

Marine Scotland Science

Scottish Shellfish Farm Production Survey 2015



marinescotland
science

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Artwork by : M Sinclair, Marine Scotland Communications Team

CONTENTS

| | |
|-----------|--------------------------------------|
| II | CONTACT DETAILS |
| 1 | INTRODUCTION TO THE YEAR 2015 SURVEY |
| 2 | PRODUCTION |
| 5 | SITES AND BUSINESSES |
| 8 | SPAT SETTLEMENT |
| 9 | EMPLOYMENT |
| 10 | HEALTH INFLUENCES ON THE INDUSTRY |
| 12 | SUMMARY |
| 13 | GLOSSARY |
| 14 | APPENDIX 1 |
| 16 | APPENDIX 2 |

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// INTRODUCTION TO THE YEAR 2015 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, 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 2015 ([see Appendix 1, p.14](#)). All return forms were received. During 2015, one business became authorised and two businesses rescinded their authorisation.

The survey showed that, of the 144 businesses authorised at the end of 2015, 76 recorded sales during that year. These 144 authorised businesses farmed 335 active sites, of which 171 (51%) placed shellfish on the market. Shellfish production by business and site is presented.

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May 2016

// PRODUCTION

The survey indicates that the shellfish species cultivated in Scottish waters in 2015 were:

| | |
|-----------------|--------------------------------|
| Mussel: | <i>Mytilus spp.</i> |
| Pacific oyster: | <i>Crassostrea gigas</i> |
| Native oyster: | <i>Ostrea edulis</i> |
| Queen scallop: | <i>Aequipecten 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 2015 production data for each species by region are given in Table 1.

TABLE 1
SCOTTISH SHELLFISH PRODUCTION BY REGION, 2015.

| 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 | 420 | 73 | 556 | 3,844 | 0 | 0 | 1 | 0 | 27 | 47 |
| Orkney | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shetland | 26 | 5,565 | 1,768 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Strathclyde | 49 | 567 | 0 | 2,133 | 2,020 | 200 | 13 | 32 | 900 | 3 | 2 |
| Western Isles | 17 | 718 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All Scotland | 144 | 7,270 | 1,841 | 2,693 | 5,864 | 200 | 13 | 33 | 900 | 30 | 49 |
| Weight (tonnes) | | 7,270 | 1,841 | 215 | | 16 | | 1 | | 4 | |

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 2006-2015 .

| For the table | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | %change 14-15 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| Pacific oyster (000s) | 3,138 | 2,603 | 3,093 | 2,900 | 3,008 | 3,136 | 2,706 | 1,891 | 3,392 | 2,693 | -21 |
| Native oyster (000s) | 300 | 273 | 250 | 490 | 350 | 350 | 317 | 260 | 242 | 200 | -17 |
| Queen (000s) | 1,510 | 384 | 687 | 138 | 184 | 27 | 9 | 33 | 18 | 33 | 83 |
| Scallop (000s) | 87 | 15 | 15 | 35 | 64 | 78 | 58 | 40 | 48 | 30 | -38 |
| Mussel (tonnes) | 4,219 | 4,806 | 5,869 | 6,302 | 7,199 | 6,996 | 6,277 | 6,757 | 7,683 | 7,270 | -5 |

| For on-growing | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-----------------------|-------|------|------|------|-------|-------|-------|-------|-------|-------|
| Pacific oyster (000s) | 1,685 | 945 | 26 | 45 | 1,633 | 1,400 | 3,190 | 6,216 | 6,792 | 5,864 |
| Native oyster (000s) | 0 | 10 | 0 | 0 | 300 | 1 | 677 | 1,015 | 749 | 13 |
| Queen (000s) | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 1,490 | 500 | 900 |
| Scallop (000s) | 287 | 45 | 0 | 0 | 0 | 104 | 16 | 1,470 | 136 | 49 |
| Mussel (tonnes) | 68 | 44 | 30 | 391 | 175 | 282 | 309 | 1,281 | 1,263 | 1,841 |

