



Agri-Food and Biosciences Institute
Agriculture, Food and Environmental Science Division
Fisheries and Aquatic Ecosystems Branch

Cruise Report: CO 1410
Vessel: RV *Corystes*
Date: 5th – 9th April 2010
Area: Irish Sea (north); ICES VIIa
Survey Type: Nephrops Trawl Survey

Personnel:

R Briggs (SIC)	PSO	AFBI	5 – 9 April
P McCorrison	TSO	AFBI	5 – 9 April
J Peel	ASO	AFBI	5 – 9 April
C McKenna	SO	AFBI	5 – 9 April
I McCausland	SO	AFBI	5 – 9 April
F George	SO	AFBI	5 – 9 April

Circulation

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DCSO & CEO

Ship Managers

Fisheries Division

ANIFPO

NIFPO

Comments

Signed Head of Branch

Objectives:

- i. Trawl each station sampled during previous cruises and quantify catches.
- ii. Collect maturity data for female *Nephrops*
- iii. Assess the prevalence of the dinoflagellate parasite *Hematodinium* in *Nephrops* catches.
- iv. Identify and quantify bycatch species associated with *Nephrops* catches.
- v. Collect biological data (length, weight, age, maturity, parasite infection) of cod and haddock
- vi. Examine the feasibility of collecting *Nephrops* length/weight data in order to verify the relationship used in ICES assessments.

Methods:

The fishing gear was the same as that used in earlier cruises and was a custom made 20-fathom *Nephrops* net of nominal mesh size 50mm throughout. Warp was deployed at approximately 3.5 x water depth and towed at 2.5-2.7 knots for 30 minutes. Catch bulk at stations fished during previous surveys (Fig. 1) was quantified by crane scale or by basket weight for smaller catches. Sample baskets of catch were sorted to provide an assessment of species composition. The *Nephrops* in sub-samples of 6-7kg were divided into male and female components and the ovary maturity stage of female animals noted. Carapace length frequency distributions of both male and female *Nephrops* were measured and the prevalence of the parasitic dinoflagellate *Hematodinium* was assessed. The individual weight at length was determined for a sample of 214 male *Nephrops* from station 109. Stratified sampling procedures for bycatch were similar to those used during AFBI IBTS groundfish surveys. Biological data (length, weight, age, maturity and parasite infection) of cod catches were measured and otoliths retained for age determination.

Cruise Narrative:

Sunday 4th April

Forecasts of severe southerly gales for Monday 5 April forced the decision not to sail until the Monday evening.

Monday 5th April

Scientific staff boarded during the evening.

Tuesday 6th April

Following a safety briefing the ship sailed at 08.30 and set course for the western Irish Sea *Nephrops* grounds. After a rather bumpy ride, moderation in the weather allowed work to commence at station **1** at 16.46. This was followed by stations **2** and **35**. The night was spent steaming south to station 207.

Wednesday 7th April

Stations **207, 8, 107,104, 106, 200, 105** and **103** were fished in fine weather conditions. The night was spent dodging on station ready for the next day's work.

Thursday 8th April

Stations **210, 108, 102, 7, 101, 10, 20** and **30** were fished. The weather remained fine. The night was spent steaming slowly towards station 208 ready for the next day's work.

Friday 9th April

The remaining stations **208, 209, 109, 15,** and **17** were completed and with all objectives completed RV *Corystes* set course for Belfast where she docked at 19.00.

Work Done and Preliminary Results:

During this successful cruise all 24 *Nephrops* trawl stations were completed (Figure 1) and 9,403 *Nephrops* were measured. Maturity at length was assessed from 3,363 female animals. Table 1 is a summary of trawl station details and Table 2 shows the mean size; catch rate, proportion of female *Nephrops* and percentage (by number) of animals infected by *Hematodinium*. Infection of *Hematodinium* had a mean level of 2.5% compared with 3.2% in 2009 and 2.3% in 2008. *Nephrops* catches were generally poor, though within the expected range for the April survey. Catches are always higher during the August surveys due mainly to the fuller emergence of female animals in the summer months. Weight at length was measured for 214 male *Nephrops* from station 109 and the results compared with weights generated by the relationship used in ICES assessments (Pope and Thomas, 1955). These results are shown in Figure 2. Bycatch consisted of a wide range of taxa and details of the major species are shown in Table 3. The predominant commercial species was whiting, though these were mainly below the minimum landing size. The otoliths of all 84 cod caught during the survey were removed for age determination. This is the highest cod catch since 2003 and the second highest on record for April *Nephrops* surveys. Length frequency distributions of the major commercial fish species are shown in Figure 3.

