Assessing relationships between invasive and native fish species in marine protected areas across the Mediterranean Sea

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Abstract

Marine protected areas (MPAs) have emerged as one prominent management tool for the conservation and recovery of marine ecosystems. Currently, assessments of invasive species' impacts on marine ecosystems in and outside MPAs are scanty. At the same time, the role of MPAs in controlling invasive species populations is largely unknown. The "biotic resistance hypothesis" states that ecosystems with high species richness are more resistant to invaders than those with low biodiversity. Hence, the expected recovery of native species richness within MPAs could prevent the penetration and settlement of invasive species. Furthermore, the restoration of top-down regulation processes (e.g., restoration of top predators' populations) in MPAs could allow control of the spreading of some invasive species inside MPAs. Nonetheless, numerous studies have reported positive relationships between the numbers of native and invasive species. Moreover, the populations of some invasive species could be enhanced in MPAs mainly because they would benefit from non-harvesting. The project "PAVIS: Assessing the relationships between marine protected areas and invasive species" (funded by ANR) will investigate the following hypotheses: 1) whether MPAs influence the expansion of invasive species and mitigate their effects on native assemblages, and 2) whether the ecological effects of such species could alter, reduce, or nullify ecosystem responses to protection in MPAs. Data from 8 MPAs across the Mediterranean (6 countries) will be analysed and preliminary results on the relationships between invasive fishes and native fish assemblages will be presented.

Keywords: invasive species, marine protected areas, Mediterranean Sea, native fish assemblages

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