

**NWIFCA Technical, Science and Byelaw
Sub-Committee**

15th August 2014: 10:00am

**REPORT
NUMBER**

7

MUSSEL FISHERIES

Purpose: To report on the potential developments of mussel fisheries in the District and consider options for management.

Recommendations

- 1. Renew delegated powers to Officers to make decisions on the management of mussel fisheries in the District, consulting with TSB Members via email where necessary with full reporting to the Authority at quarterly meetings.**
- 2. Approve the authorisation of defined vessels to dredge seed mussel from the South America/Falklands with conditions as set out in the report.**
- 3. Approve opening of the seed mussel fishery at Heysham Flat for hand-gathering in August.**
- 4. Approve the authorisation of a maximum of two boats to dry out on Heysham Flat during the seed mussel fishery for the transport of the stock.**
- 5. Approve the authorisation for one boat to dredge the seed mussel at Perch Scar Fleetwood.**
- 6. Approve the partial harvesting of the seed mussel at Foulney.**
- 7. TSB approve a consultation with Byelaw 3 permit holders on their ideas and opinions for future management of mussel fisheries at Foulney.**
- 8. Approve the use of the Welsh seed mussel dredger 'Mare Gratia' for surveying seed mussel in the Solway.**

Background

- 1. Mussel beds throughout the District are open all year round for the hand-gathering of size mussel (>45mm) by Byelaw 3 permit holders.**
- 2. The NW&NWSFC had a long-standing policy, adopted by the NWIFCA, that harvesting of undersize or seed mussel should only be authorised on beds that are classed as ephemeral – ie. where stock is usually lost through natural processes and rarely forms a size fishery.**
- 3. The NW&NWSFC also had a long-standing policy, adopted by the NWIFCA, that only mussel beds that cannot be safely accessed from the inter-tidal area should be opened to mussel dredging, and only when stock allows.**
- 4. When the beds are subject to mass recruitment, events can move very quickly. Depending on weather conditions the mussel can put on extremely rapid growth and lay down deep layers of soft unstable mud, which then renders the stock vulnerable to scouring and wash out within a very short time.**

5. Such conditions make fishers nervous that stock will be wasted and result in demands to the Authority to open fisheries urgently. Waiting for an Authority meeting can cause delay so the SFC and NWIFCA have in the past agreed delegated powers to Officers to take decisions and issue authorisations without awaiting an Authority meeting, provided certain criteria are satisfied (e.g. NW&NWSFC Minutes 11th September 2009 and NWIFCA TSB Minutes 11th December 2012). These criteria are that the fishery must be uncontroversial, it must have been fished for seed before, the stock must be agreed to be ephemeral and environmental concerns must have been addressed through the Habitats Regulations process.
6. During the last quarter, tides and daylight have enabled Science Officers to access the District's mussel beds and a number of potential fisheries now need urgent consideration in order to ensure that a valuable resource is utilised before natural processes remove them.
7. There is generally a shortage of seed and 'part-grown' mussel for relaying in the aquaculture industry and therefore the market is very buoyant. Reports from the Irish Sea Fisheries Board are that some beds in Southern Ireland have a reasonable settlement on them this year and will be opened to seed mussel dredging on 17th August. It is understood that some of the boats from Northern Ireland that fished in Morecambe Bay over the last two years will fish in Ireland this year. Officers are awaiting stock survey reports from Northern Ireland and Wales.

