The Scottish Government
Riaghaltas na h-Alba

Marine Scotland Science

Scottish Shellfish Farm Production Survey 2014

marinescotland science

Written and compiled by : LA Munro and IS Wallace

Artwork by : M Sinclair, Marine Scotland Communications Team

CONTENTS

// CONTACT DETAILS

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

E: MS.fishhealth@scotland.gsi.gov.uk
T: +44 (0)1224 295525
S/B: +44 (0)1224 876544

w: http://www.gov.scot/Topic/marine/Fish-Shellfish

// INTRODUCTION TO THE YEAR 2014 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, Sonia Duguid, David Fraser, Andrew Mayes, Keith Mutch, Ronald Smith and Andrea Warwick for their contributions to the production of this report.

Production survey questionnaires were sent to 144 businesses registered as active during 2014 (*see* Appendix 1, p.14). All return forms were received. During 2014, six businesses became authorised and four businesses rescinded their authorisation.

The survey showed that, of the 144 businesses authorised at the end of 2014, 79 recorded sales during that year. These 144 authorised businesses farmed 344 active sites, of which 165 (48%) placed shellfish on the market. Shellfish production by business and site is presented.

LA Munro
IS Wallace

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

May 2015

// PRODUCTION

The survey indicates that the shellfish species cultivated in Scottish waters in 2014 were:

Mussel:	*Mytilus* spp.
Pacific oyster:	*Crassostrea gigas*
Native oyster:	*Ostrea edulis*
Queen scallop:	*Aequipecten opercularis*
Scallop:	*Pecten maximus*

Production was dominated by mussel and Pacific oyster, although small quantities of scallop, queen scallop (queen) and native oyster were also produced. The 2014 production data for each species by region are given in Table 1.

TABLE 1
SCOTTISH SHELLFISH PRODUCTION BY REGION, 2014.

Region	Businesses	Mussel (tonnes)		Pacific oyster (000s)		Native oyster (000s)		Queen (000s)		Scallop (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	48	531	30	1,413	3,930	1	74	1	0	38	136
Orkney	3	0	0	0	0	0	0	0	0	0	0
Shetland	26	5,919	1,133	0	0	0	0	0	0	0	0
Strathclyde	49	822	80	1,953	2,862	241	675	17	500	10	0
Western Isles	18	411	20	26	0	0	0	0	0	0	0
All Scotland	144	7,683	1,263	3,392	6,792	242	749	18	500	48	136
Weight (Tonnes)		7,683	1,263	271		19		1		6	

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.

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 2005-2014.

For the table	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	% change 13-14
Pacific oyster (000s)	3,070	3,138	2,603	3,093	2,900	3,008	3,136	2,706	1,891	3,392	79
Native oyster (000s)	162	300	273	250	490	350	350	317	260	242	-7
Queen (000s)	1,441	1,510	384	687	138	184	27	9	33	18	-45
Scallop (000s)	100	87	15	15	35	64	78	58	40	48	20
Mussel (tonnes)	4,135	4,219	4,806	5,869	6,302	7,199	6,996	6,277	6,757	7,683	14

For on-growing	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Pacific oyster (000s)	1,467	1,685	945	26	45	1,633	1,400	3,190	6,216	6,792
Native oyster (000s)	0	0	10	0	0	300	1	677	1,015	749
Queen (000s)	0	0	0	0	30	0	0	0	1,490	500
Scallop (000s)	382	287	45	0	0	0	104	16	1,470	136
Mussel (tonnes)	20	68	44	30	391	175	282	309	1,281	1,263

Mussel production, for the table, increased by 14% in 2014 (*see* figure 1) to 7,683 tonnes. This is the highest level of mussel production ever recorded in Scotland. The greatest contribution in regional mussel production was from Shetland, accounting for 5,919 tonnes or 77% of Scotland's total. Pacific oyster production increased by 79% from 2013. Following a drop in production in 2013, production has returned to a similar level as seen in previous years. This is mainly due to one of the largest pacific oyster producers developing new markets domestically and outwith Great Britain. The Strathclyde region produced 58% of Scotland's farmed Pacific oysters. Queen scallop production fell by 45% since 2013, a contributing factor was reported as poor spat settlement, while the production of farmed scallops increased by 20%. Both these sectors continue to target small niche markets. Production of native oysters decreased by 7% from 2013. Native oyster production accounts for a small percentage of total oyster production, however, demand for this species continues to be high.

