place in the wake of a year of record-breaking high of 205,393 tonnes production in 2021.

In the wake of these figures campaigners at Scamon **Scotland** called for a consumer boycott of Scottish salmon.

“Scottish salmon is dead in the water with 2023 shaping up to be the worst year ever,” said Don Staniford, director of the campaigning group Scamon Scotland. “A deadly cocktail of warming water temperatures, swarms of jellyfish, gill problems, infectious diseases, plagues of parasites and toxic algal blooms has already killed off millions of salmon this summer.”

READ MORE: Scottish salmon: What dead fish I saw tells us about sector

READ MORE: 210,000 salmon dead at one salmon farm in one month

Rachel Mulrenan, Scotland director at the conservation charity WildFish, said: “The considerable drop in farmed salmon production volume is not surprising, considering that 2022 was the deadliest year on record for Scottish salmon farms, with 16.7 million farmed salmon dying in the water. What is concerning is that this year is looking even worse than last, with 10.5 million deaths already reported from January to August; 2.7 million more than the same period last year.”

Ms Mulrenan continued: “This is yet another sign that open-net salmon farming is not a viable long-term industry for Scotland - and it's high time the Scottish Government followed the lead of Iceland, Washington and others, and moved away from this inherently unsustainable production system; for the health of the farmed fish, wild fish and our **environment.**”

These 2022 production figures were published on the same day as fresh data for salmon mortalities was released by Salmon Scotland, showing that for the fourth month running fish deaths were higher than they were in last year's record-breaking year.

Monthly mortality on Scottish salmon farms

Overall monthly mortality percentage for Scottish salmon farms

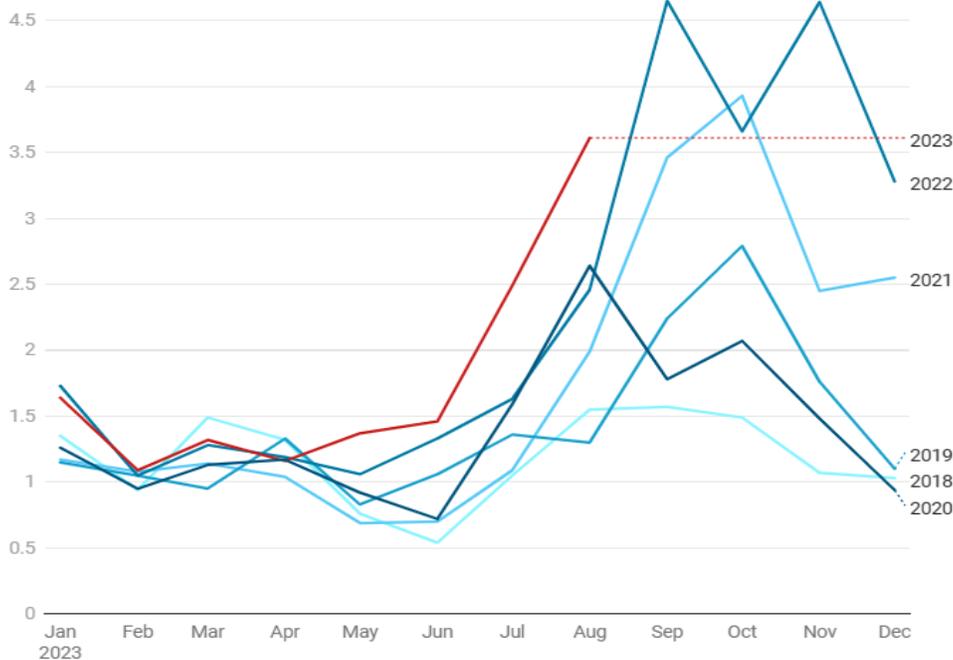
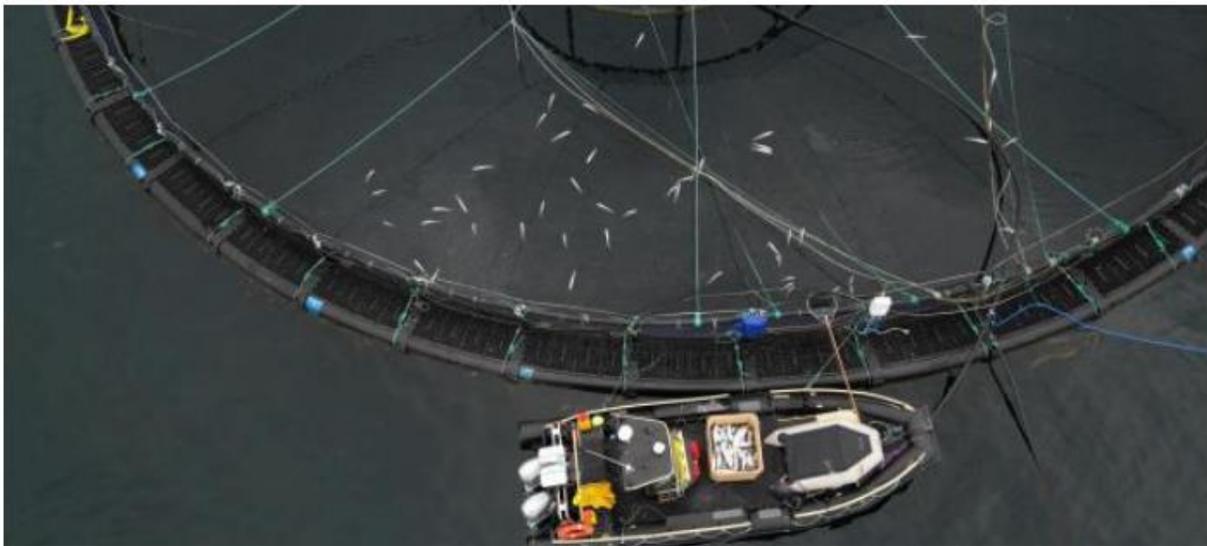


Chart: Vicky Allan • Source: [Salmon Scotland](#) • [Get the data](#) • Created with [Datawrapper](#)

The report also revealed that 11 farms had been made fallow with cumulative mortality rates of over 20%. Two Bakkafrost farms topped the list for worst cumulative mortalities: Druimyeon Bay, which had a massive rate of 82.3% and Greanamul, which suffered 56.4%. But Scottish Sea Farms, Eday site wasn't so far behind at 42.3%. Jellyfish and plankton were frequently cited as causes, along with viral disease.