South America / Falklands Seed Mussel – North Morecambe Bay

8. This area is classed as ephemeral and has been historically fished by seed mussel dredgers, having once been covered by the Morecambe Bay Mussel Fishery Order 1978 (expired 2009).
9. Science Officers and IFCOs have inspected this area on foot via NWIFCA RIB, and by hovercraft and helicopter, provided by the industry. The area has been subject to great change over the past 12 months with a large swathe of sand now covering much of the central strip of skear, either rendering the substrate unsuitable for mussel recruitment or burying any early settlement that had occurred. This is not unusual and appears to occur every few years, sometimes covering the whole of the skear.
10. The channel that once separated the area to the north of the skear from the Roosebeck inter-tidal area has now narrowed and sanded in, making a crossing by quad bike feasible. However, this area, roughly estimated at 9.6ha, was not included in the authorisation to dredge last year, and some of the mussel has survived. It is now mixed with 2014 seed mussel and the recommendation is to again leave this area to grow on to size.
11. The densest area of seed mussel is to the far south (estimated area = 84ha). This has suffered from a plague of starfish preying on the young mussel, a feature observed from the helicopter in April. However the starfish now on the bed are smaller and obviously a younger cohort. There is a putrid smell on the bed, the small and thin shelled seed mussel is lying loose on a soft mud layer and is very vulnerable to being washed out should it survive predation. The neighbouring areas (to the south west) have dense seed mussel but also a covering of bootlace weed (*Chorda filum*).
12. Another area to the east (estimated at 67ha maximum) was omitted during the hovercraft inspection due to a high sandbank hiding it from view. However it was seen on foot and from the helicopter survey, and is known to hold seed mussel.
13. The Industry has requested urgent opening of the fishery to dredge the seed before it is lost to either the tides or predation. A meeting has taken place internally to discuss management and enforcement requirements should it open. It is the intention to return by hovercraft during the week beginning 11th August for a further inspection and an up-to-date verbal report will be given during the TSB meeting.

14. Officers advise authorising seed mussel dredging on South America skear. The authorised area will be the same as last year including the southern and eastern parts of the skears, subject to observations made during the next inspection. However, the fishable area is smaller than last year so a restriction on the number of vessels authorised is proposed using the criterion of track record, as previously agreed by TSB.
15. Officers have still to agree the opening and requirement for HRA with Natural England. Proposals on the number of vessels, fees payable, the period of fishing and any other conditions will be presented to the meeting.

Heysham Flat Seed Mussel

16. A full survey of Heysham Flat skear was carried out by Science Officers assisted by Wildlife Trust Marine Graduates on 16th July using a methodology used by Eastern IFCA to assess biomass – the Dutch Wand method. A high percentage of the skear has been subjected to mass mussel recruitment with a dense coverage of small seed extending from Dallam Dyke in the west up to a high level on the shore (Fig. 1), with 89% cover. All of the main *Sabellaria alveolata* reef area is smothered leaving only exposed worm mounds around the edges of the skear, and to the north where the worms have recently colonised an old dead shell patch. The estimated total biomass on the skear from survey results was 5419 tonnes over 63.3 Ha.

