

# Scottish Shellfish Farm Production Survey



2008 report



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**marinescotland**

## **INTRODUCTION TO THE YEAR 2008 SURVEY**

This report is based on the returns of an annual survey questionnaire sent to all active registered shellfish farming companies in Scotland. The cooperation of the shellfish farming industry is gratefully acknowledged.

Production survey questionnaires were sent to 169 companies registered as active during 2008 (*see* Appendix 1, p10). All return forms were received. One 'wild' mussel fishery registered as a shellfish farm has been excluded from this report. During 2008, five new companies registered and nine de-registered.

The survey showed that, of the 168 companies registered at the end of 2008 and included in this report, 112 recorded no sales during that year. These 168 registered companies farmed 332 active sites, of which 152 (46%) placed shellfish on the market. Shellfish production by company and site is presented.

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April 2009

## PRODUCTION

The survey indicates that the shellfish species cultivated in Scottish waters in 2008 were:

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

Production was dominated by mussel and Pacific oyster. Small quantities of queen, native oyster and scallop were also produced. The 2008 production data for each species by region are given in Table 1.

TABLE 1 : Scottish shellfish production by region, 2008.

Region	Companies	Mussel (tonnes)		Pacific oyster (000s)		Native oyster (000s)		Queen (000s)		Scallop (000s)	
		Table	On-growing	Table	On-growing	Table	On-growing	Table	On-growing	Table	On-growing
Highland	54	760	0	271	0	0	0	87	0	15	0
Orkney	9	0	0	2	0	0	0	0	0	0	0
Shetland	36	3,506	0	20	0	0	0	0	0	0	0
Strathclyde	52	932	0	3,488	26	250	0	600	0	0	0
Western Isles	17	671	0	4	0	0	0	0	0	0	0
All Scotland	168	5,869	0	3,785	26	250	0	687	0	15	0
Weight (tonnes)		5,869	0	303	2	20	0	27	0	2	0

NB: This report lists regions with active registered 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 companies 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 22% from 2007 to 2008, showing a continued increasing trend. The greatest contribution in regional mussel production was from Shetland, accounting for 3,506 tonnes. Nine hundred and thirty-two tonnes was produced in Strathclyde which, combined with that produced in Shetland, accounted for 76% of the total mussel production in Scotland. Pacific oyster production increased by 45% from 2007. Ninety-two percent of Pacific oyster was produced in the Strathclyde region. Queen production increased by 79% on the 2007 total. Production of farmed scallop showed no change on the previous years' total. Poor results from spat recruitment have reportedly led to low production in recent years. Native oyster production decreased by 8% continuing the downward trend in production of this species seen over the last three years. Native oyster production accounts for a small percentage of the total oyster production, and targets a niche market.

Eleven Several Orders remain in place for scallop fisheries, two of which include native oyster (Figure 2, see page 5). Eight of these Orders were in Highland region, two in Strathclyde and one in Shetland. The size of the Orders ranged from 3.2 hectares (ha) to as much as 97.4 ha.

FIGURE 1 : Table production by species 1999-2008.

