



CCGP Newsletter

August 2, 2021

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Welcome new CCGP projects!

In late March the CCGP distributed a final call for proposals. While the [CCGP species](#) represent a wide range of California’s diversity, it was evident that a few general groups were missing and would strengthen the project. Specifically, our CCGP “wish list” included butterflies, beetles, succulents/cacti, scorpions, the black widow spider, and freshwater fishes and insects. These are groups that, in addition to being underrepresented in the current taxonomic set, include endangered taxa restricted to California, or are otherwise of great interest, and will benefit from conservation genomics work. Our final call resulted in six newly funded proposals encompassing 12 taxa: [Tamalia coweni](#)

([Manzanita Leaf-gall Aphid](#)), *Apodemia mormo* (Mormon Metalmark Butterfly), *Euphydryas editha* (Edith's Checkerspot Butterfly), *Parnassius behrii* (Sierra Nevada Parnassian Butterfly), *Colias behrii* (Sierra Sulfur butterfly), *Oeneis chryxus ivallda* (Ivallda Arctic butterfly), [Opuntia basilaris var. basilaris](#) (Beavertail Cactus), [Opuntia basilaris var. treleasei](#) (Bakersfield Cactus), [Opuntia basilaris var. brachyclada](#) (Short-Joint Beavertail Cactus), [Uroctonus mordax](#) (Western Forest Scorpion), [Rhinichthys osculus](#) (Speckled Dace), and [Gasterosteus aculeatus](#) (Threespine Stickleback).



CDFA pest species to join CCGP

As part of the overall funding model for the CCGP, the California Budget Act of 2019 provided funding to the California Department of Food and Agriculture

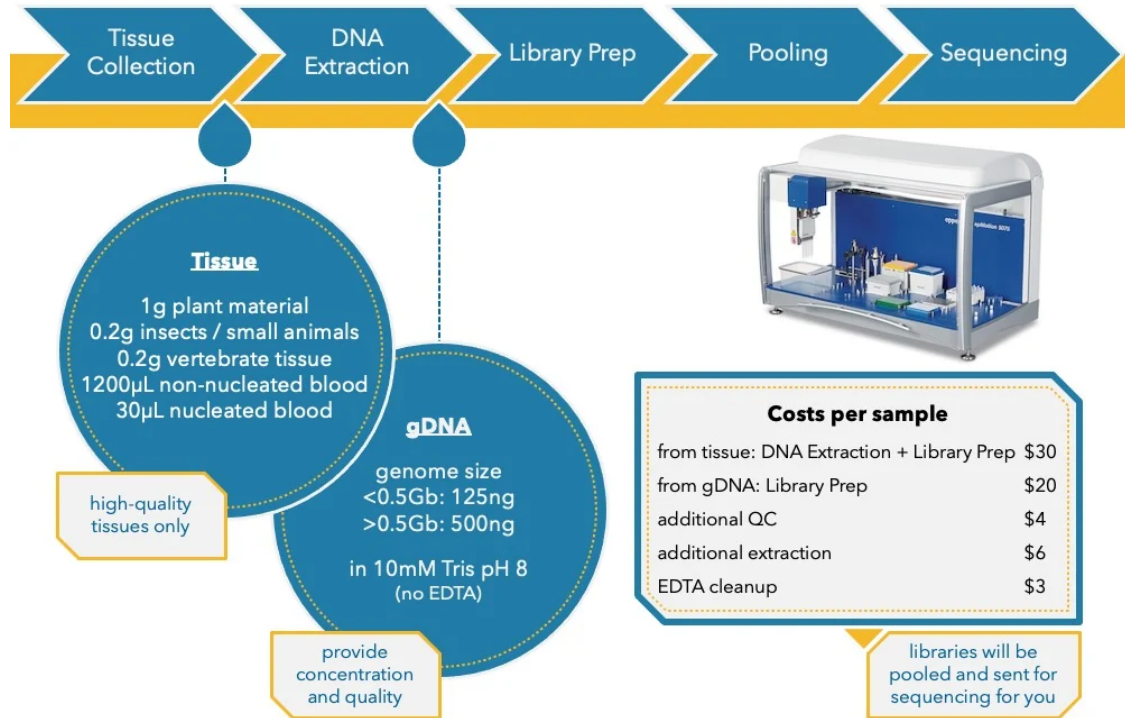
(CDFA) intended to support and enhance our project's mission.