Mussel production, for the table, decreased by 5% in 2015 (see figure 1) to 7,270 tonnes, this is the second highest production level of mussels on record. The greatest contribution in regional mussel production was from Shetland, accounting for 5,565 tonnes or 77% of Scotland's total. Pacific oyster production decreased by 21% from 2014. The Strathclyde region produced 79% of Scotland's farmed Pacific oysters. Queen scallop production increased by 83% since 2014 while the production of farmed scallops decreased by 38%, both these sectors continue to target small niche markets. Production of native oysters decreased by 17% from 2014. Native oyster production accounts for a small percentage of total oyster production, however, demand for this species continues to be high. Historical data for all shellfish species show that production levels vary year on year, this can be due to a number of different factors such as poor spat fall, algal toxins, poor growth, adverse weather and fluctuations in market prices.

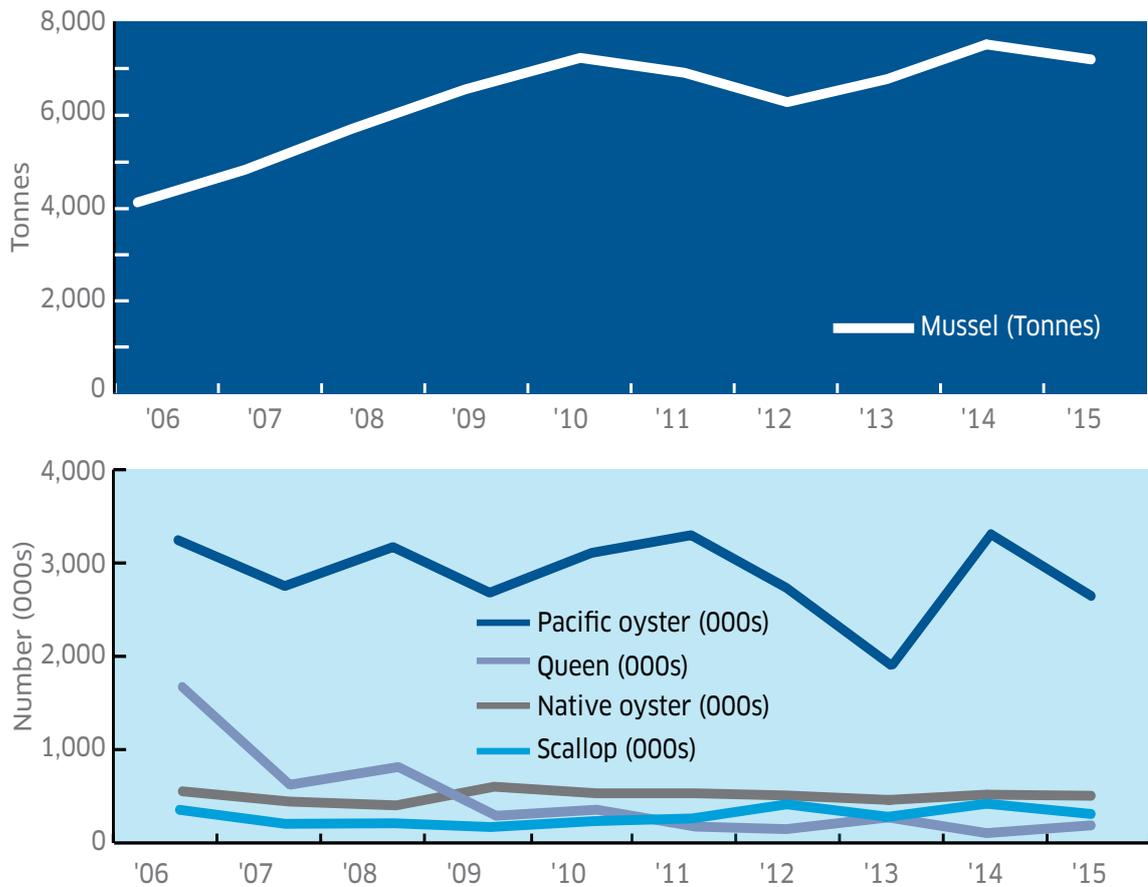


FIGURE 1
TABLE PRODUCTION BY SPECIES 2006-2015.

