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Charter Vessel MV *Carolisa/Ocean Trust*

Charter Cruise 3501H

REPORT

31 January - 9 February 2002

Sailing: Inverness
Landing: Inverness

Personnel

F Burns (In charge)
D O'Driscoll

Fishing Gear

40 ft sprat trawl

Objectives

To undertake a sprat trawling survey in the Moray Firth area 57°30-58°N and 4-2°W. (From Inverness east to Fraserburgh and north to the Dornoch Firth)

1. To determine the distribution and relative composition of 'sprat shoals' encountered during the survey.

2. An age key is to be collected for sprat and herring.

Narrative

Staff travelled to Inverness on Thursday 31 January to meet the vessels at approximately 1500 hours. The vessels left Inverness at 1730 hours from where they proceeded into the Beauly Firth before heading up under the Kessock Bridge to survey the Inverness and Cromarty Firths. As yet there had been nothing to see on either sounder. Weather disrupted the survey during the evening of 1 February and the vessels were forced to shelter in Invergordon until the following morning. On the morning of 2 February a lull in the wind afforded an opportunity to survey the Cromarty Firth although access was impeded due to oilrigs and other oil related obstacles present in the firth at that time. Yet again neither sounders showed any significant hauls. During the steam across the Moray Firth on the morning of 2 February both vessels spotted scattered marks hard on the bottom just west of Findhorn Bay. The net was shot twice for quarter of a basket of small sprats. By this time the weather had deteriorated once more and the survey had to be abandoned until the morning of 3 February. The vessel then transected east as planned in a zig zag fashion to a distance of 10-12 nm offshore, the transect spacing being approximately 7.5 nm. Throughout the vessels kept a distance of 2.5 nm relative to each other. The most easterly point reached was Rosehearty Bank just west of Fraserburgh. There were reports from fishermen in Macduff that the prawn boats in this vicinity had been marking sprats in amongst their catch, however after investigation this area also yielded nothing. From

4 February the vessels surveyed back in a westerly direction, interlacing between the transects completed on the first easterly run with no more success.

Having completed the survey track along the southern coast with little success the decision was taken on 6 February to survey the Dornoch Firth and the area just above 58°N. During this time no marks of any description were seen on either sounder. Once again weather forced the survey to be abandoned and the vessels were unable to commence until the morning of 8 February. The survey resumed in the inner Moray Firth and once again in the area near to Findhorn Bay marks were seen hard on the bottom. The net was shot three times in this vicinity for one and a half tons of predominantly small sprats. With the charter concluded the vessels headed back towards Inverness and were alongside by 2300 hours on 8 February 2002.

Where possible the survey was carried out during the hours of darkness, however disruption due to weather as well as tidal restrictions in some of the harbours meant that a flexible approach had to be adopted. Although two days of the charter were lost to bad weather the survey area received comprehensive coverage and all objectives were met.

Results

The gear was shot away a total of nine times during the survey with sprat or herring being present in significant numbers in five of these (Hauls 1,2,7,8 and 9). The survey tracks for both vessels as well as the haul positions are displayed on Map 1.

All species caught were identified and measured with total weights being recorded for sprat, and herring and 'others'. Hauls 8 and 9 yielded considerable quantities of Sprat and Herring so in this case a subsample was taken and raised up to give numbers caught as well as the catch weight.

As the duration of the hauls varied numbers caught, as well as catch weights have been raised up to a thirty minute duration in an effort to standardise the data. These data can be found on Tables 1 and 2 together with the relative proportions of Sprat and Herring /number as well as /weight. Maps 2 and 3 show superimposed maps of the survey area where significant numbers of Clupeids were caught together with pie charts detailing relative proportions of Sprat and Herring /weight and /number for the relevant hauls. Length frequencies for both species are presented in Figs 1 to 8.

