WHAT IS THE SOD-BLITZ PROGRAM?

A collaboration between UC and local organizers to train volunteers to identify SOD symptoms, survey, and collect SOD samples throughout California

Matteo Garbelotto

UCB Forest Pathology and Mycology Lab

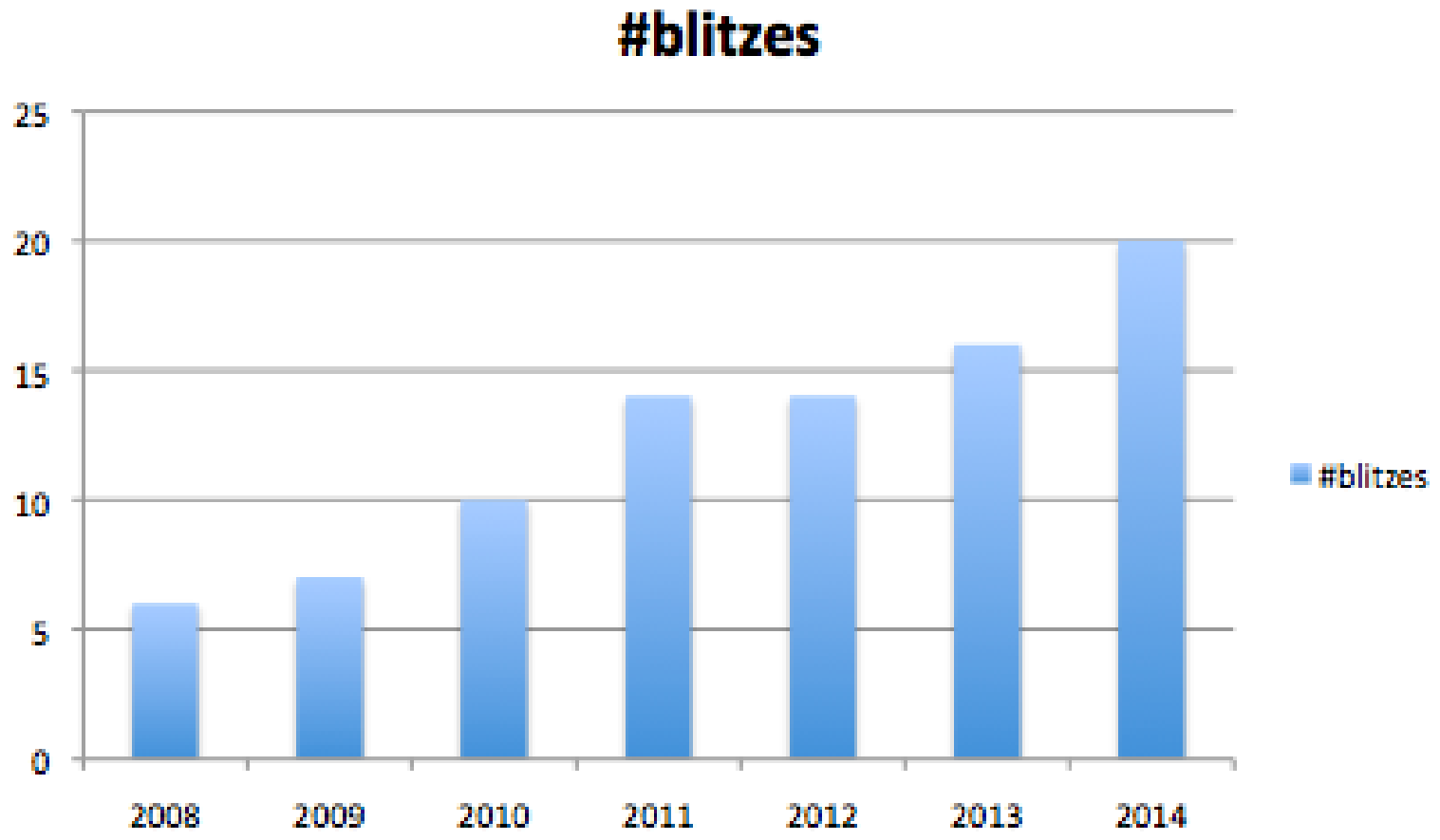
What are the goals of SOD Blitzes?

- To identify new infestations
- To determine position of infected trees in local neighborhoods
- To provide data needed to estimate disease severity and to **update** SODmap and SODmap mobile, two tools to inform the public about SOD risk in any given area

Suggested surveying approaches

- Sample extensively an area, collecting at distances of 50-100 m, to cover more acreage (suggested since 2008)

- Sample intensively at distances of 5-10 m, to identify trees that may play a key role in spreading SOD (since 2014)


#blitzes
25
20
15
10
5
0
2008
2009
2010
2011
2012
2013
2014
#blitzes

SOD BLITZES
Communities Coming Together in the Fight Against
Sudden Oak Death

2014 SOD BLITZES and ORGANIZERS

o April 5, 10 am, Santa Lucia Preserve, Blitz for residents

o April 11, 7 pm, Santa Cruz, UCSC Arboretum, 1156 High St, Santa Cruz, CA Map Link Brett Hall - brett@ucsc.edu

o April 12, 10 am, South Skyline, Saratoga Summit Forestry and Fire Protection (CalFire) CDF fire station, Jane Manning - skyline_sod@yahoo.com

o April 18, 7 pm, Mendocino, Fort Bragg, CA Dept. of Fish & Wildlife conference room, 32330 North Harbor Drive, Fort Bragg, CA, Lori Hubbart - lorih@mcn.org

o April 19, 10 am, Mendocino, Gualala, North Gualala Water Company, meeting room, 38958 Cypress Way, Gualala, CA Lori Hubbart - lorih@mcn.org

o April 19, Sonoma, four locations to choose from, Lisa Bell - lkbell@ucanr.edu

Sebastopol 9-10 AM, Sebastopol Center for the Arts, 282 South High Street, Sebastopol, CA Map Link

Santa Rosa 9-10 AM, Spring Lake Park Environmental Discovery Center, 5585 Newanga Ave, Santa Rosa, CA Map Link

Cloverdale 11-12 AM, Cloverdale Historical Society, 215 N. Cloverdale Blvd, Cloverdale, CA Map Link

Sonoma, 9-10 AM, Sonoma Community Center, 276 East Napa Street, Sonoma, CA Map Link

o April 26, 10 am, Marin, San Rafael - Dominican University, Joseph R Fink Science Center, San Rafael, CA Wolfgang Schweigkofler - wolfgang.schweigkofler@dominican.edu & Kristin Jacob - kristinjakob@att.net

o April 26, 1 pm, San Mateo, Burlingame Hills, 120 Tiptoe Lane (off Canyon Rd.), Burlingame, CA Steve Epstein - steve@burlingamehills.org

o May 3, 10 am, Monterey County, Garland Ranch Regional Park Museum Visitors Center, Carmel, CA Kerri Frangioso - kfrangioso@ucdavis.edu & Brian LeNeve - bjleneve@att.net

o May 10, 10 am, Contra Costa County, Orinda Public Library, 26 Orinda Way, Orinda, CA William Hudson - wilhh@ymail.com

o May 10, 1 pm, Alameda County, 159 Mulford Hall, UC Campus, Berkeley, CA, RSVP at: Eventzilla Sign up. For more info: Susan Schwartz - fScreeks at gmail dot com

o May 16, 7 pm, San Luis Obispo, SLO County Department of Agriculture, 2156 Sierra Way, San Luis Obispo, CA Lauren Brown - lbrown805@charter.net

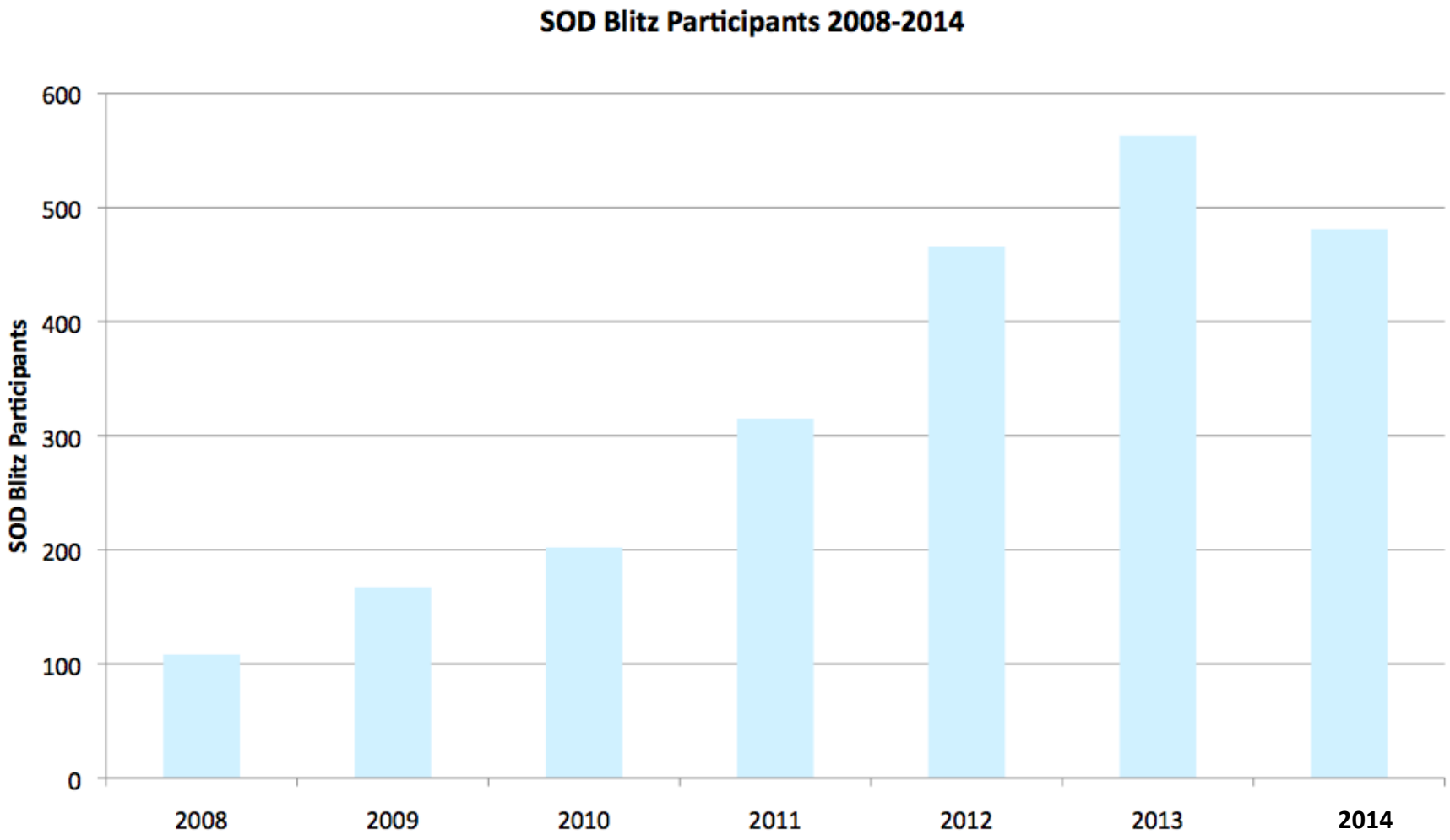
o May 17, 10 am, San Mateo-Santa Clara, Woodside-Portola Valley/Emerald Hills/San Carlos/Atherton, Woodside Town Hall, 2955 Woodside Road, Woodside, CA Debbie Mendelson - sodblitz@gmail.com

