

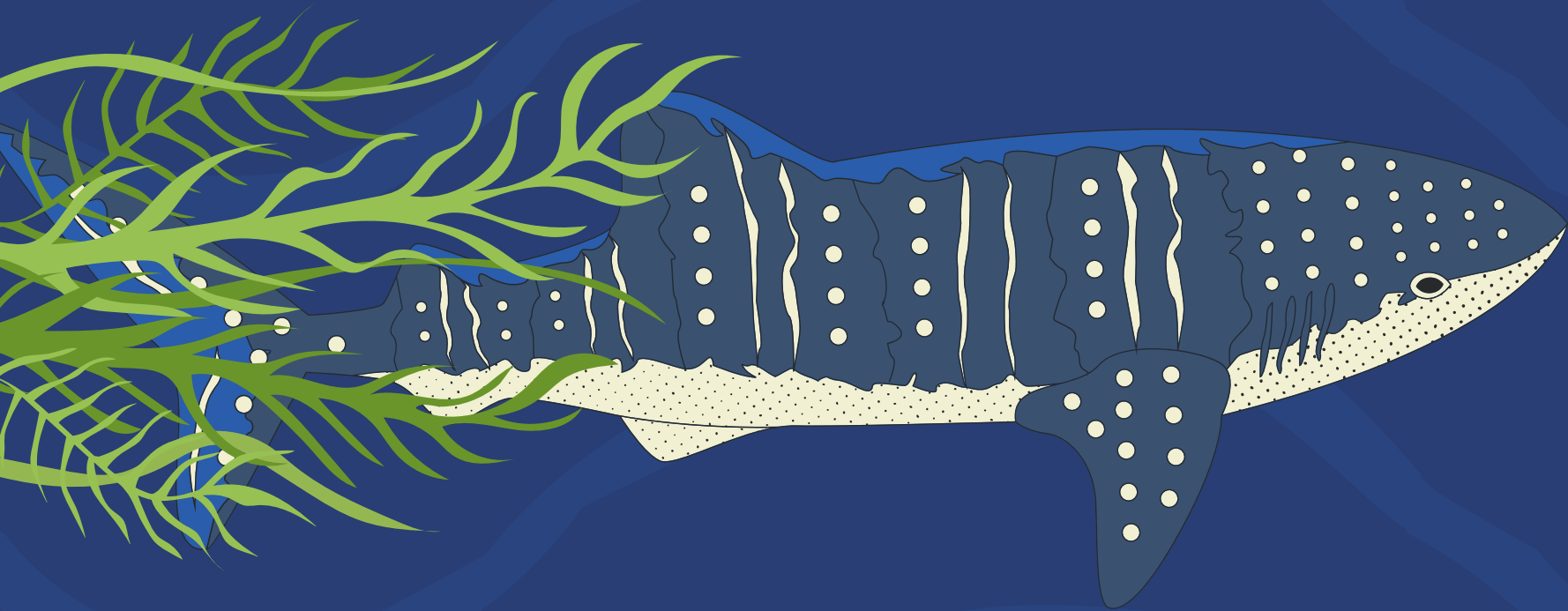