Discussion

The only definite marks to be seen during the survey were located in the area of the inner Moray Firth immediately north and west of Findhorn Bay. These marks comprised a widespread blanket, which during the day was hard on the bottom and therefore extremely difficult to catch with the pelagic trawl. It did however rise off the bottom and disperse during the night. This dial vertical migration is reflected in the catch rates, with hauls 1,2, and 7 taking place during daylight hours and hauls 8 and 9 taking place at night. The geographical positions of hauls 2, 8 and 9 were virtually identical with haul 8 being a midwater tow whilst hauls 2 and 9 were carried out on the bottom. These were undertaken to see if there was any discernible variation in proportionality between the different layers, which seemed to form up during this vertical migration. It also allowed a comparison to be made between a daylight and night haul on the bottom. There was however very little evidence to show any variation in relative proportionality between species and no evidence at all of any variation in intraspecial length or age structure. All these five hauls provided very similar results, these being that the majority of the Clupeids encountered were juveniles. This we can see from the length frequencies as well as from analysis of the age length keys, which were compiled from otoliths, collected for both species during the charter. These show the overwhelming

majority of fish sampled were one year olds. The gear was shot a total of nine times but in reality fish were only really expected in the five hauls mentioned previously. The remainder of the time there was very little or nothing to be seen on the sounder even at maximum gain setting. This prediction was borne out when the net was shot.

The lack of fish and the complete absence of any mature individuals encountered during the survey were attributed to the survey taking place out of season. The skippers of both vessels as well as the shore advisor agreed that if a sprat survey were to be carried out in the Moray Firth then it should take place in November or December. Historically this was when the fishery took place.

Finlay Burns
15 May 2002

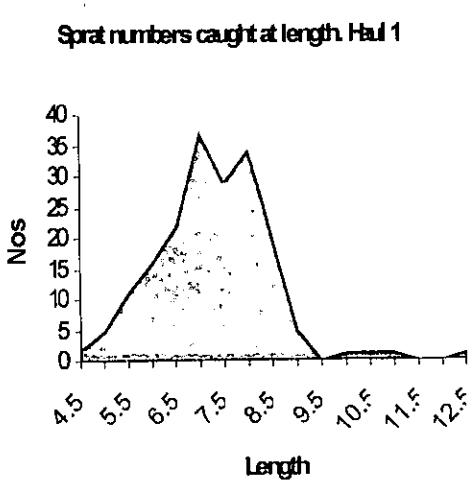
Table 1. Catch weights / 30 minutes of Sprat, Herring and 'Others' for all hauls.

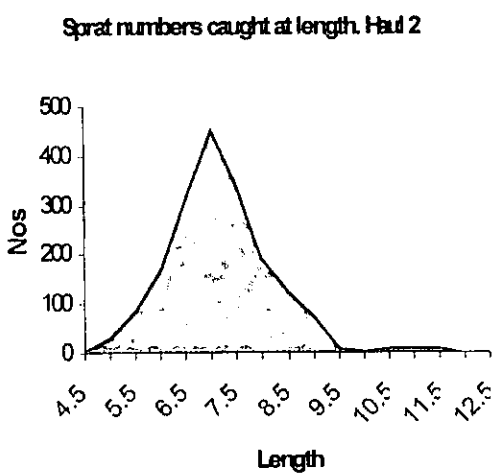
Catch Weights/30mins.										
Haul	Mid.Lat	Mid.Long	Date	Herring wt.(Kg)	Sprat wt.(Kg)	Other wt.(Kg)	Tot.wt(Kg)	%Herring /weight	%Sprat /weight	%Others /weight
1	57°39.46N	3°49.00W	2/2/02	0.02	0.53	0.00	0.55	4.35	95.65	0.00
2	57°39.77N	3°46.25W	2/2/02	0.72	5.30	0.00	6.02	11.95	88.05	0.00
3	57°48.17N	3°20.85W	3/2/02	0.16	0.00	0.00	0.16	100.00	0.00	0.00
4	57°42.78N	2°22.90W	4/2/02	0.00	0.00	0.49	0.49	0.00	0.51	99.49
5	57°47.71N	3°01.75W	6/2/02	0.04	0.00	0.00	0.04	100.00	0.00	0.00
6	57°46.05N	3°37.88W	8/2/02	0.00	0.01	0.09	0.10	0.00	10.00	90.00
7	57°41.79N	3°40.71W	8/2/02	0.20	13.80	0.00	14.00	1.43	98.57	0.00
8	57°39.82N	3°46.47W	8/2/02	25.50	1045.50	0.00	1071.00	2.38	97.62	0.00
9	57°39.44N	3°47.15W	8/2/02	120.99	1044.51	0.00	1165.50	10.38	89.62	0.00

