

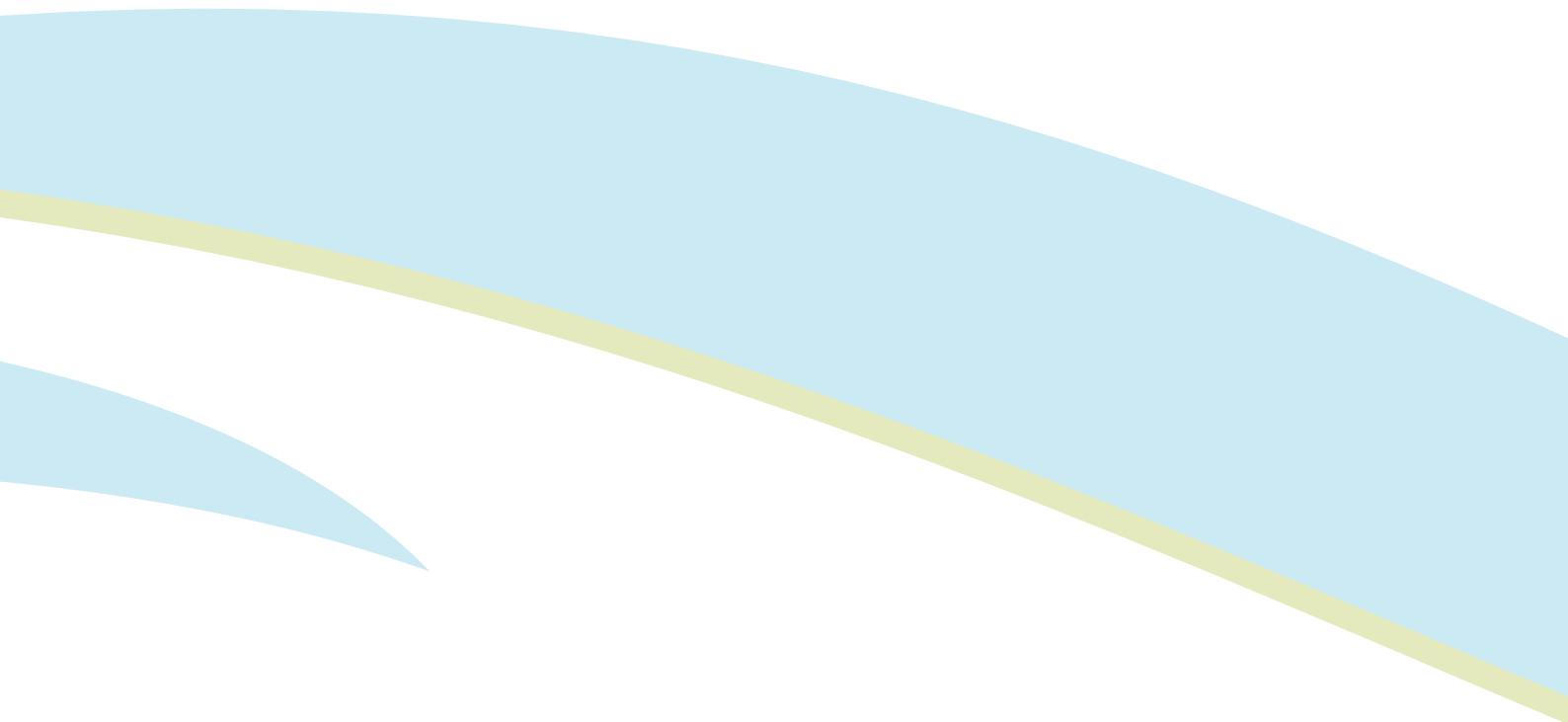
Scottish Shellfish Farm Production Survey

2010 REPORT



marinescotland
science

SCOTTISH SHELLFISH FARM PRODUCTION SURVEY 2010



Written and compiled by : AS Mayes, DI Fraser

Designed by : KD Mutch, Marine Scotland Communications Team

© Crown copyright 2011

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

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

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

ISBN: 978-1-78045-322-4

ISSN: 1363-5867

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

Produced for the Scottish Government by APS Group Scotland
DPPAS11863 (07/11)

Published by the Scottish Government, July 2011



CONTENTS

1	INTRODUCTION TO THE YEAR 2010 SURVEY
2	PRODUCTION
5	SITES AND BUSINESSES
9	EMPLOYMENT
10	HEALTH INFLUENCES ON THE INDUSTRY
11	SUMMARY
12	GLOSSARY
13	APPENDIX 1
19	APPENDIX 2

// CONTACT DETAILS

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

T: +44 (0)1224 295255

S/B: +44 (0)1224 876544

F: +44 (0)1224 295620

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

// INTRODUCTION TO THE YEAR 2010 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 165 businesses registered as active during 2010 (*see Appendix 1, p.13*). All return forms were received. During 2010, eight businesses registered and twelve de-registered.

