

# Marine Scotland Science

Scottish Shellfish Farm Production Survey  
2012 Report



marinescotland  
science

# Marine Scotland Science

Scottish Shellfish Farm Production Survey  
2012 Report

© Crown copyright 2013

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](mailto: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](http://www.scotland.gov.uk)

ISBN: 978-1-78256-575-8  
ISSN: 1363-5867

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

Produced for the Scottish Government by APS Group Scotland  
DPPAS14227 (05/13)

Published by the Scottish Government, May 2013

**Written and compiled by : LA Munro, IS Wallace and AS Mayes**

Designed by : KD Mutch, Marine Scotland Communications Team

## CONTENTS

<b>II</b>	CONTACT DETAILS
<b>1</b>	INTRODUCTION TO THE YEAR 2012 SURVEY
<b>2</b>	PRODUCTION
<b>5</b>	SITES AND BUSINESSES
<b>8</b>	EMPLOYMENT
<b>9</b>	HEALTH INFLUENCES ON THE INDUSTRY
<b>11</b>	SUMMARY
<b>12</b>	GLOSSARY
<b>13</b>	APPENDIX 1
<b>20</b>	APPENDIX 2

## // CONTACT DETAILS

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

E: [MS.fishhealth@scotland.gsi.gov.uk](mailto:MS.fishhealth@scotland.gsi.gov.uk)

T: +44 (0)1224 295525

S/B: +44 (0)1224 876544

F: +44 (0)1224 295620

w: <http://www.scotland.gov.uk/marinescotland>

## // INTRODUCTION TO THE YEAR 2012 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.

Production survey questionnaires were sent to 153 businesses registered as active during 2012 (*see Appendix 1, p.13*). All return forms were received. During 2012, four businesses became authorised while six businesses' authorisation ended.

The survey showed that, of the 153 businesses authorised at the end of 2012, 73 recorded no sales during that year. These 153 authorised businesses farmed 330 active sites, of which 163 (49%) placed shellfish on the market. Shellfish production by business and site is presented.

LA Munro  
IS Wallace  
AS Mayes

Marine Scotland Science  
Marine Laboratory  
375 Victoria Road  
Aberdeen  
AB11 9DB

**May 2013**

## // PRODUCTION

The survey indicates that the shellfish species cultivated in Scottish waters in 2012 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 2012 production data for each species by region are given in Table 1.

TABLE 1  
SCOTTISH SHELLFISH PRODUCTION BY REGION, 2012.

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	49	985	168	323	2,663	0	672	1.5	0	54	16
Orkney	5	0	0	0	0	0	0	0	0	0	0
Shetland	27	4,340	101	15	0	0	0	0	0	0	0
Strathclyde	54	323	0	2,322	527	317	5	7.5	0	4	0
Western Isles	18	629	40	46	0	0	0	0	0	0	0
All Scotland	153	6,277	309	2,706	3,190	317	677	9	0	58	16
Weight (tonnes)		6,277	309	216		25		0.4		7	

NB: THIS REPORT LISTS REGIONS WITH ACTIVE AUTHORISED SHELLFISH FARMS.

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.

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 2003-2012.

For the table	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	% change 11-12
Pacific oyster (000s)	3,488	3,586	3,070	3,138	2,603	3,093	2,900	3,008	3,136	2,706	-14
Native oyster (000s)	161	105	162	300	273	250	490	350	350	317	-9
Queen (000s)	1,124	1,118	1,441	1,510	384	687	138	184	27	9	-67
Scallop (000s)	180	85	100	87	15	15	35	64	78	58	-26
Mussel (tonnes)	3,632	4,223	4,135	4,219	4,806	5,869	6,302	7,199	6,996	6,277	-10

For on-growing	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Pacific oyster (000s)	2,640	2,510	1,467	1,685	945	26	45	1,633	1,400	3,190
Native oyster (000s)	0	0	0	0	10	0	0	300	1	677
Queen (000s)	0	600	0	0	0	0	30	0	0	0
Scallop (000s)	86	80	382	287	45	0	0	0	104	16
Mussel (tonnes)	38	61	20	68	44	30	391	175	282	309

Mussel production, for the table, decreased by 10% from the 2011 total (see Figure 1) and survey responses attribute the cause of the decrease to be environmental effects such as variation of spat settlement in time and place in recent years. The greatest contribution in regional mussel production was from Shetland, accounting for 4,340 tonnes or 69% of Scotland's total. Pacific oyster production decreased by 14% from 2011 reportedly due to losses from severe weather conditions and the impact of a significant producer ceasing to trade. Meanwhile, production of Pacific oysters for on-growing has significantly increased, supplying markets within and outwith Scottish waters. The Strathclyde region produced about 86% of Scotland's farmed Pacific oysters. Queen and scallop production target a small niche market, however production fell by 67% and 26% respectively since 2011. A contributing factor was reported as poor spat settlement. Production of native oysters decreased by 9% from 2011. Native oyster production accounts for a small percentage of total oyster production, however, demand for this species continues to be high.



