Bi-Monthly Progress Reports To iDigBio Submitted By Active Thematic Collections Networks (TCNs)

November 2019

CONTENTS:

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Submission #1567

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by BruceL
Saturday, November 2, 2019 - 14:50
24.124.110.43

TCN Name:
The Cretaceous World: Digitizing Fossils to Reconstruct Evolving Ecosystems in the Western Interior Seaway

Person completing the report:
blieber@ku.edu

Progress in Digitization Efforts:
Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman (BSL), we have databased 135,985 fossil specimens total, with 5,630 specimens databased since the last reporting period. 110,222 of these specimen records are also georeferenced. In addition, we have georeferenced 260 localities since the last reporting period and have now georeferenced a total of 8,503 localities associated with this project. These all dramatically exceed our original project goals.

Regarding the South Dakota School of Mines & Technology portion of the project, led by co-PI Laurie Anderson:

They have databased 56,906 Cretaceous specimens total (5,018 lots), with 1,805 (443 lots) databased since the last reporting period (July 27, 2019-October 23, 2019). 52,157 of these specimen records (4,493 lots) are also georeferenced with an additional 732 (42 lots) being evaluated for georeferencing. Of the remainder: 3,627 specimens (442 lots) have field and/or locality numbers but are missing locality data, 688 specimens (36 lots) have locality information that is too vague to make georeferencing meaningful, and 424 specimens (59 lots) have no locality information. In addition, they have georeferenced 30 localities since the last reporting period and now georeferenced a total of 902 Cretaceous localities associated with this project (642 of these georeferenced localities are associated with collection objects cataloged as part of the TCN, 139 localities are corrections of previously cataloged WIS localities (Cedar Creek Anticline), and the remaining 121 georeferenced localities are in the database but not yet linked to a specimen record. They also generated 11 new images.

Regarding the Fort Hays State University portion of the project, led by PI Laura Wilson:

They have databased 4,191 Cretaceous specimens total, with 101 databased since the last reporting period. 4,191 of these specimen records are also georeferenced. In addition, they have

georeferenced 1 locality since the last reporting period and now georeferenced a total of 706 Cretaceous localities associated with this project. They also generated 682 new images.

Regarding the University of New Mexico (UNM) portion of the project, led by PI Cori Myers (CM):

They have databased 17,875 Cretaceous specimens total (1,560 specimen lots). 16,649 specimens of these specimen records (1,400 specimen lots) are also georeferenced. In addition, they have georeferenced 2 localities since the last reporting period and now georeferenced a total of 401 Cretaceous localities associated with this project. They also generated 161 total images and 107 new images.

Regarding the University of Texas portion of the project, led by Rowan Martindale and Lisa Boucher with major participation from Liath Appleton

they have 23,866 Cretaceous cataloged records, representing ~80,000 specimens total. Of the total number of specimen records, 23,738 have been georeferenced.

In addition, they have now georeferenced a total of 5,663 Cretaceous localities (out of 5,709 total) associated with this project (104 localities georeferenced since our last report). There are 46 localities that have not been georeferenced for various reasons.

They generated 1,131 new images since our last report. The total number of images attached to our Specify database is 7,051.

They also contributed several images to the Digital Atlas of Ancient Life including 36 Cretaceous holotypes and 62 Cretaceous echinoids. In the Spring they will continue to image, and will support both graduate and undergraduate students for this purpose.

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

Share and Identify Education and Outreach (E&O) Activities:
Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman (BSL), BSL is working with programmer Rod Spears on one of the apps that is going to be created associated with the project. This app is an update to the original version Digital Atlas of Ancient Life App that adds in our content from the Cretaceous Atlas of Ancient Life and will work for both iPhone and Android. The iPhone version of the App is in its final testing stages and will be published soon. The Android version is currently undergoing its secondary round of testing.

BSL continues to work on the next chapter of the Digital Encyclopedia of Ancient Life (DEAL) along with Jon Hendricks from the Paleontological Research Institution (PRI) (discussed also as part of the PRI update). The chapter focuses on “Evolution and the Fossil Record”.

Regarding the Paleontological Research Institution portion of the project, led by PI Jonathan Hendricks

Efforts at the Paleontological Research Institution (PRI; PI Hendricks) have continued to focus on development of outreach products related to the Digital Atlas of Ancient Life project (homepage: https://www.digitalatlasofancientlife.org/), including content development for the Digital Encyclopedia of Ancient Life, Virtual Collections, and the Cretaceous Atlas of Ancient Life.

Digital Atlas of Ancient Life Homepage

The Digital Atlas of Ancient Life homepage recently received a stylistic overhaul to improve presentation and usability: https://www.digitalatlasofancientlife.org/

Digital Encyclopedia of Ancient Life

The online, open access Digital Encyclopedia of Ancient Life (DEAL) paleontology textbook continues to grow and there are several noteworthy additions since the last update:

First, PRI Research Scientist Dr. Elizabeth Hermsen—as part of her NSF-supported research—is developing DEAL chapters on modern plant structure and development, as well as paleobotany. Since the last report, she has developed four additional pages related to the large land plant chapter that she is writing. These include:

• Origin of Land Plants: https://www.digitalatlasofancientlife.org/learn/embryophytes/land-plant-origins/
• Greek & Latin in Botanical Terminology: https://www.digitalatlasofancientlife.org/learn/embryophytes/botanical-terminology/
• Angiosperm Life Cycle: https://www.digitalatlasofancientlife.org/learn/embryophytes/angiosperms/angiosperm_life_cycle/
• Angiosperm Fruits: https://www.digitalatlasofancientlife.org/learn/embryophytes/angiosperms/fruits/

Second, PRI Science Communication Assistant Jaleigh Pier has developed an all new, multi-page chapter on the Phylum Brachiopoda, which can be accessed at: https://www.digitalatlasofancientlife.org/learn/brachiopoda/

Third, a “cookbook-style” chapter written by former PRI Digitization Assistant Emily Hauf on the methodology of photogrammetry, which we have used to create 3D models of fossils, is available at: https://www.digitalatlasofancientlife.org/methods-techniques/photogrammetry/

Fourth, PI Hendricks very recently shared a new page for the Phylum Cnidaria chapter that focuses upon fossil and modern scleractinian corals: https://www.digitalatlasofancientlife.org/learn/cnidaria/anthozoa/scleractinia/

Finally, PIs Hendricks and Lieberman (University of Kansas) are continuing to work on the “Evolution & The Fossil Record” chapter of DEAL. It is now ~90% finished (including completed sections on natural selection, species and species concepts, speciation, and punctuated equilibria and stasis).

Google analytics information for the DEAL is also included as an attachment.

Virtual Collections

As part of the Digital Atlas project, PRI staff are creating curated “Virtual Collections” of specimens derived from 3D photogrammetry models of PRI specimens. We envision these Virtual Collections to being akin to the physical drawers of specimens that an instructor might place on a bench during a paleontology laboratory exercise. Not all instructors have access to such physical collections, however, and we see these virtual equivalents as the next best thing. They can also be used in online courses and students can additionally use them to study at home.

Since the time of the last report, they have added virtual collections pages on Stromatolites, Foraminifera, Bryozoans, Annelids, Graptolites, and Plants. With these updates, we now have nearly complete coverage of all major groups of macrofossils. All of the Virtual Collections may be accessed at: https://www.digitalatlasofancientlife.org/vc/

Further, they have continued to greatly increase the total number of 3D models incorporated into the Virtual Collections (as well as some Digital Encyclopedia pages) and made available for free download on our SketchFab page (https://sketchfab.com/DigitalAtlasOfAncientLife/models). In total, 503 models are currently available, making this one of the largest collections of photogrammetry models of fossil specimens available online.

Cretaceous Atlas

PRI Science Communication Assistant Jaleigh Pier has worked very hard over the past several months to help with finalizing the Cretaceous Atlas of Ancient Life (www.cretaceousatlas.org), which with the Digital Encyclopedia of Ancient Life, was one of the two major broader impacts associated with PRI’s component of the Cretaceous World TCN.

Species-level pages are now posted for 763 Cretaceous species from the ancient Western Interior Seaway, up from 521 at the time of the last report. Further, species distribution maps have been created and added for nearly all of these species based on data downloaded from iDigBio (maps were created in R).

While in the future they envision the possibility of adding more taxa to the Cretaceous Atlas, effectively this component of the project is now complete, which represents the accomplishment of a major project goal.

Presentations for Teachers

On October 5, PI Hendricks presented on educational resources associated with the Digital Atlas project to several dozen middle- and high-school science teachers as part of PRI’s Teacher Resource Day event. The same presentation will be given as part of a workshop on November 3 to another group of K-12 teachers at the 2019 Science Teachers Association of New York State (STANYS) conference in Rochester, New York.

Social Media

Social media numbers:
• The Digital Atlas Twitter account (@PaleoDigAtlas) currently has 1,284 followers.
• The new Digital Atlas Facebook account (@PaleoDigAtlas) currently has 152 follows.
The Digital Atlas Sketchfab account has 503 models posted and 233 followers.

Google Analytics
DEAL-Stats-Oct2019.pdf

Other Progress (that doesn't fit into the above categories):
Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman (BSL), one of BSL's graduate students, Julie Taylor, gave a talk on using GIS animations to consider patterns of changes in ammonite distribution and abundance through time in the Western Interior Seaway at the Geological Society of America Annual meeting in Phoneix, AZ.

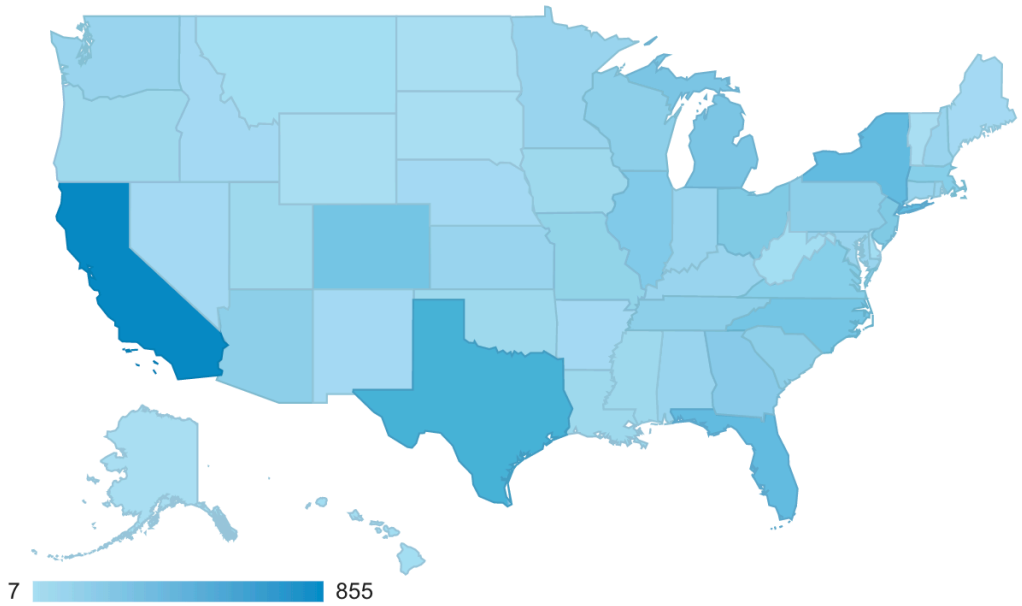
Finally, we are in the midst of conducting a search for a new collections manager and hopefully will have someone in by the start of 2020.

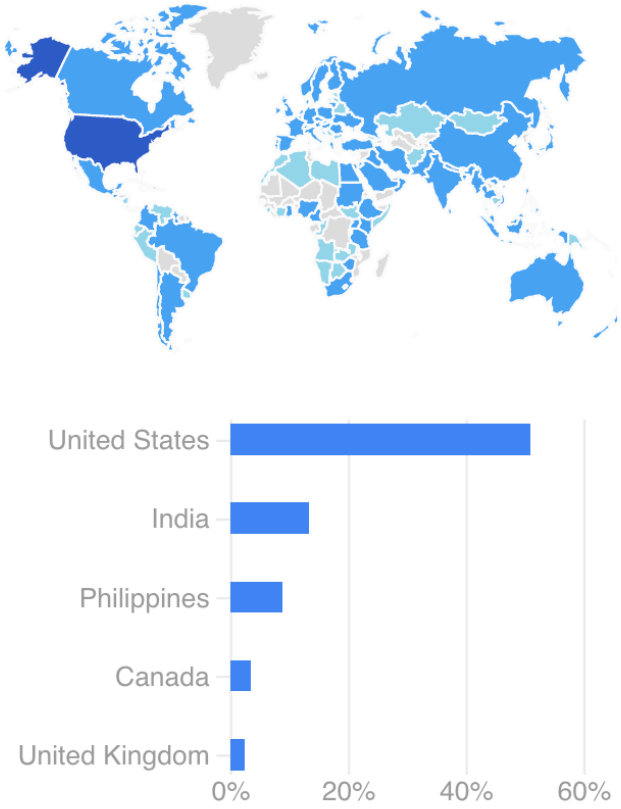
Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1567

