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

Report submitted by: eclites@berkeley.edu
Report Submitted on: 11/21/2015 - 17:23

Progress in Digitization Efforts

As of 11/20/2015, the TCN has digitized 31076 specimens and photographed 3365 specimens. We have also georeferenced 1454 localities. Our main effort currently is compiling locality data, standardized to DarwinCore terms. As of 11/20, partner institutions have cleaned and compiled 37972 locality records. These records will be used to create a stratigraphic dictionary of eastern Pacific rock formations. Compiled records will also be batch georeferenced by the institution with expertise in that geographic area. Other digitization efforts included: photographing specimen cards to add to digital records at the University of Washington Burke Museum (Burke). At the University of Oregon (OU), six ledgers from Greg Retallack fieldwork have been scanned and information is being updated for ~2000 localities. This work includes cleaning lithostratigraphy and chronostratigraphy information as well as removing duplicate localities. At the Paleontological Research Institution (PRI), 803 localities were transcribed. PRI is beginning to segregate and stage material to begin digitization work. The California Academy of Sciences (CAS) also has on-going digitization of field notebooks and cleaning of currently databased locality data (3,500 unique records). CAS is also cleaning and restructuring currently databased records in FileMaker Pro for conversion to Specify7 via MySQL. CAS is concurrently updating field names and subsequent data to conform to Darwin Core terms and standards. At the National Museum of Natural History (NMNH), survey work was done by Austin Hendy (LACM) and Judy Smith to assess how many cases or drawers of eastern Pacific Mollusca specimens are identified and sufficiently well curated to enter into the EPICC database. NMNH has scanned the associated ledgers, which are being formatted for upload into their collection database. This process will also create stub records for specimens associated with each page. The Los Angeles County Museum (LACM) is conducting an inventory of 190 cabinets of material relevant to the TCN. This inventory is compiling taxonomic and geographic information as well as stratigraphic context and curatorial quality. This process has identified priorities for pre-digitization tasks (rehousing and identifications), cataloging, and imaging. The Cooper Center recently hired a new Associate Curator of Paleontology who is beginning to compile and clean locality records.

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

Adoption of Darwin Core terms and standards for locality fields. Agreed upon image acquisition standards. Development of an agreed upon standard of diagnostic "views" for imaging key invertebrate groups. Agreed upon convention for fuzzing geographic coordinates to the nearest 0.1 degree worldwide. Photography station equipment lists and photographic workflows were also shared among TCN members, and demonstrated at the first TCN meeting.

Inventory first, digitize second! Not all localities and specimens are of research interest, or fit with an efficient workflow. Digitization efforts at LACM will be based on the data generated by a detailed inventory.

Identify Gaps in Digitization Areas and Technology

The Burke Museum is still evaluating photographic equipment for purchase. PRI recently upgraded their computer workstations and photography equipment. PRI is in the process of acquiring photo processing software and acknowledges a need to work on getting an IPT to push data to IDigBio. LACM does not currently have a functioning database. A Microsoft Access-based database has been tested and requires additional development (<1 week of IT support) before use. LACM is still >6 months from deployment of KE-Emu software.

Share and Identify Opportunities to Enhance Training Efforts

Trained 19 undergraduate and graduate students in techniques including: pre-digitization curation, cataloging, taxonomic identification, digitization standards, georeferencing and handling. In addition, several high school interns and volunteers were trained in imaging, cataloging and collections handling protocols at CAS. LACM trained 15 mostly middle school teachers in bulk sample sorting and identification. Teachers and students at LACM will participate in Citizen Curator program, developed in partnership with LACM Education Department to assist staff in curation during the course of the TCN.

Protocols and procedures agreed upon at the Sept. 2015 TCN meeting were shared with relevant staff and students at all institutions. Three TCN PIs (Marshall, Holroyd, Davis) attended the iDigBio Summit in Arlington and learned more about best practices for

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

photography and digitization. The Summit also provided opportunities for discussions with other TCNs (see section below). Several TCN members participated in recent iDigBio webinars hosted by the Paleo Digitization Working Group. UCMP is planning a data carpentry workshop for Jan./Feb. 2016 to enhance the skills of TCN members. There will be a remote workshop site at University of Oregon and all TCN members will be invited to attend.

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

We have spoken with the other paleontology TCNs, especially Dena Smith at the Fossil Insect TCN, about potential collaborations via iDigPaleo. We continue to speak with several institutions about potential future PENs, including the San Diego Museum of Natural History. Several non-TCN institutions (Sam Noble Oklahoma Museum of Natural History, University of California, Riverside, Yale Peabody Museum) have agreed to share their eastern Pacific locality data with us to improve our stratigraphic dictionary and batch georeferencing efforts. LACM has had conversations with the Southern California Paleontological Society about assisting in digitization of collections and expects that they will begin participation in February 2016.

Share and Identify Opportunities and Strategies for Sustainability

UO has an online data repository that could be used as a location for periodic data dumps from TCN institutions. At LACM, the use of undergraduate and community-college interns and volunteers in pre-digitization tasks and at various points in digitization workflow is expected to provide sustainability. The smaller universities/colleges are very enthusiastic for their students to participate in real-world activities, and the students are very engaged and motivated.

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

After the first two months of active digitization work, the University of Alaska Museum of North (UAM) established working protocols that will be in place for the rest of the project, and trained the student who will be doing the lion's share of the work. CAS is currently developing an image driven resources/references database for use in taxonomic identification of EPICC specimens. UO has a number of additional updates: they have been adding legacy digital images to TCN-related specimen records in their Specify DB, ~40 at this time.They have updated their online database, at paleo.uoregon.edu. They have completed a test of their IPT and are about to put it into production mode. They have a GRBio Institution ID and have requested a collection ID. They set up a Specify Attachment Server, which allowed them to begin attaching those legacy images to specimen records. This server will also serve the images online for both their portal and iDigBio. They are only one day away from having all of their non-Oregon localities in the database and shared with TCN partners. They will begin updating and georeferencing their Oregon localities after the Thanksgiving holiday, in preparation for facilitating batch georeferencing of all OR localities for the TCN.

Our first virtual TCN meeting will be held via AdobeConnect Dec. 7. The Burke Museum scheduled our second annual TCN meeting for Sept. 2016 and reserved the appropriate meeting spaces.

Attachment

N/A

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

Report submitted by: neilscobb@gmail.com
Report Submitted on: 12/29/2015 - 10:02

Progress in Digitization Efforts

See attached document

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

See attached document

Identify Gaps in Digitization Areas and Technology

See attached document

Share and Identify Opportunities to Enhance Training Efforts

See attached document

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

See attached document

Share and Identify Opportunities and Strategies for Sustainability

See attached document

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

See attached document

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/SCAN_December_2015.docx

Southwest Collections of Arthropods Network Update

January 25, 2016

Neil Cobb

Progress in Digitization Efforts:

We have exceeded our quota for digitizing labels from pinned specimens, which is 736,736 records from the original 10 institutions and 958,736 total records when we include the three PEN projects. T**able 1** presents four sets of statistics derived from our data portal as of December 28, 2015. These include the following data: 1) institutions that are funded by the NSF-ADBC program, including the 3 PEN grants; 2) institutions that have entered data into the SCAN portal but not funded by the NSF-ADBC program; 3) the total of these first two categories; and 4) the total records in the SCAN portal. The fourth column includes records from the first three columns as well as arthropod records we have ingested from InverteBase TCN, as well as providers that already provide data to aggregators GBIF and iDigBio. The purpose of serving this latter category of data is to provide as complete as information as possible to persons that are considering research projects. We do not serve all arthropod data available on aggregator portals, we focus on providers that have North American occurrence data that we have established an IPT link and the provider gives us explicit permission to serve their data. The only exception is North American spider data from GBIF.

Table 1. Number of specimen records digitized and associated summary statistics. From http://symbiota4.acis.ufl.edu/scan/portal/index.php . SCAN-funded numbers refers to the 13 museums receiving ADBC funding. SCAN non-funded numbers include 20 museums contributing cataloged specimen data and non-cataloged moth specimen data from 33 collections (5 private collections and 28 public museums). Total Served includes all SCAN data and other datasets with North American arthropod records (e.g., GBIF, Tri-Trophic TCN).

	SCAN funded	SCAN non-funded	TOTAL SCAN	Total Served
# Specimen Records	1,497,362	736,956	2,234,318	6,609,934
# Georeferenced	1,278,792	362,016	1,640,808	5,031,586
# Identified to species	698,781	318,972	1,017,753	3,312,889
# Families	1,409	1,386	2,191	2,302
# Genera	7,298	9,524	12,038	14,632
# Species	23,302	36,858	49,966	75,267
# All Taxa	24,247	37,294	51,139	78,129
% Georeferenced	85%	49%	73%	76%
% Identified to Species	47%	43%	46%	50%

Although we have technically reached our goal for the 13 SCAN museums, we have not thoroughly reviewed all records produced by SCAN-funded museums to determine how many of those strictly ground-dwelling arthropods, but we expect that 80% or those are target taxa and thus we expect to exceed our project goal. Ten museums are in a one-year no-cost extension and

the one PEN museum (BYU) is in their second year. We estimate that we will digitize at least 400,000 more ground-dwelling arthropod specimens by the end of the project and over 1.7 million total specimens for the original 10 museums. The three additional PEN grants (Harvard, BYU, and Ohio State University) are on track to meet their quotas. For the purpose of the bi-monthly reports I lumped all data provided by PEN institutions. Ohio State University provided data prior to becoming a PEN collaborator and they have produced 405,702 records to date, of which only ~40,000 records represent the two focal taxa (Carabidae and Tenbrionidae) that they have targeted in their PEN project.

A subset of SCAN museums are creating high-resolution images and three museums are creating low resolution images that include the specimen and labels in the same image. **Table 2** lists the number of images posted on SCAN by participating museums. Our goal was to produce 15,125 high-resolution images suites. An image suite consists of 1-3 images representing different aspects of a specimen. This will translate into approximately 40,000 images. Three museums are producing low-resolution images (University of Hawaii, University of Arizona, and Texas Tech University).

Share and Identify Best Practices and Standards (including Lessons Learned):
We are identifying best practices on a weekly basis and sharing those with respective people within SCAN.

Identify Gaps in Digitization Areas and Technology:
We need to harvest additional data (i.e. beyond SCAN) to better understand the biogeography of arthropod taxa. We are partially meeting this need by incorporating GBIF into the SCAN database.

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

Share and Identify Collaborations with other TCNs, Institutions, and Organizations:
We are primarily working with Tri-Trophic TCN in order to develop questions for analyzing ADBC data.

Share and Identify Opportunities and Strategies for Sustainability:
We have a sustainability plan for Colorado State University, they are finished using their NSF funding http://scan1.acis.ufl.edu/content/sustainability .

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

Institution	
Arizona State University Hasbrouck Insect Collection (ASU-ASUHIC	3,051
C.P. Gillette Museum of Arthropod Diversity (CSU-CSUC	49
Colorado Plateau Museum of Arthropod Biodiversity (NAUF-CPMAB	2,389
Denver Museum of Nature & Science (DMNS-DMNS	627
Museum of Comparative Zoology, Harvard University (MCZ	23,098
Museum of Southwestern Biology, Division of Arthropods (UNM-MSBA	193
New Mexico State Collection of Arthropods (NMSU-NMSU	1,380
Ohio State C.A. Triplehorn Insect Collection (OSU-OSU	2,655
Texas Tech University - Invertebrate Zoology (TTU-TTU-Z	27,061
University of Arizona Insect Collection (UA-UAIC	76,512
University of Colorado Museum of Natural History Entomology Collection (UCB-UCMC	2,035
Essig Museum of Entomology (EMEC-EMEC) (1)	1
Hymenoptera Institute Collection (UKY-HIC-HIC	2,297
SDSU Terrestrial Arthropods Collection (SDSU-TAC	104
The Albert J. Cook Arthropod Research Collection (MSU-MSUC)	541
UAM Entomology Collection (UAM-UAM_ENT	5,879
United States National Museum, Entomology Collections (USNM-USNMENT) (38)	38
University of Hawaii Insect Museum (UHIM-UHIM	86,337
University of Kansas Natural History Museum Entomology Division (KU-SEMC	4,445
University of Tennessee at Chattanooga (UTC-UTCI	32
Virginia Polytechnic Institute and State University Insect Collection (VPI-VTEC) (184)	184
Yale Peabody Museum, Entomology Division (YPM-ENT	10,029
SCAN Funded Musuems (All Images)	**139,050**
SCAN Funded Musuems (High Resolution Images)	**45,477**
Non-ADBC Funded Musuems (All Images)	**109,887**
Total Images Servged on SCAN	**248,937**

Other Progress (that doesn't fit into the above categories): We continue to provide North American data we have obtained from other sources to increase the quantity of data available to SCAN users. We have grown from serving 10 collection datasets to serving 87 data sets through SCAN (**Table 3**). There are five categories of data sets listed; 1) SCAN ADBC funded

collections; 2) SCAN collaborator collections, 3) Moth data collected from non-cataologed specimens, 4) Aggregator collections (Data served directly to iDigBio/GBIF but also on SCAN) and 5) Arthropod records produced through InverteBase. These latter two categories will greatly increase the usability of the existing SCAN data, especially understanding species distributions and more complete species lists. We are re-building our data harvested from North American data from GBIF and are in the process of hosting data from other non-TCN arthropod data sets that have been harvested by iDigBio.

Table 3 List of Collection data sets being served on SCAN data portal.

