



SCOTTISH SHELLFISH FARMS
Annual Production Survey 1999

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FRS Marine Laboratory.

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INTRODUCTION

This report is based on an annual survey questionnaire of all registered Scottish shellfish farming companies. The cooperation of the shellfish farming industry is gratefully acknowledged.

Movement and production forms were sent to 164 companies registered as active before the survey. One hundred and sixty (98%) returns were received; the remaining four companies which could not be contacted made no contribution to the survey in 1998. Production returns were recorded from 151 companies. Nine companies had ceased trading, and one 'wild' mussel fishery, registered as a shellfish farm has been excluded from this report.

The survey shows that 74 companies (49%) produced shellfish for sale, both for the table and for ongrowing. The remaining 77 companies remained in operation, but had no sales during 1999. The number of active companies has decreased from 171 to 165 since 1998 (from a peak of 229 in 1990). These companies farmed 237 active sites, of which 137 (from 158 in 1988) placed shellfish on the market (58%).

DI Fraser
June 2000

PRODUCTION

The survey indicated that the shellfish species cultivated in Scottish waters in 1999 were:

Common mussel:	<i>Mytilus edulis</i>
Pacific oyster:	<i>Crassostrea gigas</i>
Native oyster:	<i>Ostrea edulis</i>
Scallop:	<i>Pecten maximus</i>
Queen:	<i>Chlamys opercularis</i>

Total production tonnage was dominated by mussels (1,400 tonnes), Pacific oysters (232 tonnes) and queens (114 tonnes). Small volumes of native oysters (11 tonnes) and scallops (15 tonnes) were also produced. The 1999 production data for each species by region is given in Table 1.

TABLE 1 : Scottish shellfish production survey 1999. Regional production.

Region	Companies	Pacific oysters (000s)		Native oysters (000s)		Mussels (tonnes)		Queens (000s)		Scallops (000s)	
		Table	Other	Table	Other	Table	Other	Table	Other	Table	Other
Highland	64	563	416	3	0	415	0	92	0	42	86
Orkney	6	26	0	0	0	3	0	0	0	0	0
Shetland	12	0	0	0	0	196	0	0	13	0	0
Strathclyde	56	2,306	86	139	1	670	0	2,750	0	85	0
Western Isles	13	0	0	0	0	116	0	0	0	0	0
All Scotland	151	2,895	502	142	1	1,400	0	2,842	13	127	86
Weight (tonnes)		232		11		1,400		114		15	

NB: These reports only list those regions from which annual survey returns were received.
 Conversion to weight used the following assumptions: individual oysters averaged 80g; individual scallops averaged 120 g;
 individual queens averaged 40g.
 Other = Sales for on-growing to other companies

Trends in production for the whole of Scotland are given in Table 2 for *table* and *on-growing* and for total production in Fig. 1. Pacific oyster production increased slightly (1%) as markets were maintained and demand remained high. The 1998 production figures *for the table* and *for on-growing* were revised from the previously published report, 3,257,000 to 2,857,000 and from 250,000 to 750,000 respectively, following updated information from one major producer. Native oyster production continued its upward trend, accounting for a small percentage of total oyster production, and continued to supply a strong market. Mussel production increased by 3% as markets remained strong and prices high. Production of farmed scallops decreased (due to marketing restrictions resulting from area closures which followed statutory marine biotoxin monitoring) however, the market for cultivated scallops remained strong during the year.

Queen production decreased by 23% as a result of an unforeseen harvesting problem in one area.