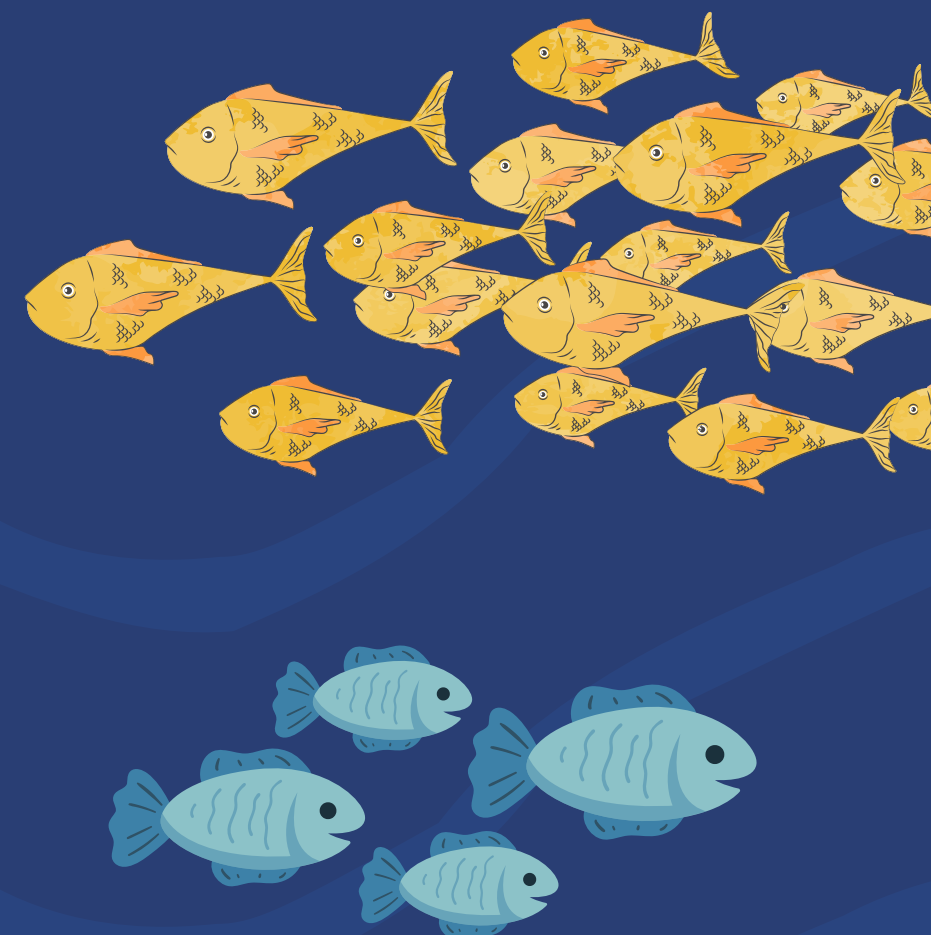
TALES FROM EAR BONES

