1982

SALMON AND TROUT FARMING IN SCOTLAND
REPORT OF DAFS ANNUAL SURVEY 1982

Responses to a Departmental questionnaire from all known Scottish salmon and rainbow trout farming companies have been summarised in the following paragraphs and attached figures and tables 1-4. The co-operation of the fish farming industry in completing these questionnaires is welcome.

Rainbow Trout

Returns were received from 65 companies operating 85 farm sites predominantly in the Central and Southern areas of Scotland. Trout production, after increasing from 1,279 tonnes in 1979 to 1,717 tonnes in 1980 and 2,261 tonnes in 1981, fell to 1,918 tonnes in 1982 (85% of the previous year's figure). The tonnage used for restocking (132 tonnes) represented an increase of some 30% on the 1981 figure.

Some 20.6 million ova were laid down for hatching in 1982; 14.1 million from UK farms and 7.5 million from foreign sources. The Scottish industry itself produced 20.1 million eggs some of which were sold outside Scotland and some of which were destroyed for lack of sales

Production (tonnage) in 1983 seems unlikely to change much.

The recorded buying in of 5.1 million fry/fingerlings represented a fall by 12%. Nevertheless trade in fry/fingerlings was significant. The 0.9 million difference between those sold and bought suggests that Scottish farmers are still net suppliers.

Comparison by system of production between 1981 and 1982 showed that sea-water cage production increased by 18% (to 132.75 tonnes), freshwater cage production remained at about the same level (727.75 tonnes), tank production was down by 33% (404 tonnes) and pond production by 20% (653 tonnes).

The returns show that 44 farms actively involved in producing table trout produced less than 25 tonnes per annum each. Enquiry suggests that much of this production was sold to local retailers at prices significantly above nationally quoted figures.

Total manpower employed in Scottish trout farming was 194 (a fall of 8) of whom 73 were part-time staff.

Atlantic Salmon

Returns were received from 41 companies operating 37 freshwater and 46 sea sites. Atlantic salmon production has increased from 598 tonnes in 1980 to 1,133 tonnes in 1981 to 2,152 tonnes in 1982. Of the 1982 production 595 tonnes were grilse and 1,557 tonnes were salmon. This indicates a higher percentage (by weight) were grilse than in previous years. The calculations in table 4 indicate a much higher percentage of grilse (by number) than before. If the survival of the 1981 class of smolts is the same as for previous years (ie 52%) then the big proportion of fish grilsing in 1982 will mean fewer salmon in 1983. Calculation indicates there will be 1286 tonnes in 1983 based on an overall 52% survival. Such a survival rate compares badly with over 70% in the Norwegian salmon industry.

The 1982 questionnaire requested information on the mean grilse weight at each site. The distribution of mean weights at 27 sites is shown in figure 1 and their overall weighted mean was 1.7 kg much higher than the estimated 1.3 kg of the two previous years. The reasons for the apparent increase in mean weight and probable greater grilse percentage may involve several factors of which both improved husbandry and feed formulations are two.

Smolt production increased by 10% over the previous year, the increase being made up mostly of S2's. This modest increase suggests that the production of market sized fish will show a similar modest growth over the period 1983-84.

Approximately one-third of the smolts were for sale to third parties, the remainder bring produced for on-growing within the producing company.

The number of ova laid down (10.8 million) was some 27% more than 1982 which suggests that further increases in future smolt and salmon production may be expected. The origins of the ova show that almost all the increase in numbers were from farmed Scottish sources. In 1981 8.49 million ova laid down produced 887,000 S1 smolts in 1982 and should give approximately an equal number of S2 smolts in 1983. These S2 smolts in 1983. These S2 smolts and the S1's from the 1982 ova should give an estimated 1.97 million smolts in 1983.

Total manpower employed in Scottish salmon farming was 297 of whom 65 were part-time.

DAFS
June 1983

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TABLE 1

Annual return (1982) of Production from Scottish Rainbow Trout Farm Sites

Production (tonnes)			Nos Fry/Fingerlings ('000)		Nos and sources of ova ('000s)				Manpower employed		
					Sources of ova for hatching						
Table	Restocking	Total	Bought	Sold	UK	Foreign	Total	Scottish Ova Production	Full Time	Part Time	Total
1786	132	1918	5166	6011	14174	7500	21,674	20,127	121	73	194

TABLE 2

Annual Return (1982) of Production from Scottish Trout Farm Sites:
Analyses by site system and scale of production

Production (tonnes) / System	0	< 10	10–25	25–50	51–100	> 100	Totals No of sites	Tonnes	% Contribution of each system to total production
Ponds	4	5	8	3	3	1	24	653.5	34
Tanks	14	11	6	2	3	0	36	404.05	21
F W Cages	1	6	5	1	3	2	18	727.75	38
S W Cages	2	0	3	2	0	0	7	132.75	7
	21*	22	22	8	9	3	85	1918.05	

* Includes hatcheries producing ova, fry and fingerlings and others which have produced in previous years and which were staffed but did not record production in 1982.

TABLE 3

Annual Return (1982) of Production from Atlantic Salmon Farms

Production (tonnes)			Nos of Smolts ('000)						Nos and sources of ova ('000)				Manpower Employed		
Grilse	Salmon	Total	Placed in seawater			Sold			Scottish Farmed	Scottish Wild	Foreign	Total	Full Time	Part Time	Total
			S1	S2	Total	S1	S2	Total							
595	1557	2152	887	799	1686	419	138	557	6851	2456	1503	10,810	232	65	297

TABLE 4

1979 Smolt intake

1979 Numbers of smolts	=	834,000
1980 Assume that 20% of 1980 tonnage of 598 tonnes were grilse at 1.3 kg/fish	=	
Numbers of grilse were 100,000 - 1.3 =	=	92,308
1981 Numbers of salmon harvested from 923 tonnes at 2.65 kg/fish	=	348,302
Numbers of fish recovered	=	440,610
% recovery	=	52.8
% grilse in total number recovered	=	20.0

1980 Smolt intake

1980 Numbers of smolts	=	1,418,000
1981 Numbers of grilse from 210 tonnes at 1.3 kg/fish	=	161,538
1982 Numbers of salmon from 1,558 tonnes at 2.75 kg/fish	=	566,545
Numbers of fish recovered	=	728,083
% recovery	=	51.3
% grilse	=	22.2

1981 Smolt intake

1981 Numbers of smolts	=	1,539,000
1982 Numbers of grilse from 595 tonnes at 1.70 kg	=	349,139
1983 Numbers of salmon assuming a 52% recovery = 800,280 - 349,139	=	451,141
1983 tonnage at 2.85 kg/fish = 1,286		
On the foregoing calculation, the grilse %	=	43.6

For each 1% more or less fish than the assumed 52% recovered another 15,390 salmon more or less will now be harvested in 1983. This represents 43.9 tonnes at 2.85 kg/fish. If the greater grilse proportion in 1982 represented greater survival then for each 1% increase another 43.9 tonnes should be added to the 1983 estimate of tonnage.

1982 Smolt intake

1982 Numbers of smolts	=	1,686,000
1983 Numbers of grilse assuming 652 tonnes produced ie		
$595 \times \frac{1,686}{1,539}$ and with a mean weight of 1.70 kg/fish	=	383,529
1984 Numbers of salmon assuming a 52% recovery = 876,720 - 383,529	=	493,191
1984 tonnage at 2.95 kg/fish = 1,455		
These calculations assume 43.7% grilse		

Fig. 1 Distribution of mean grilse weights at 27 sea sites