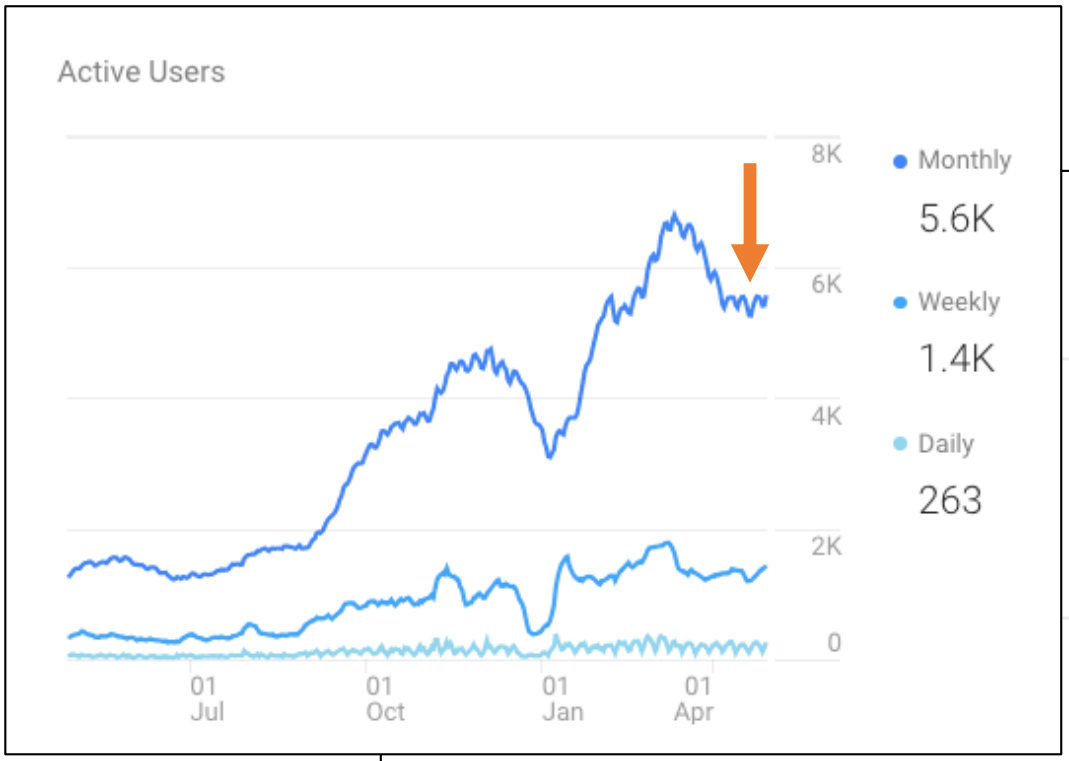
Digital Encyclopedia of Ancient Life



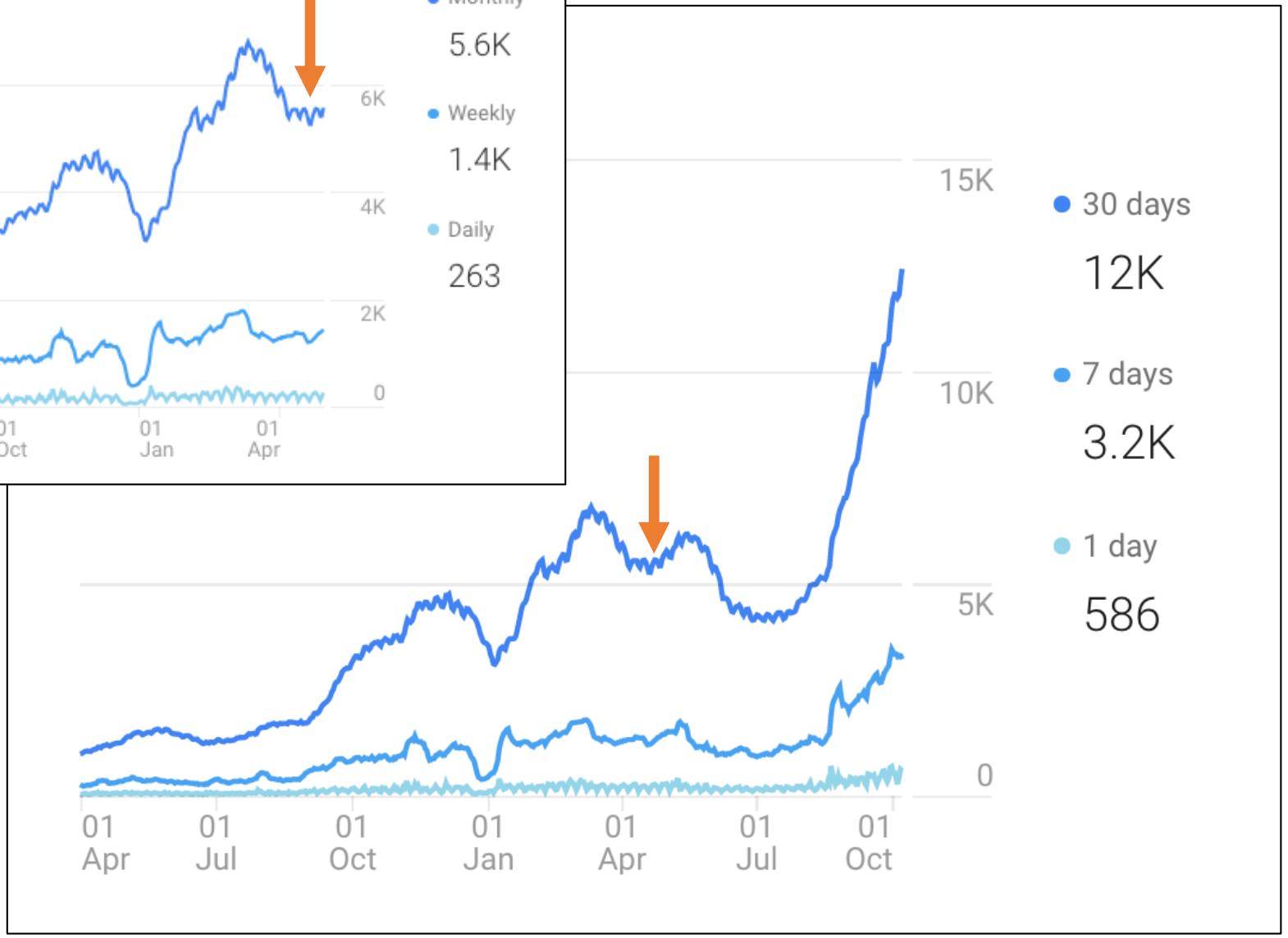


Visitors over the past 30 days.

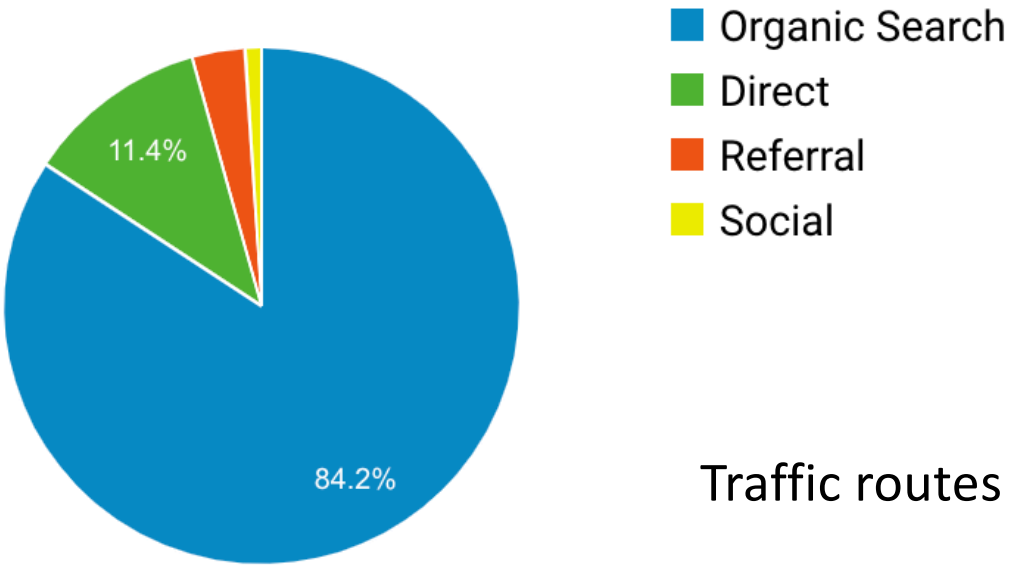
Digital Encyclopedia of Ancient Life



Majority of visits are a result of organic searches.



Digital Encyclopedia of Ancient Life



Traffic routes over the past 30 days.

1	Organic Search	10,530
2	Direct	1,425
3	Referral	417
4	Social	128

Digital Encyclopedia of Ancient Life

Most frequent organic Google searches that led to Digital Encyclopedia pages over the past month

1.	geological time scale	550 (16.92%)
2.	geologic time scale	346 (10.64%)
3.	geological time scale eras	88 (2.71%)
4.	time periods in order	81 (2.49%)
5.	the fossils are preserved in	55 (1.69%)
6.	4 eras of geologic time oldest to youngest	54 (1.66%)
7.	process of fossilization	41 (1.26%)
8.	fossilization	37 (1.14%)
9.	rugose coral	33 (1.02%)
10.	fossilization proce s	30 (0.92%)

Current Google rank for those search terms

Geological Time Scale

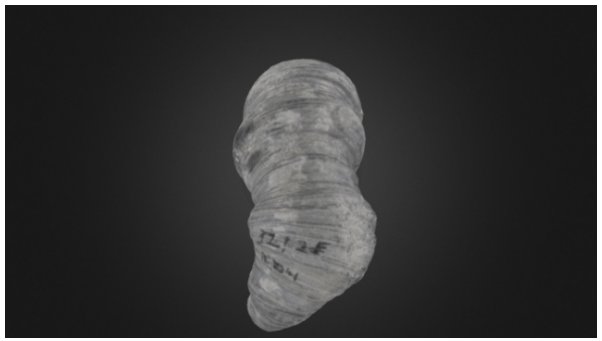
1. Wikipedia
2. Geol. Soc. of America (GSA)
3. geology.com
4. britannica.com
5. Digital Atlas
6. Berkeley / UCMP

Fossilization

1. Alamo Impact Project
2. Live Science
3. Wikipedia
4. Digital Atlas
5. Virtual Fossil Museum

Rugose Coral

1. Wikipedia
2. Digital Atlas
3. Berkeley / UCMP



Published on *iDigBio* (https://www.idigbio.org)

Submission #1568

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by kds15e
Monday, November 4, 2019 - 10:37
75.128.64.143

TCN Name:
Capturing California's Flowers: Using Digital Images to Investigate Phenological Change in a Biodiversity Hotspot

Person completing the report:
kds15e@my.fsu.edu

Progress in Digitization Efforts:
see attached report

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

Identify Gaps in Digitization Areas and Technology:
see attached report

Share and Identify Opportunities to Enhance Training Efforts:
see attached report

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
see attached report

Share and Identify Opportunities and Strategies for Sustainability:
see attached report

Share and Identify Education and Outreach (E&O) Activities:
see attached report

Google Analytics

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

Attachment 1
November2019QuarterlyReport.pdf

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1568

CALIFORNIA PHENOLOGY TCN – QUARTERLY REPORT – NOVEMBER 2019

Assembled by Katie Pearson and Jenn Yost, November 1, 2019

Progress in Digitization Efforts:

All institutions are continuing to image specimens or have achieved their imaging goals and have moved on to image processing, transcription, and/or georeferencing. Figure 1 shows the distribution of unprocessed, barcoded/processed, and imaged target specimens per institution as of November 1, 2019. To date, five institutions (BSCA, CSUSB, LOB, SFV, and SJSU) have imaged their entire collections, and two institutions (OBI, UCSB) have surpassed their digitization goals and have continued to image.

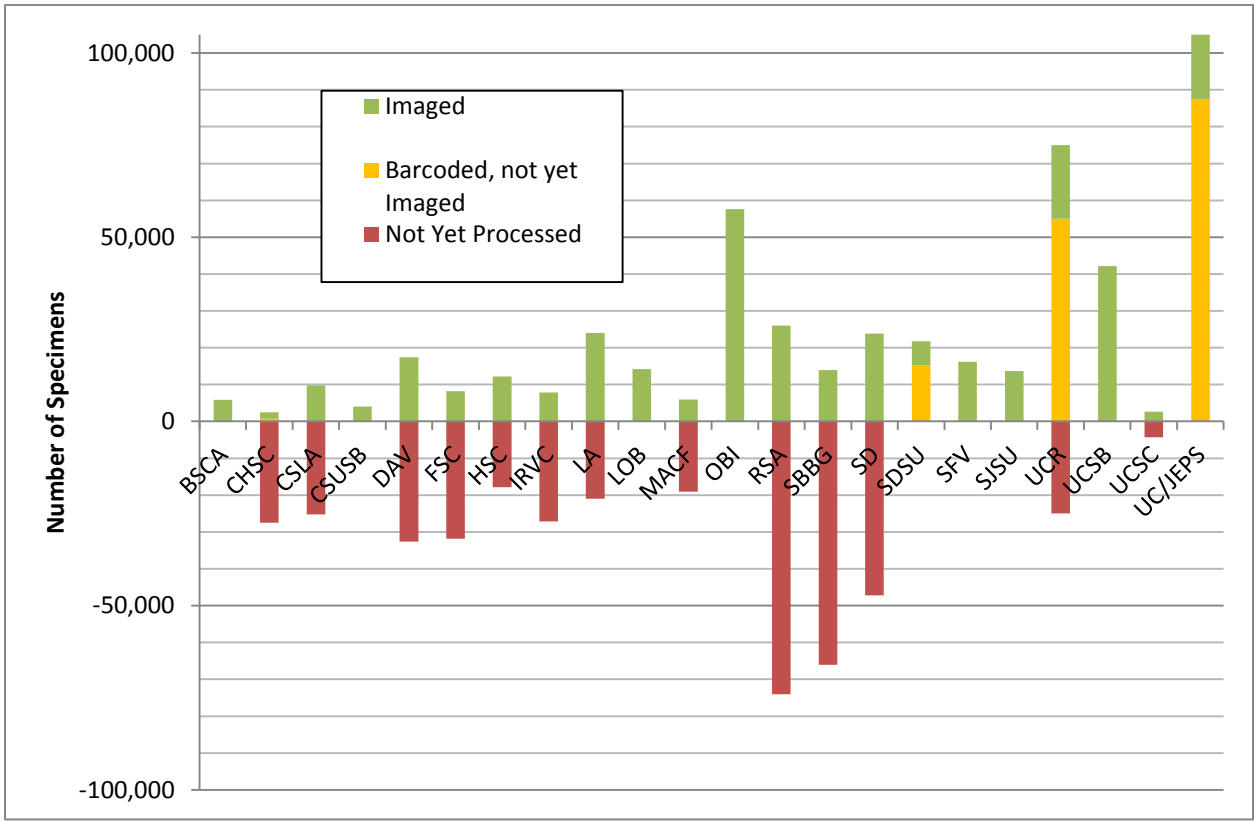


Figure 1. Digitization progress, in terms of number of specimens imaged, barcoded, or not yet imaged. Bars above the zero line indicate specimens that have been processed in preparation for imaging or have been imaged. The green portions of these bars represent the number of specimens that have been imaged. Red bars below the zero line indicate the number of target specimens (i.e., specimens to be imaged as part of the CAP TCN) that have not yet been pre-processed or imaged. These numbers do not indicate transcription, georeferencing, or phenological scoring progress.

Four institutions have created expeditions on Notes from Nature to engage citizen scientists in transcribing several thousand imaged specimens. Two expeditions were completed in October 2019 as the result of the WeDigBio event, resulting in the transcription of 2594 records that were then migrated into the CCH2 data portal.

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:

Two webinars were held to communicate new developments and outreach opportunities. Abby Benson, the U.S. Node Manager for GBIF, led a webinar to introduce CAP participants to GBIF on September 4th, 2019. Five CAP TCN members participated in this webinar. Libby Ellwood represented WeDigBio to 10 CAP TCN participants in a webinar held September 18th, 2019. All webinars were recorded, and recordings were posted on YouTube and linked to the project website.

A new version (3.0) of the comprehensive Symbiota/CCH2 portal guide was developed and disseminated to all collaborators. It is also available on the project website. This new version includes coverage of data cleaning, specimen management, and other tools that were not described in versions 1 or 2.

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

Lead PI Yost, the PM, and collaborator Nazaire attended the ADBC Summit on October 2nd-3rd and benefited from the sharing of best practices and ideas from other institutions and TCNs.

Two new herbaria, JROH and MCCC, are now managing their data live in the CCH2 portal, benefiting from data management, data cleaning tools, and support from the data manager and PM.

CAP TCN leadership collaborated with Oregon State University and six additional institutions to submit a PEN proposal to enhance digitization across the entire California Floristic Province, a biodiversity hotspot. If funded, this PEN would enable the digitization of approximately 148,000 specimen records.

The CAP TCN is coordinating with our Data Advisory Committee to prepare for 2020 conferences and meetings. Lead PI-Yost and the PM plan to submit a workshop proposal for the Ecological Society of America meeting that will introduce participants to the many types of available phenological data and how they can be integrated using, e.g., the Plant Phenology Ontology.

Share and Identify Opportunities and Strategies for Sustainability:

The new workflow for web-hosting images on CyVerse was officially rolled out to CAP TCN collaborators. The new protocol was disseminated to all CAP institutions, and the PM has worked with institutions on troubleshooting various problems during the transition.

Share and Identify Education and Outreach (E&O) Activities:

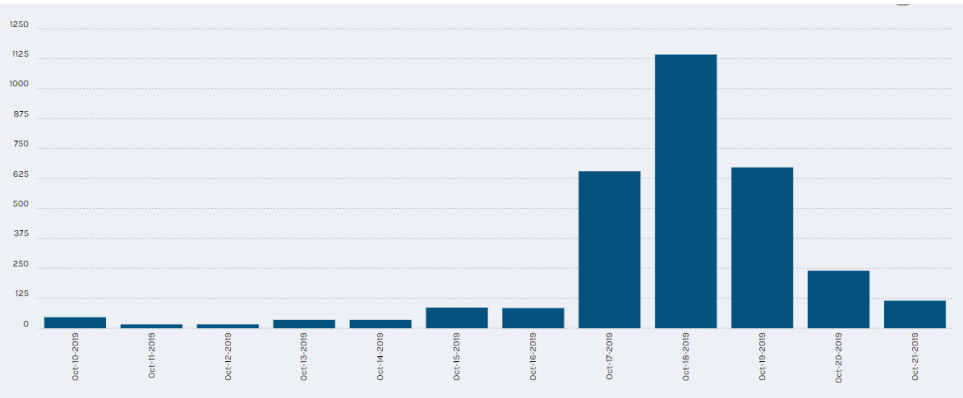
An article introducing the CAP TCN, its goals, and its outreach efforts was accepted for publication in the peer-reviewed journal *Madroño*. This paper is currently in press and will be published as open access.

The PM shares updates on the project and phenology-related news via the network Twitter account (@CalPhenologyTCN).

A new blog, *The ReCAP*, was developed as an outreach tool to share stories from herbaria and offer announcements, such as CAP-related events (https://www.capturingcaliforniasflowers.org/blog-recap). Two blog posts were published in October 2019.

Two Notes from Nature (NfN) expeditions were launched, one in September 2019 featuring the CSU Long Beach and CSU Los Angeles specimens, and one in October featuring UC Irvine specimens. Blog posts associated with each of these specimens were developed and disseminated on the Notes from Nature blog (https://blog.notesfromnature.org).

