

# Marine Scotland Science

Scottish Shellfish Farm Production Survey 2013



marinescotland  
science

**Written and compiled by : LA Munro and IS Wallace**

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## // CONTACT DETAILS

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## // INTRODUCTION TO THE YEAR 2013 SURVEY

This report is based on the returns of an annual survey questionnaire sent to all active authorised shellfish farming businesses in Scotland. The cooperation of the shellfish farming industry is gratefully acknowledged. The report authors also acknowledge Alan Christie, David Fraser, Keith Mutch, Mhairi Sinclair, Ronald Smith and Andrea Warwick for their contributions to the production of this report.

Production survey questionnaires were sent to 142 businesses registered as active during 2013 ([see Appendix 1, p.14](#)). All return forms were received. During 2013, four businesses became authorised and 10 businesses rescinded their authorisation.

The survey showed that, of the 142 businesses authorised at the end of 2013, 61 recorded no sales during that year. These 142 authorised businesses farmed 328 active sites, of which 158 (48%) placed shellfish on the market. Shellfish production by business and site is presented.

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**May 2014**

## // PRODUCTION

The survey indicates that the shellfish species cultivated in Scottish waters in 2013 were:

Mussel:	<i>Mytilus spp.</i>
Pacific oyster:	<i>Crassostrea gigas</i>
Native oyster:	<i>Ostrea edulis</i>
Queen scallop:	<i>Chlamys 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 2013 production data for each species by region are given in Table 1.

TABLE 1  
SCOTTISH SHELLFISH PRODUCTION BY REGION, 2013.

Region	Businesses	Mussel		Pacific oyster		Native oyster		Queen		Scallop	
		(tonnes)		(000s)		(000s)		(000s)		(000s)	
		Tonnes Table	tonnes on-growing	000s Table	000s on-growing	000s Table	000s on-growing	000s Table	000s on-growing	000s Table	000s on-growing
Highland	45	1,096	67	369	3,102	0	977	1	0	38	1,470
Orkney	5	0	0	0	0	0	0	0	0	0	0
Shetland	25	4,337	1,148	0	0	0	0	0	0	0	0
Strathclyde	49	796	0	1,503	3,114	260	38	32	1,490	2	0
Western Isles	18	528	66	19	0	0	0	0	0	0	0
All Scotland	142	6,757	1,281	1,891	6,216	260	1,015	33	1,490	40	1,470
Weight (tonnes)		6,757	1,281	151		21		1		5	

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 QUEEN AVERAGE 40g.

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

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 2004-2013.

For the table	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change 12-13
Pacific oyster (000s)	3,586	3,070	3,138	2,603	3,093	2,900	3,008	3,136	2,706	1,891	-30
Native oyster (000s)	105	162	300	273	250	490	350	350	317	260	-18
Queen (000s)	1,118	1,441	1,510	384	687	138	184	27	9	33	>100
Scallop (000s)	85	100	87	15	15	35	64	78	58	40	-31
Mussel (tonnes)	4,223	4,135	4,219	4,806	5,869	6,302	7,199	6,996	6,277	6,757	+8

For on-growing	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Pacific oyster (000s)	2,510	1,467	1,685	945	26	45	1,633	1,400	3,190	6,216
Native oyster (000s)	0	0	0	10	0	0	300	1	677	1,015
Queen (000s)	600	0	0	0	0	30	0	0	0	1,490
Scallop (000s)	80	382	287	45	0	0	0	104	16	1,470
Mussel (tonnes)	61	20	68	44	30	391	175	282	309	1,281

Despite high levels of shellfish toxins which caused a number of businesses to voluntarily suspend commercial production for several months, mussel production, for the table, increased by 8% in 2013 (see figure 1). The greatest contribution in regional mussel production was from Shetland, accounting for 4,337 tonnes or 64% of Scotland's total. Pacific oyster production decreased by 30% from 2012 reportedly due to the downstream effects of poor seed supply in 2010 and 2011, environmental factors such as poor growth and losses from severe weather conditions. Meanwhile, production of Pacific oysters for on-growing has significantly increased, supplying markets within and outwith Scottish waters. The Strathclyde region produced about 79% of Scotland's farmed Pacific oysters. Scallop production fell by 31% since 2012 while the production of farmed queen scallops increased by >100% with both these sectors continuing to target small niche markets. Production of native oysters decreased by 18% from 2012. Native oyster production accounts for a small percentage of total oyster production, however, demand for this species continues to be high.

