

Preliminary Seed Mussel Survey Report for Blackwater/Cahore Point and Rusk Channel Area – 21/07/2020 to 07/08/2020

Equipment: 400 kHz side-scan sonar, 1 m dredge, Go Pro camera for video transects

Area surveyed: (see Seed Mussel Survey Extent Map) Previously productive seed mussel beds in the Blackwater Bank and shore, south of Cahore Point along the shore and in the Rusk Channel.

Survey summary:

As is standard practice, historical beds were checked first. Side-scan sonar data were collected in the areas mentioned above, several areas observed on the side-scan sonar data were investigated.

1- Blackwater (see Seed Mussel Survey Extent Map) :

Despite an extensive search using side-scan sonar and 19 tows, no seed mussel was found. Locations of beds from previous years along the west side of the Blackwater were checked, but only old oyster shells and mix of bryozoans and hydroids were found. Tows were made around the 2013 seed mussel settlement closer to shore, but again only stones and a mix of bryozoans and hydroids were found. More data was collected along the shore next to Ballyvaldon where half-grown mussels were found in 2019, but only starfish and some tunicates were observed.

2- Rusk Channel (see Rusk Channel Detailed Preliminary Survey Map)

Following reports from the industry, 3 small beds were found in the Rusk Channel over 4 km long. Seed coverage is not consistent over this distance, and there is a large gap between the south bed and the middle one. In total, the seed is covering around 40 hectares.

Table 1: Area coordinates (in Degrees, decimal minutes WGS84):

South bed (11.4 hectares):

Latitude	Longitude
52° 30.954' N	6° 10.475' W
52° 30.848' N	6° 10.303' W
52° 30.470' N	6° 10.597' W
52° 30.524' N	6° 10.748' W

Middle bed (20.4 hectares):

Latitude	Longitude
52° 31.637' N	6° 9.998' W
52° 31.345' N	6° 10.175' W
52° 31.396' N	6° 10.344' W
52° 31.578' N	6° 10.344' W
52° 32.124' N	6° 9.990' W

North Bed (8.8 hectares):

Latitude	Longitude
52° 32.157' N	6° 10.051' W
52° 32.638' N	6° 9.816' W
52° 32.637' N	6° 9.737' W
52° 32.177' N	6° 9.832' W

NOTE: The seed bed displayed on the attached map has been established following verification by ground-truthing of the side-scan sonar data. These coordinates represent the corners of a simplified polygon of the area of the settlement identified (green box on the map).

A total of 17 tows were made in the area, and 9 of those showed various quantities of seed mussel. The successful tows were little over 100 m long and containing between 30 and 60 kg of seed of various size depending on the bed.

The south bed has smaller mussels than the other two, and they appear to be in high density; the dredge contained 50 kg of loose seed, a lot of byssus and silt typical of high-density settlements (Liu *et al.*, 2012). The average size in **TC 19** was **16 mm** (min:7.32 mm, max: 23.76 mm) representing **2900 pieces per kg**. The waste represented 24% of the total weight, and it was mainly composed of byssus. 49% of the sampled mussels were comprised between 18 and 20 mm at this location. The size range in TC19 could indicate multiple settlements times. The seed in this area has a light brittle shell. Few starfish were found in the area. No ground coverage assessment was carried out due to high turbidity and strong tidal current.

The middle bed is composed of slightly larger mussels, and again density appears to be high (patterns from the sonar, the content of the dredges and video transect). The average size in **TC16** was **21 mm** (min: 5.38 mm, max: 32.4 mm) representing **985 Pieces per kg**. The waste represented 24% of the total weight (70 kg in the dredge) and mainly composed of few starfish and coarse sediment. The video transect from the centre of the bed (close to TR30) showed near-uniform coverage and could be estimated to 80%. A significant quantity of starfish was observed through the transect, although this was not replicated in the various tows carried out in this bed. 66% of the sampled mussel were comprised between 16 and 20 mm.



Fig.1: Seed coverage near TC30

The North bed appears to be an extension of the main centre bed but separated by a sand ridge. This extension doesn't appear to be as dense as the other beds. The results from **TC28** were as followed: average size **19.83 mm** (min: 6.88, max: 31.78mm), representing **1375 Pieces per kg**. 44% of the sampled mussels were comprised between 24 and 28 mm, and the range of sizes observed could also indicate multiple settlement times. The waste was slightly higher than the other two beds, reaching 29 %, mainly due to stones and coarse sediment. No video transect was carried out due to strong tidal current. However, patterns observed on the side-scan sonar data appeared similar to the ones seen on the south bed.

3- Cahore Point Shore (see Seed Mussel Survey Extent Map) :

Extensive side-scan sonar data was collected along the shore on previously known settlement area and few features were investigated, but no mussels were found. Only bryozoans, hydroids and stones were observed in the dredges.

Summary:

Three partially distinct beds were found. Samples indicated a wide size range through the three beds. The centre bed could potentially be under threat from starfish, although, little to no predation was observed throughout the samples. At the time of the survey, it was too early to carry out robust and reliable biomass or tonnage estimation. However, considering the beds already found outside Wexford and Rosslare, BIM is confident that the required tonnage for the fishery to open is already available. Tonnage estimation and alien species survey will be carried out on the known beds starting on the week of the 17th of August 2020. Considering the current situation (Covid-19 pandemic and potential expanding predation on the seed beds), the fishery should be opening as soon as possible.

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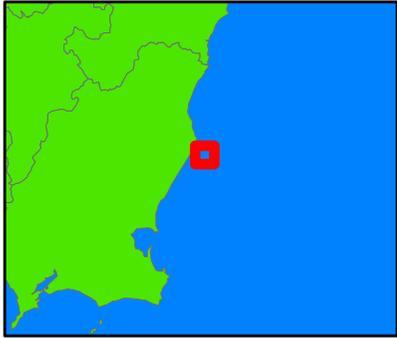
BIM Aquaculture Technical Section – STS BU

Note for the map:

TC stands for Tow Cahore

References

Liu, Q. X. *et al.* (2012) 'Alternative mechanisms alter the emergent properties of self-organization in mussel beds', *Proceedings of the Royal Society B: Biological Sciences*, 279(1739), pp. 2744–2753. doi: 10.1098/rspb.2012.0157.



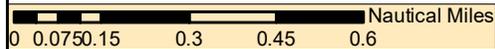
Legend

-  seed_tows
-  signs_tows
-  shells_stones_tows
-  o_species_tows
-  empty_tows
-  side_scan_sonar_track
-  rusk_pbl_bd
-  bed_extent
-  buoysMFAWgs

INFOMAR_bathylines_10m

CONTOUR

-  -40
-  -30
-  -20
-  -10
-  0



Rusk Channel Detailed Preliminary Survey Map- August 2020