This year, the CAP TCN participated in WeDigBio from October 17th-20th. The CAP Network hosted ten on-site events that engaged over 160 volunteers, including students and California Native Plant Society (CNPS) members. More volunteers participated online in CAP NfN expeditions. Over the course of four days, volunteers completed 2,708 transcriptions, finishing two Notes from Nature expeditions. A snapshot of digitization progress (in terms of transcriptions per day) is shown in the graph below.



Lead-PI Yost and the PM summarized CAP TCN progress at the ADBC Summit on October 2nd, 2019. At the Southern California Botanists annual symposium, the PM gave an invited talk, and collaborator Rebecca Crowe presented a poster on digitization at the UC Irvine Herbarium (citations below).

- Crowe RE and Bowler PA. 2019. Reopening the UCI Herbarium (IRVC). [Poster]. 45th Annual Southern California Botanists Symposium New Frontiers in Botany: Discoveries and Emerging Tools. 5 October. Rancho Santa Ana Botanic Garden, Claremont, CA.
- Pearson KD. 2019. Old plants, new tricks: Phenological revelations from herbarium specimens. 45th Annual Southern California Botanists Symposium New Frontiers in Botany: Discoveries and Emerging Tools. 5 October. Rancho Santa Ana Botanic Garden, Claremont, CA.

The CAP TCN was featured in a news article at CSU Long Beach (http://www.csulb.edu/news/article/universitys-plant-collection-now-part-of-national-database), and the WeDigBio events at Cal Poly SLO were highlighted in the Cal Poly Report (https://calpolynews.calpoly.edu/cpreport/2019/oct_30).

Published on *iDigBio* (https://www.idigbio.org)

Submission #1569

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by EPICC
Tuesday, November 5, 2019 - 16:33
128.32.154.17

TCN Name:
Documenting Fossil Marine Invertebrate Communities of the Eastern Pacific - Faunal Responses to Environmental Change over the last 66 million years

Person completing the report:
aadineen@berkeley.edu

Progress in Digitization Efforts:
As of 10/30/19, the TCN has fully curated and computer cataloged 1,842,407 specimens (113% of goal) and made 688,765 of these specimens (41% of goal) available in the iDigBio portal. The TCN has photographed 130,630 specimens (156% of goal) and georeferenced 32,248 localities (98% of goal). LACM reports that their type collection is now undergoing data cleaning, including improved bibliographic referencing and preparation for imaging. This will ultimately result in another ~5k specimen records and images available to aggregators within 12 months.

Share and Identify Best Practices and Standards (including Lessons Learned):
UCMP has found that hiring the same undergraduate students for EPICC as previous semesters saves time for digitization, as the students have already been taught best practices and curatorial techniques.

Identify Gaps in Digitization Areas and Technology:
Our new PEN, the Academy of Natural Sciences of Philadelphia (ANSP), reports that they do not have a real, working, relational database at this point. They are currently discussing moving to a modern museum-wide collections database (most likely Specify or Arctos). In the meantime, they are using Excel, as the Filemaker database they inherited is out of date, non-relational, and needs major work in terms of data-cleaning. ANSP is waiting on updates from the museum president about a timeline for the move to a new database before they make a decision for how to proceed for the IP collection. UO also reports that they are currently working with the Specify IT department to figure out why the attachment photographs are not uploading to their online server and to iDigBio.

Share and Identify Opportunities to Enhance Training Efforts:
CAS has four high-school interns currently participating in the project by cataloging and digitizing their Cenozoic Santa Cruz material. The interns will compare the taxa represented in CAS's collections to that of the published literature (primarily USGS publications of species occurrences of the Purisima Fm.), and present the results at AGU next month. UO reports that they've trained their undergrad workers on cataloging specimens and on Excel data management strategies. ANSP

currently has three undergraduate Drexel students (two part time collections assistants and one work-study), and one recent Drexel B.S. graduate (now a half-time collections assistant) working on EPICC. The students have recently been trained on specimen photography, and the recent grad has been trained on and assisting with databasing. UCMP has also re-hired 6 undergraduate students to continue their work cataloging, labeling, and photographing EPICC specimens in the Fall and Spring semesters.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
LACMIP has contributed towards the development of a TCN proposal to digitized primarily eastern Pacific marine invertebrates. Existing EPICC-TCN staff at LACMIP are senior personnel on this proposal and will aim to incorporate workflows and develop analyses of both paleo and neontological datasets if funded. ANSP has two students working on EPICC have partial funding from the NSF program Louis Stokes Alliance for Minority Participation at Drexel University (NSF HRD 1408052).

Share and Identify Opportunities and Strategies for Sustainability:
In order to sustain collaboration and maintain good digitization practices, the EPICC TCN held their fifth annual meeting at the Los Angeles Museum of Natural History, September 14-15, 2019. Twenty representatives from 9 institutions attended, as well as a new unfunded partner, the San Diego Natural History Museum. Topics discussed include challenges going into Year 5, potential manuscripts, upcoming meetings, and how to manage and groom our data for inclusion into future research projects.

Share and Identify Education and Outreach (E&O) Activities:
PRI's Rob Ross and Don Haas each gave talks about EPICC at the GSA Annual Meeting in Phoenix (September 22-25, 2019), and also used EPICC as an example for a topical session they hosted. UCMP spent a day in August at the site for second Virtual Field Experience (VFE; Central CA Coast), taking photographs and interviewing local experts (i.e., Charles Powell, Wayne Thompson) for inclusion on the website. LACIMP also hosted 15 teachers from California State University, Dominguez Hills California STEM Institute for Innovation and Improvement, who worked on aspects of pre-digitization with LACMIP staff.

Google Analytics

Other Progress (that doesn't fit into the above categories):
LACMIP reports that initial dataset to be made available via IPT has been quality controlled. Upload to iDigBio/GBIF will happen within days-weeks.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1569

Published on *iDigBio* (https://www.idigbio.org)

Submission #1570

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by djbarroso
Tuesday, November 5, 2019 - 16:50
192.17.34.169

TCN Name:
The Microfungi Collections Consortium: A Networked Approach to Digitizing Small Fungi with Large Impacts on the Function and Health of Ecosystems

Person completing the report:
barroso@illinois.edu

Progress in Digitization Efforts:
• Imaging of Iowa State University fungal specimens is now complete (Sept. 3rd, 2019). In 14 months, 12,653 specimens were imaged, represented by 21,103 images. The specimens were retrieved by Curator Deb Lewis on October 29th-30th, 2019, and taken back to ISC.

Share and Identify Best Practices and Standards (including Lessons Learned):
• Nothing new to report.

Identify Gaps in Digitization Areas and Technology:
• Nothing new to report.

Share and Identify Opportunities to Enhance Training Efforts:
• Nothing new to report.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
• Collaboration with UARK on Myxomycota project is ongoing (with Steve Stevenson); 22,693 records (21,612 specimen-based, and 1,081 observation-based) from 18 western U.S. states were pulled from MyCoPortal for their use (August 22nd, 2019).

• The Mushroom Observer dataset on MyCoPortal was complemented, by adding links out to 587,000 pre-existing thumbnails on the Mushroom Observer servers. It was therefore not necessary to have to build these images locally on MyCoPortal (finished August 28th, 2019).

• In addition to the Mushroom Observer thumbnail images mentioned above, another ~363,000 thumbnail images were built or refreshed on MyCoPortal, for approximately 10 different collections (most notably, 44,000 for MICH and ~305,000 for NYBG). This was done over the course of August 2019, enhancing the value of the portal and the user experience it provides.

• The data snapshot for the U.S. National Fungus Collections (BPI) was updated. This added

17,910 new records, and complemented another 678,548 records with collection date information which was formerly missing. The total number of BPI records on MyCoPortal now amounts to 790,460 (September 3rd, 2019).

• Imaging of Iowa State University fungal specimens is now complete (Sept. 3rd, 2019). A total of 12,653 specimens were imaged over the course of 14 months (having begun July 18th, 2018), represented by 21,103 images, with corresponding records (skeletal or better). The specimens were picked up by Curator Deb Lewis on October 29th-30th, 2019, to be taken back to the ISC Herbarium.

• A new presence was created for the Fungal Records Database of Britain and Ireland (British Mycological Society observations), adding 1,085,628 new observation records. This brings the grand total of records on MyCoPortal to 6,331,618. (September 12th, 2019).

• MICH collection was updated to their latest IPT data, published August 2019. This added 828 new records to the MICH collection dataset (September 13th, 2019).

• The Harvard University Herbaria (HUH) snapshot was updated on MyCoPortal, adding lichen records and increasing numbers from ~75,000 to ~104,000, via the Harvard IPT (Sept. 14th, 2019). The data were also further cleaned and formatted to fit the Symbiota format. ~70,500 images were also added as Associated Media (October 18th, 2019)

• Andy Miller and Diego Barroso attended the IX iDigBio ADBC Summit 2019 in Gainesville, FL (Oct. 1 – 4, 2019), representing MyCoPortal.

• The Catalog Number format for records from the New York State Museum was updated on MyCoPortal, per their request, in order to match their in-house database. This will make their workflow easier, and will also promote more frequent updates to their database snapshot on MyCoPortal (October 7th, 2019).

• A new presence was created for the specimen-based collection of the Institute of the Industrial Ecology Problems of the North of Kola Science Center of the Russian Academy of Sciences. This collection, based on the CRIS system (Cryptogamic Russian Information System), added ~1,100 records to MyCoPortal (October 12th, 2019).

• A new presence was added for the observations-based CRIS (Cryptogamic Russian Information System) collection, adding 20,518 new records to MyCoPortal. These records are based not only on observations, but also on the literature (published papers), and surveys (October 12th, 2019).

• A presence was created on MyCoPortal for the new observations-based collection of the Malta Mycological Association (October 14th, 2019).

• The observations-based collection of the Russian Yugra State University (YSU – FreDY) was added to MyCoPortal. In addition to observations, this collection also includes records based on the literature (published papers), and surveys. This collection added 11,779 records to MyCoPortal. (October 17th, 2019).

• MyCoPortal has been approached by Carol Buck from the State Museum of Pennsylvania, and by other representatives of the Pennsylvania DCNR, who have expressed an interest in joining MyCoPortal and contributing data (October 18th, 2019).

Share and Identify Opportunities and Strategies for Sustainability:

• Canon 5D Mark II DSLR cameras (which is the equipment that most TCN projects are using for

digitization) are reaching their end-of-life / end of serviceability with the manufacturer, at the end of this year (December 31st, 2019). In light of this, we are now resorting to using a Canon-certified 3rd-party repair service (“Midwest Camera Repair”, at www.midwestcamera.com), based out of Wyandotte, Michigan.

• MyCoPortal is now being migrated away from University of Florida servers, to be hosted on virtual machines managed locally by Phil Anders, bioinformatician at the Illinois Natural History Survey. The new MyCoPortal is currently in its testing phase, and is expected to enter production by the end of 2019.

Share and Identify Education and Outreach (E&O) Activities:

• Andy Miller and Diego Barroso attended the IX iDigBio ADBC Summit 2019 in Gainesville, FL (Oct. 1 – 4, 2019), representing MyCoPortal.

Google Analytics
iDigBio_Google_analytics_report_Q4_2019.pdf

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

• In the process of adding Russian records (which use the Cyrillic alphabet) to MyCoPortal, a bug was found in Symbiota, which would corrupt records containing a certain range of Cyrillic characters. This was reported to Ben Brandt and Ed Gilbert, who promptly fixed the issue, improving the Symbiota base code. (October 11th, 2019).

• Please see MyCoPortal Data Portal Statistics, generated from Google Analytics on November 4th, 2019 (attached).

PRESENTATIONS:

• Miller, A.N., D.J. Barroso, P.J. Anders, and S.T. Bates. 2019. The MyCoPortal: Past, Present, and Future. Abstracts of the Mycological Society of America Meeting. Published online. (Abstr.)

• Miller, A.N., S.T. Bates, and P.J. Anders. 2019. The Symbiota Sequence Submission Tool. Society for the Preservation of Natural History Collections, Chicago, IL, May 29.

Attachment 1

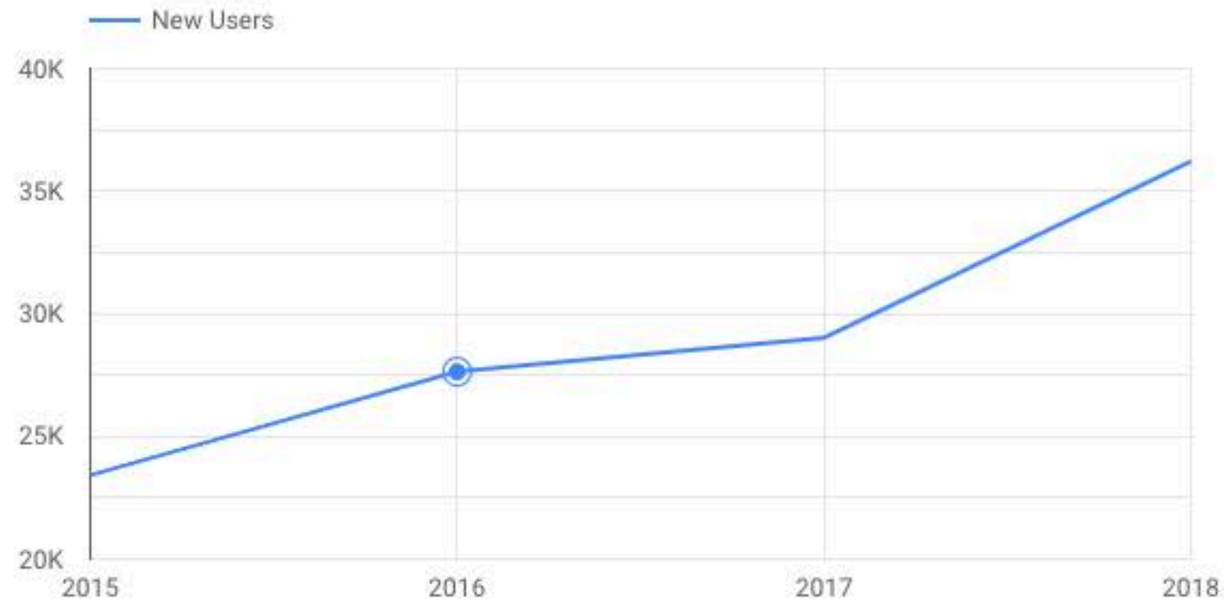
Attachment 2

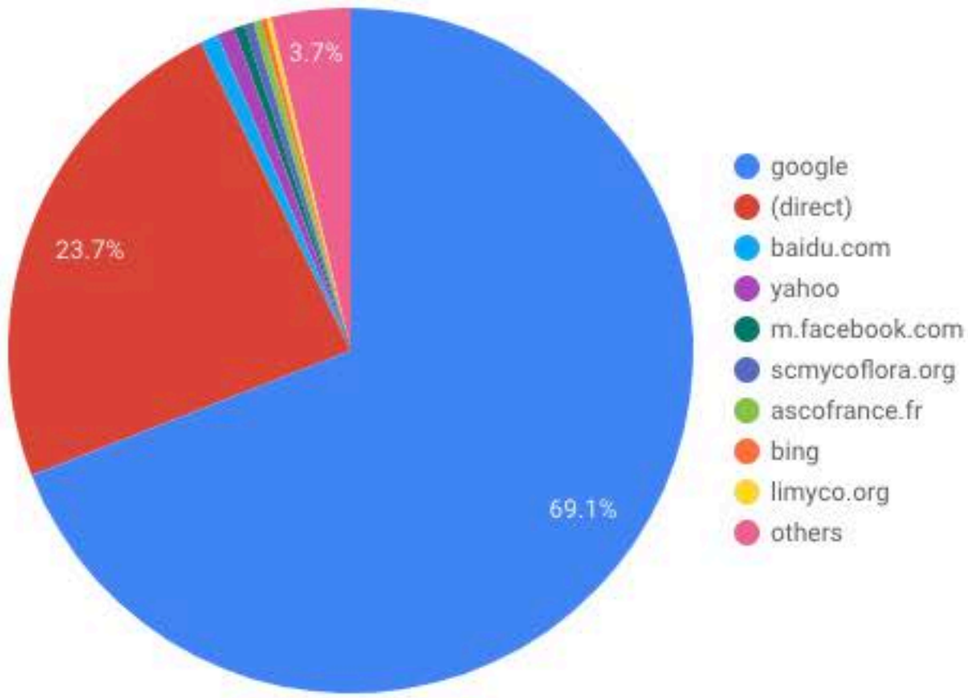
Source URL: https://www.idigbio.org/node/564/submission/1570

