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LONG-TERM ENVIRONMENTAL RECORD IN *Glycymeris inflata*, A RELIC OF MEDITERRANEAN OLD-GROWTH SOFT BOTTOMS

Cristian R. Altaba [(1)], Maximino Forés [(2)], Sebastian Monserrat [(3)]

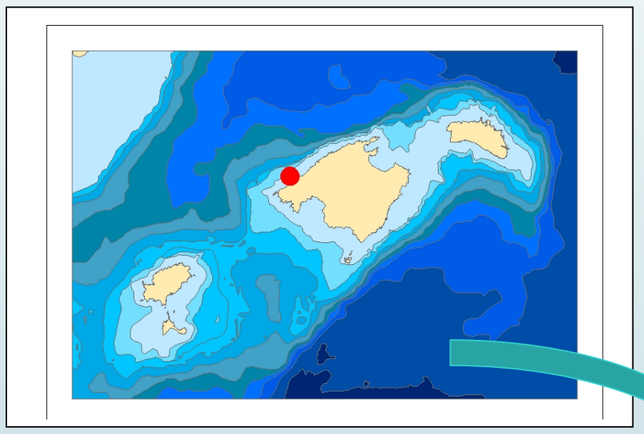
[(1)] *Laboratory of Human Systematics, Universitat de les Illes Balears, 07071 Palma de Mallorca, Balearic Islands (Spain)*

[(2)] *C. 31 de desembre 32, 07010 Palma de Mallorca, Balearic Islands (Spain)*

[(3)] *Physics Department, Universitat de les Illes Balears, 07071 Palma de Mallorca, Balearic Islands (Spain)*

Glycymerids are:

- free-living arcoid bivalves
- typical of sedimentary bottoms
- protected by heavy shells
- abundant fossils
- long duration species
- poorly known



Mass dredgings off Banyalbufar (NW Mallorca) provided abundant glycymerids.

Four native species are known in the Mediterranean:

Glycymeris bimaculata (Poli, 1795)
Glycymeris pilosa (Linné, 1758)
Glycymeris glycymeris (Linné, 1758)
Glycymeris cor (Lamarck, 1805) [= G. *insubrica* (Brocchi, 1814)]

[plus the Lessepsian invader *Glycymeris arabica* (H. Adams, 1870)]

Glycymeris cor →

← *Glycymeris pilosa*

A fifth species has been identified as *Glycymeris inflata* →

← *Glycymeris inflata* from Eutyrrhenian (last interglacial) beach at Ses Covetes (Mallorca)

G. inflata (Brocchi, 1814) is recorded since the lower Burdigalian (20 Ma) and throughout the Pliocene and Quaternary until the last interglacial, in the Mediterranean, Aquitanian and Vienna basins.

Glycymeris inflata is distinguished by:

1) valves solid, strongly inflated, clearly inequilateral, rounded trapezoid outline, upper margin smoothly arched ending in blunt obtuse angles;
2) umbos prominent, markedly opisthogirous, covered by dense concentric ridges unaffected by vary faint radial sculpture;
3) ligament area wide, long inverted V-shaped ridges rather irregular and not forming neat chevron pattern, in very large specimens much reduced but with vertical riblet;
4) outer color brown or greyish, inner white with deep brown posterior blotch variable in size but always reaching shell edge.

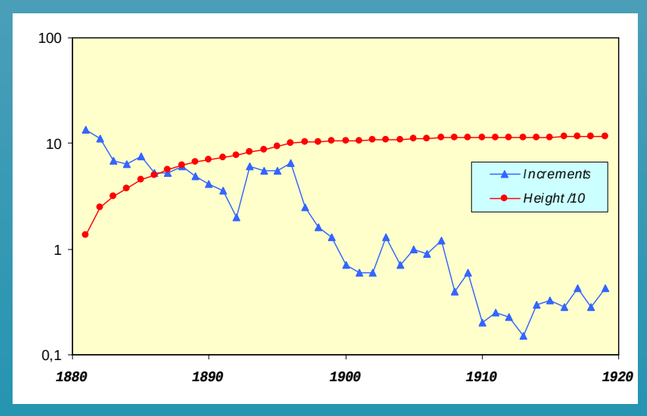
These shells exhibit clearly visible growth rings, presumably annual as in other marine temperate infaunal bivalves living in deep, well-mixed waters.

Its current limited range suggests that it survives only at sites untouched by commercial fishing or other disturbances.

Thus, it belongs to scarce soft-bottom communities that are a marine equivalent of old-growth forests.

The age of the largest individuals has been thus estimated to be around 140 years.

This makes them the oldest living animals in the Mediterranean Sea, and one of the few animal species known to live beyond a century.



Such extreme longevity allows examination of long time-series records of marine environmental conditions in these shells.

Growth residuals exhibit variations with a periodicity of 11 years.

This is probably related to oscillations in phytoplankton production triggered by the solar constant.

We are now searching for additional environmental signals in these records.