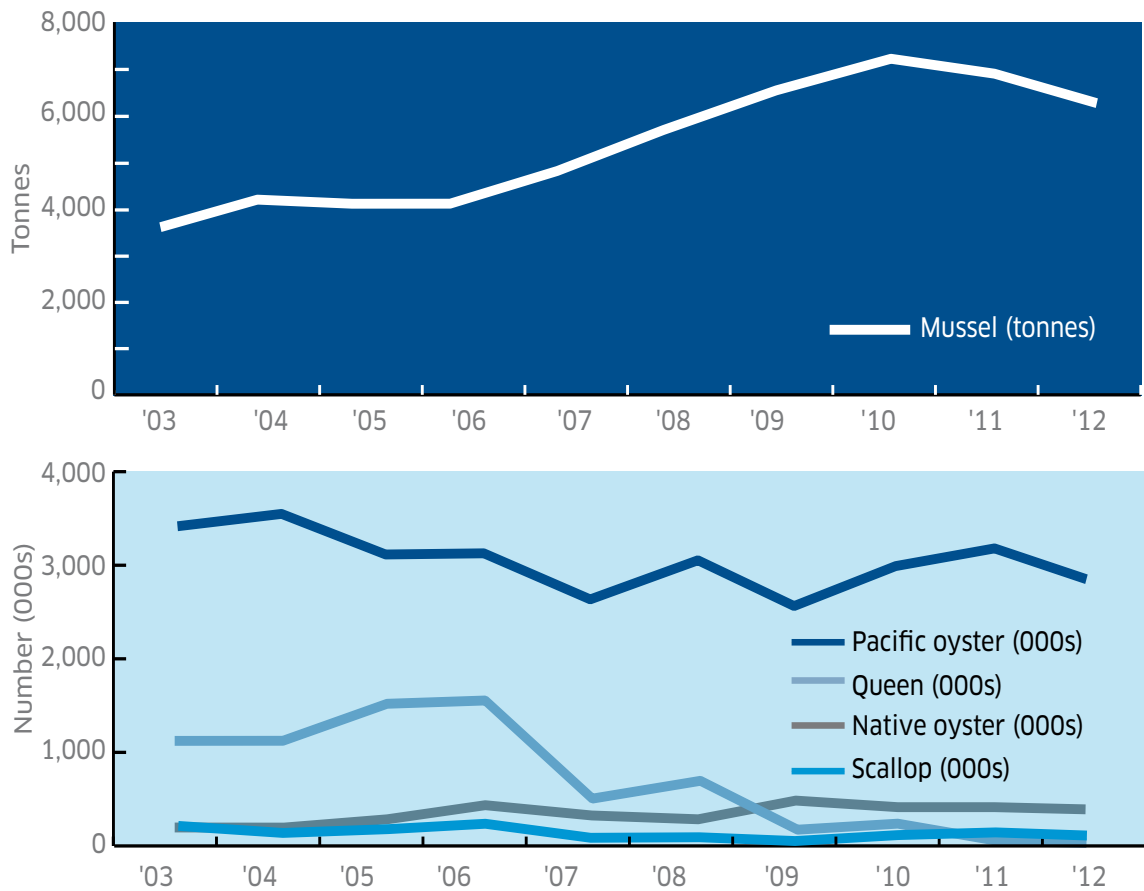


FIGURE 1  
TABLE PRODUCTION BY SPECIES 2003-2012.

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 £0.35 per shell; native oyster, £0.60 per shell; scallop, £1.70 per shell; queen scallop, £0.10 per shell; and mussels £1,200 per tonne. The value of the table trade is estimated from the production figures shown in Table 1 (*see page 2*).

Mussel:	£7.5 million	Pacific oyster:	£0.95 million
Native oyster:	£0.19 million	Scallop:	£0.10 million
Queen:	£0.001 million		

The 2012 total value, at first sale for all species, was estimated at £8.7 million a decrease from £9.8 million in 2011.