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 £0.39 per shell; native oyster, £0.60 per shell; scallop, £1.89 per shell; queen scallop, £0.11 per shell and mussels £1217 per tonne. The value of the table trade is estimated from the production figures shown in Table 1 (*see page 2*).

| | | | |
|----------------|----------------|-----------------|---------------|
| Mussel: | £8.8 million | Pacific oyster: | £1.1 million |
| Native oyster: | £0.12 million | Scallop: | £0.06 million |
| Queen: | £0.004 million | | |

The 2015 total value, at first sale for all species, was calculated at approximately £10.1 million, a decrease from £10.5 million estimated in 2014.

// 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 2015, 171 sites produced shellfish for sale, an increase of 4% since 2014.

TABLE 3
AUTHORISED AND ACTIVE BUSINESSES 2006-2015.

| Number of Businesses | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| Active | 173 | 170 | 168 | 168 | 164 | 153 | 153 | 142 | 144 | 144 |

TABLE 4
ACTIVE AND PRODUCING FARM SITES BY REGION 2015.

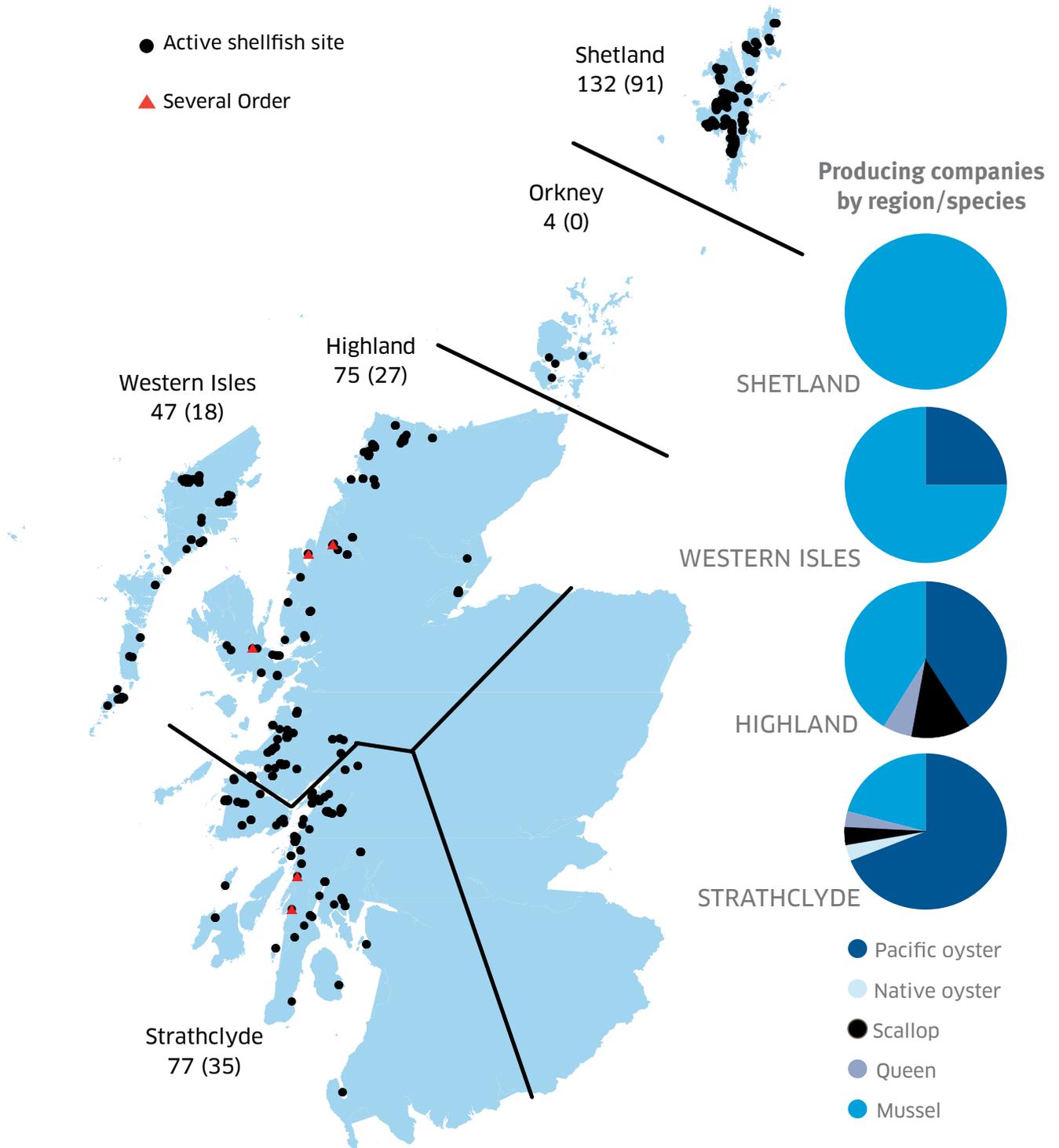
| | Region | | | | | |
|-----------|----------|--------|----------|-------------|---------------|--------------|
| | Highland | Orkney | Shetland | Strathclyde | Western Isles | All Scotland |
| Sites | | | | | | |
| Active | 75 | 4 | 132 | 77 | 47 | 335 |
| Producing | 27 | 0 | 91 | 35 | 18 | 171 |

