

## Preliminary Seed Mussel Survey Report for the Rusk Channel – 24 and 25/07/2024

**Methodology:** Acoustic data collection using 400 kHz side scan sonar, data processing on SonarWiz 6 and ground truthing of acoustic targets with a standard seed mussel fishing dredge meter dredge (BIM, 2016; Chopin, 2024; Van Lancker et al., 2007; van Overmeeren et al., 2009).

**Area surveyed:** In the area of (see map).

### Survey details:

The survey extended from the Rusk Buoy N.1 south to the north end of the Rusk Channel near the North Blackwater cardinal buoy. The survey was split into two areas over the two days. The southern half was surveyed with the sonar on the 24<sup>th</sup>, this yielded 15 acoustic targets with relevant features. 14 tows averaging 200 meters in length were carried out on those targets. Small quantities of 20 mm length seed were found in tows TC5 and TC8 (less than a quarter of a dredge, mixed with stones, shells, and other organisms). The largest quantity was found in TC6 which contained approximately a quarter dredge of clean seed. Seed was not found in any other tows on the day. The second area was surveyed on the 25<sup>th</sup> where 17 targets were identified. A total of 25 tows were carried out (averaging 200 m in length), including few extra tows on the southern area. Very small quantities of seed (20 mm in length) were found in TC16 and TC17. No other traces of seed were found in the proximity of those tows. However, TC18 contained half a bag of empty mussel shells (30 mm in length). Some traces of seed were found in TC32.



## Biometrics:

A sample was collected in TC6 (Fig.2). The seed presented dense byssus mating with a significant amount of smaller spat through it. The sample indicated low amount of waste material (27% of the total sample weight), mainly composed of gravel, shells and byssus mating. 200 individuals were subsampled to assess the size distribution. The average length of the seed is 23.06 mm (maximum: 30.95 mm, minimum: 6.68 mm). The most represented size class is from 30 to 34 mm (27% of the mussel measured) However, the analysis of the size distribution indicates that there is also a significant amount of smaller individuals (Fig.1).

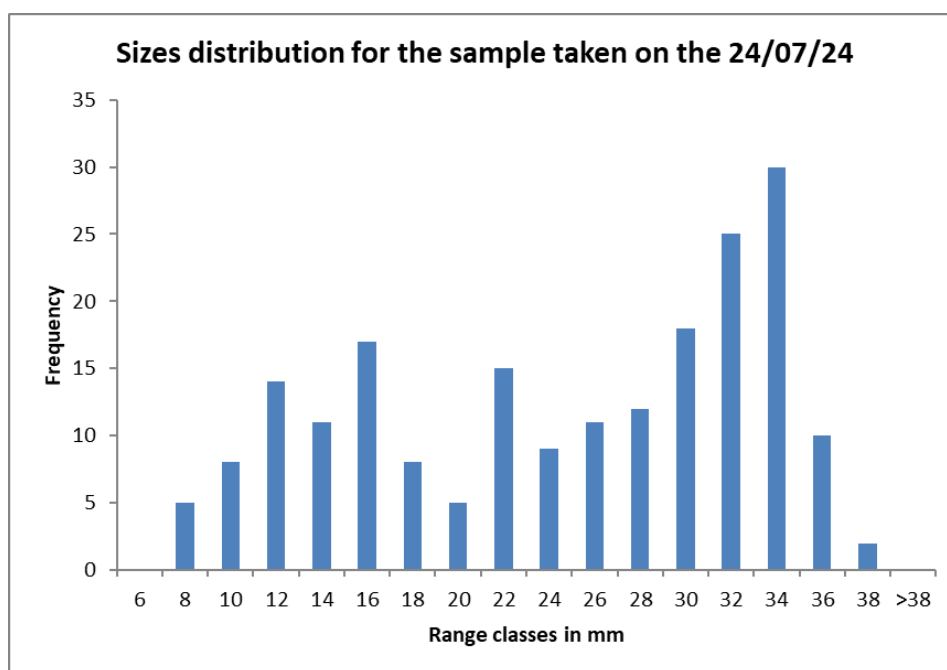


Fig.1: Seed mussel size distribution through the sample of TC6 (N=200)

## Summary:

No significant settlement was identified during the survey of the Rusk Channel. Some sporadic seed was observed in two locations within the surveyed area, with the seed observed in the south section appearing to be the most promising. The average size of the seed found during the survey was **23.06 mm**, with the sample indicating possible **multiple settlement throughout the last couple of months** (significant

amount of mixed smaller sizes). This could be the results of trickle spawning of mature mussels which has been observed previously (BIM, 2018; Chopin, 2024; Demmer et al., 2022; Strong, Service, & Moore, 2016).