	SCAN ADBC-Funded Collections	**Specimens**
1	Ohio State C.A. Triplehorn Insect Collection	405,725
2	Texas A&M University Insect Collection	231,480
3	Texas Tech University - Invertebrate Zoology	145,783
4	Denver Museum of Nature & Science	122,502
5	University of Arizona Insect Collection	83,949
6	University of Colorado Museum of Natural History Entomology Collection	80,836
7	C.P. Gillette Museum of Arthropod Diversity	78,309
8	Arizona State University Hasbrouck Insect Collection	73,764
9	New Mexico State Collection of Arthropods	72,163
10	Museum of Comparative Zoology, Harvard University	68,859
11	Colorado Plateau Museum of Arthropod Biodiversity	58,028
12	Brigham Young University Arthropod Museum	43,269
13	Museum of Southwestern Biology, Division of Arthropods	32,695
	SCAN collaborator collections (not funded through ADBC SCAN Project)	**Specimens**
1	California Academy of Sciences Entomology	272,005
2	The Sam Noble Museum Department of Recent Invertebrates	111,582
3	University of Hawaii Insect Museum	92,854
4	The Albert J. Cook Arthropod Research Collection	76,007
5	Scarab Central: World Scarabaeoidea	37,999
6	Entomology Collection at the Natural History Museum of Utah	28,931
7	K-State Museum of Entomological and Prairie Arthropod Research	17,367
8	Hymenoptera Institute Collection	16,167
9	R. M.Bohart Museum of Entomology	11,653
10	University of Tennessee at Chattanooga	8,852
11	Essig Museum of Entomology	5,838
12	SDSU Terrestrial Arthropods Collection	3,432
13	University of Georgia Collection of Arthropods	3,343

14	The Purdue Entomological Research Collection	2,917
15	Virginia Polytechnic Institute and State University Insect Collection	2,804
16	University of Vermont Zadock Thompson Zoological Collection-Invertebrates	2,599
17	United States National Museum, Entomology Collections	2,483
18	Academy of Natural Sciences, Entomology Collection	1,983
19	Dugway Proving Ground Natural History Collection	753
20	Western Washington University Insect Collection	656
21	Gregory P. Setliff Collection - Kutztown University	577
22	University of Delaware Insect Research Collection	563
23	Utah Department of Agriculture and Food Entomology Collection	425
24	Oregon State Arthropod Collection	420
25	Denver Botanic Gardens Collection of Arthropods	275
26	Milwaukee Public Museum, Invertebrate Zoology-Insect Collection	79
	Collections set up in SCAN but no records to date	**Specimens**
1	BLM Mother Lode Field Office: The Bees of Pine Hill Preserve	0
2	Clemson University Arthropod Collection	0
3	ColecciÃ³n ZoolÃ³gica de la Universidad AutÃ³noma de QuerÃ©taro	0
4	Ed V Gage Collection	0
5	Enns Entomology Museum	0
6	Florida Museum of Natural History, McGuire Center for Lepidoptera and Biodiversity	0
7	LTER Central Arizona Phoenix Arthropod Collection	0
8	M. Andrew Johnston Collection	0
9	The Mississippi Entomological Museum	0
10	University of Minnesota Insect Collection	0
11	University of Nevada, Reno, Museum of Natural History	0
12	Wichita State University Collection	0
13	William F. Barr Entomological Museum	0
14	Wisconsin Insect Research Collection	0
	Collections from Moth specimen survey (Chris Grinter - Coordinator)	
1	Moth Observations Database: UC Berkeley	10,580
2	Moth Observations Database: UC Davis	5,145
3	Moth Observations Database: Denver Museum of Nature & Science	4,118
4	Moth Observations Database: LA County Museum of Natural History	4,097
5	Moth Observations Database: California Academy of Sciences	2,847
6	Moth Observation Database: Field Museum of Natural History	2,319

7	Moth Observations Database: California Department of Food and Agriculture	1,646
8	Moth Observations Database: Canadian National Collection	751
9	Moth Observations Database: Tom Dimock Personal Collection	689
10	Moth Observations Database: National Museum of Natural History	567
11	Moth Observations Database: UC Riverside	335
12	Moth Observations Database: Paul and Sandy Russel Personal Collection	315
13	Moth Observations Database: University of Connecticut	235
14	Moth Observation Database: Santa Barbara Museum of Natural History	211
15	Moth Observations Database: American Museum of Natural History	182
16	Moth Observations Database: San Diego Natural History Museum	155
17	Moth Observations Database: Peter Jump Personal Collection	63
18	Moth Observation Database: Kansas State University	61
19	Moth Observation Database: David L. Wikle Personal Collection	49
20	Moth Observations Database: Colorado State University, Fort Collins	25
21	Moth Observations Database: Chuck Harp Personal Collection	1
22	Moth Observations Database: Illinois Natural History Survey	1
	Aggregator Collections (Data served directly to iDigBio/GBIF but also on SCAN)	**Specimens**
1	University of Kansas Natural History Museum Entomology Division	1,227,972
2	Tri-Trophic TCN	759,378
3	AntWeb	545,759
4	UAM Insect Collection	458,432
5	North American Bee Collections	351,520
6	University of Alberta Museums Entomology Collection (UASM)	303,837
7	Yale Peabody Museum, Entomology Division	192,309
8	Tri-Trophic Interactions - Texas A&M	139,170
9	GBIF NA spiders Extract without Location Information	65,362
10	GBIF NA spiders Extract with Location Data	56,263
	InverteBase TCN Records	**Specimens**
1	Field Museum of Natural History Collection of Insects, Arachnids, and Myriapods	262,928
2	Cleveland Museum of Natural History Invertebrate Zoology Collection	12,686

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

Report submitted by: blieber@ku.edu
Report Submitted on: 01/03/2016 - 12:39

Progress in Digitization Efforts

Paleoniches Update, December 2015

Regarding the University of Kansas portion of the project, led by PI Bruce S. Lieberman, we now have a total of 193,556 specimens databased. Further, we now have a total of ~ 177,618 specimens that are georeferenced. In addition, a total of 7,795 localities have been georeferenced (as mentioned previously, thus the georeferencing component of our proposed work is completed). Since the last update to iDigBio, we are continuingto database cnidarians. Thus, the major component of our proposed taxonomic foci have now been completely databased, imaged, and georeferenced.

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

Cincinnati Museum Center:

Since 9/2015, the UC student intern on the project, Ian MacAdam, has been focusing on georeferencing Ordovician locality records from Canada. He has worked a total of 52 hours. In total, we now have 6,986 sites georeferenced resulting in 44,389 catalogue records in Emu with georeferencing data. This is 63.6% of our digital database georeferenced to date.

Miami Limper Geology Museum:

We have georeferenced almost all of the electronically cataloged specimens, with only a few dozen or so more difficult localities remaining, which I will take care of. One we reached that point, we shifted our efforts to electronically cataloging the fairly large number of specimens we have that were previously cataloged on paper, but never electronically. Over the last reporting period, we have added approximately 1,100 specimens to the electronic catalog. As far as georeferencing, nearly all of these specimens are from localities that have already been georeferenced, so it will be just a matter of adding the respective georeferencing data to these new electronic entries. We plan to continue with this next semester as well. My students are getting faster, so I hope that our numbers will grow at a faster rate next year.

Ohio University:

Four undergraduate students have been working on various aspects of the project this semester including continued development of web pages for the Ordovician Atlas website with a focus on completing molluscan clades.

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

There are several noteworthy updates from SJSU since the last report:
First, 505 species-level pages are now online on the Neogene Atlas. Thus, we have now surpassed the 500 that we originally planned to construct. Additional species-level pages may be added to the Neogene Atlas in the future.

Second, spatio-temporal distribution maps (made using GIS) have now been constructed and put online for all of the 500+ species on the Neogene Atlas (only about half of these were done at the time of the last update).

Finally, the primary focus of current work is the addition of supporting content to the Neogene Atlas. In the case of species-level pages, this includes adding copies of original descriptions and the original figured images of type specimens (a SJSU undergraduate is doing this work). PI Hendricks is adding content to the Neogene Atlas about higher taxa, including information about the modern and ancient diversity of each genus, its geological range (beyond the Neogene), its phylogenetic status, and its ecology (e.g., infaunal vs. epifaunal).

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

Data is available via GBIF and iDigBio but images are awaiting attachment. We are preparing for a new upload and will attach images at that point. We continue to georeference. There are 142,444 records now in Specify. Of those directly relevant to the TCN/PEN project they can be divided as follows:

1. Paleozoic – 27,159 records, 13,967 georeferenced and 2,557 with stage/age resolution

2. Cenozoic – 43,165 records, 15,457 georeferenced and 3,894 with stage/age resolution

3. Localities

Paleozoic unique events: 6,531; number of georeferenced events: 3,042
Paleozoic unique localities: 2,701; number of georeferenced localities: 1,062

Cenozoic unique events: 6,776; number of georeferenced events: 2,919
Cenozoic unique localities: 3,310; number of georeferenced unique localities: 1,228

4. Images- Of the whole drawer images about half are Paleozoic and Cenozoic of relevance to the TCN, drawers have been imaged by specimen with labels, with over 12K image files.

5. Attachments within Specify become potential data for researchers. Our current attachments total 11,479. These breakdown into specific categories:

8,477 attachments that are attached to Collection Objects
227 attachments that are attached to Localities
1,945 attachments that are attached to Storage
829 attachments that are attached to Field Notebook pages
61 attachments that are attached to Preparations

And at Yale: From PI Susan Butts:

We are still digitizing the most abundant taxa from the Ordovician and the Pennsylvanian (50 most abundant genera from each time period) and are proceeding to digitize that material from our systematic collection on a drawer-by-drawer method. We have digitized 31 drawers of this subset since the previous report. Since the previous report, we have modified or inserted 2,094 records in KE EMu and have attached photos to 5,620 additional records (1-3 photos per specimen).

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

N/A

Identify Gaps in Digitization Areas and Technology

N/A

Share and Identify Opportunities to Enhance Training Efforts

N/A

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

N/A

Share and Identify Opportunities and Strategies for Sustainability

N/A

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

For the KU portion of the project, a paper describing research results from our project has been accepted for publication in the journal Lethaia. Bruce Lieberman is a co-author along with a former graduate student Erin Saupe, who was supported by the grant, and is now a post-doc at Yale.

Further, several talks were presented. In particular, PI B. Lieberman presented an invited talk (with several other co-authors from our TCN) at the Topical session on using digitized data in geological and paleontological research at the Geological Society of America Annual Meeting, Baltimore, MD, November 3, 2015 titled: "Digital fossils: there's an App for that." It focused on the new app that was developed associated with our TCN and described its usage and relevance for outreach and research. He was also a co-author on a talk presented by former post-doc Michelle Casey and former graduate student Erin Saupe, each previously supported by the TCN grant, at the same topical session/meeting titled: "The biogeography of 'sluggish' evolution: the impact of geographic range size on extinction selectivity in Pennsylvanian brachiopods of the North American midcontinent." This talk described how we used the database generated during the course of our grant to conduct Geographic Information System analyses of biogeographic patterns to consider the processes that influenced speciation, extinction, and persistence during the Late Paleozoic. Finally, on December 2 PI B. Lieberman attended the iDigBio workshop on Using Biodiversity Specimen-Based to Study Global Change at the Missouri Botanical Garden in early December and presented a talk.

Regarding the Yale PEN, PI Butts represented PaleoNiches TCN at the iDigBio TCN Summit in Alexandria, VA, November 5 and 6, 2015.

Attachment

N/A

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

Report submitted by: kmcameron@wisc.edu
Report Submitted on: 01/05/2016 - 13:36

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

N/A

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

N/A

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/GLIReport_Dec2015.pdf

GREAT LAKES INVASIVES TCN – Bi-Monthly Report **Through Dec. 31, 2015**

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

1) **Progress in Digitization Efforts TO DATE**

PLANTS:

- Specimens Barcoded Only (not photographed yet): **0**
- Imaged only AND image uploaded to the portal (i.e., no data record yet): 6604 (OSU) + 9804 (ALBC) + 1833 (MSC) **= 18,241**
- Imaged only but image not yet uploaded to the portal: 436 (BUT)+ 102,646 (NY) + 38,198 (F) + 26,744 (OSU) **= 168,024**
- Databased only (skeletal or complete record) AND data uploaded to a portal (i.e., but not imaged yet): 3840 (MOR) **= 3,840**
- Databased only but not yet uploaded to a portal: 98,519 (NY) + 46,079 (F) + 3250 (MOR) **= 147,848**
- Imaged and Databased but not yet uploaded to a portal: 20,775 (MICH)
- Both Image AND a Data Record Uploaded to iDigBio, to the GLI portal directly, or to another Symbiota portal: **458,473**

PLANT IMAGING SUMMARY: At least 644,738 images taken. Target stated in grant proposal is 637,000. Imaging goal is 101% complete.

FISH:

- Specimens Barcoded Only (not photographed yet): 519 (MIN) **=519**
- Imaged only AND image uploaded to a portal (i.e., no data record yet): 1617 (F) + 6694 (OSU) **= 8,311**
- Imaged only but image not yet uploaded to a portal: 187 (OSU) **= 187**
- Databased only (skeletal or complete record) AND data uploaded to a portal (i.e., but not imaged yet): 29291 (ILLS) + 4422 (WIS) **= 33,713**
- Databased only but not yet uploaded to a portal: 200,000 (MICH: UMMZ) complete, but waiting for corresponding images to be completed before uploading + 4709 (F) **= 204,709**
- Both Image AND a Data Record Uploaded to iDigBio, to the GLI Portal directly or to another Symbiota Portal for editing before transfer to GLI Portal: 128 (MICH: UMMZ) + 6674 (OSU) + 2696 (MIN) **= 9,498**

FISH IMAGING SUMMARY: Five institutions making progress so far. At least 17,809 images have been taken. Target stated in grant proposal is 102,000 lots. Imaging goal is 17% complete.

MOLLUSKS:

- Specimens Barcoded Only (not photographed yet): 200 (WIS) **= 200**
- Imaged only AND image uploaded to a portal (i.e., no data record yet): **0**
- Imaged only but image not yet uploaded to a portal: 9341 (MICH: UMMZ) + 640 (ILLS) **= 9,981**
- Databased only (skeletal or complete record) AND data uploaded to a portal (i.e., but not imaged yet): 5716 (ILLS) + 349 (WIS) **= 6,065**
- Databased only but not yet uploaded to a portal: 15,668 (MICH: UMMZ) **= 15,668**
- Both Image AND a Data Record Uploaded to iDigBio, to the GLI Portal directly or to another Symbiota Portal for editing before transfer to GLI Portal: 855 (MICH: UMMZ) + 94 (WIS) **= 949**

MOLLUSK IMAGING SUMMARY: Two institutions making progress so far. At least 10,889 images have been taken. Target stated in grant proposal is 44,000 lots. Imaging goal is 25% complete.

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

MOR - We recently switched to entering skeletal records for plants collected outside of the Chicago Region and we are continuing to enter full records for plants collected within the Chicago Region.

Learned about how GUIDs are assigned and how to best ensure that collections added to Symbiota are given correct GUIDs to enable ingestion into iDigBio (WIS)

3) Identify Gaps in Digitization Areas and Technology

F - the new EMu version (our database system) generates a report with a project name and with live image links that will enable us to upload our data and images to the portal. We will test this in January.

MOR - Our database is almost out of the transition stage but we are still having issues with data export. A meeting with the database programmer is planned to discuss these issues.

4) Share and Identify Opportunities to Enhance Training Efforts

We need to make a better effort in helping less experienced (with digitization) collections in setting up and managing their online presence (WIS)

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

The Experience Box learning tool being developed in collaboration with the Field Museum is well underway. The activity guides outlining suggestions and procedures for lesson planning are in the drafting stage. Future meetings are planned for editing, scientific content review, and efficacy review by area teachers.

The Education and Outreach Coordinator attended the Michigan Consortium of Botanists meeting on October 24. At this meeting she presented our TCN's outreach strategies and networked with botanists interested in sharing the Experience Box's educational materials. Half of the day's presentations were focused on invasive species research, reporting, and control strategies. Of particular interest was learning more about MISIN (Midwest Invasive Species Information Network). MISIN has an online invasive species records database and specializes in optimizing occurrence reporting. We will be contributing our data records to MISIN.

6) Share and Identify Opportunities and Strategies for Sustainability

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

Intensive data-cleaning and quality control was completed. As a result, some data from the project have been repatriated into the MICH in-house database.

