

Seed Mussel Survey Report for the Rusk Channel (updated)- 11/09/2024

Methodology: The acoustic data was collected using 400 kHz side scan sonar, and the data was processed on SonarWiz 6. Ground truthing of acoustic targets was carried out using a standard seed mussel fishing dredge meter dredge. The spatial data (dredge and grabs) was recorded using ESRI Field Maps with the Arrow 100 GNSS receiver for submeter accuracy (Van Lancker *et al.*, 2007; van Overmeeren *et al.*, 2009; BIM, 2016; Chopin, 2024).

Area surveyed: Between the Rusk Buoy No. 4 and the Rusk Buoys No.1 and 2 (see map).

Survey details:

Some scattered seed was identified in this particular area at the end of July (25/07/2024 see full report [BIM - Aquaculture](#)). At the time of this previous survey, the full extent of this potential settlement could not have been finalised. Due to the suitable tidal stage (near slack water), it was decided to collect grab samples at the location. Nineteen stations were randomly generated in proximity to the tows that indicated mussels from the previous survey. Only five grabs contained seed mussel. Further investigation was conducted using the side scan sonar. Following acoustic data processing, an area representing **17 hectares** was defined.

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

Latitude	Longitude
52° 29.515' N	6° 11.000' W
52° 29.300' N	6° 10.925' W
52° 28.846' N	6° 11.212' W
52° 28.872' N	6° 11.344' W
52° 29.166' N	6° 11.257' W
52° 29.515' N	6° 11.000' 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 box around the beds on the map).

This small settlement stretches over 1,000 m long (north to south) at 200 m at its widest. However, the boundaries of the settlement were difficult to establish from the sonar data, as the typical seed mussel bed features usually observed on high-density beds appeared very light on the data. Two tows were also carried for ground truthing. TC41 was 291 m long and produced a $\frac{3}{4}$ quarter full dredge, while TC42 was 222m and only produced a quarter dredge of seed. The combination of the amount of seed found in the dredges and the lack of seed mussel features on the acoustic data indicate that the available mussel biomass on the seabed is limited. The biomass survey using the grab was also cancelled due to the lack of positive results in the area (5 grabs with seed against 14 with no seed). For a reliable survey, the number of grabs presenting seed must be over 50% of the overall number of grabs (Chopin, 2024)

Biometrics:

A sample was collected in TC41 for analysis, and the length of 200 mussels was recorded using an electronic calliper. The average length was **32.65 mm** (min: 10.55 mm, maxi: 46 mm), with the range classes between 36 and 42 mm the most represented (41% of the overall sample). A small quantity of smaller individuals was also observed in the samples (from 22 to 30 mm), representing 22% of the sampled population. The two distinctive size classes(binomial distribution) observed at the end of July were not as clear in the September sample, likely due to the exponential growth of the seed. Indeed, the average size recorded on 24/07/24 was 23.62 mm (mini: 6.22mm, maxi:37.63 mm). The number of individuals per kilogram also reflects this growth, passing from 620 pieces/kg in July to **332 pieces/kg** in September. Less waste (non-mussels) was found in the September sample (from 27% in July to 9% in September).



Overall, the mussels appear to be in good condition, presenting strong shells and strong byssus attachment. No significant mortality was observed in this settlement despite the presence of a large number of spider crabs (*Maja brachydactyla*).

