



Finlay Carson MSP
 Convenor of the Rural Affairs, Islands and Natural Environment Committee
 The Scottish Parliament
 Edinburgh
 EH99 1SP

30 September 2022

Dear RAINE Committee Convenor,

**Mortalities on Disease-Ridden Salmon Farms:
 22 million in sea cages (plus another 26 million in freshwater) in 2021?**

Further to [Edward Mountain’s letter to the RAINE Committee dated 6 September 2022](#), Scamon Scotland supports the call for further scrutiny of the salmon farming sector. Suffice to say that the escalating problem of mortalities on disease-ridden salmon farms is a burning issue which warrants urgent investigation by the Scottish Parliament.

One suggestion – in order to gauge the true scale of the mortality problem and to shame the industry into taking immediate action - is to force the salmon farming industry to publish mortality numbers (something which [the industry lobbied against back in 2013 when it argued that disclosure would be ‘commercially damaging’](#)). If you use basic Math ratios sourced from the [data published for 2010 to 2012](#), you can estimate mortality numbers since then and it is not difficult to see why the salmon farming industry do not want the data disclosed to the public:

Scottish Farmed Fish* Mortalities (2010 to 2021)			
Year	Mortalities (tonnes)**	Mortalities (#s)***	Estimated Mortalities (#s)****
2021	29,959	commercially damaging so not disclosed	19.7 million to 22 million
2020	27,369	commercially damaging so not disclosed	18 million to 20.1 million
2019	25,772	commercially damaging so not disclosed	16.9 million to 18.8 million
2018	16,573	commercially damaging so not disclosed	10.9 million to 12.2 million
2017	25,444	commercially damaging so not disclosed	16.7 million to 18.7 million
2016	22,240	commercially damaging so not disclosed	14.6 million to 16.3 million
2015	18,295	commercially damaging so not disclosed	12 million to 13.4 million
2014	16,005	commercially damaging so not disclosed	10.5 million to 11.7 million
2013	10,325	commercially damaging so not disclosed	6.8 million to 7.6 million
2012	12,925	8.5 million	
2011	9,489	6.8 million	
2010	7,502	5.5 million	

* The vast majority are farmed salmon but there are some farmed rainbow trout & steelhead

** Sourced from SEPA via

http://aquaculture.scotland.gov.uk/data/fish_farms_monthly_biomass_and_treatment_reports.aspx

*** The SSPO lobbied SEPA in 2013 not to disclose farmed salmon mortalities

<https://www.robedwards.com/2013/10/scottish-watchdog-labelled-lapdog-after-agreeing-to-keep-fish-farm-deaths-secret.html>

**** Based on known mortality ratios of tonnes to #s published by SEPA from 2010 to 2012

<https://www.robedwards.com/2013/02/farmed-salmon-killed-by-disease-leaps-to-85-million.html>

The 13 million farmed salmon [reported by The Herald On Sunday](#) (25 September 2022) therefore represents a conservative underestimate with the real figure maybe as high as 22 million mortalities in the sea phase of production. Moreover, the mortality data presented above does not even include mortalities in freshwater (in both hatcheries and smolt farms). All mortalities – at every stage of salmon farming production – should be recorded and published.

The second suggestion by \$camon \$cotland is to investigate the whole life cycle of salmon farming – from hatch as eggs to ‘catch’ in the sea. Data published by the Scottish Government – sourced from the latest ‘[Scottish Fish Farm Production Survey 2020](#)’ published in September 2021 (the 2021 survey will be published by the Scottish Government on 27 October 2022) – details over 20 million mortalities in freshwater hatcheries and smolt farms per year (for example, in 2020 there were 78.6 million ova laid down to hatch but only 52.5 million smolts put to sea and 50.5 million smolts produced):

Table 18: Source, number (000's), previous year's estimate of ova laid down to hatch during 2011-2020 and projected production for 2021

Year	In-house broodstock	Out-sourced GB broodstock	GB wild broodstock	Foreign ova	Total	Previous year's estimate
2011	15,664	14,630	0	34,322	64,616	54,526
2012	18,556	9,981	0	34,700	63,237	55,723
2013	16,996	8,263	0	41,315	66,573	49,249
2014	14,418	2,725	10	53,684	70,837	48,149
2015	6,479	223	10	61,463	68,175	65,284
2016	5,884	4	0	58,458	64,346	59,604
2017	6,228	360	0	59,158	65,746	60,673
2018	8,780	200	0	61,499	70,479	67,374
2019	5,516	1,724	75	63,931	71,246	71,571
2020	5,195	4,480	258	68,685	78,618	70,598
2021						68,588