Progress slowed a bit this bimester due to technician turnover (MICH)

Rich Rabeler, Diego Barroso, and Taehwan Lee (Mollusk Division) attended iDigBio Summit in Washington, DC, in November 2015 (MICH); additional attendees included Andrew Simons (MINN – who gave 10 minute presentation on behalf of Ken Cameron who could not attend), Melissa Tulig (NY), Ed Gilbert (ASU) among others

Ken Cameron (WIS) attended the iDigBio workshop on using specimen data to address issues of global change 2-3 December, St. Louis, MO.

Interviewing applicants for 300 hour digitization internship. (MOR)

Created several charts of GLI data to begin to tease out collection patterns and differences between native and nonindigenous species (WIS)

The following tables contain data taken from the greatlakesinvasives.org portal on 12/305. The values represent only records & images that can be seen at the present time; others may be uploaded but not yet released.

Table 1. PLANTS

Institution	Total Records	with images	% with images	georeferenced	% georeferenced
UW-Madison	91337	86566	95	6605	7
UW-Milwaukee	7300	7225	99	10	0.14
UW-LaCrosse	1095	603	55	11	1
UW-StevensPoint	0	0	0	0	0
UMinnesota	29830	29783	100	4	0.01
Field	5782	0	0	3050	53
UofIllinois	5558	5519	99	0	0
INHS	45011	17179	38	5075	11
Morton	10297	8135	79	1093	11
NotreDame	0	0	0	0	0
Butler	272	267	98	0	0
UMichigan	75546	67525	89	7623	10
MichiganState	12177	12128	100	0	0
CentralMichigan	3722	3691	99	288	8
Miami	17721	17512	99	0	0
OhioState	394	394	100	0	0
OhioUniversity	0	0	0	0	0
NYBotanical	22282	11208	50	8284	37
NYMuseum	0	0	0	0	0
Canadensys	122816	14278	12	57504	47
Eastern_Michigan	1458	1357	0.93	0	0
Total	452598	283370	0.63	89547	20

Table 2. Fish

Institution	Total Records	with images	% with images	georeferenced	% georeferenced
INHS:Fish	29291	0	0	8325	28
Uminnesota:Fish	2696	2647	89	2404	89
OhioState:Fish	6674	6046	91	0	0
UW-Madison:Fish	4422	0	0	427	10
Umichigan:Fish	128	48	38	0	0
Total	43211	8741	20	11156	26

Table 3. Mollusks

Institution	Total Records	with images	% with images	georeferenced	% georeferenced
INHS:Mollusks	5716	0	0	5553	97
U-M:Mollusks	0	0	0	0	0
OhioState:Mollusks	0	0	0	0	0
Umichigan:Mollusks	855	414	48	1	0.12
UW-Madison:Mollusks	443	94	21	425	96
Total	7014	508	7	5979	85

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

Report submitted by: eclites@berkeley.edu
Report Submitted on: 01/05/2016 - 16:22

Progress in Digitization Efforts

Our TCN continues to digitize and photograph specimens, though progress is slower between semesters when student assistants are not working. Working locality data has been received from four of the TCN institutions (UCMP, LACM, PRI, University of OR) and one partner institution (University of California, Riverside). This locality data is being used to compile lists of formations and to batch georeference localities.

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

Held our first virtual TCN meeting via AdobeConnect. We received an update on digitization procedures at the Cooper Center from their director and curator of paleontology. Experienced some issues with sound quality that we are working with Kevin Love to resolve before the next call in early March.

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

Nothing to report

Share and Identify Opportunities and Strategies for Sustainability

The Geological Society of America Cordilleran section meeting will be held in Ontario, CA in April. The Cooper Center will have a booth at the meeting, and the TCN may develop a poster for display.

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

Created a TCN Google calendar that includes the dates of iDigBio Internal Advisory Committee meetings as well as NSF report deadline dates. This will help everyone in the TCN budget the time necessary to prepare these reports.

Attachment

N/A

THE MICROFUNGI COLLECTIONS CONSORTIUM: A NETWORKED APPROACH TO DIGITIZING SMALL FUNGI WITH LARGE IMPACTS ON THE FUNCTION AND HEALTH OF ECOSYSTEMS

Report submitted by: lippold2@illinois.edu
Report Submitted on: 01/05/2016 - 17:49

Progress in Digitization Efforts

- Added BRU, ACAD, BISH, and TRTC to the portal.
- Approximately 132,155 images uploaded.
- Approximately 196,765 records uploaded (116,486 = Unprocessed; 6,792 = Stage 1; 30,654 = Stage 2; 40,508 = Stage 3; 7,088 =Georeferenced.)

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

- Created an exsiccati upload guide.
- Attaching all project guides mentioned in this report and the previous to this report (Digitization Workflow, Migrating Skeletal Records, Uploading Images via FTP, Naming Conventions, Downloading a Backup File, Geor

Identify Gaps in Digitization Areas and Technology

- Altered Symbiota crowdsourcing module to import Stage 1 records (previously this module only imported Unprocessed records for transcription)
- Altered Symbiota to only allow specific terms when batch editing records' processing statuses.
- Included "

Share and Identify Opportunities to Enhance Training Efforts

- Trained CUP (2 total) for digitization and data upload processes on 10/13/2015, all day.
- Held a Microfungi TCN meeting at the iDigBio Summit 2015 with all Project Collaborators, where we presented on the mission and purpose of the project, MyCoPortal

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

- PI, Project Manager, Biological Informatician, and Project Consultant presented at and attended the iDigBio Summit 2015 all three days.
- Established a Symbiota Working Group (SWG) to ensure collaboration and discussion between TCNs using Symbiota soft

Share and Identify Opportunities and Strategies for Sustainability

- Began discussing Symbiota sustainability through additional funding, a developers community, and outreach and education within the Symbiota Working Group.

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

N/A

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/All_docs_report.pdf

Digitization Workflow

Created 15-July-2015
Updated 13-Aug-15

Creating MyCoPortal Records

1. Log in to MyCoPortal
   a. Go to "My Profile" → "Specimen Management" → Choose the collection you wish to add a record to → "Add New Occurrence Record."

2. Populate as many fields as possible using the specimen label information, but the MINIMUM is the Scientific Name (Genus and species) and Catalog Number (Barcode) fields.

3. Change "Processing Status" to "Stage 1."

4. Click "Add Record" (make sure "Follow-Up Action:" is set to "Go to New Record").

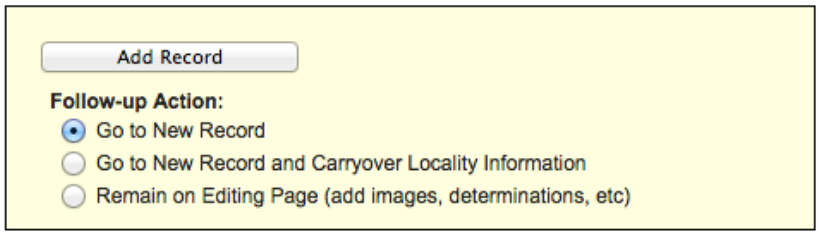


Image Capturing

1. Turn on the lights (give them a minute or two to get bright).

2. Turn on the camera (flip the camera switch to "on").

3. If it does not open automatically, open EOS Utility → click on "Camera settings/Remote shooting" → make sure images are being saved in correct folder. We save each day's images in a separate folder named with the date (i.e. "1 May 2015", "2 May 2015", etc.).

4. Open Digital Photo Professional → make sure the correct folder is being displayed in window
(select the folder from the menu on the right side of the screen)

5. Take the first specimen to be photographed
    a. Open the packet/box and remove any ancillary items (additional labels, notes, illustrations, spore prints, etc.)
    b. One at a time, place each item separately under the camera with the barcode and capture an image.
    c. After all the ancillary items have been photographed, the barcode can then be attached to the main specimen packet/box and photographed.
        - Some items may be very old and brittle- please, handle them carefully.
        - With folded items, gently unfold them to image. They do not need to be perfectly flat; the camera will autofocus and collect a clear image.

6. Repeat this process until you have about 80 images in the folder.

7. Rename the images with the barcode number according to the following protocol (barcode_1, barcode_C1, etc.).

Table 2. Image naming conventions for jpeg uploads to MyCoPortal

Image Type	Convention	Example
Main Label	Just the Barcode	ILL00042658
Additional Labels	Barcode_Integer	ILL00042658_1 ILL00042658_2
Field Notes	Barcode_C[Integer]	ILL00042658_C1 ILL00042658_C2

*for additional information (convention for photographs, spore prints, etc.), refer to pg 35-37 of the manual

8. Switch to a new, empty folder on EOS Utility and Digital Photo Professional and continue imaging.

[If images are not showing up in Digital Photo Professional, double check to make sure you (1) have them saving to the correct folder through EOS Utility (step 3 above) and (2) have the correct folder selected for display on the screen of Digital Photo Professional (step 4 above.)]

Image Editing: Setup

1. Open Adobe Photoshop.

2. Open a single image (make a duplicate of a file and use the duplicate, or use an image you do not need).

3. Go to "Window" → "Actions"
    a. Click "Create New Set" (folder icon) and name it (i.e. "Batch Edit")
    b. Making sure that your new set is highlighted, click "Create New Action" (rectangle next to the folder icon) and name it (i.e. Grayscale, Crop, Copyright.)
    c. Click "Record" (the circle should turn red.)
    d. Go to "Image" → "Mode" → "Grayscale"
    e. Go to "File" → "Automate" → "Crop and Straighten"
    f. Go to "File" → "File Info" → Add your Institution as the "Author" and select "Copyrighted" as the "Copyright Status." Click OK.
    g. In the Actions Window, hit stop (the rectangle) and the red circle will turn gray.

Image Editing: Batch Processing

1. Open Adobe Photoshop.

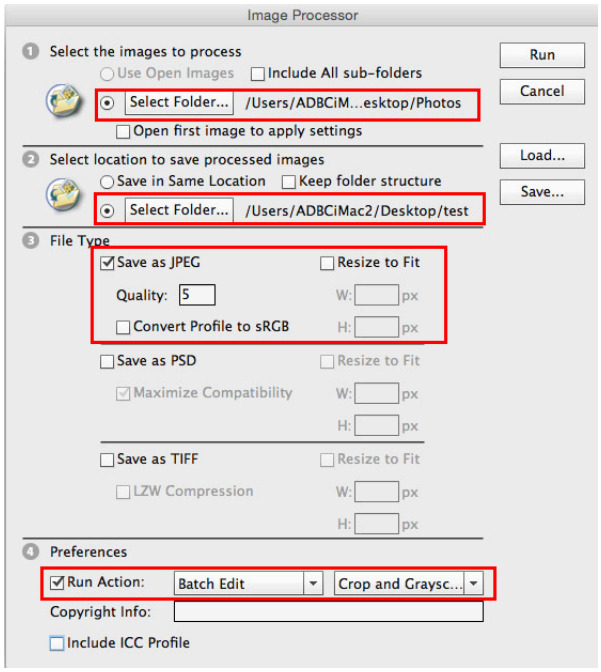
2. Go to "File" → "Scripts" → "Image Processor"

3. In Box 1, choose the folder containing your Raw Images (.CR2 files).

4. In Box 2, choose the folder you want the images to be stored (i.e. [dayMonthyear_JPG]).

5. In Box 3, make sure the "Save as JPEG" box is checked (do not resize or compress).

6. In Box 4, check "Run Action" and then choose the set and action you already set up.



7. Click “Run” (top right corner)

8. Let Photoshop do its thing…this may take a few minutes.

9. Repeat steps 2 through 7 until you have processed all of your raw images. Click File > Close All to close all the images in the program once they have been processed.

   [As way to keep track of the progress and make sure no images are getting left out, transfer raw image files (folders of about 80-90) into a single Raw images file as you process them. The number of items in the Raw folder and the JPG folder should always match up.]

10. Once all images have been processed, open the JPG folder and sort it by size. Images should be around 200-400 KB. Any images significantly smaller than that were probably cropped too much in Photoshop. Reopen these images in Photoshop and manually crop, straighten, and change to grayscale before saving them in the JPG folder, replacing the incorrectly cropped images.

Files are now ready to be uploaded through FTP (i.e. FileZilla).

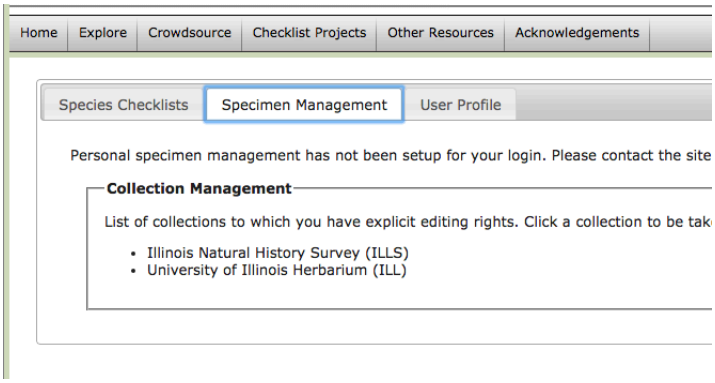
See document: Uploading_Images_Via_FTP

Uploading Skeletal Records Via Mycoportal

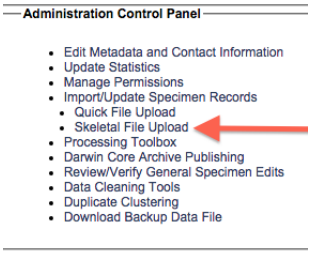
Created 13-July-2015

1. Log onto http://mycoportal.org/portal/index.php with credentials.

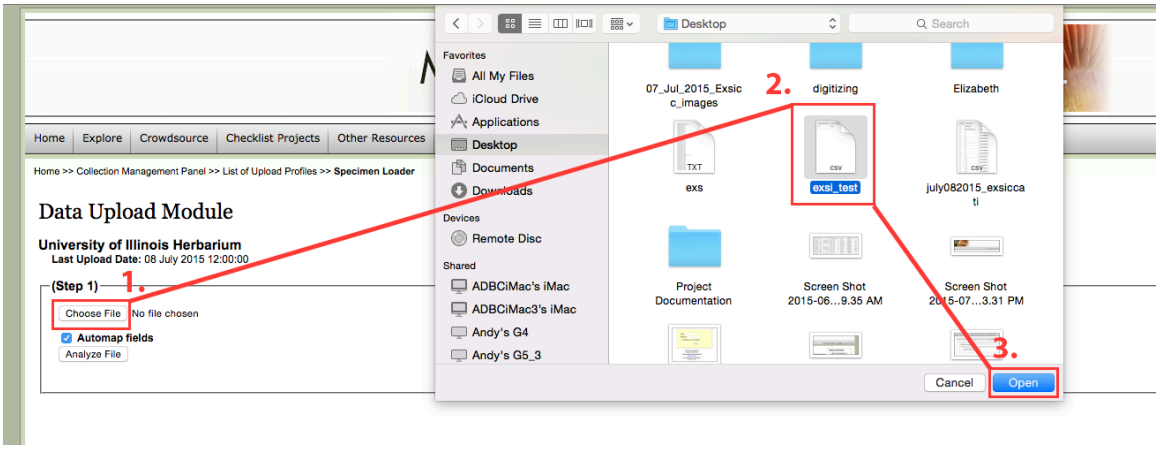
2. Go to My profile, select Specimen Management, and select collection related to upload.



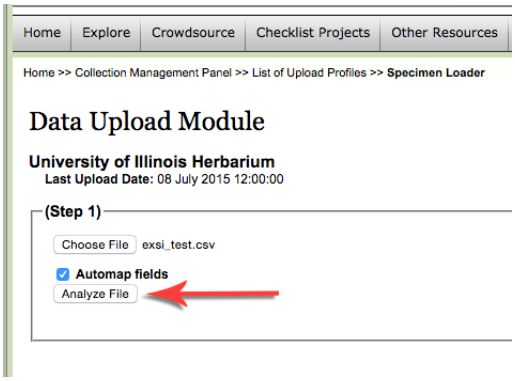
3. Underneath Administration Control Panel, select Skeletal File Upload.



4. Within the Data Upload Module, choose the .csv file you wish to upload.

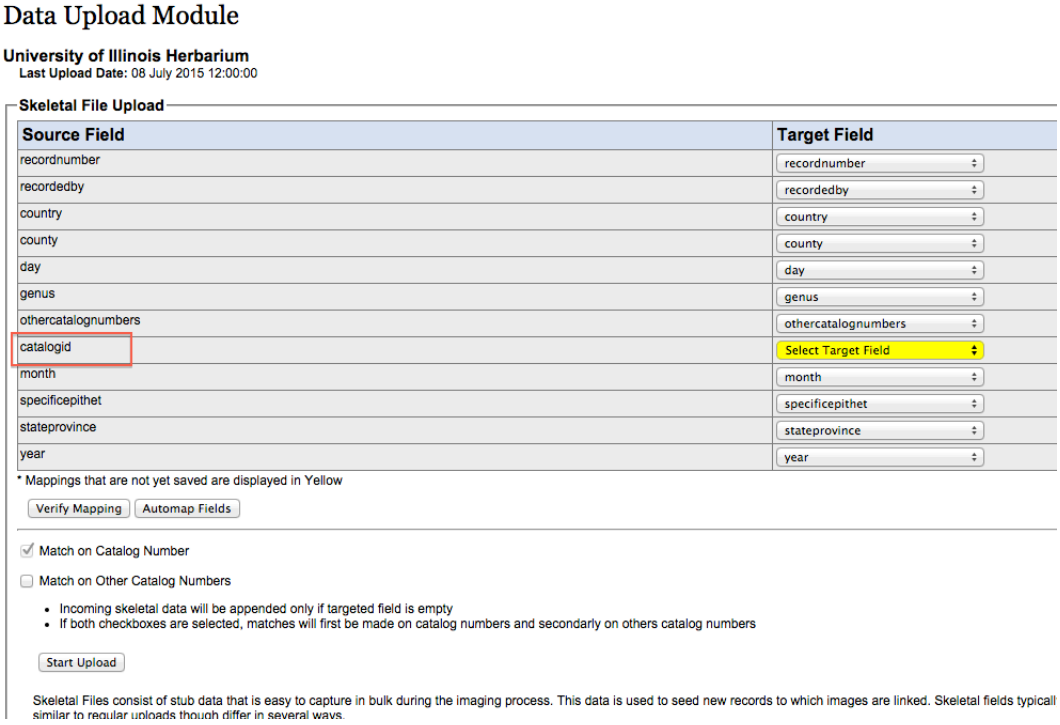


5. Hit Analyze File.



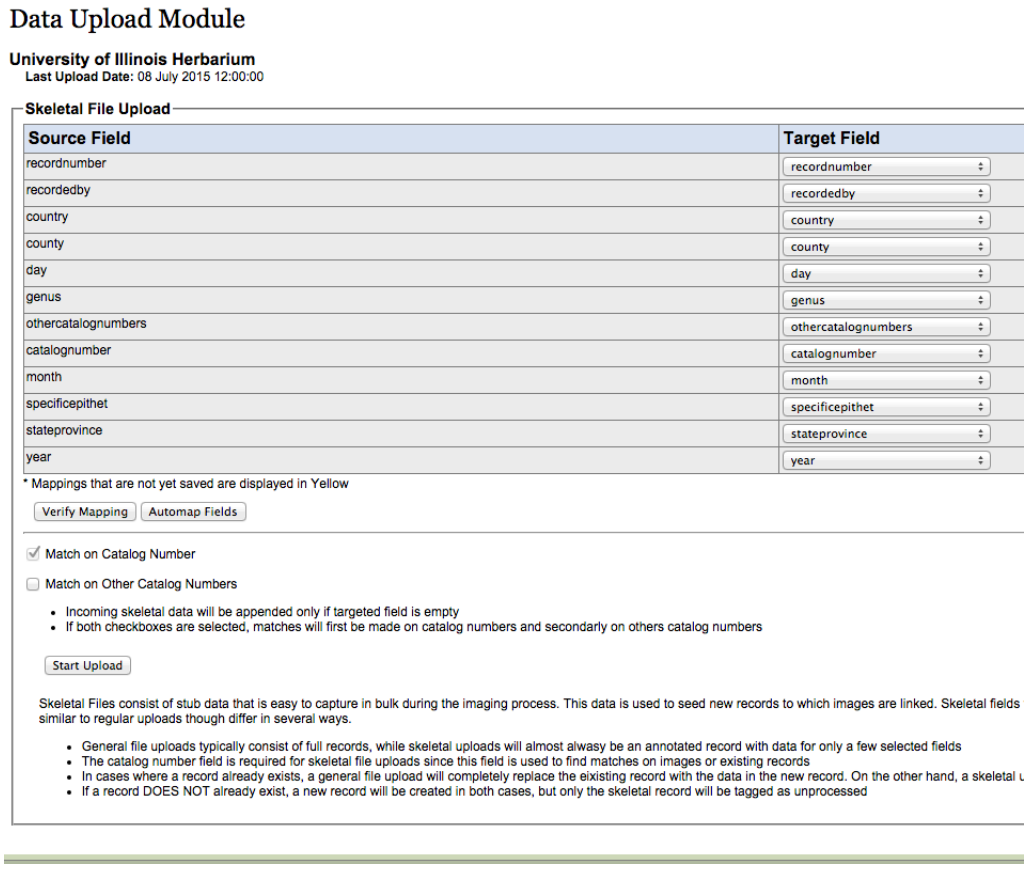
6. The following table maps the institution's .csv headers (Source Field) with the Symbiota headers (Target Field.)

   Fields highlighted in yellow indicate that the Source Fields do not automatically match with the Target Fields. This could be due to misspelling, mislabeling, or institutional preferences in the original .csv.



Example of field-mapping errors.

Go into the Target Field drop-down bar and select the corresponding header. Consulate http://symbiota.org/docs/wp-content/uploads/SymbiotaOccurrenceFields.pdf for aid in determining the correct Symbiota header.

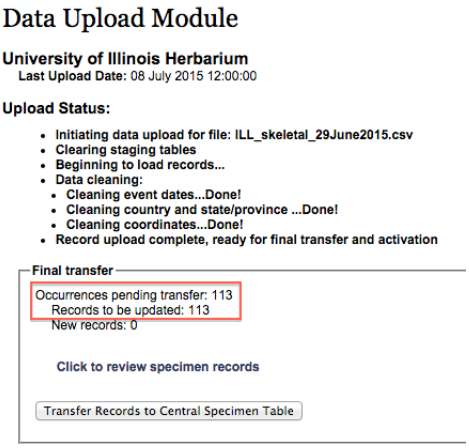


Example of good field mapping.

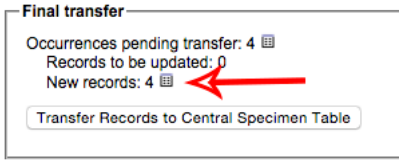
7. Hit Start Upload.

8. On the next page, Occurrence Pending reflects the number of records in the .csv sheet. Records to Updated reflects the number of records duplicated from the .csv sheet that will be uploaded into the portal. Both numbers *must* match [image 8a.]

   If the page lists New Records, click on the icon next the New Records number [image 8b], which will pull up a table of the "new records" [image 8c.] There is probably an error in the Catalog Number field. Open the .csv file, sort it by catalogNumber (go to Data→ Sort→ find catalogNumber in the column drop down and make sure "my list has headers" box is checked), locate and correct the error [image 8d.] Save the corrected .csv, replacing the old one. Go back to Step 4 and re-upload the file.



8a. Correct .csv; ready for Step 9.

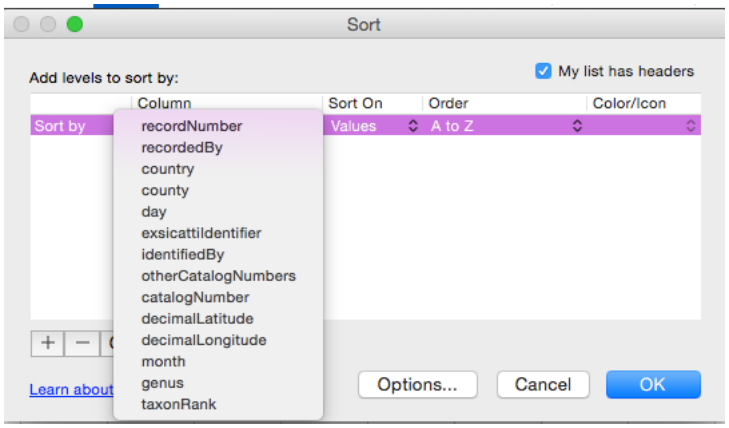


8b. Error in .csv, click the icon to the right of New Records, troubleshoot, and fix before proceeding.

Illinois Natural History Survey (ILLS)

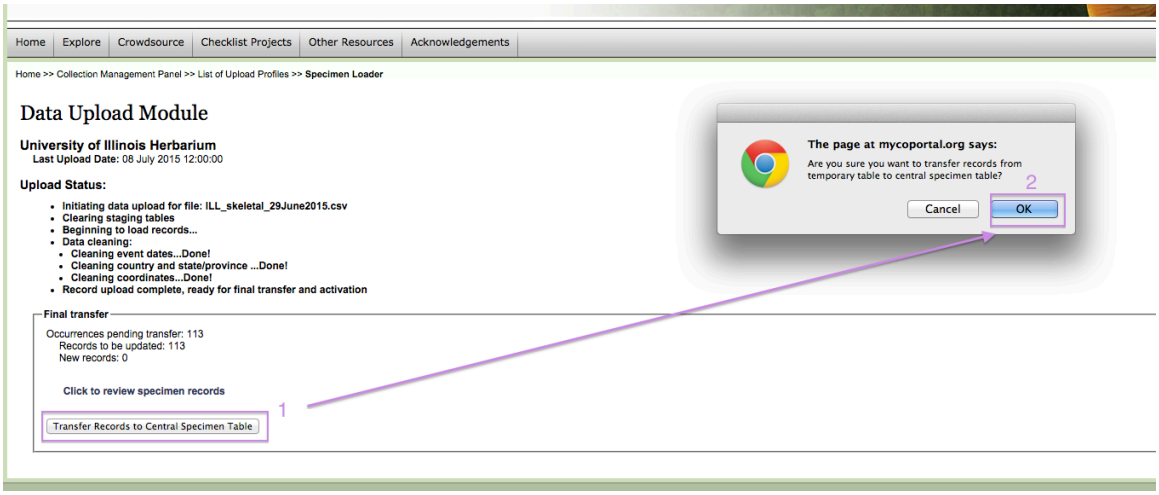
Catalog Number	Processing Status	Basis Of Record
ILL000085124	unprocessed	PreservedSpecimen
ILL00084964	unprocessed	PreservedSpecimen
ILL00085490	unprocessed	PreservedSpecimen
ILL00085491	unprocessed	PreservedSpecimen

8c. Table of New Records



8d. Sorting the .csv file

9. Hit “Transfer Records to Central Specimen Table” and then “OK”.



10. When the .csv file is done loading, double-check to assure that specimens were uploaded.

    a. Return to My Profile → Specimen Management → Collection Management and select the collection the file was uploaded to.
    b. Select Edit Existing Occurrence Records.
    c. Search a few of the specimens from the .csv by entering in the Catalog Number.
    d. Check that the fields are populated with info matching the images.

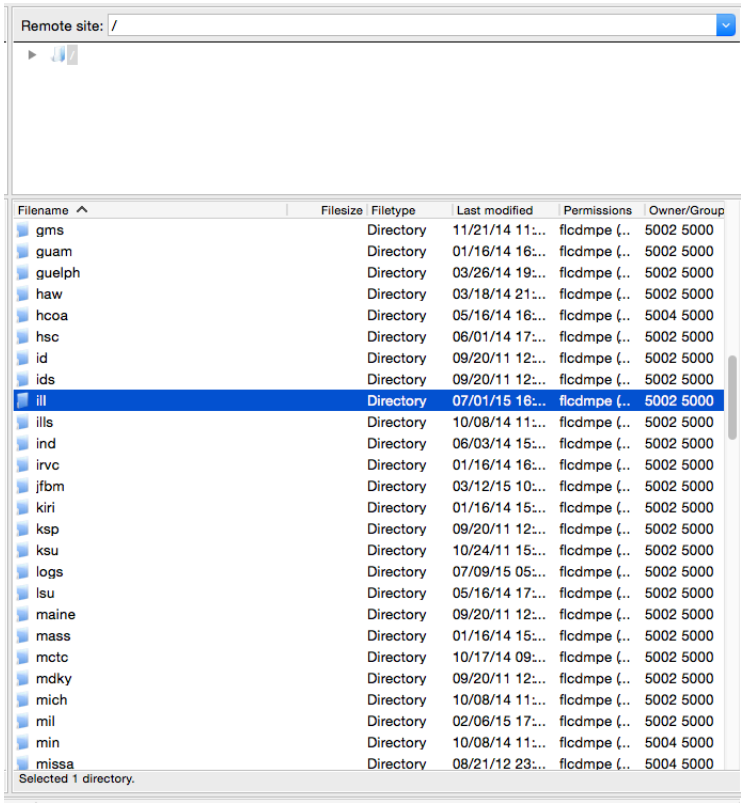
Uploading Images Via FTP

Created 10-July-2015

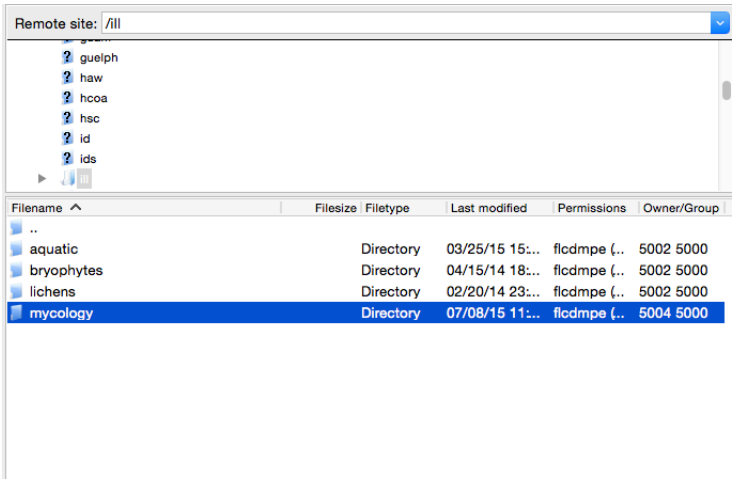
1. Open FileZilla and log into the idigbio server with the following credentials:
   Host: storage.idigbio.org
   Username: mfccstorage
   Password: macrofungi
   Port: 21
   Protocol: FTP [no encryption]

2. The directory on the left lists the files on your computer (Local Site) and the directory on the right lists the files on the iDigBio server (Remote Site.)

