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

August 2019

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iDigBio is funded by a grant from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program (Cooperative Agreement EF-1115210). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

	Nov 1 2018 to Jan 24 2019					Jan 24 2019 to April 28					April 29, 2019 to August 5 2019			
Website	**Users**	**Sessions**	**Pageviews**	**Bounce Rate**		**Users**	**Sessions**	**Pageviews**	**Bounce Rate**		**Users**	**Sessions**	**Pageviews**	**Bounce Rate**
iDigBio Portal	5,519	8,206	33,516	57%		5,746	10,010	39,780	49%		4,299	7,710	27,277	0
iDigBio Website	15,872	19,006	32,918	68%		21,463	26,825	47,861	68%		18,673	24,440	43,098	1
Digital Atlas of Ancient Life	12,102	14,048	21,010	80%		17,852	20,849	30,639	82%		15,688	18,569	28,561	0.8
Digital Atlas of Ancient Life (Ordovician)	508	727	6,073	49%		474	691	4,957	46%		1,284	1,627	4,239	1
Pennsylvanian of Ancient Life	1,355	1,592	3,787	65%		1,437	1,684	4,846	66%		713	924	3,726	1
Neogene Atlas of Ancient Life	1,090	1,581	7,130	66%		1,274	1,893	10,443	64%		1,009	1,518	9,171	1
Cretaceous Atlas of Ancient Life	627	741	2,767	61%		801	963	2,423	66%		920	1,227	9,972	1
Fossil Marine Invertebrate Communities (EPICC)	336	312	400	68%		NA	NA	NA	NA		NA	NA	NA	NA
Fossil Insect Collaborative	NA	NA	NA	NA		NA	NA	NA	NA		NA	NA	NA	NA
Aquatic Invasives	298	458	1,192	67%		292	384	686	**75%**		286	325	600	1
SCAN (Arthropods)	4,557	9,981	38,138	45%		6,455	13,567	45,547	47%		5,804	12,162	39,884	0
LepNet WordPress	592	734	1,248	76%		680	875	1,711	73%		698	868	1,455	1
InvertEBase	1,148	1,372	2,850	68%		1,119	1,585	6,420	57%		1,513	2,026	8,332	1
Mycoportal	10,205	17,937	45,222	61%		8,370	16,241	44,725	57%		9,345	16,215	47,452	1
LBCC Lichen	12,451	25,591	73,868	60%		12,422	28,481	106,730	**56%**		10,392	23,001	89,877	1
LBCC Frullania	778	934	1,304	79%		670	788	1,315	77%		701	850	1,614	1
LBCC Arctic	270	307	722	76%		224	258	801	69%		149	180	571	1
LBCC Bryophyte Portal	1,712	3,554	15,412	42%		1,951	4,429	21,435	35%		1,692	3,420	22,334	0
Macroalgae	2,400	3,778	14,183	56%		2,521	3,927	13,216	**52%**		2,431	3,791	13,005	1
The Pteridological Collections Consortium	NA	NA	NA	NA		1,002	1,820	6,266	51%		1,115	2,246	13,554	0
Capturing California's Flowers (CCH2)	NA	NA	NA	NA		NA	NA	NA	NA		1,491	5,294	60,648	0
Endless Forms	NA	NA	NA	NA		NA	NA	NA	NA		SEINet	SEINet	SEINet	SEINet
Herbarios del Noroeste de Mexico	8,062	12,751	47,422	65%		12,943	19,677	71,224	66%		18,170	27,276	83,111	1
SERNEC	4,395	11,770	58,841	41%		6,118	14,974	61,602	41%		8,022	16,601	109,322	0
SEINet vPlants	2,105	2,844	10,215	57%		2,418	3,382	13,572	55%		2,809	3,748	12,199	1
SEINet Intermountain	4,951	8,816	37,454	39%		4,521	8,928	44,137	41%		5,377	10,274	75,137	0
SEINet Arizona-New Mexico	29,558	62,843	325,320	52%		40,136	84,546	477,470	51%		48,640	96,847	565,246	1
SEINet Midwest Herbaria	1,871	5,027	30,425	38%		2,304	6,662	28,943	35%		2,218	5,810	41,018	0
Mid-Atlantic Herbaria	936	2,830	10,785	46%		1,219	3,988	16,070	37%		1,314	3,965	70,273	0
NANSH	716	1,656	4,689	50%		657	1,363	6,682	47%		821	1,656	8,906	0
Northern Great Plains	1,674	3,063	5,473	74%		876	2,259	4,831	68%		917	2,450	9,841	1
OregonFlora Portal	2,169	5,008	16,068	46%		2,887	6,848	22,916	43%		4,148	9,799	26,997	0
CNH Mobilizing New England Vascular Plant Specimen Data (NEVP)	805	1,960	10,691	?		NA	NA	NA	NA		1,020	2,163	8,761	0
Southern Rockies Plant Niches (SoRo)	NA	NA	NA	NA		301	486	1,885	57%		397	575	1,996	1
Vertebrates (i.e., VertNet)	NA	NA	NA	NA		NA	NA	NA	NA		NA	NA	NA	NA
Symbiota WordPress	2,447	4,055	8,450	63%		3,040	5,070	9,845	66%		2,816	4,455	8,027	1
Tri-Trophic Databasing (TTD)	NA	NA	NA	NA		NA	NA	NA	NA		NA	NA	NA	NA
A Centralized Digital Archive of Vouchered Animal Communication Signals	NA	NA	NA	NA		NA	NA	NA	NA		NA	NA	NA	NA
Open Exploration of Vertebrate Diversity in 3D (oVert)	NA	NA	NA	NA		NA	NA	NA	NA		NA	NA	NA	NA
InvertNet	NA	NA	NA	NA		NA	NA	NA	NA		NA	NA	NA	NA

	Nov 1 2018 to Jan 24 2019				Nov 1 2018 to Jan 24 2019			April 29, 2019 to August 5, 2019		
	Users	**Sessions**	**Pageviews**		**Users**	**Sessions**	**Pageviews**	**Users**	**Sessions**	**Pageviews**
iDigBio	**21,391**	**27,212**	**66,434**		**27,209**	**36,835**	**87,641**	**22,972**	**32,150**	**70,375**
TCN and related portals	**110,118**	**206,270**	**801,139**		**134,964**	**256,618**	**1,061,337**	**151,900**	**279,862**	**1,375,829**
Symbiota Portals	**91,653**	**183,214**	**751,522**		**110,086**	**225,468**	**998,184**	**129,470**	**251,542**	**1,312,133**
TOTAL	**131,509**	**233,482**	**867,573**		**162,173**	**293,453**	**1,148,978**	**174,872**	**312,012**	**1,446,204**
Portals by Taxa	**Users**	**Sessions**	**Pageviews**		**Users**	**Sessions**	**Pageviews**	**Users**	**Sessions**	**Pageviews**
Vascular Plants	57,242	118,568	557,383		75,382	154,933	755,598	96,459	188,704	1,087,009
Lichen & Bryophytes	15,211	30,386	91,306		15,267	33,956	130,281	12,934	27,451	114,396
Algae	2,400	3,778	14,183		2,521	3,927	13,216	2,431	3,791	13,005
Fungi	10,205	17,937	45,222		8,370	16,241	44,725	9,345	16,215	47,452
Invertebrates	6,297	12,087	42,236		8,254	16,027	53,678	8,015	15,056	49,671
Multiphyla (Aquatic Invasives & Symbiota portal)	2,745	4,513	9,642		292	384	686	292	384	686

Vertebrates (i.e., VertNet)	NA	NA	NA		NA	NA	NA		NA	NA	NA	
Paleo	16,018	19,001	41,167		21,838	26,080	53,308		19,614	23,865	55,669	
Total	**110,118**	**206,270**	**801,139**		**131,924**	**251,548**	**1,051,492**		**149,090**	**275,466**	**1,367,888**	
	Per Day				Per Day				Per Day			
	Users	**Sessions**	**Pageviews**	% of total (users)	**Users**	**Sessions**	**Pageviews**	% of total (users)	**Users**	**Sessions**	**Pageviews**	% of total (users)
iDigBio	255	324	791	**16%**	293	396	942	**17%**	237	331	726	**14%**
TCN and related portals	1,311	2,456	9,537	**84%**	1,451	2,759	11,412	**83%**	1,566	2,885	14,184	**90%**
TOTAL	**1,566**	**2,780**	**10,328**	**100%**	**1,744**	**3,155**	**12,355**	**100%**	**1,803**	**3,217**	**14,909**	**103%**
Non-iDigBio by taxa												
Vascular Plants	681	1,412	6,636	**52%**	811	1,666	8,125	**57%**	994	1,945	11,206	**70%**
Lichen, Bryophytes	181	362	1,087	**14%**	164	365	1,401	**12%**	133	283	1,179	**9%**
Algae	29	45	169	**2%**	27	42	142	**2%**	25	39	134	**2%**
Fungi	121	214	538	**9%**	90	175	481	**6%**	96	167	489	**7%**
Invertebrates	75	144	503	**6%**	89	172	577	**6%**	83	155	512	**6%**
Multiphyla	33	54	115	**2%**	3	4	7	**0%**	3	4	7	**0%**
Vertebrates (i.e., VertNet)	NA	NA	NA	**NA**	NA	NA	NA	NA	NA	NA	NA	NA
Paleo	191	226	490	**15%**	235	280	573	**17%**	202	246	574	**14%**
Total	**1,311**	**2,456**	**9,537**		**1,419**	**2,705**	**11,306**		**1,537**	**2,840**	**14,102**	

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

Submission #1553

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by kds15e
Thursday, August 1, 2019 - 18:16
141.126.84.87

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

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

Progress in Digitization Efforts:
see attached report

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

Identify Gaps in Digitization Areas and Technology:
see attached report

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

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

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

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

Google Analytics

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

Attachment 1
August2019QuarterlyReport.pdf

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1553

CALIFORNIA PHENOLOGY TCN – QUARTERLY REPORT – AUGUST 2019

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

Progress in Digitization Efforts:

All institutions are continuing to image specimens or have achieved their imaging goals and have moved on to image processing. Figure 1 shows the distribution of unprocessed, barcoded/processed, and imaged target specimens per institution as of July 2019.

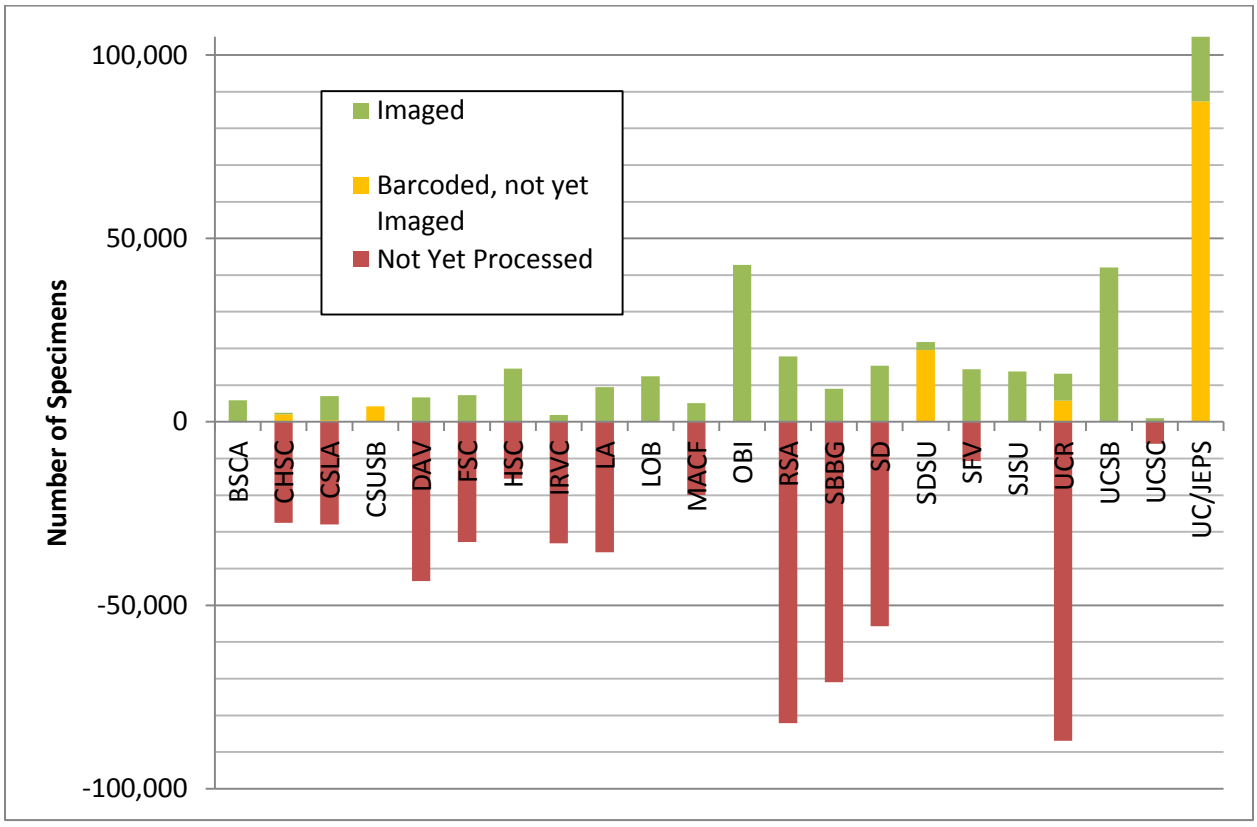

Figure 1. Digitization progress, in terms of number of specimens imaged or barcoded, not yet imaged. Bars above the zero line indicate specimens that have been processed in preparation for imaging or have been imaged. The green portions of these bars represent the number of specimens that have been imaged. Red bars below the zero line indicate the number of target specimens (i.e., specimens to be imaged as part of the CAP TCN) that have not yet been pre-processed or imaged. These numbers do not indicate transcription, georeferencing, or phenological scoring progress, which will begin in future years. The proportions of imaged specimens that have been fully processed (converted into JPEG and DNG format, uploaded to server, made available online, linked to existing records, and archived) are not represented in this figure.

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

On July 28th, the lead PI (Jenn Yost), PM (Katie Pearson), portal developer (Ed Gilbert), NEVP representative (Patrick Sweeney), and iDigBio director (Gil Nelson) met with 14 in-person and remote participants to discuss phenology data standards. As a result, we have a way forward to store and share phenology data coded from herbarium specimen images using the new Symbiota scoring tools.

Identify Gaps in Digitization Areas and Technology:

Nothing to report.

Share and Identify Opportunities to Enhance Training Efforts:

The project website, particularly the workflows and protocols page (https://www.capturingcaliforniasflowers.org/workflow--protocols.html) was restructured to enhance clarity and resource accessibility.

New protocols were developed in preparation for the switch to CyVerse image hosting (see next section). A network-wide virtual meeting is scheduled for late August 2019 to discuss this and other developments for the CAP TCN, as well as strategize for Year 2.

A webinar introducing GBIF and its data policies will be held in September or October 2019 in association with GBIF personnel.

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

We are collaborating with CyVerse to web-host our images using a community data folder and their discovery environment. This process will replace the current workflow of web-hosting images via iDigBio servers. Network-wide adoption of this new workflow is expected to commence in late Fall 2019.

On July 28th of the Botany 2019 conference in Tucson, AZ, the lead PI (Jenn Yost), PM (Katie Pearson), portal developer (Ed Gilbert), NEVP representative (Patrick Sweeney), and iDigBio director (Gil Nelson) co-coordinated a workshop to demonstrate the new Symbiota tools developed to score phenology of herbarium specimens and to discuss data standards that will be used to store and share these data. Excluding the five organizers, the tool demonstration part of the workshop had 15 attendees, 5 of whom also participated in the data standards conference call. An additional 9 members of the broader community, including representatives of the Plant Phenology Ontology (Rob Guralnick) and the National Phenology Network (Kathy Gerst), participated in the data standards conference call remotely.

The PM and portal developer have finalized a protocol to enable collections to share their data automatically from the portal to GBIF. Data sharing of all collaborating institutions with GBIF will commence in late Fall 2019.

The Botany 2019 meeting also leant the opportunity for the lead PI and PM to meet with personnel from other TCNs (e.g., Patrick Sweeney, NEVP; Michael Denslow, SERNEC) and attend talks to learn best practices, workflows, and lessons learned.

The first Notes from Nature citizen science expedition was completed in July 2019, and a new expedition was launched shortly thereafter.

Two additional collections have been added to the CCH2 portal: the CSU Stanislaus Herbarium and the Mendocino College Coast Center Herbarium. Both collections now manage their records live in the portal.

Share and Identify Opportunities and Strategies for Sustainability:

As previously described, we are collaborating with CyVerse to web-host our images on their servers rather than iDigBio servers.

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).

The first Notes from Nature (NfN) expedition, which engages citizen scientists and other volunteers to transcribe specimen data from images of specimens, was completed in July 2019. A new expedition featuring specimen images from CSU Fresno was launched shortly thereafter and is currently 2% complete. A Zooniverse blog post was published to introduce this expedition: https://blog.notesfromnature.org/2019/07/18/capturing-californias-flowers/. The curator of the CSU Fresno Herbarium plans to engage undergraduates in data transcription, including participating in the WeDigBio event in October.

The PM presented a poster about the CAP TCN at the Botany 2019 meeting on July 29, 2019 and briefly introduced the project during an oral presentation. The following poster presentations were given at Botany 2019 by undergraduates associated with the project at CSU Long Beach:

Olmeda BL [undergraduate], Cuadra S [undergraduate], Barnett A [undergraduate], Rice M [undergraduate], Fisher AE [PI]. Capturing California's Flowers at the Beach: Herbarium Specimen Imaging at Long Beach State (LOB). Poster to be presented at Botany, July 2019, Tucson, Arizona.

McGowan H [undergraduate], Fisher AE [PI]. A Flora of the Chiquito Basin, Santa Ana Mountains, Peninsular Ranges of Southern California. Poster to be presented at Botany, July 2019, Tucson, Arizona.

Tang K [undergraduate], Fisher AE [PI]. A Visual Guide and Morphometric Analysis of Leaf Shapes of Common Shrubs of the Santa Ana Mountains of Southern California. Poster to be presented at Botany, July 2019, Tucson, Arizona.

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

Submission #1554

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by EPICC
Friday, August 2, 2019 - 13:10
128.32.154.17

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

Person completing the report:
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Progress in Digitization Efforts:
As of 07/25/19, the TCN has fully curated and computer cataloged 1,752,390 specimens (108% of goal) and made 579,593 of these specimens (35% of goal) available in the iDigBio portal. The TCN has photographed 123,288 specimens (148% of goal) and georeferenced 30,367 localities (93% of goal). LACM reports that all localities are now batch processed or hand-georeferenced. The total number of georeferenced localities is 14,709, but they note that they only reported accurate (non-batch georeferenced) sites, which totals 8,371 localities. An additional 46 localities have been flagged as having verbatim localities inadequate for georeferencing. UCR has also been cleaning their locality data; all 4,609 digitized entries were edited to a standardized format. UCMP has made a large jump in the number of specimens photographed by uploading a backload of type photographs taken by a volunteer, in addition to training a summer student researcher in photography. Additionally, UCMP, CAS, LACM, the Burke, PRI, and UO have been granted no-cost extensions by NSF to continue work on EPICC until 08/2020.

Share and Identify Best Practices and Standards (including Lessons Learned):
The EPICC TCN has mutually decided the best way to continue collaboration is to regularly meet in-person to discuss current and potential research, in addition to digitization best practices. As such, Jann Vendetti and Austin Hendy (LACM) will be hosting members of the TCN September 14 and 15th, 2019 at the Natural History Museum of Los Angeles County.

Identify Gaps in Digitization Areas and Technology:
UCR and several other institutions report that delays over the summer are mainly the result of the loss of student workforce over finals and summer break. Many expect that progress will speed up in the fall quarter with the return of student hirees. At PRI, the lack of a micro-photography camera setup has resulted in a bias towards photographing mostly larger specimens.

Share and Identify Opportunities to Enhance Training Efforts:
The Burke has trained three women undergraduates to continue work on the EPICC project. CAS has also recently acquired four high-school interns who are participating in a project that will digitize

a section of their collection that is relevant to the EPICC project. They are receiving training in specimen data verification and data entry. PRI has trained several undergraduates in photography and post processing of photos. Similarly, UCR has provided individual training to student interns at the start of their internship (e.g., standardization considerations to ease specimen searches), as well as whenever learning opportunities arose (e.g., identification and mitigation of pyrite disease and radioactive specimens). UCMP trained a summer research assistant in EPICC-standard photography; so far he has contributed over 600 photographs to the UCMP database.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
At LACM, Austin Hendy is working with the Academy of Natural Sciences of Philadelphia (ANSP), our new TCN PEN, on developing digitization workflows and doing pre-curation prioritization and identification of material. Hendy is also working with L.-F. Opazo Mella (Pontificia Universidad Catolica de Chile, Santiago, Chile) to collect body size data in Cretaceous-Paleogene material to enhance analysis of ecological/energetic response to K-T extinction.

Share and Identify Opportunities and Strategies for Sustainability:
UCMP has recently been focusing on making sure digitization and photography of specimens is capturing a wide range of geographical localities and taxonomic groups. For example, they have been targeting echinoderms, crustaceans, and corals for photography, as fewer of these exist than that of molluscs currently in our database.

Share and Identify Education and Outreach (E&O) Activities:
PRI and UCMP report that the second Virtual Fieldwork Experience (VFE) on the Purisima Formation of California has gone live. CAS is currently utilizing this VFE to lay the foundation for a project involving four high-school interns from their Careers in Science program, which serves students typically underrepresented in STEM. These interns will participate in a collections-based research project that will digitize and analyze EPICC specimens from the Purisima Formation of Santa Cruz.

Google Analytics

Other Progress (that doesn't fit into the above categories):
The Academy of Natural Sciences of Philadelphia (ANSP) has been funded as a PEN on the EPICC grant. For this project, ANSP staff will digitize and make available online specimen and locality data for approximately 18,300 EPICC TCN-relevant specimens held in the ANSP Invertebrate Paleontology Department. LACM is working on getting their database up to date; 2,165,825 specimens (68,722) lots are currently in Axiell-EMu that are pertinent to the EPICC grant; 973,683 specimens (38,000) lots have been catalogued during the course of this grant.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1554

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

Submission #1555

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by BruceL
Saturday, August 3, 2019 - 13:56
24.225.98.220

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

Person completing the report:
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Progress in Digitization Efforts:
Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman (BSL) and with involvement from collections manager Julien Kimmig (JK), we have databased 130,355 fossil specimens total, with 47,128 specimens databased since the last reporting period. 99,688 of these specimen records are also georeferenced. In addition, we have georeferenced 753 localities since the last reporting period and have now georeferenced a total of 8,243 localities associated with this project. We also generated 1,500 new images.

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

They have databased 55,101 Cretaceous specimens total (4,575 lots), with 10,545 (1083 lots) databased since the last reporting period (April 22, 2019-July 26, 2019). 50,527 of these specimen records (4065 lots) are also georeferenced with an additional 732 (42 lots) being evaluated for georeferencing. Of the remainder: 3,336 specimens (406 lots) have field and/or locality numbers but are missing locality data, 80 specimens (11 lots) have locality information that is too vague to make georeferencing meaningful, and 425 specimens (50 lots) have no locality information. In addition, they have georeferenced147 localities since the last reporting period and now georeferenced a total of 872 Cretaceous localities associated with this project (504 of these georeferenced localities are associated with collection objects cataloged as part of the TCN, 139 localities are corrections of previously cataloged WIS localities, e.g., Cedar Creek Anticline), and the remaining 128 georeferenced localities are in the database but not yet linked to a specimen record.

Regarding the Yale University portion of the project, led by PI Susan Butts, during this period:

They have databased 93,239 Cretaceous specimens total, with 5,332 databased since the last reporting period. 90,703 of these specimen records are also georeferenced. In addition, they have georeferenced 1 locality since the last reporting period and now georeferenced a total of 2,457 Cretaceous localities associated with this project. They also generated 209 new images.

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

They have databased 4,090 Cretaceous specimens total, with 281 databased since the last reporting period. 4,090 of these specimen records are also georeferenced. In addition, they have georeferenced 5 localities since the last reporting period and now georeferenced a total of 705 Cretaceous localities associated with this project. Finally, they have generated 535 new images.

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

They have databased 17,519 Cretaceous specimens total, with 1,026 databased since the last reporting period. 10,802 of these specimen records are also georeferenced. In addition, they have georeferenced 35 localities since the last reporting period and now georeferenced a total of 697 Cretaceous localities associated with this project. They also generated 1,497 new images.

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

They have databased 1,560 Cretaceous specimens total, with 40 databased since the last reporting period. 1,389 of these specimen records are also georeferenced. In addition, they have georeferenced 223 localities since the last reporting period and now georeferenced a total of 399 Cretaceous localities associated with this project.

They have focused on georeferencing and consolidating our localities (reducing duplicates). They've enhanced their number of georeferenced records by 23% (total of 89%). Their next goal is to increase the number of imaged specimens.

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

they have 23,866 Cretaceous cataloged records, representing ~80,000 specimens total, with 1 new record databased since the last reporting period, 4/24/2019. Of the total number of specimen records, 23,478 have been georeferenced. In addition, they have now georeferenced a total of 5,559 Cretaceous localities (out of 5,709 total) associated with this project (380 localities georeferenced since their last report).
They generated 2,259 new images since their last report. The total number of images attached to their Specify database is 2,841.

Thus in total we have databased more than 342,000 specimens (not counting contributions from our PEN partners but including numbers from the American Museum of Natural History who recently submitted their final report). This is well ahead, in fact more than double, our original proposed goal of 168,000 specimens.

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), one of BSL's graduate students supported by the grant, Steven Byrum (member of an underrepresented group – Hispanic), successfully defended his Master's thesis and we are working on a paper describing his research on phylogenetic and biogeographic patterns in Cretaceous echinoids from the Western Interior Seaway (WIS).

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
N/A

Share and Identify Opportunities and Strategies for Sustainability:
N/A

Share and Identify Education and Outreach (E&O) Activities:
Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman (BSL), BSL is working with programmer Rod Spears on one of the apps that is going to be created associated with the project. This app is an update to the Digital Atlas of Ancient Life App that adds in our content from the Cretaceous Atlas of Ancient Life and will work for both iPhone and Android. Progress is going very well and we hope that this will be completed by our next iDigBio update.

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

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

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

Digital Encyclopedia of Ancient Life

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

First, PRI Research Scientist Dr. Elizabeth Hermsen—as part of her NSF-supported research—is developing DEAL chapters on modern plant structure and development, as well as paleobotany. She most recently added a page on angiosperm floral structure: https://www.digitalatlasofancientlife.org/learn/embryophytes/angiosperms/flowers/

Hendricks also recently contributed a brief overview of animal phylogeny: https://www.digitalatlasofancientlife.org/learn/animal-phylogeny/

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

Virtual Collections

As part of the Digital Atlas project, PRI staff are creating curated "Virtual Collections" of specimens

derived from the 3D photogrammetry models of PRI specimens. We envision these Virtual Collections to being akin to the physical drawers of specimens that an instructor might place on a bench during a paleontology laboratory exercise. Not all instructors have access to such physical collections, however, and we see these virtual equivalents as the next best thing. They can also be used in online courses and students can additionally use them to study at home. We have added a number of Virtual Collections since the last report and collections now available include: Phylum Porifera (sponges), Class Anthozoa (corals), Phylum Brachiopoda, Phylum Mollusca, Phylum Arthropoda, Phylum Echinodermata, Phylum Chordata, Trace Fossils, Fossil Preservation, and Devonian Fossils of New York. Planned additional virtual collections include Phylum Bryozoa, Graptolites, and Plants. Virtual Collections may be accessed at: https://www.digitalatlasofancientlife.org/vc/

Hendricks presented on these Virtual Collections in an eLearning session at the North American Paleontological Convention (NAPC) in Riverside, California at the end of June.

PRI staff have also been working hard this summer to continue to increase the number of 3D photogrammetry models available to incorporate into these Virtual Collections, as well as the DEAL. The SUNY Geneseo undergraduate who helped produce nearly 240 3D photogrammetry models last summer returned to work on the project this summer and has already added an additional 160+ models to the collection. These may all be viewed and freely downloaded on our Sketchfab page: https://sketchfab.com/DigitalAtlasOfAncientLife/models

Cretaceous Atlas

A new staff member joined the Cretaceous World project at PRI in June to help assist with construction of the Cretaceous Atlas of Ancient Life (www.cretaceousatlas.org), as well as content development with the DEAL. Over the past two months she has dramatically increased the taxonomic coverage on the Cretaceous Atlas, as well as cleared and posted a backlog of images that were waiting to be shared. Species-level pages are now posted for 521 species, up from 230 at the time of the last report. Further, she has added basic overview information to most classes and families on the Cretaceous Atlas, including information about their key morphological features, paleoecology, common names, and whether a given group is extant or extinct.

Teacher Resource Workshop at North American Paleontological Convention (NAPC) Meeting

In addition to presenting about Virtual Collections at NAPC, PI Hendricks also took part in an all-day workshop about digital paleontological resources for K-12 teachers. Hendricks and colleagues Alycia Stigall, Jen Bauer, and Adriane Lam presented on the Digital Atlas project and also shared curricular materials (https://www.digitalatlasofancientlife.org/teach/) associated with the Digital Atlas project to the workshop participants.

Social Media

Social media numbers:
• The Digital Atlas Twitter account (@PaleoDigAtlas) currently has 1,188 followers.
• The new Digital Atlas Facebook account (@PaleoDigAtlas) currently has 128 follows.
• The Digital Atlas Sketchfab account has 405 models posted and 174 followers.

Regarding the Yale University portion of the project, led by PI Susan Butts, during this period: YPM gave six Western Interior Seaway collection tours to Peabody Summer Camp participants (69 campers in total – all elementary school students) and developed and delivered exercises to two summer camp groups. One exercise (Cretaceous Ecosystems, 28 campers) involved drawing specimens from the collections in their living environment and listing out their predator and defense

features. As a group, each student represented their organism in a mock battle to investigate predator-prey relationships and the food web. It culminated in students organizing into a food chain based on the organism they represented. Another exercise, with 19 campers, guided students through microfossils from the Western Interior Seaway using a projection microscope.

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), graduate student supported by the grant, Julie Taylor, submitted and had an abstract accepted for a topical session on Cephalopods through Time: Paleobiology, Paleoecology, and Links to Paleoenvironmental Change at the Geological Society of America Annual meeting in Phoneix, Arizona:

Taylor, J, and B. S. Lieberman. 2019. Animating ammonites: Using GIS to illustrate changes in abundance through the Western Interior Seaway. Geological Society of America Annual Meeting, Phoenix, AZ, Abstracts with Programs, https://gsa.confex.com/gsa/2019AM/webprogram/Paper338747.html

Where she will be describing work using GIS animations to consider patterns of changes in ammonite distribution and abundance through time in the WIS.

In other research news, Luke Strotz, who was a post-doc working on the grant returned from his current post-doc in China to Kansas for a research stay and we conducted research using digitized collections data to look at patterns of community stability and change in the fossil record and ascertain whether they may be general rules governing the assembly of marine fossil ecosystems. We hope to be able to submit a manuscript on this research this fall.

Finally, JK is leaving KU and thus ending his association with the project so that he can be with his wife in Washington State. We are sorry to see him go and wish him the very best with his future career plans. The Biodiversity Institute is currently conducting a search for a new collection manager in the division and we hope to have someone new in by early 2020.

Regarding the American Museum of Natural History (AMNH) portion of the project, led by PI Neil Landman and co-PI Ruth O'Leary:

They have submitted their final report and successfully completed all of the goals and aims of their portion of the project.

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1555

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

Submission #1556

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by djbarroso
Tuesday, August 6, 2019 - 17:03
192.17.34.169

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

Person completing the report:
barroso@illinois.edu

Progress in Digitization Efforts:
• During this reporting period – from May 1st through August 1st – 6,424 ISC specimens were digitized and minimally databased. They are represented by 6,424 records and 10,570 images. Of these 6,424 specimens, 5,668 are in packets, and the remaining 756 are boxed. The specimens in packets are now done, and we estimate there are fewer than 250 boxed specimens left to image; this should be completed in the following weeks.

Share and Identify Best Practices and Standards (including Lessons Learned):
• Boxed specimens can be imaged much faster than previously expected.

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

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

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
• A presence was created on MyCoPortal for the University of Copenhagen collection (C), with 46,933 specimen-based records added (May 20th, 2019).

• Denver Botanic Gardens (DBG) has published its data to GBIF, via the MyCoPortal (May 21st, 2019).

• A presence was created on MyCoPortal for the Santa Barbara Botanic Garden (SBBG) (May 29th, 2019, and updated June 25th, 2019).

• The data snapshot for the State University of New York College at Cortland (CORT) was updated (June 28th, 2019). This added 133 new occurrence records, 40 georeferences, 107 new determinations, and images for 1065 pre-existing records, bringing the proportion of records with

images to 100%. The total number of records for CORT is now 8,876.

• Automated georeferencing was carried out on the records for CORT, using the Python script for GeoLocate developed by Nelson Rios. Coordinates were returned, and uploaded, for 8,766 out of 8,876 records (~99%). (July and August, 2019).

• The data snapshot for the observation-based Mushroom Observer collection (MUOB) was updated, increasing its number of records from 164,304 to 228,607, a 64,303- record increase (July 19th, 2019). Also, links to existing images hosted at MUOB were updated, bringing the total of linked images to 667,994 (July 22nd, 2019; thumbnail images continue to be built).

• Imaging of Iowa State University (ISC) specimens will be completed in the upcoming weeks.

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

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

Google Analytics

Other Progress (that doesn't fit into the above categories):
• On July 24th, 2019, Andy Miller and Diego Barroso attended an information session at Busey Woods (park in Urbana, Illinois), to learn more about the iNaturalist application, in anticipation of a BioBlitz event to be held this Fall.

• A glitch in the way the Symbiota code calculates statistics for collections was identified, and corrective measures were taken (since duplicate collection names skew the calculation of statistics, a few collections that had both specimen-based and observation-based presences on MyCoPortal needed to be renamed). Statistics are now being calculated without error and consistently.

• Summary of MyCoPortal Statistics (August 6th, 2019):
I. Specimen-based records
4,388,857 occurrence records
2,108,123 (48%) georeferenced
1,776,650 (40%) imaged
3,332,431 (76%) identified to species
1,819 families
8,589 genera
118,054 species
124,852 total taxa (including subsp. and var.)
II. Observation-based records

845,666 occurrence records
669,814 (79%) georeferenced
451,609 (53%) imaged
755,744 (89%) identified to species
503 families
2,925 genera
20,867 species
21,915 total taxa (including subsp. and var.)
III. Combined statistics
5,234,527 occurrence records

2,777,937 (53%) georeferenced
2,228,259 (43%) imaged
4,088,175 (78%) identified to species
1,834 families
8,721 genera
121,125 species
128,414 total taxa (including subsp. and var.)
• Please see also MyCoPortal Data Portal Statistics generated from Google Analytics (attached).

• New Publications citing MyCoPortal*:
(*Peer-reviewed papers in which the MyCoPortal data were actually used in the paper, not just a mention of the MyCoPortal):

Gierczyk, B. and R. Kubiński. 2019. The first report of Pleuroflammula ragazziana in Poland. Acta Mycologica: 54(1): ###-###. DOI:10.5586/am.1121

Hiller, T. and D. Haelewaters. 2019. A case of silent invasion: Citizen science confirms the presence of Harmonia axyridis (Coleoptera, Coccinellidae) in Central America. PLoS ONE 14(7): e0220082. https://doi.org/10.1371/journal.pone.0220082

Pietras, M. 2019. First record of North American fungus Rhizopogon pseudoroseolus in Australia and prediction of its occurrence based on climatic niche and symbiotic partner preferences. Mycorrhiza #: 1432–1890. doi: 10.1007/s00572-019-00899-x

Pietras, M. and M. Kolanowska. 2019. Predicted potential occurrence of the North American false truffle Rhizopogon salebrosus in Europe. Fungal Ecology 39: 225–230. doi: 10.1016/j.funeco.2018.12.002

Sanchez, R.M, A.N. Miller and M.V. Bianchinotti. 2019. New species of Capronia (Herpotrichellaceae, Ascomycota) from Patagonian forests, Argentina. Plant and Fungal Systematics 64(1): 81–90. doi: 10.2478/pfs-2019-0009

Stephenson, S. L., R. W. Stauffacher, and C. Rojas. 201-. Myxomycetes collected in the eastern United States and the relative abundance of particular species. Journal of Biogeography (in prep.)

Attachment 1
Google_analytics-2019-08-05.pdf

Attachment 2

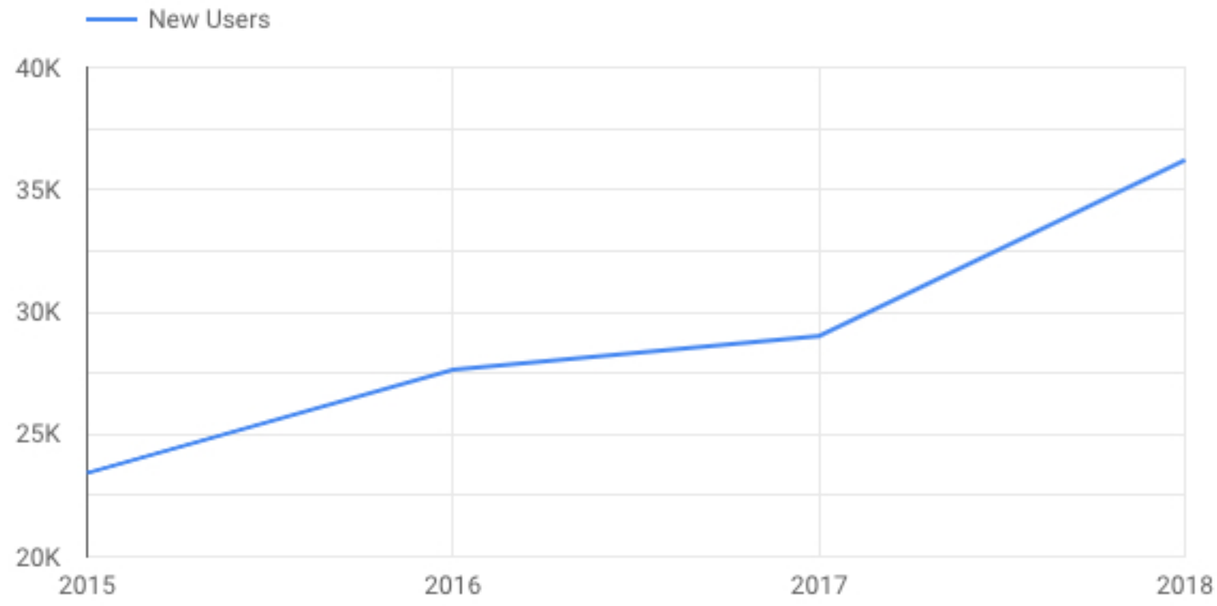
Source URL: https://www.idigbio.org/node/564/submission/1556

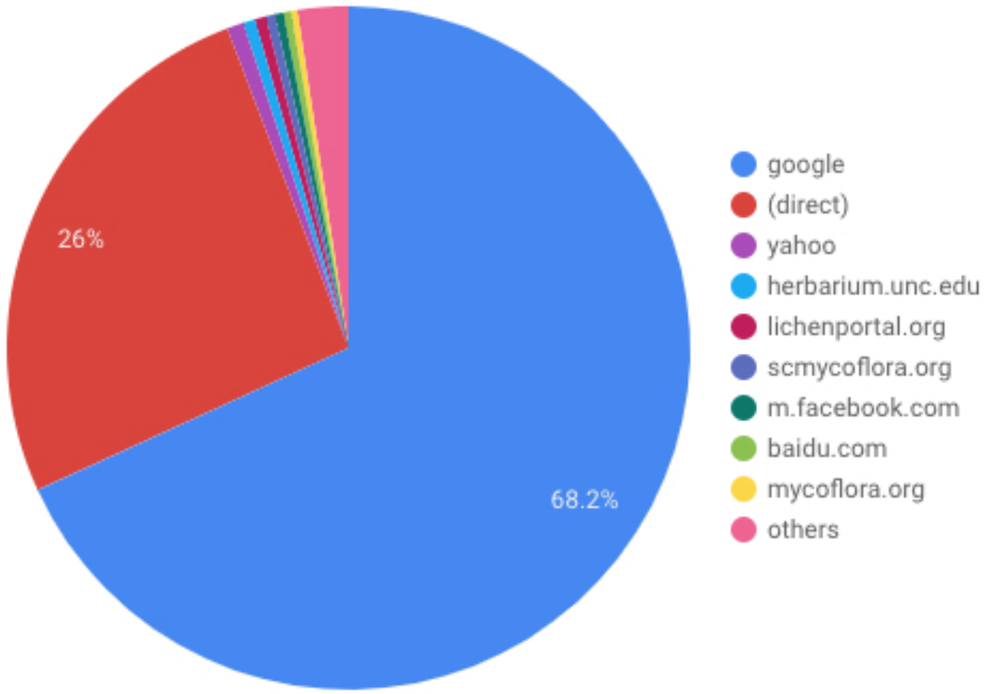
MyCoPortal Data Portal Statistics

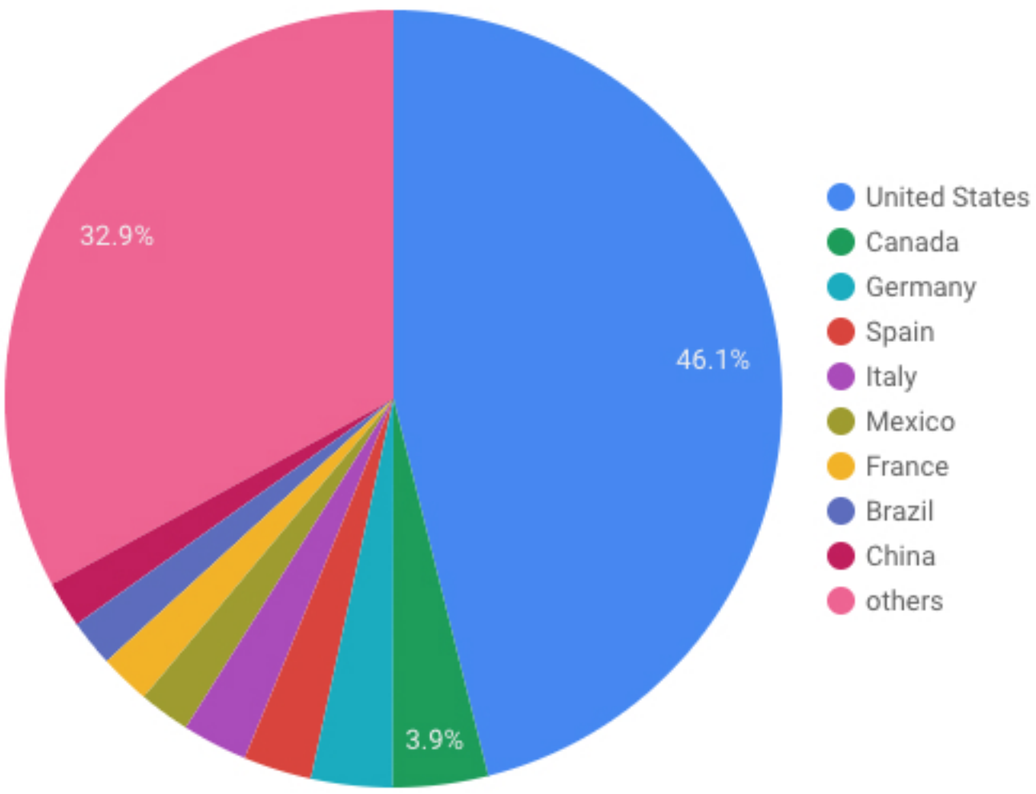
www.mycoportal.org **Data from Google Analytics**

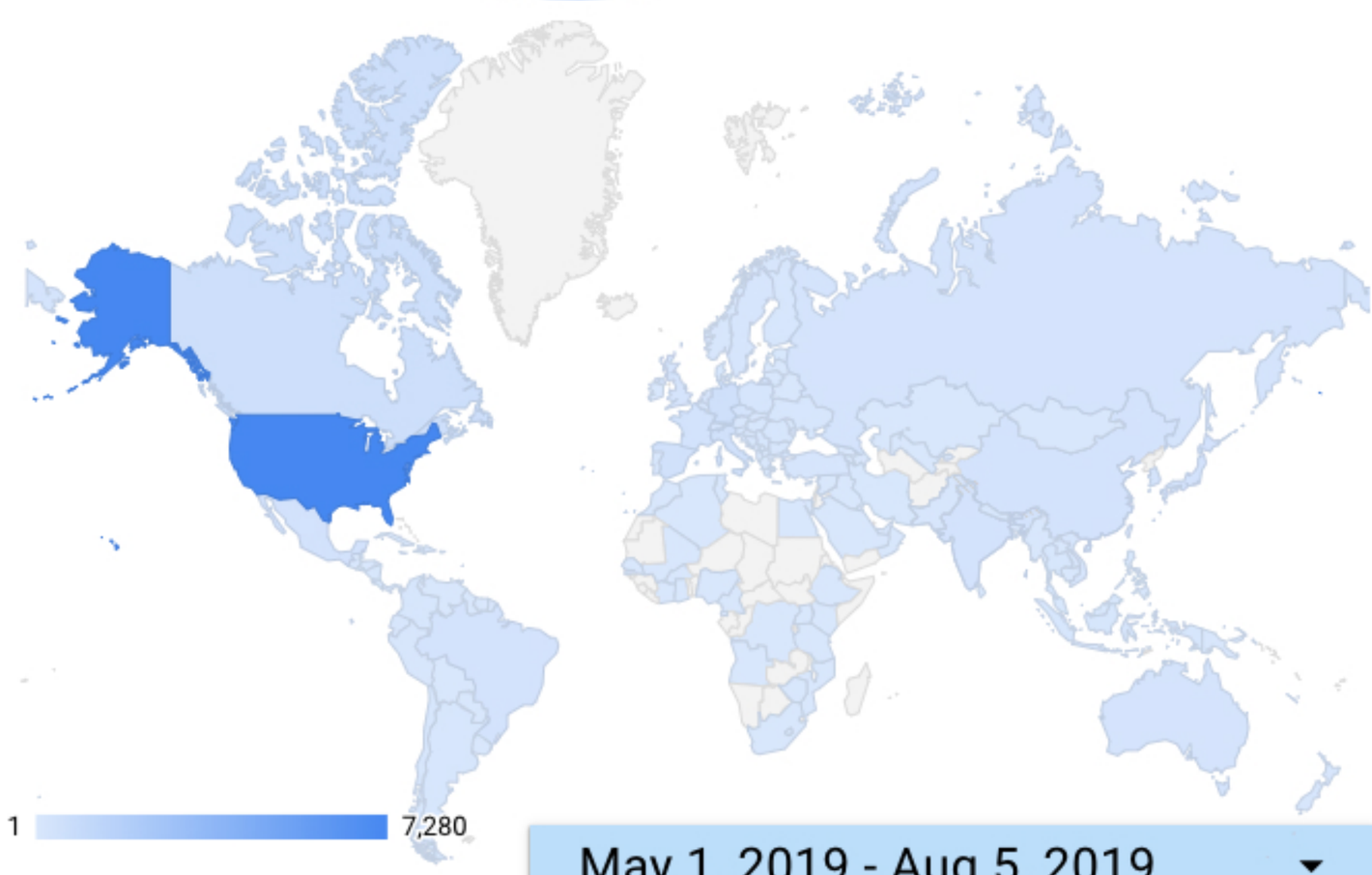
MYCOLOGY COLLECTIONS PORTAL

Users	New Users	Sessions	Number of Sessions per User	Pageviews	Pages / Session	Avg. Session Duration	Bounce Rate
9,152	8,258	15,798	1.73	46,432	2.94	00:03:36	58.72%









May 1, 2019 - Aug 5, 2019

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

Submission #1558

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by neilscobb
Tuesday, August 6, 2019 - 18:09
47.215.133.118

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

Person completing the report:
neilscobb@gmail.com

Progress in Digitization Efforts:
See attachment

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

Identify Gaps in Digitization Areas and Technology:
See attachment

Share and Identify Opportunities to Enhance Training Efforts:
See attachment

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

Share and Identify Opportunities and Strategies for Sustainability:
See attachment

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

Google Analytics
ADBC_Google_Analytics_August_2019.xlsx

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

Attachment 1
LepNet_SCAN_August_2019.docx

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1558

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

Submission #1557

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by neilscobb
Tuesday, August 6, 2019 - 18:06
47.215.133.118

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 attachment

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

Identify Gaps in Digitization Areas and Technology:
See attachment

Share and Identify Opportunities to Enhance Training Efforts:
See attachment

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

Share and Identify Opportunities and Strategies for Sustainability:
See attachment

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

Google Analytics

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

Attachment 1
LepNet_SCAN_August_2019.docx

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1557

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

August 2, 2019
Neil Cobb

Progress in Digitization Efforts:

This is a joint report for the two networks SCAN and LepNet. Many museums are involved in both SCAN and LepNet, including collections that have received funding from both TCNs, collections that are unfunded for one TCN and funded by the other, and some collections that are providing data to both and are unfunded by the ADBC program. Both TCNs share the same database http://symbiota4.acis.ufl.edu/scan/portal/index.php , which depending on the context we refer to as the SCAN-LepNet database or the LepNet-SCAN database. All data presented here were accessed on August 2, 2019. **Table 1** shows the key statistics of Lepidoptera (LepNet) and non-Lepidoptera (SCAN) records to date. These consist of all records and images, including records and images from data providers who have allowed us to post their data on the SCAN/LepNet portal. Providing data from these additional providers increases our ability to georeference, add to taxonomic tables, and more accurately assess the total digitization effort for any given taxon.

