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California Conservation Genomics Project First Year Annual Report

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Authors

Shaffer, Howard B
Toffelmier, Erin

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California Conservation Genomics Project First Year Annual Report September 2020

Overview

One million species are at risk of extinction worldwide, many of which are found in—or restricted to—California. Climate change is stretching species and habitats to their breaking points. To address this crisis, the California Conservation Genomics Project (CCGP) is engaging leading experts in genomics and conservation science to rapidly sample and study the genetics of 220 species that span the breadth of California’s native species and ecosystems.

The \$12 million, state-funded project is creating an unparalleled body of knowledge which will enable policy makers and natural resource managers to make sound decisions that help species survive as climate changes continue. The data and resulting geospatial analyses will inform the optimal siting of alternative energy facilities to least impact ecosystem health, identify landscapes that harbor the genetic diversity needed for climate resilience in endangered species, and produce genetic roadmaps for individual species and broader ecosystem protection and recovery. Researchers and experts from all 10 University of California campuses are involved in this research partnership, which is managed by UCLA.

Selection Criteria

In January 2020, a call for proposals from researchers to contribute to the CCGP was issued. [Criteria](#) for selection included:

- The importance of the selected species for conservation in California.
- The ecological breadth of the proposed species and how well they integrate with other proposals.
- The expertise of the research group in both conservation genomics and the biology of their proposed study taxa; the availability of samples; and the cost-efficiency of the budget.

Funding Decisions

After an extensive evaluation of proposals, initial funding decisions were announced in early May. Details of CCGP projects funded to-date can be found [here](#). Highlights include commercially and recreationally-exploited marine species (e.g. Dungeness crab, California grunion), California’s only native freshwater turtle (the western pond turtle), and our state bird, the California quail, among many others.

Progress-to-Date

The first virtual workshop for project teams took place over two days in July 2020. Over 100 principal investigators and their collaborators convened to discuss the next steps

for CCGP.

During and after the workshop, several key staff positions (e.g., Associate Director and Senior Fund Analyst/Project Manager) that are critical to the next phase of the CCGP were identified and are being filled. Researchers have also launched a rapid assessment pilot of two iconic California species.

A second, smaller round of funding based on targeted requests for proposals that fill in critical gaps in both species and ecosystems is now essentially complete.

Based on extensive input and support from the CCGP community, we are also funding a small core facility to provide molecular benchwork services to all funded projects as needed. A state of the art liquid handling robot and dedicated technician will be housed at UCLA to ensure that high quality data are delivered efficiently to all researchers.

Next Steps

Over the next several months, researchers will create reference genomes for focal species that will be cornerstones of CCGP projects. These gold-standard genomes will serve as the genetic foundations that will enable CCGP researchers to assemble and analyze the ~20,000 resequenced genomes that will result from the CCGP. The CCGP will make these reference genomes immediately publicly available as a free resource for conservation and resource managers, as well as the broader scientific community.

Three primary working groups, comprising lead CCGP researchers, are being assembled to make recommendations about developing bioinformatic pipelines, spatial analyses, and policy products.

Questions about the California Conservation Genomics Project may be directed to Brad Shaffer, CCGP Director (brad.shaffer@ucla.edu) and Erin Toffelmier, CCGP Associate Director (etoff@ucla.edu).

Additional background:

<https://www.ccgproject.org>

<https://grandchallenges.ucla.edu/happenings/2019/09/05/ca-conservation-genomics-kickoff-ucla/>

<https://newsroom.ucla.edu/releases/10-million-california-conservation-project>