

Santa Barbara Restoration Project Database

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25 June 2015

CONTENTS

Introduction 2

Setting..... 2

Methods..... 3

Results 5

Discussion 10

Conclusions..... 12

INTRODUCTION

The Santa Barbara Restoration Project Database (SBRPD) was created to accomplish the following goals: (1) inventory ecological restoration projects in the south coast region of Santa Barbara County, (2) establish a centralized repository for data associated with those projects, and (3) make these data available to a broad public audience of restoration practitioners, regulators, researchers, students, and community members. The SBRPD is intended to serve as an informational resource and research tool that could potentially serve as a basis for planning, decision-making, and developing recommendations for regulators about issues pertaining to the preservation of local biological resources through restoration, conservation, and natural-lands management in the south coast region.

The Cheadle Center for Biodiversity and Ecological Restoration (CCBER) undertook the SBRPD project in 2012. The project stemmed from a series of discussions among local restoration practitioners regarding the use of non-locally sourced plant material in local restoration projects. Specifically, practitioners were concerned that the use of non-locally sourced plant material could potentially threaten the biological integrity of existing local native plant resources and destabilize the market for local native plant growers using locally-sourced plant material. The SBRPD addresses this concern by providing a means to document introductions of non-local plant material into the south coast region. Such documentation could offer insight about the extent to which the use of non-local plant material is a local issue and help practitioners identify potential threats to rare or sensitive local native plant resources.

SETTING

The south coast region of Santa Barbara County spans the south side of the Santa Ynez Mountains between Point Conception on the west and the City of Carpinteria on the

east. This region has a Mediterranean climate with frequent ocean fogs and marine layers during summer. Floristically, the south coast region is a transitional zone between northern California and southern California flora. Many plant taxa occur in the south coast region at their southern or northern extremes of distribution.

For the purposes of the SBRPD, the term 'local' is understood to refer to any area within the extent of south coast region as described in the preceding paragraph. Alternative characterizations of 'local', such as those suggesting intrataxic variation within the south coast region, are beyond the scope of the SBRPD.

METHODS

Local restoration organizations and agencies were asked to provide official documents and other data about their local restoration projects. Documents solicited included plans, reports, maps, and any records pertaining to the collection sources of native plant material used for those projects. These documents were mined for background, physiographic, and biological resource data. Special attention was paid to data pertaining to sensitive resources including special status plants, special status animals, and wetlands. Project data were also obtained from other sources including California Coastal Commission staff reports and plant growers' nursery records. Generally, data for each project were compiled from a combination of the aforementioned sources. As part of the data collection process, each restoration project was geo-referenced in WGS84 datum using ArcGIS satellite imagery. The data fields are outlined as follows:

- Background
 - Project name
 - Size of restoration area
 - Location (geographic coordinates)
 - Start date
 - End date
 - Involved parties
 - Includes landowner, restoration contractor(s), native plant growers, etc.
- Physiography
 - Watershed
 - Wetland presence*
 - Includes estuaries, palustrine marshes, vernal pools, and riparian corridors
- Biological resources
 - Special status plants and special status animals*
 - Pertains only to those projects with explicit consideration of special status plants or animals
 - Native plant collection source documentation
 - Native plant source locality (i.e., local or non-local)

** indicates sensitive resource*

Project data were initially compiled into a Microsoft Excel worksheet. Tabular data were then imported into ArcGIS, which was used to create a geographic data layer of restoration projects as point features. Three additional data layers were created using modified data sets of physiographic data for the south coast region. These physiographic data sets contained data about soils (U.S. Department of Agriculture, Natural Resources Conservation Service), creeks (U.S. Geological Survey and Gibbs, 2002), and wetlands (National Wetlands Inventory, U.S. Fish & Wildlife, 2009).

A map containing the four geographic data layers (restoration projects, soils, creeks, and wetlands) was generated. This map provided a basis for the development of an interactive web map application designed for online public viewing and querying of restoration project data. The application was developed on the ArcGIS Online platform

through a partnership with UCSB's Department of Geography. The application presents restoration project data within a context of ecologically relevant physiographic features including soils and wetlands. When using the application, users may select any geographic feature (e.g., restoration project, soil zone, or wetland) on the map and view data about that feature and other coinciding features.

