

SYMBOLS.

BRUSH SPECIES

- Af - *Adenostoma fasciculatum*.
- Ad - *Adalphia californica*.
- Ab - *Arcostaphylos bicolor*.
- Ac - *Artemisia californica*.
- Bs - *Baccharis sarothraoides*.
- Bv - *Baccharis viminea*.
- Cb - *Cercocarpus betuloides*.
- Co - *Ceanothus oliganthus*.
- Cve - *Ceanothus verrucosus*.
- Cso - *Ceanothus sorediatus*.
- Ef - *Eriogonum fasciculatum*.
- Qd - *Quercus dumosa*.
- Ri - *Rhus integrifolia*.
- RL - *Rhus laurina*.
- Sa - *Salvia apiana*.
- Sm - *Salvia mellifera*.
- Saa - *Salicornia ambigua*.
- VL - *Viguiera laciniata*.

TREE SPECIES

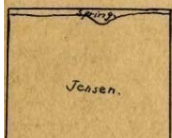
- A - *Quercus agrifolia*.
- E - *Quercus engelmannii* false Pt.
- F - *Populus fremontii*.
- S - *Platanus racemosa*.
- Sx - *Salix* sp.
- Euc - *Eucalyptus* sp.
- Tp - *Pinus torreyana*.
- Phs - *Pinus halipensis*.
- Pcs - *Pinus canaryensis*.

MISCELLANEOUS

- Cu - Cultivated.
- Res - Residential.
- Gr - Grass.
- Mdw - Meadow.
- Ba - Barren.

Mapped by:
H.A. Jensen.
J.B. Spring.

Completed:
Feb. 24, 1931.



