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Estación de Ciencias Mariñas de Toralla

Allometric growth of *Kurtiella bidentata* (Montagu, 1803) and its relation with sediment characteristics in a Galician Ría (NW Iberian Peninsula)

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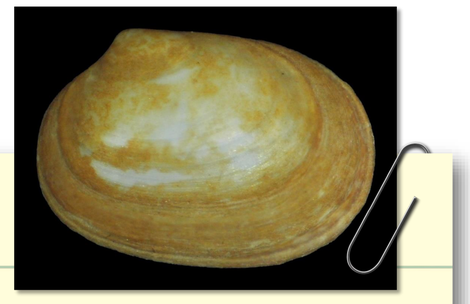
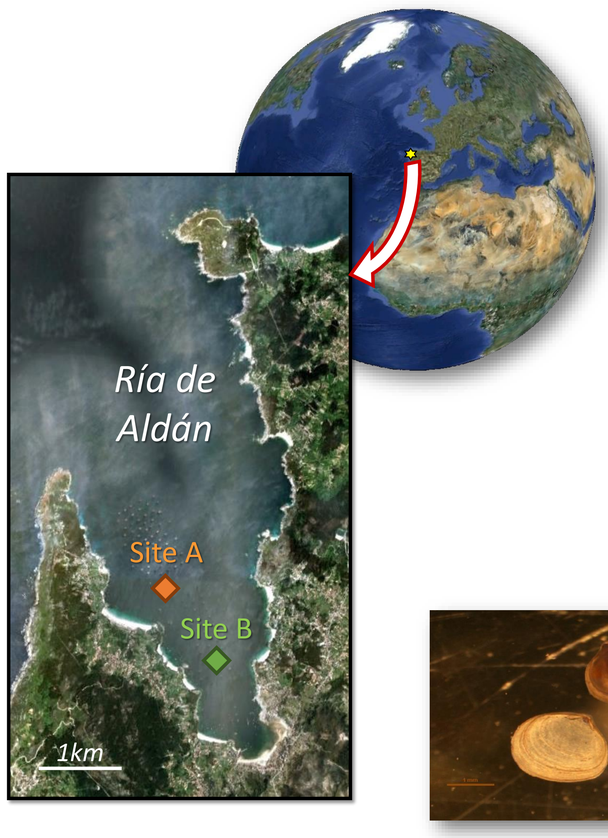
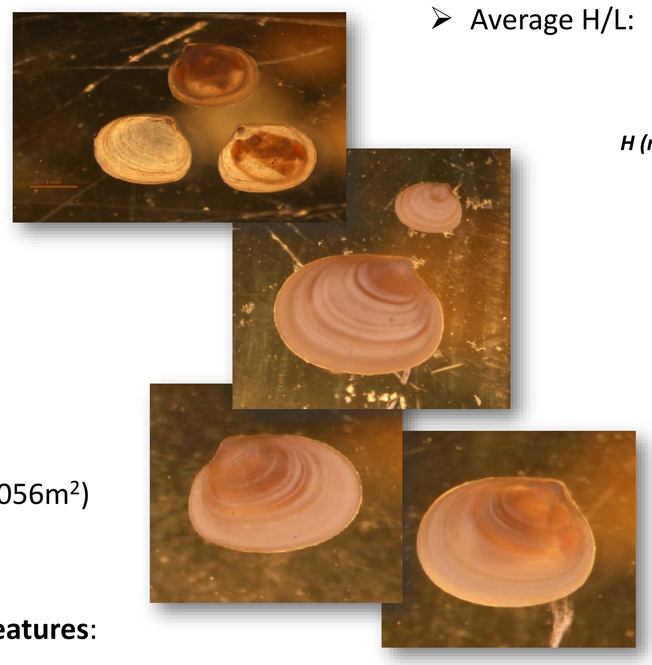


STUDY AREA: RÍA DE ALDÁN

- **Small bay** located in the NW of the Iberian Peninsula
- **Galician Rías**: group of tectonically-formed estuarine-like bays
- Highly **exposed** to oceanic swell and currents
- Subjected to **coastal upwelling and downwelling** processes
- High variety of sedimentary habitats
- Diverse benthic fauna





KURTIELLA BIDENTATA

- Common in **shallow sedimentary bottoms**
- Usually very abundant in **fine sediments** (fine sand to mud)
- Frequently inhabits the burrows of the brittle star *Amphiura filiformis* (O.F. Müller, 1776)
- Mainly **suspension feeder** (also deposit feeder)
- **Up to 5mm long**
- Slightly **allometric growth** has been reported
- Differences in allometry have been reported to be **related to sediment characteristics**

