The community composition of benthic foraminifera in the saltmarshes of Y Foryd Nature Reserve, Menai Strait, Wales

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Introduction and Study Site

The abundance and distribution of foraminifera were investigated at a Site of Special Scientific Interest in North Wales. Key environmental parameters (salinity, pH, temperature and dissolved oxygen) were assessed in relation to the vertical and horizontal community composition of foraminifera in the mudflat and salt marsh habitats of Foryd Bay (Fig.1), a partially enclosed intertidal bay in Y Foryd Nature Reserve.

Fig.1. High (a), low (b), tidal (c), and subtidal (d) marsh habitats in Y Foryd Nature Reserve, North Wales

Fig.2. Foraminiferal characteristics, morphology and diversity

Background

Benthic foraminifera are unicellular organisms that form hard external skeletons and are an important component of marine and estuarine food webs [1,2,4].

- **Pseudopodia aid movement, feeding, respiration, and locomotion (Fig.2)**
- **Benthic foraminiferal microhabitats: epifaunal (the surface of the substrate) and infaunal (in the sediment) niches**
- **Preserved fossils of calcareous tests are useful for biostratigraphy and paleoclimatology**
- **Calcareous tests are also susceptible to carbonate corrosive environment and react quickly to disturbances**
- **Test deformities (Fig.2) increase at polluted areas as indicators of environmental change in coastal and estuarine habitats.**

Methods

Sediment core samples were collected from Y Foryd in October 2018. Each sample was sectioned at 0-1 and 1-10cm, wet sieved and preserved in rose Bengal solution. Foraminifera were identified and mounted on micropaleontology slides for identification. The composition of living and dead foraminiferal assemblages were analysed separately.

Fig.3. Map of the Foryd Estuary area showing the location of the nearshore zone transcect

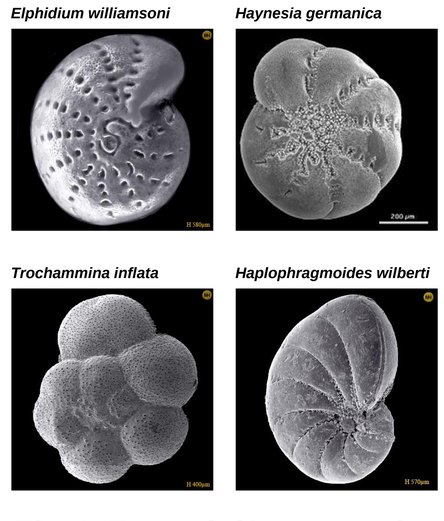

Fig.4. Foraminiferal species found in the Foryd Estuary

Preliminary Results and Discussion

- **Confirmation of the presence of *Elphidium williamsoni*, *Haynesia germanica* ,*Trochammina inflata and Haplophragmoides wilberti* (Fig.4) and a diverse range of invertebrates [3]**
- **Evaluating live and dead assemblages seems to be a more accurate method to reflect current environmental conditions of the area [1] (Fig.5)**
- **The faunal characteristics of foraminifera can be used to support their potential use as bioindicators of water quality in environmental monitoring programs [1]**
- **Environmental disturbances vary, and need to be further assessed and tested in different ecosystems**

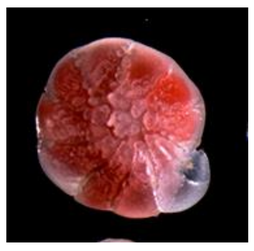

Fig. 5. Distinguishable live foraminifera protoplasm stained by rose Bengal

References

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