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FRV Clupea

Cruise 1200C

### REPORT

17 August - 1 September 2000

### Personnel

Ian Tuck

(In charge)

Charlie Shand Adrian Weetman

Hector Lizarraga

(17-24 August) (Student visitor, University of Aberdeen)

Dave Bova

(24 August - 1 September)

## **Objectives**

• To obtain estimates of distribution and abundance of *Nephrops* in the Firth of Forth and Moray Firth using underwater cameras.

To collect sediment samples at each station.

• To use trawl caught samples of *Nephrops* to examine biological features at different sites throughout the survey areas.

The TV survey will also be used to collect data on other potential commercial species.

Make video observations of crab and lobster habitat using the drop frame.

Estimated Days per Project: 16 Days MF01T

## **Narrative**

Clupea sailed from Fraserburgh at 1230 hours on Thursday 17 August 2000 and steamed for the Firth of Forth. TV survey work commenced at 0800 hours on 18 August 2000 in the outer Firth, working towards the west. The initial survey consisted of 39 stations, which were completed by lunch on 21 August 2000. An additional 15 stations were then determined (allocated to strata on the basis of the results of the first survey), and these were completed by the evening of 22 August 2000. At each TV station, a sediment sample was collected for granulometric analysis. In addition to the TV stations, three trawls were undertaken. On the morning of 23 August 2000, eight TV transects were carried out over the lobster grounds off Fife Ness with the drop frame system. Clupea left the Firth of Forth area at 1300 hours on 23 August 2000, and headed for Fraserburgh for the half landing.

Work recommenced in the Moray Firth on 25 August 2000. The 35 stations of the initial survey were completed during 29 August 2000, and 15 additional stations were determined. Three trawls were undertaken, and sediment samples were collected at each TV station. Thirteen of these additional stations were completed by 1300 hours on 31 August 2000 this then meant that it was no longer possible to carry out TV operations. *Clupea* therefore returned to Fraserburgh, and was offloaded on the following day.

# Results

Preliminary estimates of mean *Nephrops* burrow density for each station are shown in Table 1. The distribution and comparative densities are shown on the charts.

Final analysis of the video tapes will be carried out within the laboratory.

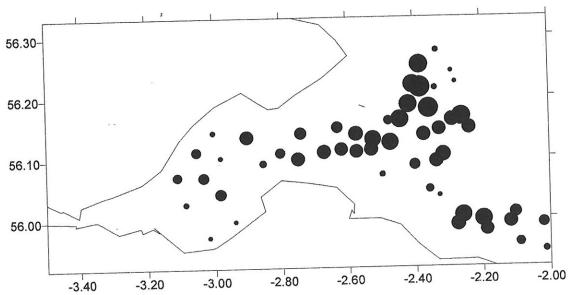
Ian Tuck 21 September 2000

Seen in draft: A Simpson, OIC

 Table 1. Preliminary Nephrops density for TV survey, 2000.

