

Mapping Working Group Session October 8, 2004
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The working group started with a recap of last year's working group discussion, followed by an overview of the objectives of Cal-IPC's Weed Mapping Committee, including a call for data. Various presentations were then given describing new **Data Tools**. The session ended with a discussion of these different Data Tools and applications they are useful for.

Recap and Overview: Last year's discussion concluded that mapping is necessary but there is a steep learning curve with current technologies. Several needs were identified for weed mapping in California. In response to these needs, Cal-IPC formed a Weed Mapping Committee with the following goals in mind:

- Develop online statewide maps of the known locations of California's worst weeds.
- Host an inventory of programs conducting weed mapping and any data they are willing to share.
- Create a clearinghouse of tools and methods used by weed mapping efforts in California and elsewhere.

To achieve these goals the following projects are being worked on and can be accessed from Cal-IPC's website (www.cal-ipc.org >> Projects >> Cal-IPC Weed Mapping Committee).

- *Statewide Maps:* Currently we are collecting data for Arundo donax and tamarisk spp. for compilation into statewide maps for those species. To contribute these and any other species map data quickly and easily, please visit the above website.
- *Weed Mapping Project Inventory:* A simple database is being built that will be made searchable on the Cal-IPC website. To contribute your project's name and focal species please visit the above website. Also, the CalWeed database is revamping their project inventory. These two resources will be combined.
- *Clearinghouse of Mapping Tools:* Information on the tools used in weed management and where to get them will soon be made available on the Cal-IPC Weed Mapping Committee website.
- *Networking:* A new listserv (CalWeedMapping@topica.org) has been created as a forum for discussing topics related to mapping weeds, monitoring invasion spread and treatment success, and managing and sharing data. You can subscribe to this listserv on the Cal-IPC Weed Mapping Committee website.

Presentations of Data Tools: Many people presented new data tools they are working on or that have proved useful in the field.

1. *Mandy Tu (TNC)* – The Nature Conservancy has been developing a new data management tool called **WIMS** (Weed Information Management System). In 1999 TNC

started working on WIMS to aid their land managers in tracking weed related data. WIMS is built around a relational database (MS Access). It contains 3 components:

1. Occurrences of weeds (GPS points and area of infestation around that point)
2. Assessments (monitoring of the weed population over time)
3. Treatment activities

WIMS is easily imported and exported for sharing in EXCEL spreadsheets. The data format conforms to NAWMA (North American Weed Mapping Association) standards. Using WIMS, TNC land managers can automatically produce shapefiles for GIS. They can also produce 20 different types of reports related to their weed control and monitoring activities. WIMS can be used in the field on a handheld PC or Palm Pilot with an attached GPS unit. The desktop format of WIMS is similar on the handheld PC. WIMS will be made available for free to everyone. Information about WIMS, including a draft user's manual, can be found at: <http://tncweeds.ucdavis.edu/wims.html>. The application will be released to the public in a couple of months.

2. *Deanne DiPietro (Sonoma Ecology Center)*: TAdN (Team Arundo Del Norte) has been working under 2 different CalFed grants. The work has involved coordinating in the Bay/Delta Region to map the invasive plant *Arundo donax*, plan eradication of *A. donax*, track treatments, monitor progress, and organize project management among partners. They were developing a data management system to accomplish these goals but have decided to partner with TNC on WIMS. The objective of the TNC/TAdN partnership is to continue upgrades and development together, making changes that benefit all WIMS users while maintaining version control, and to consolidate technical support. Steve Schoenig commented:

- WIMS can be extremely valuable for WMA's and County Ag offices.
- You don't need to adopt this system to share data.
- WIMS is ideal for someone starting from scratch.

