

**Fisheries
Research
Services**

SCOTTISH SHELLFISH FARMS Annual Production Survey 1998

This report was prepared for the Scottish Executive
by the Marine Laboratory Aberdeen.

The Marine Laboratory Aberdeen is a division of
Fisheries Research Services, an agency of
the Scottish Executive

ISBN : 1363-5867

INTRODUCTION

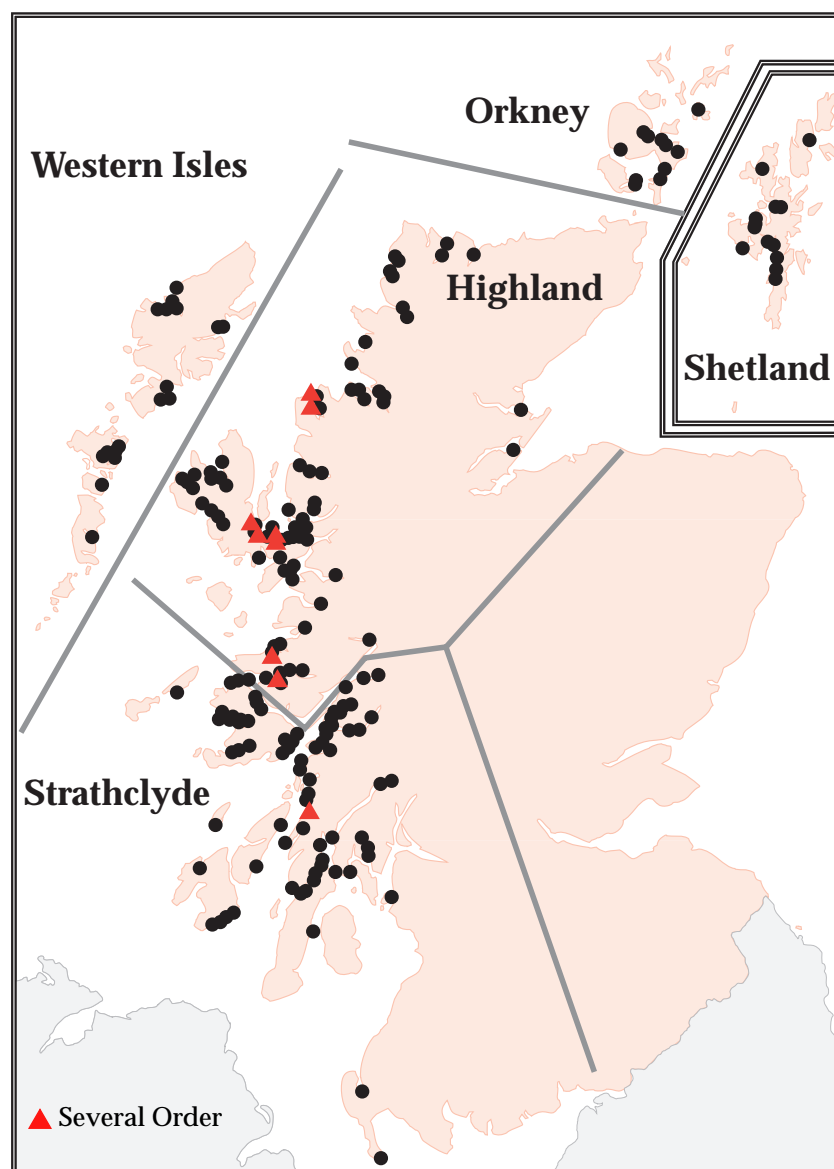
This report is based on an annual survey questionnaire of all registered Scottish shellfish farming companies. The cooperation of the shellfish farming industry is gratefully acknowledged.

Movement and production forms were sent to 182 companies registered as active before the survey. One hundred and seventy nine (98%) returns were received; the remaining three companies could not be contacted. Production returns were recorded from 171 companies (Table 1). Eleven had ceased trading, and one wild mussel fishery, registered as a shellfish farm, was excluded from the report.

The survey showed that 87 companies (51%) produced shellfish for sale, both for the table and for on-growing. The remaining 84 companies remained in operation, but had no sales during 1998. The number of active companies had increased from 170 to 171 since 1997 (from a peak of 229 in 1990). These companies farmed 255 active sites, of which 158 placed shellfish on the market (62%).

DI Fraser
September 1999

FIGURE 1 : Active Shellfish Farm Sites by Region 1998



PRODUCTION

The shellfish species cultivated at farms in Scottish waters (Figure 1) and for which production returns were received in 1998 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>

Data from the 1987-1998 production returns are summarized for each shellfish species, by region, together with a total for Scotland, in Tables 4 and 5, and in Figure 3. Data for manpower, for 1997 and 1998, are included in the tables. The data on mussels include only those grown entirely in suspended cultivation. Company production levels by species are shown in Figure 4 and Table 6.

