Fisheries
Research
Services

SCOTTISH SHELLFISH FARMS
Annual Production Survey 1997

A report was prepared for The Scottish Office
by the Marine Laboratory Aberdeen.

The Marine Laboratory Aberdeen is a division of Fisheries Research Services, an Executive Agency of The Scottish Office

ISBN : 1363-5867

INTRODUCTION

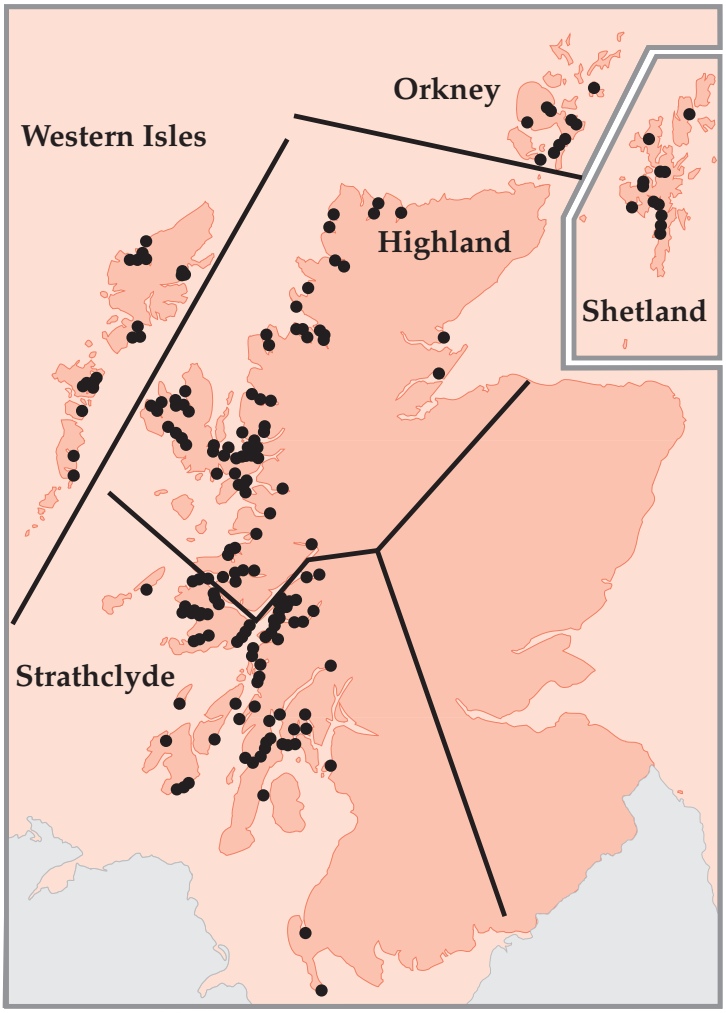
This report is based on an annual survey questionnaire of all registered Scottish shellfish farming companies. The cooperation of the shellfish farming industry is gratefully acknowledged.

Movement and production forms were sent to 191 companies registered as Active before the survey. One hundred and eighty eight (98%) returns were received; the remaining three could not be contacted. Production returns were recorded from 170 companies (Table 1). Seventeen had ceased trading and one 'wild' mussel fishery, registered as a shellfish farm was excluded from the report.

The survey showed that 105 companies produced shellfish for sale, both for the table and for ongrowing. The remaining 65 companies remained in operation but had no sales during 1997. The number of Active companies has decreased from 187 to 170 since 1996 (from a peak of 229 in 1990). These companies farmed 265 Active sites, of which 158 placed shellfish on the market, a slight increase from the 157 registered as productive at the end of 1996, but a decrease of 45% since 1993, when 287 sites produced shellfish.

DI Fraser
September 1998

FIGURE 1 : Active Shellfish Farm Sites by Region 1997



PRODUCTION

The shellfish species cultivated at farms in Scottish waters (Figure 1) and for which production returns were received in 1997 were —

Common mussel:	***Mytilus edulis***
Pacific oyster:	***Crassostrea gigas***
Native oyster:	***Ostrea edulis***
Scallop:	***Pecten maximus***
Queen:	***Chlamys opercularis***

Data from the 1986-1997 production returns are summarised for each shellfish species, by region, together with a total for Scotland, in Tables 4 and 5 and in Figure 3. Data on manpower, for 1996 and 1997, 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 are grown together with queens, Pacific oysters with native oysters and mussels with Pacific oysters. Most active sites and areas of greatest employment were focused in the Strathclyde, Highland, Western Isles, Orkney and Shetland regions, mainly using part-time and casual staff.

