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Marine Scotland Science

Scottish Shellfish Production Survey 2019



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Written and compiled by : LA Munro

Artwork by : M Sinclair, Marine Scotland Communications Team

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// CONTACT DETAILS

Lorna Munro
Epidemiology Data Manager
Marine Scotland Science
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

E: MS.Productionsurvey@gov.scot
T: +44 (0) 131 244 4348
S/B: +44 (0) 131 244 2500

Fish Health Inspectorate
Marine Scotland Science
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

E: MS.fishhealth@gov.scot
T: +44 (0) 131 244 3498
S/B: +44 (0) 131 244 2500

w: <https://www.gov.scot/policies/fish-health-inspectorate/>

// INTRODUCTION TO THE YEAR 2019 SURVEY

This report is based on the returns of an annual survey questionnaire sent to all active authorised shellfish farming businesses in Scotland. These are Official Statistics published by Marine Scotland Science in accordance with the [Code of Practice for Official Statistics](#). The cooperation of the shellfish farming industry is gratefully acknowledged. The report author acknowledges Alan Christie, Andy Mayes, Sandy Murray, Keith Mutch, Chahat Sekhon, Ronald Smith, Stuart Wallace and Andrea Warwick for their contributions to the production of this report.

Production survey questionnaires were sent to 129 businesses registered as active during 2019 (*see Appendix 1, page 16*). During 2019, eight business became authorised and four businesses rescinded their authorisation. Due to the impact of the COVID-19 pandemic, three businesses did not return data for 2019. In these instances, their 2018 data was used as a substitute for 2019. When these data are eventually obtained, the relevant sections will be updated in the 2020 report.

The survey showed that, of the 129 businesses authorised at the end of 2019, 68 recorded sales during that year. These 129 authorised businesses farmed 326 active sites, of which 165 (51%) placed shellfish on the market. Shellfish production by business and site is presented.

LA Munro
May 2020

// PRODUCTION

The survey reports that the shellfish species cultivated in Scottish waters in 2019 were:

Mussel:	<i>Mytilus</i> spp.
Pacific oyster:	<i>Crassostrea gigas</i> ¹
Native oyster:	<i>Ostrea edulis</i>
Queen scallop:	<i>Aequipecten opercularis</i>
Scallop:	<i>Pecten maximus</i>

Production was dominated by mussel and Pacific oyster, although small quantities of scallop, queen scallop (queen) and native oyster were also produced. The 2019, production data for each species by region are given in Table 1. Additionally in 2019, there was cultivation of common periwinkle (*Littorina littorea*) however, due to the small number of these species being produced it is not possible to summarise these without revealing commercially sensitive information.

TABLE 1
SCOTTISH SHELLFISH PRODUCTION BY REGION, 2019.

Region	Businesses	Mussel		Pacific oyster		Native oyster		Queen		Scallop	
		(tonnes)		(000s)		(000s)		(000s)		(000s)	
		Table	On-growing	Table	On-growing	Table	On-growing	Table	On-growing	Table	On-growing
Highland	44	468	36	1,760	2,000	0	5	1	0	26	0
Orkney	5	0	0	0	0	0	0	0	0	0	0
Shetland	23	5,324	2,869	0	0	0	0	0	0	0	0
Strathclyde	43	363	570	2,439	530	103	322	17	0	0	0
Western Isles	14	544	18	411	0	0	0	0	0	0	0
All Scotland	129	6,699	3,493	4,610	2,530	103	327	18	0	26	0
Weight (Tonnes)		6,699	3,493	369		8		1		3	

NB: THIS REPORT LISTS REGIONS WITH ACTIVE SHELLFISH FARMS OPERATED BY AUTHORISED AQUACULTURE PRODUCTION BUSINESSES.

CONVERSION TO WEIGHT USED THE FOLLOWING ASSUMPTIONS (BASED ON INDUSTRY FIGURES): INDIVIDUAL OYSTERS AVERAGED 80g; INDIVIDUAL SCALLOPS AVERAGED 120g; INDIVIDUAL QUEENS AVERAGED 40g.

TABLE = SALES DIRECTLY FOR HUMAN CONSUMPTION;
ON-GROWING = SALES TO OTHER BUSINESSES FOR ON-GROWING.

¹ A proposed name change to *Magallana gigas* remains controversial (Bayne et al. 2007, Journal of Shellfish Research. 36, 545-547)

Table production by species is illustrated in Figure 1 (see page 4), while trends in production for the table market and on-growing in Scotland are presented in Table 2.

TABLE 2
TRENDS IN PRODUCTION DATA FOR THE TABLE AND ON-GROWING 2010-2019.

For the table	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	% change 18-19
Pacific oyster (000s)	3,008	3,136	2,706	1,891	3,392	2,693	3,534	5,034	4,031	4,610	14
Native oyster (000s)	350	350	317	260	242	200	201	200	142	103	-27
Queen (000s)	184	27	9	33	18	33	155	273	18	18	0
Scallop (000s)	64	78	58	40	48	30	35	47	31	26	-16
Mussel (tonnes)	7,199	6,996	6,277	6,757	7,683	7,270	7,732	8,232	6,874	6,699	-3

For on-growing	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	% change 18-19
Pacific oyster (000s)	1,633	1,400	3,190	6,216	6,792	5,864	4,584	3,849	4,240	2,530	-40
Native oyster (000s)	300	1	677	1,015	749	13	323	481	344	327	-5
Queen (000s)	0	0	0	1,490	500	900	17	300	0	0	0
Scallop (000s)	0	104	16	1,470	136	49	23	9	4	0	-100
Mussel (tonnes)	175	282	309	1,281	1,263	1,841	2,619	4,437	2,137	3,493	63

Mussel production, for the table, decreased by 3% in 2019 (see figure 1) to 6,699 tonnes. The greatest contribution in regional mussel production was from Shetland, accounting for 5,324 tonnes or 79% of Scotland's total. Pacific oyster production increased by 14% from 2018. The Strathclyde region produced 53% of Scotland's farmed Pacific oysters. The queen scallop production figure has not been updated from 2018 as data could not be collected during the COVID-19 pandemic lockdown. The production of farmed scallops decreased by 16%. Both these sectors continuing to target small niche markets. Production of native oysters decreased by 27% from 2018. Native oyster production accounts for a small percentage of total oyster production, however, demand for this species continues to be high. Historical data for all shellfish species show that production levels vary year on year. This can be due to a number of different factors such as poor spat fall, algal toxins, poor growth, adverse weather and fluctuations in market prices. However, production was not affected by COVID-19 restrictions, as the survey covers the period prior to the pandemic.

