

# An open-source database model and collections management system for fish scale and otolith archives

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## 1. Background & Issue

Biominerals (scales and otoliths) from fish are routinely sampled for age estimation and fisheries management. They can also be used to generate long time series data on fish growth dynamics, and in combination with environmental data, can reveal species specific population responses to a changing climate. A common problem with biological collections, is that while sample intake grows, long-term storage is rarely a priority. Precious samples are stored in unsuitable locations, and may become lost or separated from associated metadata.

## 2. Materials & Methods

The Marine Institute's ecological research station in Newport, Co. Mayo, Ireland, holds a multi-decadal (1928–2020) collection of biominerals from various fish species, gathered from many geographic locations. Samples were re-housed in a new repository, allocated unique ID's, and their critical metadata was rapid catalogued (geographic location, date, and species).

<https://doi.org/10.1016/j.ecoinf.2020.101115>



Archive: Before

Archive: After

## 3. Results: Archive & Database Design

This study resulted in an archiving system, and FAIR compliant data model, to consolidate and digitize this collection, and shows how this case study infrastructure could be used for other biological sample collections. Project specific associated images and time series data can be stored locally, which links back to the archive through unique identifiers. This system shows a proof-of-concept for 'opening' a large biomineral archive, which can be invaluable for fisheries climate change science.

## Cataloguing & Database Interface

Sample Set Container: 609

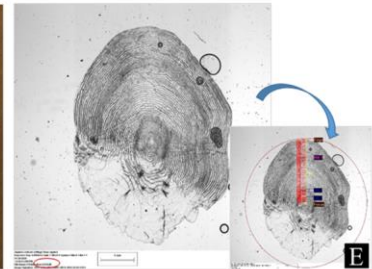
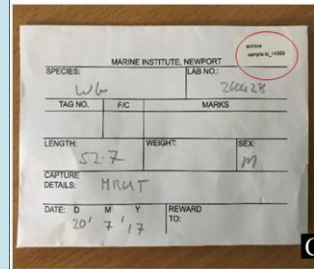
14369

Sample Set Container Envelopes  
Sample Type Fish scales  
Sample Set State Imaged  
Sample Set Comprised No  
Archive Location ESA2\_IFBA\_Unit\_5  
Contact Email ifba@marine.ie  
Date Archived 2018-01-20  
Programme Burrishoole Fish Stock Assessment Programme

Species Atlantic Salmon  
Date Collected 2017-07-20



Approximate Sample Amount 5  
Fish Length 0.527m  
Sex Male Sex Determination Method Field  
Maturity Grilse Maturity Determination Method Field Observation  
Life Stage Adult  
Fish Origin Local Wild Stock  
Fate Released  
Contained In Sample Set Container: 609  
Lab Number 260428



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