The number of registered companies decreased during 1997 by 9% (Table 1) and the number of Active sites decreased by 10% which reflects the continuing trend of closure of inefficient sites (Table 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 decreased by 4% (from 99 to 95), while those in part-time and casual employment showed a decrease of 8% as numbers dropped from 246 to 227 during the year (Table 2). Despite this, production of the two main species cultivated increased on 1996, and the number of productive sites increased by one.

Pacific oyster production increased slightly as markets were maintained and demand remained high. Native oyster production accounted for a small percentage of total oyster production, and continued to supply a strong market. Mussel production continued to increase as markets developed and prices remained high. Production of farmed scallops and queens decreased as a result of reduced production from four companies, however, the market for cultivated scallops remained strong during the year. Five Several Order fisheries have now been granted for scallops, three for commercial companies, and two for companies involved in research and development. These should encourage an increase in scallop production over the next few years.

Approved Zone status for the notifiable diseases *Bonamia* and *Marteilia* was maintained in 1997 (under EC Directive 91/67), following testing to demonstrate the absence of those diseases in Scottish waters. Samples were taken twice a year from 17 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 1997. Examination of more than 1,700 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 1997, under The Food Safety (Live Bivalve Molluscs and Other Shellfish) Regulations 1992, and results showed that 91, 34, 31 and 7 were classified either A, A/B Seasonal, B, or C respectively. There are currently 19 approved depuration systems: seven 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 12 and 25 pence per shell; native oysters 50 pence per shell; scallops and queens 50 and five pence per shell respectively; and mussels between £750-£1,200 per tonne.

Summary

The survey has shown —

- a steady rate of growth over last 11 years which has slowed down during the 1990's
- that Scottish industry is still dominated by small producers, presumably representing the crofting communities, although production of all species is dominated by a few large producers
- that the number of companies and the manpower employed in the industry remains stable
- it is predicted that production of all species will increase steadily over the next few years

TABLE 1: Registered and active companies 1986-97

	Number of companies											
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Registered	144	168	174	223	290	310	321	332	348	353	360	366
Active	141	162	169	181	229	228	214	205	196	190	187	170

TABLE 2: Active and producing farm sites and manpower by Region, 1997

	Highland	Orkney	Shetland	Strathclyde	Western Isles	Total
Sites						
Active	102	10	12	113	28	265
Producing	52	6	4	86	10	158
Manpower						
Full time	30	0	4	50	11	95
Part time	87	14	11	101	14	227

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

FIGURE 2: Active Shellfish Farm Sites by Region 1997
(Numbers of producing sites appear in brackets)

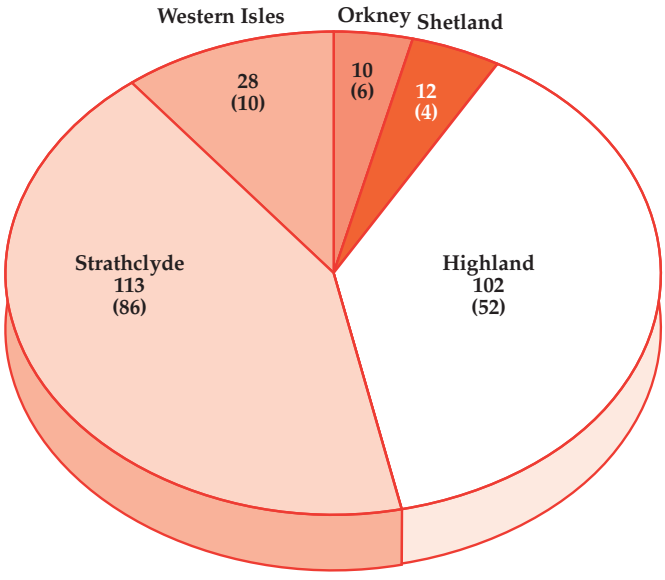


TABLE 3 : Number of companies by Region and by species, 1997

a) Production for the table

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	Total
Pacific oyster	13	2	1	23	0	39
Native oyster	0	0	0	2	0	2
Scallop	10	1	0	6	0	17
Queen	6	1	0	1	0	8
Mussel	12	1	4	18	4	39
Total	41	5	5	50	4	105

