



Scottish Government
Riaghaltas na h-Alba
gov.scot

Marine Scotland Science

Scottish Fish Farm Production Survey 2020



marinescotland
science

SCOTTISH FISH FARM PRODUCTION SURVEY 2020

This report was prepared by Marine Scotland Science

Written and compiled by : L A Munro

© Crown copyright 2021

You may re-use this information (excluding logos and images) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit <http://www.nationalarchives.gov.uk/doc/open-government-licence/> or e-mail: psi@nationalarchives.gsi.gov.uk.

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This document is available from our website at www.scotland.gov.uk.

ISBN : 978-1-80201-434-1 (web only)
ISSN : 1363-5867

The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

Artwork produced by Keith Mutch and Mhairi Sinclair, Marine Scotland Communications Team
Produced for the Scottish Government by APS Group Scotland
PPDAS933726 (09/21)

Published by the Scottish Government, September 2021

// Foreword

The annual production survey of fish farms in Scotland for 2020 was carried out by Marine Scotland Science (MSS). This survey collates annual production data from Scottish fin fish farm sites operated by authorised aquaculture production businesses. These are Official Statistics published in accordance with the Code of Practice for official Statistics, <https://gss.civilservice.gov.uk/policy-store/code-of-practice-for-statistics/>. The production tonnage obtained is for the wet weight (i.e. weight of live fish) at harvest.

Responses to questionnaires from Scottish fish farming companies covering the period 1st January to 31st December 2020 are summarised in this report and returns are consistently received from 100% of companies. The questionnaires are given in Appendix 1a-d. The survey is structured to allow readers to follow industry trends within the rainbow trout, Atlantic salmon and other farmed species sectors. Data from previous years have been reassessed and updated where necessary. To allow direct comparison to data provided in previous surveys, production information by region is presented in defined areas.

The cooperation of the Scottish fish farming industry in completing the questionnaires is gratefully acknowledged. The author also acknowledges Liam Mason, Joanne Murphy, Sandy Murray, Keith Mutch, Ed Noble, Mhairi Sinclair, Ronald Smith, Stuart Wallace and Andrea Warwick for their contributions to the production of this report.

L A Munro

September 2021

Contents

Executive Summary	1
1. Rainbow Trout (<i>Oncorhynchus mykiss</i>)	4
Table 1a Annual production (tonnes) of rainbow trout during 2006-2020 and projected production in 2021	4
Table 1b Production (tonnes) for the table trade during 2011-2020 according to weight category	4
Table 1c Production (tonnes) for the restocking trade during 2011-2020 according to weight category	5
Table 2 Number of sites grouped by tonnage produced during 2011-2020	6
Table 3 Grouping of rainbow trout sites by production tonnages, main methods of production in 2020 and comparison with production in 2019	6
Table 4 Number of companies and sites in production during 2011-2020	7
Table 5 Number of staff employed and productivity per person during 2011-2020	7
Table 6 Production and staffing by area in 2020	8
Figure 1 The regional distribution of active rainbow trout sites in 2020	9
Table 7 Number (000's) and proportions (%) of eyed ova types laid down to hatch during 2011-2020	10
Table 8 Number (000's) and sources of eyed ova laid down to hatch in 2011-2020	10
Table 9a Number (000's) and sources of ova imported into Scotland from outwith GB during 2011-2020	11
Table 9b Seasonal variation in numbers (000's) and sources of ova imported into Scotland from outwith GB during 2020	11
Table 9c Number (000's) and sources of fish imported into Scotland from outwith GB during 2011-2020	11
Table 10 Number (000's) of fry and fingerlings traded during 2011-2020	12
Table 11 Number of sites rearing fish vaccinated against enteric redmouth disease (ERM) and number of fish vaccinated (millions) during 2011-2020	12
2. Atlantic Salmon (<i>Salmo salar</i>) - ova and smolts	14
Table 12 Number of companies and sites in production during 2011-2020	14
Table 13 Number (000's) of smolts produced, staff employed and smolt productivity during 2011-2020	14
Table 14 Number of smolts (000's) produced by type during 2011-2020	15
Table 15 Number and capacity of production systems during 2016-2020	15

Table 16	Number (000's) of smolts produced and stocking densities by production system during 2016-2020	16
Table 17	Number (000's) of salmon ova produced during 2011-2020	16
Table 18	Source, number (000's), previous year's estimate of ova laid down to hatch during 2011-2020 and projected production for 2021	16
Table 19	Actual and projected smolt production and smolts put to sea (millions) during 2011-2022	17
Table 20	Smolt-producing sites grouped by numbers (000's) of smolts produced during 2011-2020	18
Table 21	Staffing in 2020, ova laid down to hatch in 2019-2020, smolt production in 2019-2020 and estimated production in 2021-2022 by region	18
Figure 2	The regional distribution of active Atlantic salmon smolt sites in 2020	20
Table 22a	Source and number (000's) of ova, fry, parr and smolts imported during 2011-2020 derived from health certificates	21
Table 22b	Destination and number (000's) of salmon ova, fry, parr and smolts exported during 2011-2020 derived from health certificates	22
Table 23	Number of sites using vaccines and number (millions) of fish vaccinated during 2011-2020	22
3.	Atlantic Salmon – Production	23
Table 24	Annual production of salmon (tonnes) during 2000-2020 and projected production in 2021	23
Table 25	Number (000's), production (tonnes) of salmon harvested and mean fish weight (kg) per year class during 2011-2020	24
Table 26	Number (000's) and production (tonnes) of grilse and pre-salmon harvested during 2011-2020	25
Table 27	Percentage (by weight) of annual production by growth stage harvested during 2011-2020	25
Table 28	Survival and production in smolt year classes during 2001-2020	26
Table 29	Number (000s) and origin of smolts put to sea during 2010-2019	27
Table 30	Number (000s) of smolts put to sea and year class survival by area during 2009-2020	28
Table 31	Number of staff employed in the production of salmon during 2011-2020	29
Figure 3	The regional distribution of active Atlantic salmon production sites in 2020	29
Table 32	Production methods, capacity, tonnage and average stocking densities (kg/m ³) during 2018-2020	30

Table 33	Number of sites shown in relation to their production grouping and percentage share of production 2011-2020	31
Table 34	Number of companies grouped by production (tonnes), staff and productivity (tonnes per person) during 2019-2020	32
Table 35	Staff and production (tonnes) by area 2011-2020 and projected production in 2021	33
Table 36	Number of companies and sites engaged in the production of Atlantic salmon during 2011-2020	34
Table 37	Number of seawater cage sites employing a fallow period during 2011-2020	34
Table 38	Number of sites holding Atlantic salmon broodstock during 2011-2020	35
Table 39	Organic production of Atlantic salmon during 2011-2020	35
4.	Other Species	36
Table 40	Number of companies and sites producing other species in 2020, annual production of other species (tonnes) during 2017-2020 and projected production in 2021	36
Table 41	Number of staff employed in farming other species during 2011-2020	37
Table 42	Number (000s) of cleaner fish (lumpsucker and wrasse) produced during 2015-2020	37
Table 43	Source of ova from other species laid down to hatch during 2020	37
Table 44	Trade in small fish of other species in 2020	38
5.	Scottish Marine Regions	39
Figure 4	Scottish Marine Regions	39
6.	Summary	40
	Appendices	
	Appendix 1 Questionnaires Sent to Fish Farmers	42
	Appendix 2 Glossary and Abbreviations	50
	Appendix 3 Scottish Marine Regions	53

// Executive summary

The tables below summarise the results from the 2020 fish farms annual production survey (slight differences in these summary figures from figures in the main report are due to rounding).

Rainbow Trout (*Oncorhynchus mykiss*)

		2019	2020
Total production	(tonnes)	7,405	7,576
Production for the table	(tonnes)	6,906	7,032
Production for restocking	(tonnes)	499	544
Number of staff employed		144	134
Mean productivity	(tonnes/person)	51.4	56.5
Number of ova laid down to hatch	(millions)	6.6	6.2
Number of ova imported	(millions)	6.5	4.7

In 2020, the production of rainbow trout increased by 171 tonnes. Employment decreased by 10 staff and mean productivity increased to 56.5 tonnes per person. The number of ova laid down to hatch decreased by 0.4 million and the number of ova imported decreased by 1.8 million.

Atlantic salmon (*Salmo salar*)

Ova and Smolts

		2019	2020
Number of ova produced	(millions)	11.6	20.0
Number of ova laid down to hatch	(millions)	71.2	78.6
Number of ova exported	(millions)	0	0
Number of ova imported	(millions)	60.2	60.1
Number of smolts produced	(millions)	51.4	50.5
Number of smolts put to sea	(millions)	53.0	52.5
Number of staff employed		281	292
Mean productivity (000's smolts/person)		183.0	172.9

The production of ova increased by 8.4 million in 2020 and the number of ova laid down to hatch increased by 7.4 million. No ova were exported in 2020 and the number of ova imported decreased by 0.1 million from the 2019 figure. The number of smolts produced decreased by 0.9 million. In 2020 the number of staff employed increased by 11 and mean productivity decreased by 10,100 smolts per person.

Production fish

		2019	2020
Total production	(tonnes)	203,881	192,129
Production of 0-year fish	(tonnes)	931	1,208
Production of grilse	(tonnes)	72,243	88,025
Production of pre-salmon	(tonnes)	59,847	57,808
Production of year 2 salmon	(tonnes)	70,860	45,088
Mean fish weight 0-year	(kg)	2.9	3.7
Mean fish weight grilse	(kg)	5.0	4.8
Mean fish weight pre-salmon	(kg)	5.1	5.3
Mean fish weight salmon	(kg)	5.8	5.5
Number of staff employed		1,651	1,630
Mean productivity	tonnes/person	123.5	117.9

Production tonnage decreased by 11,752 tonnes with an increase in the mean harvest weight of year 0 and pre-salmon but a decrease in the mean weight of grilse and year 2 salmon. Staff numbers decreased by 21 and mean productivity decreased to 117.9 tonnes per person.

Smolt survival (percentage harvested)

Survival (%)	Years 0+1	Year 2	Total
2017 input year class	47.3	26.5	73.8
2018 input year class	57.8	17.9	75.9

The smolt survival rate for the 2018 input year class increased to 75.9%. Mortality is included in the number of fish not harvested for human consumption, which also consists of fish which have escaped, been culled for production reasons, removed for sampling purposes, statutory culls or selected for broodstock production.

Other Species

Including brown/sea trout (*Salmo trutta*); halibut (*Hippoglossus hippoglossus*); lumpsucker (*Cyclopterus lumpus*) and several species of wrasse (Labridae).

		2019	2020
Total production	(tonnes)	41 ^a	43 ^a
Number of staff employed	(full-time)	38	22
	(part-time)	15	13
Number of ova laid down to hatch	(millions)	19.8 ^b	20.7 ^b
Number of ova imported	(millions)	1.3	0.7

Some figures are excluded from this report as providing them would reveal production information from an individual company.

^aExcluding halibut production.

^bExcluding halibut ova laid down to hatch.

In 2020, the production of other species increased by two tonnes from the 2019 total, although this figure does not include halibut production. Overall, employment decreased by 18 in 2020. There was an increase in the number of ova laid down to hatch during 2020 but any halibut ova laid down to hatch were excluded from this figure.

Number of Confirmed Escape Incidents from Fish Farms Notified to the Scottish Government

Species	Number of reported incidents which could have led to an escape of farmed fish	Number of reported incidents which did lead to an escape of farmed fish	Number of fish escaped
Rainbow trout	1	1	1,601
Atlantic salmon (freshwater stages)	1	1	20
Atlantic salmon (seawater stages)	13	5	204,901

// 1. Rainbow trout (*Oncorhynchus mykiss*)

Production survey information was collected from all 21 companies actively involved in rainbow trout production, farming 50 active sites. This figure represents the entire industry operating in Scotland.

Production

Table 1a: Annual production (tonnes) of rainbow trout during 2006-2020 and projected production in 2021

Year	Tonnes	Percentage difference	Year	Tonnes	Percentage difference
2006	7,492	7	2014	5,882	5
2007	7,414	-1	2015	8,588	46
2008	7,670	3	2016	8,096	-6
2009	6,766	-12	2017	7,637	-6
2010	5,139	-24	2018	6,413	-16
2011	4,619	-10	2019	7,405	15
2012	5,670	23	2020	7,576	2
2013	5,611	-1	2021	9,303*	

* Industry estimate based on stocks currently being on-grown.

Production increased in 2020 by 171 tonnes, an increase of 2%, to 7,576 tonnes.

Table 1b: Production (tonnes) for the table trade during 2011-2020 according to weight category

Year	<450 g <1 lb	450-900 g 1-2 lbs	>900 g >2 lbs	Total Tonnes
2011	1,421	1,004	1,433	3,858
2012	1,195	1,655	2,209	5,059
2013	1,908	825	2,268	5,001
2014	2,334	290	2,704	5,328
2015	2,299	258	5,476	8,033
2016	2,393	234	4,810	7,437
2017	2,000	544	4,453	6,997
2018	803	223	4,848	5,874
2019	343	228	6,335	6,906
2020	403	164	6,465	7,032

Production for the table in 2020 was 7,032 tonnes, an increase of 126 tonnes (2%) on the 2019 total. This accounted for 93% of the total rainbow trout production, the same proportion to that produced in 2019. Also, an increase in the number of fish in the large and small size ranges and a decrease in the number of fish in the medium size range were observed.

Table 1c: Production (tonnes) for the restocking trade during 2011-2020 according to weight category

Year	<450 g <1 lb	450-900 g 1-2 lbs	>900 g >2 lbs	Total Tonnes
2011	8	419	334	761
2012	22	266	323	611
2013	24	221	365	610
2014	28	256	270	554
2015	15	158	382	555
2016	35	183	441	659
2017	10	150	480	640
2018	14	143	382	539
2019	16	113	370	499
2020	46	130	368	544

In 2020, production for the restocking of angling waters increased to 544 tonnes representing an increase of 45 tonnes (9%) on the 2019 total. This accounted for 7% of total rainbow trout production in 2020. These figures represent the tonnage of fish supplied to angling waters for restocking purposes; they do not account for the catch taken by anglers. The production of large sized fish showed a small decrease while there was an increase in the production of small and medium sized fish.

