Quarterly Progress Reports To iDigBio Submitted By Active Thematic Collections Networks (TCNs)

December 2020

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Submission #1652

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by kds15e
Monday, November 2, 2020 - 16:42
129.65.145.174

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

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

Identify Gaps in Digitization Areas and Technology:
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Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
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Share and Identify Education and Outreach (E&O) Activities:
see attached

Google Analytics

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

Attachment 1
November2020QuarterlyReport.pdf

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1652

CALIFORNIA PHENOLOGY TCN – QUARTERLY REPORT – NOVEMBER 2020

Assembled by Katie Pearson, 2 November 2020

PROGRESS IN DIGITIZATION EFFORTS:

Figure 1 shows our progress in imaging, transcribing, georeferencing, and phenologically scoring the target specimens for our project, explained more in detail in the following sections.
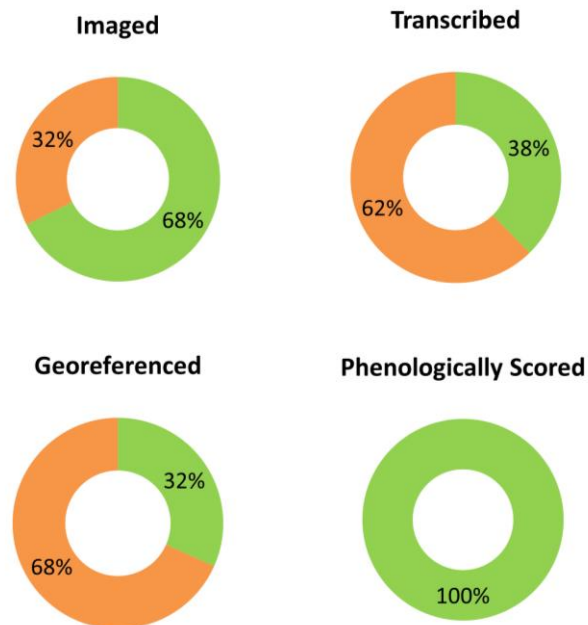
Imaged

32%
68%

Transcribed

38%
62%

Georeferenced

32%
68%

Phenologically Scored

100%

Figure 1

TRANSCRIPTION

An estimated 113,000 specimen records have been transcribed across the CAP Network since the beginning of the project. This is approximately 38% of the goal number of transcriptions.

GEOREFERENCING

We have georeferenced approximately 95,000 specimen records, which is 32% of our goal. Progress toward this goal was greatly accelerated by a new workflow. We recognized that many of the specimens in our aggregated database are duplicates, and that many of these duplicates had already been georeferenced. To leverage this pre-existing data, we developed an R script that retrieves the existing georeference data and returns the data in a separate spreadsheet. We cleaned and vetted these data and uploaded them to the appropriate collections. As a result, we applied georeferences to over 10,000 specimens in the span of about 2 weeks.

IMAGING

Nine of our 22 herbaria (41%) have completed their imaging goals (Figure 2). Of the remaining herbaria, five have been able to resume imaging since the COVID-19 shutdowns. The other herbaria have used this time offsite to process images, georeference specimens, and transcribe specimens. As a result, our numbers of imaged, transcribed, and georeferenced specimens have continued to increase. Figure 2 shows the current state of CAP imaging as of October 29, 2020.
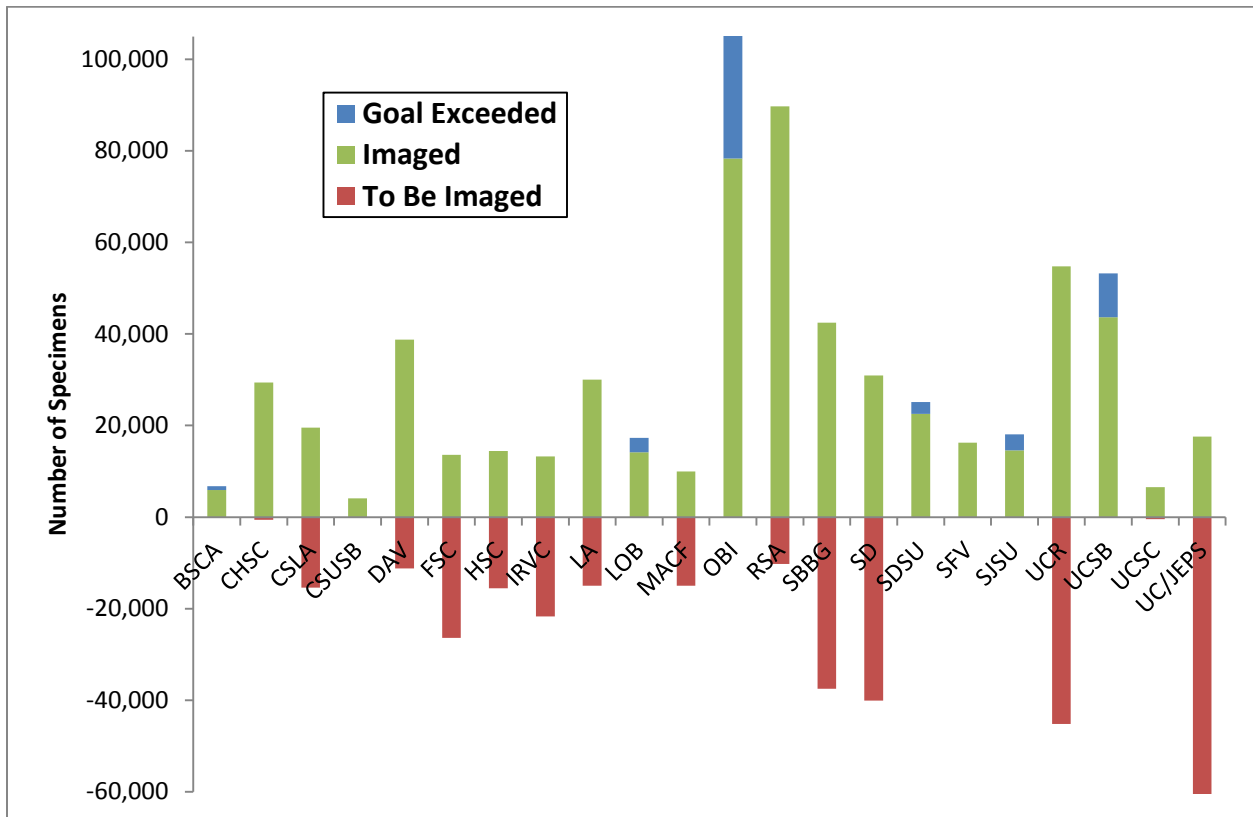

Figure 2. Herbarium specimen imaging progress. Green portions represent the number of specimens that have been imaged, while blue portions represent the number of specimens that have been imaged beyond the expected target specimens. Red bars below the zero line indicate the number of target specimens that have not yet been imaged.

NEW PEN INSTITUTIONS

In September 2020, a PEN grant was awarded to six new CAP institutions (CDA, OSC, PUA, SFSU, SHTC, and UNLV) and one existing CAP institution (SD). We held a kick-off meeting with these new collaborators on September 15th, and the PM met with each institution during the following week to ensure participants were prepared to begin the digitization process.

Data from SFSU and SHTC had previously been imported into the CCH2 portal. Data from UNLV are now regularly imported into CCH2 from SEINet, where the dataset will continue to be managed live. CDA data were newly mapped and imported into CCH2, where they will now be managed live. We plan to

establish a link between the OSC Symbiota-based data portal soon, as well as upload data from PUA, which will be managed live in CCH2 as well.

CDA and UNLV will begin imaging once they have received their equipment and hired their technicians. We predict that imaging will commence no later than January 2021, barring additional coronavirus-related shutdowns. SFSU and OSC, which already had imaging equipment, will begin to image once they have hired their technicians and they are allowed to work in the herbarium. SHTC and PUA will conducting imaging, one after another, once UNLV has completed their goals and transfers the imaging station to California (Figure 3).
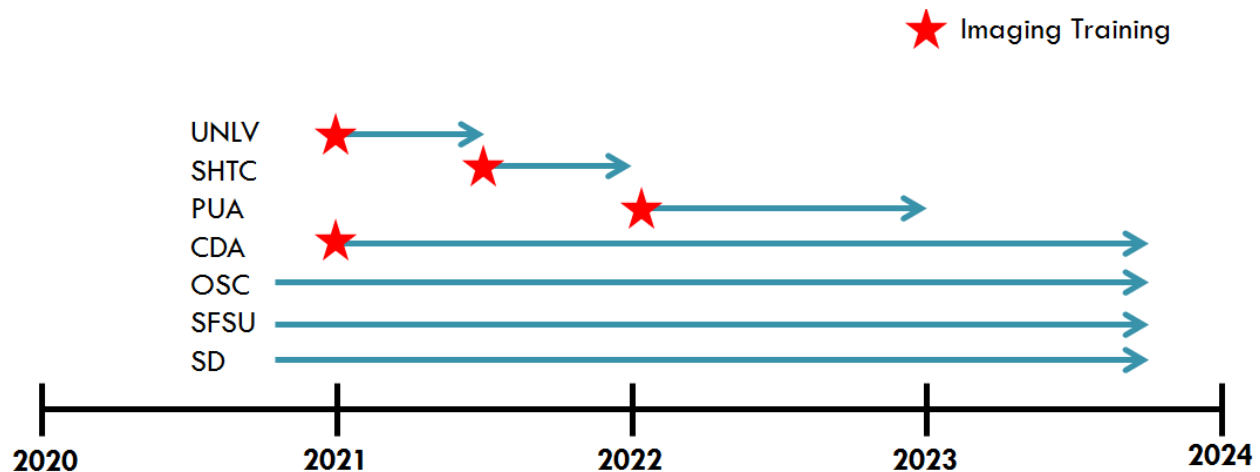

Figure 3. Expected timeline for imaging herbarium specimens at each of the seven PEN institutions. Note that imaging at SFSU and OSC has been delayed due to COVID-19 shutdowns and will likely re-commence in early 2021.

SHARE AND IDENTIFY BEST PRACTICES AND STANDARDS (INCLUDING LESSONS LEARNED)

As discussed in "Georeferencing" above, we developed a script that identifies and imports georeference data from duplicate specimens. Applying this script to our database increased the number of databased specimens by over 10,000.

To further accelerate our georeferencing progress, we instituted an undergraduate internship course led by Cal Poly (OBI) involving students at multiple CAP institutions, facilitated by the remote learning environment (Zoom). This course began in mid-September and currently involves 65 students from 6 institutions (IRVC, LOB, OBI, OSC, UCSB, and UCSC). There are two sections of the course, one meeting on Tuesdays for 2 hours and one meeting on Thursdays for 2 hours. The course is facilitated by the PM and two experienced OBI undergraduate assistants. The 65 students were trained in transcription (through Notes from Nature) and georeferencing (in our data portal, CCH2). Unfortunately, because of the complexity of the georeferencing task, it became apparent that georeferencing by these students was neither efficient nor very effective, so we pivoted to having the students primarily transcribe through Notes from Nature. A small percentage of students who produce high-quality georeferences are continuing to work on georeferencing.

Another strategy we employed to advance georeferencing is engaging persons who are already knowledgeable in California geography. To this end, we launched the CAP Network "100 club" (https://www.capturingcaliforniasflowers.org/100-club.html), a team of botanists and naturalists across the state whom we train to use the georeferencing tools in CCH2. We have identified members of the California botanical community through our network of faculty and staff, and we recruit individuals through targeted emails and announcements in relevant botanical societies. Many of these naturalists are botanists and herbarium specimen collectors, and they are now empowered to augment the data of their own specimens "live" in CCH2. This initiative has so far proven quite successful. We have recruited and trained 13 individuals who have georeferenced over 800 records since late September.

IDENTIFY GAPS IN DIGITIZATION AREAS AND TECHNOLOGY

We are continuing to develop the functionality of our CCH2 data portal. Currently, we lack a way to search by, download, and visualize specimens' phenological scorings, though these data currently exist. We are also developing a way to track who downloads our data and for what purpose.

SHARE AND IDENTIFY OPPORTUNITIES TO ENHANCE TRAINING EFFORTS

All digitization protocols were re-assessed because of the addition of 6 new digitizing institutions as part of the PEN grant. Protocols and equipment recommendations were updated on the website.

We created a new training video for using the taxonomic cleaning tool and an updated video for how to image specimens for the PEN participants, both available on our YouTube channel (https://www.youtube.com/channel/UCFjYwX5cjS_NaUkx3F-4lpg).

As described in the "best practices and standards" section above, we launched an herbarium digitization internship course across six CAP institutions with 65 students currently enrolled. These students have all been trained in transcription through Notes from Nature and georeferencing in CCH2. Because of the relatively low quantity and quality of georeferences from these students, we pivoted to transcription in Notes from Nature. We maintain high student engagement by playing transcription games such as "Habitat bingo" (https://biospex.org/bingos) and encouraging them to share their screens to ask questions. Once during the course, each student also conducts a 5-minute presentation on a primary research paper of their choice that involves herbarium specimens. Each week, we also have a number of students give a 2-minute summary of their activities from the previous week. At the end of the course, students will complete a formative assessment of their learning and provide feedback about the course.

SHARE AND IDENTIFY COLLABORATIONS WITH OTHER TCNS, INSTITUTIONS, AND ORGANIZATIONS

CAP leadership has continued to lead the new Consortium of California Herbaria Administrative Committee. This committee drafted a data sharing and downloading agreement with Calflora, met in early September to ratify it, and sent it to Calflora for consideration. We are now working with Calflora to ingest CCH2 data into their system.

We are partnering with the UC California Naturalists program to recruit volunteer transcribers and georeferencers. We met with California Naturalist leadership on August 31, 2020, and are now building a plan to disseminate promotional materials, present at the next instructors' meeting, and lead virtual training workshops for instructors and volunteers.

Specimen data and images from the Sequoia and Kings Canyon National Parks Herbarium (THRI) were added to CCH2. THRI will now manage their collection live in CCH2.

The PM provided training materials and an orientation to CCH2 to California Native Plant Society rare plant botanists, who will work to improve data and georeferences regarding rare plants.

The lead PI and PM continue to participate in the BIOME Institute to further develop the course-based undergraduate research experience (CURE) we implemented in spring 2020. As part of this institute, we are developing additional educational materials including a video that explains the importance of attribution and citation when using biodiversity specimen data. This resource will be posted on QUBES and YouTube when complete.

SHARE AND IDENTIFY OPPORTUNITIES AND STRATEGIES FOR SUSTAINABILITY:

The California Botanic Garden (formerly Rancho Santa Ana Botanic Garden) and the California Department of Food and Agriculture herbaria have switched to "live" management in CCH2. This will allow more streamlined digitization workflows in the future and likely improve the sustainability of the portal in general.

SHARE AND IDENTIFY EDUCATION AND OUTREACH (E&O) ACTIVITIES:

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

Three blog posts were written and published to the CAP website: https://www.capturingcaliforniasflowers.org/blog-recap.

To engage more educators and students with the specimen data in CCH2 and how they can get involved through Notes from Nature, we developed an educational exercise that walks students through both platforms. The exercise is now published on QUBES here: https://qubeshub.org/publications/2068/1 . We also sent this resource to botany and ecology faculty throughout the state via email.

As described in the "enhance training efforts" section above, we launched an herbarium digitization internship course that remotely engages 65 undergraduate students from 6 universities.