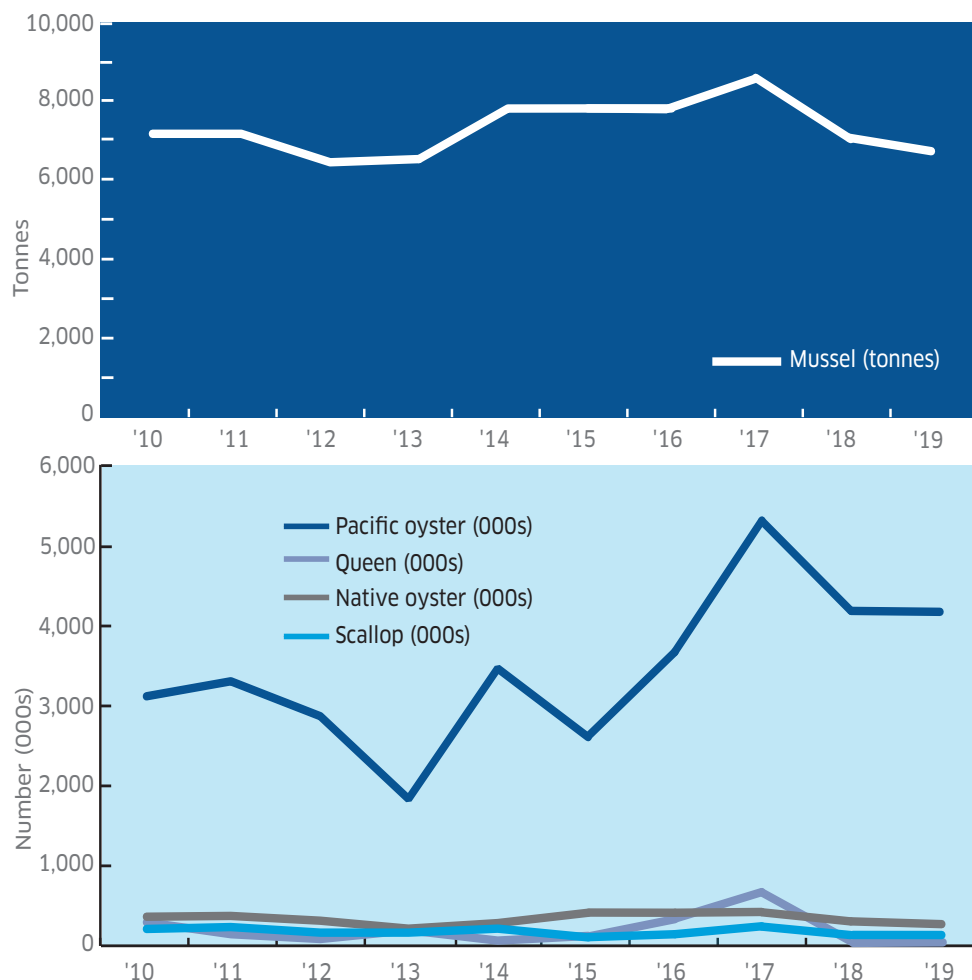


FIGURE 1
TABLE PRODUCTION BY SPECIES 2010-2019.

Prices of farmed shellfish fluctuated throughout the year. Their value at first sale was estimated from the following figures obtained from the shellfish farming industry. These vary with demand, level of production and geographical area of origin. The average price of Pacific oyster was £0.34 per shell; native oyster, £0.60 per shell; scallop, £1.84 per shell; queen scallop, £0.13 per shell and mussel £920 per tonne. The value of the table trade is estimated from the production figures shown in Table 1 (see page 2).

Mussel:	£6.2 million	Pacific oyster:	£1.6 million
Native oyster:	£0.06 million	Scallop:	£0.05 million
Queen:	£0.002 million		

In 2019, the total value at first sale for all species was calculated at approximately £7.9 million, a decrease of 17% from the £9.5 million estimated in 2018. This decline is largely due to a decrease in the average price estimate for mussels in 2019, see Appendix 2 for more details.

// SITES AND BUSINESSES

The numbers of authorised, active businesses and sites in operation are presented in Tables 3 and 4. There are many sites that held stock not yet ready for market, others were fallow, and some were located in remote areas where cost-effective production and marketing of shellfish proved difficult. In 2019, 165 sites produced shellfish for sale, an increase of 3% since 2018, and 56% of these sites were located in Shetland.

TABLE 3
AUTHORISED AND ACTIVE BUSINESSES 2010-2019.

Number of Businesses										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Active	164	153	153	142	144	144	138	132	130	129

TABLE 4
ACTIVE AND PRODUCING FARM SITES BY REGION 2019.