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 2015 (NUMBER PRODUCING GIVEN IN BRACKETS) AND NUMBER OF PRODUCING BUSINESSES BY REGION/SPECIES.



There were five Several Orders in place for scallop fisheries in 2015 (see Fig. 2). Three of these Orders are in the Highland region and two in Strathclyde.

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 2015.

A) PRODUCTION FOR THE TABLE

| | Highland | Orkney | Region Shetland | Strathclyde | Western Isles | All Scotland |
|----------------|-----------|----------|--------------------|-------------|---------------|--------------|
| Pacific oyster | 7 | 0 | 0 | 20 | 2 | 29 |
| Native oyster | 0 | 0 | 0 | 1 | 0 | 1 |
| Scallop | 2 | 0 | 0 | 1 | 0 | 3 |
| Queen | 1 | 0 | 0 | 1 | 0 | 2 |
| Mussel | 7 | 0 | 20 | 6 | 6 | 39 |
| Total | 17 | 0 | 20 | 29 | 8 | 74 |

B) PRODUCTION FOR ON-GROWING TO OTHER PRODUCERS

| | Highland | Orkney | Region Shetland | Strathclyde | Western Isles | All Scotland |
|----------------|----------|----------|--------------------|-------------|---------------|--------------|
| Pacific oyster | 2 | 0 | 0 | 4 | 0 | 6 |
| Native oyster | 0 | 0 | 0 | 2 | 0 | 2 |
| Scallop | 1 | 0 | 0 | 1 | 0 | 2 |
| Queen | 0 | 0 | 0 | 1 | 0 | 1 |
| Mussel | 1 | 0 | 12 | 0 | 0 | 13 |
| Total | 4 | 0 | 12 | 8 | 0 | 24 |