The PM created an informational video about the Robert F. Hoover Herbarium at Cal Poly and plants of the Central Coast of California as part of Biodiversity Week, hosted by the Central Coast State Parks Association. The recording of the presentation can be viewed here: https://www.youtube.com/watch?v=V8NCB413TII

The CAP TCN hosted two virtual WeDigBio events, engaging 95 participants across the western U.S. and resulting in 2,072 Notes from Nature transcriptions from October 15-18 (Figure 4).
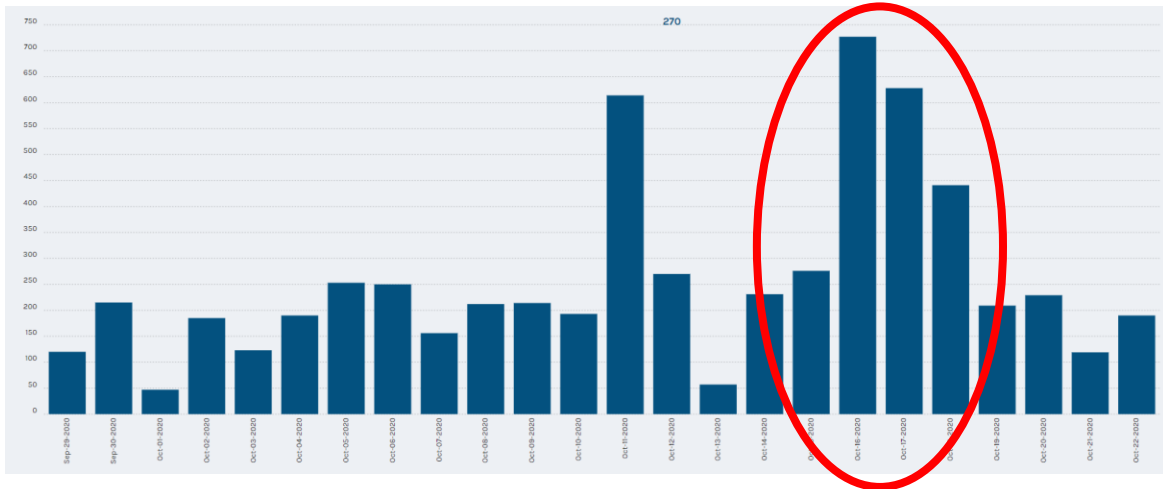
Figure 4. Number of transcriptions per day completed in Notes from Nature. The four days of WeDigBio are circled in red, demonstrating a significant uptick in transcriptions on those days total 2,072 transcriptions.

One Notes from Nature expedition was completed in late August 2020, resulting in 1999 specimens from CSLA being fully transcribed and their data imported into CCH2. We launched an additional expedition for IRVC in late August and a new expedition for CSLA in late October.

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

Submission #1650

> **Submission information**
>
> Form: TCN Quarterly Progress Report to iDigBio
> Submitted by BruceL
> Saturday, October 31, 2020 - 13:36
> 140.186.130.137

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) and with major involvement from collections manager Natalia Lopez Carranza (NLC, who is Hispanic), we have databased 136,476 fossil specimens total. 110,742 of these specimen records are also georeferenced. In addition, we have georeferenced 165 localities since the last reporting period and have now georeferenced a total of ~ 9,989 localities associated with this project (the results presented here use the query associated with the web version of Specify due to COVID-19, and seem to be not quite as accurate as what we could report if we used the desktop version of Specify). This work has been performed by NLC. All KU digital data have been shared with iDigBio and GBIF.

One of the tasks that NLC has also been focusing on is producing new images of specimens that have already been databased. She is making these images in conjunction with newly supported (female) graduate student Rene Martin. A total of 315 specimens have been imaged, using Helicon stacking software, since the last reporting period. These images are being prepared for sharing on our Specify database and thus with iDigBio.

Regarding the University of Colorado portion of the project, led by PI Talia Karim:

They have databased 20,827 Cretaceous specimens total, with no new specimens databased since the last reporting period. 13,472 of these specimen records are also georeferenced. In addition, they have georeferenced three localities since the last reporting period and now georeferenced a total of 898 Cretaceous localities associated with this project. They also generated about 100 new images.
PI Karim has been working on parsing locality information for Cretaceous specimens from the digitized catalog ledgers and entering this information into Specify. Since the last quarterly report, 184 new localities were created from the ledger data and entered into Specify; they will be georeferenced later this fall.

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:
Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman (BSL) and with major involvement from collections manager Natalia Lopez Carranza, we have a newly supported (female) graduate student, Rene Martin. She is receiving training in the imaging of fossil specimens, using photo stacking software, and working with our Specify database.

Regarding the University of Colorado portion of the project, led by PI Talia Karim:
they currently have one undergraduate work-study student working on a combination of remote and on-campus projects. He has just resumed specimen imaging and image editing/upload to Specify, and also completed a remote project updating publication information for their collection of D. Eicher's Cretaceous Foraminifera. He will also be working on georeferencing localities later this fall.

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) and with major involvement from collections manager Natalia Lopez Carranza (NLC), NLC produced a new video showcasing our fossil collections for National Fossil Day, available here: https://drive.google.com/file/d/1vW0_jBmTN7CbRbJGBXnU5qvKKy663jxW/view?usp=sharing that has been shared very widely on social media and other platforms.

The Digital Atlas of Ancient Life website continues to receive major usage. Note that the development of this website and its continued maintenance, the addition of content, etc., has been led by Jonathan Hendricks at the Paleontological Research Institution. During August and September the site received more than 24,000 clicks with 2.3 million impressions, while the Cretaceous Atlas itself received more than 1,400 clicks with 68,000 impressions. In both cases the primary users were based in the U.S.A. The former also has high numbers of users based in India and the Philippines. The latter also has high numbers of users based in Canada and the UK.

The Digital Atlas identify app has also been receiving good, and increasing, usage with an average of about 100 images of fossil specimens submitted for identification each week.

Google Analytics

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) and with major involvement from collections manager Natalia Lopez Carranza (NLC), two papers describing results from research have been accepted.

The first, with former graduate student Erin Saupe, who is now an associate professor at Oxford University and former post-doc Michelle Casey, who is now an associate professor at Towson University, focuses on the relationship between macroevolutionary rates of speciation and extinction and the geographic range and abundance of species. We actually found that at certain times abundance appears to be a better predictor of extinction resistance than geographic range,

but this seems to be associated with distinctive environmental conditions. It will appear in Paleobiology.

The second focuses on phylogenetic and biogeographic patterns in Cretaceous echinoids with special emphasis on taxa from the Western Interior Seaway. The lead author is former graduate student Steven Byrum (who is Hispanic) and it will appear in the Journal of Paleontology.

There is also an update on another paper, with former post-doc Luke Strotz, who is now a post-doc based in Australia, that looks at patterns of ecological stability in the fossil record and considers to what extent species assemblages are stable over long intervals of time. We found that the precise taxonomic composition of assemblages does not appear to be stable and instead varies. However, total diversity levels, which vary across different environments, do happen to show stability over very long intervals of time. This paper was in review at Paleobiology. We received back reviews, made our revisions, and have resubmitted the paper to the journal.

Lastly, NLC and graduate student Martin are working on a project involving digitizing published and museum images of specimens to conduct morphometric analyses for the purposes of producing a phylo-morphospace of a trilobite clade that will allow a comparison between rates of morphological change and rates of speciation. This work also involves collaboration with current post-doc Rhiannon LaVine (female) and BSL.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1650

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Submission #1658

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by plarson
Tuesday, December 1, 2020 - 12:41
216.186.200.58

TCN Name:
Documenting Marine Biodiversity Through Digitization of Invertebrate Collections (DigIn)

Person completing the report:
Paul.Larson@MyFWC.com

Progress in Digitization Efforts:
This grant only began Nov 1 so Digitization has not begun yet. Still in hiring phase for collection technician.

Share and Identify Best Practices and Standards (including Lessons Learned):
Not yet applicable

Identify Gaps in Digitization Areas and Technology:
Not yet applicable

Share and Identify Opportunities to Enhance Training Efforts:
Not yet applicable

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
We have identified collaboration opportunities for several working groups with the Eastern Seaboard Mollusks TCN

Share and Identify Opportunities and Strategies for Sustainability:
Not yet applicable

Share and Identify Education and Outreach (E&O) Activities:
Not yet applicable

Google Analytics

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

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1658

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

Submission #1659

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by rbieler
Tuesday, December 1, 2020 - 19:02
24.14.162.251

TCN Name:
ESB - Mobilizing Millions of Marine Mollusks of the Eastern Seaboard

Person completing the report:
rbieler@fieldmuseum.org

Progress in Digitization Efforts:
COVID-19 restrictions impacting staff access to the collections and widespread hiring freezes for new staff caused unavoidable delays with our project startup (start date: 15 September 2020). However, where possible under the circumstances, work has begun. Members of the collaborative found creative ways to prepare for, and begin, digitization. Examples include: ANSP: Made live/dead determinations for 67,491 records in malacology collection database based on information already in the database; of these records 6504 are in scope for the Eastern Seaboard project. CM: Digitized 125 lots comprising 825 individuals, all dry, of U.S. ESB Marine Mollusks. DMNH hired a database specialist (Larry Van Stone) and Specify Data Technician (Julie Steinhauer). DMNH has begun to identify ESB specimen lots and develop a workflow for how to update and transition these data at an appropriate taxonomic level; data from one family of ESB bivalves have been digitized. NCSM has scanned all card catalogues of Duke Marine Lab and Charleston Museum (using the Citizen Science Project CitSciScribe (https://naturalsciences.org/calendar/news/become-a-scientist-for-the-day-at-museums-citsciscribe-event-june-11/) to transcribe the data. The latter data have been imported into NCSM's Access database for editing; taxonomic names of 3,800 lot were updated in the process. UF georeferenced data from 1,310 lots (11,194 specimens) of eastern seaboard mollusks from the R. Christensen, H.G. Lee and H. Hough collections with error radii and uploaded into the institution's Specify database. UMMZ reported digitized data from 83 lots (429 specimens) of eastern seaboard mollusks, including 17 lots (61 specimens) of polyplacophorans, 33 lots (232 specimens) of bivalves, and 33 lots (136 specimens) of gastropods. 134 lots of polyplacophorans and gastropods of that collection were pre-curated and prepared for data entry. RSMAS placed an ad for an intern to help with the initial scanning and database input with targeted start date January 15, 2021. YPM hired a GEOLocate software engineer (Djihbrihou Abibou) in October 2020. FMNH and MCZ are preparing for hires. Synergies with parallel TCN projects and other databasing efforts are being successfully explored. One example is the collaboration with the PILSBRY-TCN (e.g., ANSP, where more than the 24,000 records in the online publication "2400 Years of Malacology" have been parsed from a MS Word document provided by the authors into a FileMaker database to form the basis of an agent dictionary for malacology [under funding from the PILSBRY, but the result is relevant to both projects]). Another example is the joint development of Expedition data authority files with the DigIn-TCN.

Share and Identify Best Practices and Standards (including Lessons Learned):
Working groups have been established (e.g., workflow, georeferencing) that had their first
meetings. Several of these groups are joint efforts with the DigIn-TCN. Also, ANSP developed a
prototype module in FileMaker for making live/dead determinations in support of development of
standards across institutions for this function. Fields used and text of drop-down menus have
been added to discussion documents of the ESB working group on this subject. Examples:
specimens preserved in fluid are assumed to be live collected; observations of behavior taken to
indicate presence of live individuals. FMNH's team has a TDWG member (Janeen Jones) and
we are coordinating with that group.

Identify Gaps in Digitization Areas and Technology:
There is much ongoing discussion by collaborative partners in this arena. Initial needs and
concerns vary among members, with ANSP needing to modify collection database to support
polygons and other complex spatial types being added to GeoLocate by YPM, and CM needing
to establish an IPT instance (or tap into an existing one). DMNH identified as the biggest gap the
challenge to integrate live/dead determinations into its local Specify database and migrate that
data to iDigBio and GBIF. RSMAS is starting from scratch and has identified the first phases as
1) scanning the written documents and card catalogues, and 2) starting to input the information
for the written catalogues into a database; however, selection of a database has yet to be made.
YPM is facing the challenge of georeferencing complex spatial types (lines, multi-lines, multi-
polygons, donuts etc.) and integration of depth/elevation data in georeferencing. Work is
underway to implement these capabilities within GEOLocate.

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

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
Much effort has been spent to facilitate exchanges and avoid duplication with other relevant
TCNs. InvertEBase is the main partner for our Symbiota portal – with close coordination with
DigIn-TCN, PILSBRY-TCN, and Smithsonian's Panama project (which is also in the process of
joining the InvertEBase platform). Shared working groups (with members of multiple TCNs) have
been established and are beginning to meet regularly. ESB and DigIn, in particular, share many
upcoming needs in authority file development, georeferencing needs, and workflow development,
and the two projects have a strong overlap in their steering committees to assure the best-
possible flow of ideas and information. Specific projects that are underway: ANSP is working with
working with PILSBRY and MolluscaBase to develop an agent database for collectors, donors,
preparators, vessels, and other actors associated with malacology collections. MCZ is integrating
workflows with other TCNs and a CSBR grant to cryo-preserve MCZ primary types.

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

Share and Identify Education and Outreach (E&O) Activities:
Our Social Media Committee (spearheaded by BMSM, with FMNH, MCZ, and FWRI) defined
parameters and spearheaded creation of media resources for the project. ESB now has media
presence on:

Facebook https://www.facebook.com/groups/easternseaboardmollusks;

Instagram @eastern_seaboard_mollusks;

Twitter @EMollusks;

iNaturalist https://inaturalist.org/projects/eastern-seaboard-mollusks

Other efforts include website development by RSMAS and NCSM's Citizen Science Project
CitSciScribe (described above) to transcribe the data.

Google Analytics

Other Progress (that doesn't fit into the above categories):
Cost-Reimbursement Subaward Agreements have been executed or are close to completion.

Communication infrastructure and file storage has been organized via Google Drive. We also are sharing relevant Slack channels with DigIn.

The ESB Steering Committee now consists of Rüdiger Bieler* (FMNH), Petra Sierwald (FMNH), Gary Rosenberg* (ASNP), Elizabeth Shea (DMNH), Adam Baldinger* (MCZ), and Gustav Paulay* (UF); the four individuals marked by * also serve on the current DigIn steering committee.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1659

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Submission #1654

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by jbudke
Friday, November 20, 2020 - 12:24
192.249.3.135

TCN Name:
GLOBAL: Building a Global Consortium of Bryophytes and Lichens: Keystones of Cryptobiotic Communities

Person completing the report:
jbudke@utk.edu

Progress in Digitization Efforts:
Our TCN started on September 15, 2020 and our plan is to report effort in 3 month increments going forward. For the Feb 2021 report we will report on progress from Oct, Nov, and Dec 2020. Thus this report is for September 15-30, 2020. Due to COVID-19 we have had a slow start to our digitization efforts. Some of our collaborating institutions are working partially to fully remotely and some are currently unable to access their collections or work spaces due to institutional regulations limiting occupancy of buildings. That being said, we have made some digitization progress. For September 15-30, 2020 we have barcoded 2,301 specimens, imaged labels for 801 specimens, imaged the organisms inside the specimen packets/boxes for 558 specimens, transcribed 1,428 specimen labels, and have georeferenced 2,536 specimens.

Share and Identify Best Practices and Standards (including Lessons Learned):
We have had an Executive Committee meeting and we held a kickoff meeting for the entire collaboration after one of the iDigBio Summit sessions and have been working to strategize the initial phases of the project. Jessica Budke and Matt von Konrat also presented at the iDigBio Summit on the goals and aims of this TCN project. We have also connected members from all of our collaborating institutions using project management software to shared discussion boards and document folders. We are working together online to develop and trial digitization workflows for label and specimen image capture for specimens across a range of storage types, since there is a wide diversity across institutions and very few institutions have done this step in the digitization process before.

Identify Gaps in Digitization Areas and Technology:
We have started to build controlled vocabulary to establish a tagged image library; discussed necessary programming routines and development of the new platform to integrate and build up an image tagging library (including informal coordination meetings with collaborators). We are also working on revising batch image upload routines and new ways to present images (specimens, taxon profiles, checklists), as well as setting up an image hosting server.

Share and Identify Opportunities to Enhance Training Efforts:
Our internal Outreach & Training Team has begun sharing existing web resources (e.g.,

https://help.lichenportal.org/index.php/en/cnalh-help-resources/) and routine digitization guidelines (maximum image file upload size, naming conventions, recommendations on file formats, etc.) to help guide the work.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
We are working towards establishing a Help & Resources site as an integral part of the new project website and are planning training workshops about Symbiota functionality.

Share and Identify Opportunities and Strategies for Sustainability:
NA

Share and Identify Education and Outreach (E&O) Activities:
We are working to identify possible sets of specimens (or already imaged labels) that would be a good fit for crowdsourcing transcription, and are thinking ahead to winter citizen science initiatives and WeDigBio 2021.

Google Analytics

Other Progress (that doesn't fit into the above categories):
Collaborators have started investigating and purchasing barcodes and imaging equipment.

The lead PI has been working to hire a Project Manager to assist with managing this collaborative grant. Collaborators at Arizona State University (ASU) have started and completed the hiring process for a Data Portal Manager who will be starting January 2021. Collaborators at ASU have also had several preliminary internal planning sessions on the new portal development.

