

Polymerase chain reaction - single strand conformation polymorphism analyses of nuclear and chloroplast DNA provide evidence for recombination, multiple introductions and nascent speciation in the *Caulerpa taxifolia* complex

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Abstract

Independent lines of evidence support an Australian origin for the Mediterranean populations of the tropical alga *Caulerpa taxifolia*. To complement previous biogeographical studies based on nuclear rDNA internal transcribed spacer (ITS), a new chloroplast marker was developed in the cp 16S rDNA intron-2. Sequence variability for both nuclear and chloroplast markers were assessed in 110 individuals using single strand conformation polymorphism. Comparison of intrapopulation genetic diversity between invasive Mediterranean and native Australian populations revealed the occurrence of two divergent and widespread clades. The first clade grouped nontropical invasive populations with inshore-mainland populations from Australia, while the second clustered all offshore-island populations studied so far. Despite our finding of nine distinct nuclear and five distinct chloroplast profiles, a single nucleocytoplasmic combination was characteristic of the invasive populations and sexual reproduction was found to be very rare. *C. taxifolia* is clearly a complex of genetically and ecologically differentiated sibling species or subspecies.