

CALIFORNIA PHENOLOGY TCN – QUARTERLY REPORT – NOVEMBER 2021

Assembled by Katie Pearson, 1 November 2021

PROGRESS IN DIGITIZATION EFFORTS

Figure 1 shows our progress in imaging, transcribing, georeferencing, and phenologically scoring the target specimens for the original 22 CAP institutions, explained more in detail in the following sections.

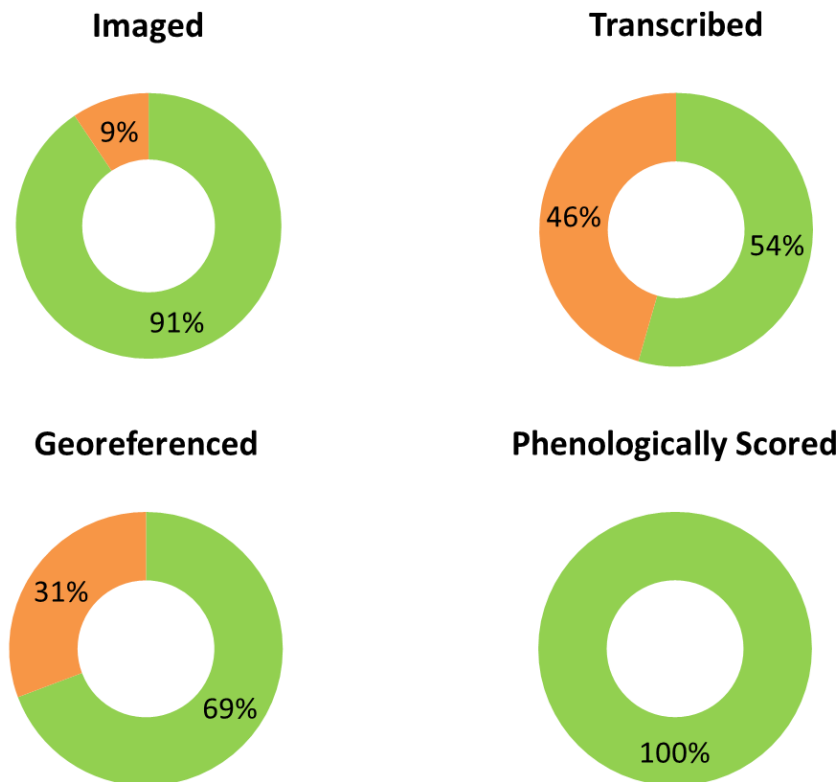


Figure 1. Progress in each of our four major digitization goals. Totals represent the original goals of the CAP grant: 902,400 specimens imaged and phenologically scored, and 300,000 transcribed and georeferenced. Additional specimens to be digitized by the PEN grant are tabulated in the PEN section below. This progress reflects completely new digitization activities to the CCH community, rather than total data liberated by the grant. **In the latter terms, we have far exceeded our goals in all four areas listed here.**

TRANSCRIPTION

Over 163,000 specimen records have been transcribed across the CAP Network since the beginning of the project. This is approximately 54% of our goal.

Transcription has largely been accomplished by institutional volunteers and technicians in CCH2 and online volunteers in Notes from Nature.

GEOREFERENCING

We have georeferenced over 207,000 specimen records, which is 69% of our goal. Georeferencing is conducted by trained staff and students at HSC, OBI, and SD, by naturalist volunteers are part of the “100 Club,” and by undergraduate students in the cross-institution herbarium digitization course led by Cal Poly. The CAP 100 Club currently has 28 active members. We have also continued to use the code we developed to convert township, range, section data into decimal coordinates to apply georeferences to specimens from other states, as they are transcribed.

IMAGING

Twelve of our 22 herbaria (55%) have accomplished their imaging goals (Figure 2). All herbaria have resumed imaging following COVID-19-related shutdowns. Figure 2 shows the current state of CAP imaging as of July 2021.