Preliminary discussions have begun focusing on how to update the taxonomic thesauri for bryophytes and lichenized fungi (bryophytes: integration with Tropicos, but adding accepted names vs. synonyms catalog by research at the Missouri Botanical Garden; lichens: better integration tools to harvest data from Index Fungorum & Mycobank, preliminary discussion with MycoPortal).

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1654

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

Submission #1651

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by psierwald
Sunday, November 1, 2020 - 16:35
24.14.162.251

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:
Combined annual report for InvertEBase 2020
FMNH: 2nd year no cost extension: Mollusks (served on InvertEBase): 256,522 digitized lots,
representing an estimated 2,5 million specimens (includes non-TCN funded additions), 22%
georeferenced. Completely Georeferenced mollusk localities in Colorado, New Mexico, Utah,
Arizona; georeferencing continues, currently working on Indiana and Illinois. Insects digitization:
438,272 specimen records, 74 % georeferenced. Newly available online through this grant.
PEN grant 16-01700 (grant ended, final report submitted): mollusks 15,423 specimen records
(42% georeferenced) on InvertEBase. Insects on SCAN: 26,175 occurrences, 39%
georeferenced
PEN grant 17-01842 (grant ongoing): Museum of Northern Arizona: Biodiversity of the Colorado
Plateau, start date: 15 April 2018: MNA : summer employment for one undergraduate and one
post-MS position, digitization of 2000 invertebrate specimen batches this past quarter, including
many species-level identification of Odonata, Hemiptera, Coleoptera, Lepidoptera, aculeate
Hymenoptera specimens. At present, MNA has exceeded 120,000 batches of specimens in the
database, including more than 180,318 individual specimens and with more than 63,837
specimens identified to the species level, and more than 80,000 specimens identified to genus
level. The imaging portion of the project has been completed. Most of the data and images are
not yet uploaded to InvertEBase, more are uploaded to SCAN.
New 2020 PEN grant added: Invertebrates from the Rocky Mountains and Great Plains:
University of Colorado Museum of Natural History, Boulder Col History expands taxonomic and
geographic coverage of InvertEBase. PI Leanne Elder, University of Colorado Museum
UMMZ (grant ended 2019, final report submitted): Invertebrates data served on
InvertEBase:105,094 specimen records, 60% georeferenced. Terrestrial arthropods on SCAN:
315,996 specimen records, 16% georeferenced.
DMNH: (2nd year of no-cost extension, grant ended 2020, final report pending): serving 78,482
records on the Symbiota portal InvertEBase. Over 50% are georeferenced and 62% are
identified to species, representing 5,838 species, with an average of 13 records per species.
Records are served on iDigBio and GBIF.
CMNH (1 year, no-cost extension, grant ended, final report pending) Insects: total of 131,371
specimens digitized. Digitization of Lepidoptera collection was completed in early December

2019, final count of 55,251 digitized specimens, housed in 864 drawers and 42 cabinets. Georeferencing for new localities ongoing. All records are available online on the OSU data portal (Hymenoptera online) and currently 126,703 specimen records are mirrored on global aggregators (GBIF, SCAN etc).
Auburn (grant ended 2019, final report submitted): terrestrial arthropods: 97,931 specimen records, ,31% georeferenced, served on SCAN. Mollusks/Invertebrates: not yet on InvertEBase, but on iDigBio: 20,995 specimen records. Poting on InvertEBase planned. This is collection is newly online through the InvertEBase grant.
Frost Entomological Collections (grant ended 2019, final report submitted): 131.808 occurrence/specimen data digitized, 58% georeferenced. This is collection is newly online through the InvertEBase grant. The data are available online on the SCAN portal https://scan-bugs.org/portal/collections/misc/collprofiles.php?collid=126

Share and Identify Best Practices and Standards (including Lessons Learned):
nothing to report

Identify Gaps in Digitization Areas and Technology:
nothing to report

Share and Identify Opportunities to Enhance Training Efforts:
nothing to report

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

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

Share and Identify Education and Outreach (E&O) Activities:
nothing to report

Google Analytics

Other Progress (that doesn't fit into the above categories):
nothing to report

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1651

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

Home > Collaborators > TCN Quarterly Progress Report to iDigBio > Webform results > TCN Quarterly Progress Report to iDigBio

Submission #1656

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by neilscobb
Tuesday, December 1, 2020 - 07:42
134.114.101.73

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

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

Identify Gaps in Digitization Areas and Technology:
see attached

Share and Identify Opportunities to Enhance Training Efforts:
see attached

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

Share and Identify Opportunities and Strategies for Sustainability:
see attached

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

Google Analytics

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

Attachment 1
LepNet_SCAN_November_2020.docx

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1656

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

November 30, 2020
Neil Cobb

Progress in Digitization Efforts:

This is a joint report for the two Thematic Collections Networks (TCNs) 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 https://scan-bugs.org/portal/, which depending on the context we refer to as the SCAN-LepNet database or the LepNet-SCAN database. We will also serve arthropod data for InverteBase and will serve Terrestrial Parasite Tracker TCN data when it becomes available (See TPT TCN report for details). Summary statistics presented here were compiled from data accessed on the SCAN portal, August 9, 2020. **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. We provide data specific to institutions that received direct funding from the NSF-ADBC program in the annual reports to NSF.

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 (LepNet)
Specimen Records	22,676,043	18,419,006	4,257,037
# Georeferenced	19,086,256	15,362,486	3,723,770
# Imaged	3,903,414	2,461,799	1,441,615
# Identified to species	13,640,873	9,554,232	4,086,641

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 27 ADBC funded museums and one non-funded museum (Oklahoma State University). The museums comprising the NSF-ADBC LepNet are all serving records and images 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 where specimens were collected outside of North America.

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. Although most of

the Lepidoptera imaged are from INaturalist, 170,854 are specimen images **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 87% 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 74% 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 are sponsoring 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. They have already contributed over 13,000 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	866,504	794,766	853,030	785,577
Noctuidae	551,907	497,764	532,520	484,671
Erebidae	409,709	364,190	391,397	350,357
Geometridae	354,158	311,771	338,290	298,221
Hesperiidae	343,517	290,141	335,880	283,861
Pieridae	341,709	285,533	337,471	282,400
Lycaenidae	271,896	242,957	267,095	239,354
Papilionidae	170,456	142,609	168,960	141,616
Crambidae	157,158	133,565	151,543	129,497
Tortricidae	134,876	107,454	125,529	100,934

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 one SCAN PEN proposal, one through the American Museum of Natural History, focusing on several ground-dwelling 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.scan-all-bugs.org/ .

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 SCAN/LepNet project website https://scan-all-bugs.org/ .

Images for Research - We developed a new and efficient process for uploading images to the database https://scan-bugs.org/portal/profile/index.php?refurl=/portal/imagelib/imagebatch.php? .We are participating in a TDWG-sponsored working group to develop standards for specimen images, including definition of morphological traits.

Identify Gaps in Digitization Areas and Technology: We are supporting the "LightingBug" project https://lightningbug.tech/, which will exponentially increase transcription rate of labels and produce specimen images comprising 360-degree image suites. The production of images will be transformational in terms of extending our capabilities to provide automated identifications and examine morphological traits.
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 217 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 three new collections since the last update.

GBIF Registration - There are 47 Live collections on SCAN that are now registered with GBIF and 87 other entomology collection datasets from the North America being served on GBIF for a total of 181 datasets. This leaves approximately 30 collections in North America that still need to register on GBIF.

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 review of North American entomology collections has been published in PeerJ. We are now developing a follow up review on North American arthropod data.

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. 2019 Assessment of North American Entomology Collections: Prospects and Challenges for Addressing Biodiversity Research. PeerJ, 7, p.e8086.

Google Analytics: Our Google Analytics data are dynamically shown https://datastudio.google.com/u/0/reporting/1VvEU4pM2LGqQXY0hVCTf98VvGmM7T_bu/page/cLZN for the SCAN portal, http://scan-bugs.org/portal/index.php .

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

Submission #1657

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by amiller
Tuesday, December 1, 2020 - 12:05
192.17.34.136

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:
amiller@inhs.illinois.edu

Progress in Digitization Efforts:
• Over 2000 records from EIU have been fully transcribed and over 5000 records have been georeferenced
• 3,893 records from the Estonian Museum of Natural History (TAM) have been uploaded to the MyCoPortal
• 15,101 records from the Tallinn Botanic Garden (TALL) have been uploaded to the MyCoPortal
• 109,038 records from the University of Tartu Natural History Museum (TU) have been uploaded to the MyCoPortal
• 136,411 records from the Institute of Agricultural and Environmental Sciences of the Estonian University of Life Sciences (TAAM) & Estonian University of Life Sciences (EAA) have been uploaded to the MyCoPortal
• Two additional collections, Bridgewater College Herbarium (BDWR) and University of Central Florida (UCF) have been added to the MyCoPortal.
• The MyCoPortal now contains 7,354,391 records from 114 collections!

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:
• Hired an undergraduate student (minority female) and she has been trained via Zoom to transcribe and georeference fungal records.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
• FunGuild, which serves fungal ecological metadata, is moving to the INHS as part of the MyCoPortal suite, which includes FDex – a simplified names database, primarily for projecting taxonomic hierarchy for fungal taxa.

Share and Identify Opportunities and Strategies for Sustainability:

• Development is continuing on our automatic taxonomic thesauri updater. It is hoped to be completed by early 2021 when other TCNs such as the GLOBAL TCN will be able to use it.

Share and Identify Education and Outreach (E&O) Activities:
• Nothing new to report.

Google Analytics
FOURTH-Q-2020-REPORT.pdf

Other Progress (that doesn't fit into the above categories):
• Please see MyCoPortal Data Portal Statistics generated from Google Analytics (attached).

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1657

Fourth Quarter 2020
August, September, October

Progress in Digitization Efforts
- Over 2000 records from EIU have been fully transcribed and over 5000 records have been georeferenced
- 3,893 records from the Estonian Museum of Natural History (TAM) have been uploaded to the MyCoPortal
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- Two additional collections, Bridgewater College Herbarium (BDWR) and University of Central Florida (UCF) have been added to the MyCoPortal.
- The MyCoPortal now contains 7,354,391 records from 114 collections!

Best Practices and Standards (Lessons Learned)
- Nothing new to report.

Gaps in Digitization Areas and Technology
- Nothing new to report.

Opportunities to Enhance Training Efforts
- Hired an undergraduate student (minority female) and she has been trained via Zoom to transcribe and georeference fungal records.

Collaboration with other TCNS, Institutions, and Organizations
- FunGuild, which serves fungal ecological metadata, is moving to the INHS as part of the MyCoPortal suite, which includes FDex – a simplified names database, primarily for projecting taxonomic hierarchy for fungal taxa.

Opportunities and Strategies for Sustainability
- Development is continuing on our automatic taxonomic thesauri updater. It is hoped to be completed by early 2021 when other TCNs such as the GLOBAL TCN will be able to use it.

Education and Outreach Activities
- Nothing new to report.

Other Progress
- Please see MyCoPortal Data Portal Statistics generated from Google Analytics (attached).
-

Publications
- MyCoPortal has been cited 86 times - 29 times in 2020, in peer-reviewed journal publications.

Presentations
- Nothing new to report.

MyCoPortal Data Portal Statistics

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

MYCOLOGY COLLECTIONS PORTAL

Users	New Users	Sessions	Number of Sessions per User	Pageviews	Pages / Session	Avg. Session Duration	Bounce Rate
15,377	14,362	23,883	1.55	64,796	2.71	00:02:55	63.28%

New Users (line chart, 2015–2019)

Referral sources pie chart:
- google — 69%
- (direct) — 24.4%
- baidu
- m.facebook.com
- bing
- mollusk.inhs.illinois.edu
- yahoo
- baidu.com
- scmycoflora.org
- others

Country pie chart:
- United States — 40%
- China — 7.2%
- Canada — 4.7%
- France — 3.6%
- Italy — 3.6%
- Germany
- Spain
- United Kingdom
- India
- others — 30.3%

