

Seed Mussel Beds Survey and Biomass Estimation Report for Rosslare – August 2022

Methodology:

A 400kHz side scan sonar was used to assess the presence/absence of seed mussel feature on the seabed as well as delineate the extent of the possible settlement (van Overmeeren et al. 2009). Georeferenced recorded side scan sonar targets were investigated using a 1 metre dredge deployed for a short tow (usually < 100 m long). The data (dredge and grabs) was recorded using ESRI Field Maps with the Arrow 100 GNSS receiver provide submeter accuracy.

The biomass estimation has been calculated using 0.1m-2 Day grab samples collected randomly within each bed. 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) as well as seed mussel beds in 2020 and 2021 (Chopin and McCoy, 2020).

Survey summary:

As part as the agreed survey schedule, the 2021 mussel beds are checked for potential overwintered stock. A number of relevant features were recorded and investigated following the sides scan sonar survey. A total of 10 tows were done within the surveyed area, 10 of those showing various quantities of seed mussel. Using this data and the side scan sonar imagery, the settlement borders were delineated. At the time of the survey, the bed represents approximately **60 hectares**, situated in the South Shear outside Rosslare Europort at an average depth of 14 m.

Table 1: Areas coordinates (in Degrees, Decimal minutes and WGS84 projection)

Latitude	Longitude
52° 15.257' N	6° 17.970' W
52° 15.095' N	6° 18.022' W
52° 15.284' N	6° 18.718' W
52° 15.557' N	6° 19.169' W
52° 15.758' N	6° 19.146' W
52° 15.766' N	6° 18.704' W
52° 15.645' N	6° 18.474' 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 possible settlement identified (green boxes around the beds on the map).



Biomass estimation:

Random sampling points were generated within the previously established borders of the settlement (see main survey map). A total of 40 grabs were collected including 10 that returned negative with mussels. The average weight per grab 468.67 g (minimum: 60g, maximum 2,420g). 10 weight classes were used for the IDW interpolation, as shown in the table below.

Table 2: Biomass estimation details

Density Classes	Areas in hectares	N samples	Mean Wt per 0.1 m ⁻² in Kg	Tonnes/Area
0 to 60g	3.99	10	0.00	0.00
60g to 100g	5.99	4	0.07	38.95
100g to 200g	13.94	8	0.14	191.62
200g to 300g	11.82	4	0.26	307.40
300g to 400g	4.97	4	0.35	171.56
400g to 500g	6.30	3	0.43	272.99
500g to 750g	8.12	2	0.57	462.97
750g to 1000g	2.77	2	0.90	249.01
1000g to 1500g	1.69	1	1.48	249.88
1500g to 2500g	0.89	2	2.28	202.99
Total area	60.49		Total tonnage	2147.37

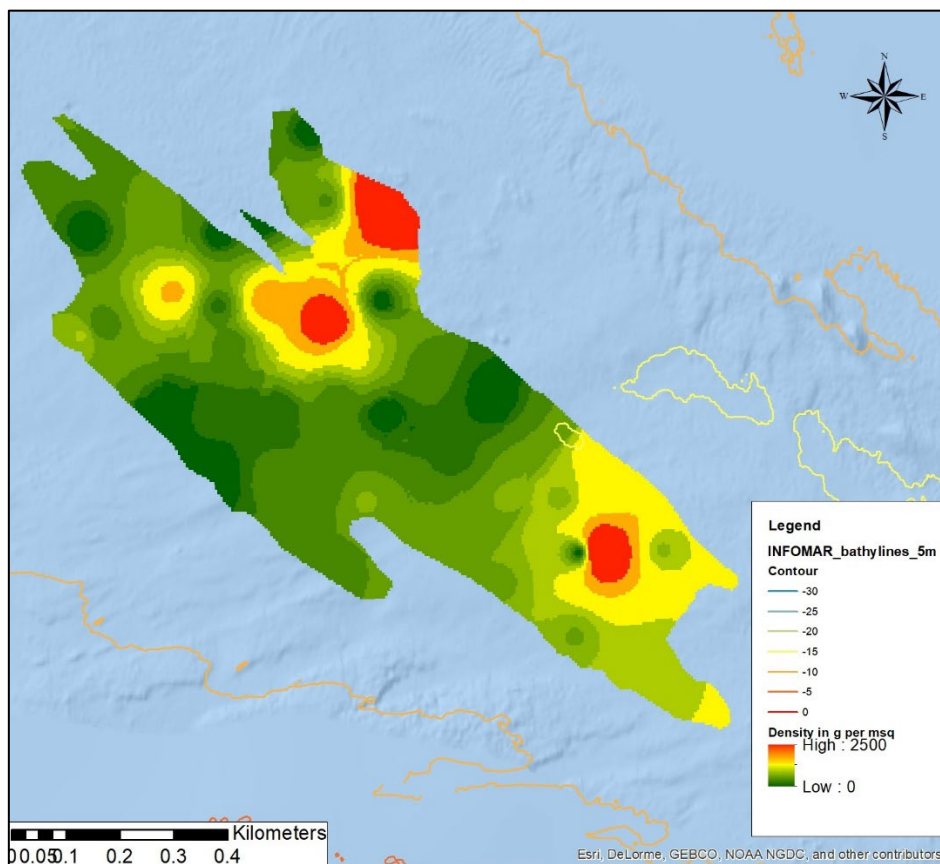
The estimated tonnage at the time of the survey for the main patch was **2,147.37tonnes**. The average size is **46.72 mm** (minimum: 31.06 mm, maximum: 61.84 mm), the 40 to 46 mm size range represented nearly 33% of the measured individuals (303 units).

