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Mediterranean *Hippocampus* Mission: a study on the geographical and ecological distribution of seahorses carried out in collaboration with recreational scuba divers

Abstract

Seahorses (*Hippocampus*) live in both tropical and temperate waters, where they are vulnerable due to their life histories and habitat preferences. Habitat degradation and fishery overexploitation has led to drastic population declines on a global scale. Population monitoring is essential to assess their current status and manage their conservation. This is the first study conducted in Italian waters to determine the geographical and ecological distribution of the two Mediterranean seahorse species: *Hippocampus hippocampus* and *Hippocampus ramulosus*. Recreational scuba divers were recruited and trained to report sightings on a questionnaire. In this 3-year study, 2536 recreational scuba divers spent 6077 diving hours gathering data and completed 8827 questionnaires. 8% of the questionnaires reported seahorse sightings for a total of 3061 sighted specimens, 68% of which referred to *Hippocampus ramulosus*. The two seahorse species had overlapping geographic distributions. Seahorse abundance varied considerably around the coast of Italy: the northern Adriatic Sea had the greatest abundance of seahorses, followed by the central-southern Tyrrhenian Sea and seahorses were rare in the Ligurian and northern Tyrrhenian Seas. Preferred habitats were shallow areas with either sandy bottoms or *Posidonia oceanica* meadows. The seahorse distribution may be correlated with the degree of degradation of *P. oceanica* meadows. We have shown that resource users like scuba divers are willing to take part in biological monitoring and can contribute both in scientific terms by collecting considerable amounts of data over short time periods, and economic terms by indirectly part funding research. The greatest limitation with volunteers was the difficulty in obtaining a uniformly distributed sample across time and space. We conclude that recreational scubadivers can play an active part in the monitoring of the marine environment and that the "Mediterranean *Hippocampus* Mission" may be used as a model for biodiversity monitoring.