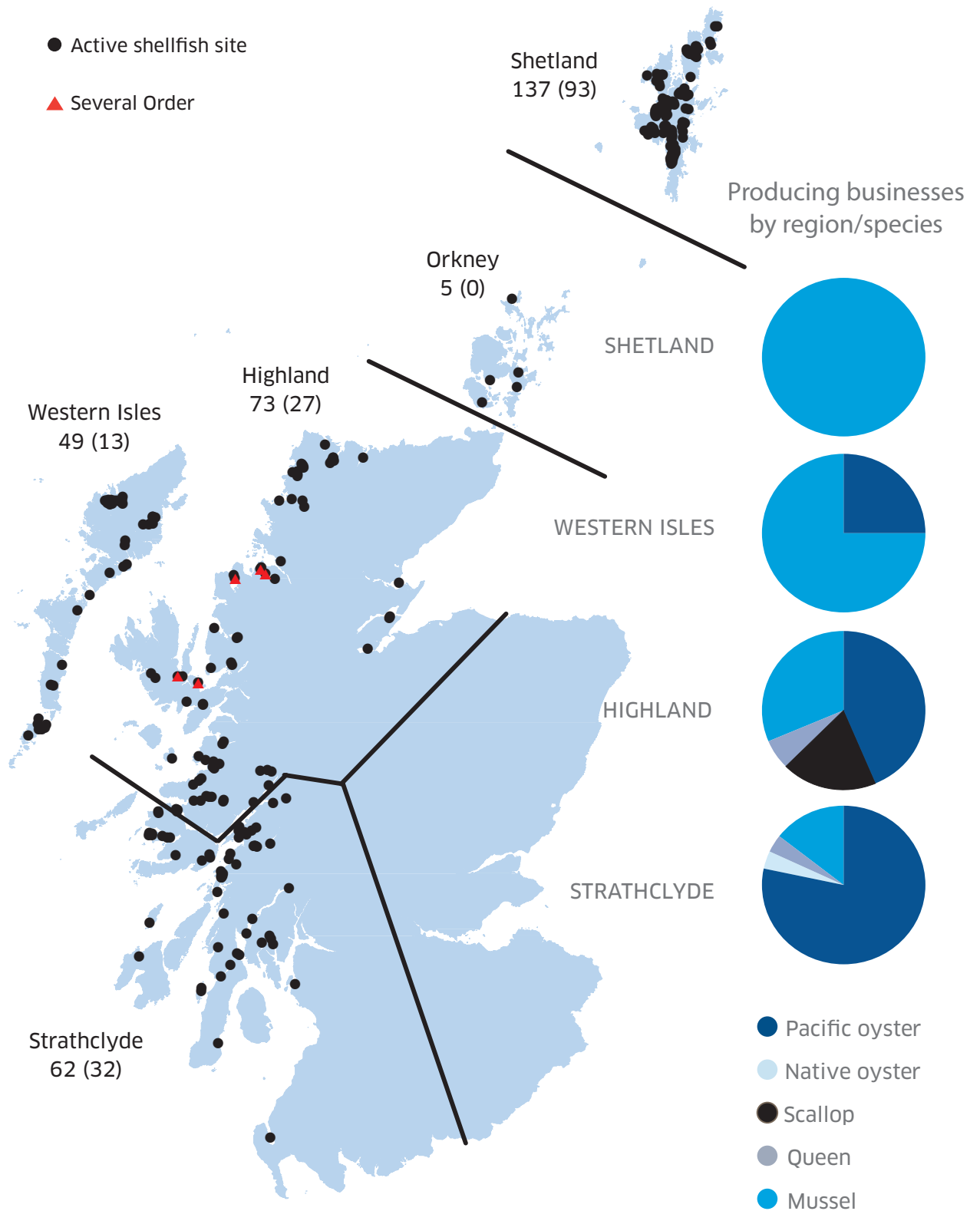
	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Sites						
Active	73	5	137	62	49	326
Producing	27	0	93	32	13	165

ACTIVE = FARMS IN A PRODUCTION GROWING CYCLE WHICH MAY CONTAIN STOCK OR BE FALLOW.

PRODUCING = PLACING ON THE MARKET FOR THE TABLE AND/OR ON-GROWING.

NB: A BUSINESS MAY PRODUCE MORE THAN ONE SPECIES AND IN MORE THAN ONE REGION.

FIGURE 2
 REGIONAL DISTRIBUTION OF ACTIVE SHELLFISH SITES IN 2019 (NUMBER PRODUCING GIVEN IN BRACKETS) AND NUMBER OF PRODUCING BUSINESSES BY REGION/SPECIES.



There were five Several Orders in place for scallop fisheries in 2019 (see Fig. 2), all of which are in the Highland region.

Table 5 depicts the number of businesses by region and by species: A) in table production, B) in on-growing production and C) showing no production. Many businesses cultivate more than one species on site, a practice made possible by similar cultivation techniques. For example, scallop can be grown together with queen, Pacific oyster with native oyster, and mussel with Pacific oyster. The highest proportion of Pacific oyster businesses are located in Strathclyde while the highest proportion of mussel businesses are in Shetland.

TABLE 5
NUMBER OF BUSINESSES BY REGION AND BY SPECIES 2019.

A) PRODUCTION FOR THE TABLE

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	7	0	0	22	2	31
Native oyster	0	0	0	1	0	1
Scallop	3	0	0	0	0	3
Queen	1	0	0	1	0	2
Mussel	5	0	17	4	5	31
Total	16	0	17	28	7	68

B) PRODUCTION FOR ON-GROWING TO OTHER PRODUCERS

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	1	0	0	3	0	4
Native oyster	2	0	0	2	0	4
Scallop	0	0	0	0	0	0
Queen	0	0	0	0	0	0
Mussel	1	0	14	2	2	19
Total	4	0	14	7	2	27

C) NO PRODUCTION, ACTIVELY ON-GROWING OR FALLOW

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	11	2	0	9	3	25
Native oyster	3	1	0	2	0	6
Scallop	6	0	0	3	0	9
Queen	2	0	0	1	0	3
Mussel	15	2	4	6	5	32
Total	37	5	4	21	8	75

Business production levels by species are shown in Table 6. There were 15 businesses producing more than 100 tonnes of mussels, this remained the same as in 2018. Out of these 15 businesses, nine produced more than 200 tonnes. These nine businesses produced 78% of the total mussel production in Scotland. There were seven businesses that produced more than 200,000 Pacific oysters. The production from these businesses accounted for 87% of the Scottish Pacific oyster total.

TABLE 6
BUSINESS PRODUCTION LEVELS BY SPECIES 2019.

Species	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-200	>200	Total
Pacific oyster (000s)	13	1	2	2	4	0	0	0	0	0	2	7	31
Native oyster (000s)	0	0	0	0	0	0	0	0	0	0	1	0	1
Scallop (000s)	2	1	0	0	0	0	0	0	0	0	0	0	3
Queen (000s)	1	1	0	0	0	0	0	0	0	0	0	0	2
Mussel (tonnes)	3	0	3	3	3	1	0	2	0	1	6	9	31
Total	19	3	5	5	7	1	0	2	0	1	9	16	68

// SPAT SETTLEMENT

Following anecdotal industry reports of poor spat settlement and mortality in 2010, Marine Scotland Science developed a questionnaire which was sent to all authorised aquaculture production businesses farming mussels. The results of this 2011 investigation indicated that poor spat settlement and mortality were not widespread in Scottish waters, although they had major impacts on certain individual producers. The causes were associated with environmental variables, guiding the industry to consider focused spat fall monitoring. As a result of talks between the Association of Scottish Shellfish Growers, Marine Scotland policy and Marine Scotland scientists, to determine the focus of possible research and development, a spat collection question was introduced to the 2013 survey. This question focused on mussel spat collection and was presented in two parts: is this a spat collection site; if yes, was spat settlement sufficient for production purposes?

Responses were received from 235 (100%) of the sites authorised for mussel production in 2019. One hundred and twenty eight (54%) of these were spat collection sites, 41 (32%) of which reported that they had sufficient spat settlement for production purposes. To identify statistically significant trends a longer time series is required.

