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## **Adaptation of fish farming production to the environmental characteristics of the receiving marine ecosystems: A proxy to carrying capacity.**

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**Abstract:** In order to produce a new regulatory scheme for the fish farming industry in Greece, a Delphi exercise, asking a large number of experts to provide multiplication factors for the production for farms exposing at deeper, offshore and more exposed sites, was used. A simple formula was developed, taking into account the responses of the 31 experts, and three scenarios were derived by using different percentiles for each one of the factors. The system was discussed with a very broad spectrum of stakeholders and was evaluated by an international panel of experts. The results presented here were used as a basis for a ministerial decision which has been the regulatory framework for fish farming in Greece since 2009.

Key words: Delphi method; regulation; carrying capacity; fish farming; Greece

### **1. Introduction**

The Greek fish farming industry has expanded rapidly over the past three decades. As in many countries with a developing aquaculture sector, regulation of the industry has not kept pace with the expansion of the industry in terms of number of farms, size of farms, and changes in husbandry and associated technology. A regulatory framework for aquaculture is necessary in order to satisfy EU level Directives and Policies such as the Water Framework Directive (WFD, 2000/60/EC) and the Marine Strategy Framework Directive (MSFD 2008), but it is also important for the public perception of the industry. To this end, the Greek authority responsible for the regulation of aquaculture (Ministry for Maritime Policy, then called Ministry for Agriculture) decided to update the regulation for fish farming in 2004. The new regulation had to include the management of coastal activities aiming at the conservation and sustainable multiple use of the coastal zone by bringing together coastal stakeholders (Integrated Coastal Zone Management - ICZM). The objectives of the new regulation were

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