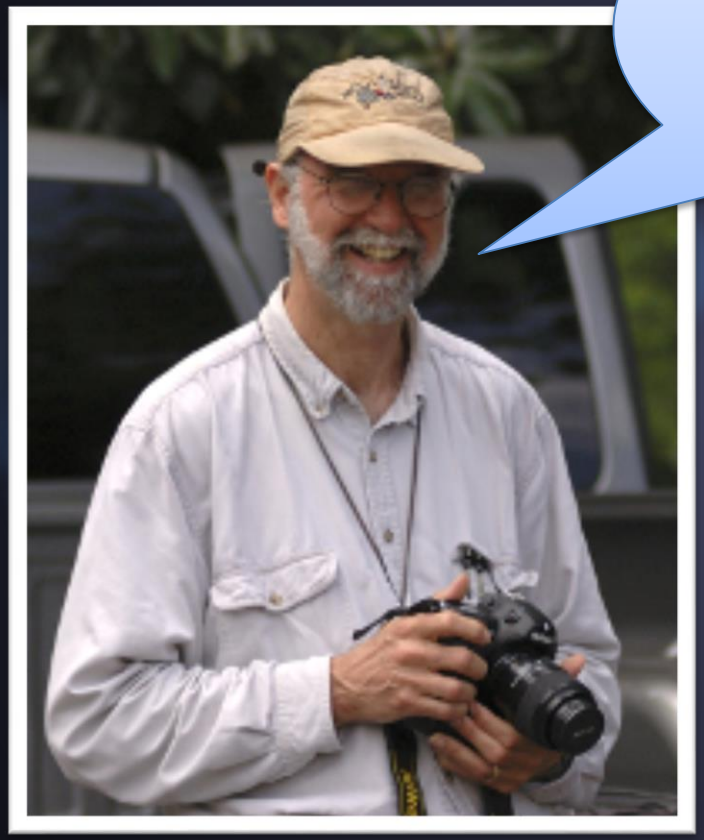
Is *Specimen Imaging* Important in Vertebrate Digitization?



Yes!

3D computer modeling is much faster and less subjective than traditional 3D reconstructions

Ability to examine and analyze aspects of an organism that were previously unimaginable

Obtain data non-destructively

Increased access to specimens for educators

Visual representations of specimens whose future is uncertain

Potentially increases the rate at which new species can be identified

Increased access to specimens for artists

Eliminates the need to take pictures haphazardly that have little value for a broader audience

Increased access to specimens for the scientific community

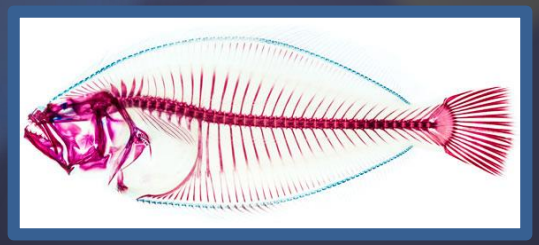
2D Imaging with Digital SLR

Pros

Cost Effective

Straightforward set-up

Relatively easy training for technicians



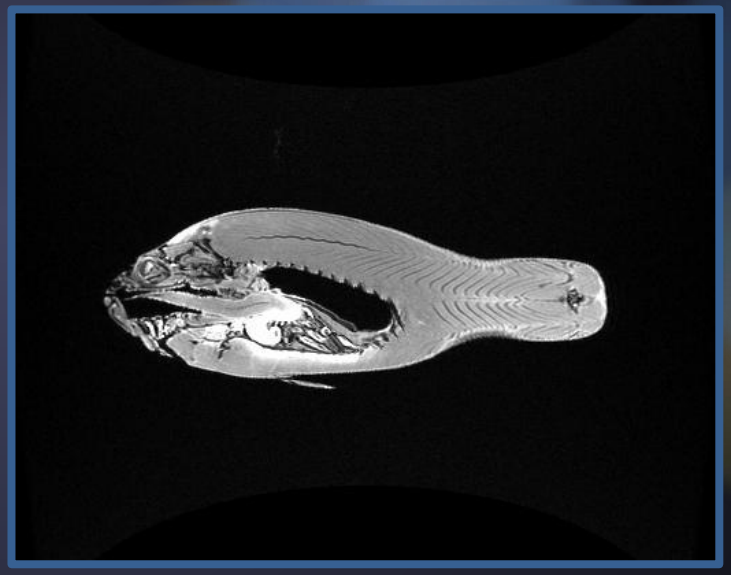
Cons

Does not offer the same analytical opportunities as more advanced imaging techniques

