



Marine  
Laboratory  
Aberdeen

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## SCOTTISH SHELLFISH FARMS Annual Production Survey 1996

This report was conducted 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

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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 202 companies registered as active prior to the survey. Returns received were 201, the remaining one could not be contacted. Production returns were recorded from 187 companies (Table 1), 13 had ceased trading and one 'wild' mussel fishery, registered as a shellfish farm, was excluded from the report.

The survey showed that 108 companies produced shellfish for sale, both for the table and for on growing, the remaining 79 companies remained in operation but for various reasons had no sales during 1996. The number of active companies decreased from 190 to 187 since 1995 (from a peak of 229 in 1990). These companies consisted of 293 active sites, of which 157 produced shellfish, a 15% decrease from the 185 registered as productive at the end of 1995 and a decrease of 45% since 1993 when 287 sites produced shellfish.

The regional distribution of active farm sites and those companies producing shellfish for sale, is shown in Tables 2 & 3 and Figure 1. Many companies cultivate more than one species on site, made possible because of similar cultivation techniques (table 3) eg scallops 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 by part time and casual staff.

# PRODUCTION

Data from the 1986-1996 production returns is summarised for each shellfish species, by region together with a total for Scotland, in Tables 4&5 and Figure 2. Data on manpower, for 1995 and 1996, is included in the tables. The data on mussels include only those grown entirely in suspended cultivation. Farm production levels, by species is shown in Figure 3.

The shellfish species cultivated in Scottish waters and for which production returns were received 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>

## Oysters

### Pacific Oysters

Forty-four companies produced 2.8 million oysters for the table, a 41% increase in production on the previous year. Eight companies produced 72% of that total. A further seven companies sold Pacific oysters for on growing within the industry while 19 were registered as holding 'gigas' but recorded no production for 1996. Most productive companies were sited in the Strathclyde region.

### Native Oysters

Nine companies produced 96,000 native oysters, a 47% decrease on the previous year. Again one company was responsible for a large percentage of those sales. Three farms sold native oysters for on growing while eight recorded no production during the year.

## Pectinids

### Scallops and Queens

Production of scallops for the table rose by 1% in 1996. Fourteen companies sold 302,000 shells, ten companies produced scallops for on growing while 31 recorded no production. A total of seven companies produced 1,271,000 queen scallops, an increase of 11% on the previous year. Three companies dominated production. A further two farms produced queens for on growing, while 13 recorded no production. Most productive companies were sited in the Strathclyde and Highland regions.

## Mussels

Mussel production increased by 22% during 1996, as 1072 tonnes were produced by 34 companies, eight of which produced 72% off that total. One company produced mussels for on growing while 40 were unproductive. Most productive companies were sited in the Strathclyde and Highland regions. The figures for mussels do not include dredge caught, market size animals from wild fisheries.

# CONCLUSIONS

The number of registered companies decreased during 1996 by 3% and the number of sites producing decreased by 15%, which reflects the continuing trend of closure of inefficient sites. 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. Reports were received of losses of stock by storm damage; husbandry problems; gear damage by fishing vessels; predation by eider ducks, crabs and starfish; and infestation by fouling organisms which prevented settlement and growth of stock. These losses had a considerable effect on production by a number of businesses. Despite these problems, production of most species increased since 1995. The number of staff in full time employment rose by 30% (from 76 to 99), while those in part-time and casual employment showed a small decrease as numbers dropped from 251 to 246 during the year.

Pacific oyster production increased significantly as markets continued to expand and demand remained strong. The report contains revised figures for Pacific oyster production in 1995 (Tables 4 & 5A, Figure 2). Native oyster production accounted for a small percentage of total oyster production and continued to supply a strong market. Mussel production increased despite continued problems with eider duck predation. Production of farmed scallops and queens showed a small annual increase, continuing to target a niche market. It is anticipated that a significant increase in scallop production over the next few years, will result from the allocation of a limited number of Several Order Fisheries.

Approved zone status for the notifiable diseases *Bonamia* and *Marteilia* was achieved in 1996 (under EC Directive 91/67), following three years testing to demonstrate their absence from Scottish waters. Samples were taken twice a year from some 25 sites which held native oysters, a species proven susceptible to these diseases of shellfish. Approved zone status offers protection to both wild and farmed native oyster stocks in Scottish waters.

Marine biotoxin monitoring in Scotland continued during 1996. Examination of more than 1200 shellfish flesh and phytoplankton samples at 49 sites revealed the presence of Paralytic Shellfish Poisoning (PSP) and Diuretic Shellfish Poisoning (DSP) in all important shellfish growing regions. Voluntary Closure Agreements (VCA's) were agreed where appropriate and one FEPA closure was imposed. The effects were seasonal, from Spring through to early Autumn.

Classification of bivalve mollusc production areas continued during 1996, under The Food Safety (Live Bivalve Molluscs and Other Shellfish) Regulations 1992 and results showed that 55%, 19%, 22% and 4% were classified either A, A/B Seasonal, B, or C respectively. There are currently 16 approved depuration systems; six small scale oyster purification plants; three 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, 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 5 pence per shell respectively; and mussels £750-£1100 per tonne.