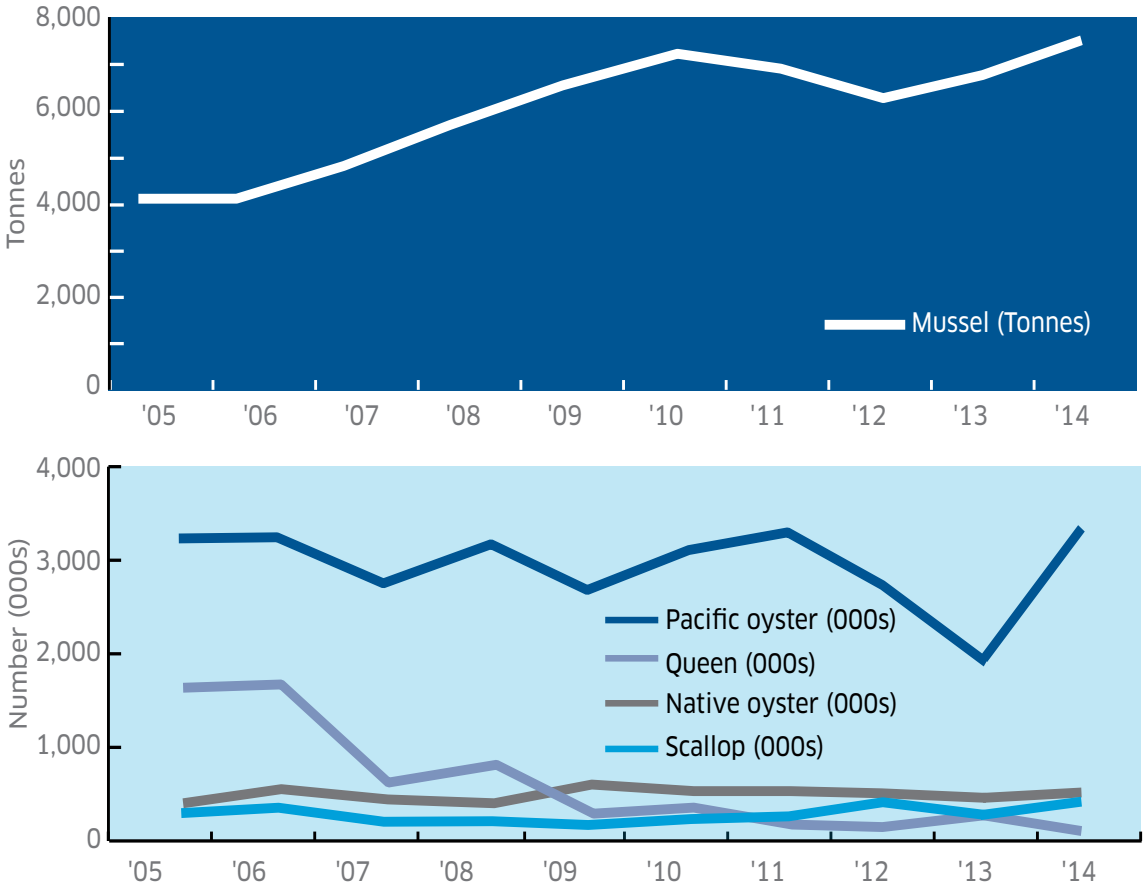


FIGURE 1
TABLE PRODUCTION BY SPECIES 2005-2014.