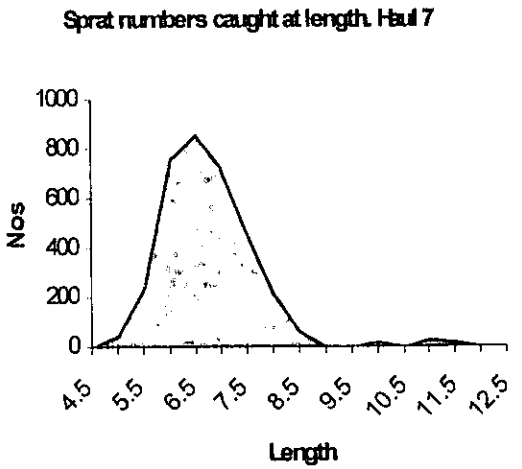
Table 2. Numbers caught / 30 minutes of Sprat and herring for all hauls.

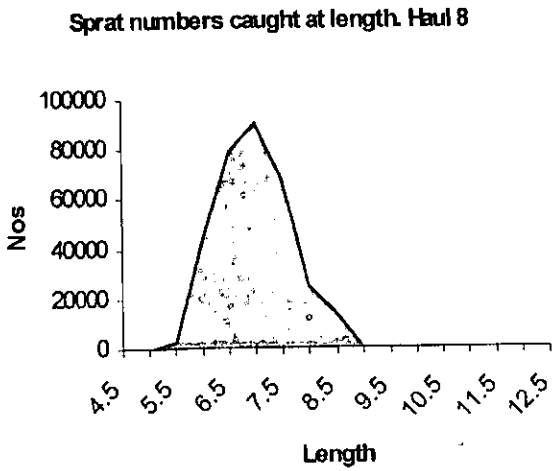
Numbers Caught/30mins.							
Haul	Mid.Lat	Mid.Long	Date	Nos. Herring	Nos. Sprat	%Herring /number	%Sprat /number
1	57°39.46N	3°49.00W	2/2/02	4	222	1.60	98.40
2	57°39.77N	3°46.25W	2/2/02	276	2206	11.12	88.88
3	57°48.17N	3°20.85W	3/2/02	10	0	100.00	0.00
4	57°42.78N	2°22.90W	4/2/02	0	1	0.00	100.00
5	57°47.71N	3°01.75W	6/2/02	2	0	100.00	0.00
6	57°46.05N	3°37.88W	8/2/02	0	4	0.00	100.00
7	57°41.79N	3°40.71W	8/2/02	14	6844	0.20	99.80
8	57°39.82N	3°46.47W	8/2/02	3239	488247	0.66	99.34
9	57°39.44N	3°47.15W	8/2/02	12570	433469	2.82	97.18

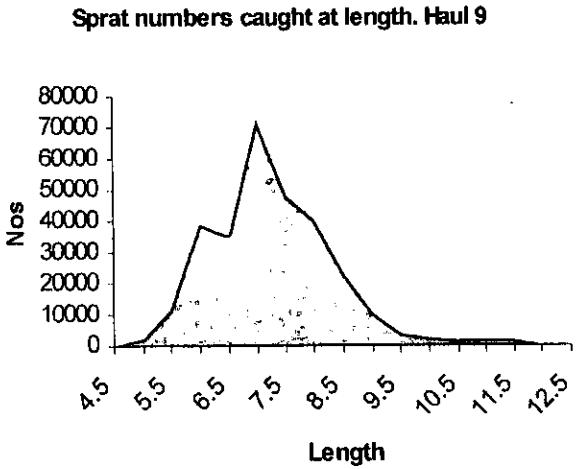
Figs. 1- 5 Length frequencies of Sprats for Hauls 1,2 and 7-9.



