Dipartimento di Scienze Biologiche, Geologiche ed Ambientali

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A glimpse into ostracod research from the Central Mediterranean and beyond: developments and perspectives

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Ostracods from Cuba and Longarini Swamp Lakes (SE Sicily)

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Rationale

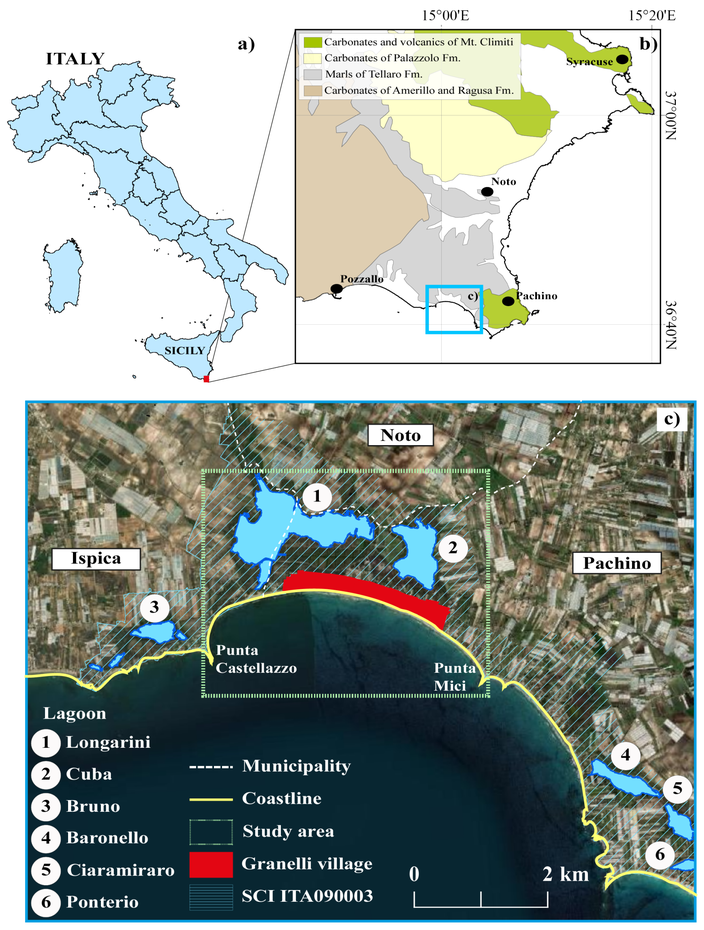
Coastal areas are highly dynamic environments, and their behavior is the complex result of multiple processes occurring and interacting on a variety of time and spatial scales.
Despite the significant role of coastal areas in terms of economic, cultural, and social benefits, coastal environmental conditions and microbiodiversity are poorly investigated.

Aim

For the first time, bottom samples and water samples were taken with the aim of acquiring knowledge of the biodiversity of living ostracods in the two lagoons of Longarini and Cuba (SE Sicily).

Case study

The study area lies in the South-East of Sicily (Italy), interesting three municipalities (Pachino, Noto, Ispica). The Longarini and Cuba lagoons are part of the complex coastal wetlands system of South-East Sicily, which includes several coastal lagoons. These wetlands system has great naturalistic value, hosting rich biodiversity. As such, the site is part of the Natura 2000 European Network as a Site of Community Importance - Pantani della Sicilia sud orientale. Despite being a recognized Natura 2000 site, this area has also undergone intensive human-inducedpressures over the past decades due to the onset of an extensive greenhouse agricultural system insisting on the coastal zone and the increase of tourists' fluxes, which led to significant growth of urban areas on the coast. The two lagoons are separated by a NE-SW oriented canal at the border between the two provinces and between the municipalities of Ispica and Pachino (ARPA, 2019). The swamp lake is characterised by a muddy-silty bottom devoid of hard substrates (with occasional anoxia phenomena of bottom water) and never reaches a depth higher than one meter (ARPA, 2019). The average salinity of the water is <30 PSU (20-27 PSU) (Euryhaline waters). Pantano Cuba has a water surface of about 50 hectares with a total volume of about 35x106 m3 and reaches a maximum depth of three metres during periods of maximum rainfall (ARPA, 2019). It is categorised in mesohaline waters of intermediate salinity (between 5 and 20 PSU) (Galasso et al., 2023).