The SBRPD web map application is hosted on UCSB's ArcGIS Online server space and is accessible via hyperlink from an SBRPD informational webpage on CCBER's website.

The SBRPD webpage and application URLs are as follows:

- SBRPD webpage: <http://ccber.ucsb.edu/restoration-database>
- SBRPD web map application:
<https://ucsb.maps.arcgis.com/apps/webappviewer/index.html?id=3cd18f44d1dc4867b37ef27c0b711f1d>

An online data entry form on the SBRPD webpage allows users to submit data for new projects or update data for existing projects that are already in the database.

RESULTS

A total of 75 restoration projects were identified. Sensitive resources (i.e., special status plants, special status animals, or wetlands) were present within the restoration area in 58 projects (77.3%). Special status plants or animals were involved in 14 projects (18.7%), including one project with both special status plants and special status animals. Wetlands were involved in 54 projects (72.0%). Figure 1 depicts the presence of sensitive resources among all projects.

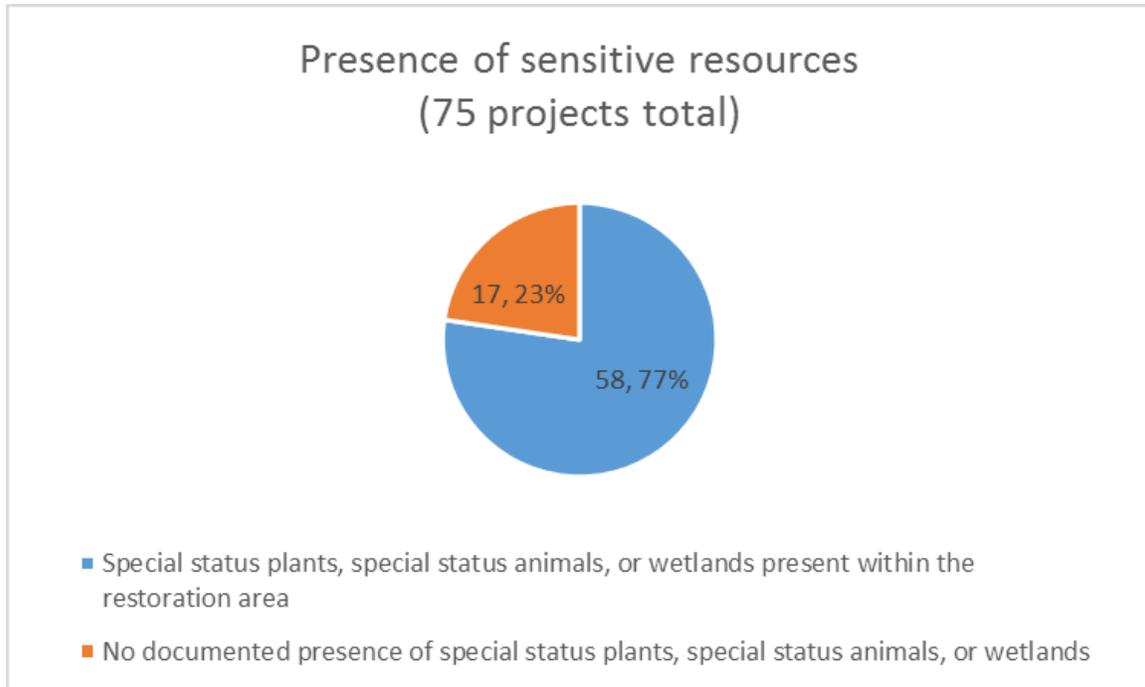


Figure 1: Presence of sensitive resources (i.e. special status plants, special status animals, or wetlands); 75 projects total

Native plant suppliers were identified for 64 projects (85.3%). Plant source documentation was confirmed for 57 projects (76.0%). Of the 57 projects for which plant source documentation was confirmed, 52 projects had fully local plant sources, while 5 projects had local plant sources with the exception of one taxon with unresolved or indeterminate origins used in each project.¹ Figure 2 depicts the rate of confirmed plant source documentation among all projects. Figure 3 depicts plant source locality among all projects.

