The role of hydrozoans in European sea bass (Dicentrarchus labrax) gill disorders in Mediterranean aquaculture

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Finfish marine aquaculture farms across European coasts have been repeatedly affected by mortality events following the occurrence of episodic high densities of gelatinous cnidarians. Due to their stinging cells and venoms, these jellyfish species may severely damage fish gills. Gill disorders were observed in sea bass (Dicentrarchus labrax) fish farms along the Spanish Mediterranean coast. To investigate the potential for cnidarian-related pathologies affecting cage-reared fish, biweekly monitoring of zooplankton, phytoplankton and farmed fish gills were performed at two aquaculture facilities from south-western Spain from January 2012 to June 2014 (Almería facility) and June 2013 to June 2014 (Málaga facility). Analyzed data showed significant and positive correlation between the densities of planktonic hydrozoans and the recorded fish mortalities; in particular, the most related species were the siphonophores Muggiaea atlantica, Muggiaea kochi, and the actinulae larvae of Ectopleura larynx hydroid which is usually forming part of cage net biofouling community. Moreover, low temperature, high cnidarians densities and farmed fish mortalities were significantly associated. Finally, gill damage scores were positively correlated with cnidarians densities, while other gelatinous zooplankton groups and the studied phytoplankton species seemed not to be related with recorded fish gill disorders and mortality, even if high density peak of Chaetoceros sp. was observed coinciding with fish mortality event in Almería fish farm. This work may provide baseline information to develop methodological action plans and protocols to prevent and mitigate the impacts of jellyfish proliferations on finfish aquaculture farms.

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