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Abstract

Species structuring marine coastal ecosystems (as corals, phanerogams and algae) are strictly or partially clonal. Understanding the dynamics and evolutionary consequences of this life history trait is thus a major challenge to preserve these ecosystems.
For many years theorical works on clonality predict that only almost exclusive clonal reproduction would significantly affect the expected genetic composition of populations, particularly the departure from Hardy Weinberg equilibrium (Fis) and the linkage disequilibrium. Departure from HWE toward an excess of heterozygotes thus tended to be considered as a clue for nearly exclusive clonal reproduction. Recent findings however suggest that with increasing clonality (c) even at intermediate rates, while the clonal richness (R) moves toward 0, the variance of the fixation index (Fis) increases and Fis itself has an increasing probability for exhibiting negative values, suggesting an incidence of even modest rates of clonal reproduction.

Here we considered four phanerogams: *Posidonia oceanica*, *Cymodocea nodosa*, *Zostera marina* and *Zostera noltii*, for which the ecological expectations are decreasing longevity and increasing turn-over rates and thus, decreasing clonality. This meta-analysis gathered data from 141 populations.
From the longest-living species with the lowest turn-over, so the more expected clonal, *Posidonia oceanica*, to the shortest-living with the highest turn-over, the less clonal species, *Zostera noltii*, while the index R increases, departure from HWE is decreasing progressively from significant and negative to non-significant values. These empirical data support the more recent models suggesting an influence of partial clonality on the genetic composition of populations, even at intermediate rates of c.

Keywords: population genetics, clonality, Fis, phanerogams

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