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THE MONITORING OF SEAGRASSES THROUGH UNDERWATER PHOTOGRAPHIC IMAGES AND VIDEO: TECHNICAL OVERVIEW ON THE CASE STUDY OF THE MARINE PROTECTED AREA OF CAPO RIZZUTO, (ITALY)

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Seagrass meadows are considered to be among the most important marine ecosystems, for biodiversity, ecological and economic reasons. Their progressive degradation may be due to natural or anthropogenic disturbances and stress, although losses of the seagrass meadows were mainly related to coastal development, pollution, trawling, fish farming, moorings, dredging, dumping and the competition with introduced species. As a consequence it is necessary to establish monitoring programs that follow a unified and complete protocol of actions to preserve these important marine resources. We have developed a new protocol for monitoring the *Posidonia oceanica* and *Cymodocea nodosa* meadows that use underwater photocamera or georeferenced towed underwater video-camera, or alternatively the remotely operated vehicle (ROV). In this work we tested the new protocol at the marine protected area (MPA) of Capo Rizzuto (Italy) by divers and/or video systems along 50m x 1m² transects that originate within existing seagrass prairies. The considered variables were: area, continuity, proximity, coverage percentage (using the software estimate), and species composition. The combination of these five variables was used to calculate the habitat structure index, H'. The monitoring protocol of the seagrasses by divers or by video systems can be applied to monitor the upper and lower limits of the meadows. This method has several advantages over other techniques: 1) estimates of changes over time; 2) provide positive identification of plants which is not possible with acoustics techniques; 3) provide a permanent archive of visual images.