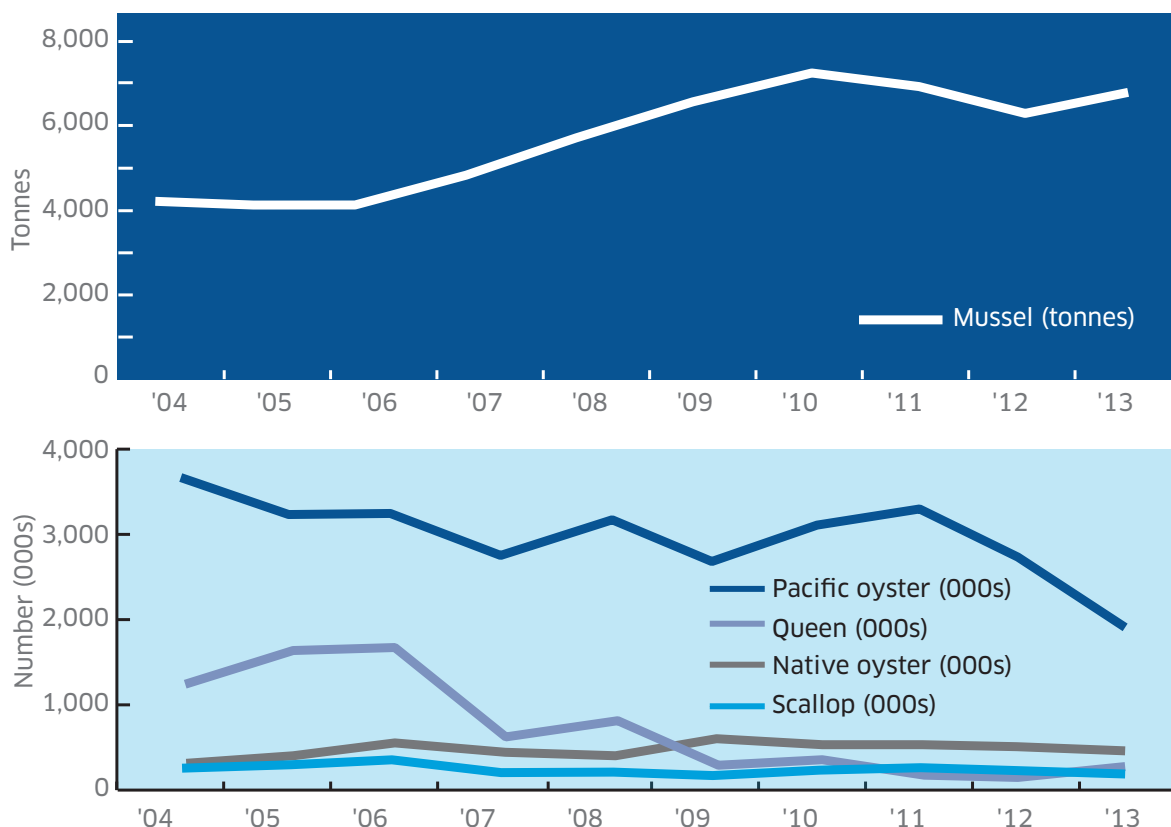


FIGURE 1  
TABLE PRODUCTION BY SPECIES 2004-2013.

Prices of farmed shellfish fluctuated throughout the year. Their value at first sale was estimated from the following figures (Supplied by industry, these vary with demand, level of production and geographical area of origin). The average price of Pacific oyster was £0.33 per shell; native oyster, £0.60 per shell; scallop, £1.29 per shell; queen scallop, £0.15 per shell and mussels £1200 per tonne. The value of the table trade is estimated from the production figures shown in Table 1 (*see page 2*).

Mussel:	£8.1 million	Pacific oyster:	£0.62 million
Native oyster:	£0.16 million	Scallop:	£0.05 million
Queen:	£0.005 million		

The 2013 total value, at first sale for all species, was estimated at approximately £8.9 million, an increase from £8.7 million in 2012.



## // SITES AND BUSINESSES

The numbers of authorised, active businesses and sites in operation are presented in Tables 3 and 4. Many sites held stock not yet ready for market, others were fallow, and some were positioned in remote areas where cost-effective production and marketing of shellfish proved difficult.

Historically, production data have been collected by business. However, since 2002, data have been collected for both business and site, enabling the provision of more accurate site information. In 2013, 158 sites produced shellfish for sale, a decrease of 3% since 2012.

TABLE 3  
AUTHORISED AND ACTIVE BUSINESSES 2004-2013.