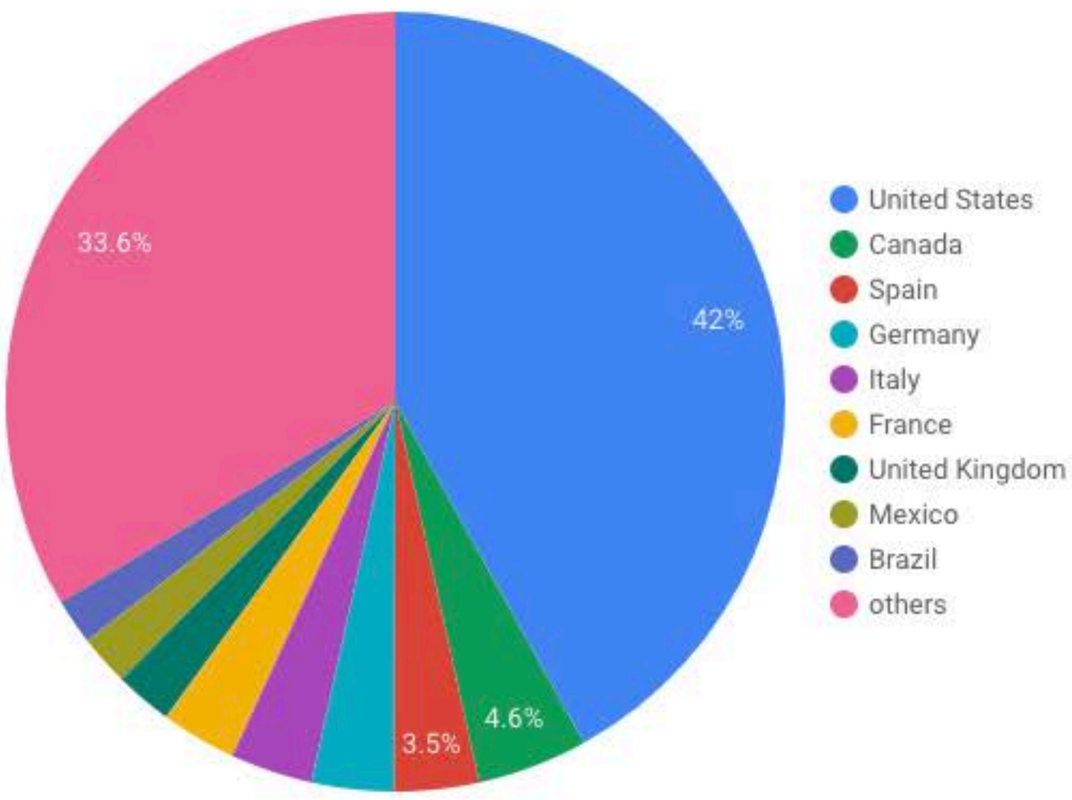
MyCoPortal Data Portal Statistics

www.mycoportal.org **Data from Google Analytics**

Users	New Users	Sessions	Number of Sessions per User	Pageviews	Pages / Session	Avg. Session Duration	Bounce Rate
12,275	11,509	19,218	1.57	51,688	2.69	00:02:45	61.55%







Published on *iDigBio* (https://www.idigbio.org)

Submission #1571

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by psierwald
Tuesday, November 5, 2019 - 17:20
73.50.202.233

TCN Name:
InvertEBase: Reaching Back to See the Future: Species-rich Invertebrate Faunas Document Causes and Consequences of Biodiversity Shifts

Person completing the report:
psierwald@fieldmuseum.org

Progress in Digitization Efforts:
FMNH (2nd year of no-cost extension)
FMNH Invertebrates: Digitization: Ca. 600 previously digitized and nomenclaturally updated lots have been labeled and re-housed by volunteers. Volunteer Jerry Gagne continued imaging Midwestern mollusks (among others).
Georeferencing US land and freshwater mollusks: 19,524 locality records from Illinois and Flor-ida were georeferenced by an undergraduate intern, who received extensive training during the process.
FMNH Insects: At present, over 215,000 North American insect specimen records have been entered into our KE EMu database (representing over 775,000 total specimens databased and barcoded). Data entry of the North American Histeridae pinned collection is complete with over 39,799 records entered representing 52,278 total specimens. Data entry of the North American Coccinellidae pinned collection is 95% complete with 12,087 records entered representing 13,138 total specimens. Digitization of select groups of North American Diptera will began October 1, 2019.
Georeferencing terrestrial North American arthropods – US: 35,765 individual site records of which 55.96% were unique locations were georeferenced. Using GeoLocate and other tools, we were able to successfully georeference 96.11% of the site records at an average speed of 2.86 minutes per record. 30.92% of the records had been previously georeferenced using a number of web applications, GPS and maps. We decided to test the accuracy of previous web applications and found that 21.91% of previously georeferenced sites were incorrect.
In Canada (excluding Quebec), we had 3,075 individual site records of which 89% were unique locations. Using GeoLocate and other tools, we were able to successfully georeference 84.08% of the site records at an average speed of 4.82 minutes per record.
We georeferenced 32 Mexican states for a total of 3,072 individual site records of which 66% were unique locations. Using GeoLocate and other tools, we were able to successfully georefer-ence 87% of the site records at an average speed of 3.47 minutes per record.

UMMZ, Michigan, Invertebrates (grant ended, final report pending): A total of 25 students have participated in specimen digitization since October 2018. This mollusk data-entry team included a

local high school volunteer, a Eastern Michigan University master student, 19 UM undergraduates and four UM masters. Data entry was mainly focused on Stylomatophoran land snail families, especially Camaenidae, Gastrodontidae and Clausiliidae. 36,840 new records were added to UMMZ Specify database during 10/26/2018 - 08/26/2019 resulting in a total of 105,343 records added since the beginning of this project. Currently, more than 164,000 specimen records are available at iDigBio and GBIF and 45% of them have coordinates.

UMMZ, Michigan Insects: Erika Tucker was hired as UMMZ Insect Collection Manag-er/Research Scientist and started the position in June 2018. An IPT server was created for UMMZ Insect Specify database and now available on the LSA IPT server with the help of the University IT specialist John Torgersen. Since April 2019, UMMZ Insect database is available at SCAN Symbiota, iDigBio and GBIF portals (>200,000 specimen records).

DMNH (2nd year of no-cost extension): We continue to update the taxonomy, locality data, and georeferencing of the remaining landsnails. There are now 76,091 records in our local Specify database and served on InvertEBase.org, which translates to over 835,000 digitized specimens (based on 11 specimens/lot). This past year more than 33,000 DMNH records were served online for the first time. We have now georeferenced 38,863 specimen lots, which represents 51% of our on-line data.

CMNH (2nd year, no-cost extension): In the quarter of August-October 2019 6,715 Lepidop-tera specimens were entered in to the database. All Lepidoptera have now been assigned bar-codes and await final transcription and data entry. Digitization of the Coleoptera began in June. The work study students finished their annual contracts in May so progress slowed over the summer. Majewski has been working through the backlog of specimen data that accumulated during the technical issues when DEA was offline. A total of 123,794 specimens have now been digitized for the collection and are publically available.

Auburn (grant ended, final report pending): Digitization under the grant has ended. Recently, all Auburn records were made available for the first time online on IPT, iDigBio and GBIF: Mollusks: 20,995; Invertebrates: 8,853; and terrestrial arthropods: 97,931 occurrence records, on SCAN.

Frost (grant ended, final report pending): The project resulted (so far) in >130,000 occurrence records on the SCAN Symbiota portal, representing, 51% of which are georeferenced. These records are dominated by beetles (Coleoptera), the most diverse insect order, but we added substantial number of Diptera, Hymenoptera, and minor orders (Mecoptera, Plecoptera, etc.) We also finished imaging our entire dry Odonata collection (approximately 39,000 images, representing close to 100,000 specimens) and imaged another 10,000 specimens and lots, primarily odonate larvae, other aquatic taxa (Plecoptera), and spiders (Araneae). The images are in TaxonWorks, where about 26% have been transcribed and georeferenced, and not yet available in SCAN. We've imaged about 50% of our spider collection (2,550 lots photographed so far), and they are now available for transcription in TaxonWorks. We have just started digitizing the larval Odonata collection. Altogether, these records bring us very close to our originally proposed goal of 260,000 specimens digitized. Our taxonomic focus changed from the original proposal, away from aphids and more towards Diptera and Anthophila, in part to facilitate research on mimicry and pollinators.

PEN grant 16-01700 (grant ended, final report pending): Chicago Academy of Sciences
The workplan in this subaward comprised the following activities: support the identification and taxonomic update of Midwest arthropod specimens and mollusk specimens in the collections of the Chicago Academy of Sciences; imaging the mollusk type specimens of CAS at FMNH; im-aging Midwest freshwater and land mollusks for use in the Midwest mollusk picture identifica-tion guide; collaborative production of the Midwest Mollusks picture identification guide.

Taxonomic updates and re-identification: FMNH staff Sierwald, Bieler and Gerber supported the

update of taxonomic names of Chicago Academy of Sciences insect and mollusk specimens. Bieler and Gerber supported the re-identification of CAS mollusk specimens and determining the type status.
Type specimen imaging: FMNH Gerber determined the type status of 60 CAS mollusk speci-mens. He supervised the Field Museum's grant staff DeLaPena, who imaged all the designated mollusks type specimens, generating over 120 edited (stacked) images of 60 mollusk type spec-imen in the CAS collection using FMNH's Microptics imaging equipment. Mollusk specimens are imaged in at least 2 views, lateral view and aperture view, Under this subaward, FMNH staff member Jochen Gerber trained and directed an undergraduate intern and a volunteer to produce 430 high resolution images of US land and freshwater mollusk specimens, partly for use in the Midwest Mollusk identification guide, and online service.
Georeferencing: As part of this subaward, FMNH undergraduate intern A. Ralston was trained in georeferencing using GeoLocate and various online tools. She georeferenced 5,649 site records for Illinois, and 13,784 site records for Florida mollusk specimens of land and freshwater species.
Collections Manager Jochen Gerber (FMNH) collaborated with Dawn Roberts (Chicago Acade-my of Sciences) on two easy-to-use field guides to mollusks of the Chicago area, each covering ca. 20 common species. One guide covers freshwater snails and bivalves, the other land snails and slugs. Both guides will be available on the participating institutions' websites as well as in the form of weather-proof, laminated ID sheets.

PEN grant 17-01842 (grant ongoing): Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: MNA
The Museum of Northern Arizona PIs Stevens and Ledbletter transferred 12 samples of Dip-lopoda and 554 samples of Colorado Plateau land and fresh water mollusks to the Field Museum in November 2018. FMNH Collection Manager J. Gerber checked the completeness of the sam-ples and associated collecting documentation. The mollusk samples were shipped to collabora-tor Dr. S. Clark (Australia) as agreed upon in the scope of work for the subaward. The Diplopoda samples were identified by Sierwald. The mollusks samples were identified by Dr. S. Clark and have been returned to the US. The mollusk and Diplopoda samples will be returned to the Museum of Northern Arizona in November 2019. PI's Sierwald and Bieler will meet with PEN PIs Ledbletter and Stevens in October and November to establish a workflow for uploading the PEN data from the Colorado Plateau to iDigBio, InvertEBase and SCAN.

Share and Identify Best Practices and Standards (including Lessons Learned):
FMNH: nothing to report
UMMZ, Michigan (grant ended, final report pending): nothing to report
CMNH: nothing to report
Auburn (grant ended, final report pending): nothing to report
Frost (grant ended, final report pending): Direct transcription of pinned specimens appears to be the fastest approach to acquire the most relevant data (collecting events, taxon) for our collection. We will use this strategy for all remaining pinned insects except for those taxa that are part of mimicry complexes (some Diptera and Coleoptera species that imperfectly mimic Aculeata), where phenotype data are important for ongoing projects. For specimens in ethanol, imaging followed by transcription is still the most efficient way to go.
PEN grant 16-01700: Chicago Academy of Sciences (grant ended, final report pending): nothing to report
PEN grant 17-01842: Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: nothing to report

Identify Gaps in Digitization Areas and Technology:
FMNH Insects: Continued collaboration with the Lightening Bug project. Goals: fast, automat-ed imaging of pinned insect specimens and labels in place for data transcription
UMMZ, Michigan (grant ended, final report pending) nothing to report

DMNH: nothing to report
CMNH: nothing to report
Auburn (grant ended, final report pending) nothing to report
Frost (grant ended, final report pending) nothing to report
PEN grant 16-01700: Chicago Academy of Sciences
CAS/PNNM (grant ended, final report pending) nothing to report
PEN grant 17-01842: Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: nothing to report

Share and Identify Opportunities to Enhance Training Efforts:
FMNH Invertebrates/Insects: two undergraduate interns participated in georeferencing. A georeferencing training manual is in preparation. The project currently hosts an undergraduate intern from Lake Forest College (college-credit, not funded): pre-curation of darkling beetles in FMNH collections.
DMNH: The DMNH-Widener University collaboration has strengthened over the past two years. PI Shea has co-advised 3 Independent study students who used both physical specimens and digital data to examine 1) whether there is one species of Spirula spirula (Cephalopoda: Spirulidae) with a worldwide distribution, or multiple species; and 2) whether the attached pe-ripheral shells in two species of carrier shell – Xenophora pallidula and Xenophora neozelanica – serve to create a protected area outside and around the animal that could act as a protective feeding zone. In addition to these ongoing independent study projects, PI Shea will co-teach the DMNH-Widener Biology 350: Natural History Collections class again in Spring 2020.
UMMZ, Michigan (grant ended, final report pending) nothing to report
CMNH: nothing to report
Auburn grant ended, final report pending): nothing to report
Frost (grant ended, final report pending): We hosted numerous groups of non-experts in our museum, for programs focused on the relevance of natural history collections and the importance of specimen digitization. We reached approximately approximately 150 people annually, in programs focused on the importance of natural history collections. Examples include: undergraduates enrolled in Principles of Environmental Interpretation course, Art Education graduate students, volunteers from the Penn State Arboretum, Centre County Christian Academy students, Ag LEAP course on ethics in agriculture (for incoming undergrads at Penn State), Autism Support group at Park Forest Middle School, and a tour for KinderCare Pre-K kids. We have also trained more than 40 Penn State students (grad and undergrad) in the relevance and utility of collections data and in the role biodiversity informatics and data standards play in research. The lesson plan is available in GitHub. More directly, we trained 10 people in how to digitize, refine, georeference, and handle specimens in a natural history collection.
PEN grant 16-01700: Chicago Academy of Sciences (grant ended, final report pending): nothing to report
PEN grant 17-01842: Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: nothing to report

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
FMNH : supported PEN grant application by University of Colorado Collection
FMNH Insects/Invertebrates: Collections Manager Jochen Gerber (FMNH) collaborated with Dawn Roberts (Chicago Academy of Sciences) on two easy-to-use field guides to mollusks of the Chicago area, each covering ca. 20 common species. One guide covers freshwater snails and bivalves, the other land snails and slugs. Both guides will be available on the participating institutions' websites as well as in the form of weather-proof, laminated ID sheets.
UMMZ, Michigan, Invertebrates grant ended, final report pending): nothing to report
DMNH: The results of the DMNH-Widener collaboration have been far reaching and include the Widener Class Biology 350: Natural History Collections; three undergraduate independent study students; and a new NSF 1-year implementation grant designed to establish a network of ecology faculty and collections professionals who want to use collections data in Classroom-based

Undergraduate Research Experiences (CUREs). This new collaboration includes a steering committee comprised of iDigBio participants (Soltis, Flemming, Phillips) as well as local mid-Atlantic ecology faculty from Gettysburg College, George Washington University and Finger Lakes Community College. For more details see our website: https://www.delmnh.org/collections-research/bceenet/
CMNH: nothing to report
Auburn (grant ended, final report pending): nothing to report
Frost (grant ended, final report pending): Illinois Natural History Service at University of Illinois, Champaign-Urbana,
PEN grant 16-01700: Chicago Academy of Sciences grant ended, final report pending): nothing to report
PEN grant 17-01842: Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: nothing to report

