**Introduction**

*Posidonia oceanica* (L.) Delile is an endemic species of the Mediterranean Sea, widely recognized as key species in the infaunal habitats (Hemminga and Duarte, 2000). Caused by the increase in anthropogenic pressure on marine ecosystems and the associated water quality decline, the European Union has engaged a strategy, the Water Framework Directive (WFD), with the aim to preserve and recover the ecological quality of the marine environment. For this purpose, according to the WFD, a specific monitoring of *Posidonia oceanica* meadows was carried out along the Apulian coasts by the Regional Agency for the Environmental Prevention and Protection (ARPA Puglia).

**Material and Methods**

A total of 17 sites, 11 in the Southern Adriatic Sea and 6 in the Northern Ionian Sea were investigated during two consecutive monitoring cycles (2009-2011 and 2012-2014) (Fig. 1). Sampling procedures as well as laboratory analyses (phenology and lipidochromophore) were carried out according to a common methodological protocol shared at Italian national level (D.M. 260/2010) for the final ecological classification (see Supplementary Table 1). The PREI index (Box 1), as derived by Costantino et al. (2009), in each *Posidonia* meadow, was obtained by two sampling stations that were investigated by scuba divers at the fixed depth of 15 m and in correspondence of the lower benthic community distribution limit. Box 1.

**Result – Evaluation of Ecological Status from 2009 to 2014**

In the first cycle of monitoring the values of the PREI Index varied from 0.295 (Mola di Barzì) to 0.701 (S. Maria al Bagno). In the second cycle of monitoring (2011-2013) the PREI Index ranged from 0.332 (Barì Balice) to 0.723 (Porto Cesareo) (Fig. 2).

The results showed that in the first cycle of monitoring (2009-2011) 29% of sites were classified as “GOOD”, 59% were classified as “MODERATE” and the remaining 12% as “POOR”. While the second cycle (2012-2014) there is a general slight improvement of the classification (71% classified as “MODERATE”, 29% as “GOOD”) (Fig. 3).

In the second monitoring cycle (2012-2014) the sites of Ugento and S. Maria al Bagno weren’t sampled because the water bodies (semi WFD) whose they belong to, were classified in a Good status in the first cycle (2009-2011).

**Result – Effect of water column transparency on PREI Index**

Among the environmental factors that affect and limit the distribution and the ecological status of *Posidonia oceanica*, the transparency of water column is considerable and is related to the minimum light requirement of this seagrass (Dennison et al., 1993). Over the past hundred years, the reduction of water transparency was caused by human activities such as poor land and maritime management practices resulting into increased surface run-off, dredging operations, coastal urbanization and engineering, marine farming, etc (Ralph et al., 2007). Fig. 4 shows the positive relation (R^2=0.83, p=0.0012) between mean water transparency and values of PREI Index for the second cycle of monitoring. Fig. 5 underlines that the reduction in water transparency could be related, other than to the natural oceanographic features different for the Adriatic and for the Ionian Sea (Barbone et al., 2014), to the population density, and consequently to an higher rate of human activities, of the coasts of Puglia Region.

**Conclusions**

Although the ecological quality status of the Apulian *Posidonia oceanica* meadows (summarized by the PREI index values) reflects the distribution of anthropic pressures on the coast (harbours, industrial and urbanized areas, river’s outlets) along a latitudinal gradient, the classification based on the rules (reference conditions and EQR boundaries for the PREI index) reported in the Italian law (D.M. 260/2010) seems to underestimate the real ecological status. Consequently, a revision of both the current reference conditions and EQR boundaries is suggested for the BOE *Posidonia oceanica* in the Apulian marine waters, in order to taking account of the environmental features of two different marine basins as the Southern Adriatic Sea and the Northern Ionian Sea.