Station	Firth of Forth					Moray Firth			
801   56.252   -2.384   1.1016   701   57.788   -2.017   0	Station	Lat	Long			Station	Lat	Long	Burrow density (m <sup>-2</sup> )
802   56.241   -2.289   0   702   57.806   -1.879   0   0.3005   803   56.215   -2.384   1.322   703   57.833   -2   0.3005   804   56.18   -2.358   1.2342   704   57.829   -2.119   0.3007   805   56.138   -2.374   0.7713   705   57.893   -2.141   0.1005   807   56.148   -2.238   0.8054   706   57.923   -1.989   0.1095   807   56.148   -2.238   0.7558   707   57.946   -2.208   0.4031   808   56.104   -2.316   0.8601   708   57.852   -2.269   0.2945   809   56.048   -2.357   0.2941   709   57.821   -2.371   0.1955   810   56.005   -2.259   1   710   57.784   -2.299   0.0083   811   55.98   -2.189   0.697   711   57.825   -2.478   0.227   812   55.993   -2.118   0.7254   713   57.762   -2.574   0.813   55.99   -2.02   0.4908   714   57.829   -2.612   0.1374   815   55.959   -2.09   0.3716   716   57.96   -2.708   0.1885   816   56.008   -2.103   0.5819   717   57.98   -2.768   0.3593   817   56.088   -2.401   0.5023   718   57.993   -2.768   0.3593   818   56.073   -2.444   1.0596   721   57.881   -2.885   0.1012   821   56.131   -2.555   0.9609   722   57.835   -3.104   0.1465   822   56.141   -2.576   0.8163   723   57.813   -3.195   0.823   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   824   56.131   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.7596   726   57.819   -3.452   0.0593   825   56.111   -2.673   0.0595   7279   72.555   0.7596   726   57.819   -3.923   0.0593   0.0593   0.0593   0.0593   0.0593   0.0593   0.0593   0.0593   0.0593   0	801	56 252	-2 384		_	701	57 788	-2 017	
803   56.215   -2.384   1.322   703   57.833   -2   0.3308   804   56.18   -2.358   1.2342   704   57.829   -2.119   0.3007   805   56.138   -2.374   0.7713   705   57.893   -2.114   0.1008   806   56.162   -2.289   0.8054   706   57.923   -1.989   0.1098   807   56.148   -2.238   0.7558   707   57.946   -2.208   0.4031   808   56.104   -2.316   0.8601   708   57.852   -2.269   0.2943   809   56.048   -2.357   0.2941   709   57.821   -2.371   0.1995   810   56.005   -2.259   1   710   57.784   -2.299   0.0083   811   55.98   -2.189   0.697   711   57.762   -2.574   0.227   812   55.993   -2.118   0.7254   713   57.762   -2.574   0.227   813   55.99   -2.02   0.4908   714   57.829   -2.612   0.1371   814   55.946   -2.013   0.174   715   57.818   -2.751   0.1844   815   55.959   -2.09   0.3716   716   57.96   -2.708   0.3881   56.073   -2.498   0.1219   717   57.89   -2.768   0.3593   817   56.088   -2.401   0.5023   718   57.943   -2.95   0.1298   820   56.163   -2.444   1.0596   721   57.899   -3.111   0.1923   821   56.131   -2.575   0.8163   723   57.813   -3.104   0.1463   823   56.114   -2.575   0.7097   724   57.842   -3.292   0.0083   822   56.14   -2.576   0.8163   723   57.817   -3.317   0.0108   825   56.111   -2.675   0.7097   724   57.842   -3.292   0.0083   825   56.111   -2.675   0.7097   724   57.842   -3.292   0.0083   826   56.093   -2.857   0.2241   729   57.676   -3.815   0.4316   828   56.093   -2.857   0.2241   729   57.676   -3.815   0.4316   828   56.071   -3.111   0.3833   733   57.991   -3.381   0.4586   3.532   0.266   56.144   -2.050   0.4448   728   57.712   -3.66   0.3324   828   56.071   -3.111   0.3833   733   57.933   -3.605   0.0714   834   56.077   -3.034   0.4968   732   57.808   -3.852   0.5053   0.0053   835   56.114   -2.675   0.0665   737   57.77   -3.555   0.1998   835   56.114   -2.675   0.0665   737   57.77   -3.555   0.0998   835   56.114   -2.675   0.0665   737   57.791   -3.381   0.4586   0.5307   0.0655   737   0.5794   0.5561   0.4368   0.5307   0.0655   737   0.		77721004-004034-00501041933531	The Columbia Color Color				(2)		
804         56.18         -2.358         1.2342         704         57.829         -2.119         0.3007           805         56.138         -2.374         0.7713         705         57.893         -2.141         0.1006           806         56.162         -2.289         0.8054         706         57.923         -1.989         0.1006           807         56.148         -2.238         0.7558         707         57.946         -2.208         0.4031           809         56.048         -2.357         0.2941         709         57.821         -2.371         0.1955           810         56.005         -2.259         1         710         57.784         -2.299         0.0083           811         55.98         -2.189         0.697         711         57.825         -2.478         0.227           812         55.993         -2.113         0.7254         713         57.762         -2.574         0           814         55.946         -2.013         0.174         715         57.818         -2.751         0.1844           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1886			and the second s	10550		202 1040000 (1/2)		200000000000000000000000000000000000000	U