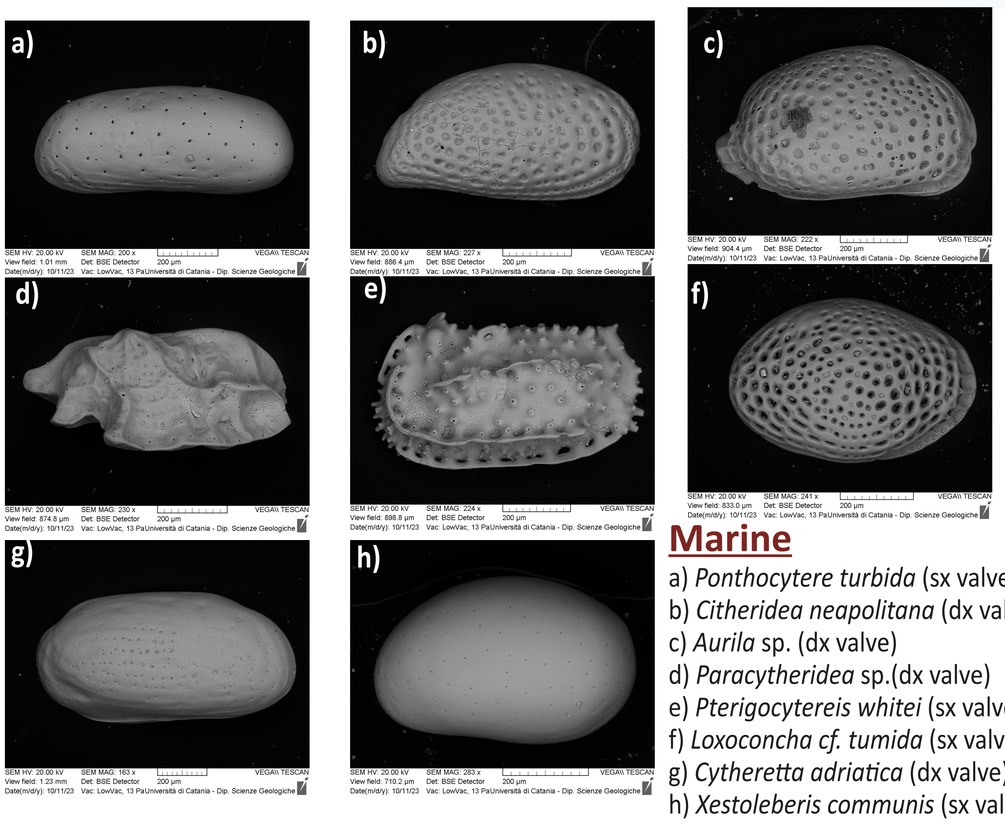


Workflow

Four sampling stations were made in Cuba lagoon and six in Longarini lagoon in July 2022 and December 2022. Bottom samples were carried out by a small bottom dredging with a 63-micron net. Ostracods were picked up under a stereomicroscope, therefore adult living and dead specimens were counted and identified, juveniles are only reported but not counted. The distinction between live and dead specimens was made on the basis of the presence of soft parts.

