North American Lichens and Bryophytes: Sensitive Indicators of Environmental Quality and Change

Report submitted by: cgries@wisc.edu
Report Submitted on: 01/23/2014 - 10:46

Progress in Digitization Efforts

As of January 2014 the number for the LBCC are as follows:
Lichens: http://lichenportal.org
Herbaria actively submitting images or key stroked records to the portal: 49
Specimen records in portal: 1,155,951 (up by 85200 since September 2013)
Specimen records with label images: 466,360 (over 103,967 labels have been imaged since September 2013)

Bryohpytes http://bryophyteportal.org
Herbaria actively submitting images or key stroked records to the portal: 46
Specimen records in portal: 1,694,563 (up by 126,833 since September 2013)
Specimen records with label images: 518,215 (166,517 labels have been imaged since September 2013)

the numbers show, that now the majority of new records are coming through label imaging and not so much through mobilizing existing databases, although that still represents a significant contribution to the increase in numbers of records.

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

nothing new to share

Identify Gaps in Digitization Areas and Technology

nothing new

Share and Identify Opportunities to Enhance Training Efforts

our annual project meeting will be at the end of February and will be devoted to 'train the trainer', that is, we have invited the collaborating institutions and representatives from the small collections for which specimens have been digitized. We will provide training in how to manage collections in Symbiota and how to effectively use the transcription interface.

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

Share and Identify Opportunities and Strategies for Sustainability

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

We are gearing up for the massive transcription phase. This involves working with the UW financial service to determine how best to pay for transcription that may happen from all around the country. After our annual meeting we will be advertising and recruiting volunteers as well as professional transcribers.

Attachment

iDigBio is funded by a grant from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program (#EF1115210)

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

Report submitted by: Bthiers@nybg.org
Report Submitted on: 01/28/2014 - 10:13

Progress in Digitization Efforts

Specimens added to the MycoPortal: since October 2014: 121,638
Total specimens in the MycoPortal: 1,574,761

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

Nothing new to report

Identify Gaps in Digitization Areas and Technology

Gaps in digitization areas and technology remain with regard to interpretation of OCR results and data parsing. We have tested the new data parsing techniques in Symbiota (available only in the Lichen and Bryophyte portals at this time); we are hopeful that these techniques will speed the creation of records when the feature in installed in the MycoPortal.

Share and Identify Opportunities to Enhance Training Efforts

1. All institutions participating in the project have now been trained and have begun their digitization projects. Additional training at this point consists mostly of answering questions and trouble-shooting problems with the imaging setup or the MycoPortal software.

2. Crowdsourcing: We have been contributing images of specimens for transcription to Notes from Nature since late October 2013. It has been a mixed success. There is interest in the project – more tha10,000 transcriptions have been done – but the project is hampered by a lack of attention to bugs and glitches by the Zooniverse developer, and the lack of a dedicated staff member to manage the project. The Macrofungi Collection Consortium has contributed three blogs about the project to the Notes from Nature website – two of which have been published, and one is in the queue.

What are Macrofungi? Barbara M. Thiers, 26 Nov 2013
The Macrofungi Collection Consortium – some background 12 Nov 2013
The University of Michigan Herbarium – Mecca for Macrofungi 28 Jan 2014

3. Two student interns have just completed their internships at The New York Botanical Garden. Mari Roberts has been hired as the manager of another digitization project at The Garden, and Thomas
Park is a strong contender to assume the role of Project Coordinator of the Macrofungi project.

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

. Our collaboration with Genbank continues – Genbank numbers are now included in records for those specimens whose sequences have been uploaded to GenBank. Conversely, a link to the specimen record in MycoPortal now exists from GenBank. We are very excited about this collaboration because it not only addresses the problem of poor citation of specimens in GenBank, but also further imbeds the MycoPortal in the standard work practices of mycologists, which is key to the sustainability of this resource.

2. We are collaborating on a Genealogy of Life proposal with a team of mycologists who have been involved in building the Fungal Tree of Life, to combine specimen data, phylogenetic data, and descriptive data in preparation for a project to document all species of Macrofungi on earth.