The regional distribution of active farm sites and those companies producing shellfish for sale is shown in Tables 2 and 3, and in Figure 2. Many companies cultivate more than one species on site, made possible because of similar cultivation techniques (Table 3). For example, scallops were grown together with queens, Pacific oysters with native oysters and mussels with Pacific oysters. Most productive sites and areas of greatest employment were focused in the Strathclyde, Highland, Western Isles, Shetland and Orkney regions, mainly using part-time and casual staff.

The number of registered companies increased by one during 1998 however, the number of active sites decreased by 4%, reflecting the continued trend of closure of inefficient sites (Tables 1 and 2). Many unproductive sites held stock not yet ready for market, others were positioned in remote areas where the cost-effective production and marketing of shellfish proved difficult. The number of staff in full-time employment increased by 22% (from 95 to 116), whilst the number in part-time and casual employment decreased by 18% (227 to 187) during the year (Table 2). Despite this, production of the five species cultivated increased since 1997, and the number of productive sites was maintained at 158.

Pacific oyster production increased by 17% as markets were developed. Native oyster production accounted for a small percentage of total oyster production, and continued to supply a strong market. Mussel production increased by 4% as markets developed and prices remained high. Production of farmed scallops increased as a result of production from Several Order fisheries targeting a niche market. Eight Several Order fisheries have now been granted for scallops, six for commercial companies and two for companies involved in research and development. These should encourage a continued increase in scallop production over the next few years. A significant increase in queen scallop production resulted from a healthy demand and good marketing.

Approved Zone status for the notifiable diseases Bonamiasis and Marteiliasis was maintained in 1998 (under EC Directive 91/67), following testing to confirm the absence of those diseases in Scottish waters. Samples were taken twice a year from sites which held native oysters, a species proven to be susceptible to these diseases of shellfish. Approved Zone status continued to offer protection to both wild and farmed native oyster stocks in Scottish waters.

Marine biotoxin monitoring in Scotland continued during 1998. Examination of more than 1,825 shellfish flesh and phytoplankton samples from 40 sites revealed the presence of paralytic shellfish poisons (PSP) and diarrhetic shellfish poisons (DSP) in all important shellfish growing regions. Voluntary Closure Agreements (VCAs) were agreed where appropriate, and Food and Environment Protection Act 1985 (FEPA) closure orders were imposed in Orkney. The effects were seasonal, from spring through to early autumn.

Classification of bivalve mollusc production areas continued during 1998, under The Food Safety (Live Bivalve Molluscs and Other Shellfish) Regulations 1992, and currently 79, 31, 37 and 7 are classified as either A, A/B Seasonal, B, or C respectively. There are currently 20 approved depuration systems: eight small scale oyster purification plants; six bulk bin systems for mussels; and six medium sized plants for the depuration of mussels or oysters. In an attempt to meet the End Product Standard at all times, there is an increasing demand by buyers that all marketed stocks be depurated, including those classified as A (where purification is not essential).

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 20 and 35 pence per shell; native oysters 40-50 pence per shell; scallops 45-80 pence; queens five pence per shell; and mussels £850-£1,200 per tonne.

Summary

The survey has shown —

- An increase in the production of the five main species, since 1997;
- The continued trend in increased production from fewer active sites as the industry becomes more efficient;
- That the Scottish industry continues to be dominated by a large number of small producers;
- A few large companies contribute significantly to the annual production of each species;
- The number of companies and the manpower employed in the industry remains stable, although the numbers in full-time employment increased while numbers in part-time employment decreased;

It is predicted that production of all species will increase steadily over the next few years.

TABLE 1: Registered and active companies 1987-98

		Number of companies											
		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Registered		168	174	223	290	310	321	332	348	353	360	366	377
Active		162	169	181	229	228	214	205	196	190	187	170	171

TABLE 2: Active and producing farm sites and manpower by region, 1998

	Highland	Orkney	Shetland	Strathclyde	Western Isles	Total
<i>Sites</i>						
Active	104	9	14	100	28	255
Producing	56	5	6	80	11	158
<i>Manpower</i>						
Full-time	37	2	8	62	7	116
Part-time	77	11	7	81	11	187

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

FIGURE 2: Active Shellfish Farm Sites by Region 1998
(Numbers of producing sites appear in brackets)

