

{rokbox title=|Fondos de roca con comunidades de algas fotófilas ramoneadas por el erizo de mar (*Paracentrotus lividus*) :: Foto: Bernat Hereu (Universidad de Barcelona)|
thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-incremento-e-erizos-mediterraneo-cardona-et-al-2013-thumb.jpg|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-incremento-erizos-mediterraneo-cardona-et-al-2013.jpg{/rokbox}

Luis Cardona, **Joan Moranta**, **Olga Reñones**, Bernat Hereu, (2013). [Pulses of phytoplanktonic productivity may enhance sea urchin abundance and induce state shifts in Mediterranean rocky reefs](#)

. Estuarine, Coastal and Shelf Science. Volume 133, 20 November 2013, Pages 88–96.

Abstract: This paper tests the hypothesis that increased planktonic primary productivity may enhance sea urchin recruitment and trigger changes in the structure of benthic communities in oligotrophic temperate regions. Underwater surveys were conducted in the marine reserve of northern Minorca (Balearic Archipelago, western Mediterranean) and an adjoining control area in 2005 and 2012 to assess the abundance of fishes and sea urchins and the cover of macroalgae before and after a natural pulse of planktonic primary productivity. The biomass of most fishes, including that of sea urchin predators, increased significantly in the whole area two years after the productivity pulse, without any effect of management or depth. The abundance of sea urchins also increased throughout the whole area two years after the productivity pulse, but the average test diameter decreased, thus revealing improved recruitment. The aggregated cover of erect algae and that of *Cystoseira brachycarpa* did not change significantly from 2005 to 2012, but the cover of turf-forming algae was negatively correlated with the biomass of sea urchins, whereas the cover of coralline barren was positively correlated with the biomass of sea urchins. The overall evidence indicates that planktonic primary productivity is a key factor in the dynamics of sea urchin populations in oligotrophic regions and that improved sea urchin recruitment after productivity pulses in spring and early summer may result in sea urchin populations sufficiently dense to result in the development of coralline barrens independently on the density of sea urchin predators.

Keywords: bottom–up control, *Cystoseira brachycarpa*, coralline barrens, *Diplodus* spp., marine protected areas, *Paracentrotus lividus*, top–down control, trophic cascades