Mussel, oyster and scallop cultivation in Scotland operates on a relatively small scale but the industry continues to develop, notably in areas such as husbandry, mechanisation and marketing. There has been a healthy demand and buoyant market for all species during 1996 and it is predicted that production will increase steadily over the next few years as improved efficiency, by reducing production costs and price at first sale, allows markets to expand.

**David Fraser**  
May 97

**TABLE 1: Registered and active companies 1985-96**

	Number of companies											
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Registered	98	144	168	174	223	290	310	321	332	348	353	360
Active	98	141	162	169	181	229	228	214	205	196	190	187

**TABLE 2: Active and producing farm sites and manpower by Region, 1996**

	Highland	Orkney	Shetland	Strathclyde	Western Isles	Total
<i>Sites</i>						
Active	119	12	16	114	32	293
Producing	59	4	2	86	6	157
<i>Manpower</i>						
Full time	32	6	2	51	8	99
Part time	97	13	12	108	16	246

Active = growing and placing on the market in 1996 ; Producing = placing on the market in 1996

**Figure 1 : Active Shellfish Farm Sites by Region 1996**

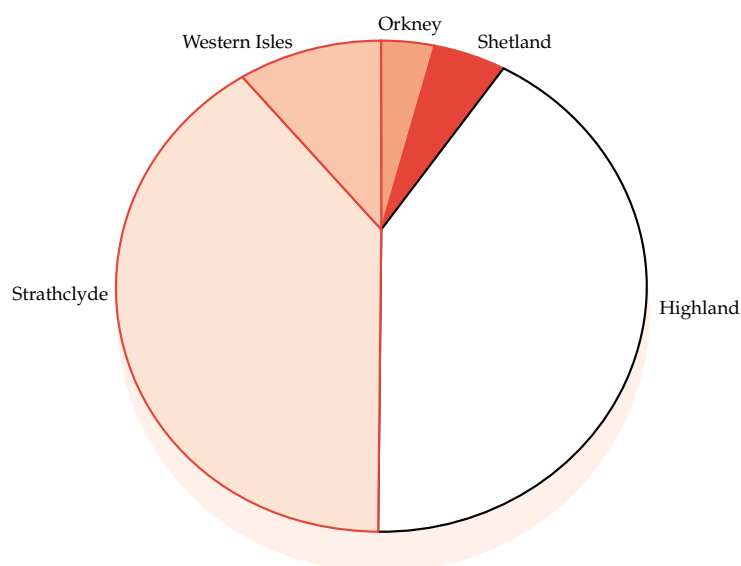


TABLE 3 : Number of companies by Region and by species, 1996

a) Production for the table

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	13	0	0	30	1	44
Native oyster	3	1	0	4	1	9
Scallop	7	0	0	7	0	14
Queen	5	1	0	1	0	7
Mussel	10	1	2	16	5	34
<b>Total</b>	<b>38</b>	<b>3</b>	<b>2</b>	<b>58</b>	<b>7</b>	<b>108</b>

b) Production for on-growing to other producers

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	0	1	0	6	0	7
Native oyster	0	2	0	1	0	3
Scallop	8	1	0	1	0	10
Queen	1	1	0	0	0	2
Mussel	0	0	0	0	1	1
<b>Total</b>	<b>9</b>	<b>5</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>23</b>

c) No production but actively on-growing

	Region					Total
	Highland	Orkney	Shetland	Strathclyde	Western Isles	
Pacific oyster	4	6	2	6	1	19
Native oyster	1	3	1	2	1	8
Scallop	17	2	0	9	3	31
Queen	7	0	0	4	2	13
Mussel	18	2	7	7	6	40
<b>Total</b>	<b>47</b>	<b>13</b>	<b>10</b>	<b>28</b>	<b>13</b>	<b>111</b>

Note: a company may produce >1 species

TABLE 4 :Shellfish company production 1986-1996

For the table	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	% increase 94-95
	Pacific oyster (000s)	507	1,109	1,580	1,234	1,441	2,300	2,560	2,594	2,104	1,973	2781
Native oyster (000s)	1	436	21	15	1	122	194	119	142	182	96	-47
Scallop (000s)	75	105	66	45	68	316	489	176	199	300	302	1
Queen (000s)	283	806	415	2,282	1,310	1,529	1,538	788	956	1,147	1271	11
Mussel (tonnes)	262	271	384	346	462	1,024	923	708	716	882	1072	22
For on-growing	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
Pacific oyster (000s)	1,165	1,815	2,830	2,220	2,035	2,310	1,217	1,849	1,313	2,165	3580	
Native oyster (000s)	0	320	413	583	40	1,080	202	207	33	112	23	
Scallop (000s)	840	580	217	5,455	5,093	1,743	1,046	636	198	896	822	
Queen (000s)	430	210	1,093	682	3,762	312	1,128	2,620	746	3,415	2657	
Mussel (tonnes)	0	1	3	3	1	30	73	131	12	<1	30	