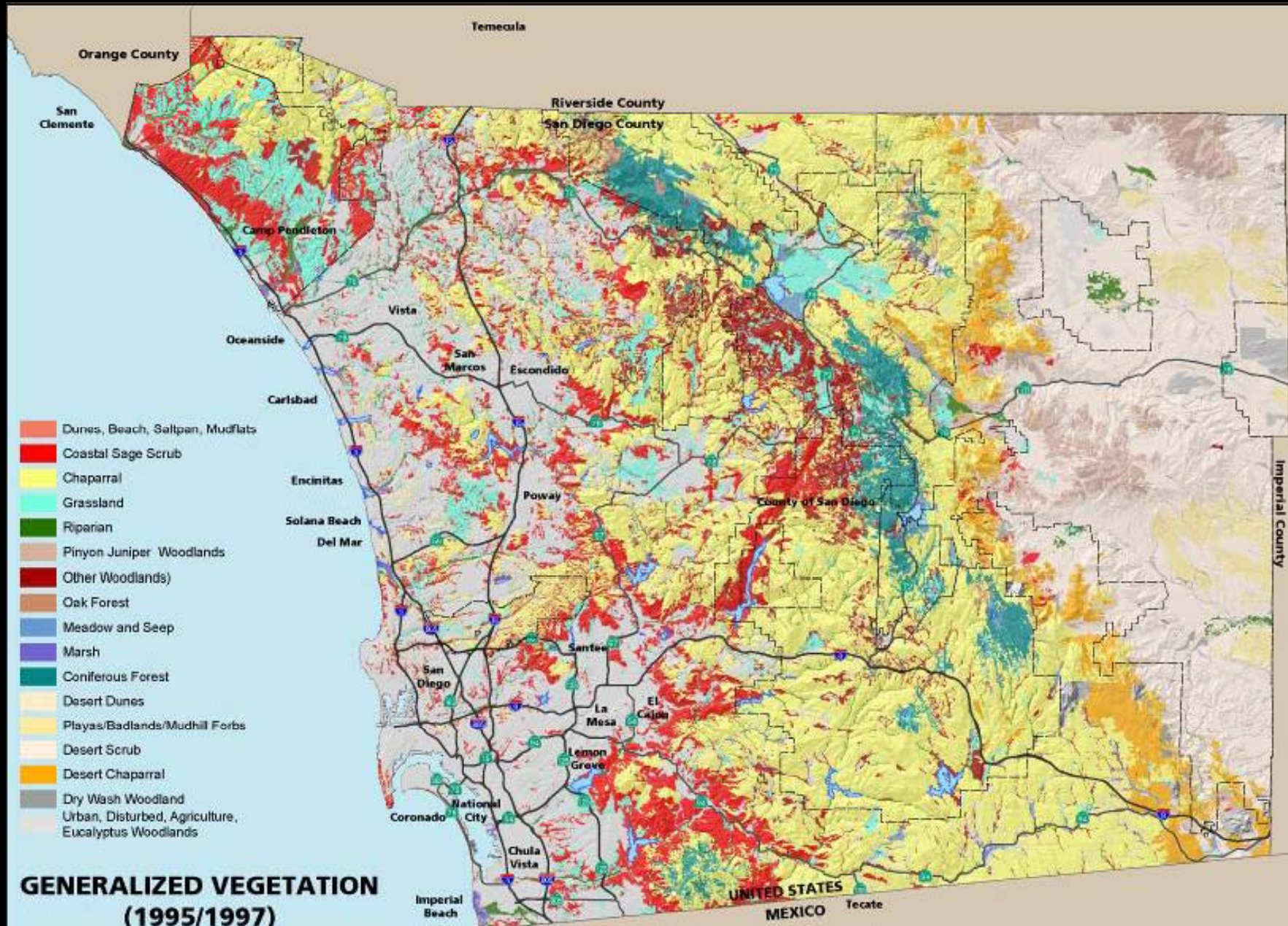
UPDATING WESTERN SAN DIEGO COUNTY VEGETATION AND INVASIVE SPECIES MAPPING

San Diego Mitigation and Monitoring
Program
25 January 2012
2012

Jonathan Dunn

AECOM

SANDAG



**GENERALIZED VEGETATION
(1995/1997)**



Tijuana
Imperial Beach
San Diego
National City
Chula Vista
Coronado
Lemon Grove
La Mesa
El Cajon
Santee
Poway
Escondido
San Marcos
Vista
Carlsbad
Encinitas
Solana Beach
Del Mar
Oceanside
Camp Pendleton
Orange County
Riverside County
San Diego County
Imperial County
Tecate
MEXICO
UNITED STATES

Vegetation Mapping Oversight Committee

- Darren Smith, State Parks
- David Mayer, DFG
- Doug Deutschman, SDSU
- Doug Stow, SDSU
- Clark Winchell, USFWS
- Grace Chung, SANDAG
- Jennifer Buck, CNPS
- John O'Leary, SDSU
- Julie Evens, CNPS
- Patricia Gordon-Reedy, CBI
- Randy Rodriguez, DFG
- Spring Strahm, SDSU
- Thomas Oberbauer, County SD
- Todd Keeler-Wolf, DFG
- Facilitated: Keith Greer, SANDAG

Vegetation Mapping Oversight Committee

- Recommended two phase approach:

Phase 1

The development of a vegetation classification system (VCS) for western San Diego County consistent with the California Manual of Vegetation.

Phase 2

The application of this VCS to create a vegetation map through the photo-interpretation of available aerial imagery and field verification.

