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Community structure and predation marks on *Astarte longirostra* d´Orbigny (Bivalvia) from the Southwest Atlantic off Tierra del Fuego

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INTRODUCTION & AIM

Astartids are a major component in marine ecosystems, playing important roles in trophic networks (Hobson et al. 2002).

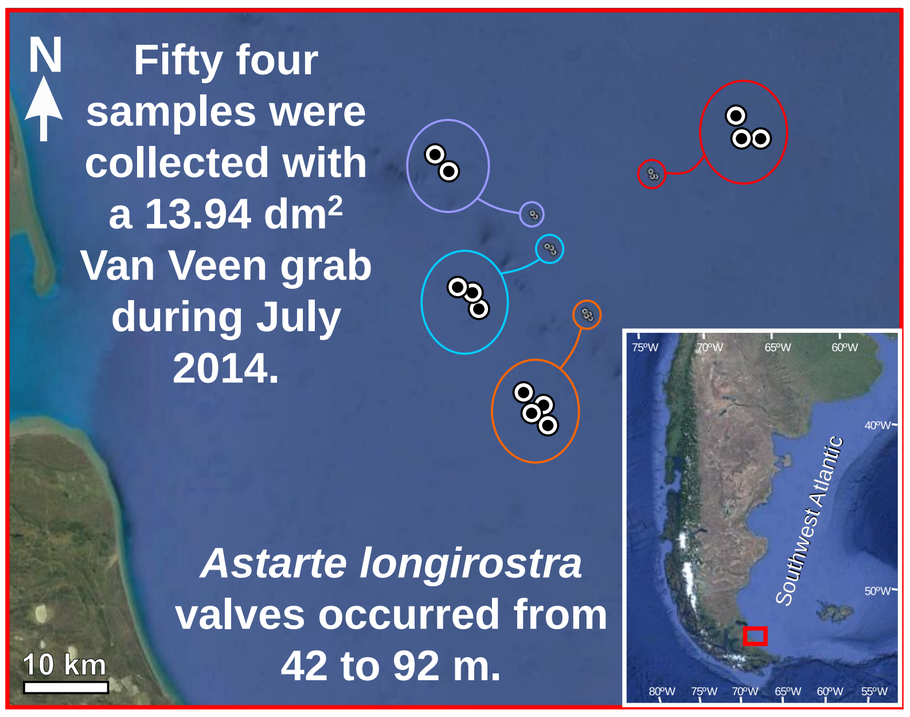
At the southern Southwest Atlantic, *Astarte longirostra* lives partially buried in the sediment.

Muricid and naticid gastropods feed on clams, drilling holes on the valves.

Drillholes made by predatory gastropods are useful tools for evolutionary and ecological studies, since they provide direct, preservable evidences of predation.

The aim of this study is to analyze the community structure and predation pressure on *A. longirostra* on the continental shelf off Tierra del Fuego (Southwest Atlantic).

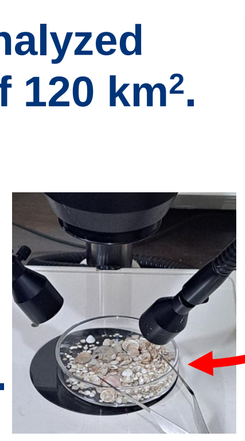
METHOD

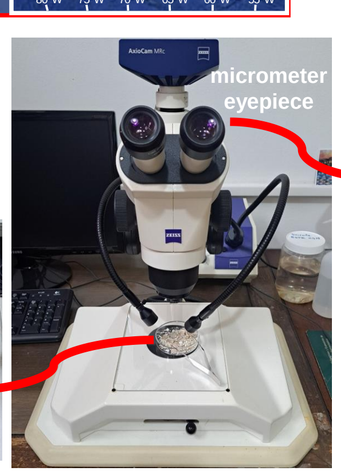


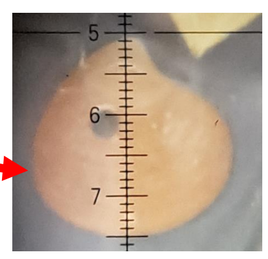
Predation pressure was assessed in 12 samples with at least 20 valves each, whose depths ranged from 74 to 92 m, as clams were less frequent at shallower depths.

The 12 samples analyzed covered an area of 120 km².