¹ The taxa in question are *Geranium californicum*, which had one occurrence, and *Juncus acutus*, which had four occurrences.

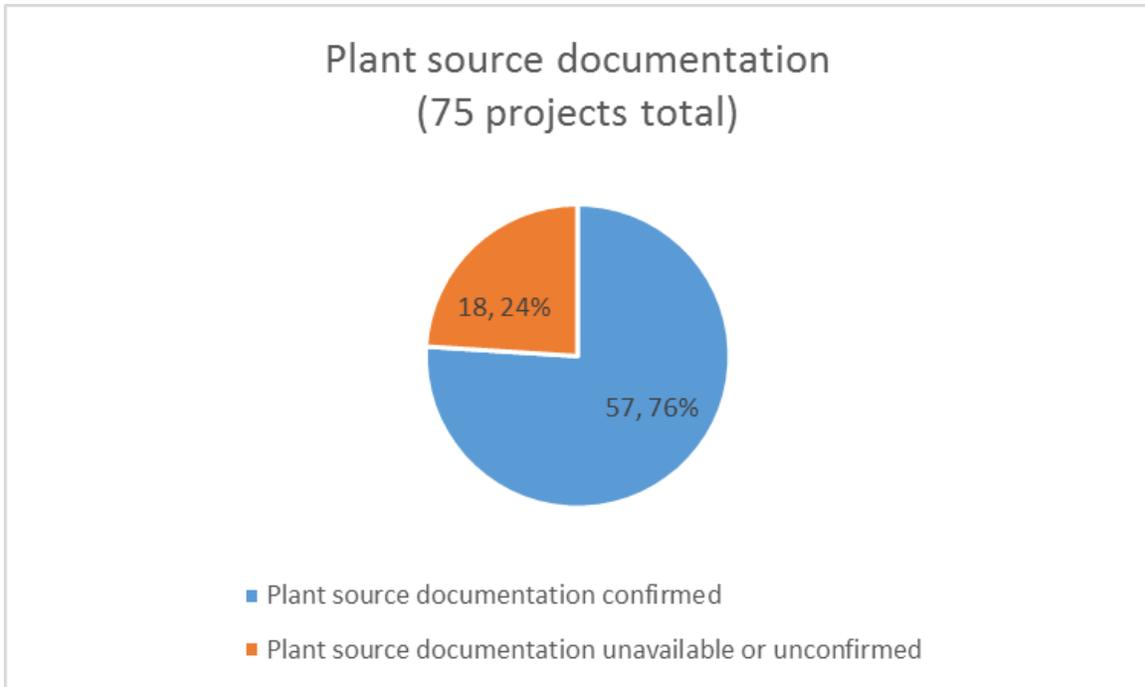


Figure 2: Plant source documentation; 75 projects total

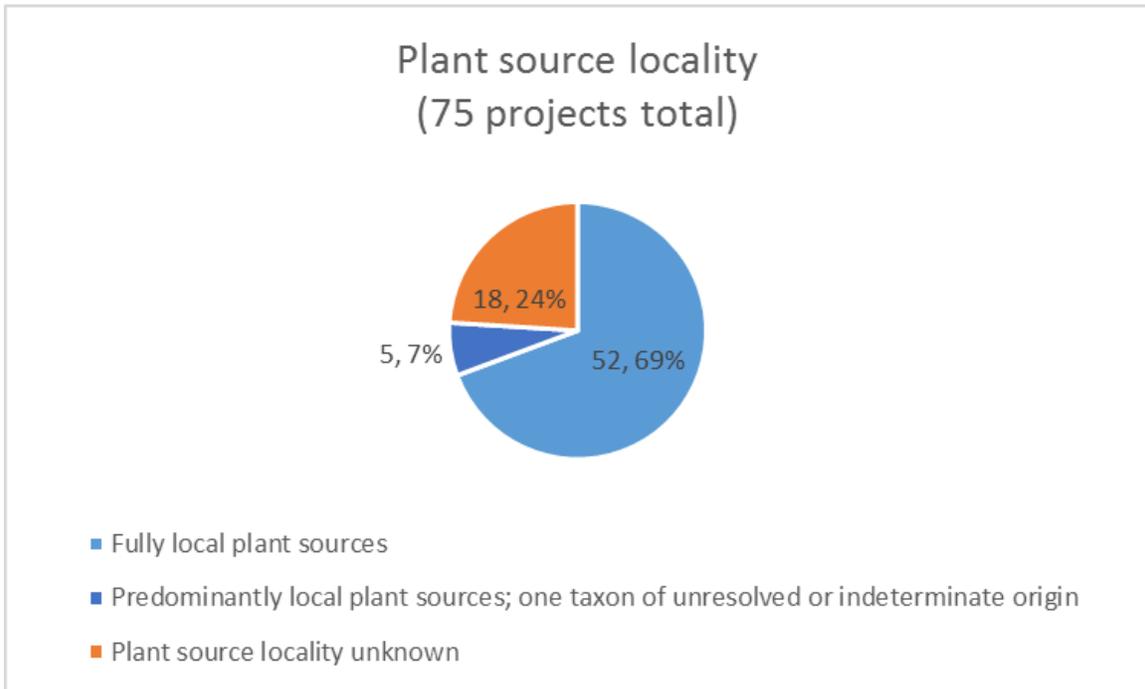


Figure 3: Plant source locality; 75 projects total

The University of California was responsible for implementing 39 projects (52.0%), which included 35 projects (46.7%) on University of California property. Of the 39 projects associated with the University of California, 38 projects had confirmed plant source documentation, including 33 projects with fully