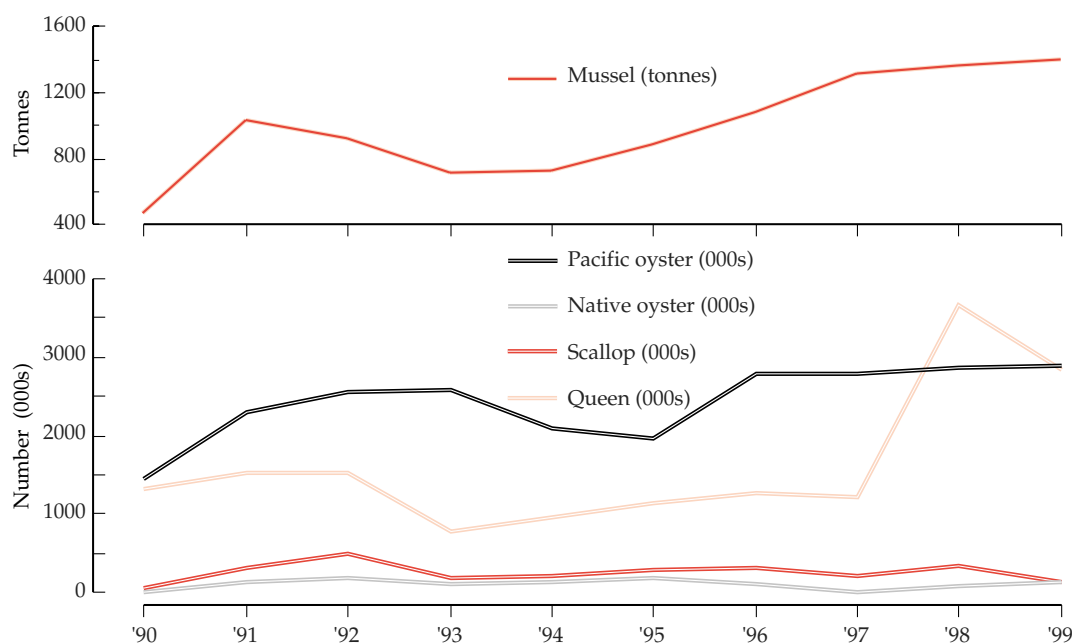
Nine Several Orders have now been granted for scallop fisheries, seven for commercial companies, and two for companies involved in research and development (Fig. 2). These should lead to an increase in scallop production over the next few years.

TABLE 2 : Trends in production data for table and on-growing 1990-1999

For the table	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	% increase 98-99
Pacific oyster (000s)	1,441	2,300	2,560	2,594	2,104	1,973	2,781	2,787	2,857	2,895	1
Native oyster (000s)	1	122	194	119	142	182	96	11	87	142	63
Scallop (000s)	68	316	489	176	199	300	302	223	343	127	-63
Queen (000s)	1,310	1,529	1,538	788	956	1,147	1,271	1,207	3,676	2,842	-23
Mussel (tonnes)	462	1,024	923	708	716	882	1,072	1,307	1,355	1,400	3

For on-growing	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Pacific oyster (000s)	2,035	2,310	1,217	1,849	1,313	2,165	3,580	1,264	750	502
Native oyster (000s)	40	1,080	202	207	33	112	23	55	154	1
Scallop (000s)	5,093	1,743	1,046	636	198	896	822	647	49	86
Queen (000s)	3,762	312	1,128	2,620	746	3,415	2,657	3,050	0	13
Mussel (tonnes)	1	30	73	131	12	<1	30	0	3	0

FIGURE 1 : Company production 1990 – 1999



Prices of farmed shellfish fluctuated throughout the year, however, the value at first sale of the species cultivated was estimated. The price of Pacific oysters varied between 15 and 25 pence per shell; native oysters 50 pence per shell; scallops and queens 50-60 and five pence per shell respectively; and mussels between £800-£1,300 per tonne. Approximate value of the table trade based on these prices and the production figures (Table 1) would be:

Mussel:	£1.12 – 1.82 million
Pacific oyster:	£0.43 – 0.72 million
Native oyster:	£0.07 million
Scallop:	£0.06 – 0.08 million
Queen:	£0.14 million

SITES AND COMPANIES

The number of companies registered as active decreased by 19 during 1999 (Table 3), and the number of active sites decreased by 7% (Table 4). This trend reflects the closure of inefficient sites. Many unproductive sites held stock not yet ready for market, others were fallow, and some were positioned in remote areas where the cost-effective production and marketing of shellfish proved difficult.