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

	All data	Non-Lep SCAN	LepNet
Specimen Records	20,748,546	17,155,123	3,593,423
# Georeferenced	17,266,274	14,192,208	3,074,066
# Imaged	2,812,284	1,864,201	948,083
# Identified to species	12,942,858	9,501,214	3,441,644

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

LepNet - The LepNet ADBC-funded museums are still on target to meet goals for records and images. An additional 32 collaborators (non-ADBC funded museums that use our data portal to serve their data) have also provided additional records for Lepidoptera. There are 26 collections (referred to as added-value) that have allowed us to harvest their data via IPT to serve lepidopteran records. **Table 2** shows the top 10 families of Lepidoptera in terms of total occurrences digitized.

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

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

Taxa	# Specimen Records	# Georeferenced	# Specimen Identified to species	# Georeferenced & Ided to species
Nymphalidae	726,482	652,059	714,127	643,994
Noctuidae	456,897	406,422	439,416	395,267
Erebidae	324,843	278,587	308,630	266,830
Pieridae	313,605	256,841	309,802	254,092
Geometridae	304,398	261,425	289,596	249,033
Hesperiidae	300,834	247,693	293,443	241,683
Lycaenidae	240,240	211,137	235,608	207,776
Papilionidae	140,420	112,582	139,094	111,754
Crambidae	127,647	104,774	123,755	102,095
Tortricidae	120,128	95,142	110,938	88,765

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

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

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

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

Taxa	# Specimen Records	# Georeferenced	# Specimen Identified to species	# Georeferenced & Ided to species
Formicidae	1,165,344	1,041,895	651,520	578,399
Carabidae	616,308	494,372	405,675	326,357
Araneae	240,161	194,945	207,216	167,543
Acrididae	373,583	206,098	354,621	205,471
Tenebrionidae	185,060	161,427	113,947	99,484

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

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

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

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

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

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

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

GBIF Registration - There are 35 Live collections on SCAN that are now registered with GBIF and 30 other entomology collections from the United States that have institutional collection data sets on GBIF..

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

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

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

Publications - We have published an overview of the LepNet project (Seltmann et al 2017), and several LepNet participants collaborated on a publication below (Belitz et al., 2018). We are finishing a draft manuscript reviewing North American entomology collections.

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).

Google Analytics: Below (**Figure 1**) is the summary graphical stats for the period since our last report April 24, 2019 to August 2, 2019) for the SCAN portal, http://scan-bugs.org/portal/index.php . In June we moved the portal from University of Florida to Texas Advanced Computing Center (TACC). This had a negative impact on portal visitation, which is now starting to come back to pre-move numbers.

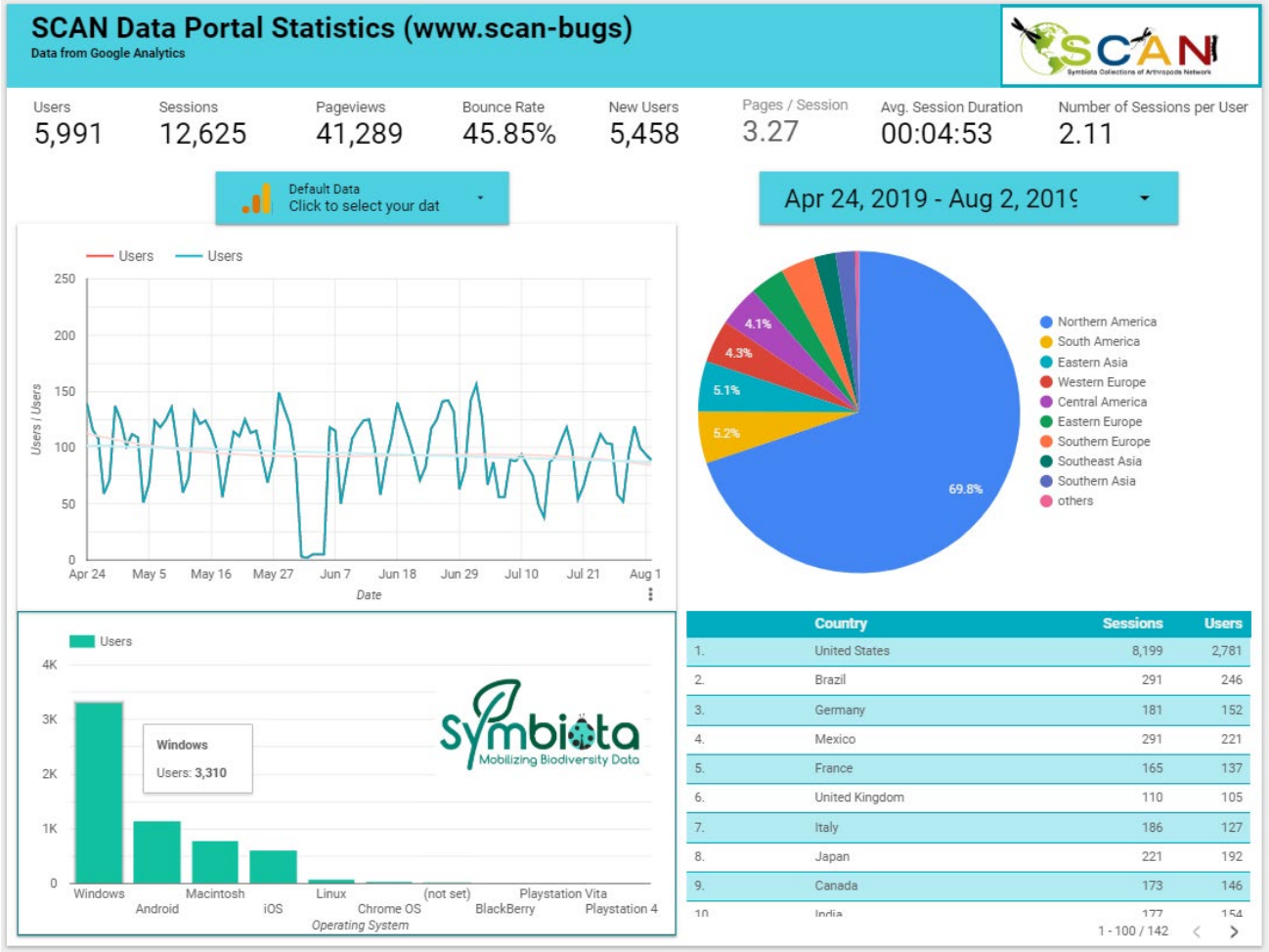


Figure 4. Summary statistics for SCAN April 24, to August 2, 2019.

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

Submission #1559

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by mwdenslow
Wednesday, August 7, 2019 - 06:22
198.255.227.86

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

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

Progress in Digitization Efforts:
There are 115 collections serving data through the SERNEC portal. There are currently 4,742,269 specimen records and 423,827 (9%) of those records are georeferenced. There are currently 4,248,372 imaged specimen images available. There are currently 62 collections publishing to iDigBio.

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

Identify Gaps in Digitization Areas and Technology:
Nothing to report

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

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

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

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

The SERNEC – TCN presented a colloquium at Botany 2019 in Tucson. The colloquium included

13 speakers who presented on a wide variety of topics that highlighted the successes of the SERNEC – TCN.

Google Analytics

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

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1559

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

Submission #1562

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by akasameyer
Tuesday, August 13, 2019 - 19:37
136.152.143.13

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

Person completing the report:
akasameyer@berkeley.edu

Progress in Digitization Efforts:
For extant specimen progress during this reporting period, Pteridophyte Collections Consortium (PCC) members created skeletal records for 37,288 specimens, fully transcribed 55,389 specimens, imaged 80,603 specimens, and geo-referenced 9,840 specimen records. The total pteridophyte extant specimen progress including work done prior to the start of the grant is 394,586 skeletal records created, 480,563 extant specimens imaged, 337,857 extant specimens fully transcribed, and 82,274 extant specimens geo-referenced.

In our Pteridoportal we currently have 759,196 extant occurrence records:

250,768 (33%) georeferenced
400,854 (53%) imaged
359,536 (47%) identified to species

For fossil specimen progress during this reporting period, PCCmembers databased 4,511 specimens, imaged 5,190 specimens, geo-referenced 614 specimen records, and geo-referenced 87 localities. The total fossil pteridophyte specimen progress including work done prior to the start of the grant is 18,395 specimens databased, 19,305 specimens imaged, 7,648 specimen records geo-referenced, and 87 localities geo-referenced. These records have not been uploaded to the Pteridoportal yet because the Symbiota Paleo Module is still in development.

Oregon State University has barcoded 5665 specimens, circa 60% of their total pteridophyte specimens.

The Sam Noble Museum at the University of Oklahoma has refined workflows for staging specimens to be imaged as well as processes for moving specimens from/to storage, determined which rock specimens/slabs have pteridophytes to be imaged and which pteridophyte specimens will require close-ups, and used an Excel file of county, state/province or country with centroids coordinates to produce “county level” geo-referenced specimens.

Share and Identify Best Practices and Standards (including Lessons Learned):
Rutgers University found that it is more efficient to barcode using the Symbiota skeletal record application rather than including information in the metadata of the images. Both the time efficiency of barcoding and imaging has increased due to this new practice.

The Sam Noble Museum at the University of Oklahoma is revising their detailed written museum-specific workflows for various processes of the project. Lessons Learned: 1. Showing someone how to do something is easier and more straightforward than writing the procedures to account for multiple backgrounds/life experiences. While procedures are simplified and understandable in person does not mean that written procedures are straightforward. 2. Because paleo-related procedures are not one-size fits all, special procedure may have to be developed for specimens with unusual size, orientation, or lighting requirements.

Denver Museum of Nature and Science found that data quality review is absolutely necessary.

Identify Gaps in Digitization Areas and Technology:
The Paleo Module for Symbiota is not yet available, although our developer expects to have it ready within a few weeks. This has prevented any of our Paleo partners from uploading specimen data or images to the Pteridoportal, which has been frustrating for them.

