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## Application of hydroacoustic techniques for biomass estimation in fish farms

To efficiently manage their farms in the open ocean, aquaculture companies require precise measurements of the number and size of fish they contain. These measurements are essential to allow operators to properly manage the tasks of feeding and crop protection, further ensuring minimal environmental impact.

Inaccurate estimates of biomass lead to overfeeding or underfeeding of fish and generate significant economic losses. Existing technologies do not offer the precision needed to avoid those losses. Therefore the Business Association of Marine Aquaculture Producers of Spain (APROMAR), the Andalusian Aquaculture Technology Centre, CTAQUA, and the Research Institute for Integrated Coastal Zone Management from the University of Valencia, are working on a project entitled "*Design technologies for calculating total biomass of fish in offshore farms*".

The first stage of this research has focused on the evaluation existing technologies that could best meet project objectives. After a period of state of the art analysis, the team concluded that aquaculture can achieve significant progress by using hydroacoustic monitoring systems, since this technique could allow sufficiently precise measurements of the fish biomass. Other advantages of this system are their easy deployment method and easy retrieval. The equipment

allows communication wirelessly with other environmental control devices and could even generate early warnings in case of significant decrease of biomass (escapes or disease episodes).

BioSonics, Inc. (USA) is a company with experience in providing solutions for monitoring the biological and physical characteristics in the aquatic environment. As a pioneer in the application of hydroacoustic technology in this field, BioSonics Inc. has been selected to collaborate actively in this project.

The work of BioSonics is focused on the design of robust equipments to be installed in the offshore farms, deployment of the hydroacoustic equipment, data processing, analysis and reporting. The project is designed to evaluate the suitability of this technology for application in seabass and seabream aquaculture farms.

Remarkably, in recent years, BioSonics has conducted substantial research and technology development management of salmon aquaculture systems based on their echo sounders (COTS).

In the course of the coming months it is expected to have the results of the tests performed this summer. Although final evaluation is not available yet, it is likely that hydroacoustic technology will become a standard management tool for Mediterranean aquaculture industry.

### **About the project:**

The budget for this project amounts to € 214,000, of which 175,000 are provided by a grant from the Secretary General of Fisheries, Ministry of Agriculture, Food and Environment of the Government of Spain (Program of support for technological development). The rest of the budget is supported by the partner of the project.

Note that the scope of this project is national and its duration is two years. According to the schedule, the final results will be announced in February 2014.

## About Ctaqua

Ctaqua works for the aquaculture sector in various lines that include Environment, Food and Nutrition, New Species, Pathology, Applied Engineering and Commercialisation, with excellent results.

With finished projects in the lines mentioned above, this year Ctaqua reinforces the services it offers with the implementation of new facilities in El Puerto de Santa Maria, which allow for the development of new projects in the test centres, workshops and laboratories equipped with the latest technology.

The modern two-story building houses the nutrition, diversification, mollusc, crustacean, phytoplankton and zooplankton rooms on the ground floor. The microbiology and pathology labs, transformation room and the engineering room are also located on this level. The technical offices, physicochemical, materials and food technology labs are located on the upper level.

The premises allow Ctaqua to consolidate its work and become a reference in R+D+I management for the aquaculture sector, as well as a driving and essential force to generate added value for companies in the sector.

### **Contact (more information and photos):**

Andalusian Aquaculture Technology Centre  
T. +34 956 56 93 63 - comunicacion@ctaqua.es – www.ctaqua.es