

Polychaetes associated to *Posidonia oceanica* meadows along a gradient of ocean acidification at a CO₂ vent system (Ischia, Italy)

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Polychaetes represent one of the most diversified and abundant taxa associated with seagrass meadows. These organisms show various feeding habits at different levels of the complex seagrass food web, representing suitable bioindicators of meadow structure and environmental status and disturbances. Ocean acidification (OA) is today considered one of the most pervasive stressors for marine biota at the level of species, communities and ecosystems. Naturally acidified systems, such as CO₂ vents, represent suitable natural laboratories to study the effects of OA on benthic organisms. An analysis of polychaetes associated with *Posidonia oceanica* meadows located around shallow CO₂ vents off the island of Ischia, is presented here.

Polychaetes were collected in November 2011 with an air-lift sampler (40x40 cm; 4 replicates per station) along a gradient of OA at the Castello's vent system at six stations (3 on the south and 3 on the north side), ranging from extreme low pH conditions (mean pH 7.5 occurring only on the south side) to control, normal pH conditions (8.12); a further control station was considered, 600 m from the Castello in similar environmental conditions and ambient pH (S. Anna meadow). A total of 99 taxa and about 4200 individual polychaetes were collected. Taxa richness showed higher values in the acidified stations, especially on the south side; similarly abundances were from two- to four-fold higher under low and extreme low pH conditions, in respect to control ones, due to relatively few dominant taxa. These are represented by *Amphiglena mediterranea*, *Syllis gerlachi*, *S. prolifera*, *Exogone dispar*, *Sphaerosyllis pirifera*, *Polyophthalmus pictus* and *Kefersteinia cirrata*. Multivariate analysis showed a separation between control and low pH assemblages and a separation between low pH and the extreme low pH site on the south side. Control stations showed higher variability among replicates, while acidified stations, especially those under extreme low pH conditions, showed a more homogeneous assemblage structure. These results demonstrate that many species of polychaetes are robust to OA, however, the high seagrass shoot density, occurring at acidified stations, may buffer the negative effect of this stressor on the biota, and explain both the high diversity and abundance observed there.