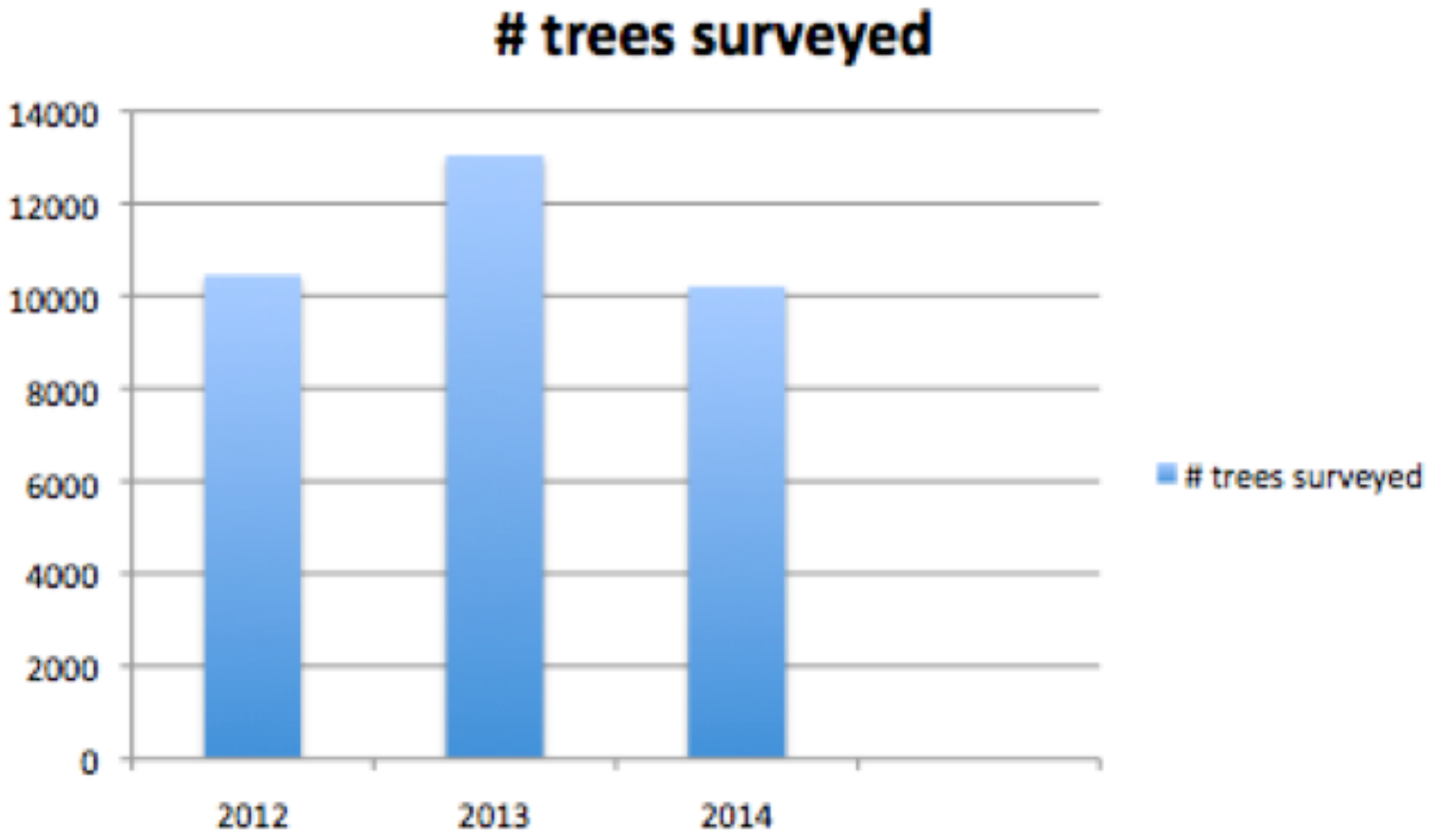
o May 18, 10 am, Santa Clara, Montalvo-Saratoga-Los Gatos, Montalvo Arts Center, 15400 Montalvo Road, Saratoga, CA Kelly Sicat - KSicat@montalvoarts.org

o May 22, 9:30am, San Francisco, County Fair Building Golden Gate Park, San Francisco, CA Eric Anderson - eric.anderson@sfgov.org

o May 24, 10 am, Santa Clara, Los Altos Hills, Los Altos Hills Town Hall, 26379 Fremont Road Los Altos Hills, CA Sue Welch - sodblitz09@earthlink.net

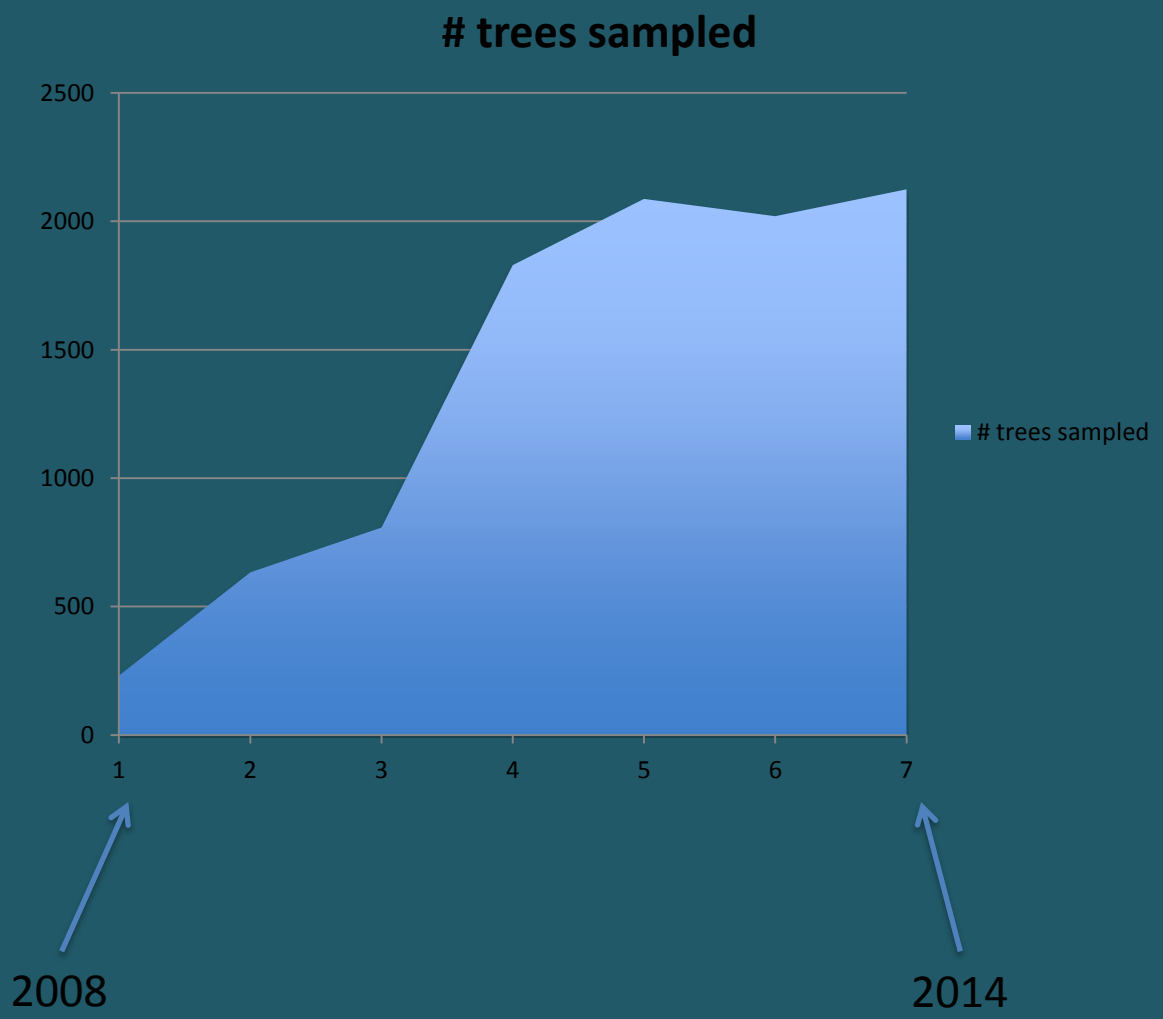
o May 31, 10 am, Napa, UCCE Meeting Room, 1710 Soscol Avenue, Napa, CA Bill Pramuk - info@billpramuk.com


SOD Blitz Participants 2008-2014
SOD Blitz Participants
600
500
400
300
200
100
0
2008
2009
2010
2011
2012
2013
2014

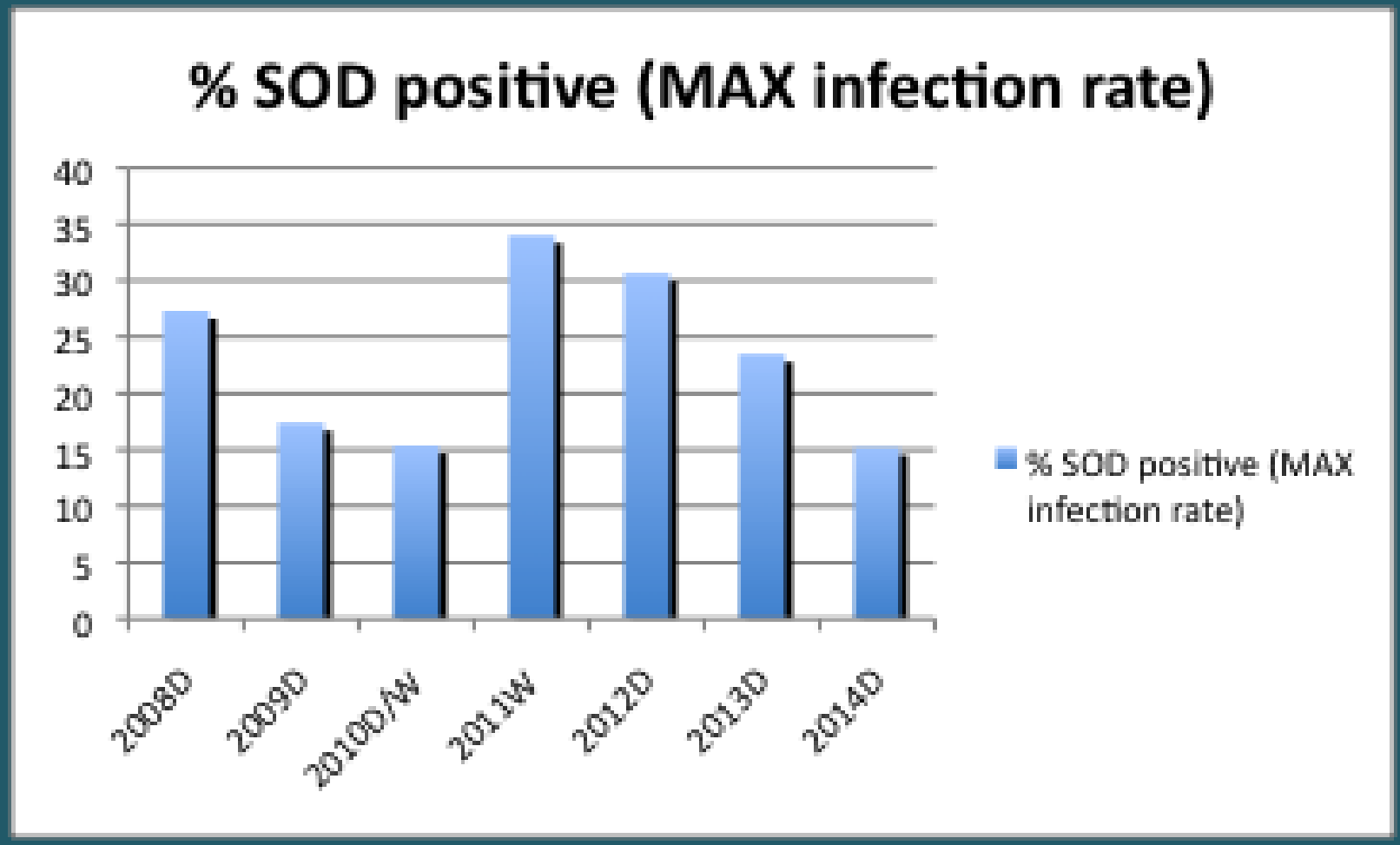


Metric not available before 2012

Number of trees sampled in 7 years of SOD blitzes



Average % positives decreases progressively with each additional dry year



Berkeley College of Natural Resources — Environmental Science, Policy, and Management

Search this website... Go

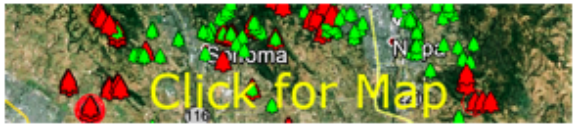
UC BERKELEY FOREST PATHOLOGY AND MYCOLOGY LAB

Home | Featured | Treatment & Diagnosis | Contact | Publications | Blog | English | September 21, 2014

