

Biogeography of polychaetes (Annelida) in the Bay of Biscay (NE Atlantic) : New records and distribution patterns

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1. Introduction

The Bay of Biscay is still poorly studied. This wide continental shelf acts as a biogeographical transition zone inhabited with diverse Atlantic-Mediterranean faunal assemblages with different temperature affinities : warm, moderate, and cold temperate. It lies within the Lusitanian region, on the boundary between the Lusitanian-boreal and the Lusitanian provinces (Hiscock, 1998; Figure 1).

As part of the French offshore wind farm strategy plan, a two-year (2023–2025) survey mapping of soft bottom benthic habitats was performed to assess the environmental baseline off Oléron Island, France.

This study aimed to list the new polychaete species occurring in this site and relate their origin to known temperature affinity.

2. Material and methods

Sampling : 111 stations × 5 replicates (depths ranging from 53 to 86 m) over 430 km²

Four campaigns : Oct. 2023, April/May 2024, Nov. 2024 and April/May 2025

Day grab (0.1 m²) **Sieve mesh** (1mm)

→ Total of 2200 samples

Data compared to **public databases** (WoRMS and GBIF).

3. Results and discussion

A total of **50,095 polychaetes** individuals were sampled and **189 species** formally identified ; 15 species (cf.) remained to be fully checked.

Among the **189 species**, 163 (86%) were already recorded on the French coast within the Bay of Biscay whereas 26 (14%) have never been recorded in the area.

Biogeographical distribution of the 26 new species for the area

- **Nine species (35%)** show a **warm-temperate** distribution, exclusively found in the Lusitanian region and occasionally in the Mediterranean Sea with **4** of them found only in the Mediterranean ;
- **Three species (12%)** show a **cold-temperate** distribution, exclusively found in the Boreal region and in the Arctic region ;
- The remaining **14 species** do not appear to share any particular distribution pattern and were found in both warm- and cold-temperate regions.

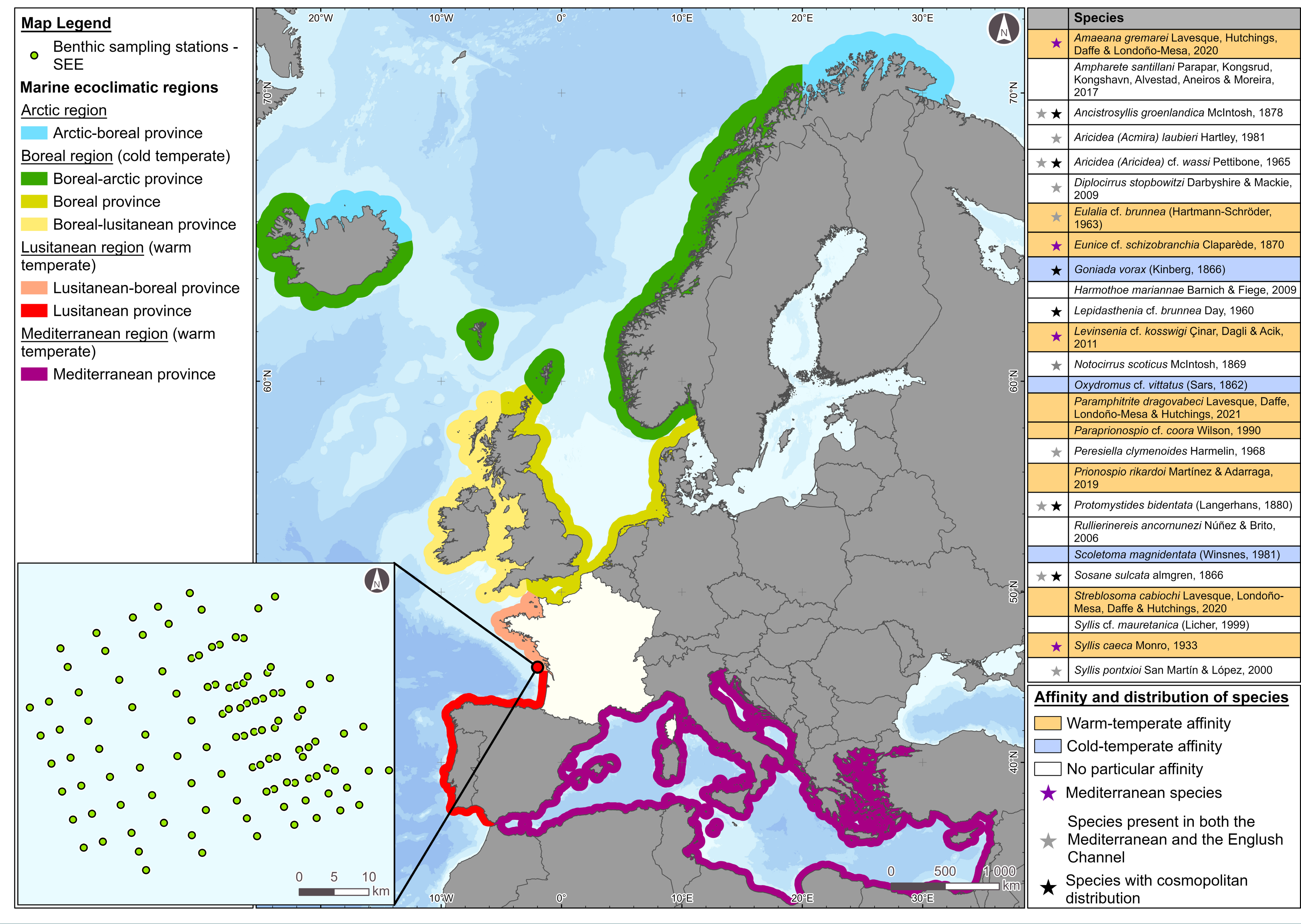


Figure 1. Biogeographic zones within the North-East Atlantic Ocean (modified from Hiscock 1998), sampling sites (left-down panel) and list of the 26 species newly recorded (right panel)

4. Conclusion

Climate change and distribution range

As water temperature raises warm-water species spread northward (Poloczanska *et al.* 2013). However, the opposite movement of boreal species appears counter-intuitive. One explanation is that certain benthic species may spawn earlier due to warming waters, whilst coastal currents flow southwards (Fuchs *et al.*, 2020) .

Also, our study area is located at considerable depths, where temperatures remain cool and vary less than at the surface.

→ While the **immediate** impact of climate-driven water temperature changes in the distribution of species is hard to assess, it underscores the necessity of **long-term monitoring**.

Références

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