805         56.138         -2.374         0.7713         705         57.893         -2.141         0.1005           807         56.148         -2.289         0.8054         706         57.923         -1.989         0.1005           807         56.148         -2.238         0.7558         707         57.946         -2.208         0.4031           808         56.104         -2.316         0.8601         708         57.852         -2.289         0.2942           809         56.048         -2.357         0.2941         709         57.821         -2.371         0.1955           810         56.005         -2.259         1         710         57.784         -2.299         0.0083           811         55.993         -2.118         0.7254         711         57.825         -2.478         0.227           812         55.993         -2.02         0.4908         714         57.829         -2.612         0.1374           815         55.996         -2.02         0.4908         714         57.829         -2.612         0.1374           815         55.996         -2.09         0.3716         716         57.96         -2.708         0.1886	1						A CONTROL OF THE PROPERTY OF T	100000000000000000000000000000000000000	
806         56.162         -2.289         0.8054         706         57.923         -1.989         0.1095           807         56.148         -2.238         0.7558         707         57.946         -2.208         0.4031           808         56.104         -2.316         0.8601         708         57.852         -2.269         0.2943           809         56.048         -2.357         0.2941         709         57.821         -2.371         0.1955           810         56.005         -2.259         1         710         57.784         -2.299         0.0083           811         55.98         -2.189         0.697         711         57.825         -2.478         0.227           812         55.993         -2.118         0.7254         713         57.762         -2.574         0           814         55.946         -2.013         0.174         715         57.818         -2.751         0.1844           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1888           816         56.088         -2.401         0.5023         718         57.96         -2.768         0.3593	1	l		1					
807         56.148         -2.238         0.7558         707         57.946         -2.208         0.4031           808         56.104         -2.316         0.8601         708         57.852         -2.269         0.2943           809         56.048         -2.357         0.2941         709         57.821         -2.371         0.1955           810         55.005         -2.259         1         710         57.784         -2.299         0.0083           811         55.98         -2.189         0.697         711         57.825         -2.478         0.227           812         55.993         -2.118         0.7254         713         57.762         -2.574         0           813         55.999         -2.02         0.4908         714         57.829         -2.612         0.1371           814         55.999         -2.09         0.3716         716         57.96         -2.708         0.1844           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1888           816         56.008         -2.401         0.5023         718         57.943         -2.95         0.1295	100000000000000000000000000000000000000								
808         56.104         -2.316         0.8601         708         57.852         -2.269         0.2943           809         56.048         -2.357         0.2941         709         57.821         -2.371         0.1956           810         56.005         -2.259         1         710         57.784         -2.299         0.0083           811         55.98         -2.189         0.687         711         57.825         -2.478         0.227           812         55.993         -2.118         0.7254         713         57.762         -2.574         0           813         55.995         -2.013         0.174         715         57.818         -2.751         0.187           815         55.959         -2.09         0.3716         716         57.98         -2.708         0.188           816         56.008         -2.103         0.5819         717         57.98         -2.768         0.3593           817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           819         56.125         -2.474         1         720         57.85         -2.994         0.1925 <td< td=""><td></td><td>and the second contract of the second contrac</td><td>The state of the s</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		and the second contract of the second contrac	The state of the s						
809         56.048         -2.357         0.2941         709         57.821         -2.371         0.1955           810         56.005         -2.259         1         710         57.784         -2.299         0.0083           811         55.98         -2.189         0.697         711         57.825         -2.478         0.227           812         55.993         -2.013         0.174         713         57.762         -2.574         0           814         55.946         -2.013         0.174         715         57.818         -2.751         0.1844           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1888           816         56.088         -2.401         0.5023         718         57.943         -2.95         0.1295           817         56.088         -2.401         0.5023         718         57.843         -2.95         0.1295           818         56.073         -2.498         0.1219         719         57.851         -2.885         0.1012           820         56.163         -2.474         1         720         57.85         -2.994         0.1925 <t< td=""><td></td><td></td><td></td><td>Nachard Caraca C</td><td></td><td></td><td></td><td></td><td></td></t<>				Nachard Caraca C					
