



NOTE

Preliminary observations of caulerpin accumulation from the invasive *Caulerpa cylindracea* in native Mediterranean fish species

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ABSTRACT: Recent studies have shown that the Mediterranean white sea bream *Diplodus sargus* includes the invasive green alga *Caulerpa cylindracea* in its diet, with consequent metabolic and enzymatic alterations. As a result of this novel alimentary habit, the bioactive algal red pigment caulerpin has been detected in its tissues. However, this may not be an isolated case: other fish species have also been reported to feed on *C. cylindracea*, although the possible accumulation of caulerpin in their tissues has not yet been investigated. In this report, we analysed stomach contents and caulerpin levels in the native sparid species *Spondyliosoma cantharus*, *Sarpa salpa*, and *Diplodus vulgaris*, and in the scarid *Sparisoma cretense*, along with the Lessepsian siganid *Siganus luridus*. *C. cylindracea* was found in the stomachs of all but one fish species, the exception being *S. cretense*, in which prey items could not be determined due to the high degree of digestion. Chemical analysis of fish tissues revealed that only *S. cantharus* and *S. salpa* accumulated caulerpin, while no traces of the compound were detected in the other species. Despite intense research efforts on natural products obtained from *C. cylindracea*, a complete picture of the impacts caused by fish including this alga in their diet has not been elucidated. The identification of caulerpin in other Mediterranean native fish suggests a need for further research in order to assess the possible transfer of such molecules to humans through seafood consumption.

KEY WORDS: Invasive species · Bioaccumulation · Alien metabolites · Food webs · Mediterranean

INTRODUCTION

Invasive species are causing negative impacts across all regions of the Mediterranean, including many marine protected areas, with the consequent failure of management and conservation practices to maintain native biodiversity (Simberloff 2000). The Pelagian Islands have not escaped this general trend

and have now been colonized by many exotic species of Indo-Pacific origin, including fish (e.g. *Siganus luridus* and *Fistularia commersonii*; Azzurro et al. 2007) and invasive green algae (e.g. *Caulerpa cylindracea*; Serio et al. 2006).

However, although the densities, distribution and temporal patterns of non-indigenous species (NIS) have been widely investigated over the last few years,

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