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:	£9.2 million	Pacific oyster:	£1.1 million
Native oyster:	£0.15 million	Scallop:	£0.06 million
Queen:	£0.003 million		

The 2014 total value, at first sale for all species, was estimated at approximately £10.5 million, an increase from £8.9 million in 2013.

// 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 2014, 165 sites produced shellfish for sale, an increase of 4% since 2013.

TABLE 3
AUTHORISED AND ACTIVE BUSINESSES 2005-2014.

	Number of Businesses									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Active	183	173	170	168	168	164	153	153	142	144

TABLE 4
ACTIVE AND PRODUCING FARM SITES BY REGION 2014.

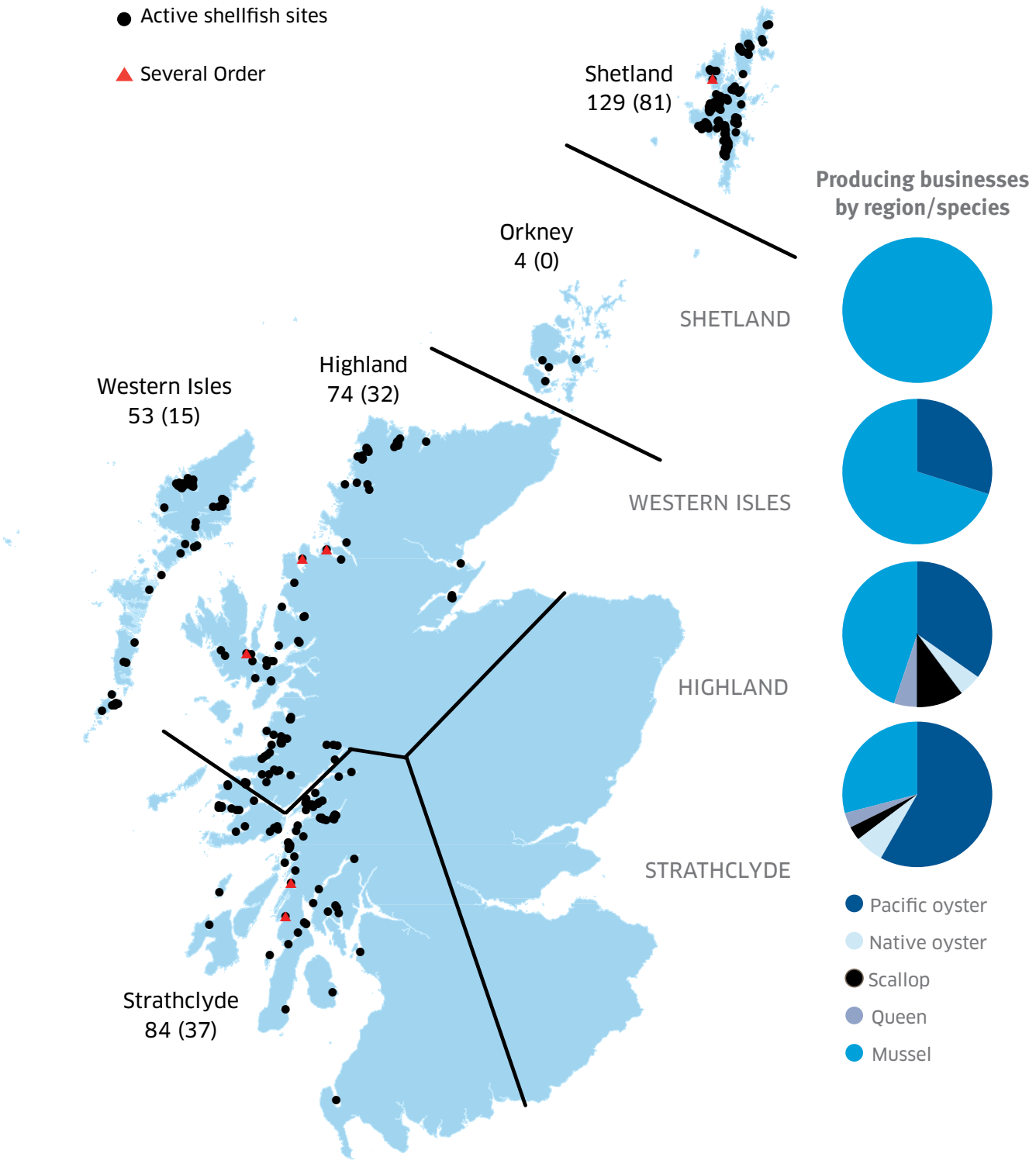
	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Sites						
Active	74	4	129	84	53	344
Producing	32	0	81	37	15	165

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 REGION.

