

Diversity and distribution of ostracods in a high-use coastal ecosystem, Bay of Sept-Îles, Québec

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Québec
Océan

Coastal Ostracoda

Why study ostracods ?

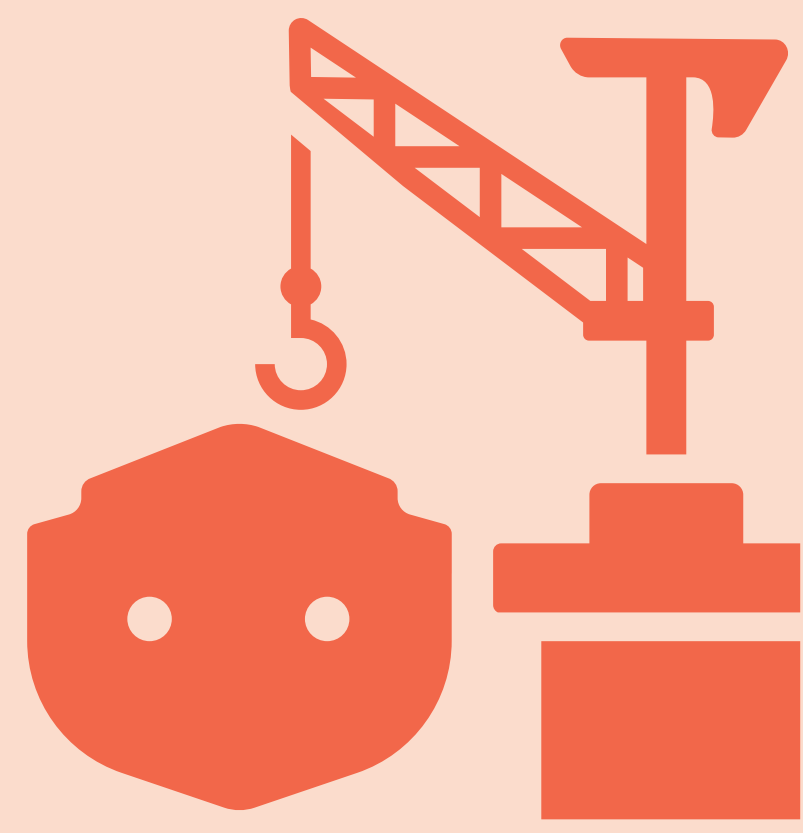
- Good **bio-indicators** : Present in water bodies around the world, good **preservation**, extensive **fossil record**, sensitive to changes in their environment, high **abundance** and **diversity** ^{1,2}

Why study the Bay of Sept-Îles (BSI) ?

- Region submitted to various **port, industrial, maritime** and **urban** activities ³
- Constant **perturbation** of the ecosystem and benthic communities by anthropic activities ³
- Region submitted to **climate change** effects, such as a reduction in winter ice cover

