

Seed Mussel Survey Tonnage Estimation Report for the Rosslare Area – 26/08/2020

Equipment: 0.1 m2 Day Grab

Area surveyed: Seed mussel settlement previously found in Rosslare (see Preliminary Seed Mussel Survey Report for Wexford/Rosslare Area – 7/07/2020 to 16/07/2020 at www.bim.ie)

Survey summary:

Following the identification of three seed mussel settlement sites in Rosslare South Shear, further sampling was required to facilitate biomass estimation and invasive alien species screening. A total of 44 random sampling points was generated using ArcGIS (Fig 1). A total of 42 grabs were then collected within the possible settlement borders highlighted in the previous report. Due to tide conditions, 2 sampling stations were outside the boundaries of the identified beds.

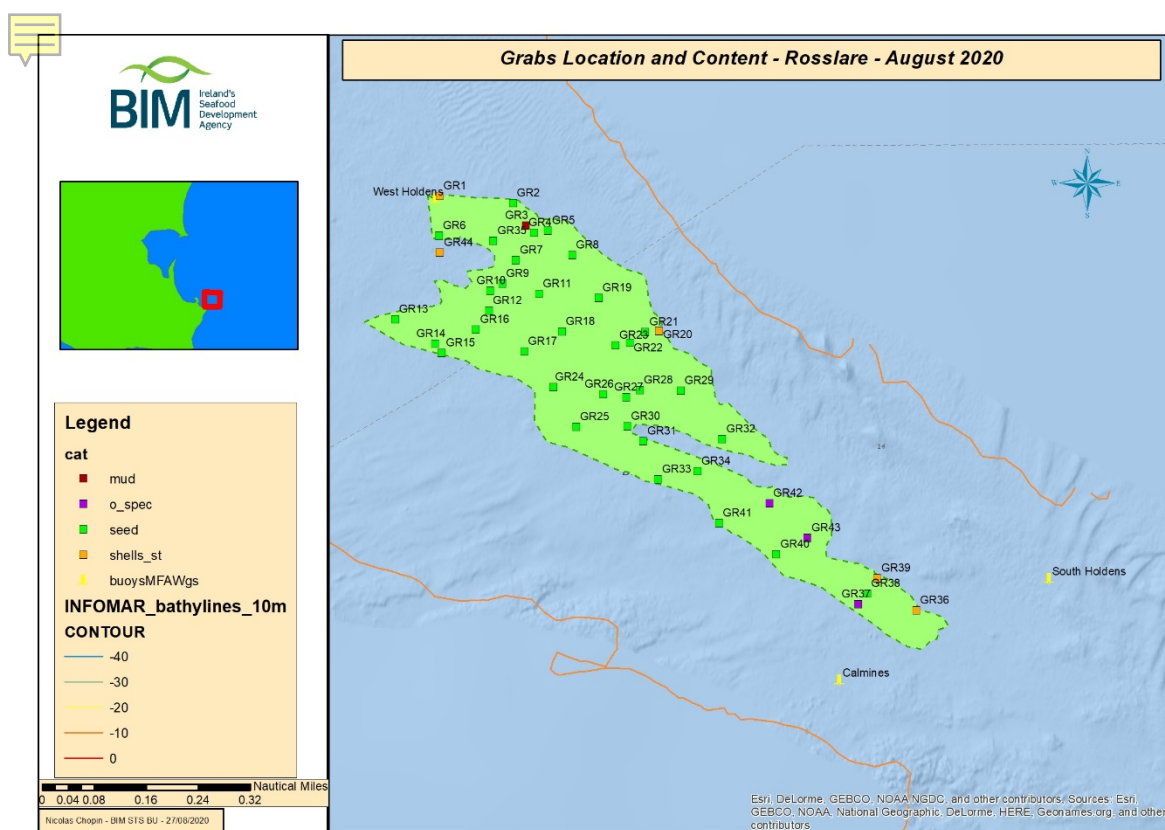


Fig.1: Grabs location and content map.

Of the 42 grabs, 7 did not contain seed mussel (mud, stones/gravel, other species) and 35 were successful. The density throughout the area is highly variable. However, the centre of the mussel settlement area appears to have a slightly higher mussel density compared to the north and south ends (Fig 2).