local plant sources and 5 projects with predominantly local plant sources (one taxon of unresolved or indeterminate origin used in each project; see footnote 1). Of the 36 projects conducted by parties unaffiliated with the University of California, 20 projects had confirmed plant source documentation, all 20 with local plant sources. Figure 4 and Figure 5 depict the rates of confirmed plant source documentation among University of California projects and among non-university projects.

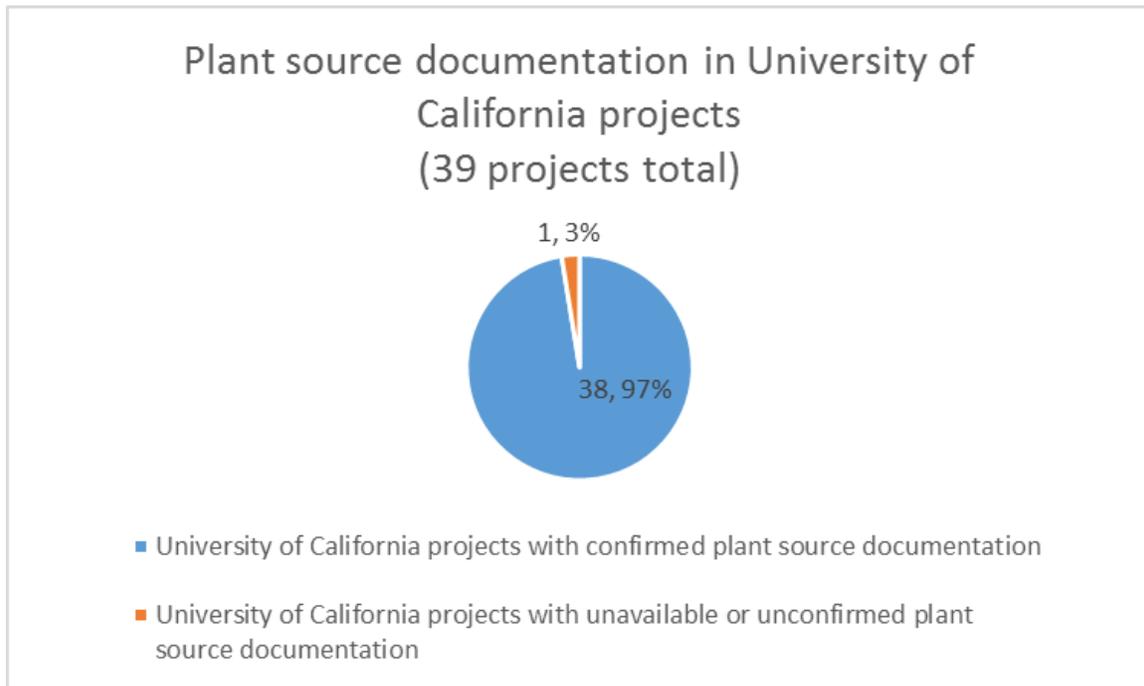


Figure 4: Plant source documentation in University of California projects; 39 projects total