FIGURE 2
REGIONAL DISTRIBUTION OF ACTIVE SHELLFISH SITES IN 2014 (NUMBER PRODUCING GIVEN IN BRACKETS) AND NUMBER OF PRODUCING BUSINESSES BY REGION/SPECIES.



There were six Several Orders in place for scallop fisheries in 2014 (*see* Fig. 2). Three 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 2014.

A) PRODUCTION FOR THE TABLE

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	7	0	0	18	3	28
Native oyster	1	0	0	2	0	3
Scallop	2	0	0	1	0	3
Queen	1	0	0	1	0	2
Mussel	9	0	18	9	7	43
Total	**20**	**0**	**18**	**31**	**10**	**79**

B) PRODUCTION FOR ON-GROWING TO OTHER PRODUCERS

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	2	0	0	3	0	5
Native oyster	1	0	0	2	0	3
Scallop	1	0	0	0	0	1
Queen	0	0	0	1	0	1
Mussel	1	0	8	1	1	11
Total	**5**	**0**	**8**	**7**	**1**	**21**

C) NO PRODUCTION, ACTIVELY ON-GROWING OR FALLOW

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	11	0	0	9	4	24
Native oyster	5	0	1	1	0	7
Scallop	6	0	1	3	1	11
Queen	3	0	0	0	1	4
Mussel	14	3	6	8	6	37
Total	**39**	**3**	**8**	**21**	**12**	**83**

TABLE 6
BUSINESS PRODUCTION LEVELS BY SPECIES 2014.

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)	10	1	2	1	1	3	0	0	2	1	2	5	**28**
Native oyster (000s)	2	0	0	0	0	0	0	0	0	0	0	1	**3**
Scallop (000s)	1	1	1	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)	10	1	2	1	2	2	3	2	2	0	7	10	**42**
Total	**24**	**4**	**5**	**2**	**3**	**5**	**3**	**2**	**4**	**1**	**9**	**16**	**78**

Business production levels by species are shown in Table 6. There were 17 businesses producing more than 100 tonnes of mussels, an increase of two businesses since 2013. Out of these 17 companies, ten produced more than 200 tonnes. These ten companies produced 76% of the total mussel production in Scotland. There were five businesses that produced more than 200,000 Pacific oysters. The production from these businesses accounted for 72% 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 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 in two parts: is this a spat collection site; if yes, was spat settlement sufficient for production purposes?

Responses were received from 218 (84%) of the 259 sites authorised for mussel production in 2014. One hundred and five (48%) of these were spat collection sites, 60 (57%) 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 175 full-time and 170 part-time and casual workers during 2014. The number of full-time staff increased by 15 and the number of part-time and casual employees decreased by three compared with 2013. The regional breakdown of employment is given in Table 7. The number of people employed by the shellfish farming industry in Scotland increased by 4% from the 2013 total of 333.

TABLE 7
REGIONAL EMPLOYMENT 2014.