// EMPLOYMENT

The industry employed 136 full-time and 141 part-time and casual workers during 2019. The number of full-time staff decreased by one and the number of part-time and casual employees decreased by 20 compared with 2018. The regional breakdown of employment is given in Table 7. The number of people employed by the shellfish farming industry in Scotland decreased by 7% from the 2018 total of 298.

TABLE 7
REGIONAL EMPLOYMENT 2019.

Region	Businesses	Staff						Total
		Full-time Male	Full-time Female	Part-time Male	Part-time Female	Casual Male	Casual Female	
Highland	44	14	1	31	4	7	2	59
Orkney	5	3	1	0	0	3	0	7
Shetland	23	56	2	7	9	14	1	89
Strathclyde	43	36	7	21	8	20	2	94
Western Isles	14	16	0	7	2	2	1	28
Scotland	129	125	11	66	23	46	6	277

// SCOTTISH MARINE REGIONS

The Marine (Scotland) Act 2010 introduced 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 Appendix 2 map, page 22*) which cover sea areas extending out to 12 nautical miles.

To support the development of Regional Marine Plans by Regional Marine Planning Partnerships, tonnages/shell numbers and financial values of annual shellfish production for mussels and Pacific oysters have been calculated for the regions defined under the Act. These regional data are presented in Appendix 2 (*see page 23-25*).

In order to maintain commercial confidentiality mussel production figures for Argyll & Clyde, and the West Highlands, Moray Firth & the North Coast were merged. Pacific oyster production for the West Highlands & the North Coast also required to be merged to maintain commercial confidentiality. Other shellfish species including native oyster (Argyll & Solway), scallop (Argyll & West Highlands) and queen scallop (Clyde & West Highlands) were produced, however these figures cannot be attributed to Scottish Marine Regions due to commercial confidentiality.

// HEALTH INFLUENCES ON THE INDUSTRY

In accordance with Council Directive 2006/88/EC, a risk based surveillance programme targeting 59 shellfish site inspections was undertaken during 2019. On these visits, facilities, stock health, bio-security measures plans, movement records and details required for authorisation were checked. Diagnostic samples were taken from 4 sites. Statutory samples were taken from 5 sites as part of an investigation following notification of the suspicion of the presence of *Bonamia ostreae*.

Movement restrictions placed due to confirmation of the presence of *Bonamia ostreae*, remained in force in Loch Sunart, Highland and in West Loch Tarbert, Argyll during 2019. In addition, movement restrictions were placed on the Dornoch Firth, Highland and an area covering the Lynn of Lorne, Loch Creran and Loch Etive, Strathclyde following confirmation of the presence of *Bonamia ostreae*. Movement restrictions covering these areas prevent the relaying of native oyster from them ([see Appendix 3, page 26 for maps of areas under movement restrictions](#)). Approved zone status for bonamiasis, marteiliasis and Ostreid Herpes Virus-1 Microvariant (OsHV-1 μ var) continued to protect the health of both wild and farmed susceptible shellfish stocks for the remainder of Scotland's waters (<https://www.gov.scot/policies/fish-health-inspectorate/movement-restrictions-on-fish-and-shellfish/>).

Most of the reported mortalities during 2019 were attributed to: predation from wild ducks, starfish, crabs and oystercatchers; fouling by sea squirts; adverse weather conditions including storms and temperature extremes; damage due to grading and handling and from natural causes. Reports of high, unexplained shellfish mortalities generated three shellfish diagnostic cases during 2019, at sites holding Pacific oysters. Results of diagnostic investigations showed no association with listed (notifiable) diseases. It is the responsibility of shellfish farmers to inform Marine Scotland of any abnormal or unexplained shellfish mortality on their sites ([see guidance on shellfish mortality in Appendix 1, page 20](#)).

In 2019 there was a continued demand for imported mussel and Pacific oyster spat in Scotland. The industry should be aware of the increased disease risk with the introduction, movement and deposit of stock on site and the importance of ensuring good bio-security practices when sourcing shellfish from other areas. In addition, consignments imported from outside Great Britain are required to be accompanied by a health certificate.

The whole coastline of Great Britain is recognised as free from infection with *Marteilia refringens* although there are movement restrictions in place on the River Tamar in Cornwall and Devon. Guernsey, Jersey, Herm and the Isle of

Man are all recognised as *Marteilia refringens* free areas. The whole coastline of Northern Ireland is recognised as free from *Marteilia refringens* apart from Belfast Lough and Dundrum Bay.

The whole coastline of Great Britain is recognised as free from infection with *Bonamia ostreae* except the following areas which are covered by movement restrictions:

- the south coast of Cornwall from Lizard to Start Point;
- the coast of Dorset, Hampshire and Sussex from Portland Bill to Selsey Bill;
- the area along the coast of North Kent and Essex from North Foreland to Felixstowe;
- the area along the coast in south-west Wales from Wooltack Point to St Govan's Head, including Milford Haven and the tidal waters of the East and West Cleddau river;
- Loch Sunart, Highland;
- West Loch Tarbert, Argyll;
- Dornoch Firth, Highland;
- Lynn of Lorne, Loch Creran and Loch Etive, Strathclyde;
- Menai Strait.

Guernsey, Herm and the Isle of Man are all recognised as *Bonamia ostreae* free areas. The whole coastline of Northern Ireland is recognised as free from *Bonamia ostreae* apart from Lough Foyle and Strangford Lough. Jersey is no longer recognised as free from *Bonamia ostreae*.

The whole coastline of Great Britain is recognised as free from OsHV-1 μ var except for the following areas:

- River Roach, River Crouch, Blackwater Estuary and River Colne in Essex;
- the north Kent coast;
- Poole Harbour in Dorset;
- the River Teign in Devon.

Guernsey is also recognised as free from OsHV-1 μ var. In the territory of Northern Ireland, Belfast Lough is the only area approved as free from OsHV-1 μ var.

Movements of shellfish species susceptible to infection by *Marteilia refringens*, *Bonamia ostreae* and OsHV-1 μ var, into the Great Britain health zone, must originate from another zone or country recognised as free of that disease. Movements are allowed from disease free areas to non-approved areas, as well as those for direct human consumption without re-immersion in any other sea water areas.

