

LIBRARY

R1/6

CM

15 CR
15 CR 79

IN CONFIDENCE NOT TO BE QUOTED WITHOUT REFERENCE TO THE LABORATORY

CRUISE REPORT
FRV "CLUPEA"
DEC 4-20 1979

- Objectives:
1. To carry out a pre-recruitment demersal fish survey off the west coast of Scotland.
 2. To survey the stocks of spurdogs to the west and north of Scotland.
 3. To tag spurdogs and collect relevant data on spurdogs.

Scientific staff and ships personnel joined FRV "Clupea" at Troon on 4 December 1979. Work commenced in the Clyde area on 5 December and continued till the vessel docked at Stornoway for the week-end 8-9 December. From 10-14 December "Clupea" worked in the North Minch and North Coast areas, the week-end 15-16 December being spent at Kirkwall. Hurricane winds (Force 14) prevented work on 17 December but the relatively sheltered area east of Orkney was worked on 18 and 19 December. "Clupea" returned to Aberdeen on 20 December 1979.

Pre-recruit demersal fish survey.

10 trawl hauls using a 30' bottom trawl with 70mm cod-end and small mesh cover were made extending from the Clyde through the North Minch. Small whittings and spurdogs predominated in most catches, one large haul of juvenile haddock was made off Tolsta Head. Few cod, saithe or flatfish were caught.

Spurdog survey

1. Trawling. In addition to the above a further 11 hauls covering the North Minch, North Coast and East Orkney were made. In later hauls the small mesh cover was removed as relatively few spurdogs had been present in the cover and the cover itself delayed the release of spurdogs in a suitable condition for tagging from the cod-end. Storm force winds prevented "Clupea" from continuing the survey to the Sulisker area.
2. Long lines with clip-on-snoods were shot on 3 occasions - twice in the North Minch and once off the North Coast. A catch rate of 1 dogfish per 6.4 hooks was made, the length composition of dogfish was similar to that taken by trawl in the same area. No preference for the type of bait used ie salt mackerel and fresh squid was observed.
3. Distribution. Catches of spurdogs varied by size and by sex composition according to areas fished:-

Area	Number of hauls	Catch rate (no/hour)	% of catch by length		Sex Ratio (male : female)
			<60 cms	>60 cms	
1. Clyde	2	2	0	100	0:1.00
2. South Minch	5	178	21	79	1:0.16
3. North Minch	6	150	67	23	1:0.50
4. North Coast	3	313	17	83	1:0.36
5. East Orkney	5	41	7	93	1:0.65

Trawl catches of spurdogs in areas 2, 4 and 5 were of a uniform composition. Data for area 3 is distorted due to one large haul of juveniles, taken off Tolsta Head; if this haul is omitted the catch rate for the North Minch drops to 22 per hour with juveniles comprising 26% on average. This catch rate is similar to that of commercial vessels fishing the area at that time. The differences in catch composition were not observed to be related to depth.

In areas 4 and 5 few juveniles were caught, the proportion of larger females (>60 cm) however increased, especially in area 5. In area 2 these larger females were scarce averaging only 6 per haul.

4. Tagging. A total of 809 spurdogs were tagged:-

Area	Number
Minches	578
North Coast	123
East Orkney	108

The length of spurdogs tagged ranged from 41 cms to 86 cms and included both males and females. All fish were double tagged using a Swiftattachment-plastic tag combination and standard Petersen discs, through the bases of the first and second dorsal fins respectively.

In addition 2 tope (*Galeorhinus galeus*) were tagged.

5. Stomach contents. Of 1134 dogfish stomachs examined 433 (33%) were empty. Male and juvenile females to the west of Orkney were feeding predominantly on ctenophores, the larger fish tending more to a diet of fish. East of Orkney where only larger fish were caught 87% of spurdogs had fed on fish and no evidence of ctenophores was observed. One free-swimming juvenile of 25 cms still bearing an internal yolk sac was found to have been feeding on zooplankton.