World map: 1 — 9,542
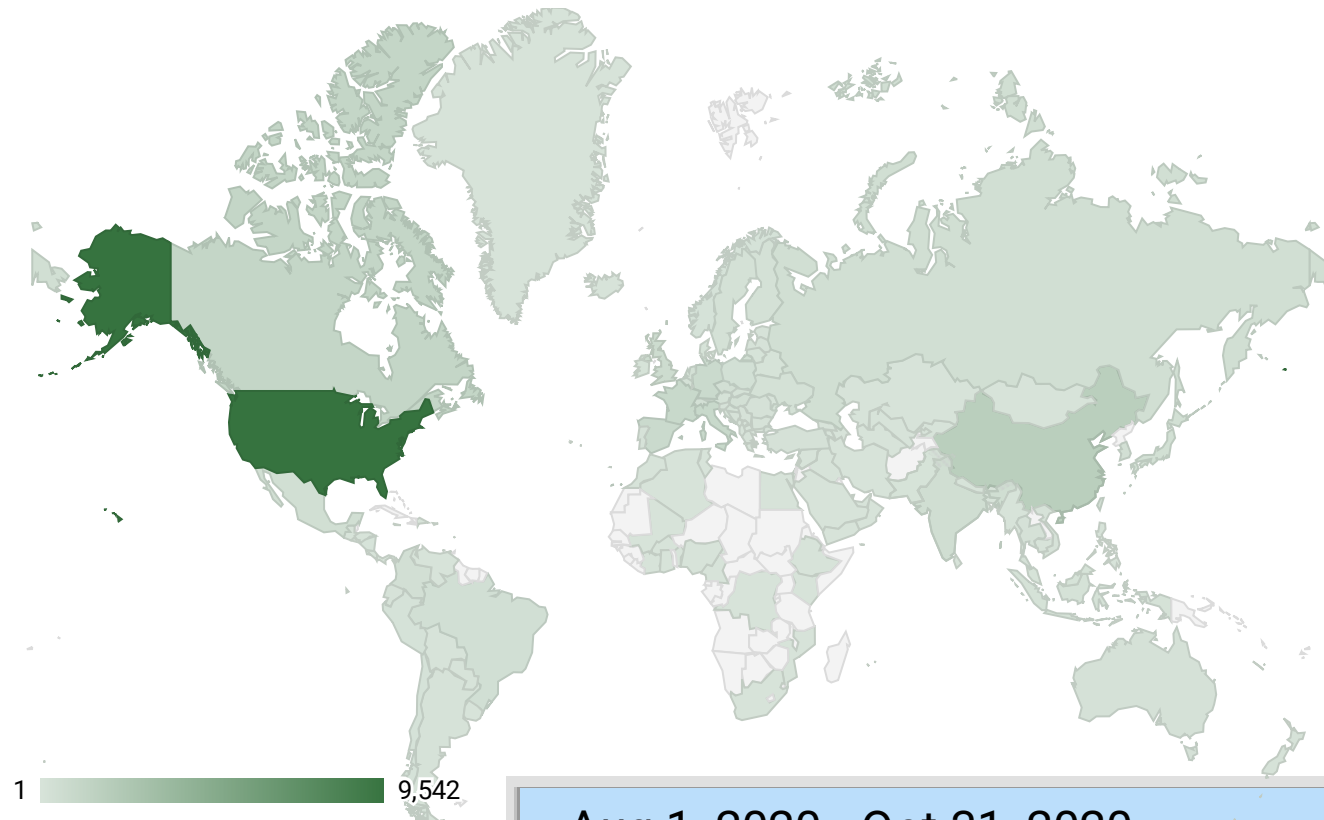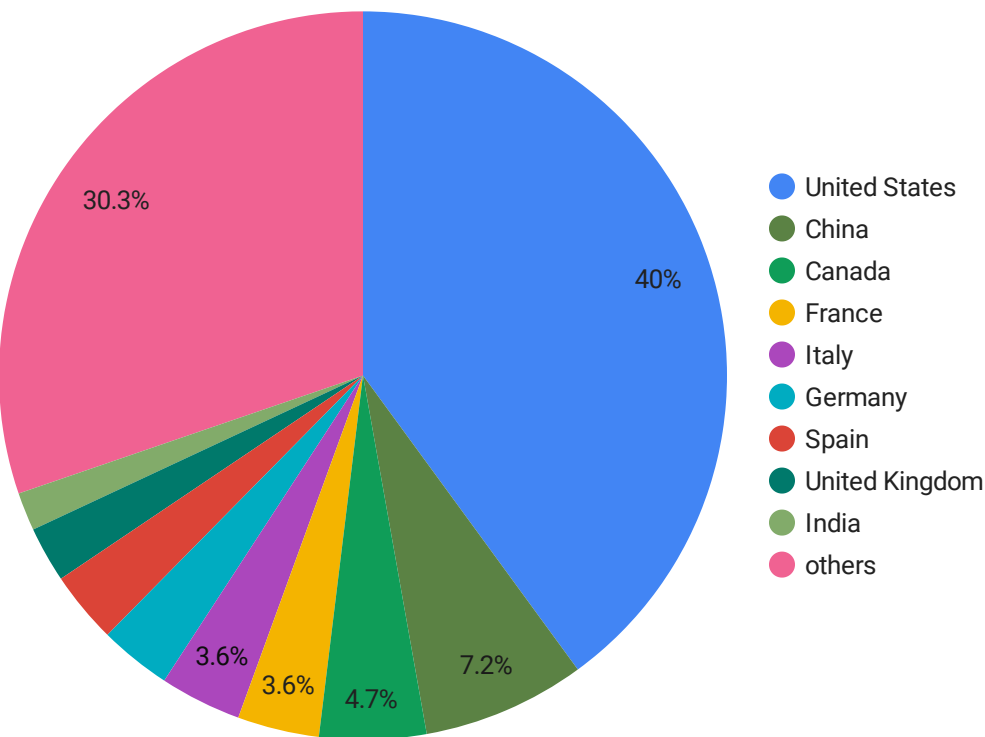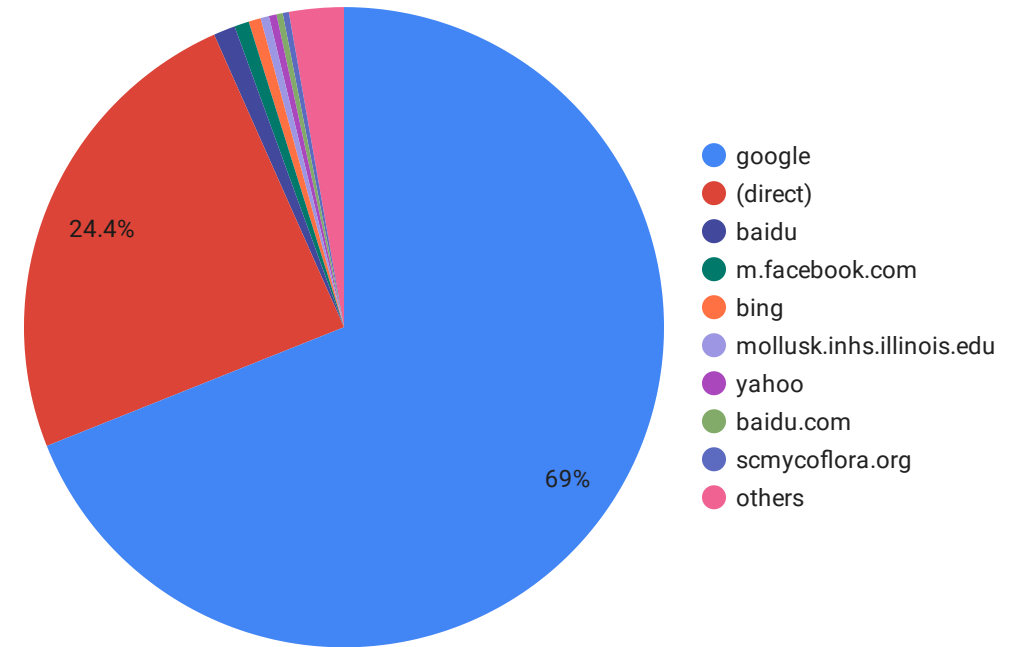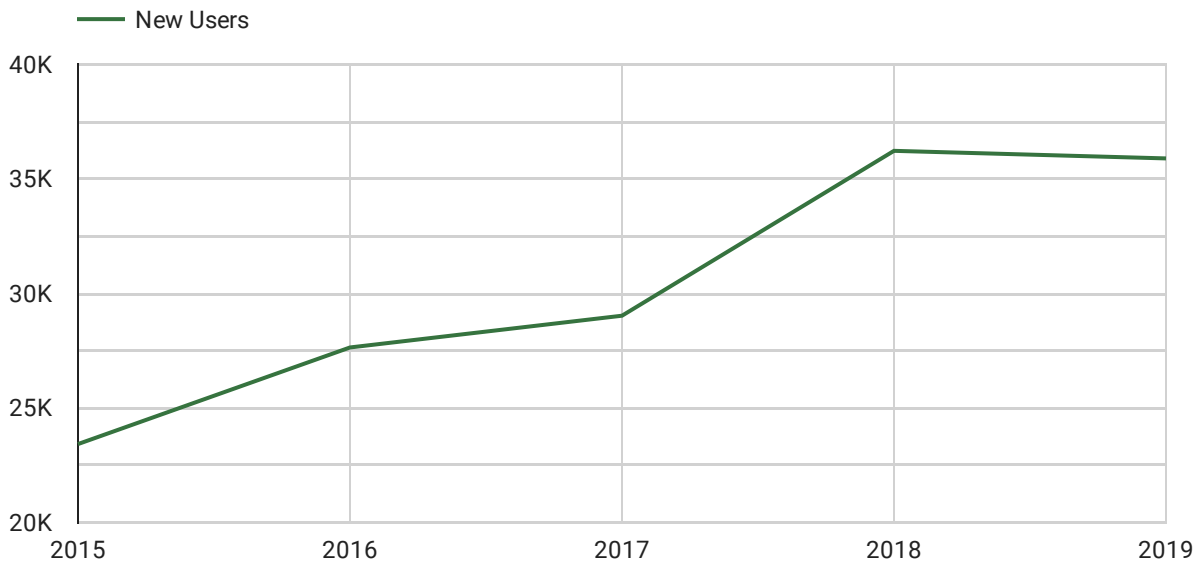
Aug 1, 2020 - Oct 31, 2020

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

Submission #1648

┌─ Submission information ─────────────────────────────────┐

Form: TCN Quarterly Progress Report to iDigBio
Submitted by akasameyer
Friday, September 11, 2020 - 20:20
135.180.96.65

└──┘

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:
Note: Due to ongoing stay-at-home orders which limit access to workplaces, some project participants were unable to accurately report their institution's progress during this quarter. They will include this information in our next quarterly report.
For extant specimen progress during this reporting period, Pteridophyte Collections Consortium members created skeletal records for 7,932 specimens, fully transcribed 42,090 specimens, imaged 5,090 specimens, and geo-referenced 4,309 specimen records. The total pteridophyte extant specimen progress including work done prior to the start of the grant is 569,772 (34% of goal) skeletal records created, 1,065,414 (65% of goal) extant specimens imaged, 962,836 (58% of goal) extant specimens fully transcribed, and 252,978 (15% of goal) extant specimens geo-referenced.
In the Pteridoportal (http://pteridoportal.org/), we currently have the following data available for extant specimens:
1,531,664 occurrence records
350,019 (23%) georeferenced
1,200,151 (76%) occurrences imaged
For fossil specimen progress during this reporting period, Pteridophyte Collections Consortium members databased 461 specimens, imaged 150 specimens, and geo-referenced 100 specimen records. The total pteridophyte fossil specimen progress including work done prior to the start of the grant is 28,791 (33% of goal) specimens databased, 27,754 (32% of goal) specimens imaged, and 10,796 (12% of goal) specimen records geo-referenced.
In the Pteridoportal (http://pteridoportal.org/), two collections, UCMP and UNC, currently have data loaded, totalling:
1,052 occurrence records
117 (11%) georeferenced
294 (28%) occurrences imaged
NYBG uploaded a crowdsourcing expedition to DigiVol focused on pteridophytes of Mexico (https://volunteer.ala.org.au/project/index/97401069). The public transcribed 2363 records. The data will be checked by trained volunteers and then imported to the NYGB institutional database.
BRIT launched an online meeting activity called the Armchair Botanist (http://www.brit.org /armchairbotanist). That meets every Tuesday from 2:00-3:00 pm for volunteers and other people

interested in Notes for Nature expeditions for transcription. They made a youtube video that explains the basics of specimen transcription https://youtu.be/QxrI3RwUL_4.

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:
The Field Museum created documentation for using the Symbiota Crowdsourcing module which is available on our website: https://pteridophytes.berkeley.edu/project-resources/
Michigan State trained three graduate students on transcription this summer and created a training website for volunteers.

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:
The University of Texas presented one virtual program to a Master Naturalists' group.
At CHRB, Collections Manager Megan R. King presented 'How Collections-based Undergraduate Research Adapted to a Pandemic: A Case Study of the Herbarium Army at Rutgers University' at Virtual Botany 2020 Director Dr. Lena Struwe presented on 'Remote active learning in botany using your students' homes and neighborhoods – an opportunity and a challenge' during Virtual Botany 2020 as well.
The Field Museum shared the PCC project with two summer camps, using the crowdsourcing module to showcase how youth can participate in science. They hosted an online volunteer event with United Airlines with an attendance of 23 people that edited a total of 672 specimen records from the United States.

Google Analytics

Other Progress (that doesn't fit into the above categories):
Project staff are working with participants to load data into the Paleo Module of the Pterdoportal.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1648

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

Home > Collaborators > TCN Quarterly Progress Report to iDigBio > Webform results > TCN Quarterly Progress Report to iDigBio

Submission #1661

┌─ Submission information ─────────────────────────────────┐

Form: TCN Quarterly Progress Report to iDigBio
Submitted by nyeung
Tuesday, December 1, 2020 - 19:55
66.91.202.54

└──┘

TCN Name:
PILSBRy

Person completing the report:
nyeung@hawaii.edu

Progress in Digitization Efforts:
Since the last quarterly meeting, we have databased another 7005 specimen records with 50,409 specimens and 2886 specimen records have been georeferenced. The symbiota portal is almost fully developed and we expect to start populating this portal with specimen records from all institutions later this month. This will allow us to better clean up taxonomic names and have more consistent georeferenced localities across all collections.

Share and Identify Best Practices and Standards (including Lessons Learned):
Due to COVID19 shutdowns, each institution has been making the best in digitizing from home which includes a lot of transcription work. Additionally, recruitment of students, volunteers, and technicians have been slow due to COVID19 restrictions.

Identify Gaps in Digitization Areas and Technology:
Due to COVID19 shutdowns, each institution has been making the best in digitizing from home which includes a lot of transcription work. Additionally, recruitment of students, volunteers, and technicians have been slow due to COVID19 restrictions.

Share and Identify Opportunities to Enhance Training Efforts:
Personnel have been training and meeting via zoom. Social media platform has aided in distributing project updates gaining community interest.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
We have contacted state agencies in Hawaii and Guam to acquire georeferencing data to aid in developing the gazetteer to have more accurate data for our specimen records.

Share and Identify Opportunities and Strategies for Sustainability:
This is currently difficult as we are all struggling to be productive with COVID19 restrictions.

Share and Identify Education and Outreach (E&O) Activities:
There has been limited recruitment due to COVID19 restrictions but we have been able to recruit and train 5 undergraduate students to aid in digitization efforts. However, their hours are limited due to access restrictions to the collection. There are some institutions that are still unable to

recruit students to work in the collectino. However, social media (e.g. Twitter, Facebook), and other video platforms (e.g. youtube, vimeo, zoom) has allowed us to develop educational outreach videos and project updates and to conduct virtual taxonomic workshop and collection tours.

Google Analytics

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

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1661

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

Submission #1655

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by neilscobb
Tuesday, December 1, 2020 - 07:41
134.114.101.73

TCN Name:
Southwest Collections of Arthropods Network (SCAN): A Model for Collections Digitization to Promote Taxonomic and Ecological Research

Person completing the report:
neilscobb@gmail.com

Progress in Digitization Efforts:
See attached

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

Identify Gaps in Digitization Areas and Technology:
See attached

Share and Identify Opportunities to Enhance Training Efforts:
See attached

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

Share and Identify Opportunities and Strategies for Sustainability:
See attached

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

Google Analytics

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

Attachment 1
LepNet_SCAN_November_2020.docx

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1655

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

November 30, 2020
Neil Cobb

Progress in Digitization Efforts:

This is a joint report for the two Thematic Collections Networks (TCNs) 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 https://scan-bugs.org/portal/, which depending on the context we refer to as the SCAN-LepNet database or the LepNet-SCAN database. We will also serve arthropod data for InverteBase and will serve Terrestrial Parasite Tracker TCN data when it becomes available (See TPT TCN report for details). Summary statistics presented here were compiled from data accessed on the SCAN portal, August 9, 2020. **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. We provide data specific to institutions that received direct funding from the NSF-ADBC program in the annual reports to NSF.

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 (LepNet)
Specimen Records	22,676,043	18,419,006	4,257,037
# Georeferenced	19,086,256	15,362,486	3,723,770
# Imaged	3,903,414	2,461,799	1,441,615
# Identified to species	13,640,873	9,554,232	4,086,641

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 27 ADBC funded museums and one non-funded museum (Oklahoma State University). The museums comprising the NSF-ADBC LepNet are all serving records and images 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 where specimens were collected outside of North America.

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. Although most of

the Lepidoptera imaged are from INaturalist, 170,854 are specimen images **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 87% 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 74% 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 are sponsoring 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. They have already contributed over 13,000 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	866,504	794,766	853,030	785,577
Noctuidae	551,907	497,764	532,520	484,671
Erebidae	409,709	364,190	391,397	350,357
Geometridae	354,158	311,771	338,290	298,221
Hesperiidae	343,517	290,141	335,880	283,861
Pieridae	341,709	285,533	337,471	282,400
Lycaenidae	271,896	242,957	267,095	239,354
Papilionidae	170,456	142,609	168,960	141,616
Crambidae	157,158	133,565	151,543	129,497
Tortricidae	134,876	107,454	125,529	100,934

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 one SCAN PEN proposal, one through the American Museum of Natural History, focusing on several ground-dwelling 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.scan-all-bugs.org/ .

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 SCAN/LepNet project website https://scan-all-bugs.org/ .

Images for Research - We developed a new and efficient process for uploading images to the database https://scan-bugs.org/portal/profile/index.php?refurl=/portal/imagelib/imagebatch.php? .We are participating in a TDWG-sponsored working group to develop standards for specimen images, including definition of morphological traits.

Identify Gaps in Digitization Areas and Technology: We are supporting the "LightingBug" project https://lightningbug.tech/, which will exponentially increase transcription rate of labels and produce specimen images comprising 360-degree image suites. The production of images will be transformational in terms of extending our capabilities to provide automated identifications and examine morphological traits.
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 217 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 three new collections since the last update.

GBIF Registration - There are 47 Live collections on SCAN that are now registered with GBIF and 87 other entomology collection datasets from the North America being served on GBIF for a total of 181 datasets. This leaves approximately 30 collections in North America that still need to register on GBIF.

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 review of North American entomology collections has been published in PeerJ. We are now developing a follow up review on North American arthropod data.

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. 2019 Assessment of North American Entomology Collections: Prospects and Challenges for Addressing Biodiversity Research. PeerJ, 7, p.e8086.

Google Analytics: Our Google Analytics data are dynamically shown https://datastudio.google.com/u/0/reporting/1VvEU4pM2LGqQXY0hVCTf98VvGmM7T_bu/page/cLZN for the SCAN portal, http://scan-bugs.org/portal/index.php .