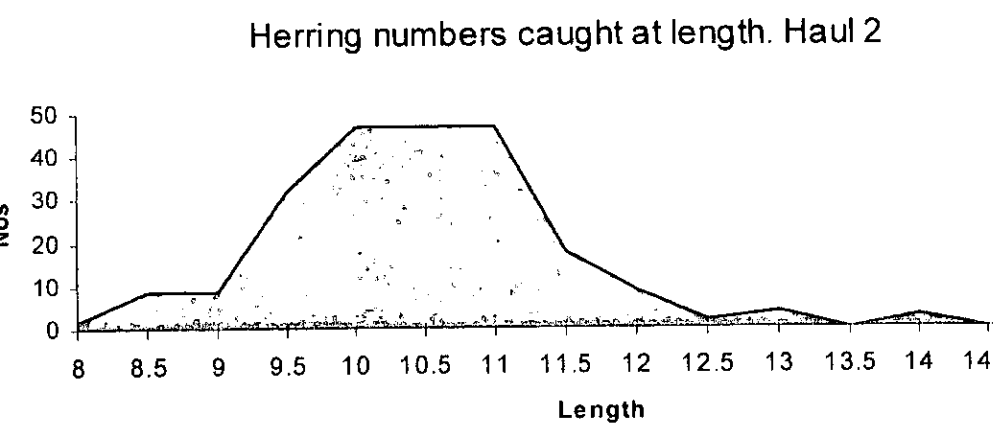


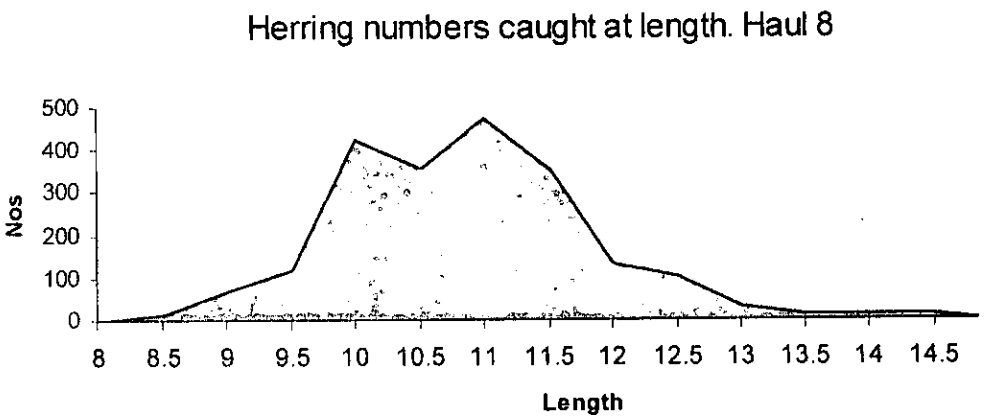






Figs. 6- 8 Length frequencies of Herring for Hauls 2,8 and 9.