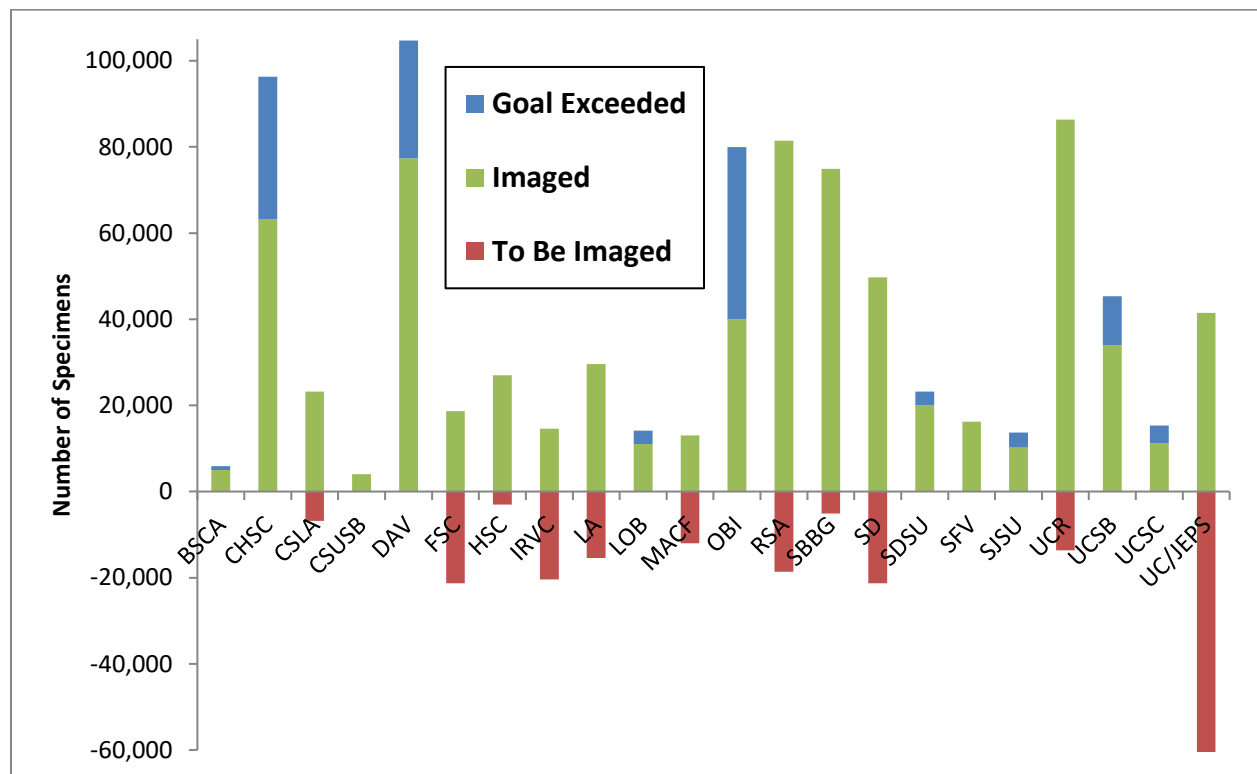


Figure 2. Herbarium specimen imaging progress. Blue portions represent the number of specimens that have been imaged, while green portions represent the number of specimens that have been imaged beyond the expected target specimens. Red bars below the zero line indicate the number of target specimens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

PEN PROGRESS

OSC, SFSU, and SHTC are continuing to image specimens as expected and have completed 76%, 11%, and 1% of their imaging goals, respectively. CDA is continuing to work on acquiring imaging equipment. Figure 3 shows the current imaging progress at PEN institutions.