Number of Businesses										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Active	175	183	173	170	168	168	164	153	153	142

TABLE 4  
ACTIVE AND PRODUCING FARM SITES BY REGION 2013.

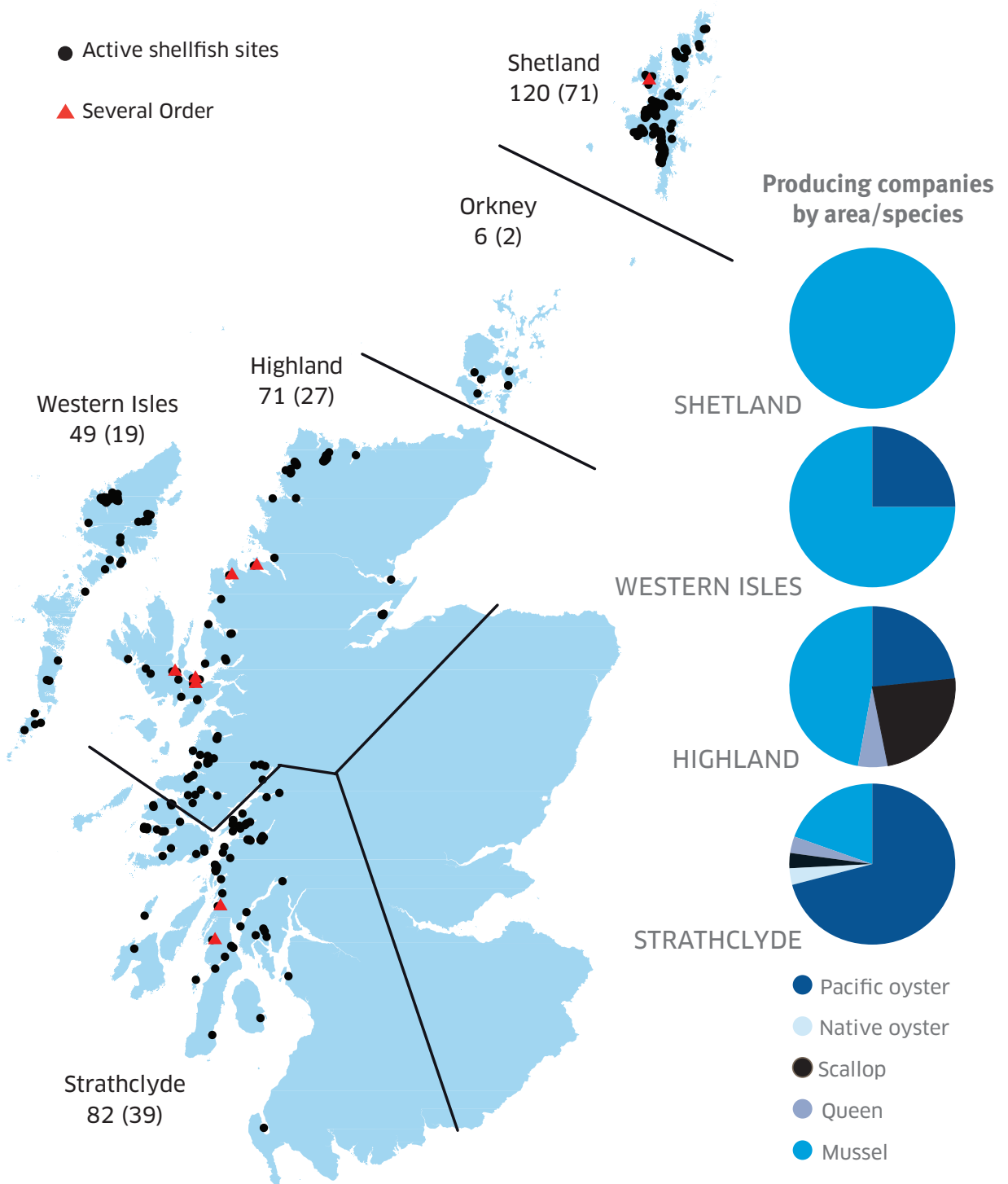
Region						
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Sites						
Active	71	6	120	82	49	328
Producing	27	2	71	39	19	158

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

PRODUCING = PLACING ON THE MARKET FOR THE TABLE AND ON-GROWING

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

FIGURE 2  
 REGIONAL DISTRIBUTION OF ACTIVE SHELLFISH SITES IN 2013 (NUMBER PRODUCING GIVEN IN BRACKETS) AND NUMBER OF PRODUCING BUSINESSES BY AREA/SPECIES.