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

Submission #1662

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by djbarroso
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TCN Name:
American Crossroads: Digitizing the Vascular Flora of the South-Central United States (TORCH TCN)

Person completing the report:
dbarroso@brit.org

Progress in Digitization Efforts:
TORCH TCN — Quarterly Report
Reporting Period: August 1st, 2020 - October 31st, 2020
Assembled by BRIT on December 1st, 2020, for Dec. 2nd IAC meeting

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

Institutions reporting:
BRIT – Botanical Research Institute of Texas (including subaward work done this Quarter)
BAYLU – Baylor University
HUH – Harvard University
KANU – University of Kansas
MO – Missouri Botanical Garden
NOSU – Northeastern State University
NY – New York Botanical Garden
OKL – University of Oklahoma
OKLA – Oklahoma State University
SHST – Sam Houston State University
TAES – Texas A&M University-College Station
TAMUCC – Texas A&M University-Corpus Christi
TEX-LL – University of Texas at Austin (Plant Resources Center), including subawards who submitted a Quarterly Report to TEX-LL for this period.
TTC – Texas Tech University
UTEP – University of Texas at El Paso

Progress in Digitization Efforts:
• Number of skeletal records created:

BRIT = 0

BAYLU = 0

HUH = 0

KANU = 0

MO = 0

NOSU = 0

NY = 5,926

OKL = 0

OKLA = 0

SHST = 0 (Cumulative = 25,000 available)

TAES = 0

TAMUCC = 0 (None yet)

TEX-LL = 1,101

TTC = 75

UTEP = 0

Total skeletal records created this quarter: 7,102

• Number of fully-transcribed records created:

BRIT = 20,693 (11,709 staff and volunteer transcriptions + 8,984 community science NfN-supplied transcriptions)

BAYLU = 0

HUH = 83

KANU = 2,299 (Total number of fully transcribed records from OK and TX = 26,131)

MO = 104

NOSU = 0

NY = 685 (year total: 52,485)

OKL = 1,055

OKLA = 2,000 (On Notes from Nature via Field Botany course assignment; ongoing)

SHST = 0 (Cumulative = 25,000 available)

TAES = 0

TAMUCC= 0 (None yet)

TEX-LL = 452

TTC = 75

UTEP = 0

Total fully-transcribed records created this quarter: 27,446

• Number of specimens imaged:

BRIT = 14,982

BAYLU =14,830

HUH = N / A. We have resumed imaging operations under a low-density staff occupancy plan. However, we have had technical maintenance issues that have interrupted our transcription activities and will not know the number of project-related specimens that have been imaged until transcription has resumed.

KANU = 0

MO = 51

NOSU = 0

NY = 5,926

OKL = 1,151

OKLA = 20,282

SHST = 0

TAES = 12,000

TAMUCC = 0 (None yet. We are still calibrating the imaging station.)

TEX-LL = For TEX-LL: 1,101
For HPC: 300

Sub-Total: 1,401

TTC = 337

UTEP = 3,000

Total number of specimens imaged this quarter: 73,960

• Number of specimens georeferenced:
BRIT = 0
BAYLU = 0
HUH = 0
KANU = 2,319 (Total number of georeferenced records from OK and TX = 25,830)

MO = 55

NOSU = 0

NY = 12,589 (year total: 45,060)

OKL = 0

OKLA = 0

SHST = 0

TAES = 0

TAMUCC = 0 (None yet)

TEX-LL = 0

TTC = 3,015

UTEP = 4,234 since August, for this Quarter (8,427 total)

Total number of specimens georeferenced this quarter: 22,212

• Other digitization or pre-digitization efforts:

BRIT: Placed order for barcodes for additional BRIT specimens, and those of provider herbaria (ACU, HSU, NTSC, and TCSW) –significant amounts of time were spent research and communicating with barcode providers to select Watson Labels.

Continued locating project specimens in BRIT collection (Oklahoma in BRIT/SMU North America folders).

Used herbarium High School student assistant to assist with skeletally transcribing images from image sets containing a mix of project and non-project specimens (Texas and Oklahoma in VDB North America folders).

Hired and trained Tessa Boucher as a BRIT Herbarium Digitization Technician, to digitize the specimens in the Benjamin B. Harris herbarium at the University of North Texas.

Commenced the imaging and transcription of the NTSC herbarium.

Retrieved the ACU herbarium (Abilene Christian University) in 37 boxes and rotated these through the BRIT freezing protocol for pest management.

BAYLU: None.

HUH: None.

KANU: We have now databased all OK and TX specimens in 330 of our 350 cases (94%). Drop tags identifying OK and TX specimens have been placed in 8 additional cases; those specimens will be databased next. Databasing progressed more slowly than we expected during the quarter, so we did not complete databasing this quarter as we had projected. However, barring a complete shutdown of the herbarium again, we expect to complete all databasing and georeferencing early in the next quarter.

MO: We have finished searching for and sorting out project specimens from Aceraceae Adoxaceae and Anacardiaceae. The amount of time needed to locate project–specific specimens is significant, even when working from a well-defined checklist of taxa found in Texas and

Oklahoma. Many 19th and early 20th century specimens in our collection have cryptic hand-written text on their labels, often in pencil, which needs to be examined carefully to determine whether or not the specimen falls in the project area.

NOSU: None.

NY: 971 other partial transcriptions (State and Country name added)

OKL: All 200,820 OKL records from the pre-existing Oklahoma Vascular Plant Database (OVPD) were cleaned, and are being uploaded into the TORCH Symbiota portal. These records were uploaded by Data Manager Clay Barrett, and problems with the records were resolved by Amy Buthod and Todd Fagin.

OKLA: >50,000 Oklahoma complete records (without images) were imported into the TORCH Portal from the pre-existing OVPD/OBIS database; 82,787 records from OVPD/OBIS have been cleaned and reformatted by Data Manager Clay Barrett. Genus folders were made for Texas specimens (17 cabinets).

SHST: We are still in the process of purchasing imaging equipment, and discussing with BRIT the possible alternative of utilizing the planned TORCH TCN roving imaging station.

TAES: Hired and trained 4 undergraduate students.

TAMUCC: 1) Digitization station setup completed; 2) barcode labels ordered; 3) digitization intern hired.

TEX-LL: We have one student who is continuing to pull Oklahoma specimens out of the general herbarium. We are approaching 90% of the way through the collections. Also, The Fort Worth Nature Center (1,918 specimens) was transcribed and imaged prior to this quarter, but the records have yet to be transferred to iDigBio and the TORCH portal.

TTC: Mounting specimens from Guadalupe Mountains National Park collected in the 1970s.

UTEP: None.

• Comments about the digitization process:

BRIT: Nothing new to report.

BAYLU: On-going. Utilizing the TACC data repository with BRIT post-processing of imagery.

HUH: Specimens are currently being barcoded and imaged at high through-put. We are resolving technical infrastructure issues that have prevented us from transcribing new project specimens this quarter. We are also setting up data in GeoLocate to begin georeferencing in full.

KANU: Digitization progress has been slow but steady most of the quarter. Essential staff continued to have access to the herbarium (since late June with some restrictions remaining). Unfortunately, we could not get approval to allow student employees back in the building until the end of the first week of October. We lost another student employee because they could not return to campus at the start of the fall semester, and one student employee is working limited hours off-site for health reasons. As we wrap up databasing, we will shift efforts to imaging of specimens. Students will not be allowed to work in teams at the imaging station due to safety protocols, so imaging will proceed more slowly than we originally planned.

MO: As of this reporting access to our collections remains restricted to our science staff, who are authorized to be on-site only one or two days per week. Presently, there is no provision for access for students, volunteers and visitors. This has severely impacted our ability to recruit,

train and add new people to the project.

NOSU: No work has been done due to the pandemic.

NY: During the first six months of the shutdown we basically finished everything that could be done remotely, except georeferencing. We are now able to begin generating skeletal records and images again. Due to state and city restrictions, we are limited to only a small number of onsite staff each day, and each staff member can only work two days per week.

OKL: Newly imaged specimens are only from OKL and include new OK specimens in groups that have already been imaged as well as TX specimens. The TX images are being uploaded as they are databased, while the OK images are being kept separate to be uploaded in a batch to match the existing database records.

OKLA: Progressing well!

SHST: Like everyone else, the pandemic has slowed down the process as the university has made it so students are not yet allowed to be on campus to work.

TAES: Nothing new to report.

TAMUCC: With the partial return to campus at Texas A&M University-Corpus Christi (TAMUCC), we have resumed work in the herbarium and on the digitization project. Specifically, we the team at TAMU Corpus Christi had a meeting with the lead PI at TAMU College Station (Daniel Spalink at TAES) to harmonize our workflow with theirs, such as image capture, using Adobe Lightroom, etc.

TEX-LL: Our data manager has started a conversation with both iDigBio and TORCH to work on the details of the data transfer from our Specify database to those platforms, using an IPT. We should have this running sometime during the next quarter.

TTC: Over 12,000 of 15,000 Texas specimens have been georeferenced.

UTEP: We still have a limited ability to have students work in the herbarium due to COVID-19. We have been able to make some progress on the imaging thanks to efforts by our collections manager, Mingna "Vicky" Zhuang.

• Number of records available in iDigBio portal (cumulative) (Please NOTE: These numbers will be artificaly low, due to the fact that iDigBio has not been ingesting records from the Symbiota portals for several months now):

BRIT = For BRIT-SMU-VDB-NLU: 123,792 (All Texas and Oklahoma records)
For TAC: 6,664
For NTSC: 0

Sub-Total: 130,456

BAYLU = N / A

HUH = 43,508

KANU = We upload a new instance of our database to GBIF and iDigBio at the beginning of each month.

MO = Nothing to report.

NOSU = 0

NY = 85,517 (also includes bryophytes and fungi)

OKL = 0

OKLA = 0

SHST = 27,000

TAES = 851

TAMUCC = 0 (None yet)

TEX-LL = For TEX-LL: 1
For HPC: 26,769
For TLU: 6,297

Sub-Total: 33,067

TTC = 0

UTEP = 0

Total number of records available in iDigBio portal (cumulative): 320,399

• Number of records from TX & OK available in TORCH Symbiota portal (cumulative):
BRIT = For BRIT-SMU-VDB-NLU: 164,360 (All Texas and Oklahoma records)
For TAC: 6,662 (All Texas and Oklahoma records)
For NTSC: 697 (All Texas and Oklahoma records)
Sub-Total: 171,719

BAYLU = 14,830 stub records (non-transcribed images) available

HUH = 41,556

KANU = All KANU records uploaded to GBIF and iDigBio should be accessible via the TORCH portal.

MO = Nothing to report.

NOSU = 0

NY = 77,184 specimen records

OKL = 134,384

OKLA = 52,184 from Oklahoma and Texas (53,928 total).

SHST = 0

TAES = 234,741

TAMUCC = 0 (None yet. Once we get the imaging process going, we will simultaneously set up the project on the Symbiota portal).

TEX-LL = For TEX-LL: 207,178
For HPC: 26,643

For TLU: 6,657
For SAT: 56,452
For SRSC: 7,385
PAUH: 7,742

Sub-Total: 312,057 (of which 194,202 have images)

TTC = 21,615

UTEP = 0

Total number of TX & OK records in TORCH Symbiota Portal (cumulative): 1,060,270

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

BRIT: Approximately 200 images had to be re-taken because operator did not realize the box had misaligned –this will be more heavily stressed in the verbal training.

BAYLU: Identified imagery issue related to scale bar upside down in images. Now corrected.
Also employing clean-up procedure to reduce debris on specimens in between photobox transfer and digitization.

HUH: Nothing new to report.

KANU: Nothing new to report.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Nothing to report.

OKL: Nothing to report.

OKLA: Guide for imaging with Nikon 850 camera drafted.

SHST: Nothing to report.

TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: This quarter, we successfully converted our workflow from "Transcription first followed by imaging" to "Imaging first followed by transcription." This was necessitated by our continuing need to provide remote work to a portion of our student workers. Also, we delivered and installed an imaging station, and trained the data providers to use it, at HPC.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Identify Gaps in Digitization Areas and Technology:
Identify Gaps in Digitization Areas and Technology (issues preventing progress):

BRIT: Nothing new to report.

BAYLU: None.

HUH: Maintenance activities on local IT-supported storage have caused interruptions to our image ingest process, which has prevented us from transcribing new images this quarter. Impacts are limited to processing new images; data integrity and distribution of existing records and images are unaffected. Work is underway to limit the impact of IT maintenance so that transcription of new records can resume in the upcoming quarter.

KANU: Nothing new to report.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: During our lockdown, we ran out of previously-imaged specimens to transcribe, so we shifted the focus to georeferencing. The Lead Digitizer, McKenna Coyle, was cleared for return to onsite work two days per week in September, but due to illness and quarantine, she was only able to work for two weeks (four days) that month. Since October 1, she had been maintaining the schedule of two days onsite per week, creating skeletal records and imaging specimens. During the remaining work time, she and Intern Alex Patrascu are doing transcription and georeferencing.

OKL: COVID-19 still prevents progress, because it is increasing the amount of time it takes for us to get equpiment (second lightbox) and makes visiting provider and subaward herbaria more difficult.

OKLA:
Need segmentation/OCR of accession stamp to link existing database records to images as they are obtained. Also need digital barcode reader/file re-namer.

SHST: The locations from a number of our specimens collected in Walker County have general descriptions, and not an exact address or cross reference. We are setting these aside and trying to locate field notes from the collector to get a more accurate location.

TAES: We are struggling to identify a good pipeline for image transcription, particularly with our partially complete database.

TAMUCC: The major issue is that the COVID-19 pandemic slowed the progress of work.

TEX-LL: We have not yet started digitization efforts with other data provider institutions, such as the Wildflower Center, Our Lady of the Lake, and UT-Rio Grande Valley-Brownsville. We also are not working effectively yet with Sul Ross State University. Additionally, we have developed lighting issues with one of our imaging stations that have only temporarily been fixed.

TTC: We are still operating with limited capacity in the Herbarium for imaging, which is a two-person process. We have started working with one person remotely controlling the imaging station, but this requires some coordination, and so imaging progress has slowed.

UTEP: As per above, imaging delayed due to COVID-19.

Share and Identify Opportunities to Enhance Training Efforts:
Opportunities to Enhance Training Efforts; Training and Professional Development Opportunities you offered and/or participated in (e.g., webinars, student digitizer training, etc.):

BRIT: Continued hosting weekly #TranscriptionThursday zoom conversations with the Armchair Botanist program to engage Notes from Nature volunteers transcribing project specimens.

Offered an additional and advanced training (via Zoom) for BRIT volunteers interested in transcribing directly into Symbiota (including those previously not contributing to online Notes from Nature transcriptions).

Multiple Zoom meetings were held by Diego Barroso with representatives from TORCH TCN collaborating institutions, to train them on image-processing and how to upload images to the TORCH Portal. (with BAYLU, OKL, OKLA, SAT, TAES, TEX-LL, TTC, UTEP).

Diego Barroso co-presented – with David Jennings and Jen Zaspel – an iDigBio Webinar on Project Management during COVID-19 (October 27th).

BAYLU: Contacted Texas Master Naturalists (Central Texas) and now have volunteers for transcription. Training to commence soon.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Digitization staff have taken advantage of a wide range of webinars and online conferences sponsored by New York Botanical Garden, iDigBio, Royal Botanic Gardens, Kew, etc.

OKL: Nothing new to report.

OKLA: Guide for imaging with Nikon 850 camera drafted.

SHST: When the semester resumes in two weeks and students are allowed on campus, we will begin a bi-weekly Zoom meeting to teach students how to geo-reference specimens.

TAES: Nothing new to report.

TAMUCC: The digitization team at TAMU Corpus Christi (TAMUCC) met with the team at TAMU College Station (TAES) for a brief training on the digitization workflow.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Georeferencing training has been offered to several student volunteers.

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

The TORCH TCN Project held two virtual Executive Committee meetings (with all 5 lead PI's in attendance), on August 28th, 2020, and October 28th, 2020.

BRIT:

The BRIT-TEX collaboration for remote transcription of BRIT specimens by TEX students (collaboration stylized "TEX4BRIT") came to an end (September 1st, 2020). Transcriptions are ready to be "ingested" into the TORCH Portal.

Met with Ed Gilbert and representatives from NY in order to update the NY database snapshot on the TORCH TCN Portal (August 2020).

Working with graduate student Kyle Simpson and P.I. Daniel Spalink at TAES, in order to clean and upload 233,000 records from the legacy database at TAES (began September 2020, ongoing).

Texas Master Naturalists, participating in #transcriptionthursdays with the Armchair Botanist program with BRIT (Indian Trail Master Naturalists, Cross Timbers Chapter, North Texas Chapter, Highland Lakes Chapter, South Texas Chapter, etc).

BAYLU: Utilizing BRIT expertise for file transfer processes and Symbiota linkage.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Nothing to report.

OKL: Nothing new to report.

OKLA: None.

SHST: We have discussed the possibility of digitizing the specimens at the Natural History Museum in San Antonio, approximately 6,000 specimens.

TAES: Nothing new to report.

TAMUCC: The team at TAMU Corpus Christi (TAMUCC) is in regular touch with the team at TAMU College Station (TAES) for guidance on the project.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Share and Identify Opportunities and Strategies for Sustainability:
Opportunities and Strategies for Sustainability:

BRIT: Our weekly Armchair Botanist sessions have received positive feedback from participants indicating it is a good way to stay in touch and to stay motivated.

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing to report.

NY: Nothing to report.

OKL: Nothing to report.

