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- Title and Author Search

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## The effects of clam fishing on the properties of surface sediments in the lagoon of Venice, Italy

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**Abstract.** Harvesting of clams (*Tapes philippinarum*) has important socio-economic and environmental implications for the Venice lagoon area, Italy. Clam harvesting disrupts the structure of benthic communities but the effects upon sediment stability and surface structure remain unclear. The effect of clam fishing on the sediment properties of the lagoon bed was investigated at two different sites, a heavily fished site (San Angelo) and an infrequently fished site (San Giacomo). Both sites were assessed for immediate impacts of fishing, using indicators of biogenic sediment stabilisation. Samples were taken at three points along three 100 m linear transects at each site prior to and post fishing. Paired samples were also taken parallel to each transect at a distance of 5m, to allow for temporal variation. Sediment stability, measured with a cohesive strength meter (CSM), was significantly higher at the less impacted site ( $F_{1,34} = 6.23$ ,  $p < 0.018$ ), was correlated with indicators of biogenic sediment stabilisation and decreased by approximately 50% following the trawling event. Concomitant decreases in chlorophyll *a* (chl *a*), colloidal-S carbohydrate and dry bulk density were observed on the transect after fishing but not adjacent to the fishing path. At the heavily impacted site, clam fishing by trawling had, in general, no significant effect on the biological and physical properties (although chl *a* did decrease significantly after fishing). The lack of a significant impact from fishing at the impacted site was attributed to the higher frequency of fishing occurring in this area. Hence, frequent fishing of the lagoon prevents establishment of biotic communities, preventing biostabilisation and thus reduces the stability of the surface sediment.

**Keywords:** clam harvesting, erosion threshold, microphytobenthos, sediment, stability

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