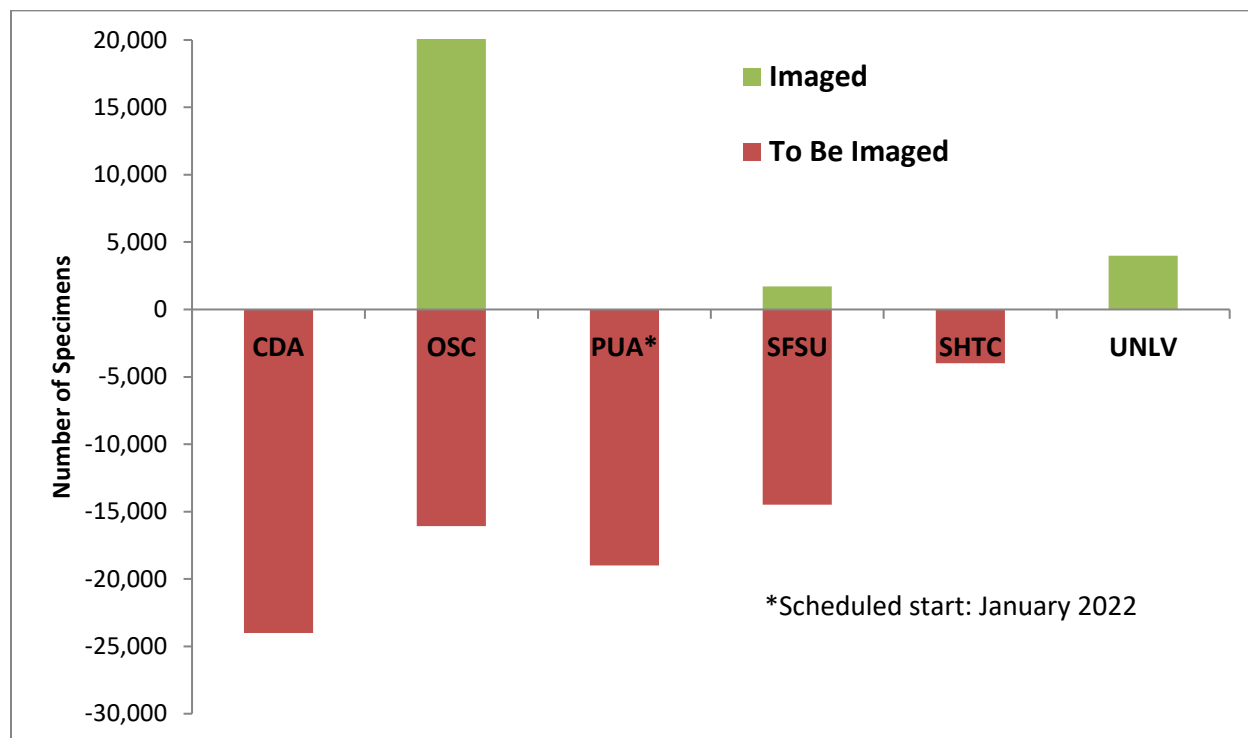


Figure 3. Herbarium specimen imaging progress for the seven PEN institutions. Green portions represent the number of specimens that have been imaged, while red bars below the zero line indicate the number of target specimens that have not yet been imaged. For SD, the total number of specimens to be imaged, including those added as part of the PEN grant, is indicated in Figure 2; therefore, SD is not included in this figure.

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

We drafted a charter for our proposed TDWG Task Group to develop data standards for plant phenology, and we were approved as an official TG on October 19. We introduced our TG in a [presentation at the TDWG 2021 conference](#) to recruit new members and participation in our first TG meeting, scheduled for November 3.

IDENTIFY GAPS IN DIGITIZATION AREAS AND TECHNOLOGY

We are continuing to discuss long-term sustainability and cost of storing image data, which is a major need for some institutions that have lost their previously unlimited cloud storage solution (Box).

SHARE AND IDENTIFY OPPORTUNITIES TO ENHANCE TRAINING EFFORTS

In early October, the PM visited UC Irvine, CSU Fullerton, and UC Los Angeles to conduct in-person trainings and help coordinate the activity of new students. CSU Fullerton and UC Los Angeles experienced significant shutdowns due to COVID-19, and as a result, when they could finally resume imaging, all experienced students had moved on, and new students had to be trained. At CSU Fullerton, the PM helped to troubleshoot the imaging equipment, which was not functioning as expected after it had been moved to the new temporary workspace. Then, in addition to training to new interns, we coordinated an all-day “Image-a-Thon” in which groups of two to three students visited the herbarium every hour, received a tour and introduction to the herbarium, received basic training in how to image specimens, and imaged for the remainder of the hour. In this way, over 30 students received an in-person introduction to the collection and learned digitization skills. At UCLA, interested students were invited to participate in a group workday, in which we barcoded and imaged specimens as a group and discussed herbarium research and the collection process. Over 12 students participated during the day, and we barcoded over 1000 specimens in the process.

We continue to support the work of our “100 Club” of naturalist georeferencers. We hold Zoom co-working sessions on the first Tuesday of every month in which we socialize, answer questions, and georeference together.

