

## Plan Overview

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*A Data Management Plan created using DMPTool*

**Title:** Sentenac Cienega Restoration Project

**Creator:** Yanghongfan Wang

**Affiliation:** University of California, Irvine

**Principal Investigator:** Yanghongfan Wang, Rachel Yuan, Cherish Cartagena, Victoria Masjuan

**Data Manager:** Yanghongfan Wang

**Project Administrator:** Rachel Yuan

**Funding opportunity number:** 58637

**Template:** AHRQ - Agency for Healthcare Research and Quality

### **Project abstract:**

Sentenac Cienega is a degraded desert wetland located within Anza Borrego Desert State Park (ABDSP), at the confluence of the seasonal San Felipe creek and Sentenac Canyon. Water flowing from Sentenac Cienega through San Felipe Creek supports key habitat for some 30+ critical species of plants and animals. However, species diversity and hydrologic health have been in decline for at least two decades in part due to invasive species overtaking the area. From 2002- 2007 California State Parks undertook removal of non-native tamarisk (*Tamarix ramosissima*) as part of an effort to restore native vegetation. Following the tamarisk removal, a secondary wave of non-native invasive vegetation, including *Bassia hyssopifolia*, *Salsola* spp. and *Lepidium latifolium*, occurred after the removal process. Sentenac Cienega is a rare, unique, and extremely valuable feature of the western Colorado Desert landscape area that supports essential and critical ecosystem services that benefit both wildlife and the public. Our project has a comprehensive and holistic plan that involves a better understanding of the latest vegetation condition and wildlife activities, deliberate target species selection, multiple restoration approaches, and careful spatial planning for the high priority restoration areas. The project will inform the future ecosystem management of this area in the face of current and future challenges. As such, we anticipate that this project will establish the foundation for future research and restoration implementation in Sentenac Cienega which could help enhance support for sensitive species, such as the state- and federally- listed, endangered least Bell's vireo. Additionally, in combining vegetation investigations, biological monitoring, and restoration experiments, this project will provide a novel and transferable approach to restoration in the context of a changing climate and socioeconomic stress.

**Start date:** 09-28-2020

**End date:** 06-11-2021

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## Sentenac Cienega Restoration Project

Bill will create and analyze the data collected by the camera traps and compile them into an excel spreadsheet

Cherish will organize the wildlife camera photos

Rachel will collect and organize data on plant transplantation method

Victoria will collect and organize data on plant restoration experiment

Finally, we will all create and organize a folder on vegetation composition of the Sentenac Cienega

Data for wildlife camera traps are collected via strategic placement of 8 different cameras in the Sentenac Cienega based on expert's opinion and advise and recorded in the Collector application as point data. The cameras will detect movements and capture wildlife activities. Eventually, these datas will be compiled into an excel spreadsheet to quantify wildlife activities.

Data for vegetation composition of the Sentenac Cienega will be collected via the Survey123 application as polygons. These polygons will eventually be uploaded to ArcGIS online to create an up-to-date and comprehensive map of the vegetation community in the Sentenac Cienega.

Data on both the restoration trails and transplantation method will be collected via experiments. We will run a manipulative and a two-factorial design, respectively, to determine effective measures to increase native plant cover and most tolerant native plant. Data will be analyzed in R and visualized via graphs and bar chart.

A separate document will record the methodology for setting up the camera traps and an excel spreadsheet will contain the metadata of the camera trap

Vegetation composition data will have its own metadata accompanied with appropriate variables noted. Data analysis and appropriate testing will be recorded in R markdown or as a README file

We will document and record our process in the restoration trail and the transplantation with both digital and written documents as a README file

A separate hard-drive will be used to back up all the data during the research.

All of the data collected should be retained, shared and preserved to further develop the project for incoming graduate students

All relevant data will be deposited to Dryad, the Data Publication platform, and preserved in the backend Merritt Repository for both public access and long-term storage upon completion of the project study. All relevant data will be made publicly available upon deposit and will be findable through a DataCite DOI granted by Dryad

Data will be shared via Dryad data repository and made available under the CC0 license. Where no databases exist, data will be made available as supplemental material to publications. All software generated in the course of this project will be freely available for download (along with open source code) through GitHub and standard R sites such as CRAN. (NSF 1661529)

None of the samples or data involved are proprietary, high-security, or sensitive.

We will first ask consent with any researchers or faculties we collaborate with to publish and share their data and research method for our project and cite them in our final report.

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