Region	Businesses	Staff						Total
		Full-time Male	Full-time Female	Part-time Male	Part-time Female	Casual Male	Casual Female	
Highland	48	33	7	30	8	6	0	**84**
Orkney	3	0	0	0	0	1	0	**1**
Shetland	26	61	3	21	7	19	3	**114**
Strathclyde	49	49	6	28	8	24	2	**117**
Western Isles	18	14	2	9	1	3	0	**29**
Scotland	**144**	**157**	**18**	**88**	**24**	**53**	**5**	**345**

// HEALTH INFLUENCES ON THE INDUSTRY

In accordance with Council Directive 2006/88/EC, a risk based surveillance programme targeting 111 shellfish site inspections was undertaken during 2014. 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 farm sites, and four 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 ostrea*, remained in force in Loch Sunart and in West Loch Tarbert, Argyll during 2014. These movement restrictions 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 for bonamiasis, marteiliasis and Ostreid Herpes Virus-1 Microvariant (OsHV-1 µvar) continued to protect the health of both wild and farmed susceptible shellfish stocks for the remainder of Scotland's waters.

Most of the reported mortalities were attributed to: predation from wild ducks, starfish, crabs and oyster catchers; 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 one shellfish diagnostic case during 2014, at a site holding mussels. 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, p.14-19).

In 2014 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, movement and deposit of stock on site 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 OsHV-1 µvar.

Following completion of a targeted surveillance programme, the UK has been granted disease free status for OsHV-1 µvar (Decision 2014/12/EU). This includes the territory of Great Britain except Whitstable Bay (Kent), Blackwater estuary (Essex), River Crouch (Essex) and Poole Harbour (Dorset). In addition, Guernsey and the territory of Northern Ireland (except Dundrum Bay, Killough Bay, Lough Foyle, Carlingford Lough and Strangford Lough) have also been granted disease free status for OsHV-1 µvar. Movements of Pacific oysters into an area recognised as free from OsHV-1 µvar must originate from another disease free area. Movements are still allowed from disease free areas to non-approved areas.

http://www.gov.scot/Topics/marine/Fish-Shellfish/aquaculture/diseases/notifiableDisease/oshvdec

// SUMMARY

- In 2014, 7,683 tonnes of mussels were produced for the table market, this is the highest level of mussel production recorded in Scotland;
- Mussel and Pacific oysters remain the main species produced in terms of value and tonnage. Mussel and Pacific oyster production increased by 14% and 79% respectively during 2014;
- Table production of Pacific oysters was at its highest level since 2004;
- Production of Pacific oysters for on-growing has increased by 9% in 2014 as trade in both domestic markets and those outwith Great Britain have become more established;
- There has been an increase in scallop production but a decrease in queen scallop production, attributed to poor spat fall in previous years;
- Native oyster production dropped from 260,000 to 242,000 shells in 2014. The sector continues to target a strong niche market;
- Employment levels showed an increase of 4% from the previous year, with 345 full, part-time and casual staff being employed during 2014.
- The Scottish shellfish farming industry is estimated to be worth £10.5 million at first sale value.
- Targeted surveillance for the shellfish diseases bonamiasis and marteiliasis was maintained in 2014 resulting in no new infected areas. Movement restrictions remain in place for the presence of *Bonamia ostreae* at Loch Sunart and West Loch Tarbert. Active surveillance for OsHV-1 µvar continued in 2014.
- For shellfish health purposes, 111 out of 344 sites were inspected during 2014 as part of a risk based surveillance programme implemented under Council Directive 2006/88/EC. Details of this can be found at http://www.gov.scot/Topics/marine/Fish-Shellfish/FHI/surveillance;
- The UK maintained disease free status with regard to OsHV-1 µvar, (*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

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). *See* the Marine Scotland website for more details www.gov.scot/Topics/marine/Fish-Shellfish
Several 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

marinescotland science

The Scottish Government
Riaghaltas na h-Alba

12th December 2014

ANNUAL RETURNS OF SHELLFISH FARM PRODUCTION – 2014
For the period 1st January to 31st December 2014

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 2014.

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@scotland.gsi.gov.uk or by telephoning me on 01224 425 537.

The data you supply to Marine Scotland Science 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 2014 report will be available in the spring of 2015.

Although MSS would be 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) a recent decision by the information commissioner determined that the survey returns are protected.

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 01224 425 537 or e-mail MS.productionsurvey@scotland.gsi.gov.uk

Please send returns to me by post, or electronically, before **31st January 2015**.

Yours faithfully,
Stuart Wallace
Marine Scotland Science

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

marinescotland science

The Scottish Government
Riaghaltas na h-Alba

SCOTTISH SHELLFISH FARM PRODUCTION SURVEY 2014

FORM (a) – BUSINESS PRODUCTION

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

Please indicate production of shellfish for business in 2014 and an estimate of production in 2015 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 2014				PRODUCTION OF SHELLFISH FOR 2015 (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 *M. edulis*								
Pacific oysters *C. gigas*								
Native Oysters *O. edulis*								
Scallops *P. maximus*								
Queens *C. opercularis*								
Lobsters								
Other (Specify)								

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

Please state the number of persons employed by your business in 2014

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 31st January 2015.

Marine Laboratory, 375 Victoria Road,
Aberdeen, AB11 9DB
MS.productionsurvey@scotland.gsi.gov.uk
01224 425 535

marinescotland science

The Scottish Government
Riaghaltas na h-Alba

SCOTTISH SHELLFISH FARM PRODUCTION SURVEY 2014

FORM (b) – SITE PRODUCTION, SIZE and MOVEMENTS

Site name / Site No: .....

SPECIES	PRODUCTION OF SHELLFISH FOR 2014 (EXCLUDES HATCHERIES AND NURSERIES)				HIGHEST MORTALITY	
	A) for the table		B) for depositing in other waters			
	No.	Weight*	No.	Weight*	% of facilities type / period	Reason
Mussel *M. edulis*						
Pacific oyster *C. gigas*						
Native oyster *O. edulis*						
Scallop *P. maximus*						
Queen *C. opercularis*						
Lobster						
Other (specify)						

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

SPECIES	SIZE OF PRODUCTION FACILITIES IN 2014			
	Molluscs			
	On bottom (lease area in hectares or m²)	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 m²)	
Mussel				
Pacific oyster				
Native oyster				
Scallop				
Queen				
Other (specify)				

SPECIES	INPUT TO CAPTURE BASED AQUACULTURE		SHELLFISH PRODUCTION FOR 2014 (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 2014			
	Crustaceans			
	Ponds (hectares or m²)	Enclosures and pens (hectares or m²)	Tanks and raceways (m³)	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 ongrowing, 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

2014 SPAT SETTLEMENT

Is this a spat collection site?	Yes	No
If yes, was spat settlement sufficient for production purposes?	Yes	No

marinescotland science

The Scottish Government
Riaghaltas na h-Alba

GUIDANCE ON COMPLETING THE SURVEY FORMS

FORM (a) - BUSINESS PRODUCTION

Production of shellfish for 2014: Please provide your total business production for 2014 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 tranferred 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 2015 (estimate): Please provide estimates of production for 2015 "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 2014: Please provide your total site production for 2014 "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 2014 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 01224 295 525 or by e-mail at MS.fishhealth@scotland.gsi.gov.uk

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

Size of production facilities in 2014 (molluscs): Please provide the size of the production facilities for the respective species cultured. If you cultured shellfish species in 2014 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 (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 dropper length) in the column titled 'Off bottom' and subititled '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'.

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 2014 (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 2014 (crustaceans): Please record the size of the facilities. For ponds, enclosures and pens, the **bottom area** should be recorded in hectares or m^2. For tanks and raceways the **volume** should be recorded in m^3. 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**.

2014 spat settlement: Please indicate if this was a spat collection site and if so, was spat settlement sufficient for production purposes.