## // 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 2012, 163 sites produced shellfish for sale, an increase of 1% since 2011.

TABLE 3  
AUTHORISED AND ACTIVE BUSINESSES 2003-2012.

Number of Businesses										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Active	178	175	183	173	170	168	168	164	153	153

TABLE 4  
ACTIVE AND PRODUCING FARM SITES BY REGION 2012.

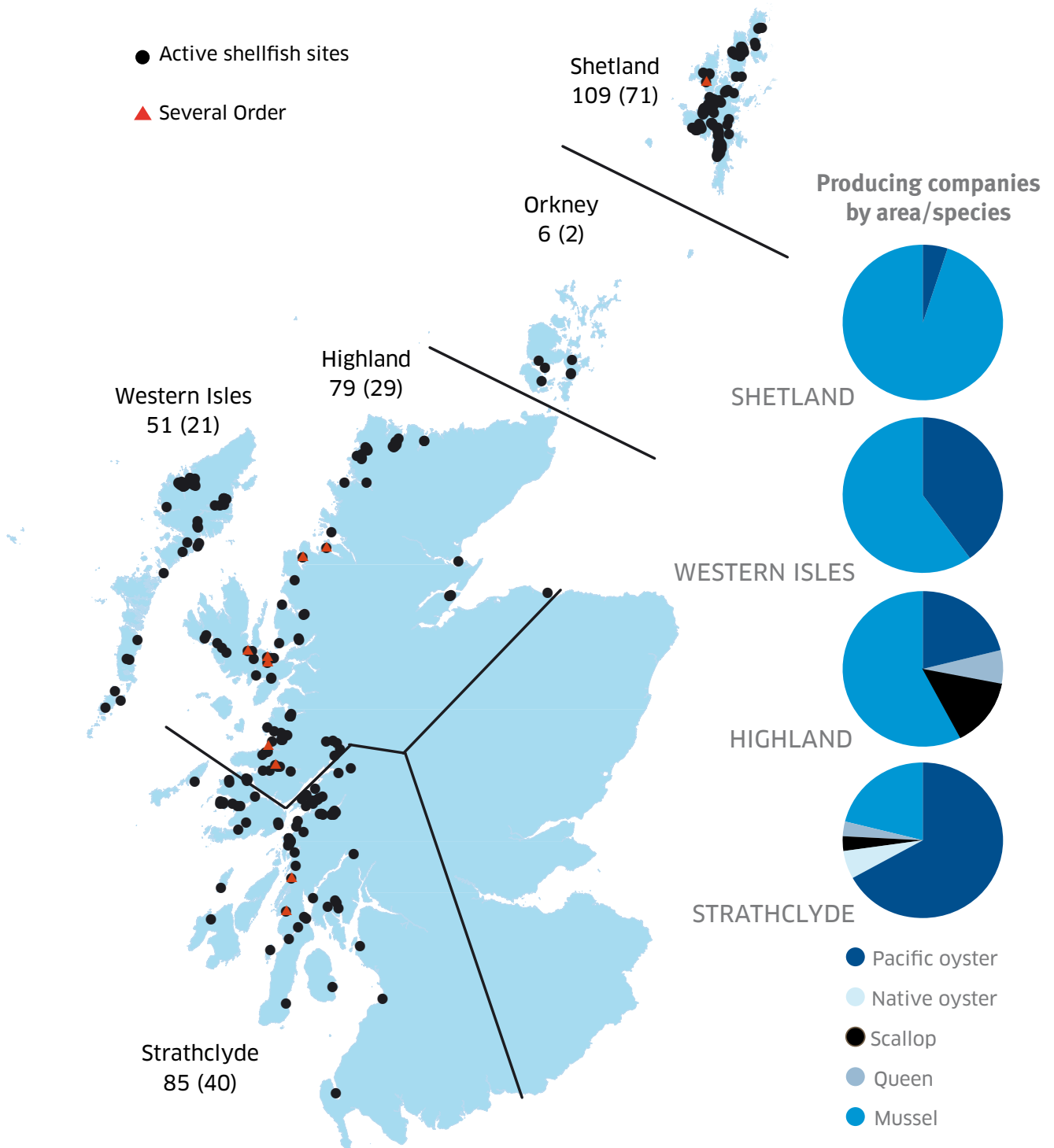
	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Sites						
Active	79	6	109	85	51	330
Producing	29	2	71	40	21	163

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 2012 (NUMBER PRODUCING GIVEN IN BRACKETS) AND NUMBER OF PRODUCING BUSINESSES BY AREA/SPECIES.



