

University of Las Palmas, Gran Canaria

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The University Institute of Sustainable Aquaculture and Marine Ecosystems (IU-ECOQUA), at University of Las Palmas, Gran Canaria (ULPGC) is a key participant in the **Tricontinental Atlantic Campus (CEI)** project, and has achieved national distinction in the discipline of Marine Sciences (CEI10/00018). It participates in national and European projects: MACAROMOD, DIVERSIFY, ARRANA, PERFORMFISH, ECOQUA, AQUAEXCEL, ISLANDAP, MacBIOBLUE, LIFEBAQUA, MIMAR. IU-ECOQUA is part of the European Network of Research Infrastructures (MERIL) and the European Network of Aquaculture Infrastructures for Excellence (AQUAEXCEL and AQUAEXCEL2020), where it has achieved recognition as the European Research Institute with the greatest number of Transnational Access (TNA) projects. The institution offers three standardized facilities featuring control and monitoring of physiochemical parameters which may be managed in real time (MBS, WWSSU, FITU) where any public or private European entity, including commercial enterprises, can conduct experiments of up to three months' duration. AQUAEXCEL2020 supports TNA projects with biological material, facilities rental, funding to support trials, reports, travel and researchers in the ULPGC facilities.

Standardizing aquaculture processes reduces errors and facilitates meaningful comparisons within and between experiments. This standardization also allows such processes to be introduced in industrial scenarios, which require large volumes of data to be generated, stored and traced. To that end, the ULPGC is continually seeking to implement automatic systems that allow the standardization of processes between partners engaged in scientific and industry collaboration.

For its sampling and monitoring processes, the ULPGC has acquired two *FishReader* workstations from Trovan, Ltd. These *FishReaders* allow researchers to monitor the whole productive cycle of marine species from larva to brood stock. Using *FishReader*, IU-ECOQUA has been able to automate its data collection process, ensuring that all data is entered into a database in real time. Using the software programs, which are easy to learn, operators can quickly capture each specimen's ID, measure relevant characteristics, and register biological samples taken. Operators record all the data automatically, which minimizes errors and saves a great deal of time, especially in comparison to conventional data collection processes which involve a lot of manual labor, in a long, tedious and error-prone process.

B.L. – Why did you decide to implement TROVAN's *FishReader* system?

J.M.A.¹ - At our facilities, we track thousands of fish, so it is necessary for the data collection process to be fast and reliable so we can ensure accurate information and take the right decisions.

In the past, in some large-scale experiments, it took several days to complete the sampling, so the use of a fast but reliable system was absolutely essential for us.

B.L. - What have you accomplished with the use of Microchips and the *FishReader* system from TROVAN?

J.M.A. - We have achieved three fundamental things:

Reliability of the data. We now process all data automatically, avoiding the tedious work of entering it manually as well as avoiding the errors inherent in a manual process.

Speed. We now collect the complete data on an animal in about 20 seconds, 12 in the case of animals that have already been tagged if we only record weight and size. Before, it took approximately one minute and 20 seconds per animal, which meant it took significantly longer to complete sampling of several thousand fish, for instance in quantitative genetics.

Reduced staff workload. Before starting to work with the *FishReader*, we needed about 4 people to carry out each sampling. Now, we need only two people. But the most important thing is that we saved hundreds of hours of work which used to be required for the introduction and verification of the data in our system. We also save a lot of time on identification of fin samples to perform genotyping.

¹ Juan Manuel Afonso López leads ULPGC in the AQUAEXCEL2020 project and is director of the Aquaculture Research Group

B.L. - How was the implementation of the new system?

J.M.A. - Actually much simpler than we thought. After two days of training and configuration, the system can be operated by anyone; it is extremely easy to learn. It is also very versatile: in the brood stock room, we connected our own scales to the *FishReader* system to process the weight data on our PC.

B.L. - What do you hope to achieve in the long term with the use of the *FishReader*?

J.M.A. - At the moment we have significantly optimized the use of our personnel and eliminated jobs that are now done automatically. In the medium term we will be able to perform many more sampling sets and increase the number of fish that we are studying as well as the number of experiments that we do with our researchers.

B.L. - Is there any other advantage that you have not mentioned?

J.M.A. - We have also been able to record our data digitally in a simple and verifiable way for our work with research groups with whom we collaborate. As a research center, it is very important for us not only to obtain results, but also to be able to substantiate them credibly, and we can now do so. We have also managed to restructure and considerably optimize our internal processes, which is evident in the scope of the organization and especially in the results achieved.

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