

FOSSIL INSECT COLLABORATIVE: A DEEP-TIME APPROACH TO STUDYING DIVERSIFICATION AND RESPONSE TO ENVIRONMENTAL CHANGE

Report submitted by: adrian.carper@gmail.com
Report Submitted on: 03/30/2015 - 14:59

Progress in Digitization Efforts

Since February, the University of Colorado Museum of Natural History (UCB) has taken 975 additional images of XXX specimens. The Harvard University Museum of Comparative Zoology (MCZ) has taken 1900 images accounting for about 1600 specimens from their collection. In addition, MCZ has assigned 180 new catalog numbers to unnumbered fossils found as they imaged their collection. The American Museum of Natural History (AMNH) has entered over 5000 collection objects in amber from three major localities (the Burmese, New Jersey and Baltic deposits) and close to 6,000 new records of fossil arthropods from the Dominican Republic. All of these are now being exported to a customized Specify database hosted on the AMNH server, so that students and volunteers will be able to continue data entry in this format. In addition they have imaged more than 4000 inclusions in amber.

Share and Identify Best Practices and Standards (including Lessons Learned)

The AMNH is sharing the most accurate dates for each amber deposit (based on radiometric dating methods where possible) and georeferenced locality information to help standardize these fields across institutions.

Identify Gaps in Digitization Areas and Technology

It was necessary for AMNH to update Specify to allow associations between collection objects and localities, given that typically, all specimens from individual amber localities share the same geological and geographical information.

Share and Identify Opportunities to Enhance Training Efforts

There is nothing to report.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

MCZ collaborated in the Smithsonian and National Geographic documentary "World's Biggest Beasts." MCZ filmed an interview and other scenes, provided images and videos of *Meganeuropsis americana*, and gave scientific advice on a reconstruction of the fossil. In addition, the Virginia Museum of Natural History (VMNH) collaborated with the American Museum of Natural History (AMNH) in regards to preparing and conserving the VMNH collection of insects in amber.

Share and Identify Opportunities and Strategies for Sustainability

There is nothing to report.

Other Progress (that doesn't fit into the above categories)

The AMNH hosted the 2nd Annual Fossil Insect Collaborative TCN Meeting, during which special presentations and workshops were given on the preparation and conservation of fossil resins and their inclusions, as well as digital photomicrography. We also determined at this meeting to utilize GeoLocate's Collaborative Georeferencing Portal to share geographical information on specific fossil insect localities across institutions.

Attachment

Nothing to report.

SOUTHWEST COLLECTIONS OF ARTHROPODS NETWORK (SCAN): A MODEL FOR COLLECTIONS DIGITIZATION TO PROMOTE TAXONOMIC AND ECOLOGICAL RESEARCH

Report submitted by: neilscobb@gmail.com
Report Submitted on: 04/05/2015 - 13:12

Progress in Digitization Efforts

See Attached

Share and Identify Best Practices and Standards (including Lessons Learned)

See Attached

Identify Gaps in Digitization Areas and Technology

See Attached

Share and Identify Opportunities to Enhance Training Efforts

See Attached

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

See Attached

Share and Identify Opportunities and Strategies for Sustainability

See Attached

Other Progress (that doesn't fit into the above categories)

See Attached

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/SCAN_March_2015.docx

Southwest Collections of Arthropods Network Update
May 14, 2015
Neil Cobb

Progress in Digitization Efforts:

We are on target to meet our third-year quota for digitizing labels from pinned specimens (736,736 records). **Table 1** presents four sets of statistics derived from our data portal as of March 31, 2015. These include the following data: 1) institutions that are funded by the NSF-ADBC program, including the 2 PEN grants; 2) institutions that have entered data into the SCAN portal but not funded by the NSF-ADBC program; 3) the total of these first two categories; and 4) the total records in the SCAN portal. The fourth column includes records from the first three columns as well as all records we have ingested from aggregators GBIF and iDigBio. The purpose of serving aggregator data is to provide as complete as information as possible to persons that are considering research projects.

Although we have technically reached our goal for the 10 original SCAN museums (735,956 records), we have not thoroughly reviewed all records that SCAN-funded museums have produced to determine how many of those strictly ground-dwelling arthropods, but we expect that 80% or those are target taxa and that we will need 147,000 more records to meet our project goal. Six museums will request one-year no-cost extensions. We estimate that we will digitize

Table 1. Number of specimen records digitized and associated summary statistics. From <http://symbiota4.acis.ufl.edu/scan/portal/index.php>. SCAN-funded numbers refer to the 12 museums receiving ADBC funding. SCAN non-funded numbers include nine museums contributing cataloged specimen data and non-cataloged moth specimen data from 22 collections (5 private collections and 17 public museums). Total Served includes all SCAN data and other datasets with North American arthropod records (e.g., GBIF, Tri-Trophic TCN).

	SCAN funded	SCAN non-funded	TOTAL SCAN	Total Served
# Specimen Records	798,066	179,993	978,059	2,463,522
# Georeferenced	583,925	86,662	670,587	1,878,576
# Identified to species	506,053	83,309	589,362	1,287,089
# Families	747	388	787	894
# Genera	7,611	3,919	9,380	13,917
# Species	17,497	7,997	22,944	41,639
% Georeferenced	73%	48%	69%	76%
% Identified to Species	63%	46%	60%	52%

789,000 ground-dwelling arthropod specimens by the end of the project and over one million total specimens for the original 10 museums. The two additional PEN grants (Harvard and BYU) are on track to meet their quotas.

A subset of SCAN museums are creating high-resolution images and three museums are creating low resolution images that include the specimen and labels in the same image. **Table 2** lists the number of images posted on SCAN by participating museums. Our goal is to produce 15,125 high-resolution images suites. An image suite consists of 1-3 images representing different aspects of a specimen. This will translate into approximately 40,000 images.. Three museums are producing low-resolution images (University of Hawaii, University of Arizona, and Texas Tech University). Texas Tech University has produced about 3,000 high-resolution images as part of their 25,529 images uploaded. We currently have 10,361 high-resolution images (out of 84,135 total SCAN images) and we are serving a total of 121,864 images.

Share and Identify Best Practices and Standards (including Lessons Learned):

We are identifying best practices on a weekly basis and sharing those with respective people within SCAN.

Identify Gaps in Digitization Areas and Technology:

We need to harvest additional data (i.e. beyond SCAN) to better understand the biogeography of arthropod taxa. We are partially meeting this need by incorporating GBIF into the SCAN database.

