



**North Western
Inshore Fisheries and Conservation Authority
Meeting 4: 30 September 2011
Morecambe Town Hall: 10.30 a.m.**

Agenda Item 7: Annex 2

REVIEW OF COCKLE STOCKS IN MORECAMBE BAY

Purpose of Report

To inform members of the status of the cockle stocks within Morecambe Bay.

Recommendations

1. That the report be received.
2. That the cockle beds within Morecambe Bay should remain closed until the start of the Seasonal Closure on 1st May 2012.

Background

1. All the cockle beds in Morecambe Bay have been closed under byelaw 13A (Management of the Fishery) or byelaw 14 (Seasonal Closure) since the winter of 2008-09 on biological grounds due to very low stock levels. The current seasonal closure expired on 31st August. A briefing paper was sent out to Members with the agenda advising that Officers recommended that all Morecambe Bay should again be closed to cockle fishing under Byelaw 13A, for a period of 1 month from 1st September. This closure would be reviewed at the NWIFCA meeting on 30th September following a full discussion and analysis of the survey results.
2. The main stock surveys have been carried out by Scientific and Fishery Officers during June, July and August. Results from this survey work together with reports from Fishery Officers suggest that densities of adult cockles remain at low levels on all the main beds within Morecambe Bay. There is no evidence of any significant increase in recruitment to the fishery from the 2010 year class. A 2011 spatfall has occurred and in some areas there is a good representation of year classes. However, these are extremely patchy in distribution and occurring in low densities.

Survey Results

3. All of the cockle beds within Morecambe Bay have been surveyed by Scientific and Fishery Officers. Table 1 below provides data on the mean densities of **adult** cockle on the Morecambe Bay beds from 2004 – 2011. As can be seen, densities for all beds for 2011 (except Flookburgh) are below the minimum biological threshold of 20 per m² used by the NWSFC. Below this density there is evidence to suggest that the likelihood of successful breeding among the population is much reduced.

4. Despite reports from local cocklers that there were high densities at Flookburgh, surveys by Scientific Officers only found a mean density of 21 per m². When considering closures, Morecambe Bay is taken as one entity and as illustrated the mean across all beds is 10.3 per m². To raise the mean across all beds above the minimum threshold the Flookburgh beds would need to have a stock of 85 per m² of adult cockle.

It must be stressed that the figures given are for adult cockle (ie. 2010 settlement and older). The figures for **size** cockle are substantially less and shown in Table 2.

5. Officers therefore recommend that the closure under Byelaw 13a (Management of the Fishery) remains in force until the Seasonal Closure (Byelaw 14) begins on 1st May 2012, as stocks are below safe biological limits.

Table 1: data on the mean densities of **adult** cockle on the Morecambe Bay beds from 2004 – 2011

Bed	<u>MORECAMBE BAY COCKLE BEDS MEAN DENSITIES FOR ADULT COCKLE</u>							
	<u>per m²</u>							
	2004	2005	2006	2007	2008	2009	2010	2011
Pilling	182	39	15	38	14	5	n/a	10
Middleton	111	54	12	40	17	14	15	8
Warton Sands	83	28	7	32	15	7	15	5
Flookburgh	162	10	5	31	26	6	15	21
Leven Island	n/a	n/a	n/a	n/a	n/a	n/a	n/a	15
Aldingham	n/a	n/a	n/a	n/a	n/a	n/a	21	3

Table 2: data on the mean densities of **size** cockle on the Morecambe Bay beds 2011

<u>MORECAMBE BAY COCKLE BEDS 2011</u>	
<u>MEAN DENSITIES FOR SIZE COCKLE per m²</u>	
Bed	2011
Pilling	6
Middleton	5
Warton Sands	4
Flookburgh	11
Leven Island	5
Aldingham	1

6. The map (Fig.1) provides a visual representation of the positions of surveys stations and densities of adult cockle for all beds in Morecambe Bay August 2011. Figure 2 illustrates the size cockle densities. Details about individual beds are given below.

