

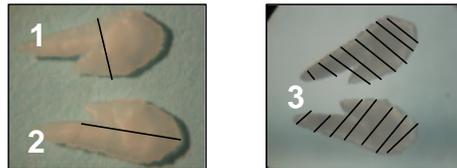
Specimen Preparation of Sardine Otoliths

1. Background

The preparation and observation of fish otolith bones are used to reveal micro structural details which helps researches determine fish age, growth rates, environmental factors, and other important aspects to fish microstructure. Related to this is the sample preparation techniques and equipment utilized for studying otolith microstructure. Several important factors should be considered when choosing the appropriate techniques and equipment; orientation of microstructure, tolerances of the orientation, thickness of specimen, quantity of specimens to be studied. This note briefly details the equipment and procedures used for preparation of sardine otoliths which needed to be observe in several critical orientations.

2. Orientation Mounting &

Several orientations of the sardine otoliths needed to be observed (below 1,2,3). The Model 590 Tripod Polisher® was selected as the fixture of choice because of its versatility with the ability to perform changes to sample orientation during the polishing process. Specimens were mounted onto a pyrex stub using Quickstick135 thermal wax.

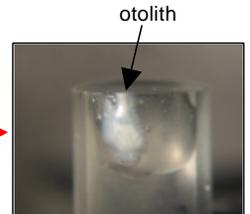


Model 590

3. Fine Grinding & Polishing

After mounting the otoliths were finely polished using the Model 910 polishing machine. Parameters & consumables used are listed in the table below. Once the cross sectional area is met with fine polishing on 1um diamond film, the specimen is ready for the removal step

Abrasive	Lubricant	Platen Speed	Time (min)
30um diamond film	H ₂ O	150-200	until planar
15um diamond film	H ₂ O	150	+/-10
3um diamond film	H ₂ O	150	+/-10
1um diamond film	H ₂ O	60-100	+/-10



Model 910 Polishing Machine

4. Removal

The final step in the specimen preparation process is to remove the finished specimen. The most convenient approach is to gently saw off a small slice of the pyrex stub which the otolith is wax mounted against. The Model 650 Low Speed Saw is utilized and sectioning is accomplished in less than two minutes. The small slice can now be mounted in a larger microscope glass slide and observed in the light microscope.



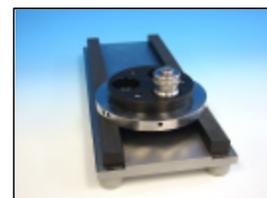
Model 650 Low Speed Saw

5. Optional Accessories

Model 155LMD Lapping & Polishing Fixture
 Model 195 Rail Polisher



Model 155LMD



Model 195 Rail Polisher