Share and Identify Opportunities and Strategies for Sustainability:
FMNH Insects/Invertebrates: nothing to report
UMMZ, Michigan, Invertebrates: nothing to report
DMNH: We are exploring how to set up an IPT instance at DMNH to facilitate the sharing of our data with online portals.
CMNH: nothing to report
Auburn: nothing to report
Frost: nothing to report
PEN grant 16-01700: Chicago Academy of Sciences (grant ended, final report pending) nothing to report
PEN grant 17-01842: Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: nothing to report

Share and Identify Education and Outreach (E&O) Activities:
FMNH : received and displayed DMNH-produced "Little Creatures, Big Data" exhibit at several events
FMNH Invertebrates: Collections Manager Jochen Gerber (FMNH) collaborated with Dawn Roberts (Chicago Academy of Sciences) on two easy-to-use field guides to mollusks of the Chi-cago area, each covering ca. 20 common species. One guide covers freshwater snails and bi-valves, the other land snails and slugs. Both guides will be available on the participating institu-tions' websites as well as in the form of weather-proof, laminated ID sheets.
Collections Manager Jochen Gerber gave a specimen-focused presentation at the SPNHC meet-ing in May 2019.
FMNH Insects: active participation in WeDigBio, FMNH collection club continues.
Zoological Museum, Michigan (grant ended, final report pending) received DMNH-produced "Little Creatures, Big Data" exhibit for display at various local events.
DMNH: PI Shea continues to participate in the K-12 E&O working group. The paper that was under development based on the December 2016 meeting at Q?erius, National Museum of Natural History, Smithsonian Institution has been finished and submitted: Flemming A, Phillips M, Shea EK, Bolton A, Lincoln C, Green K, Mast A, Cubeta MA. Using Digital Natural History Collections in K-12 STEM Education. Submitted to the Journal of Museum Education.
In addition, the Exhibit, “Little Creatures, Big Data" was completed and published. This 6-panel exhibit was written and produced by DMNH Collections and Research staff in collaboration with exhibit writer Jane E. Boyd and exhibit designer Stephanie Gleit. One exhibit set was donated to iDigBio at the Florida Museum of Natural History.
CMNH: CMNH participated an Members behind the scenes night and Majewski hosted a table on digitization. Gunter spoke at the Kirtlandia Society delivering a talk “Why Natural History Collections are more relevant than ever” discussing digitization and utility of the meta-data.
CMNH received DMNH-produced "Little Creatures, Big Data" exhibit for display at various local events

Auburn: received DMNH-produced "Little Creatures, Big Data" exhibit for display at various local events
Frost: received DMNH-produced "Little Creatures, Big Data" exhibit for display at various local events
PEN grant 16-01700: Chicago Academy of Sciences: nothing to report
PEN grant 17-01842: Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: nothing to report

Google Analytics

Other Progress (that doesn't fit into the above categories):
FMNH: nothing to report
Zoological Museum, Michigan: nothing to report
DMNH: nothing to report
CMNH: There has been continued technical issues with the database regarding data harvesting. Prior to the technical issues with DEA, data was automatically harvested every Friday and mirrored on iDigBio, SCAN and GBIF. Now data must be manually shared, however this can only be achieved from OSU's end.
Auburn: nothing to report
Frost: nothing to report
PEN grant 16-01700: Chicago Academy of Sciences: nothing to report
PEN grant 17-01842: Museum of Northern Arizona: Biodiversity of the Colorado Plateau, start date: 15 April 2018: nothing to report

Attachment 1
Digitization Exhibit Panels-BL FNL (9).pdf

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1571

Little Creatures, Big Data

Digitizing Natural History Collections

Preserving Nature

For every animal or plant you see at a natural history museum, there are millions more behind the scenes.

- Fish in jars
- Shells in boxes
- Insects on pins
- Birds in drawers
- Plants on paper
- ...and so many more

What are natural history collections?

Examples of animals and plants that are preserved, labeled, and organized so they can be studied—like unique books in a giant library of life.

Where do the animals and plants come from?

All over the world—every continent, every country, every ocean.

Scientists climb mountains, wade in rivers, hike through forests, and even dive under the sea to find them.

Why are there so many?

Scientists need to have many examples of animals and plants to identify and name different species, find out how they are related, and document where they live.

What do the labels say?

A label with each specimen gives its scientific name, who collected it, and where and when it was collected.

These essential pieces of information are the specimen's data. Scientists record these data so the specimen will be useful for study.

What are all these collections for?

Understanding life on Earth—past, present, and future.

Hey Bonnie! Why do scientists call the plants and animals they collect "specimens"?

That's easy, Sammy! A "specimen" is a single plant or animal that scientists use for study or display.

Credits: All photographs from the Delaware Museum of Natural History (DMNH) unless otherwise noted. Boxes of insects (top and bottom): Andy Deans, The Frost Entomological Museum at Pennsylvania State University.

Delaware Museum of Natural History

National Science Foundation

iDigBio Integrated Digitized Biocollections

Invert EBase

This exhibit was produced by the Delaware Museum of Natural History as part of InvertEBase, a digitization project for North American arthropod and mollusk collections funded by the National Science Foundation.

Exhibit team: Liz Shea, Jean Woods, Jane E. Boyd, Stephanie Gleit

Additional photography: Matt McGraw, Alisha Solaiman, Aaron Bond, Rosemary Ginzberg, Leslie Skibinski, Meredith Hatzinikolas, José Leal (Bailey-Matthews National Shell Museum), Andy Deans (The Frost Entomological Museum at Pennsylvania State University), The C.V Starr Virtual Herbarium of The New York Botanical Garden, iDigBio, Natural History Museum of Los Angeles County, NOAA Office of Ocean Exploration and Research, Universidade de Brasília.

Thanks to colleagues who generously provided advice, information, and images.

iDigBio (idigbio.org) is funded by grants from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program (DBI-1115210 (2011-2018) and DBI-1547229 (2016-2021)].

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

InvertEBase (invertebase.org) is a Thematic Collections Network of iDigBio and is funded by National Science Foundation grants to the following collaborative partners:
Auburn University Museum of Natural History, EF 14-01176
Cleveland Museum of Natural History, EF 14-02785
Delaware Museum of Natural History, EF 14-02697
Field Museum, Chicago, EF 14-02667
The Frost Entomological Museum at Pennsylvania State University, EF 14-00993
Museum of Comparative Zoology, Harvard University, EF 14-01450
University of Michigan Museum of Zoology, EF 14-04964

Little Creatures, Big Data

Digitizing Natural History Collections

Big and Small—
We Have Them All

There are billions of specimens in natural history collections all around the world. The variety of specimens in these vast collections is amazing.

Natural history specimens are:

Huge

Skull of a humpback whale

and Tiny

Small spot snails on a dime

Single

Green comma butterfly

and Many

Common violet sea-snails

Rare

Four-leaf white clover

and Common

City or rock pigeon

Wet

Deep-sea squids

and Dry

Sand dollar

Imagine organizing and taking care of all these different specimens.

Natural history specimens come in all shapes and sizes.

You can't put a whale in a drawer with a bunch of shells!

Credits: All photographs from the Delaware Museum of Natural History (DMNH) unless otherwise noted. Shells, header, far left: Meredith Hatzinikolas, four-leaf white clover: Image courtesy of the C. V. Starr Virtual Herbarium of The New York Botanical Garden.

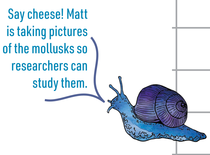
Little Creatures, Big Data

Digitizing Natural History Collections

Data Connects Collections

Look at all the shells! What's going on here?

Say cheese! Matt is taking pictures of the mollusks so researchers can study them.



Real specimens in drawers are essential, but what if someone far away wants to study a specimen? Or analyze specimen data from hundreds of collections around the world?

Scientists can **DIGITIZE** each specimen so its image and data can be shared over the Internet.

Digitization is much more than just taking a picture. There are many steps:

1

IDENTIFY
the specimen

2

LOCATE
where it was collected

3

ENTER THE SPECIMEN'S DATA
into a computer database

4

CHECK
the information for accuracy

5

PHOTOGRAPH
the specimen

6

PUBLISH
the data online

Natural history museums share all these data in a free online catalog called **iDigBio** (Integrated Digitized Biocollections).

iDigBio has data for more than 100 million specimens, and it's growing every day.

Anyone can search iDigBio and download data—no matter where they are.

Credit: Photograph from the Delaware Museum of Natural History (DMNH).

Little Creatures, Big Data

Digitizing Natural History Collections

Big Data for Big Questions

Scientists have collected animal and plant specimens for hundreds of years.

Digitizing these huge collections creates lots of data. We can use these data to answer big questions about how the natural world works and changes over time.

QUESTION

How does climate affect animal populations?

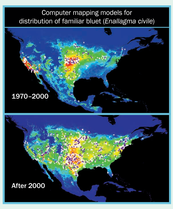
ANSWER

Locations of insect populations followed the changing temperatures across North America.

WHO: Emily L. Sandall, Ph.D. student, and Dr. Andrew R. Deans

WHERE: The Frost Entomological Museum at Pennsylvania State University

WHAT: Digital data from 13 species of damselflies in North America



LEFT: A living familiar bluet damselfly.
RIGHT: Warmer colors on these maps show the warmer habitats these damselflies prefer. The dots show where the insects were collected.

QUESTION

How fast can animal populations change?

ANSWER

Populations of land snails can change appearance in less than 100 years.

WHO: Dr. Małgorzata Ożgo from Poland, with colleagues from Malaysia and the Netherlands

WHERE: Naturalis Biodiversity Center, Leiden, the Netherlands

WHAT: Digitized historical specimens of grove land snails compared to recently collected specimens

TOP: The dark colorform of *Cepaea nemoralis* was common in the past.
BOTTOM: The light colorform is more common now.

QUESTION

Does biodiversity ever change?

ANSWER

Revisiting past collecting sites may reveal changes in the distribution of mollusk species over time.

WHO: Dr. Gary Rosenberg, with students and collaborators

WHERE: The Academy of Natural Sciences of Drexel University, Philadelphia

WHAT: Digital data for marine mollusk specimens collected from the late 1800s to now on the New Jersey coast

A researcher collects mollusks on the beach to build a natural history collection.

Collecting specimens and data helps us to understand biodiversity now and in the future.

Wow! Using natural history collections lets us travel back in time!

We can learn so much from digitized data.

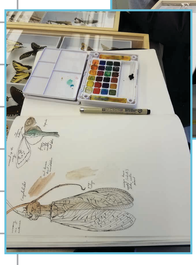
Credits: All photographs from the Delaware Museum of Natural History (DMNH) unless otherwise noted.
Sea slug, header, left: Photo by José Leal, courtesy of the Bailey-Matthews National Shell Museum; maps: The Frost Entomological Museum at Pennsylvania State University.

Little Creatures, Big Data

Digitizing Natural History Collections

Collections Are for Everyone

People of all ages can use natural history collections and digitized data to learn about the natural world. What animals and plants are you curious about?

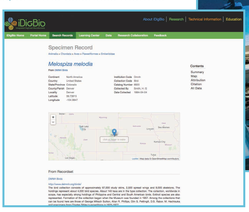


ARTISTS

Art students sharpened their observation and technical skills by drawing insect specimens from the Frost Entomological Museum at Pennsylvania State University.

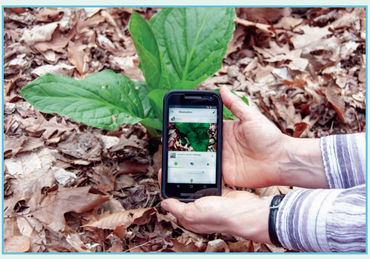
STUDENTS

Undergraduate students from Widener University in Pennsylvania spent a semester at the Delaware Museum of Natural History. They used digital data and specimens to learn about birds, mollusks, and the scientific method.



FAMILIES

Hundreds of volunteers are helping the Natural History Museum of Los Angeles County to survey land snails and find out how urbanization is affecting snails in the region.



Using the iNaturalist app to identify and document a skunk cabbage

AND YOU!

Get Involved

You don't need a science degree to work with digital natural history collections. You can:

- Use the iNaturalist app to collect and share natural history data
- Come to an iDigBio digitizing event
- Volunteer to help digitize specimens in a museum
- And more!

Digital data inspires exploration and discovery of life on Earth.

Get a nature app and be a naturalist in your own neighborhood.

The closer you look, the more you'll find!

Credits: All photographs from the Delaware Museum of Natural History (DMNH) unless otherwise noted.
Drawing: insects, top left: Andy Deans, The Frost Entomological Museum at Pennsylvania State University; screenshot, top right: iDigBio; snail surveying, center: Natural History Museum of Los Angeles County.

Little Creatures, Big Data
Digitizing Natural History Collections

Behind the Scenes at the Delaware Museum of Natural History

Did you know this Museum contains some of the largest shell and bird collections in the country? The specimens come from all over the world.

Our staff build, protect, and preserve our collections with the help of volunteers. We also do research and teach using the collections.

Here are a few of our favorite things.

Liz

We used a remotely operated underwater vehicle to collect this octopus egg case. I'm interested in the diversity of octopuses and squids that live in deep-sea canyons.

Liz Shea, Ph.D., Curator of Mollusks, with a dumbo octopus egg (*Grimpoteuthis* sp.). **INSET:** Dumbo octopuses live 2,000 meters beneath the ocean's surface.

Jean

I study shorebirds like this one that fly up to 16,000 kilometers every spring from South America to the Arctic. We analyze the chemicals in feathers from this species to find out where individuals spend the winter.

Jean Woods, Ph.D., Director of Collections and Curator of Birds, with red knot (*Calidris canutus*). **INSET:** During their spring migration, red knots visit the Delaware Bay, where they eat horseshoe crab eggs.

Alex

Holes on these fossil cowry shells are almost always in the same spot. This tells us that ancient octopuses figured out the best way to attack and eat cowries.

Alex Kittle, Collections Manager of Mollusks, with a fossil cowry shell (*Siphocypraea problematica*). **INSET:** The shell, showing the small hole made by an octopus (marked in red).

Nadinni

I'm one of the many researchers who use the Delaware Museum's collections. My colleagues and I are examining how the changing climate is affecting the breeding biology of tropical birds in South America.

Nadinni Oliveira de Matos Sousa, Ph.D. student in Zoology, Universidade de Brasília, Brazil, photographing eggs. **INSET:** Nests and eggs of vermilion flycatchers from Peru.

Some of our important collections:

More than **2 million** mollusk specimens!

77,000 bird specimens

36,000 bird egg specimens

400 herbarium sheets

6,000 mammal specimens

1,500 insect specimens

Credits: All photographs from the Delaware Museum of Natural History (DMNH) unless otherwise noted.
Dumbo octopus, inset, top left: NOAA Ship *Okeanos Explorer*, NOAA Office of Ocean Exploration and Research; Nadinni Oliveira de Matos Sousa, bottom right: Universidade de Brasília.

Published on *iDigBio* (https://www.idigbio.org)

Submission #1572

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by trehman
Wednesday, November 6, 2019 - 10:42
12.44.89.34

TCN Name:
American Crossroads: Digitizing the Vascular Flora of the South-Central United States (TORCH TCN)

Person completing the report:
trehman@brit.org

Progress in Digitization Efforts:
Please see attached report.

Share and Identify Best Practices and Standards (including Lessons Learned):
Please see attached report.

Identify Gaps in Digitization Areas and Technology:
Please see attached report.

Share and Identify Opportunities to Enhance Training Efforts:
Please see attached report.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
Please see attached report.

Share and Identify Opportunities and Strategies for Sustainability:
Please see attached report.

Share and Identify Education and Outreach (E&O) Activities:
Please see attached report.

Google Analytics

Other Progress (that doesn't fit into the above categories):
None to report.