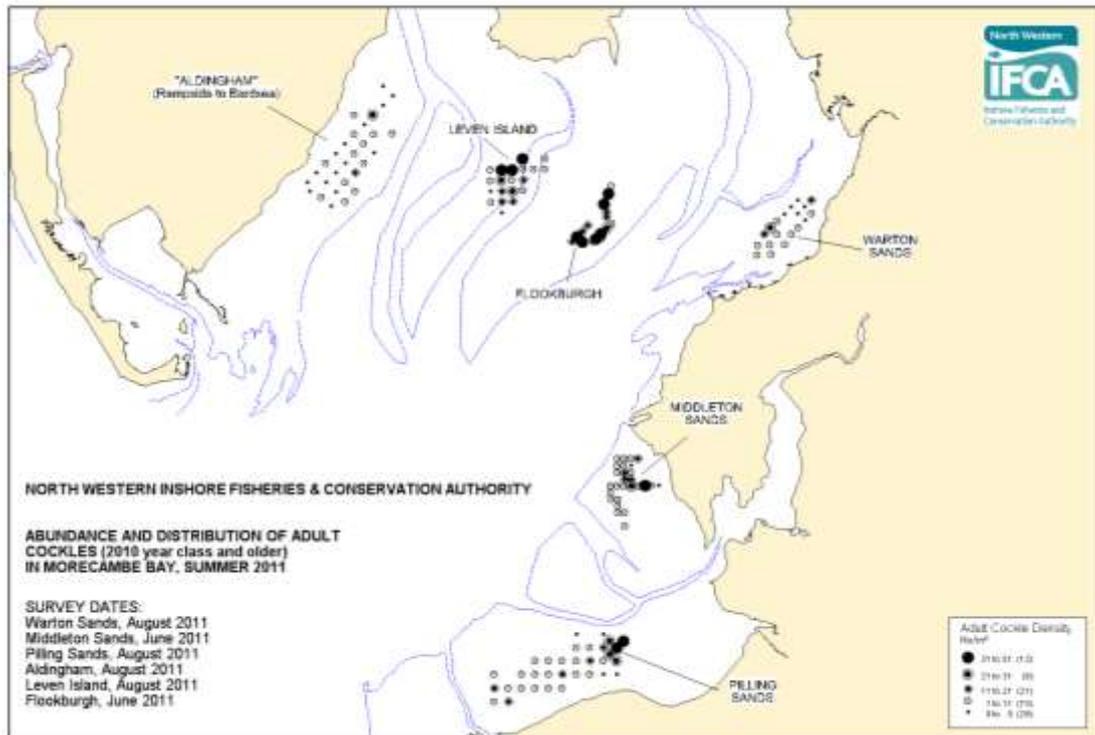


Fig. 1. Map of survey stations and densities of adult cockle for all Morecambe Bay beds 2011.