6. Maturity. Examination of 72 females of >69 cms revealed:-

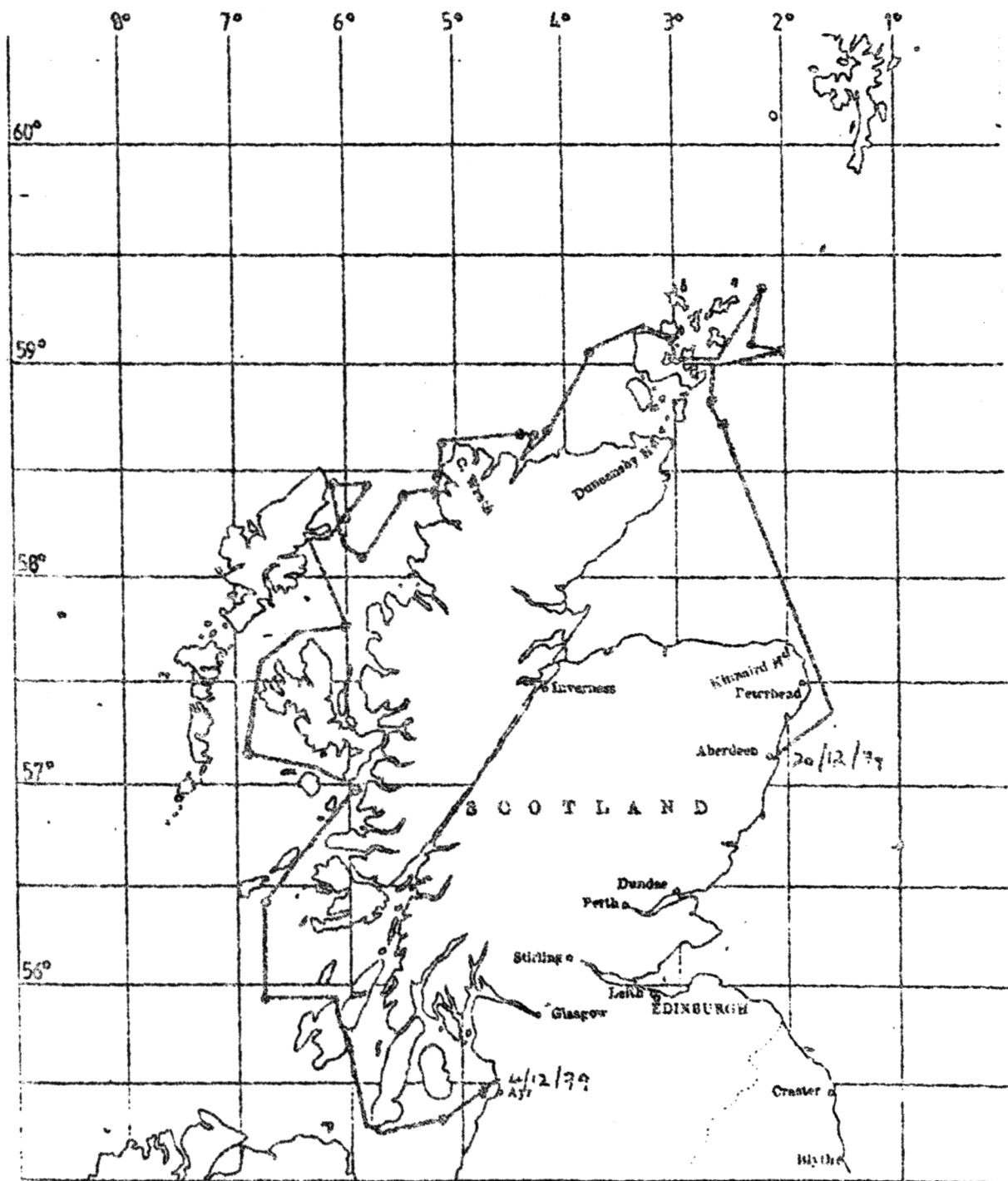
Maturity stage	Number examined	Length Range (cms)	Mean Length (cms)
Immature	14	70-77	-
Maturing (1st year)	11	69-81	73.6
" 2nd "	9	75-83	78.1
Mature--full term embryos	7	} 74-102	93.9
" embryos shed	3		-
" candled embryos	19		-
" half term embryos	3		-

As shown above sampling co-incident with the parturition - re-ovulation phase of the reproductive cycle. The mean length of unborn full-term embryos (no external yolk sac) was 22.2 cm for a mean parent length of 93.9 cms. The male/female ratio for these embryos (39) was 1:0.95. The mean number of "mature ova" not yet ovulated was 9.1 for a mean parent length of 91.9 cms.

7. Mercury content: 51 spurlogs (8 males of 52-72 cms and 43 females of 60-102 cms) from east of Orkney were taken back to the Laboratory for mercury content analysis.

J Gauld
28 January 80

Seen in draft: G Geddes



FRV. Clupea 4/12 — 20/12/79

15CP79