C) NO PRODUCTION, ACTIVELY ON-GROWING OR FALLOW

| | Highland | Orkney | Region Shetland | Strathclyde | Western Isles | All Scotland |
|----------------|-----------|----------|--------------------|-------------|---------------|--------------|
| Pacific oyster | 13 | 0 | 1 | 13 | 5 | 32 |
| Native oyster | 7 | 0 | 1 | 1 | 0 | 9 |
| Scallop | 7 | 0 | 1 | 3 | 1 | 12 |
| Queen | 2 | 0 | 0 | 1 | 1 | 4 |
| Mussel | 16 | 3 | 4 | 11 | 6 | 40 |
| Total | 45 | 3 | 7 | 29 | 13 | 97 |

Business production levels by species are shown in Table 6. There were 19 businesses producing more than 100 tonnes of mussels, an increase of two businesses since 2014. Out of these 19 companies, ten produced more than 200 tonnes. These ten companies produced 71% of the total mussel production in Scotland. There were four businesses that produced more than 200,000 Pacific oysters. The production from these businesses accounted for 62% of the Scottish total.

TABLE 6
BUSINESS PRODUCTION LEVELS BY SPECIES 2015.

| 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) | 11 | 0 | 3 | 1 | 3 | 1 | 0 | 2 | 0 | 1 | 3 | 4 | 29 |
| Native oyster (000s) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Scallop (000s) | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Queen (000s) | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Mussel (tonnes) | 3 | 3 | 2 | 1 | 3 | 2 | 0 | 1 | 1 | 3 | 9 | 10 | 38 |
| Total | 16 | 5 | 5 | 3 | 6 | 3 | 0 | 3 | 1 | 4 | 12 | 15 | 73 |

// 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 249 (100%) of the sites authorised for mussel production in 2015. One hundred and eleven (45%) of these were spat collection sites, 77 (69%) of which reported that they had sufficient spat settlement for production purposes. To identify trends a longer time series is required.

// EMPLOYMENT

The industry employed 166 full-time and 178 part-time and casual workers during 2015. The number of full-time staff decreased by nine and the number of part-time and casual employees increased by eight compared with 2014. The regional breakdown of employment is given in Table 7. The number of people employed by the shellfish farming industry in Scotland decreased by 0.3% from the 2014 total of 345.

TABLE 7
Regional employment 2015.

| Region | Businesses | Staff | | | | | | Total |
|-----------------|------------|----------------|------------------|----------------|------------------|-------------|---------------|------------|
| | | Full-time Male | Full-time Female | Part-time Male | Part-time Female | Casual Male | Casual Female | |
| Highland | 49 | 33 | 7 | 26 | 7 | 9 | 0 | 82 |
| Orkney | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Shetland | 26 | 48 | 2 | 24 | 11 | 17 | 2 | 104 |
| Strathclyde | 49 | 47 | 9 | 33 | 10 | 21 | 5 | 125 |
| Western Isles | 17 | 17 | 3 | 7 | 0 | 5 | 0 | 32 |
| Scotland | 144 | 145 | 21 | 90 | 28 | 53 | 7 | 344 |

// HEALTH INFLUENCES ON THE INDUSTRY

In accordance with Council Directive 2006/88/EC, a risk based surveillance programme targeting 92 shellfish site inspections was undertaken during 2015. 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 nine farm sites, and three wild beds, for the notifiable diseases bonamiasis (causative agent, protozoan parasite *Bonamia ostreae*) and marteiliasis (causative agent, protozoan parasite *Marteilia refringens*). Results were negative. Native oyster is a species known to be susceptible to these shellfish diseases. Movement restrictions placed due to confirmation of the presence of *Bonamia ostreae*, remained in force in Loch Sunart and in West Loch Tarbert, Argyll during 2015. These movement restrictions covering both sea lochs prevent the relaying of native oyster from them ([see Appendix 2, p.16 for maps of areas under movement restrictions](#)). Approved zone status for bonamiasis, marteiliasis and Ostreid Herpes Virus-1 Microvariant (OsHV-1 μ var) 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 during 2015 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 four shellfish diagnostic cases during 2015, at sites holding Pacific and native oysters. 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.14-15](#)).

In 2015 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 μ var.