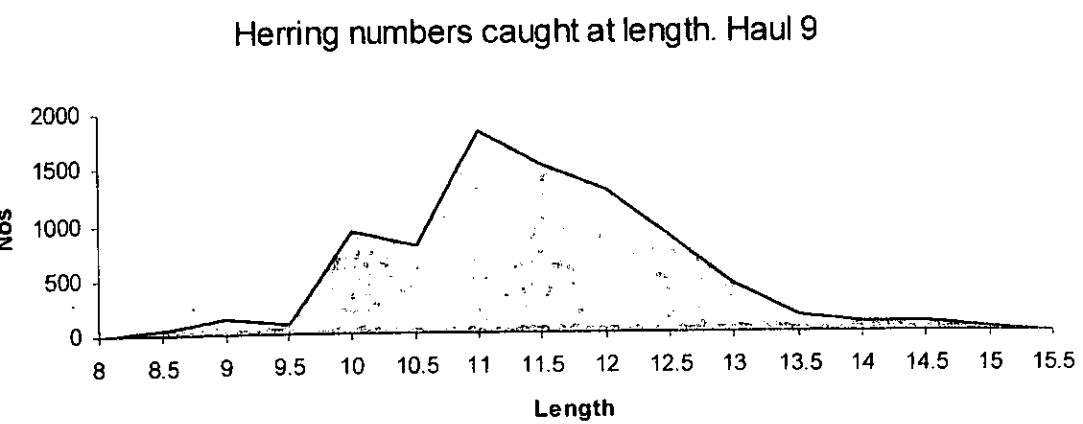
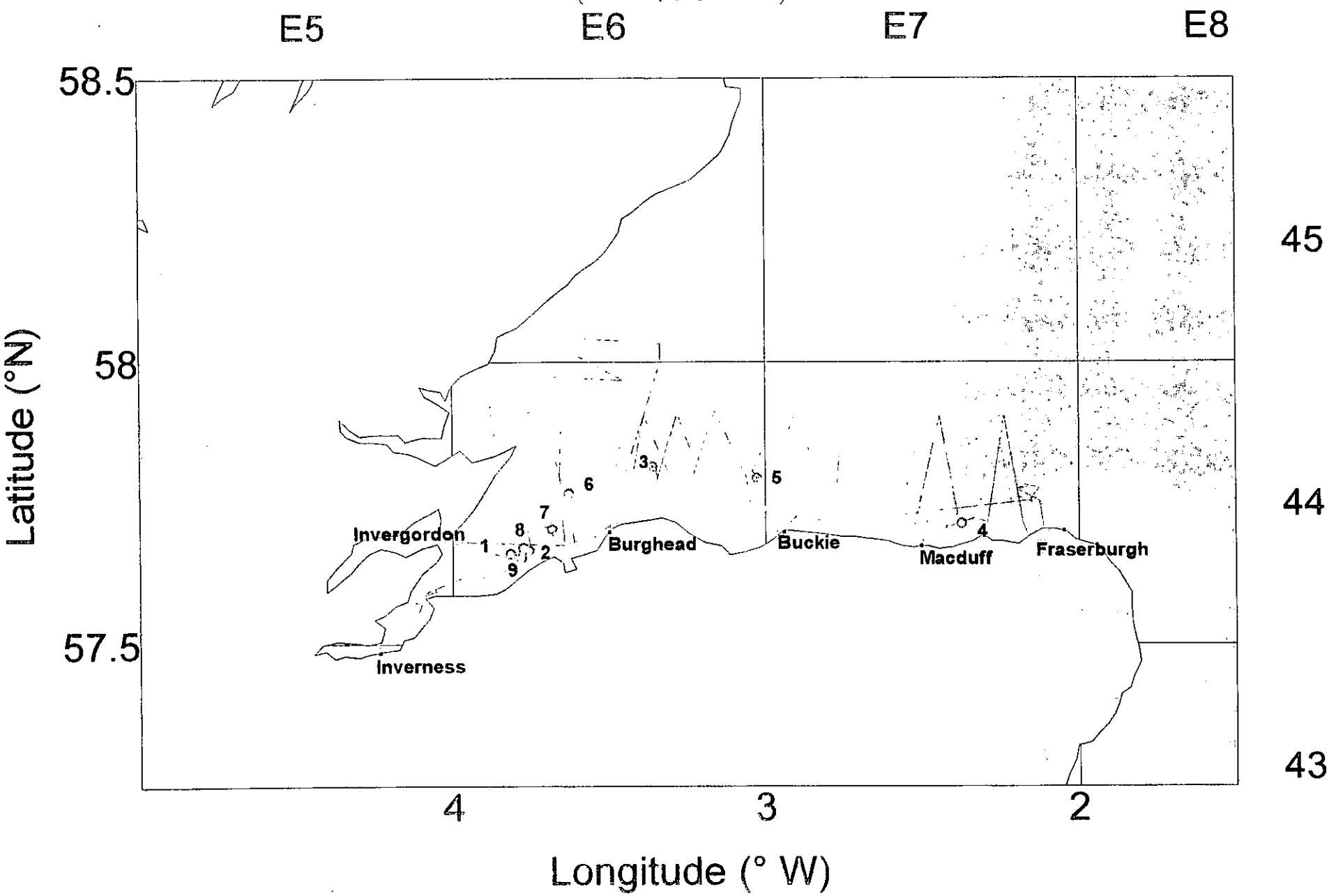