Figure 2 : Company production 1986 – 1996

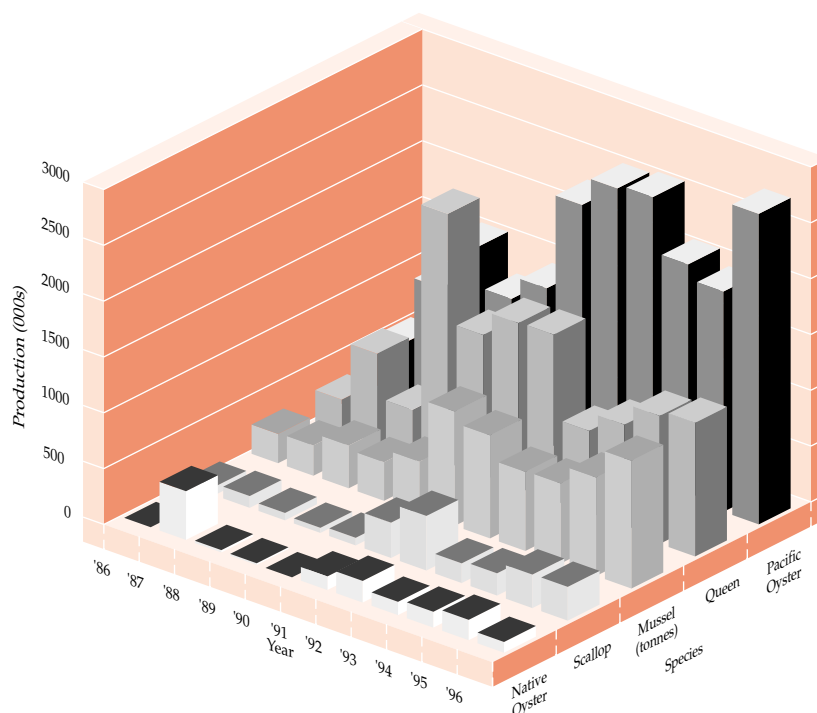


TABLE 5A : Scottish shellfish companies - survey data 1995. Regional production summary

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	80	22	60	46	163	20		2	226		145	3415	117	846
Orkney	14	6	12	4	44	1804	<1		12		2		20	
Shetland	10		13	4	2				21	<1				
Strathclyde	69	44	71	27	1764	341	181	110	509	<1	1000		163	50
Western Isles	17	4	6	8	<1		<1		114		<1			
All Scotland	190	76	162	89	1973	2165	182	112	882	<1	1147	3415	300	896
Weight (tonnes)					158		15		882		46		36	

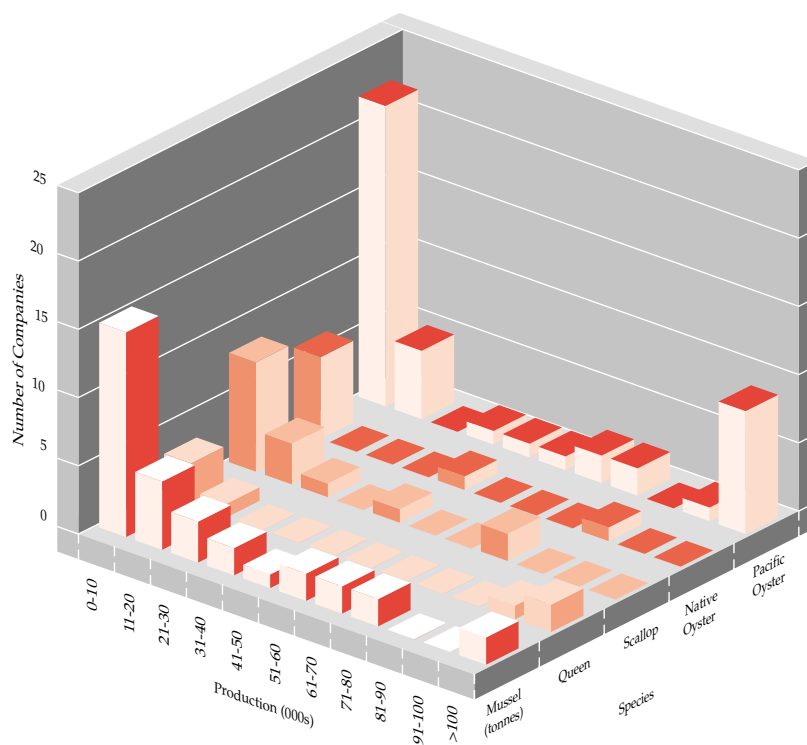
NB: These reports only list those Regions from which annual survey returns were received.

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 1996. 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	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 3 : Company production by species 1996**



**Table 6: Company production by species 1996**

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)	22	5	0	1	1	1	2	2	0	1	9	44
Native oyster (000's)	6	0	0	0	1	0	0	0	1	0	0	8
Scallop (000's)	8	3	1	0	1	0	0	2	0	0	0	15
Queen (000's)	3	1	0	0	0	0	0	0	0	1	2	7
Mussel (tonnes)	15	5	3	2	1	2	2	2	0	0	2	34
												108