810         56.005         -2.259         1         710         57.784         -2.299         0.0083           811         55.98         -2.189         0.697         711         57.825         -2.478         0.227           812         55.993         -2.118         0.7254         713         57.762         -2.574         0           813         55.99         -2.02         0.4908         714         57.829         -2.612         0.1371           814         55.946         -2.013         0.174         715         57.818         -2.751         0.1844           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1888           816         56.008         -2.103         0.5819         717         57.98         -2.768         0.3593           817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.85         -2.994         0.1925           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1463	1						COMPAGNATION STATES AND COLUMN	DALLIOTAL VOCUMENTA	2000/00/00/00/00/00/00/00/00/00/00/00/00
811         55.98         -2.189         0.697         711         57.825         -2.478         0.227           812         55.993         -2.118         0.7254         713         57.762         -2.574         0           813         55.996         -2.013         0.174         715         57.818         -2.751         0.1848           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1888           816         56.008         -2.103         0.5819         717         57.98         -2.768         0.3593           817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           819         56.125         -2.474         1         720         57.851         -2.994         0.1928           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.575         0.7907         724         57.842         -3.292         0	1	1 1							0.0083
812         55.993         -2.118         0.7254         713         57.762         -2.574         0           813         55.99         -2.02         0.4908         714         57.829         -2.612         0.1371           814         55.946         -2.013         0.174         715         57.818         -2.751         0.1844           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1888           816         56.008         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           820         56.125         -2.474         1         720         57.85         -2.994         0.1928           821         56.163         -2.444         1.0596         721         57.899         -3.111         0.1928           821         56.131         -2.575         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.575         0.7097         724         57.842         -3.292         0	988191099			1		1	l .	l .	0.227
813         55.99         -2.02         0.4908         714         57.829         -2.612         0.1371           814         55.946         -2.013         0.174         715         57.818         -2.751         0.1844           815         55.959         -2.09         0.5819         717         57.96         -2.708         0.1888           816         56.008         -2.103         0.5819         717         57.98         -2.768         0.3593           817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           819         56.125         -2.474         1         720         57.85         -2.994         0.1925           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.525         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.575         0.7097         724         57.842         -3.292         0							l	1	
814         55.946         -2.013         0.174         715         57.818         -2.751         0.1844           815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1884           816         56.008         -2.103         0.5819         717         57.98         -2.768         0.3593           817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           819         56.125         -2.474         1         720         57.85         -2.994         0.1928           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.555         0.9609         722         57.835         -3.004         0.1463           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           822         56.14         -2.575         0.7097         724         57.842         -3.292         0			The State of			770.037.970	57.829	-2.612	0.1371
815         55.959         -2.09         0.3716         716         57.96         -2.708         0.1886           816         56.008         -2.103         0.5819         717         57.98         -2.768         0.3593           817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           819         56.165         -2.474         1         720         57.85         -2.994         0.1925           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.525         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           824         56.15         -2.632         0.5588         725         57.817         -3.452         0.0593				Approximating and Assessment		715	57.818	-2.751	0.1844
816         56.008         -2.103         0.5819         717         57.98         -2.768         0.3593           817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           819         56.125         -2.474         1         720         57.85         -2.994         0.1928           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.575         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.111         -2.575         0.7097         724         57.842         -3.292         0           824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.5593								#100 months (1997)	0.1888