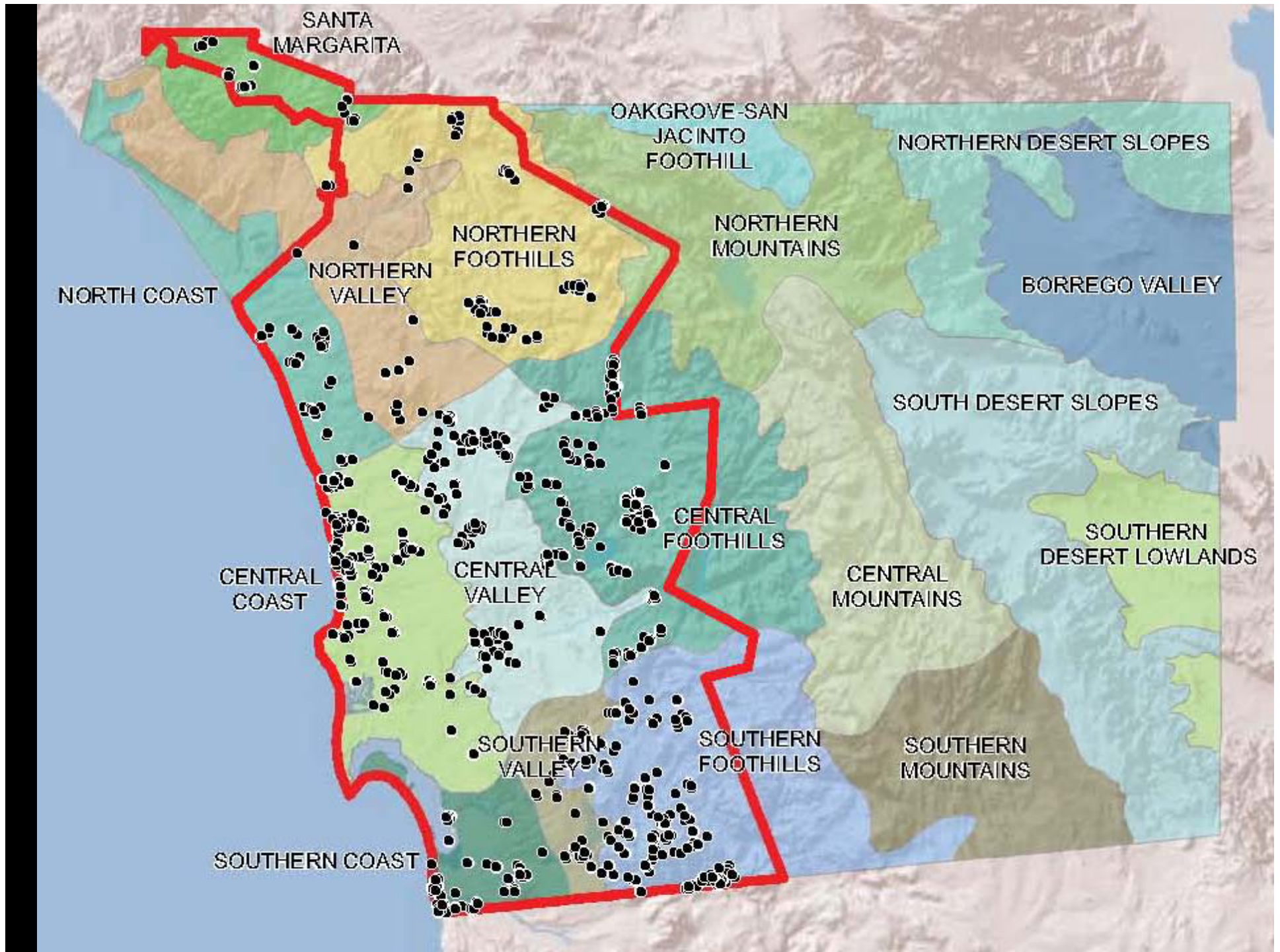


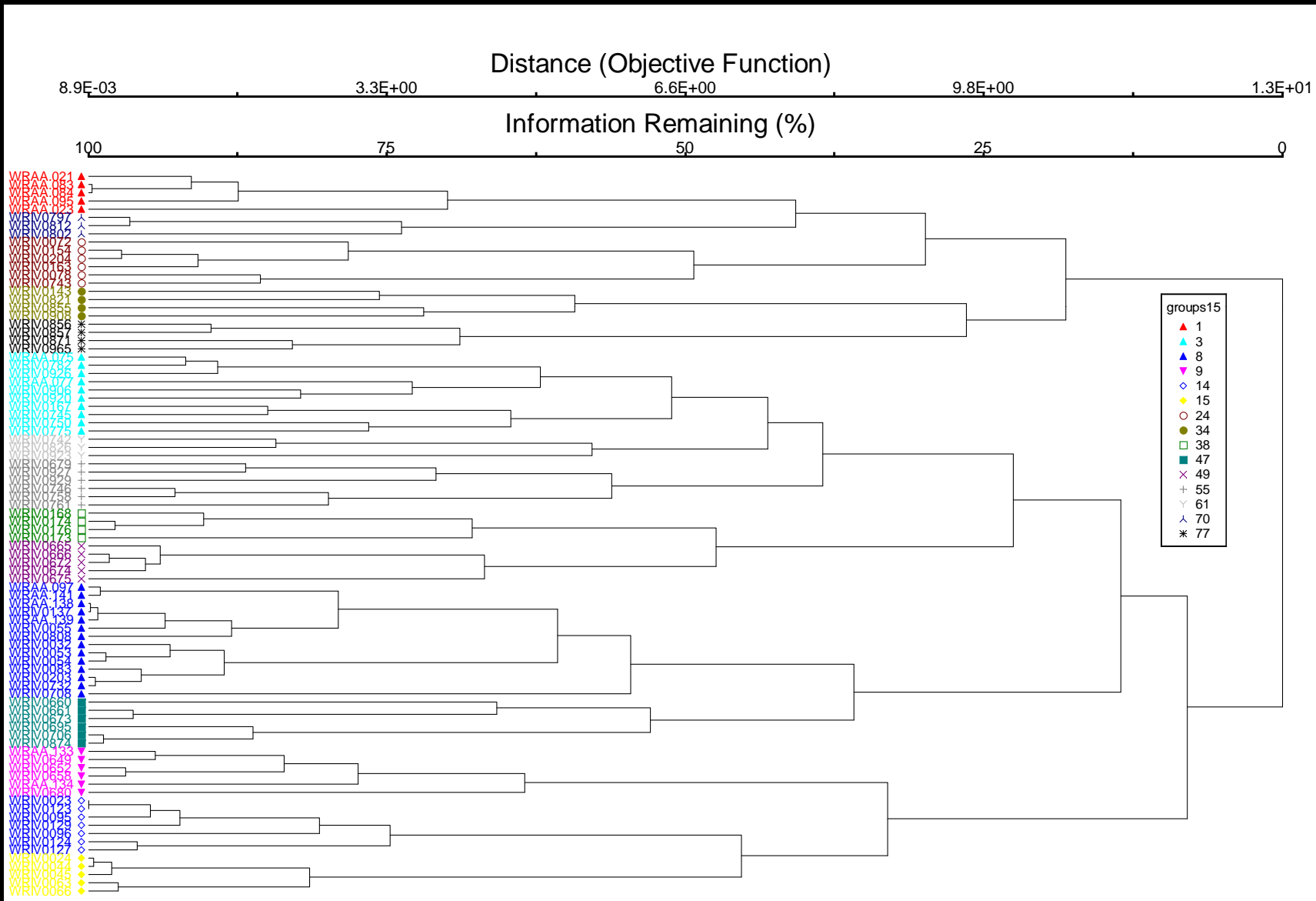
UPDATING WESTERN SAN DIEGO COUNTY VEGETATION AND INVASIVE SPECIES MAPPING

Phase 1:
A New
Vegetation
Classification System









Results and Interpretation

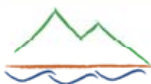
~ 1300 stands

- *72 alliances*
- *102 associations*
- *15 semi-natural stands*
 - *8 special stands*
- (16 new CMV types)

Vegetation Classification Manual for Western San Diego County

February 2011





Quick Links

- [Plant and Animal Species](#)
- [Grant Opportunities](#)

Plant Monitoring

The USGS was contracted to evaluate data collected thus far on covered plant species in the MSCP area and to provide recommendations for an overarching monitoring program design. Several workshops were held to gather additional input from the multiple jurisdictions, agencies, scientists and other interested parties. A draft report was prepared in 2010 and is available below.