b) Production for ongrowing to other producers

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	Total
Pacific oyster	0	0	0	6	0	6
Native oyster	0	2	0	2	0	4
Scallop	5	0	0	2	0	7
Queen	2	0	0	0	0	2
Mussel	0	0	0	0	0	0
Total	7	2	0	10	0	19

c) No production but actively ongrowing

	Region					
	Highland	Orkney	Shetland	Strathclyde	Western Isles	Total
Pacific oyster	5	4	1	12	0	22
Native oyster	2	4	1	4	0	11
Scallop	15	2	0	5	5	27
Queen	8	0	0	0	1	9
Mussel	14	1	5	6	7	33
Total	44	11	7	27	13	102

Note: a company may produce >1 species

TABLE 4 :Shellfish company production 1987-1997

For the table	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	% increase 96-97
Pacific oyster (000s)	1,109	1,580	1,234	1,441	2,300	2,560	2,594	2,104	1,973	2781	2787	0.2
Native oyster (000s)	436	21	15	1	122	194	119	142	182	96	11	-
Scallop (000s)	105	66	45	68	316	489	176	199	300	302	223	-26
Queen (000s)	806	415	2,282	1,310	1,529	1,538	788	956	1,147	1271	1207	-5
Mussel (tonnes)	271	384	346	462	1,024	923	708	716	882	1072	1307	22

For on-growing	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Pacific oyster (000s)	1,815	2,830	2,220	2,035	2,310	1,217	1,849	1,313	2,165	3580	1264
Native oyster (000s)	320	413	583	40	1,080	202	207	33	112	23	55
Scallop (000s)	580	217	5,455	5,093	1,743	1,046	636	198	896	822	647
Queen (000s)	210	1,093	682	3,762	312	1,128	2,620	746	3,415	2657	3050
Mussel (tonnes)	1	3	3	1	30	73	131	12	<1	30	0

FIGURE 3 : Company production 1987 – 1997

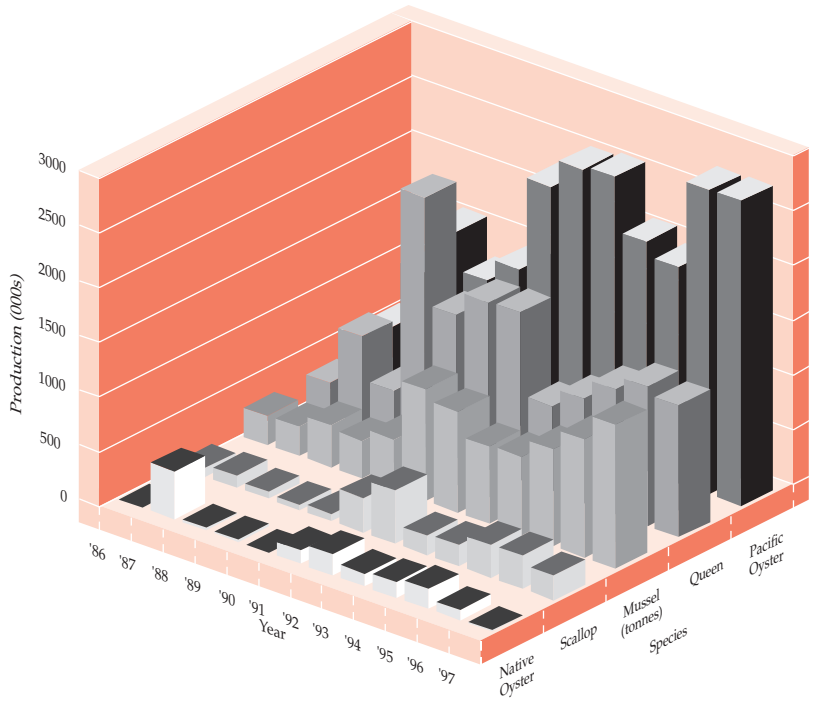


TABLE 5A: Scottish shellfish companies - survey data 1997. Regional production summary

