

Suehs C.M., Affre L. et Médail F., 2004. Invasion dynamics of two alien *Carpobrotus* (Aizoaceae) taxa on a Mediterranean island: I. Genetic diversity and introgression. *Heredity*, 92 : 31-40.

This study, based on morphological and isozyme analysis, clearly discriminates two invasive *Carpobrotus* taxa, *C. edulis* and *C. acinaciformis*, in the Hyères archipelago off the southeastern coast of France. However, three different allelic combinations demonstrate the presence of intermediate individuals resulting from an introgression of part of the *C. edulis* genome into that of *C. acinaciformis*. Both taxa have higher than average genetic (*C. edulis*: $P(0.95) = 62.5\%$, $A = 2.25 \pm 0.70$, $H_o = 0.329 \pm 0.324$; *C. acinaciformis*: $P(0.95) = 75\%$, $A = 2.38 \pm 0.42$, $H_o = 0.645 \pm 0.109$) and clonal diversities (*C. edulis*: $IP = 0.37$; *C. acinaciformis*: $IP = 0.48$). Furthermore, *C. acinaciformis* has an excess of heterozygotes ($F = -0.585 \pm 0.217$), probably due to introgression. The relationship between the probability of clonal identity for two individuals and distance indicates that *C. acinaciformis* relies more on clonal reproduction than on sexual recruitment (seed recruitment/vegetative propagation = $u/v = 0.027$), in contrast to *C. edulis*, whose probability of clonal identity did not vary with distance. The overwhelming clonal growth and high genetic diversities of *C. acinaciformis* and the previously recorded invasion potential for *C. edulis* raises concern for intensified invasion via hybridisation.

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This study compares sexually and asexually produced fruit set, seed production, biomass, germination, and seedling size in *Carpobrotus acinaciformis* and *C. edulis* following controlled pollination experiments in order to evaluate the potential role of reproductive traits with respect to the invasive potential of these taxa. *C. edulis* is slightly agamospermic, completely self-fertile, slightly preferentially self-compatible, experiences no inbreeding depression, and has low hybrid vigour. In contrast, *C. acinaciformis* does not have reliable agamospermy, is only slightly self-fertile and self-compatible, experiences a slight inbreeding depression, and has a strong hybrid vigour. Both taxa have relatively low, although significantly different germination frequencies, and insignificantly different seedling sizes. Owing to the high performance in hybridisation as compared to all other controlled pollinations in *C. acinaciformis*, as well as a large amount of previously demonstrated introgression, we refer to the population studied on the island of Bagaud (France) as *C. affine acinaciformis*. We conclude that both *C. edulis* and *C. affine acinaciformis* should be considered as harmful invasive plants in the Mediterranean Basin, the former because of the flexibility of its mating system and high seed production, and the latter because of its strong clonality, high hybrid vigour, and potential for continued introgression from *C. edulis* genes. These differences require different control strategies, while the avoidance of sympatry is a distinct priority.

Bourgeois K., Vidal E., Suehs C.M. et Médail F., 2004. Extreme invasional meltdown: multi-trophic interactions catalyse Mediterranean island invasions. In : Arianoutsou M. & Papanastasis V.P. (eds.). *Proceedings of the 10th MEDECOS Conference. Ecology, conservation and management of Mediterranean climate ecosystems*. Millpress Science Publishers, Rotterdam, pp. 1-5.

Alien species are presently considered a major threat to the world's island biodiversity. Within these fragile habitats, mutualisms are particularly thought to increase the success and the spread of biological invasions. This paper reports a striking case of a three trophic level alien/alien/alien synergism bringing together, on a small Mediterranean island (Bagaud island, Port-cros National Park), two mammals and one plant. The three invasive species involved, the ship rat (*Rattus rattus*), the feral cat (*Felis catus*) and the Hottentot fig (*Carpobrotus edulis*). Ingestion and gut passage by the introduced ship rat is a primary dispersal vector for *Carpobrotus* seeds, while also enhancing seed germination rates and speed. In return, *Carpobrotus* fruits constitute a crucial resource for rats during the critical period of summer drought and starvation typical of Mediterranean islands. Finally, feral cats, which prey mainly upon rats, secondarily disperse viable and intact *Carpobrotus* seeds at distances much greater than those provided by the rat vector.

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