3D Imaging with MRI

An MRI scanner forms a strong magnetic field around the area to be imaged. Protons (hydrogen atoms) in tissues containing water molecules are used to create a signal that is processed to form an image

Best for use on soft tissues



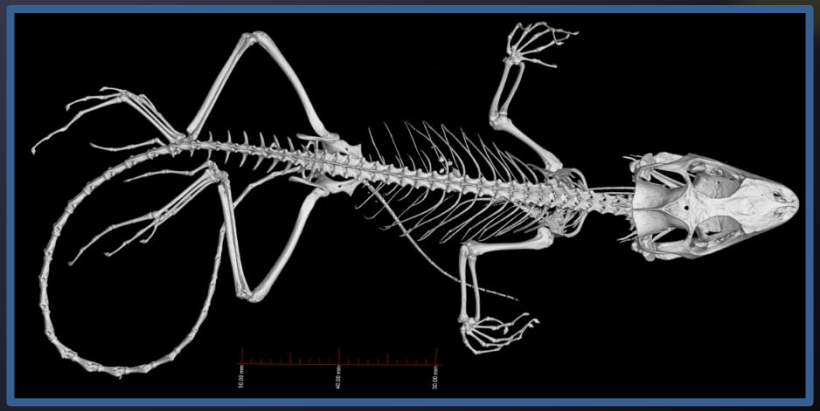
Digital Fish Library – UCSD
http://www.digitalfishlibrary.org

3D Imaging with CT

X-ray **computed tomography** (X-ray **CT**) is a technology that uses computer-processed X-rays to produce **tomographic** images (virtual 'slices') of specific areas of a scanned object, allowing the user to see inside the object without cutting.

Cal Academy herpetologists are using CT to explore unstudied morphological diversity among herps

http://www.calacademy.org/scientists/projects/digital-imaging-and-morphology-reptiles-and-amphibians



Imaging with SEM

A **scanning electron microscope** (**SEM**) is a type of**electron microscope** that produces images of a sample by **scanning** it with a focused beam of electrons.

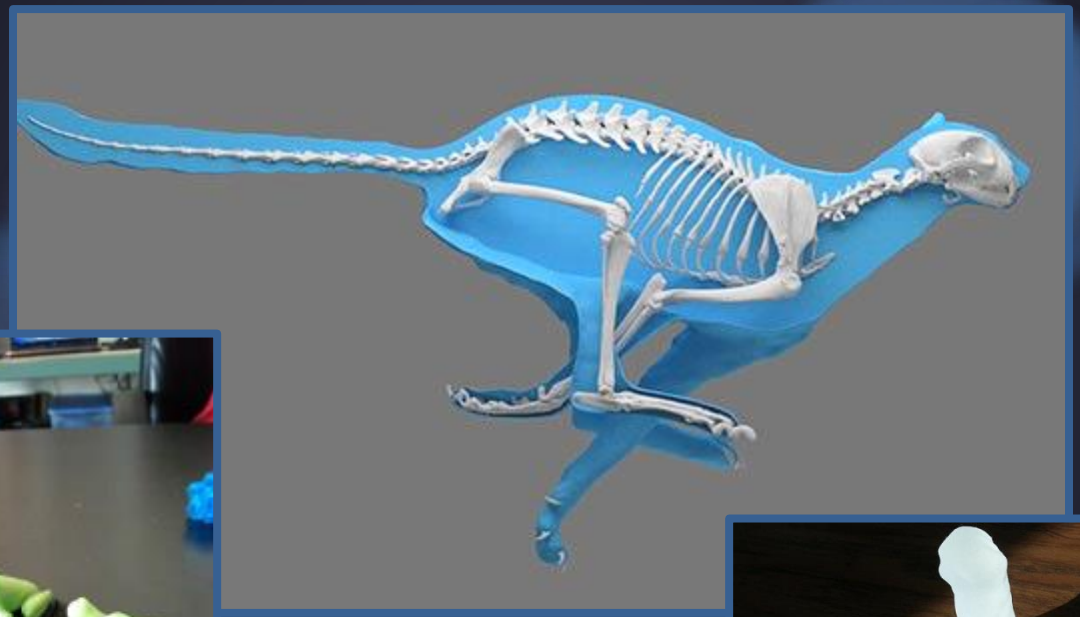
Used to examine pollen from the beaks of Hawaiian honeycreepers specimens

Increased Access

For researchers…

For artists and writers…

Education and Outreach



Training for Federal Employees

USFWS and Dept of Agriculture use collections to train employees to spot endangered and invasive species

Capturing Abnormalities During Prep

Insurance Against Catastrophe