You are here: Home / SOD Blitz 2014 Results

SOD Blitz 2014 Results

SOD Blitz 2014-2008 Google Earth Map Overlay



Download and install Google Earth here LINK

SOD Blitz 2014 Results Summary

Location	Surveyed Trees	Symptomatic Surveyed Trees %	Sampled Trees	SOD Positive Sampled Trees %	Estimated True Infection Rate %
Big Sur	270	30.4	218	14.2	4.3
Carmel	645	45.0	250	23.6	10.6
East Bay-South	43	18.6	4	0.0	0.0
East Bay-East	382	48.4	90	10.0	4.8
East Bay-West	1306	14.6	204	16.2	2.4
Marin	172	12.2	24	208	2.5
Mendocino	406	14.0	42	2.4	0.3
Napa	906	3.4	36	0	0.0
Peninsula-North	66	65.2	32	71.9	46.8
Peninsula-South	535	33.1	162	27.2	9.0
Peninsula-East	652	21.6	196	2.6	0.6
Peninsula-West	1196	20.7	203	22.7	4.7
San Francisco	1196	58.9	104	1.9	1.1
San Luis Obisbo	210	20.0	56	0.0	0.00
Santa Cruz	560	71.4	52	19.2	13.7
Sierra	1	0.0	1	0.0	0.0
Sonoma-North	67	16.4	13	0.0	0.0
Sonoma-East	975	29.9	305	23.3	7.0
Sonoma-West	612	21.4	133	33.1	7.1
Total=	10200	28.7	2125	15.2	5.4

Total number of SOD Blitz participants = 514

Link to 2013 SOD Blitz Results

Link to Results from Previous SOD Blitz Years 2012-2008

SOD Blitz 2014-2008 Results Excel File

Featured

SOD in the Montesclaros Declaration

PCR Testing for Sudden Oak Death

Heterobasidion: A Disposition of Two North American Species

Tracks of an Oak Killer

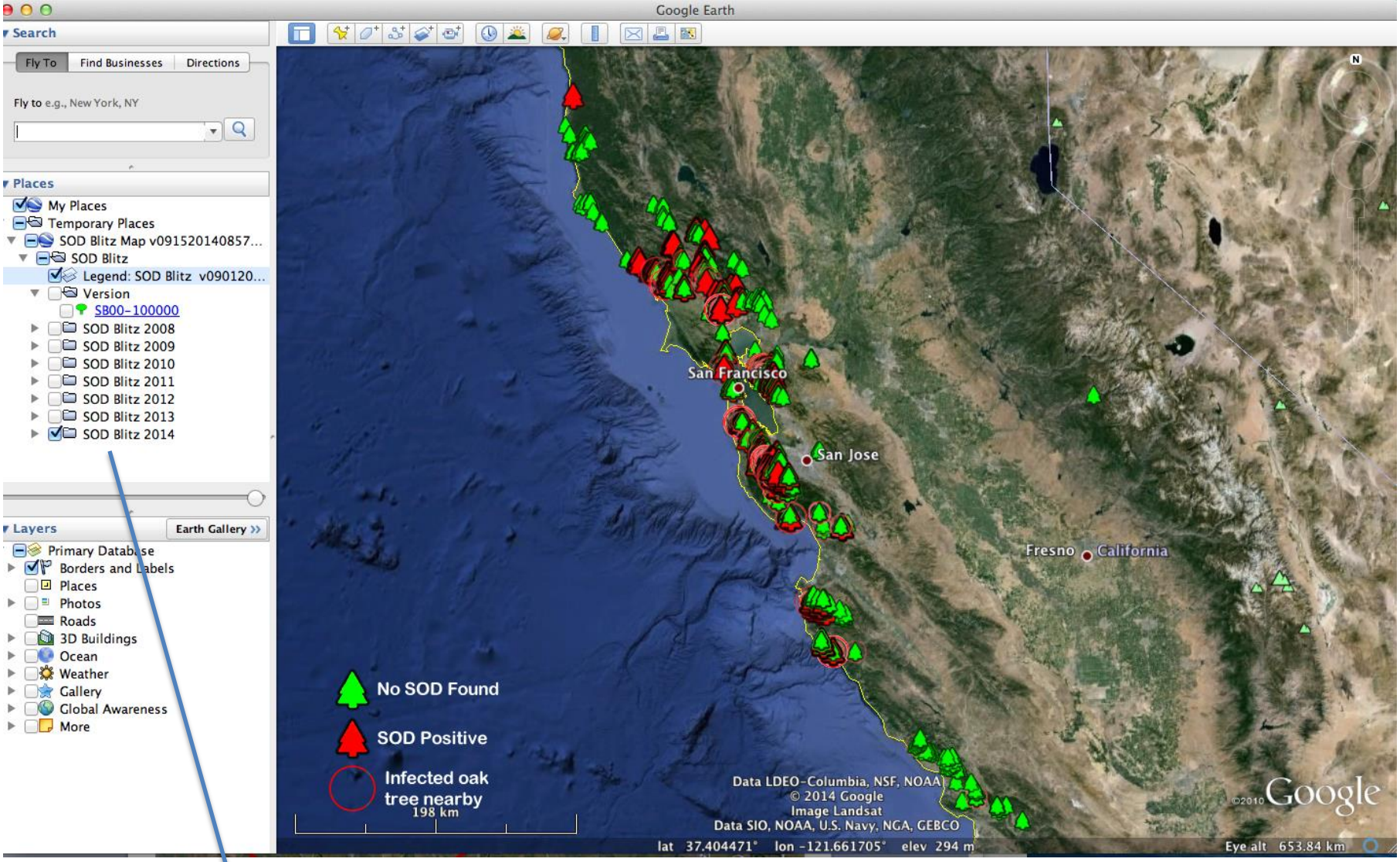
Podcast: Overview of SOD in California 2013

www.sodblitz.org

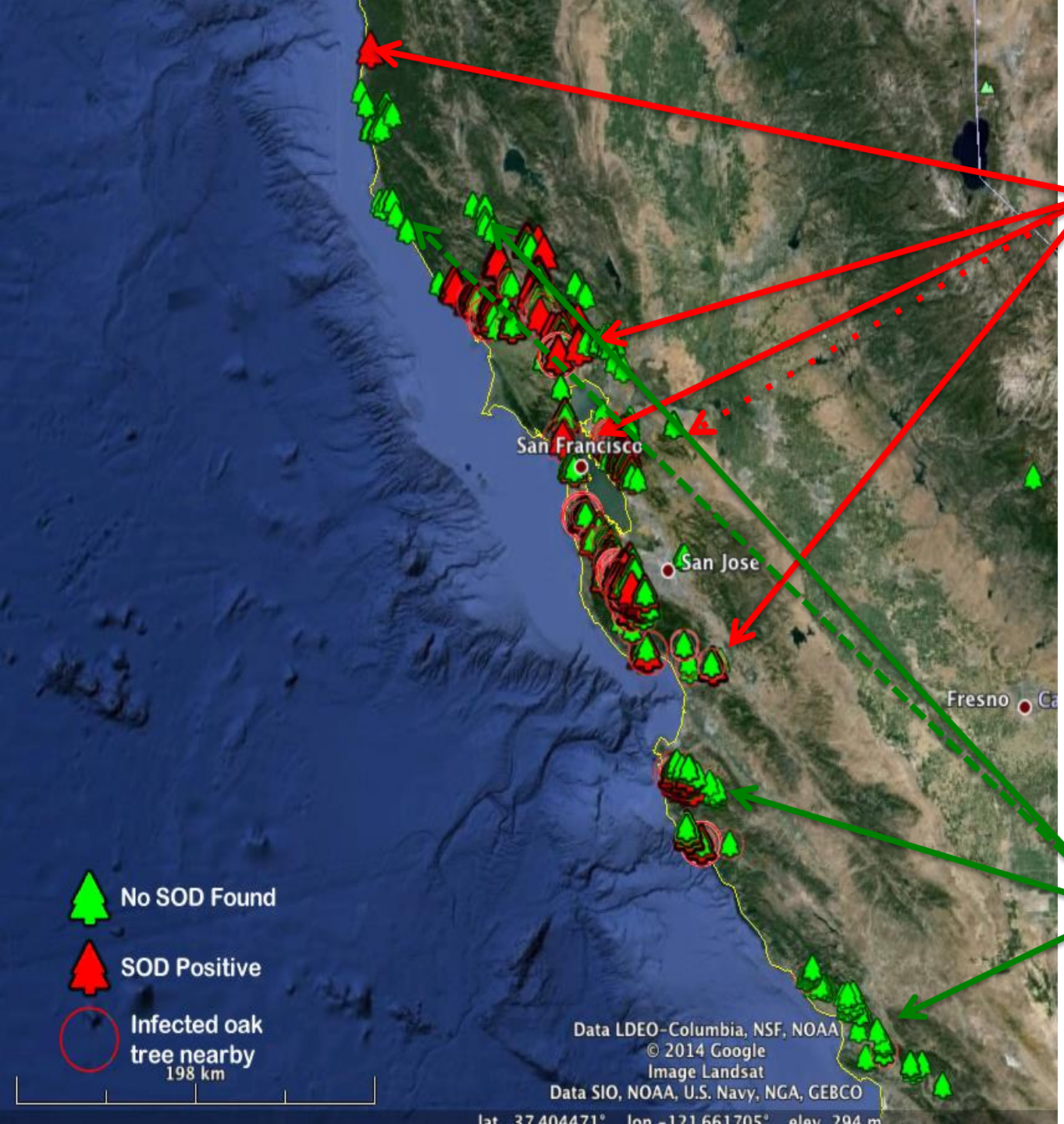
Download Google Earth Map Of 2014 Blitz results

Summary table, now dynamic and by smaller, more homogeneous areas

Download Excel file to help Collectors find their samples



SOD Blitzes 2014, Fort Bragg to San Luis Obispo, Gualala to Yosemite
Should open with 2014 data only: use sidebar on left to toggle on/off other years



Important outbreaks

Notable SOD-negative

How to interpret results?

- Expectation is that SOD epidemic should decrease with drought: e.g. number of infected bay trees will go down
- This effect should be stronger where disease has arrived more recently (e.g. North Sonoma, South Mendocino, Carmel Valley Village), where it is hotter (e.g. oak woodlands vs. redwood stands), where it is more urban (Napa)
- Uncertainty (e.g. dashed lines) due to possibility of having missed positive trees, and to error rate in assay (higher with drought: approx. 7% false negative)
- For disease control: sampling has to be intensive and positives 20% or less. Then, one may consider removal of positive small to medium sized bays, if not on river bank or on steep slope

Novel findings and novelties of 2014 SOD blitzes

- Data presented by geographic area not by blitz (e.g. summaries presented for smaller and more homogeneous areas)
- San Luis Obispo still negative, great monitoring network has been set up
- Eastern Carmel valley sampled for the first time and negative
- New infestations discovered in Presidio National Park (San Francisco) and eastern Santa Cruz County
- North Berkeley, North Peninsula, Marin, Western Sonoma, Southern Sonoma, Golden Gate Park (SF), Parts of Santa Cruz Mountains have significant outbreaks even in dry conditions. Confirmed oak infection in East Bay
- Identified many areas where disease incidence has gone down significantly and disease control may be easier: Central Sonoma, SF Peninsula, Carmel Valley, Orinda-Moraga
- In a few areas SOD not found where it previously had been found, but often sampling limited: Northern Sonoma, Carmel Valley, Montclair (Oakland)
- NON Blitz new findings will be presented later in the presentation

SOD Blitz 2014 Results Summary

Location	Surveyed Trees	Symptomatic Surveyed Trees %	Sampled Trees	SOD Positive Sampled Trees %	Estimated True Infection Rate %
Big Sur	270	30.4	218	14.2	4.3
Carmel	645	45.0	250	23.6	10.6
East Bay-South	43	18.6	4	0.0	0.0
East Bay-East	382	48.4	90	10.0	4.8
East Bay-West	1306	14.6	204	16.2	2.4
Marin	172	12.2	24	208	2.5
Mendocino	406	14.0	42	2.4	0.3
Napa	906	3.4	36	0	0.0
Peninsula-North	66	65.2	32	71.9	46.8
Peninsula-South	535	33.1	162	27.2	9.0
Peninsula-East	652	21.6	196	2.6	0.6
Peninsula-West	1196	20.7	203	22.7	4.7
San Francisco	1196	58.9	104	1.9	1.1
San Luis Obisbo	210	20.0	56	0.0	0.00
Santa Cruz	560	71.4	52	19.2	13.7
Sierra	1	0.0	1	0.0	0.0
Sonoma-North	67	16.4	13	0.0	0.0
Sonoma-East	975	29.9	305	23.3	7.0
Sonoma-West	612	21.4	133	33.1	7.1
Total=	10200	28.7	2125	15.2	5.4