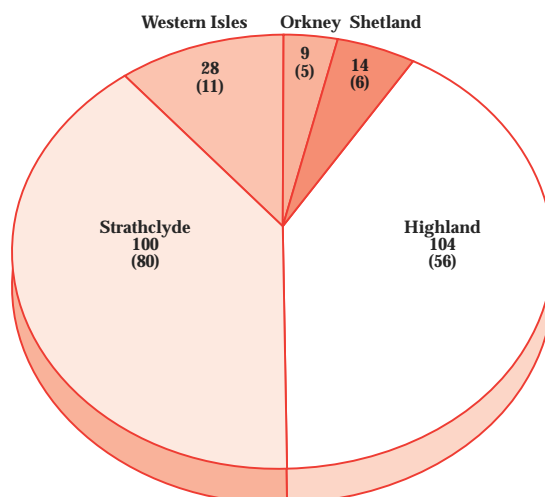


TABLE 3 : Number of companies by region and by species, 1998

a) **Production for the table**

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	11	1	1	23	0	36
Native oyster	3	0	0	3	0	6
Scallop	10	0	0	5	0	15
Queen	7	0	0	1	0	8
Mussel	15	2	3	13	3	36
Total	46	3	4	45	3	101

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	1	0	0	1	0	2
Scallop	0	0	0	2	0	2
Queen	0	0	0	0	0	0
Mussel	0	0	0	1	0	1
Total	1	0	0	8	0	9

c) **No production but actively on-growing**

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	8	4	3	8	1	24
Native oyster	3	3	1	5	3	15
Scallop	15	3	0	4	4	26
Queen	13	1	0	5	2	21
Mussel	11	1	5	9	8	34
Total	50	12	9	31	18	120

Note: a company may produce >1 species

TABLE 4 :Shellfish company production 1988-1998

For the table	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	% increase 96-97
	Pacific oyster (000s)	1,580	1,234	1,441	2,300	2,560	2,594	2,104	1,973	2,781	2,787	3,257
Native oyster (000s)	21	15	1	122	194	119	142	182	96	11	87	>100
Scallop (000s)	66	45	68	316	489	176	199	300	302	223	343	53
Queen (000s)	415	2,282	1,310	1,529	1,538	788	956	1,147	1,271	1,207	3,676	>100
Mussel (tonnes)	384	346	462	1,024	923	708	716	882	1,072	1,307	1,355	4
For on-growing	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Pacific oyster (000s)	2,830	2,220	2,035	2,310	1,217	1,849	1,313	2,165	3,580	1,264	250	
Native oyster (000s)	413	583	40	1,080	202	207	33	112	23	55	154	
Scallop (000s)	217	5,455	5,093	1,743	1,046	636	198	896	822	647	49	
Queen (000s)	1,093	682	3,762	312	1,128	2,620	746	3,415	2,657	3,050	0	
Mussel (tonnes)	3	3	1	30	73	131	12	<1	30	0	3	

FIGURE 3 : Company production 1987 – 1998

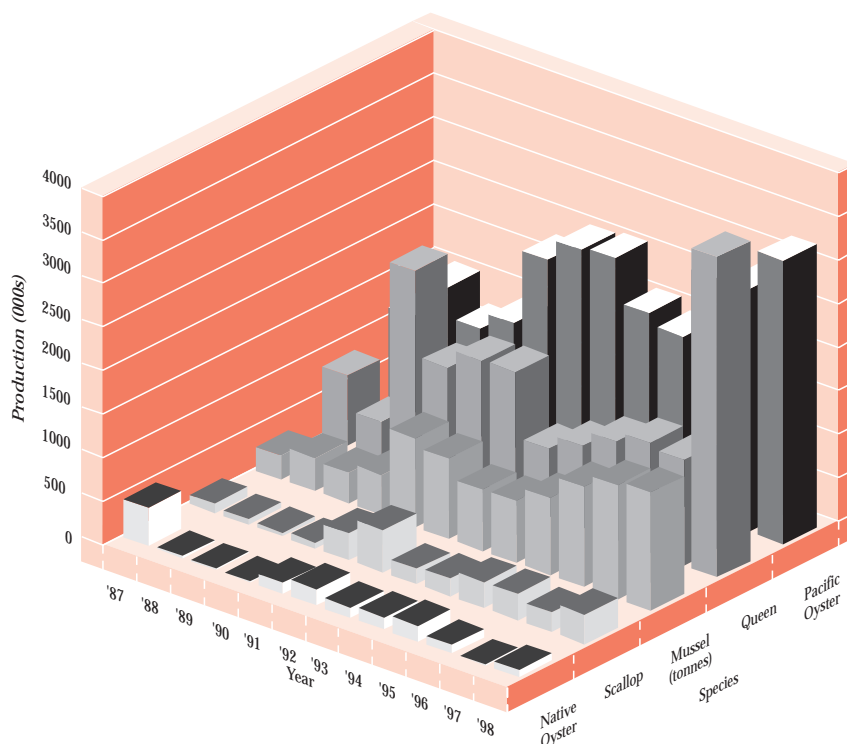


TABLE 5A: Scottish shellfish companies - survey data 1998. Regional production summary