An unplanned reduction in University of Michigan Specify database support is preventing progress on uploading fossil specimen records and images via the pipeline used for herbarium specimens. Once a University Michigan paleobotany database has been successfully initiated, development of a project-specific repository for paleobotany specimen records and images will be essential for further progress.

Work has slowed for some participants over the summer with less student workers working in the collections.

Share and Identify Opportunities to Enhance Training Efforts:
Participants trained 21 new undergraduates to work on the project.

The New York Botanical Garden (NYBG) trained three high-school aged NYC Summer Youth Employment Program Interns to photograph fern specimens for six weeks. Robbin Moran presented the 6th of ten total PCC seminars/activities to all NYBG TCN digitization staff (3-SoRo, 3-MiCC, 3-PCC, 3-Endless Forms).

The University of Texas provided six hours of enrichment (botanical instruction) to the three students doing data entry across the entire three month period.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
Participants are collaborating with Endless Forms, Phenology, and Cretaceous World TCNs.

Share and Identify Opportunities and Strategies for Sustainability:
The Sam Noble Museum is continuing to take the opportunity to work collaboratively with other collection staff, volunteers, and their museum's IT department to improve in-house technical and collection knowledge. They are also establishing in-house processes to appropriately add additional data fields to datasets being shared via the museum's IPT server, ensure data quality, and handle updates as needed.

Share and Identify Education and Outreach (E&O) Activities:
Cindy Looy presented "The Pteridological Collections Consortium: An integrative approach to pteridophyte diversity over the last 420 million years" at the North American Paleontological Convention in Riverside, CA, on June 23, 2019. Carl Rothfels presented "The Pteridophyte Collections Consortium: 420 million years in two million specimens" at Botany 2019 in Tucson, AZ,

on July 29, 2019.

Rutgers University presented a poster focusing on the inadvertent skills developed among students interning in the herbarium at the iDigBio conference at Yale University in June:
King, M., J. Borden, D. Jaikumar, G. Donato, R. Helsel, E. Popp, K. Svoboda, E. Tillett, M. Furci, & L. Struwe. 2019. The broadest impacts: The inadvertent and unexpected building of life skills from biodiversity collection digitization in Rutgers' undergraduate Herbarium Army. Third Annual Digital Data in Biodiversity Research Conference, New Haven, CT, June 10-12, 2019 "

The New York Botanical Garden hosted several public tours of the collections which featured the Digital Imaging Center and highlighted the TCNs, their digitization staff, and the value in preserving and digitizing natural history collections. Mirielle Lopez-Guzman, PCC Digitization Intern published three short articles about various pteridophyte species on NYBG's "The Hand Lens" website (http://sweetgum.nybg.org/science/the-hand-lens/explore/?NarAuthorsRef_tab=255723).
The Denver Museum of Nature and Science featured this project during two open houses.

Carol Ann McCormick wrote an article for the North Carolina Botanical Garden e-newsletter, "What's in a Name? Hopefully more than just initials…"

Google Analytics

Other Progress (that doesn't fit into the above categories):
The Denver Museum of Nature and Science completed the cataloguing and imaging of all pteridophytes found in the DMNS paleobotany collections this reporting period.

The project manager and portal manager met with the project manager and portal manager for the Phenology TCN to discuss using Cyverse as an image storage solution to replace the IDigBio server which will be decommissioned.

Three new collections were added to the Pteridoportal:
Arizona State University Vascular Plant Herbarium
Garrett Herbarium, Natural History Museum of Utah
West Virginia University Herbarium

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1562

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

Submission #1563

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by djennings
Wednesday, August 14, 2019 - 16:45
10.228.208.157

TCN Name:
Digitizing "Endless Forms": Facilitating Research on Imperiled Plants with Extreme Morphologies

Person completing the report:
mpace@nybg.org

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):
See attached

Attachment 1
EndlessForms_TCN_annual_report_SUMMARY.pdf

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1563

NSF Project Reporting Format

This document has been developed to provide Principal Investigators (PIs), co-PIs, and research organizations with:

- a listing of the questions that will be asked in the new NSF project reporting format;
- assistance in planning for the submission of the report; and
- a tool to help PIs collaborate with other contributors in answering these questions, if needed.

The project reporting service on Research.gov and the associated help documentation provides more detailed instructions and contextual assistance.

Note: NSF project reports are not cumulative and should always be prepared for the specific project reporting period only.

PIs should NOT complete and upload this document to Research.gov in order to meet your reporting requirement. You are required to enter text in the text boxes available

Accomplishments

You have the option of selecting “nothing to report” in this section.

What are the major goals of the project?

Digitize and make publicly accessible online 2,000,000 collections of epiphytic, carnivorous, and succulent plants housed at 14 participating U.S. herbaria, universities, and botanical gardens. Engage with the hobbyist communities who have interests in these taxa. Train a diverse range of students in museum specimen digitization, and species conservation assessment. Engage the Natural History Community in a dialog about how location data of sensitive species are shared digitally.

What was accomplished under these goals (you must provide information for at least one of the 4 categories below)?

Major Activities:

-Major progress has been made with 39% of the promised specimens digitized within the first year of this project (if removing organizations that were unable to fully participate in the first year due to unforeseen staffing changes and equipment shortages, this rises to 49%).

-The majority of participants in the TCN are undergraduate students or recent graduates who gained significant work place experience working in major natural history museums.

-Several outreach events have taken place, in particular, conservation internships where students learned GIS and conducted initial conservation assessments.

-Foundational planning for a 2020 Symposium.

Specific Objectives:

Items digitized	Total Costs	Average Cost/Specimen
447,815	$277112.90	$0.58

ACTIVITY	OBJECTIVE	COMPLETED TO DATE	% TOTAL COMPLETED
Imaging	1,701,394	299,973	18%
Bar coding	1,152,192	447,815	39%
Data Entry	1,160,560	232,112	20%
Geo-Ref	1,542,194	59,865	4%

Significant Results:

- 36% of the promised specimens were digitized within the first year of this project

- Conservation Internship
NYBG just completed the first iteration of one of our major grant deliverables: an educational 'conservation internship' with a NYC high school. NYBG hosted 5 high school seniors for a month, with the students working on preliminary species conservation assessments.
In short, the students georeferenced data, learned a simple protocol in QGIS, analyzed their data, and gave a presentation on their research. The students really enjoyed the process, and their post-internship questionnaire shows they got a lot out of the whole process. Although none are interested in a botany-related career, they all stated a marked improvement in their appreciation and awareness of plants based on pre- and post-internship questionnaires.
We are working on writing-up the protocol and curriculum to distribute to any TCN participants who are interested in implementing this project at their institution. It is hoped this curriculum (or variants thereof) will be widely implemented among TCN participants. Some participating institutions are already implementing similar curricula, as detailed in their reports.

Key outcomes or other achievements:

53 tours or open houses across the included institutions discussed or otherwise highlighted this TCN. The project was discussed in the context of national digitization efforts, the conservation threats of the included species were presented, and engagement via potential volunteering was encouraged. 5 publications have been produced.

What opportunities for training and professional development has the project provided?

57 students (primarily undergraduate, but also including high school and recent college graduates) have received some form of training and professional development. This includes training in GIS analysis, specimen digitization and data curation, and general work place culture. A smaller subset of these students and recent graduates were involved in implementing a Conservation Internship for high school students, and institutional tours.

How have the results been disseminated to communities of interest?

Several partner institutions are opening direct communications with hobbyist groups that focus on the included plant groups, to help spread awareness of the importance of natural history collections, and to help recruit volunteers to augment digitization efforts.

The project has been presented by some participating institutions in select local media markets (morning news shows).

Presentations have been given at national scientific meetings.

What do you plan to do during the next reporting period to accomplish the goals?

A few Institutions we unable to fully participate in year 1 due to unforeseen staff changes (e.g., sudden departure of the collections manager) or unforeseen equipment back-orders (e.g., camera rigs). These issues have all been resolved, allowing for full participation throughout FY 2020.

The educational plans and curricula for the High School Conservation Internship are currently being written, and will be distributed to all TCN participants In August 2019. It is expected participants will then be able to conduct this Internship at their institution, or modify It to serve their community's needs.

We will continue to make inroads and form partnerships with hobbyist groups, via emails, and in-person discussions.

The Symposium on Sharing Sensitive Biodiversity Data is actively being planned, and will take place in the summer of 2020.

Train any additional participants who may join the project.

NOTE: You may upload PDF files with images, tables, charts, or other graphics in support of the Accomplishments section. You may upload up to 4 PDF files with a maximum file size of 5 MB each.

Products

You have the option of selecting "nothing to report" in this section. There are no limitations to the number of entries you submit and you can also pull information directly from Thomson Search when using the online tool on Research.gov.

Within the Products section, you can list any products resulting from your project during the specified reporting period, such as:

Journals: nothing to report

Books: nothing to report

Book Chapters: nothing to report

Thesis/Dissertations: nothing to report

Conference Papers and Presentations: "Introducing the new "Endless Forms' Digitization TCN: Digitizing "endless forms most beautiful and most wonderful": Facilitating Research on Imperiled Plants with Extreme Morphologies", Matthew Pace, Poster at the 2018 Botany meeting, Rochester, Minnesota, 2018.

Other Publications: Popular Science: "These beautiful images preserve plant species that might otherwise disappear forever", Eleanor Cummins, Dec 2018, https://www.popsci.com/endangered-scientific-plant-scans/

Best, J. H. (2019). BRIT Digitization Appliance. DemoCamp presentation at the Society of Preservation of Natural History Collections, Chicago, Illinois, May 25-31.

The following news story featuring Dr. Cameron's research with Orchidaceae systematics appeared on May 21, 2019 for all UW-Madison students, employees, and alumni. http://ls.wisc.edu/news/beautiful-wonder

Technologies or Techniques: nothing to report

Patents: nothing to report

Inventions: nothing to report

Licenses: nothing to report

Websites: Project Website: **http://sweetgum.nybg.org/science/projects/endlessforms/**

Other Products:

NOTE: You may upload PDF files with images, tables, charts, or other graphics in support of the Products section. You may upload up to 4 PDF files with a maximum file size of 5 MB each.

What other organizations have been involved as partners?

