

PRISSM: Data management plan for monitoring of vertebrate diversity in the California sage scrub ecosystem.

Data and Materials Produced

PRISSM vertebrate monitoring protocols were developed to minimize the need for extensive training and permits by using a design that passively monitors vertebrates in CSS fragments using motion detector cameras. Bio-monitoring protocols for vertebrates will collect data on vertebrate phenology and species richness at each CSS fragment. Over multiple years, these protocols should compile a relatively complete vertebrate species inventory of each CSS fragment.

Protocols require the use of a minimum of five motion detector cameras, although more are recommended. Cameras are attached / tied to stakes or trees approximately 30 cm above the ground so the lens face is perpendicular to the ground. This orientation with outward facing cameras was found to be better at capturing mammal, bird, reptile and amphibian diversity than downward facing cameras in CSS (Karnovsky unpublished). Cameras are placed in the field for one week of each month from November through June. We have found that cameras, the date/time stamp function in particular, often miss function during the hot summer months.

Cameras are placed at sites within each CSS fragment that span the variety of habitats present. Each camera site will be categorized into habitat type (e.g., intact CSS, degraded CSS, non-native grassland, burned CSS, Chaparral). Classification of habitats will use the protocol outlined in the PRISSM protocol document (www.prissm.org).

Data will be pictures from motion sensor cameras. Each picture will have a date and time stamp associated with it. Raw data (e.g., pictures with relevant date/time stamp data) will be stored on an external hard drive at each participating institution's laboratory and copies will be uploaded to an external cloud based server. Synthesized data will be reported using a $site_{(date)}$ by species matrix. For each day a camera was recording data, we will report the number of pictures that recorded each species and the maximum number of individuals recorded that day. Synthesized data will be made publically available on an annual basis for researchers and managers to use starting in January 2019 as multiple publications are currently in preparations. Raw data may be obtained by contacting Professor Nina Karnovsky (nina_karnovsky@pomona.edu).

Standards, Formats and Metadata

Data will be saved in three separate formats:

- (1) All pictures will be stored by each institution
- (2) synthesized data from will be stored in Excel using a separate file for each participating location.

We will use the program Morpho to upload Excel files and input all appropriate metadata using Ecological Metadata Language. Upon completion, the metadata and data will be made available

on Data ONE's KNB Network. All links will be attached to the PRISSM: Partnership of Regional Institutions for Sage Scrub Monitoring website (<https://prissm.org/>).

Roles and Responsibilities

Wallace Meyer (WM), Director of the Robert J. Bernard Field Station, and Nina Karnovsky (NK) will oversee input of data in collaboration. Currently, only the BFS is conducting this portion of the bio-monitoring program. Other members will be added as collaborators increase.

WM and NK will:

- (1) will hire students and initiate sampling at the beginning of September
- (2) will update all participants to any change in protocols
- (3) set up a meeting in the fall to discuss and combine data from previous years
- (4) oversee that data and metadata are uploaded each year with the objective to have data available by the beginning of each year starting in January 2018.

Changes in responsibility will be agreed upon by participating members. However, not adhering to the data management plan and actions required may result in exclusion of the data collected. Data will be uploaded once each year.

Dissemination Methods

While we plan to make synthesized data openly accessible to the public on the KNB network with links from the PRISSM website each year starting January 2019, it is possible that data may be embargoed if being used for a publication. In either instance, all metadata needed to understand the approach and files will be available. The process for accessing the metadata will be to either search the KNB network for these key terms: PRISSM, Bernard Field Station, Voorhis Reserve, sage scrub, vertebrate diversity or follow links to the data from the PRISSM website (www.prissm.org). If data is currently under an embargo, access to data can still be provided by contacting Wallace Meyer (Wallace_meyer@pomona.edu) following consultation.

Policies for Data Sharing and Public Access

If data are not embargoed, no restrictions will be placed its use. If the data are used in a publication, we expect that PRISSM be acknowledged and that a copy of the manuscript be sent to Wallace Meyer (wallace_meyer@pomona.edu) to help us document the importance of the data and justify its collection. While we intend to use these data in classes and to provide context to appropriate management decisions at our sites, we hope other researchers use our data.

Archiving, Storage and Preservation

Because we view this as key baseline data for our sites and region, we are using the KNB network to store the synthesized data and metadata for long-term preservation. Each site will maintain electronic copies of raw photo data to assure its preservation.