Share and Identify Opportunities to Enhance Training Efforts: Nothing new to report, we are working on activities already described in previous reports

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:

We are primarily working with Tri-Trophic TCN in order to develop questions for analyzing ADBC data.

Share and Identify Opportunities and Strategies for Sustainability:

We have a sustainability plan for Colorado State University, they are finished using their NSF funding <http://scan1.acis.ufl.edu/content/sustainability> .

Table 2. Number of images posted on SCAN portal from SCAN museums that are focused on producing high-resolution images of specimens. Data are recorded from <http://symbiota1.acis.ufl.edu/scan/portal/imagelib/photographers.php>

Institution	# Images
Arizona State University Hasbrouck Insect Collection	2,194
C.P. Gillette Museum of Arthropod Diversity	49
Colorado Plateau Museum of Arthropod Biodiversity	1,562
Denver Museum of Nature & Science	625
Museum of Southwestern Biology, Division of Arthropods	193
National Park Collections at Northern Arizona University	673
New Mexico State Collection of Arthropods	1,380
SDSU Terrestrial Arthropods Collection	49
Texas Tech University - Invertebrate Zoology	25,492
University of Arizona Insect Collection	51,281
University of Colorado Museum of Natural History Entomology Collection	636
University of Hawaii Insect Museum	25,529
University of Tennessee at Chattanooga	1
UAM Entomology Collection	2,881
Yale Peabody Museum, Entomology Division	9,319
SCAN Museums (All Images)	84,135
SCAN Museums (High-Resolution Images)	10,361
All Images served on SCAN	121,864

Other Progress (that doesn't fit into the above categories): We continue to provide North American data we have obtained from other sources to increase the quantity of data available to SCAN users. We have grown from 10 collection datasets to serving 28 data sets through SCAN (**Table 3**). These will greatly increase the usability of the existing SCAN data, especially understanding species distributions and more complete species lists. We are re-building our data harvested from North American data from GBIF and are in the process of hosting data from other non-TCN arthropod data sets that have been harvested by iDigBio.

THE MACROFUNGI COLLECTION CONSORTIUM: UNLOCKING A BIODIVERSITY RESOURCE FOR UNDERSTANDING BIOTEC INTERACTIONS, NUTRIENT CYCLING AND HUMAN AFFAIRS

Report submitted by: barbara.thiers@gmail.com
Report Submitted on: 04/29/2015 - 15:39

Progress in Digitization Efforts

Since our last report (February 2015), 27,028 specimen records have been added to the Portal. This represents about 90% of the records actually created during this period. The total number of records available for searching in the MycoPortal stands at 1,830,665, approximately 400,000 more than promised in the original proposal. Sixteen of the participating institutions have completed their digitization work. We estimate that there remain to be digitized about 250,000 images across the 19 institutions still participating institutions.

Share and Identify Best Practices and Standards (including Lessons Learned)

We have summarized our best practices for engaging citizen scientists in the form of a guide for other institutions to use to get started on this activity. This was a joint project between MaCC and LBCC

Identify Gaps in Digitization Areas and Technology

nothing to report

Share and Identify Opportunities to Enhance Training Efforts

1. See above under "Share and Identify Best Practices" above

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

The guide for engaging Citizen Scientists is a collaboration with the Lichens, Bryophytes and Climate Change project.

Share and Identify Opportunities and Strategies for Sustainability

Other Progress (that doesn't fit into the above categories)

Institutions are preparing annual reports for year three of the project, and collaborators who need more time to finish their projects are requesting no-cost extensions.

Attachment

<https://www.idigbio.org/sites/default/files/webform/tcn-reports/Get%20Started%20with%20Crowdsourcing.pdf>

Get Started with Crowdsourcing

Set goals and write a plan.

- What will the volunteers accomplish by the end of the project?
- What duties and responsibilities will be required of volunteers?
- What is the minimum number of hours required of volunteers?
- What forms of compensation will be offered (discounts, networking, events, etc.)?
- Who will have the primary responsibility for the volunteers?

RECRUITMENT



- Designate a staff employee as the Volunteer Coordinator.
- Develop relationships with career or internship centers at colleges and universities.
- Reach out to intern coordinators or career counselors who can inform students and departments of digitization opportunities.
- Post job listings on websites (Indeed, Monster, Volunteer Opportunities NYC).
- Promote your volunteer needs to local employment organizations and youth employment projects (NYC Department of Youth & Community Development).
- Partner with your volunteer services and education department. They can send volunteer applications to you or inform applicants of your digitization needs.

TRAINING



- One of the challenges that employers face is the amount of work that goes into training volunteers. Train your first volunteer(s) then have one of their early tasks be to create a training technique for future volunteers.
- Provide an orientation, including an overview of our mission, a tour, and introductions to the staff.
- Create a standardized presentation and training program.
- Delegate beginning to end projects.
- Volunteers choose a specific genus or geographic region to work on.
- Provide optional training sessions in georeferencing so students can learn the value of GIS analysis.

MANAGEMENT



- Track volunteer progress (# of records transcribed, # specimen labels, # specimen images, # of hours, etc.) in a Google spreadsheet that can be accessed from any computer.
- This will keep track of volunteers who transcribe from home.
- Know what has been done, who did the work, and the outcomes for the overall project.
- Periodically provide feedback to volunteers on their work.

Crowdsourcing Module Management

- The crowdsourcing module is used to make unprocessed records accessible for data entry by the general user who does not have explicit editing rights for a particular collection.
- Short Form -vs- Long Form: In order to simplify data entry, a shortened form is presented to the user with only a select number of fields displayed. A link to the upper right of the form allows the user to toggle between the long and short form.
- Data Protection: Certain data fields are not available for editing by the general user. These fields include catalog number, scientific name, and all fields in the determination and image tabs. However, users with explicit editing rights for a particular collection will have access to all fields and editing tabs.

1. Select records for crowdsourcing

- Skeletal records set under the processing status "Unprocessed" – are submitted to the crowdsourcing module and are available for the queue.

- Note: Records must have images of collector labels in order to be transcribable.

Adding records to the queue:

- Visit the Administration Control Panel for collection.
- Click the "Processing Toolbox" link.
- Click the "Crowdsourcing Module" tab.

Make records available for editing:

- Click the "Add to Queue" link next to "Available to Add".
- Choose Criteria and click "Add to Queue".

2. Transcribing information

Create an account:

- Volunteers must first create an account on the [Bryophyte Portal](#) and login (no additional permissions are required).
- After creating an account, navigate to the [Crowdsource tab](#).
- Access a table of records for a particular collection by clicking the value in the "Open Records" field within the Collection table.
- In table view, click value in "Symbiota ID" field to edit records and view collector labels.

