Factsheet

The contribution of internet of things (IoT) to precision aquaculture farming

The fish farming industry needs instruments that can monitor in real time fish health and welfare objectively, without interfering with the daily management.

In this sense, the precision livestock farming is gaining increased attention to enhance animal welfare, but also to enhance production and environmental sustainability.

This is why **FutureEUAqua** project is committed to exploit the potential of IoT to address the challenges of a sustainable and resilient aquaculture system that ensures profitability, maintains healthy aquatic ecosystems and strengthens capacity for adaptation to climate change.

CHALLENGE: Monitoring fish metabolic rates, water quality and environmental data, to enhance welfare and performance of farmed fish.

Electronic sensors support the monitoring and collection of enhanced environmental data and biological traits. A network of wireless electronic sensors can thus enable accurate fine-scale measurements of environmental conditions, fish health, welfare and habitat use, facilitating predictive modelling and data-driven aquaculture, where knowledge informs tailored decisions.

ACTIONS
COISPA researchers set up a multiplatform tracking system for simultaneously monitoring the behavior and physiology of fish, coupled with key environmental variables, by using a wireless sensors system.

A hub, installed on a floating platform close to the seabass cages, was connected to an underwater hydrophone to continuously receive acoustic signals from both environmental and physiological sensors. The connection of the hub to the farm WIFI allowed real time handover of data to the cloud and synchronous display of the information to a live dashboard.

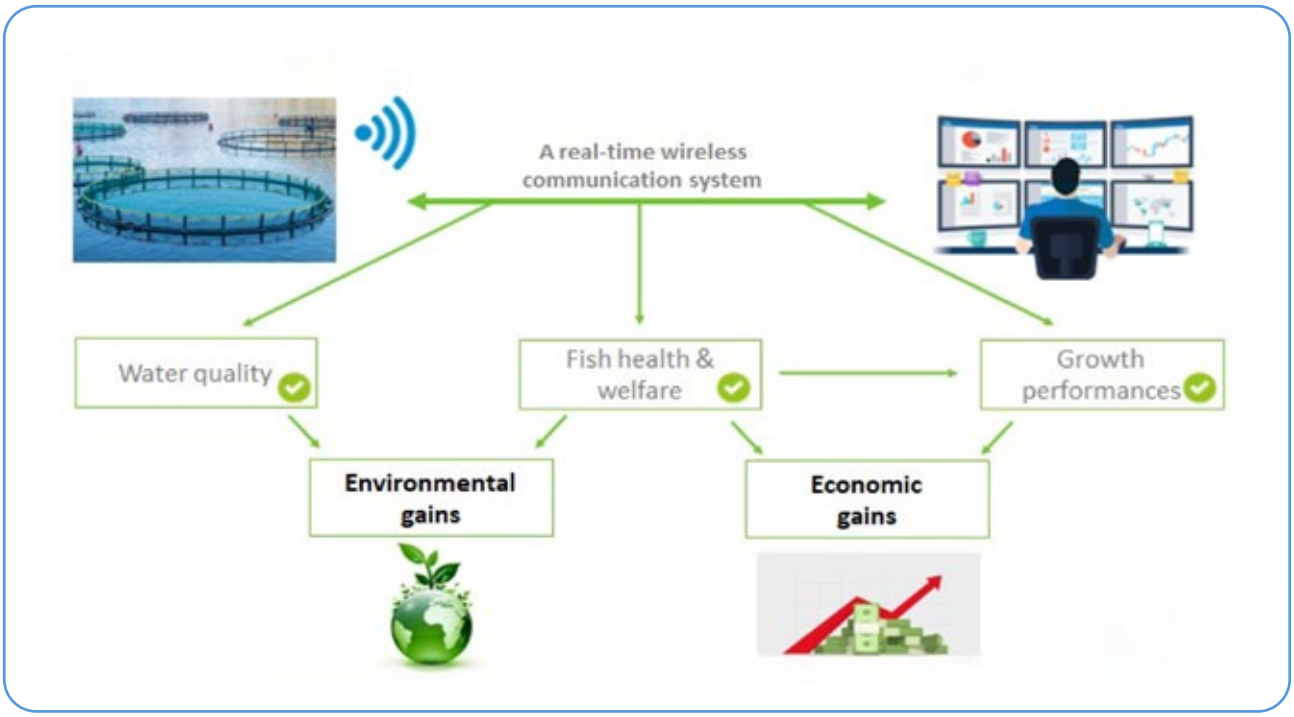
Modelling the relationships between the environmental parameters and the physiological/behavioral traits of sea bass we were able to predict possible impacts on some key performances indicators (KPIs), such as growth performance and fish mortality.

WHAT IS Precision aquaculture farming?
The science of improving aquaculture yields and assisting management decisions using high technology sensor and analysis tools.

WHAT IS IoT?
A network of physical objects with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data.

TAKE HOME MESSAGE

Precision farming has great potential in aquaculture and promoting new and larger experiments with networks of sensors will help to enhance the predictive ability of modelling KPIs and environmental data.



Real-time wireless communication system and sensor network.

Read more on our website:
www.futureeuaqua.eu

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