OBJECTIVES

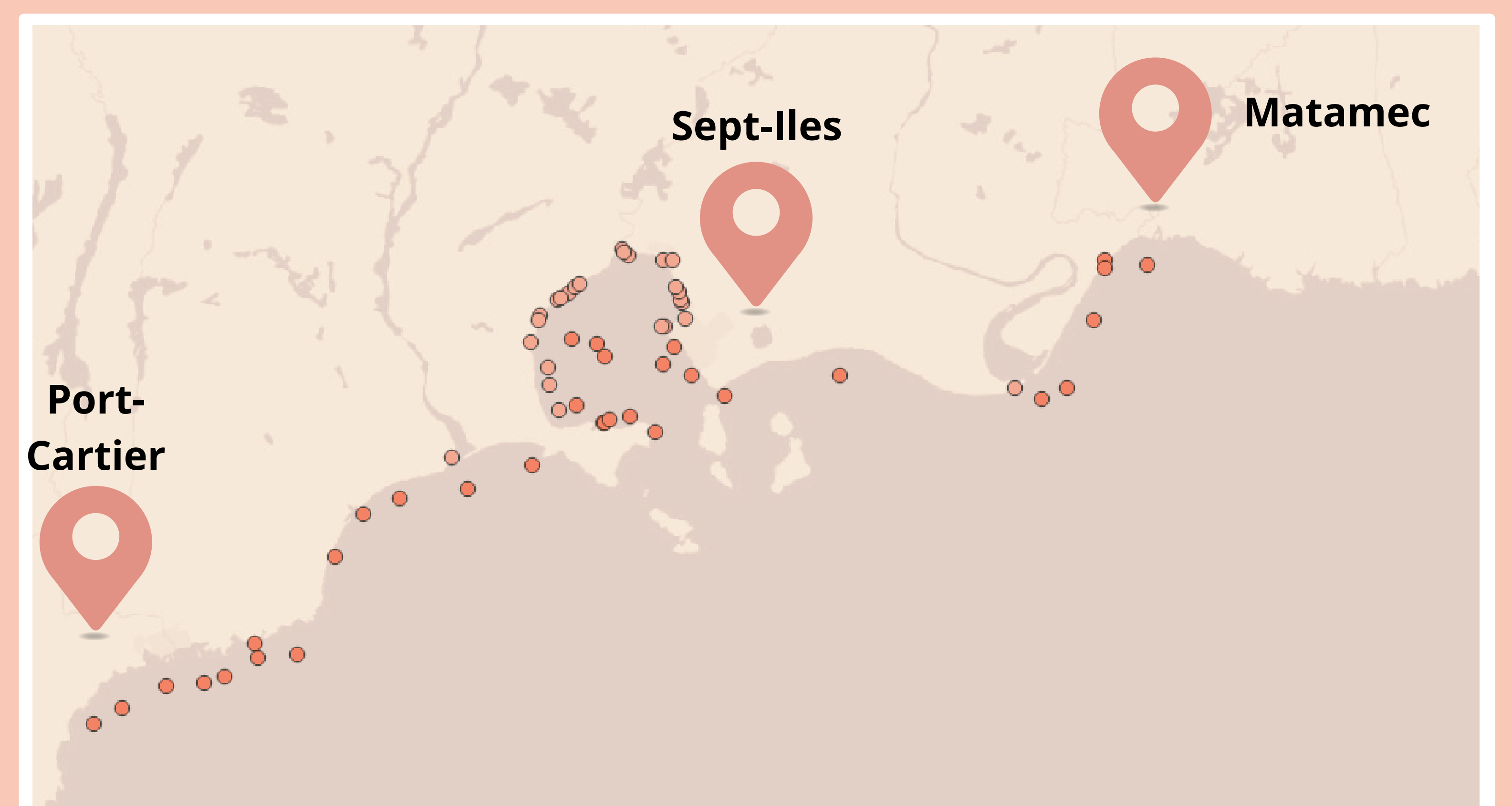
1. **Characterize ostracoda** from the Sept-Îles region
2. Determine the **environmental factors** which explain the **distribution** and **abundance** of ostracoda in the study area



Sub-arctic coast of Canada

Bay of Sept-Îles

- Connected to **Gulf of St-Lawrence**
- **Marine** to **brackish** water gradient
- Ecosystems : sandy beaches, mud flats, salt marshes, urbanized structures



Field sites : Intertidal zone Bay of Sept-Îles
Field sites : Deeper zone (15-20 m) from Port-Cartier to Matamec

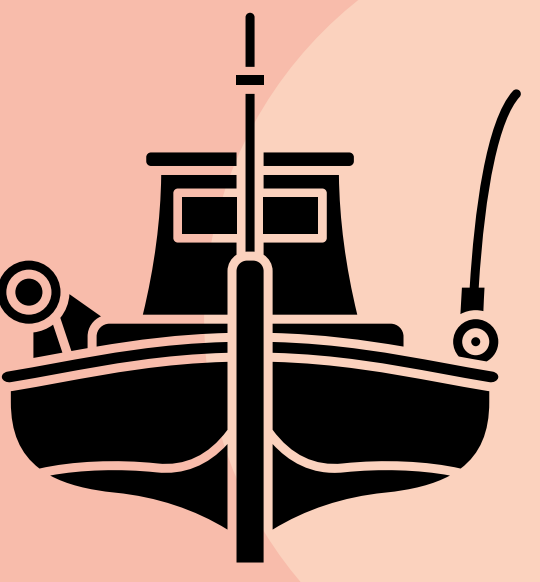
Ostracoda sampling

Habitats :