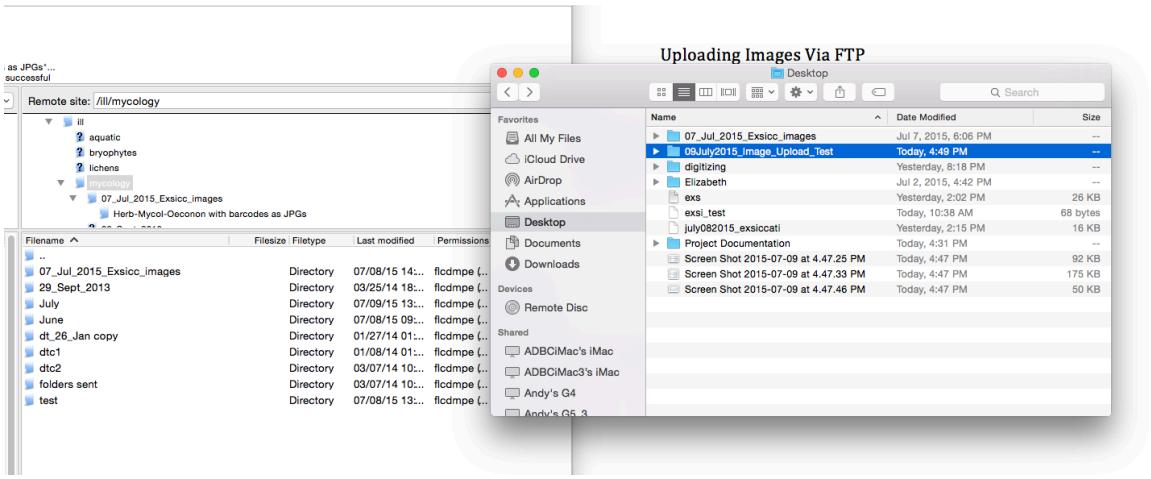
   Locate and open the Filename corresponding to your institution's code on the right.

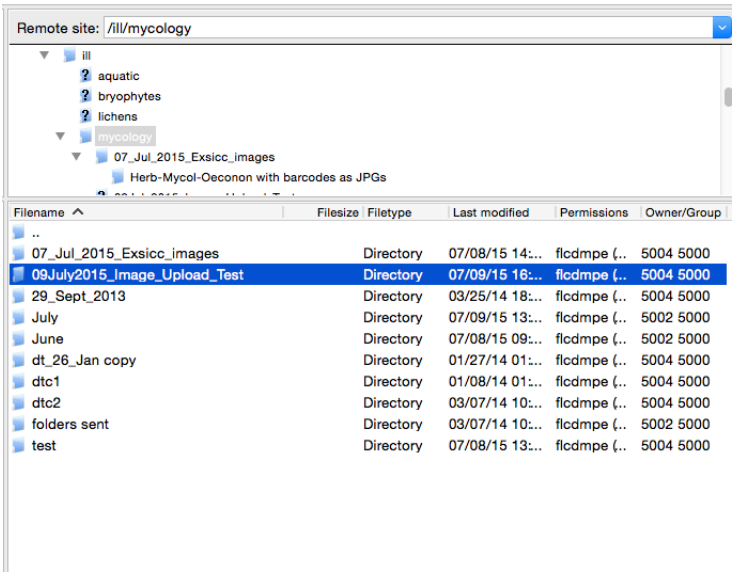


3. Locate and open the “mycology” folder.



Locate the folder of images and copy them over to this folder. The images will be automatically uploaded to iDigBio overnight.





Naming Conventions

Created 14-July-2015

Table 1. List of codes to be used before .csv file is uploaded to MyCoPortal

FileMaker Field	Excel Header
Collector Number	**recordNumber**
Collector	**recordedBy**
Country	**country**
County	**county**
Day	**day**
Det.	identifiedBy
Exsiccati	exsiccatiIdentifier
Genus	**genus**
Host/Substrate	substrate
Accession Number	**otherCatalogNumbers**
Barcode No.	**catalogNumber**
Latitude (decimal)	decimalLatitude
Longitude (decimal)	decimalLongitude
Month	**month**
Notes	notes
Species	**specificEpithet**
State/Prov.	**stateProvince**
Var. or Subsp. or Forma*	**taxonRank** **infraspecificEpithet**
Year	**year**

*note that "Var. or Subsp. or Forma" must split into two columns: v/f/t abbreviation (taxonrank) and actual name (infraspecificepithet)

****those in bold are more common to skeletal records**

***those in plain font are additional with Stage 2 records

Table 2. Image naming conventions for jpeg uploads to MyCoPortal

Image Type	Convention	Example
Main Label	Just the Barcode	ILL00042658
Additional Labels	Barcode_Integer	ILL00042658_1 ILL00042658_2
Field Notes	Barcode_C[Integer]	ILL00042658_C1 ILL00042658_C2

*for additional information (convention for photographs, spore prints, etc.), refer to pg 35-37 of the manual

Downloading Collection Back-Up

1. Log in to MycoPortal.

2. Go to My Profile → Collection Management and select your collection.

3. Underneath Administration Control Panel, click Download Backup Data File (image A) and select Perform Backup (image B.)

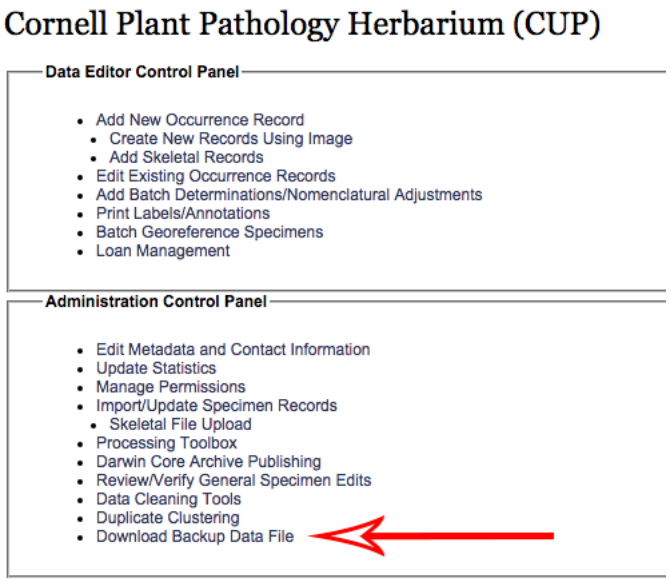


Image A

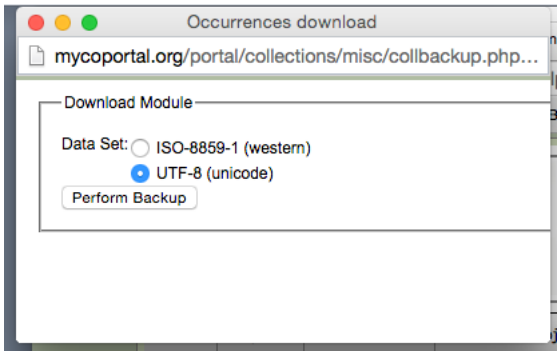
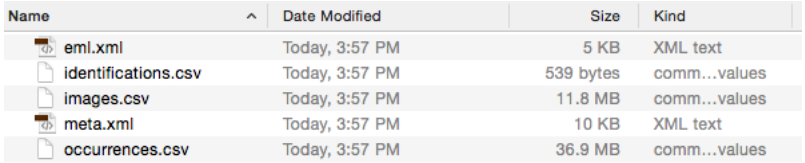


Image B

4. This will download a zip of .cvs files of: occurrence records and links to the image locations on the idigbio server. The files can be 1) used to save data in case of data-loss or iDigBio server issues 2) manipulated to be ingested into an institution's own database and 3) used for assigning and tracking batches of transcription work.

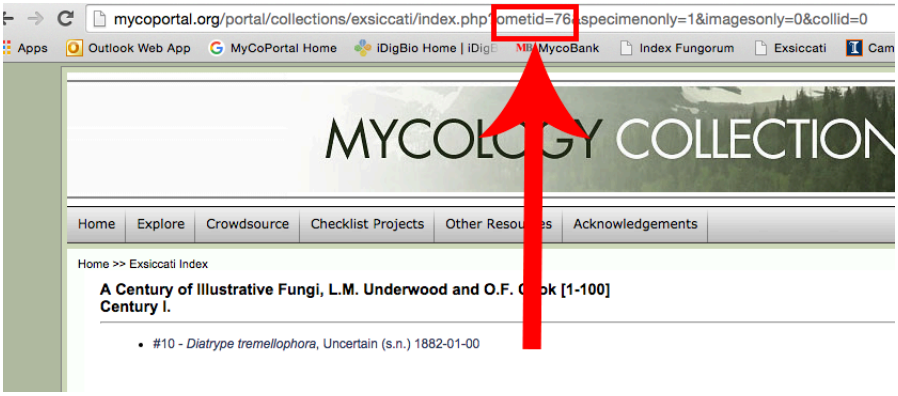


Uploading Exsiccati Skeletal Records

Created 12-October-2015

1. When constructing .csv files to upload exsiccate sets, include the columns *exsiccatiIdentifier* and *exsiccatiNumber*.

   ExsiccatiIdentifier refers to a database number assigned individually to each exsiccati title. This can be found by selecting the title, looking at the website address, and locating the ometid= code in the address. The number following "ometid=" is the exsiccatiIdentifier.



   Ex: The exsiccatiIdentifier is 76 for this exsiccati.

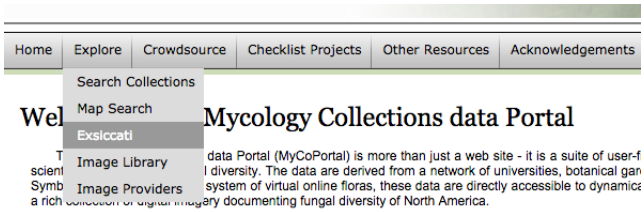
   ExsiccatiNumber refers to the number assigned to the specimen within the exsiccati.

2. Follow the steps in the Uploading Skeletal Records workflow guide.

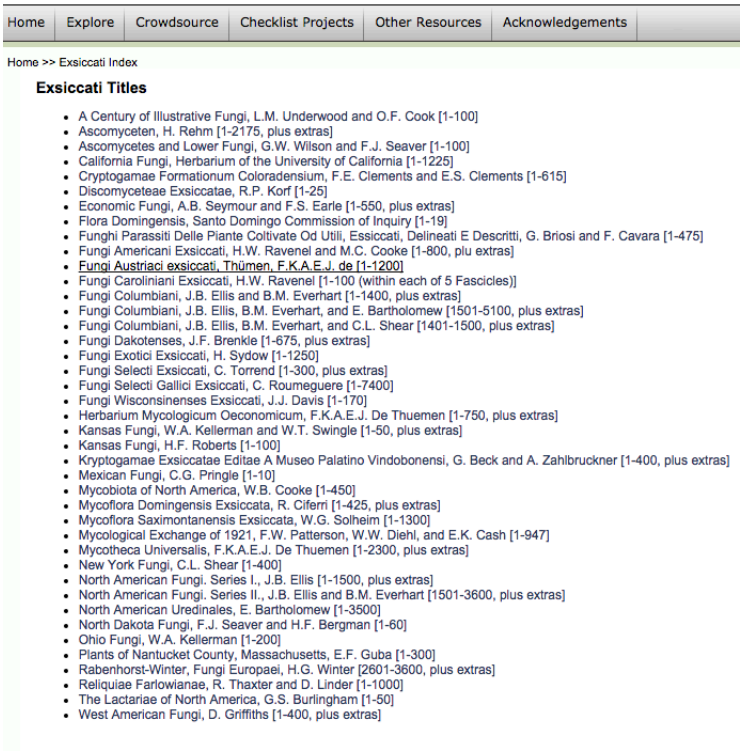
Transcribing Exsiccati

1. Log onto http://mycoportal.org/portal/index.php with credentials.

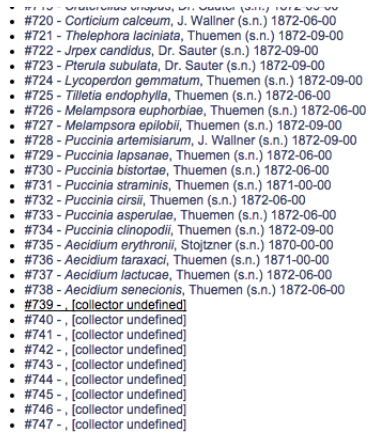
2. Go to Explore → Exsiccati



3. Select the Exsiccati Title you wish to work from.



4. Select the individual exsiccate record you wish to transcribe.



5. Click Full Record Details and then in the next window click Occurrence Editor.

6. Transcribe the exsiccati record. Please refer to the Exsiccati Transcription Guidelines below.

7. If you wish to add another exsiccate record to this exsiccati, then go to Add New Occurrence Record in the Data Editor Control Panel, enter data into the necessary fields (Exsiccati Title, Exsiccati Number, Collector, Date, Notes, etc.), and save new occurrence record.

Exsiccati Transcription Guidelines

- Collector
  - usually marked as "legi _____" on the label, or some variant.
  - "Ipse legi" refers to the exsiccati collection author as the collector.

- Date
  - formatted in year/month/date.
  - Use 0's as placeholders for unknown data, leave blank if completely unknown.
  - Latin: vere – spring; aestate – summer; autumn – autumn; hieme – winter.

- Scientific Name
  - As you type the name, the list of species within the portal's dictionary will generate. Select the correct name.
  - Oftentimes the name will not be in the dictionary; type the name out as best as possible, anyway.

- Author & Family
  - If either of these are not auto-generated with the scientific name, then do not worry about them. They will be automatically filled in after we implement the MycoBank taxonomic thesaurus in the near future.

- Country
  - Use current country names. For example, Bohemia is now an area within the Czech Republic, so use the Czech Republic.
  - These, like the scientific names, will generate a list with the correct spelling as you type, select the name from the list.
  - United State is entered as "USA."

