

# Unveiling Cryptic Diversity: A reevaluation of the warm-water genus *Sporolithon* in the Mediterranean Sea.

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## ABSTRACT

Coralline algae of the warm-water genus *Sporolithon* Heydrich (Sporolithales, Corallinophycidae, Rhodophyta) are distributed worldwide, from shallow (1–1.5 m deep) to the lower end of the mesophotic zone (178 m). Recent studies have shown that *Sporolithon* species may also play a critical role in completing the life cycle of macro- and microalgae (Fredericq et al., 2019) and in the settlement of coral larvae. Due to the morphological plasticity and cryptic diversity of these taxa, it has been emphasized that morpho-anatomical analyses must be combined with DNA sequencing techniques to correctly identify *Sporolithon* species (Richards et al., 2017, Richards et al., 2022). Among the 31 recognized living species of *Sporolithon*, only three have been recorded in the Mediterranean region: the generitype *Sporolithon ptychoides*, Heydrich, *S. molle* (Heydrich) Heydrich and *S. mediterraneum* Heydrich. However, studies of Alongi et al. (1996) and Cormaci et al. (2017) considered *S. molle* as a *taxon excludendum* and *S. mediterraneum* as conspecific with *S. ptychoides*, which is regarded as the sole Mediterranean representative of this genus based solely on morpho-anatomy. Our investigations in rhodolith beds of the Tyrrhenian Sea and the Menorca Channel using both molecular and morpho-anatomical approaches, detected the presence of *Sporolithon* rhodoliths that differed from *S. ptychoides* based on molecular information recently available from its type material. We also provide taxonomically relevant information on the reproductive features.