NEW METHODOLOGICAL APPROACH FOR STUDIES OF FISH BEHAVIOR IN OFFSHORE WIND FARMS.

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Offshore wind energy has become a leading candidate for the generation of renewable energy. There has been a rapid development in the construction of offshore wind farms (OWF) in Europe during the last years. Currently, 1,371 turbines operate in 53 wind farms over 10 countries totaling 3812,6 MW. The UK has by far the largest number of turbines and, therefore, it is the largest supplier of offshore wind power with 2,094 MW. After UK, Denmark, with 857 MW and the Netherlands (247 MW), Germany (200 MW), Belgium (195MW), Sweden (164 MW), Finland (26 MW), Ireland (25 MW), Norway (2.3 MW) and Portugal (2 MW), with just one turbine (Wilkes et al, 2011). In recent years, several European studies have been carried out to test the local effects that OWF may lead in terms of redistribution of fish species and incorporation of new species. These effects refer mainly to "FAD" (fish aggregation device) effect (Ybema et al, 2009; Scheidat et al, 2011) produced by the tower and its shadows on the water surface and to the artificial reef effect resulting from the foundations (Lindeboom et al, 2011; Wilhelmsson et al, 2010). Most attempts to quantify fish populations near hard structures, and natural and artificial reefs have used visual techniques. To improve the results, we propose the use of an acoustic and visual warning based system integrated into a computes part of a remote sensing platform (POR). The POR provides a continuous sampling over time based on echograms detecting presence of fish and on observation of species in real time. POR gives the possibility of quantifying fish populations plus studying their behaviour around the foundations and within the OWF. Therefore, this method can be applied in different scenarios to investigate the regional effects of OWF on local distribution patterns of pelagic and semi-pelagic communities but also on the study of attraction/avoidance behaviour of fish species.

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