Bay, port and gulf | Bay

Materials :

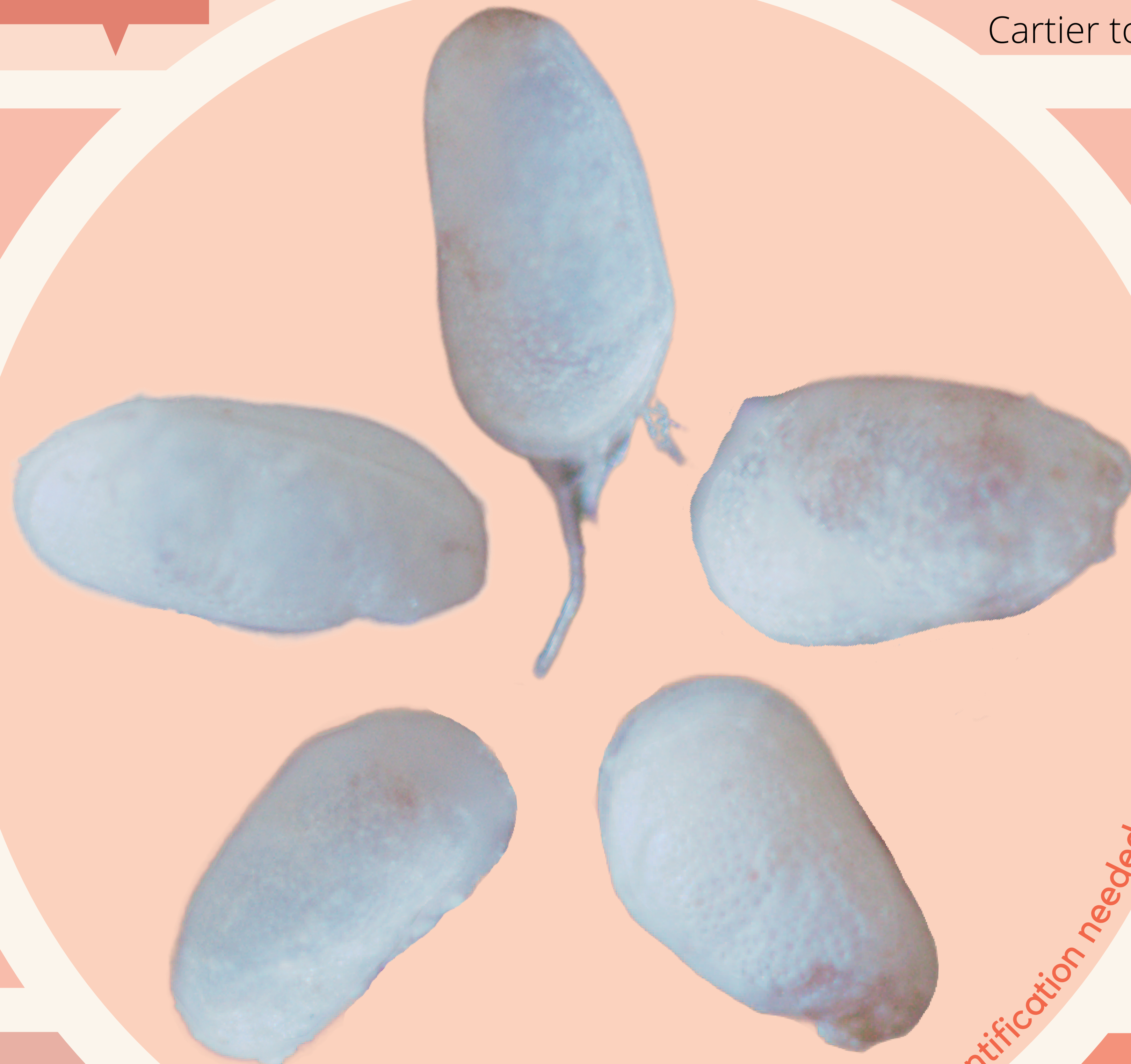
Grab | Small corer



Substrates :