From the data gathered with the grab and the side scan sonar, it appears that these mussels are scattered over the area forming dense patches in some places (in red on Map 2).

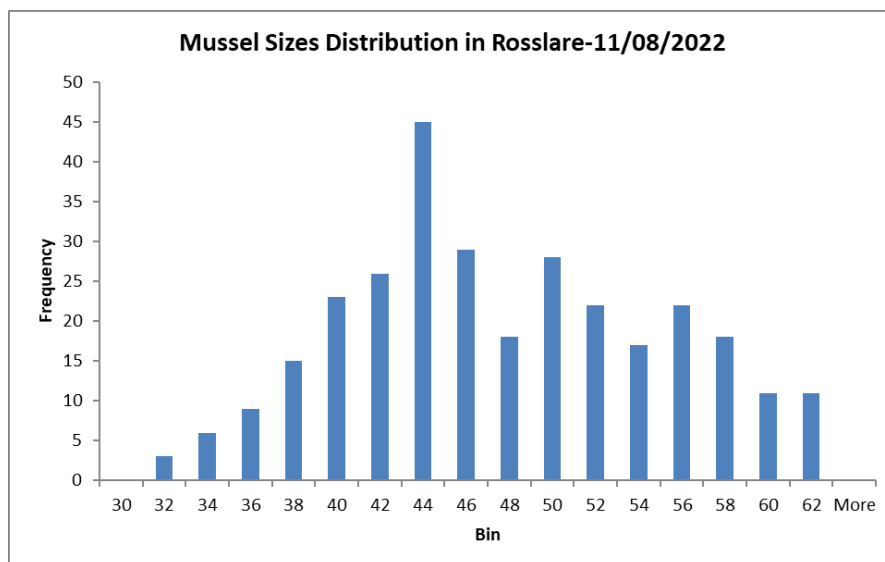
There was no sign of predation on this particular bed and the mussels appear to be in good condition. The average size of the mussels in Rosslare would indicate that biomass is mainly composed of overwintered seed from 2021 with some appearing to be from 2020. Indeed, most of the mussels having a greater size (>55 mm) show more fouling from barnacles and bryozoans. As in Wicklow and Cahore, at the time of the survey, no recent recruitment was visible (no mussels below 30 mm in length). The average waste through the grab samples was 65% of the original weight of the grab (minimum:10%, maximum: 97%), and was mainly composed of stones, gravel, and shells debris.

A Condition Index (CI) on the mussel meat was also carried out using the suitable method described in (Davenport and Chen 1987). At the time of the survey, the mussels presented a CI of 28%.





Map2: Density distribution from IDW interpolation for Rosslare



Graph 1: Mussel size distribution for Rosslare

Summary:

The settlement currently spread over **60 hectares** and yield over **2,000 tonnes** of overwintered mussel of 1 and 2 years old with an average size of **46 mm**. There was no self-recruitment visible for 2022. The highest densities were observed along the eastern border of the bed. At the time of the survey, the mussels did not show any visible spawning or maturation patterns (Chipperfield 1953).