Ten Several Orders remain in place for scallop fisheries, two of which include native oyster (Figure 2). Seven of these Orders are in the Highland region, two in Strathclyde and one in Shetland. The size of the Orders measure from 18m<sup>2</sup> up to 31 ha.

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 2012.

A) PRODUCTION FOR THE TABLE

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	3	0	1	22	4	30
Native oyster	0	0	0	2	0	2
Scallop	2	0	0	1	0	3
Queen	1	0	0	1	0	2
Mussel	8	0	21	7	6	42
<b>Total</b>	<b>14</b>	<b>0</b>	<b>22</b>	<b>33</b>	<b>10</b>	<b>79</b>

B) PRODUCTION FOR ON-GROWING TO OTHER PRODUCERS

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	3	0	0	5	0	8
Native oyster	1	0	0	1	0	2
Scallop	1	0	0	0	0	1
Queen	0	0	0	0	0	0
Mussel	2	0	4	0	2	8
<b>Total</b>	<b>7</b>	<b>0</b>	<b>4</b>	<b>6</b>	<b>2</b>	<b>19</b>

C) NO PRODUCTION, ACTIVELY ON-GROWING OR FALLOW

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	7	0	2	9	2	20
Native oyster	4	0	1	1	0	6
Scallop	6	0	1	3	1	11
Queen	3	0	0	0	1	4
Mussel	22	3	3	11	7	46
<b>Total</b>	<b>42</b>	<b>3</b>	<b>7</b>	<b>24</b>	<b>11</b>	<b>87</b>

Business production levels by species are shown in Table 6. There were 16 businesses producing more than 100 tonnes of mussels, an increase of one business since 2011. Out of these 16 companies, six produced more than 300 tonnes. These six companies produced 58% of the total mussel production in Scotland. There were two businesses that produced more than 300,000 Pacific oysters, this is two less than the 2011 total. The production of these two businesses' accounted for 35% of the Scottish total.

TABLE 6  
BUSINESS PRODUCTION LEVELS BY SPECIES 2012.

Species	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-200	201-300	>300	Total
Pacific oyster (000s)	13	1	0	0	3	1	0	2	1	2	2	3	2	<b>30</b>
Native oyster (000s)	1	0	0	0	0	0	0	0	0	0	0	0	1	<b>2</b>
Scallop (000s)	1	1	0	0	1	0	0	0	0	0	0	0	0	<b>3</b>
Queen (000s)	2	0	0	0	0	0	0	0	0	0	0	0	0	<b>2</b>
Mussel (tonnes)	4	5	0	2	4	0	3	6	1	1	9	1	6	<b>42</b>
<b>Total</b>	<b>21</b>	<b>7</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>8</b>	<b>2</b>	<b>3</b>	<b>11</b>	<b>4</b>	<b>9</b>	<b>79</b>

## // EMPLOYMENT

The industry employed 171 full-time and 187 part-time and casual workers during 2012. The number of full-time employees remained the same while there was an increase of 15 part-time and casual employees since 2011. The regional breakdown of employment is given in Table 7. The number of people employed by the shellfish farming industry in Scotland rose by 4% from the 2011 total of 343. This increase in employment and the increase in the number of sites producing shellfish (*see Table 4*) indicates a continued confidence within the industry.

TABLE 7  
REGIONAL EMPLOYMENT 2012.

Region	Businesses	Staff						Total
		Full-time Male	Full-time Female	Part-time Male	Part-time Female	Casual Male	Casual Female	
Highland	49	23	3	31	4	13	0	<b>74</b>
Orkney	5	2	0	2	0	1	0	<b>5</b>
Shetland	27	71	5	25	12	17	2	<b>132</b>
Strathclyde	54	48	5	29	7	18	2	<b>109</b>
Western Isles	18	13	1	14	2	6	2	<b>38</b>
<b>Scotland</b>	<b>153</b>	<b>157</b>	<b>14</b>	<b>101</b>	<b>25</b>	<b>55</b>	<b>6</b>	<b>358</b>

## // HEALTH INFLUENCES ON THE INDUSTRY

In accordance with Council Directive 2006/88/EC, a risk based surveillance programme targeting 118 shellfish site inspections was undertaken during 2012. 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 six sites, including two 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 2012. Movement restrictions in place covering both sea lochs prevent the relaying of native oyster from them ([see Appendix 2, p.20 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.