Region	Companies	Staff			Pacific oysters (000s)		Native oysters (000s)		Mussels (tonnes)		Queens (000s)		Scallops (000s)	
		F/T	P/T	Cas	Table	Other	Table	Other	Table	Other	Table	Other	Table	Other
Highland	72	37	51	26	1,182	0	5	2	391	0	676	0	204	19
Orkney	8	2	8	3	32	0	0	150	8	0	0	0	0	0
Shetland	12	8	7	0	4	0	0	0	175	0	0	0	0	0
Strathclyde	65	62	51	30	2,043	250	82	2	653	3	3,000	0	139	30
Western Isles	14	7	10	1	0	0	0	0	128	0	0	0	0	0
All Scotland	171	116	127	60	3,257	250	87	154	1,355	3	3,676	0	343	49
Weight (tonnes)					261		7		1,355		147		41	

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

TABLE 5B: Scottish shellfish companies - survey data 1997. Regional production summary

Region	Companies	Staff			Pacific oysters (000s)		Native oysters (000s)		Mussels (tonnes)		Queens (000s)		Scallops (000s)	
		F/T	P/T	Cas.	Table	Other	Table	Other	Table	Other	Table	Other	Table	Other
Highland	69	30	50	37	564	520	0	0	414	0	205	3,050	113	623
Orkney	8	0	11	3	32	0	0	51	11	0	2	0	0	0
Shetland	10	4	8	3	4	0	0	0	96	0	0	0	0	0
Strathclyde	69	50	59	42	2,187	744	11	4	609	0	1,000	0	110	24
Western Isles	14	11	4	10	0	0	0	0	177	0	0	0	0	0
All Scotland	170	95	132	95	2,787	1,264	11	55	1,307	0	1,207	3,050	223	647
Weight (tonnes)					224		1		1,307		46		27	

FIGURE 4 : Company production by species 1998

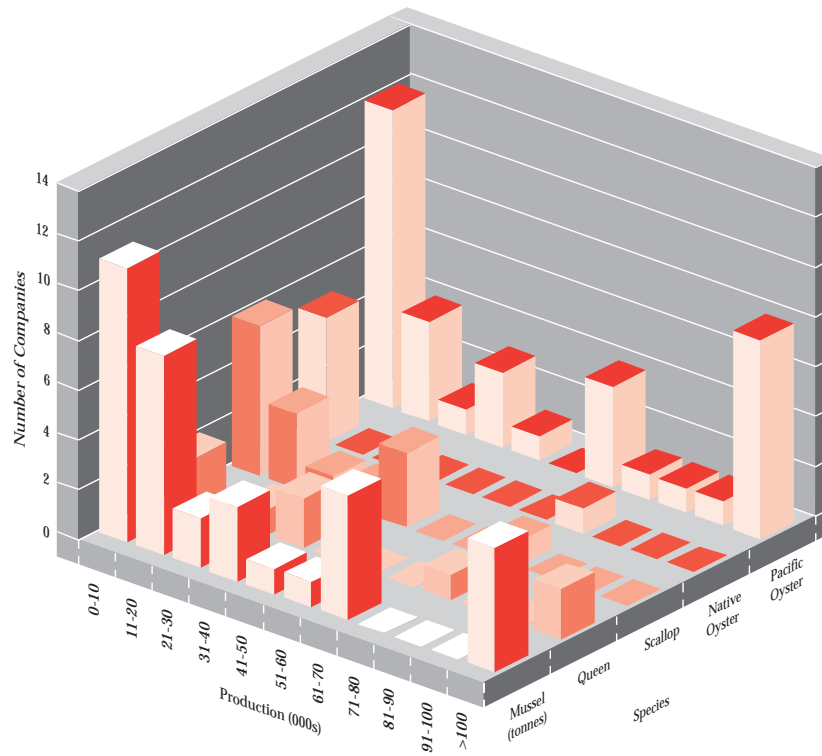


Table 6: Company production by species 1998

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)	12	4	1	3	1	0	4	1	1	1	8	36
Native oyster (000s)	5	0	0	0	0	0	0	1	0	0	0	6
Scallop (000s)	6	3	1	1	3	0	0	1	0	0	0	15
Queen (000s)	2	0	1	2	0	0	0	1	0	0	2	8
Mussel (tonnes)	11	8	2	3	1	1	5	0	0	0	5	36
												101

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	May go direct for human consumption if End Product Standard met
Category B	Less than 4,600 <i>E.coli</i> /100g flesh (in 90% of samples)	Must be depurated, heat treated or relayed or relayed to meet Category A requirements
Category C	Less than 60,000 faecal coliforms/100g flesh	Must be relaid for long periods (at least two months) whether or not combined with purification, or after intensive purification to meet Category A or B
	Above 60,000 faecal coliforms	Unsuitable for production
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 SOAEFD and farmer(s), to cease harvesting shellfish for human consumption	