Eight Several Orders remain in place for scallop fisheries (*see Fig. 2*). Five of these Orders are in the Highland region, two in Strathclyde and one in Shetland.

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.

TABLE 5  
NUMBER OF BUSINESSES BY REGION AND BY SPECIES 2013.

A) PRODUCTION FOR THE TABLE

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	4	0	0	22	2	28
Native oyster	0	0	0	1	0	1
Scallop	4	0	0	1	0	5
Queen	1	0	0	1	0	2
Mussel	8	0	19	6	6	39
<b>Total</b>	<b>17</b>	<b>0</b>	<b>19</b>	<b>31</b>	<b>8</b>	<b>75</b>

B) PRODUCTION FOR ON-GROWING TO OTHER PRODUCERS

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	3	0	0	6	0	9
Native oyster	1	0	0	2	0	3
Scallop	2	0	0	0	0	2
Queen	0	0	0	1	0	1
Mussel	1	0	9	0	2	12
<b>Total</b>	<b>7</b>	<b>0</b>	<b>9</b>	<b>9</b>	<b>2</b>	<b>27</b>

C) NO PRODUCTION, ACTIVELY ON-GROWING OR FALLOW

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	7	0	0	6	5	18
Native oyster	3	0	1	1	0	5
Scallop	4	0	1	3	1	9
Queen	2	0	0	0	1	3
Mussel	15	3	4	8	7	37
<b>Total</b>	<b>31</b>	<b>3</b>	<b>6</b>	<b>18</b>	<b>14</b>	<b>72</b>

TABLE 6  
BUSINESS PRODUCTION LEVELS BY SPECIES 2013.

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)	12	3	0	0	2	1	1	1	0	2	4	2	<b>28</b>
Native oyster (000s)	0	0	0	0	0	0	0	0	0	0	0	1	<b>1</b>
Scallop (000s)	4	0	1	0	0	0	0	0	0	0	0	0	<b>5</b>
Queen (000s)	1	0	0	1	0	0	0	0	0	0	0	0	<b>2</b>
Mussel (tonnes)	3	3	7	1	1	1	1	1	3	3	5	10	<b>39</b>
<b>Total</b>	<b>20</b>	<b>6</b>	<b>8</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>13</b>	<b>75</b>

Business production levels by species are shown in Table 6. There were 15 businesses producing more than 100 tonnes of mussels, a decrease of one business since 2012. Out of these 15 companies, ten produced more than 200 tonnes. These ten companies produced 74% of the total mussel production in Scotland. There were two businesses that produced more than 200,000 Pacific oysters. The production from these businesses accounted for 33% of the Scottish total.

## // 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 shellfish production businesses. 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, MS policy and MS 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 in two parts: is this a spat collection site; if yes, was spat settlement sufficient for production purposes?

Responses were received from 176 (72%) of the 246 sites authorised for mussel production in 2013. Ninety-seven (55%) of these were spat collection sites, 42 (43%) of which reported that they had sufficient spat settlement for production purposes. To identify trends a longer time series is required and the more growers who respond the better this data will be.

## // EMPLOYMENT

The industry employed 160 full-time and 173 part-time and casual workers during 2013, a decrease of 11 full-time and 14 part-time and casual employees since 2012. The regional breakdown of employment is given in Table 7. The number of people employed by the shellfish farming industry in Scotland fell by 7% from the 2012 total of 358. This decrease in employment can be attributed to the reduced number of authorised businesses in 2013.

TABLE 7  
REGIONAL EMPLOYMENT 2013.

Region	Businesses	Staff						Total
		Full-time Male	Full-time Female	Part-time Male	Part-time Female	Casual Male	Casual Female	
Highland	45	31	5	30	3	6	1	<b>76</b>
Orkney	5	0	0	2	0	1	0	<b>3</b>
Shetland	25	54	4	28	9	17	0	<b>112</b>
Strathclyde	49	50	3	32	8	19	1	<b>113</b>
Western Isles	18	10	3	11	0	4	1	<b>29</b>
<b>Scotland</b>	<b>142</b>	<b>145</b>	<b>15</b>	<b>103</b>	<b>20</b>	<b>47</b>	<b>3</b>	<b>333</b>