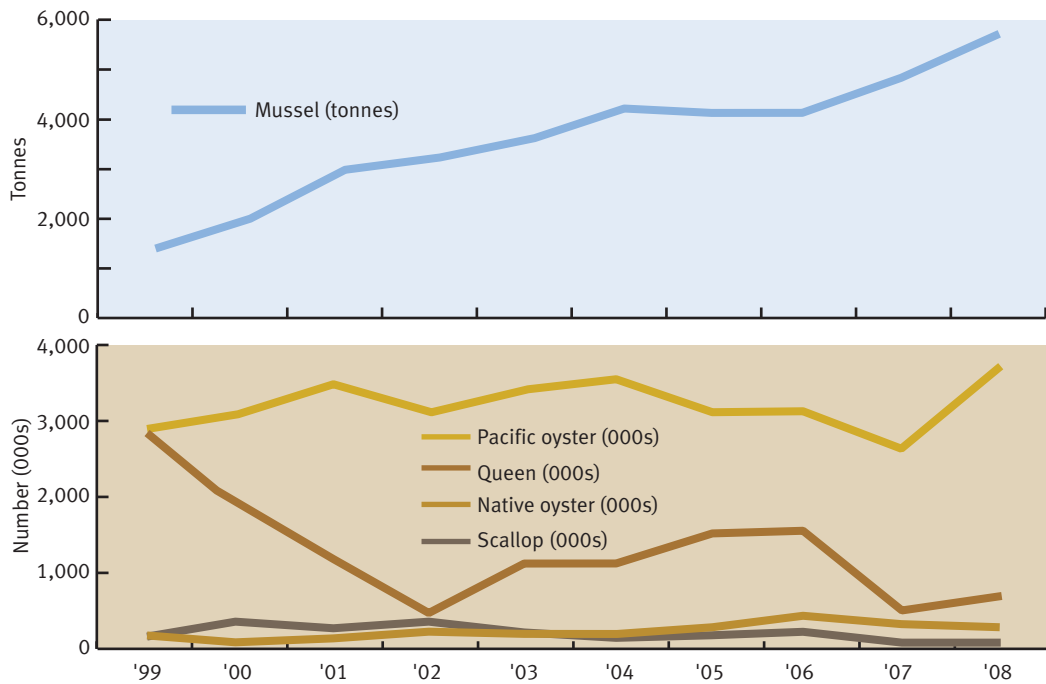


TABLE 2 : Trends in production data for the table and on-growing 1999-2008.

For the table	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change 07-08
Pacific oyster (000s)	2,895	3,088	3,483	3,114	3,488	3,586	3,070	3,138	2,603	3,785	+45
Native oyster (000s)	142	51	103	191	161	105	162	300	273	250	-8
Queen (000s)	2,842	2,084	1,182	472	1,124	1,118	1,441	1,510	384	687	+79
Scallop (000s)	127	323	236	323	180	85	100	87	15	15	0
Mussel (tonnes)	1,400	2,003	2,988	3,236	3,632	4,223	4,135	4,219	4,806	5,869	+22

For on-growing	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	% change 07-08
Pacific oyster (000s)	502	1,315	881	1,578	2,640	2,510	1,467	1,685	945	26	-98
Native oyster (000s)	1	3	0	0	0	0	0	0	10	0	-100
Queen (000s)	13	0	200	320	0	600	0	0	0	0	0
Scallop (000s)	86	9	485	147	86	80	382	287	45	0	0
Mussel (tonnes)	3	0	33	4	38	61	20	68	44	30	-33

Prices of farmed shellfish fluctuated throughout the year. The value at first sale of the species cultivated was estimated based on the following figures. The price of Pacific oyster was around £0.40 per shell; native oyster, £0.38 per shell; scallop, £0.60 per shell; queen sold for approximately £0.08 per shell; and mussel £1,000 per tonne. The approximate value of the table trade based on these prices and the production figures given in Table 1 is:

Mussel:	£5.9 million	Pacific oyster:	£1.5 million
Native oyster:	£0.09 million	Scallop:	£0.01 million
Queen:	£0.05 million		

The total value at first sale for all species was estimated to be in the region of £7.55 million.

## SITES AND COMPANIES

The numbers of registered and active companies 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 company. However, since 2002, data have been collected for both company and site, enabling the provision of more accurate site information. One hundred and fifty-two sites produced shellfish for sale in 2008, a decrease of 3% since 2007.

TABLE 3 : Registered and active companies 1999-2008.

	Number of Companies									
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Registered	386	407	423	437	448	466	478	484	495	497
Active	151	176	173	183	178	175	183	173	170	168

TABLE 4 : Active and producing farm sites by region 2008.

Sites	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Active	84	11	110	86	41	332
Producing	36	1	58	38	19	152

Active = growing and placing on the market. Producing = placing on the market for the table and on-growing

FIGURE 2 : Regional distribution of active shellfish sites in 2008 (number producing given in brackets) and number of producing companies by area/species.