OKLA: Nothing new, but working on upgrading local image storage hardware.

SHST: Nothing to report.

TAES: Nothing new to report.

TAMUCC: None yet, as we have not fully started digitizing.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Share and Identify Education and Outreach (E&O) Activities:
Methods of disseminating results to communities of interest (presentations, lectures, etc.):

Diego Barroso gave the TORCH TCN presentation at the iDigBio virtual ADBC Summit 2020 (September 24th, 2020)

BRIT:
At Texas Plant Conservation Conference (13-14 August 2020; virtual, 138 conference attendees), presented "American Crossroads: Digitizing the Vascular Flora of the Southcentral United States" (presenter: Tiana Rehman).

At Texas Master Naturalist Annual Meeting (14-17 October 2020; virtual), presented "American Crossroads: Digitizing the floras of Texas and Oklahoma with boots-on-the-ground knowledge." (presenter: Tiana Rehman) (39 attendees); and "Armchair Botanist: Citizen Scientists Transcribing Collections" (presenters: Tiana Rehman, Diego Barroso, Jason Best) (89 attendees, who rated this presentation "5 stars").

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Nothing to report.

OKL: Discussed TORCH TCN Project as part of two research seminars (Moore).

OKLA: Presentation made to OSU Plant Biology, Ecology & Evolution department on the use of the TORCH portal for research.

SHST: None.

TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: We gave two tours (six students each) to members of a Plant Systematics class at UT.

The TORCH TCN Project was discussed during the tours.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Other Education and Outreach activities:

BRIT: At Texas Master Naturalist Virtual Volunteer Fair (2 September 2020), presented "Armchair Botanist: Community Scientists Transcribing Specimen Labels" (presenter: Tiana Rehman) (364 virtual attendees during this timeslot). While 310 Texas Master Naturalists signed up for one or more of 40 volunteer projects that were presented, the "Armchair Botanist" project received 71 sign-ups, which was 2nd highest ranking project (another project had 75 interested members).

Diego Barroso was featured in the iDigBio "Scientist in the Spotlight" blog posting (September 2nd, 2020).

Diego Barroso presented the TORCH TCN project to BRIT and Fort Worth Botanic Garden staff during the monthly All-Staff Meeting (September 8th, 2020).

Diego Barroso and Demekia Biscoe presented the Armchair Botanist program to two local high school students from underrepresented communities, as part of the "Teen Tuesday" program from GROW with BRIT (September 29th, 2020).

WeDigBio 2020 (15-18 October, 2020). 3-hour Armchair Botanist session on 15 October 2020. (presenters: Diego Barroso, Jessica Lane, Clay Barrett, Jason Best, Tiana Rehman). The event was promoted in BRIT's newsletter and at the Colleyville Garden Club (Colleyville, Texas).

BAYLU: Held Zoom presentation in early September with Texas Master Naturalists to discuss updates on digitization progress and training updates.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing to report.

NY: Participated in WeDigBio by contributing records for transcription.

OKL: Nothing to report.

OKLA: Notes from Nature transcription class project assigned in Fishbein's Field Botany course. Project in progress.

SHST: None.

TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Google Analytics
TORCH-Google_Analytics.png

Other Progress (that doesn't fit into the above categories):
Other Progress not listed above (anything else to share):

The TORCH TCN NSF Annual Report for Year 1 was successfully submitted and accepted (September 1st, 2020).

BRIT:
We have been exploring the crowd-sourcing module in Symbiota and developing a training document that will be utilized this with our new group of trainees. We expect positive feedback using this method to direct volunteers to specimens in need of transcription, as it is easily circumscribed and has a measurable goal that they are able to see.

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU: As we have worked our way through the cases, we have been performing strategic curatorial work on many of our specimens, including many not from OK and TX. This is work that we have handed off to the Collection Manager and/or a student employee not working on the TORCH grant and has resulted in significant collateral collection improvements. This work includes replacing worn genus folders, refoldering specimens to reduce compaction, repairing damaged specimens, annotating specimens, and updating the taxonomy tree in Specify.

MO: Nothing new to report.

NOSU: No work has been done due to the pandemic, but I have students ready to help once we can.

NY: Remaining work to do in Year 2:
Skeletal records : 28,820 (out of a promised 57,000)
Specimens imaged: 51,074 (out of a promised 57,000)
Full transcriptions: 24,515 (out of a promised 77,000)
Georeferences: 23,207 (out of a promised 68,267)

OKL: Nothing to report.

OKLA: None.

SHST: The biggest change to the grant is that Justin Williams was made the P.I. of the project on October 30th, 2020. With this change in management, he will now be the point of contact at SHST, and not Will Godwin.

TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: Nothing new to report.

TTC: We're delighted to share that we have successfully georeferenced all specimens from Lubbock County, Texas. This was by far our largest county, with over 2,000 records needing manual verification, but was finished in October 2020! Please see also the included image below (a map of Texas), which illustrates our georeferencing progress. Lots of work done there this quarter!

UTEP: Nothing new to report.

Products generated (publications, conference presentations, technologies/techniques, websites, etc.):

BRIT: Jason Best, TORCH TCN Technological Innovator, completed the first version of a new cloud-based image processing workflow built on the Google Cloud Platform. This workflow automates the process of generating web-ready image derivatives that are needed for display in the Symbiota portal. The workflow also generates high-quality OCR data using the Google Vision API. The OCR results will be used to extract key specimen information to help group the specimens into thematic transcription expeditions based on taxonomy, location, and other traits. This cloud workflow has been used to process ~23,000 specimen images from BAYLU, TAC, and UTEP.

BAYLU: Nothing new to report.
HUH: Nothing new to report.
KANU: Nothing new to report.
MO: Nothing new to report.
NOSU: Nothing to report.
NY: Nothing to report.
OKL: Nothing to report.

OKLA: Data Manager Clay Barrett has been creating new workflows in Notes from Nature, and has been in contact with both Notes from Nature and BioSpex to sort out various issues with subject processing and transcription reconciliation. Existing documentation for the project is being updated, and new documentation is also being produced.

SHST: None.
TAES:Nothing new to report.
TAMUCC: Nothing new to report.
TEX-LL: None.

TTC:
New preprint using digitized herbarium data:
Slimp, M., Williams, L. D., Hale, H., & Johnson, M. G. (2020). On the potential of Angiosperms353 for population genomics. In biorxiv (p. 2020.10.11.335174). https://doi.org/10.1101/2020.10.11.335174. Submitted to American Journal of Botany

Conference presentations using TTC digitized herbarium data:

Herbaria as botanical snapshots: 50 years of land use and climate change impacts on genetics and physiology in the Guadalupe Mountains. Botany 2020 (Virtual Conference) Oral Presentation by: Madeline Slimp. Co-authors: Haley Hale, Cassidy Coker, Zachary Bailey, Matthew G. Johnson
https://2020.botanyconference.org/engine/search/index.php?func=detail&aid=353

Implementing undergraduate research in an upper-level botany lab using target capture sequencing of herbarium specimens. Botany 2020 (Virtual Conference) Oral Presentation by: Haley Hale. Co-authors: Yanni Chen, Lindsay Williams, Matthew G. Johnson
https://2020.botanyconference.org/engine/search/index.php?func=detail&aid=477

Towards a Genetic Database of Texas Flora Via Targeted Sequencing of 353 Genes. Texas Plant Conservation Conference 2020 (Virtual Conference). Oral Presentation by: Haley Hale. Co-authors: Madeline Slimp, Matthew G. Johnson

UTEP: Nothing new to report.

Participants (especially those who have newly joined the project):

BRIT:
Ashley Bordelon, Digitization Technician; abordelon@brit.org
Joe Lippert, Digitization Coordinator; jlippert@brit.org
Diego Barroso, TORCH TCN Project Manager; dbarroso@brit.org
Tiana Rehman, Collections Manager/Institutional Rep; trehman@brit.org
Jason Best, Director of Biodiversity Informatics & Technological Innovator; jbest@brit.org
Peter Fritsch, VP of Research/PI; pfritsch@brit.org
Jessica Lane, BRIT Herbarium Assistant; jlane@brit.org
Tessa Boucher, Digitization Technician, tboucher@brit.org
Rachel Carmickle, Herbarium Technician, rcarmickle@brit.org

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU:
LeeAnn Bennett - databasing
Zoe Chan – hourly student – worked only first month of quarter; foreign student who was unable to return to university when fall semester began
Keta Ewing – hourly student – working limited hours off-site
Craig Freeman – PI
Maeve Hilgers – hourly student
Megan Wetherington – hourly student

MO: Lauren Boyle

NOSU: Nothing to report.

NY:
McKenna Coyle, Lead Digitizer
Alexandra Patrascu, Intern

OKL: Master's student Leann Monaghan is funded to work 20 hours/week on TORCH-related work for the Fall 2020 semester.

OKLA: Four undergraduate workers began imaging (three returning, one new since the COVID gap).

SHST:
Justin Williams, Curator and P.I.
Will Godwin, Collection Manager
We will hire students when the semester begins and the new fiscal year starts.
Dr. Williams was officially made the P.I. of the grant on October 30th. He will begin the process of interviewing students the beginning of November.

TAES:
Virginia Deden
Madilyn Goles
Sarah Beal
Samuel De Los Santos

TAMUCC: Jordan Rodriguez (an undergraduate student).

TEX-LL: Saint Edward's University (in Austin) is becoming a data provider, but we have not yet

been able to retrieve specimens from that herbarium.

TTC:
Undergraduates: Dawson Westurn, Jennifer Mendez, Chase Bergeron
Graduate Students: Yanni Chen

UTEP:
Undergraduates:
Justin Gaenzle (new)
Carlos Vargas (new)
Muriel Norman (new work study)
Alexis Vallejo (continuing)
Aparna Mangadu (continuing)

All are georeferencing, trained and supervised by our collections manager, Mingna "Vicky" Zhuang, who is also imaging.

Questions/comments:

BRIT:
BRIT safety restrictions in response to the pandemic have prevented volunteers from returning to the BRIT building, which has impacted our progress in imaging, and pre-digitization curation. We do not see this issue being resolved in the next 6 months, but we are able to generate enough material to keep our remote employees and volunteers with specimens to be transcribed.

HUH: We had some technical difficulties here this quarter, but we anticipate that our numbers should return to normal in the upcoming quarter.

MO: Our accomplishments for the TORCH TCN this quarter have been minimal, and mostly limited by our ability to obtain potential participants and to provide them with collection access. This has been very frustrating.

NOSU: Nothing has been done due to delays with the pandemic. Hopefully we can make some progress soon.

SHST: The pandemic has slowed down our efforts; this will change when the semester begins.

TEX-LL: We have greatly appreciated the insights and assistance that we have received from our Project Coordinators, Diego and Clay, and we have enjoyed interacting with other PIs.

Attachment 1
TORCH-compiled-Q4-REPORT-2020-12-02.pdf

Attachment 2
TTC-Georeferencing-image001.png

Source URL: https://www.idigbio.org/node/564/submission/1662

TORCH TCN — Quarterly Report

Reporting Period: August 1st, 2020 - October 31st, 2020

Assembled by BRIT on December 1st, 2020, for Dec. 2nd IAC meeting

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

Institutions reporting:

BRIT – Botanical Research Institute of Texas (including subaward work done this Quarter)

BAYLU – Baylor University

HUH – Harvard University

KANU – University of Kansas

MO – Missouri Botanical Garden

NOSU – Northeastern State University

NY – New York Botanical Garden

OKL – University of Oklahoma

OKLA – Oklahoma State University

SHST – Sam Houston State University

TAES – Texas A&M University-College Station

TAMUCC – Texas A&M University-Corpus Christi

TEX-LL – University of Texas at Austin (Plant Resources Center), including subawards who submitted a Quarterly Report to TEX-LL for this period.

TTC – Texas Tech University

UTEP – University of Texas at El Paso

Progress in Digitization Efforts:

- Number of skeletal records created:

  BRIT   = 0

  BAYLU = 0

  HUH =   0

  KANU =   0

MO =   0

NOSU =   0

NY =   5,926

OKL =   0

OKLA =   0

SHST =   0 (Cumulative = 25,000 available)

TAES =   0

TAMUCC =   0 (None yet)

TEX-LL = 1,101

TTC =   75

UTEP =   0

Total skeletal records created this quarter: 7,102

• Number of fully-transcribed records created:

BRIT = 20,693 (11,709 staff and volunteer transcriptions + 8,984 community science NfN-supplied transcriptions)

BAYLU =   0

HUH =   83

KANU = 2,299 (Total number of fully transcribed records from OK and TX = 26,131)

MO =   104

NOSU =   0

NY =   685 (year total: 52,485)

OKL =   1,055

OKLA = 2,000 (On Notes from Nature via Field Botany course assignment; ongoing)

SHST =   0 (Cumulative = 25,000 available)

TAES =   0

TAMUCC= 0 (None yet)

TEX-LL = 452

TTC =   75

UTEP =   0

Total fully-transcribed records created this quarter: 27,446

- Number of specimens imaged:

BRIT = 14,982

BAYLU =14,830

HUH =   N / A. We have resumed imaging operations under a low-density staff occupancy plan. However, we have had technical maintenance issues that have interrupted our transcription activities and will not know the number of project-related specimens that have been imaged until transcription has resumed.

KANU =   0

MO =   51

NOSU =   0

NY =   5,926

OKL =   1,151

OKLA = 20,282

SHST =   0

TAES = 12,000

TAMUCC =   0 (None yet. We are still calibrating the imaging station.)

TEX-LL = For TEX-LL: 1,101
           For HPC: 300

           Sub-Total: 1,401

TTC =   337

UTEP = 3,000

Total number of specimens imaged this quarter: 73,960

- Number of specimens georeferenced:

  BRIT = 0

  BAYLU = 0

  HUH = 0

  KANU = 2,319 (Total number of georeferenced records from OK and TX = 25,830)

  MO = 55

  NOSU = 0

  NY = 12,589 (year total: 45,060)

  OKL = 0

  OKLA = 0

  SHST = 0

  TAES = 0

  TAMUCC = 0 (None yet)

  TEX-LL = 0

  TTC = 3,015

  UTEP = 4,234 since August, for this Quarter (8,427 total)

Total number of specimens georeferenced this quarter: 22,212

- Other digitization or pre-digitization efforts:

BRIT: Placed order for barcodes for additional BRIT specimens, and those of provider herbaria (ACU, HSU, NTSC, and TCSW) –significant amounts of time were spent research and communicating with barcode providers to select Watson Labels.

Continued locating project specimens in BRIT collection (Oklahoma in BRIT/SMU North America folders).

Used herbarium High School student assistant to assist with skeletally transcribing images from image sets containing a mix of project and non-project specimens (Texas and Oklahoma in VDB North America folders).

Hired and trained Tessa Boucher as a BRIT Herbarium Digitization Technician, to digitize the specimens in the Benjamin B. Harris herbarium at the University of North Texas.

Commenced the imaging and transcription of the NTSC herbarium.

Retrieved the ACU herbarium (Abilene Christian University) in 37 boxes and rotated these through the BRIT freezing protocol for pest management.

BAYLU: None.

HUH: None.

KANU: We have now databased all OK and TX specimens in 330 of our 350 cases (94%). Drop tags identifying OK and TX specimens have been placed in 8 additional cases; those specimens will be databased next. Databasing progressed more slowly than we expected during the quarter, so we did not complete databasing this quarter as we had projected. However, barring a complete shutdown of the herbarium again, we expect to complete all databasing and georeferencing early in the next quarter.

MO: We have finished searching for and sorting out project specimens from Aceraceae Adoxaceae and Anacardiaceae. The amount of time needed to locate project–specific specimens is significant, even when working from a well-defined checklist of taxa found in Texas and Oklahoma. Many 19th and early 20th century specimens in our collection have cryptic hand-written text on their labels, often in pencil, which needs to be examined carefully to determine whether or not the specimen falls in the project area.

NOSU: None.

NY: 971 other partial transcriptions (State and Country name added)

OKL: All 200,820 OKL records from the pre-existing Oklahoma Vascular Plant Database (OVPD) were cleaned, and are being uploaded into the TORCH Symbiota portal. These records were uploaded by Data Manager Clay Barrett, and problems with the records were resolved by Amy Buthod and Todd Fagin.

OKLA: >50,000 Oklahoma complete records (without images) were imported into the TORCH Portal from the pre-existing OVPD/OBIS database; 82,787 records from OVPD/OBIS have been cleaned and reformatted by Data Manager Clay Barrett. Genus folders were made for Texas specimens (17 cabinets).

