# Decomposition and nutrient release in halophytes of a Mediterranean salt marsh.

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Abstract: This study dealt with the decomposition and nutrient release from the halophytes *Atriplex portulacoides*, *Arthrocnemum macrostachyum*, *Limoniastrum monopetalum*, and *Spartina densiflora*, the dominant species in the Castro Marim salt marsh, Portugal. Environmental effects on decomposition were also assessed. The study was carried out for one year using the in situ litterbag technique. *S. densiflora* showed a lower decomposition rate (k = 0.003 day−1) than the other study species (k = 0.005–0.009). Study species showed similar decomposition patterns, that is, the weight loss mostly occurred during the autumn–winter period (study beginning in November). This indicates that temperature in this period did not hamper the decomposition process. The decomposition rate was positively affected by the initial N concentration (r2 = 0.87, P < 0.05) and negatively by the C:N ratio (r2 = 0.86, P < 0.05) in decomposing materials. At the end of the study, *S. densiflora* and *L. monopetalum*, the species with lower initial N concentrations, retained much higher proportion of initial N (89–109%) than the others (5–14%). Also, *S. densiflora* with the lowest P concentration retained higher proportion of initial P (48%) than the others (5–20%). Release of K and Mg were also slower from *S. densiflora* and was associated with their initial low concentration in this species. The lowest Mn release was observed from *A. macrostachyum* and also in relation to the lowest initial concentration. Our study supports the hypothesis that decomposition patterns of marsh species are mostly associated with differences regarding their morphology and chemical composition. Given the higher resistance of *S. densiflora* to decomposition, its progressive spreading may result in accumulation of organic detritus overtime in invaded salt marshes.