The survey showed that, of the 164 businesses authorised at the end of 2010 and included in this report, 73 recorded no sales during that year. These 164 authorised businesses farmed 328 active sites, of which 146 (45%) placed shellfish on the market. Shellfish production by business and site is presented.

AS Mayes
DI Fraser

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

July 2011

// PRODUCTION

The survey indicates that the shellfish species cultivated in Scottish waters in 2010 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 2010 production data for each species by region are given in Table 1.

TABLE 1
SCOTTISH SHELLFISH PRODUCTION BY REGION, 2010.

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	728	0	446	1,466	0	300	8	0	64	0
Orkney	8	0	0	0	0	0	0	0	0	0	0
Shetland	32	3,840	138	30	0	0	0	0	0	0	0
Strathclyde	58	1,367	2	2,529	167	350	0	176	0	0	0
Western Isles	17	1,264	35	3	0	0	0	0	0	0	0
All Scotland	164	7,199	175	3,008	1,633	350	300	184	0	64	0
Weight (tonnes)		7,199	175	241		28		7		8	

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, while trends in production for the table market and on-growing in Scotland are presented in Table 2.

Mussel production increased by 14% from 2009 to 2010, showing a continued increasing trend (*see figure 1*). The greatest contribution in regional mussel production was from Shetland, accounting for 3,840 tonnes or 53% of Scotland's total. Pastoral cultivation of wild mussel stock contributed an additional 491 tonnes (not represented in Table 1). Pacific oyster production increased by 4% from 2009, following a small reduction in 2008-2009. The Strathclyde region produced about 84% of Scotland's

farmed Pacific oysters. Queen production increased by 33% since 2009, while production of farmed scallops increased by 83%, continuing to target niche markets. Native oyster production declined by 29% since 2009 accounting for a small percentage of total oyster production, however, targeting a strong niche market.

Eleven Several Orders remain in place for fisheries, two of which include native oyster (Fig. 2, see page 6). Seven of these Orders are in the Highland region, two in Strathclyde and two in Shetland. The size of the Orders measure from 18m² up to 31 ha.