Production by Site

Table 2: Number of sites grouped by tonnage produced during 2011-2020

Year	Number of sites per production tonnage				Total number of sites
	<1-25	26-100	101-200	>200	
2011	9	10	6	8	33
2012	10	10	6	8	34
2013	6	11	5	8	30
2014	6	11	5	9	31
2015	4	10	5	11	30
2016	6	10	3	13	32
2017	4	8	5	11	28
2018	5	10	3	11	29
2019	5	9	4	10	28
2020	6	13	2	11	32

Production was reported from 32 of the 50 active sites. The number of producers in the 101-200 tonnes size bracket decreased while those in the <1-25, 26-100 and >200 tonnes size brackets increased. These figures do not include those sites specialising in the production of ova or young fish for on-growing.

Production by Method

Table 3: Grouping of rainbow trout sites by production tonnages, main methods of production in 2020 and comparison with production in 2019

Production method	Production grouping (tonnes) in 2020					Total tonnage and (%) by method		Number of sites	
	<10	10-25	26-50	51-100	>100	2019	2020	2019	2020
FW cages	1	0	0	1	4	2,273 (30.7%)	2,279 (30.1%)	6	6
FW ponds and raceways	1	2	5	3	3	971 (13.1%)	1,022 (13.5%)	12	14
FW tanks and hatcheries	2	0	0	1	0	78 (1.1%)	86 (1.1%)	4	3
SW cages	0	0	1	2	6	4,083 (55.1%)	4,189 (55.3%)	6	9
SW tanks	0	0	0	0	0	0	0	0	0
Total	4	2	6	7	13	7,405	7,576	28	32

Seawater production accounted for 4,189 tonnes (55.3%) and freshwater production the remaining 3,387 tonnes (44.7%). Production from all freshwater facilities and seawater cage facilities increased during 2020.

Company and Site Data

Table 4: Number of companies and sites in production during 2011-2020

Year	No. of companies	No. of sites
2011	23	48
2012	25	48
2013	24	46
2014	24	46
2015	24	45
2016	24	44
2017	23	44
2018	23	53
2019	22	52
2020	21	50

In 2020, the number of companies authorised by the Scottish Government and actively engaged in rainbow trout production was 21. The number of sites registered and in production was 50.

Staffing and Productivity

Table 5: Number of staff employed and productivity per person during 2011-2020

Year	Full-time Male	Full-time Female	Total Full-time	Part-time Male	Part-time Female	Total Part-time	Total Staff	Productivity (tonnes/person)
2011	90	5	95	16	7	23	118	39.1
2012	74	5	79	23	5	28	107	53.0
2013	85	4	89	16	5	21	110	51.0
2014	86	7	93	13	7	20	113	52.1
2015	100	10	110	10	6	16	126	68.2
2016	90	10	100	15	6	21	121	66.9
2017	98	12	110	15	7	22	132	57.9
2018	103	8	111	17	8	25	136	47.2
2019	103	11	114	21	9	30	144	51.4
2020	97	13	110	20	4	24	134	56.5

The overall number of staff employed in 2020 decreased by 10 to 134. The number of full-time staff decreased by four while the number of part-time staff decreased by six. Productivity, measured as tonnes produced per person, increased by 9.9% in 2020 with no distinction between full and part-time employees being made for this calculation.

Production by Area

Table 6: Production and staffing by area in 2020

Area	No. of sites	Table production (tonnes)	Restocking production (tonnes)	Mean tonnes per site	Staffing			Productivity (tonnes/person)
					F/T	P/T	Total	
North*	12	282	29	25.9	10	4	14	22.2
East	12	935	261	99.7	27	10	37	32.3
West	16	5,432	11	340.2	60	5	65	83.7
South	10	383	243	62.6	13	5	18	34.8
All	50	7,032	544	151.5	110	24	134	56.5

*From 2018, the North area also included production and staff from the Western Isles

Productivity was greatest in the West at 340.2 tonnes per site and 83.7 tonnes per person.

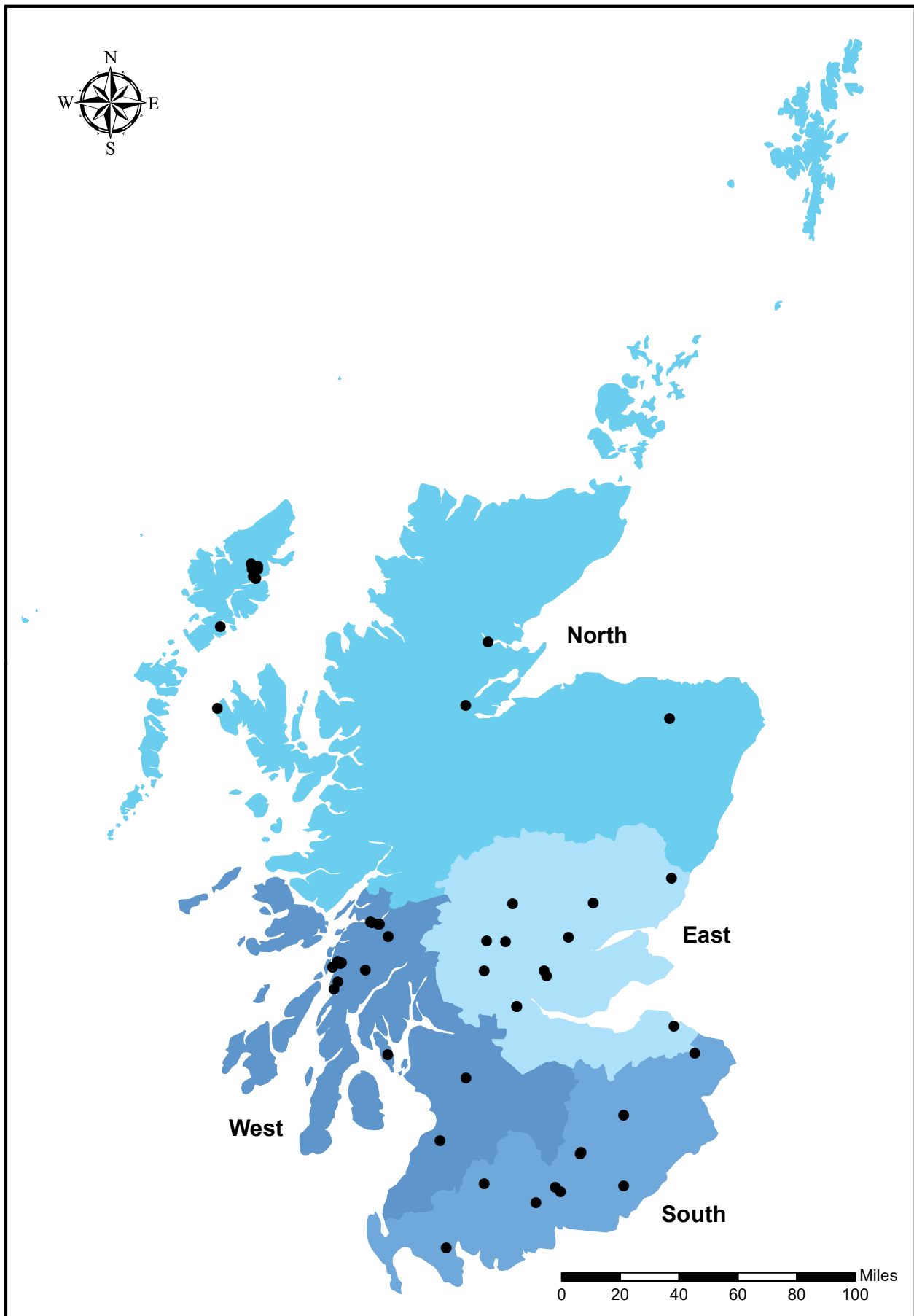


Figure 1: The regional distribution of active rainbow trout sites in 2020

© Crown copyright and database rights 2020 OS (100024655)

Type of Ova Laid Down

Table 7: Number (000's) and proportions (%) of eyed ova types laid down to hatch during 2011-2020

Year	All female diploid no. (%)	Triploid no. (%)	Mixed sex diploid no. (%)	Total ova
2011	12,673 (84)	2,254 (15)	215 (1)	15,142
2012	10,967 (85)	2,005 (15)	7 (<1)	12,979
2013	7,857 (80)	1,955 (20)	77 (<1)	9,889
2014	8,321 (75)	2,710 (25)	9 (<1)	11,040
2015	10,245 (85)	1,800 (15)	76 (<1)	12,121
2016	7,986 (80)	1,943 (20)	5 (<1)	9,934
2017	2,366 (34)	4,670 (66)	5 (<1)	7,041
2018	1,460 (23)	4,843 (77)	15 (<1)	6,318
2019	1,077 (16)	5,369 (82)	105 (2)	6,551
2020	286 (5)	5,943 (95)	15 (<1)	6,244

Source of Ova Laid Down

Table 8: Number (000's) and sources of eyed ova laid down to hatch in 2011-2020

Year	Ova produced in Great Britain (GB)			Total imported ova		Total
	Own stock	Other stock	Total	Northern hemisphere	Southern hemisphere	
2011	215	189	404	14,738	0	15,142
2012	14	230	244	12,735	0	12,979
2013	77	537	614	9,275	0	9,889
2014	9	655	664	10,376	0	11,040
2015	6	888	894	11,227	0	12,121
2016	35	349	384	9,550	0	9,934
2017	20	547	567	6,474	0	7,041
2018	15	495	510	5,808	0	6,318
2019	10	22	32	6,519	0	6,551
2020	15	1,552	1,567	3,712	965	6,244

In 2020, the total number of eyed ova laid down to hatch decreased by 0.3 million (4.7%) on the 2019 figure. Imported ova came from both the Northern and Southern hemispheres during 2020. The proportion of ova from GB broodstock increased (25% of the total) and the rainbow trout industry remained reliant on imported ova. Data on the importation of ova into Scotland are also available from the health certificates and are shown in Table 9a. Any discrepancy between the figures in Tables 8 and 9a is due to data being obtained from two independent sources.

Imports from Official Import Health Certificates

Table 9a: Number (000's) and sources of ova imported into Scotland from outwith GB during 2011-2020

Source	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Denmark	5,250	1,950	1,315	2,500	2,330	5,535	3,518	3,728	5,567	3,703
Isle of Man	520	300	800	1,000	175	20	300	0	0	0
N. Ireland	7,320	8,332	5,125	4,780	6,535	3,040	1,240	1,085	380	150
Norway	130	300	175	710	670	500	774	0	0	0
South Africa	0	0	0	0	0	0	0	0	0	1,225
Spain	0	0	0	0	0	0	0	0	60	180
USA	1,580	1,800	2,350	1,700	1,675	750	0	855	430	1,580
Totals	14,800	12,682	9,765	10,690	11,385	9,845	5,832	5,668	6,437	5,258

Table 9b: Seasonal variation in numbers (000's) and sources of ova imported into Scotland from outwith GB during 2020

Month	Denmark	N. Ireland	South Africa	Spain
January	1,030	0	0	0
February	125	0	0	0
March	227	150	0	0
April	681	0	0	0
May	200	0	125	0
June	100	0	130	0
July	0	0	0	0
August	0	0	250	0
September	0	0	720	0
October	420	0	0	0
November	920	0	0	180
December	0	0	0	0
Totals	3,703	150	1,225	180

Table 9c: Number (000's) and sources of fish imported into Scotland from outwith GB during 2011-2020

Source	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
N. Ireland	72	155	537	674	746	592	486	391	935	787

Suppliers within the European Union (EU) accounted for 76.7% of ova imported into Scotland during 2020 with South Africa accounting for the remaining 23.3%. In recent years there has been a trend for producers to import part grown rainbow trout into Scotland from Northern Ireland.

Trade in Fry and Fingerlings

Table 10: Number (000's) of fry and fingerlings traded during 2011-2020

Year	Fry and fingerlings bought			Total number bought	Total number sold
	All female diploid no. (%)	Triploid no. (%)	Mixed sex diploid no. (%)		
2011	16,288 (88.5)	1,970 (10.7)	138 (0.8)	18,396	16,612
2012	12,543 (91)	1,226 (9)	0	13,769	12,088
2013	6,734 (84)	1,239 (16)	0	7,973	6,749
2014	5,911 (81)	1,423 (19)	0	7,334	6,719
2015	6,104 (87)	598 (9)	290 (4)	6,992	6,971
2016	6,452 (85)	1,125 (15)	0	7,577	6,779
2017	3,989 (73)	1,446 (27)	0	5,435	4,145
2018	979 (42)	1,361 (58)	0	2,340	2,383
2019	861 (25)	2,532 (75)	0	3,393	2,832
2020	937 (33)	1,916 (67)	0	2,853	2,544

The established trade between hatcheries and on-growing farms continued in 2020. Some companies specialised in fry and fingerling production. The total number of fry and fingerlings bought decreased by 15.9% while the number sold decreased by 10.2%. The disparity between supply and demand is due to trade with England and Wales.

Use of Vaccines

Table 11: Number of sites rearing fish vaccinated against enteric redmouth disease (ERM) and number of fish vaccinated (millions) during 2011-2020

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No. of sites	26	24	19	21	17	18	18	17	21	18
No. of fish	20.3	20.4	9.9	10.0	8.3	7.3	5.4	3.4	3.4	2.8

Vaccines continued to be used as a preventative treatment against enteric redmouth disease (ERM), a potentially serious bacterial infection, caused by *Yersinia ruckeri*. Vaccination is generally carried out as a bath treatment at the fingerling stage, although some vaccines are administered by intra-peritoneal injection. A total of 2.8 million fish were vaccinated on 18 sites.

Organic Production

Of the 52 sites recorded as being active in rainbow trout production in 2020, none were certified as organic.

Escapes

There was one incident involving the loss of 1,601 fish from a rainbow trout site in 2020. There was one additional incident reported where the company confirmed there was no loss of fish.

//2. Atlantic salmon (*Salmo salar*) – ova and smolts

Production survey information was collected from all 24 companies actively involved in the freshwater production of Atlantic salmon, farming 78 active sites. This figure represents the entire freshwater industry operating in Scotland.

Company and Site Data

Table 12: Number of companies and sites in production during 2011-2020

Year	No. of companies	No. of sites
2011	28	98
2012	28	100
2013	27	102
2014	26	96
2015	25	87
2016	26	87
2017	24	79
2018	24	71
2019	23	76
2020	24	78

In 2020, the number of companies authorised by the Scottish Government for freshwater production of Atlantic salmon increased by one to 24. A total of 78 sites were actively engaged in commercial production, an increase of two from the 2019 figure.