817         56.088         -2.401         0.5023         718         57.943         -2.95         0.1298           818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           819         56.125         -2.474         1         720         57.85         -2.994         0.1928           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.576         0.8163         723         57.813         -3.195         0           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.111         -2.575         0.7097         724         57.842         -3.292         0           824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199 <td< td=""><td></td><td></td><td></td><td>1</td><td></td><td>717</td><td>57.98</td><td>-2.768</td><td>0.3593</td></td<>				1		717	57.98	-2.768	0.3593
818         56.073         -2.498         0.1219         719         57.881         -2.885         0.1012           819         56.125         -2.474         1         720         57.85         -2.994         0.1928           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.525         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.111         -2.575         0.7097         724         57.842         -3.292         0           824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.805         0.4448         728         57.712         -3.55         0.199           827         56.11         -2.805         0.7368         730         57.676         -3.815         0.4318						718	57.943	-2.95	0.1299
819         56.125         -2.474         1         720         57.85         -2.994         0.1928           820         56.163         -2.444         1.0596         721         57.899         -3.111         0.1923           821         56.131         -2.525         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.111         -2.575         0.7097         724         57.842         -3.292         0           824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199           827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.983         0.0292         731         57.868         -3.532         0.26           <				0.1219		719	57.881	-2.885	0.1012
821         56.131         -2.525         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.111         -2.575         0.7097         724         57.842         -3.292         0           824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199           827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586			-2.474	1		720	57.85	-2.994	0.1929
821         56.131         -2.525         0.9609         722         57.835         -3.104         0.1463           822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.111         -2.575         0.7097         724         57.842         -3.292         0           824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199           827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.073         -3.034         0.4968         732         57.901         -3.381         0.4586		56.163	-2.444	1.0596		721	57.899	-3.111	0.1923
822         56.14         -2.576         0.8163         723         57.813         -3.195         0           823         56.111         -2.575         0.7097         724         57.842         -3.292         0           824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199           827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.071         -3.111         0.3833         733         57.901         -3.381         0.4586	11 1	56.131	-2.525	0.9609		722	57.835	-3.104	0.1463
824         56.15         -2.632         0.5588         725         57.817         -3.317         0.0108           825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199           827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0	2000-00-00-00-00-00-00-00-00-00-00-00-00	56.14	-2.576	0.8163		723	57.813	-3.195	0
825         56.111         -2.673         0.7596         726         57.819         -3.452         0.0593           826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199           827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0		56.111	-2.575	0.7097		724	57.842	-3.292	0
826         56.141         -2.743         0.6006         727         57.729         -3.55         0.199           827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307	824	56.15	-2.632	0.5588		725	57.817	-3.317	0.0108
827         56.11         -2.805         0.4448         728         57.712         -3.66         0.3324           828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           838         55.972         -3.018         0         738         57.723         -3.61         0.4599	825	56.111	-2.673	0.7596		726	57.819	-3.452	0.0593
828         56.093         -2.857         0.2241         729         57.676         -3.815         0.4318           829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.838         -3.223         0           840 </td <td>826</td> <td>56.141</td> <td>-2.743</td> <td>0.6006</td> <td></td> <td>727</td> <td>57.729</td> <td>-3.55</td> <td>0.199</td>	826	56.141	-2.743	0.6006		727	57.729	-3.55	0.199
829         56.136         -2.905         0.7368         730         57.679         -3.923         0           830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.23         -3.61         0.4598           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           84	827	56.11	-2.805	0.4448		728	57.712	-3.66	0.3324
