FIRST RESULTS OF FISH DIVERSITY ASSOCIATED WITH *POSIDONIA OCEANICA* MEADOWS IN THE AEGEAN SEA

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Abstract
Spatial variation in density, and diversity of littoral fish species associated with nearshore *Posidonia oceanica* meadows from the Aegean Sea was studied during the period 2008-2009. A total of 318980 littoral fishes were collected with boat seine from 12 locations in the Aegean Sea, belonging to 47 families and 137 species. Total number of species per location varied between 25 and 54. Throughout the study, schooling planktivorous species such as *Spicara smaris*, *Boops boops* and *Chromis shromis* were dominant in terms of density. Mean number of individuals varied between locations and ranged between 600 and 4500. For most of the locations, diversity of species did not vary significantly.

Keywords: Fishes, Teleostei, Posidonia, Aegean Sea

Introduction
Posidonia oceanica meadows provide key ecological services to the coastal zone, ranking among the most valuable ecosystems in the biosphere and are protected by EU legislation (Habitat directive), the Bern and Barcelona Conventions and national legislations. Fishing regulations limit trawling activities near the shore (either above 50 m or a certain distance from the coast), which constitute an indirect protection measure for the species (EC Council Regulation N° 1967/2006 and national regulations). Important shallow coastal habitats, such as seagrass meadows, may provide a habitat for food, shelter, reproduction, settlement and serve as a nursery habitat with high quality for many fish species (Kalogirou et al. 2010; Kalogirou et al. 2012). In this study we focused on one of the most important habitat, *Posidonia oceanica* meadows. Through quantitative data collected over a broader spatial scale the aim of this study was to examine geographical differences in fish diversity associated to *P. oceanica* meadows in the Aegean Sea.

Materials and Methods
The study was performed at 12 shallow (5–35 m) locations in the Aegean Sea (Aegina, Chios, Eretria, Karistos, Koilada, Lesvos, Marmari, Neapoli, Paros, Rhodes and Salamina). All 12 locations selected for this study had sandy sediment with a patchy distribution of *P. oceanica* meadows. In Hellenic waters, the boat-seine fishing method, used in this study, is banned from 1 April to 31 September. For this reason the sampling was performed during 1 October to 31 March. Daylight sampling was undertaken at all locations in order to study spatial variation in fish diversity. The boat-seine fishing method was used to sample fishes from the *P. oceanica* habitats with the help of a local fishing boat. The seine is hauled at a constant speed of *c.* 0·3 m s^{-1}. The total time elapsing from deployment of the start line with an anchor to the time the seine was taken onboard was *c.* 35 min. Mesh-size decreased from the outer end of the wing towards the centre in the sequence 500, 180, 32–34, 12 and 11 mm, with a minimum mesh-size of 8 mm in the codend. Due to unequal sample size per location, three sweeps were randomly chosen from each locality. All fishes were immediately identified to species level Whitehead *et al*., 1986), weighed in g and measured (total length, *LT*). Fish species diversity for each sample was estimated using the Shannon-Weiner equation.

Results and Discussion
In total 137 species belonging to 47 families were identified during this study. Dominant species I terms of number of individuals included *Sardina pilchardus*, *Boops boops*, *Chromis chromis*, *Spicara smaris*, *Mullus surmuletus*, *Atherina hepsetus* and *Coris julis*. Number of species varied between locations and ranged between 25 and 54, with Chios Island representing the lowest number of species (25) and Karistos the highest (54) (Fig. 1). Mean number of individuals ranged between 600 and 4500, with Eretria representing the lowest (600) and Paros the highest (4500) (Fig. 2). Diversity of species between localities with Chios Island representing the lowest (0.6) and Karistos the highest (1.9).

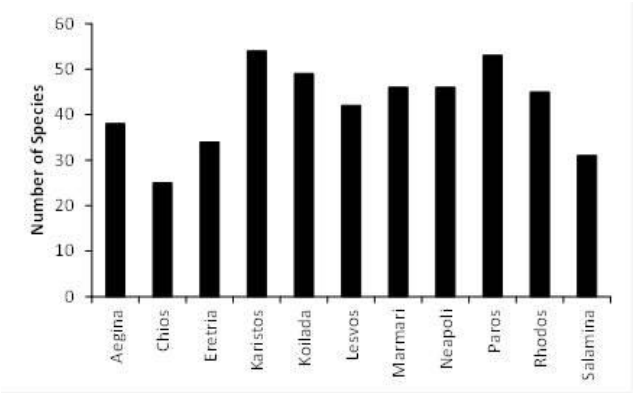

Fig. 1. Total number of species per location

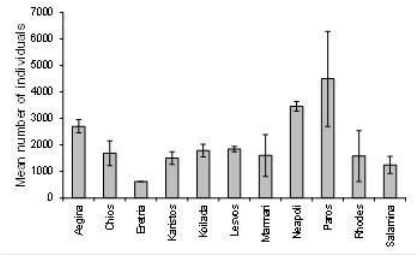

Fig. 2. Mean number of individuals per location

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