METHODOLOGY

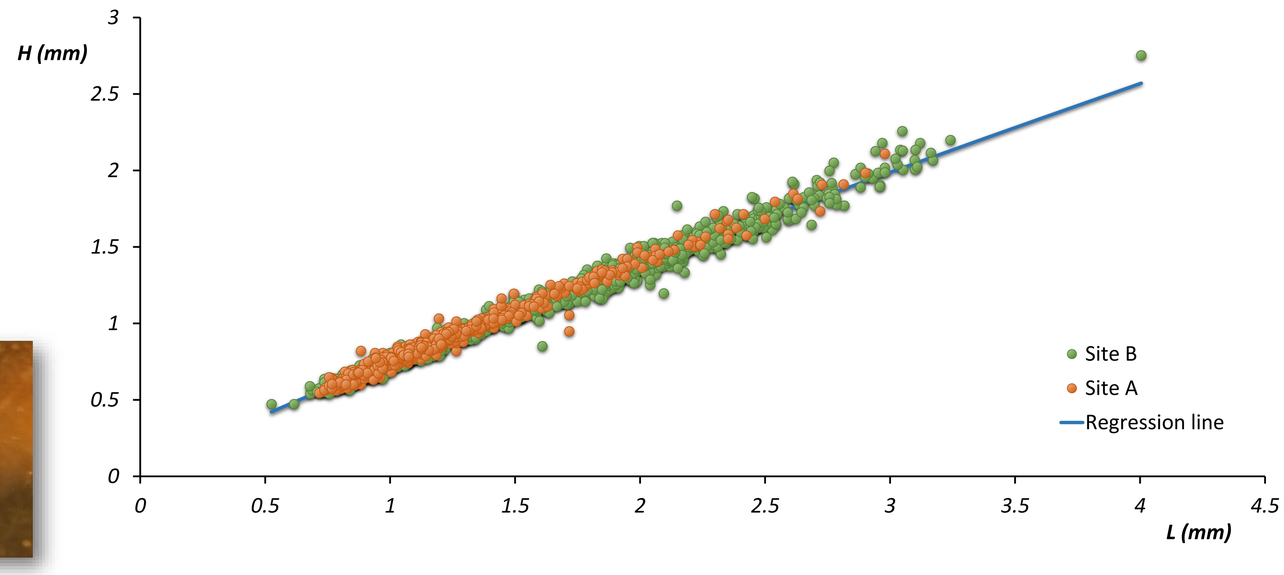
- **2 sampling sites**
- **Monthly** samplings
- May 1998 to May 1999
- **Van-Veen grab** (operating surface of 0.056m^2)
- 5 replicate samples
- Sieving through **0.5mm** mesh
- Additional sample to study **sediment features**:
  - Grain size
  - Carbonate content
  - Total organic matter (TOM) content
- **Length (L) and height (H)** measured in all individuals with at least one valve unbroken
  - Stereo microscope (Nikon SMZ1500)
  - Image analysis software (NIS-Elements)

THE STUDIED BOTTOMS

	Site A	*Site B*
Depth (m):	18	17
Sediment type:	**Muddy Sand**	**Mud**
Q_{50} (mm):	0.34 ± 0.48	0.01 ± 0.01
Silt + Clay (%):	**6.34 ± 3.49**	**80.86 ± 9.39**
TOM (%):	**3.19 ± 0.86**	**12.72 ± 1.66**
Carbonate (%):	58.29 ± 7.35	28.93 ± 5.32

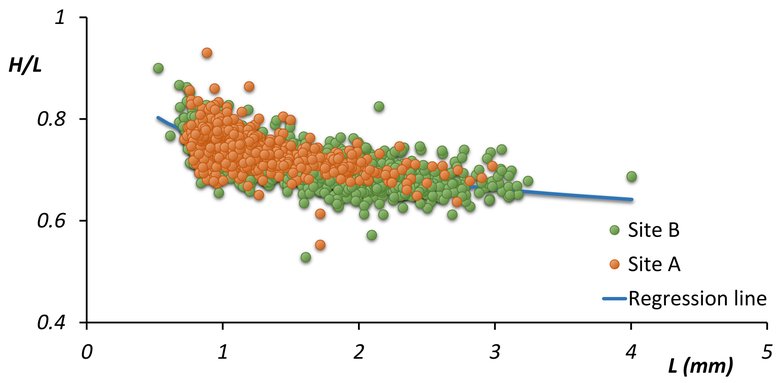
RESULTS

	Site A	*Site B*	*Total*
N:	763	1171	**1934**
Length range (mm):	0.717 – 2.979	0.525 – 4.005	**0.525 – 4.005**
Average length ± SD (mm):	1.233 ± 0.368	1.708 ± 0.564	1.520 ± 0.547
Height range (mm):	0.545 – 2.110	0.473 – 2.753	**0.473 – 2.753**
Average height (mm):	0.904 ± 0.244	1.194 ± 0.363	1.080 ± 0.351
H/L range:	0.553 – 0.931	0.529 – 0.901	**0.529 – 0.931**
Average H/L:	0.739 ± 0.033	0.708 ± 0.039	0.720 ± 0.040



- Regression results:
  - **$H = 0.7477 \cdot L^{0.8900}$** ($R^2 = 0.9852$)
- Considering each site alone:
  - Site A: $H = 0.7505 \cdot L^{0.9042}$ ($R^2 = 0.9768$)
  - Site B: $H = 0.7432 \cdot L^{0.8945}$ ($R^2 = 0.9851$)

- Another way of seeing the allometry: H/L decreases with L



DISCUSSION

- **At Site B (finer sediment), shells are more elongated and growth is more allometric than at Site A**
- These results agree with the findings of Ockelmann & Muus (1978)
- The pattern is rather consistent when comparing the results from both studies
  - **↓ Grain size → ↓ H/L + ↑ Allometry**
- Further research is required to confirm this relationship and to isolate the precise factors behind it

LITERATURE CITED: Ockelmann, K.W., Muus, K., 1978. The biology, ecology and behaviour of the bivalve *Mysella bidentata* (Montagu). Ophelia 17 (1), 1–93.

ACKNOWLEDGEMENTS

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