



Calflora's Weed Manager Potential Enhancements

Introduction

Weed Manager (WM) is a system built within the Calflora Database enabling organizations to track and report on invasive plant infestations and treatments over time.

Each WM group configures and customizes aspects of using the WM system. For instance, a group decides which fields will be included on their customized data collection form(s), how many projects to have within the group, which data collection fields are mandatory (if any), who may edit data in the group (if anyone), and who has access to see certain aspects of observations.

Core data fields and methodologies remain standard across all organization subscribers, however, thus enabling data exchange and integration across jurisdictions. The overall design of the WM system is outlined in [this document](#). Notes on the user interface patterns used in WM are in [this document](#). WM annual subscription fees may be found [here](#).

Potential Enhancements

Below are enhancements being considered for Weed Manager. We welcome comments about these proposed enhancements and also suggestions for other enhancements that might be included.

[API \(\\$25,000\)](#)

[Scheduling Crews \(not fully scoped\)](#)

[Background Lines and Polygons available to a group \(\\$4,800\)](#)

[Dashboard \(\\$13,000\)](#)

[Systems Modernizations Plan \(not fully scoped\)](#)

[Grid Survey Mapping \(not fully scoped\)](#)

[Map Report Application \(not fully scoped\)](#)

[Observation Upload \(\\$26,000\)](#)

History stack build tool (\$12,000) Funded and completed

New Fields in Group Observations (\$1,500) Funded and completed

Add Symbology to iOS OP (\$3,000) Funded and completed



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Custom Report Generator (\$45,000) Funded and completed

API (\$25,000)

There will be a read-only API (Application programming interface) with the same functionality as Group Observations. An API call would be generated by the Group Observations application, similar to how the Observation Download application currently works.

Scheduling Crews (not fully scoped)

Use Weed Manager to keep track of when you should visit specific weed infestations.

Background Lines and Polygons available to a group (\$4,800)

Users may upload or draw their own background lines and polygons to use in Observer Pro maps. When using Observer Pro in the field, a background line or polygon might help you find a trail or a survey area, particularly if the area is not marked by fences or other physical signs. These lines and polygons may each may be a different color. Background lines and polygons are available on OP but they are currently not available to a group; they are a personal resource. We would like to make them available to a group.

Dashboard (\$13,000)

Each Calflora user would have a dashboard containing quick links to the Calflora web applications they use most often. Users would control which applications appear on their dashboard. Logged-in users would by default go to their dashboard, and will be able to get to the Calflora home page via a link.








For Weed Manager users, there could be a WM- specific part of their dashboard. For each Weed Manager group, the group administrator (owner) would choose which applications members of the group will be able to use.

Such a dashboard would be particularly useful when new group members are being trained to use Weed Manager applications. On their dashboard, they will see a short list of the applications they need.



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My Dashboard

 Plant Observation Entry Using this application, you can view, enter or edit a plant observation record.	 Multiple Group Search This application is similar to Group Observations, except that you can search for records from multiple groups at the same time. This can be useful if you are a member of more than one Weed Manager group.	
 Survey Entry A survey is a focused search for certain plants, in a discrete area, and over a limited amount of time. Using this application, you can view, enter, or edit a survey record.	 Work Session Entry Enter what crew did which activity, on what day, for which project.	 Plant List Definition If you need a custom plant list for one of your group's projects, use this application to define it.
 My Groups Use this application to join a group, or to check on the recent activity (new observations) of any groups of which you are a member.	 Manage Groups If you are the owner of a group, use this application to add new members, or to assign roles to existing members.	

Systems Modernizations Plan (not fully scoped)

There are a number of factors that create risks for Calflora. This section of proposed enhancements is concerned only with technology related risks. These risks can be broadly categorized as infrastructure/availability risks, security related issues, software bug/instability risks, and issues related to new functionality. A thorough plan to address all of these risks, in both an initial triage form, and in the way of introducing a culture of software quality to mitigate these risks in the future, encompasses this systems modernizations plan.

Grid Survey Mapping (not fully scoped)

Invasive plants may be mapped by grid cell instead of by population ([details](#)). This method produces results which are more easily quantifiable than other methods. This method is also potentially less expensive. Grid Survey mapping is not currently part of Weed Manager.

Plant location data could be collected by individuals in the field using Calflora's Observer Pro phone app (with added grid mapping component), by helicopter, by using remote sensing e.g. Lidar, or some combination.