Get started:

- Begin transcription of collector and locality information.
- For General Transcribing instruction, refer to "[Crowd Sourcing: Get Involved](#)" page for the MycoPortal.
- For detailed instructions, see the [Digitization Guidelines](#) for digitizers.
- Keep an eye out for [Exsiccati Titles](#).

3. Reviewing submissions

- Visit the "Crowdsourcing Module" as described above.
- The module separates volunteers and approved editors into two tables. You may individually check records per transcriber or batch edit all records that need approval.
- To batch edit, click the "Review" link that is next to "Pending Approval".

Approve records:

- Set points, add comments, and edit records as desired.
- Click checkbox(s).
- Click "Submit Reviews".
- After submission, points will be allocated to each volunteer and their score will appear on the Crowdsourcing Score Board.
- Reviewed records will be set to the Processing Status "Closed (Reviewed)".

DIGITIZING FOSSILS TO ENABLE NEW SYNTHESSES IN BIOGEOGRAPHY- CREATING A PALEONICHES

Report submitted by: blieber@ku.edu
Report Submitted on: 04/30/2015 - 15:51

Progress in Digitization Efforts

Paleoniches Update, May 2015

Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman and co-PI Una Farrell, we now have a total of 178,889 specimens databased. Of these, there are a total of 176,003 specimens databased that have clean, proofed localities. Further, we now have a total of 138,575 specimens that are georeferenced. We have now completed databasing all of the cephalopods we aimed to database. We are almost finished databasing our bivalves and have begun databasing our gastropods. In addition, a total of 8,219 localities have been georeferenced. Thus we have completed the entire georeferencing component of our proposed work. We have also since the last update to iDigBio significantly expanded the number of species that have been imaged, especially focusing on adding nautiloids and other mollusks.

Further, PI's B. Lieberman, J. Hendricks, and co-PI J. Beach have continued to work with the developer of the Paleoniches iPad Atlas "app" (Rod Spears Consulting) and we are getting much closer to completion of this important outreach aspect of the project. The architecture for the app is finished from a programming perspective and all that remains is the ingestion of our data. As of now, the plan is for data ingestion to occur for the Pennsylvanian and Neogene components of the atlas hopefully by mid-May with the Ordovician component to follow a few weeks after that. Thus we are hoping at least for now that the "app" will be made freely available on the "App Store" sometime in mid-June.

Regarding the Ohio University portion of the project, led by PI Alycia Stigall

The Digital Atlas of Ordovician Life is currently up to 173 species pages live. This is over 100 pages more than we had made available this time last year. The Bryozoan pages are currently the primary focus of development efforts, with a few gastropod, bivalve, and echinoderm pages remaining to be made live. The most recent addition to the website are 3D models of fossils that are embedded in the pages. Although we cannot make models for all the species present in the Atlas, we hope to make models for the most common species (trilobites, brachiopods, crinoids). Within the last week, five new students have been trained to work on the website to develop content. It is our sincere hope that all the pages we have will be completed and make live by the end of this year. The newly acquired Stocker Collection, which includes about 30,000 invertebrate specimens, is currently being identified. Georeferencing of species will likely take place later this year/early next year.

Cincinnati Museum Center

Since the beginning of December 2014, the UC student intern on the project, Ian MacAdam, has been focusing on georeferencing Ordovician locality records from the United States. He has worked a total of 245 hours and has georeferenced 1,571 locality records. In total, we now have 4,316 sites georeferenced resulting in 29,253 catalogue records in Emu with georeferencing data. This is 43% of our digital database georeferenced to date.

Miami University

Progress continues with georeferencing as well as relocating specimens due to the renovations currently ongoing at Miami University.

Regarding the San José State University portion of the project, led by PI Jon Hendricks:

Since the last update, PI Hendricks (San José State University; SJSU)—in collaboration with Invertebrate Paleontology staff at the Florida Museum of Natural History—has continued to develop and add content to the Neogene Atlas of Ancient Life. In particular, seven additional families of gastropods have been added since the last updated (distributional maps for these will be published online soon). Species-level pages are now online for 332 species (out of 500 planned pages).

Hendricks is currently recruiting a new undergraduate student assistant to help with the development of content for the Pennsylvanian Atlas. The new student assistant will be hired, trained, and actively generating new web content for the Pennsylvanian Atlas by the time of the next update.

(Also see Jon's activities mentioned above under KU pertaining to the development of the portable device app.)

Finally, for our PEN partners. First, Texas, PI: Ann Molineux, Co-PI: James Sprinkle

They have been continuing their push to add and refine specimen data for collections in the Cambro-Ordovician, Carboniferous, and Paleogene/Neogene. The most recent additions have come for the Johns and Craddock collections (Paleozoic).

Imaging has been continuing and the current attachments in Specify breakdown is as follows:

Of the 3682 attachments, 2923 are attached to Collection Objects, 214 are attached to Localities, 112 are attached to Storage, 420 are attached to Field Notebook pages and 13 are attached to Preparations. This reflects an increase of almost 400 since the last update.

However, they have waited until Specify was modified to allow us to bulk upload most of our images, both high resolution and lower resolution specimen with label and drawer imagery. Our new completion date of October 2015 will ensure enough time to get those images attached using a more efficient method and ensure standard, adequate metadata for those media files.

The first dataset has been migrated through VertNet to GBIF and iDigBio. The process was slow and the extension will now enable us to update that dataset with more extensive and higher quality (further refined) data.

The new Paleocentral.org is in beta testing and still buggy, plus needs improvements to the GUI. For example <http://paleocentral-qa.tacc.utexas.edu/specimen/list>, and search for Pleurocystites or Katian gaps are evident, not all images are yet uploaded, and the dataset is not a live connection and lacks the latest refine and georeferencing. But that link and the <http://paleocentral-qa.tacc.utexas.edu/specimen/show/48#prettyPhoto>, are examples of the new capabilities with more robust chronostratigraphy, complete US geological coverage and mapping in Google Earth and modified UTIG PLATES projections. This will be a major area of concentration during the next reporting period.

And at Yale: From PI Susan Butts:

They are working on digitizing the most abundant taxa from the Ordovician and the Pennsylvanian (50 most abundant genera from each time period) and are proceeding to digitize that material from our systematic collection. They have done at least one drawer of the top 50 most abundant Ordovician fossils and 27 of the top 50 Pennsylvanian drawers (3 are in progress). At this rate, they will certainly achieve their digitization goals by the end of their project (June 30, 2015).

Since the previous report, they have modified or inserted 904 records in KE EMu. We have attached photos to 2,464 additional records (1-3 photos per specimen). They have over 500 specimen images (most with three views) awaiting upload to the database.

The EVOLUTIONS (Peabody afterschool program for high school students in the greater New Haven area) multimedia kiosk is expected available in the museum exhibition space by the end of May. The cart was designed and created by EVOLUTIONS interns with the assistance of Senior Personnel Butts and Museum Assistant Utrup. It is a multimedia touch screen cart with actual fossil specimens. It will be attended by SciCORPS cart in the Peabody's public exhibitions area for the duration of the grant (after the grant, other members of SciCORPS (the special group in EVOLUTIONS that involves most of the upperclassmen with 75 hours of EVOLUTIONS training under their belts) will be trained to man the cart as well. SciCORPS students will invite museum visitors to use the kiosk and provide additional guidance as visitors identify 13 common fossils of the Ordovician Cincinnati Arch from actual specimens using a key developed for this project.

Share and Identify Best Practices and Standards (including Lessons Learned)

N/A

Identify Gaps in Digitization Areas and Technology

N/A

Share and Identify Opportunities to Enhance Training Efforts

N/A

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

N/A

Share and Identify Opportunities and Strategies for Sustainability

N/A

Other Progress (that doesn't fit into the above categories)

We have also just had a paper accepted at *Global Ecology and Biogeography* describing research activities associated with the project. In particular, we used Ecological Niche Modeling of the Neogene mollusk collections to look at the relative controls that the Fundamental and Realized niches playing in determining macroevolutionary patterns. This work was led by a former graduate student at KU, Erin Saupe (now a post-doc at Yale), who was supported by our TCN project and also involved Bruce Lieberman (KU), Jonathan Hendricks (SJSU) and Roger Portell (FLMNH).

A manuscript by PI's Hendricks, Stigall, and Lieberman—titled “The Digital Atlas of Ancient Life: delivering information on paleontology and biogeography via the web” was submitted for peer review to *Palaeontologia Electronica* (an open-access online journal) on December 18, 2014. This manuscript provides an overview of our Digital Atlas project and goals for the paleontological community.

Attachment

Nothing to report.

NORTH AMERICAN LICHENS AND BRYOPHYTES: SENSITIVE INDICATORS OF ENVIRONMENTAL QUALITY AND CHANGE

Report submitted by: cgries@wisc.edu
Report Submitted on: 05/01/2015 - 17:31

Progress in Digitization Efforts

As of May 2015, the number for the LBCC are as follows:

Lichens:

<http://lichenportal.org>

Herbaria actively submitting images or key stroked records to the portal: 71

Specimen records in portal: 1,776,338 (up by 53,836 since February 2015)

Specimen records with images: 664,375 (4051 labels have been imaged since February 2015)

Records with locality information: 1,521,436 (122,906 locality information where added since February 2015)

Bryophytes:

<http://bryophyteportal.org>

Herbaria actively submitting images or key stroked records to the portal: 62

Specimen records in portal: 2,092,273 (up by 16,320 since February 2015)

Specimen records with images: 988,122 (35,747 labels have been imaged since February 2015)

Records with locality information: 1,337,129 (73,110 locality information where added since February 2015)

Share and Identify Best Practices and Standards (including Lessons Learned)

nothing to report

Identify Gaps in Digitization Areas and Technology

nothing to report

Share and Identify Opportunities to Enhance Training Efforts

The LBCC volunteer coordinator Mari Roberts has developed a crowdsourcing manual for using Symbiota for lichen and bryophyte label transcription.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

Nothing to report.

Share and Identify Opportunities and Strategies for Sustainability

Nothing to report.

Other Progress (that doesn't fit into the above categories)

Nothing to report.

Attachment

Nothing to report.

MOBILIZING NEW ENGLAND VASCULAR PLANT SPECIMEN DATA TO TRACK ENVIRONMENTAL CHANGE

Report submitted by: patrick.sweeney@yale.edu
Report Submitted on: 05/05/2015 - 12:24

Progress in Digitization Efforts

Capture of collection level-information (i.e., “pre-capture”) is complete. Approximately 800,000 specimens have been pre-captured -- with at least current identification captured. As part of the primary digitization phase, approximately 349,000 records and 330,000 images have been captured.

Share and Identify Best Practices and Standards (including Lessons Learned)

nothing to report

Identify Gaps in Digitization Areas and Technology

nothing to report

Share and Identify Opportunities to Enhance Training Efforts

nothing to report

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

We continue to collaborate with, iPlant, the FilteredPush project, the Symbiota team, and iDigBio. We are collaborating with Anne Bashram (U. of AZ), iDigBio, and other TCNs to develop a Augmented Reality tool that will be useful in K-12 education. PI Sweeney has been working with iDigBio and other ADBC TCNs to produce a Herbarium workflows paper; this work builds on the Jan 2015 workshop that was hosted by iDigBio and SERNEC. NEVP continues to advise SERNEC on their overall data workflow, particularly aspects related to the flow of data to and from iPlant.

Share and Identify Opportunities and Strategies for Sustainability

nothing to report

Other Progress (that doesn't fit into the above categories)

nothing to report

Attachment

Nothing to report.

GREAT LAKES INVASIVES: DOCUMENTING THE OCCURRENCE THROUGH SPACE AND TIME OF AQUATIC NON-INDIGENOUS FISH, MOLLUSKS, ALGAE, AND PLANTS THREATENING NORTH AMERICA'S GREAT LAKES

Report submitted by: kmcameron@wisc.edu
Report Submitted on: 05/05/2015 - 15:48

Progress in Digitization Efforts

See attached pdf entitled "GLITCN_progress report_May2015"

Share and Identify Best Practices and Standards (including Lessons Learned)

See attached pdf entitled "GLITCN_progress report_May2015"

Identify Gaps in Digitization Areas and Technology

See attached pdf entitled "GLITCN_progress report_May2015"

Share and Identify Opportunities to Enhance Training Efforts

See attached pdf entitled "GLITCN_progress report_May2015"

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

See attached pdf entitled "GLITCN_progress report_May2015"

Share and Identify Opportunities and Strategies for Sustainability

See attached pdf entitled "GLITCN_progress report_May2015"

Other Progress (that doesn't fit into the above categories)

See attached pdf entitled "GLITCN_progress report_May2015"

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/GLITCN_progress%20report_May2015.pdf

GREAT LAKES INVASIVES TCN – Bi-monthly report Feb 1, 2015 – April 30, 2015

Third GLI TCN report, representing eight months' of effort to date.

Our four regional data processing centers (NY Botanical Garden, Field Museum, Univ of Michigan, and Univ of Wisconsin-Madison) report the following from their constituents:

1) Progress in Digitization Efforts TO DATE -- Visit GreatLakesInvasives.org

PLANTS:

Specimens Barcoded Only: 32,415 (NY) + 18,189 (ILLS) + = **50,604**

Barcoded and Imaged to Date: 58,698 (WIS) + 59,517 (NY) + 6,606 (OSU) + 3,981 (MIN) + 17,891 (MICH) + 520 (ILLS) + 9,402 (F) + 2,309 (MOR) + 4,880 (MU) = **163,804**

Databased to Date: 58,698 (WIS) + 16,275 (NY) + 35840 (MIN) + 17,742 (MICH) + 27,000 (ILLS) + 15,020 (F) + 12,078 (MOR) = **182,653**

Uploaded to iDigBio, the GLI Portal directly or to another Symbiota Portal for editing before transfer to GLI Portal: 58,698 (WIS) + 13,349 (MICH) + 520 (ILLS) + 5,783 (F) + 4,616 (MIN) + 9,624 (MOR) + 9,804 (ALBC) + 21,452 (NY) + 160 (MSU) + 6,606 (OSU) + 214 (UWM) = **130,826**

- Note that the new 'Consortium of Midwest Herbaria' Symbiota portal, which is directly related to this TCN, now has 782,296 occurrence records available from 21 herbaria. All of these will eventually be ingested by iDigBio. Visit MidwestHerbaria.org

MOLLUSKS:

Barcoded and Imaged to Date: **3,045** lots imaged to date, representing 3 different genera (UMMZ)

Databased to Date: all specimen records (ca. 2,000 - ILLS) + 11,461 records added to date, representing 29 genera and 289 species (UMMZ) = **13,461**

Uploaded to iDigBio, the GLI Portal or another Symbiota Portal: 1,404 (UMMZ) have been uploaded to the GLI portal + all specimen records (ca. 2,000 - ILLS) uploaded to the iDigBio web portal = **3,404**

FISH:

Specimens Barcoded Only: **976** (MIN)

Barcoded and Imaged to Date: 493 (MIN) + 130 (F) + 636 (OSU) = **1,259**

Databased to Date: 27,145 (ILLS) + 1,469 (MIN) + 81,324 specimens [in 4,709 lots (F)] = **109,938**

Uploaded to iDigBio, the GLI Portal &/or another Symbiota Portal: 505 (MIN) + 636 (OSU) to GLI + all specimen records (27,145 - ILLS) uploaded to the iDigBio web portal = **28,286**

2) Share and Identify Best Practices and Standards / Lessons Learned

Some participants report that they have discovered a lot of issues with their Specify database, and are fixing these before photographing specimens; this will soon determine the final imaging rate at which they can move forward with animal digitization. “We have discovered a lot of old specimens sitting on the shelf which were never entered into our electronic database, a function of the history of the collection.”

A squeeze tank, long used by ichthyologists to photograph specimens in the field, works well for specimens up to 10cm in length and a student worker can photograph 60 specimens in three hours. We have not tried to photograph larger specimens or eccentrically shaped fishes such as catfish.

Another institution states that “we find that our photography of fish specimens works best when the specimens are submerged in ethanol in a glass pan that is suspended approximately one foot above the stage of a camera stand illuminated by two fluorescent lamps. The stage is matte black. This setup allows for the fish to be in focus while the background is somewhat blurred. The digitization process is smoothest when two students are working simultaneously; one student prepares the specimens and labels for imaging while the other operates the camera, scans the barcode, enters label information, and checks the quality of the photograph.”

A herbarium partner shares “We write an “I” by the barcode to indicate that specimen has been imaged. This way we will know in the future what specimens have images and which ones aren’t as new herbarium specimens get added to folders that have already been imaged.”

Likewise some are using an inexpensive red ink stamp “imaged” to mark sheets that have been photographed for one project or another.

3) Identify Gaps in Digitization Areas and Technology

The lack of a single protocol for fish imaging has been a source of frustration for some. Likewise the inconsistent use of disuse of barcodes to serve as GUIDs has been a source of great debate among the zoologists in our TCN.

One partner shares that . . . “Digitization of alcohol preserved specimens will always be slow due to the handling time involved. We will never achieve the levels of throughput that botanical collections can generate. The utility of barcodes in alcohol preserved collections is debatable and several groups in our TCN have not elected to use them as their lots already have unique identifiers; we have elected to use them in the Bell Collections as the barcodes can be generated within SPECIFY from our catalog numbers. Thus the barcodes do not add an additional number to track and with the work flow we have developed, serve a useful tool in matching the specimen data to the photograph.”

4) Share and Identify Opportunities to Enhance Training Efforts

Nothing to report

5) Share and Identify Collaborations with other TCNs, Institutions, and Organizations –

Nothing to report

6) Share and Identify Opportunities and Strategies for Sustainability

Nothing to report

7) Other Progress (that doesn't fit into the above categories)

Larger institutions such as NY and F are establishing IPT methods to upload data directly to iDigBio or to other repositories. For example, Field reports that "Botany will soon be able to publish its own KE EMu data --and images-- to GBIF. Once there, the data can be captured using the correct project code or name as a filter, and then it can then be posted to the Great Lakes TCN." A revised and reversed workflow (i.e., from iDigBio back to the TCN portal) will need to be considered in order to capture all relevant data in developing the Great Lakes Invasives portal as a focused tool for invasive species biologists.

Submitted by Ken Cameron, May 5, 2015

INVERTEBASE: REACHING BACK TO SEE THE FUTURE: SPECIES-RICH INVERTEBRATE FAUNAS DOCUMENT CAUSES AND CONSEQUENCES OF BIODIVERSITY SHIFTS

Report submitted by: eshea@delmnh.org
Report Submitted on: 05/05/2015 - 16:22

Progress in Digitization Efforts

Field: Insect Digitization: completed digitization of insect orders (pinned): Odonata – 3277; Blattodea – 1280; Mantodea – 296. Wet specimens: Trichoptera – 286; trained prospective summer intern, Trichoptera will be completed during summer 2015. Currently ongoing: digitization of all Nearctic Apidae (Hymenoptera). Next anticipated steps: batch uploading of digitized data into FMNH EMU database; continued development of Symbiota portal. Ongoing: digitization of pinned Nearctic Apidae. Invertebrates: full time digitizer hired March 2. Dr. S. Clark (land and fresh water mollusks specialist) is preparing the North American taxonomic authority file for fresh water and land mollusks.

Cleveland: Mantodea from the Smithsonian Collection continue to be digitized using the two-step xBio:D database developed by Ohio State University. To date over 1000 specimens have been digitized by the 3 work study students from Case Western Reserve University and is currently ongoing. Our new thermal printer is up and running and we have designed and printed 2D barcodes for digitization of the CMNH Entomology collection. Efforts have begun to digitize the Hymenoptera. .

Auburn: nothing to report.

Michigan: nothing to report due.

Delaware: Freshwater unionid bivalves: we have updated taxonomy in accordance with the MusselP website and filled in geography. Agent field housekeeping has resulted in the discovery of full first and last names for: 108 of 116 donors (93%); 19 of 25 identifiers (76%), and 10 of 18 catalogers (55%). Many of these were previously entered as initials only. We resolved 3,395 collectors to 409 unique collectors. We are currently mapping fields from MOLCOL to match the highly resolved Specify schema. We also have a new volunteer who arrived with an interest in freshwater bivalves and photography. We have identified and initiated hiring of a summer short-term temporary undergraduate student as an "Inventory Specialist".

Frost: The collection of lice mounted on slides was imaged using a flatbed scanner, with the resulting ~900 images (of approximately 15,000 specimens) sent to Matt Yoder (Speciesfile Group, University of Illinois) for parsing. More than 13,000 Odonata specimens and lots were images, using a standard template. The first batch of Odonata images (n=10,000) were sent to Matt Yoder for parsing. We continue to work on the imaging of odonates in the collection, with particular focus on taxa organization in preparation for new cabinets (arriving mid-June). And we've moved towards imaging pollinators, which are mostly on pins. A template has been established, and several hundred bees have been imaged. The team is mulling over refinements, e.g., how we can make the workflow more efficient and the images higher quality, before progressing further with pinned insects.

Share and Identify Best Practices and Standards (including Lessons Learned)

Field: produced batch of notched forceps to manipulate pinned labels, ready to distribute forceps to collaborating institutions and others. Developed racks for organizing and holding ethanol vials and dry vials for easy data entry, current experiments with Dragon Naturally Speaking for data entry underway in Invertebrates and Insects. Pinned Insect Lego manipulator is currently being built.

Cleveland: Developed mount for USB microscope camera used in association with chromebooks.

Auburn: nothing to report

Michigan: nothing to report

Delaware: nothing to report

Frost: We have published a manual that describes our Odonata-in-envelopes imaging process. This manual is available for anyone to use (under a CC BY license) - <http://scholarsphere.psu.edu/files/x346dt992> - and will be updated soon to include post-imaging processing.

Identify Gaps in Digitization Areas and Technology

Field: workflow currently under comparison: data entry directly from labels on pinned specimens vs. generating label images with data entry from label images.

Cleveland: nothing to report

Auburn: nothing to report

Michigan: nothing to report

Delaware: nothing to report

Frost: Our primary gap is manpower. We addressed this by hiring Emily Sandall full time and adding an hourly worker. We're also advertising for two more hourly data entry positions.

Share and Identify Opportunities to Enhance Training Efforts

Field: first experiments with high school intern conducted in preparation for summer internship period employing high school and undergraduate interns in various Insect digitization efforts

Cleveland: nothing to report

Auburn: nothing to report

Michigan: nothing to report

Delaware: nothing to report

Frost: We published our odonata imaging manual and have recruited a new person in to the project (Carlie Harding). She is being trained in digitization and is helping us with our training materials.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

Field: PI Sierwald collaborating with Neil Cobb, Northern Arizona University Flagstaff, for further development of taxonomic authority files. Focus: produce authority files in a timely fashion and enhance sharing protocol, timely updates are a the next problem to solve.

Cleveland: nothing to report

Auburn: nothing to report

Michigan: nothing to report

Delaware: Visited the Academy of Natural Sciences in Philadelphia and learned about how Dragon Naturally Speaking is integrated into their ongoing collection inventory.

Frost: We continue to collaborate with the InvertNet TCN at the University of Illinois. By using their slide imaging protocol, we expect to be able to seamlessly add our images to their database in the next few months. We also have strengthened our collaboration with the Speciesfile Group at the University of Illinois (primarily through Matt Yoder). They are developing an image parser that will facilitate future efforts to transcribe label data.

Share and Identify Opportunities and Strategies for Sustainability

Field: nothing to report

Cleveland: nothing to report

Auburn: nothing to report

Michigan: nothing to report

Delaware: nothing to report.

Frost: We are posting our standard operating procedures to robust repositories, primarily Penn State's Scholarsphere (<https://scholarsphere.psu.edu/>) but also soon FigShare (<http://figshare.com/>). Our strategy to sustain access to our specimen data is to disseminate them broadly.

Other Progress (that doesn't fit into the above categories)

Field: Establishing protocol for monitoring various collection improvements caused or initiated during digitization: e.g., (among others) report on specimen quality, evaluating data quality, specimen rehousing, re-labeling, recognition of types. Invertebrates: co-PI Bieler to Cleveland Museum of Natural History for assessment of Cleveland Museum Mollusk Collection: digitization priorities, historic and research quality, alternate deposition of specimens.

Cleveland: Visited by FMNH as above, also discussed current digitization workflow, tools and potential solutions for digitizing enveloped specimens.

Auburn: nothing to report

Michigan: nothing to report

Delaware: Discussed InvertEBase with Board of Trustees and staff during DMNH's ongoing Strategic Planning activities. Preparing a Board presentation for June that describes how the grant has improved our collection and provided new opportunities for partnerships.

Frost: nothing to report

Attachment

Nothing to report.

INVERTNET: AN INTEGRATIVE PLATFORM FOR RESEARCH ON ENVIRONMENTAL CHANGE, SPECIES DISCOVERY AND IDENTIFICATION

Report submitted by: chdietri@illinois.edu
Report Submitted on: 05/06/2015 - 09:06

Progress in Digitization Efforts

Drawer digitizing robots at all collaborating institutions have been upgraded with new camera head parts that improve stability and image quality. Most collaborators are now digitizing drawers. Removeable hard drives containing drawer images have been received from 8 collaborators and are being uploaded into the InvertNet cyberinfrastructure/storage system. 50 drawers are now viewable on invertnet.org. The InvertNet technical team continues to provide support to collaborators by fixing software bugs and addressing hardware problems. We anticipate that most drawer images will have been captured by the original project end date of June 30, although we have been granted a 1-year no-cost extension. Work on incorporating a crowd-sourcing application into the cyberinfrastructure to facilitate transcription of label data from pinned specimens is ongoing.

Share and Identify Best Practices and Standards (including Lessons Learned)

Nothing to report.

Identify Gaps in Digitization Areas and Technology

Nothing to report.

Share and Identify Opportunities to Enhance Training Efforts

Nothing to report.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

Nothing to report.

Share and Identify Opportunities and Strategies for Sustainability

Because we are nearing the end of life of the funded project, we are in the process of transferring responsibilities for maintenance of InvertNet cyberinfrastructure to IT personnel at the Illinois Natural History Survey. These personnel are now working with the InvertNet technical team to receive training and will assume responsibility for maintenance of the CMS and backup systems within the next month.

Other Progress (that doesn't fit into the above categories)

Nothing to report.

Attachment

Nothing to report.

PLANTS, HERBIVORES AND PARASITOIDS: A MODEL SYSTEM FOR THE STUDY OF TRI-TROPHIC ASSOCIATIONS

Report submitted by: moon@begoniasociety.org
Report Submitted on: 05/06/2015 - 09:17

Progress in Digitization Efforts

Botanical Numbers:

Partners have completed 140,466 records over the course of the project.

Of these completed, 17,151 were transcribed by volunteers at NYBG.

Total Symbiota complete records = 1,253,054

Total Symbiota skeletal records = 360,206

Total Images uploaded to iDigBio = 489,628

Total Images uploaded to DiscoverLife = 168,992

Total images received at NY to Date = 839,780

Entomological Numbers:

1,081,934 transcribed insect records, 53% georeferenced

Share and Identify Best Practices and Standards (including Lessons Learned)

Nothing new to report.

Identify Gaps in Digitization Areas and Technology

Ability to model and share associations between taxa.

Share and Identify Opportunities to Enhance Training Efforts

Botanical partners (under Mari Roberts) have developed a robust volunteer label transcription effort.

10 part-time volunteers, each of them come in once a week for a half-day or work from home.

Events:

March 19th - Attended the St. John's University Non-profit Career Fair to recruit students for the summer.

March 25th and April 1st - 2-day Georeferencing Workshop for Volunteers. One veteran volunteer, Dr. Maura Flannery, will be batch georeferencing specimens and transcribing records over the summer.

June 9th - Goldman Sachs Volunteer Event scheduled. 8 employee volunteers will attend a one-day digitization workshop.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

TTD-TCN has worked with the Collaborative databasing of North American bee collections within a global informatics network project to share 367,977 Apidae records with iDigBio

All TTD data and bee data are now shared with EOL through Globi portal. An example search of the Globi portal

(<http://www.globalbioticinteractions.org/#sourceTaxon=Ufens&interactionType=interactsWith&accordingTo=amnh.org>)

Through Globi EOL Traitbank will have access to TTD data.

Share and Identify Opportunities and Strategies for Sustainability

Katja Seltmann, Deb Paul, and others organized a very successful Field to Database workshop. The demand for this workshop and others in the series is very high. Workshops of this type could be offered for a small fee.

Other Progress (that doesn't fit into the above categories)

Nothing to report.

Attachment

Nothing to report.

SERNEC: THE KEY TO THE CABINETS: BUILDING AND SUSTAINING A RESEARCH DATABASE FOR A GLOBAL BIODIVERSITY HOTSPOT

Report submitted by: michael.denslow@gmail.com
Report Submitted on: 05/06/2015 - 16:35

Progress in Digitization Efforts

All SERNEC:

The SERNEC portal (<http://serneportal.org/>) currently has 22 TCN institutions hosted. The portal now hosts 444,975 specimen records.

The SERNEC - TCN developed a new tool that allows users to create skeletal records in Symbiota for newly generated images. There are currently 139,835 skeletal records in the SERNEC portal.

Georgia:

GA has imaged 9,405 specimens to date. Richard Carter (VSC), Steven Hughes (GA) and Wendy Zomlefer (GA) met with Kevin Burgess and Julie Ballenger (COLG) in February to discuss the imaging of COLG. The imaging will be completed by VSC. A second follow up meeting was held at the Association of Southeast Biologist conference in Chattanooga, Tennessee to finalize plans for COLG imaging. Alan Harvey (GAS) has begun the process of ordering imaging equipment. GAS will also image AASU.

North Carolina:

NCU is working on converting their local Specify database from version 5.2.3 to Specify 7 so that the 140,000+ records can be loaded more easily into the SERNEC portal. Michael Lee (NCU) and Theresa Miller (Specify) are actively working on this task. This process will also facilitate the repatriation of data to the local NCU database in future years of the project.

NCU currently has 42 specimens (20 with images) in the SERNEC portal. Shanna Oberreiter (NCU) is concentrating on loading Type specimens at this time.

A new intern named Billy Marinello will act as the Felton Herbarium Intern for this summer at NCU. He has previously been working as an imaging technician on another TCN, which should greatly facilitate his work on the SERNEC – TCN. He is scheduled to begin his Internship on May 11.

South Carolina:

All needed equipment has been purchased and received. In addition, specimen barcodes have been purchased and received. Work has begun on hiring students to work at FUGR and USCH. One prospective student has already been identified to work at CLEMS.

Virginia:

Four undergraduate student workers have been selected at GMUF for part-time summer imaging. Their start dates are tentative pending final delivery of imaging equipment that is on order. All barcodes have been delivered and are being dispersed to partner herbaria in South Carolina.

Share and Identify Best Practices and Standards (including Lessons Learned)

All SERNEC:

We have completed several pieces of documentation for the project. These are currently shared publicly here: <http://bit.ly/1aOhFow> for anyone to access. These documents include the equipment list for the project, as well as protocols for barcoding, image archive, image processing, image capture, image station set up and skeletal data entry. We continue to refine and edit these documents as they get utilized by our partner institutions.

The image archive protocol utilizes iPlant's Discovery Environment for a safe and secure centralized archive of specimen images for the project.

The Symbiota skeleton record interface that was developed for the SERNEC – TCN can also be leveraged by anyone using Symbiota. This new tool was recently announced on the Symbiota list serve and we anticipate that it will prove useful to other projects.

Georgia:

Steven Hughes and Wendy Zomlefer (GA) have designed laminated hangtags to number cabinet shelves for imaging, facilitating movement of whole shelves of specimens from their home cabinet and their return to the cabinet after imaging.