- Locality
  - Enter in the locality as it appears on the label. The georeferencer will have to determine the correct coordinates from your transcribed locality.

- Habitat & Substrate
  - Substrate = item the specimen was on (usually a plant, "rotting log"); Habitat = environment descriptor where the specimen was found ("grassy field")
  - Enter in the habitat and substrate as in appears, in the original language. If you are competent in the original language, include a translation [in brackets] if time allows.

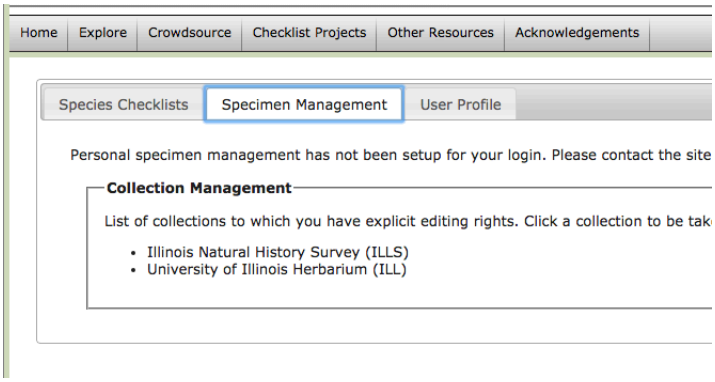
- Transcription vs. translation
  - Enter in the data exactly as it appears on the label (this is transcription). If you also choose to translate from the foreign language into English, then please include your translation in brackets after the transcribed data. Example: something in German [translated phrase in English]

Batch Georeferencing

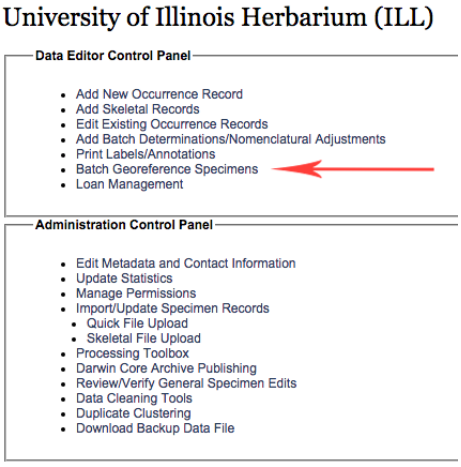
Batch Georeferencing should be done after images have been uploaded and fully transcribed.

1. Log onto http://mycoportal.org/portal/index.php with credentials.

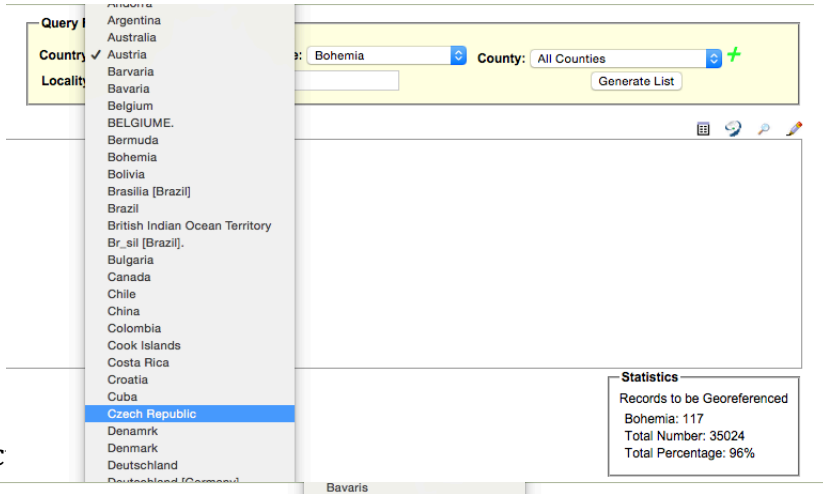
2. Go to My profile, select Specimen Management, and select your collection.



3. Underneath Administration Control Panel, select Batch Georeference Specimens.

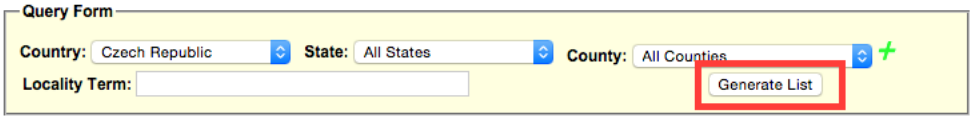


4. Select the country you wish to batch georeference.

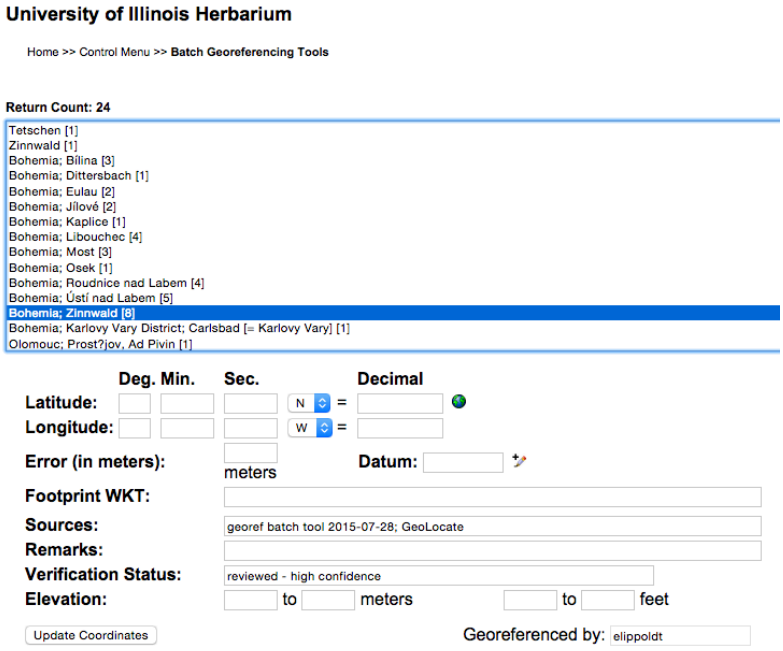


5. Selec

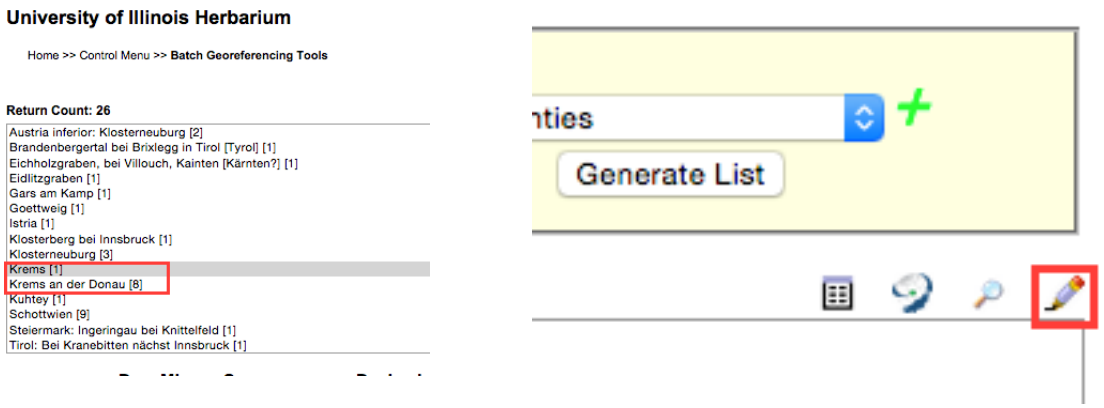
6. Hit "Generate List."



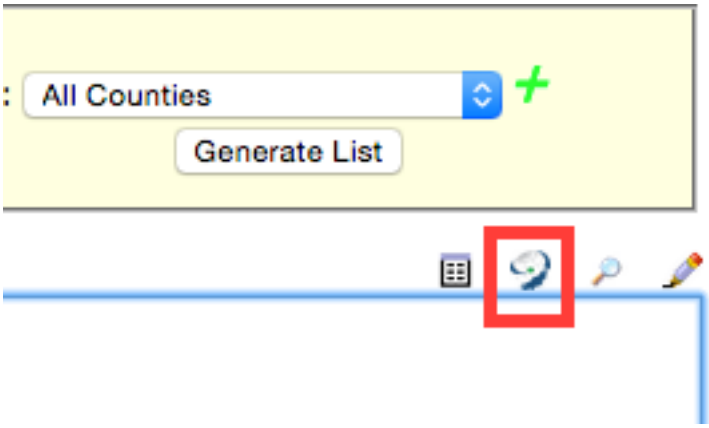
7. Select the locality you wish to georeference.



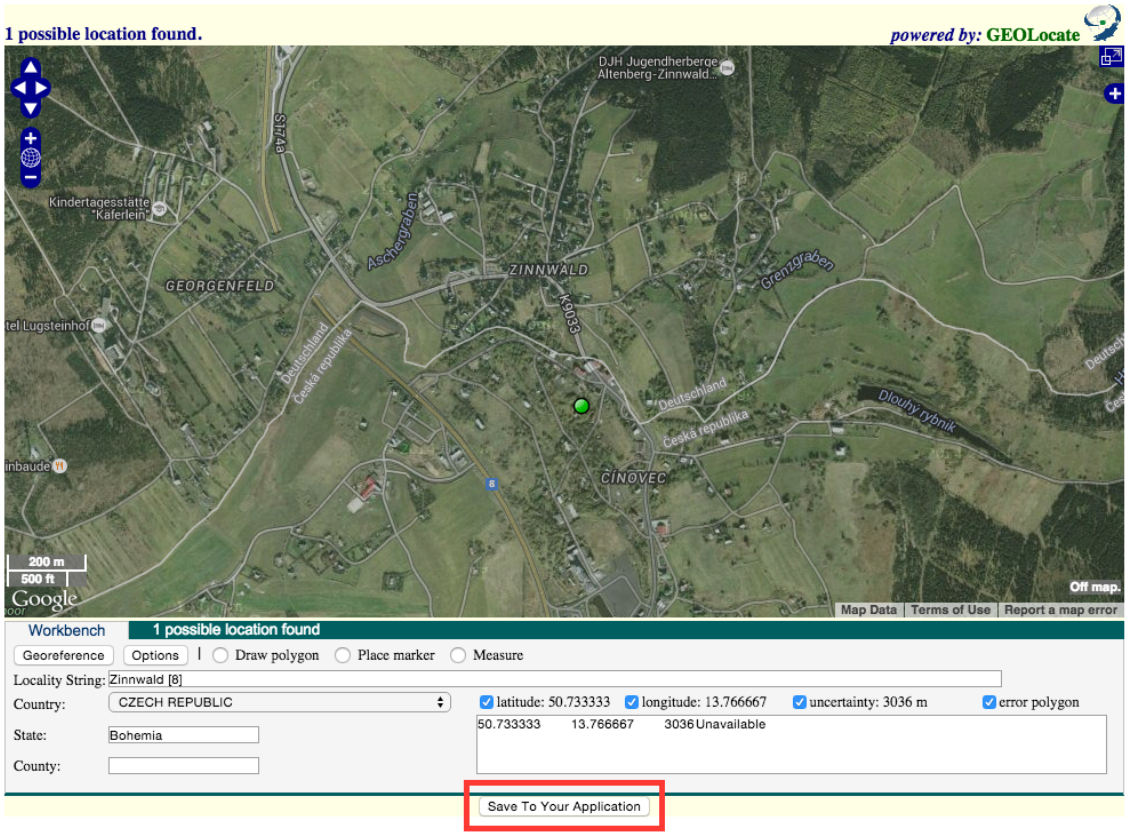
7a. Occasionally there are multiple locations that have been transcribed differently. You can go back and edit the occurrence records so that they are transcribed correctly by hitting the pencil button.



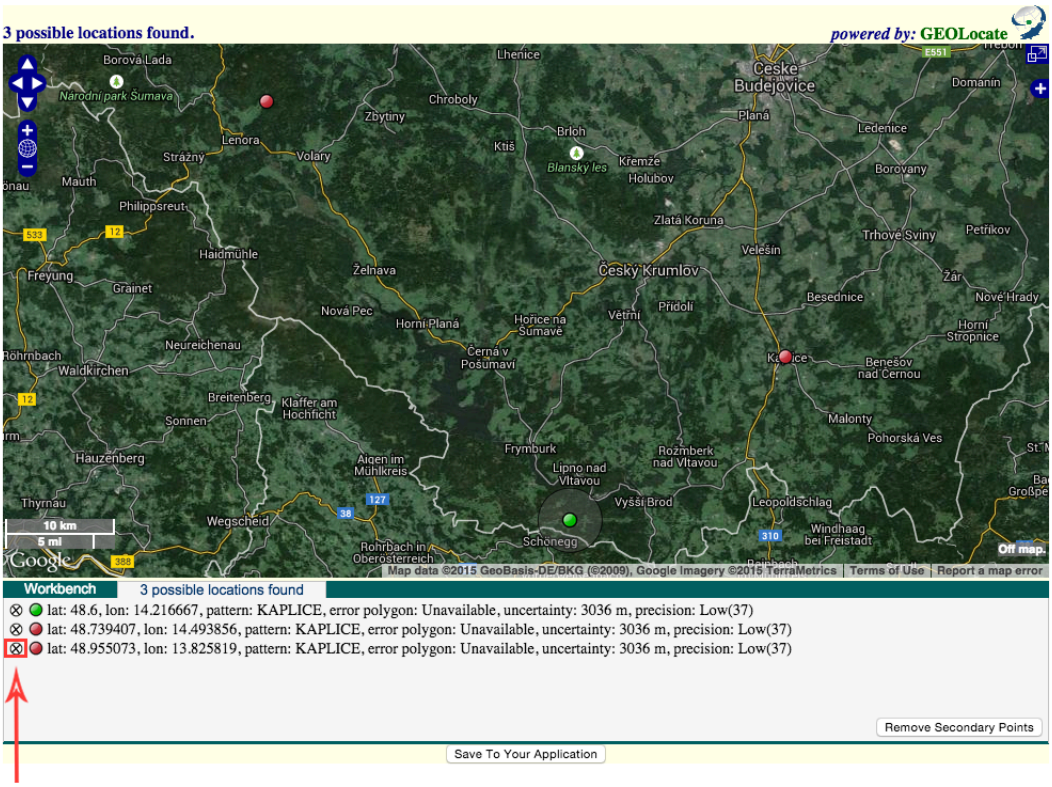
8. Hit the swirled Geolocate Locality button from the bar on the upper right.