Smolts Produced and Put to Sea

Table 19: Actual and projected smolt production and smolts put to sea (millions) during 2011-2022

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Actual smolts put to sea	42.7	41.1	40.9	48.1	45.5	43.0	46.1	45.5	53.0	52.5		
Smolts produced	43.6	44.3	40.5	45.0	44.6	42.9	46.2	47.1	51.4	50.5		
Estimated production	35.9	31.3	28.1	39.9	43.4	36.6	39.3	46.1	38.6	52.1	55.6	54.6
Ratio of ova laid down to smolts produced	1.5	1.4	1.6	1.6	1.5	1.5	1.4	1.5	1.4	1.6		

To illustrate the scale of the mortality problem in freshwater hatcheries, the RAINE Committee is encouraged to view [‘Case Information’ published by the Scottish Government](#) and ‘Mortality Information’ published by the Scottish Government. For example, [‘Case Information’ for May 2022](#) (Case 202200166) details over 2 million mortalities at Mowi’s Inchmore hatchery in a three month period with a mortality rate ranging from 19.22% to 35.97%:

Case No:	2022-0166	Date of visit:	24/05/2022
Time spent on site:	2 hours	Main Inspector:	
Site No:	FS0226	Site Name:	Inchmore
Business No:	FB0119	Business Name:	Mowi Scotland Ltd

Q3 total mortality from input to date - 35.97% (690,554). Attributed to poor egg quality/failed eggs. 29% of that total occurred during the first 5 weeks. Mortality during the last 4 week period was 0.96% (24,183). Attributed to deformities. Ova were a mix from Ireland and Dumfries.

Q4 total mortality from input to date 29.5% (982,778). 27.94% of the total losses occurred during the first 11 weeks incubation. Mortality in the week before the inspection was 0.19%. Total mortality over the last 4 week period was 1.35% (41,179).

Q2 total mortality from input to date 19.22% (764,733) over an 8 week period. Mortality in the 2 weeks before the inspection was 0.59% (20,758). Total mortality over the last 4 week period was 4.46% (161,403).

Peaks in mortality all occurred within the first 6-weeks post stocking so were not required to be reported. However, business has reported these and a record has been made for them.

Site Details (include cleaner fish for all sections)			
Total No facilities	48 tanks		Facilities stocked
Species	SAL	SAL	SAL
Age group	Q3	Q4	Q2
No Fish	2,499,884	3,025,524	3,509,781

‘Mortality Information’ [published by the Scottish Government](#) (which does not capture all morts – only mortalities above a certain threshold are reported) illustrates the scale of the mortality problem. Here’s the [Top 50 \(i.e. most/worst\) ‘Mortality Event Reports’ reported to the Scottish Government since January 2017](#):

Event #	Business Name	Site Name	Date reported	Water	Mort %	Explained reasons	Total mortality
MRT02893	Mowi Scotland Ltd	Inchmore	15/03/2022	FW	6.65	Unviable Eggs & Alvin / Hatch Fail	415707
MRT02826	The Scottish Salmon Company	Applecross Smolt Unit	31/01/2022	SW	52.77	Stock Incident	408892
MRT02920	Mowi Scotland Ltd	Inchmore	14/04/2022	FW	4.04	Unviable Eggs & Alvin / Hatch Fail	295959
MRT02856	Mowi Scotland Ltd	Inchmore	17/02/2022	FW	9.14	Unviable eggs & Alvin/ Hatch Mortalities	274496
MRT02926	Mowi Scotland Ltd	Inchmore	20/04/2022	FW	3.79	Unviable Eggs & Alvin / Hatch Morts	266768
MRT02879	Mowi Scotland Ltd	Lochailort	03/03/2022	FW	6.11	Unviable eggs/alvin - Hatch mortalities	192992
MRT02536	The Scottish Salmon Company	Druimyeon Bay	25/10/2021	SW	47.60	Gill Health Related	148628
MRT02842	The Scottish Salmon Company	Applecross Smolt Unit	07/02/2022	FW	29.62	Stock Incident	135401
MRT02671	Scottish Salmon Company	Taranaish	06/12/2021	SW	28.73	Gill Health Related	129650
MRT02498	The Scottish Salmon Company	East Tarbert Bay	12/10/2021	SW	20	Gill Health Related, Environment	120580
MRT02872	Kames Fish Farming Ltd	Torhouse Mill	01/03/2022	FW	19.59	Water quality	119169
MRT02526	The Scottish Salmon Company	Druimyeon Bay	18/10/2021	SW	21.96	Gill Health Related	116680
MRT03086	The Scottish Salmon Company	East Tarbert Bay	08/08/2022	SW	7.73	Environment (Water Quality); Sea Lice related (Post-bath treatment)	105355
MRT02459	Mowi Scotland Ltd	Grey Horse Channel Outer	04/10/2021	SW	9.19	AGD	104249