Total number of SOD Blitz participants = 514

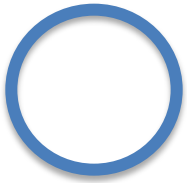
SOD Blitz 2013 Results Summary

Location	Surveyed Trees	Symptomatic Surveyed Trees %	Sampled Trees	SOD Positive Sampled Trees %	Estimated True Infection Rate %
Big Sur					na
Carmel	962	39.5	195	17.9	7.1
East Bay-South	78	66.7	40	0.0	0.0
East Bay-East	582	33.0	229	13.5	4.5
East Bay-West	2007	31.2	565	14.5	4.5
Marin	983	65.8	91	39.6	26.0
Mendocino	559	17.0	72	6.9	1.2
Napa	949	17.3	66	6.1	1.0
Peninsula-North	132	40.2	52	23.1	9.3
Peninsula-South	879	53.7	173	55.5	29.8
Peninsula-East	694	28.5	219	3.2	0.9
Peninsula-West	1300	30.6	329	22.2	6.8
San Francisco	576	25.3	109	108	0.5
San Luis Obisbo	872	17.5	123	0.0	0.0
Santa Cruz	632	28.6	62	54.8	15.7
Sierra					na
Sonoma-North	68	13.2	26	11.5	1.5
Sonoma-East	1080	18.9	177	26.0	4.9
Sonoma-West	684	19.4	44	13.6	2.7
Total=	13037	32.1	2572	18.3	5.8

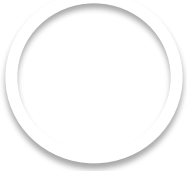
Total number of SOD Blitz participants = 563

In general a reduction, or slight increase in areas that are cool. When increase is high there was a significant change in sampling effort, either in size or location wise

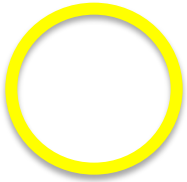
Key to interpret following slides



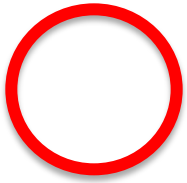
SOD was once found there, but apparently absent in 2014



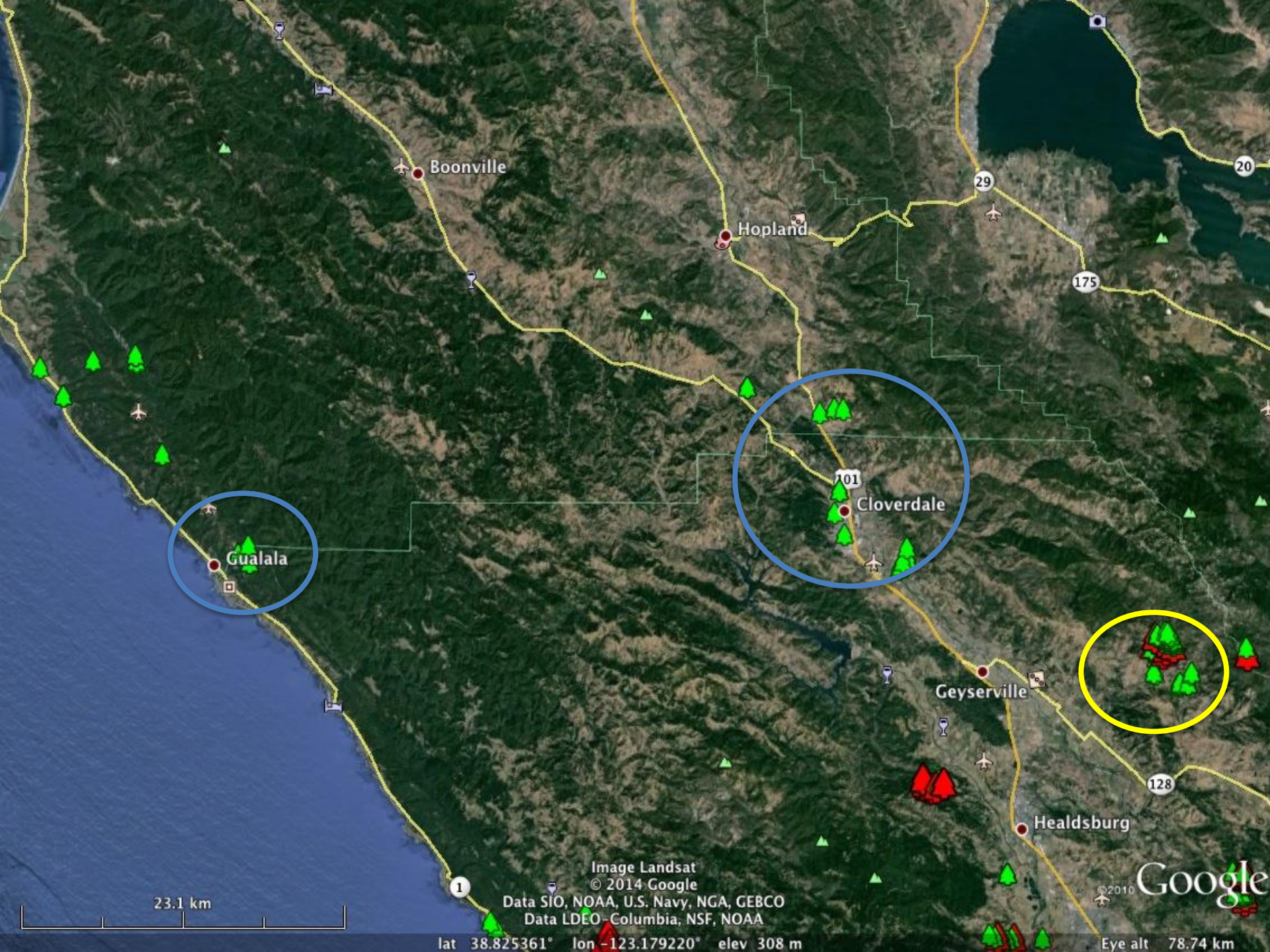
SOD levels appear to be constant (remained high or low as previously)

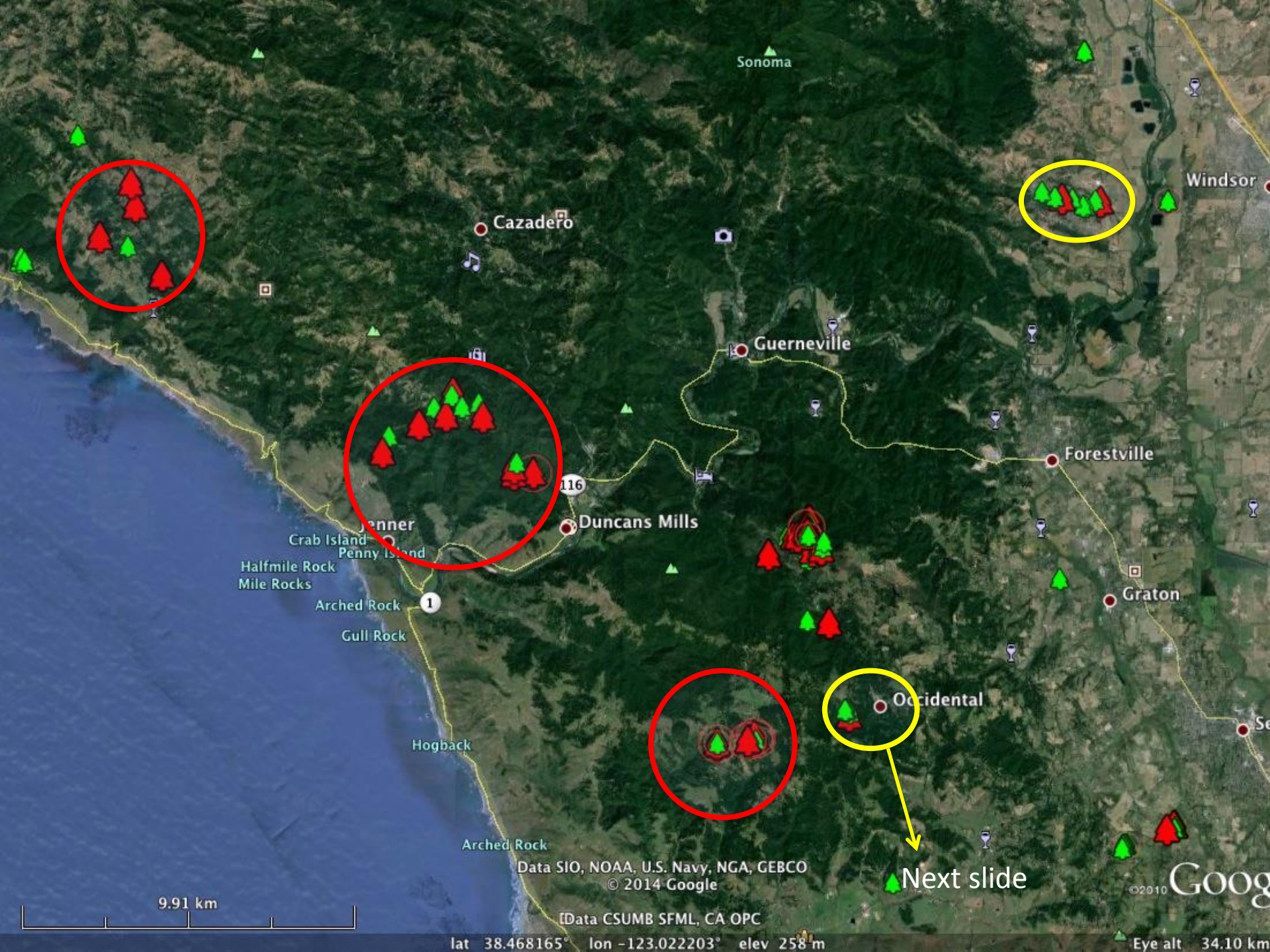


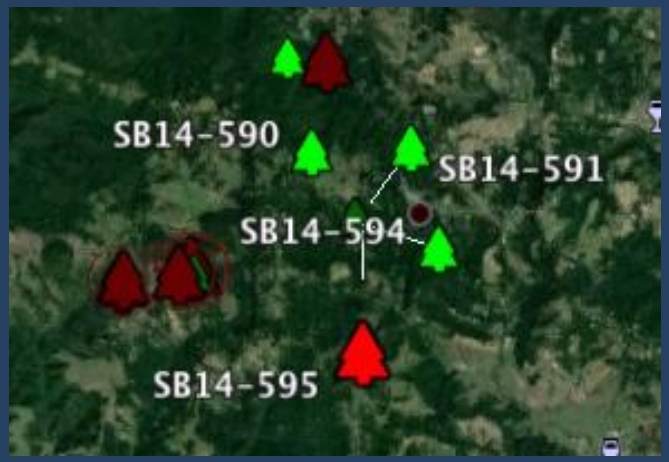
SOD levels decreased and sampling was intensive enough



SOD levels notably high


Boonville
Hopland
Cloverdale
Gualala
Geyserville
Healdsburg
101
29
20
175
128
1
23.1 km
Image Landsat
© 2014 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Data LDEO-Columbia, NSF, NOAA
lat 38.825361° lon -123.179220° elev 308 m
Eye alt 78.74 km
2010 Google