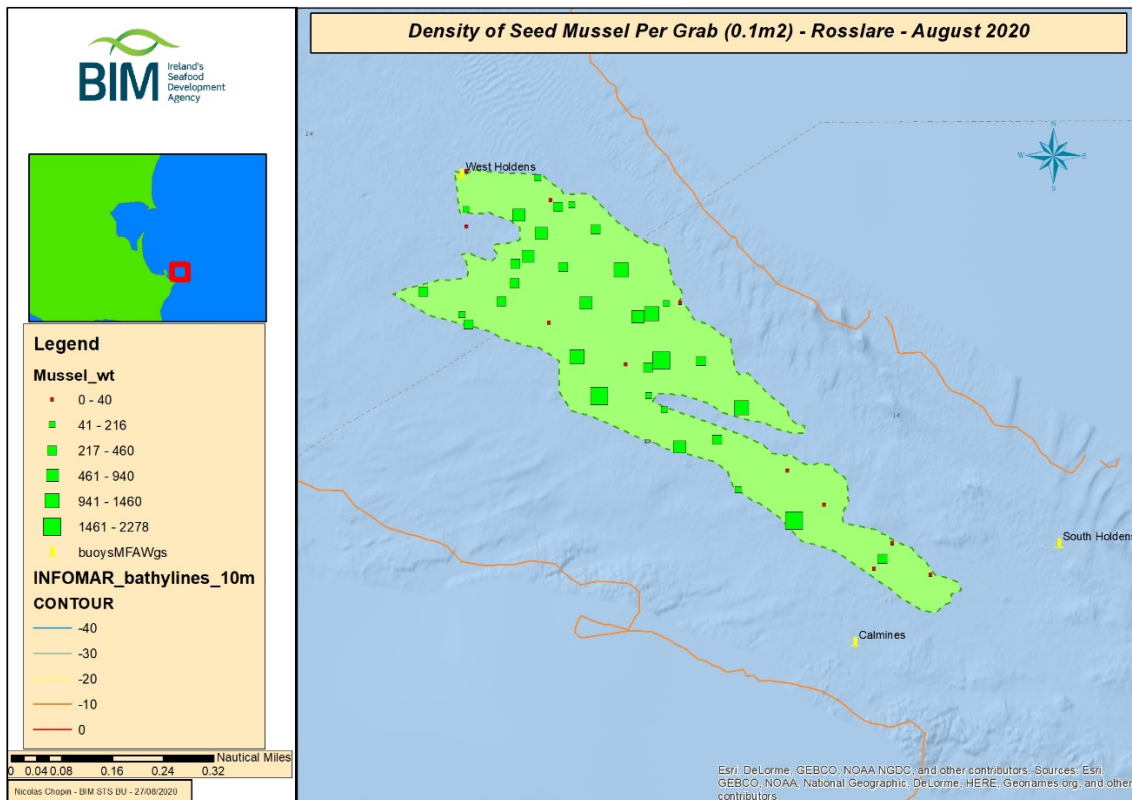


Fig.2: Grabs density map

The average weight of seed collected throughout the grabs was 603.76 grams per 0.1 m² (maximum: 2,278 g, minimum: 40 g). The average amount of waste (including stones and other shells) was 51% across the settlement with the highest level at 91% and the lowest level at 12%. The samples did not highlight specific areas of high waste level throughout bed, but rather a more distributed pattern.

NOTE: Grab sampling also collects the substrate on which the seed has settled, this explains the high levels of waste.

Starfish were observed on the southern limits of the settlement.

Biomass estimation:

The data collected was interpolated using the IDW (Inverse Distance Weighting) tool in ArcGIS, which was previously used to assess biomass on cockle beds (Hervas *et al.*, 2008).