Following completion of a targeted surveillance programme, the UK has been granted disease free status for OsHV-1 μ var (Decision 2014/12/EU). This includes the territory of Great Britain except the River Roach, River Crouch Blackwater Estuary and River Colne in Essex, the north Kent Coast, Poole Harbour in Dorset and the River Teign in Devon. 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 μ var.

In 2015 six compartments in Ireland were also recognised as free from OsHV-1 μ var: compartment 1 - Sheephaven Bay, compartment 3 - Killala, Broadhaven and Blacksod Bays, compartment 4 - Streamstown Bay, compartment 5 - Bertraghboy and Galway Bays, compartment 6 - Poulnisharry Bay and compartment A - Tralee Bay Hatchery.

Movements of Pacific oysters into an area recognised as free from OsHV-1 μ var 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

- Table production of mussels remains high with the second highest tonnage recorded, 7,270 tonnes, being produced in Scotland in 2015;
- Mussel and Pacific oysters remain the main species produced in terms of value and tonnage although production decreased by 5% and 21% respectively during 2015;
- During 2015, over 5 million Pacific oyster shells were produced for on-growing showing that markets both home and abroad are well established;
- There has been an 83% increase in queen scallop production and a 38% decrease in scallop production since 2014;
- Native oyster production dropped from 242,000 to 200,000 shells in 2015. The sector continues to target a strong niche market;
- Employment levels showed a decrease of 0.3% from the previous year, with 344 full, part-time and casual staff being employed during 2015.
- The Scottish shellfish farming industry is estimated to be worth approximately £10.1 million at first sale value.
- Targeted surveillance for the shellfish diseases bonamiasis and marteiliasis was maintained in 2015 resulting in no new infected areas. Movement restrictions remain in place for the presence of *Bonamia ostreae* at Loch Sunart and West Loch Tarbert, Argyll. Active surveillance for OsHV-1 μ var continued in 2015;
- For shellfish health purposes, 92 out of 335 sites were inspected during 2015 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 was granted disease free status with regard to OsHV-1 μ var, ([See page 11 for details of disease free areas](#)). Immediate notification of increased mortality on farm sites must be reported to Marine Scotland Science, Fish Health Inspectorate ([see Contact details page II](#)).

// GLOSSARY

| | |
|----------------------------|---|
| 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). <i>See</i> 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 |

GUIDANCE ON COMPLETING THE SURVEY FORMS

FORM (a) - BUSINESS PRODUCTION

Production of shellfish for 2015: Please provide your total business production for 2015 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 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.

Production of shellfish for 2016 (estimate): Please provide estimates of production for 2016 '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 2015: Please provide your total site production for 2015 '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 2015 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

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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 295535 or by e-mail at MS.fishhealth@gov.scot

Size of production facilities in 2015 (molluscs): Please provide the size of the production facilities for the respective species cultured. If you cultured shellfish species in 2015 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 (m²) (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 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 (m²) (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 2015 (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 2015 (crustaceans): Please record the size of the facilities. For ponds, enclosures and pens, the **bottom area** should be recorded in hectares or m². For tanks and raceways the **volume** should be recorded in m³. 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 on-growing, **not for table production**.

2015 spat settlement: Please indicate if this was a spat collection site and if so, was spat settlement sufficient for production purposes.

