

Fish Bones

natural history to faunal reference

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Process Outline

- About the key
- Prepping fish for imaging
- Imaging the fish
- Fish Key
- Bishop Museum Faunal Reference Collection

About the Key

- The key was created by Dr. Ken Longenecker of the Hawai‘i Biological Survey, Bishop Museum, Honolulu, Hawai‘i.
- Created to assist the general public, archaeologists, and marine biologists identify Hawaiian fishes based on bones, scales and otoliths recovered from the digestive tracts of predators (such as fishes, birds and marine mammals) or from archaeological excavations
- There are 1250 fishes known from Hawaiian waters
- The key concentrates on those fishes known from the diet of the Hawaiian monk seal, and is constantly being expanded
- Funding was provided by the [Marine Mammal Commission](#) and Pacific Islands Fisheries Science Center's [Protected Species Division](#) (NOAA/NMFS)

Prepping fish for imaging

- The whole fish was photographed using a digital camera
- Tissues of the fish were taken and stored
- 5 scales from different locations on the fish were removed to be photographed later
- The fish was then skinned and de-fleshed as much as possible



Prepping fish for imaging



- Bishop Museum's Vertebrate Zoology Collection has a colony of dermestid beetles that help "clean" specimens to be skeletonized
- The fish entered the "Bug Box" to be skeletonized
- Turtle bones pictured...sorry.

Prepping fish for imaging



- Bones were soaked and cleaned after the bugs finished
- They were dried, sorted, placed in their permanent storage containers and ready for imaging!

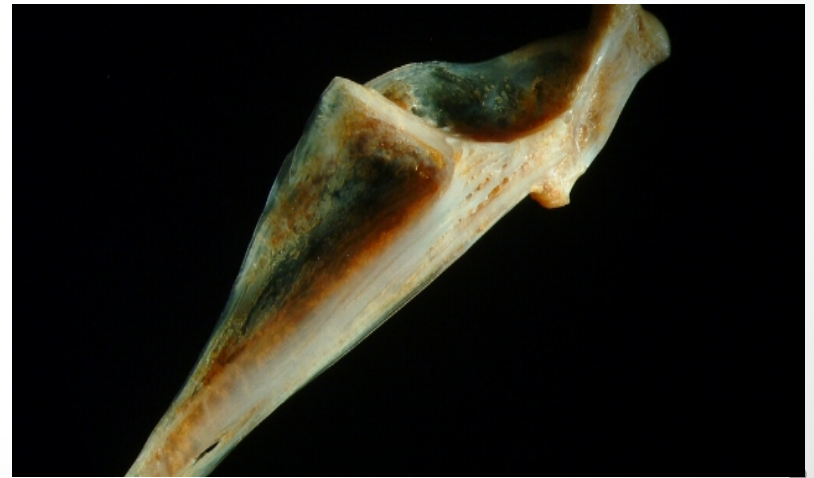
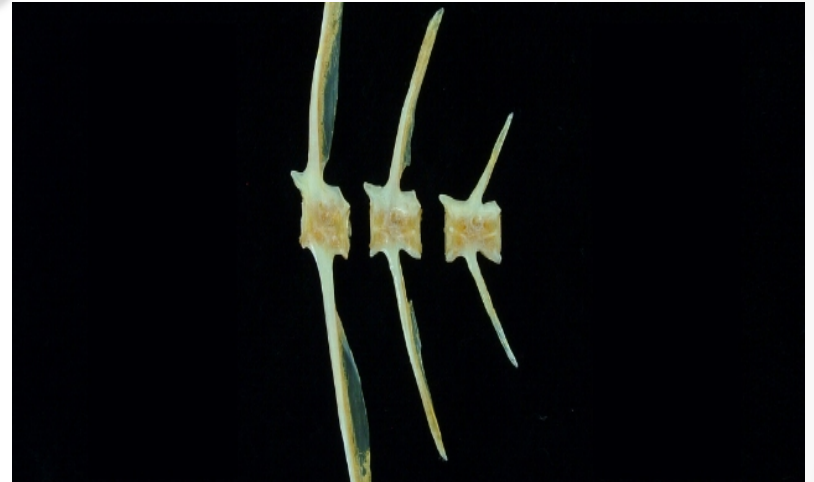
Imaging the fish