Bakkafrost's Geasgill salmon farm off the Isle of Mull, which we reported on, and visited, earlier this year, also had a mortality rate over just one month of 28.7%. A total of 300,750 morts were reported for Geasgill since late July. That's on top of 210,000 deaths the previous month.



Bakkafrost in Scotland is, according to its third-quarter trading report, looking at halving of harvest compared to the same period last year.

According to the news site Salmon Business: “In Scotland, the North and South regions reported harvests of 2,900 and 1,200 tons respectively. The trading update for the same period last year saw harvests of 3,000 tons and 5,100 tons for the same regions, meaning volumes have decreased by almost 50 percent.”

However, Salmon Scotland, issued a press release which stated that salmon survival was improving despite rising sea temperatures. “New figures,” it said, “on Scottish salmon survival rates show that the sector continues to make progress in managing environmental challenges in the sea.”

Yahoo News reported the same story under the headline: [Just how disastrous is Scottish salmon farming? The latest graph and figures](#)

Don Staniford @TheGAALA

Read an obituary for @rspcaassured Scottish salmon in today's @heraldscotland @ScotlandSalmon heraldscotland.com /news/23834070...

How long before investors @Folketrygdffond & greenwashers @ASC_aqua pull the plug on disease-ridden Scottish salmon? @MowiScotlandLtd @scotseafarms @TavishScott

Thursday October 5, 2023 A SCOTTISH PERSPECTIVE News 7

Salmon farm mortalities rise as report reveals startling drop in 2022 harvest

Vicky Allan

SALMON farming production has dropped by a massive 18%, a Scottish Government survey has revealed. News of the crash coincides with the release of the latest mortality figures for August 2023, which show mortalities from last year's record-breaking year.

The Scottish Fish Farm Production Survey showed that total weight produced in 2022, at 169,194 tonnes, was not only less than it had been in 2021, but also less than production in 2020, in spite of all the intervening years of expansion.

It was also a much bigger drop than the 4% that had been projected in last year's 2022 production survey.

The huge drop of 2022, however, took place following a record-breaking high of production of 205,393 tonnes in 2021.

In the wake of these figures, campaigners at Salmon Scotland called for a consumer boycott of Scottish salmon.

"Scottish salmon is dead in the water, with 2023 shaping up to be the worst year ever," said Don Staniford, director of the campaigning group.

"A deadly cocktail of warming water temperatures, seaweed or jellyfish, gill problems, infectious diseases, plaques of parasites and toxic algal blooms has already killed off millions of salmon this summer."

Rachel Mulholland, Scotland director at the environmental charity Wildfish, said: "The considerable drop in farmed salmon production volume is not surprising, considering that 2022 was the deadliest year on record for Scottish salmon farms, with 18.7 million farmed salmon dying in the water."

"What is concerning is that this year is looking even worse than last, with 11.5 million deaths already reported from January to August - 2.7 million more than the same period last year."

Ms Mulholland continued: "This is yet another sign that consistent outdoor farming is not a viable long-term industry for Scotland - and it's high time the Scottish Government followed the lead of Ireland, Washington and others, and moved away from this inherently unsustainable production system for the health of the farmed fish, wild fish and our environment."

These 2022 production figures were published on the same day as fresh data for salmon mortalities was released by Salmon Scotland, showing that for its fourth month running fish deaths were higher than they were in last year's record-breaking year.

The report also revealed that 11 farms had been made failure with cumulative mortality rates of over 20%.

Two Bakkafrost farms topped the list for worst cumulative mortalities. Drumoyne Bay, which had a massive rate of 62.3%, and Grounsell, which suffered 56.4%. But Scottish Sea Farm, Eday, was also far behind at 42.3%. Jellyfish and plankton were frequently cited as causes, along with viral diseases.

Bakkafrost's Grounsell salmon farm off the Isle of Mull, which The Herald reported on and visited earlier this year, also had a mortality rate over just one month of 28.7%.

A total of 102,782 mortalities (dead fish) was reported for Grounsell since late July.

This is on top of 210,000 deaths the previous month.

Bakkafrost in Scotland is, according to its third-quarter trading report,

looking at halving its harvest compared to the same period last year. According to the new Sea Salmon Business' in Scotland, the North and South regions reported harvests of 2,040 and 1,206 tonnes respectively.

"The trading update for the same period last year saw harvests of 3,000 tons and 3,100 tons for the same regions, showing outcomes have decreased by almost 50%."

However, Salmon Scotland issued a press release which stated that salmon survival was improving despite rising sea temperatures. "New figures on Scottish salmon survival rates show that the sector continues to make progress in managing environmental challenges in the sea," it said.

Preliminary data for September 2023, it noted, "indicates that survival was above 96.3%, up on the 95.3% recorded in September 2022".

Dr Ian Firth, head of technical at Salmon Scotland, said: "September is usually one of the most challenging months for survival, but interim figures suggest that monthly survival in September is expected to be above 96.3%, compared to 95.3% in the same month last year."

