
**Abstract**: A long-term time series of plankton records collected by the continuous plankton recorder (CPR) Survey in the northeast Atlantic indicates an increased occurrence of Cnidaria since 2002. In the years 2007 and 2008, outbreaks of the warm-temperate scyphomedusa, *Pelagia noctiluca*, appeared in CPR samples between 45° N to 58° N and 1° W to 26° W. Knowing the biology of this species and its occurrence in the adjacent Mediterranean Sea, we suggest that *P. noctiluca* may be exploiting recent hydroclimatic changes in the northeast Atlantic to increase its extent and intensity of outbreaks. In pelagic ecosystems, Cnidaria can affect fish recruitment negatively. Since *P. noctiluca* is a highly venomous species, outbreaks can also be detrimental to aquaculture and make bathing waters unusable, thus having profound ecological and socio-economic consequences.

**Keywords**: climate; jellyfish blooms; *Pelagia noctiluca*; plankton; temperature