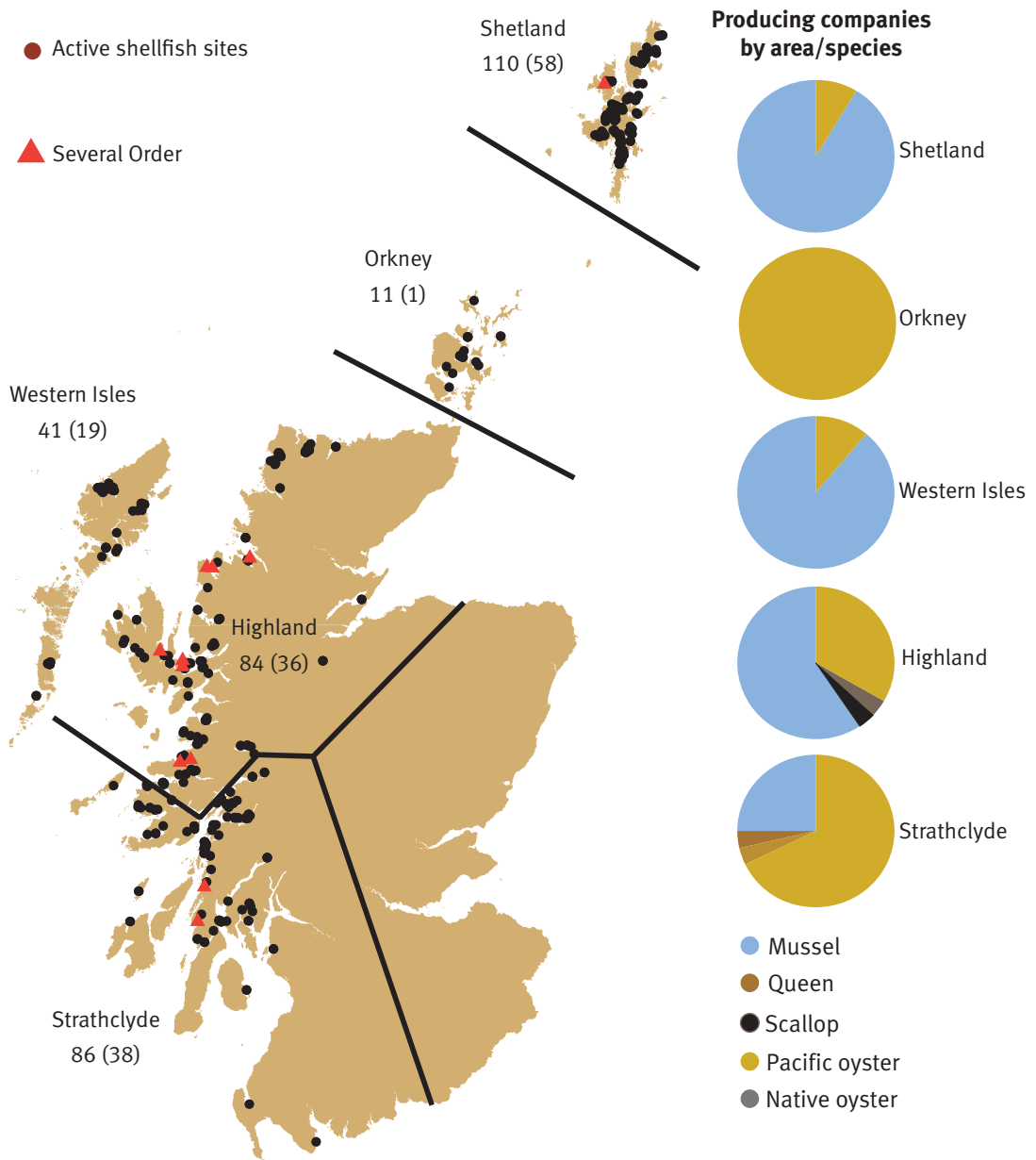


Table 5 shows the number of companies by region and by species: a) in table production, b) in on-growing production and c) showing no production. Many companies cultivate more than one species on site, a practice made possible by similar cultivation techniques. For example, scallop can be grown together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

TABLE 5 : Number of companies by region and by species 2008.

a) Production for the table

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	9	1	2	19	1	32
Native oyster	0	0	0	1	0	1
Scallop	1	0	0	0	0	1
Queen	1	0	0	1	0	2
Mussel	16	0	21	7	8	52
<b>Total</b>	<b>27</b>	<b>1</b>	<b>23</b>	<b>28</b>	<b>9</b>	<b>88</b>

b) Production for on-growing to other producers

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	0	0	0	5	0	5
Native oyster	0	0	0	0	0	0
Scallop	0	0	0	0	0	0
Queen	0	0	0	0	0	0
Mussel	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>

c) No production, actively on-growing or fallow

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	All Scotland
Pacific oyster	2	1	5	12	2	22
Native oyster	4	0	2	3	1	10
Scallop	9	3	2	6	1	21
Queen	4	2	0	0	1	7
Mussel	19	7	8	12	6	52
<b>Total</b>	<b>38</b>	<b>13</b>	<b>17</b>	<b>33</b>	<b>11</b>	<b>112</b>

NB: A company may produce more than one species

Company production levels by species are shown in Table 6. There were 20 companies producing more than 100 tonnes of mussels, an increase of three companies since 2007. Those 20 companies produced 81% of the total mussel production in Scotland. Eight companies produced more than 100,000 Pacific oyster, an increase of one since 2007. These eight companies' production accounted for 66% of the Scottish total.