"There is no question that 2023 has been a challenging year, but that ongoing hard work by our farmers has provided good conditions for their salmon, despite record-breaking seawater temperatures here in the UK and globally."

"However, while there is always a level of fish loss in any farming operation, the numbers this year are not what our farmer would want them to be. It is utterly devastating to the farmers caring for those animals when any fish are lost."

It is utterly devastating to the farmers caring for those animals

Salmon farming production has dropped steeply, the reports reveals

Grounsell salmon farm was hard hit

Fresh witness appeal after pedestrian died

WildFish and 9 others

9:55 AM · Oct 5, 2023 · 15 Views

Thursday October 5, 2023 A SCOTTISH PERSPECTIVE News 7

Salmon farm mortalities rise as report reveals startling drop in 2022 harvest

Vicky Allan

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Rachel Mulholland, Scotland director at the environmental charity Wildfish, said: "The considerable drop in farmed salmon production volume is not surprising, considering that 2022 was the deadliest year on record for Scottish salmon farms, with 18.7 million farmed salmon dying in the water."

"What is concerning is that this year is looking even worse than last, with 11.5 million deaths already reported from January to August - 2.7 million more than the same period last year."

Ms Mulholland continued: "This is yet another sign that consistent outdoor farming is not a viable long-term industry for Scotland - and it's high time the Scottish Government followed the lead of Ireland, Washington and others, and moved away from this inherently unsustainable production system for the health of the farmed fish, wild fish and our environment."

These 2022 production figures were published on the same day as fresh data for salmon mortalities was released by Salmon Scotland, showing that for its fourth month running fish deaths were higher than they were in last year's record-breaking year.

The report also revealed that 11 farms had been made failure with cumulative mortality rates of over 20%.

Two Bakkafrost farms topped the list for worst cumulative mortalities. Drumoyne Bay, which had a massive rate of 62.3%, and Grounsell, which suffered 56.4%. But Scottish Sea Farm, Eday, was also far behind at 42.3%. Jellyfish and plankton were frequently cited as causes, along with viral diseases.

Bakkafrost's Grounsell salmon farm off the Isle of Mull, which The Herald reported on and visited earlier this year, also had a mortality rate over just one month of 28.7%.

A total of 102,782 mortalities (dead fish) was reported for Grounsell since late July.

This is on top of 210,000 deaths the previous month.

Bakkafrost in Scotland is, according to its third-quarter trading report,

looking at halving its harvest compared to the same period last year. According to the new Sea Salmon Business' in Scotland, the North and South regions reported harvests of 2,040 and 1,206 tonnes respectively.

"The trading update for the same period last year saw harvests of 3,000 tons and 3,100 tons for the same regions, showing outcomes have decreased by almost 50%."

However, Salmon Scotland issued a press release which stated that salmon survival was improving despite rising sea temperatures. "New figures on Scottish salmon survival rates show that the sector continues to make progress in managing environmental challenges in the sea," it said.

Preliminary data for September 2023, it noted, "indicates that survival was above 96.3%, up on the 95.3% recorded in September 2022".

Dr Ian Firth, head of technical at Salmon Scotland, said: "September is usually one of the most challenging months for survival, but interim figures suggest that monthly survival in September is expected to be above 96.3%, compared to 95.3% in the same month last year."

"There is no question that 2023 has been a challenging year, but the ongoing hard work by our farmers has provided good conditions for their salmon, despite record-breaking seawater temperatures here in the UK and globally."

"However, while there is always a level of fish loss in any farming operation, the numbers this year are not what our farmer would want them to be. It is utterly devastating to the farmers caring for those animals when any fish are lost."

It is utterly devastating to the farmers caring for those animals

Salmon farming production has dropped steeply, the reports reveals

Grounsell salmon farm was hard hit

Fresh witness appeal after pedestrian died

The Scotsman [reported \(5 October 2023\)](#):

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BREAKING

Environment

Climate change: Warm seas and jellyfish blamed for record August farmed salmon deaths and harvest drop

Scottish fish farmers have this year suffered their highest August losses of stock since recording began.

By **Ilona Amos**

Published 5th Oct 2023, 04:55 BST



0 Comment

Monthly mortality data produced by industry body Salmon Scotland show 3.61 per cent of farmed fish died before harvest in August.

This compares to an August death rate of 2.46 per cent in 2022, 1.99 per cent in 2021 and 2.64 per cent in 2020.

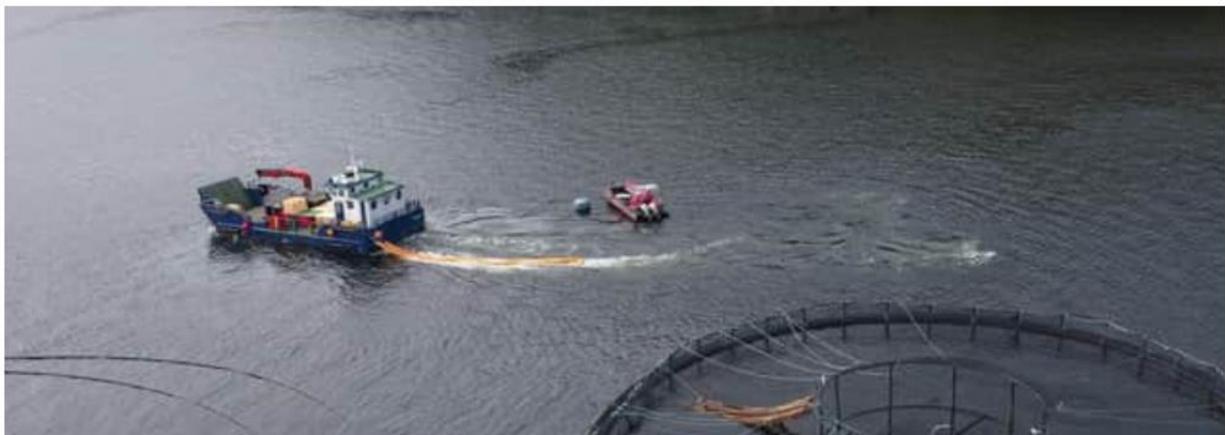
Jellyfish, parasites and diseases were the key killers this year, according to the data, with the impacts of climate change considered a major factor.