Attachment 1
2019-11-05_TORCH-TCN_iDigBio-QTR-report-Aug-Oct-2019.pdf

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1572

TORCH TCN — Quarterly Report — August-October 2019

Assembled by BRIT, 5 November 2019

Digitization TCN: Collaborative: American Crossroads: Digitizing the Vascular Flora of the South-Central United States (TORCH TCN)

Progress in Digitization Efforts:

The official start date of the TORCH TCN is 1 September 2019. The advanced date of notification of award has resulted in delayed deployment of the project at many institutions. As of 31 October 2019, nine institutions have reported progress in digitization of project specimens (these numbers include digitization efforts for some institutions that were able to begin on the project prior to award notification), these efforts are summarized in the table below, along with dissemination effort:

Institution (IH Herbarium Code)	No. of Specimens Imaged	No. of Complete Record Transcriptions	No. of Specimen Locality Records Georeferenced	No. of Records available: TORCH Symbiota Portal	No. of Records available: iDigBio Portal
BRIT	1776	436	0	52620	52638
HUH	4644	4644	0	34036	34036
KANU	0	3462	5330	18062	0
MO	0	46	13	0	0
NY	0	0	0	-	25591
OKL	6089	466	0	0	0
TAMUCC	0	7000	0	-	25591
TEX-LL	0	1366	0	0	209452
TTC	0	250	365	0	21452
UTEP	60	0	160	0	0
Project Total	**12569**	**17670**	**5868**	**104718**	**368760**

Participants have made progress in other areas, including but not limited to: equipment and supply acquisition and organization, barcoding and pre-digitization curation of specimens,

segregation of project specimens from the remainder of their collections, executing the subaward agreements, contacting data providers to develop workflows, advertising and filling digitization staff, training of volunteers and staff that will participate in digitization efforts, created institutional profiles within the Symbiota environment, and held coordination meetings with institutional stakeholders for within-institution implementation of the project.

At least 19 new digitizers were trained on the TORCH project:

- UTEP: 2 hispanic undergraduates
- TTC: 6 undergraduate students
- TEX/LL: 7 students, 1 volunteer
- TAMUCC: students
- BRIT: 1 non-student employee

Jason Best, the project Technical Innovator, has begun initial discussions, along with PI Yatskievych, with staff at the Texas Advanced Computing Center (TACC) where the TCN will host and archive all specimen images including both raw and JPEG formats. The general image ingest workflow has been developed and will soon enter the testing phase.

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

Matt Johnson and team have generated a new guide for georeferencing specimens used by TTC undergraduates (available here: http://mossmatters.com/protocols/protocol/Georeferencing_Guide.html).

Identify Gaps in Digitization Areas and Technology:
Concerns about digitization progress include hiring digitizers, awaiting order fulfillment for digitization equipment (especially the Ortery Photosimile 50 lightbox). Obtaining light boxes has been problematic (they are on back-order or have delayed delivery dates), as has making the modifications required to make these meet the project requirements (lighting, opening, interior frame, etc).

A major obstacle to rapidly completing (in calendar time) digitization of TORCH specimens is that at some institutions, the geographically relevant collections are interspersed across their collection.

The currently unfilled positions of Data Manager and Project Manager are hampering the coordination of effort and migration of data for the project. The former is awaiting final approval through Human Resource Department at Oklahoma State University, and the latter position is in the interview stages at BRIT. Data Provider associations are being pursued and built upon, but are not yet in place. In addition, some institutions have reported delays in accessing funds internally for equipment purchases required to begin digitization.

Share and Identify Opportunities to Enhance Training Efforts:

Interviews have commenced for the TORCH TCN Project Manager (PM; located at BRIT), with hopes for the position to be filled as soon as possible. Once established in the position, the PM will coordinate training efforts to maximize participant effort and opportunities.

14 TORCH representatives and one visitor attended the annual iDigBio Summit held in Gainesville Florida, from 1-3 October, 2019. TORCH TCN meetings were held in the afternoon on October 1 and 3, during which project management and execution was discussed. In person attendees: Mark Fishbein (OKLA), Abby Moore (OKL), Daniel Spalink (TAES), Peter Fritsch (BRIT), Tiana Rehman (BRIT), Jason Best (BRIT), Joseph White (Baylor), Eric Knox (Indiana University - non-TORCH guest), Ann Marie Coutrie (Harvard), Haley Hale (TTC), Mike Moody (UTEP), Craig Freeman (KANU), Jim Solomon (MO), Amber Horning (TEX/LL), Jenna Messick (UCO), Matt Johnson (TTC). In addition to in-person attendees, Barnabas Daru (TAMUCC) attended TORCH group meetings via Skype.

Discussions and a draft are underway for a proposal to iDigBio for funding a March 27-29, 2020 TORCH TCN workshop to be held at BRIT in Fort Worth, Texas.

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

Various TORCH TCN institutions are also engaged with other TCNs simultaneously; Specifically the Endless Forms TCN and Pteridophyte TCN. Relationships are being established or renewed with plant enthusiast organizations, such as BAYLU (Joseph White, Robert Doyle) receiving favorable response with asking for help with application of barcodes to specimen sheets from the McLennan Co., TX Master Naturalist Chapter.

Share and Identify Opportunities and Strategies for Sustainability:

Jason Best has developed a preliminary alternative for a light box and camera mount. It is in early stages and will be tested by Daniel Spalink (TAES) and Matt Johnson (TTC). Best is developing the documentation so the supplies for this imaging set-up can be readily purchased and the unit can be constructed on-site by digitizing institutions interested in this alternative. This light box design will be open and can be used and modified by the TCN and community at large which will decrease dependence upon particular vendors.

Multiple institutions reported strong volunteer interest in working with collections in response to presentations and discussions about the TORCH TCN.

Specific reports:

- HUH maintains local informatics staff with expertise in digital preservation. We utilize a combination of services from Harvard IT/Research Computing, and Amazon Web Services for image storage and delivery. Notably, AWS Glacier Deep Archive is a highly affordably off-line option for data replication.

Share and Identify Education and Outreach (E&O) Activities:

- George Yatskievych (TEX/LL) gave a presentation (Oct. 19) to members at Peckerwood Garden (Hempstead, TX) on 19 October, on Herbaria and TORCH.
- TEX/LL gave six herbarium tours to classes, Master Naturalists, Master Gardeners, etc., each of which included a summary of digitization efforts.
- Barnabas Daru (TAMUCC) gave additional presentations regarding the project.
- Between Sept 1 - Oct. 31, MO hosted 17 herbarium/library collection tours involving 171 people and presented a public lecture on the life and travels of Alexander von Humboldt, presented by Carmen Ulloa, with displays of Humboldt-related specimens and books, that was attended by 80 people. MO also developed several longer-term public displays with items and stories from the herbarium collection in the Garden's Spink Gallery, Sachs Museum and Tower Grove House.
- MO has shared collections-related blogs at the Garden"s "Discover + Share" blog site: https://discoverandshare.org/collections/.
- OKL generated outreach slides about the digitization effort made for slide showcase in the University of Oklahoma library.
- BRIT held two WeDigBio in-person transcription blitzes, on the BRIT campus (Oct. 19), and at the 2019 Texas Master Naturalist annual meeting in Rockwall, Texas (Oct. 20), led by Tiana Rehman, Jason Best, Ashley Bordelon, Jessica Lane.
- BRIT led an additional transcription blitz (Oct. 25) for volunteers from the GM Financial offices in Arlington, Texas.
- BRIT gave five herbarium tours to classes, Master Naturalists, Garden Clubs, volunteer groups, and the general public, including a summary of the recently awarded digitization grant, and previously awarded TCNs (Endless Forms TCN, Pteridophyte TCN).
- Peter Fritsch (BRIT) presented the TORCH TCN at the 2019 annual iDigBio summit.

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

Nothing to report.

Published on *iDigBio* (https://www.idigbio.org)

Submission #1574

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by neilscobb
Wednesday, November 6, 2019 - 11:01
47.215.133.118

TCN Name:
Lepidoptera of North America Network: Documenting Diversity in the Largest Clade of Herbivores

Person completing the report:
neilscobb@gmail.com

Progress in Digitization Efforts:
see attached document

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

Identify Gaps in Digitization Areas and Technology:
see attached document

Share and Identify Opportunities to Enhance Training Efforts:
see attached document

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
see attached document

Share and Identify Opportunities and Strategies for Sustainability:
see attached document

Share and Identify Education and Outreach (E&O) Activities:
see attached document

Google Analytics
LepNet_SCAN_November_2019.docx

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

Attachment 1
LepNet_SCAN_November_2019.docx

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1574

Lepidoptera of North America Network &
Symbiota Collections of Arthropods Network (SCAN)
Quarterly Report

November 6, 2019
Neil Cobb

Progress in Digitization Efforts:

This is a joint report for the two networks SCAN and LepNet. Many museums are involved in both SCAN and LepNet, including collections that have received funding from both TCNs, collections that are unfunded for one TCN and funded by the other, and some collections that are providing data to both and are unfunded by the ADBC program. Both TCNs share the same database http://symbiota4.acis.ufl.edu/scan/portal/index.php , which depending on the context we refer to as the SCAN-LepNet database or the LepNet-SCAN database. All data presented here were accessed on November 5, 2019. **Table 1** shows the key statistics of Lepidoptera (LepNet) and non-Lepidoptera (SCAN) records to date. These consist of all records and images, including records and images from data providers who have allowed us to post their data on the SCAN/LepNet portal. Providing data from these additional providers increases our ability to georeference, add to taxonomic tables, and more accurately assess the total digitization effort for any given taxon.

Table 1. Records in SCAN/LepNet database, "all data" reflects all arthropod taxa, "Non-Lep" includes all non-Lepidoptera arthropod data, and Lepidoptera includes only Lepidoptera taxa.

	All data	Non-Lep SCAN	Lepidoptera
Specimen Records	21,451,067	17,608,272	3,842,795
# Georeferenced	17,266,274	14,577,627	3,324,127
# Imaged	2,812,284	2,067,900	1,122,992
# Identified to species	12,942,858	9,780,207	3,679,490

The SCAN network started in 2012 and the TCN funding has ended, but SCAN continues to support PEN projects. The LepNet grant was initiated on July 1, 2016 and there are currently 26 ADBC funded museums and one non-funded museum (Oklahoma State University). Twenty-six museums comprise the NSF-ADBC LepNet and all have established a collection on the LepNet Portal and are serving data directly to iDigBio via IPT or through DwC archives on the LepNet-SCAN portal. Twenty museums are serving DwC archives to iDigBio and six museums are serving data snapshots with the LepNet portal. We have set up the SCAN Portal to serve all arthropod data from North America as well as all data from North American arthropod collections.

LepNet - The LepNet ADBC-funded museums are still on target to meet goals for records and images. An additional 59 collaborators (non-ADBC funded museums that use our data portal to serve their data) have also provided additional records for Lepidoptera. There are 47 collections (referred to as added-value) that have allowed us to harvest their data via IPT to serve lepidopteran records. **Table 2** shows the top 10 families of Lepidoptera in terms of total occurrences digitized.

What is most encouraging about the lepidopteran records is that 96% of the records are identified to species, which is higher than any of the other major orders. Thus, the primary factor limiting the production of "research-ready" data is due to georeferencing. For Lepidoptera 80% of the records are research-ready (i.e., identified to species and georeferenced) and by georeferencing existing records we should increase that percentage to 90% over the next three years. We realize that many records represent misidentified specimens and we also need to seek additional non-ADBC funding to review as many specimen identifications as possible. We will sponsor the first LepNet Partners to Existing Networks (PEN) grant with the San Diego Museum of Natural History. This PEN project will focus on the Lepidoptera of Baja California, including a large number of historical records.

Table 2. The number of occurrence records for the top 10 families of Lepidoptera that have been digitized.

Taxa	# Specimen Records	# Georeferenced	# Specimen Identified to species	# Georeferenced & Ided to species
Nymphalidae	780,984	709,722	767,584	700,604
Noctuidae	492,415	441,121	473,469	428,459
Erebidae	353,355	310,012	335,859	296,804
Pieridae	322,880	267,526	318,908	264,607
Geometridae	321,238	279,233	305,954	266,287
Hesperiidae	314,809	262,080	307,288	255,941
Lycaenidae	252,910	224,098	248,095	220,502
Papilionidae	152,762	125,677	151,335	124,737
Crambidae	136,746	113,438	131,859	110,072
Tortricidae	127,074	100,079	117,797	93,629

Symbiota Collections of Arthropods Network (SCAN) - We have surpassed our overall TCN/PEN goals for the network and have been very successful in supporting data mobilization for unfunded museums and cooperation by larger collections that have allowed there data to be used to help mobilize data from other museums. We are sponsoring two SCAN PEN projects, one through the University of Texas- El Paso that is digitizing ants from the McKay ant collection and The Field Museum, focusing on several ground-dwelling coleopteran families. **Table 3** shows data for the five major taxa we targeted in SCAN. All five groups have enough data to produce scores of papers.

Share and Identify Opportunities to Enhance Training Efforts: We are developing resources on the WordPress site http://www.lep-net.org/ . We will expand this to incorporate material from the SCAN drupal project website.

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

Table 3 Number of records for the five focal SCAN taxa groups.

Taxa	# Specimen Records	# Georeferenced	# Specimen Identified to species	# Georeferenced & Ided to species
Formicidae	1,191,047	1,074,097	690,977	615,852
Carabidae	622,726	507,590	391,047	323,411
Araneae	252,097	198,201	208,854	169,032
Acrididae	431,679	218,036	368,783	203,830
Tenebrionidae	192,506	167,147	113,304	99,095

We share best practices on the LepNet project website http://www.lep-net.org/ . Most of these are also relevant to SCAN.

Standardization of Images for Research - We developed a consensus for criteria that would make images the most useful for research. We defined criteria that would make images good for computer vision identification (LepSnap) and for ImageJ, a software program designed to quantify pixel qualities http://www.lep-net.org/?p=383 .

Identify Gaps in Digitization Areas and Technology: We are supporting the "LightingBug" project that proposes to exponentially increase transcription of labels and specimen images. We continue to seek out occurrence data to better understand the biogeography of the focal SCAN taxa and Lepidoptera. For most groups there is not enough data to talk about gaps. We are meeting this need by incorporating additional collections into the SCAN-LepNet database, and harvesting observational records from iNaturalist, Pollardbase, Buguide, LepSoc inventories, and smaller observation sets provided by individual lepidopterists.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
We are primarily working with other Symbiota TCNs and other Symbiota portals. We are also generally collaborating with a variety of individuals, projects and organizations to extend the ability to mobilize biodiversity data and promote the use of data in research. We are serving data from 191 collections, we continue to add one collection per month.

Share and Identify Opportunities and Strategies for Sustainability: Nothing to report

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

Focus on North American Arthropods We continue to provide North American data obtained from any credible sources to increase the quantity of data available to SCAN and LepNet users. We have added one new collections since the last update.

GBIF Registration - There are 36 Live collections on SCAN that are now registered with GBIF and 31 other entomology collections from the United States that have institutional collection data sets on GBIF..

LepNet Research Advisory Board - We have created a LepNet research advisory board (RAB), which is a subgroup of the LepNet TCN's CoPIs charged with developing guidelines for research projects and grant proposals that are requesting digitized specimen data ahead of online publication. LepNet is receiving requests for Lepidoptera on a regular basis, including requests for student research projects and conservation projects that include sensitive data. Thus, the goal of the RAB is to establish a process that maximizes efficiency of digitization for LepNet, opportunity for collaboration, and publications for those involved (as appropriate). We are tracking LepNet's collaborative research projects online and engaging in regular discussions with PIs and at RAB monthly meetings. While project tracking will help our TCN become more organized, we also hope this new pipeline will generate even more energy and excitement for research that uses digitized collections data. The initial project that precipitated the creation of a research advisory board was the Poweshiek Skipperling project, which was so successful in terms of soliciting participation by museums, we wanted to expand the projects program. We hope that we can ensure that participants are provided attribution (e.g. authorship in checklist publications) and project leads let participants know exactly what they need.

We have identified nine projects to date, each one is described below.

Project Name	**Name, Affiliation (contacts)**
Puerto Rico Hurricane Project	Catherine Hulshof
Woolly bear tymbal morphology Project	Nick Dowdy
Colias eurytheme Project	Matt Nielsen,
Agriculturally significant Lepidoptera (In Prep)	Crystal Klem, Jen Zaspel, Bledsoe, Neil Cobb,
Pieris biocontrol Project	JJ Weis
Mimallonid biogeography	Ryan St Laurent
Collection patterns of North American Lepidoptera	Erica Fisher & Anthony Cognato
Catocala	Akito Kawahara, Larry Gall
Poweshiek skipperling Project – Published BDJ	Anna Monofils

Publications - We have published an overview of the LepNet project (Seltmann et al 2017), and several LepNet participants collaborated on a publication below (Belitz et al., 2018). Our manuscript reviewing North American entomology collections has been accepted by PeerJ.