- Assessment of Eleven Years of Rare Plant Monitoring Data from the San Diego Multiple Species Conservation Plan ([MP77 McEachern 2010 ElevenYears_plant_analysis.pdf \[1229KB\]](#))

2011 Rare Plant Monitoring Strategy

The USGS and SANDAG have developed a strategy for the regional monitoring of rare plants in the San Diego region to establish regulatory compliance with the adopted regional habitat conservation plans and to inform land managers on the status of rare plants for potential management efforts. The results of the monitoring efforts help to refine adaptive management models, monitoring objectives, and management objectives, as well as further define the general distribution of the species. While it is the intent to apply these protocols (presented in Appendix C) toward a regional effort, the protocols are intended to be flexible enough to be used by individual land managers that wish to contribute information to the regional effort.

- San Diego Rare Plant Monitoring Plan: Fiscal Year 2011 Prepared by: Jeff Tracey, Ph.D, SigmaLogic Consulting Inc., Kathryn McEachern, Ph.D, U.S. Geological Survey, Keith Greer, M.A., San Diego Association of Governments, January 2011 ([FY 11 RARE PLANT MONITORING.pdf \[197 KB\]](#))
- Appendix A through C ([FY 11 RARE PLANT MONITORING appendixA-C.pdf \[1874KB\]](#))

Vegetation Classification and Mapping

The new Vegetation Classification Manual for Western San Diego County is now available. The classification is the result of a detailed analysis of data collected throughout the western San Diego County study area. Under contract to the San Diego Association of Governments (SANDAG), Biologists from AECOM, Conservation Biology Institute, and the California Department of Fish and Game (CDFG) Vegetation Classification and Mapping Program (VegCAMP) collaborated on the analyses, definition of the classifications, and preparation of the manual. A new vegetation map of conserved lands in San Diego County will be produced using the new classification and will be available in 2012.

- Vegetation Classification Manual ([Vegetation Classification Manual for Western San Diego County.pdf \[29033KB\]](#)).
- Stand Summary Data ([Supporting Data/Stand Summary Data.pdf \[902KB\]](#))
- Electronic key for 2007 MS Access users ([Western SD Veg Key.accde \[9072KB\]](#)) with README file ([README.txt \[3KB\]](#))



BDB PROGRAMS

- ACE-II
- BIOS
- Vegetation Classification and Mapping Program
- CNDDDB
- CWHR
- GIS Services
- Data Products
- Support
- About BDB
- Staff
- Partners

VegCAMP Links

- Vegetation Classification Reports & Maps
- Vegetation Publications & Protocols
- Natural Communities
- Vegetation-related Links

Vegetation Classification Reports and Maps

Vegetation Classification Reports

[Northern Sierra Nevada Foothills Vegetation Project: Vegetation Mapping Report](#) [PDF] (5.6 mb)

[Northern Sierra Nevada Foothills – Volume 1 \(Introduction, Methods, and Results\)](#) [PDF] (2.2 mb)

[Northern Sierra Nevada Foothills – Volume 2 \(Vegetation Descriptions\)](#) [PDF] (2.5 mb)

[Golden Gate National Recreation Area and Point Reyes National Seashore](#) [PDF] (1.4 mb)

[Suisun Marsh](#) [DOC] (370 kb)

[Suisun Marsh Change Detection 2003](#) [PDF] (1.1 mb)

[Sacramento-San Joaquin River Delta](#) [PDF] (4.3 mb)

[Clear Creek Management Area, Joaquin Ridge, Monocline Ridge and Environs, San Benito and Fresno Counties](#) [PDF] (4.3 mb)

[Central Mojave](#) [PDF] (5.5 mb)