TABLE 6 : Company production levels by species 2008.

Species	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	>100	Total
Pacific oyster (000s)	14	2	0	0	4	1	0	1	1	1	8	32
Native oyster (000s)	0	0	0	0	0	0	0	0	0	0	1	1
Scallop (000s)	0	1	0	0	0	0	0	0	0	0	0	1
Queen (000s)	0	0	0	0	0	0	0	0	1	0	1	2
Mussel (tonnes)	11	2	4	5	6	0	1	1	1	1	20	52
<b>Total</b>	<b>25</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>10</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>30</b>	<b>88</b>

## EMPLOYMENT

The industry employed 149 full-time, 199 part-time and casual workers during 2008, a reduction of eight full-time and 42 part-time employees since 2007. The regional breakdown of employment is given in Table 7. With the exception of the Western Isles, which had an increase of 14%, all regions showed a decrease in the number of employees of at least 10%. The total number employed in shellfish aquaculture in Scotland fell by 14% in 2008.

TABLE 7 : Regional employment 2008.

Region	Companies	Staff			Total
		Full-time	Part-time	Casual	
Highland	54	22	36	16	74
Orkney	9	0	7	0	7
Shetland	36	46	46	12	104
Strathclyde	52	63	38	22	123
Western Isles	17	18	17	5	40
<b>All Scotland</b>	<b>168</b>	<b>149</b>	<b>144</b>	<b>55</b>	<b>348</b>

## HEALTH INFLUENCES ON THE INDUSTRY

In accordance with EC Directive 91/67, native oyster was sampled from six sites for the notifiable diseases bonamiasis (causative agent, protozoan parasite *Bonamia ostreae*) and marteiliasis (causative agent, protozoan parasite *Marteilia refringens*). 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 2008. Movement restrictions in place covering both sea lochs prevent the relaying of native oyster from these sea lochs (see Appendix 2, p15 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.

In accordance with EC Council Directive 95/70, minimum Community measures for the control of certain diseases affecting bivalve molluscs were maintained. A third of all shellfish sites were visited annually by Fisheries Research Services (FRS) Fish Health Inspectorate. On these visits, facilities, stock health, movement records and registration details were checked.

Reported mortalities were generally low and attributed to predation by eider ducks, crabs, starfish and oyster catchers. Losses were also reported due to storm damage and fouling. 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, p11)

Council Directive 2006/88/EC which supercedes Directives 91/67/EEC and 95/70/EC was implemented in March 2009. The aim of this new Directive is to meet the needs of an ever evolving aquaculture industry, and raise standards of aquaculture health throughout the EU. The Directive introduces a risk based surveillance scheme of site inspections.

\*Marine Scotland was established on April 1 2009 and combines the functions and resources of the former SG Marine Directorate, Fisheries Research Services and the Scottish Fisheries Protection Agency.



## SUMMARY

- Mussel and Pacific oyster remain the main species produced in terms of both value and tonnage. Mussel production increased by 22% while Pacific oyster production increased by 45% during 2008;
- There has been no change in the production of scallop which remains low. Poor results from spat recruitment have reportedly led to this low production in recent years;
- There has been a significant increase of 79% in the production of queen in 2008.
- Employment levels showed a 14% decrease from the previous year with 348 full, part-time and casual staff being employed during 2008;
- Surveillance for the shellfish diseases bonamiasis and marteiliasis was maintained in 2008. Movement restrictions are in place for the presence of *Bonamia ostreae* at Loch Sunart and West Loch Tarbet;
- For shellfish health purposes, one third of all shellfish sites was inspected by FRS Fish Health Inspectorate during 2008. In 2009, with the Implementation of EEC Directive 2006/88, risk based surveillance of sites will be introduced;
- Again the industry was dominated by small producers, although there was a continued and marked trend toward large companies 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
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

FRS/08/0781  
15 December 2008

Dear Sir/Madam

#### ANNUAL RETURNS OF SHELLFISH FARM PRODUCTION - 2008

For the year 2008 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 [fishhealth@marlab.ac.uk](mailto:fishhealth@marlab.ac.uk) providing business name, number and correspondent name. FORMS (a) & (b) will then be issued to you electronically for completion and return to [fishhealth@marlab.ac.uk](mailto:fishhealth@marlab.ac.uk)

**FORM (a) requests data on production by business.**

**FORM (b) requests data on production and number of shellfish movements by site(s), by species.**

FORM (b) can accommodate up to four site returns. If your business operates more than four sites, 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). These data will allow a more accurate reflection of site production both geographically and by species.