## // HEALTH INFLUENCES ON THE INDUSTRY

In accordance with Council Directive 2006/88/EC, a risk based surveillance programme targeting 91 shellfish site inspections was undertaken during 2013. On these visits, facilities, stock health, bio-security measures plans, movement records and details required for authorisation were checked. In addition, native oysters were sampled from seven sites, including three wild beds, for the notifiable diseases bonamiasis (causative agent, protozoan parasite *Bonamia ostreae*) and marteiliasis (causative agent, protozoan parasite *Marteilia refringens*). Results were negative. Native oyster is a species known to be susceptible to these shellfish diseases. Movement restrictions placed due to confirmation of the presence of *Bonamia ostreae*, remained in place in Loch Sunart and in West Loch Tarbet during 2013. These movement restrictions covering both sea lochs prevent the relaying of native oyster from them ([see Appendix 2, p.21 for maps of areas under movement restrictions](#)). Approved Zone status continued to protect the health of both wild and farmed native oyster stocks for the remainder of Scotland's waters.

Most of the reported mortalities were attributed to: predation from wild ducks, starfish and oyster catchers; adverse weather conditions including storms and frost; damage due to grading and handling and from natural causes. Reports of high, unexplained shellfish mortalities generated three shellfish diagnostic cases during 2013, at sites holding mussels. Results of diagnostic investigations showed no association with 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, p.14-20](#)).

In 2013 there was a continued demand for imported mussel seed into Scotland to supplement the vagaries in natural settlement. The industry should be aware of the increased disease risk with the introduction of pests and pathogens, and the importance of ensuring good bio-security practices when sourcing shellfish from other areas.

In March 2010 Commission Regulation No. 175/2010 was introduced to implement Council Directive 2006/88/EC as regards measures to control increased mortality in Pacific oysters, in connection with the detection of Ostreid Herpes Virus OsHV-1  $\mu$ var.

Following completion of a targeted surveillance programme, the UK has been granted disease free status for OsHV-1  $\mu$ var (Decision 2014/12/EU). This includes the territorial waters of Great Britain (except Whitstable Bay (Kent), Blackwater estuary (Essex), Poole Harbour (Dorset)), Larne Lough in Northern Ireland and Guernsey. Movements of Pacific oysters into an area recognised as free from OsHV-1  $\mu$ var must originate from another disease free area. Movements are still allowed from disease free areas to non-approved areas.

<http://www.scotland.gov.uk/Topics/marine/science/Research/aquaculture/diseases/notifiableDisease/oshvdec>

## // SUMMARY

- In 2013, 6,757 tonnes of mussels were produced for the table market in Scotland. This was despite the toxin issues which caused a number of producers to voluntarily suspend commercial production for several months during 2013;
- Mussel and Pacific oysters remain the main species produced in terms of both value and tonnage. Mussel production increased by 8% while Pacific oyster table production decreased by 30% during 2013;
- Production of Pacific oysters for on-growing has significantly increased (95%) in 2013 as new markets, home and abroad, have been established;
- There has been an increase in queen scallop production but a decrease in scallop production, production for on-growing of both queens and scallops has increased since 2012;
- Native oyster production dropped from 317,000 to 260,000 shells in 2013. The sector continues to target a strong niche market;
- Employment levels showed a decrease of 7% from the previous year, with 333 full, part-time and casual staff being employed during 2013.
- The Scottish shellfish farming industry is estimated to be worth £8.9 million at first sale value.
- Surveillance for the shellfish diseases Bonamiasis and Marteiliasis was maintained in 2013 resulting in no new infected areas. Movement restrictions remain in place for the presence of *Bonamia ostreae* at Loch Sunart and West Loch Tarbet;
- For shellfish health purposes, 91 out of 329 sites were inspected during 2013 as part of a risk based surveillance programme implemented under Council Directive 2006/88/EC;
- The UK was granted disease free status with regard to OsHV-1  $\mu$ var, ([See page 11 for details of disease free areas](#)). Immediate notification of increased mortality on farm sites must be reported to Marine Scotland Science, Fish Health Inspectorate ([see Contact details page II](#)).



## // GLOSSARY

<b>Active sites</b>	Farms in a production growing cycle which may contain stock or be fallow
<b>Inactive sites</b>	Farms not in a production cycle, without stock and not to be used by the company in the foreseeable future
<b>Authorised business</b>	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 <a href="http://www.scotland.gov.uk/marinescotland">www.scotland.gov.uk/marinescotland</a>
<b>Several Order</b>	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

marine scotland  
science



Ref no: A7411304  
16<sup>th</sup> December 2013

Dear Sir/Madam

### ANNUAL RETURNS OF SHELLFISH FARM PRODUCTION – 2013

For the year 2013 we seek production data from your business and site(s).