Further survey is required in the south part of the Rusk Channel (between the channel buoys) and near the small patches identified in 2023.

*BIM Aquaculture Technical Section*

31/07/2024



Fig.2: Seed mussel from the Rusk Channel (TC6)

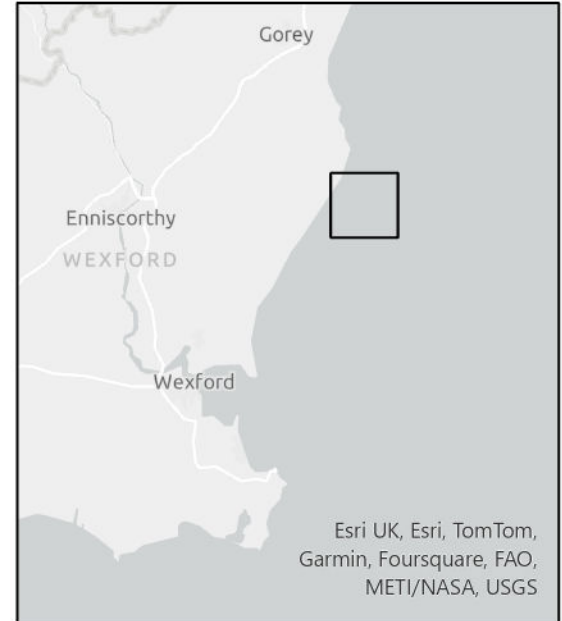
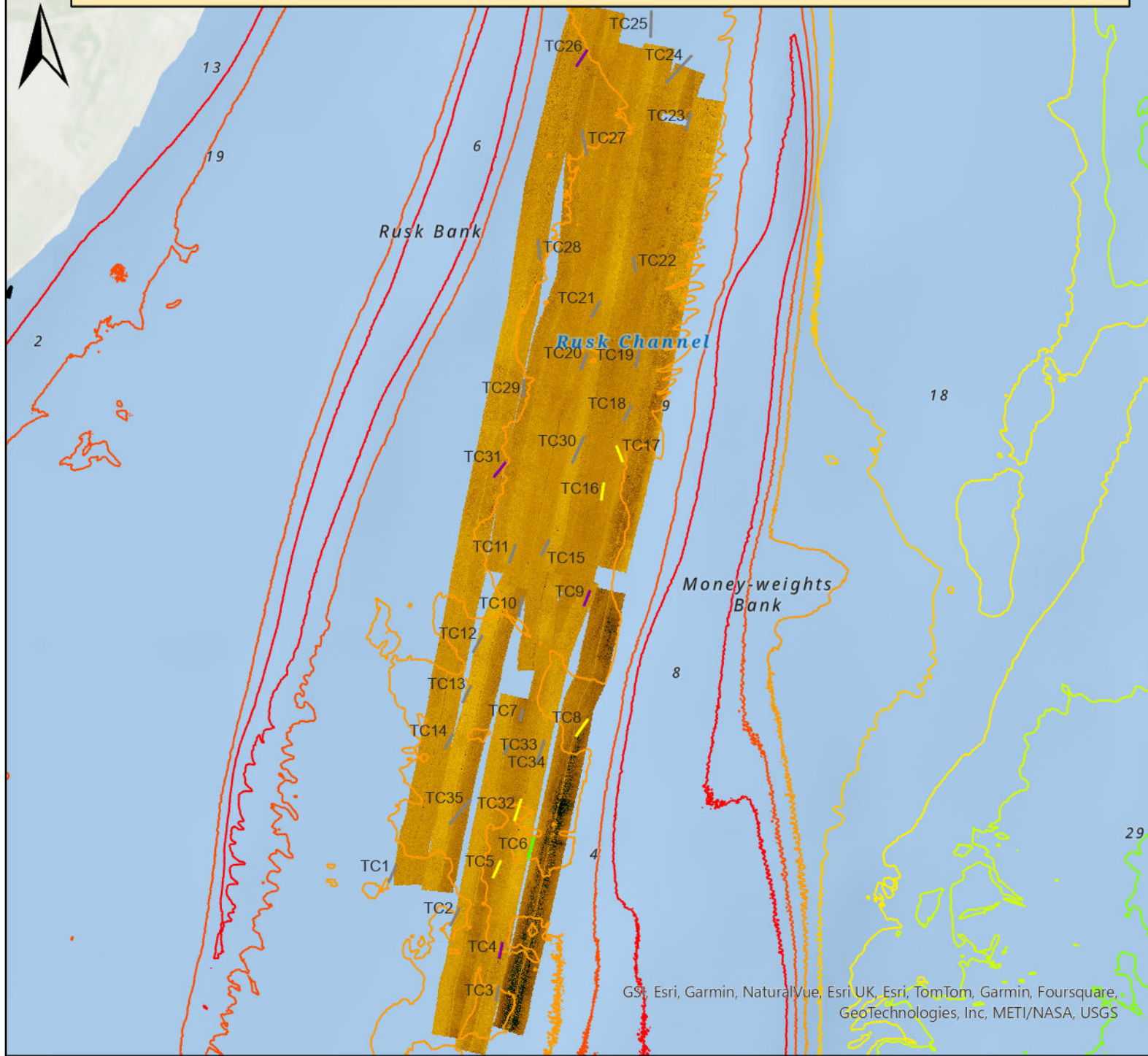
## REFERENCES