[Santa Monica Mountains National Recreation Area](#) [PDF] (3.6 mb)

[Western Riverside County](#) [PDF] (1.5 mb)

[Anza-Borrego Desert State Park](#) [PDF] (3.5 mb)

[Vegetation Classification Manual for Western San Diego County part 1](#) [PDF] (28 mb)

[Vegetation Classification Manual for Western San Diego County part 2 Stand Data](#) [PDF] (1 mb)



UPDATING WESTERN SAN DIEGO COUNTY VEGETATION AND INVASIVE SPECIES MAPPING

Phase 2:
CREATING
THE
VEGETATION
MAP

Vegetation Mapping Strategy

Botanists – Primary Mappers

1. Vicinity reconnaissance with GIS field computer
 - Identify vegetation types – place points
 - Place limited number of “break lines”
2. Continue line drawing in office environment
 - Extrapolate out from recon areas
 - Utilize Rapid Assessment data points
3. Return to field verify to level of confidence



AECOM Vegetation Mapping Team

Botanists –

Primary Mappers

- Tom Oberbauer
- Fred Sproul
- Jonathan Dunn
- Lance Woolley
- Kyle Harper

GIS Staff –

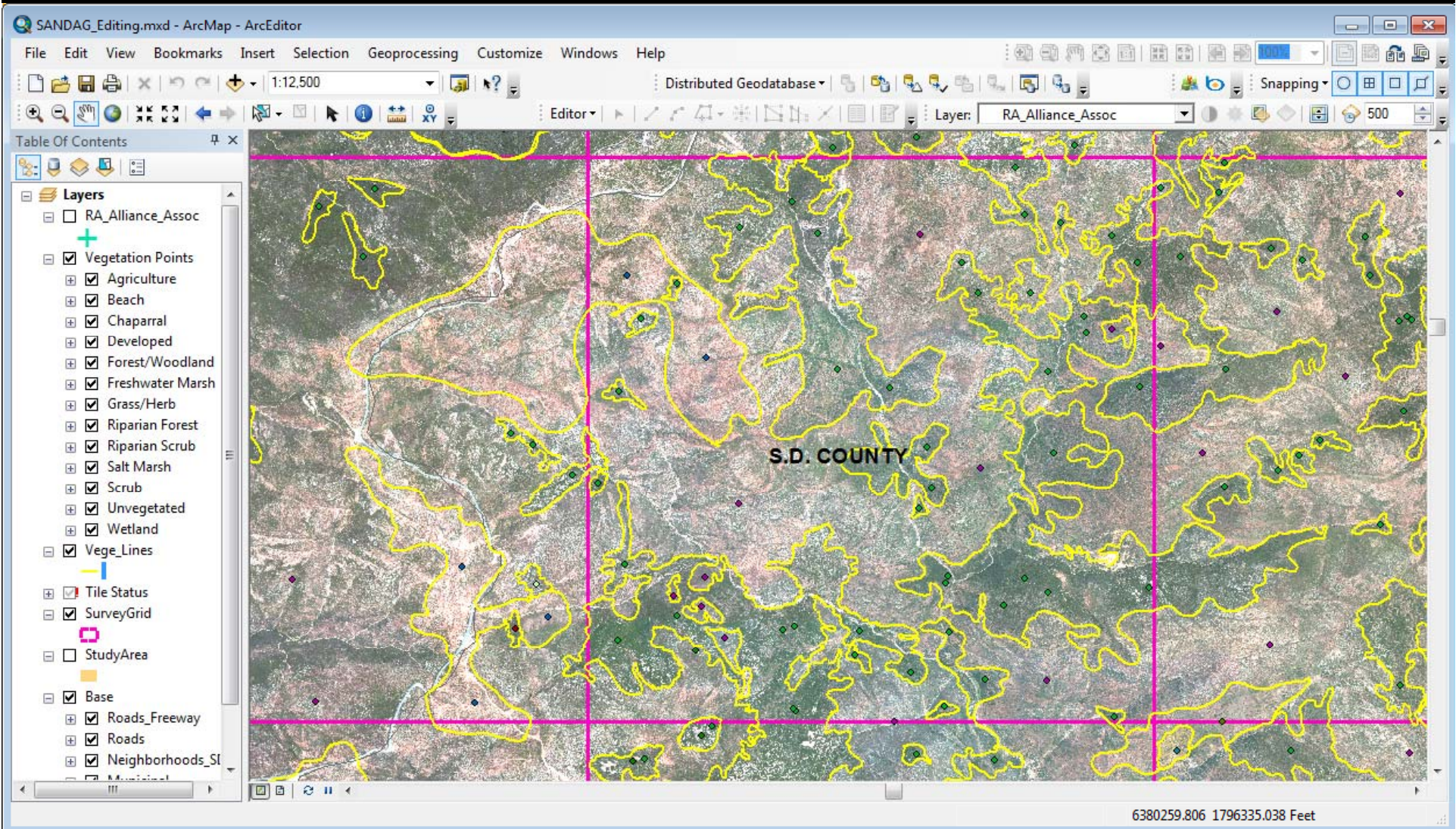
Support and Geoprocessing

- Matt Palavido
- Brad Stein

Vegetation Mapping Strategy

GIS Staff – Support and Geoprocessing

- Manage data
 - Arc SDE data check-out and synchronization
 - Convert botanist's "line work" into polygons and join attributes



Vegetation Mapping

Current Status

- Line work and field verification ongoing
 - Facilitated by land managers
- On-schedule for completion – June 2012