SHST: We are still in the process of purchasing imaging equipment, and discussing with BRIT the possible alternative of utilizing the planned TORCH TCN roving imaging station.

TAES: Hired and trained 4 undergraduate students.

TAMUCC: 1) Digitization station setup completed; 2) barcode labels ordered; 3) digitization intern hired.

TEX-LL: We have one student who is continuing to pull Oklahoma specimens out of the general herbarium. We are approaching 90% of the way through the collections. Also, The Fort Worth

Nature Center (1,918 specimens) was transcribed and imaged prior to this quarter, but the records have yet to be transferred to iDigBio and the TORCH portal.

TTC: Mounting specimens from Guadalupe Mountains National Park collected in the 1970s.

UTEP: None.

- Comments about the digitization process:

BRIT: Nothing new to report.

BAYLU: On-going. Utilizing the TACC data repository with BRIT post-processing of imagery.

HUH: Specimens are currently being barcoded and imaged at high through-put. We are resolving technical infrastructure issues that have prevented us from transcribing new project specimens this quarter. We are also setting up data in GeoLocate to begin georeferencing in full.

KANU: Digitization progress has been slow but steady most of the quarter. Essential staff continued to have access to the herbarium (since late June with some restrictions remaining). Unfortunately, we could not get approval to allow student employees back in the building until the end of the first week of October. We lost another student employee because they could not return to campus at the start of the fall semester, and one student employee is working limited hours off-site for health reasons. As we wrap up databasing, we will shift efforts to imaging of specimens. Students will not be allowed to work in teams at the imaging station due to safety protocols, so imaging will proceed more slowly than we originally planned.

MO: As of this reporting access to our collections remains restricted to our science staff, who are authorized to be on-site only one or two days per week. Presently, there is no provision for access for students, volunteers and visitors. This has severely impacted our ability to recruit, train and add new people to the project.

NOSU: No work has been done due to the pandemic.

NY: During the first six months of the shutdown we basically finished everything that could be done remotely, except georeferencing. We are now able to begin generating skeletal records and images again. Due to state and city restrictions, we are limited to only a small number of onsite staff each day, and each staff member can only work two days per week.

OKL: Newly imaged specimens are only from OKL and include new OK specimens in groups that have already been imaged as well as TX specimens. The TX images are being uploaded as they are databased, while the OK images are being kept separate to be uploaded in a batch to match the existing database records.

OKLA: Progressing well!

SHST: Like everyone else, the pandemic has slowed down the process as the university has made it so students are not yet allowed to be on campus to work.

TAES: Nothing new to report.

TAMUCC: With the partial return to campus at Texas A&M University-Corpus Christi (TAMUCC), we have resumed work in the herbarium and on the digitization project. Specifically, we the team at TAMU Corpus Christi had a meeting with the lead PI at TAMU College Station (Daniel Spalink at TAES) to harmonize our workflow with theirs, such as image capture, using Adobe Lightroom, etc.

TEX-LL: Our data manager has started a conversation with both iDigBio and TORCH to work on the details of the data transfer from our Specify database to those platforms, using an IPT. We should have this running sometime during the next quarter.

TTC: Over 12,000 of 15,000 Texas specimens have been georeferenced.

UTEP: We still have a limited ability to have students work in the herbarium due to COVID-19. We have been able to make some progress on the imaging thanks to efforts by our collections manager, Mingna "Vicky" Zhuang.

- Number of records available in iDigBio portal (cumulative) **(Please NOTE: These numbers will be artifically low, due to the fact that iDigBio has not been ingesting records from the Symbiota portals for several months now)**:

  BRIT = For BRIT-SMU-VDB-NLU: 123,792 (All Texas and Oklahoma records)
     For TAC: 6,664
     For NTSC: 0

     Sub-Total: 130,456

  BAYLU =   N / A

  HUH =   43,508

    KANU = We upload a new instance of our database to GBIF and iDigBio at the beginning of each month.

    MO = Nothing to report.

    NOSU =   0

    NY =   85,517 (also includes bryophytes and fungi)

    OKL =   0

    OKLA =   0

    SHST =   27,000

TAES =		851
TAMUCC =		0 (None yet)

TEX-LL =	For TEX-LL:	1
	For HPC:	26,769
	For TLU:	6,297
	Sub-Total:	33,067

TTC =	0
UTEP =	0

Total number of records available in iDigBio portal (cumulative): 320,399

- Number of records from TX & OK available in TORCH Symbiota portal (cumulative):

BRIT =	For BRIT-SMU-VDB-NLU:	164,360 (All Texas and Oklahoma records)
	For TAC:	6,662 (All Texas and Oklahoma records)
	For NTSC:	697 (All Texas and Oklahoma records)
	Sub-Total:	171,719

BAYLU = 14,830 stub records (non-transcribed images) available

HUH =   41,556

KANU = All KANU records uploaded to GBIF and iDigBio should be accessible via the TORCH portal.

MO = Nothing to report.

NOSU =   0

NY =   77,184 specimen records

OKL = 134,384

OKLA = 52,184 from Oklahoma and Texas (53,928 total).

SHST =   0

TAES = 234,741

TAMUCC =   0 (None yet. Once we get the imaging process going, we will simultaneously set up the project on the Symbiota portal).

TEX-LL =	For TEX-LL:	207,178
	For HPC:	26,643
	For TLU:	6,657

	For SAT:	56,452
	For SRSC:	7,385
	PAUH:	7,742
	Sub-Total:	312,057 (of which 194,202 have images)
TTC =		21,615
UTEP =		0

Total number of TX & OK records in TORCH Symbiota Portal (cumulative): 1,060,270

Best Practices and Standards (Lessons Learned):

BRIT: Approximately 200 images had to be re-taken because operator did not realize the box had misaligned –this will be more heavily stressed in the verbal training.

BAYLU: Identified imagery issue related to scale bar upside down in images. Now corrected. Also employing clean-up procedure to reduce debris on specimens in between photobox transfer and digitization.

HUH: Nothing new to report.

KANU: Nothing new to report.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Nothing to report.

OKL: Nothing to report.

OKLA: Guide for imaging with Nikon 850 camera drafted.

SHST: Nothing to report.

TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: This quarter, we successfully converted our workflow from "Transcription first followed by imaging" to "Imaging first followed by transcription." This was necessitated by our continuing need to provide remote work to a portion of our student workers. Also, we delivered and installed an imaging station, and trained the data providers to use it, at HPC.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Identify Gaps in Digitization Areas and Technology (issues preventing progress):

BRIT: Nothing new to report.

BAYLU: None.

HUH: Maintenance activities on local IT-supported storage have caused interruptions to our image ingest process, which has prevented us from transcribing new images this quarter. Impacts are limited to processing new images; data integrity and distribution of existing records and images are unaffected. Work is underway to limit the impact of IT maintenance so that transcription of new records can resume in the upcoming quarter.

KANU: Nothing new to report.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: During our lockdown, we ran out of previously-imaged specimens to transcribe, so we shifted the focus to georeferencing. The Lead Digitizer, McKenna Coyle, was cleared for return to onsite work two days per week in September, but due to illness and quarantine, she was only able to work for two weeks (four days) that month. Since October 1, she had been maintaining the schedule of two days onsite per week, creating skeletal records and imaging specimens. During the remaining work time, she and Intern Alex Patrascu are doing transcription and georeferencing.

OKL: COVID-19 still prevents progress, because it is increasing the amount of time it takes for us to get equpipment (second lightbox) and makes visiting provider and subaward herbaria more difficult.

OKLA:
Need segmentation/OCR of accession stamp to link existing database records to images as they are obtained. Also need digital barcode reader/file re-namer.

SHST: The locations from a number of our specimens collected in Walker County have general descriptions, and not an exact address or cross reference. We are setting these aside and trying to locate field notes from the collector to get a more accurate location.

TAES: We are struggling to identify a good pipeline for image transcription, particularly with our partially complete database.

TAMUCC: The major issue is that the COVID-19 pandemic slowed the progress of work.

TEX-LL: We have not yet started digitization efforts with other data provider institutions, such as the Wildflower Center, Our Lady of the Lake, and UT-Rio Grande Valley-Brownsville. We also are not working effectively yet with Sul Ross State University. Additionally, we have developed lighting issues with one of our imaging stations that have only temporarily been fixed.

TTC: We are still operating with limited capacity in the Herbarium for imaging, which is a two-person process. We have started working with one person remotely controlling the imaging station, but this requires some coordination, and so imaging progress has slowed.

UTEP: As per above, imaging delayed due to COVID-19.

Opportunities to Enhance Training Efforts; Training and Professional Development Opportunities you offered and/or participated in (e.g., webinars, student digitizer training, etc.):

BRIT: Continued hosting weekly #TranscriptionThursday zoom conversations with the Armchair Botanist program to engage Notes from Nature volunteers transcribing project specimens.

Offered an additional and advanced training (via Zoom) for BRIT volunteers interested in transcribing directly into Symbiota (including those previously not contributing to online Notes from Nature transcriptions).

Multiple Zoom meetings were held by Diego Barroso with representatives from TORCH TCN collaborating institutions, to train them on image-processing and how to upload images to the TORCH Portal. (with BAYLU, OKL, OKLA, SAT, TAES, TEX-LL, TTC, UTEP).

Diego Barroso co-presented – with David Jennings and Jen Zaspel – an iDigBio Webinar on Project Management during COVID-19 (October 27th).

BAYLU: Contacted Texas Master Naturalists (Central Texas) and now have volunteers for transcription. Training to commence soon.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Digitization staff have taken advantage of a wide range of webinars and online conferences sponsored by New York Botanical Garden, iDigBio, Royal Botanic Gardens, Kew, etc.

OKL: Nothing new to report.

OKLA: Guide for imaging with Nikon 850 camera drafted.

SHST: When the semester resumes in two weeks and students are allowed on campus, we will begin a bi-weekly Zoom meeting to teach students how to geo-reference specimens.

TAES: Nothing new to report.

TAMUCC: The digitization team at TAMU Corpus Christi (TAMUCC) met with the team at TAMU College Station (TAES) for a brief training on the digitization workflow.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Georeferencing training has been offered to several student volunteers.

Collaboration with other TCNs, Institutions, and Organizations:

The TORCH TCN Project held two virtual Executive Committee meetings (with all 5 lead PI's in attendance), on August 28th, 2020, and October 28th, 2020.

BRIT:

The BRIT-TEX collaboration for remote transcription of BRIT specimens by TEX students (collaboration stylized "TEX4BRIT") came to an end (September 1st, 2020). Transcriptions are ready to be "ingested" into the TORCH Portal.

Met with Ed Gilbert and representatives from NY in order to update the NY database snapshot on the TORCH TCN Portal (August 2020).

Working with graduate student Kyle Simpson and P.I. Daniel Spalink at TAES, in order to clean and upload 233,000 records from the legacy database at TAES (began September 2020, ongoing).

Texas Master Naturalists, participating in #transcriptionthursdays with the Armchair Botanist program with BRIT (Indian Trail Master Naturalists, Cross Timbers Chapter, North Texas Chapter, Highland Lakes Chapter, South Texas Chapter, etc).

BAYLU: Utilizing BRIT expertise for file transfer processes and Symbiota linkage.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Nothing to report.

OKL: Nothing new to report.

OKLA: None.

SHST: We have discussed the possibility of digitizing the specimens at the Natural History Museum in San Antonio, approximately 6,000 specimens.

TAES: Nothing new to report.

TAMUCC: The team at TAMU Corpus Christi (TAMUCC) is in regular touch with the team at TAMU College Station (TAES) for guidance on the project.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Methods of disseminating results to communities of interest (presentations, lectures, etc.):

Diego Barroso gave the TORCH TCN presentation at the iDigBio virtual ADBC Summit 2020 (September 24th, 2020)

BRIT:
At Texas Plant Conservation Conference (13-14 August 2020; virtual, 138 conference attendees), presented "American Crossroads: Digitizing the Vascular Flora of the Southcentral United States" (presenter: Tiana Rehman).

At Texas Master Naturalist Annual Meeting (14-17 October 2020; virtual), presented "American Crossroads: Digitizing the floras of Texas and Oklahoma with boots-on-the-ground knowledge." (presenter: Tiana Rehman) (39 attendees); and "Armchair Botanist: Citizen Scientists Transcribing Collections" (presenters: Tiana Rehman, Diego Barroso, Jason Best) (89 attendees, who rated this presentation "5 stars").

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing new to report.

NY: Nothing to report.

OKL: Discussed TORCH TCN Project as part of two research seminars (Moore).

OKLA: Presentation made to OSU Plant Biology, Ecology & Evolution department on the use of the TORCH portal for research.

SHST: None.

TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: We gave two tours (six students each) to members of a Plant Systematics class at UT. The TORCH TCN Project was discussed during the tours.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Other Education and Outreach activities:

BRIT: At Texas Master Naturalist Virtual Volunteer Fair (2 September 2020), presented "Armchair Botanist: Community Scientists Transcribing Specimen Labels" (presenter: Tiana Rehman) (364 virtual attendees during this timeslot). While 310 Texas Master Naturalists signed up for one or more of 40 volunteer projects that were presented, the "Armchair Botanist" project received 71 sign-ups, which was 2nd highest ranking project (another project had 75 interested members).

Diego Barroso was featured in the iDigBio "Scientist in the Spotlight" blog posting (September 2nd, 2020).

Diego Barroso presented the TORCH TCN project to BRIT and Fort Worth Botanic Garden staff during the monthly All-Staff Meeting (September 8th, 2020).

Diego Barroso and Demekia Biscoe presented the Armchair Botanist program to two local high school students from underrepresented communities, as part of the "Teen Tuesday" program from GROW with BRIT (September 29th, 2020).

WeDigBio 2020 (15-18 October, 2020). 3-hour Armchair Botanist session on 15 October 2020. (presenters: Diego Barroso, Jessica Lane, Clay Barrett, Jason Best, Tiana Rehman). The event was promoted in BRIT's newsletter and at the Colleyville Garden Club (Colleyville, Texas).

BAYLU: Held Zoom presentation in early September with Texas Master Naturalists to discuss updates on digitization progress and training updates.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing to report.

NY: Participated in WeDigBio by contributing records for transcription.

OKL: Nothing to report.

OKLA: Notes from Nature transcription class project assigned in Fishbein's Field Botany course. Project in progress.

SHST: None.

TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Products generated (publications, conference presentations, technologies/techniques, websites, etc.):

BRIT: Jason Best, TORCH TCN Technological Innovator, completed the first version of a new cloud-based image processing workflow built on the Google Cloud Platform. This workflow automates the process of generating web-ready image derivatives that are needed for display in the Symbiota portal. The workflow also generates high-quality OCR data using the Google Vision API. The OCR results will be used to extract key specimen information to help group the specimens into thematic transcription expeditions based on taxonomy, location, and other traits. This cloud workflow has been used to process ~23,000 specimen images from BAYLU, TAC, and UTEP.

BAYLU: Nothing new to report.
HUH: Nothing new to report.
KANU: Nothing new to report.
MO: Nothing new to report.
NOSU: Nothing to report.
NY: Nothing to report.
OKL: Nothing to report.

OKLA: Data Manager Clay Barrett has been creating new workflows in Notes from Nature, and has been in contact with both Notes from Nature and BioSpex to sort out various issues with subject processing and transcription reconciliation. Existing documentation for the project is being updated, and new documentation is also being produced.

SHST: None.
TAES: Nothing new to report.
TAMUCC: Nothing new to report.

TEX-LL: None.

TTC:

   New preprint using digitized herbarium data:
   Slimp, M., Williams, L. D., Hale, H., & Johnson, M. G. (2020). On the potential of
   Angiosperms353 for population genomics. In *biorxiv* (p. 2020.10.11.335174).
   https://doi.org/10.1101/2020.10.11.335174. Submitted to American Journal of Botany

   Conference presentations using TTC digitized herbarium data:

   Herbaria as botanical snapshots: 50 years of land use and climate change impacts on
   genetics and physiology in the Guadalupe Mountains. Botany 2020 (Virtual Conference)
   Oral Presentation by: Madeline Slimp. Co-authors: Haley Hale, Cassidy Coker, Zachary
   Bailey, Matthew G. Johnson
   https://2020.botanyconference.org/engine/search/index.php?func=detail&aid=353

   Implementing undergraduate research in an upper-level botany lab using target capture
   sequencing of herbarium specimens. Botany 2020 (Virtual Conference) Oral
   Presentation by: Haley Hale. Co-authors: Yanni Chen, Lindsay Williams, Matthew G.
   Johnson
   https://2020.botanyconference.org/engine/search/index.php?func=detail&aid=477

   Towards a Genetic Database of Texas Flora Via Targeted Sequencing of 353 Genes.
   Texas Plant Conservation Conference 2020 (Virtual Conference). Oral Presentation by:
   Haley Hale. Co-authors: Madeline Slimp, Matthew G. Johnson

UTEP: Nothing new to report.