This collaboration has resulted in expanding our research efforts to include a suite of California's most important pest species: *Anastrepha ludens* (Mexican Fruit Fly), *Bactrocera dorsalis* (Oriental Fruit Fly), *Bromus tectorum* (Cheatgrass), *Centaurea solstitialis* (Yellow Starthistle), *Ceratitis capitata* (Mediterranean Fruit Fly), *Convolvulus arvensis L.* (Field Bindweed), *Diaphorina citri* (Asian Citrus Psyllid), *Euwallacea sp.* (Polyphagous Shot Hole Borer), *Homalodisca vitripennis* (Glassy-winged Sharpshooter), and *Popillia japonica* (Japanese Beetle).

We are working out the final details of these efforts with our CDFA project lead, Dean Kelch. Dean is the Environmental Program Manager at CDFA who will be spearheading this work along with the support of Special Assistant David Pegos and a team of CDFA species and genetics experts. The CCGP will provide information on such critical issues as the number of introductions (and therefore potential biological variation among those introductions), levels of genomic variation, and adaptation to climate change in these pest taxa.

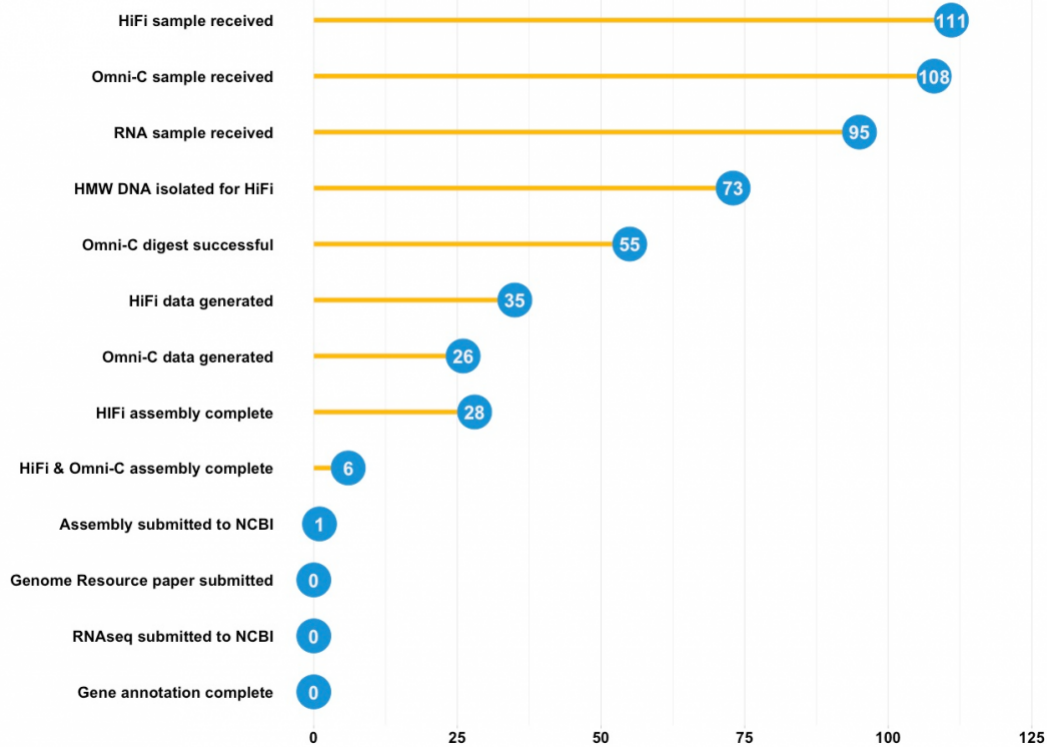
CCGP Mini-Core is in full swing!