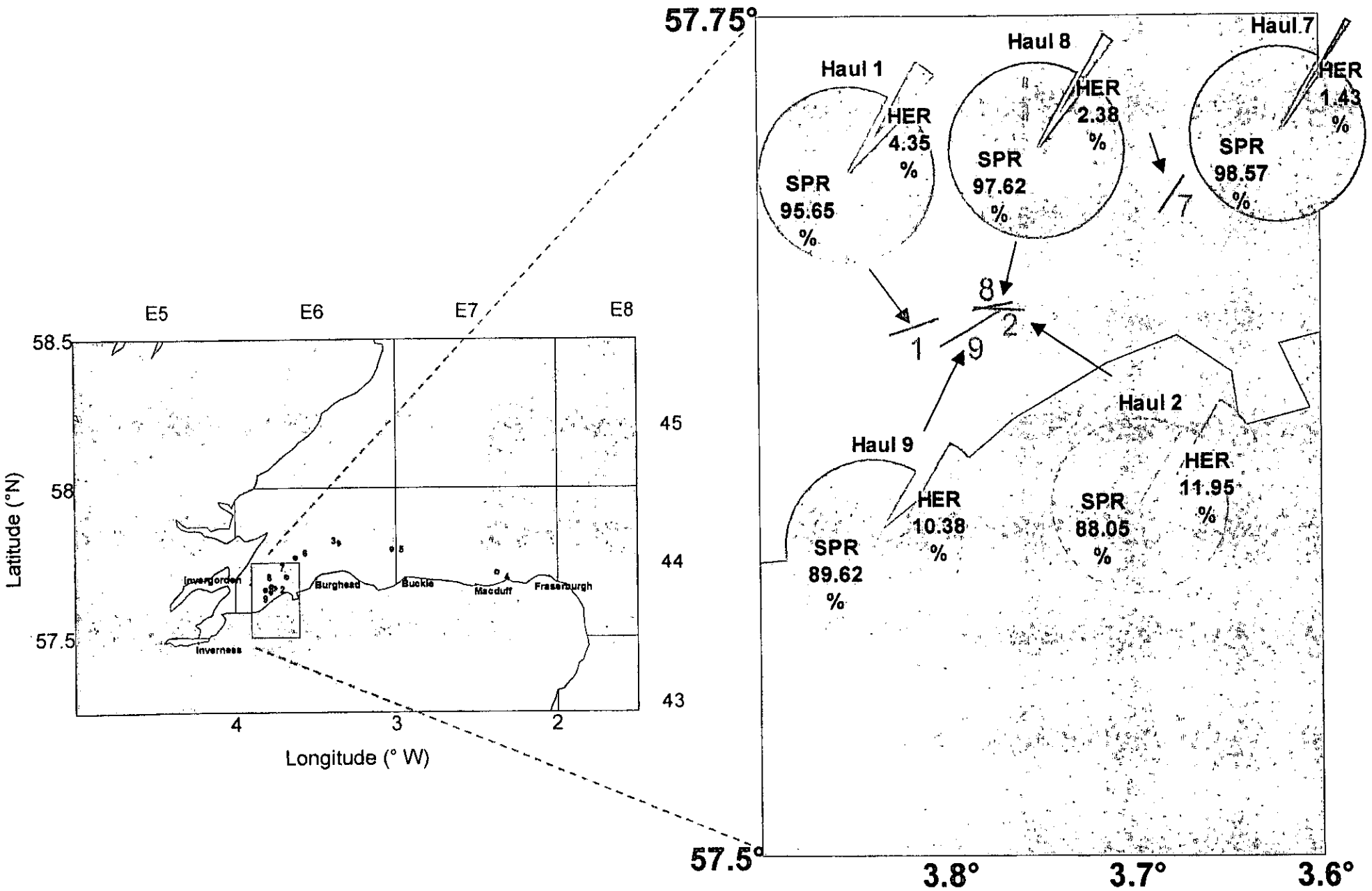