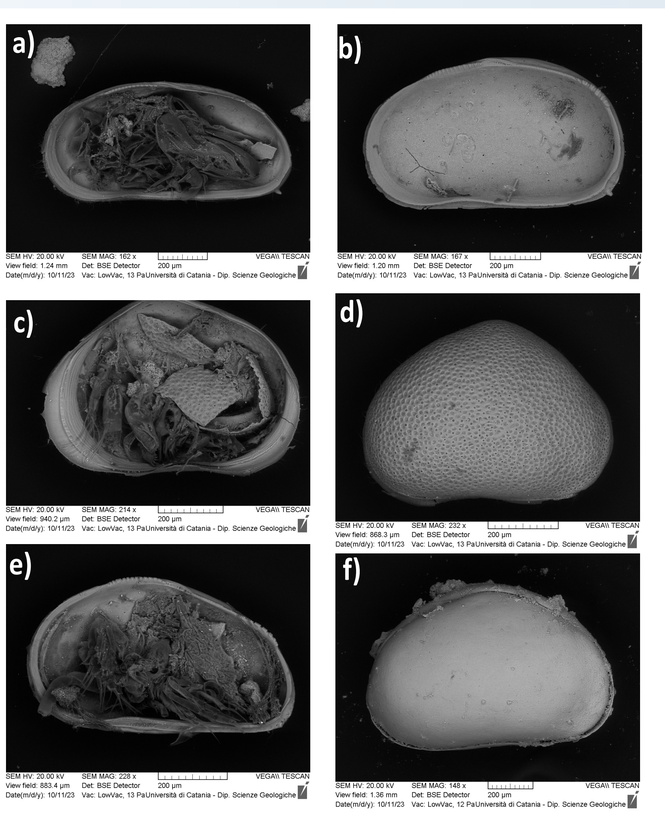
Results

A total of 15 ostracod species were identified: *Cyprideis torosa* (Jones, 1850), *Prionocypris zenkeri* (Chyzer & Toth, 1858), *Heterocypris salina* (Brady, 1868), *Plesiocypridopsis aculeata* (Costa, 1852), *Candona* (?), *Cytheridea neapolitana* Kollmann, 1960, *Aurila convexa* (Baird, 1850), *Aurila prasina* Barbeito-Gonzalez, 1971, *Cytheretta adriatica* Ruggieri, 1952, *Loxoconcha elliptica* Brady, 1868, *Paracytheridea* sp., *Pontocythere turbida* (Müller, 1894), *Pterigocythereis jonesii* (Baird, 1850), *Xestoleberis communis* Müller, 1894, *Semicytherura incongruens* (Müller, 1894); the first five species, almost all taken in December 2022, are known as non-marine ostracods and already reported in inland water of Sicily (Pieri et al., 2020) except for P. aculeata reported here for the first time; remaining 10 species, also taken in December 2022, are commonly known as living in shallow marine environments and they were all found only in the PL1 sample taken near the coast except for A. prasina which is represented by very few specimens and it was also found in the samples distant from the coast. The euryhaline ostracod *C. torosa* appears to be the most abundant species predominantly in July and subordinately in December. All other non-marine species are represented by a few specimens. The presence of marine species in sample PL1 in December is related to the increased connection between the swamp and the sea right in the area of the sampling station due to the greater amount of water in the swamp during the winter period. This would allow a greater faunal exchange between the two environments.



Marine

a) *Ponthocytere turbida* (sx valve)
b) *Citheridea neapolitana* (dx valve)
c) *Aurila* sp. (dx valve)
d) *Paracytheridea* sp.(dx valve)
e) *Pterigocytereis whitei* (sx valve)
f) *Loxoconcha cf. tumida* (sx valve)
g) *Cytheretta adriatica* (dx valve)
h) *Xestoleberis communis* (sx valve)



Brackish

a) *Cyprideis torosa* (internal view dx valve)
b) *Cyprideis torosa* (internal view dx valve)
c) *Plesiocypridopsis* sp. (internal view dx valve)
d) *Plesiocypridopsis* sp. (external view sx valve)
e) *Eucipris* sp. (internal dx valve)
f) *Heterocypris saline* (entire carapace)

References

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