Mortalities were attributed to predation by eider ducks, crabs, starfish or oyster catchers, fouling by a polychaete worm and extreme weather conditions. Reports of high, unexplained shellfish mortalities generated nine shellfish diagnosis cases during 2012, at sites holding mussels and Pacific oysters. Results of diagnostic investigations showed no association with notifiable diseases. It is the responsibility of farmers to inform Marine Scotland of any abnormal or unexplained shellfish mortality on their sites ([see guidance on shellfish mortality in Appendix 1, p.13-19](#)).

2012 saw a considerable increase in the importation of mussel seed, for on-growing, 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.

The results of poor mussel spat settlement investigations in 2011, including a questionnaire to industry, indicated that poor spat settlement and mortality was not widespread in Scottish waters, although a major impact on certain individual producers. The causes are associated with environmental variables, guiding industry to consider focussed spat fall monitoring to help predict spat settlement in time and space. Communication among industry, MS policy and scientists is to continue to determine the need and focus for possible research and development.

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.

Targeted surveillance continued in 2012 on 13 sites holding susceptible Pacific oysters, no evidence of the presence of Oyster Herpes Virus has been found in Scottish waters to date. Active surveillance is to continue in 2013 under article 43 of Directive 2006/88/EC. A submission (Declaration from the United Kingdom for disease-free status for Ostreid herpes virus (OsHV-1  $\mu$ Var) under Article 43 of Council Directive 2006/88/EC) has been made following the third complete year of surveillance for the UK. <http://www.scotland.gov.uk/Topics/marine/science/Research/aquaculture/diseases/notifiableDisease/oshvdec>

## // SUMMARY

- Mussel and Pacific oysters remain the main species produced in terms of both value and tonnage. Mussel production decreased by 10% and Pacific oyster production decreased by 14% during 2012;
- Production of Pacific oysters for on-growing has significantly increased (128%) in 2012 as new markets, home and abroad, have been established;
- There has been a reduction in queen scallop and scallop production, attributed to poor spat fall and severe weather conditions;
- Native oyster production dropped from 350,000 to 317,000 shells. The sector continues to target a strong niche market;
- Employment levels showed an increase of 4% from the previous year, with 358 full, part-time and casual staff being employed during 2012.
- The Scottish shellfish farming industry is estimated to be worth £8.7 million at first sale value.
- Surveillance for the shellfish diseases Bonamiasis and Marteiliasis was maintained in 2012, 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, 118 out of 330 sites were inspected during 2012 as part of a risk based surveillance programme implemented under Council Directive 2006/88/EC;
- A surveillance programme targeting Pacific oyster farm sites continued in 2012, to detect any occurrence of OsHV-1  $\mu$ var, no evidence of infection was found from samples taken ([see page 10 for further details of UK OsHV-1  \$\mu\$ var disease-free status declaration](#)). Immediate notification of increased mortality on farm sites must be reported to Marine Scotland Science, Fish Health Inspectorate ([see Contact details page II](#)).
- The industry is dominated by small producers, although there was a continued and marked trend toward large businesses contributing to the annual production of all species.



## // 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

marinescotland  
science



Ref no: A4625727  
10<sup>th</sup> December 2012

Dear Sir/Madam

### ANNUAL RETURNS OF SHELLFISH FARM PRODUCTION – 2012

For the year 2012 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 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 SGMD Scottish Shellfish Farms Annual Production Survey 2012 which should be available in the spring of 2013.

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).

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 2013**.

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 2012  
ANNUAL PRODUCTION BY BUSINESS**

Please note that the information provided on this form will remain confidential to the Scottish Government and any summary of information will be framed so that particulars concerning any one business or person cannot be ascertained from it. Please use BLOCK LETTERS and write in INK unless completing electronically:

Please indicate estimated production for 2012 of shellfish 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	Estimated production of shellfish for 2012			
	A) for the table		B) for depositing in other waters	
	Number	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 2012

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 2013.

Marine Laboratory, PO Box 101, 375 Victoria Road,  
Aberdeen AB11 9DB  
[MS productionsurvey@scotland.gsi.gov.uk](mailto:MS productionsurvey@scotland.gsi.gov.uk)  
01224 425535



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

**SCOTTISH SHELLFISH FARMS PRODUCTION SURVEY 2012**

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

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

SPECIES	ESTIMATED PRODUCTION OF SHELLFISH FOR 2012 (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 2012			
	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		ESTIMATED PRODUCTION OF SHELLFISH FOR 2012 (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 2012			
	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 on-growing, NOT for the table.