// SUMMARY

- In 2019, 6,699 tonnes of mussels were produced for the table market;
- Mussel and Pacific oyster remain the main species produced in terms of value and tonnage. Mussel production decreased by 3% and Pacific oyster production increased by 14% during 2019;
- During 2019, over 2.5 million Pacific oyster shells were produced for on-growing showing that markets both home and abroad are well established;
- Queen scallop production figures were not able to be updated for 2019. There was a decrease in scallop production, from 31,000 to 26,000 shells, since 2018;
- There was a decrease in the production of native oyster from 142,000 to 103,000 shells in 2019. This sector continues to target a strong niche market;
- Employment levels decreased by 7% from the previous year, with 277 full, part-time and casual staff being employed during 2019.
- The Scottish shellfish farming industry is estimated to be worth approximately £7.9 million at first sale value, a decrease of 17% on the 2018 figure.
- Active surveillance for bonamiasis, marteiliasis and OsHV-1 μ var continued in 2019;
- For shellfish health purposes, 59 out of 329 sites were inspected during 2019 as part of a risk based surveillance programme implemented under Council Directive 2006/88/EC. Details of this can be found at <https://www.gov.scot/policies/fish-health-inspectorate/surveillance-programme/>;
- Movement restrictions remain in place for the presence of *Bonamia ostreae* at Loch Sunart, Highland and West Loch Tarbert, Argyll;
- Movement restrictions for *Bonamia ostreae* were placed on the Dornoch Firth, Highland and an area covering the Lynn of Lorne, Loch Creran and Loch Etive, Strathclyde;
- The UK maintained disease free status with regard to bonamiasis, marteiliasis and OsHV-1 μ var, with the exception of specific compartments under movement restrictions. Immediate notification of increased mortality on farm sites must be reported to Marine Scotland Science, Fish Health Inspectorate (see [Contact details page II](#)).

// GLOSSARY

Active sites	Farms in a production growing cycle which may contain stock or be fallow
Inactive sites	Farms not in a production cycle, without stock and not to be used by the company in the foreseeable future
Authorised business	Any shellfish production business authorised under Regulation 6 of the Aquatic Animal Health (Scotland) Regulation 2009 (as amended). <i>See</i> the Marine Scotland website for more details https://www.gov.scot/policies/fish-health-inspectorate/
Severed Order	An area of the seabed severed from the public right to fish, in order to conserve or enhance named shellfish stocks

// APPENDIX 1

Covering Letter and Guidance Notes

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T: +44 (0)131 244 4348
MS.productionsurvey@gov.scot



6th December 2019

ANNUAL RETURNS OF SHELLFISH FARM PRODUCTION – 2019

Dear Sir/Madam

As part of the annual survey of Scottish shellfish farms we seek production data from your business and site(s) for the year 2019.

I enclose forms requesting information on your shellfish farming enterprise and a self-addressed pre-paid envelope for their return. Alternatively these forms can be issued electronically upon request by contacting MS.Productionsurvey@gov.scot or by telephoning me on 0131 244 4348.

The data you supply to Marine Scotland Science (MSS) is of great assistance to your industry and the Scottish Government. It is our intention to continue to publish these data annually and in a summarised form. The Scottish Shellfish Farm Production Survey 2019 report will be available in May 2020. MSS is obliged to consider any request it receives in relation to this under the Freedom of Information (Scotland) Act 2002 (FOISA) and the Environmental Information (Scotland) Regulations 2004 (EISRs).

FORM (a) requests data on production by business.
FORM (b) requests data on production, facility size and number of shellfish movements by site(s) and by species. Guidance notes are enclosed.

Please note production recorded by business must equal total production recorded by site(s). If the business has a nil return please place an X against the species registered as cultured, in FORM (a).

Please note that it is your duty to notify a competent authority or a veterinarian if you know or suspect that increasing mortality has occurred or is occurring in aquaculture animals in accordance with the Aquatic Animal Health (Scotland) Regulations 2009. **See guidance notes** for reporting of mortality events where appropriate and registration changes.

Thank you for your co-operation. If you have any queries regarding the survey, please do not hesitate to contact me at the address given below, or telephone 0131 244 4348 or e-mail MS.Productionsurvey@gov.scot

Please send returns to me by post, or electronically, before **31st January 2020**.

I would also like to remind you that the Scottish Shellfish Farm Production Survey 2018 is available on the Marine Scotland website, <https://www.gov.scot/publications/scottish-shellfish-farm-production-survey-2018/>

Yours faithfully,

Lorna Munro
Marine Scotland Science

Marine Laboratory, 375 Victoria Road,
Aberdeen, AB11 9DB
www.gov.scot/marinescotland



SCOTTISH SHELLFISH FARM PRODUCTION SURVEY 2019

FORM (b) – SITE PRODUCTION, SIZE and MOVEMENTS

Site No./Site Name:

SPECIES	PRODUCTION OF SHELLFISH FOR 2019 (EXCLUDES HATCHERIES AND NURSERIES)				HIGHEST MORTALITY	
	A) for the table		B) for depositing in other waters		% of facilities type / period	Reason
	No.	Weight*	No.	Weight*		
Mussel <i>M. edulis</i>						
Pacific oyster <i>C. gigas</i>						
Native oyster <i>O. edulis</i>						
Scallop <i>P. maximus</i>						
Queen <i>A. opercularis</i>						
Lobster						
Other (specify)						

*Please state the unit of measurement, e.g. tonnes, kilogrammes.

SPECIES	SIZE OF PRODUCTION FACILITIES IN 2019			
	Molluscs			
	On bottom (lease area in hectares or m ²)	Off bottom		Other methods (specify no, type and size)
Total rope length (m) (No. of droppers x dropper length)		Leasing area containing trestles (lease area in hectares or m ²)		
Mussel				
Pacific oyster				
Native oyster				
Scallop				
Queen				
Other (specify)				

SPECIES	INPUT TO CAPTURE BASED AQUACULTURE		SHELLFISH PRODUCTION FOR 2019 (HATCHERIES AND NURSERIES)			
			Transferred to a controlled environment for on growing		Released to the wild	
	No.	Weight*	No. Eggs	No. Juveniles	No. Eggs	No. Juveniles
Mussel						
Pacific oyster						
Native oyster						
Scallop						
Queen						
Lobster						
Other (specify)						

*Please state the unit of measurement, e.g. tonnes, kilogrammes.

SPECIES	SIZE OF PRODUCTION FACILITIES IN 2019			
	Crustaceans			
	Ponds (hectares or m ²)	Enclosures and pens (hectares or m ²)	Tanks and raceways (m ³)	Other methods (specify no, type and size)
Lobster				
Others (specify)				

SHELLFISH MOVEMENTS BY SITE AND SPECIES

(Record live shellfish movements on or off-site where they are for on-growing, NOT for the table).