Reference:

Pope, J. and Thomas, H. J., 1955. Some biometric observations on *Nephrops norvegicus* (L.). ICES, Doc 1955 paper No. 180 (mimeo).

Acknowledgements:

The scientific staff is congratulated for their productive teamwork during this successful survey. The officers and crew of *RV Corystes* are thanked for their continued support.

Richard Briggs

Sam McBride (seen in draft excluding tables and figures)

Scientist in Charge

Master

9 April 2010

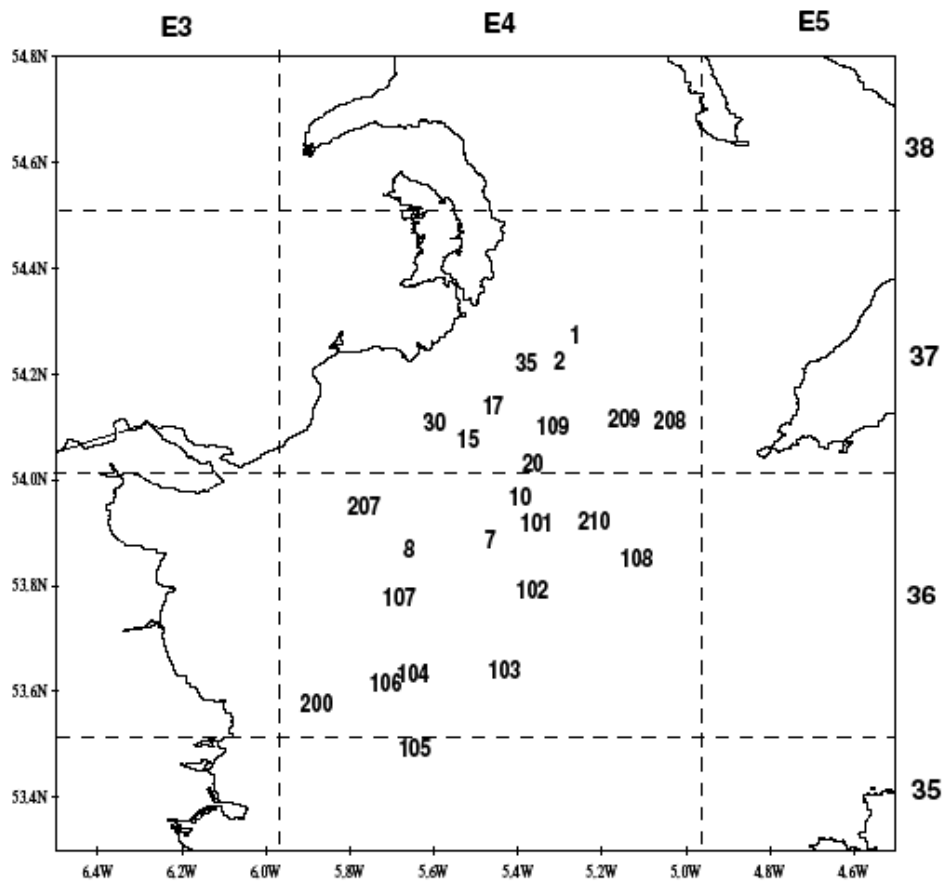


Figure 1: Western Irish Sea Nephrops stations

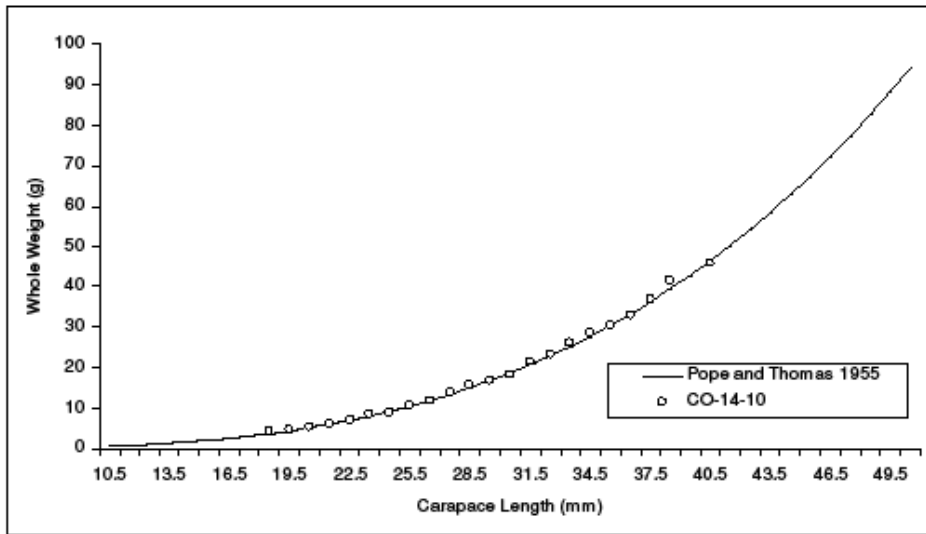


Figure 2: Length weight relationship of 216 male *Nephrops* measured from station 109 on cruise compared with a simulated curve from the relationship used in ICES assessments (Pope and Thomas 1955)

$$W = 0.00032CL^{3.21}$$

Where W = whole weight (g) and CL = carapace length (mm)