Share and Identify Opportunities and Strategies for Sustainability

Our strategy for sustainability is as follows:
1) Make the MycoPortal an indispensible tool for mycological research by linking it to GenBank (see above), and making upload of specimen data into the MycoPortal a requirement for publication in Mycologia, the journal of the Mycological Society of America. Discussions have started on GenBank portion of this strategy, and will be started with the editor of Mycologia at the annual MSA meeting in August.
2) Continue the reach of the MycoPortal beyond macrofungi. Dr. Andrew Miller of the Illinois Natural History Survey is preparing a proposal to digitize microfungi to be added to the MycoPortal. Broadening the user base will help sustain the project
3). Internationalization of the MycoPortal. Soon we will add data from non North American herbaria to the MycoPortal; we hope this will stimulate continued discussion of the development of complementary projects in Asia, Europe and South America that further broaden the scope of the MycoPortal
4) Management of the Portal beyond the current grant: My dream is to have the MycoPortal Management become a standing committee of the Mycological Society of America, and that they will allow donations above their current membership rates to support the MycoPortal. I hope to start discussions with members of the Executive Committee of the Society about this at the MSA meeting in June 2014

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

1. Presentations about the MycoPortal and the MaCC Project were given at the iDigBio Summit in late November 2013, and at the Education and Outreach Workshop in Gainesville in January 2014.
2. Subcontracts have been rearranged in the project so that Scott Bates, now at University of Minnesota, can hire staff and students to help manage the MycoPortal as well as digitize specimens in that collection. The Denver Botanic Garden is currently advertising for a staff member who will devote 20 hrs. per week for the next two years to record completion.
3. The New York Botanical Garden team is currently in transition – Project Coordinator Shannon Ascencio has accepted a position at the Canadian Museum of Nature, beginning February 2014. A search for her replacement has begun, and hopefully a new staff member will be in place by the end of February 2014.

Attachment

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

Report submitted by: blieber@ku.edu
Report Submitted on: 01/28/2014 - 14:58

Progress in Digitization Efforts

Please see attached file

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

Please see attached file

Identify Gaps in Digitization Areas and Technology

Please see attached file

Share and Identify Opportunities to Enhance Training Efforts

Please see attached file

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

Please see attached file

Share and Identify Opportunities and Strategies for Sustainability

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

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/PaleoNichesiDigBioUpdateJan2014_0.docx

Developing a Centralized Digital Archive of Vouchered Animal Communication Signals

Report submitted by: msw244@cornell.edu
Report Submitted on: 01/30/2014 - 06:38

Progress in Digitization Efforts

In the first seven months two major thematic network partner NHC audio collections were fully digitized: (1) KU ornithology collection of Mark Robbins covering over 500 physical specimens, and (2) the Oecanthus spp. recordings of Dartmouth researcher Laurel Symes, some 665 physical specimens. Digitization has commenced on thematic network partner Yale's avian audio recordings by Kristof Zyskowski, and also KU herpetological audio recordings by William Duellman. These digitized recordings are now available through the Macaulay Library (ML) website.

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 (EODs) produced by electric fish (e-fish). Macaulay Library audio archival staff are working with staff at the Cornell University Museum of Vertebrates to develop archival and web-proxy presentation protocols, in collaboration with other e-fish researchers, that will serve as a model formats for EODs.

Share and Identify Opportunities to Enhance Training Efforts

Staff from the participating institutions and other institutions have met several times to discuss and develop plans for training. ML personnel have interacted one-on-one with network NHC principals from California Academy of Sciences, Dartmouth, KU, LSU, Texas A&M, and Yale on topics ranging from audio recording technology to metadata structure. Participant Liz Derryberry (Tulane) visited in the Fall 2013 to meet with Cornell staff and students and discuss the use of archived sound recordings for research. LSU personnel [Dan Lane] are scheduled to visit ML in March. Finally, we have begun planning for a forthcoming workshop on media digitization.

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

No collaborations with other TCNs at this time, but we are exploring data-cleaning and geo-referencing capabilities developed by other TCNs. We have also begun discussing possible PEN project with staff and researchers at the California Academy of Sciences.

Share and Identify Opportunities and Strategies for Sustainability

A strategy being employed by the Cornell Lab of Ornithology is to put considerable effort into national-level reporting of research/archival achievements, in particular through the public media (NPR, etc). Media from the archive, including media digitized as part of this TCN, can be used and highlighted. This raises the public profile of the research collection, garnering benefits through increased public and institutional support.

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

A forthcoming publication describing a new species of mormyrid fish references forty EOD recordings, deposited with the Macaulay Library (as part of this project) by thematic partner Carl Hopkins of CUMV/Cornell. Also a forthcoming article by ML staff on digitization and archival practices for natural history media.

Attachment

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

Report submitted by: moon@begoniasociety.org
Report Submitted on: 01/30/2014 - 10:39

Progress in Digitization Efforts

* Insect record report:
Complete records now available through iDigBio: ~400,000
Total insect data numbers, as of January 9, 2014: ~754,887

* Plant record report:
Complete records sent to NY:1183076
Complete records with images sent to NY: 80838
Skeletal records sent to NY : 438525
Skeletal records with images sent to NY: 393172
Skeletal Records completed at NY: 8137
Complete Records in Symbiota: 674522
Skeletal Records in Symbiota: 326372
Images uploaded to DiscoverLife: 146489

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

* We plan on writing up a description of our data for the Biodiversity Data Journal, thereby giving us a DOI to enter as attribution for the project.
* The TTD proposed standards for sharing association data are now open for review. They are here: http://tinyurl.com/lxbgfxd SCAN project, iDigBio Team and our TTD partners are all reviewing these at the present time. The first set of TTD data shared conforms to these standards.

Identify Gaps in Digitization Areas and Technology

* A major concern for us is how to encourage our researchers and graduate students to participate in the digitization effort. They have research databases of specimens from multiple institutions and would like a clear path detailing how to share these data.

Share and Identify Opportunities to Enhance Training Efforts

* Danielle Pace, one of our digitizers and Museum Studies masters student, participated in the Education and Outreach workshop. Engaging local Museum Studies programs has been very successful for us. We have a second intern, Becky Fisher, who is working for school credit in the project developing a virtual exhibit on early women insect collectors from our data.
* Christiane Weirauch, Mellissa Tulig, and Kim Watson taught a two week Biodiversity Data Capture bioinformatics course in Ghana between Jan 11-23 (http://biodiversity-informatics-training.org/training-courses)

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

* Kim Watson participated in the iDigBio Small Herbaria Digitization workshop December 9-11, 2014, during which she gave two 30-minute presentations and an afternoon of herbarium imaging station demonstrations.
* Robert Naczi, Katja Seltmann, and Richard Rabeler attended the iDigBio Summit III during 19--20 November 2013 in Tallahassee Florida. Rob and Rich delivered a 5-minute lightning talk on the Tri-trophic TCN, “Plants, Herbivores, and Parasitoids: A model system for the study of tri-trophic associations”: https://www.idigbio.org/sites/default/files/workshop-presentations/summit3/iDigBioSummit_2013_TTD_FNL.pdf .

* The TTD second sponsored education and research workshop is in the planning stages. This second workshop engages graduate students and researchers to explore data collected from the project in niche modeling and data mining research. Members of SCAN TCN and TaxonWorks (INHS) are both involved.
* Discover Life Time Machine Portal (http://www.discoverlife.org/timemachine) continues to be developed as one of our methods for capturing data from images.
* Many of our insect partners participated in this years Entomological Collection Network and Entomological Society of America meetings.
* Arthropod Easy Capture at AMNH hosts projects from multiple Planetary Biodiversity Inventory projects, we have engaged these projects concerning sharing data to iDigBio

Share and Identify Opportunities and Strategies for Sustainability

* Creating a repository for sharing research datasets, with linkable DOIs, might lead toward a GenBank like model.

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

* Kimberly Watson, Tri-trophic Data Capture Specialist and Project Coordinator for Botany at The New York Botanical Garden during 2011--2013, has been promoted to Herbarium Information Manager. We congratulate Kim on her new position, as well as thank her for her excellent and indispensable work on this project.

* We welcome Mari Roberts as our new Data Capture Specialist and Project Coordinator for Botany, and congratulate her on her promotion to this position. Mari comes to us with a rich background in digitization, including working as NYBG Herbarium Intern specializing in digitization since June 2013.

Attachment

MOBILIZING NEW ENGLAND VASCULAR PLANT SPECIMEN DATA TO TRACK ENVIRONMENTAL CHANGE

Report submitted by: patrick.sweeney@yale.edu
Report Submitted on: 01/30/2014 - 14:24

Progress in Digitization Efforts

Capture of collection level-information (i.e., "pre-capture") is the primary activity. At this stage approximately 700,000 specimens have been pre-captured -- with at least current identification captured. Testing & configuration of one high-throughput digitization apparatus (conveyor system) was completed in late November - primary digitization has been taking place since early December. A second unit will be installed in March. Light-boxes are deployed at three institutions, and primary digitization has begun at those institutions. Approximately 28,000 images and full metadata records 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.

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

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

Report submitted by: chdietri@illinois.edu
Report Submitted on: 02/04/2014 - 13:36

Progress in Digitization Efforts

Approximately 14,200 images have been uploaded to date and are searchable via the InverNet.org portal and zoomable viewer. The second InvertNet workshop was held Nov. 1-3 at the University of Illinois and focused on group discussions of digitization efforts, demonstration of the robotic drawer digitization prototype system, and training in the use of the InvertNet cyber infrastructure. Although the InvertNet technical team was hoping to deliver pre-assembled robotic drawer digitization systems to collaborators at the workshop, unanticipated delays in obtaining some precision-machined parts resulted in the systems not being ready in time for the workshop. We plan to deliver and set up the systems at collaborating institutions within the next month.

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

Share and Identify Opportunities and Strategies for Sustainability

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

Attachment

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

Report submitted by: neil.cobb@nau.edu
Report Submitted on: 02/13/2014 - 17:24

Progress in Digitization Efforts

see attachment

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

see attachment

Identify Gaps in Digitization Areas and Technology

see attachment

Share and Identify Opportunities to Enhance Training Efforts

see attachment

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

see attachment

Share and Identify Opportunities and Strategies for Sustainability

see attachment

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

see attachment

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/SCAN_Feb_2014.docx

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: 02/18/2014 - 15:08

Progress in Digitization Efforts

Six collections have been set up on Macroalgae.org portal. Occurrence records and images are starting to be added. The CONN collection is nearly complete with 2145 specimens, 97% georeferenced and 90% with images. NY has uploaded 16701 occurrence records but has not begun to georeference or add images. NHA has finished barcoding, and imaging is green algae and has started on the reds. They have uploaded 22894 occurrence records, 5% have been fully populated and georeferenced, and 78% are imaged. NCU has uploaded 271 occurrence records, 42% georeferenced and 73% are imaged. MICH has uploaded 1523 occurrence records and has begun imaging, but has not uploaded images. F has just been set up on the portal and is reading to start uploading.

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

Several workflow documents have been added to the project document site (macroalgae.unh.edu). In general the workflow adopted for the project, which is based on protocols from other TCNs is working well.

Identify Gaps in Digitization Areas and Technology

Not a gap, but note. With extended use, the cooling fans on the Photo eBoxes used for herbarium sheet imaging begin to wobble. It is audible and can result in noticeable image blurring. Not a bad idea to keep a spare fan o hand if you are doing a lot of imaging.

Share and Identify Opportunities to Enhance Training Efforts

A number of the Macroalgae consortium members are scheduled to participate in the iDigBio digitization workshop in Honolulu next month. This is an outstanding opportunity to get the Pacific Islanders together for training.

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

Personnel working on the Macroalgae project have been interacting with personnel from other digitization projects at their own institutions. This has been quite helpful for hands on help with data and image uploading to the portal and other procedures.

Share and Identify Opportunities and Strategies for Sustainability

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

Attachment

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

Report submitted by:
Report Submitted on:

Progress in Digitization Efforts

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

Identify Gaps in Digitization Areas and Technology

Share and Identify Opportunities to Enhance Training Efforts

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

Share and Identify Opportunities and Strategies for Sustainability

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

Attachment

Paleoniches Update, January 2014

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 115,922 specimens databased. Of these, there are a total of 109,272 specimens databased that have clean, proofed localities. Further, we now have a total of 81,695 specimens that are georeferenced. In addition, a total of ~4800 localities have been georeferenced. In other relevant news, Una Farrell and post-doc Michelle Casey attended a georeferencing workshop in August and the paleodigitization workshop at Yale in September, and each of these will enhance our ability to train others and improve progress on the grant. Una Farrell will also be attending the upcoming paleo imaging workshop at Texas this spring. Further, recently Ohio State submitted a PEN to join our TCN and KU will be providing a small subcontract on that. In addition, post-doc Michelle Casey and Bruce Lieberman are close to putting on line a lab resource on trilobites that draws on images of specimens from our collections that can be used in outreach efforts and also teaching college invertebrate paleontology labs on trilobites at schools that lack fossil collections. Finally, PI Bruce Lieberman and one of the graduate students funded off the grant, Erin Saupe, have a paper, along with PI from San José State Jon Hendricks, (and one other author) describing our ecological niche modeling relying on georeferenced and environmental data from mollusks housed in the museum of one of our partners on the grant (FLMNH) in press at the *Journal of Biogeography*.

Since the last update, PI Hendricks (**San Jose State University; SJSU**) and his undergraduate and graduate student assistants have continued to generate content for the "Digital Atlas of Ancient Life" and have put it online (currently accessible at http://www.geosun.sjsu.edu/~jhendricks/AtlasTemp/).

Important new updates include the following:

1) Species-level pages for the bivalve families Cardiidae and Carditidae were added to the Neogene Atlas.

2) A new undergraduate student has been trained on working with Dreamweaver and adding content to the Digital Atlas webpages.

3) An undergraduate student (same as #2) has been working on developing content for the Brachiopoda portion of the Pennsylvanian Atlas webpage.

4) The domain names www.digitalatlasofancientlife.org, www.pennsylvanianatlas.org, and www.neogeneatlas.org have been registered and content is gradually being transferred to a new, permanent server (on www.ipage.com).

5) PI Hendricks attended the iDigBio Education and Outreach workshop in Gainesville, FL on Jan. 16 and 17, 2014. He also presented the Digital Atlas of Ancient

Life to the workshop participants, as this is the major outreach component of our TCN.

Planned activities between now and the next update include:

1) Adding species-level pages for the bivalve family Arcidae to the Neogene Atlas.

2) Adding species-level pages for the Brachiopoda to the Pennsylvanian Atlas.

3) Transferring all existing web content from the temporary location (http://www.geosun.sjsu.edu/~jhendricks/AtlasTemp/) to the new domains listed above.

Since the last update, the Ordovician part of our project, led by PI Stigall (**Ohio University; OU**) reports the following: Since the launch of our website at the annual GSA meeting in Denver, has had 12 species completed and live on the webpage. Further, they have been focusing on finalizing the content for the top 50 species and the associated higher taxonomic units. This has been completed and nearly all top 50 species have pages created for them but are currently hidden from the public. All of the top 50 species that we have in our collections have been photographed and we will be traveling to the (Cincinnati Museum Center) CMC and Miami University, both collaborators in the project, to photograph the remaining specimens this month.

In addition to the top 50 species, the majority of the bryozoan pages had been nearly completed prior to the graduation of grad student Hannah Brame who was supported by the project. All but three families of bryozoans have pages on the Atlas but many are missing pictures, which we will hopefully be able to acquire on our museum trip. Making paleoecology and stratigraphy figures will be finished this month for the top 50 species and we will hopefully be going live with the majority of the pages in the near term. Production is summarized in the table below.

Taxon	**Total in Collection:** **Families - Genera (species)**	**Atlas Pages Created** **Families - Genera (species)**	**Atlas Pages Live** **Families - Genera (species)**
Brachiopods	17 – 28 (49)	11 – 15 (19)	5 – 5 (9)
Arthropods	7 – 7 (9)	5 – 5 (6)	1 – 1 (1)
Corals	6 – 7 (7)	2 – 2 (2)	-
Bryozoa	15 - 38 (89)	15 - 28 (46)	1 – 1 (3)
Bivalves	11 – 20 (24)	3 – 4 (4)	-
Cephalopods	7 – 9 (10)	2 – 3 (3)	-

Gastropods	7 – 12 (20)	4 – 0 (0)	-
Porifera	2 – 2 (2)	-	-
Echinoderms	11 – 13 (16)	3 – 1 (1)	
Graptolites	2 – 2 (2)	-	-
Tentaculites	2 – 2 (3)	-	-
Monoplacophora	1 – 1 (1)	-	-
Trace Fossils	0 – 11 (0)	-	-
Totals:	**88 – 152 (232)**	**45 – 58 (81)**	**7 – 7 (13)**
Final Totals:	**472**	**184**	**27**

The spring semester goals include:

1. Researching and creating pages for the top 50 genera in the Cincinnatian
2. Generating dynamic maps to correspond with each of the species location data
3. Creating easy-identification figures for each of the species

Associated with the work on the Ordovician part of the project, for the Miami University collaborator, they are continuing to georeference Shideler's localities and have completed those from Indiana and at least 90% of those from Kentucky and Indiana. In fact, they are in the process of going back to do more difficult ones that were put on hold until they were more experienced. The numbers of georeferenced localities since the last report are 393. For the CMC collaborator, since the last update over 2500 catalogue records have been added into the KeEmu database, over 700 type specimen photographs have been taken, and 70% of the Ohio site records in KeEmu have been georeferenced.

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

1) Transfer and upgrade all relevant digital records into Specify 6 and make them available to the TCN and iDigBio HUB

Migration to Specify 6 continues, as of 1-27-2014 about 100k records covering more than 325K have been upgraded. We continue to image the Carboniferous specimens and labels, extracting data from those labels for addition into Specify. We had 13 distinct databases that we have been migrating, those covering the

Paleozoic and Paleogene/Neogene specimens have now been migrated. Specify has improved the paleo context side of the database and importing geological data has been made more effective and efficient. We continue to work to refine as many records to the finest stage/age level as possible (Jim Sprinkle, Lou Zachos and myself are involved in that action). The 'Tertiary' database has now been migrated into Specify and Lou Zachos is working on those specimen localities and taxonomies and those in his own collection. We continue to improve the lithostratigraphy and chronostratigraphy of the early Paleozoic

2) Acquire scaled, digital images of key specimens;

We continue to add high resolution images of relevant new type and figured material. We have demonstrated our techniques at SPNHC and have been working with the iDigBio paleo workflow group and other related iDigBio groups and were involved in the workshop in Yale. New software in this area has boosted throughput, Helicon Focus remote in this instance. This automates the multilevel focus shots and makes the image process much more efficient. Our software scripts for embedding scales are available on our redeveloped website.

We have, however, been very active with iDigBio. I am working on several working groups and we are jointly hosting a digital paleoimaging workshop at UT at the end of April. This will allow us to provide hands on experience for several imaging techniques, CT scanning, SEM imaging, our own 2D stacking and scale embedding plus several other methodologies that others are finding productive.

3) Integrate images with supplemental metadata (from interviews with emeritus curators and professors, field notebooks, peels, thin sections;

As stated above we have scanned James Sprinkle's field notebooks and have also scanned those available for H. B. Stenzel and the locality cards of Helen Plummer.

4) Georeference all localities for mapping;

Liath Appleton continues to train and quality control the output of our georeferencers. We have over 14K collection localities uploaded into Specify and 20% are georeferenced with quality control. We are concentrating on those sites relevant to the PEN project.

5) Update PaleoCentral web access to the digital data from Specify 6 , and provide portal access to GBIF and PaleoPortal, enabling multi-collection and cross-discipline searches;

The other good Specify development has been the web-viewing module (web portal). Tomislav Urban, our TACC connection, is currently working on ours and soon we shall be able to have online access to all records for selected fields and media. We have not yet sent/connected data to iDigBio that is this year's agenda item. Tomislav and I have been working on a new version of PaleoCentral.org to include a current and deep time mapping for each specimen, based on the UTIG PLATES project algorithms. The beta version for this is also complete. We are putting together an ABI proposal to develop this deep time ability as a plugin for all Specify users and are working with support from Jim Beach on that development.