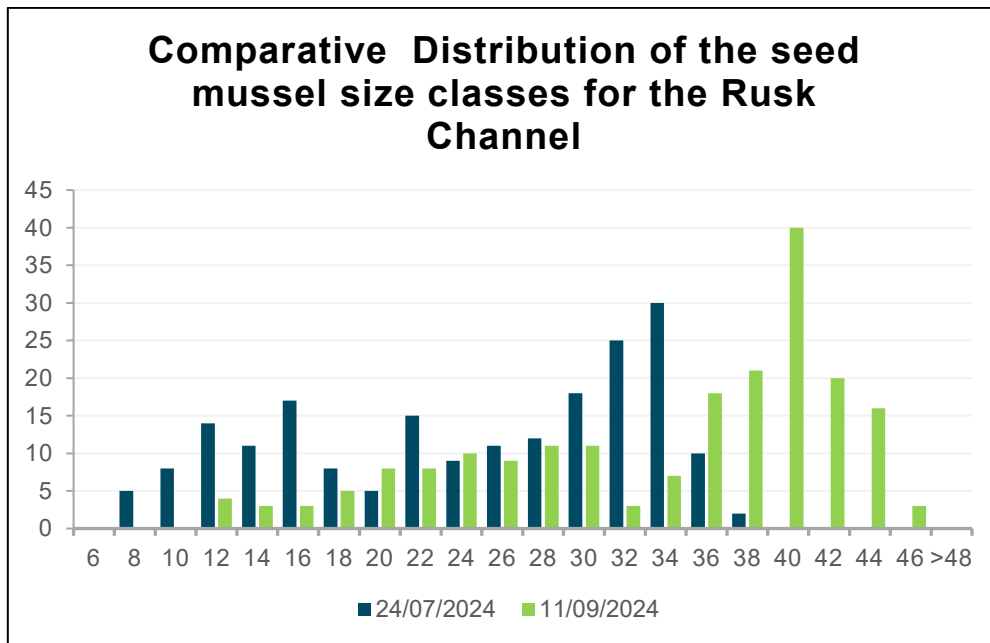


Fig.1: Mussel length distribution during the two surveys in the Rusk Channel

Summary:

The biomass survey of the seed mussel present in the Rusk Channel failed to indicate any available tonnage. Although, good quality seed was found, the quantities are too limited to carry out a comprehensive survey. The area is small (**17 hectares**), and the seed appears to be in good condition (**significant growth from the previous survey**). However, the addition of the available biomass in Wicklow (600 tonnes) and this small settlement would still be below the 1,500 tonnes threshold for opening the fishery.

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 Seafood Technology Services Business Unit
 BIM

References:

BIM. 2016. Side Scan Sonar Features Catalogue.

Chopin, N. 2024. Temporal and Spatial Settlement of Subtidal Seed Mussels on the Southeast coast of Ireland. Bangor University. 127 pp. [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).

Van Lancker, V., Du Four, I., Papili, S., Verfaillie, E., Schelfout, K., Rabout, M., and Degraer, S. 2007. Habitat signature catalogue, Belgian Part of the North Sea.