Production and Staffing

Table 13: Number (000's) of smolts produced, staff employed and smolt productivity during 2011-2020

Year	Number (000's) of Smolts produced	Full-time Male	Full-time Female	Total Full-time	Part-time Male	Part-time Female	Total Part-time	Total Staff	Productivity, (000's) smolts per person
2011	43,626	207	18	225	45	23	68	293	148.9
2012	44,324	218	17	235	60	33	93	328	135.1
2013	40,457	226	11	237	29	19	48	285	142.0
2014	45,004	226	18	244	42	23	65	309	145.6
2015	44,571	208	31	239	41	14	55	294	151.6
2016	42,894	225	27	252	35	7	42	294	145.9
2017	46,152	219	31	250	33	8	41	291	158.6
2018	47,097	210	29	239	30	9	39	278	169.4
2019	51,430	215	32	247	26	8	34	281	183.0
2020	50,492	233	30	263	23	6	29	292	172.9

Smolt production in 2020 decreased by 2% compared to 2019. The number of staff employed in 2020 increased by 11 and productivity decreased by 6% to a figure of 172,900 smolts produced per person. Data for staffing and productivity in 2013 are shown, however, there are uncertainties with these data due to consolidation within the industry.

Smolts by Age Group

Table 14: Number of smolts (000's) produced by type during 2011-2020

Year	S½	S1	S1½	Total
2011	17,233	26,393	0	43,626
2012	18,795	25,239	290	44,324
2013	19,024	21,279	154	40,457
2014	22,367	22,473	164	45,004
2015	23,850	20,711	10	44,571
2016	25,072	17,822	0	42,894
2017	28,072	18,080	0	46,152
2018	24,058	23,039	0	47,097
2019	25,607	25,823	0	51,430
2020	22,872	27,620	0	50,492

In 2020, there was a decrease of 11% in the number of S½ smolts produced and an increase of 7% in the number of S1 smolts produced.

Production Systems

Table 15: Number and capacity of production systems during 2016-2020

System	No. of sites with system					Total capacity, 000's cubic metres				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Cages	38	36	27	27	27	400	357	346	351	379
Tanks and Raceways	49	43	44	49	51	46	55	54	68	62
Total	87	79	71	76	78	446	412	400	419	441

The types of facility used for the production of smolts in freshwater are cages or tanks and raceways. In 2020, the number of farms using cages remained the same as in 2019 and the number of farms using tanks and raceways increased by two. In terms of volume, cage capacity increased by 5,000 m³ and tank and raceway capacity increased by 28,000 m³. This resulted in a net increase in volume of 22,000 m³ available for the production of smolts in Scotland during 2020.

Table 16: Number (000's) of smolts produced and stocking densities by production system during 2016-2020

Year	Number of smolts produced (000's)					Stocking densities (smolts/m ³)				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Cages	15,884	17,207	21,771	18,964	18,331	40	48	63	54	48
All others	27,010	28,945	25,326	32,466	32,161	587	526	469	477	519
Total	42,894	46,152	47,097	51,430	50,492	-	-	-	-	-

The average stocking densities of cages decreased from 58 to 48 smolts per m³ in 2020 compared to 2019, while densities in tanks and raceways decreased from 477 to 519 smolts per m³.

Ova Production

Table 17: Number (000's) of salmon ova produced during 2011-2020

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No. of ova	78,208	57,489	56,904	33,450	11,605	13,689	12,631	15,228	11,618	20,021

In 2020, over 20 million ova were stripped, an increase of 72% from the number of ova produced in 2019.

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

The number of ova laid down to hatch was 78.6 million, an increase of 7.4 million (10.3%) on the 2019 figure. The majority of the ova (87.4%) were derived from foreign sources, this being an increase of 4.8 million (7.4%) on the 2019 figure. Supplies derived from GB broodstock (excluding wild origin ova) increased by 2.4 million, a 33.6% increase on the 2019 figure. In 2020, 258,000 ova from GB wild broodstock were laid down to hatch, ova derived from wild stocks are generally held and hatched for wild stock enhancement by the aquaculture industry in cooperation with wild fisheries managers.

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		

The figure for the number of smolts put to sea includes smolts produced in England and smolts imported from elsewhere, whereas smolt production data relate only to those produced in Scotland. Smolt producers estimate putting 55.6 million smolts to sea in 2021. The ratio of ova laid down to hatch to smolts produced in 2020 was greater than the ratio in 2019.

Scale of Production

Table 20: Smolt-producing sites grouped by numbers (000's) of smolts produced during 2011-2020

Year	Scale of production								No. of sites in production	Total smolts produced
	1-10	11-25	26-50	51-100	101-250	251-500	501-1,000	>1,000		
2011	1	0	4	5	11	14	9	17	61	43,626
2012	0	0	1	3	19	14	11	13	61	44,324
2013	1	0	1	7	14	14	7	14	58	40,457
2014	0	0	2	1	11	9	14	13	50	45,004
2015	1	1	2	4	9	11	16	11	55	44,571
2016	1	1	0	3	7	11	13	12	48	42,894
2017	1	0	0	2	6	11	10	15	45	46,152
2018	0	1	0	0	6	9	14	12	42	47,097
2019	1	0	0	2	8	8	10	16	45	51,430
2020	1	1	0	4	4	5	10	16	41	50,492

Note: These data refer only to sites producing smolts. The sites holding only ova, fry or parr are excluded.

The number of sites producing smolts in 2020 was 41. The number of sites producing less than 101,000 smolts increased by three while the number of sites producing between 101,000 and one million smolts per year decreased by 7. The number of sites producing in excess of one million smolts per year remained at 16 sites.

Production of Ova and Smolt by Production Area

Table 21: Staffing in 2020, ova laid down to hatch in 2019-2020, smolt production in 2019-2020 and estimated production in 2021-2022 by region

Region	Number of staff employed in 2020		Ova laid down to hatch (000's)		Smolt production (000's)		Estimated smolt production (000's)	
	F/T	P/T	2019	2020	2019	2020	2021	2022
North West	135	16	34,519	42,702	29,660	26,308	30,529	30,389
Orkney	0	2	0	100	102	97	65	125
Shetland	27	1	6,512	5,948	4,560	3,804	3,030	3,030
West	66	6	23,221	23,810	11,772	16,213	17,409	18,299
Western Isles	31	2	6,952	5,738	4,362	3,247	3,155	2,100
East and South	4	2	42	320	974	823	1,439	700
All Scotland	263	29	71,246	78,618	51,430	50,492	55,627	54,643

In 2020, the North West and the West were the main areas where ova were laid down to hatch. The North West and the West were the main smolt producing areas. The greatest number of staff were employed in the North West region.

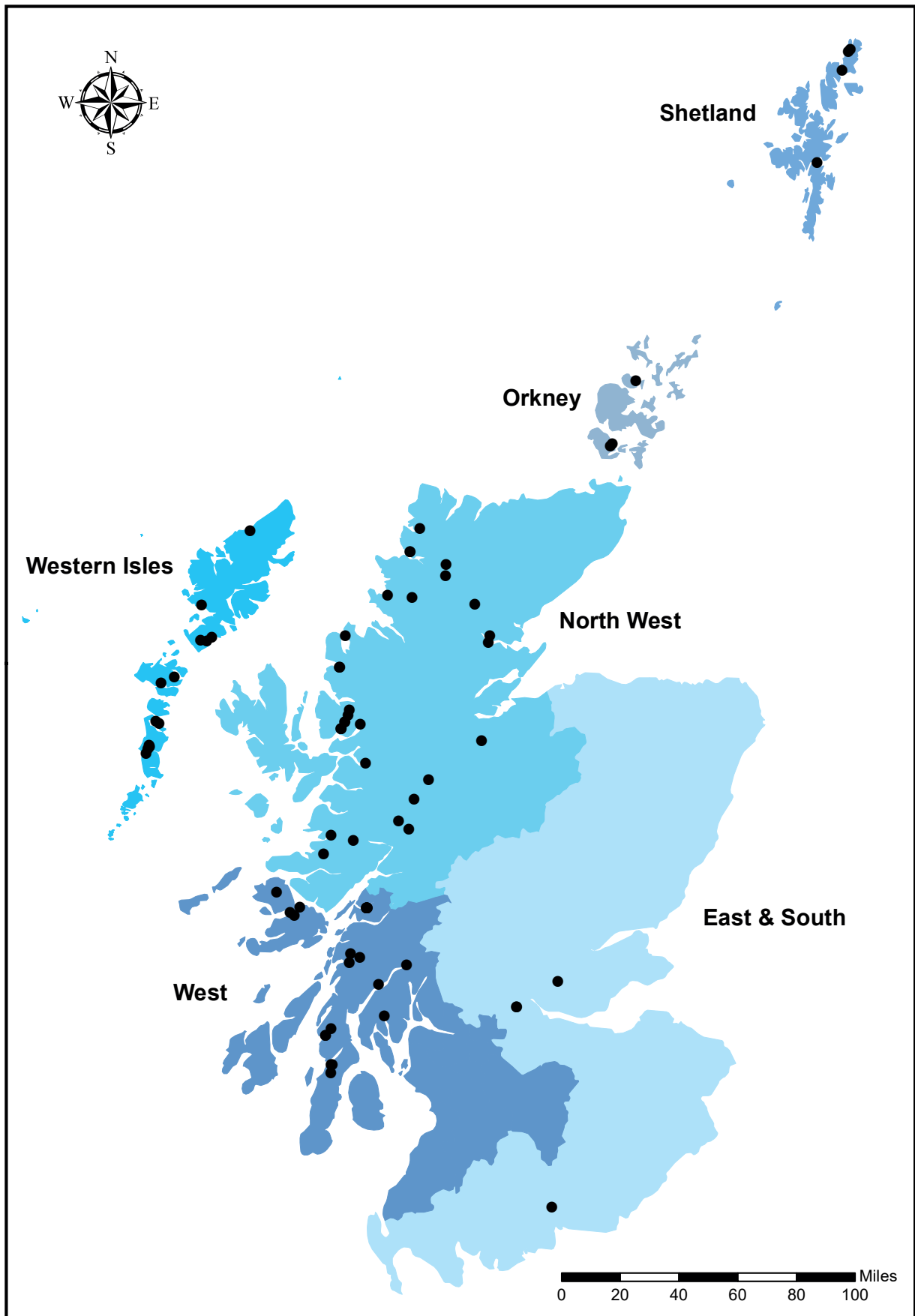


Figure 2: The regional distribution of active atlantic salmon smolt sites in 2020

© Crown copyright and database rights 2020 OS (100024655)

International Trade in Ova

Since the introduction of the EU single market on 1st January 1993 and the associated Fish Health Regulations common to all EU member states, a trade in live salmon and ova has been established. In addition, the European Economic Area (EEA) agreement allows trade between the EU and the member states of the European Free Trade Association (EFTA). Trade was based on the same rules as are established within the EU regarding compartments and zones declared free from listed diseases. This situation existed until 1st January 2021 and so covers the period of this report.

Trade with Third Countries has also been established, but only from sites that have met the same health standards as are established within the EU regarding the approval of farms and zones for listed diseases. Exports to countries outside the EU are subject to the health conditions placed by the importing country. Marine Scotland Science advises potential exporters to ascertain with the importing country any specific health testing requirements that may be a condition of import.

Imports and Exports

Table 22a: Source and number (000's) of salmon ova, fry, parr and smolts imported during 2011-2020 derived from health certificates

Import Year	Ova				Fry, Parr and Smolts	
	EU Member States	EFTA		Total	EU Member States	EFTA-Norway
		Iceland	Norway			
2011	3,400	0	35,851	39,251	800	0
2012	10,134	0	23,849	33,983	0	0
2013	10,700	2,719	35,044	48,463	55	0
2014	5,218	3,813	49,831	58,862	1,602	1,748
2015	4,815	8,978	45,926	59,719	2,118	365
2016	5,444	5,324	38,602	49,370	1,956	0
2017	7,000	13,883	37,025	57,908	2,012	0
2018	7,250	10,116	48,430	65,796	1,700	0
2019	10,184	26,352	23,673	60,209	297	0
2020	17,746	42,106	220	60,072	1,130	0

The numbers of ova imported decreased by 0.2%. The number of fry, parr and smolts imported increased from that observed in 2019, with over 1.1 million imported from EU member states during 2020.

Table 22b: Destination and number (000's) of salmon ova, fry, parr and smolts exported during 2011-2020 derived from health certificates

Export year	Farmed origin ova			Total	Fry, Parr and Smolts
	EU	Norway	Others		
2011	0	0	820	820	183
2012	0	0	0	0	55
2013	650	0	0	650	404
2014	0	0	0	0	259
2015	93	0	2	95	8
2016	335	0	23	358	173
2017	16	0	323	339	206
2018	23	0	0	23	71
2019	0	0	0	0	263
2020	0	0	0	0	389

In 2020, no ova were exported. Fry, parr and smolt exports increased by 126,000 fish on the 2019 figure.

Vaccines

Table 23: Number of sites using vaccines and number (millions) of fish vaccinated during 2011-2020

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No. of sites	67	63	63	56	55	47	46	43	46	43
No. of fish (millions) vaccinated	49.2	48.1	47.5	44.7	48.0	42.6	58.4	51.0	52.4	59.2

Vaccines were used to provide protection against furunculosis, infectious pancreatic necrosis (IPN), ERM, vibriosis and salmonid alphavirus (SAV). The majority of fish were vaccinated against furunculosis, IPN and SAV, with smaller numbers of fish being vaccinated against ERM and vibriosis. A total of 59.2 million fish were vaccinated across 43 sites.

Escapes

In 2020, there was one escape incident involving the loss of 20 fish from sites rearing freshwater Atlantic salmon. There was one additional incident reported where the company confirmed there was no loss of fish.

// 3.Atlantic salmon – Production

Production

Production survey information was collected from all 11 companies actively involved in Atlantic salmon production, farming 232 active sites. This figure represents the entire industry operating in Scotland.