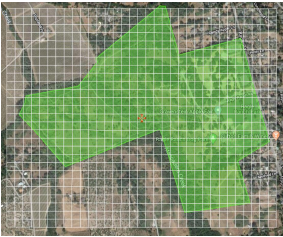
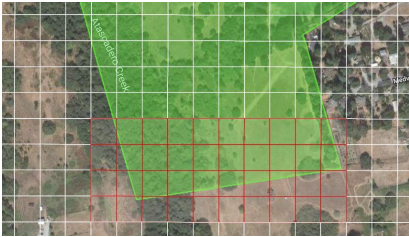
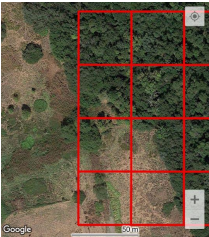


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Potential benefits of grid survey mapping include:

- Absence is cleanly quantifiable. If a weed is being assessed and treated inside of a management unit over several years, progress in the containment of that weed will be evidenced by more cells in which the weed is no longer found, and/or less abundance of the weed in those cells where it is found.
- The metric of progress is very similar for all weeds. It may be possible to compare the effectiveness of treatment plans for weeds of various sizes.
- Training for field staff may be simpler and produce more uniform results than with a population based approach. In particular, crews would not need to draw polygons on the phone app in the field. This could decrease the expense of time in the field.

For example, using the Grid Survey Editor, a user could make a new Grid Survey Framework record, choose a cell size of e.g. 40 meters (each cell side is 40m), and generate a grid that covers the polygon boundary of a management unit.

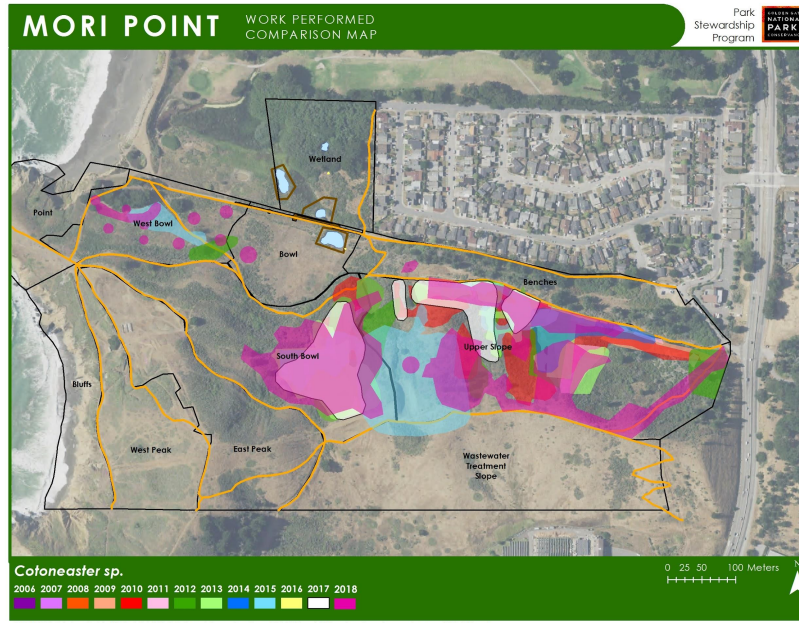
Entire park to be surveyed	Assign cells (red) to a crew	Crew sees assigned cells on Observer Pro phone app
		

Map Report Application (not fully scoped)

The current report application does not include maps. There will be a new application for generating printed reports that include a map with colored weed polygons and points. Such a map-based report would utilize the same symbology themes that are now in Group Observations. There would also be additional symbology themes, such as by year.



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This is an example map report courtesy of Christina Crooker, showing population extent by year.

Observation Upload (\$26,000)

There will be a new Observation Upload application used for batch uploads of observation records into the database. This new application would be aware of WM forms and column sets so that it will be straightforward to upload data arranged according to a particular column set. The application would also do record-by-record error checking so that if a record fails to upload, the user will know why. (Note that we are not currently considering an upload API; the new Observation Upload application is necessarily interactive.)

History stack build tool (\$12,000) **Funded and completed**

This function will automatically add observation records to an existing stack, or combine observation records into a new stack. Records to be added to a stack must be of the same plant. There are two methods available for determining whether records are of the same population based on their spatial relationship.

Proximity: the user specifies how close two observations must be in order to be stacked.

Intersection: two observations will be stacked if they both have polygons, and if those polygons overlap. The result of running this function is a preview or list of suggested stack additions. The user can accept them all, or accept them one-by-one.



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New Fields in Group Observations (\$1,500) Funded and completed

Auto-convert ranges to mid-points in GO. This will create two new columns with a mid-point for "number of plants" and "percent cover."

Add Symbology to iOS OP (\$3,000) Funded and completed

This is not yet available on iOS Observer Pro: on Android Observer Pro, if you go to History and press the Map tab, you see a "Color" drop down above the map with 5 choices:

- Default colors
- Management Status
- Priority (aka Population Priority)
- Plant Count (aka Population Plant Count)
- Plant Name

Calflora would add this functionality to iOS OP.

Custom Report Generator (\$45,000) Funded and completed

This new system would be in addition to the current Group Reports (GR) application, where users can run pre-designed reports.