We have launched a webinar series for the Consortium of California Herbaria community called “Data Portal Lunch Breaks”. These half-hour webinars led by the PM consist of one, brief demonstration of a particular tool or function in the CCH2 portal, followed by Q&A. These webinars are conducted on the first Wednesday of every month from 12:00-12:30 PM Pacific.

We have also initiated monthly meetings of the Consortium of California Herbaria, in the place of monthly meetings with individual PIs (though individual meetings are still scheduled on an as-needed basis). The CCH meetings engage a broader audience (all CCH members, rather than just CAP Network participants) and provide updates on community developments, give announcements, and facilitate discussions on important matters to the CCH community, such as sustainable image storage.

We began the fall 2021 quarter of our online herbarium digitization course, which currently engages 33 students from 5 institutions. In this class, students learn about herbarium and digitization topics and are trained in online digitization tasks, starting with Notes from Nature transcription and transitioning into transcription directly in our Symbiota portal (more info in E&O section below).

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

We have expanded our recruitment for members of our TDWG Task Group to develop data standards for plant phenology, as recommended by TDWG leadership. To date, we have recruited representatives from Argentina (GBIF Latin America), France (CIRAD), Sweden (University of Oslo), Germany (University of Munich), and Australia (ClimateWatch).

The Consortium of California Herbaria is continuing to work with Calflora to enable users to download data including CCH data directly from Calflora.

PM Pearson continues to advise the new GLOBAL Lichens and Bryophytes TCN on matters of reporting, georeferencing, coordinating WeDigBio events, and other needs.

We integrated California vascular plant data from the University of Nevada, Reno and from the Smithsonian Institution National Museum of Natural History into the CCH2 portal to provide a more comprehensive database of California specimens.

We met with leadership of the California Digital Library to discuss potential archival image storage for California institutions,

SHARE AND IDENTIFY OPPORTUNITIES AND STRATEGIES FOR SUSTAINABILITY:

In the spring 2021 quarter of the online herbarium digitization course (see E&O activities, below), one of our collaborators (Robin Bencie, Humboldt State) sat in weekly to learn how to run the course in the future, when the CAP TCN no longer has a project manager. In the current fall quarter, another collaborator (Alison Colwell, UC Davis) is sitting in for the same purpose. The intent is to have various collaborators across the Consortium of California Herbaria run the course for a quarter at a time to continuously engage students in herbarium work and make continued progress on digitization tasks.

We are strategically expanding our community outreach to engage potentially new portal users. We presented posters at [the Ecological Society of America meeting](#) on August 5, the [Biodiversity Digitization 2021 conference](#) on September 22, and the [Southern California Botanists Symposium](#) on October 16. We presented a lightning talk at the California Invasive Plant Council 30-Year Anniversary Symposium on October 27. In addition, we collaborated with the Symbiota Support Hub to lead a workshop at the Ecological Society of America meeting on August 6 titled “Connecting Ecology and Natural History Specimen Data: Using Tools in Public, Symbiota Data Portals”. We taught 10 ecologists how to access and use Symbiota portals, including CCH2, to access and work with biodiversity specimen data.

We drafted a charter for our proposed TDWG Task Group to develop data standards for plant phenology, and we were approved as an official TG on October 19. We introduced our TG in a [presentation at the TDWG 2021 conference](#) to recruit new members and participation in our first TG meeting, scheduled for November 3. Development of phenological data standards with this TG will be an important milestone for ensuring the data captured as part of our project is findable, accessible, interoperable, and reusable into the future.

We met with leadership of the California Digital Library to discuss potential archival image storage for California institutions. The price and support for this image storage solution is tremendously improved from other solutions, so this collaboration looks promising for our institutions that are currently struggling with sustainable 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).

Five blog posts were written and published to the CAP website:

<https://www.capturingcaliforniasflowers.org/blog-recap>. Blog posts are publicized via Twitter.

Five Notes from Nature expeditions are ongoing, consisting of 9,655 specimens from Cal Poly, Cal State LA, UC Los Angeles, Fresno State University, and Oregon State University. Volunteer activity was greatly boosted by participation in WeDigBio 2021 events (Figure 4). The CAP Network coordinated five WeDigBio events: one hybrid (in-person + virtual) event at CSU Fresno (11 participants), one asynchronous event with a plant taxonomy class at CSU Fresno, one hybrid event at Oregon State University (35 participants), one virtual event with CSU Long Beach (40 participants), and a virtual, cross-network event led by Cal Poly (157 participants). At a total of 243 synchronous participants, this year had the highest participation on record for the CAP TCN.