Table 24: Annual production of salmon (tonnes) during 2000-2020 and projected production in 2021

Year	Tonnes	Percentage difference	Year	Tonnes	Percentage difference
2000	128,959	2	2011	158,018	2.5
2001	138,519	7	2012	162,223	2.7
2002	144,589	4	2013	163,234	0.6
2003	169,736	17	2014	179,022	9.7
2004	158,099	-7	2015	171,722	-4.1
2005	129,588	-18	2016	162,817	-5.2
2006	131,847	2	2017	189,707	16.5
2007	129,930	-1.4	2018	156,025	-17.8
2008	128,606	-1	2019	203,881	30.7
2009	144,247	12	2020	192,129	-5.8
2010	154,164	6.9	2021	236,000*	

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

The total production of Atlantic salmon during 2020 was 192,129 tonnes, a decrease of 11,752 tonnes (5.8%) on the 2019 total. This was the second highest level of production recorded in Scotland.

Table 25: Number (000's), production (tonnes) of salmon harvested and mean fish weight (kg) per year class during 2011-2020

	Year of smolt input	Year of harvest	Number (000's)	Production (tonnes)	Mean weight at harvest (kg)
Harvest in year 0 (i.e. in year of input)	2011	2011	109	307	2.8
	2012	2012	127	301	2.4
	2013	2013	0	0	-
	2014	2014	286	720	2.5
	2015	2015	223	626	2.8
	2016	2016	114	333	2.9
	2017	2017	0	0	-
	2018	2018	84	247	2.9
	2019	2019	319	931	2.9
	2020	2020	323	1,208	3.7
Harvest in year 1	2010	2011	18,694	91,105	4.9
	2011	2012	21,502	97,744	4.5
	2012	2013	21,264	106,161	5.0
	2013	2014	20,316	101,997	5.0
	2014	2015	24,038	114,112	4.7
	2015	2016	24,633	111,163	4.5
	2016	2017	25,596	126,445	4.9
	2017	2018	21,825	110,554	5.1
	2018	2019	26,324	132,090	5.0
	2019	2020	29,244	145,833	5.0
Harvest in year 2	2009	2011	13,772	66,606	4.8
	2010	2012	13,053	64,178	4.9
	2011	2013	11,283	57,073	5.1
	2012	2014	13,712	76,305	5.6
	2013	2015	10,910	56,984	5.2
	2014	2016	10,940	51,321	4.7
	2015	2017	11,094	63,262	5.7
	2016	2018	7,165	45,224	6.3
	2017	2019	12,212	70,860	5.8
	2018	2020	8,169	45,088	5.5

Table 26: Number (000's) and production (tonnes) of grilse and pre-salmon harvested during 2011-2020

Year	Grilse (January-August)			Pre-salmon (September-December)		
	Number	Tonnes	Average weight (kg)	Number	Tonnes	Average weight (kg)
2011	7,604	35,146	4.6	11,090	55,959	5.0
2012	11,337	53,216	4.7	10,165	44,528	4.4
2013	9,618	47,496	4.9	11,646	58,665	5.0
2014	9,048	46,686	5.2	11,268	55,311	4.9
2015	11,243	53,930	4.8	12,795	60,182	4.7
2016	13,463	59,853	4.4	11,170	51,310	4.6
2017	13,523	68,116	5.0	12,073	58,329	4.8
2018	10,815	53,244	4.9	11,010	57,310	5.2
2019	14,495	72,243	5.0	11,829	59,847	5.1
2020	18,328	88,025	4.8	10,916	57,808	5.3

Table 27: Percentage (by weight) of annual production by growth stage harvested during 2011-2020

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Growth stage	-	-	-	-	-	-	-	-	-	-
Input year fish	<1	<1	0	<1	<1	<1	0	<1	<1	<1
Grilse	22	33	29	26	31	37	36	34	35	46
Pre-salmon	35	27	36	31	35	31	31	36	29	30
Year 2 salmon	42	39	35	42	33	31	33	29	35	23

Survival and Production in Smolt Year Classes

Table 28: Survival and production in smolt year classes during 2001-2020

Year of smolt input (000's)	Harvest year 0				Harvest year 1				Harvest year 2				Total % of year class harvested (survival)	Year class weight (tonnes)	Yield per smolt (kg)
	Number (000's)	Weight (tonnes)	Mean weight (kg)	% harvest	Number (000's)	Weight (tonnes)	Mean weight (kg)	% harvest	Number (000's)	Weight (tonnes)	Mean weight (kg)	% harvest			
2001 48,643	557	1,227	2.2	1.1	23,528	90,230	3.8	48.4	15,619	73,255	4.7	32.1	81.6	164,712	3.39
2002 50,086	272	824	3.0	0.5	22,602	96,205	4.3	45.1	15,555	71,988	4.6	31.1	76.7	169,017	3.37
2003 43,083	82	276	3.4	0.2	19,596	85,792	4.4	45.5	13,920	61,850	4.4	32.3	78.0	147,918	3.43
2004 39,041	168	319	1.9	0.4	15,075	67,738	4.5	38.6	14,237	67,537	4.7	36.5	75.5	135,594	3.47
2005 37,168	0	0	-	0	14,036	64,099	4.6	37.8	14,999	69,000	4.6	40.3	78.1	133,099	3.58
2006 41,091	115	211	1.8	0.3	13,787	60,890	4.4	33.5	15,881	73,631	4.6	38.6	72.5	134,732	3.28
2007 37,853	23	40	1.7	0.06	13,011	54,759	4.2	34.4	14,133	66,448	4.7	37.3	71.8	121,247	3.20
2008 36,662	116	216	1.9	0.3	16,338	77,621	4.7	44.6	13,666	68,070	5.0	37.3	82.2	145,907	3.98
2009 38,548	81	178	2.2	0.2	18,266	85,826	4.7	47.4	13,772	66,606	4.8	35.7	83.3	152,610	3.96
2010 38,490	128	268	2.1	0.3	18,694	91,105	4.9	48.6	13,053	64,178	4.9	33.9	82.8	155,551	4.04
2011 42,733	109	307	2.8	0.3	21,502	97,744	4.5	50.3	11,283	57,073	5.1	26.4	77.0	155,124	3.63
2012 41,094	127	301	2.4	0.3	21,264	106,161	5.0	51.7	13,712	76,305	5.6	33.4	85.4	182,767	4.45
2013 40,936	0	0	-	0	20,316	101,997	5.0	49.6	10,910	56,984	5.2	26.7	76.3	158,981	3.88
2014 48,112	286	720	2.5	0.6	24,038	114,112	4.7	50.0	10,940	51,321	4.7	22.7	73.3	166,153	3.45
2015 45,465	223	626	2.8	0.5	24,633	111,163	4.5	54.2	11,094	63,262	5.7	24.4	79.1	175,051	3.85
2016 42,957	114	333	2.9	0.3	25,596	126,445	4.9	59.6	7,165	45,224	6.3	16.7	76.6	172,002	4.00
2017 46,116	0	0	-	0	21,825	110,554	5.1	47.3	12,212	70,860	5.8	26.5	73.8	181,414	3.93
2018 45,513	84	247	2.9	0.2	26,324	132,090	5.0	57.8	8,169	45,088	5.5	17.9	75.9	177,425	3.90
2019 52,990	319	931	2.9	0.6	29,244	145,833	5.0	55.2							
2020 52,492	323	1,208	3.7	0.6											

In 2018, the last year for which survival can be calculated, the survival rate from smolt input to harvest increased to 75.9%. Of the 2019 year class, 55.8% of the input has been harvested, 2.2% lower than the average harvest of fish one year after input in the 2018 year class. In 2020, 0.6% of the fish were harvested from the 2020 input. This was the same as the proportion of fish harvested from the same year class in 2019.

Smolts to Sea

Table 29: Number (000's) and origin of smolts put to sea during 2011-2020

Year	Smolts put to sea (000's)			Total (000's)	Scottish Origin %	English Origin		Other Origin	
	S½	S1	S1½			(000's)	%	(000's)	%
2011	17,721	25,012	0	42,733	96	1,765	4	0	0
2012	17,334	23,480	280	41,094	96	1,510	4	0	0
2013	19,262	21,534	140	40,936	97	1,169	3	0	0
2014	23,758	24,212	142	48,112	94	893	2	2,072	4
2015	22,886	22,569	10	45,465	96	938	2	1,082	2
2016	22,052	20,905	0	42,957	97	1,048	2	611	1
2017	25,490	20,626	0	46,116	97	976	2	300	<1
2018	21,767	23,746	0	45,513	96	1,318	3	364	<1
2019	24,525	28,465	0	52,990	98	751	1	297	<1
2020	24,809	27,683	0	52,492	96	1,070	2	1,130	2

The total number of smolts put to sea in 2020 was over 52.4 million. This smolt input comprised S½s (47.3%) and S1s (52.7%). Four percent of the smolts stocked to Scottish salmon farms were sourced from outwith Scotland, 2% of which came from sources outwith GB. This was an increase of 2% compared with the proportion observed in 2019.

Survival and Production in Smolt Year Classes by Production Area

Table 30: Number (000's) of smolts put to sea and year class survival by area during 2009-2020

Region	Smolts put to sea (000's)		Harvest in year 0			Harvest in year 1			Harvest in year 2			Total Harvest	
	Year	No	Year	No	%	Year	No	%	Year	No	%	No	%
North West	2009	9,986	2009	42	0.4	2010	7,045	70.5	2011	2,003	20.1	9,090	91.0
	2010	9,924	2010	117	1.2	2011	6,324	63.7	2012	2,802	28.2	9,243	93.1
	2011	12,605	2011	53	0.4	2012	7,937	63.0	2013	1,744	13.8	9,734	77.2
	2012	11,588	2012	127	1.1	2013	7,179	62.0	2014	2,623	22.6	9,929	85.7
	2013	10,975	2013	0	0	2014	6,549	59.7	2015	1,695	15.4	8,244	75.1
	2014	17,543	2014	191	1.1	2015	9,649	55.0	2016	3,768	21.5	13,608	77.6
	2015	8,646	2015	223	2.6	2016	6,122	70.8	2017	1,695	19.6	8,040	93.0
	2016	14,534	2016	114	0.8	2017	9,711	66.8	2018	1,882	12.9	11,707	80.5
	2017	9,527	2017	0	0	2018	3,809	40.0	2019	1,739	18.3	5,548	58.2
	2018	15,177	2018	84	0.6	2019	10,947	72.1	2020	1,852	12.2	12,883	84.9
	2019	15,071	2019	205	1.4	2020	7,838	52.0					
Orkney	2009	1,154	2009	0	0	2010	741	64.2	2011	95	8.2	836	72.4
	2010	2,557	2010	0	0	2011	1,126	44.0	2012	936	36.6	2,062	80.6
	2011	2,718	2011	0	0	2012	1,203	44.3	2013	765	28.1	1,968	72.4
	2012	2,727	2012	0	0	2013	1,422	52.1	2014	1,167	42.8	2,589	94.9
	2013	2,104	2013	0	0	2014	1,023	48.6	2015	512	24.3	1,535	72.9
	2014	2,829	2014	0	0	2015	1,412	49.9	2016	1,244	44.0	2,656	93.9
	2015	3,266	2015	0	0	2016	1,580	48.4	2017	1,521	46.6	3,101	95.0
	2016	3,050	2016	0	0	2017	1,184	38.8	2018	1,571	51.5	2,755	90.3
	2017	3,524	2017	0	0	2018	1,699	48.2	2019	835	23.7	2,534	71.9
	2018	3,616	2018	0	0	2019	2,068	57.2	2020	1,382	38.2	3,450	95.4
	2019	4,670	2019	0	0	2020	2,230	47.8					
Shetland	2009	10,031	2009	29	0.3	2010	4,201	41.9	2011	3,234	32.2	7,464	74.4
	2010	11,573	2010	0	0	2011	4,134	35.7	2012	4,292	37.1	8,426	72.8
	2011	11,206	2011	49	0.4	2012	4,911	43.8	2013	2,709	24.2	7,669	68.4
	2012	11,389	2012	0	0	2013	4,995	43.9	2014	4,022	35.3	9,017	79.2
	2013	9,956	2013	0	0	2014	4,289	43.1	2015	3,034	30.5	7,323	73.6
	2014	11,309	2014	0	0	2015	5,042	44.6	2016	2,663	23.5	7,705	68.1
	2015	9,040	2015	0	0	2016	5,322	58.9	2017	1,592	17.6	6,914	76.5
	2016	10,640	2016	0	0	2017	6,012	56.5	2018	1,723	16.2	7,735	72.7
	2017	8,539	2017	0	0	2018	4,579	53.6	2019	2,005	23.5	6,584	77.1
	2018	11,312	2018	0	0	2019	4,430	39.2	2020	1,813	16.0	6,243	55.2
	2019	7,613	2019	114	1.5	2020	4,955	65.1					
South West	2009	8,200	2009	10	0.1	2010	2,700	32.9	2011	4,697	57.3	7,407	90.3
	2010	6,565	2010	12	0.2	2011	3,000	45.7	2012	2,648	40.3	5,660	86.2
	2011	7,493	2011	0	0	2012	2,673	35.7	2013	3,706	49.4	6,379	85.1
	2012	7,363	2012	0	0	2013	2,841	38.6	2014	3,863	52.5	6,704	91.1
	2013	7,801	2013	0	0	2014	3,202	41.0	2015	3,564	45.7	6,766	86.7
	2014	6,981	2014	95	1.4	2015	3,771	54.0	2016	2,023	29.0	5,889	84.4
	2015	11,156	2015	0	0	2016	4,944	44.3	2017	3,643	32.7	8,587	77.0
	2016	8,093	2016	0	0	2017	4,643	57.4	2018	1,622	20.0	6,265	77.4
	2017	11,106	2017	0	0	2018	5,330	48.0	2019	3,648	32.8	8,978	80.8
	2018	7,177	2018	0	0	2019	4,799	66.9	2020	1,150	16.0	5,949	82.9
	2019	11,100	2019	0	0	2020	6,126	55.2					
Western Isles	2009	9,177	2009	0	0	2010	3,579	39.0	2011	3,743	40.8	7,322	79.8
	2010	7,870	2010	0	0	2011	4,110	52.2	2012	2,375	30.2	6,485	82.4
	2011	8,711	2011	7	0.1	2012	4,778	54.9	2013	2,358	27.1	7,143	82.0
	2012	8,027	2012	0	0	2013	4,827	60.1	2014	2,037	25.4	6,864	85.5
	2013	10,100	2013	0	0	2014	5,254	52.0	2015	2,105	20.8	7,359	72.8
	2014	9,451	2014	0	0	2015	4,164	44.1	2016	1,242	13.1	5,406	57.2
	2015	13,357	2015	0	0	2016	6,665	49.9	2017	2,643	19.8	9,308	69.7
	2016	6,640	2016	0	0	2017	4,046	60.9	2018	367	5.5	4,413	66.4
	2017	13,420	2017	0	0	2018	6,408	47.7	2019	3,985	29.7	10,393	77.4
	2018	8,231	2018	0	0	2019	4,080	49.6	2020	1,972	24.0	6,052	73.5
	2019	14,536	2019	0	0	2020	8,094	55.7					
	2020	9,282	2020	0	0								

The practice of putting smolts to sea in one region and subsequently moving them to another sea water site in another region for harvest can lead to an overestimation of survival in some regions and under-estimation in others.