- BIM. (2016). *Side Scan Sonar Features Catalogue*. Retrieved from [https://www.researchgate.net/publication/358640202\\_Side\\_Scan\\_Sonar\\_Features\\_Catalogue\\_related\\_to\\_Aquaculture\\_and\\_Inshore\\_Fishing\\_Activities#fullTextFileContent](https://www.researchgate.net/publication/358640202_Side_Scan_Sonar_Features_Catalogue_related_to_Aquaculture_and_Inshore_Fishing_Activities#fullTextFileContent)
- BIM. (2018). *2018 Spring Mussel Larvae Monitoring*.
- Chopin, N. (2024). *Temporal and Spatial Settlement of Subtidal Seed Mussels on the Southeast coast of Ireland*. Bangor University. Retrieved from [https://research.bangor.ac.uk/portal/en/theses/temporal-and-spatial-settlement-of-subtidal-seed-mussels-on-the-southeast-coast-of-ireland\(63c5e187-82ac-4a73-a9fc-efbe7d34328c\).html](https://research.bangor.ac.uk/portal/en/theses/temporal-and-spatial-settlement-of-subtidal-seed-mussels-on-the-southeast-coast-of-ireland(63c5e187-82ac-4a73-a9fc-efbe7d34328c).html)
- Demmer, J., Robins, P., Malham, S., Lewis, M., Owen, A., Jones, T., & Neill, S. (2022). The role of wind in controlling the connectivity of blue mussels (*Mytilus edulis* L.) populations. *Movement Ecology*, *10*(1), 1–15. <https://doi.org/10.1186/s40462-022-00301-0>
- Strong, J. A., Service, M., & Moore, H. (2016). Estimating the historical distribution, abundance and ecological contribution of *Modiolus modiolus* in Strangford Lough, Northern Ireland. *Biology and Environment*, *116B*(1), 1–16. <https://doi.org/10.3318/BIOE.2016.1>
- Van Lancker, V., Du Four, I., Papili, S., Verfaillie, E., Schelfout, K., Rabout, M., & Degraer, S. (2007). Habitat signature catalogue, Belgian Part of the North Sea.
- van Overmeeren, R., Craeymeersch, J., van Dalssen, J., Fey, F., van Heteren, S., & Meesters, E. (2009). Acoustic habitat and shellfish mapping and monitoring in shallow coastal water - Sidescan sonar experiences in The Netherlands. *Estuarine, Coastal and Shelf Science*, *85*(3), 437–448. <https://doi.org/10.1016/j.ecss.2009.07.016>





# Preliminary Seed Survey Map for the Rusk Channel - July 2024

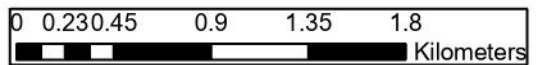


Esri UK, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS

## Legend

Tows	Bathymetric lines in meters
seed	-5
other species	-10
shells stones	-15
signs	-20
sonar tracks	-25
	-30
	-35
	-40
	-45
	-50
	-55
	-60

Do not use for navigation  
 Map prepared by : Nicolas Chopin, BIM,  
 29/07/2024  
 Credits bathymetry data: INFOMAR 2023



Esri, Garmin, NaturalVue, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS