

CALIFORNIA PHENOLOGY TCN – QUARTERLY REPORT – OCTOBER 2018

Assembled by Katie Pearson and Jenn Yost, October 29, 2018

Progress in Digitization Efforts:

Cal Poly (OBI; lead institution) hired Katie Pearson as the Project Manager (PM).

Jason Alexander at UC Berkeley is the data manager.

OBI is spearheading protocol development and imaging equipment testing, influenced heavily by lessons learned at the ADBC Summit and input from other herbarium digitization networks. Barcode and imaging equipment recommendations have been developed and disseminated (<https://www.capturingcaliforniasflowers.org/equipment-recommendations.html>). All institutions that budgeted to purchase imaging equipment are now ordering or have already ordered their equipment.

Draft barcoding, imaging, and image processing protocols have been developed and beta tested at OBI.

Katie, Jason, Jenn Yost (lead PI) and Ed Gilbert (Symbiota developer) have weekly video conferences related to portal development and data migration.

We have developed a new stand-alone Symbiota data portal, CCH2 (<http://www.portal.capturingcaliforniasflowers.org/>) installed on the UF servers.

We have migrated 11 collections into live data management on the portal, reflecting:

- 477,752 specimen records
- 64% are georeferenced
- 0.3% imaged

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

A reference guide for using the CCH2 portal was developed (<https://www.capturingcaliforniasflowers.org/symbiota-tutorials.html>) with guidance from other TCN manuals.

Images created using the Ortery Photosimile 50 lightbox were compared to those created using a copy stand and LED panels. Lightbox images were superior to LED images in evenness of lighting; therefore, the lightbox is being strongly recommended for use at participating institutions.

From previous experience, we recognized that image capture and renaming steps—particularly the computer program(s) used to complete these steps—can significantly slow the imaging process. For this reason, we investigated multiple camera tethering programs: Ortery software, Adobe Lightroom, Nikon Camera Control 2, digiCamControl, and Smart Shooter 3. Smart Shooter 3 provided the most options, including the capability to automatically rename images according to the barcode in the image. This will

facilitate more efficient imaging workflows and enable parallel data entry and imaging with the single barcode scanner budgeted in the project.

Image processing steps can also be a bottleneck for imaging workflows. For this reason and with careful consideration of other herbarium protocols, we chose to restrict the number of processing steps to a select few: sharpness adjustment and conversion to DNG and JPEG formats.

The workflows developed and piloted at OBI will be disseminated to all member institutions, and the PM will work with each institutional representative to customize the protocol for their institution.

Identify Gaps in Digitization Areas and Technology:

The Ortery lightboxes need a better camera mount to remain securely in place and to fit the entire herbarium sheet in the image. We have been looking at the Consortium of Pacific Northwest Herbaria documentation but are still in need of a solution.

The lack of long term image storage is another obstacle. Each institution on this project is required to store their own images, and the external hard drives we budgeted will not suffice. Potential solutions to this problem, such as investing in cloud storage or institutional servers, are being investigated.

Share and Identify Opportunities to Enhance Training Efforts:

All PIs and many lead personnel have received orientation either via the ADBC Summit in early October or through phone calls or video conferencing with the lead PI, PM, or both.

We had a very successful kickoff and orientation meeting at the ADBC Summit with 18 of our 22 participating institutions represented. Each institution that could not send a representative followed up via phone meetings with the PM.

The first virtual training was conducted as a webinar via Adobe Connect on October 26th. There were 12 participants, and a recording of the webinar was posted on the project website. Future webinars will address the topics of administrator tools, collection management tools, and georeferencing. All members of the TCN are encouraged to request additional training as necessary.

Site visits to each institution are scheduled for late November, early December, and late January. In these visits, the PM will work with PIs to optimize institutional protocols, as well as train staff, volunteers, and student workers as necessary.

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

Many digitization standards and workflows from other TCNs, iDigBio, and herbarium consortia have been instrumental to the development of the CAP TCN equipment recommendations and protocols. For example, following conversations at the ADBC Summit with leadership of the Mid-Atlantic Megalopolis digitization project, we changed our equipment recommendations from a Canon to a Nikon camera. Furthermore, documentation from the Pacific Northwest Consortium of Herbaria has been useful in the design of our own camera mount.

California herbaria other than those listed in the grant, such as the Klamath National Forest Herbarium and Sacramento State University, are being solicited for data to host in the CCH2 portal.

Share and Identify Opportunities and Strategies for Sustainability:

Project leadership is training administrators and technicians in using the CCH2 data portal to enable active collections management in perpetuity.

Image uploading workflows have been developed such that they can be used beyond the duration of the 4-year grant. For example, rather than processing and uploading images in a central server at OBI, each institution will be trained and able to perform these steps from their imaging computer or other machine.

As referenced in “Identify Gaps in Digitization Areas and Technology” above, we are seeking sustainable data management strategies such as institutional servers or cloud storage solutions to replace the previous, unsustainable strategy of solely hard drive-based storage.

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

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

The PM presented a poster at the Southern California Botanists Symposium on November 3rd and is currently drafting a scholarly article to publish in a peer-reviewed journal by 2020.

The CAP TCN was featured in the August issue of *The Vasculum*, the biannual newsletter of the Society of Herbarium Curators. The project was also described in a San Diego public news report featuring phenology research at San Diego State University (<https://www.kpbs.org/news/2018/aug/14/cholla-cactus-didnt-bloom-year-california-scientis/>) and in an article for UCSB news publication *The Current* (<http://www.news.ucsb.edu/2018/019244/golden-state-splendor>).