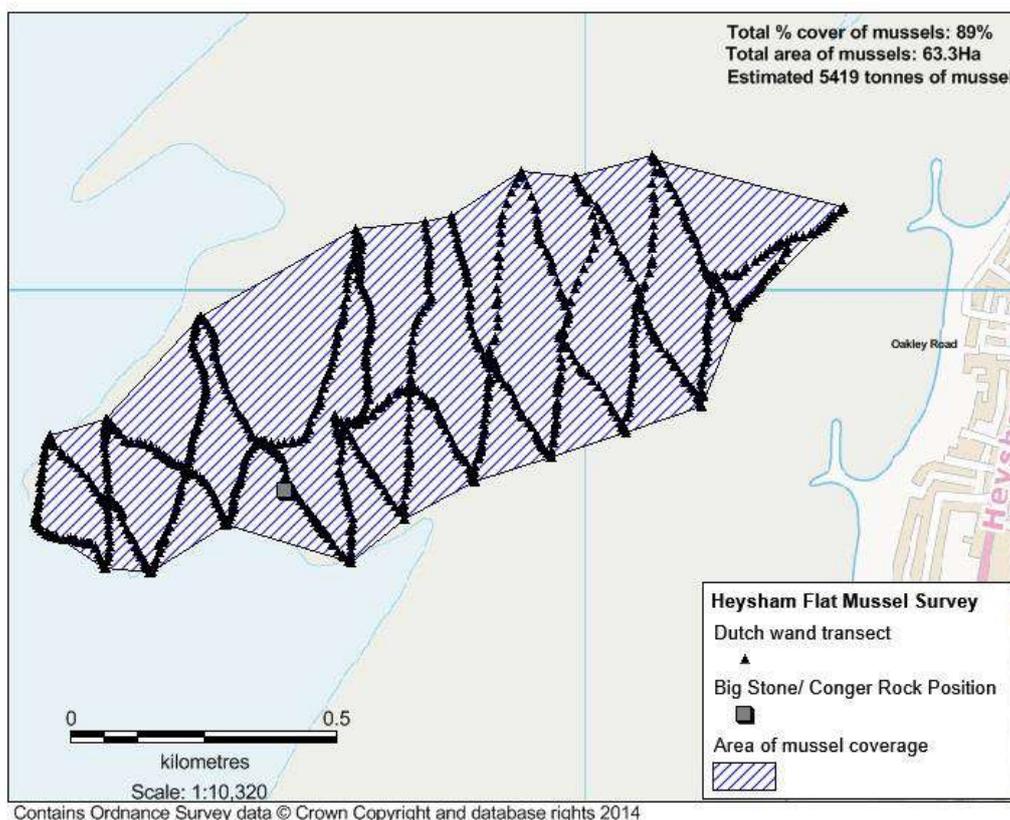


Fig. 1. Mapping of the Heysham Flat Mussel Survey on 16-07-14 provides an illustration of the Dutch wand survey transects and mussel bed coverage.

17. There has been a long- established protocol for carrying out an Appropriate Assessment of this fishery under Habitats Regulations, and generally Natural England are supportive of the opening of this hand-gathering fishery providing certain conditions are placed on the fishery – for example, a demarcation line is set up to protect the main area of *Sabellaria alveolata* reef from trampling or fishing damage. This would provide a fishable area of 48 ha containing an estimated biomass of 4086 tonnes.
18. At the time of writing. the seed is becoming very loose as is the norm for this bed and is almost fishable. Officers are working with the Local Authority to get the bed open when it is

ready (ie around the middle of August) and meetings have taken place to discuss the issuing of beach access permits for quad bikes in a more equitable way to overcome some of the issues of last year's fishery.

19. There have been requests from two operators for permission to dry mussel boats out on the sandbanks next to the skear and have hand-gatherers land to them as an alternative to bringing the seed mussel back to the Battery Car park. This measure has been included in the Appropriate Assessment.

20. The advantages and disadvantages of the use of vessels are as follows:

Advantages: Lancaster City Council will only issue 15 beach access permits for the quad bikes. The boats would provide the means for more Byelaw 3 permit holders to access the fishery by transporting quad bikes to and from the skear.

By providing an alternative means of transporting mussel from the bed this may relieve some of the problems posed by having an active fishery and tonning up area next to a busy tourist area during the height of the holiday season.

Disadvantages: Having more buyers involved may drive down the price that Byelaw 3 permit holders receive for their work.

The boats will need to sail back to either lays or to a port to land the mussel to road / ferry transport (additional cost). If transporting to lays this may take 1 -2 days which would then be lost fishing days to those Byelaw 3 permit holders who were working to the boats.

Although Officers have not spoken to many permit holders about the proposal some have expressed their opinion that there could be a risk that some may stretch the time available for landing to the boats as the tide is flooding, creating an unsafe situation.

Fleetwood Mussel Beds

21. The Authority is requested to allow seed mussel harvesting by dredge from a small bed in the mouth of the Wyre Estuary at Fleetwood, known as Perch Scar. Officers have inspected the area, and found dense mussel quite hard in with around 75% cover. Some of it is beginning to 'rope up' making it very loose and 'unembysed', so vulnerable to being washed out. The area is estimated from mapping at 4.84 hectares with an estimated biomass of 349 tonnes.