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 the Official Service of any **observed abnormal mortality**, under EC Council Directive 95/70. **See guidance notes overleaf** for reporting of mortality events where appropriate and registration changes.

Returns will be summarised in the Scottish Government Scottish Shellfish Farm Production Survey 2008, which should be available in the spring of 2009.

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 [fishhealth@marlab.ac.uk](mailto:fishhealth@marlab.ac.uk).

Please send returns to me by post, or electronically, before 9 January 2009.

#### GUIDANCE ON SHELLFISH MORTALITY

It is your duty to notify the Official Service of any observed abnormal mortality, under EC Council Directive 95/70. 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. 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 fishhealth@marlab.ac.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.

#### GUIDANCE ON REGISTRATION CHANGES

If there have been any recent changes to your business and/or site registration details, held by the Fish Health Inspectorate on behalf of the Scottish Ministers, please enclose details with your returns. Such information should be included with production returns, on a separate sheet of paper headed by your business/site name and number.

**Food and Fish Division**  
**FRS Marine Laboratory**  
 PO Box 101  
 Victoria Road  
 Aberdeen AB11 9DB  
 Direct Dialling 01224 295637  
 Fax 01224 295620  
 E-mail fishhealth@marlab.ac.uk



**FORM (a) – BUSINESS PRODUCTION**

IN CONFIDENCE **SCOTTISH SHELLFISH FARMS PRODUCTION SURVEY 2008**  
**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 2008 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 2008			
	A) for the table		B) for depositing in other waters	
	No	Weight*	No	Weight*
Mussels - <i>M. edulis</i>				
Pacific oysters - <i>C. gigas</i>				
Native oysters - <i>O. edulis</i>				
Scallops - <i>P. maximus</i>				
Queens - <i>C. opercularis</i>				
Lobsters				
Other (specify)				

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

Number of persons employed by your business in 2007:

- 1. Full time                      Signature
- 2. Part time                      Date
- 3. Casual

Thank you for your cooperation. Please return the completed form in the envelope provided, or electronically, by **9 January 2009**.

**Food and Fish Division**  
**FRS Marine Laboratory**  
 PO Box 101  
 Victoria Road  
 Aberdeen AB11 9DB  
 Direct Dialling 01224 295637  
 E-mail fishhealth@marlab.ac.uk



**FORM (b) – SITE PRODUCTION/MOVEMENTS**

IN CONFIDENCE **SCOTTISH SHELLFISH FARMS PRODUCTION SURVEY 2008**  
**ANNUAL PRODUCTION BY SITE AND SPECIES**

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

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

Species	Estimated production of shellfish for 2008				Highest Mortality	
	A) for the table		B) for depositing in other waters		% of facility 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 (specify)						

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

Species	Estimated production of shellfish for 2008				Highest Mortality	
	A) for the table		B) for depositing in other waters		% of facility 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 (specify)						

Continued overleaf

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

Species	Estimated production of shellfish for 2008				Highest Mortality	
	A) for the table		B) for depositing in other waters		% of facility 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 (specify)						