I enclose forms requesting information on your shellfish farming enterprise and a self-addressed envelope for their return. Alternatively these forms can be issued electronically upon request by contacting [MS productionsurvey@scotland.gsi.gov.uk](mailto:MS productionsurvey@scotland.gsi.gov.uk) providing business name, number and correspondent name. FORMS (a) & (b) will then be issued to you electronically for completion and return to [MS productionsurvey@scotland.gsi.gov.uk](mailto:MS productionsurvey@scotland.gsi.gov.uk).

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 the data in a summarised form in the MSS Scottish Shellfish Farms Annual Production Survey 2013 which should be available in the spring of 2014.

Marine Scotland 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.**

FORM (b) can accommodate one site return. If your business operates more than one site, extra forms have been provided. Please note that production recorded by business must equal total production recorded by site. If the business has a nil return please place an X against the species registered as cultured, in FORM (a). This data will allow a more accurate reflection of site production both geographically and by species. Input into capture based aquaculture should be recorded on form (b). Recording of movements of live shellfish for on-growing (NOT for the table), on or off-site, should be recorded on FORM (b).

Industry concerns have prompted the addition of a question on natural spat settlement at each farm site. Results will be summarised in the report to help give an indication of future production potential.

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 01224 425535 or e-mail [MS productionsurvey@scotland.gsi.gov.uk](mailto:MS productionsurvey@scotland.gsi.gov.uk)

Please send returns to me by post, or electronically, before **31<sup>st</sup> January 2014**.

Yours faithfully,  
Lorna Munro  
Marine Scotland Science

Marine Laboratory, PO Box 101, 375 Victoria Road, Aberdeen AB11 9DB  
[www.scotland.gov.uk/marinescotland](http://www.scotland.gov.uk/marinescotland)



**FORM (a) – BUSINESS PRODUCTION**

**SCOTTISH SHELLFISH FARMS PRODUCTION SURVEY 2013  
ANNUAL PRODUCTION BY BUSINESS**

Please use BLOCK LETTERS and write in INK unless completing electronically:

Please indicate production of shellfish for business \_\_\_\_\_ in 2013 and an estimate of production in 2014 for:

- A) the table (which should include any shellfish sent for depuration or cleansing, or temporarily held in other waters or tanks etc, prior to consumption or processing), AND  
B) depositing in other waters (ie for restocking or growing-on, including in tanks etc).

Species	Production of shellfish for 2013				Production of shellfish for 2014 (Estimate)			
	A) for the table		B) for depositing in other waters		A) for the table		B) for depositing in other waters	
	No.	Weight*	No.	Weight*	No.	Weight*	No.	Weight*
Mussels <i>M. edulis</i>								
Pacific oysters <i>C. gigas</i>								
Native Oysters <i>O. edulis</i>								
Scallops <i>P. maximus</i>								
Queens <i>C. opercularis</i>								
Lobsters								
Other (Specify)								

\*Please state unit of measurement, eg tonnes, kilogrammes.

Please state the number of persons employed by your business in 2013

Full time male \_\_\_\_\_ Full time female \_\_\_\_\_

Part time male \_\_\_\_\_ Part time female \_\_\_\_\_

Casual male \_\_\_\_\_ Casual female \_\_\_\_\_

Please detail any accreditation schemes you are a member of:

Was any of your production certified as organic (circle appropriate option)? Yes No

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Thank you for your cooperation. Please return the completed form in the envelope provided, or electronically, by 31 January 2014.

FORM (b) – SITE PRODUCTION, SIZE and MOVEMENTS

SCOTTISH SHELLFISH FARMS PRODUCTION SURVEY 2013

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

Name of SITE / SITE No: .....

SPECIES	PRODUCTION OF SHELLFISH FOR 2013 (EXCLUDES NURSERIES AND HATCHERIES)				HIGHEST MORTALITY	
	A) for the table		B) for depositing in other waters		% of facilities type / period	Reason
	No.	Weight*	No.	Weight*		
Mussels <i>M. edulis</i>						
Pacific oysters <i>C. gigas</i>						
Native Oysters <i>O. edulis</i>						
Scallops <i>P. maximus</i>						
Queens <i>C. opercularis</i>						
Lobsters						
Other						

SPECIES	SIZE OF PRODUCTION FACILITIES 2013			
	Molluscs			
	On bottom (Lease area in Hectares or m <sup>2</sup> )	Off Bottom		Other methods (specify no, type and size)
Total rope length (m) (No. of droppers x length of droppers)		Leasing area containing trestles (m <sup>2</sup> ) (Lease area in Hectares or m <sup>2</sup> )		
Mussels <i>M. edulis</i>				
Pacific oysters <i>C. gigas</i>				
Native oysters <i>O. edulis</i>				
Scallops <i>P. maximus</i>				
Queens <i>C. opercularis</i>				
Other (specify)				