22. The other skears at Fleetwood were also inspected to provide information on alternative mussel food resource for birds, and broodstock. These skears would not be fished. Black Scar has patchy mussels of around 30-40% cover. King Scar (2.5ha) also has seed with a good density of mussel hard in to cobble substrate ~ 50% cover equated to around 121.7T. Neckings skear has mussel on cobble. IFCO Brown reports that this sometimes overwinters or dies by November. Rossall Scar has dense seed mussel mainly hard in of mixed sizes.

23. IFCO Brown reports that historically both Perch Scar and Black Scar suffer badly from the cold winter freshwater coming down the river. Black Scar normally suffers a high natural mortality by the 2nd week of December in most years. Perch Scar suffers a little later in the season.

24. In recent history Neckings was authorised for dredge in July 2009 for three weeks. But by 10th July when the authorisations started most of stock had been lost – indicating how short

the window of opportunity can be. Only 50T was taken by one boat. Black Scar has been both dredged and hand gathered for seed mussel. Perch Scar has been occasionally gathered by hand for both size and seed mussel.

25. To date two operators have shown an interest and helped to provide information on the stock. Officers consider that as the area is small it would only accommodate one boat fishing, and should Members approve this proposal would ask that the operators work together to share the catch.

Foulney Mussels

26. Members will recall that there has been an on-going hand-gathered size mussel fishery at Foulney throughout the winter up to mid-April. Byelaw 3 permit holders have been using riddles to ensure only size mussel was being removed from the fishery. Effort switched to the Duddon mussel bed once that was classified.
27. Officers inspected the Foulney bed on the 17th July 2014 and found the whole bed carpeted with dense mussel settlement, the like of which has not been seen in a number of years. Whether this is due to the fact the size fishery exposed bare substrate suitable for re-settlement, or whether the mass recruitment is from larvae that would have settled on South America had large parts of it not been covered in sand, or a combination of both, is open to conjecture.
28. However, it has left Officers of the opinion that some of this seed should be harvested by Byelaw 3 permit holders. The sheer density of it suggests that much of it will be lost to natural mortality either through over-competition and smothering, or wash-out and erosion from build-up of loose mussel mud.
29. Looking back at recent records it can be reported that the NW&NWSFC authorised the hand-gathering of seed from the western half of the bed in December 2008, leaving the eastern side unfished. Again when in October 2009 a substantial seed settlement was reported, the western side of the bed had already begun to suffer natural erosion and mortality. By the December 2009 report both areas were said to be dying and that the Committee had 'missed the boat' in authorising a fishery there.
30. Back in 2013, Science Officers had intended to carry out some background research of different management options for a bed such as Foulney but unfortunately this work was not progressed due to other priorities and staff changes. Officers recommend that Byelaw 3 permit holders are consulted as to their opinions on how much seed can be taken and which part of the bed could be fished. Officers consider that thinning out of such dense mussel may provide improved conditions to allow the mussel a chance to persist through the winter.
31. Officers intend to have a meeting with interested Byelaw 3 permit holders to garner their opinions and ideas. Any proposal would be subject to HRA, and it is not suggested that all of the seed should be harvested.

Solway Mussels

32. Officers have recently received requests from industry to prospect for seed mussel on the sub-littoral beds in the Solway Firth. Since the formation of the NWIFCA the science team have been aware that there is some local interest in dredging these beds for size mussel. Information suggests that some of these beds are the result of intertidal mussel being washed into a 'hole' in the channel where it persists and grows to size. This conflicted with what some in the industry were reporting ie. that the beds were ephemeral and that mussel larvae recruits to the beds from the water column, seed grows to a size of around 35mm, is very thinned shelled and is heavily predated on by starfish and shore crabs, and any that

survives into autumn / winter is generally lost to storms. It is possible that there may be a combination of both effects on separate beds.