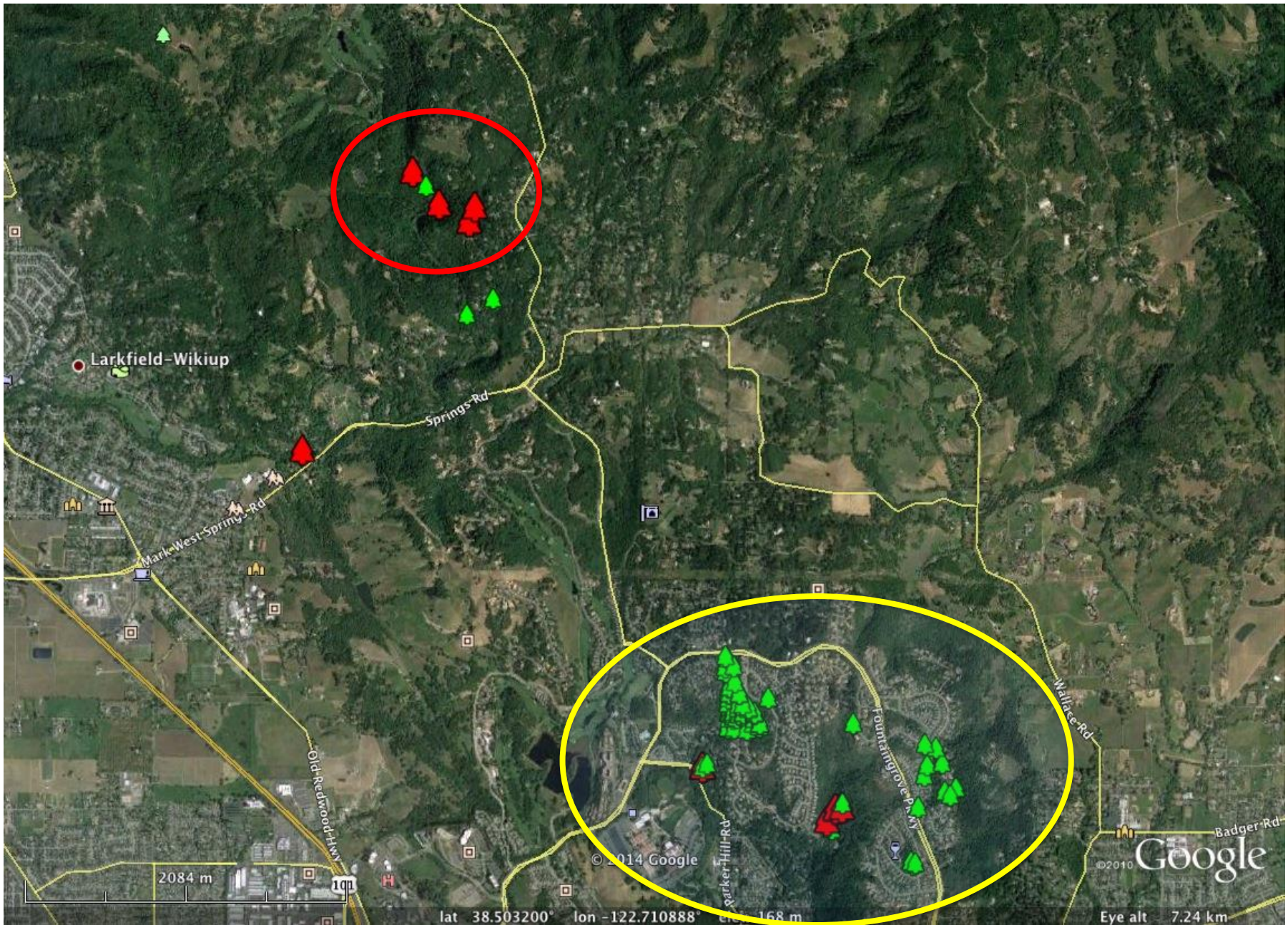

Sonoma
Windsor
Cazadero
Guerneville
Forestville
116
Duncans Mills
Crab Island
Halfmile Rock
Mile Rocks
Arched Rock
Gull Rock
1
Graton
Occidental
Hogback
Arched Rock
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2014 Google
Next slide
9.91 km
Data CSUMB SFML, CA OPC
lat 38.468165° lon -123.022203° elev 258 m
Eye alt 34.10 km



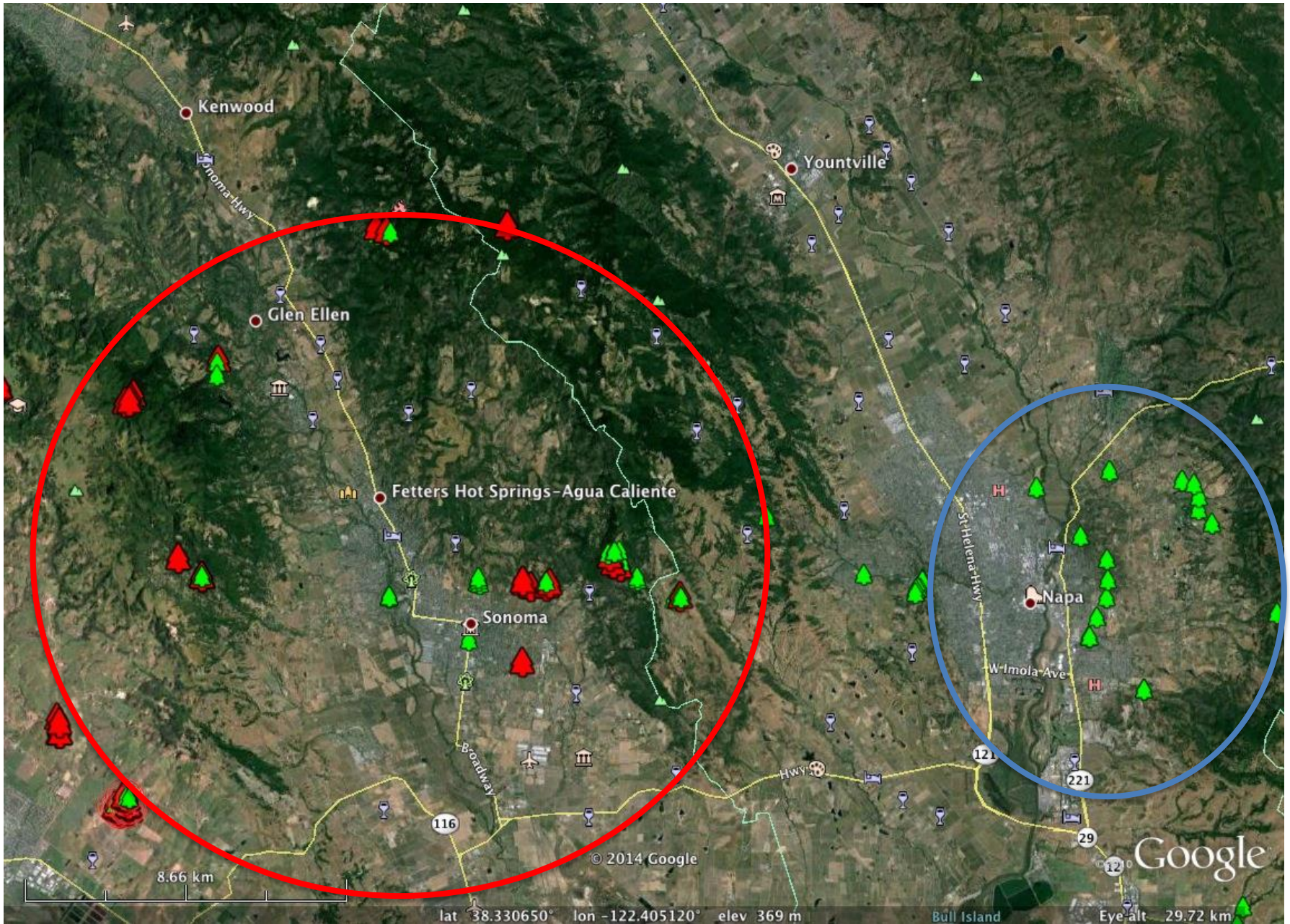
Spiderfy view of site near Occidental (Sonoma) where:

1)- sampling was performed intensively
2)- only one positive was found
3)- removal of positive tree may be beneficial if performed before wet season

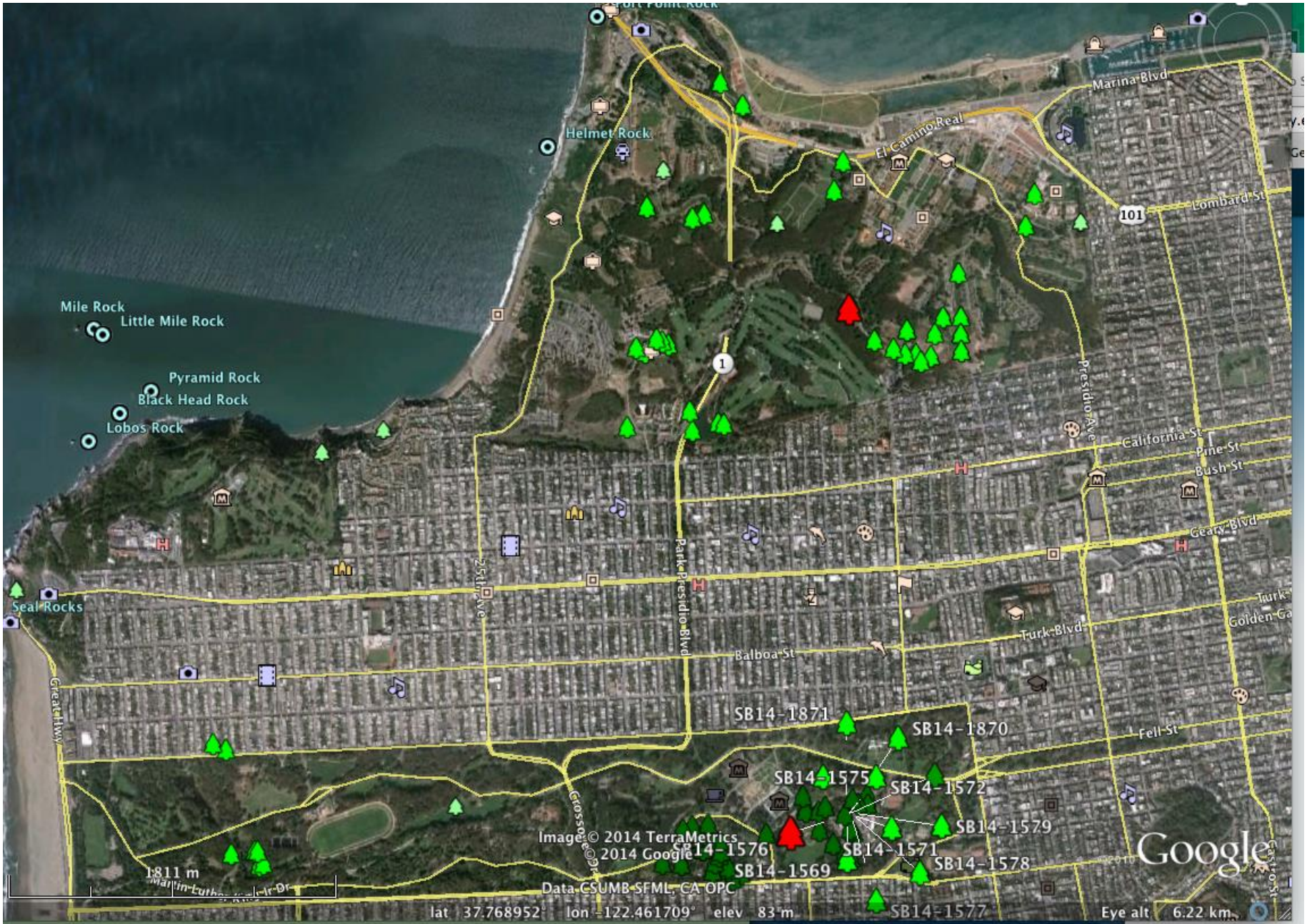
Santa Rosa


Larkfield-Wikiup
Springs-Rd
Mark-West-Springs-Rd
Old-Redwood-Hwy
Wallace-Rd
Fountaingrove-Pkwy
Parker-Hill-Rd
Badger-Rd
2084 m
© 2014 Google
©2010 Google
lat 38.503200° lon -122.710888°
Eye alt 7.24 km