6) Extend mobile applications for greater access to all dimensions of our data;

   Our smartphone app, Fossil Roulette, is being demonstrated at NAPC and I shall be talking about how we are using volunteer and avocational person power at NPL to achieve our goals.

7) Further develop our GIS ability to track specimens and disseminate their data.

   Our inventory continues and as mentioned in the last report we have a working beta system for direct online access to the collections repository and to the data relating to the specimens. This ArcOnline project had an initial issue when we moved from MSAccess to Specify, we could not create a dynamic and effective link to the database without somewhat cumbersome downloads. We have solved that issue now and are just completing a 'view' of Specify that links to our ArcGIS management system and will allow us to move forward. I was especially concerned with this recent admin move that we needed to make the offsite collections much more virtually accessible to researchers and teachers as well as the public. I believe we have that now and are routinely creating whole drawer images so the user can literally browse from a distance. I spoke at GSA this year about this project and demonstrated the technique.

And finally for **Yale**:

In October 2013 we held a two day georeferencing conference at Yale. Jessica Utrup, Museum Assistant, who attended and co-taught the idigbio georeferencing "train the trainers" course was the instructor with assistance from Susan Butts (Senior Collections Manager) and Eric Peavey (student worker). Twenty-six participants attended and were awarded an average of $568 per person to compensate for travel expenses. Eight additional Yale participants attended but were not compensated.

Additionally, the conference was webcast using Adobe Connect facilitated by idigbio. Up to 6 external participants at a time viewed remotely.

Since September 2013, we have cataloged 27 additional drawers, a total of 1,120 specimens and we have reached our goal of material to be cataloged from the stratigraphic collection. This most recent batch of drawers awaits imaging. We have also georeferenced 558 pre-existing and new localities (affecting 5,027 object records) and have reached the georeferencing goals described in our proposal. We have not yet started digitizing material from our ledgers.

Southwest Collections of Arthropods Network Update

February 13, 2014

Neil Cobb

Progress in Digitization Efforts:

We are on target to meet our second-year quota for digitizing labels from pinned specimens. Table 1 presents three sets of statistics as of February 11, 2013. These include data from institutions that are funded by SCAN, institutions that are entering data into the SCAN portal but not funded by SCAN, and the total records in the SCAN portal. Our total records have actually decreased since last fall, 2013 because most of the MCZ records were pulled by Harvard University. These Harvard records will be made available through iDigBio.

Table 1. Number of specimen records digitized and associated summary statistics. From http://symbiota1.acis.ufl.edu/scan/portal/collections/misc/collstats.php

	SCAN funded	SCAN non-funded	TOTAL SCAN
# Specimen Records	441,220	84,353	525,573
# Georeferenced	306,637	28,981	323,409
# Identified to species	317,646	56,940	360,377
# Families	658	467	686
# Genera	6,131	2,889	7,024
# Species	13,217	6,734	16,659
% Georeferenced	69%	34%	65%
% Identified to Species	72%	68%	71%

We have also started creating high-resolution images taken by a subset of SCAN museums that are committed to producing specimen images. Table 2 lists the number of images posted on SCAN by theses participating museums. Our goal is to produce ~16,000 images suites. An image suite consists of 1-5 images representing different aspects of a specimen. This will translate into approximately 40,000 images. We are currently behind on our projections due to unexpected logistical challenges but we expect to greatly increase our productivity over the summer, 2014.

Arizona State University hosted a weeklong Filtered Push hackathon January 6-10, 2014. The annotation system will be ready to roll out in March, 2014.

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	# High-Resolution Images
Arizona State University	987
Colorado State University	23
Northern Arizona University	782
Denver Museum of Nature and Science	480
University of New Mexico	18
Northern Arizona University - NPS	673
New Mexico State University	307
Texas Tech University	38

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. We are working with Pam Soltis and Charlotte Germain on collaborative ecological niche modeling and biodiversity issues.

Share and Identify Opportunities and Strategies for Sustainability:
The next test will be this spring when Colorado State University finishes with their SCAN funds and initiates a program to digitize new material.

Other Progress (that doesn't fit into the above categories):
Nothing new to report, we are working on activities already described in previous reports
Attachments