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

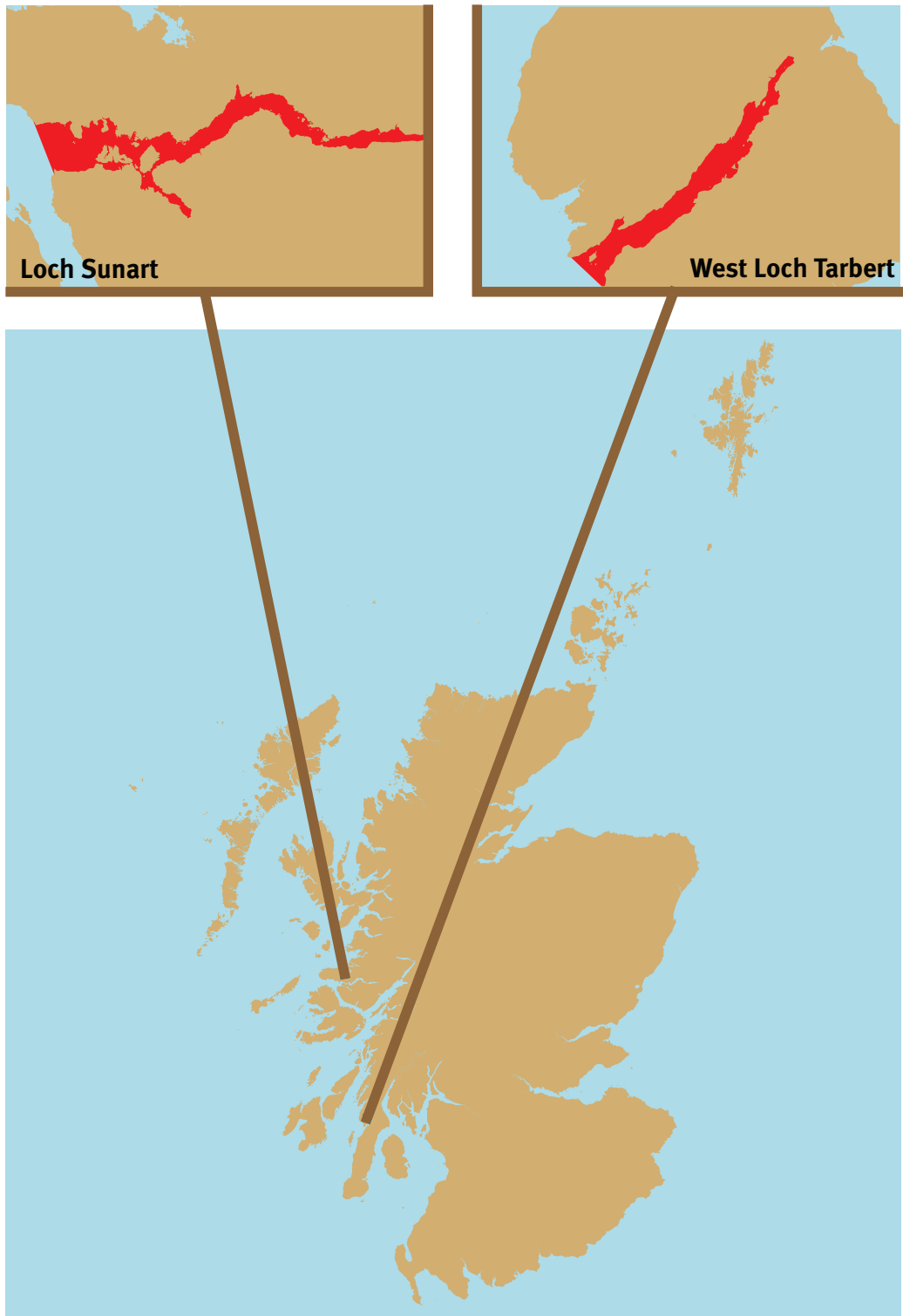
Species	Estimated production of shellfish for 2008				Highest Mortality	
	A) for the table		B) for depositing in other waters		% of facility type / Period	Reason
	No	Weight*	No	Weight		
Mussels - <i>M. edulis</i>						
Pacific oysters - <i>C. gigas</i>						
Native oysters - <i>O. edulis</i>						
Scallops - <i>P. maximus</i>						
Queens - <i>C. opercularis</i>						
Lobsters						
Other (specify)						

**SHELLFISH MOVEMENTS BY SITE AND SPECIES**

Name of Site/Site No			Name of Site/Site No			Name of Site/Site No			Name of Site/Site No		
.....			.....			.....			.....		
No of Movements			No of Movements			No of Movements			No of Movements		
Species	On-site	Off-site	Species	On-site	Off-site	Species	On-site	Off-site	Species	On-site	Off-site

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

## APPENDIX 2



Map of movement restrictions in place for the presence of *Bonamia ostreae* (designated areas in red).

Note: Other designated area orders (DAO) are in place for the presence of *Bonamia ostreae* in the Great Britain zone. Please contact the FRS Fish Health Inspectorate if you have any queries about shellfish import from England and Wales.