INVASIVE SPECIES MAPPING

Update
Invasive Species
Distributions in Format
Suitable for Regional
Planning Efforts

Invasive Species Mapping Strategy

1. Compile existing distribution data
2. Define vector grid
3. Office mapping
 - Species identifiable through the interpretation of aerial photographs
 - Utilize Rapid Assessment data points
4. Field mapping
 1. Assess the accuracy of the office-mapping
 2. Map species not detectable through photo-interpretation.

Invasive Species Mapping Strategy

Rational for vector grid vs. polygon mapping

- Suitable for species tracking at regional scale
- More suitable computational analyses
- Cost

Define vector grid

- Based on the historic Public Land Survey System (Bird Atlas / Plant Atlas)
- Primary grid resolution 10 acres (square of 660 feet on a side - 1/64 of a section)
- Secondary grid resolution 0.1 acre

Invasive Species Mapping Strategy

Office mapping

- Conduct heads up digitizing through photo-interpretation
- Use Bing Bird's Eye and Google to assist

Invasive Species Mapping Strategy

Cover Classes (adopted from VCMWSD)

1. Species with $\geq 75\%$ relative cover [Strongly dominant]
2. Species with $\geq 50\%$ and $<75\%$ relative cover [Dominant]
3. Species with $\geq 30\%$ and $<50\%$ relative cover [Codominant]
4. Species with $\geq 30\%$ and $<50\%$ relative cover [Subdominant]
5. Species with $\geq 5\%$ and $<30\%$ relative cover [Sparse]
6. Species with $< 5\%$ relative cover [Trace]