33. In order to advise the Authority the recent history of the beds has been scrutinised from Cumbria Sea Fisheries Committee papers and correspondence. It appears that there has been industry interest in dredging seed mussel at least as far back as 1989. Records show that seed mussel dredging was authorised by the CSFC in 1993, 1994 (estimated area 160 acres, 12 authorisations issued, 8 vessels fished, 1393 tonnes harvested, 79.5% destined to Menai), and 2003 (estimated area 60 hectares, 12 authorisations issued, 4 vessels fished, 309.6 tonnes harvested). Trials of dredging small amounts and relaying within the area were authorised in 2001 (2 tonnes) and 2002 (max. 20 tonnes). All of these have been subject to HRA and agreement with Natural England.
34. MAFF Fisheries laboratory carried out some research on the sub-littoral beds in the Solway and came to the following conclusions: the majority of stock is fast growing, has poor meat yield, producing a poor quality mussel which is best for relaying. The stock is susceptible to stress so transport and relaying needs to be done quickly and with care ie it cannot be left on the quayside or in sun. Correspondence from the Solway Shellfishermen's Association and Maryport Shellfish Association in June 2003 supports these findings.
35. A report from the then Chief Fishery Officer in June 1994 asks CSFC to reconsider allowing undersized to be fished, and relayed outside our area of jurisdiction, which had not been permitted previously. No suitable areas within the District for relaying had been found and so it was considered that the stock was being wasted. The report also stated that the area could become a leading supplier for relaying mussels, and that dredging a proportion of the seed mussel would benefit the fishery by removing starfish, thinning out the stock to allow on-going growth, and encourage new spat settlement. It is repeated throughout the history that it is not possible to limit the fishery, other than by conditions under derogation of byelaws and setting a TAC.
36. In June 2003 the Chief Fishery Officer recommended the setting up a Shellfish Working Group with delegated powers so decisions can be taken quickly as the process of having to take decisions to Committee resulted in stock being lost before authorisations could be approved. It appears that this Group was set up.
37. In March 2004 Seafish issued a report entitled 'Sublittoral Ephemeral Mussel Seed Resources in the UK' authored by Martin Syvret, which examined the state and management of all the intertidal and sub-tidal mussel beds around the UK and Ireland. He states that 'the biggest of sub-tidal ephemeral mussel beds can be found at Caernarfon Bar, North Wales and Upper Solway Firth', and provides an analysis of their worth to the aquaculture industry. Based on a 1:1 ratio each thousand tonne of seed lost to predation or wash out could represent a missed opportunity to industry of £500,000 (2004 figures). In reality that ratio is generally higher so the potential losses are much greater.
38. There have been major logistical difficulties for the science team to survey these areas. The last survey was carried out from 'Solway Protector' in November 2012 using a small dredge, when no commercial stock was found. Since then due to the problems with the derrick on board 'Solway Protector' it has been impossible to carry out any survey without the use of industry boats or chartering a survey vessel, which has not happened.
39. Officers recommend that the use of a specialised industry vessel with ground discrimination software, underwater camera and grabs for ground-truthing, crewed by experienced mussel men would be advantageous to the Authority by providing a means to survey and define what stock is available. In March 2007, the 'Mare Gratia' was authorised to prospect by CSFC, with conditions attached. Deepdock Ltd have made a request to prospect the area and have such specialised equipment aboard. They have also offered the science team a place aboard a heliflight to inspect the area from the air.

40. Should a substantial stock of seed be found, Officers recommend on the basis of the information above that the Authority approves a seed mussel dredge fishery, having agreed a TAC. A decision also needs to be taken on whether the vessel length restriction within CSFC boundaries would still apply (NB. 'Mare Gratia' is 39.51m Registered Length). There is likely to be significant industry interest in this fishery considering the state of Morecambe Bay beds this year.

Duddon Estuary Mussel Fishery

41. The size mussel fishery in the Duddon Estuary has continued at a relatively low level since mid-April. Officers have liaised regularly with the National Trust and Barrow Borough Council officials over some issues relating to access and use of the National Trust car park. The level of compliance of fisheries regulations has been high.

Senior Scientist
1st August 2014