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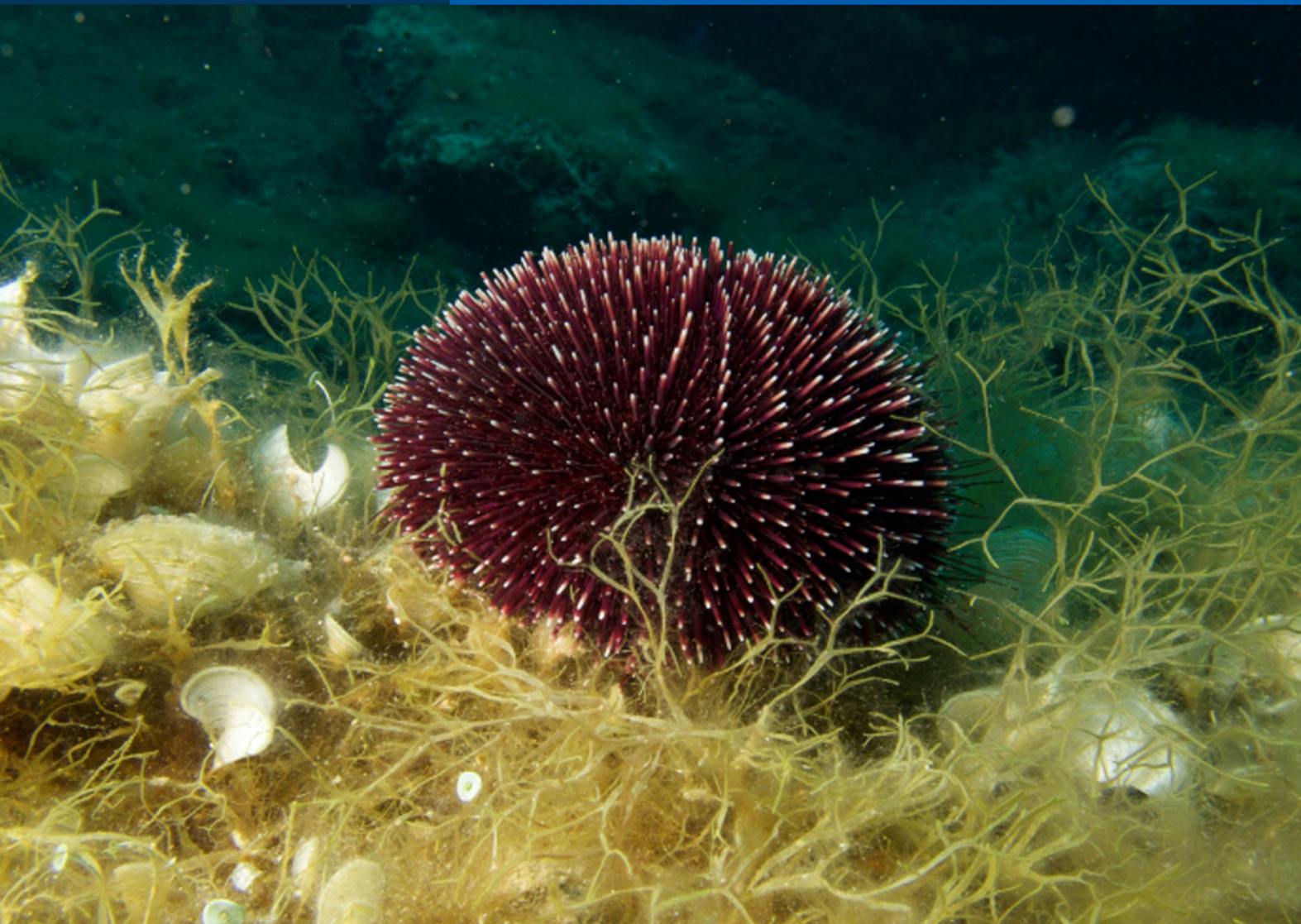
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Sphaerechinus granularis (Lamarck, 1816) - Funtanazza, Arbus, Sardinia, Italy

Echinoids and paleo-geographic reconstructions. The evolutionary adaptations, in this class of marine organisms, have brought profound changes in the number and shape of plates that compose the skeleton, both in regular echinoids (see picture in the cover) than in irregular ones. The columns of plates that show the most evident adaptations in the irregular echinoids, are those that characterize the "ventral" part of the interambulacrum 5 and the dorsal part of the ambulacra (petaloid). It is shown that the shape and dimensions of these plates, their total number, as well as the shape and dimensions of the petaloid, assume a high diagnostic value in irregular echinoids as spatangoids and clypeasteroids (Stockley et al., 2005; Stara et al., 2016). It was observed that the total number of plates per column tends to decrease with the elapsed geological time. However, comparing the number of plates on some species of *Schizaster* from Lower Miocene of Sardinia, with that of *S. studeri* from the late Eocene of Verona, we have observed the opposite. The lowest number of plates in the ambulacra of the Verona species, compared to that of Sardinia, would indicate that the two forms are likely to have separated from a common ancestor a long time before the Eocene and, later, undergone two separate evolutionary ways. In extreme synthesis, the Sardinian Miocene faunas (at least in part) are not directly related to those of eocenic Po basin and this allows us to hypothesize a long geographical separation, which might have changed only at the beginning of the Miocene, as observed in Stara & Borghi (2012) and Stara & Sanciù (2014), when many evidences of migrations from Proto-Western Mediterranean to the east, through the Po basin appear.

References: Stara P. & Sanciù L., 2014. Analysis of some astriclypeids (Echinoidea Clypeasteroidea). In: Paolo Stara (Ed.). Studies on some astriclypeids (Echinoidea Clypeasteroidea), Biodiversity Journal, 5: 291-358 - Stara P. & Borghi E., 2012. First fossil record of the genus *Faorina* Echinoidea: Pericosmidae). Bollettino della Società Paleontologica Italiana 51, 8598 - Stockley B., Smith A.B., Littlewood D.T.J, Harilaos A., Lessios A. & Mackenzie-Dodds J.A., 2005. Phylogenetic relationships of spatangoid sea urchins (Echinoidea): taxon sampling density and congruence between morphological and molecular estimates. Zoologica Scripta, 34: 447-468 - Stara P., Borghi E. & Kroh A., 2016. Revision of the genus *Mariania* (Echinoidea) with the description of two new species from the Miocene of Italy. Bulletin of Geosciences, 91: 1-24.

Paolo Stara. Museo di Storia Naturale Aquilegia and Geomuseo Monte Arci, Piazza Convento, Masullas, Oristano, Italy; e-mail: paolostara@yahoo.it

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