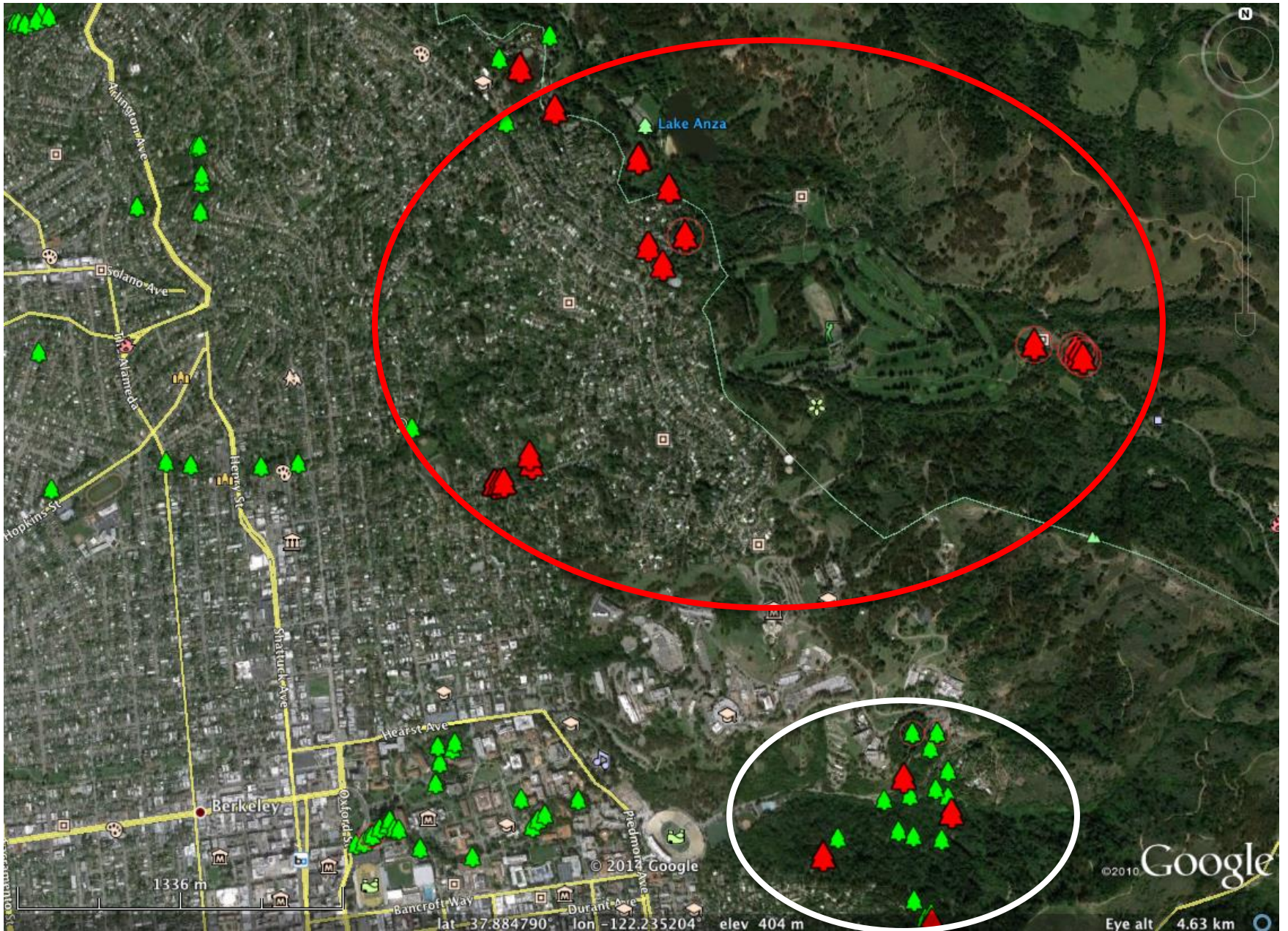
Sonoma and Napa valleys



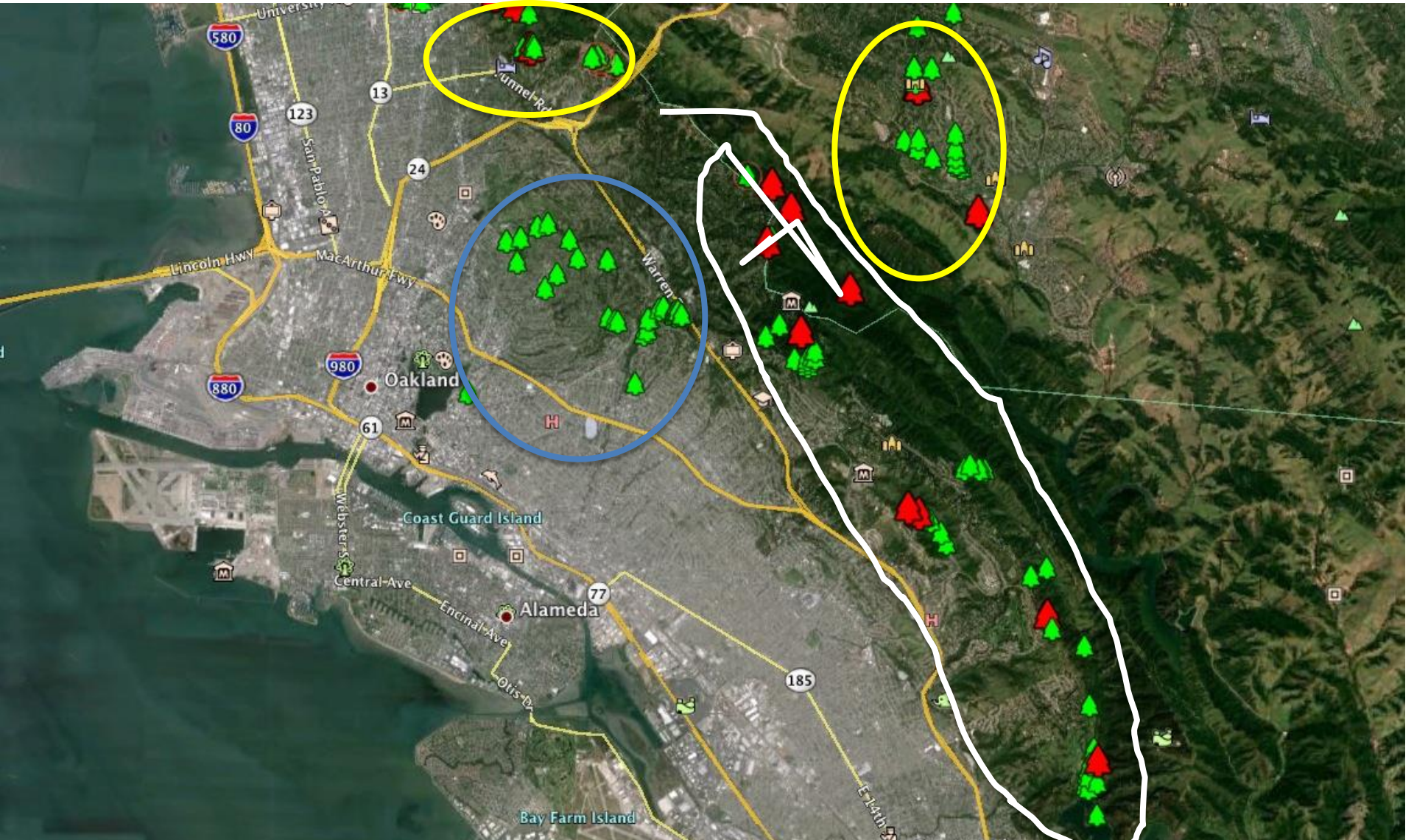
San Francisco



Berkeley Area

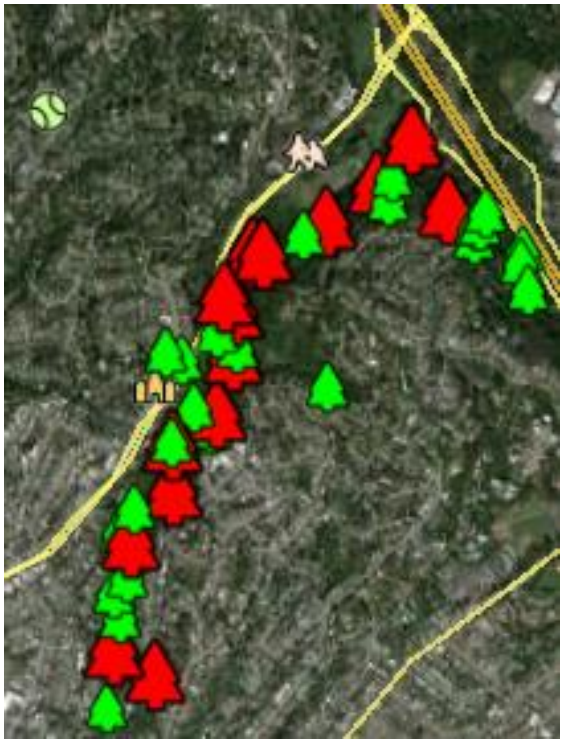


Oakland-Orinda-San Leandro



Montclair: decrease in infection as weather dries

2012



2013

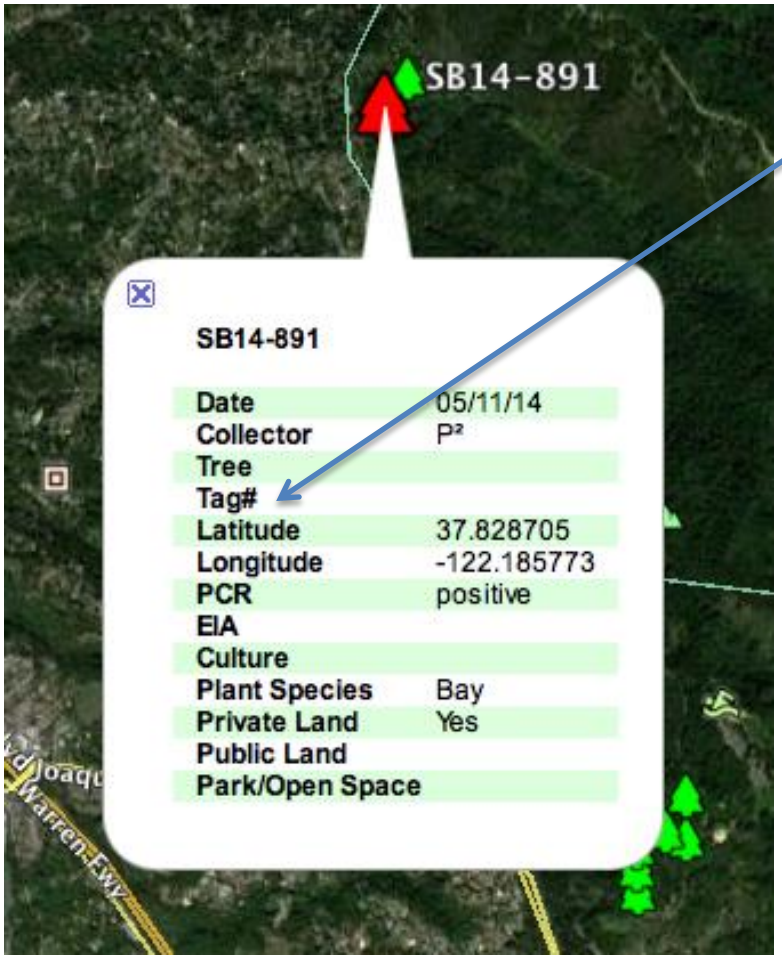
2014

BUT:

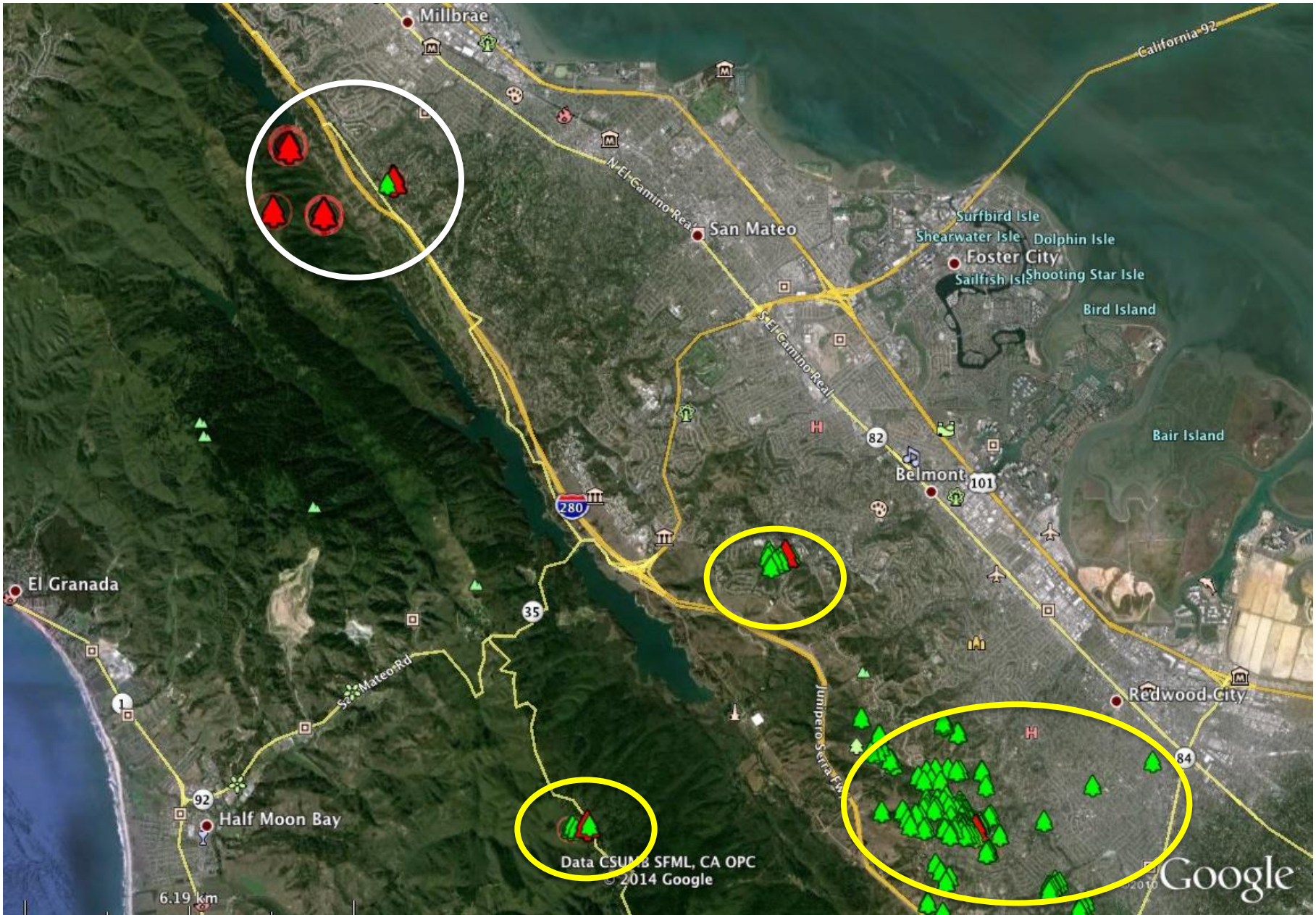
1- Sampling intensity is different

2- Are we looking at the same trees or at neighbors?