Sea temperatures have been particularly warm in Scotland this year, with an official 'marine heatwave' declared in early summer. Warmer waters can bring increased numbers of jellyfish, which can block or sting fish gills, and boost survival of bacteria and viruses.

According to Salmon Scotland, jellyfish and algal blooms have been exacerbated this year as a result of higher-than-average temperatures, but these are not expected to last.

Salmon fatalities at fish farms 'double' in past year, figures suggest

The figures come on the same day as **Scottish Government** industry statistics revealed annual production of farmed salmon and trout was down by 18 per cent last year.



A total of 169,194 tonnes of farmed fish was produced in 2022 – 36,199 tonnes less than in 2021, when a record 205,393 tonnes was harvested.

Dr Iain Berrill, head of technical for Salmon Scotland, said: “There is no question that 2023 has been a challenging year, but the ongoing hard work by our farmers has provided good conditions for their salmon, despite record-breaking seawater temperatures here in the UK and globally.

“However, while there is always a level of fallen stock in any farming operation, the numbers this year are not where any farmer would want them to be. It is utterly devastating to the farmers caring for those animals when any fish are lost.

The remote Scottish community fighting to save iconic wild salmon

“Our ability to address the environmental challenges facing our fish while they spend up to two years in the sea has improved, but there is always more we can do to further improve survival.”

Environmental campaigners have said the fall in 2022’s harvest was “not surprising” after record-high losses of fish last year.

Rachel Mulrenan, Scotland director of campaign group Wild Fish, said: “The considerable drop in farmed salmon production volume is not surprising, considering that 2022 was the deadliest year on record for Scottish salmon farms, with 16.7 million farmed salmon dying in the water. What is concerning is that this year is looking even worse than last, with 10.5 million deaths already reported from January to August – 2.7 million more than the same period last year.

“High mortality on salmon farms reflects an environmental disaster, as well as being an animal welfare scandal.”

Fish farming is worth around £885 million to the Scottish economy. Ministers have set out ambitions to expand the industry, with a target to produce 300,000 to 400,000 tonnes annually by 2030.

Call for Scotland fish farming expansion to be put on hold over cruelty fears and pollution

Rural affairs, land reform and islands secretary Mairi Gougeon has welcomed the latest statistics, despite the drop in output.

“These figures also show that farmers are pro-actively responding to environmental and biological challenges and pressures, for example by making the responsible decision where necessary to harvest smaller fish to support health and welfare, which has resulted in decreased production figures,” she said.

Faroese fish farm firm Bakkafrost reported particularly high August losses at a number of its operations. Six sites were hit by massive monthly death rates from 19.6 per cent to 38.2 per cent.

At Druimyeon Bay, on the Isle of Gigha, more than four out of five fish died in a single production cycle, while Greanamul, on Benbecula, lost more than half of its stock.

A spokesperson for Bakkafrost Scotland said: “Mass mortalities are not unique to fish farming and, like other farmers, we take pride in our stock and our facilities.

“We are experts in salmon husbandry and are committed to the welfare and health of our salmon and the natural environment, which are intrinsically linked. The warmer sea water temperatures over the summer resulted in increased environmental and biological challenges for salmon stock and our teams have worked diligently over the summer and have gone above and beyond to manage a challenging set of circumstances.

“Our world-class standard operating procedures and our critical situation deployment plan and investment in our facilities means that we are fully equipped to respond to urgent situations at speed.”

Activist Don Staniford, director of Scamon Scotland, blasted the deaths, calling for an end to the industry.

“Scottish salmon is dead in the water, with 2023 shaping up to be the worst year ever,” he said. “A deadly cocktail of warming water temperatures, swarms of jellyfish, gill problems, infectious diseases, plagues of parasites and toxic algal blooms has already killed off millions of salmon this summer.

“The Scottish Government must end the welfare nightmare inside salmon cages by shutting down the 250 factory farms littering the Highlands and Islands of Scotland.”

The Daily Record [reported \(5 October 2023\)](#):

R News › Scottish News › Environment

Scottish salmon production plunged by a fifth last year amid record fish farm deaths

The Scottish Fish Farm Production Survey 2022 found production of Atlantic salmon decreased by 18 per cent - while latest monthly death stats also paint a grim picture.

NEWS By [Dan Vevers](#)
15:23, 5 OCT 2023

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 Comments

Scottish salmon production plunged by a fifth last year amid record deaths on fish farms and the blight of parasites and disease.

The Scottish Fish Farm Production Survey 2022 found production of Atlantic salmon decreased by 36,199 tons - 18 per cent - to stand at 169,194 tonnes, a much bigger drop than previously forecast.

Campaigners blamed the stats on a “deadly cocktail” of [warming waters](#), jellyfish blooms, lice, viruses and a “welfare nightmare” inside salmon cages, demanding a shutdown of the industry.

It comes after all-time high mortalities of more than 16million on farms last year - which experts fear will be surpassed this year.

But [the Scottish Government](#) praised salmon farmers for taking the “responsible decision” in the face of eco pressures to “harvest smaller fish” in 2022 which it said partly explained the lower production tonnage.

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Daily Record

Rachel Mulrenan, Scotland director for conservation charity WildFish, said: "The considerable drop in farmed salmon production volume is not surprising, considering that 2022 was the deadliest year on record for Scottish salmon farms, with 16.7 million farmed salmon dying in the water.