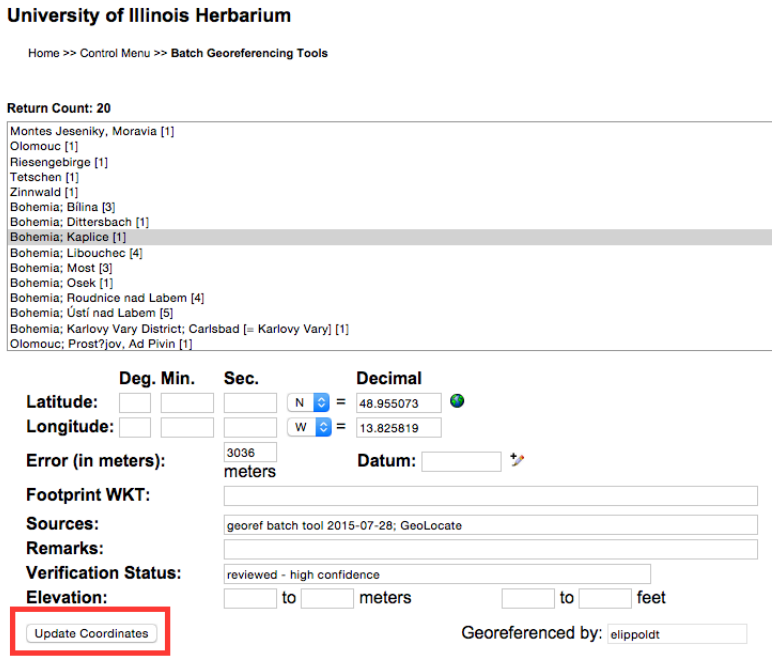
9. This will open a new window with Google Maps. Once you have determined that this location matches the locality of the specimens, hit Save to Your Application.



9a. Occasionally there will be multiple locations. Select them one by one and view it on the map to determine if they are plotted near the locality. If they are incorrect, hit the circled X button to remove them from the list. Do this until you have your determined correct locality.



10. Hitting Save to Application will plot the coordinates into the previous page. Hit Update Coordinates to apply this location to all the specimens of the selected locality.



11. You've successfully batch georeferenced specimens!

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

Report submitted by: barbara.thiers@nybg.org
Report Submitted on: 01/05/2016 - 18:40

Progress in Digitization Efforts

So far, approximately 785,316 items have been digitized for this project (85,000 more that originally estimated). The major product of the project is the MycoPortal. To date 2,072,119 specimen records have been added to the portal. The Portal contains about 74,559 skeletal records (i.e. locality data yet to be added); and approx. 300,000 records have geocoordinates.

We are now in the one year no-cost extension for the project, so most institutions have already completed their digitization. Only the Farlow Herbarium of Harvard University, New York Botanical Garden and San Francisco State University have more than 10,000 specimens left to digitize. The focus of the work this year is completing that digitization, and completing records by adding geographical information.

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

Our best successes were in the initial training and orientation for the project. Keeping the participants in the habit of regular project updates were largely unsuccessful. Despite repeated attempts to get very simple monthly reports from participants (using a form that was distributed to all or even bi-monthly reports was mostly a failure. However, progress on the project has been steady and mostly satisfactory, I would have been much happier if the collaborators had stayed in closer touch but I was unsuccessful in finding a way to make this happen as I would have liked.

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

A transcription crowdsourcing workshop sponsored by the MaCC project was held at Botany 2015, led by Dr. George Weiblen of University of Minnesota and Mari Roberts of the LBCC and Tritrophic TCNs at NYBG.. There were about 20 participants in the workshop, which was held on the Sunday afternoon preceeding the meeting. In the workshop we discussed the general principles of crowdsourcing the transcription of label data, and compared the Notes From Nature and Symbiota crowdsourcing interfaces. We have collaborated in sharing expertise with setting up a citizen science/crowdsourcing program for transcribing specimen records. Mari Roberts, who is funded as Volunteer Coordinator for the Lichens, Bryophytes and Climate Change TCN, is stationed at NYBG, and thus interacts closely with other TCN projects here, and has incorporated experiences from all the TCNS that NYBG is involved in into the attached document.

Share and Identify Opportunities and Strategies for Sustainability

This is an on-going topic of discussion with Dr. Andrew Miller, PI of the new Microfungi TCN. Our long-term objective is to convince the Mycological Society of America to form a committee to provide oversight for the MycoPorta

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

N/A

Attachment

N/A

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

Report submitted by: chdietri@illinois.edu
Report Submitted on: 01/05/2016 - 19:54

Progress in Digitization Efforts

To date, 48,296 images have been uploaded to invertnet.org, including 8,041 slide boxes, 6,518 vial racks and 2,951 drawers of pinned specimens. We are troubleshooting the stitching of several hundred additional sets of drawer images that have not yet been uploaded due to problems with the stitching software.

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

Nothing to report.

Identify Gaps in Digitization Areas and Technology

Nothing to report.

Share and Identify Opportunities to Enhance Training Efforts

Nothing to report.

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

We are collaborating with personnel from Notes from Nature and Biospex to gamify the transcription of specimen label data in an effort to enhance the experience of citizen scientists participating in crowdsourcing efforts by making the often tedious and repetitive tasks more fun and educational.

Share and Identify Opportunities and Strategies for Sustainability

We submitted a proposal to the IMLS National Leadership Grants for Museums program in December requesting funds to develop a prototype game portal focusing on insect natural history and incorporating specimen label transcription tasks.

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

N/A

Attachment

N/A

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

Report submitted by: michael.denslow@gmail.com
Report Submitted on: 01/06/2016 - 08:53

Progress in Digitization Efforts

All SERNEC:
There are currently 61 collections serving data through the SERNEC portal. There are currently 945,518 specimens records and 84,601 (9%) of those records are georeferenced.
Of the total records 91,830 are skeletal or partial records. There are currently 114,622 specimen images available.

Georgia:
16,390 GA specimens were imaged during the reporting period (68,540 total to date). A second imaging station has been set up for this project (D810 Nikon purchased with departmental instructional funds).

Kevin Burgess (curator of COLG) brought a second batch of COLG specimens to VSC in October (12 boxes). VSC curator Richard Carter has trimmed the oversized sheets and annotated them. VSC federal work-study student Aramis has started imaging the approximately COLG 2,000 sheets in this batch, with completion planned by 31 December or mid-January at the latest. The final COLG set is planned for delivery to VSC for imaging.
VSC cannot set up the subcontract for GSW until Stephanie Harvey (curator of GSW) hires a student worker spring semester 2016.

New GAS curator, John Schenk, started this fall semester 2015. Alan Harvey (coPI) and John have been conducting imaging trials with the recommended copy stand/photo eBox. After testing various workflows, an Ethernet line was installed in the herbarium dedicated to this project. A Specify database was prepared for this project with skeletal data migrated from the legacy database for 21,127 specimens. Three undergraduate students were hired for spring semester 2016.

Kentucky:
EKY continued imaging through the Fall semester and currently has 26,075 specimens imaged. In December EKY successfully linked ~750 images to the SERNEC Portal. The remaining images should be linked to the portal by the end of the year. At KNK, skeletal entry and barcoding in preparation for summer imaging will continue on a volunteer basis through the Spring semester. The next step at KNK is to do some troubleshooting with the cyberduck software and try their first test submission of photos.

Mississippi:
No funds from the ADBC budget are used during the academic year, although progress has been made in imaging, label transcription, and georeferencing of the MSU and IBE collections overseen by Wallace, and these data contribute to the SERNEC project. For the MSU collection, 443 records were georeferenced during the reporting period. Imaging is complete for this collection, and limited label transcription occurred during the reporting period (18,889 records have been transcribed for this collection to date). For the IBE collection, skeletal label information was entered for 3,295 records during the reporting period (13,654 records have been transcribed to date), and 2,906 images were captured (ca. 42,000 images have been taken to date).

West Virginia:
MUHW hired two undergraduate students in fall 2015 to work in the herbarium. Additionally, MUHW retained three federal work study students and acquired two new work study students. All of these students are barcoding, imaging and re-filing specimens. One undergraduate senior carried out a pilot study in the herbarium that necessitated imaging and label-transcribing specimens relevant to his project. One graduate student carried out an independent study project related to characterizing our predominant Monocot collections and this involved full label transcriptions of already-imaged specimens. Approximately 1,500 specimens have full label transcriptions now (~500 were transcribed last academic year) and another ~2000 have basic geography (country/state/county) information transcribed.

WVA completed image station assembly and hired three undergraduate students in fall 2015. WVA has continued the sorting process from summer to separate southeast specimens (completed in November). The students began barcoding in August (20,320 done) and imaging in November (2,179 done).

Marshall University now has nearly 20,000 imaged specimens available through the SERNEC portal; nearly 12,000 of these (i.e. ⅓ more than spring 2015 semester) were processed in fall 2015, indicating that our workflows are stable and efficient. We are generally ahead of schedule at this time.

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

All SERNEC:
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

All SERNEC:
The TCN is in the process of planning a georeferencing workshop to be held at the Associate of Southeast Biologists meeting this coming March 2016.

West Virginia:
MUHW trained 8 students this past semester in image handling, basic curation, barcoding, imaging and refiling. Some students are also being trained in label transcriptions.

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

All SERNEC:
The SERNEC – TCN participated in the iDigBio summit held in Arlington, VA in November, 2015. A presentation was given and can be found on the SERNEC website. http://sernec.appstate.edu/sites/sernec.appstate.edu/files/SERNECiDigBioSummit2015v2.pptx

Members of the SERNEC – TCN are currently participating in three iDigBio working groups. These include the Education and Outreach, Symbiota and Project Management working groups.

Share and Identify Opportunities and Strategies for Sustainability

Nothing to report.

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

Nothing to report.

Attachment

N/A

MOBILIZING NEW ENGLAND VASCULAR PLANT SPECIMEN DATA TO TRACK ENVIRONMENTAL CHANGE

Report submitted by: p_sweeney@att.net
Report Submitted on: 01/06/2016 - 10:04

Progress in Digitization Efforts

Capture of collection level-information (i.e., "pre-capture") is complete. Approximately 800,000 specimens have been pre-captured -- with at least current identification captured. As part of the primary digitization phase, approximately 616,313 records and 633,521 images have been captured. Functionality for scoring phenology has been developed within Symbiota, and scoring of flowering and fruiting phenology will begin in January 2016.

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

nothing to report

Identify Gaps in Digitization Areas and Technology

nothing to report

Share and Identify Opportunities to Enhance Training Efforts

nothing to report

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

We continue to collaborate with, iPlant, the FilteredPush project, the Symbiota team, and iDigBio. We are collaborated with Anne Bashram (U. of AZ), iDigBio, and other TCNs to develop a Augmented Reality tool that will be useful in K-12 education. We participated in the WeDigBio event in October of 2015 and participated in the iDigBio Summit in November of 2015.

Share and Identify Opportunities and Strategies for Sustainability

nothing to report

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

nothing to report

Attachment

N/A

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

Report submitted by: talia.karim@colorado.edu
Report Submitted on: 01/06/2016 - 13:12

Progress in Digitization Efforts

CU-Boulder:
Since November, the University of Colorado Museum of Natural History (UCB) has taken 514 additional images. Specimens imaged include ant and beetle type and figured specimens, roaches from Green River, and all general collection beetles from Florissant. The ant type and figured images will be uploaded to Ant Web (https://www.antweb.org) in January 2016. A total of 800 new fossil insect records were added to Specify during the reporting period.

Harvard-MCZ:
Since our last report (mid September) we have taken about 1,800 images more, accounting for about 1,600 specimens from the collection. We have assigned about 400 new catalog numbers to unnumbered fossils found as we imaged the collection.

Yale-Peabody:
Finished cataloging 12,940 cataloged hexapoda – have been receiving major donations, so this number is larger than anticipated. A total of 10,778 objects have been photographed in at least one view, but most with several).

Berkeley PEN:
Stewart Valley digitization — The Fall 2015 BFIP team (UCB undergrads Lin Wang, Iyawnna Hazzard, Meralina Morales and volunteer Visiting Scholar Dr. Marwa Wafeeq El-Faramawi) reached its target date of early January 2016 completing the databasing and imaging of the UCMP Stewart Valley (SV) collection of 1655 insect and 19 arachnid specimens. All the BFIP's 1674 SV insect|arachnid specimen records, plus the specimen records of the 1100 UCMP SV insect specimens on loan to University of Colorado, Boulder, are web accessible via the online UCMP database and published via the BNHM IPT. These data are now being harvested by the iDigBio and GBIF portals. The 1473 images of the insect|arachnid specimens are currently web accessible online, with roughly the remaining 150 images to be uploaded by mid-January. The data records and images can be accessed via the UCMP online database in a couple of ways. One way is to go to the UCMP homepage (http://www.ucmp.berkeley.edu/) click on the following links: Collections>Search the Collections online>UCMP Specimen Search>select "Specimens (advanced)">then select Class = Insecta>Locality "contains" Stewart Valley. This will bring up all the data records. Those specimens with images will have a small camera icon displayed next to the specimen number. Another way, which is useful if one wants to see all the images displayed as thumbnails is to select "Photos" from the UCMP Specimen Search page>then select Type of Photo=Fossil-Invertebrate>Locality Name "contains" Stewart Valley.

Amber digitization — The BFIP team continued working on the pre-digitization of the UCMP Type and non-Type specimen amber collections in preparation for imaging this Spring and Summer using the Zeiss Discovery V20 stereomicroscope system. The team completed entry of the metadata (specimen records) for 2000+ amber objects that included bulk samples, samples of in situ amber in matrix, and the UCMP non-Type collection of approximately 1650 amber pieces with inclusions in varying degrees of completeness and taxonomic identification into the UCMP database. These specimen records are now available via the UCMP online database published via the BNMH IPT and is being harvested by the iDigBio and GBIF portals.

Imaging is now complete of the non-Type amber collection's individual 99 metal slide trays, which hold the cardboard slides that house the individual amber pieces and the associated label data, as well as the individual Type specimen cardboard slides with label data. These images will be uploaded to the web this Spring to be linked to the specimen records and ultimately to images of the inclusions.

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

CU-Boulder:
We discovered an issue with our digital scale bars being mis-calibrated in November of 2015. The issue was due to an incorrect Photoshop preset file that came loaded on the system we purchased from visionary digital. We are in the process of correcting the scale bars on several thousand images and have been working with the Specify team on a way to bulk purge the corrupted images from our database. An upshot of this is that we are working on a method for automating and improving image editing which should significantly speedup future image processing. This automated process will also now include putting the specimen number (already part of the original file name) directly into the image so that when Specify renames the file when it is attached to the database the catalog number will stay associated with the image. Lesson learned: check and calibrate digital scale bars against a ruler yourself– do not blindly accept what came with your system!

Berkeley PEN Update:
Here lies one of the challenges the BFIP project will be working through over the next several months. As mentioned in the prior report, initial work on the project revealed the fragile nature of the amber specimens once team members began the actual handling of amber specimens and the urgent need to remove them from their non-archival quality cardboard slide holders that have thin plastic coverslips that slide in and out over the top of the specimens. In many cases the plastic coverslips are applying a constant pressure on the specimen where they touch causing fracturing. The coverslips, when one attempts to slide them out, can also catch on specimens dragging them long with the coverslip further exacerbating the fracturing problem. What was thought to be an excellent means for storing and handling inclusion-bearing amber pieces decades ago has turned out to be one of the worse methods possible. Per best practice these specimens will be removed, embedded in a protective resin where possible, imaged, and placed in archival tissue paper in labeled gem boxes. The gem boxes will then be stored in a light-tight museum cabinet. To date, the team has finished preparing the gem boxes, each with its printed specimen label for all the Type and non-Type specimens and will begin the specimen removal and rehousing in late January.