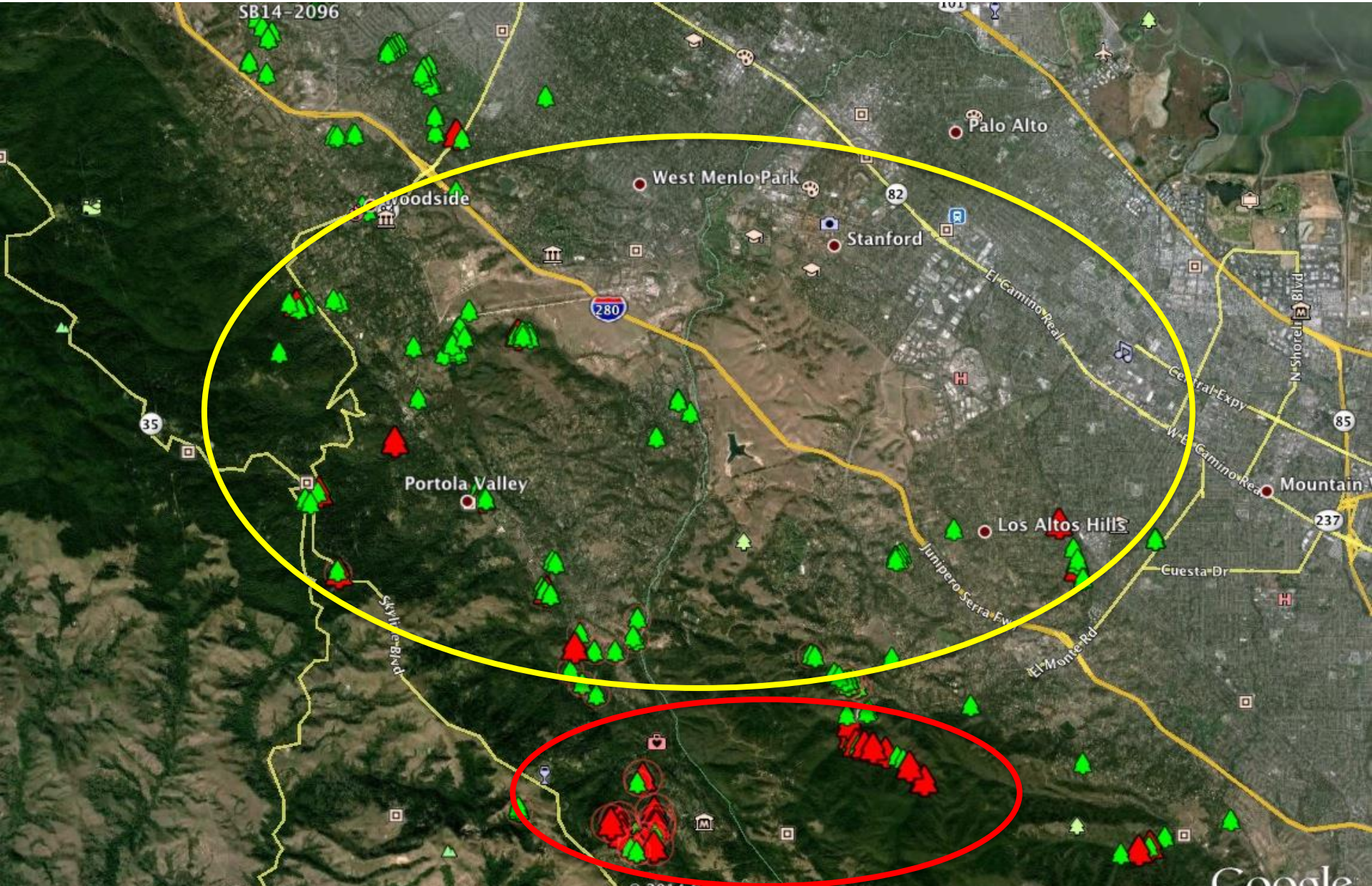
Tagging trees provides certainty on results and infection status of a tree