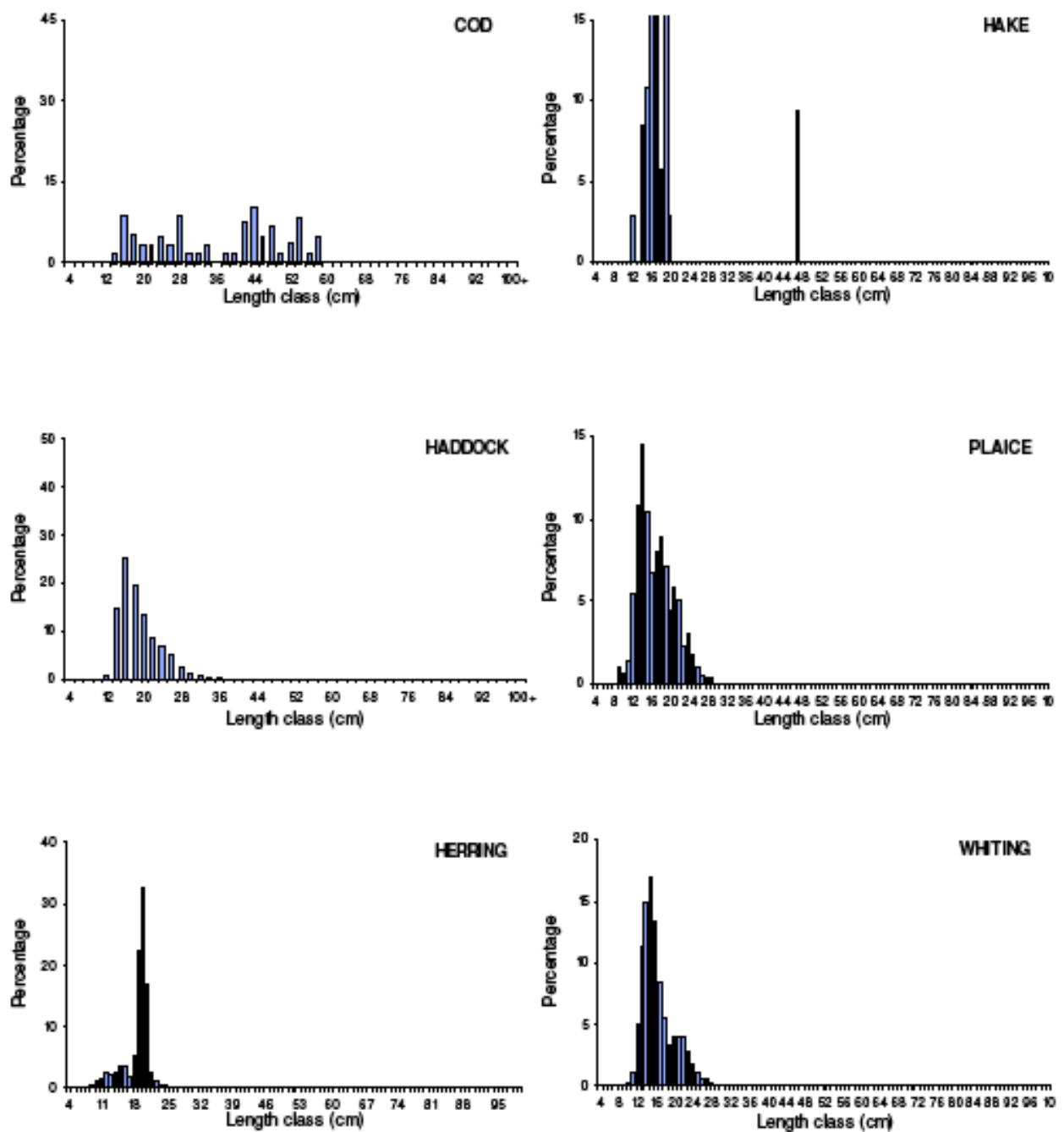


Figure 3: Length frequency of fish for the Western Irish Sea CO14-10.