Identify Gaps in Digitization Areas and Technology

There is nothing to report.

Share and Identify Opportunities to Enhance Training Efforts

There is nothing to report.

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

CU-Boulder: We will be sending ant images and associated specimen data to Ant Web in January 2016, which is a new collaboration for our institution.

Several members of our TCN participated in the Geological Society of America Annual Meeting. Karim co-Organized and moderated two half-day sessions with Gil Nelson (11.3-4.2015) on using digitized data for research. D. Smith and L. Walker (CU-Boulder, MS Student) gave presentations on various aspects of digitization related to the FIC project.

Share and Identify Opportunities and Strategies for Sustainability

There is nothing to report.

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

CU-Boulder:
Hosted Peter Barna, visiting PhD student from Slovakia working on fossil roaches (June-November 2015).

Harvard-MCZ:
Hosted and assisted Ms. Martina Pecharová, from Charles University in Prague, visiting the MCZ fossil insect collection (November 15-21) to study specimens belonging to the order Megasecoptera.

Took and shared general images of the holotype of the carabid beetle Plochionus lesquereuxi from Florissant with Dr. Beulah Garner from the Natural History Museum of London.

Berkeley PEN Update:
Dr. El-Faramawi continued scanning the Amber Archives. She has scanned the contents (i.e., correspondence, manuscripts, loan paperwork, and other related documents) of 45 of the 85 folders. The associated metadata and pdfs will be uploaded to DocuBase (https://docubase.berkeley.edu/) and linked to the UCMP online finding aid for the "Amber Files" currently hosted by Archon (ArchivesSpace). The metadata will be batch uploaded followed by the pdf uploads. The pdfs will be downloadable from either DocuBase or ArchivesSpace. Though not a task funded by the BFIP, this resource will be used in highlighting the rich history of the amber collection, is useful to the current curatorial staff and for developing outreach and education activities relating to archives.

Attachment

N/A

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

Report submitted by: cgries@wisc.edu
Report Submitted on: 01/14/2016 - 12:48

Progress in Digitization Efforts

As of January 2016 the number for the LBCC are as follows:
Lichens:
http://lichenportal.org
Herbaria actively submitting images or key stroked records to the portal: 78
Specimen records in portal: 1,906,673 (up by 41,051 since June 2015)
Specimen records with images: 704,081 (14,151 labels have been imaged since June 2015)
Records with locality information: 1,697,536 (65,858 locality information where added since June 2015)

Bryohpytes:
http://bryophyteportal.org
Herbaria actively submitting images or key stroked records to the portal: 72
Specimen records in portal: 2,339,778 (up by 90,945 since June 2015)
Specimen records with images: 1,153,632 (73,241 labels have been imaged since June 2015)
Records with locality information: 1,621,761 (191,692 locality information where added since June 2015)

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

nothing to report

Identify Gaps in Digitization Areas and Technology

nothing to report

Share and Identify Opportunities to Enhance Training Efforts

Our project manager Julianne Smith is helping with Symtiota training webinars

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

N/A

Share and Identify Opportunities and Strategies for Sustainability

N/A

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

N/A

Attachment

N/A

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

Report submitted by: schuh@amnh.org
Report Submitted on: 01/14/2016 - 15:33

Progress in Digitization Efforts

The TTD-TCN is in the final two months of its grant funding. Activities have included working with our collaborators and sub-contracts to complete their respective commitments under our award and to finish the last data-capture objectives at the American Museum of Natural History as well. We are pleased that our final report will be able to show data capture totals exceeding those that we projected in our original proposal.

We are also pleased to report that we have submitted for review to the journal Cladistics a manuscript entitled “Areas of endemism in the Nearctic: a case study of 1,339 species of Miridae (Insecta: Hemiptera) and their plant hosts“ that utilizes records for more than 450,000 insect and plant specimens, the majority of which were either captured and/or georeferenced during the course of the TTD-TCN project.

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.

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

Nothing to report.

Attachment

N/A

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

Report submitted by: psierwald@fieldmuseum.org
Report Submitted on: 01/15/2016 - 12:28

Progress in Digitization Efforts

FMNH Invertebrates: 9,545 entries (164 freshwater bivalves, 9,143 freshwater gastropods, 238 terrestrial gastropods). Two undergraduate interns (Sep – Dec; 3 hours per week) and Rachel Sommer labeled ca. 2,500 newly digitized freshwater bivalve lots. Initial data entry of non-marine mollusks in the general collection has now been accomplished. Taxonomic updates still need to be made according to authority lists currently being compiled. Rachel Sommer is now digitizing collections from the backlog.
FMNH Insects: 29,258 total specimens databased to date; added a new experienced data entry staff member to the team
UMMZ: Students digitizing specimens: 1 graduate (20 hours/week) and 5 undergraduate students (~10 hours/week); 3,954 records entered to UMMZ Specify database during 9/24 – 12/31/2015 (freshwater bivalves: 148; freshwater snails: 1,545; land snails: 2,261)
DMNH: Inventoried 6,748 of 7,317 freshwater snail records. Added 390 newly discovered, uncataloged lots to the database; split 16 lots with mixed species. Freshwater bivalve data are ready for transition to Specify and have been awaiting assistance in setting up our database since July 2015. In addition, DMNH provided DNREC (see story below) with unionid locality data and in return DNREC will provide georeferences and GIS maps for specimens from DE/MD/NJ. In addition, DMNH provided DNREC (see story below) with unionid locality data and in return DNREC will provide georeferences and GIS maps for specimens from DE/MD/NJ.
CMNH: A total of 20,445 invertebrate specimens have been databased, primarily representing Mantodea (1,878) and Hymenoptera (18, 564). Of these records, ~7000 were databased from Nov 1-Dec 31, 2015. An additional ~500 specimens have had barcodes added and labels imaged, and are awaiting transcription. Approximately 30% of the Hymenoptera collection is now digitized.
AUMNH: As of 31 December 2015 100,005 entries (primarily insects). Working group at present comprises two undergraduates and three graduates (Charles Stephen, Rebecca Godwin, and Kellie Bourguignon). Taxonomic updates remain needed according to authority lists being compiled. January plans include digitization of the spider and millipede collections (accessioning and databasing) as well as conversion to Specify. Our plans are to begin testing voice recognition approaches to entering data for specimens in the alcohol collection.
Frost Entomological Museum: Odonata: over 20,100 images, with over 2700 specimens' label data transcribed and georeferenced (for preliminary niche modeling analyses, presented by Emily Sandall at the 2015 Entomological Collections Network Meeting). Began digitizing field notes for use in georeferencing Beatty collection. Pollinators: 5,700 images. No additional lice images.

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

FMNH Invertebrates: nothing to report
FMNH Insects: data entry workflows for increasing data entry rates in EMu need to be developed. Data entry into KE EMu is more complex, and time consuming than entering into organized spread sheet templates. Batch upload of spread sheets to EMu currently presents numerous, significant problems, several of which have not been properly identified yet.
UMMZ: nothing to report
DMNH: nothing to report
CMNH: nothing to report
AUMNH: nothing to report
Frost Entomological Museum: 4 part ¬time staff working on imaging and digitization efforts, general SOP created for quick capture of pinned specimens with specific practices for bumble bees (Bombus spp.) and Lepidoptera. One of our priorities is to digitize pollinators, broadly defined. Our standard operating procedures (SOPs) are available on the Web: http://bit.ly/FrostSOPs

Identify Gaps in Digitization Areas and Technology

FMNH (specifically Insects): pre-existing taxonomic data in EMu represent significant hurdles during new data entry as well as batch-up load of specimen data from spread sheets. It would be an enormous step forward if taxonomic catalogs (e.g., the Thesaurus in Symbiota) of individual collection databases could be linked in a controlled manner to existing on-line taxonomic authority files which are typically managed by taxon experts and updated at regular intervals.
UMMZ: nothing to report
DMNH: nothing to report
CMNH: nothing to report

AUMNH: We need to obtain assistance from the lead institution (FMNH) with regards to voice recognition and discuss approaches to georeferencing.
Frost Entomological Museum: We committed to TaxonWorks as our database and have tested it with the staff, providing feedback for future integration. The prototype is available for testing, but our data are not yet available for sharing with GBIF and Symbiota (no ITP instance yet).

Share and Identify Opportunities to Enhance Training Efforts

FMNH Invertebrates: nothing to report
FMNH Insects: currently developing FMNH Insect specific EMu data entry manual which incorporates all our developed digitization protocols.
UMMZ: nothing to report
DMNH: In November, the Delaware Department of Natural Resources and Environmental Control (DNREC) reached out and asked for assistance identifying freshwater bivalves. After a visit to the collection and library, DNREC and the Museum will partner to host a freshwater bivalve identification workshop. Dr. Art Bogan (North Carolina Museum of Natural Sciences) will come to DMNH in April 2016 to teach a class to using newly curated DMNH specimens to DNREC staff who will be involved in developing a citizen science project to survey the freshwater streams of Delaware.
CMNH: nothing to report
AUMNH: nothing to report
Frost Entomological Museum: For his graduate course on insect systematics, Deans has developed a literature exercise and group discussion about the importance and use of collections. This lecture will be given as part of a similar course at Cornell as well, during a visit in October 2015. The slideshow and information sheet will be made available by the end of the semester.

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

FMNH Invertebrates/Insects: nothing to report
UMMZ: nothing to report
DMNH: The collaboration with DNREC outlined above has resulted in a request for interview by a local sport fishing blogger (Mr. Rich King http://delaware-surf-fishing.com/author/rich-king/) who will be visiting the Museum in January to see the DMNH Mollusk collection and the specimens that were identified for DNREC.
CMNH: Received an update from Northeast Reintegration Center that their internal deadline for upgrades to their new IT system was 1 December 2015. Once upgrades are implemented and tested they plan on using our project as a pilot for the prison. We await further news on the upgrade of their IT system.
Sam Droege from USGS Native Bee Inventory and Monitoring Lab has donated ~1000 pinned and identified bees that were duplicate specimens from their recent surveys. This material provides a reliable collection to assist in curation of our bees which have remained largely unexamined in the past.
AUMNH: nothing to report
Frost Entomological Museum: We continue to collaborate with the Speciesfile Group at the University of Illinois, in order to develop an efficient strategy for converting images of Odonata in envelopes to accessible data.

Share and Identify Opportunities and Strategies for Sustainability

FMNH Invertebrates/Insects: nothing to report
UMMZ: nothing to report
DMNH: nothing to report
CMNH: nothing to report
AUMNH: nothing to report
Frost Entomological Museum: nothing to report

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

FMNH Invertebrates/Insects: nothing to report
UMMZ: nothing to report
DMNH: nothing to report
CMNH: nothing to report
AUMNH: nothing to report

Frost Entomological Museum: All documents pertaining to workflows are available at:
https://drive.google.com/folderview?id=0ByHLC7qBcIh7S1VVcUF4X1FRY00&usp=sharing

Attachment

N/A

Developing a Centralized Digital Archive of Vouchered Animal Communication Signals

Report submitted by: es269@cornell.edu
Report Submitted on: 01/15/2016 - 16:11

Progress in Digitization Efforts

During the reporting period, our TCN digitized over 1700 audio recordings from several TCN partners. Over 220,000 digitized media specimens are now available (or will soon be) through the Macaulay Library website (MacaulayLibrary.org) and iDigBio portal (and VerNet where applicable). Below are details for the major bodies of material digitized during this reporting period:

Anurans: During this reporting period we completed 462 recordings associated with specimens from the Texas Natural History Collection.

Orthopterans: Over 1300 orthopteran recording from the David Weissman collection.

At present, we have 891 ML data records corresponding to TNC partner University of Kansas Herpetology (KUH) with GUIDs (occurrenceID) and KUH catalog numbers, so that the iDigBio specimen records for 891 ML assets include links the associated KUH specimen record and vice versa.

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

We learned value of using truly unique GUIDs compared with "human interpretable" occurrenceIDs in the form of institutionCode/collectionCode/catalogNumber which we had been using. The unfortunate reality is that institutional and collection names do change, which can cause instability in the occurrenceID. The Macaulay Library is now using and sharing non-human interpretable and truly unique GUIDs. This is making, and will make, all future data/record linkages more reliable and persistent.

Identify Gaps in Digitization Areas and Technology

Filtering for non-image media species via the iDigBio portal is currently limited, as is the presentation of non-image based media records (e.g. sound recordings). There currently not a functional way to find or search for specimens with associated media that isn't image based media. Nor is there a suitable way to find media specimens that have associated physical specimens. These are areas of technology that have gaps and need improvement.

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.

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

Nothing to report.

Attachment

N/A

The Macroalgal Herbarium Consortium: Accessing 150 Years of Specimen Data to Understand Changes in the Marine/Aquatic Environment

Report submitted by: Chris.neefus@unh.edu
Report Submitted on: 01/25/2016 - 15:13

Progress in Digitization Efforts

Our overall goal is to digitize 1.1 million specimens in 50 collections. Progress to date is as follows:
Records created: 721,180
Records on Portal: 693,531
Images on Portal: 531,901
Labels completely transcribed: 427,312
Specimens georeferenced: 286,948

See attachment for details

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

N/A

Share and Identify Opportunities and Strategies for Sustainability

N/A

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

We are working with the Symbiota group to enhance the data visualization and research data tools available in Symbiota portals.

Attachment

https://www.idigbio.org/sites/default/files/webform/tcn-reports/digitization%20numbers%201-25-16.pdf

				Percent Complete				
Digitizing Institution	**Start**	**Collections**	**Specimens**	**Records Created**	**On Portal**	**Imaged**	**Transcribed**	**Geo-referenced**
University of New Hampshire	Year 1	10	131,677					
New York Botanical Garden	Year 1	5	169,150					
University of North Carolina	Year 1	7	52,086					
University of Michigan	Year 1	5	95,892					
University of Washington	Year 1	3	36,102					
Duke University	Year 1	1	22,014					
University of Alaska SE	Year 1	1	9,889					
Bishop Museum	Year 1	1	65,000					
Field Museum	Year 1	1	48,249					
Oregon State University	Year 1	1	12,120					
University of Guam	Year 1	1	13,600					
University of California - Berkeley	Year 2	9	228,862					
University of Hawaii	Year 2	1	2,401	1	1	0	1	1
Harvard University	Year 2	1	150,000	0	0	0	0	0
Academy of Natural Sciences	Year 3	1	37,000					
University of Vermont	Year 3	1	3,500					
	Totals	49	1,077,542	721,180	693,531	531,901	427,312	286,948
				1	1	0	0	0