CONVERSIONS

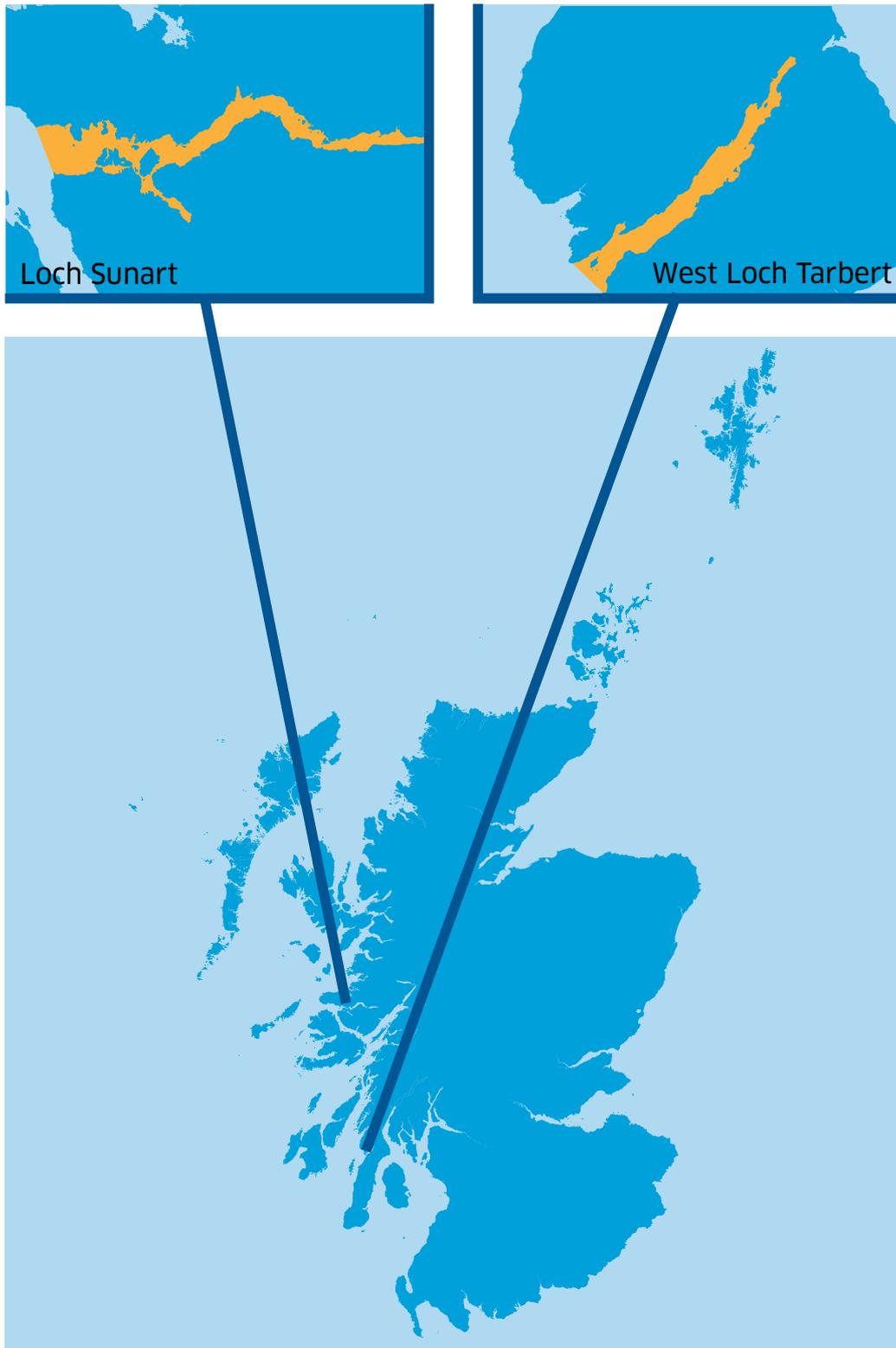
| To convert | To | Multiply (X) or divide (/) by |
|---------------------------------|--------------------------------|-------------------------------|
| Yards | Metres | X 0.9144 |
| Miles | Kilometres | X 1.609 |
| Acres | Hectares | X 0.4047 |
| Square metres (m ²) | Hectares | / 10000 |
| Cubic feet (ft ³) | Cubic metres (m ³) | X 0.0283 |

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// 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* AND OTHER LISTED DISEASES 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/guidance/prevent-fish-or-shellfish-diseases#control-areas-for-notifiable-disease-outbreaks>



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