SPECIES	INPUT TO CAPTURE BASED AQUACULTURE		PRODUCTION OF SHELLFISH FOR 2013 (HATCHERIES AND NURSERIES)			
			Transferred to controlled environment for on growing		Released to the wild	
	No.	Weight*	No. Eggs	No. Juveniles	No. Eggs	No. Juveniles
Mussels <i>M. edulis</i>						
Pacific oysters <i>C. gigas</i>						
Native oysters <i>O. edulis</i>						
Scallops <i>P. maximus</i>						
Queens <i>C. opercularis</i>						
Lobsters						
Other (specify)						

SPECIES	SIZE OF PRODUCTION FACILITIES 2013			
	Crustaceans			
	Ponds (Hectares or m <sup>2</sup> )	Enclosures and pens (Hectares or m <sup>2</sup> )	Tanks and Raceways (m <sup>3</sup> )	Other methods (Specify no, type and size)
Lobsters				
Others (specify)				

### SHELLFISH MOVEMENTS BY SITE AND SPECIES

NAME OF SITE/SITE NO			NAME OF SITE/SITE NO			NAME OF SITE/SITE NO			NAME OF SITE/SITE NO		
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

\*Please record only live shellfish movements on or off-site where they are for ongrowing, NOT for the table.

### 2013 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 COMPLETION OF THE SURVEY FORMS

### BUSINESS PRODUCTION FORM (a)

Please check your business title and address at the top of the page. If you are no longer the correspondent for the business then please notify the Fish Health Inspectorate (FHI, details below) and your details can be changed on our database. If the business is no longer producing shellfish or the lease for the site has been lost or sold, the FHI will have to be informed.

Please provide your total business production next to the relevant species (the individual site production should add up to the total business production form). The weight and number of shells produced should also be stated in the correct column. 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), and 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.

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

Accreditation schemes; please include membership to trade associations, quality schemes or organic certification schemes (for example Association of Scottish Shellfish Growers, Tartan Quality Mark, Soil Association).

Please finish the form by signing and dating.

### SITE PRODUCTION, SIZE and MOVEMENTS – FORM (b)

#### Shellfish Mortality

- 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 in accordance with the Aquatic Animal Health (Scotland) Regulations 2009. 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. Where significant abnormal mortalities occur, our Duty Inspector (DI) should be informed immediately stating suspected cause (if known). You will then be contacted to discuss the possible need for a diagnostic investigation of the case. Copies of movement records should be included in the correspondence. The DI can be contacted by telephone on 01224 295525, by Fax on 01224 295620 or by e-mail at [MS.fishhealth@scotland.gsi.gov.uk](mailto:MS.fishhealth@scotland.gsi.gov.uk)
- Please indicate in the box provided on FORM (b), 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, in the box provided on FORM (b). Examples are given below.

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 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.

## FACILITY SIZE

The form can accommodate one site return. If your business operates more than one site, extra forms have been provided. If more forms are needed then please contact the Fish Health Inspectorate to acquire more sheets. You have been issued with forms appropriate to the details which we hold for your sites. If you held species in 2013 which are not listed on the form please specify these in the row marked 'Other'.

Conversion factors have been supplied overleaf.

## Molluscs

- 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 (m<sup>2</sup>) (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 length of droppers used) 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 (m<sup>2</sup>) (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'.

## Crustaceans

- 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**.
- The size of each type of holding facility being utilised for these purposes should be recorded:

Marine Laboratory, PO Box 101, 375 Victoria Road,  
Aberdeen AB11 9DB  
[www.scotland.gov.uk/marinescotland](http://www.scotland.gov.uk/marinescotland)



- For ponds, enclosures and pens, the **bottom area** should be recorded in either hectares or m<sup>2</sup>
- For tanks and raceways the **volume** should be recorded in m<sup>3</sup>

## CAPTURE-BASED AQUACULTURE

Capture based aquaculture refers to the practice of collecting aquatic animals from the wild for aquaculture purposes prior to placing 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

**Note:** Minimum landing sizes for shellfish are laid down in Annex XII of Council Regulation (EC) No. 850/98 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms. The minimum size for scallops (*Pecten maximus*) is 100mm and as such it is illegal to retain on board, tranship, land, transport, store, sell, display or offer for sale undersized animals of this species. **Juveniles and spat for relaying must be sourced from aquaculture establishments only.**