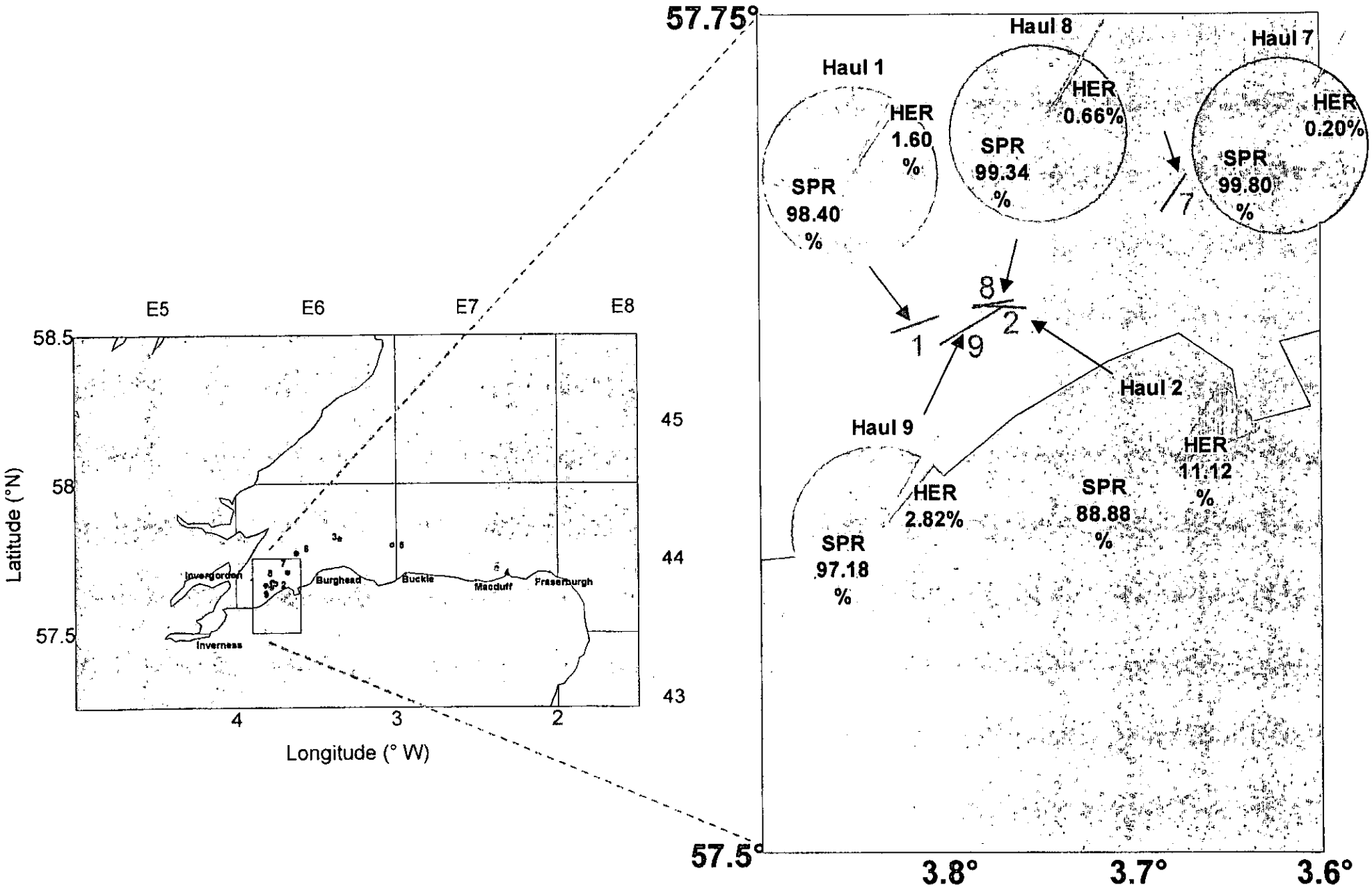
Fig 1. Trawl positions and surveytracks for Charter cruise 3501H.

(, Ocean Trust)





Map.2 Relative Composition of catch / weight of Sprat and herring.



Map.3 Relative Composition of catch / numbers of Sprat and herring.