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TITLE: Status of vulnerable *Cystoseira* populations along the Italian infralittoral fringe, and relationships with environmental and anthropogenic variables

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ABSTRACT:

We analyzed the occurrence and status of infralittoral fringe populations of *Cystoseira* spp. (Fucales) at thirteen rocky sites around the Italian coastline, and explored the relationships with relevant environmental and anthropogenic variables. We found *Cystoseira* populations at 11 sites: most were scattered and comprised monospecific stands of *C. compressa*, and only 6 sites also supported sparse specimens of either *C. amentacea* var. *stricta* or *C. brachycarpa*. Coastal human population density, Chlorophyll *a* seawater concentrations, sea surface temperature, annual range of sea surface temperature and wave fetch explained most of the variation of the status of *C. compressa*. We hypothesize a generally unhealthy state of the Italian *Cystoseira* infralittoral fringe populations and identify multiple co-occurring anthropogenic stressors as the likely drivers of these poor conditions. Extensive baseline monitoring is needed to describe how *Cystoseira* populations are changing, and implement a management framework for the conservation of these valuable but vulnerable habitats.

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