- Variety of methods
 - The project started out with an SLR camera coupled with a dissecting scope
 - flatbed scanner
 - Bishop Museum received an NSF grant to purchase a *microscope imaging station* consisting of a precision stereo and compound microscope, digital camera, auto-montage software, and computer workstation

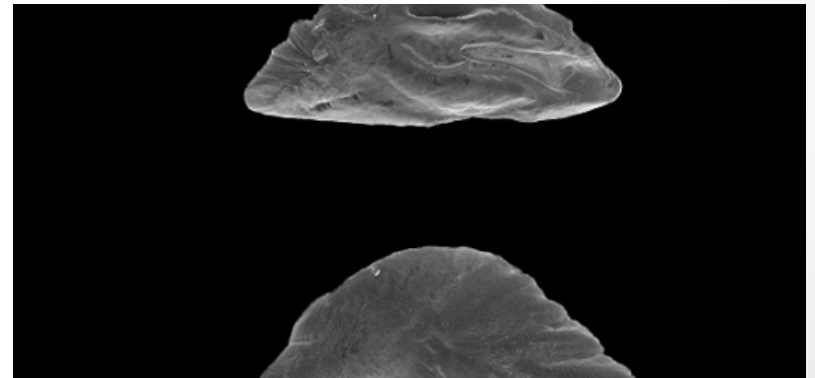
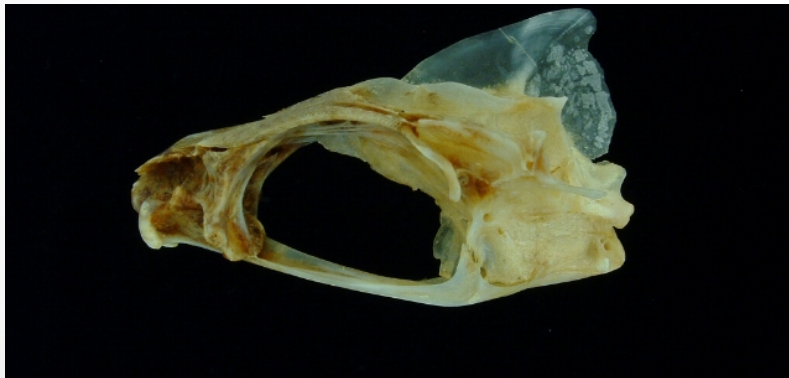
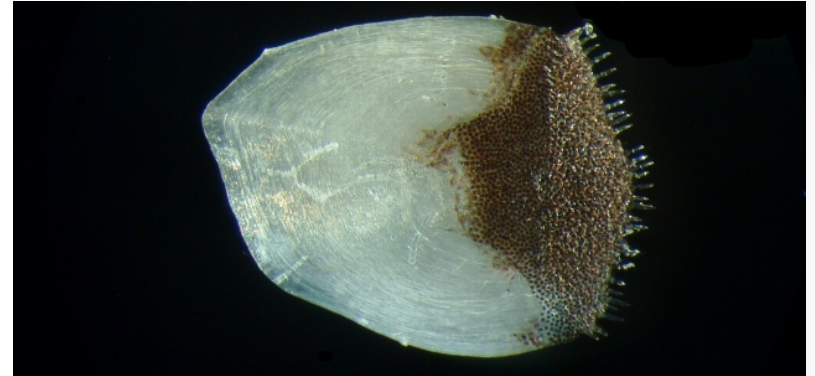
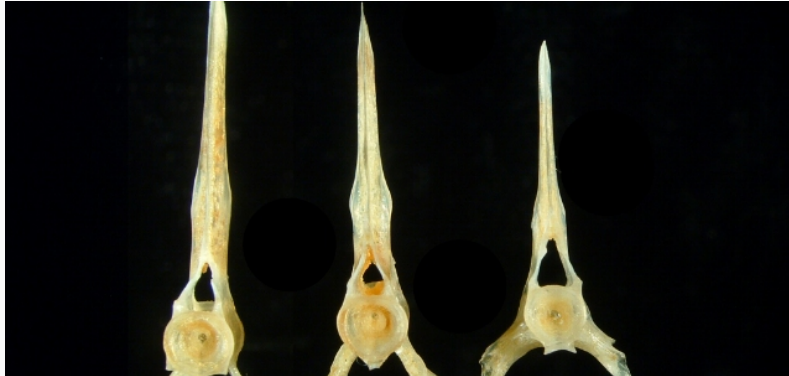