Belitz, M.W., Hendrick, L.K., Monfils, M.J., Cuthrell, D.L., Marshall, C.J., Kawahara, A.Y., Cobb, N.S., Zaspel, J.M., Horton, A.M., Huber, S.L. and Warren, A.D., 2018. Aggregated occurrence records of the federally endangered Poweshiek skipperling (*Oarisma poweshiek*). *Biodiversity data journal*, (6).

Cobb, N.S., L. Gall, J.M. Zaspel, L.M. McCabe, N.J. Dowdy. and A.Y. Kawahara. (Accepted with minor revisions) Assessment of North American Entomology Collections: Prospects and Challenges for Addressing Biodiversity Research. PeerJ

Google Analytics: Below (**Figure 1**) shows the summary graphical stats for the period since our last report August 3, to November 5, 2019) for the SCAN portal, http://scan-bugs.org/portal/index.php . In June we moved the portal from University of Florida to Texas Advanced Computing Center (TACC).

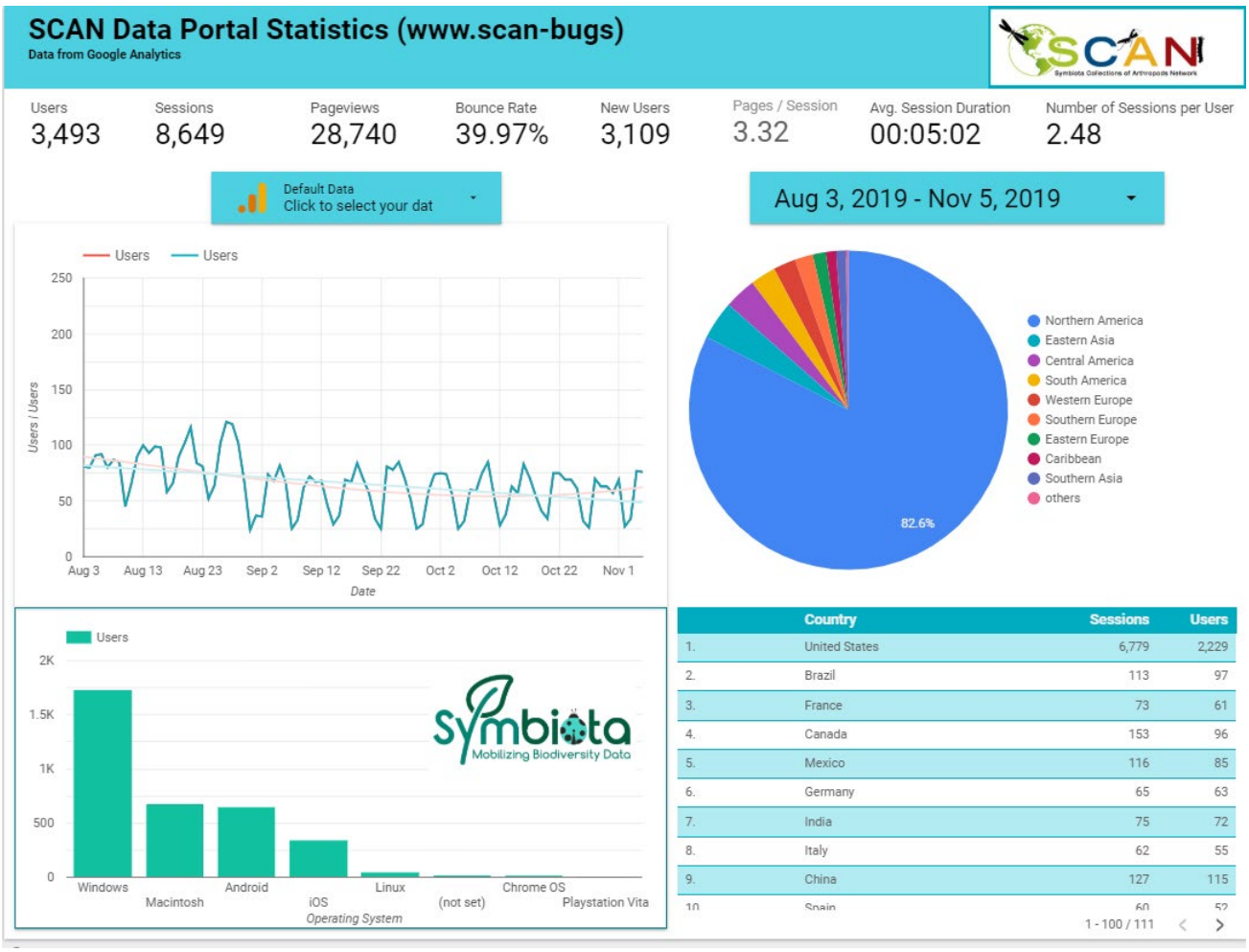


Figure 1. Summary statistics for SCAN August 3, to November 5, 2019.

Published on *iDigBio* (https://www.idigbio.org)

Submission #1575

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by jrallen99
Wednesday, November 6, 2019 - 13:41
128.138.130.189

TCN Name:
SoRo: Using Herbarium Data to Document Plant Niches in the High Peaks and High Plains of the Southern Rockies - Past, Present, and Future

Person completing the report:
james.allen@colorado.edu

Progress in Digitization Efforts:
Collectively for the current quarter roughly August 2019- October of 2019 we have entered 49,111 new records into databases, barcoded 67,650 new specimens, imaged 93,452 new specimens and georeferenced 19,341 new records.

In aggregate the project has now produced 266,053 new database records, 779,714 newly barcoded specimens, 779,259 new images and 71,235 new georeferences.

The project after 26 months (out of 48) has completed.
Data Entry 52.9%
Barcodes 94.35%
Images 95.74%
Georeferences 12.73%

The balance of the project focus continues to shift away from the imaging process with more effort being placed on transcription of specimen records and georeferencing.
Rancho Santa Ana Botanic Garden was added as a PEN on September 1st 2019. Starting with the next report we include data for the entire project including the PEN. The PEN will add 42,600 new images, 49,000 new database entries, and 56,600 new georeferences. Coupled with existing data this project will add ~60,700 new SoRo specimens.

Share and Identify Best Practices and Standards (including Lessons Learned):
CSCN - I have begun to put together a short summary of guidelines for data entry and georeferencing, with the focus of minimizing student errors that I have seen thus far. I had noticed that I seem to have gotten a different takeaway from the online georferencing workshop than my freshman student did.

ASC - will need to reimage a handful of specimens that had post it notes on them Ayers mentioned “It never occurred to me to say take the post it notes off before imaging so I found out the hard way

that I have a few images with post it notes."

SJNM – Adriano Tsinigine (NAU student and former SJC student) came back to SJC to show us several techniques he learned at NAU that will shorten the time required for imaging vouchers. As we image the vouchers we scan the vouchers to change the name of the image file to the barcode. When we develop the images in Lightroom we can then export all of the images as a batch. This enables us to take more images while the previous are being exported, which cuts the imaging time in half. Currently we are able to image about 100-150 vouchers per hour.

HUH - We switched to our new transcription app tool. This means that staff is barcoding and imaging specimens first. After the images are electronically processed and accessible from a queue, specimens are databased from the image. This has the advantage that staff does not need to look back and forth from an actual specimen sheet on the desk to the computer screen, but instead can stay in an ergonomically straighter position while databasing the specimens. Also, the specimens are only handled once. All staff is now databasing SoRo relevant specimens fully when they are first encountered. Two members of our project staff are filling in gaps of originally minimally captured SoRo records. This way we will ensure that all SoRo records will have full data available at the end of the project.

RSA - Because our collection's emphasis is on California, California specimens are segregated from the remainder of North American specimens. We have found that it is much more efficient for staff to pull all folders of North American taxa, image, and then refile back into the collection than the time it takes to search and pull specimens specific to the SoRo region. Furthermore, this approach minimizes handling and potential damage to the collections. During the imaging process, when the intern saves an image of the specimen, he also enters the barcode and state from a drop down menu in a Google spreadsheet. Cells for the specimens in the areas within the SoRo region automatically color-code red, and those specimens are targeted for data entry in the SoRo project. Our strategy for imaging and data entry is to prioritize taxa (e.g., Astragalus, Lupinus and Penstemon) that have strong representation in the SoRo region.

UNM - We had an issue with one of our back-up drives that we reported in an earlier report. That situation is now resolved but did make us reconsider our back-up process. We now store image drives in two places, one in the herbarium and one at a remote location.

Identify Gaps in Digitization Areas and Technology:
CSCN - We had a gap in our imaging progress between 20 August, when the loaner camera we were using was sent back to Nikon. Our original camera was finally fixed (the shutter mechanism was replaced) and we resumed imaging on 21 September. I have been researching ways to transfer all our data from our Specify 6 database to Symbiota, but have run into problems that seem to be shared by other collections using Specify. One of the foremost issues is that we cannot transfer TRS data from Specify to Symbiota (and it seems most other collections using Specify share this problem). As this is the primary coordinate and in too many cases the only locality info on a large portion of our student collections, this is likely to present problems for georeferencing. I have spoken to Grace Kostel at BHSC. It seems the process for combining the TRS fields from Specify is beyond my abilities and as our institution does not pay the yearly support fee to Specify, I cannot resolve this at present.

HUH - Our new workflow involves, first imaging and then databasing. We can query our database for databased SoRo records, but specifying how many images were taken in the first step is a little more challenging: We image all specimens from US and Canada and during this step cannot filter how many images are relevant for the SoRo project. The filter/count can only be applied after the geography is databased. The electronic processing time is estimated to be 4-5 working days from the time an image is created until the image is available in the queue for staff to database. Hence, the numbers of images and database records will not be a perfect match anymore.

ALL SoRo - Several collections have noted that the iDigBio Media Appliance is no longer allowing them to upload new images. We are collectively waiting to hear what the next step will be for collections that were relying on this system to share their images. We are evaluating Cyverse as a potential alternative and COLO is preparing a contingency plan to host up to 1 MB images for collections without the infrastructure to host their own images.

GREE - We have yet to upload any images to Symbiota. We are in discussion with the UNC Libraries about using the Digital Commons platform through our library portal https://digscholarship.unco.edu. The UNC Libraries all hosts photoplot data for various ecological projects, so this would be a good avenue for serving our specimen images. Other herbaria (University of Mary Washington, Utah State University – Type specimens, Wellesley College) are using digital commons and the UNC Library staff are enthusiastic about this collaboration.

SJNM - Our IT department is working with SEINet to see if we can use the SJC servers for storing the images and linking them to SEINet. If this works out we will be able to quickly upload all of the images and manage them efficiently in the future.

Share and Identify Opportunities to Enhance Training Efforts:
UNM - While there are several available workflows for georeferencing we're finding that our approach is more conservative than any of the previous recommendations when it comes to uncertainty. As Ryan outlined in the training we are making our uncertainty larger than some of the recommendations. Having a workflow that fits our interpretation of how best to map individual plants involves modifying existing protocols. We are using an INRAM mapping protocol that was developed at UNM in 2004 (The INRAM Protocol for Georeferencing Biological Museum Specimen Records). We have made some modifications to this document and will develop a 2019 version of this protocol as part of our TCN efforts.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
RSA- We are part of the California Phenology TCN to digitize target taxa for scoring phenology and using this as a proxy to investigate how climate change may be influencing flowering and fruiting times in California native plant species. California State Polytechnic University, San Luis Obispo is the lead institution.

UNM - We've been working with the Seeds of Success Program and have allowed the BLM offices in Santa Fe and Taos to image their specimens for this program at UNM. We are receiving requests from other BLM offices to image their specimens.

COLO – Has been in touch with two separate BLM field offices interested in joining the SoRo network. Both collections have been added to the portal and we are working with them to provide support and resources to help enable them to digitize their collections.

BHSC – Held a workshop at the Oglala Lakota College (details in Education and Outreach).

Share and Identify Opportunities and Strategies for Sustainability:
RSA - All data (images, databased records, georeferenced coordinates) are entered directly into RSA's institutional database. This is maintained with institutional support and does not rely on external funding. All data generated as part of this project will become part of RSABG's digital assets, will be managed in accordance with RSABG's digital asset management plan and will persist indefinitely.

Share and Identify Education and Outreach (E&O) Activities:
HUH - We mention our digitization efforts, incl. the SoRo project, during our educational tours to the Harvard and non-Harvard communities.

RSA - We have partnered with Dr. Ed Bobich at California Polytechnic Institute, Pomona to recruit undergraduate students from his Form & Function in Plants class to barcode as partial fulfillment of their course objectives. We have had two barcoding sessions (informally called Barcoding Bonanzas) with the students and a third session is scheduled for Monday, 4 November. Students learn about the specimens that they are barcoding as well as reinforcing concepts that they learn in their class. At the end of the barcoding session students are given a tour of the herbarium to learn about the collection and how it is cared for. We have taken a poll with the students that participate in this experience and have learned that ~95% of the students have never been to the Garden before and ~98% have never set foot in a natural history collection before. We have found this to be a great strategy for recruiting interns on projects such as these.

UNM - The imaging systems have been discussed in multiple tours of the herbarium as well as a museum-wide open house with >900 participants. We've inspired students to use the images available for research and expanding their understanding of the flora of the American Southwest. Recently we worked with an art gallery, 516 arts to highlight "Species In Peril along the Rio Grande"

BHSC - Mark Gabel presented a three day workshop for the Oglala Lakota College Advanced Ecology class on the 23rd and 30th of September and the 2nd of October. The workshop included plant morphology, major plant groups, plant collecting, GPS procedures, keying plants, mounting specimens, plant ecology, barcoding, databasing, imaging specimens, and major plant databases.

COLO – Hosted a georeferencing workshop lead by Ryan Allen targeted at SoRo collections to help them get up to speed and learn best practices in Georeferencing based on the Biogeomancer Guide to Best Practices in Georeferencing. 16 participants attended the workshop on the afternoon of September 17th, 19th and 24th.

FLD – Hosted a herbarium tour for a small science class from a local high school and a tour of the collection for a college art class. This included discussion of general botany topics, the use and importance of herbaria, and the giving of some pointers on plant collection for a project the class was completing. The art class included the history of herbaria and the artistic nature of the specimens. The professor was trying to influence students to integrate the "art of science" into some of their pieces and thought seeing how this is done in science would be a good stimulus. It was a fun discussion.

Google Analytics
SoRo Symbiota Analytics All Web Site Data Audience Overview 20190801-20191031.pdf

Other Progress (that doesn't fit into the above categories):
We continue to see an upward trend on usage within the SoRo portal but suspect that the majority of the people accessing our data are going through the main SEINet portal. The SoRo portal did see a significant jump in usage based on our Google Analytics report. This include a large increase in page views (12,228 vs. 1,855) and average session time (3:35 vs 17:36) (included).

All funded collections now have some level of data available through the SoRo portal. During the second half of the project we will work to bring existing federal data into the portal.

Attachment 1

Attachment 2

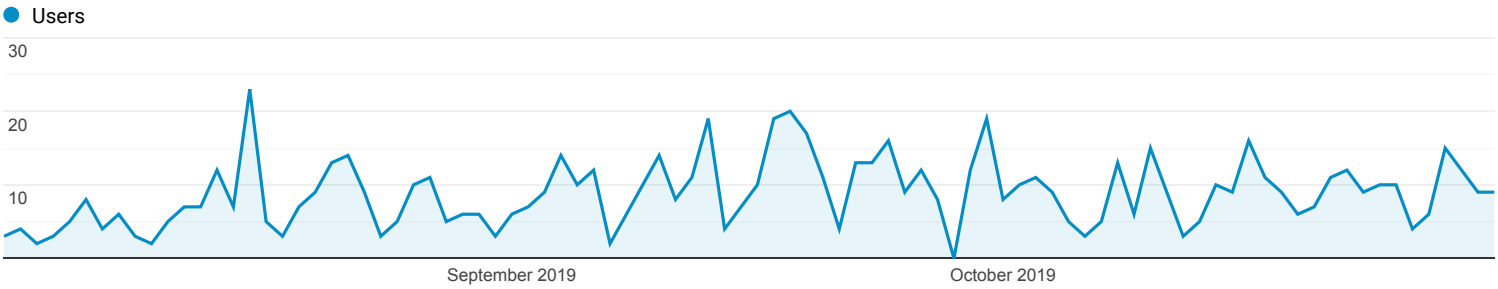
Source URL: https://www.idigbio.org/node/564/submission/1575

Audience Overview

All Users
100.00% Users

Aug 1, 2019 - Oct 31, 2019

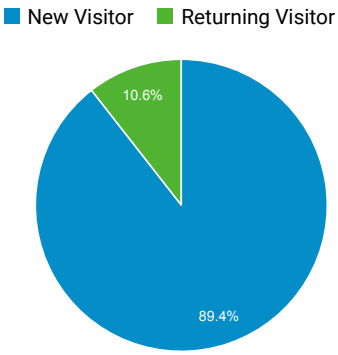
Overview



Users	New Users	Sessions
647	635	968

Number of Sessions per User	Pageviews	Pages / Session
1.50	12,228	12.63

Avg. Session Duration	Bounce Rate
00:17:36	56.40%



	Language	Users	% Users
1.	en-us	382	59.04%
2.	ru-ru	40	6.18%
3.	zh-cn	37	5.72%
4.	es-es	26	4.02%
5.	en-gb	16	2.47%
6.	ru	16	2.47%
7.	de-de	12	1.85%
8.	es-419	12	1.85%
9.	de	10	1.55%
10.	fr-fr	8	1.24%

Published on *iDigBio* (https://www.idigbio.org)

Submission #1576

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by cskema
Friday, November 8, 2019 - 12:44
165.123.74.113

TCN Name:
The Mid-Atlantic Megalopolis: Achieving a greater scientific understanding of our urban world

Person completing the report:
cskema@upenn.edu

Progress in Digitization Efforts:
Please see attached pdf.

