

# CAULERPA RACEMOSA (FORSSKAL) INDUCES SHIFTS IN MOLLUSCAN SPECIES COMPOSITION AT POSIDONIA OCEANICA (L.) DELILE SEAGRASS MEADOWS

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## Abstract

In the Balearic Islands, the *Caulerpa racemosa* is an actual problem because colonize all kind of bottoms between 0-40 meters. The colonization of the dead rhizomes of *P. oceanica* seagrass by the green algae *Caulerpa racemosa* change the molluscan community previously associated with *P. oceanica*. This change is reflected in an increase of molluscan abundances and diversity, higher in *C. racemosa*.

**Keywords :** *Algae, Balear Islands, Mollusca, Coastal Systems.*

## Introduction

*P. oceanica* meadows are characterized by a high molluscan diversity, especially gastropoda species [3]. The substitution of the seagrass *P. oceanica* by *Caulerpa racemosa* macroalgae changes abundances and diversity of molluscan species [1,2]. *C. racemosa* is expanding its presence in the Mediterranean and has been reported in 11 Mediterranean countries [4]. In Balearic Islands *C. racemosa* is frequent growing over dead *P. oceanica* rhizomes near the edge of the meadow.

The aim of this study is to analyze changes in species composition, diversity and abundance in the molluscan fauna associated to *Posidonia oceanica* after the substitution of the seagrass beds by *Caulerpa racemosa* macroalgae.

## Material and methods

During 2004, bimonthly samples of molluscan fauna were collected in Portals Vells (Balearic Islands) at 5-8 m depth among *Posidonia oceanica* rhizomes colonized by *Caulerpa racemosa*. The control sampling station (*P. oceanica*) without *Caulerpa* was located in Cala d'Or. Molluscan individuals were collected using a 20x20 cm frame set by scuba-diving in the rhizome bed inserted 5 centimeters into the sediment; both sediment and rhizomes inside the frame were removed, placed in a net-bag of 200  $\mu$ m mesh size and sorted in laboratory.

SIMPER routine (PRIMER 5.0) was used to evaluate main species in each meadow and a CLUSTER (based in Bray- Curtis similarity algorithm) was performed to analyse the grouping of the samples.

## Results and discussion

A total of 17 gastropoda species and 20 bivalve species were identified in the *C. racemosa* macroalgae. In *C. racemosa* samples there was a low similarity value (average similarity 37%, SIMPER). Main species in *C. racemosa* were *Glans trapezia*, *Ctena decussata*, *Bittium reticulatum*, *Limaria hians*, *Paphia aurea*, *Rissoina bruguieri*, *Alvania cimex*, *Nassarius incrassatus* and *Arca noae*. At seagrass *P. oceanica* samples a total of 12 gastropoda species and 16 bivalvia were identified. The main contribution to the similarity percentage (average similarity 24%, SIMPER) was due to the bivalves *Glans trapezia*, *Loripes lacteus*, *Pinna nobilis* and *Arca noae*. The dissimilarity percentage between meadows *Caulerpa* vs *Posidonia* was high (average dissimilarity 80.22%) attributed to the differences between the species and abundances between meadows. The cluster analysis clumped all samples from *C. racemosa* apart from that of *P. oceanica* showing a clear seasonal pattern in the molluscan species at *C. racemosa*. In the *C. racemosa* Margalef diversity maximum values ( $d=2,13$ ) and Shannon-Wiever maximum data ( $H'=2,12$ ) were found in October, and maximum abundance (308 ind/m<sup>2</sup>) was quantified in February. The values at *Caulerpa* mats were higher than those obtained in the *P. oceanica* seagrass, where maximum diversity values ( $d=1,42$  and  $H'=1,9$ ) corresponded to June, and maximum abundance (67 ind/m<sup>2</sup>) to April and June. The substitution of *P. oceanica* by *C. racemosa* seems to produce a change in the dominant and most frequent molluscan species of *P. oceanica*, reflected in an increase in diversity values and abundances quantified at *C. racemosa* mats.

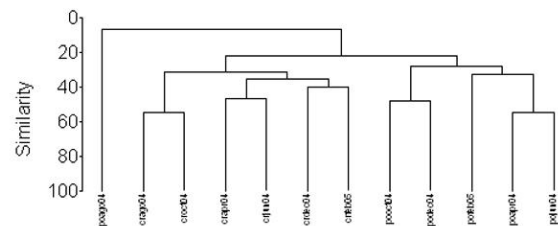


Fig. 1. CLUSTER representation of the collected samples from *P. oceanica* and *C. racemosa*. PO means *Posidonia oceanica* and CR means *Caulerpa racemosa*.

## References

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