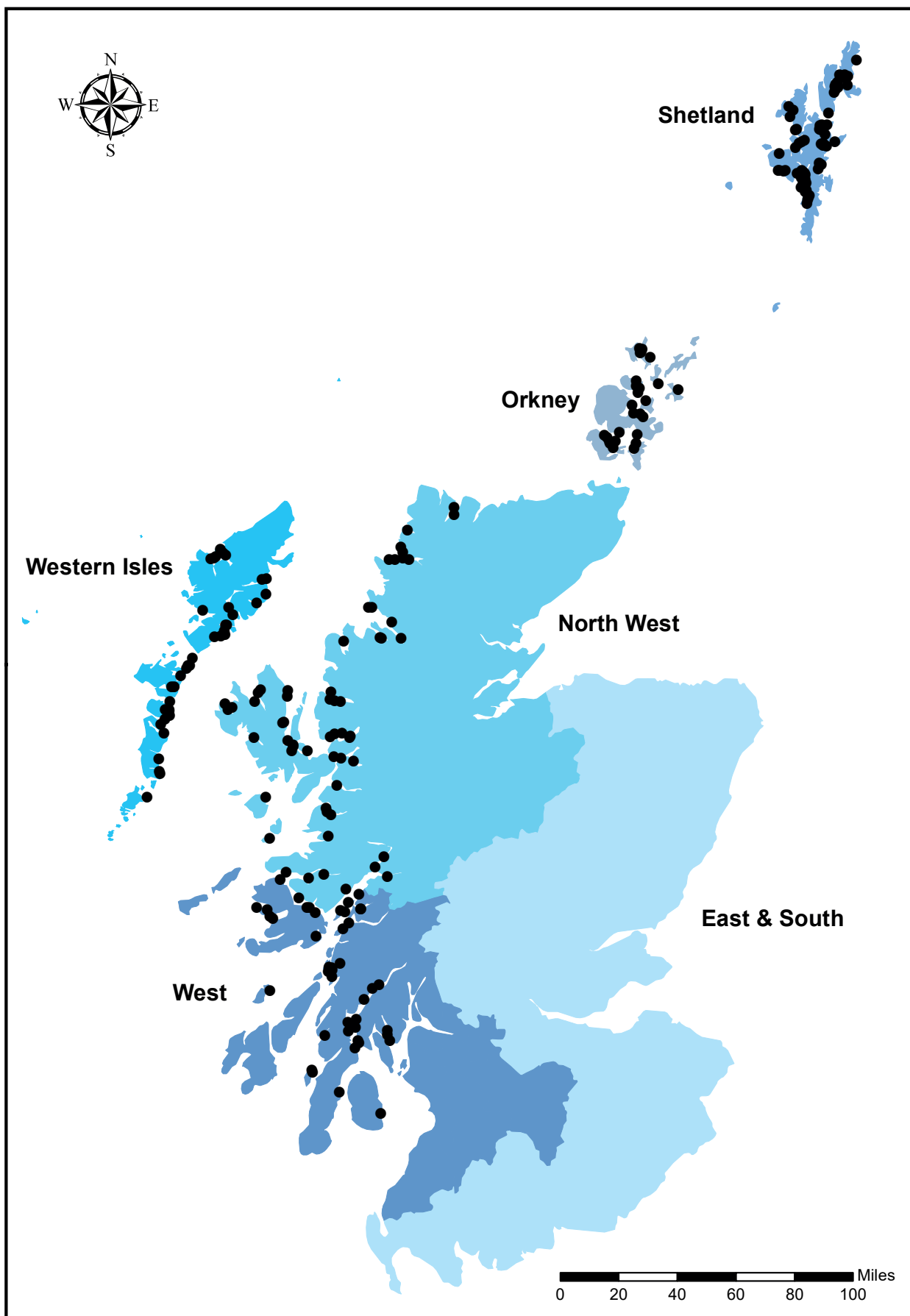


Figure 3: The regional distribution of active atlantic salmon production sites in 2020

© Crown copyright and database rights 2020 OS (100024655)

Staffing

Table 31: Number of staff employed in the production of salmon during 2011-2020

Year	Full-time Male	Full-time Female	Total Full-time	Part-time Male	Part-time Female	Total Part-time	Total Staff	Productivity (tonnes/person)
2011	847	76	923	62	28	90	1,013	156.0
2012	870	74	944	80	35	115	1,059	153.2
2013	997	84	1,081	74	25	99	1,180	138.3
2014	1,082	109	1,191	98	36	134	1,325	135.1
2015	1,125	131	1,256	70	37	107	1,363	126.0
2016	1,182	197	1,379	67	40	107	1,486	109.6
2017	1,175	145	1,320	59	10	69	1,389	136.6
2018	1,273	142	1,415	35	16	51	1,466	106.4
2019	1,425	166	1,591	35	25	60	1,651	123.5
2020	1,412	145	1,557	45	28	73	1,630	117.9

In 2020, the total number of staff employed in salmon production was 1,630, a decrease of 21 compared with 2019. The staffing figures collected refer specifically to the production of Atlantic salmon and do not include figures for staff involved with processing or marketing activities. Productivity decreased from 123.5 to 117.9 tonnes produced per person.

Production Methods

Table 32: Production methods, capacity, tonnage and average stocking densities (kg/m³) during 2018-2020

Method	Number of sites			Total capacity (000's cubic metres)			Production (tonnes)		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Seawater tanks	4	2	1	7.1	6.3	5.1	35	28	18
Seawater cages	217	224	231	19,922	21,628	22,818	155,990	203,853	192,111
For cage sites: ratio of production (kg) to cage capacity (m ³)							7.8	9.4	8.4

In 2020, the majority of fish were produced in seawater cages. There were 18 tonnes of production from seawater tank sites in 2020. This reflects the high installation and running costs incurred in operating seawater tank systems. Most seawater tank capacity has been re-deployed for the production of other species of marine finfish or salmon broodstock.

Sea cage capacity increased by 1,190,000 m³ during 2020 and the number of sea cage sites in production increased by seven. Production efficiency in sea cages, measured as the ratio of fish weight in kilograms produced per cubic metre, decreased from 9.4 kg/m³ in 2019 to 8.4 kg/m³ in 2020.

Scale of Production by Site

Table 33: Number of sites shown in relation to their production grouping and percentage share of production 2011-2020

Production grouping (tonnes)	0	1-50	51-100	101-200	201-500	501-1,000	>1,000	Total	
								Sites*	Tonnes
2011	106	9	7	9	28	29	66	254	158,018
2012	115	3	5	9	25	33	67	257	162,223
2013	112	9	3	12	18	36	67	257	163,234
2014	117	8	1	9	26	29	70	260	179,022
2015	115	2	1	9	26	26	75	254	171,722
2016	117	3	3	9	22	26	73	253	162,817
2017	93	2	0	8	13	33	77	226	189,707
2018	100	6	2	6	17	26	64	221	156,025
2019	80	8	7	1	17	24	89	226	203,881
2020	101	6	2	7	17	18	81	232	192,129
2011	0	0.2	0.3	0.8	6.4	13.4	78.9	-	-
2012	0	<0.1	0.2	0.9	5.0	15.0	78.8	-	-
2013	0	0.1	0.1	1.1	4.0	16.7	78.0	-	-
2014	0	0.1	<0.1	0.8	5.0	12.0	82.0	-	-
2015	0	<0.1	<0.1	0.9	5.0	11.6	82.4	-	-
2016	0	<0.1	0.1	0.8	4.6	11.7	82.8	-	-
2017	0	<0.1	0	0.6	3.2	13.9	82.3	-	-
2018	0	<0.1	<0.1	0.6	3.7	13.5	82.0	-	-
2019	0	<0.1	0.3	<0.1	2.8	9.7	87.1	-	-
2020	0	0.1	0.1	0.5	2.8	6.9	89.6	-	-

*Includes farms stocked but having no production.

In 2020, the number of sites with no production increased by 21 and the number producing 1 to 500 tonnes decreased by one. The number of sites producing over 500 tonnes decreased by 14 and the trend towards production in larger sites continued, with 89.6% of production being derived from sites producing over 1,000 tonnes.

Company Productivity

Table 34: Number of companies grouped by production (tonnes), staff and productivity (tonnes per person) during 2019-2020

Total Tonnage		0-100	101-200	201-400	401-700	701-1,000	1,001-2,000	>2,000	Total
No. of companies	2019	4	0	0	0	0	1	6	11
	2020	4	0	0	0	0	1	6	11
No. of tonnes	2019	28	0	0	0	0	1,636	202,217	203,881
	2020	18	0	0	0	0	1,722	190,389	192,129
Staff (total)	2019	13	0	0	0	0	36	1,602	1,651
	2020	36	0	0	0	0	40	1,554	1,630
Productivity (tonnes/person)	2019	2	-	-	-	-	45	126	124
	2020	0.5	-	-	-	-	43	123	118

The greatest productivity of 123 tonnes per person was achieved in the companies producing over 2,000 tonnes. The least productivity of 0.5 tonnes per person was from the companies producing between 0-100 tonnes. In comparison with 2019, the average company productivity decreased from 124 to 118 tonnes per person. Overall, production was dominated by six companies in 2020 which between them accounted for 99% of Scotland's farmed Atlantic salmon production.

Staff and Production by Production Area

Table 35: Staff and production (tonnes) by area 2011-2020 and projected production in 2021

Region	Year	Staff		Annual Production	Productivity (t/person)	Year of input		Grilse		Pre-salmon		Year 2 Salmon	
		F/T	P/T			Tonnes	Mean weight (kg)	Tonnes	Mean weight (kg)	Tonnes	Mean weight (kg)	Tonnes	Mean weight (kg)
North west	2011	303	38	41,656	122	174	3.2	13,152	4.3	16,879	5.1	11,451	5.7
	2012	300	40	50,987	150	301	2.4	31,121	4.7	5,842	4.7	13,723	4.9
	2013	350	48	43,320	109	0	-	17,937	4.9	16,417	4.7	8,966	5.1
	2014	348	46	50,873	129	511	2.7	26,440	5.3	8,731	5.5	15,191	5.8
	2015	382	66	54,741	122	626	2.8	18,046	4.8	26,897	4.6	9,172	5.4
	2016	538	30	46,917	83	333	2.9	21,576	4.7	7,515	5.0	17,493	4.6
	2017	437	11	55,690	124	0	-	32,113	5.1	14,920	4.4	8,657	5.1
	2018	453	17	30,948	66	247	2.9	11,899	4.9	7,780	5.6	11,022	5.9
	2019	662	32	66,633	96	472	2.3	35,020	5.0	21,873	5.5	9,268	5.3
	2020	546	19	48,762	86	539	4.2	24,065	4.7	13,852	5.2	10,306	5.7
	2021			86,934*									
Orkney	2011	69	0	6,369	92	0	-	3,508	5.1	2,355	5.4	506	5.3
	2012	65	6	11,694	165	0	-	3,532	5.3	2,720	5.1	5,442	5.8
	2013	86	3	11,479	129	0	-	3,191	5.1	4,491	5.7	3,797	5.0
	2014	90	6	13,029	136	0	-	980	5.5	5,045	6.0	7,004	6.0
	2015	93	1	11,074	118	0	-	1,386	5.0	6,129	5.4	3,559	6.9
	2016	102	8	14,752	134	0	-	3,491	4.6	4,668	5.7	6,593	5.3
	2017	108	9	16,756	143	0	-	3,215	5.3	3,823	6.6	9,718	6.4
	2018	93	0	20,956	225	0	-	2,808	5.2	6,906	6.0	11,242	7.2
	2019	110	1	17,758	160	0	-	6,393	5.9	5,952	6.1	5,413	6.5
	2020	138	13	21,612	143	0	-	4,383	5.8	8,875	6.0	8,354	6.0
	2021			23,104*									
Shetland	2011	189	22	35,493	168	118	2.4	4,611	4.7	16,071	5.1	14,693	4.5
	2012	188	16	43,010	211	0	-	6,083	4.3	15,784	4.5	21,143	4.9
	2013	210	14	36,694	164	0	-	5,822	4.5	18,121	4.9	12,751	4.7
	2014	224	24	46,369	187	0	-	6,196	5.7	17,604	5.5	22,569	5.6
	2015	228	19	42,786	173	0	-	11,134	5.4	14,939	5.0	16,713	5.5
	2016	200	23	37,464	168	0	-	11,844	4.4	12,906	4.9	12,714	4.8
	2017	207	12	38,908	178	0	-	14,132	4.6	15,284	5.2	9,492	6.0
	2018	206	3	35,947	172	0	-	12,741	5.4	12,835	5.8	10,371	6.0
	2019	227	6	36,141	155	459	4.0	11,478	5.2	12,451	5.6	11,753	5.9
	2020	280	12	40,749	140	356	4.2	16,452	5.6	12,743	6.3	11,198	6.2
	2021			42,131*									
South West	2011	212	17	37,157	162	0	-	3,618	4.8	10,899	4.8	22,640	4.8
	2012	221	24	26,850	110	0	-	9,315	5.4	4,508	4.8	13,027	4.9
	2013	251	19	34,924	129	0	-	5,847	4.8	9,111	5.6	19,966	5.4
	2014	279	29	34,976	114	209	2.2	4,278	5.1	10,476	4.4	20,013	5.2
	2015	302	12	35,911	114	0	-	10,356	4.7	6,686	4.3	18,869	5.3
	2016	305	26	31,022	94	0	-	12,349	4.3	9,246	4.4	9,427	4.7
	2017	316	18	44,575	133	0	-	11,206	5.7	12,903	4.8	20,466	5.6
	2018	375	14	37,506	96	0	-	9,690	5.1	17,246	5.0	10,570	6.5
	2019	338	7	44,881	130	0	-	8,071	5.4	13,846	4.2	22,964	6.3
	2020	331	17	36,367	105	313	2.8	16,394	4.9	13,519	4.8	6,141	5.3
	2021			47,189*									
Western Isles	2011	150	13	37,343	229	15	2.1	10,257	4.7	9,755	5.0	17,316	4.6
	2012	170	29	29,682	149	0	-	3,165	3.7	15,674	4.0	10,843	4.6
	2013	184	15	36,817	185	0	-	14,699	5.2	10,525	5.2	11,593	4.9
	2014	250	29	33,775	121	0	-	8,792	4.5	13,455	4.1	11,528	5.7
	2015	251	9	27,210	105	0	-	13,008	4.4	5,531	4.5	8,671	4.1
	2016	234	20	32,662	129	0	-	10,593	4.2	16,975	4.1	5,094	4.1
	2017	252	19	33,778	125	0	-	7,450	4.7	11,399	4.6	14,929	5.6
	2018	288	17	30,668	101	0	-	16,106	4.5	12,543	4.4	2,019	5.5
	2019	254	14	38,468	144	0	-	11,281	4.1	5,725	4.2	21,462	5.4
	2020	262	12	44,639	163	0	-	26,731	4.3	8,819	4.6	9,089	4.6
	2021			36,642*									
Scotland Total	2011	923	90	158,018	156	307	2.8	35,146	4.6	55,959	5.0	66,606	4.8
	2012	944	115	162,223	153	301	2.4	53,216	4.7	44,528	4.4	64,178	4.9
	2013	1,081	99	163,234	138	0	-	47,496	4.9	58,665	5.0	57,073	5.1
	2014	1,191	134	179,022	135	720	2.5	46,686	5.2	55,311	4.9	76,305	5.6
	2015	1,256	107	171,722	126	626	2.8	53,930	4.8	60,182	4.7	56,984	5.2
	2016	1,379	107	162,817	110	333	2.9	59,853	4.4	51,310	4.6	51,321	4.7
	2017	1,320	69	189,707	137	0	-	68,116	5.0	58,329	4.8	63,262	5.7
	2018	1,415	51	156,025	106	247	2.9	53,244	4.9	57,310	5.2	45,224	6.3
	2019	1,591	60	203,881	124	931	2.9	72,243	5.0	59,847	5.1	70,860	5.8
	2020	1,557	73	192,129	118	1,208	3.7	88,025	4.8	57,808	5.3	45,088	5.5
	2021			236,000*									