Unraveling Fish Growth through Otolith analysis in Polar and Atlantic Cod

1 SCALE OF IMPORTANCE

Predicting fish growth is essential for fisheries' management and predicting population changes. It is also important for calculating growth efficiently and knowing the conditions the growth took place in.

Fish exhibit lifelong growth influenced by multiple factors. Many models exist to calculate growth patterns. Polar cod and Atlantic cod require distinct approaches due to their different ecological niches.

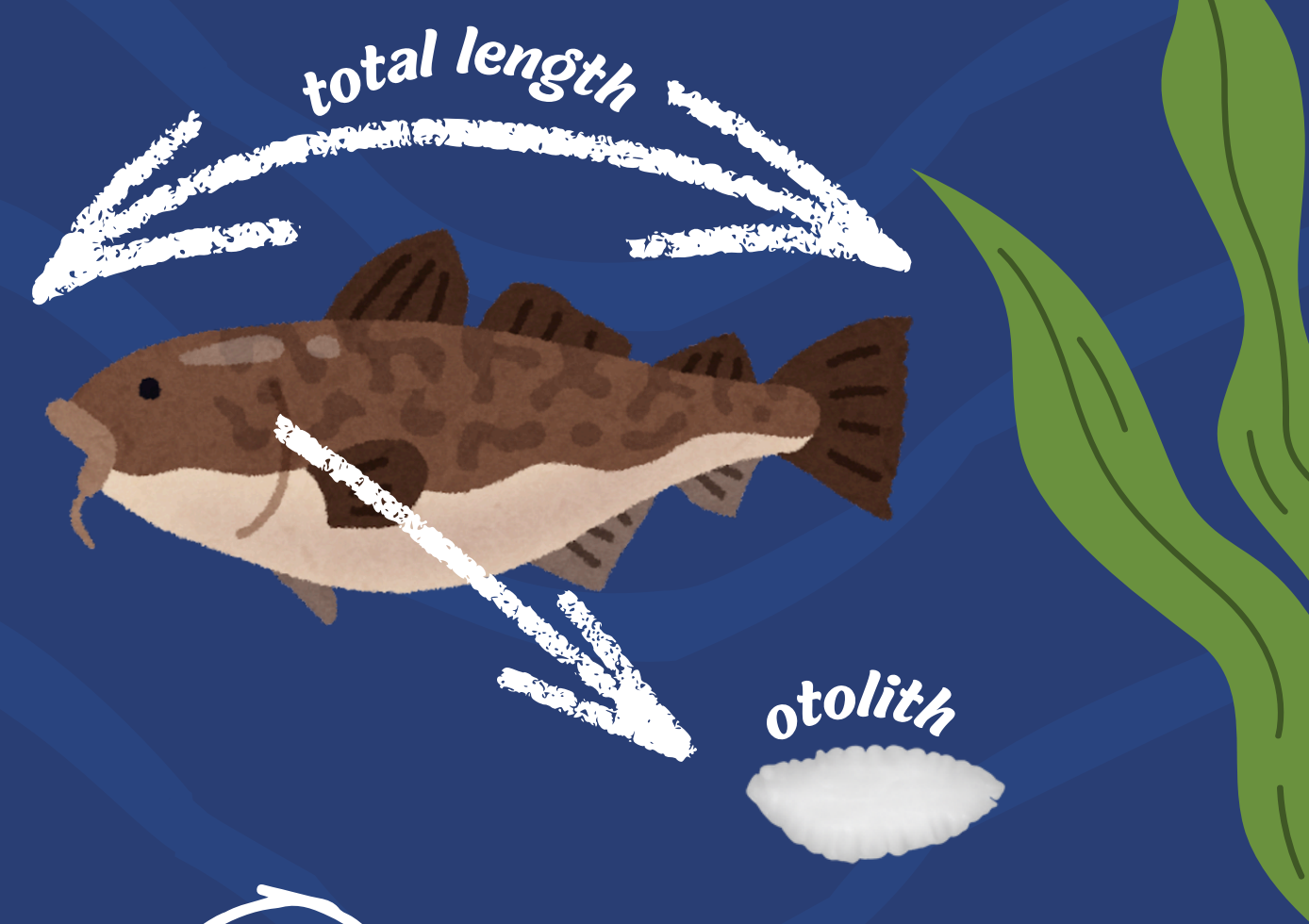


2 OTOLITHS: NATURE'S GROWTH DIARIES

Otoliths, small ear bones, continue growing even when fish growth slows, creating permanent records of environmental conditions. Their species-specific shapes and resistance to dissolution make them valuable research objects.

3 SIZE MATTERS (STATISTICALLY)

Multiple studies have been performed on Atlantic cod about otoliths, but only a few studies have been performed on polar cod. Using LME and ANCOVA models, the relation between otolith weight and total body length is calculated and compared between both species across shared stations (containing both species in presumed similar environments) and separate stations (containing only one species in presumed different environments).



4 NET RESULTS

- Otolith weight is a strong predictor of total length in both species.
- Polar cod are longer than Atlantic cod for the same otolith weight, reflecting intrinsic species-level growth differences.
- Environmental conditions have little effect on the predictive relationship. Further station-specific analyses planned.