"What is concerning is that this year is looking even worse than last, with 10.5 million deaths already reported from January to August."

Veteran campaign Don Staniford said: "A deadly cocktail of warming water temperatures, swarms of jellyfish, gill problems, infectious diseases, plagues of parasites and toxic algal blooms has already killed off millions of salmon this summer.

"The Scottish Government must end the welfare nightmare inside salmon cages by shutting down the 250 factory farms littering the Highlands and Islands."

Dr Iain Berrill, head of technical at Salmon Scotland, said: "Interim figures suggest monthly survival in September is expected to be above 96.5 per cent, compared to 95.3 per cent in the same month last year.

"There is no question that 2023 has been a challenging year, but the ongoing hard work by our farmers has provided good conditions for their salmon.

"However... the numbers this year are not where any farmer would want them to be."

Monthly mortality data produced by industry body Salmon Scotland showed 3.61 per cent of farmed fish died before harvest in August.

That compares to an August death rate of 2.46 per cent in 2022 and 1.99 per cent in 2021.

But at some farms, the death figures were much worse - with six sites run by Faroese seafood giant Bakkafrøst hit by massive monthly mortality rates from 19.6 per cent to 38.2 per cent.

Jellyfish, parasites and diseases along with climate change were the chief reasons given for mortalities. It comes after a "marine heatwave" was declared in waters around Scotland this summer.

A Bakkafrøst Scotland spokesman said: "Mass mortalities are not unique to fish farming and, like other farmers, we take pride in our stock and our facilities."

Rural Affairs Secretary Mairi Gougeon said: "Farmers are proactively responding to environmental and biological challenges and pressures, for example by making the responsible decision where necessary to harvest smaller fish to support health and welfare."

The Oban Times [reported \(7 October 2023\)](#):

The Oban Times

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Warming seas and jellyfish blamed for “record” farmed salmon deaths and harvest drop



Salmon farming, one of the Highlands and Islands’ largest employers, suffered a “record” rise in fish mortalities and fall in production last year, blamed on warming seas and jellyfish blooms.

Scottish salmon is the UK’s top food export with sales worth £578 million in 2022, and a huge domestic market valued at £1.2 billion, according to UK Government figures.

There are over 200 salmon farms in Scotland, almost all based on the west and north-west coasts, due to a presumption in Scottish planning policy against marine finfish farm developments on the north and east coasts to safeguard migratory fish species.

Wild salmon begin their lives in freshwater rivers and naturally migrate to the sea – a process called ‘smoltification’. In aquaculture, juveniles are reared from eggs in freshwater lochs and hatcheries until the smolt stage, when they are moved and grown in nets at sea until harvest.



Sandy Neil

Updated:
07/10/23,
10:39 am

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This month the Scottish Government published its Scottish Fish Farm Production Survey for 2022, detailing how many people it employed and salmon it made. In 2022, 1,508 staff were directly employed in producing Atlantic salmon in seawater – an increase of 13 from 2021. But production plunged.

The industry reared 169,194 tonnes of farmed salmon in 2022, 36,199 tonnes (18 per cent) less than 2021, despite putting more smolts to sea. 2021 was a record year, seeing Scotland's highest production volume of 205,393 tonnes, up seven per cent from 2020.

"2022 was the deadliest year on record for Scottish salmon farms, with 16.7 million farmed salmon dying in the water," said Rachel Mulrenan, Scotland director of Wildfish, a conservation charity protecting wild salmon and their waters.

"This year is looking even worse than last, with 10.5 million deaths already reported from January to August; 2.7 million more than the same period last year."

A WildFish spokesperson added: "Increasingly, fish are reported to be suffering from poor gill health, due to environmental issues, including jellyfish and plankton blooms, as well as parasitic, viral and bacterial infections."

Ms Mulrenan concluded: "High mortality on salmon farms reflects an environmental disaster, as well as being an animal welfare scandal. Open-net salmon farming is not a viable long-term industry for Scotland."

Last year the salmon farmers' trade body, Salmon Scotland, warned of a significant increase in microscopic jellyfish blooms affecting the survival of farm-raised fish.

"Record seawater temperatures do contribute to an increase in naturally occurring organisms which can reduce oxygen levels and also compromise the health of the salmon in areas such as the west coast of Scotland," it said.

"Jellyfish and algal blooms have been exacerbated this year as a result higher than average temperatures. But these are not expected to last and seawater temperatures are expected to return to average in 2024."

The Northern Times [reported \(10 October 2023\)](#):

'Deep concerns' over soaring ocean temperatures for Sutherland fish farm business

By Philip Murray - philip.murray@hnmedia.co.uk

Published: 07:06, 10 October 2023 | Updated: 08:31, 10 October 2023



A Loch Duart Salmon worker on site monitoring water.

SOARING sea water temperatures are causing "deep concern" a Highland salmon farm business has warned.

Loch Duart Salmon, based in Scourie, said it had seen a "consistent and concerning rise" in sea temperatures at its various sites in Sutherland and the Outer Hebrides.

This comes amid wider reports of rising water temperatures in the North Atlantic driven by climate change - a phenomenon which saw the waters off parts of the UK coastline record figures roughly 4C-5C warmer than the long-term average in late spring.

The company warned that the higher temperatures can spark an increase in the number of algal blooms, gill disease in fish and sudden explosions in jellyfish numbers - all of which can be harmful to its salmon.

The rise has prompted Loch Duart Salmon to take a number of steps to protect its stocks from the increases, and it said that this has had some effect, with survival rates for its fish improving despite the environmental challenges.

It said its efforts had yielded "positive results this summer", with "substantial survival improvements across the business" in comparison with previous years.