MRT02855	Mowi Scotland Ltd	Inchmore	17/02/2022	FW	12.95	Unviable eggs & Alvin	99432
					10.07	AGD and FW Extended Treatments	98533
MRT02565	Mowi Scotland Ltd	Grey Horse Channel Outer	29/10/2021	SW	14.99	Gill Health Related	92891
MRT02628	The Scottish Salmon Company	Taranaish	22/11/2021	SW	4.32	Viral disease	90352
MRT02987	Cooke Aquaculture (Freshwater)	Cairnlow Hatchery	10/06/2022	FW	15.81	Fungus	89190
MRT02666	Mowi Scotland Ltd	Loch Ness	06/12/2021	FW	11.73%	AGD and FW Extended Treatments	85671
MRT02612	Mowi Scotland Ltd	Grey Horse Channel Outer	11/11/2021	SW	9.79%	AGD and FW Extended Treatments	84664
MRT02586	Mowi Scotland Ltd	Grey Horse Channel Outer	08/11/2021	SW	27.21	Gill health related	80340
MRT03013	The Scottish Salmon Company	Scadabay	04/07/2022	SW	14.32	Gill Health Related	75434
MRT02644	The Scottish Salmon Company	Taranaish	29/11/2021	SW	23.42	Gill Health Related	75303
MRT02699	The Scottish Salmon Company	Taranaish	13/12/2021	SW	10.84	Gill Health Related, Environment	73315
MRT02441	The Scottish Salmon Company	East Tarbert Bay	04/10/2021	SW	14.57	Gill Health Related	70292
MRT02525	The Scottish Salmon Company	East Tarbert Bay	18/10/2021	SW	8.74	Complex gill diseases and SRS.	69704
MRT02777	Mowi Scotland Ltd	Ardintoul	17/01/2022	SW	5.94	Fungus	66253
MRT03067	The Scottish Salmon Company	Applecross Smolt Unit	01/08/2022	FW	26.87	Gill Health Related	66000
MRT02716	The Scottish Salmon Company	Taranaish	20/12/2021	SW	5.46	AGD, PD and Treatments	65251
MRT02549	Mowi Scotland Ltd	Colonsay	27/10/2021	SW	7.22	Fungus	60583
MRT02753	The Scottish Salmon Company	Russel Burn	03/01/2022	FW	3.15	Pasteurella skyensis infection.	59962
MRT02712	Mowi Scotland Ltd	Seaforth	16/12/2021	SW	5.18	Gill Health Related	56567
MRT02698	The Scottish Salmon Company	Eughlam	13/12/2021	SW	6.95	Fungus	54285
MRT02775	The Scottish Salmon Company	Russell Burn	10/01/2022	FW	6.22	Gill disease and microjellyfish bloom	52598
MRT02447	Mowi Scotland Ltd	Rum	04/10/2021	SW	6.66	Fungus	52498
MRT02639	The Scottish Salmon Company	Russel Burn (Applecross Str	22/11/2021	FW	2.95	Pasteurella skyensis infection.	50689
MRT02784	Mowi Scotland Ltd	Seaforth	17/01/2022	SW	7.02	Gill disease and microjellyfish	49282
MRT02456	Mowi Scotland Ltd	Rum	04/10/2021	SW	20.1	Gill Health, virus disease	49098
MRT02464	Scottish Sea Farms Ltd	Kishorn B (North)	08/10/2021	SW	2.79	Mechanical treatment losses / Pasteurella skyensis infection	48880
MRT02839	Mowi Scotland Ltd	Seaforth	04/02/2022	SW	10.67	Gill Health Related, Sea Lice Related	47315
MRT02492	The Scottish Salmon Company	Vuia Mor	12/10/2021	SW	2.53	Pasteurella skyensis infection.	46789
MRT02728	Mowi Scotland Ltd	Seaforth	23/12/2021	SW	9.2	Gill Health	46268
MRT02829	Scottish Sea Farms Ltd	Noust Geo	17/12/2021	SW	14.09	Gill health related	45449
MRT02991	The Scottish Salmon Company	Scadabay	13/06/2022	SW	12.6	Gill Health	45250
MRT02517	Scottish Sea Farms Ltd	Toyness	18/10/2021	SW	2.51	Pasteurella skyensis infection.	45244
MRT02751	Mowi Scotland Ltd	Seaforth	03/01/2022	SW	6.14	Fungus	45171
MRT02654	The Scottish Salmon Company	Russell Burn	29/11/2021	FW	3.12	Fungus	44526
MRT02661	Mowi Scotland Ltd	Loch Ness	06/12/2021	FW	8.16	Gill Disease	44328
MRT02662	Mowi Scotland Ltd	Camas Glas	06/12/2021	SW	4.92	Complex gill disease and SRS.	43409
MRT02746	Mowi Scotland Ltd	Ardintoul	03/01/2022	SW			

A recent [analysis of the 'Mortality Event Reports'](#) published by the Scottish Government since January 2017 by [Scamon Scotland](#) reveals:

Over 35 million mortalities were reported via nearly 3,000 ‘Mortality Event Reports’

– including:

Mowi (Marine Harvest): 666 ‘Mortality Event Reports’ = 12,353,090 (19 missing #s)

The Scottish Salmon Company/Bakkafrost Scotland: 1,045 ‘Mortality Event Reports’ = 11,728,798 (8 missing #s)

Cooke Aquaculture: 246 ‘Mortality Event Reports’ = 3,426,628

Scottish Sea Farms: 479 ‘Mortality Event Reports’ = 2,779,260 (161 missing #s)

Grieg Seafood: 206 ‘Mortality Event Reports’ = 2,350,280

Loch Duart: 171 ‘Mortality Event Reports’ = 921,252 (8 missing #s)

Lakeland: 6 ‘Mortality Event Reports’ = 599,518

Kames Fish Farming: 10 ‘Mortality Event Reports’ = 220,225

Landcatch Natural Selection: 21 ‘Mortality Event Reports’ = 165,947

Wester Ross Fisheries: 23 ‘Mortality Event Reports’ = 151,938

Organic Sea Harvest: 3 ‘Mortality Event Reports’ = 50,146

Reported Annual Mass Mortalities Increasing:

2022*: 4,917,891 (264 ‘Mortality Event Reports’)

2021: 9,091,344 (728 ‘Mortality Event Reports’)

2020: 5,155,524 (531 ‘Mortality Event Reports’)

2019: 6,389,555 (573 ‘Mortality Event Reports’)

2018: 3,794,605 (347 ‘Mortality Event Reports’)

2017: 4,843,824 (386 ‘Mortality Event Reports’)

2016: 1,065,134 (83 ‘Mortality Event Reports’)

2015: 8,118 (7 ‘Mortality Event Reports’)

* data up to end of July/early August

Finally, an investigation into why some salmon farming companies and particular sites experience exceptionally high mortality whilst others report much lower mortalities is suggested. It is clear from a [recent analysis by Scamon Scotland](#) (sourced from mortality data published by Salmon Scotland, the Scottish Government and SEPA) that Bakkafrost Scotland/The Scottish Salmon Company is an outlier in terms of mortalities:

Worst Mortality Rates by Company Over the Last Twelve Months*

– Bakkafrost Scotland is the King of Death!



The Scottish Salmon Company/Bakkafrost Scotland: 39.8%

Wester Ross Fisheries: 34.4%

Loch Duart: 22%

Mowi Scotland: 18.9%

Scottish Sea Farms: 18.3%

Grieg Seafood: 10.7%

Cooke Aquaculture: 9.9%

Industry Average: 19.9%

Industry Average in 2022 (January to July): 22%

Industry Average in 2021 (August to December): 17.8%

Summary Data:

The Worst Salmon Farms In Scotland Since 2018
(as judged by cumulative mortality rates [published by Salmon Scotland!](#))



82.1%: Druimyeon Bay (Bakkafrost Scotland/Scottish Salmon Company) – December 2021
80.2%: East Tarbert Bay (Bakkafrost Scotland/Scottish Salmon Company) – January 2022
78.3%: Leinish (Grieg Seafood) – September 2020
66.2%: Vacasay (Bakkafrost Scotland/Scottish Salmon Company) – December 2021
65.7%: Ardessie A (Wester Ross Fisheries) – February 2019
59.5%: Greshornish (Mowi) – July 2022
58.2%: Inch Kenneth (Bakkafrost Scotland/Scottish Salmon Company) – February 2018
57.7%: Kyles Vuia (Bakkafrost Scotland/Scottish Salmon Company) – July 2022
56.2%: Plocrapool (Bakkafrost Scotland/Scottish Salmon Company) – February 2021
55.9%: Greanem (Mowi) – June 2022
52.9%: Maaney (Bakkafrost Scotland/Scottish Salmon Company) – December 2019
51.3%: Corlarach (Grieg Seafood) – September 2020
50.5%: Ardessie B (Wester Ross Fisheries) – April 2019
50.3%: Sound of Harris (Loch Duart) – December 2021
50%: Camas Glas (Mowi) - July 2022

SCOTTISH SALMON'S 50%+ MORTALITY CLUB!