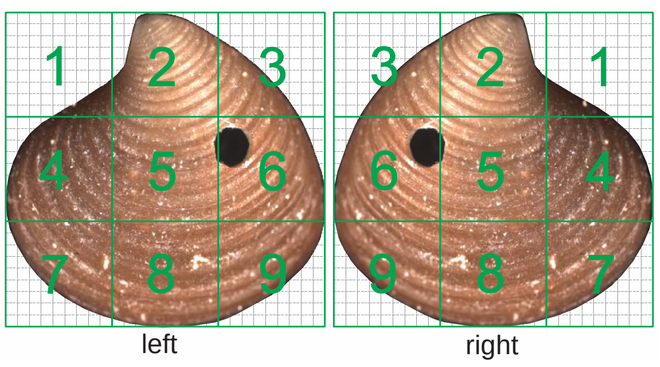
Complete valves were separated from the sediment under a stereomicroscope.







Valve length and drillhole diameter were measured with a micrometer eyepiece.



Predation site selectivity was analyzed using a Chi-square test.
A grid of 3x3 equidistant sectors was overlapped digitally on photographs of the drilled valves to classify them according to the position of the drillhole.

RESULTS & DISCUSSION

Densities of *A. longirostra* were variable: from 14 to 409 ind.m^{-2}.

Of the 4,292 disarticulated valves analyzed, 959 had drillhole marks (22.3%).

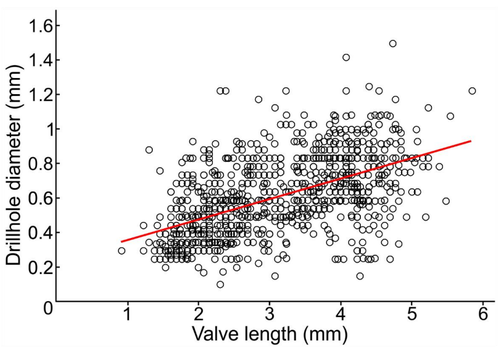
Due to their irregular shape, 11.6% of the drillholes could not be attributed to predatory gastropods.

The remaining 88.4% had rounded drillholes attributable to muricids and naticids.

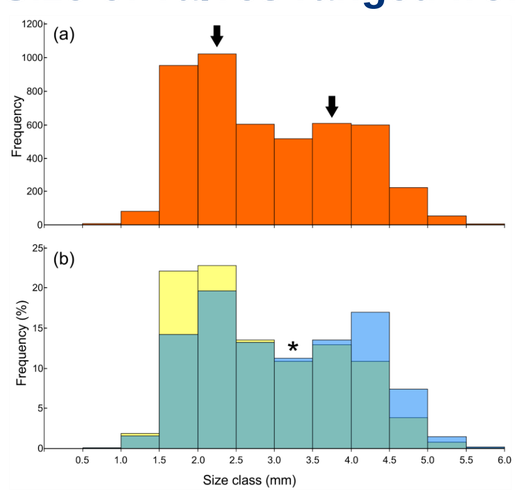
Predation rate was high (34.2% to 68.2%; pooled rate=44.4%).

Predation did not differ between left and right valves (Fisher´s Test, p=0.67).

Correlation between drillhole diameter and valve length was positive and highly significant (Spearman test: rho=0.55, p << 0.001), meaning that larger predators prefer larger clams.



Size of valves ranged from 0.62 to 5.85 mm.

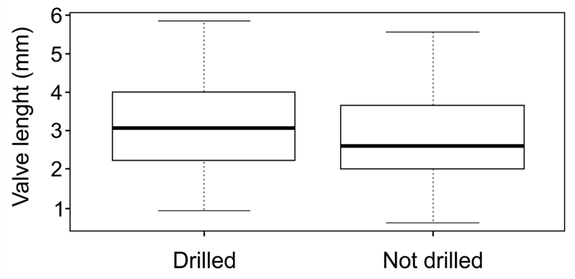


Size-frequency distributions were bimodal, with modes at 2-2.49 mm and 3.5-3.99 mm (a).

The smallest drilled clam measured 0.92 mm length and the largest 5.56 mm. This means that drilling predators fed on the entire range of size classes.

However, from 3 mm onwards the proportion of drilled valves increases, showing that drilling predators prefer to eat larger clams (b); Chi-squared test=71.2, df=4, p<< 0.001)

Drilled valves were significantly larger than not drilled ones (Mann-Whitney U Test: 1325162, p=6.8x10^{-16}).



Drillholes were significantly more frequent in the central sector (sector 5) of the valves (Chi-square test=1971.4, df=8, p<<0.001).

Of the seven species of predatory gastropods found, the naticid *Falsilunatia patagonica* was the most frequent, being present in all samples (image from https://conchology.be/?t=263&family=NATICIDAE%20GLOBISINAE&fullspecies=Falsilunatia%20patagonica&shellID=9754).

REFERENCES

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