3. *Chris Rogers (ESA Consulting)*: Esa Consulting received a CalFed grant to update and give better quality data throughout the Bay/Delta Region for *Lepidium latifolium* (perennial pepperweed). Their approach is field mapping with Trimble GPS receivers. These receivers incorporate a "data dictionary" based on TAdN's online forms. This work will be in the spirit of a publicly available online GIS product. Chris has a request for quality point, polygon data with attributes to enrich this product. This is a 3 year project and they are approaching the end of their 1st year.

4. *Ingrid Hogle (I.C.E)*: Ingrid has been working at the Cosumnes River Preserve to map *L. latifolium* areas of presence and absence. In the field they have had good success using a Garmin Rhino with a two-way radio feature. This unit takes points the whole time, which aids in tracking areas surveyed. They also use a Trimble backpack setup for more detailed locations. Data is managed using an ESRI personal geodatabase instead of shapefiles. This approach provides the ability to link tables from other databases and can keep track of metadata within the database. Spatial analysis is done using ArcMap.

5. *Bobbi Simpson (National Parks Exotic Plant Management Team)*: The National Parks EPMT uses a management tool called APCAM. APCAM uses datasheets in which you can pick and choose necessary fields depending on the project. A field person brings the

paper form and a GPS unit. This information is later input on computer in the office. They are migrating towards an Oracle setup to enter data online. Using this system EPMT puts out reports to the National Parks on exotic plants. To date APCAM has not been intended for use by other agencies.

6. *Jason Giessow (SMSLRWMA)*: Jason described a method for mapping large acreages of an exotic plant (*A. donax*) with minimum resources expended.

Step 1: Acquire orthorectified imagery of infested area.

Step 2: Print maps from this for field survey.

Step 3: Use these maps to outline exotic plant infestation in the field.

Step 4: Transfer map to a clean sheet by tracing.

Step 5: Scan traced images and convert into polygon coverages using GIS software.

Step 6: Georeference each image using GIS software.

Step 7: Merge coverages and clean up.

Step 8: Proof final coverage compared to field survey maps.

Step 9: Distribute data; final GIS coverage and maps available to public at

<http://smslrwma.org>.

This method sets up the information you need to do *A. donax* projects quickly. The final *Arundo* coverage is thought to be accurate to +/- 20% of the actual acreage at that date. If a more accurate acreage is required (eg. for mitigation projects) then ground-based GPSing can be carried out during the actual treatment effort. This ground-based mapping is however, much more expensive and is not generally warranted for large scale mapping projects.

7. *Christy Brigham (Santa Monica Mountain National Recreation Area)*: Christy's organization has completed mapping of their 120,000 acre recreation area. Now they are trying to prioritize, using these maps. They are getting a volunteer effort together to keep the maps up to date.

8. *Meghan Fitch (Anteon Corp.; MCB Camp Pendleton)*: AMEC has built them a geodatabase. They are impressed with the geodatabase system and see the benefits of having these linked databases. Megan said "geodatabases rock!", and now we all want geodatabases.

Discussion: After various presentations it was emphasized, when mapping, to know your objectives. There are many different methods available and your objectives will dictate which method is best for you. These methods have different levels of complexity and money expenditure. For example, TAdN will use the "Giessow Method" for quick recon of an area and WIMS method for more treatment-specific data. When choosing your weed mapping method, try using at least the minimum NAWMA mapping standards. For sharing data one must be very careful with attribute names and what you mean by it. This is important when "cross walking" databases with different fields ("semantics"). The question was raised; how much attribute data do we want? The spatial data can be very minimal and still provide for spread and position data over time for science and research. This is also beneficial for bio-control releases where it's important to show population level effects the cheapest and fastest way. Another question brought up dealt

with mapping infestation levels that change over time. WIMS addresses this issue by taking a GPS point at the infestation location and drawing different polygons around that point representing the population perimeter in different years. This way you can compare that polygon from year to year. At the end a quick poll was taken. Out of 56 people in attendance:

- 10 people were looking for a new system to use.
- 5 people had existing systems not using NAWMA standards.
- 35 people would be interested in a free WIMS workshop/training sponsored by Cal-IPC.