

**STUDY OF THE COMMUNITY OF *CYSTOSEIRA BRACHYCARPA* J. AGARDH EMEND. GIACCONE OF A SHALLOW HYDROTHERMAL VENT AREA OF THE AEOLIAN ISLANDS (TYRRHENIAN SEA): PRELIMINARY RESULTS**

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### Objective

The marine hydrothermal vent areas are of great interest because they may be used as natural laboratories to study *in situ* water acidification effects on biota. The studies concerning the marine benthic algae of these areas are scarce and the effect of the acidification induced by vents on *Cystoseira* communities has not investigated yet. The aim of this study is to evaluate the effect of the natural seawater acidification on the species composition and structure of a *Cystoseira brachycarpa* community.

### Materials and methods

The study was carried out in June 2010 off the Panarea Island (Aeolian Islands, Italy) within a hydrothermally active area. Two communities of *C. brachycarpa* were chosen: one in the islet of Bottaro, inside an intense field vent area; and the other in the islet of Lisca Nera, at a distance of about 500 m from Bottaro, where no visible hydrothermal activity was observed. In each community two samples of 400 cm<sup>2</sup> were collected and preserved in 4% formalin seawater; pH values were also recorded. The species were quantified as coverage (cm<sup>2</sup>) and the diversity (Shannon index) was calculated.

### Results

A total of 82 taxa were found (56 Rhodophyta, 15 Phaeophyceae and 11 Chlorophyta). At Lisca Nera (pH 8.14 ± 0.18) the average number of species and coverage were 62.5 and 2356.3 cm<sup>2</sup>, respectively; the community was well developed showing the typical structure of *Cystoseira* communities; the erect stratum was dominated by *C. brachycarpa* (1617 cm<sup>2</sup>) on which an epiphyte stratum mainly dominated by *Boergeseniella fruticulosa* developed; *Jania rubens* were also present in this stratum, but showed a very low mean coverage (0.5 cm<sup>2</sup>); the encrusting substratum was characterized by *Neogoniolithon brassica-florida*; the diversity was 1.41. Conversely, at Bottaro (pH 7.64 ± 0.13) the average number of species and coverage were lower (26 and 639 cm<sup>2</sup>, respectively); the community was scarcely developed and *C. brachycarpa* less abundant (525.5 cm<sup>2</sup>); *Anadyomene stellata* was the dominant species in the community and the total absence of corallinaceae was remarkable; the diversity was also lower (1.19).

### Conclusions

Qualitative and quantitative changes between the two communities were detected. Results showed a strong reduction of diversity and structural complexity at lowered pH. The absence of corallinaceae at Bottaro was probably due to low pH that caused the carbonate dissolution. The unexpected low number of calcareous species at Lisca Nera might be related to the influence of hydrothermal activity still present at a significant distance from vents.