Share and Identify Best Practices and Standards (including Lessons Learned):
Please see attached pdf.

Identify Gaps in Digitization Areas and Technology:
Please see attached pdf.

Share and Identify Opportunities to Enhance Training Efforts:
Please see attached pdf.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
Please see attached pdf.

Share and Identify Opportunities and Strategies for Sustainability:
Please see attached pdf.

Share and Identify Education and Outreach (E&O) Activities:
Please see attached pdf.

Google Analytics

Other Progress (that doesn't fit into the above categories):
Please see attached pdf.

Attachment 1
2019_11_MAM_Quarterly_Progress_Summary.pdf

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1576

Mid-Atlantic Megalopolis TCN
Quarterly Progress Report[1]
May – October 2019

Progress in Digitization Efforts: Figure 1 shows progress over time for the MAM Project by changes in the number of both specimens entered into workflow and completely digitized specimens (= imaged + transcribed + georeferenced) against the number of specimens promised to NSF for the project. The current numbers for progress of digitization efforts by specimen category for each herbarium are shown in Table 1 and Figure 2. Although updated progress for HUDC and NY are no longer included in these reports as they closed their NSF grants on the MAM Project as of 31 August 2019, their total numbers of specimens completed in the MAM Project to that date are still reported in Figure 1 and Table 1 in the interest of showing project totals.

Share and Identify Best Practices and Standards: Nothing to report.

Identify Gaps in Digitization Areas and Technology: Nothing to report.

Share and Identify Opportunities to Enhance Training Efforts: Nothing to report.

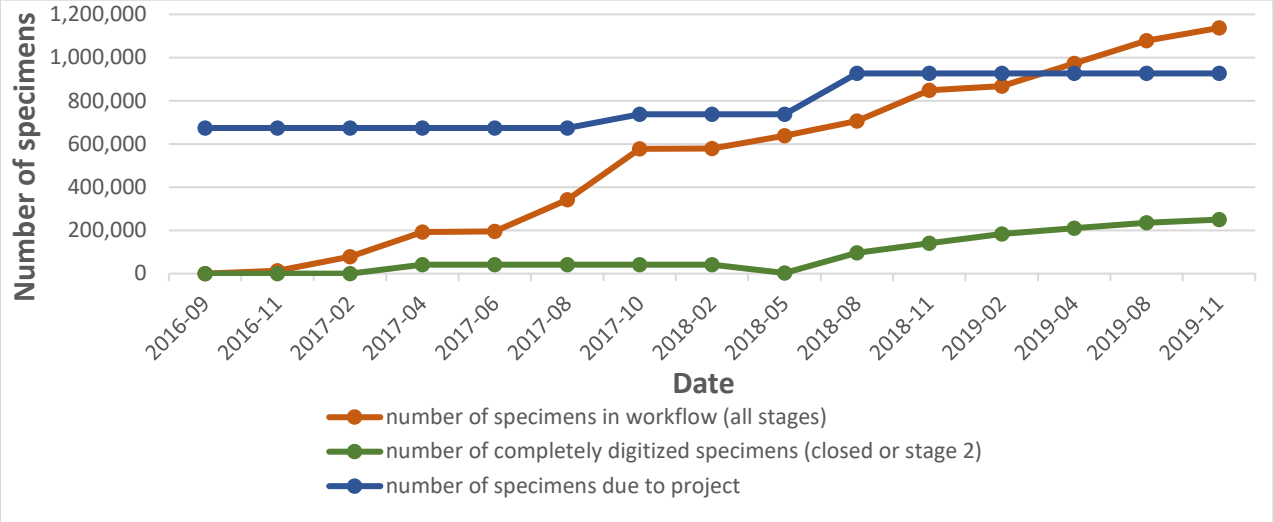
Share and Identify Collaborations with other TCNs, Institutions, and Organizations: Nothing to report.

Share and Identify Opportunities and Strategies for Sustainability: Nothing to report.

Share and Identify Education and Outreach Activities: HUDC hosted a transcription blitz event as part of WeDigBio 2019 to help transcribe records online for their fellow HBCU, DOV. CHRB held a "Night at the Herbarium" event as part of WeDigBio 2019, hosting 20 guests and resulting in 300 transcribed records. CHRB also hosted herbarium tours for members of Hunterdon County Parks (about 15 individuals in attendance) and current fall courses at Rutgers.

Other Progress: Nothing to report.

Figure 1. Progress over time for MAM Project.



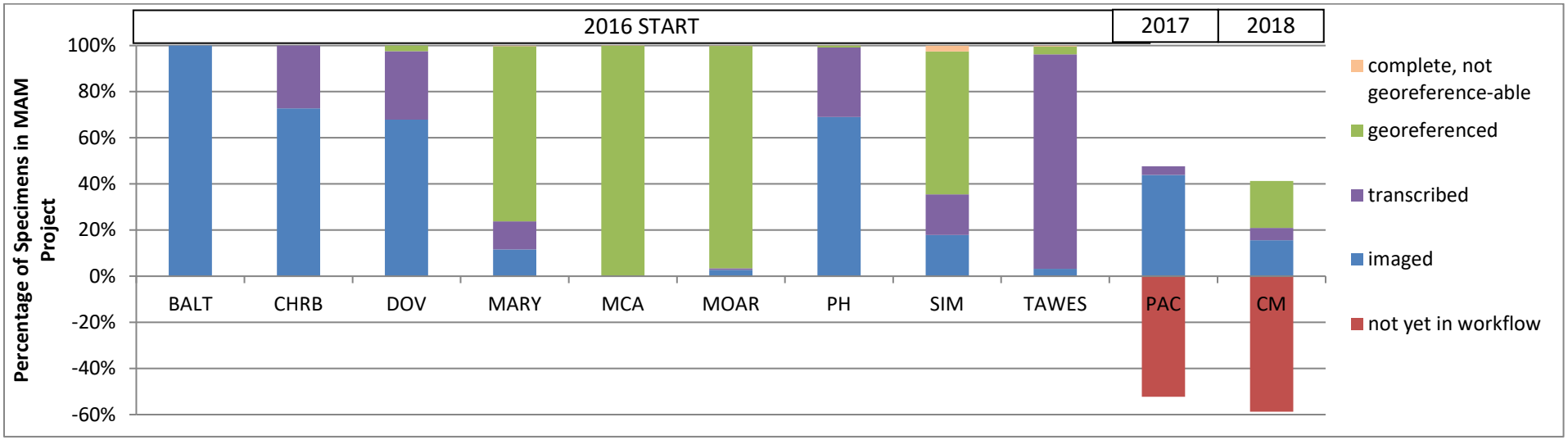
[1] Throughout this report, herbaria are referred to by their Index Herbariorum acronyms, which correspond to institutional names as follows: BALT = Towson University, CHRB = Rutgers University, CM = Carnegie Museum, DOV = Delaware State University, HUDC = Howard University, MARY = University of Maryland, MCA = Muhlenberg College, MOAR = Morris Arboretum of the University of Pennsylvania, NY = New York Botanical Garden, PAC = Pennsylvania State University, PH = The Academy of Natural Sciences of Drexel University, SIM = Staten Island Museum, TAWES = Maryland Department of Natural Resources

Table 1. Digitization of specimens by stage of completion and herbarium for MAM TCN.

	Herbarium													
Specimen Stage	BALT	CHRB	CM	DOV	HUDC	MARY	MCA	MOAR	NY	PAC	PH	SIM	TAWES	**Totals**
# specimens imaged[1]	25,000	8,626	29,380	4,913	0	0	0	0	0	0	1,100	0	0	**69,019**
# specimens as above and uploaded to Symbiota along with skeletal data; transcription/review may be in progress[2]	4,000	37,428	0	31,291	0	5,117	0	26	149,761	28,076	305,883	0	34	**561,616**
# specimens as above + completely transcribed and transcription reviewed[3]	0	17,236	10,010	15,771	47	5,514	0	155	58,423	2,457	134,647	3,843	3,420	**251,523**
# specimens as above + georeferenced[4]	0	0	38,432	1,320	4,566	34,285	51,009	20,325	81,995	0	3,597	13,469	126	**249,124**
# specimens that need special attention, e.g. go back to sheet[5]	0	0	20	0	167	124	2	544	0	0	359	3,882	85	**5,183**
# specimens imaged, uploaded, transcribed BUT not able to be georeferenced[6]	0	0	0	0	138	102	52	41	0	0	10	550	13	**906**
Totals	**29,000**	**63,290**	**77,842**	**53,295**	**4,918**	**45,142**	**51,063**	**21,091**	**290,179**	**30,533**	**445,596**	**21,744**	**3,678**	**1,137,371**

*NY only uploads to the MAM Portal periodically, after georeferencing is complete.
Processing Status in the MAM Portal: [1] No stage, not in Symbiota yet; [2] Unprocessed + Expert Required + Pending Review; [3] Stage 1; [4] Stage 2; [5] Stage 3; [6] Closed

Figure 2. Percentage of specimens by stage of completion and herbarium for MAM TCN. With this presentation of digitization progress, the final goal for each institution is to have a mostly green column above the X axis (could potentially have orange up to roughly 10%). Specimens not yet in workflow are set as negative numbers.



Published on *iDigBio* (https://www.idigbio.org)

Submission #1577

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by mwdenslow
Friday, November 8, 2019 - 16:27
76.120.67.210

TCN Name:
SERNEC: The Key to the Cabinets: Building and Sustaining a Research Database for a Global Biodiversity Hotspot

Person completing the report:
michael.denslow@gmail.com

Progress in Digitization Efforts:
There are 123 collections serving data through the SERNEC portal. There are currently 4,865,954 specimen records and 438,538 (9%) of those records are georeferenced. There are currently 4,331,544 imaged specimen images available. There are currently 64 collections publishing to iDigBio.

Share and Identify Best Practices and Standards (including Lessons Learned):
The SERNEC – TCN protocols continue to be updated as needed and are posted on the SERNEC resources site (http://sernec.appstate.edu/resources).

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:
Nothing to report

Share and Identify Education and Outreach (E&O) Activities:
SERNEC continues to have a large on active presence on Notes from Nature (https://www.notesfromnature.org/active-expeditions/Herbarium) with many expeditions running concurrently.

WeDigBio 2019 was very successful (https://blog.notesfromnature.org/2019/10/21/wedigbio-2019-appreciation/). There were several SERNEC related onsite events. SERNEC themed expeditions

received over 20,000 transcriptions in during the 3 day event.

We have a new area of the SERNEC website dedicated to volunteer opportunities. https://herbarium.appstate.edu/sernec/volunteer-sernec

Google Analytics

Other Progress (that doesn't fit into the above categories):
All SERNEC – TCN PIs have now submitted their final reports. Appalachian State University has will remain active for an additional extension year to provide project support for data portal activities, citizen science and georeferencing.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1577

Published on *iDigBio* (https://www.idigbio.org)

Submission #1580

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by akasameyer
Friday, November 15, 2019 - 19:18
192.31.105.160

TCN Name:
The Pteridological Collections Consortium: An integrative Approach to Pteridophyte Diversity Over the Last 420 Million Years

Person completing the report:
akasameyer@berkeley.edu

Progress in Digitization Efforts:
For extant specimen progress during this reporting period, Pteridophyte Collections Consortium members created skeletal records for 75,986 extant specimens, fully transcribed 55,630 extant specimens, imaged 102,800 extant specimens, and geo-referenced 8,179 extant specimen records. The total pteridophyte extant specimen progress including work done prior to the start of the grant is 411,174 skeletal records created, 623,635 extant specimens imaged, 398,389 extant specimens fully transcribed, and 95,355 extant specimens geo-referenced.

In our Pteridoportal we currently have the following extant specimens:
1,312,771 occurrence records
296,214 (23%) georeferenced
943,574 (72%) occurrences imaged
628,561 (48%) identified to species

For fossil specimen progress during this reporting period, Pteridophyte Collections Consortium members databased 7,655 fossil specimens, imaged 3,285 fossil specimens, geo-referenced 1,374 fossil specimen records. The total pteridophyte fossil specimen progress including work done prior to the start of the grant is 26,200,fossil specimens databased, 24,223 fossil specimens imaged, 9,129 fossil specimen records geo-referenced.

Share and Identify Best Practices and Standards (including Lessons Learned):
Participants who attended the ADBC summit found it useful.

Identify Gaps in Digitization Areas and Technology:
Work continues on the Paleo Module. Diane Erwin has been testing the module and providing feedback to Ed Gilbert. The module should be available for production soon.

Some institutions have had equipment issues. Miami University had to rebuild their lightbox.

Share and Identify Opportunities to Enhance Training Efforts:
PCC TCN institutions trained 8 undergraduate students, 1 graduate student, and 19 volunteers to work on the project.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
Members of the CAP and SERNEC TCNs provided assistance with setting up Cyverse for image storage.

Participants collaborated with the Endless Forms, TORCH, SERNEC TCNs.

Share and Identify Opportunities and Strategies for Sustainability:
Denver Museum of Nature and Science (DMNS) found that this project emphasized the importance of the DMNS hosting its own digital records in a standardized Museum-wide format, helping make all its TCN collaborations more sustainable.

Share and Identify Education and Outreach (E&O) Activities:
Rutgers University hosted a Night at the Herbarium as part of the WeDigBio 2019 annual volunteer event. During this event approximately 20 guests came to transcribe records. Rutgers also hosted tours of their collection for current courses at Rutgers and for members of Hunterdon County Parks.

Miami University gave tours of the herbarium to 4 groups.

Denver Museum of Nature and Science gave 6 behind the scenes tours during this time period. An article featuring the PCC project was published in the DMNS Catalyst.

New York Botanical Garden hosted a three-day public "Herbarium Open House" focused on the topic of climate change (27-29 Sep 2019), featuring specimens digitized for this and other TCNs. They also hosted onsite a WeDigBio event workshop (19 Oct 2019), recruiting and training the public to help transcribe specimen labels for WeDigBio 2019.

The Botanical Research Institute of Texas (BRIT) hosted a booth at the Mariposa Market,a community market and plant sale. The booth provided information on plant adaptive strategies, including ferns and epiphytes (Oct 4, 2019). BRIT also gave a talk about the ferns of Texas and digitization efforts to the members of the Southwestern Fern Society group in Dallas (Oct 13, 2019) and held three transcription blitzes attended by 26 people.

The Field Museum hosted the WeDigBio event in October 17th-20th used the Notes from Nature platform to display 773 fern images for the public to transcribe. The WeDigBio event at the Field Museum was picked up by the local news networks: https://www.nbcchicago.com/news/local/field-museum-volunteer-specimens_Chicago-563324632.html

Google Analytics

Other Progress (that doesn't fit into the above categories):
CyVerse is now available as an image storage option to replace the IDigBio media server for PCC TCN project participants. Joyce Gross and Amy Kasameyer developed protocols for uploading images to CyVerse and linking to the images via the Pteridoportal. Two institutions (WVA and MSC) are using CyVerse, and others have been sent information and expect to begin testing CyVerse soon.

The Symbiota Paleo Module is near completion. We are now in the test phase of uploading fossil fern specimen records to the portal. Five fossil records are currently loaded with an additional 310 to be loaded soon.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1580