North Carolina:

An NCU volunteer named James Fickle is constructing a custom "mobile herbarium case" which will assist with predigitization curation.

Virginia:

GMUF advertised for student imaging positions within the Biology Department combined with a SurveyMonkey application. This process made finding and selecting workers very efficient.

Identify Gaps in Digitization Areas and Technology

Nothing to report

Share and Identify Opportunities to Enhance Training Efforts

All SERNEC:

To complement our written documentation we are also hosting webinars, in person training sessions and video tutorials. We are making a concerted effort to distribute this information and invite other interested parties outside of the SERNEC – TCN.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

All SERNEC:

We have regular correspondence with iDigBio staff and other TCNs, especially the New England Vascular Plant and Tri-trophic TCNs. These resources have been invaluable to helping the SERNEC – TCN progress in year 1.

Share and Identify Opportunities and Strategies for Sustainability

Nothing to report

Other Progress (that doesn't fit into the above categories)

Nothing to report

Attachment

Nothing to report.

THE MACROALGAL HERBARIUM CONSORTIUM: ACCESSING 150 YEARS OF SPECIMEN DATA TO UNDERSTAND CHANGES IN THE MARINE/AQUATIC ENVIRONMENT

Report submitted by: Chris.neefus@unh.edu
Report Submitted on: 05/07/2015 - 16:34

Progress in Digitization Efforts

See attached file

Share and Identify Best Practices and Standards (including Lessons Learned)

nothing to report

Identify Gaps in Digitization Areas and Technology

nothing to report

Share and Identify Opportunities to Enhance Training Efforts

nothing to report

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

Presented overview of the project and portal demonstration at the Northeast Algal Symposium

Share and Identify Opportunities and Strategies for Sustainability

nothing to report

Other Progress (that doesn't fit into the above categories)

nothing to report

Attachment

<https://www.idigbio.org/sites/default/files/webform/tcn-reports/digitization%20numbers%205-7-2015.pdf>

Digitizing Institution	Start	Collections	Specimens	Percent Complete				
				Records Created	On Portal	Imaged	Transcribed	Geo-referenced
University of New Hampshire	Year 1	10	134,819					
New York Botanical Garden	Year 1	5	163,350					
University of North Carolina	Year 1	7	74,733					
University of Michigan	Year 1	5	91,683					
University of Washington	Year 1	3	37,154					
Duke University	Year 1	1	19,000					
University of Alaska	Year 1	1	8,300					
Bishop Museum	Year 1	1	78,795					
Field Museum	Year 1	1	38,320					
Oregon State University	Year 1	1	9,000					
University of Guam	Year 1	1	13,600					
University of California - Berkeley	Year 2	9	228,850					
University of Hawaii	Year 2	1	2,000					
Harvard University	Year 2	1	150,000					
Academy of Natural Sciences	Year 3	1	37,000					
University of Vermont	Year 3	1	3,500					
Totals		49	1,090,104					
				585,036	500,403	375,267	285,610	187,722

DEVELOPING A CENTRALIZED DIGITAL ARCHIVE OF VOUCHERED ANIMAL COMMUNICATION SIGNALS

Report submitted by: msw244@cornell.edu
Report Submitted on: 05/13/2015 - 15:26

Progress in Digitization Efforts

Our TCN project has now digitized audio recordings from several different TCN partners, with 1,472 recordings archived during this reporting period. These recordings (“media specimens”) are now available through, and playable at, the Macaulay Library website (MacaulayLibrary.org), and data are being pushed to iDigBio and VertNet. The list below details the major bodies of material digitized during the latest reporting period:

Anurans: We have continued prioritization of digitizing anuran recordings associated with specimens from several TCN partners. Principal among these are 600+ digitized recordings associated with specimens at the Smithsonian Institution, including material from recordists Cocroft (350), Heyer (136), and Rand (137). This brings the total number of digitized Smithsonian recordings to nearly 1,000. We have also initiated digitization of recordings associated with specimens at the Texas Natural History Collections: 333 recordings archived, all from open reel tapes from the 1950s! This recordings join the now-completed digitized collection of anuran recordings from famed herpetologist William Duellman: 1,334 total archived recordings, with 957 associated physical specimens.

Orthopterans: We have continued digitization work on the David Weissman orthopteran collection: 400+ recordings archived Feb-Apr 2015, bringing total archived recordings to 950.

Birds: We have also continued digitization work on the LSU bird collection by archiving 84 recordings from collector/recordist Dan Lane. Dan is now using our newly developed data entry tool, which should increase the efficiency with which his recordings can be digitized and archived.

Share and Identify Best Practices and Standards (including Lessons Learned)

The Macaulay Library uses an audio archival standard of 96kHz 24-bit, the audio standard recommended by Sound Directions: Best Practices for Audio Preservation <<http://www.dlib.indiana.edu/projects/sounddirections/papersPresent/index.shtml>> and a standard adopted by leading audio archival institutions such as the Library of Congress and The British Library.

Identify Gaps in Digitization Areas and Technology

There are no accepted standards for the preservation and subsequent presentation of electric organ discharges produced by e-fish. During the past year, Macaulay Library audio archival staff worked with staff at CUMV to develop archival and web-proxy presentation protocols in collaboration with e-fish researchers that will serve as a model formats for EODs.

Share and Identify Opportunities to Enhance Training Efforts

Personnel from this TCN project visited partner institutions and participated in meetings/summits to facilitate the work undertaken and for exchange of information. In particular, Matthew Medler (Cornell), Rafe Brown (Kansas Univ) and Robin Abraham (also KU) participated in the iDigBio summit in late October 2014.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations

In May our TCN organized and hosted a major workshop and meeting on digitization of vertebrate specimens, co-organized and supported by iDigBio. This workshop was a major success, with participation by over 70 researchers/staff from museums and other institutions from across the country. Key foci and themes from the workshop included digital media (audio and video recordings associated with specimens, etc), CT and microCT scans of specimens, and resources/strategies to support digitization efforts at smaller institutions. The workshop also included tours of the Cornell Museum of Vertebrates, tours of state-of-the-art facilities for bio-imaging and digital biodiversity media, and field workshops on collecting biodiversity media. Additional details can be found in the workshop reports.

Share and Identify Opportunities and Strategies for Sustainability

National-level reporting of iDigBio achievements, heretofore resources now available to the public.

Other Progress (that doesn't fit into the above categories)

Nothing to report.

Attachment

Nothing to report.