One of Loch Duart Salmon's fish farm sites.

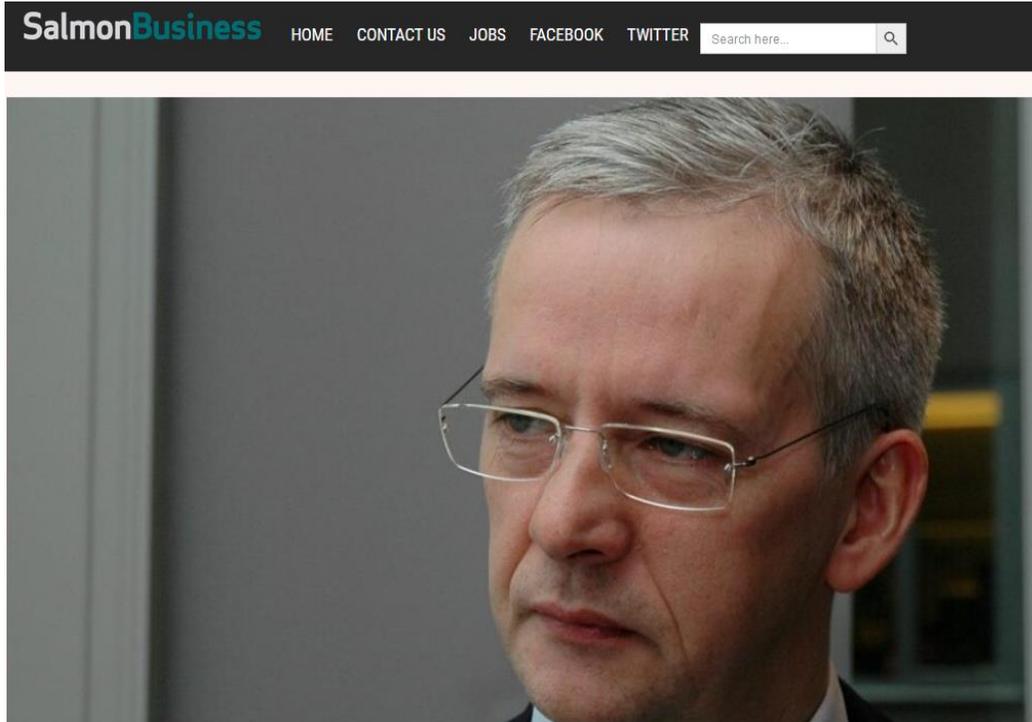
For over a decade, Loch Duart has observed an increase in the frequency of algal blooms, influxes of jellyfish, environmentally induced gill disease, and the encroachment of oceanic species in farming locations. The growth of these naturally occurring phenomena can have a devastating impact on fish health and survival.

Loch Duart is combining five approaches to in a bid to face the challenges of climate change.

- Broodstock: All Loch Duart farms are part of a natural Scottish strain broodstock programme. This has been proven to produce salmon which are more resilient to the changing marine conditions.
- Cleanerfish: Their "cleanerfish" programme works to combat the parasites that thrive in warmer water conditions.
- Improving their salmon's environment: Each site is equipped with an aeration system, boosting water movement and drawing cooler, more highly oxygenated water from depth to improve water quality for the fish, particularly on the calmer, sunnier days during the summer months.
- New technologies: Loch Duart also uses oxygen generation technology at sea, this approach mitigates oxygen depletion events, such as those caused by algal blooms.
- Staff training: Loch Duart has also been keeping staff fully trained on the warning signs to look out for in relation to any environmental changes. These include daily monitoring for microscopic algae and oceanic jellyfish.

Also reported via the Ross-shire Journal (13 October 2023): [West coast salmon farm shares 'deep concerns' for climate change induced rise in temperatures](#)

Salmon Business [reported \(4 October 2023\)](#):



Bakkafrost boss Regin Jacobsen. PHOTO: JH Gardar

Bakkafrost gives Q3 trading update; Scottish harvest volumes crash by 50%

News by Editorial staff - 4 October 2023

The total harvest for the quarter stood at 20,800 metric tons.

Faroese salmon producing giant Bakkafrost issued a trading update on Tuesday for its Q3 2023 harvest volumes for operations in both the Faroe Islands and Scotland.

According to the preliminary report, the total harvest for the quarter stood at 20,800 metric tons, compared to 24,900 tons for the same period last year, a decline of 16 percent.

Breakdowns are as follows: Faroe Islands contributed 16,700 tons, with Farming North, West, and South yielding 12,000, 2,000, and 2,800 tons respectively.

In Scotland, the North and South regions reported harvests of 2,900 and 1,200 tons respectively. The trading update for the same period last year saw harvests of 3,000 tons and 5,100 tons for the same regions, meaning volumes have decreased by almost 50 percent.

Additionally, Bakkafrost reported Q3 feed sales totalling 35,900 metric tons. Havsbrún, the feed division of Bakkafrost, sourced 109,700 tons of raw materials during the same period.

The detailed Q3 2023 report is scheduled for release on 7 November 2023 at 06:00 CET.

Fish Farmer reported (5 October 2023):

Fish Farmer

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News

Near 50% drop in Bakkafrost Scotland harvest

By Vince McDonagh - 5th October 2023



The Bakkafrost Scotland third quarter harvest will be down by almost half the total of last year, a trading update from the company revealed today.

The total figure is 4,100 tonnes, 2,900 tonnes from Scotland North and 1,200 tonnes from Scotland South.

This compared with a total of 8,100 tonnes during Q3 last year.

Although it is starting to turn things around, the company continues to battle various biological issues in Scotland.

The situation in the Faroe Islands appears to have steadied. The total harvest for July to September is around 16,700 tonnes, marginally lower than a year ago when the figure was 16,800 tonnes.