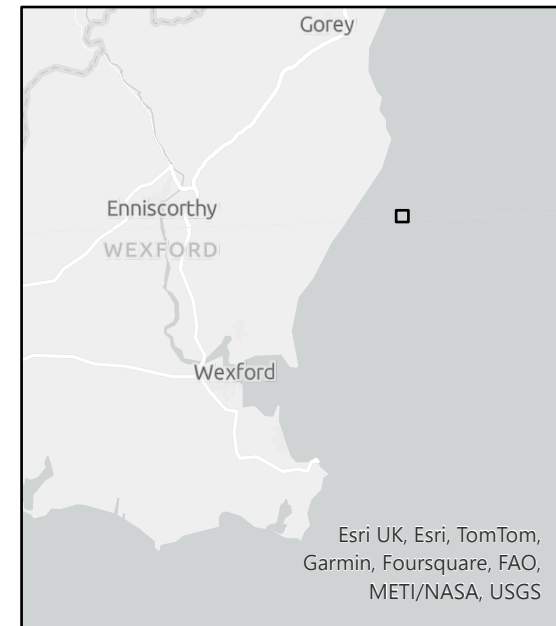
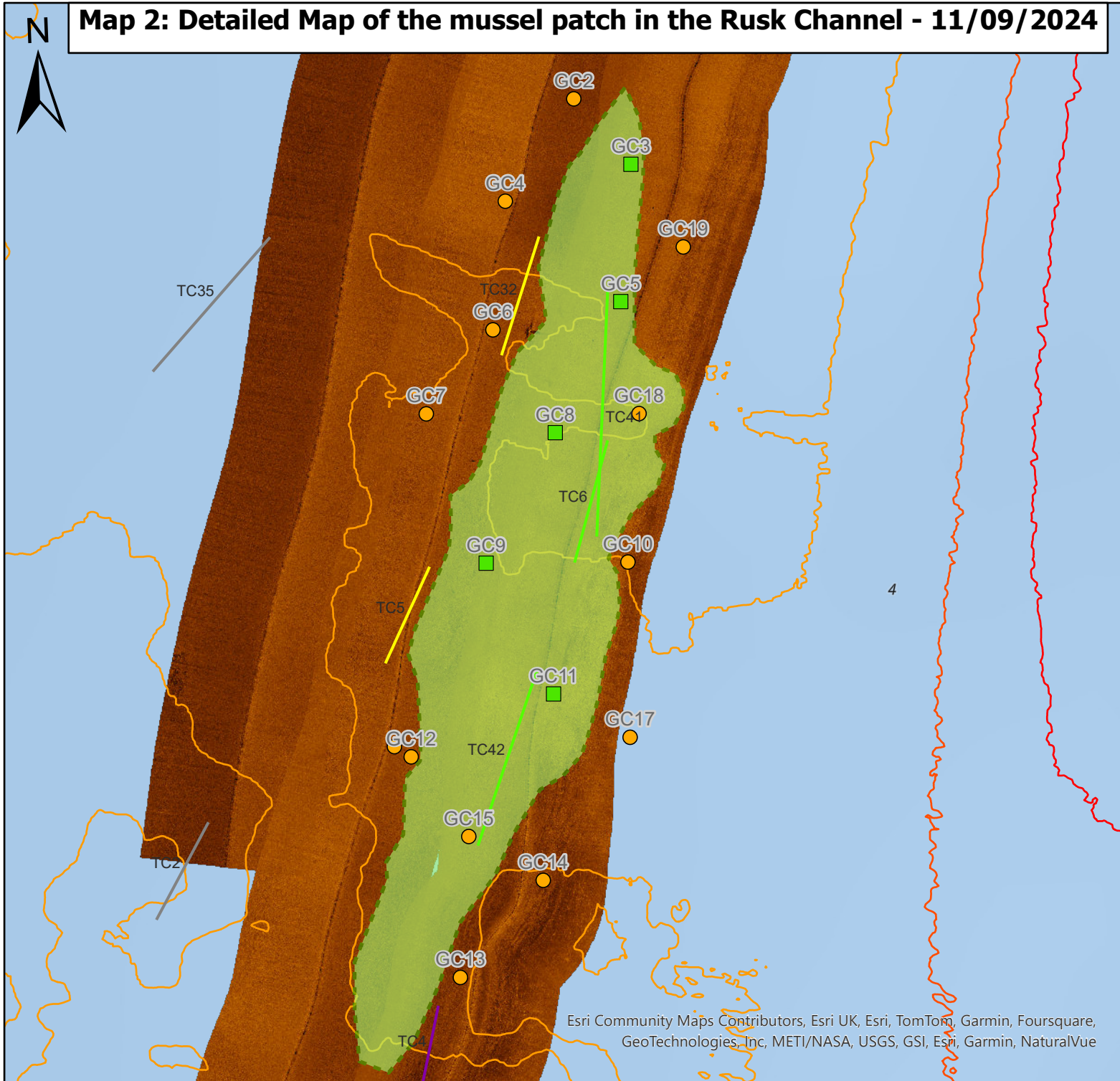
van Overmeeren, R., Craeymeersch, J., van Dalssen, J., Fey, F., van Heteren, S., and Meesters, E. 2009. Acoustic habitat and shellfish mapping and monitoring in shallow coastal water - Sidescan sonar experiences in The Netherlands. *Estuarine, Coastal and Shelf Science*, 85: 437–448. Elsevier Ltd.