Table 1: Trawl details CO14-10

Date	Station	Haul	Time shot	Shooting Position		Hauling Position		Mean Depth (m)	Distance towed (nm)	Wind Speed
				Latitude	Longitude	Latitude	Longitude			
6-Apr	1	1	15h.29	54 17.2	5 15.95	54 16	5 15.76	84	1.30	10
6-Apr	2	2	16h.41	54 14.7	5 18.87	54 13.5	5 18.84	66.5	1.20	12
6-Apr	35	3	17h.46	54 13.5	5 22.55	54 12.3	5 23.05	58.5	1.20	10
7-Apr	207	4	06h.05	53 59.2	5 45.03	53 58.1	5 45.33	54	1.30	10
7-Apr	8	5	07h.32	53 52.2	5 39.27	53 50.8	5 39.25	91	1.30	10
7-Apr	107	6	08h.43	53 47.2	5 40.74	53 45.8	5 40.97	88	1.40	14
7-Apr	104	7	10h.19	53 38.5	5 38.7	53 37.2	5 38.9	97	1.30	10
7-Apr	106	8	11h.41	53 38.6	5 43.14	53 37.3	5 43.42	81.5	1.30	8
7-Apr	200	9	13h.12	53 35.5	5 54.15	53 34.4	5 52.85	51.5	1.30	8
7-Apr	105	10	14h.49	53 30.7	5 39.55	53 30	5 37.42	84	1.30	8
7-Apr	103	11	16h.40	53 38.6	5 25.05	53 39.7	5 24.95	97	1.30	8
8-Apr	210	12	06h.05	53 55.2	5 13.43	53 54.3	5 14.75	79.5	1.30	15
8-Apr	108	13	07h.34	53 51.2	5 6.93	53 49.9	5 7.77	70.5	1.30	16
8-Apr	102	14	08h.26	53 47.2	5 22.22	53 48.6	5 22.07	91	1.30	20
8-Apr	7	15	10h.53	53 52.2	5 29.29	53 53.5	5 27.89	101	1.30	14
8-Apr	101	16	12h.25	53 54.6	5 21.35	53 55.9	5 21.45	117	1.30	10
8-Apr	10	17	13h.31	53 57.6	5 23.85	53 58.9	5 23.69	97	1.30	10
8-Apr	20	18	14h.36	54 1.44	5 21.93	54 2.49	5 21.85	95	1.00	10
8-Apr	30	19	16h.24	54 6.09	5 36.03	54 7.29	5 35.21	51	1.30	10
9-Apr	208	20	06h.04	54 7.84	5 1.22	54 6.87	5 2.25	83.5	1.30	10
9-Apr	209	21	07h.26	54 7.6	5 9.52	54 6.45	5 9.55	125	1.30	10
9-Apr	109	22	08h.58	54 7.36	5 19.12	54 6.08	5 18.77	104.5	1.30	7
9-Apr	15	23	10h.39	54 4.75	5 31.15	54 6.07	5 30.77	72	1.30	8
9-Apr	17	24	11h.44	54 7.89	5 27.59	54 9.15	5 27.36	62.5	1.30	5

Table 2: Details of *Nephrops* catches during survey (CO/14/10)

TOW	1	2	3	4	5	6	7	8	9	10	11	12
STATION	1	2	35	207	8	107	104	106	200	105	103	210
MALE CL	26.2	30.4	30.9	26.0	29.9	24.5	25.5	25.4	0.0	31.0	27.7	26.6
FEMALE CL	22.2	23.1	24.5	23.4	23.1	22.2	22.3	22.3	0.0	26.1	22.4	22.0
No per Nm	159	100	310	479	4342	8672	851	1015	0	863	2856	484
kg per Nm	1.9	2.0	7.0	6.0	49.8	83.5	9.9	12.7	0.0	20.8	42.8	6.2
% female	41.5	22.6	16.1	51.7	43.3	45.0	38.0	33.3	0.0	10.5	25.8	28.0
% Hem Males	7.7	1.0	1.3	3.8	1.6	1.1	3.3	2.9	0.0	1.1	3.6	1.9
% Hem Females	8.4	21.4	8.2	1.2	2.5	0.7	3.9	6.5	0.0	6.3	4.8	6.3
% Hem Overall	8.0	5.6	2.4	2.4	2.0	0.9	3.5	4.1	0.0	1.6	3.9	3.1

