Leaf fall impact on diversity and trophic ecology of vagile macrofauna associated with exported *P. oceanica* litter.

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**Introduction**

*Posidonia oceanica* seagrass meadows produce a huge amount of detritus (300 to 2000 g dry wt. m⁻² yr⁻¹). *P. oceanica* ecosystem presents similar traits with tempered deciduous forest ecosystem (eg: important leaf fall event in the autumn period). **Leaf fall** in *P. oceanica* ecosystem is a major event which influences the exported detritic compartment and its associated macro-invertebrates. We tried to assess the influence of leaf fall on the biodiversity and trophic diversity of *P. oceanica* exported litter macro-invertebrates.

**Methods**

- Revellata Bay (STARESO)
- 2 sampling sites, 2 seasons
- **Standardized** samples
- Evaluation of biodiversity
- **Isotopic** measurements (IRMS)
- SIAR Bayesian mixing model

**Results**

**A) Biodiversity**

![Graph A) Biodiversity](image1)

Proportionally more crustaceans at site 2 before leaf fall, and proportionally more crustaceans at site 1 after leaf fall. Proportionally more Annelids than Molluscs before leaf fall and this pattern is inverted after leaf fall. Higher global abundance before leaf fall. Higher biodiversity before leaf fall (H’=2.71 and 100 species) than after leaf fall (H’=1.38 and 37 species). Higher biodiversity at site 1 before leaf fall, and this pattern is inverted after leaf fall.

**B) Trophic diversity**

![Graph B) Trophic diversity](image2)

**Focus:** *Gammaridae furcula* (crustacean amphipod).

<table>
<thead>
<tr>
<th>Food Source</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litter</td>
<td>0 – 28%</td>
</tr>
<tr>
<td>Living leaves</td>
<td>30 – 80%</td>
</tr>
<tr>
<td>Epiphytes</td>
<td>21 – 99.5%</td>
</tr>
</tbody>
</table>

![Graph A) Biodiversity](image3)

**Discussion**

We here show a somewhat diverse community (more than 115 species) where crustaceans are dominant, and more precisely, the amphipod *G. furcula* representing up to 55% of the litter macrofauna. We also show a community with low δ¹⁵N primary consumers, carnivorous species with higher δ¹⁵N, and omnivorous species with intermediate δ¹⁵N. With the SIAR results, we can see that even if the dominant crustacean species ingest litter leaves, it seems not to assimilate the major part of it’s carbon from this food source. *G. furcula* seems to assimilate it's carbon mainly from epiphytes and to a lesser degree, from living *P. oceanica* leaves. We can also highlight major abundance and biodiversity differences between summer (before leaf fall) and autumn (after leaf fall). It's important to see that these huge community modifications don't seem to affect the diet of most of the litter macro-invertebrates as the general isotopic signatures pattern remains quite constant.

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