*Estimated production for 2021.

Company and Site Data

Table 36: Number of companies and sites engaged in the production of Atlantic salmon during 2011-2020

Year	Number of companies			Number of sites		
	Producing	Non-producing	Total	Producing	Non-producing	Total
2011	21	6	27	148	106	254
2012	16	6	22	142	115	257
2013	15	6	21	145	112	257
2014	11	7	18	143	117	260
2015	10	6	16	139	115	254
2016	10	5	15	136	117	253
2017	8	4	12	133	93	226
2018	8	4	12	121	100	221
2019	8	3	11	146	80	226
2020	8	3	11	131	101	232

The number of companies authorised and actively producing Atlantic salmon in 2020 was eight, the same number as in 2019. Three companies remained active and authorised, although not producing salmon for harvest in 2020. This continued the trend of Atlantic salmon production becoming concentrated within fewer companies. These 11 companies had 232 registered active sites, although not all these sites produced fish for harvest in 2020.

Fallowing

Table 37: Number of seawater cage sites employing a fallow period during 2011-2020

Year	Fallow Period (weeks)						Total
	0	<4	4-8	9-26	27-51	52	
2011	60	10	31	85	27	39	252
2012	58	4	31	97	28	37	255
2013	51	4	31	92	35	43	253
2014	48	4	36	89	29	51	257
2015	45	6	41	84	27	47	250
2016	47	5	27	88	32	49	248
2017	40	9	21	88	24	40	222
2018	46	5	32	76	26	32	217
2019	37	12	31	85	22	37	224
2020	57	8	33	74	14	45	231

Of the 231 seawater cage sites recorded as being active in 2020, 45 sites were fallow for the entire year whilst 129 sites were fallow for a variable period. There were 57 sites that did not fallow in 2020. The normal production cycle in seawater varies in length between 12 months and two years. A fallow period at the end of production can break the cycle of disease or parasitic infections.

Broodstock Sites

Table 38: Number of sites holding Atlantic salmon broodstock during 2011-2020

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Broodstock sites	11	7	8	8	4	3	4	4	3	4

In 2020, the number of freshwater and seawater sites holding broodstock increased to four sites. The number of sites holding broodstock in any one year can be variable, as can be seen from the previous years' figures, which indicate no obvious trend. A total of 3,776 fish were stripped, yielding 20.0 million ova, giving an average yield of 5,297 ova per fish.

Organic Production

Table 39: Organic production of Atlantic salmon during 2011-2020

Year	Number of active cage sites	Number of cage sites certified as organic	Production (tonnes)
2011	252	10	3,104
2012	255	7	4,597
2013	253	8	5,207
2014	257	8	3,588
2015	250	5	2,382
2016	248	5	3,903
2017	222	5	4,644
2018	217	5	4,219
2019	224	4	4,462
2020	231	9	12,528

Of the 231 active Atlantic salmon seawater cage sites in 2020, nine were certified as organic, producing 12,528 tonnes.

Escapes

There were five incidents involving the loss of 204,901 fish from seawater Atlantic salmon sites in 2020. There were 13 additional incidents reported where the companies confirmed there was no loss of fish.

// 4. Other Species

The Scottish aquaculture industry has continued to farm other species of fish during 2020. The production of brown/sea trout (*Salmo trutta*) showed a small decrease, with the majority of production being for the angling restocking market. In 2020 there was production of halibut (*Hippoglossus hippoglossus*) but the figure cannot be published without revealing the production from an individual company. Lumpsucker (*Cyclopterus lumpus*) and several species of wrasse (Labridae) were also produced in 2020. The production of lumpsucker and wrasse are targeted at the marine Atlantic salmon industry where they are used as a biological control for parasites. Lumpsucker and wrasse figures were amalgamated into a single cleaner fish category as separate publication of lumpsucker data would reveal the production of an individual company.

Company, Site and Production Data

Table 40: Number of companies and sites producing other species in 2020, annual production of other species (tonnes) during 2017-2020 and projected production in 2021

Species	No. of companies	No. of sites	2017 Production tonnage	2018 Production tonnage	2019 Production tonnage	2020 Production tonnage	2021 Production tonnage*
Brown/sea trout	8	9	61	20	25	24	24
Halibut	1	3	†	†	†	†	‡
Cleaner fish▲	2	4	30	20	16	19	45

* Industry estimates based on stocks currently being on-grown.

† Production occurred but this cannot be shown without revealing the figure for an individual company.

‡ Estimate provided but cannot be shown without revealing the figure for an individual company.

▲ Amalgamated lumpsucker and wrasse figures

Staffing

Table 41: Number of staff employed in farming other species during 2011-2020

Year	Full-time Male	Full-time Female	Total Full-time	Part-time Male	Part-time Female	Total Part-time	Total Staff
2011	22	2	24	17	2	19	43
2012	22	3	25	19	2	21	46
2013	26	3	29	17	4	21	50
2014	25	4	29	17	3	20	49
2015	33	2	35	11	4	15	50
2016	38	5	43	14	6	20	63
2017	37	8	45	13	4	17	62
2018	37	8	45	11	4	15	60
2019	32	6	38	10	5	15	53
2020	19	3	22	9	4	13	35

In 2020, the overall number of staff employed in the production of other species decreased by 18, to 35.

Production of Cleaner fish

Table 42: Number (000's) of cleaner fish (lumpsucker and wrasse) produced during 2015-2020

Species	Number of fish produced (000's)					
	2015	2016	2017	2018	2019	2020
Cleaner fish▲	310	380	983	656	719	15,076

▲Amalgamated lumpsucker and wrasse figures

In recent years lumpsucker and wrasse spp. have been produced for use as a biological control for parasites in the marine Atlantic salmon industry. Data on the number of fish produced has only been collected since 2015.

Ova Laid Down to Hatch

Table 43: Source of ova from other species laid down to hatch during 2020

Species	Source of ova laid down to hatch (000's)		
	Own broodstock	Other GB broodstock	Foreign ova
Brown/sea trout	15	0	0
Halibut	§	0	0
Cleaner fish▲	20,000	0	675

§ Own broodstock ova was laid down to hatch but this cannot be shown without revealing the figure for an individual company.

▲Amalgamated lumpsucker and wrasse figures

Trade in Small Fish

Table 44: Trade in small fish of other species in 2020

Species	Bought (000's)	Sold (000's)
Brown/sea trout	27	10
Halibut	#	#

During 2020 there was trade of small halibut but figures cannot be shown without revealing the figure for an individual company.

There was also a small amount of production of brook charr (*Salvelinus fontinalis*) and tiger trout (*Salmo trutta* x *Salvelinus fontinalis*). However, due to the small number of companies in production, it is not possible to summarise these data without revealing the production of individual companies.

Organic Production

Of the 18 sites recorded as producing other species in 2020, no organic production was reported.

Escapes

There were no reported escapes from sites rearing other species during 2020.

// 5.Scottish marine regions

The Marine (Scotland) Act 2010 introduces integrated management of Scotland's seas. The creation of a National Marine Plan, as required by the Act, sets the wider context for planning within Scotland including what should be considered when creating regional marine plans. Eleven Scottish Marine Regions have been created under the Act (see Figure 4) which cover sea areas extending out to 12 nautical miles.

To support the development of Regional Marine Plans by Regional Marine Planning Partnerships, tonnages and financial values of annual finfish production have been calculated for the regions defined under the Act. These regional data are presented in Appendix 3. In order to maintain commercial confidentiality salmon production figures for Argyll & Clyde and the North Coast & West Highlands have been merged. Other finfish species including brown/sea trout, rainbow trout, cod, halibut and cleaner fish were produced, however these figures cannot be attributed to Scottish Marine Regions due to commercial confidentiality.

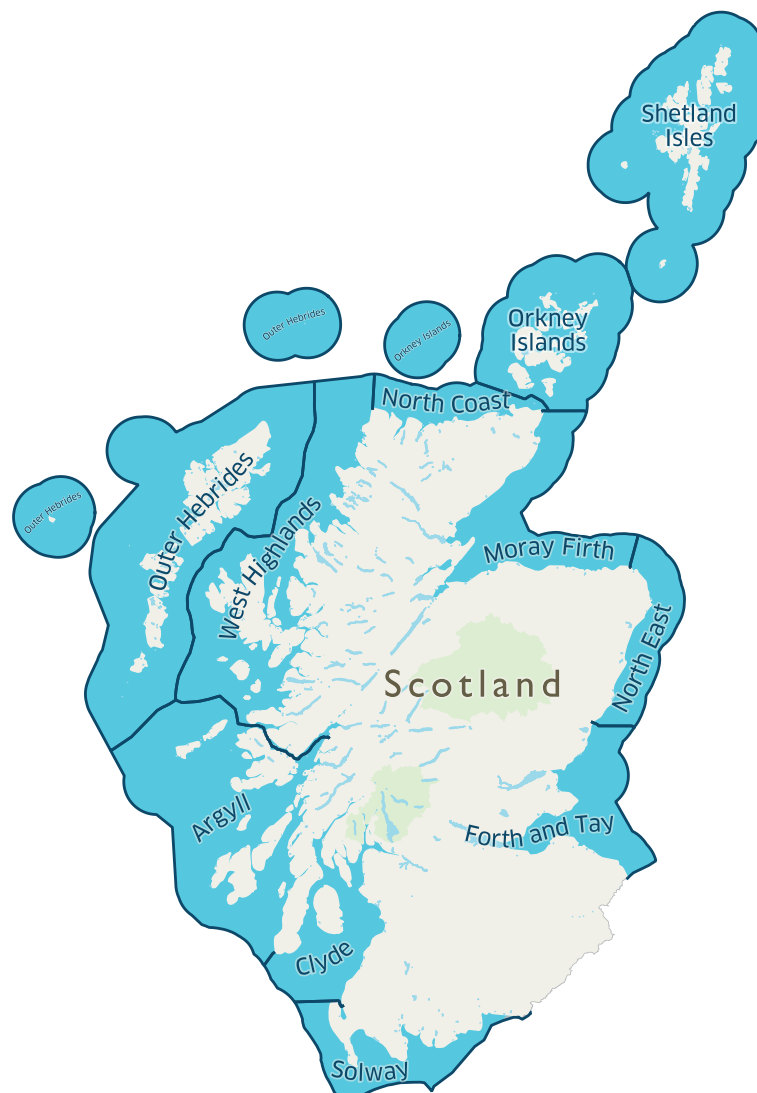


Figure 4: Scottish marine regions

// 6.Summary

Rainbow trout

The production of rainbow trout increased by 2% in 2020 to 7,576 tonnes and was directed at the table (93%) and restocking (7%) markets. The total numbers of staff employed by the sector decreased by 10 to 134. There was an overall increase in the productivity of the industry to 56.5 tonnes per person.

In 2020, the number of eyed ova laid down to hatch (6.2 million) decreased by 0.3 million and was mainly triploid stock (95%). The proportion of ova from GB broodstock increased to 25%. Denmark was the largest source of imported ova with 70.4% of the total, this was a decrease proportionally from 2019. The Scottish rainbow trout industry continues to be highly dependent on imported ova. Additionally, imports of part grown rainbow trout from Northern Ireland continued in 2020.

Atlantic salmon

In 2020, the total production of Atlantic salmon decreased by 11,752 tonnes to 192,129 tonnes, a 5.8% decrease on the 2019 production total. The survey showed increases in the production of year 0 salmon and grilse but a decrease in the production of pre-salmon and year 2 salmon during 2020. The number of staff directly employed on the farms decreased by 21. Overall, there was a decrease in the productivity of tonnes produced per person from 123.5 to 117.9. The estimated harvest forecast for 2021 is 236,000 tonnes. The trend towards concentrating production in larger sites was maintained with 89.6% of production being concentrated in the sites producing over 1,000 tonnes per annum.

During 2020, there was an increase in the number of ova produced to 20.0 million. The number of ova laid down to hatch increased by 10.3% to 78.6 million. This highlights the trend towards using foreign ova sources with 87.4% of the ova laid down to hatch being imported and only 12.6% derived from GB sources. Smolt production decreased to 50.5 million, with 60.6% being produced as S½ smolts and the remainder as S1 smolts (39.4%). The number of staff directly employed on freshwater sites increased by 11 in 2020 to 292 staff while productivity decreased to 172,900 smolts per person. Projections for 2021 suggest that more smolts will be produced than was seen in 2020, followed by a decrease in 2022.