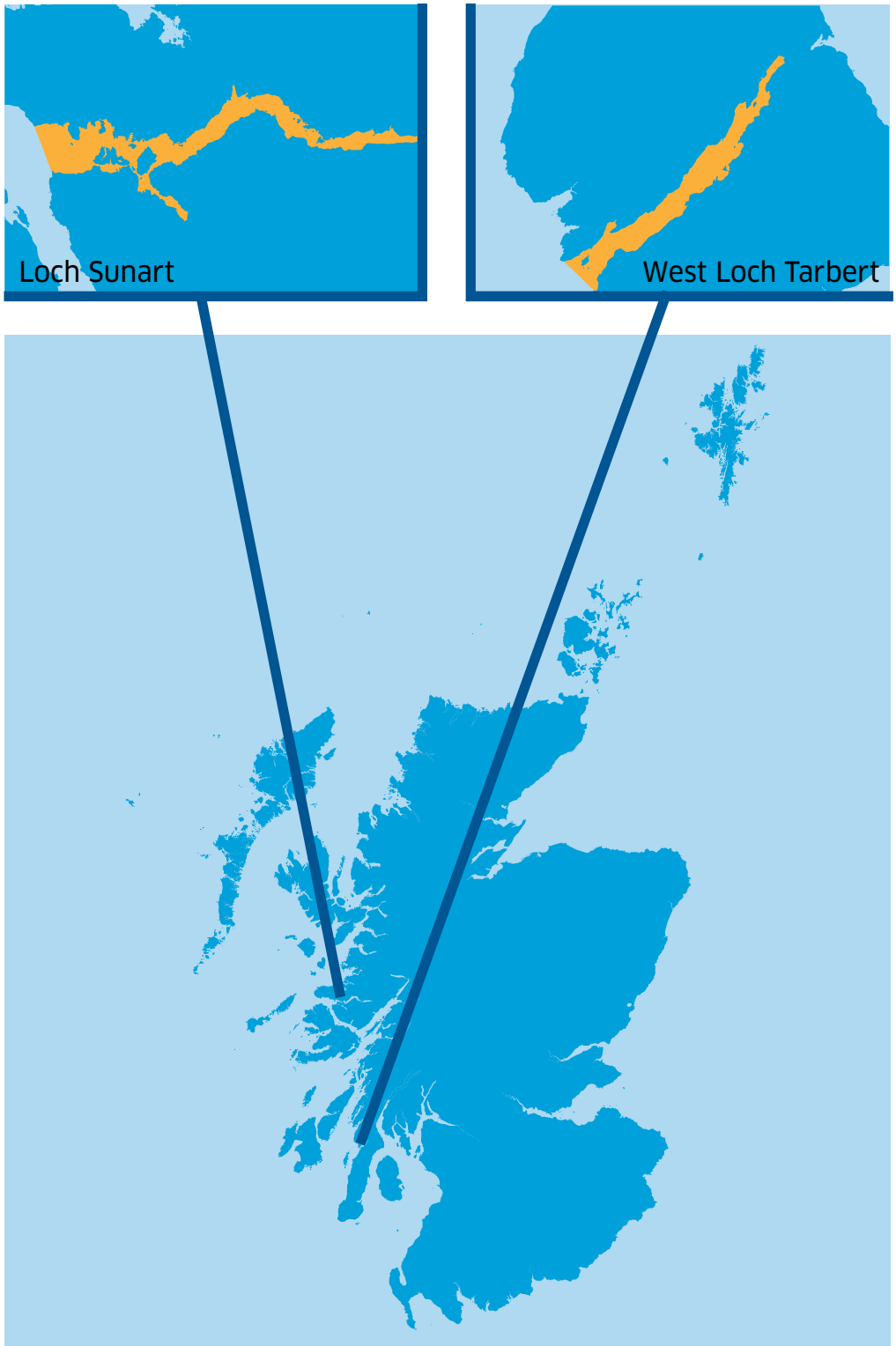
CONVERSIONS

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

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

// 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 CONSIGNMENTS FROM ENGLAND AND WALES.
https://www.gov.uk/prevent-fish-or-shellfish-diseases#control-areas-for-notifiable-disease-outbreaks

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

Any enquiries regarding this publication should be sent to us at
The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

ISBN: 978-1-78544-331-2 (web only)
ISSN: 1363-5867

Published by The Scottish Government, May 2015

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA
PPDAS45441 (05/15)

w w w . g o v . s c o t