TABLE 3 : Registered and active companies 1990-99

	Number of companies										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Registered	290	310	321	332	348	353	360	366	377	386	
Active	229	228	214	205	196	190	187	170	171	151	

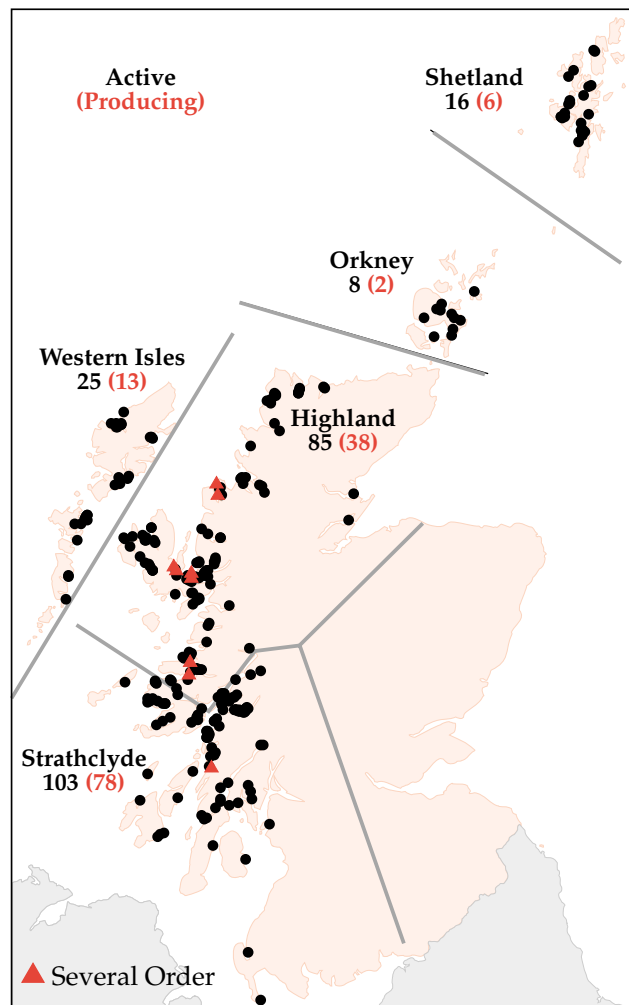
TABLE 4 : Active and producing farm sites by region, 1999

	Highland	Orkney	Shetland	Strathclyde	Western Isles	Total
<i>Sites</i>						
Active	85	8	16	103	25	237
Producing	38	2	6	78	13	137

Active = growing and placing on the market; Producing = placing on the market

A map showing the distribution of the shellfish production sites is shown in Figure 2.

FIGURE 2 : Active shellfish farm sites by region 1999



The regional distribution of active farm sites and those companies producing shellfish for sale is shown in Tables 4 and 5, and in Figure 2. Many companies cultivate more than one species on site, a practice made possible by similar cultivation techniques (Table 5). For example, scallops are grown together with queens, Pacific oysters with native oysters and mussels with Pacific oysters.

TABLE 5 : Number of companies by region and by species, 1999

a) Production for the table

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	9	1	0	20	0	30
Native oyster	3	0	0	3	0	6
Scallop	6	0	0	3	0	9
Queen	4	0	0	1	0	5
Mussel	10	1	5	16	5	37
Total	32	2	5	43	5	87

b) Production for on-growing to other producers

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	0	0	0	4	0	4
Native oyster	0	0	0	1	0	1
Scallop	1	0	0	0	0	1
Queen	0	0	1	0	0	1
Mussel	0	0	0	0	0	0
Total	1	0	1	5	0	7

c) No production but actively on-growing

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	7	4	1	7	0	19
Native oyster	1	3	1	1	0	6
Scallop	10	3	1	6	2	22
Queen	7	2	1	3	1	14
Mussel	17	1	2	4	6	30
Total	42	13	6	21	9	91

Note: a company may produce more than one species

Table 6: Company production by species 1999

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)	11	2	1	1	1	0	2	1	1	0	9	29
Native oyster (000s)	5	0	0	0	0	0	0	0	0	0	1	6
Scallop (000s)	5	2	0	0	0	1	0	0	0	0	0	8
Queen (000s)	0	2	1	1	0	0	0	0	0	0	1	5
Mussel (tonnes)	14	6	2	2	3	4	1	1	1	1	4	39
Total												87

EMPLOYMENT

The industry employed 118 full-time and 114 part-time workers during 1999, an increase of 2% over the previous year. The regional breakdown of employment is given in Table 7.