Announced via email in mid-March, the CCGP Mini-Core is open for business! If you are planning to use its services for DNA extraction and/or library prep for whole genome resequencing, please submit samples as soon as possible. If sample collection isn't complete, the Mini-Core will probably accept samples in batches, given proper coordination. Please refer to [the Mini-Core section](#) of the CCGP website for more information on our available services, costs, and submission guidelines. We have been diligently working through the samples received from several of the CCGP PIs and are in the process of hiring an extra staff member to keep samples moving through the pipelines in efforts to meet our goal to have resequencing complete by the end of 2021, or soon thereafter.



Reference genome sequencing progress

Progress on reference genome sequencing has continued to ramp up! All three cores have received about two thirds of expected sample submissions. UC Davis has completed HMW DNA extractions for the majority of species they have in hand and nearly half of those already have HiFi sequence data available. UC Santa Cruz has performed digests for a little less than half of the species they have in hand, most of which have been sent for Omni-C deep sequencing. Both labs continue to make really amazing progress troubleshooting difficult samples and working with low input protocols. Beyond the lab component of generating reference genomes, our genome assembler, Merly Escalona, has completed 2 assemblies, one of which has already received revisions from NCBI and the other is in the process of being submitted. Many more are on the way!



Number of Species Completed (as of Aug. 2, 2021)

CCGP-relevant PI highlights: Paul Barber (UCLA)

Conservation genomics is a rich and emerging field, and we try to shine spotlights on research by our [CCGP PIs](#) whenever possible. In this issue, we are recognizing Paul Barber's group for their recent research efforts.

Dr. Barber and his collaborators have curated a *12S*-specific reference database for the California Current Large Marine Ecosystem. This genetic library covers about 70% of all animals that live in this highly productive and expansive ecosystem, including 99.9% of monitored species that are important to conservation and fisheries. In doing so, they have also determined best practices to improve the utility of *12S* metabarcoding of marine fishes and emphasized the importance of updating and expanding regional reference databases. You can find this published research [here](#).

Great news for a CCGP species: the Tricolored Blackbird

Audubon California recently [reported](#) that 100% of the thirteen [Tricolored Blackbird](#) (*Agelaius tricolor*) colonies located on agricultural fields across



the San Joaquin Valley in California were protected in 2020. Over the last six years, the Tricolored Blackbird population had decreased by 44%, largely due to

the loss of marsh and nearby foraging habitats along the coast and in the Central Valley. Audubon partnered with the dairy industry, the Farm Bureau, Natural Resources Conservation Service, and other conservation groups to save at-risk Tricolored Blackbird colonies. This is a great example of the effectiveness of partnerships between conservation groups and agriculture interests to support ongoing conservation efforts.

Comings & Goings

As data start rolling in, we are gearing up to ensure that it is curated and analyzed efficiently and in line with the CCGP's goals. As part of this effort, we recently hired a "Data Wrangler", Cade Mirchandani, to curate the thousands of samples and their associated metadata that will be generated across all CCGP resequencing projects. The role of data wrangler will be to develop, deploy, and maintain protocols for whole genome resequencing data use and archiving. Cade will also be responsible for aggregating whole genome Illumina sequencing data and sample metadata for all CCGP projects. Furthermore, he will develop bioinformatics workflows to confirm the quality of the sequence data and work with the sample-submitting labs to confirm the accuracy and the quality of the sample metadata. Cade will report to the CCGP PI and bioinformatics team lead Russ Corbett-Detig at UCSC. Welcome to the CCGP team, Cade!

Year 2 CCGP progress report

As we arrive at the end of the CCGP's second year, it has been exciting to reflect on the progress made, especially given the pandemic-restrictions from Covid-19. In the Second Year Annual Progress Report we describe some of the CCGP's key accomplishments and outcomes, many of which have already been shared with the CCGP community. These included the launch of our new website, the establishment of our Mini-Core, funding additional proposals, hiring new team members, and a long list of talks and presentations where the CCGP was featured. If you would like to peruse the progress narrative for this report, you can find it [here](#).

CCGP on social media

Since our last issue, CCGP has been shared on [Instagram](#), [Twitter](#), [Facebook](#), and [LinkedIn](#)!

Have anything to share?

As always, if your lab has any interesting information to share or you come across something that may be of interest to the CCGP community, please don't hesitate to let us know. [Click here to get in touch!](#)

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