The online service will also ask you for additional information such as:

- Type of Partner Organization
- Name
- Location
- Partner's contribution to the project

Have other collaborators or contacts been involved? No

Impacts

You have the option of selecting "nothing to report" in this section.

What is the impact on the development of the principal discipline(s) of the project?

nothing to report

What is the impact on other disciplines?

nothing to report

What is the impact on the development of human resources?

nothing to report

What is the impact on physical resources that form infrastructure?

nothing to report

What is the impact on institutional resources that form infrastructure?

nothing to report

What is the impact on information resources that form infrastructure?

nothing to report

What is the impact on technology transfer?

nothing to report

What is the impact on society beyond science and technology?

nothing to report

Changes / Problems

If not previously reported in writing to the agency through other mechanisms, provide the following additional information or state, "Nothing to Report", if applicable.

Changes in approach and reason for change:

nothing to report

Actual or Anticipated problems or delays and actions or plans to resolve them:

nothing to report

Changes that have a significant impact on expenditures:

nothing to report

Significant changes in use or care of human subjects:

nothing to report

Significant changes in use or care of vertebrate animals: nothing to report

Significant changes in use or care of biohazards: nothing to report

Special Requirements

This report section is only available when Special Requirements are specifically noted in the solicitation and approved by the Office of Management and Budget.

NOTE: You may upload PDF files in support of the Special Requirements section. You may upload PDF files with a maximum file size of 10 MB each. There is no limit to the number of files uploaded.

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

Submission #1564

Submission information

Form: TCN Quarterly Progress Report to iDigBio
Submitted by dcblackburn
Thursday, August 22, 2019 - 09:33
10.243.21.179

TCN Name:
oVert: Open Exploration of Vertebrate Diversity in 3D

Person completing the report:
dblackburn@flmnh.uf.edu

Progress in Digitization Efforts:
Since 1 September 2017 (when our TCN officially began), we have added more than 8,560 media files representing >5,030 specimens to MorphoSource as part of the oVert TCN. We have CT-scanned >7,7100 fluid-preserved specimens approaching 2,900 genera of amphibians (>90% of all genera), reptiles (60%), fishes (31%), mammals (25%), and birds (10%) representing approximately half of all vertebrate families, including specimens from across more than 30 US institutions. To date, the media files on MorphoSource have been viewed >204,000 times and downloaded >7,000 times (~60% for research in a broad range of biological fields). The top most-viewed media groups are for four fishes (Anguilla, Apasmogaster, Corydoras, and Flexor), two amphibians (Cornufer, Cryptobranchus), three reptiles (Alligator, Crocodylus, and Gavialis), and one mammal (Ornithorhynchus).

While scanning is on-going at institutions across the TCN, we have developed priority lists of target species using iDigBio specimen data. We have shared lists for fishes, reptiles, and mammals, and birds such that different institutions can begin prioritizing and mobilizing specimens in their collections for imaging.

Share and Identify Best Practices and Standards (including Lessons Learned):
We continue to work closely with staff at MorphoSource (Doug Boyer, Julie Winchester) on issues related to the oVert TCN. Building on our recent work to integrating specimen data from iDigBio into MorphoSource, we continue to work on strategies to allow institutions to ingest metadata for media files into their own institutional databases and IPT. We have recently outlined a strategy to achieve better integration between MorphoSource and local Specify databases and have nearly completed a demonstration of this at FLMNH.

Previously reported efforts to achieve standardization in CT-scanning workflows are on-going. With a new oVert postdoctoral scientist, Dr. Catherine Early, beginning at UF in May 2019, we will push forward with written and video on-line tutorials related to imaging, downstream analysis, and data sharing. Scripts developed by oVert for different parts of our workflow are hosted on GitHub and updated as needed.

https://github.com/FLMNH/MorphoSourceRSSDownloader
https://github.com/nsvitek/CT_tools/tree/master/morphosource_batch_convert

We continue to work on text that institutions can use for their policy for digital data ownership. We are working with MorphoSource and local IT departments at each institution to accomplish this task.

Zach Randall (UF) has worked with participating oVert institutions ANSP (PI Sabaj) and YPM (CoPI Watkins-Colwell) to improve workflows related to specimen packaging and scanning.

Having optimized workflows for typical CT-scanning of all most vertebrate groups (and of most sizes), we have recently turned our attention to organizing efforts to generate contrast-enhanced CT-scans of each vertebrate family as well as more in-depth sampling such as ontogenetic series or species-rich clades.

Identify Gaps in Digitization Areas and Technology:
We continue to deal with challenges of long-term data storage for the project, since scanning produces large amounts of 3D data. We are working with institutions to repatriate raw projection data from scanning events that will be archived at those institutions. In addition, we are participating in efforts led by MorphoSource to create a workflow where institutions can manage their CT data in that on-line depository (as opposed to local databases) by “containerizing” MorphoSource for specific institutions. Via iDigBio, oVert and MorphoSource recently received a grant to host a workshop in January 2020 focused on using institutional data storage solutions to archive CT-data that are then made available through discipline-specific on-line depositories such as MorphoSource.

Share and Identify Opportunities to Enhance Training Efforts:
In Year 2, we have been continuing to focus on best practices and training. In addition to our on-site training workshop for imaging staff in late 2018, we continue with bi-weekly calls to discuss issues in the imaging workflow.

The oVert team continues to develop digital media (both PDFs and short videos) that provide background information about CT-scanning as well as guides on creating, sharing, and using media generated by the oVert TCN. Files are available via the oVert iDigBio wiki and videos are available on the MorphoSource YouTube page (https://www.youtube.com/channel/UCusG--ELmxbSHNuTIcVL5mQ). Several institutions have undergraduate and doctoral students working as grant-funded technicians, which provides an opportunity for training students in CT research methods. Across our network of institutions, images, digital and 3D-printed models, and actual CT-scan data are used in undergraduate and graduate courses as well as in outreach events, exhibits, and social media.

We continue to support opportunities for training in CT-scanning at Friday Harbor Labs as part of the Broader Impacts of the oVert TCN (http://bit.ly/ScanWithoVert). While at scientific conferences, we are disseminating this advertisement to solicit applications from undergrad and graduate students as well as professionals.

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
Almost as soon as the oVert TCN began in September 2017, there was wide interest from colleagues and institutions in the US and internationally in participating in or collaborating with our project. We have been working with unfunded US-based institutions at which we will CT-scan selected high-value specimens representing key taxa that are otherwise not available in oVert-participating institutions. We have recently begun work with both the the Carnegie Museum of Natural History and the Smithsonian National Museum of Natural History related to CT-scanning fluid-preserved birds. We are discussing opportunities to work with other institutions that have ongoing collaborations with oVert-participating institutions, such as scanning large marine mammal specimens through connections at Texas A&M-Galveston. The oVert PEN oMEGA (led by Leif

Tapanila, Idaho State University) is underway and recently conducted site visits for imaging at both the University of California – Berkeley and the California Academy of Sciences. The oMEGA PEN uses light-based scanning to image individual skeletal elements of large vertebrates (e.g., whales) that would otherwise not be included within oVert due to size limitations of CT-scanning. Two other PEN proposals associated with oVert were recently funded by NSF: oUTCT is led by PI Jesse Maisano at the University of Texas – Austin (UTCT) and will mobilize legacy data at the federally supported UTCT facility via MorphoSource; and FuncQEE, led by Noé de la Sancha at Chicago State University, will CT-scan rodent diversity to provide an in-depth perspective on ecomorphological diversity using fluid-preserved specimens, as well as skins and disarticulated skeletons.

Share and Identify Opportunities and Strategies for Sustainability:
The oVert TCN builds on existing resources by adding media files to an existing database platform, MorphoSource (supported by Duke University and the US National Science Foundation), and each institution is individually responsible for long-term storage of original media files if they choose to do so.

The University of Florida has entered into a licensing agreement to share CT scans generated using UF funds (i.e., not funded by NSF) with Interspectral (http://www.interspectral.com/). Revenue generated through licensing CT datasets from UF specimens will be used to support curation, research, and education at FLMNH. While not directly funded by oVert, this strategy of licensing media files for commercial use may provide funds that sustain data storage and museum curation into the future.

Share and Identify Education and Outreach (E&O) Activities:
In June 2019, we conducted our first hands-on workshop with 9 middle school and high school teachers in June 2019 via the Summer Science Institute based at the UF Center for Precollegiate Education and Training. Teachers worked with oVert PIs and students based at UF to create learning exercises (available here: https://www.cpet.ufl.edu/teachers/ssi/ssi-2019/3d-vertebrates/) using digital models on-line (via MorphoSource and/or Sketchfab) or 3D-printed models.

Information about products from the oVert TCN are regularly communicated on social media (https://twitter.com/hashtag/overttcn). Social media coming from oVert is received well on-line and often used by the US National Science Foundation in their social media feeds.

Google Analytics

Other Progress (that doesn't fit into the above categories):
As of this report, there are at least 19 scientific publications citing one of the 16 oVert TCN Awards. In addition, there have been more than 40 presentations at professional meetings related to oVert, including recent presentations at the national meetings of the 3rd iDigBio Digital Data in Biodiversity Research Conference, American Society of Mammalogists, and Joint Meeting of Ichthyologists and Herpetologists, and international meetings such as the 9th Congresso Brasileiro de Herpetologia and 12th International Congress of Vertebrate Morphology. Publications and presentations are detailed on the oVert iDigBio wiki page: (https://www.idigbio.org/wiki/index.php/OVert:_Open_Exploration_of_Vertebrate_Diversity_in_3D).

The oVert TCN is regularly highlighted in publications by those not directly associated with our project. For example, Hipsley & Sheratt (2019; Scientific Data) listed oVert (and only oVert!) as a project that can "fully realize the potential of open digital morphology." Similarly, the promise of data from oVert was also highlighted in recent work by Harmon et al. (2019; Frontiers in Ecology & the Environment) in their discussion of using museum collections to track pathogens and parasites. A version of figure 1 from the oVert NSF proposal recently appeared in the book Animal: Exploring the Zoological World (Phaidon Publishers, London).

Attachment 1

Attachment 2

Source URL: https://www.idigbio.org/node/564/submission/1564