openVertebrate Thematic Collections Network

$2.5M from NSF’s Advancing Digitization of Biodiversity Collections program

2017–2021

CT-scan >20,000 fluid-preserved vertebrate specimens

Scan >80% extant genera; “soft tissue” scan >60% extant families

Make both raw and processed data freely available on-line
18 funded institutions, including 16 museums and 6 imaging centers
oVert project management via Basecamp

**oVert TCN HQ**

oVert stuff everyone needs to know.

Campfire
- David Blackburn 9:27am: Integrating MorphoSource...
- Kate Webink 5:30pm: Cool to see the Audubon!
- David Blackburn 10:31am: I've spoken with Doug and...
- David Blackburn 10:34am: In addition, there will be a...
- April Isch Neander 10:17am: Hi All. Just thought I should...

Message Board
- Interest in discussion of CT-reconstruction 20
- SPNH 2018 abstract
  - I am following Dave's lead.
- JMIH 2018 Abstract
  - I will be submitting an
- Imaging permissions and copyright issues 8
- Adding participants to Basecamp

To-dos
Make lists of work that needs to get done, assign items, set due dates, and discuss.

Schedule
- Fri, Apr 6: Monthly oVert conference call
  - 1:00pm - 2:00pm
- Wed, May 2

Automatic Check-ins
- Asking 64 people the first Friday of every month at 9am.
- What will you be working on this month?

Docs & Files
- Present...
- Specimen selection
Builds on previous collections digitization efforts

In US, most scientific collections of vertebrates are digitized

Digital inventory allows oVert to (1) discover specimens and (2) prioritize particular specimens.
How do we choose specimens to scan?

<table>
<thead>
<tr>
<th>currentTypeSpecies</th>
<th>oVert collaborating institutions</th>
<th>non-funded US institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>aaptichthys websteri</td>
<td>CAS</td>
<td>USNM</td>
</tr>
<tr>
<td>aaptosyx grypus</td>
<td>UMMZ,CAS</td>
<td>YPM</td>
</tr>
<tr>
<td>abactochromis labrosus</td>
<td>YPM</td>
<td>USNM</td>
</tr>
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<td>abottina rivilaris</td>
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<td>USNM</td>
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<tr>
<td>ablabys taenionotus</td>
<td>AS,FMNH,SIO</td>
<td>BPBM,USNM</td>
</tr>
<tr>
<td>ablenes hians</td>
<td>CAS,UF,SIQ,MCZ,FMNH,ANSP,UMZ,TFWC,TNCM,USNM,LACM,TO,BPBM,UAIC,AUM,OS</td>
<td></td>
</tr>
<tr>
<td>abobienae etheostoma</td>
<td>MCZ,CAS</td>
<td>USNM</td>
</tr>
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<td>abramis brama</td>
<td>ANSP,SIQ,UF,MCZ,CAS,UMZ,FMNH</td>
<td>USNM</td>
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<td>MCZ,CAS</td>
<td>INHS,UAIC</td>
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<td>MCZ,SIO,AS,FMNH,UC,TFWC,KU,Y</td>
<td>USNM</td>
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<td>abyssoberyx levisquamosus</td>
<td>CAS</td>
<td>USNM,OS</td>
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<td>abyssobrotula galatheae</td>
<td>CAS</td>
<td>USNM</td>
</tr>
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<td>abyssocottus korotnefi</td>
<td>UMMZ,FMNH</td>
<td>USNM</td>
</tr>
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<td>acanthaluteres spilomelanurus</td>
<td>ANSP,SIQ</td>
<td>USNM</td>
</tr>
<tr>
<td>acanthea corynichthys</td>
<td>AS,FMNH</td>
<td>USNM</td>
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<td>acantherina pygmaea</td>
<td>UMMZ,KS,CAS</td>
<td>USNM</td>
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<td>acantharchus mesopotamensis</td>
<td>UMMZ,FMNH</td>
<td>USNM</td>
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<tr>
<td>acantherina spinosa</td>
<td>FMNH,UAF,ANSP,SIQ,UMZ,KA,MCZ</td>
<td>USNM</td>
</tr>
</tbody>
</table>
How can we best share these data?

Doug Boyer, Duke University
lead PI for MorphoSource; oVert coPI
Supports various forms of data

**Volume**
- Modality – Medical/microCT, MRI
- Formats – tiff, dicom, jpeg, bmp

**Surface**
- Modality – Laser, structured light, photogrammetry
- Formats – ply, stl, obj

**User-contributed datasets**
- Flexible tools for sharing and ownership
- Specify details on Creative Commons licensing
- Track views and downloads
- Obtain DOIs for publication
- Support sharing of derivatives of archived media

On-line digital depository for 3D data

$1.5M from NSF ABI Development
Other features

- No size limits on data files
- Batch uploading tool
- Batch metadata editing tool
- Batch downloading tools
- Exporting search results

Relative to general data archives

- Emulates a museum organization
- All data traceable back to specimen numbers
- Database can be queried by any kind of specimen metadata
- Datasets can be linked to digital record aggregators (e.g., records on iDigBio)

On-line digital depository for 3D data
Builds on previous collections digitization efforts

MorphoSource sends request

iDigBio Application Program Interface (API)

iDigBio sends metadata

Darwin Core structured metadata
referenceID
occurrenceID
locality
collectionDate
etc.
Getting information on media files back to collections

MorphoSource RSS Feed (via referenceID) containing:
1) Audobon Core metadata
2) usage statistics

for each collection (i.e., UF Herpetology)

 UF-Herp-12345

Darwin Core structured metadata
- referenceID
- occurrenceID
- locality
- collectionDate
- etc.

wooohoo!

add Audobon Core to IPT

Integrated Digitized Biocollections
Data deposited in MorphoSource
- 3D mesh files (.stl)
- image stacks (.zip of .TIFF)

Download or view in browser

bit.ly/3DFrogs
150 UF Herpetology specimens on MorphoSource since ~March 2016
>23,000 media views, and ~2,500 downloads

M8691, 8/31/2017
maher, alice (A.E.Maher@liverpool.ac.uk)
For research project on body elongation

M15979, 8/31/2017
Schwippert, Sophie (sophie_schwippert@web.de)
I want to use the data for my Bachelor Thesis, which I am currently working on at the University of Hamburg. My Thesis focuses on malformations of the sacrum of anurans. Thank you!

M8902, 4/7/2017
Currier, Aaron (acurrier@central.k12.or.us)
8th grade classroom instruction

M10212, 9/1/2017
Lee, Aaron (aaronlee70@gmail.com)
3D print of model for personal use. File will be stored. Will not be uploaded or shared. No commercial element.

M9784, 4/7/2017
lewis, chris (cloois@gmail.com)
3d print for surgery planning

M9207, 3/18/2017
Thomas, Lauren (lauren@thomasthomas.ca)
Import into Houdini, do cool stuff, post on my Instagram.