 small catch

TOW	13	14	15	16	17	18	19	20	21	22	23	24
STATION	108	102	7	101	20	30	208	209	209	109	15	15
MALE CL	30.6	24.0	26.1	26.7	25.9	24.4	24.5	26.9	29.3	24.3	26.5	26.5
FEMALE CL	26.0	22.2	22.9	22.6	22.3	20.6	24.5	22.9	24.0	22.4	23.8	23.8
No per Nm	65	4607	4128	4429	743	3770	51	4556	1824	4707	44	44
kg per Nm	1.6	48.6	49.0	57.1	8.5	38.3	0.7	61.1	33.0	44.7	0.5	0.5
% female	19.3	40.1	41.4	35.5	37.5	37.4	42.4	29.1	18.1	50.1	36.2	36.2
% Hem. Males	0.0	1.9	3.2	1.4	1.8	1.3	2.6	1.5	0.9	4.5	2.7	2.7
% Hem. Females	0.0	1.2	1.2	3.1	3.5	2.7	0.0	4.3	2.7	3.1	0.0	0.0
% Hem. Overall	0.0	1.7	2.4	2.0	2.5	1.8	1.5	2.3	1.2	3.8	1.7	1.7

Table 3: Summary of catches by station (kg)

Stn	GADOIDS					PELAGIC		FLATFISH				ELASMOBRANCHS		INVERTEBRATES		
	COD	HAD	HKE	WHG	OTHER GADOIDS	HER	OTHER PELAGIC	DAB	PLE	OTHER FLATS	OTHER TELEOSTS	SKATES + RAYS	SHARKS+DOG FISH	NEP	CEPHALOPODS	OTHER INVERTS
1	0.086	5.2	0.0	27.4	5.8	10.1		0.0	0.4	0.5	0.5		0.8	2.4		12.0
2	1.368	1.4		27.9	8.4	9.3	0.0	0.2	0.3	0.9	1.1			2.5	0.0	13.9
7	0.268	1.6	2.3	48.3	5.3	0.2		0.2		0.6	1.9		3.9	65.2	0.1	326.7
8	5.46	16.5	0.1	22.5	15.5	15.5		0.8		1.7	15.0	0.4	9.5	67.7		270.8
10	1.63	5.7		83.3	26.7	0.5	1.0			2.5	33.8		3.3	11.5	1.2	71.8
15	7.6	12.3	0.2	35.1	7.3	3.9	0.1	6.0	0.4	1.8	17.2		0.3	0.7	0.2	2.3
17	8.25	20.7		70.9	10.9	5.7		7.5	1.2	3.3	16.0			0.3		0.9
20	1.75	4.8		88.8	19.6	19.6		0.3		3.3	11.1		2.8	52.1	0.0	208.5
30	3.135	15.5		128.6		8.3	0.1	50.9	2.6	6.9	29.6		0.6	0.9	0.8	5.7
35	2.164	1.5	0.2	18.9	6.6	5.8	0.0	0.6	0.9	1.7	4.2			8.5	0.2	36.3
101	2.94	3.3		40.1	5.2	0.4	0.1	0.5	0.7	0.9	9.3		14.1	76.5	0.2	460.8
102	2.61	9.6		185.6	3.7	3.7		0.5	0.7	1.1	1.4		16.4	63.1		380.5
103	1.066	0.8		31.1	4.2	4.2	0.0	0.8	0.5	0.5	4.2		128.9	55.6		223.3
104	3.4	18.1		87.3	4.4	2.4		0.6	1.0	0.7	25.4		109.8	13.1	0.1	66.0
105	6.37	207.6		59.6	13.2	1.4		8.1	124.7	9.4	44.6	5.8	115.5	27.1	3.0	113.0
106	0.514	19.8		99.9	22.5	89.7		2.3	1.4	2.0	46.0		18.5	16.5	0.1	99.2
107	4.12	23.9		82.2	20.1	1.1		0.4	0.6	3.1	27.6		35.0	116.9	0.3	467.8
108	4.08	44.9		44.2	27.6	0.5		4.4	5.3	6.6	24.7	8.9	114.7	2.2	4.7	10.2
109	1.29	10.9		187.9	53.7	6.1			0.5	3.3	5.0	0.4	3.4	58.6	0.5	353.2
200	1.505	51.0		56.7	2.9	209.7		0.7	60.1	3.8	12.6		44.5			2.0
207	1.625	7.2	0.5	33.8	3.6	7.6	0.1	28.2	9.7	3.2	37.4			8.0		41.7
208	3.96	31.9		57.7	28.7	1.1		1.4	3.0	6.0	23.4	0.6	20.5	81.8	0.8	410.1
209	1.36			17.1	15.8	0.1	0.1	0.1		0.9		0.5		43.0		259.1
210	1.08	12.4		47.3	10.9	1.2		0.5	0.9	2.8	18.6		68.7	8.2	0.6	33.6