Fig.2: Dredge content from TC41 in the Rusk Channel



Map 2: Detailed Map of the mussel patch in the Rusk Channel - 11/09/2024

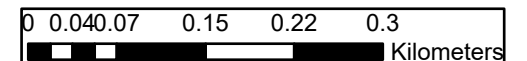


Esri UK, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS

Legend

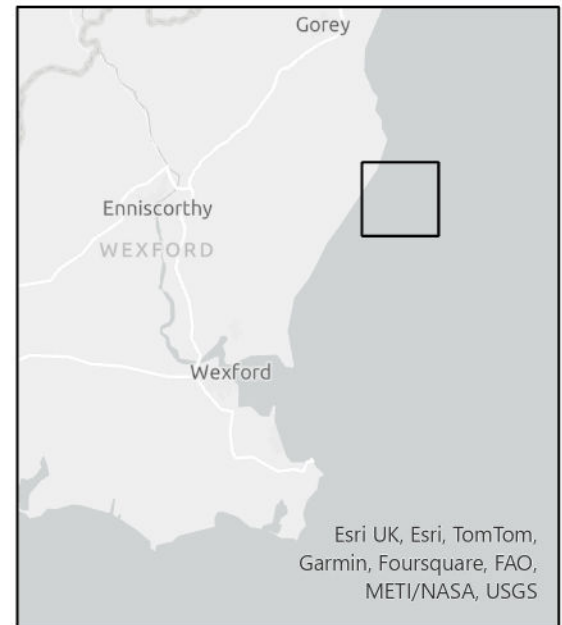
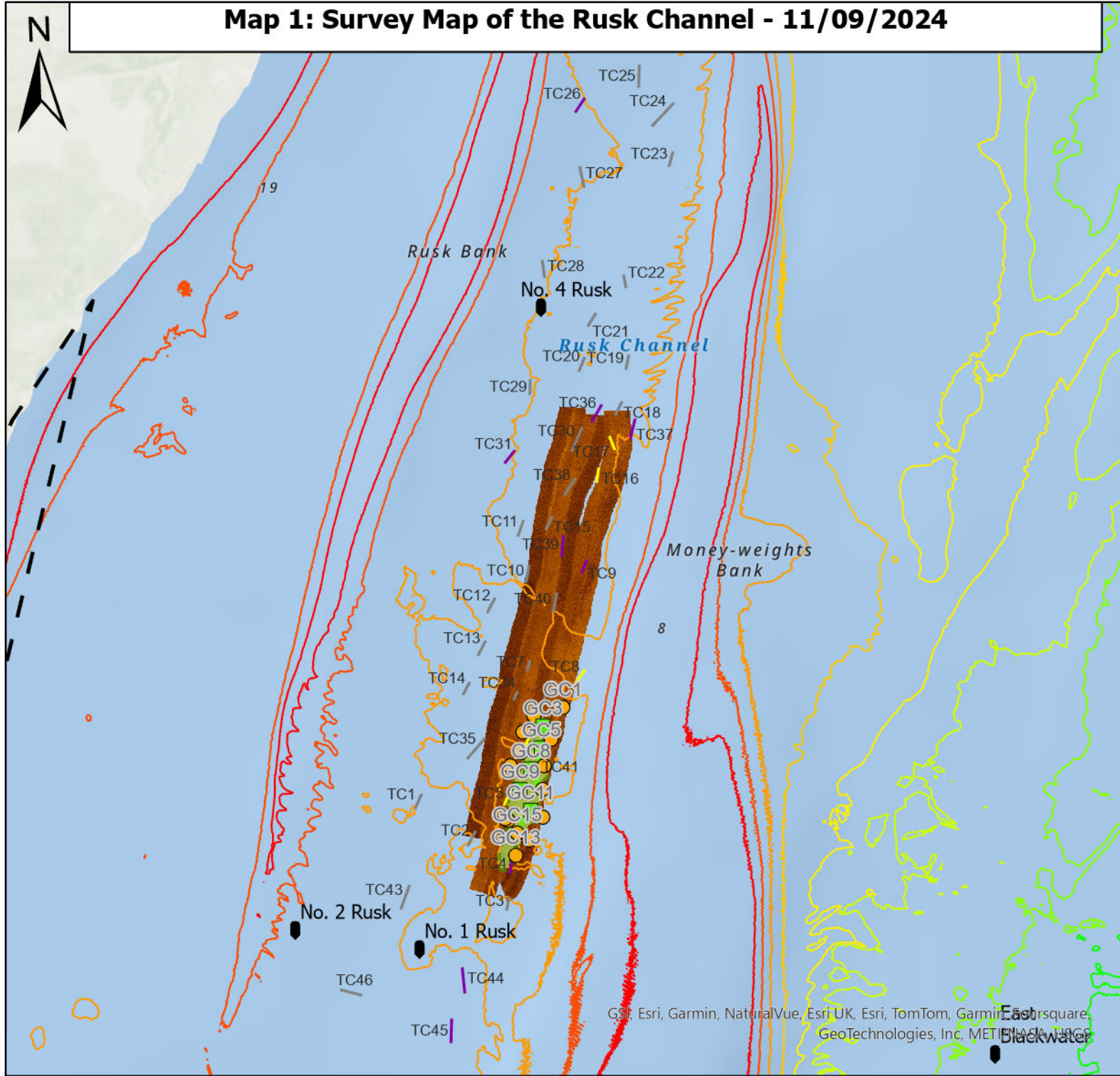
Grab Sample	Bathymetric lines in meters
● shells stones	— -5
■ seed	— -10
■ jammed	— -15
■ mud	— -20
■ other species	— -25
— Tows	— -30
— seed	— -35
— other species	— -40
— shells stones	— -45
— signs	— -50
■ seed_beds_24	— -55
■ sonar tracks	— -60

Do not use for navigation
 Map prepared by : Nicolas Chopin, BIM,
 13/09/2024
 Credits bathymetry data: INFOMAR 2023



Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, GSI, Esri, Garmin, NaturalVue

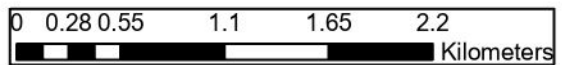
Map 1: Survey Map of the Rusk Channel - 11/09/2024



Legend

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

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