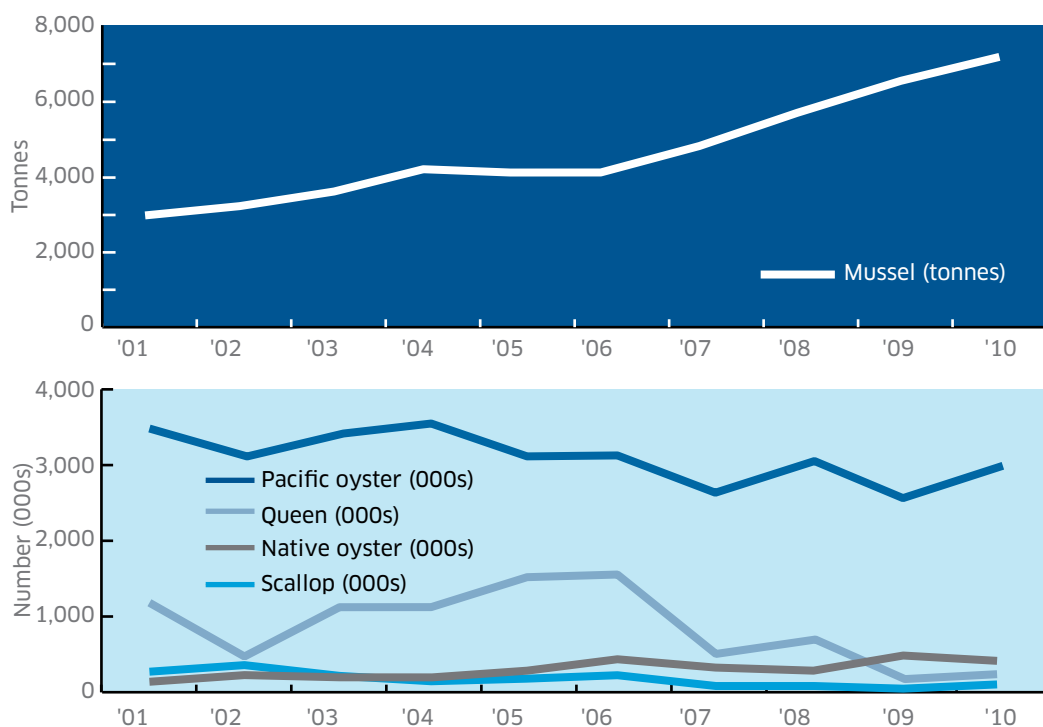


FIGURE 1
TABLE PRODUCTION BY SPECIES 2001-2010.

TABLE 2

TRENDS IN PRODUCTION DATA FOR THE TABLE AND ON-GROWING 2001-2010.

For the table	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% change 09-10
Pacific oyster (000s)	3,483	3,114	3,488	3,586	3,070	3,138	2,603	3,093	2,900	3,008	+4
Native oyster (000s)	103	191	161	105	162	300	273	250	490	350	-29
Queen (000s)	1,182	472	1,124	1,118	1,441	1,510	384	687	138	184	+33
Scallop (000s)	236	323	180	85	100	87	15	15	35	64	+83
Mussel (tonnes)	2,988	3,236	3,632	4,223	4,135	4,219	4,806	5,869	6,302	7,199	+14

For on-growing	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Pacific oyster (000s)	881	1,578	2,640	2,510	1,467	1,685	945	26	45	1,633
Native oyster (000s)	0	0	0	0	0	0	10	0	0	300
Queen (000s)	200	320	0	600	0	0	0	0	30	0
Scallop (000s)	485	147	86	80	382	287	45	0	0	0
Mussel (tonnes)	33	4	38	61	20	68	44	30	391	175

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 price of Pacific oyster was around £0.31 per shell; native oyster, £0.35 per shell; scallop, £0.70 per shell; queen's sold for approximately £0.15 per shell; and mussels from £700 to more than £1000 per tonne. The value of the table trade is estimated from the production figures shown in Table 1 (see page 2).

Mussel: £6.7 million
 Native oyster: £0.1 million
 Queen: £0.03 million

Pacific oyster: £1 million
 Scallop: £0.05 million

The total value, at first sale for all species, was estimated at £8.3 million including the pastorially cultivated mussels from wild stocks.

// SITES AND BUSINESSES

The numbers of authorised, active businesses and sites 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 2010, 146 sites produced shellfish for sale, a decrease of 3% since 2009.

TABLE 3
REGISTERED AND ACTIVE BUSINESSES 2001-2010.

Number of Businesses										
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Active	173	183	178	175	183	173	170	168	168	164

TABLE 4
ACTIVE AND PRODUCING FARM SITES BY REGION 2010.

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Sites						
Active	78	9	108	90	43	328
Producing	28	2	54	40	22	146

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 2010 (NUMBER PRODUCING GIVEN IN BRACKETS) AND
 NUMBER OF PRODUCING BUSINESSES BY AREA/SPECIES.