The Faroes total is made up of Farming North 12,000 tonnes, Farming West 2,000 tonnes and Farming South around 2,800 tonnes.

All harvest volumes are given as head-on gutted (HOG) equivalents.

Bakkafrost issued a profit warning in mid-July, after it adjusted the full year slaughter volume in the Faroe Islands down to 63,000 tonnes. It said Scotland remained on target at 30,000 tonnes.

Whether these latest figures have changed that forecast will become known when Bakkafrost publishes its full third quarter results on 7 November.

BBC News [reported \(4 October 2023\)](#):

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Farmed salmon production drops by a fifth in Scotland

4 hours ago



By Douglas Fraser

Business and economy editor, Scotland

Production of farmed salmon dropped by nearly a fifth in Scotland last year, according to new figures.

Rising sea temperatures have brought micro-jellyfish which took much of the blame for the reduced tonnage.

The 18% drop of 36,200 tonnes to 169,200 tonnes of Scottish farmed salmon follows several tough years in which the industry faced sea lice infestations and disease.

It is the lowest production level since 2018, when there was also an 18% fall.

The industry is under pressure to tackle high mortality of fish, particularly those kept in sea cages. The cages are overcrowded, according to the industry's critics.

The data shows the survival rate of smolts, or young salmon, was 75.9% for those hatched in 2020. That has been on a gradually declining trend for 20 years.

In the past three years, a high proportion have had to be slaughtered in the first year of their three-year life cycle.

The Conservative MSP who led a 2018 Holyrood committee inquiry into the industry, Edward Mountain, has raised concerns that the industry has not done enough to reduce mortality.

This August more than 160 incidents were logged by the industry's regulator, including one at Applecross in Wester Ross in which 214,000 young salmon were destroyed because water filter equipment failed in a tank, leading to worsening water quality and the growth of a deadly fungus.

Most of the mortality incidents were due to poor gill health and some were due to poor genetics.

The industry representative body, Salmon Scotland, released figures on Tuesday suggesting that mortality in September was down from 4.7% last year to 3.5% this year.

September can be the worst month for mortality as it sees sea temperatures peak. This year also saw high sea temperatures earlier in the summer.

Challenging year

Salmon can handle the heat but they are vulnerable to jellyfish and algal blooms which develop when temperatures rise.

Measures taken to keep salmon away from risks to their health include 'bubble curtains', which stop algae and jellyfish entering sea cages, and changing feeding patterns to encourage salmon to feed at lower levels further away from threats.

There are also early warning systems which alert the farmers to growing blooms, prompting them to remove fish from cages.

Fish Farming Expert [reported \(4 October 2023\)](#):



Warmer water brings more jellyfish and algae that can harm fish gills and cause mortalities. Photo: SAIC

Scotland salmon farmers hope tide is turning after tough summer

Mortalities in 'worst month' are lower than last year as suite of mitigation strategies take effect

Editorial team

PUBLISHED Wednesday 04. October 2023 - 11:22



Scotland's salmon farmers are hoping they have begun to reduce fish losses after a summer of exceptionally warm sea temperatures linked to mortalities.

Sector trade body Salmon Scotland said today that preliminary data for September 2023 indicates that monthly survival was above 96.5%, up on the 95.3% recorded in September 2022.

Monthly mortality has been similar or higher than 2022 for most of this year, and reached at 3.61% in August, up from 2.46% in the same month last year.

In August, Scottish Sea Farms announced that it was [cutting its harvest estimate for 2023 from 37,000 to 27,000 gutted weight tonnes](#) because of biological problems, and Bakkafrost Scotland warned that its forecast harvest volume of 30,000 gwt [could be reduced by 5,000-6,000 gwt](#) for the same reason.

Mitigation measures

The improvement in September's figures comes after several mitigation measures were adopted by farmers, including oxygenation of the water, improved monitoring, and new feeding strategies.

Farmers such as Bakkafrost Scotland are also stocking larger smolts, so fish spend less time spent in the sea. In Q2 2023, the average weight of smolts stocked in marine pens by Bakkafrost Scotland was 125g, 24% higher than in Q2 2022, and the company is working towards releasing smolts with an average weight of 500g.

Increased knowledge of natural environmental challenges has also helped stem the rise in mortalities.

Last year there was a significant increase in microscopic jellyfish blooms which affected the survival of farmed fish. But while the jellyfish continue to pose challenges, millions of salmon have this year been moved out of harm's way thanks to improved monitoring and the variety of mitigation measures, Salmon Scotland said.

An El Niño year

September survival rates typically drop to their lowest monthly level because this is when seawater temperatures peak – and this year has seen record temperatures, partly due to El Niño, a naturally occurring climate pattern associated with warming of the ocean surface temperatures in the central and eastern tropical Pacific Ocean that occurs on average every two to seven years.

The warmer sea water in Scotland is not an issue for salmon *per se*, as it is within their natural range. In fact, seawater temperature increases can encourage growth and allow harvest weight to be reached more quickly, said Salmon Scotland.

But record seawater temperatures do contribute to an increase in naturally occurring organisms which can reduce oxygen levels, and also compromise the health of the salmon in areas such as the west coast of Scotland.

Salmon Scotland said jellyfish and algal blooms have been exacerbated this year as a result of higher temperatures but added that these are not expected to last and seawater temperatures are expected to return to average in 2024.

Proactive and adaptable

Dr Iain Berrill, head of technical at Salmon Scotland, said: "There is no question that 2023 has been a challenging year, but the ongoing hard work by our farmers has provided good conditions for their salmon, despite record-breaking seawater temperatures here in the UK and globally.