Region	Companies	Staff F/T	Staff P/T	Staff Cas	Pacific oysters (000s) Table	Pacific oysters (000s) Other	Native oysters (000s) Table	Native oysters (000s) Other	Mussels (tonnes) Table	Mussels (tonnes) Other	Queens (000s) Table	Queens (000s) Other	Scallops (000s) Table	Scallops (000s) Other
Highland	69	30	50	37	564	520	0	0	414	0	205	3050	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	2187	744	11	4	609	0	1000	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	2787	1264	11	55	1307	0	1207	3050	223	647
Weight (tonnes)					224		1		1307		46		27	

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 ongrowing to other companies

TABLE 5B: Scottish shellfish companies - survey data 1996. Regional production summary

Region	Companies	Staff F/T	Staff P/T	Staff Cas	Pacific oysters (000s) Table	Pacific oysters (000s) Other	Native oysters (000s) Table	Native oysters (000s) Other	Mussels (tonnes) Table	Mussels (tonnes) Other	Queens (000s) Table	Queens (000s) Other	Scallops (000s) Table	Scallops (000s) Other
Highland	77	32	55	42	797	0	4	0	287	0	270	2655	122	805
Orkney	13	6	10	3	0	2845	0	22	1	0	1	2	0	0
Shetland	10	2	8	4	0	0	0	0	10	0	0	0	0	0
Strathclyde	71	51	72	36	1982	735	92	1	468	0	1000	0	180	17
Western Isles	16	8	8	8	1	0	<1	0	306	30	0	0	0	0
All Scotland	187	99	153	93	2781	3580	96	23	1072	30	1271	2657	302	822
Weight (tonnes)					224		8		1072		51		36	

FIGURE 4 : Company production by species 1997

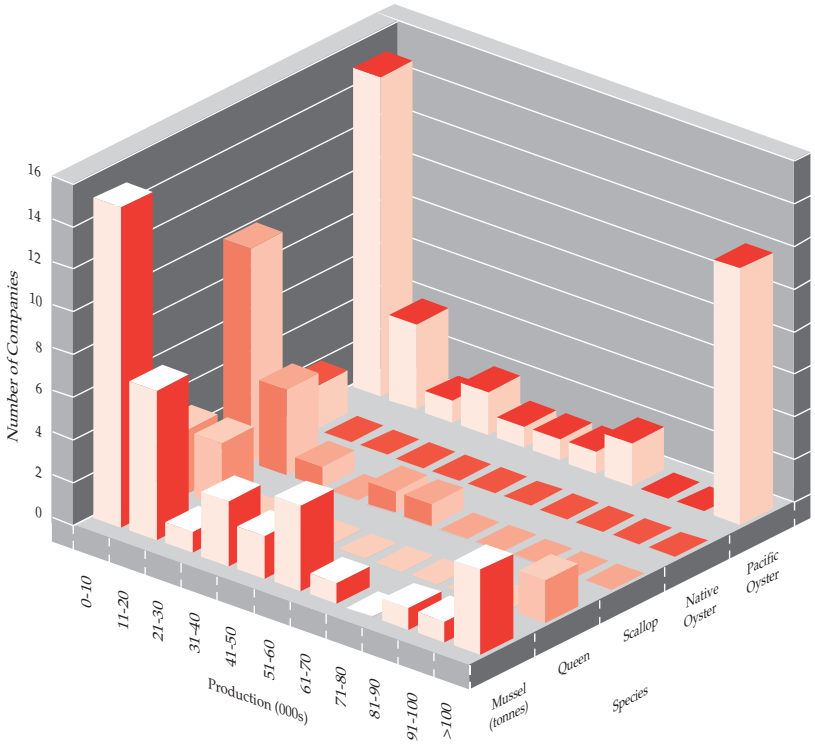


Table 6: Company production by species 1997

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 (000's)	15	4	1	2	1	1	1	2	0	0	12	39
Native oyster (000's)	2	0	0	0	0	0	0	0	0	0	0	2
Scallop (000's)	10	4	1	0	1	1	0	0	0	0	0	17
Queen (000's)	3	3	0	0	0	0	0	0	0	0	2	8
Mussel (tonnes)	15	7	1	3	2	4	1	0	1	1	4	39
												105

GLOSSARY

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

Category A	Less than 230 *E.coli*/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 *E.coli*/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
Several 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