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## **Response of *Cymodocea nodosa* to ocean acidification and warming in the Canary Islands: Direct and indirect effects**

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### **Abstract:**

As detected in warming and ocean acidification, global change can have profound impact on marine life. Its effects on seagrasses are becoming increasingly well-known, since several studies have focused on the responses of these species to global change conditions. However a few studies have assessed the combined effect of temperature and acidification on seagrasses. Overall in this study, the combined effects of increased ocean temperature and pH levels expected at the end of this century (+5 °C and pH 7.5) on *Cymodocea nodosa* from Canary Islands, were evaluated for one month through manipulative laboratory experiments. Growth, net production, respiration, gross primary production, chlorophyll-a concentration and its vulnerability to herbivory were quantified. Results showed a positive effect of decreased pH on growth and gross primary production, as well as greater vulnerability to consumption by the sea urchin *Paracentrotus lividus*. In contrast, increased temperature limited net and gross primary production. This study shows that in future scenarios, *C. nodosa* from the Canary Islands may be a losing species in the global change stakes.

Keywords: ocean warming, acidification, *Cymodocea nodosa*, herbivory, metabolic rates, growth