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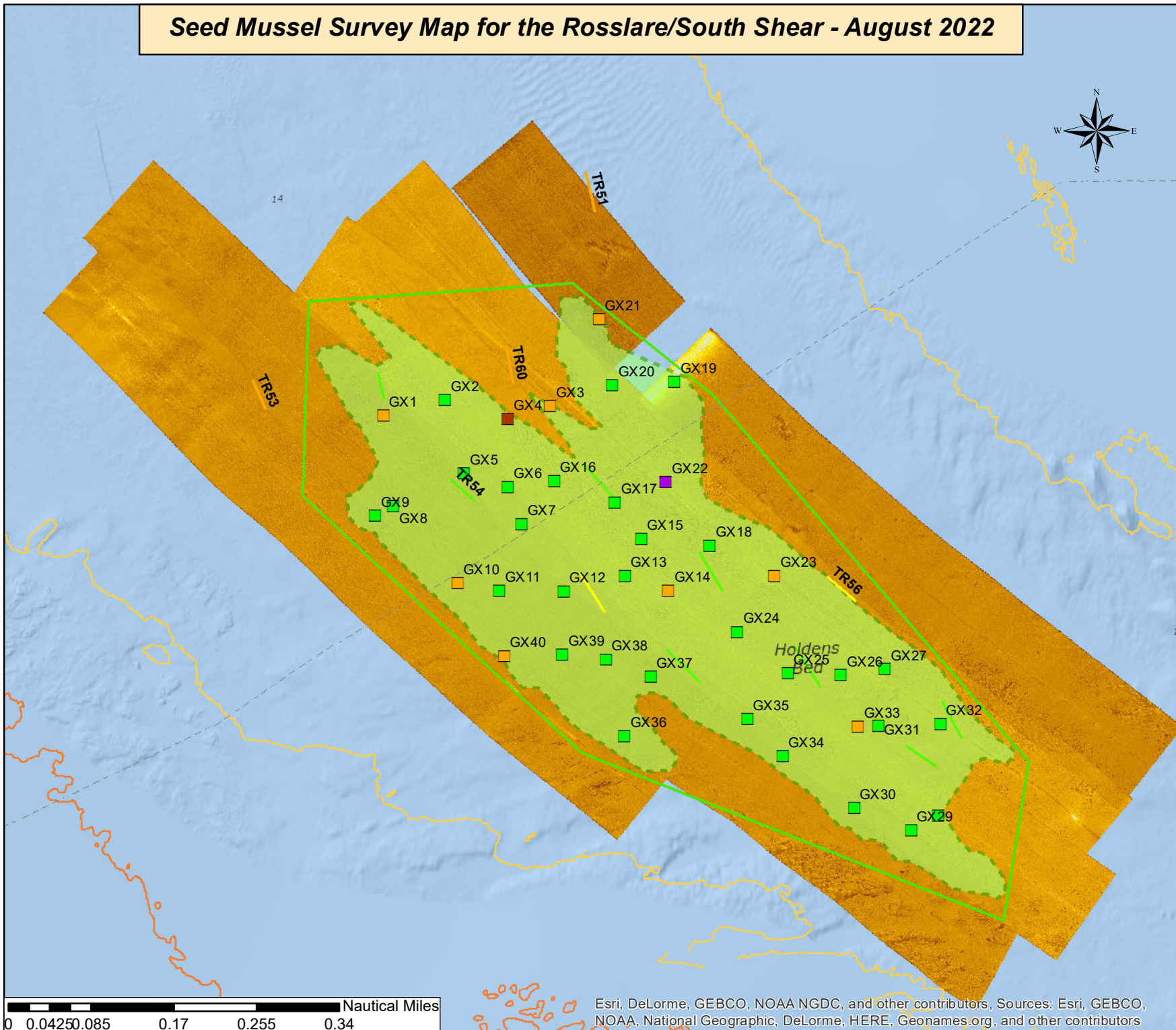
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Seed Mussel Survey Map for the Rosslare/South Shear - August 2022



Legend

Grabs content

- seed
- other species
- shells stones
- mud

Tows content

- seed
- shells_stones
- signs
- Bed_extent
- possible_beds
- Side scan sonar tracks

INFOMAR_bathylines_5m

Contour

- 0
- -5
- -10
- -20
- -30
- -40

0 0.04250.085 0.17 0.255 0.34 Nautical Miles

Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors, Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors

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