Site name:			Site name:			Site name:			Site name:		
Site number:			Site number:			Site number:			Site number:		
No of movements			No of movements			No of movements			No of movements		
Species	On-site	Off-site	Species	On-site	Off-site	Species	On-site	Off-site	Species	On-site	Off-site

2019 SPAT SETTLEMENT

Is this a spat collection site? (Circle appropriate option)	Yes	No
If yes, was spat settlement sufficient for production purposes? (Circle appropriate option)	Yes	No

GUIDANCE ON COMPLETING THE SURVEY FORMS

FORM (a) - BUSINESS PRODUCTION

Production of shellfish for 2019: Please provide your total business production for 2019 next to the relevant species (the individual site(s) production total(s) should add up to the business production total). The “for the table” column is for shellfish sold for human consumption (which should include any shellfish sent for depuration or cleansing, or temporarily held in other waters or tanks etc, prior to consumption or processing). The column “for depositing in other waters” should be filled in when shellfish have been partially grown and then sold or transferred to another business for on-growing. Please state the unit of measurement used in your total business production (e.g. kilograms, tonnes etc.). If your business has not produced any shellfish then please put an X next to the species of shellfish that is authorised to be grown on site.

Production of shellfish for 2020 (estimate): Please provide estimates of production for 2020 “for the table” and “for depositing in other waters”. Please state the unit of measurement used in your total business production (e.g. kilograms, tonnes etc.).

Employment: Please state the number of people employed in the business under: full time male; full time female; part-time male; part-time female; casual (occasionally employed) male; or casual female.

Please finish the form by signing and dating.

FORM (b) - SITE PRODUCTION, SIZE and MOVEMENTS

Each site form can accommodate one site return. You have been issued with forms appropriate to the details which we hold for your site(s).

Production of shellfish for 2019: Please provide your total site production for 2019 “for the table” and “for depositing in other waters” for the respective species cultured. (This excludes hatcheries and nurseries). If you cultured shellfish species in 2019 which are not listed on the form please specify these in the row marked ‘Other’.

Highest Mortality: Please indicate the highest mortality as a percentage (%) of the facility type, for each species registered as cultured. Mortality should be recorded over a defined period of time. Please also indicate the reason for this mortality (if known).

Example 1 – A mussel farmer has ten long lines and one line suffers total mortality through predation over one month. The highest % mortality recorded would be 10% / 1 month. Reason was eider duck predation.

Example 2 – An oyster farmer has 100 trestles and all the shellfish from 90 are lost through disease in spring. The highest % mortality recorded would be 90% / 3 months. Reason was suspect notifiable disease eg. Bonamia.

Example 3 – A scallop farmer has 50 long lines and one line is destroyed by storm damage during the year. The highest % mortality recorded would be 2% / 12 months. Reason was storm damage.

- In accordance with the Aquatic Animal Health (Scotland) Regulations 2009, it is your duty to notify the competent authority or a veterinarian if you know or suspect that increasing mortality has occurred or is occurring in aquaculture animals. This should be interpreted as being where mortality affects 15% or greater of stocks in a single facility, over a short period. It is also a requirement to maintain mortality records detailing the number of any aquaculture animals that have died in each epidemiological unit within the area. When significant abnormal mortalities occur the Fish Health Inspectorate must be informed immediately stating suspected cause (if known). The Fish Health Inspectorate can be contacted by telephone on 0131 244 3498 or by e-mail at MS.fishhealth@gov.scot

Size of production facilities in 2019 (molluscs): Please provide the size of the production facilities for the respective species cultured. If you cultured shellfish species in 2019 which are not listed on the form please specify the size of the facilities in the row marked 'Other'.

- Where molluscs are cultured on the seabed, or where a Several Order is in place, the total extent of the **lease area** should be recorded in hectares or metres squared (m²) (please specify) in the column titled 'On bottom'.
- Where molluscs are cultured on long lines / rafts please record the **total length** of rope used in metres (number of droppers x dropper length) in the column titled 'Off bottom' and subtitled 'Total rope length (m)'.
- Where molluscs are cultured in trestles please record the total extent of the **lease area** in hectares or metres squared (m²) (please specify) in the column titled 'Leasing area containing trestles'.
- If molluscs are cultured by more than one method on a site an entry should be recorded for both methods.
- If utilising types of culturing methods other than those specified please give details of the type, number and size in the column titled 'Other methods'.

Input to capture based aquaculture: Capture based aquaculture refers to the practice of collecting aquatic animals from the wild for aquaculture purposes prior to **placing them on the market**. For the purposes of this survey this **does not** include the natural settlement of mussel, oyster or scallop spat on long lines or the seabed. The active capture of animals from the wild which are then held for a period of time prior to being placed on the market should be recorded only **where those animals are being fed**. There is no requirement to record those animals which are intended for release back into the wild or are not being fed.

For example:

- Wild caught oysters held temporarily in depuration facilities **would not** be recorded.
- Wild caught lobsters held temporarily in holding facilities and being fed **would** be recorded.

Shellfish production for 2019 (hatcheries and nurseries): If applicable, please record the number of eggs and juveniles transferred to controlled environments for on growing or released into the wild.

Size of production facilities in 2019 (crustaceans): Please record the size of the facilities. For ponds, enclosures and pens, the **bottom area** should be recorded in hectares or m². For tanks and raceways the **volume** should be recorded in m³. On sites holding lobsters, either for release to the wild or for placing on the market, data is required only for those facilities where the animals are **being fed**.

Shellfish movements by site and species: Please only record live shellfish movements on or off-site where they are for ongrowing, **not for table production**.

2019 spat settlement: Please indicate if this was a spat collection site and if so, was spat settlement sufficient for production purposes.

