AN OVERVIEW OF THE PRESENT STATE OF KNOWLEDGE ON CAULERPA TAXIFOLIA IN THE MEDITERRANEAN SEA

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Caulerpa taxifolia, a green alga with a circumtropical distribution, has been used since the 1970s and early 1980s for natural display in European aquaria. It was observed for the first time in the Mediterranean Sea (Monaco, French Riviera) in the mid-1980s, and there is evidence that it had escaped from an aquarium. Morphological, ecological and physiological studies have demonstrated that the aquarium-Mediterranean strain of C. taxifolia differs from known tropical populations, exhibiting larger size, vigorous growth and resistance to low temperature. Spectacular progression of this alga was observed on the French and Italian Riviera, where the more or less colonized area extended to over 5,000 ha. Isolated colonies were also discovered in French Catalonia, Tuscany, Balearic Islands, Sicily and Croatia. Sexual reproduction of C. taxifolia remains unknown in the Mediterranean, where only male gametes have been observed. Its long distance spread probably results from dissemination of cuttings by pleasure boats and fishing nets. This is consistent with its ability to resist long periods of emersion (up to 10 days at 18 °C), when kept in darkness and at a high level of air humidity.

In the Mediterranean, Caulerpa taxifolia is able to invade most of the sublittoral environments, from sea-level down to 30 m depth: photophilic and sciaphilic communities, on rocky, sandy and muddy bottoms, in pristine and polluted waters (including harbours). It has in addition been collected down to 100 m depth. It is in competition with native benthic species. A decrease of species diversity and/or a conspicuous change in abundance of key-species has been evidenced for e.g. algae, seagrasses, fish parasites (Digenea), sea urchins, amphipods, polychaetes and fishes. Moreover, a strong impact on eco-diversity (diversity of communities) is apparent, with a consequent dramatic uniformisation of the underwater landscape. The competitive success of C. taxifolia has been attributed to a number of factors, such as a lack of severe nutrient limitation, heterotrophy, the production of toxic and/or repellent secondary metabolites, the trapping of fine sediment by the dense leaf cover and the time lag between its growing period and that of native macrophytes.

In addition to its ecological impact, the spread of Caulerpa taxifolia might have harmful economic consequences, in the field of scuba diving and fishery. The aquarium-Mediterranean strain of C. taxifolia can be purchased in many aquarium shops and is
now present worldwide in a number of public and private aquaria. Given its potentially invasive character, it would appear that stricter control of its sale and possession is warranted.