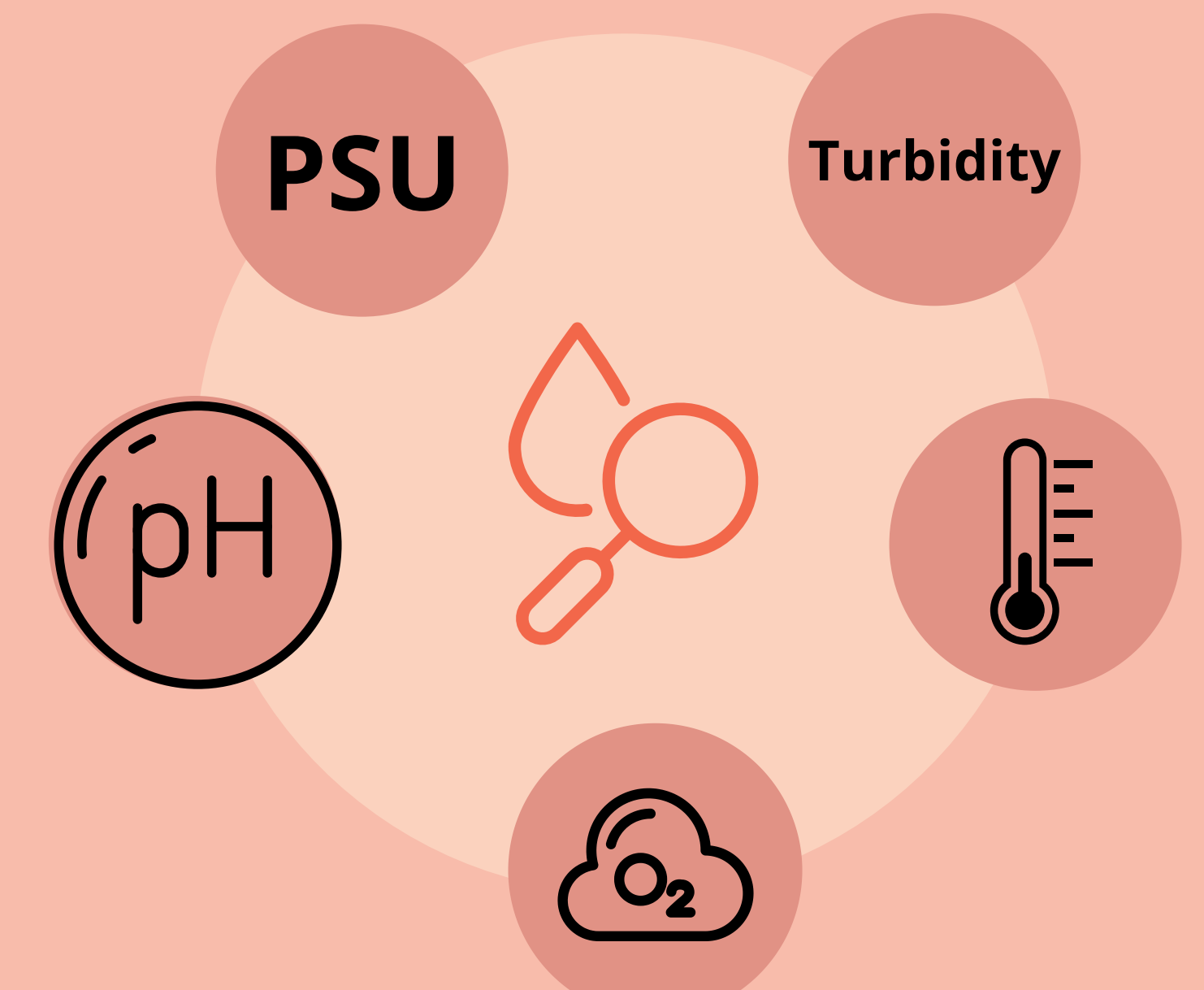
Rocky and sandy substrate | Fine silty sediments and zosteria root sediment

Sampling in summer season of 2021 and 2022.