CONVERSIONS

To convert	To	Multiply (X) or divide (/) by
Yards	Metres	X 0.9144
Miles	Kilometres	X 1.609
Acres	Hectares	X 0.4047
Square metres (m ²)	Hectares	/ 10000
Cubic feet (ft ³)	Cubic metres (m ³)	X 0.0283

// APPENDIX 2

SCOTTISH MARINE REGIONS

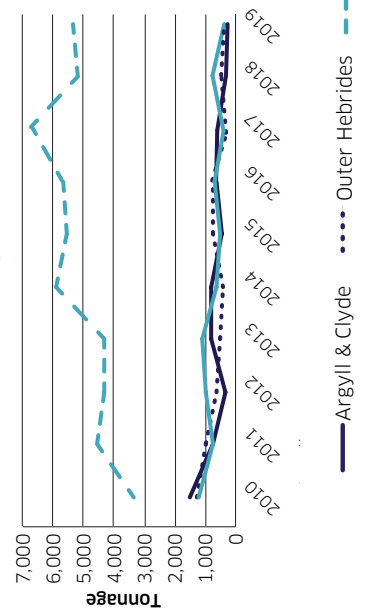


Mussel Production by Scottish Marine Region (Tonnage and Value)

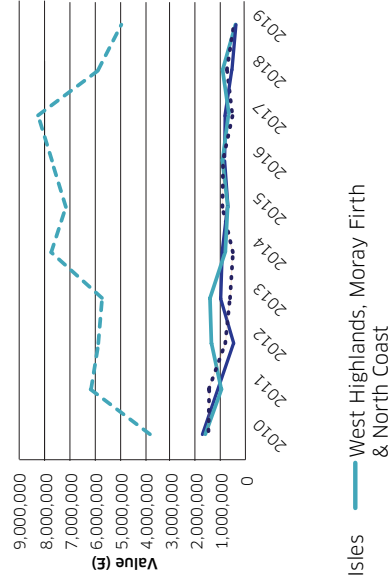
Scottish Marine Region	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £	Tonnage	Value £
Argyll & Clyde	1,347	1,574,643	710	967,730	323	436,696	770	1,024,100	755	985,275	491	641,246	615	850,545	631	803,894	442	513,604	363	333,960
Outer Hebrides	1,264	1,477,616	1,001	1,364,363	629	850,408	528	702,240	411	536,355	718	937,708	727	1,005,441	396	504,504	555	644,910	544	500,480
Shetland Isles	3,349	3,914,981	4,567	6,224,821	4,340	5,867,680	4,337	5,768,210	5,919	7,724,295	5,565	7,267,890	5,686	7,863,738	6,647	8,468,278	5,160	5,995,920	5,324	4,898,080
West Highlands, Moray Firth & North Coast	1,239	1,448,391	718	978,634	985	1,331,720	1,122	1,492,260	598	780,390	496	647,776	704	973,632	558	710,892	717	833,154	468	430,560
All Scotland	7,199	8,415,631	6,996	9,535,548	6,277	8,486,504	6,757	8,986,810	7,683	10,026,315	7,270	9,494,620	7,732	10,693,356	8,232	10,487,568	6,874	7,987,588	6,699	6,163,080

Footnote - Figures for Argyll & Clyde and the West Highlands, Moray Firth & the North Coast have been merged due to commercial confidentiality. Average prices (real) have been adjusted for inflation based on 2019 price estimates.

Mussel Production by Scottish Marine Region



Mussel Production Value (£) by Scottish Marine Region

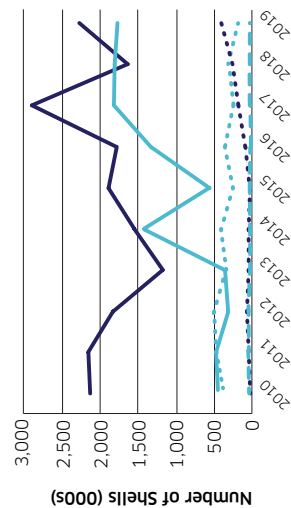


Pacific Oyster Production by Scottish Marine Region (Number of Shells and Value)

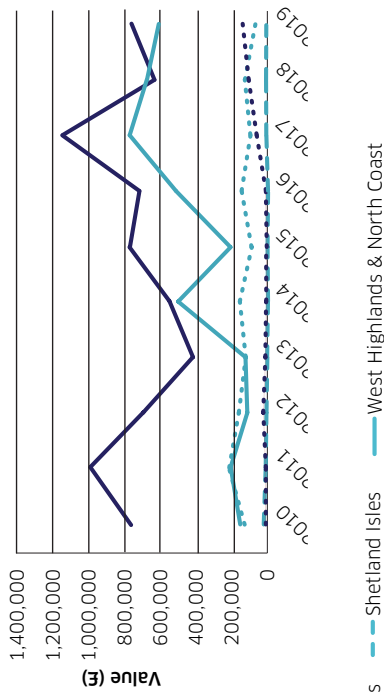
Scottish Marine Region	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £	No. of Shells (000s)	Value £
Argyll	2,145	772,200	2,155	991,300	1,837	734,800	1,172	433,640	1,549	557,640	1,884	791,280	1,774	727,340	2,857	1,199,940	1,672	635,360	2,274	773,160
Clyde	384	138,240	480	220,800	485	194,000	331	122,470	404	145,440	249	104,580	369	151,290	229	96,180	304	115,520	165	56,100
Outer Hebrides	3	1,080	15	6,900	46	18,400	19	7,030	26	9,360	4	1,680	70	28,700	149	62,580	268	101,840	411	139,740
Shetland Isles	30	10,800	25	11,500	15	6,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Highlands & North Coast	446	160,560	461	212,060	323	129,200	369	136,530	1,413	508,680	556	233,520	1,321	541,610	1,799	755,580	1,787	679,060	1,760	598,400
All Scotland	3,008	1,082,880	3,136	1,442,560	2,706	1,082,400	1,891	699,670	3,392	1,221,120	2,693	1,131,060	3,534	1,448,940	5,034	2,114,280	4,031	1,531,780	4,610	1,567,400

Footnote - Figures for West Highlands & the North Coast have been merged due to commercial confidentiality. Average prices (real) have been adjusted for inflation based on 2019 price estimates.