## 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 2012 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 ( $m^2$ ) (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 ( $m^2$ ) (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.**

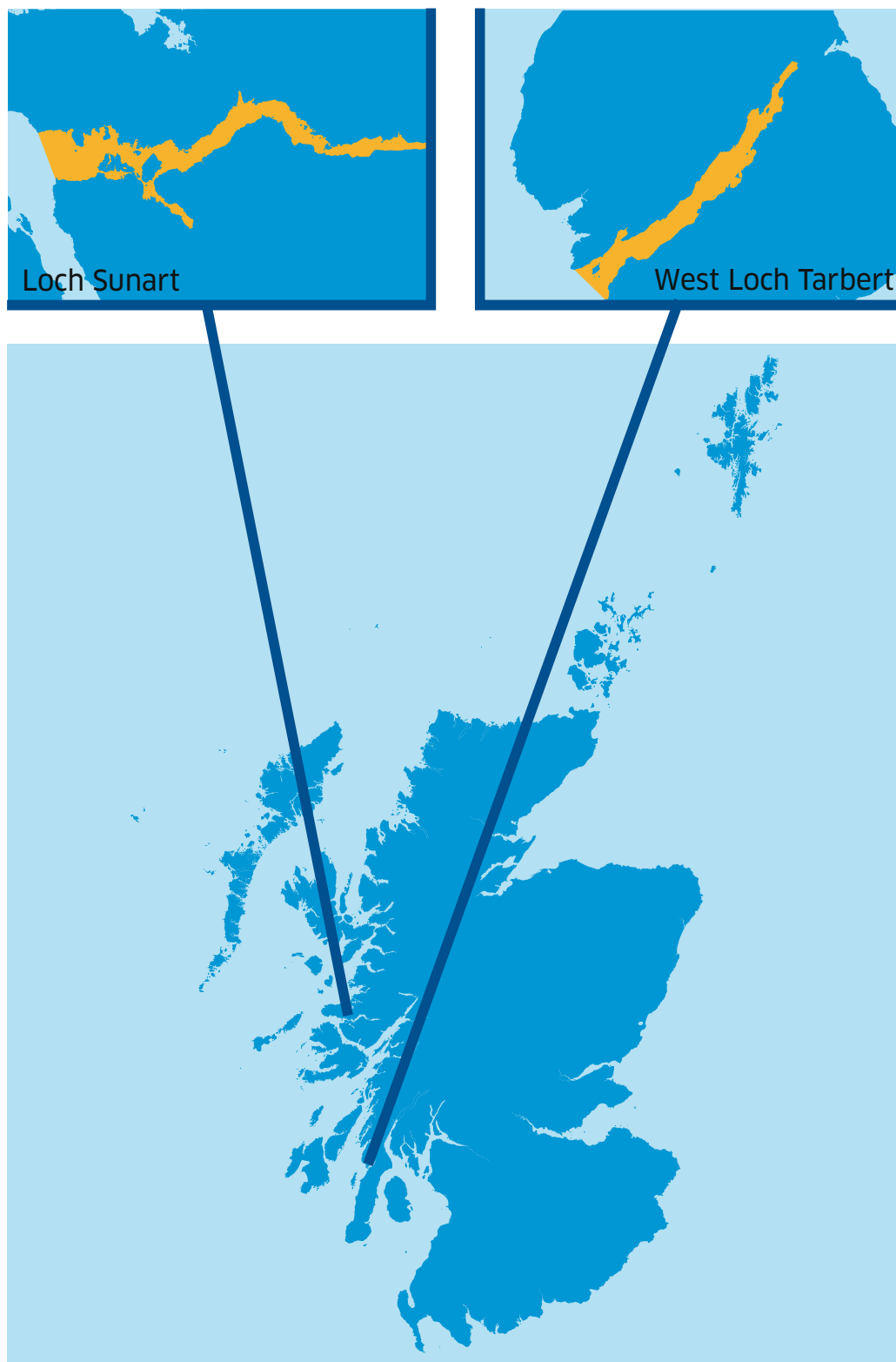
### CONVERSIONS

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.



© Crown copyright 2013

ISBN: 978-1-78256-575-8  
ISSN: 1363-5867

This document is also available on the Scottish Government website:  
[www.scotland.gov.uk](http://www.scotland.gov.uk)

APS Group Scotland  
DPPAS14227 (05/13)

[www.scotland.gov.uk](http://www.scotland.gov.uk)