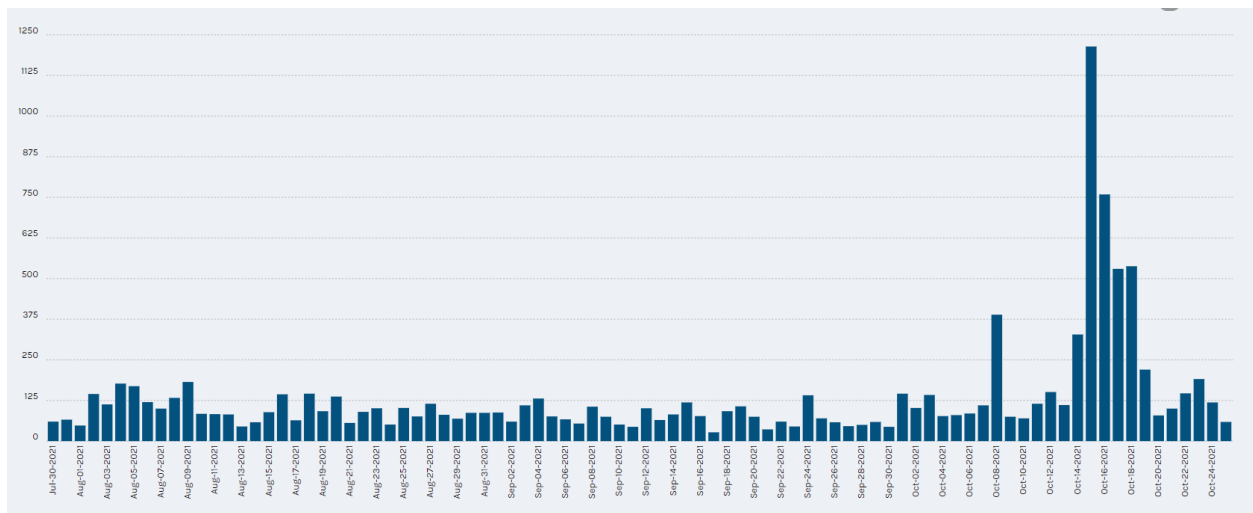


Figure 4. Notes from Nature transcription activity (in number of transcriptions) during the previous quarter. The huge peak of activity from October 14th-October 17th corresponds to the weekend of WeDigBio.

In the first week of October, we began the fall quarter of our online herbarium digitization course. We recruited broadly across the network, resulting in 33 students from 5 institutions. The course was so popular at institutions that are primarily online (e.g., SFSU), that we had to turn away students due to capacity limitations. This class meets synchronously, once weekly for 2 hours. Students learn about herbarium and digitization topics and are trained in online digitization tasks, starting with Notes from Nature transcription and transitioning into transcription directly in our Symbiota portal. The course is run by the PM and the Cal Poly Hoover Herbarium coordinator (a recent Cal Poly graduate).

On September 17, PI Susan Mazer at UC Santa Barbara led an all-day phenology workshop using the workshop-version materials developed by the Cal Poly and UCSB over the summer. In this event, 20 participants learned to analyze data from CCH2 to examine phenological trends of California plant

species. Mazer reported high engagement, positive feedback, and minimal technical difficulties from the workshop.

As described above, we presented posters at the Ecological Society of America meeting on August 5, the Biodiversity Digitization 2021 conference on September 22, and the Southern California Botanists Symposium on October 16. We presented a lightning talk at the California Invasive Plant Council 30-Year Anniversary Symposium on October 27. In addition, we collaborated with the Symbiota Support Hub to lead a workshop with 10 participants at the Ecological Society of America meeting on August 6.

WEBSITE AND PORTAL USAGE

Our project website (capturingcaliforniasflowers.org) has received 1,296 visits (0.7% decrease from previous quarter) and 1,922 page views (2% increase from previous quarter) from August 2 to October 25, 2021. The data portal (cch2.org) has supported 11,338 sessions, 171,723 pageviews, and 4,264 users over the same time period.