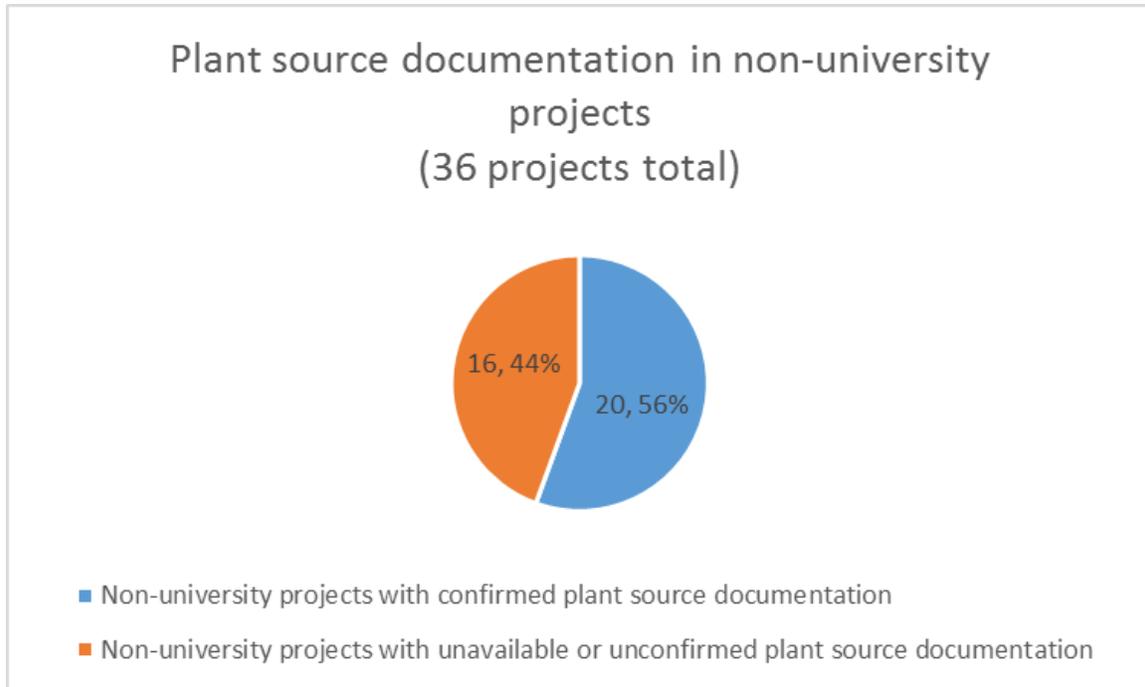


Figure 5: Plant source documentation in non-university projects; 36 projects total

The total restoration area of 58 projects with available size data was 225.7 acres. Among these projects, the mean size of the restoration area was 3.9 acres, and the median restoration area size was 1.7 acres. For projects with confirmed plant source documentation, the total restoration area (for 44 projects with restoration area size data) was 192.2 acres; mean restoration area size was 4.4 acres; and median restoration area size was 1.6 acres. For projects without confirmed native plant source documentation, the total restoration area (for 14 projects with restoration area size data) was 33.5 acres; mean restoration area size was 2.4 acres; and median restoration area size was 2.3 acres. Table 1 summarizes restoration area size data for all projects with restoration area size data (58 projects). Table 2 and Table 3 summarize restoration area size data for projects with confirmed plant source documentation (44 projects) and for projects with unavailable or unconfirmed plant source documentation (14 projects).