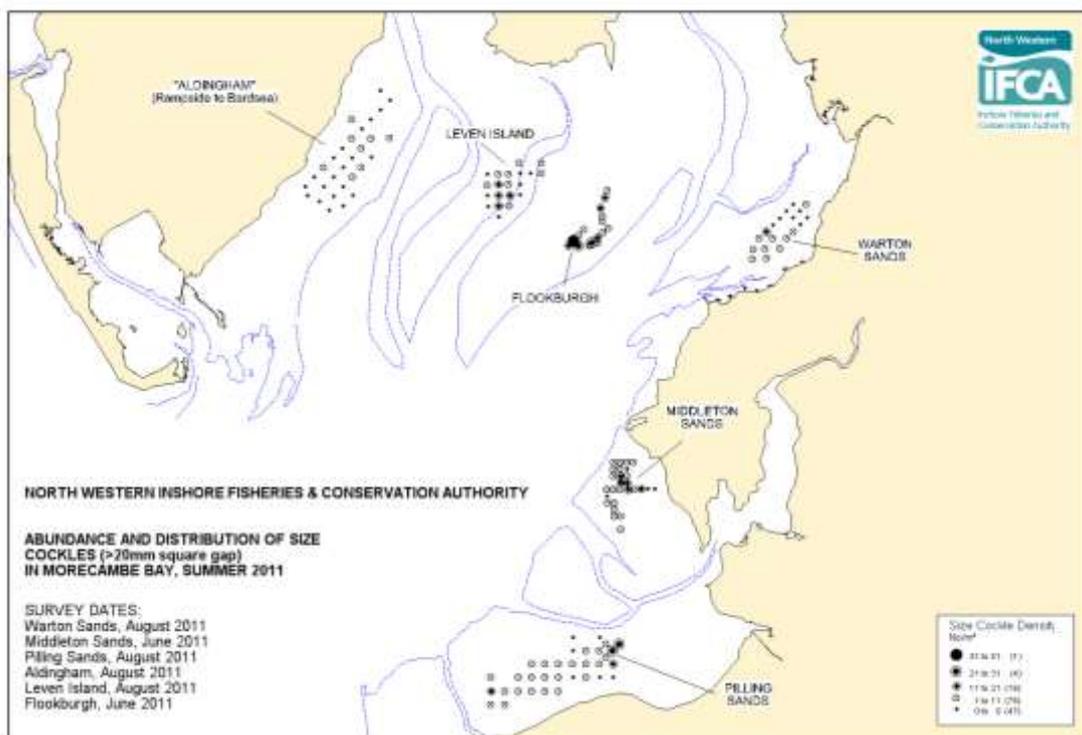


Fig. 2. Map of survey stations and densities of size cockle for all Morecambe Bay beds 2011.

Details of Survey Results for Individual Cockle Beds in Morecambe Bay

i **Pilling Cockles**

73% of bed (33 stations) was surveyed in one tide. The remaining 26% of the bed (12 stations) was not accessible due to the amount of heavy rain that had fallen in the preceding days.

37% (mean) of cockles sampled were undersize (sd = 33).

Mean density for total adults found from samples was – 10 per m² (sd = 10).

Mean density for size cockles found from samples was – 6 per m² (sd = 7).

Mean density for undersize cockles found from samples was – 6 per m² (sd = 9). There was representation of year classes from 2008 – 2011, but densities for all were low.

ii Middleton Cockles

27 stations were surveyed with stations being selected from information given by Fishery Officers of where the densest patches of cockles were situated.

28% (mean) of cockles sampled were undersize (sd = 34).

Mean density for total adults found from samples was – 8 per m² (sd = 8).

Mean density for size cockles found from samples was – 5 per m² (sd = 5).

Mean density for undersize cockles found from samples was – 5 per m² (sd = 11). Although there was a representation of cockles from year classes 2008 – 2011, densities were low. There was very little evidence of a 2011 spatfall with only a couple of stations having a low level of settlement.

iii Warton Sands Cockles

19 stations were surveyed. 16 stations were inaccessible due to the migration of the channel south eastwards. 4 stations closest to the shore were not surveyed, and 2 other stations (south west of bed) were not surveyed due to lack of time.

51% (mean) of cockles sampled were undersize (sd = 38).

Mean density for total adults found from samples was – 5 per m² (sd = 6).

Mean density for size cockles found from samples was – 4 per m² (sd = 5).

Mean density for undersize cockles found from samples was – 6 per m² (sd = 6).

There was evidence of a 2011 spatfall with 79% of stations sampled containing spat. Mean density of spat was 37 per m² (sd = 39). Range = 4 – 119.

iv Flookburgh Cockles

The eastern area of the bed was surveyed following observations made during the sample run in the previous week. The tidal window did not allow enough time to survey the whole bed – probably about half was covered. Using MapInfo a very rough estimate of the area of the whole bed was made = 1.772 km².

60% of cockles sampled were undersize.

Mean density for total adults found from samples was – 21 per m².

Mean density for size cockles found from samples was – 11 per m².

Mean density for undersize cockles found from samples was – 21 per m².

v Leven Island Cockles

20 stations were surveyed with positions identified from a previous reconnoitre visit.

64% (mean) of cockles sampled were undersize (sd = 40).

Mean density for total adults found from samples was – 15 per m² (sd = 16).

Mean density for size cockles found from samples was – 5 per m² (sd = 7).

Mean density for undersize cockles found from samples was – 24 per m² (sd = 32).

There was little evidence of a 2011 spatfall. Mean density for 2011 cockles was 14 per m² (sd = 22).

vi Aldingham Cockles

28 stations were surveyed. 8 stations were inaccessible due to the tide. 4 stations closest to the shore were not surveyed.

76% (mean) of cockles sampled were undersize (sd = 38).

Mean density for total adults found from samples was – 3 per m² (sd = 6).

Mean density for size cockles found from samples was – 1 per m² (sd = 1).

Mean density for undersize cockles found from samples was – 15 per m² (sd = 15).

There was evidence of a minor spatfall for 2011 with a mean density for 2011 cockles of 54 per m² (sd = 88).

vii Duddon Estuary Cockles

The cockle beds in the Duddon Estuary were inspected in May by Scientific and Fishery Officers. There was evidence of a minor spatfall, but very low stocks of adult cockle.

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8 September 2011.