Table 7: Regional breakdown of employment

Region	Companies	Staff		
		Full-time	Part-time	Casual
Highland	64	32	43	33
Orkney	6	3	3	6
Shetland	12	10	12	8
Strathclyde	56	66	47	25
Western Isles	13	7	9	4
All Scotland	151	118	114	76

ENVIRONMENTAL AND HEALTH INFLUENCES ON THE INDUSTRY

Approved Zone status for the notifiable diseases *Bonamia* and *Marteilia* was maintained in 1999 (under EC Directive 91/67) after testing confirmed the absence of these diseases in Scottish waters. Samples were taken twice a year from 14 sites holding native oysters, a species known to be susceptible to these shellfish diseases. Approved Zone status continued to offer benefits to both wild and farmed native oyster stocks in Scottish waters.

Statutory marine biotoxin monitoring in Scotland continued during 1999. Examination of more than 4,000 shellfish flesh and 550 phytoplankton samples from 40 sites revealed the presence of paralytic shellfish poisons (PSP), diarrhetic shellfish poisons (DSP) and amnesic shellfish poisons (ASP) in most of the important shellfish growing regions. Twenty Voluntary Closure Agreements (VCAs) were agreed, and Food and Environment Protection Act 1985 (FEPA) closure orders were imposed in scallop aquaculture and important scallop fishing grounds. The ASP problem continued to the end of the year.

Classification of bivalve mollusc production areas continued during 1999 under The Food Safety (Live Bivalve Molluscs and Other Shellfish) Regulations 1992, and results showed that 69, 37, 37, 47 and 8 areas were classified either A, A/B Seasonal, B, or C respectively. Changes resulted from the classification of new areas and an amalgamation of existing areas. There are currently some 20 approved depuration systems: seven small scale oyster purification plants; six bulk bin systems for mussels; and seven medium sized plants for the depuration of mussels or oysters. In an attempt to meet the End Product Standard at all times, buyers demand that all marketed stocks be depurated, including those classified as A (where purification is not essential).

SUMMARY

The survey has shown:

- Mussels and Pacific oysters are the main species produced in terms of tonnage;
- A continued reduction in the number of active and producing sites;
- That only 58% of active sites produced shellfish for table sales;
- That manpower levels remained stable;
- A small increase in production of the two main species — mussels and Pacific oysters;
- An increase in the production of native oysters;
- A decrease in production of scallops and queens (scallop production was directly affected by area closures as a result of the decision of marine biotoxins statutory monitoring);
- That approved zone status for the diseases *Bonamia* and *Marteilia* was maintained during the year;
- That the industry is still dominated by small producers, although a few large companies contribute significantly to the annual production of all species.

The market for all species appeared to be buoyant and prices remained stable throughout the year. It is predicted that production will continue to increase steadily over the next few years.

GLOSSARY

Classification Categories and Criteria

Production areas have been classified according to the following categories and criteria —

Category A	Less than 230 <i>E.coli</i> /100g flesh or Less than 300 faecal coliforms/100g flesh	<i>May go direct for human consumption if End Product Standard met</i>
Category B	Less than 4,600 <i>E.coli</i> /100g flesh (in 90% of samples)	<i>Must be depurated, heat treated or relayed to meet Category A requirements</i>
Category C	Less than 60,000 faecal coliforms/100g flesh	<i>Must be relayed for long periods (at least two months) whether or not combined with purification, or after intensive purification to meet Category A or B</i>
	Above 60,000 faecal coliforms	<i>Unsuitable for production</i>
Active	Farms in a production growing cycle which may contain stock or be fallow	
Inactive	Farms not in a production cycle, without stock and not to be used by the company again	
End Product Standard	A requirement to be met before a product can be marketed	
Severed Order	Application to sever an area of the sea-bed from the public right to fish which prohibits the use of demersal fishing gear, in order to conserve or enhance named shellfish stocks	
Voluntary Closure Agreement	A temporary closure of a fishery, agreed between the Scottish Executive Rural Affairs Department (SERAD) and farmer(s), to cease harvesting shellfish for human consumption	