Other Species

There was a decrease in the production of brown/sea trout from 25 tonnes in 2019 to 24 tonnes in 2020. Halibut production occurred in 2020 but the figure cannot be shown without revealing the production of individual companies. Lumpsucker and wrasse continued to be produced for use as biological controls for parasites in the marine Atlantic salmon farming industry. In 2020, the total number of staff employed in the production of other species decreased by 18 to 35.

// Appendix 1

Questionnaires sent to Fish Farmers

ANNUAL RETURN OF INFORMATION FROM SCOTTISH FISH FARMS FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020

RAINBOW TROUT – DATA

Please complete and return by 31 January 2021 to L A Munro, Marine Scotland Science
375 Victoria Road, Aberdeen, AB11 9DB

Business No:

1	How many staff were employed in rainbow trout production (company total)	Full time male	<table border="1" style="display: inline-table; width: 30px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			Part time male	<table border="1" style="display: inline-table; width: 30px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
		Full time female	<table border="1" style="display: inline-table; width: 30px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			Part time female	<table border="1" style="display: inline-table; width: 30px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

2	Please detail any accreditation schemes this company is a member of;	
---	--	--

3	How many eyed ova were laid down for hatching in 2020									
a	from own broodstock	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	from other GB broodstock	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
c	from abroad (Northern Hemisphere)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
d	from abroad (Southern Hemisphere)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

4	How many of the above ova were									
a	all female diploid	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	mixed sex diploid	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
c	all triploid	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

5	How many fry/fingerlings were									
a	bought	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	sold	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

6	How many bought fry/fingerlings were									
a	all female diploid	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	mixed sex diploid	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
c	all triploid	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

7	How many of these fish were vaccinated against ERM									
a	vaccinated on site	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	bought vaccinated	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

8	What was your total production in TONNES for the TABLE TRADE									
a	<450 g (<1 lb)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	450-900 g (1-2 lb)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
c	>900 g (>2 lb)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

9	What was your total production in TONNES for the RESTOCKING TRADE									
a	<450 g (<1 lb)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	450-900 g (1-2 lb)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
c	>900 g (>2 lb)	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

10	From the total production what amount in TONNES was certified as organic	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

11	What is your predicted production in 2021 in TONNES	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

12	What is the fish holding capacity of the holding units for each site in cubic metres									
a	Tanks	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
b	Ponds	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
c	Raceways	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		
d	Cages	<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>			<table border="1" style="display: inline-table; width: 60px; height: 20px;"> <tr><td></td></tr> <tr><td></td></tr> </table>		

ANNUAL PRODUCTION SURVEY 2020

GUIDANCE NOTES FOR QUESTIONNAIRE

RAINBOW TROUT

GENERAL NOTES

1. Please check that the pre-printed information on the sheet is correct.
2. If a site is inactive and **not part of a fallowing cycle**, please write "INACTIVE" after the site name.
3. When completing the boxes please start from the right, if NONE then enter a **zero** in right hand box eg

					0
--	--	--	--	--	---

Hopefully all questions are self-explanatory but you may wish to note that:

Q1. How many staff

- a Please give the total number of full and part-time workers employed by the company in rainbow trout production
- b Please ensure that the same staff are NOT included more than once if the company/business operates more than one site
- c Staff employed solely in processing dead fish for marketing should NOT be included

Q2. Accreditation Schemes

Please include membership to trade associations, quality schemes or organic certification schemes.

Q3. Ova laid down for hatching

Give the TOTAL NUMBER of ova laid down, if the number exceeds six figures please indicate the total number clearly in margin beside the appropriate box - this also applies to questions 3-5
Ova from abroad- Northern Hemisphere includes those from Northern Ireland and Isle of Man.

Q8-9. Weight of fish sold for:

Please record the weight of fish sold to the nearest **tonne** (not in kgs), for part tonnes please indicate strongly using a decimal point, eg **31.5**

Q12. Fish Holding Capacity

Please enter the total cubic metre capacity for each type of production unit

It will be appreciated if the questionnaires are returned promptly and not later than 31 January 2021 to allow the Annual Survey Report for 2020 to be produced.

ANNUAL RETURN OF INFORMATION FROM SCOTTISH FISH FARMS
FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020
ATLANTIC SALMON - SMOLT DATA
Please complete and return by 31 January 2021 to L A Munro, Marine Scotland Science
375 Victoria Road, Aberdeen, AB11 9DB

Business No:

<p>1 How many staff were employed in smolt production (company total)</p>	<p>Full time male Full time female</p>	<table border="1" style="width: 60px; height: 20px; margin-bottom: 2px;"></table> <table border="1" style="width: 60px; height: 20px;"></table>	<p>Part time male Part time female</p>	<table border="1" style="width: 60px; height: 20px; margin-bottom: 2px;"></table> <table border="1" style="width: 60px; height: 20px;"></table>
<p>2 Please detail any accreditation schemes this company is a member of; _____</p>				
<p>3 How many ova were produced in the winter of 2019-2020 (company total)</p>				
<table border="1" style="width: 100%; height: 20px;"></table>				
<p>4 How many eyed ova were laid down for hatching in winter of 2019-2020</p>				
<p>a From own farmed broodstock</p> <p>b From other GB farmed broodstock</p> <p>c From GB wild broodstock</p> <p>d From foreign sources</p>	<table border="1" style="width: 100%; height: 40px;"></table>			
<p>5 How many eyed ova do you expect to hatch this winter (2020-2021)</p>				
<table border="1" style="width: 100%; height: 20px;"></table>				
<p>6 How many fry or parr were</p>				
<p>a Transferred into the site</p> <p>b Transferred out of the site</p>	<table border="1" style="width: 100%; height: 40px;"></table>			
<p>7 How many smolts were produced as</p>				
<p>a S¹/₂s (ie from 2020 hatch)</p> <p>b S¹s (ie from 2019 hatch)</p> <p>c S¹/₂s or S²s (ie from 2019 or 2018 hatch)</p>	<table border="1" style="width: 100%; height: 40px;"></table>			
<p>8 How many smolts were sold as</p>				
<p>a S¹s (incl S¹/₂s)</p> <p>b S²s (incl S¹/₂s)</p>	<table border="1" style="width: 100%; height: 40px;"></table>			
<p>9 How many smolts do you expect to produce for sea winter on-growing in 2021 as</p>				
<p>a S¹s (incl S¹/₂s)</p> <p>b S²s (incl S¹/₂s)</p>	<table border="1" style="width: 100%; height: 40px;"></table>			
<p>10 How many smolts do you plan to produce in 2022</p>				
<table border="1" style="width: 100%; height: 20px;"></table>				
<p>11 What is the current fish holding capacity of each site in cubic metres</p>				
<table border="1" style="width: 100%; height: 20px;"></table>				
<p>12 Duration of FALLOW PERIOD in WEEKS (cage sites; MAX = 52)</p>				
<table border="1" style="width: 100%; height: 20px;"></table>				
<p>13 How many fish did you vaccinate</p>				
<p>a against furunculosis</p> <p>b against ERM</p> <p>c against IPN</p> <p>d against <i>Vibrio</i> spp.</p> <p>e against SAV (PD)</p>	<table border="1" style="width: 100%; height: 40px;"></table>			

ANNUAL PRODUCTION SURVEY 2020

GUIDANCE NOTES FOR QUESTIONNAIRE ATLANTIC SALMON SMOLTS

GENERAL NOTES

1. Please check that the pre-printed information on the sheet is correct.
2. If a site is inactive and **not part of a fallowing cycle**, please write "INACTIVE" after the site name.
3. When completing the boxes please start from the right, if NONE then enter a **zero** in right hand box eg

					0
--	--	--	--	--	---
4. If the numbers for any box exceeds 6 figures please indicate the total number clearly in margin beside the appropriate box

Hopefully all questions are self-explanatory but you may wish to note that:

Q1. How many staff

Please enter the total number of full and part-time staff employed in smolt production, this includes maintenance staff and staff seasonally employed for specific purposes, eg vaccination - please indicate clearly if you have contracted out vaccinating work to avoid duplication in numbers

Please ensure that the same staff are NOT included more than once if your company operates more than one site, especially for companies which operate both smolt and salmon grower sites

Companies are asked to use their discretion as to what they class as full and part-time staff

Q2. Accreditation Schemes

Please include membership to trade associations, quality schemes or organic certification schemes.

Q3. Number of ova produced

Enter the total number of ova produced by the company only once, if more than one form is used please enter **zero** or score out on subsequent forms

Q7. How many smolts produced as S¹/₂ or S1 etc

The definitions used for the survey are:

- S¹/₂ <12 months old, ie put to sea in year of hatch
S1 12-18 months old, ie put to sea in January-June in year post hatch
S¹/₂ 19-24 months old, ie put to sea in July-December in year post hatch
S2 >24 months old when put to sea

- Q8. } For S1s - combine numbers of S¹/₂s with S1s and
Q9. } For S2s - combine numbers of S¹/₂s with S2s

Q10. Enter here the total number of smolts (any stage) likely to be produced

Q11. Please enter the total cubic metre capacity for all tanks or cages combined

Q12. Fallow period - applies to cage sites only

Please enter any weeks that the site was fallow in 2020 (maximum = 52)

It will be appreciated if the questionnaires are returned promptly and not later than 31 January 2021 to allow the Annual Survey Report for 2020 to be produced.

**ANNUAL RETURN OF INFORMATION FROM SCOTTISH FISH FARMS
FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020
ATLANTIC SALMON - PRODUCTION DATA**

Please complete and return by 31 January 2021 to L A Munro, Marine Scotland Science
375 Victoria Road, Aberdeen, AB11 9DB

Business No:

1	How many staff were employed in salmon production (company total), excluding post-harvest processing staff	Full time male Full time female	<table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table>	Part time male Part time female	<table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table>
2 Please detail any accreditation schemes this company is a member of; _____					
3 How many smolts were put into the site in 2020 as:					
a	S ¹ / ₂ s (ie from 2020 hatch)		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
b	S1s (ie from 2019 hatch)		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
c	S ¹ / ₂ s or S2s (ie from 2019 or 2018 hatch)		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
4 How many of above came from England					
			<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
5 Total smolt input proposed in 2021					
			<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
6 HARVEST of 2020 SMOLT INPUT in 2020					
a	Number of tonnes (wet weight at harvest)		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
b	Number of fish		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
7 HARVEST of 2019 SMOLT INPUT from 1 JANUARY to 31 AUGUST					
a	Number of tonnes (wet weight at harvest)		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
b	Number of fish		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
8 HARVEST of 2019 SMOLT INPUT from 1 SEPTEMBER to 31 DECEMBER					
a	Number of tonnes (wet weight at harvest)		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
b	Number of fish		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
9 HARVEST of 2018 SMOLT INPUT					
a	Number of tonnes (wet weight at harvest)		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
b	Number of fish		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
10 From the total production what amount in TONNES was certified as organic					
			<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
11 How many tonnes of fish do you expect to harvest in 2021					
			<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
12 BROODSTOCK PRODUCTION					
a	Were brood fish produced in 2020	YES/NO	<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>	YES/NO	<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
b	How many fish were stripped		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
13 What is the current fish holding capacity of each site in cubic metres					
			<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
14 Duration of FALLOW PERIOD in WEEKS (cage sites; MAX = 52)					
			<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>
15 Please enter the conversion factor used in Q6, Q7, Q8 and Q9 to convert gutted weight to wet weight at harvest					
			<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>		<table border="1" style="display: inline-table; width: 100px; height: 20px;"></table>

GUIDANCE NOTES FOR QUESTIONNAIRE

ATLANTIC SALMON

GENERAL NOTES

1. Please check that the pre-printed information on the sheet is correct.
2. If a site is inactive and **not part of a fallowing cycle**, please enter "INACTIVE" after the site name.
3. All harvest tonnages should be supplied for the wet weight of fish at harvest.
4. If a site was used **only to hold broodstock** for stripping please enter "BRD" after the site name.
5. When completing the boxes please start from the right eg for 250 tonnes enter
as

			2	5	0
--	--	--	---	---	---

 or if NONE then enter as

					0
--	--	--	--	--	---

Hopefully all questions are self-explanatory but you should note that:

Q1. How many staff

Please enter the total number of full and part-time workers employed in salmon production; this includes site staff, veterinary and maintenance staff, vaccination teams, administrative and harvesting staff but NOT processing or marketing staff

Please ensure that the same staff are NOT included more than once if the company operates more than one site, especially if your company operates both salmon grower and smolt sites.

Q2. Accreditation Schemes

Please include membership to trade associations, quality schemes or organic certification schemes.

Q3. How many smolts put to sea

The definitions used for the survey are:

S¹/₂ <12 months old, ie put to sea in year of hatch

S1 12-18 months old, ie put to sea in January-June in the year post hatch

S¹/₂ 19-24 months old, ie put to sea in July-December in the year post hatch

S2 >24 months old, ie when put to sea

Q12. Broodstock production

Please circle YES if broodfish were produced on the site

Q13. Fish holding capacity

Please enter the total cubic metre capacity for all tanks and cages combined or, if not known, give the size of tanks or cages (area or circumference plus depth x nos tanks or cages)

Q14. Fallow period

For cage sites only, please enter any number of weeks a site was fallow in 2020 (the total number of fallow weeks should not exceed 52)

Q15. Conversion Factor

Please enter the value used to convert gutted weights to wet weight at harvest (i.e. weight of live fish)

It will be appreciated if the questionnaires are returned promptly and not later than 31 January 2021 to allow the Annual Survey Report for 2020 to be produced.