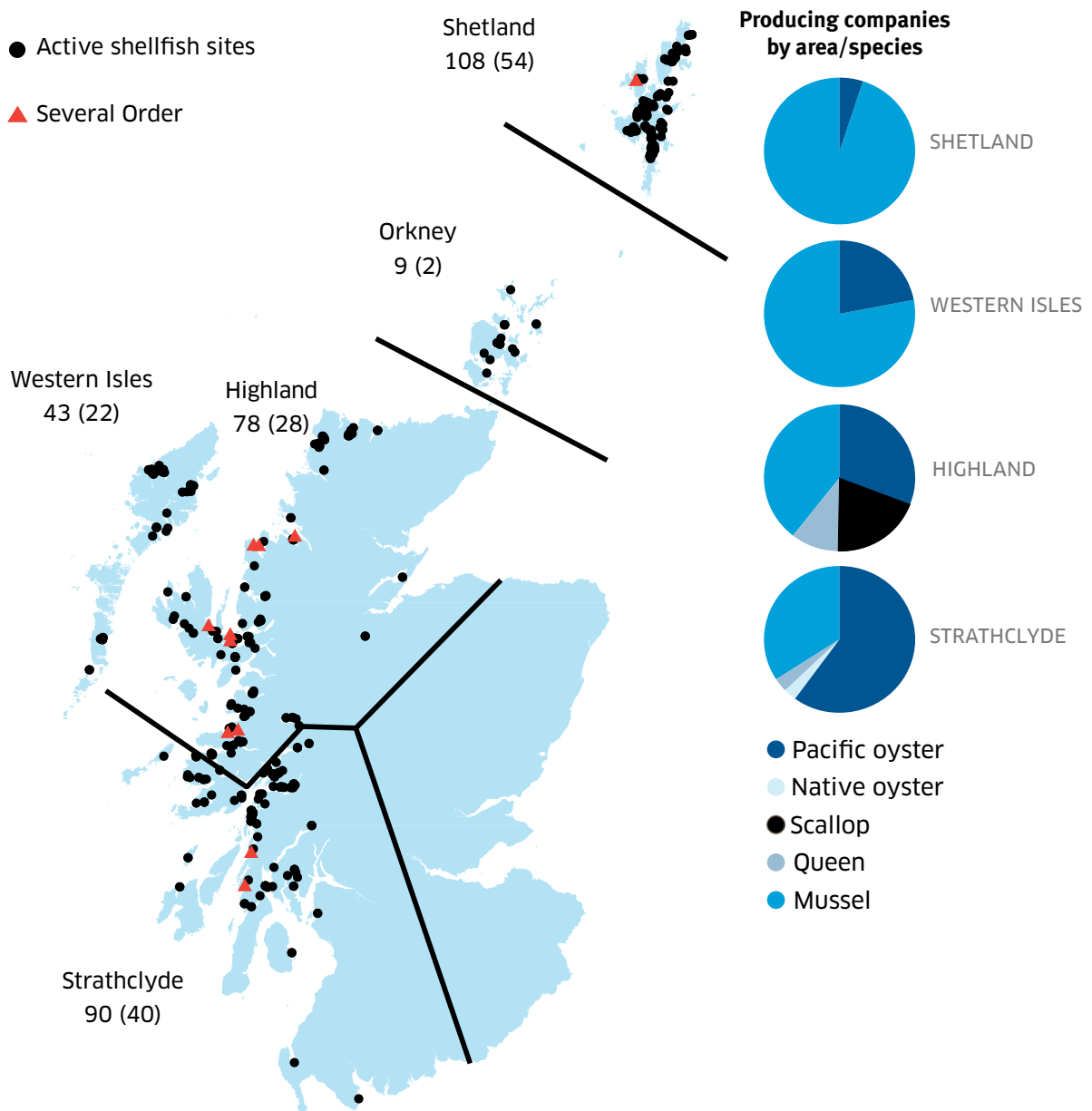


Table 5 depicts the number of businesses by region and by species: A) in table production, B) in on-growing production and C) showing no production. Many businesses cultivate more than one species on site, a practice made possible by similar cultivation techniques. For example, scallop can be grown together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

TABLE 5
NUMBER OF BUSINESSES BY REGION AND BY SPECIES 2010.

A) PRODUCTION FOR THE TABLE

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	7	0	1	19	2	29
Native oyster	0	0	0	1	0	1
Scallop	4	0	0	0	0	4
Queen	2	0	0	1	0	3
Mussel	8	0	18	11	7	44
Total	21	0	19	32	9	81

B) PRODUCTION FOR ON-GROWING TO OTHER PRODUCERS

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	3	0	0	4	0	7
Native oyster	0	0	0	0	0	0
Scallop	0	0	0	0	0	0
Queen	0	0	0	0	0	0
Mussel	1	0	2	0	1	4
Total	4	0	2	4	1	11

C) NO PRODUCTION, ACTIVELY ON-GROWING OR FALLOW

	Highland	Orkney	Region Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	3	1	3	12	2	21
Native oyster	2	0	1	1	1	5
Scallop	3	0	1	5	1	10
Queen	2	0	0	0	1	3
Mussel	18	5	8	10	6	47
Total	28	6	13	28	11	86

Business production levels by species are shown in Table 6. There were 21 businesses producing more than 100 tonnes of mussels, an increase of four businesses since 2009. Out of these 21 companies, six produced more than 300 tonnes. These six companies produced 51% of the total mussel production in Scotland. There were ten businesses that produced more than 100,000 Pacific oyster, this is two more businesses than the 2009 and 2008 total. The production of these ten businesses' accounted for 84% of the Scottish total.