Participants (especially those who have newly joined the project):

BRIT:
Ashley Bordelon, Digitization Technician; abordelon@brit.org
Joe Lippert, Digitization Coordinator; jlippert@brit.org
Diego Barroso, TORCH TCN Project Manager; dbarroso@brit.org
Tiana Rehman, Collections Manager/Institutional Rep; trehman@brit.org
Jason Best, Director of Biodiversity Informatics & Technological Innovator; jbest@brit.org
Peter Fritsch, VP of Research/PI; pfritsch@brit.org
Jessica Lane, BRIT Herbarium Assistant; jlane@brit.org
Tessa Boucher, Digitization Technician, tboucher@brit.org
Rachel Carmickle, Herbarium Technician, rcarmickle@brit.org

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU:
LeeAnn Bennett - databasing
Zoe Chan – hourly student – worked only first month of quarter; foreign student who was unable

to return to university when fall semester began
Keta Ewing – hourly student – working limited hours off-site
Craig Freeman – PI
Maeve Hilgers – hourly student
Megan Wetherington – hourly student

MO: Lauren Boyle

NOSU: Nothing to report.

NY:
McKenna Coyle, Lead Digitizer
Alexandra Patrascu, Intern

OKL: Master's student Leann Monaghan is funded to work 20 hours/week on TORCH-related work for the Fall 2020 semester.

OKLA: Four undergraduate workers began imaging (three returning, one new since the COVID gap).

SHST:
Justin Williams, Curator and P.I.
Will Godwin, Collection Manager
We will hire students when the semester begins and the new fiscal year starts.
Dr. Williams was officially made the P.I. of the grant on October 30th. He will begin the process of interviewing students the beginning of November.

TAES:
Virginia Deden
Madilyn Goles
Sarah Beal
Samuel De Los Santos

TAMUCC: Jordan Rodriguez (an undergraduate student).

TEX-LL: Saint Edward's University (in Austin) is becoming a data provider, but we have not yet been able to retrieve specimens from that herbarium.

TTC:
Undergraduates: Dawson Westurn, Jennifer Mendez, Chase Bergeron
Graduate Students: Yanni Chen

UTEP:
Undergraduates:
        Justin Gaenzle (new)
        Carlos Vargas (new)
        Muriel Norman (new work study)

> Alexis Vallejo (continuing)
> Aparna Mangadu (continuing)

All are georeferencing, trained and supervised by our collections manager, Mingna "Vicky" Zhuang, who is also imaging.

Opportunities and Strategies for Sustainability:

BRIT: Our weekly Armchair Botanist sessions have received positive feedback from participants indicating it is a good way to stay in touch and to stay motivated.

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU: None.

MO: Nothing new to report.

NOSU: Nothing to report.

NY: Nothing to report.

OKL: Nothing to report.

OKLA: Nothing new, but working on upgrading local image storage hardware.

SHST: Nothing to report.

TAES: Nothing new to report.

TAMUCC: None yet, as we have not fully started digitizing.

TEX-LL: None.

TTC: Nothing new to report.

UTEP: Nothing new to report.

Other Progress not listed above (anything else to share):

The TORCH TCN NSF Annual Report for Year 1 was successfully submitted and accepted (September 1st, 2020).

BRIT:
We have been exploring the crowd-sourcing module in Symbiota and developing a training document that will be utilized this with our new group of trainees. We expect positive feedback using this method to direct volunteers to specimens in need of transcription, as it is easily circumscribed and has a measurable goal that they are able to see.

BAYLU: Nothing new to report.

HUH: Nothing new to report.

KANU: As we have worked our way through the cases, we have been performing strategic curatorial work on many of our specimens, including many not from OK and TX. This is work that we have handed off to the Collection Manager and/or a student employee not working on the TORCH grant and has resulted in significant collateral collection improvements. This work includes replacing worn genus folders, refoldering specimens to reduce compaction, repairing damaged specimens, annotating specimens, and updating the taxonomy tree in Specify.

MO: Nothing new to report.

NOSU: No work has been done due to the pandemic, but I have students ready to help once we can.

NY: Remaining work to do in Year 2:
    Skeletal records : 28,820 (out of a promised 57,000)
    Specimens imaged: 51,074 (out of a promised 57,000)
    Full transcriptions: 24,515 (out of a promised 77,000)
    Georeferences: 23,207 (out of a promised 68,267)

OKL: Nothing to report.

OKLA: None.

SHST: The biggest change to the grant is that Justin Williams was made the P.I. of the project on October 30th, 2020. With this change in management, he will now be the point of contact at SHST, and not Will Godwin.
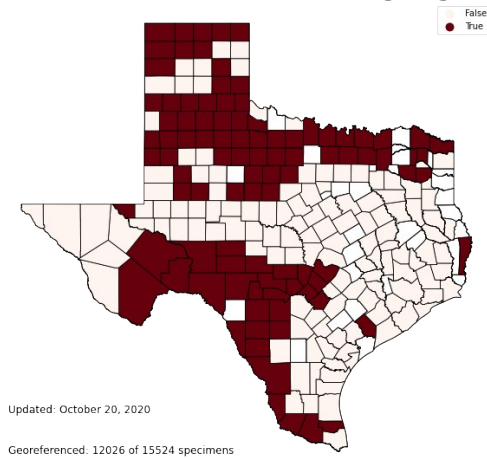
TAES: Nothing new to report.

TAMUCC: None yet.

TEX-LL: Nothing new to report.

TTC: We're delighted to share that we have successfully georeferenced all specimens from Lubbock County, Texas. This was by far our largest county, with over 2,000 records needing manual verification, but was finished in October 2020! Please see also the included image below (a map of Texas), which illustrates our georeferencing progress. Lots of work done there this quarter!

E.L. Reed Herbarium Georeferencing Progress

Updated: October 20, 2020

Georeferenced: 12026 of 15524 specimens

UTEP: Nothing new to report.

Questions/comments:

BRIT:
BRIT safety restrictions in response to the pandemic have prevented volunteers from returning to the BRIT building, which has impacted our progress in imaging, and pre-digitization curation. We do not see this issue being resolved in the next 6 months, but we are able to generate enough material to keep our remote employees and volunteers with specimens to be transcribed.

HUH: We had some technical difficulties here this quarter, but we anticipate that our numbers should return to normal in the upcoming quarter.

MO: Our accomplishments for the TORCH TCN this quarter have been minimal, and mostly limited by our ability to obtain potential participants and to provide them with collection access. This has been very frustrating.

NOSU: Nothing has been done due to delays with the pandemic. Hopefully we can make some progress soon.

SHST: The pandemic has slowed down our efforts; this will change when the semester begins.

TEX-LL: We have greatly appreciated the insights and assistance that we have received from our Project Coordinators, Diego and Clay, and we have enjoyed interacting with other PIs.

TPT TCN-- Quarterly Report --August-October 2020

Digitizing collections to trace parasite-host associations and predict the spread of vector-borne disease (TPT)

Assembled by Jen Zaspel November, 2020

Progress in Digitization Efforts:

This quarter coincided with the beginning of Project Year 2. Many collections remained in a mostly remote digitization environment, with some institutions returning to their collections on a limited basis.

Currently, TPT has 216,586 records transcribed, 97,293 high-resolution images, 21,444 labels processed/barcoded and 2,719 crowdsourced images.

Progress to date:

Institution	Transcribed records	High-resolution images	Labels	Crowdsourced
ANSP	2,242	550	4,626 processed	500
BPBM	2,787	665	508 images	2,219
CAS	836	204	51 processed	
FMNH	32,065			
INHS	6,162	348	670 processed	
MPM	1,595	59	789 processed	
MSU	5,204			
OSU	5,135			
PennState	11,093	1,351	11,801 Processed	
Purdue	2,570			
TAMU	6,145			
UMichigan	74,857	18,600		
UMN		63,694		

			20,936	
UNH	49,692	302		
UNL		5,849		
UU	5,362	5,500		
UW Madison	7,222			
UWSP	1,957	171	20,936 processed	
Yale	1,662			
TOTALS	**216,586**	**97,293**	**21,444**	**2,719**

SCAN

Several collections have started delivering data to SCAN either as snapshot collections or live databases. TPT data providers added over 17,000 specimen records to SCAN during the first quarter of the second project year. In order to adapt to remote digitization environments, some collections are now using SCAN as a crowdsourcing platform by uploading skeletal records with images and having volunteers or digitization technicians transcribe label data from the images directly into the live Symbiota portal. There is a significant number of skeletal records with images on SCAN that are being transcribed this way or with Notes from Nature that will be integrated into collection databases and SCAN in the near future.

PI Zaspel began discussions with PI Cobb regarding the development of a synthetic portal for TPT. We have begun gathering content for the site and set a target date of January 5th to begin design/building.

GloBI

GloBI and TPT were the topic of a talk at the Biodiversity Information Standards (TDWG) meeting this year. We highlighted the use of custom translation files for interactions and how important it is to get the opinions of collection managers and parasite experts into this conversation. The published abstract for our talk is available online.

Also, the newest data publication from TPT has been published on Zenodo. The new release contains 455,011 interaction records, which is up from our last release in April that contained 376,671 interaction records. Please let us know if you would like to co-author the data releases in the future.

> Poelen, Jorrit H., Seltmann, Katja C., & Campbell, Mariel. (2020). Terrestrial Parasite Tracker indexed biotic interactions and review summary (Version 0.3) [Data set]. Zenodo. http://doi.org/10.5281/zenodo.4070039

Next steps for GloBI include continuing to work with collections to get data online. Also, the Research Advisory Board is developing a research use case for GloBI data. The most important test for understanding the reusability of the data we are providing is testing a hypothesis. Also, we would like to provide in-person data reviews of indexed collections data to help understand interaction interpretation and how to improve our review process. Finally, Jorrit is improving the taxonomic integration, and cross-collection specimen linkages.

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

<u>Workflows</u>
All scanning trays have been manufactured and delivered to TPT institutions.

<u>Taxonomy</u>
TPT postdoctoral researcher Dr. Vijay Barve is working on developing a workflow for compiling and delivering taxonomic data for hosts as well as parasites for the database platforms being used by TPT. This involves maintaining the original source, developing linkages between the accepted names and synonyms, and authorities of the names. TPT is working with Arctos, Global Names Architecture (GNA), Southwest Collections of Arthropods Network (SCAN) and TaxonWorks teams to explore suitable mechanisms to manage and share the taxonomy backbone for all the TPT partners. We are having a series of consultative meetings with respective teams to understand strengths and limitations of each platform and develop a suitable workflow.

<u>Newsletters</u>
Beginning in April, PIs Zaspel and Allen and PM Sullivan disseminated highlights in TPT through a biweekly newsletter, including remote digitization workstations, adaptations for digitization, and new staff introductions. The goal for these newsletters was to keep our network connected during remote working periods and encourage active participation even when away from our collections. The first four newsletters were sent on a biweekly schedule during April and May, then a bi-monthly schedule was adopted for the future and others were sent in June, August, and early November.

<u>Research Advisory Board</u>
The Research Advisory Board met in November and discussed ideas for future projects that would use TPT data. The primary focus in the next quarter will be on tick datasets and determining certainty around association datasets.

Identify Gaps in Digitization Areas and Technology:
Members of the Research Advisory Board met with Andre Poremski to discuss building a field book of chewing lice. The goal is to develop a taxonomy resource to both train new taxonomists and also enable field biologists to lice collected from vertebrates. During this meeting, we identified the types of images we need and discussed the process for building a machine learning model. We will be collecting images for the first phase of testing the model over the next few months.

Share and Identify Opportunities to Enhance Training Efforts:
- PI Zaspel gave the TPT presentation at the iDigBio Summit 2020
- PI Zaspel iDigBio project management
- PI Zaspel and collaborator Mark Smith (Macrood Solutions) have set a date for a training webinar on how to scan slides with the Macropod camera system (January 2021)

- PIs Zaspel and Allen are working on a survey to send to TPT network participants asking about topics of interest for a large series of webinars and online workshops for 2021

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
Many PIs have participated or still participate in other TCNs, including InvertNet, InvertEBase, LepNet, SCAN, and Tri-Trophic. Best practices and workflows from those TCNs are shared with all participants in TPT.

Outside stakeholders
Many outside institutions are developing collaborations with Parasite Tracker to share data and integrate with Parasite Tracker portal.

NMNH Entomology- shared existing data for parasite groups and have started coordination with the EMu user group to integrate association data into GloBI and Parasite tracker. PI Zaspel and MPM staff will continue working on cleaning a previously digitized tick dataset which will add another 30,000 records to TPT and GloBI. In the future this partnership may become more formalized as a PEN into TPT to continue digitization of these groups in NMNH.

Vectorbase- PI Zaspel had a meeting with Vectorbase Project manager Sam Rund in November where he shared a recent update of VB data on the SCAN portal (1.4 million total records from Vectorbase).

Taxonomy - Global names Arctos
TPT is working with the Arctos team to explore using Global Names Infrastructure (GNA) for TPT's taxonomy repository. GNA (http://globalnames.org/) is a system of web-services which helps people to register, find, index, check and organize biological scientific names and interconnect on-line information about species. We expect this process to help us streamline our workflow and a meeting is scheduled with the Arctos team in the first week of November 2020.

Research Grants
One NSF grant proposal about sucking lice was submitted; the proposed work will leverage louse data digitized as part of TPT.

Share and Identify Opportunities and Strategies for Sustainability:

Bioinformatics: TPT Association data working groups
- Evin Dunn (SCAN developer), co-PI Neil Cobb and co-PI Seltmann continued to discuss and improve the import mapping and editing functionality of SCAN/Symbiota to support species interaction and TPT data. This includes creating the capacity to include dwc:associatedOccurrences. The first version of import mapping has been released.
- Bird taxonomy has been ingested into the SCAN taxonomy backbone for use in the Associated Taxa field in Symbiota/SCAN.
- Jorrit Poelen (GloBI) and co-PI Seltmann maintain and document TPT integration profiles and progress through https://www.globalbioticinteractions.org/parasitetracker/

Share and Identify Education and Outreach (E&O) Activities:
- Managed by Co-PI Julie Allen- Notes from Nature, 10 expeditions of images from the TPT have been started through Notes from Nature for label data transcription totaling 6,785 specimens (20,357 transcriptions) from 4 institutions and covering 3 taxonomic groups. We have also created 11 new expeditions for extended specimen information including the number and sex of specimens as well as host information from an additional 8,486 specimens (25,457 transcriptions).
- Co-PI Julie Allen developed two educational modules on lice and coevolution for online teaching, advertised it and distributed it through BLUE
- PIs Thompson, Bush, and Zaspel participated in an interview for the University of Minnesota's Daily newspaper entitled, "*University continues work on national insect curation project, despite pandemic.*"
- PI Jessica Light spent the semester working with an undergraduate researcher to use tick data on Symbiota and in the National Tick Collection to correlate red imported fire ant and tick presence in Texas. In the next quarter, we will finalize this work, which will hopefully be publishable in the future.
- An additional NSF REU inquiry that would also use ectoparasite digitized data was submitted this quarter and may result in a full submission in the near future.

- Conference Presentations:
  - Zaspel JM, Seltmann KC, Allen J, Sullivan K (2020) **Ensuring the Visibility, Relevance, and Community Connectedness of Natural History Collections During a Global Health Crisis.** Annual Meeting of the Entomological Collections Network.
  - Seltmann KC, Poelen JH, Sullivan K, Zaspel J (2020) **Making Parasite-Host Associations Visible using Global Biotic Interactions**. Biodiversity Information Science and Standards 4: e58985. https://doi.org/10.3897/biss.4.58985
  - Chapman C, Grinter CC, Hawkins Sipe RL, Horsley P, Krimmel E, Johnston MA, Maier CA, McElrath TC, Paul D, Tucker E, Zaspel JM (2020) **BugFlow: A Community-Driven Repository for Entomology Digitization Resources**. Annual Meeting of the Entomological Collections Network.