Bakkafrost: Scottish Salmon's King of Death
– 31 sites with cumulative mortality at 30% or higher since 2018!



- 82.1%: Druimyeon Bay (Bakkafrost Scotland/Scottish Salmon Company) – December 2021
- 80.2%: East Tarbert Bay (Bakkafrost Scotland/Scottish Salmon Company) – January 2022
- 66.2%: Vacasay (Bakkafrost Scotland/Scottish Salmon Company) – December 2021
- 58.2%: Inch Kenneth (Bakkafrost Scotland/Scottish Salmon Company) – February 2018
- 57.7%: Kyles Vuia (Bakkafrost Scotland/Scottish Salmon Company) – July 2022
- 56.2%: Plocrapool (Bakkafrost Scotland/Scottish Salmon Company) – February 2021
- 52.9%: Maaey (Bakkafrost Scotland/Scottish Salmon Company) – December 2019
- 47.6%: Gravir Outer (Bakkafrost Scotland/Scottish Salmon Company) – March 2018
- 45.4%: Reibinish (Bakkafrost Scotland/Scottish Salmon Company) – May 2021
- 42.3%: Gravir Outer (Bakkafrost Scotland/Scottish Salmon Company) – April 2022
- 41.5%: Strone (Bakkafrost Scotland/Scottish Salmon Company) – September 2020
- 39.8%: Vacasay (Bakkafrost Scotland/Scottish Salmon Company) – October 2018
- 39.4%: Taranaish (Bakkafrost Scotland/Scottish Salmon Company) – October 2018
- 39.4%: Sgian Dubh (Bakkafrost Scotland/Scottish Salmon Company) – September 2020
- 39.1%: West Strome (Bakkafrost Scotland/Scottish Salmon Company) – February 2022
- 38.9%: Grimsay (Bakkafrost Scotland/Scottish Salmon Company) – March 2020
- 36.8%: Eport Outer (Bakkafrost Scotland/Scottish Salmon Company) – December 2021
- 36.3%: Kyles Vuia (Bakkafrost Scotland/Scottish Salmon Company) – July 2020
- 34.6%: Strone (Bakkafrost Scotland/Scottish Salmon Company) – September 2018
- 33.6%: Glenan Bay (Bakkafrost Scotland/Scottish Salmon Company) – June 2021
- 34.2%: Eughlam (Bakkafrost Scotland/Scottish Salmon Company) – October 2018
- 33.5%: Taranaish (Bakkafrost Scotland/Scottish Salmon Company) – October 2020
- 33.3%: Vuia Mor (Bakkafrost Scotland/Scottish Salmon Company) – August 2018
- 32.7%: Grimsay (Bakkafrost Scotland/Scottish Salmon Company) – August 2019
- 32.6%: Vacasay (Bakkafrost Scotland/Scottish Salmon Company) – October 2020
- 32.6%: Treanay (Bakkafrost Scotland/Scottish Salmon Company) – February 2019
- 32%: Treanay (Bakkafrost Scotland/Scottish Salmon Company) – July 2018
- 32%: Sgeir Dughall (Bakkafrost Scotland/Scottish Salmon Company) – July 2021
- 31%: Vuia Beag (Bakkafrost Scotland/Scottish Salmon Company) – October 2018
- 30.6%: Portree (Bakkafrost Scotland/Scottish Salmon Company) – June 2022
- 30%: Maaev (Bakkafrost Scotland/Scottish Salmon Company) – October 2021

Further background on this alarming issue is detailed via:

[Death Deflation: 13 Million Morts On Scottish Salmon Farms in 2021 - More Like 22 Million \(& maybe 50 million if you add freshwater\)!](#)

[Media Backgrounder: Year of the Dead Salmon - Bakkafrost Scotland is the King of Death!](#)

Yours sincerely,

Don Staniford

Director, [Scamon Scotland](#) (formerly Scottish Salmon Watch)