Invasive Species Mapping Strategy

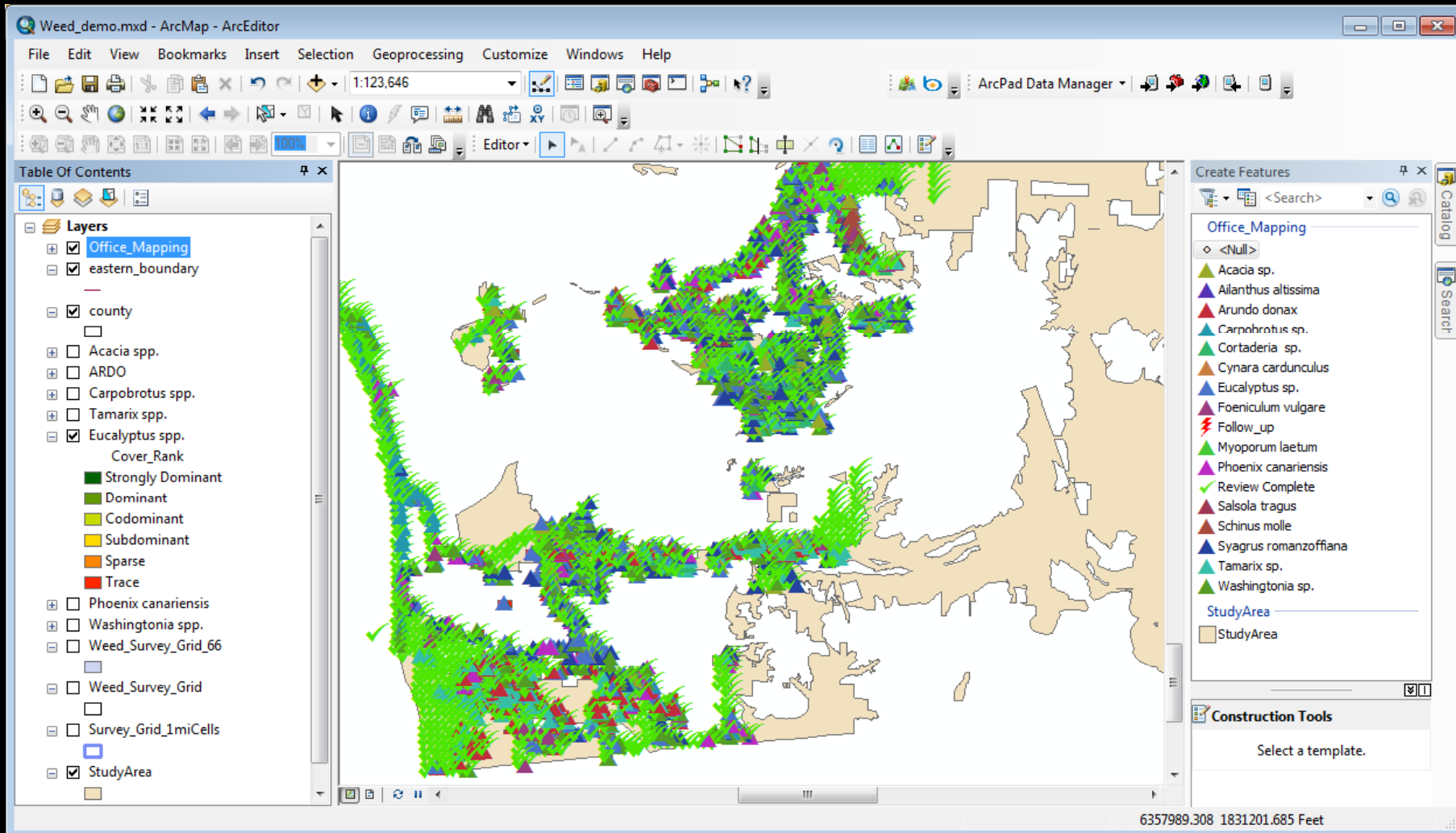
Cover Distribution(adopted from VCMWSD)

1. Species with $\geq 30\%$ and $<50\%$ relative cover [Continuous]
2. Species with $\geq 33\%$ and $<66\%$ relative cover [Intermittent]
3. Species with $\geq 5\%$ and $<33\%$ relative cover [Open]

Invasive Species Mapping Strategy

Field mapping

- Prioritize field survey extents
- Watershed
- Proximity to preserves
- Native habitat value
- Routes of invasive plant establishment (drainages, roads, etc.)
- Weed management priorities



Invasive Species Mapping

Current Status

- Office mapping - ongoing
- Field mapping - defining sampling strategy
 - Input from land managers
- On-schedule for completion – June 2012