Table 1: Restoration area size in acres; 58 projects with restoration area size data

Total restoration area (58 projects with data)	225.7 acres
Mean restoration area size	3.9 acres
Median restoration area size	1.7 acres

Table 2: Restoration area size in acres for projects with confirmed plant source documentation; 44 projects with restoration area size data

Total restoration area for projects with confirmed plant source documentation (44 projects with data)	192.2 acres
Mean restoration area size for projects with confirmed plant source documentation	4.4 acres
Median restoration area size for projects with confirmed plant source documentation	1.6 acres

Table 3: Restoration area size in acres for projects with unavailable or unconfirmed plant source documentation; 14 projects with restoration area size data

Total restoration area for projects with unavailable or unconfirmed plant source documentation (14 projects with data)	33.5 acres
Mean restoration area size for projects with unavailable or unconfirmed plant source documentation	2.4 acres
Median restoration area size for projects with unavailable or unconfirmed plant source documentation	2.3 acres

DISCUSSION

Official project plans were the most informative and reliably accurate sources of data. However, plans were obtained for only a small fraction of projects. Project monitoring reports were among the most easily obtainable documents, but they were among the least informative sources of data and were only occasionally useful. Although monitoring reports contained some data about projects' biological resources, the scope and quality of those data varied greatly from project to project. Additionally, reports

often lacked background information such as project size, project start and end dates, geographic context, and involved parties.

Native plant source documentation was the most difficult project element to verify. Plant source data were rarely included in official project documents and, if documented at all, were rarely in the possession of the parties that performed the field implementation of a project. Plant source data, and the confirmation thereof, were primarily obtained from the nursery records of native plant growers supplying plants to projects. There were cases in which plant source data were known firsthand but had not been documented. In such cases, plant source data were verified through verbal communication with individuals involved in those projects.

The University of California was responsible for the majority of restoration projects documented. Most of these projects occurred within the Devereux Slough and Goleta Slough watersheds, large portions of which lie within or are immediately adjacent to University of California property. University of California projects also had the highest rate of plant source documentation. Most University of California projects were conducted by either CCBER (formerly the Museum of Systematics and Ecology) or Coal Oil Point Reserve. Both of these groups carry out the majority of the restoration process in-house and are directly involved in the following activities: native seed collection, native plant propagation, exotic plant removal, out-planting, monitoring, and reporting. In contrast, most non-university projects are conducted by multiple independent parties, each carrying out a different phase or aspects of a project. This difference between the ways that University of California projects and non-university projects are conducted might account for some of the difficulty in confirming plant source documentation for non-university projects, since non-university projects have largely unconsolidated data.

In general, plant source documentation was strongly associated with the use of locally sourced plant material. Projects larger than ~4 acres were more likely to have plant

source documentation and, thus, more likely to have local plant sources. It is possible that large projects (i.e., larger than ~4 acres) were more likely than small projects to have plant source documentation because large projects were more likely to outsource the production of plants to native plant growers. In the south coast region, plant production for large projects seems to be correlated with the documentation of plant sources *and* the use of locally sourced plant material.

CONCLUSIONS

Restoration projects in the south coast region of Santa Barbara County are numerous, and the majority of projects involve or have direct effect on sensitive resources such as special status plants, special status animals, or wetlands. The prevalence of sensitive resources in the south coast region reinforces the importance of maintaining standards of ecological integrity in restoration practices. However, achieving and maintaining these standards may require greater transparency among restoration practitioners in regard to the documentation, availability, and accessibility of restoration project data.

Presently, differences in the degree of documentation among projects and the multi-party practice of project implementation make it difficult to learn about local restoration projects and, in turn, make it difficult to learn *from* them. This clearly illustrates a need for ways to consolidate data for individual projects and centralize these data in a way that recognizes their value and makes them accessible to the widest audience.

Plant source documentation is one way to promote the ecological integrity of restoration practices. However, outside of projects conducted by the University of California, plant source documentation appears to be a low priority, and the status of plant source locality for non-university projects remains largely unknown. Consequently, the extent to which non-locally sourced plant material has been used in local restoration projects and the extent to which its use threatens local native plant

resources or affects local native plant growers are unclear. More information is needed to assess these issues.

The documentation of native plant sources and their locality are presently unregulated aspects of restoration, and there is apparently little incentive for parties to document or report these data. Based on what has been learned through the development of the SBRPD, CCBER recommends that regulators promote native plant source documentation as a regulated component of restoration project implementation. Such action would afford greater protection of local biological resources by increasing transparency among restoration practitioners and encouraging practitioners to make decisions that uphold standards of ecological integrity in the practice of restoration.