Imaging the fish

- Images were then edited using Adobe Photoshop software to add the black background and image size scales



Imaging the fish

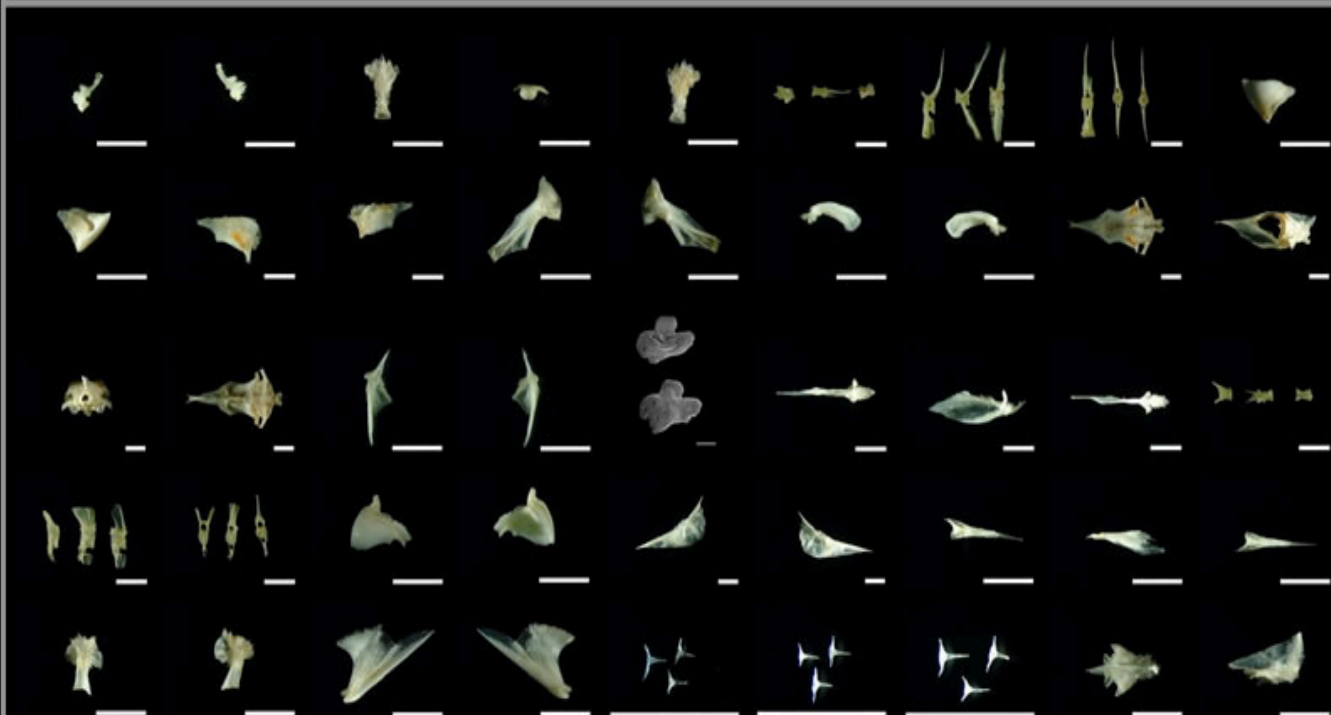


Fish Key

- As all the images were being prepared the fish key was growing

<http://hbs.bishopmuseum.org/frc/>

Fish Remains A tool for identifying Hawaiian fishes from bones, otoliths & scales



*Using the
key*

*About the
key*

*Types of
remains*

Glossary

*Start the
key*



Hawaii
Biological
Survey



Bishop Museum Faunal Reference Collection-Final Storage



- The fish collected and prepared for the key helped grow the Bishop Museum Faunal Reference Collection
- The collection is available for use by archeologists to help identify bones found in archaeological excavations, as well as dietary analysis to help identify fish, bird, and mammal prey

Thank you!