"However, while there is always a level of fallen stock in any farming operation, the numbers this year are not where any farmer would want them to be. It is utterly devastating to the farmers caring for those animals when any fish are lost.

"Our ability to address the environmental challenges facing our fish while they spend up to two years in the sea has improved, but there is always more we can do to further improve survival.

"But the sector is resilient in the face of climate change, and we have a track record of being proactive and constantly adapting to environmental challenges.

"Like all food-producing sectors, we must adapt to climate change and the aquaculture sector will continue to lead the world in healthy, sustainable salmon for decades to come."

Fish Farming Expert [reported \(4 October 2023\)](#):



The volume of Atlantic salmon harvested in Scotland last year was down by 36,199 tonnes (live weight) compared to 2021, but the sector remained a significant contributor to the economy, generating approximately £885 million GVA. Photo: Scottish Sea Farms

Scotland's Atlantic salmon production fell by 18% last year

Rural Affairs Secretary welcomes innovations and new strategies used to tackle biological problems

Editorial team

PUBLISHED Wednesday 04. October 2023 - 12:46



Production of Atlantic salmon decreased by 36,199 tonnes (18%) to 169,194 tonnes (live weight) in Scotland last year, according to the Scottish Government's [annual fish farming survey, published today](#).

The total number of smolts produced in 2022 increased by 3.9 million (8%) to 55.1 million, and the total number of staff directly employed in salmon production was 1,508 staff, an increase of 13 staff compared with 2021. The staffing figures refer to production of Atlantic salmon in seawater and do not include staff involved with processing or marketing activities.

Significant for economy

Scotland's Rural Affairs Secretary Mairi Gougeon, whose portfolio includes aquaculture, said: "I welcome the publication of these statistics. Scotland's aquaculture sector is a significant contributor to our economy, generating approximately £885 million GVA (gross value added) and an estimated 11,700 jobs while producing healthy and nutritious products. It is good to see a small uplift in direct employment in the sector, and to see innovations and new strategies being deployed by the sector having a positive impact.

"For example, we've seen a reduction on the reliance of imported salmon ova (eggs) and an increase in production and hatches in Scotland. This strengthens our domestic supply chain and improves resilience. We also know that some companies are working to change their production strategies, for example by increasing the average size of fish put to sea and reducing the marine phase of production.

"These figures also show that farmers are proactively responding to environmental and biological challenges and pressures, for example by making the responsible decision where necessary to harvest smaller fish to support health and welfare, which has resulted in decreased production figures."

Fish Farmer [reported \(4 October 2023\)](#):

Fish Farmer

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News

Salmon survival rates improve despite warmer seas

By Editors - 4th October 2023



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Last year Salmon Scotland warned of a significant increase in microscopic jellyfish blooms which had affected the survival of farm-raised fish.

But while the tiny translucent jellyfish, measuring as small as 2mm, continue to pose challenges for farmers who care for their livestock all-year round, millions of salmon have been moved out of harm's way in 2023 thanks to improved monitoring and the variety of mitigation measures.

September survival rates typically drop to their lowest monthly level because this is when seawater temperatures peak - and this year has seen record temperatures, partly due to the El Niño weather warming phenomenon.

The higher seawater temperatures seen in Scotland are not an issue for salmon, as they are within their natural range, Salmon Scotland said. Seawater temperature increases can actually encourage growth and allow harvest weight to be reached more quickly.

However, record seawater temperatures also contribute to an increase in naturally occurring organisms which can reduce oxygen levels and also compromise the health of the salmon in areas such as the west coast of Scotland.

Jellyfish and algal blooms have been exacerbated this year as a result higher than average temperatures, similar to the changing weather conditions we have all experienced this year. But these are not expected to last and seawater temperatures are expected to return to average in 2024.

The aquaculture sector is constantly innovating to overcome challenges and the sector has been investigating and deploying a range of short, medium and long-term solutions to maximise survival.

Mitigation measures include:

- Aeration/oxygenation of the water.
- Feeding strategies which minimise the time salmon spend near the water surface where they are more likely to come into contact with jellyfish / algal blooms.
- Bubble curtains, which use air to create a barrier which prevents jellyfish and algal blooms from entering salmon pens.
- Fish movement to remove salmon when the presence of micro-jellyfish is anticipated or detected.
- Putting larger fish to sea which reduces the amount of time salmon spend in sea water to just one summer, which helps avoid contact with organisms that could be harmful.
- Offshore and semi-closed containment for the marine phase could help to separate salmon from naturally occurring organisms.
- Broodstock development to breed more climate-resilient salmon.

Iain Berrill said: "Our ability to address the environmental challenges facing our fish while they spend up to two years in the sea has improved, but there is always more we can do to further improve survival.

"But the sector is resilient in the face of climate change and we have a track record of being proactive and constantly adapting to environmental challenges.

"Like all food-producing sectors, we must adapt to climate change and the aquaculture sector will continue to lead the world in healthy, sustainable salmon for decades to come."

Fish Farmer [reported \(4 October 2023\)](#):

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Scotland's salmon production fell 18% in 2022
By Editors - 4th October 2023

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The latest figures from the Scottish Government confirm what the major salmon producers' reports have already made clear – the biological issues experienced last year resulted in a significant fall in Scotland's salmon production.

The [Scottish Fish Farm Production Survey 2022](#) shows that production of Atlantic salmon in Scotland was 169,194 tonnes, representing an 18% decline year-on-year.

Mortalities and premature harvests hit production numbers in 2022, particularly related to an increase in the population of micro-jellyfish (hydrozoans) which led to gill health issues and other challenges for salmon at sea.

Read more via: [Scottish Salmon is Dead in the Warming Water!](#)

More background on mortalities due to jellyfish via:

[Summary of Silent Sting](#) (4 October 2023)

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