830         56.103         -2.983         0.0292         731         57.868         -3.532         0.26           831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.723         -3.61         0.4598           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841 <td>828</td> <td>56.093</td> <td>-2.857</td> <td>0.2241</td> <td></td> <td>729</td> <td>57.676</td> <td>-3.815</td> <td>0.4318</td>	828	56.093	-2.857	0.2241		729	57.676	-3.815	0.4318
831         56.07         -3.034         0.4968         732         57.901         -3.381         0.4586           832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.723         -3.61         0.4598           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841         56.114         -2.621         0.7086         741         57.988         -2.655         0.3792	829	56.136	-2.905	0.7368		730	57.679		
832         56.071         -3.111         0.3833         733         57.933         -3.605         0.0714           833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.723         -3.61         0.4599           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841         56.114         -2.621         0.7086         741         57.909         -2.774         0.2561           842         56.114         -2.531         0.7562         742         57.988         -2.655         0.3792	830	56.103	-2.983	0.0292		731	57.868	0.0000000000000000000000000000000000000	The second second
833         56.027         -3.087         0.1011         734         57.914         -3.822         0           834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.723         -3.61         0.4598           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841         56.114         -2.621         0.7086         741         57.909         -2.774         0.2561           842         56.114         -2.531         0.7562         742         57.988         -2.655         0.3792	831	56.07	-3.034	0.4968			57.901		0.4586
834         56.043         -2.984         0.531         735         57.919         -3.904         0           835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.723         -3.61         0.4599           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841         56.114         -2.621         0.7086         741         57.909         -2.774         0.2561           842         56.114         -2.531         0.7562         742         57.988         -2.655         0.3792	832	56.071	-3.111	0.3833				1	0.0714
835         56.112         -3.054         0.4183         736         57.868         -3.682         0.5307           835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.723         -3.61         0.4598           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841         56.114         -2.621         0.7086         741         57.909         -2.774         0.2561           842         56.114         -2.531         0.7562         742         57.988         -2.655         0.3792	833	56.027	-3.087	0.1011		734			0
835         56.144         -3.005         0.0655         737         57.7         -3.712         0.425           838         55.972         -3.018         0         738         57.723         -3.61         0.4599           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841         56.114         -2.621         0.7086         741         57.909         -2.774         0.2561           842         56.114         -2.531         0.7562         742         57.988         -2.655         0.3792	834	56.043	-2.984	0.531		10.120.750.000000000000000000000000000000000			
838         55.972         -3.018         0         738         57.723         -3.61         0.4598           839         55.998         -2.941         0         739         57.838         -3.223         0           840         56.099         -2.751         0.7458         740         57.884         -2.938         0.0893           841         56.114         -2.621         0.7086         741         57.909         -2.774         0.2561           842         56.114         -2.531         0.7562         742         57.988         -2.655         0.3792		56.112	-3.054					120000000000000000000000000000000000000	0.5307
839     55.998     -2.941     0     739     57.838     -3.223     0       840     56.099     -2.751     0.7458     740     57.884     -2.938     0.0893       841     56.114     -2.621     0.7086     741     57.909     -2.774     0.2561       842     56.114     -2.531     0.7562     742     57.988     -2.655     0.3792	1	1		1					0.425
840     56.099     -2.751     0.7458     740     57.884     -2.938     0.0893       841     56.114     -2.621     0.7086     741     57.909     -2.774     0.2561       842     56.114     -2.531     0.7562     742     57.988     -2.655     0.3792				I		1	1	1	0.4599
841     56.114     -2.621     0.7086     741     57.909     -2.774     0.2561       842     56.114     -2.531     0.7562     742     57.988     -2.655     0.3792	000000000000000000000000000000000000000							I	
842 56.114 -2.531 0.7562 742 57.988 -2.655 0.3792		ACTIVITIES OF THE PROPERTY.				100000000000000000000000000000000000000		The second secon	Carrier and Anna Carrier and C
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852   56.22   -2.405   1.0709	11								
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# Moray Firth Nephrops density, 2000

