



Unlocking the Archive: A Biochronology Repository

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The aim of the ARCHIVE project is to consolidate existing collections of fish scales, otoliths (ear bones), associated images, and data into a single biochronology repository. Growth marks, genetic material, and chemical constituents of fish scales and otoliths produce data that can be used to reconstruct temporal trends in biological responses of fish populations. These biological time series can be combined with long-term environmental data to develop robust statistical models that predict species-specific population responses to a changing climate.

A common problem associated with biological collections is that while sample intake grows exponentially, long-term storage is rarely a priority. Material is often collected to meet short-term objectives and resources are seldom committed to maintaining and archiving long-term collections. As a consequence, precious samples are frequently stored in many different and unsuitable locations, and may become lost or estranged from associated data.

The Marine Institute, Ireland (MI) holds over 10,000 scales and otoliths from salmon, trout and eel, with some collections dating back to the 1920's. Samples are in different stages of image and data processing. To consolidate these collections a multi-functional Drupal (open-source) database is under development. The database contains two main schemas: (1) an archive fish scale and otolith inventory and (2) a data analysis catalogue for researchers. Work-flows, data entry sheets, and vocabulary lists that match the database will standardize the collection and storage of fish scale and otolith samples. Biological material will be held within a sample repository and accessed according to standard procedures for sample analysis and archive deposition. A public view of the database will feature within the MI's data catalogue, which is developed by the MI's Information Services & Development team. The ultimate aim is to produce Ireland's first repository that is centered around fish sclerochronology samples, paired with a database of individual growth records and scale and otolith images.

Unlocking the archive: using scale and otolith chronologies to resolve climate impacts (the ARCHIVE project) is a collaboration between the Marine and Freshwater Research Centre at the Galway-Mayo Institute of Technology and the Marine Institute in Ireland. The project (Grant-Aid Agreement No. PBA/FS/16/03) is carried out with the support of the Marine Institute and is funded under the Marine Research Programme by the Irish Government.