Pacific Oyster Production by Scottish Marine Region



Pacific Oyster Production Value (£) by Scottish Marine Region

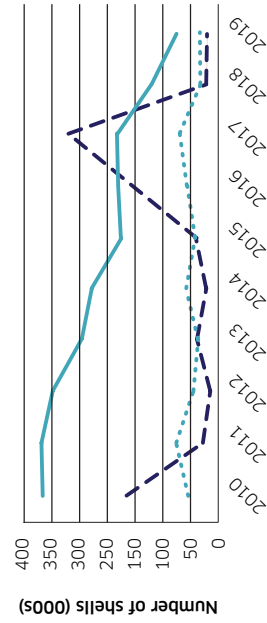


Other Scottish Shellfish Production (Number of Shells and Value)

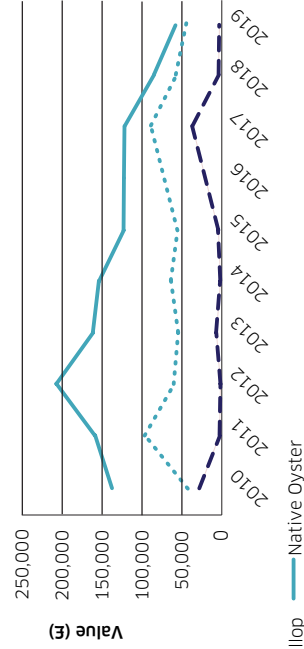
Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of shells (000s)	Value £	No. of Shells (000s)	Value £
Native Oyster	350	143,500	350	161,000	317	215,560	260	174,200	242	157,300	200	128,000	201	128,640	200	124,000	142	86,620	103	61,800
Queen Scallop	184	33,120	27	2,970	10	1,200	33	5,610	18	2,880	33	3,960	155	20,150	273	32,760	18	2,340	18	2,340
Scallop	64	52,480	78	102,960	58	73,080	40	57,200	48	67,200	30	60,900	35	75,600	47	89,770	31	57,970	26	47,840
All Scotland	598	229,100	455	266,930	385	289,840	333	237,010	308	227,360	263	192,860	391	224,390	520	246,530	191	146,930	147	111,980

Footnote – Other shellfish species including native oyster (Argyll & Solway), queen scallop (Clyde & West Highlands) and scallop (Argyll & West Highlands) were also produced however these figures cannot be attributed to Scottish Marine Regions due to commercial confidentiality. Average prices (real) have been adjusted for inflation based on 2019 price estimates.

Other Scottish Shellfish Production

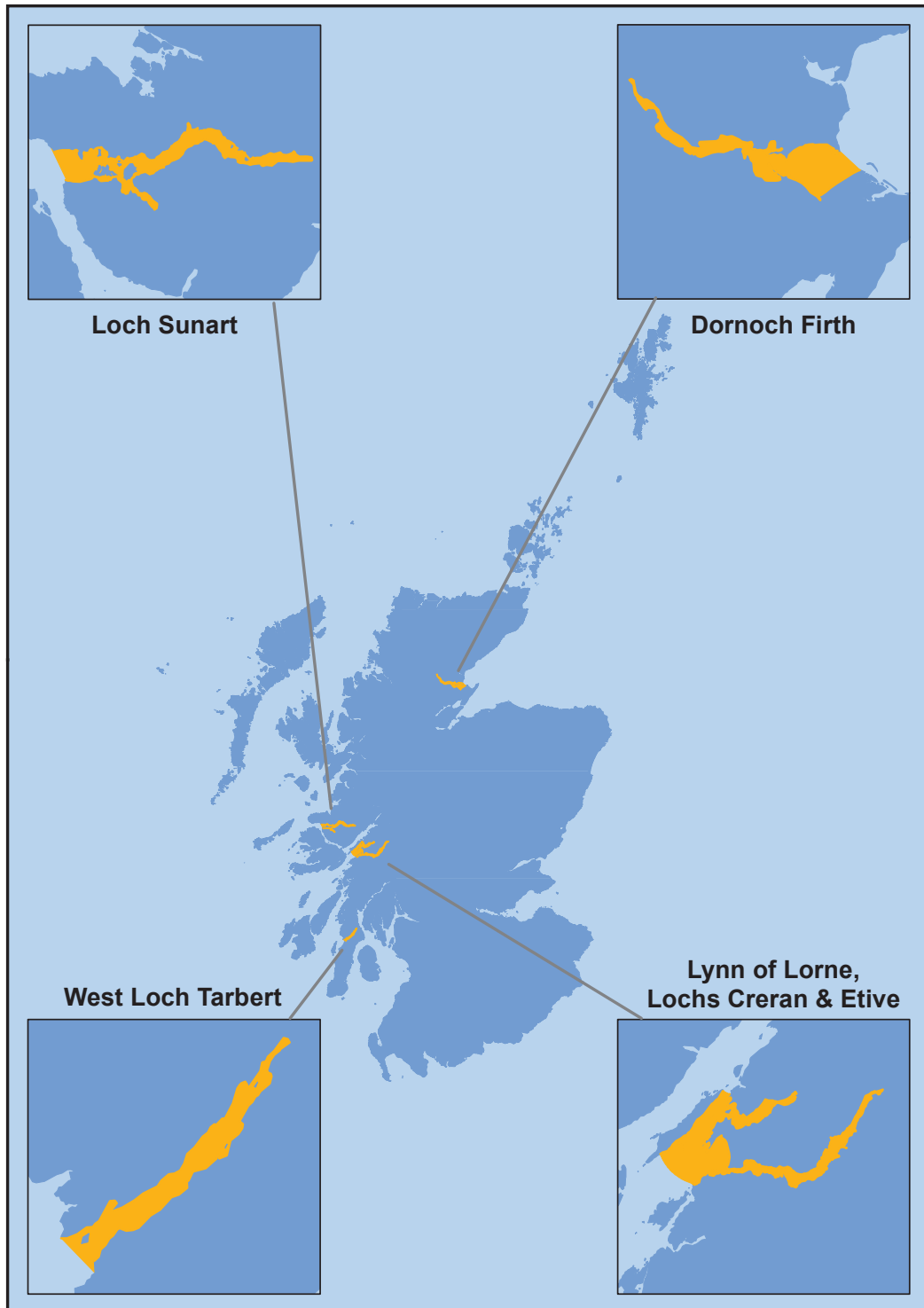


Other Scottish Shellfish Production Value (£)



// APPENDIX 3

MAP OF MOVEMENT RESTRICTIONS IN PLACE FOR THE PRESENCE OF *BONAMIA OSTREAE* (DESIGNATED AREAS IN ORANGE).



NOTE: OTHER CONFIRMED DESIGNATIONS ARE IN PLACE FOR THE PRESENCE OF *BONAMIA OSTREAE* AND OTHER LISTED DISEASES IN THE GREAT BRITAIN ZONE. PLEASE CONTACT THE MSS FISH HEALTH INSPECTORATE IF YOU HAVE ANY QUERIES ABOUT SHELLFISH CONSIGNMENTS FROM ENGLAND AND WALES.

<https://www.gov.uk/prevent-fish-or-shellfish-diseases#control-areas-for-notifiable-disease-outbreaks>



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