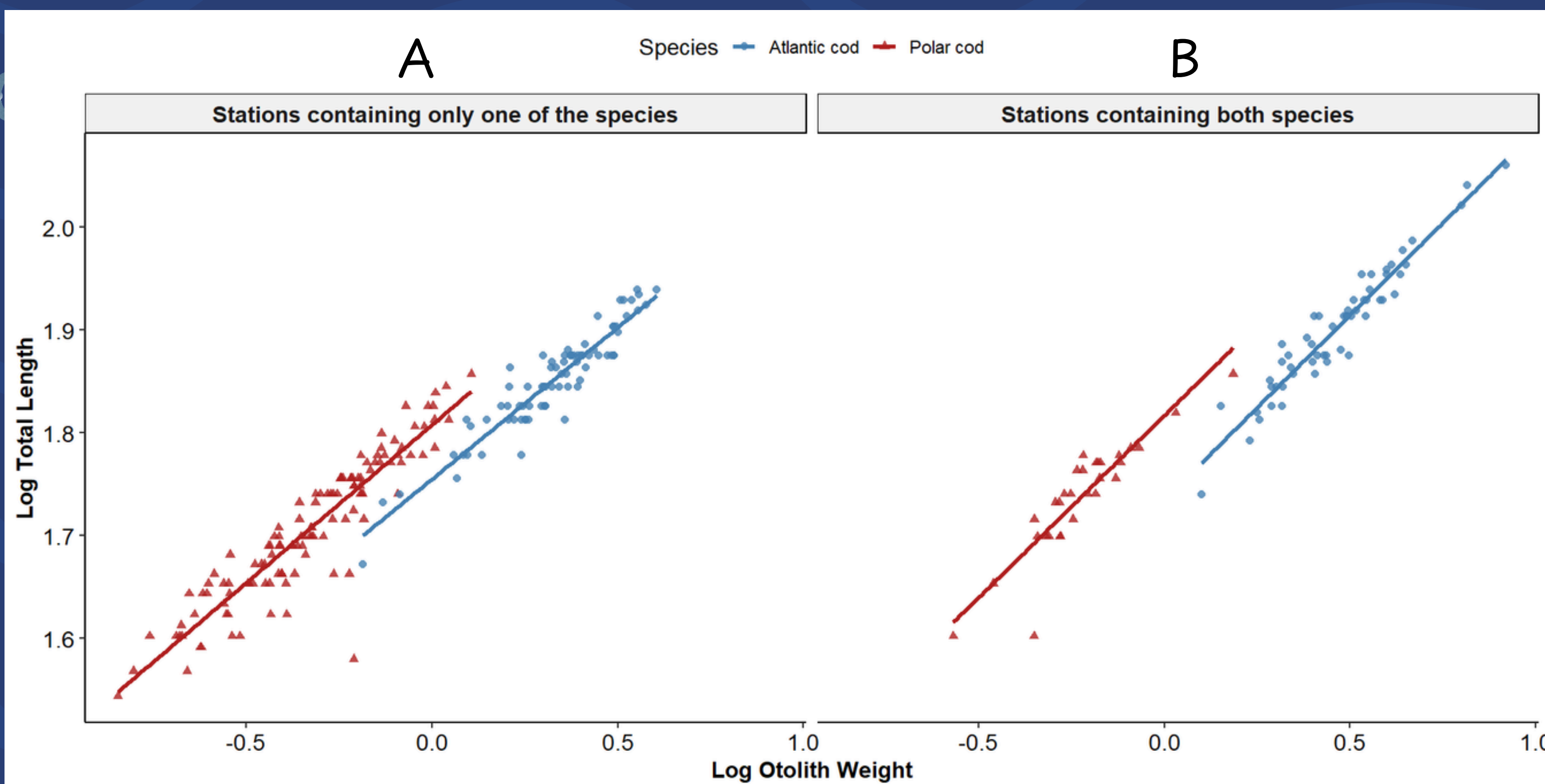


Figure 1. Relationship between log-transformed otolith weight and total length in Atlantic and Polar cod. Colored regression lines represent species-specific linear fits; points show individual fish measurements. (A) Data from stations where both species were sampled (B) Data from stations where only one species was sampled. Note: Analysis reverses the conventional relationship where otolith size depends on fish length.



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References:
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