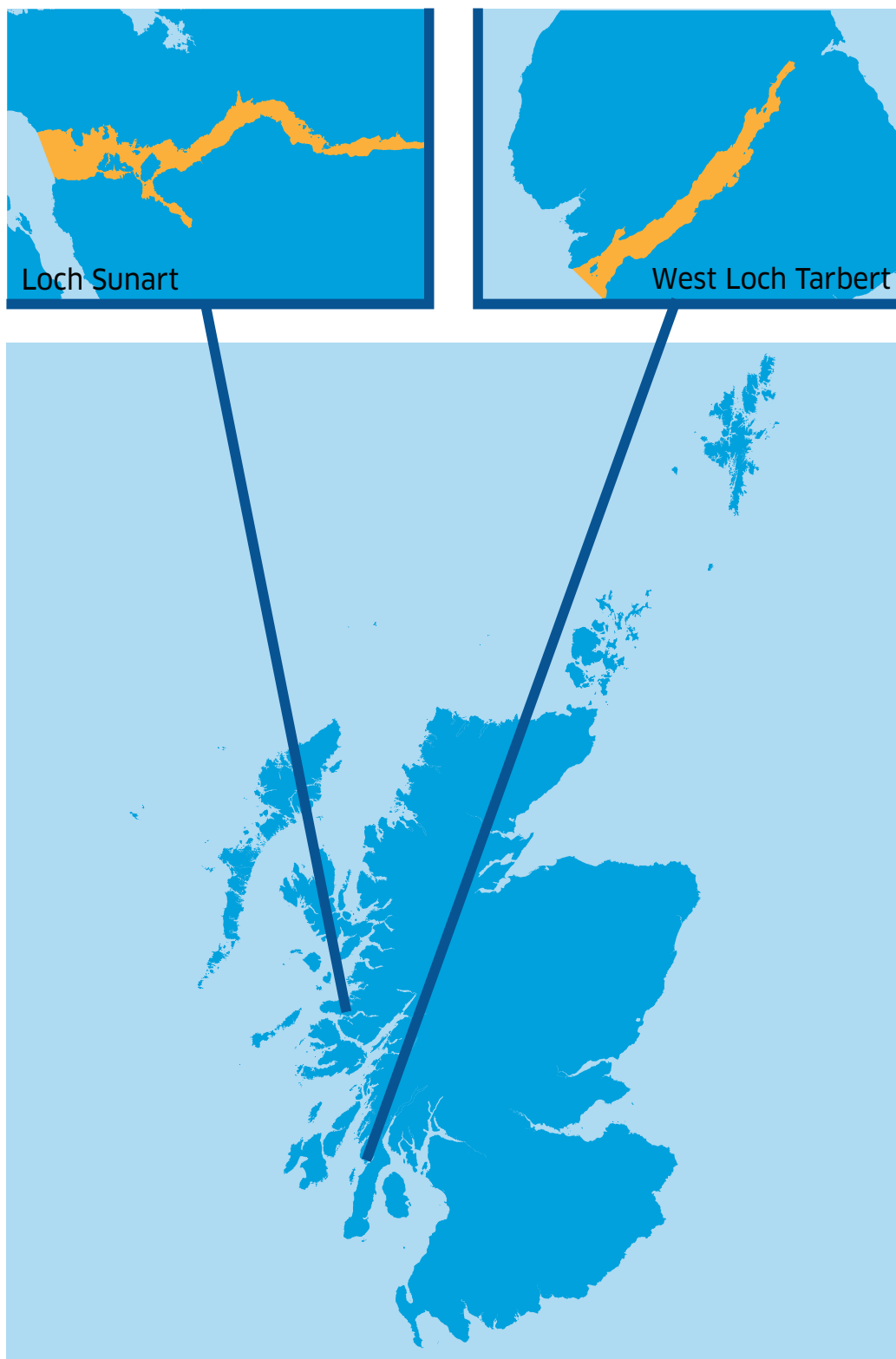
## CONVERSIONS

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	Hectares	/ 10000
Cubic feet (ft <sup>3</sup> )	Cubic metres (m <sup>3</sup> )	X 0.0283



## // APPENDIX 2

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* IN THE GREAT BRITAIN ZONE. PLEASE CONTACT THE MSS FISH HEALTH INSPECTORATE IF YOU HAVE ANY QUERIES ABOUT SHELLFISH IMPORT FROM ENGLAND AND WALES.



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