Stress and metabolic monitoring system to improve fish production

CSIC through the Instituto de Acuicultura "*Torre de la Sal*" and the Instituto de Microelectrónica de Barcelona - Centro Nacional de Microelectrónica, and the Universidad de las Palmas de Gran Canaria have developed a novel smart system which warns about changes on the fish behavior responding to external factors which are controllable in a fish farm. The system is a small, less invasive and harmless device that allows fish farmers to identify stressed fish and to perform selective breeding in a more efficient manner. This helps to set more strict and reliable welfare fish standards.

Industrial partners dedicated to the manufacture or development of fish farming (vaccines, feed) and/or fish farms monitoring products are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing

AEFishBit- A Warning system to increase fish production

Fish, like many other animals, behave abnormally under stressful situations. Such negative environment is reflected on fish growth, regardless of food availability. This phenomenon causes large economic losses to fish farm producers. Hence, the importance of reaching a health and welfare fish standard.

The first step to achieve this desired standard is to implement tools for remote non-invasive monitoring of fish condition. Some of the solutions already available in the market are based on image analysis or acoustic telemetry. However, these systems have fish-size limitations or can only detect individuals close to the water surface. AEFishBit offers an alternative system that overcomes some of these monitoring constrains. It is a triaxial accelerometer implanted on the operculum of the fish, allowing the measurement of parameters in the three axes and recording the breathing frequency and acceleration activity. Moreover, this smart electronic system goes beyond data collection, processing the information using a powerful algorithm and providing fish farmers with a reliable stress indicator and a breeding selection tool.

Fig1) Fish with AEFishBit implanted system.

Main innovations and advantages

AEFishBit is a monitoring system that enables fish farmers to monitor stress indicators and ultimately optimize fish production.

- Accessible price and high manoeuvrability.
- Reusable module that features a rechargeable battery and an easy removal system.
- Minimal invasion and low weight - does not exceed the gram.
- Triaxial accelerometer provides unbiased and reliable results when measuring physical activity rather than speed.
- Biometric monitoring of several individuals in the same space and in deeper locations far from the water Surface.
- Future applications for other farm animals beyond the marine realm.

Patent Status

Priority patent application filed suitable for international extension

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