Measurements

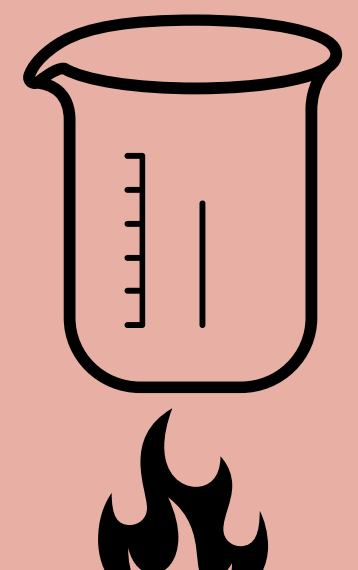
Environmental parameters



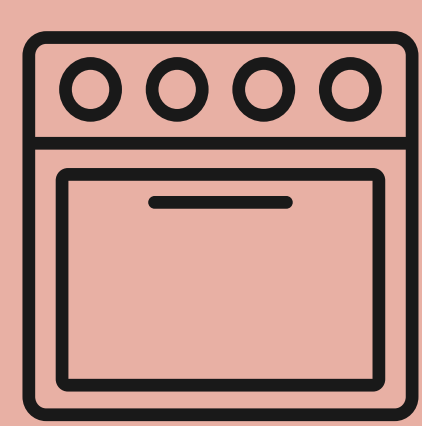
Other parameters : Conductivity, ORP, redox potential, TDS, chloride, sulfides, calcium, iron magnesium, manganese, potassium, sodium, silicium, phosphorus, nitrogen