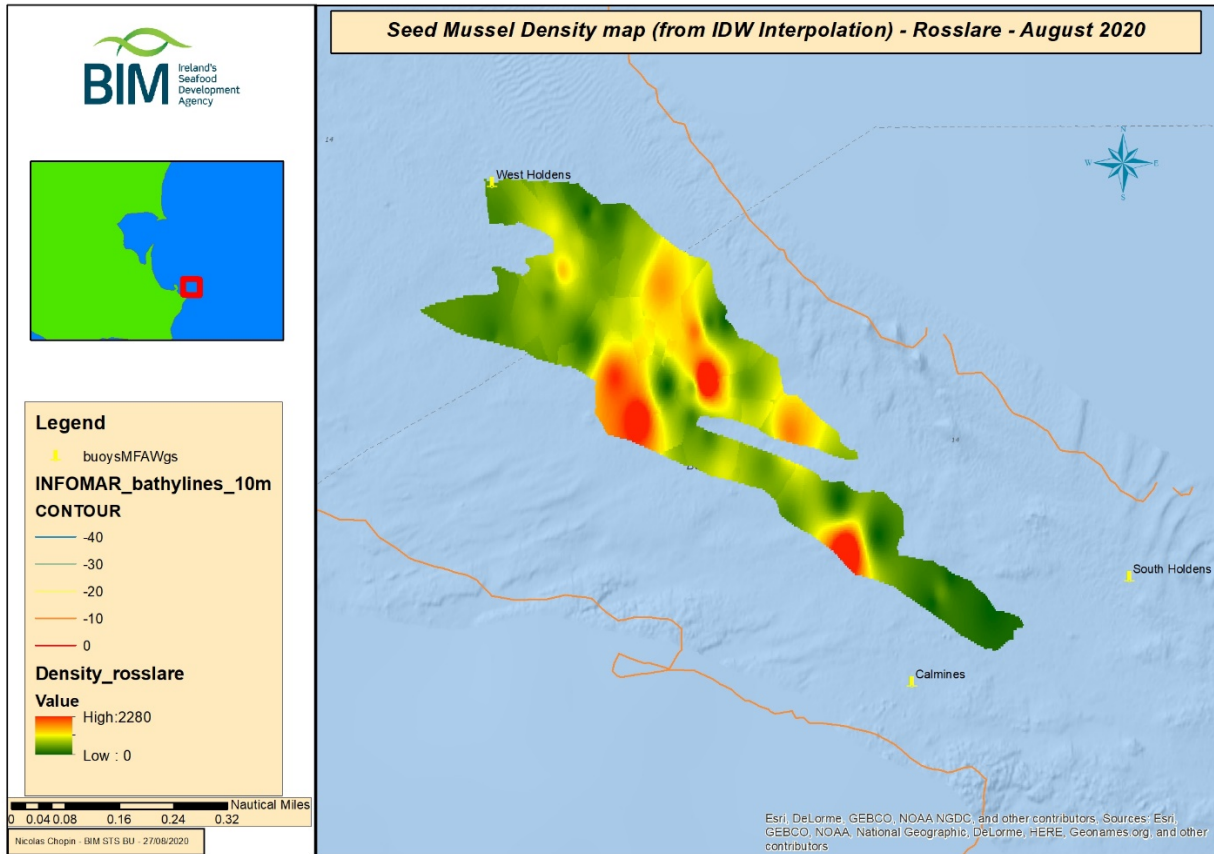


Fig.3: Seed mussel density map (IDW)

Based on the weight of seed collected in each grab, 11 density classes were defined and used to classify the interpolated grid within the bed boundaries. The extent of each class (Hectares) was then calculated (see table 1) and the biomass generated by multiplying the mean weight by the area for each class (Fig 3).

Density Classes in g	Areas in hectares	N samples	Mean Wt. per 0.1 m ⁻² in Kg	Tonnes/Area
0 to 40	1.16	8	0.00	0.00
40 to 250	10.38	11	0.16	164.83
250 to 500	18.26	10	0.34	624.53
500 to 750	10.47	4	0.63	660.58
750 to 1000	6.38	2	0.90	573.83
1000 to 1250	3.09	3	1.18	363.66
1250 to 1500	1.80	1	1.46	262.73
1500 to 1750	0.81	0	0.00	0.00
1750 to 2000	0.34	1	1.76	60.19
2000 to 2250	0.13	1	2.05	26.31
2250 to 2500	0.01	1	2.28	1.33
Total area	52.82		Total tonnage	2737.99

Table 1: Detailed estimations per areas

The total area was estimated to be **52.85 hectares** for a possible biomass of **2,737.99 tonnes** (CI 95% [70.29;427.53]).

Biometrics:

The Rosslare settlement was previously found in early July; therefore, updated biometric measurements on the population was required. A total of 310 individual mussels were measured from two randomly selected grab samples and one overall pooled mix of the grab samples. The size range of the recent survey was as follows; 38 % of the individuals were comprised between 24 and 28 mm while 25% were comprised between 42 and 46 mm (July results on 200 individuals: 41% between 38 and 42 mm and 25% between 16 and 20 mm). This distribution pattern indicates two separate settlement periods (Fig 4).

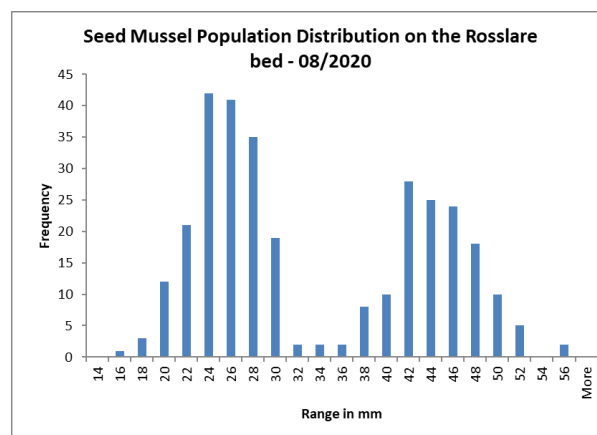


Fig.4: Population size distribution

Recommendations:

The current settlement in Rosslare has a biomass exceeding the 1,500 tonnes which is the minimum threshold for the possible opening of the fishery. It is estimated that this settlement could potentially yield over **2,700 tonnes** of seed. The cumulation of the settlement from the Rusk Channel and Rosslare areas indicate that 6,200 tonnes could be available for transplantation. Considering potential future weather deterioration, the opening of the fishery should be prioritised in the coming weeks.

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References:

Hervas, A. *et al.* (2008) *Assessment, Monitoring and Management of the Dundalk Bay and Waterford Estuary Cockle (Cerastoderma edule) Fisheries in 2007, Fisheries Resource Series.*

<http://www.bim.ie/media/bim/content/publications/aquaculture/BIM-preliminary-smsp-wexf-July-2020.pdf>