**ANNUAL RETURN OF INFORMATION FROM SCOTTISH FISH FARMS
FOR THE PERIOD 1 JANUARY TO 31 DECEMBER 2020**

OTHER SPECIES – DATA

Please complete and return by 31 January 2021 to L A Munro, Marine Scotland Science
375 Victoria Road, Aberdeen, AB11 9DB

Business No:

1	How many staff were employed in other species production (company total)	Full time male Full time female	<table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table>	Part time male Part time female	<table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table> <table border="1" style="display: inline-table; width: 40px; height: 20px;"></table>
2 Please detail any accreditation schemes this company is a member of: _____					
3 How many eyed ova were laid down for hatching in 2020					
a	from own broodstock	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
b	from other GB broodstock	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
c	from foreign sources	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
4 How many fry/small fish were					
a	bought	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
b	sold	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
What was your total					
5 production for the market in 2020					
a	Number of tonnes	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
b	Number of fish	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
6 From this production what amount in TONNES was certified as organic					
		<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
7 What is your predicted production for the market in 2021					
a	Number of tonnes	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
b	Number of fish	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
8 What is the holding capacity of the holding units for each site in cubic metres					
a	Tanks	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
b	Ponds	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
c	Raceways	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>
d	Cages	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>	<table border="1" style="width: 40px; height: 20px;"></table>

ANNUAL PRODUCTION SURVEY 2020

GUIDANCE NOTES FOR QUESTIONNAIRE

OTHER SPECIES

GENERAL NOTES

1. Please check that the pre-printed information on the sheet is correct.
2. If a site is inactive and **not part of a fallowing cycle**, or is no longer used to culture the species concerned, please score through the relevant site or species code.
3. When completing the boxes please start from the right, if NONE then enter a **zero** in right hand box eg

					0
--	--	--	--	--	---

Q1. How many staff

Please include those staff that were involved only in other species production. Please do not include staff that are involved in the production of Atlantic salmon or rainbow trout.

Q2. Accreditation Schemes

Please include membership to trade associations, quality schemes or organic certification schemes.

Q5 - 7. Weight of fish sold

Please record the wet weight of fish sold to the nearest **tonne** (not in kgs), for part tonnes please indicate strongly using a decimal point, e.g. **31.5**

It will be appreciated if the questionnaires are returned promptly and not later than 31 January 2021 to allow the Annual Survey Report for 2020 to be produced.

// Appendix 2

Glossary and Abbreviations

Active	Fish farms in a production growing cycle which may contain stock or be fallow.
Alevin	Young fish, at stage from hatching to end of dependence on yolk sacs as primary source of nutrition.
Broodstock	Adult fish held until maturation for breeding purposes.
Diploid	Fish with the normal two sets of chromosomes.
EEA	European Economic Area.
EFTA	European Free Trade Association.
ERM	Enteric redmouth disease.
EU	European Union.
Eyed-ova/eggs	Fish egg(s) at the stage of development when the heavily pigmented eyes of the embryo are sufficiently developed to be clearly visible.
Fallow	Fish farm having no stock, but still part of a growing cycle.
Fingerling	A term commonly applied to young stages of salmonid fish.
Fry	The life stage of a young salmon from independence of the yolk sac as the primary source of nutrition to dispersal from the redd.
Gamete	Reproductive cells.
Grilse	Salmon harvested between 1 st January and 31 st August after one winter at sea.
Intra-peritoneal	Within the body cavity.
IPN	Infectious pancreatic necrosis.
Non-producing	A site which is active, may be stocked with fish, but has not produced any fish for harvest during the specified year.
On-growing	Farm producing fish for the table market.

Ova	Eggs.
0-year fish	Fish in their first year of life.
MSS	Marine Scotland Science.
Parr	Young salmon at stage from dispersal from redd to migration as a smolt.
Photoperiod	Alteration of the daylight regime.
Pre-salmon	Salmon harvested between 1 st September and 31 st December after one winter at sea.
Raceway	Concrete or brick channels used for farming fish.
SAV	Salmonid alphavirus.
S½	Salmon or sea trout smolting at approximately six months from hatch (usually by photoperiod and/or temperature manipulation).
S1	Salmon or sea trout smolting at approximately one year from hatch.
S1½	Salmon or sea trout smolting at approximately 18 months from hatch.
S2	Salmon or sea trout smolting at approximately two years from hatch.
Smolt	Fully silvered juvenile salmon or sea trout ready to be transferred or migrate to sea.
Stripped	Collection of ova/milt from broodfish.
Third Country	Country outside the EU except Norway and Iceland.
Triploid	Triploid fish are sterile fish which have three sets of chromosomes, unlike a fertile fish that have two sets of chromosomes (diploid).
Year 2 Salmon	Adult salmon harvested during their 2 nd year at sea.
Year class	Fish hatched or put to sea in a given year.

// Appendix 3

Scottish Marine Regions

Salmon Production by Scottish Marine Region (Tonnage and Value)

Region	2011		2012	
	Tonnage	Value (£)	Tonnage	Value (£)
Argyll & Clyde	37,157	162,561,438	26,850	102,969,750
Orkney Islands	6,369	27,864,375	11,694	44,846,490
Outer Hebrides	37,343	163,375,625	29,682	113,832,004
Shetland Isles	35,493	155,281,875	43,010	164,943,350
North Coast & West Highlands	41,656	182,245,000	50,987	195,535,145
All Scotland	158,018	691,328,313	162,223	622,126,739

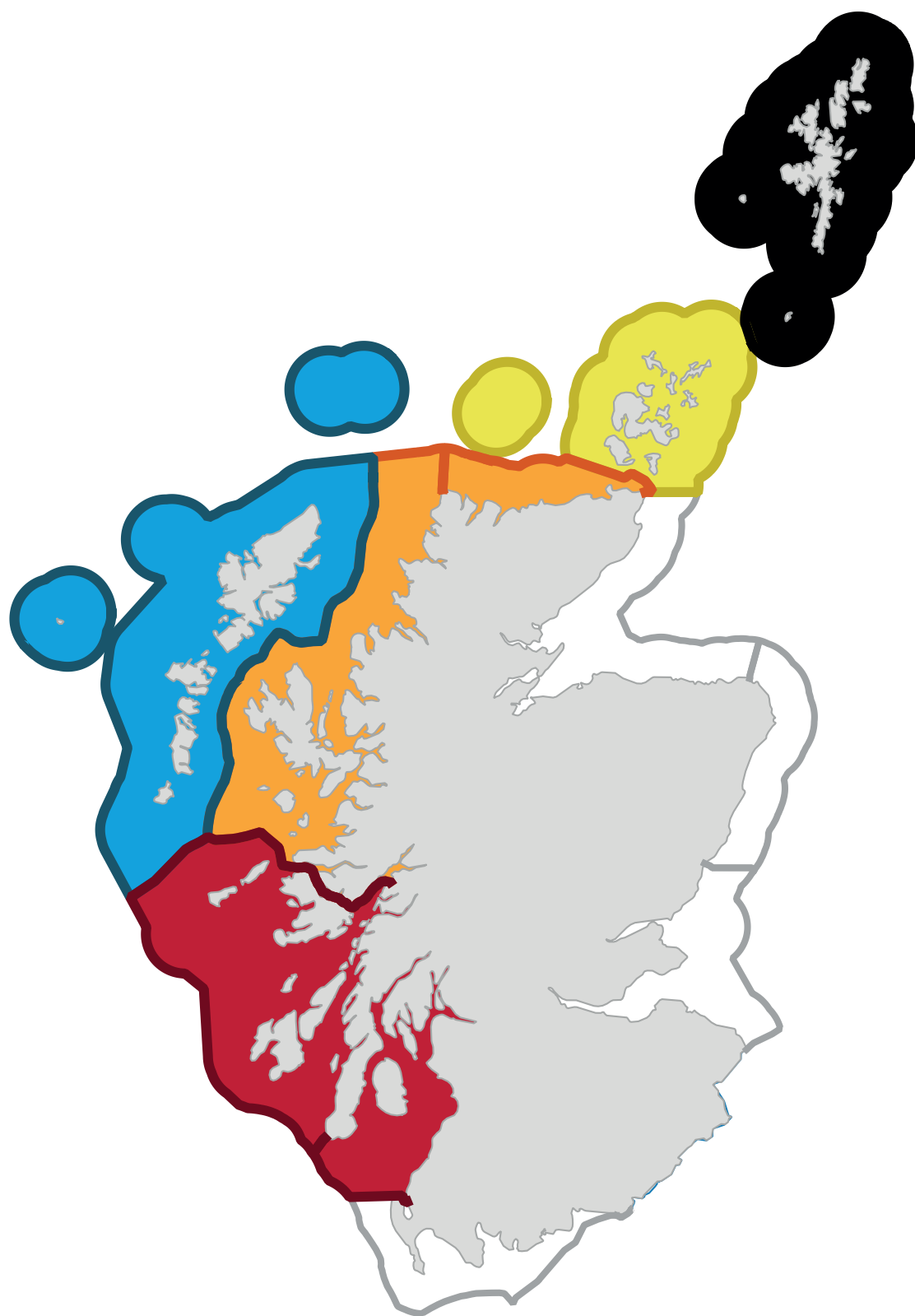
Region	2013		2014	
	Tonnage	Value (£)	Tonnage	Value (£)
Argyll & Clyde	34,924	164,526,964	34,976	156,412,672
Orkney Islands	11,479	54,077,569	13,029	58,265,688
Outer Hebrides	36,817	173,444,887	33,775	151,041,800
Shetland Isles	36,694	172,865,434	46,369	207,362,168
North Coast & West Highlands	43,320	204,080,520	50,873	227,504,056
All Scotland	163,234	768,995,374	179,022	800,586,384

Region	2015		2016	
	Tonnage	Value (£)	Tonnage	Value (£)
Argyll & Clyde	35,911	146,552,791	31,022	159,080,816
Orkney Islands	11,074	45,192,994	14,752	75,648,256
Outer Hebrides	27,210	111,044,010	32,662	167,490,736
Shetland Isles	42,786	174,609,666	37,464	192,115,392
North Coast & West Highlands	54,741	223,398,021	46,917	240,590,376
All Scotland	171,722	700,797,482	162,817	834,925,576

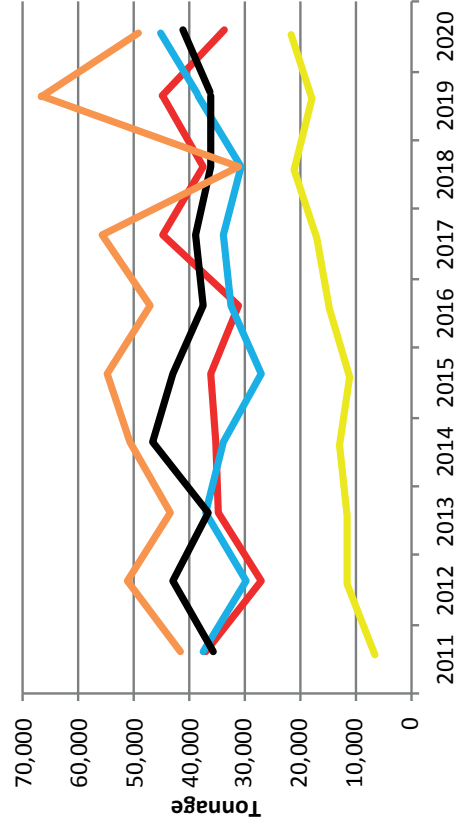
	2017		2018	
Region	Tonnage	Value (£)	Tonnage	Value (£)
Argyll & Clyde	44,575	262,947,925	37,506	220,947,846
Orkney Islands	16,756	98,843,644	20,956	123,451,796
Outer Hebrides	33,778	199,256,422	30,668	180,665,188
Shetland Isles	38,908	229,518,292	35,947	211,763,777
North Coast & West Highlands	55,690	328,515,310	30,948	182,314,668
All Scotland	189,707	1,119,081,593	156,025	919,143,275

	2019		2020	
Region	Tonnage	Value (£)	Tonnage	Value (£)
Argyll & Clyde	44,881	241,863,709	36,367	176,379,950
Orkney Islands	17,758	95,697,862	21,612	104,818,200
Outer Hebrides	38,468	207,304,052	44,639	216,499,150
Shetland Isles	36,141	194,763,849	40,749	197,632,650
North Coast & West Highlands	66,633	359,085,237	48,862	236,980,700
All Scotland	203,881	1,098,714,709	192,129	931,825,650

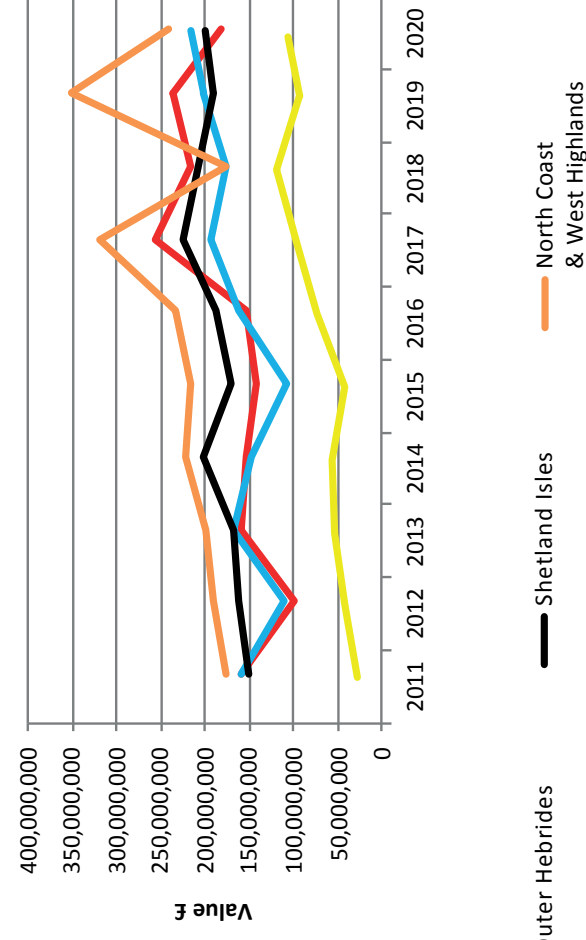
Footnote: Figures for Argyll & Clyde and the North Coast & West Highlands have been merged due to commercial confidentiality. Other finfish species including brown/sea trout, rainbow trout, halibut and cleaner fish were produced but cannot be attributed to Scottish Marine Regions due to commercial confidentiality. Average price (real) have been adjusted for inflation based on 2020 price estimates.



Salmon Tonnes



Value £ real price (inflation adjusted on 2020 Price estimates)





© Crown copyright 2021



This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit **nationalarchives.gov.uk/doc/open-government-licence/version/3** or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: **psi@nationalarchives.gsi.gov.uk**.

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at **www.gov.scot**

Any enquiries regarding this publication should be sent to us at

The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

ISBN: 978-1-80201-434-1 (web only)

Published by The Scottish Government, September 2021

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA
PPDAS933726 (09/21)

W W W . g o v . s c o t