TABLE 6 : COMPANY PRODUCTION LEVELS BY SPECIES 2010.

Species	0-10	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)	10	1	3	0	1	2	0	0	0	2	6	1	3	29
Native Oyster (000s)	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Scallop (000s)	2	0	0	0	0	0	0	0	0	0	1	0	0	3
Queen (000s)	1	1	2	0	0	0	0	0	0	0	0	0	0	4
Mussel (tonnes)	3	2	1	7	2	3	2	1	0	2	9	6	6	44
Total	16	4	6	7	3	5	2	1	0	4	16	7	10	81

// EMPLOYMENT

The industry employed 186 full-time, 213 part-time and casual workers during 2010, an increase of 17 full-time and an increase of 37 part-time and casual employees since 2009. The regional breakdown of employment is given in Table 7. The number of people employed by the shellfish farming industry in the Highlands, Strathclyde, Orkney and Shetland increased by 19%. The number of people employed in the Western Isles fell by 14%. The total number of people employed in the shellfish industry increased by 16% in 2010, from the 2009 total of 345. This increase in employment can be attributed to the increased numbers of active sites in 2010 and the increased production of mussels and Pacific oysters.

TABLE 7
REGIONAL EMPLOYMENT 2010.

Region	Businesses	Staff						Total
		Full-time Male	Full-time Female	Part-time Male	Part-time Female	Casual Male	Casual Female	
Highland	49	35	7	30	6	14	10	102
Orkney	8	2	0	4	0	0	0	6
Shetland	32	54	7	33	21	16	2	133
Strathclyde	58	59	7	34	5	17	4	126
Western Isles	17	14	1	13	1	3	0	32
Scotland	164	164	22	114	33	50	16	399

// HEALTH INFLUENCES ON THE INDUSTRY

In accordance with Council Directive 2006/88/EC, risk based surveillance programme targeting 110 shellfish site inspections was undertaken during 2010. On these visits, facilities, stock health, bio-security measures plans, movement records and registration details were checked. In addition, native oysters were sampled from eight 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 2010. Movement restrictions in place covering both sea lochs prevent the relaying of native oyster from them (see Appendix 2, p.19 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 and oyster catchers. Losses in sales of mussels from the Highland region were reported due to fouling of the shell caused by a species of polychaete worm. 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.13-18)

There were three reported cases of elevated mortality in mussels during the year, also reports of poor mussel spat settlement. In each case diagnostic investigations were conducted by Marine Scotland but no evidence of a listed pathogen was found. The cause of poor spat settlement was not determined, however reported anecdotal evidence suggested an association with environmental factors.

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 (*Crassostrea gigas*), in connection with the detection of Ostreid Herpes Virus OSHV-1 μ var.

Authorised operators farming Pacific oysters must notify Marine Scotland Science, Fish Health Inspectors (FHI) immediately of any unexplained increased mortality on site, which will prompt an investigation by the FHI (see p17). Surveillance was conducted in 2010 on thirteen sites holding the susceptible *Crassostrea gigas*, no evidence of the presence of Oyster Herpes Virus was found in Scottish waters; surveillance is to continue in 2011 under article 43 of Directive 2006/88, testing production areas with the aim of preventing imports from infected areas into Scottish waters.

// SUMMARY

- Mussel and Pacific oysters remain the main species produced in terms of both value and tonnage. Mussel production increased by 14% while Pacific oyster production increased by 4% during 2010;
- There has been an increased production of scallop species, targeting niche markets. Reports of poor spat settlement in 2010 may affect future scallop production levels;
- Native oyster production has decreased from 490,000 shells to 350,000 shells. The sector continues to target a strong niche market;
- Employment levels showed a 16% increase from the previous year with 399 full, part-time and casual staff being employed during 2010, as the industry increases its scale of production.
- The Scottish shellfish farming industry is worth £8.33 million at first sale value.
- Surveillance for the shellfish diseases Bonamiasis and Marteiliasis was maintained in 2010, 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, 110 out of 328 sites were inspected during 2010 as part of a risk based surveillance programme implemented under Council Directive 2006/88/EC;
- A surveillance programme targeting Pacific oyster farm sites was undertaken in 2010, to detect any occurrence of OshV-1 μ var, no evidence of infection was found from samples taken. Immediate notification of increased mortality on farm sites must be reported to Marine Scotland Science, Fish Health Inspectorate.
- 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

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
Registered business	Authorised business
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

T: +44 (0)1224 876544 F: +44 (0)1224 295511
MS.FishHealth@scotland.gsi.gov.uk



Ref no: FRS/09/0137
15 December 2010

Dear Sir/Madam

ANNUAL RETURNS OF SHELLFISH FARM PRODUCTION – 2010

For the year 2010 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.FishHealth@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.FishHealth@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 2010 which should be available in the spring of 2011. 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 or shellfish registration please do not hesitate to contact me at the address given below, or telephone 01224 295525 or e-mail MS.FishHealth@scotland.gsi.gov.uk

Please send returns to me by post, or electronically, before 31 January 2011.

Yours faithfully
Andrew Mayes
Fish Health Inspector
Enc

Marine Laboratory, PO Box 101, 375 Victoria Road, Aberdeen AB11 9DB
www.scotland.gov.uk/marinescotland



Marine Scotland Science
Marine Laboratory
 PO Box 101
 Victoria Road
 Aberdeen AB11 9DB
 Tel: 01224 295525
 Fax: 01224 295620
 E-mail: MS.fishhealth@scotland.gsi.gov.uk



FORM (a) – BUSINESS PRODUCTION

**SCOTTISH SHELLFISH FARMS PRODUCTION SURVEY 2010
 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 2010 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 2010			
	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.

Number of persons employed by your business in 2010

- | | | |
|----|----------------|------------------|
| 1. | Full time male | Full time female |
| 2. | Part time male | Part time female |
| 3. | Casual male | Casual female |

Please detail any accreditation schemes you are a member of:

Was any of your production certified as organic? Yes No

Signature

Date

Thank you for your cooperation. Please return the completed form in the envelope provided, or electronically, by 31 January 2011.

**Marine Scotland
Marine Laboratory**
PO Box 101
Victoria Road
Aberdeen AB11 9DB
Tel: 01224 295525
Fax: 01224 295620
E-mail: MS.fishhealth@scotland.gsi.gov.uk



Form (b) – SITE PRODUCTION/MOVEMENTS

SCOTTISH SHELLFISH FARMS PRODUCTION SURVEY 2010

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

Name of **SITE / SITE No:**

SPECIES	ESTIMATED PRODUCTION OF SHELLFISH FOR 2010 (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	Molluscs			
	Size of production facilities 2010			
	On bottom (Lease area in Hectares or m ²)	Off Bottom		Other methods (specify no, type and size)
Total rope length (m) (No. of droppers x length of droppers)		Leasng area containing trestles (m ²) (Lease area in Hectares or m ²)		
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	CRUSTACEANS			
	Size of production facilities 2010			
	Ponds (Hectares or m ²)	Enclosures and pens (Hectares or m ²)	Tanks and Raceways (m ³)	Other methods (Specify no, type and size)
Lobsters				
Others (specify)				

SPECIES	INPUT TO CAPTURE BASED AQUACULTURE		ESTIMATED PRODUCTION OF SHELLFISH FOR 2010 (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)						

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

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).

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 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, 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
- Please indicate in the box provided on FORM (b), the highest mortality as a % 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, 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. You have been issued with forms appropriate to the details which we hold for your sites. If you held species in 2010 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 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).
- Where molluscs are cultured in trestles please record the total extent of the **lease area** in hectares.
- If molluscs are cultured by more than one method on a site an entry should be recorded for both methods.

Marine Laboratory, PO Box 101, 375 Victoria Road,
Aberdeen AB11 9DB
www.scotland.gov.uk/marinescotland



- 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:
 - For ponds, enclosures and pens, the **bottom area** should be recorded in either hectares or m²
 - For tanks and raceways the **volume** should be recorded in m³

'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

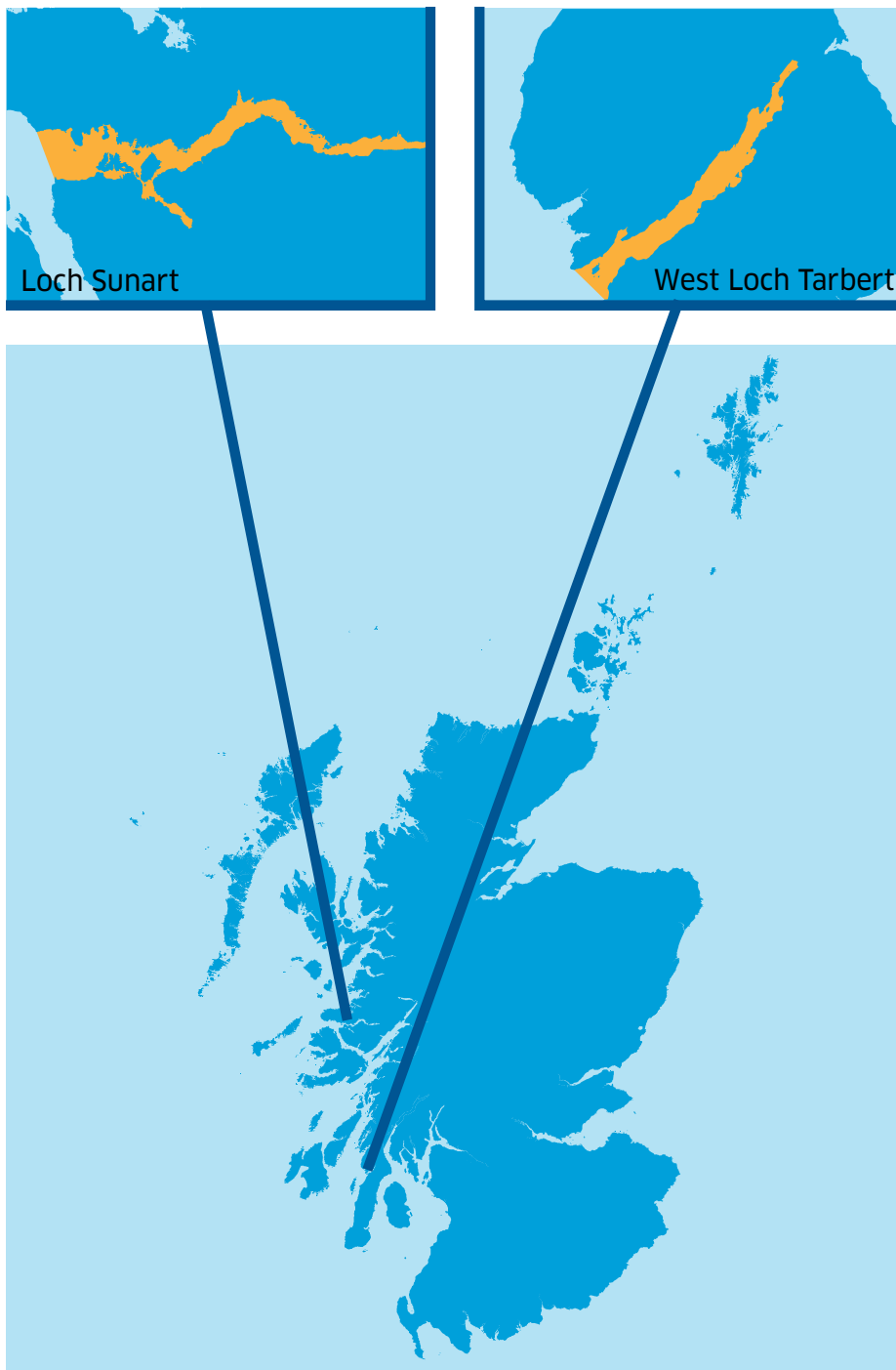
Note: Minimum landing sizes for shellfish are laid down in Annex XII of Council Regulation (EC) No. 850/98 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms. The minimum size for scallops (*Pecten maximus*) is 100mm and as such it 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 ³)	Cubic metres (m ³)	X 0.0283

// APPENDIX 2

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



NOTE: OTHER DESIGNATED AREA ORDERS (DAO) 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.



**The Scottish
Government**

© Crown copyright 2011

ISBN: 978-1-78045-322-4

ISSN: 1363-5867

APS Group Scotland
DPPAS11863 (07/11)

w w w . s c o t l a n d . g o v . u k