Analyses of ostracoda and sediment ⁴

- 1 Disaggregation
- 2 Sieving
- 3 Drying
- 4 Picking
- 5 Identification



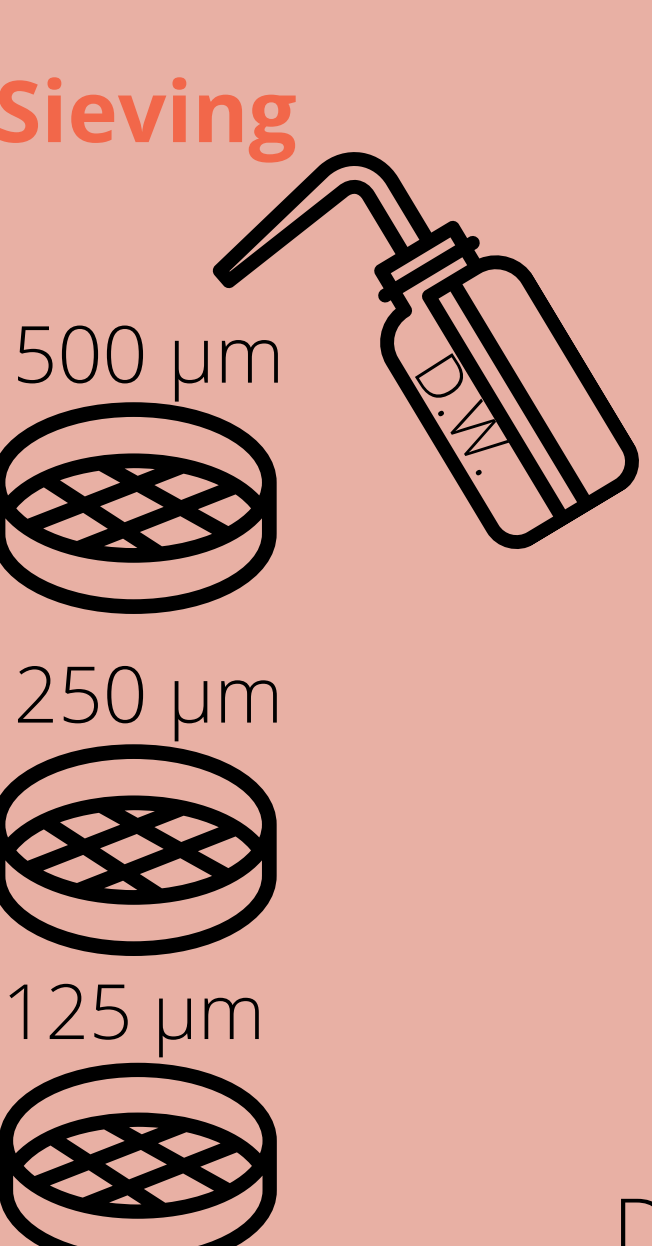
H₂O₂
w/v 5-15%
+Heat
4-8 h



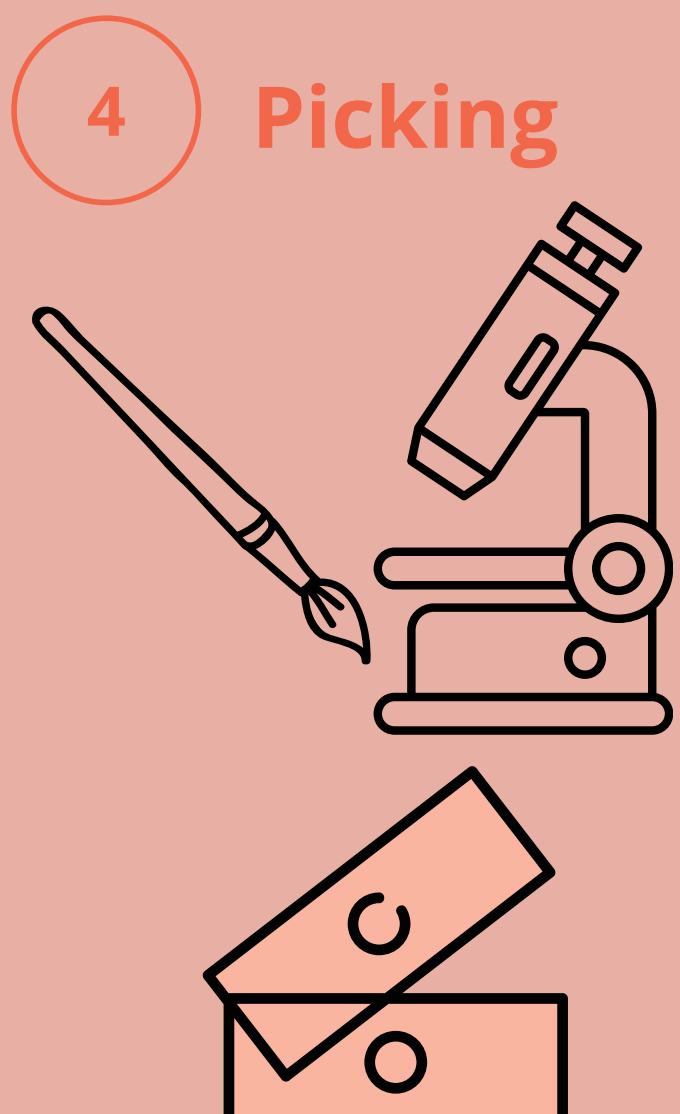
Oven dried
60°C
18-24 h



Light microscope
Ostracoda literature



500 µm
250 µm
125 µm



Dissecting microscope
Fine wet brush
Paleontological slides



Grain size analysis
Size of particles



Loss on ignition
Carbon content
Organic matter



Magnetic susceptibility
Magnetic metals composition

Objective 1: More picking and identification needed



What's next ?

- Correspondance analysis
- Principal components analysis
- Canonical analysis

Objective 2:
Multivariate analyses
of ostracod species

Expected Results

Determine ostracod **species composition** (abundance, presence-absence, dominance) in the Sept-Îles region as well as the main **environmental factors** (we expect **salinity, temperature** and **substrate** to play an important role) affecting **abundance** and **diversity**

PERSPECTIVES

The knowledge acquired will allow this bioindicator group to be integrated into **spatial** and **temporal** analyses of **environmental dynamics** for this region of the Gulf of St. Lawrence, including the **natural variability** and **effects** from **anthropogenic disturbances** of the Côte-Nord ecosystem.

Literature cited

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- 2 Frenzel, P., & Boomer, I. (2005). The use of ostracods from marginal marine, brackish waters as bioindicators of modern and Quaternary environmental change. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 225(1-4), 68-92. <https://doi.org/10.1016/j.palaeo.2004.02.051>
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- 4 Horne, D. J., & Siveter, D. (2016). Collecting and processing fossil ostracods. *Journal of Crustacean Biology*, 36(6), 841-848. <https://doi.org/10.1163/1937240X-00002487>

Acknowledgements

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For further information

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