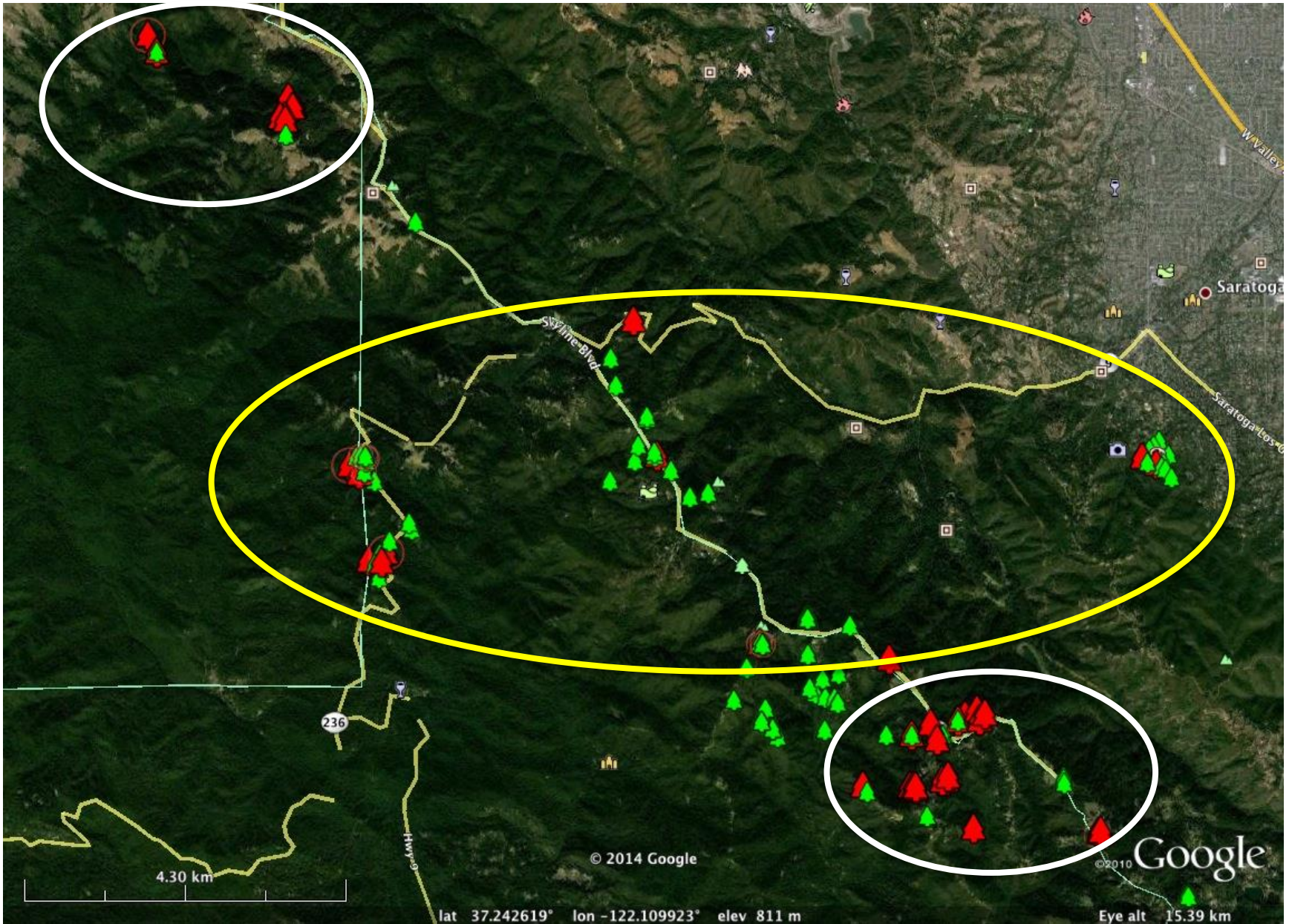
North Peninsula



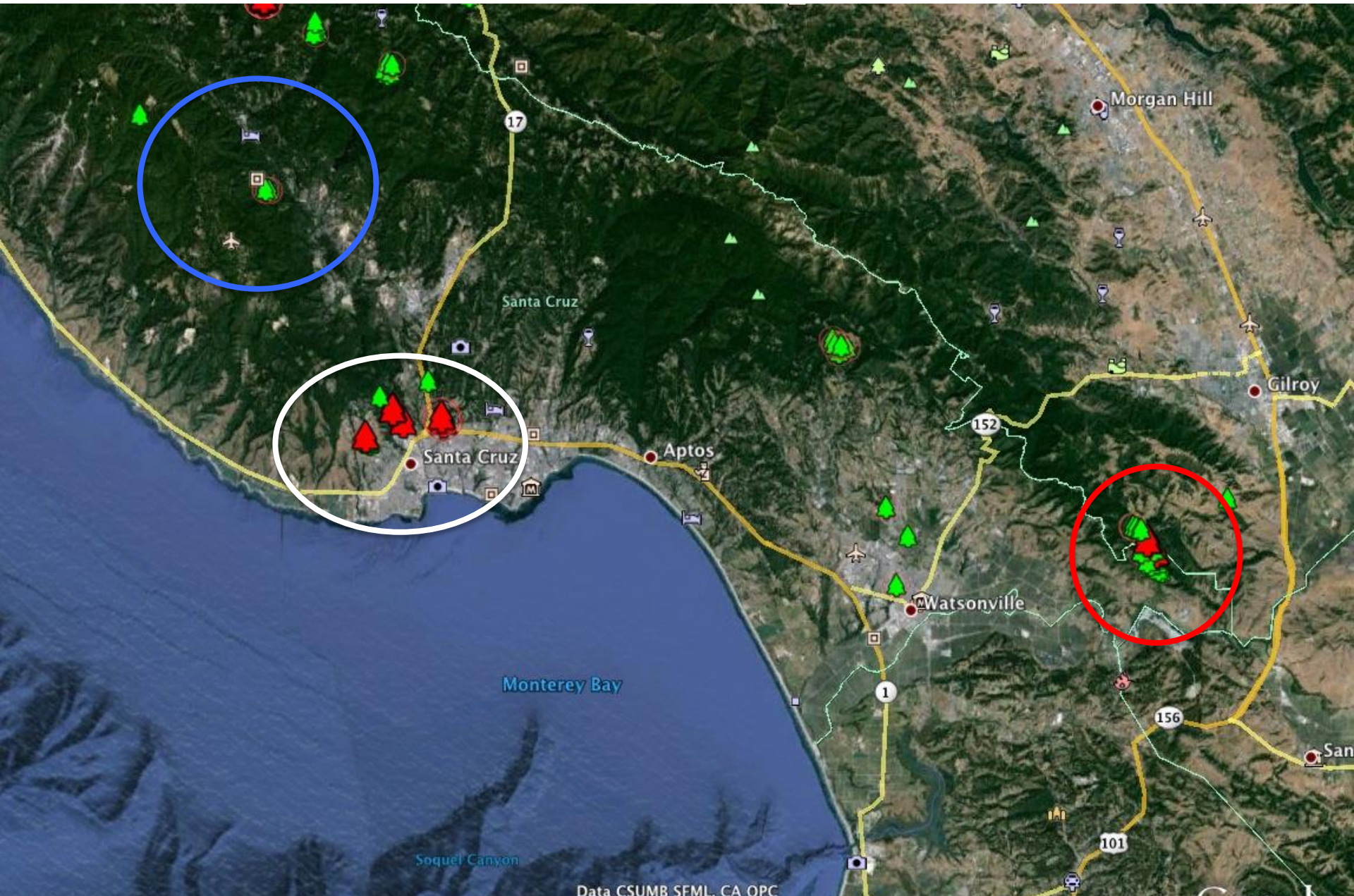
Mid peninsula



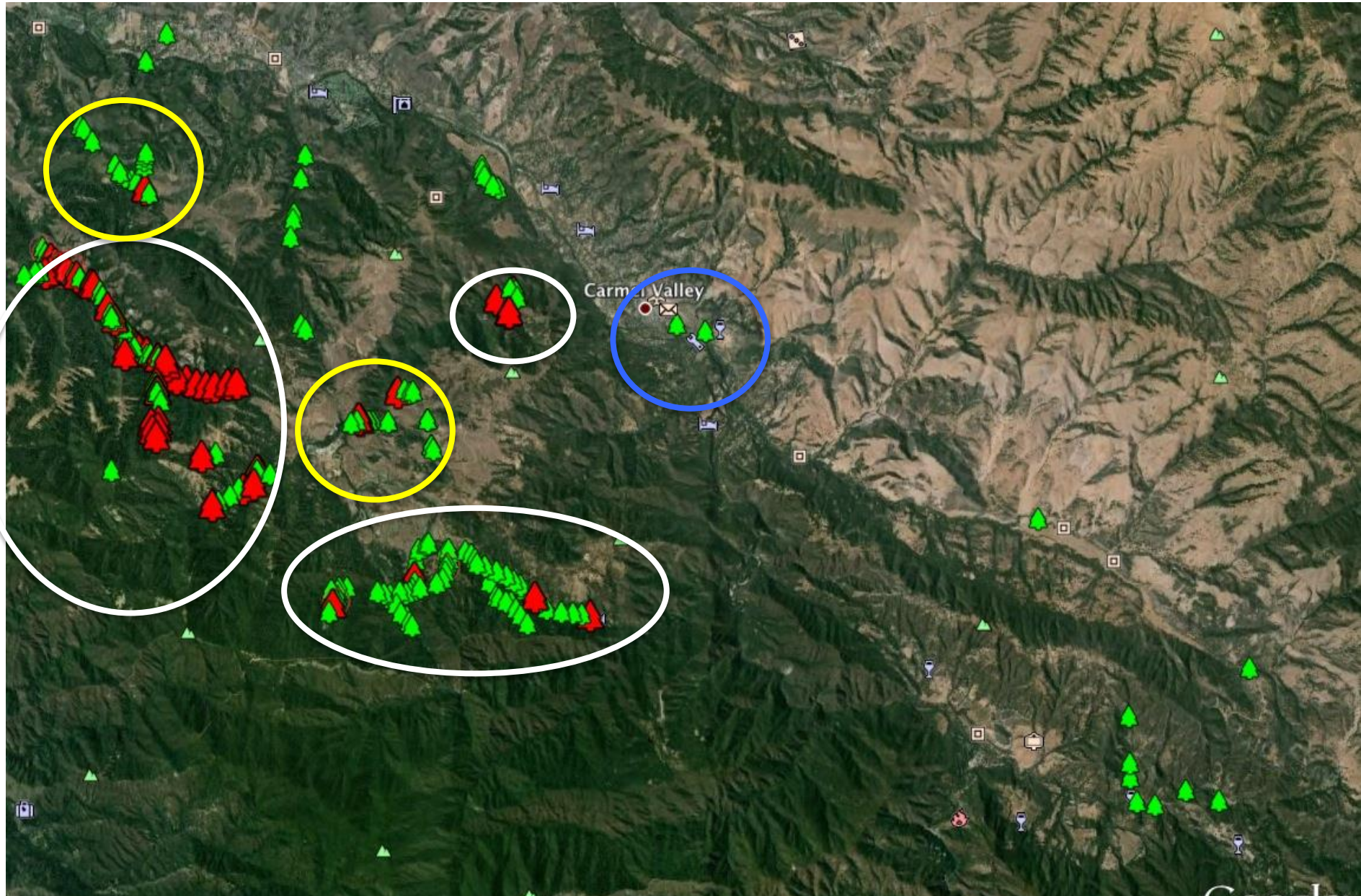
South Skyline-Saratoga



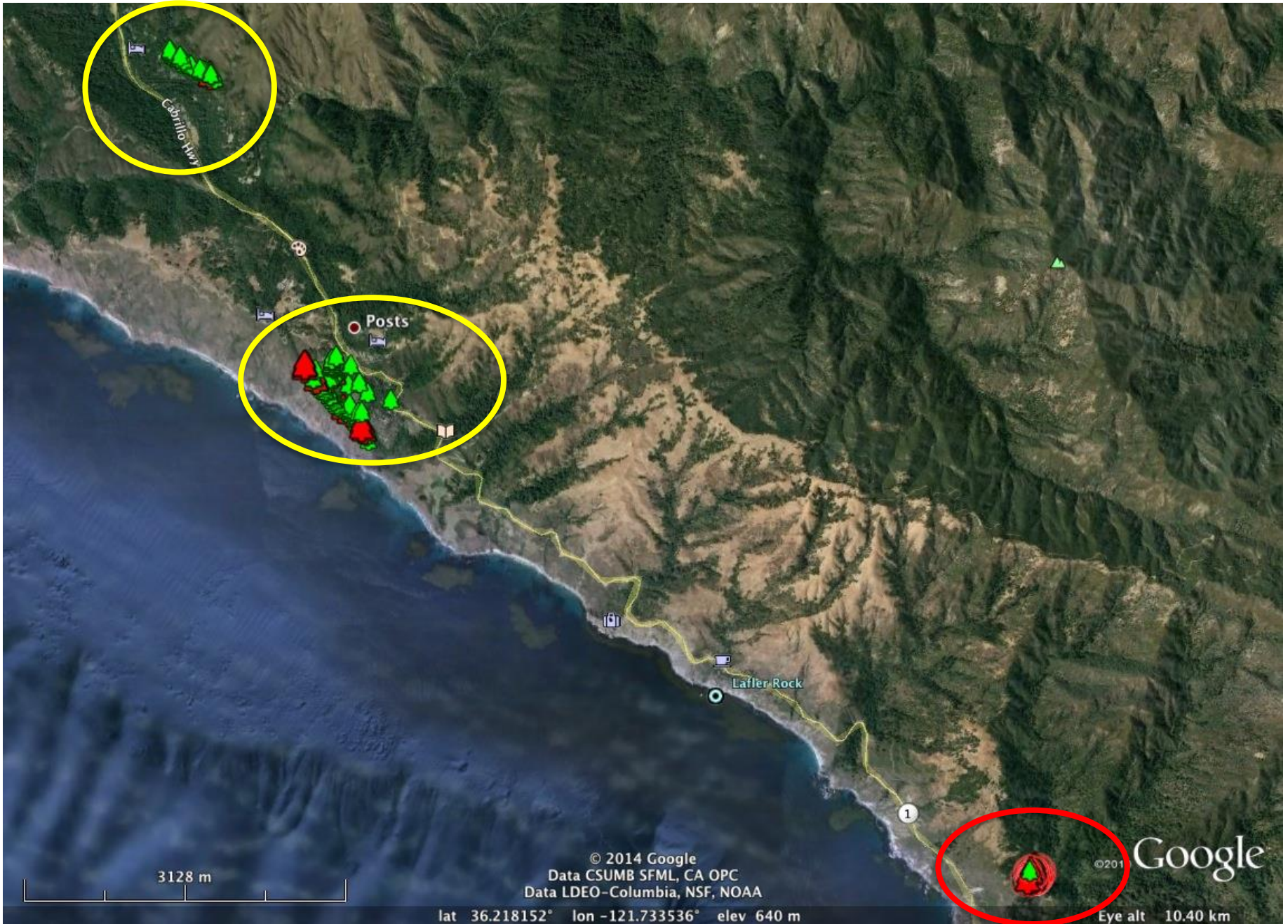
Santa Cruz


Morgan Hill
Santa Cruz
Gilroy
Aptos
Santa Cruz
Watsonville
Monterey Bay
Soquel Canyon
Data CSUMB SFML, CA OPC
17
152
1
156
101

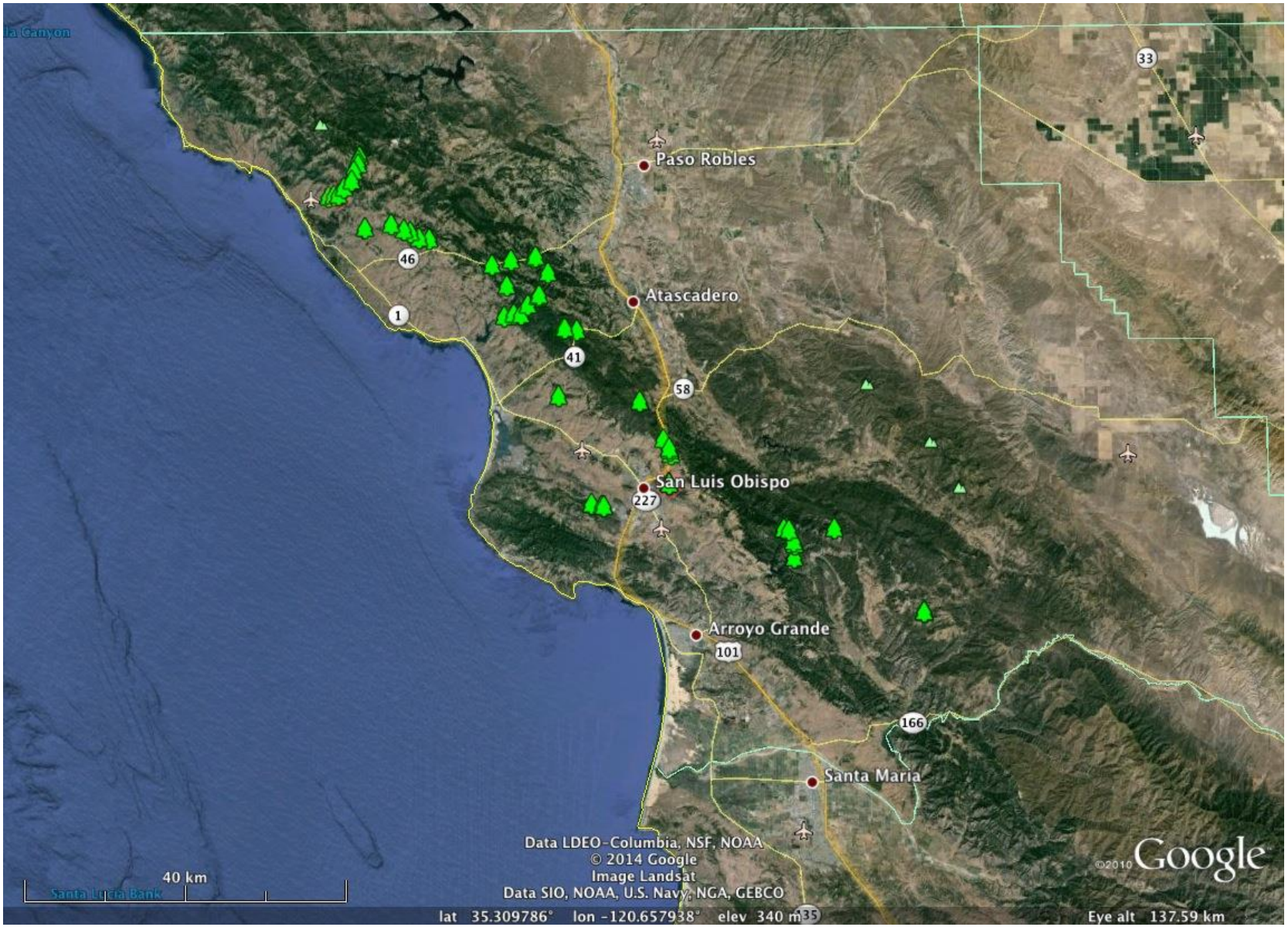
Carmel



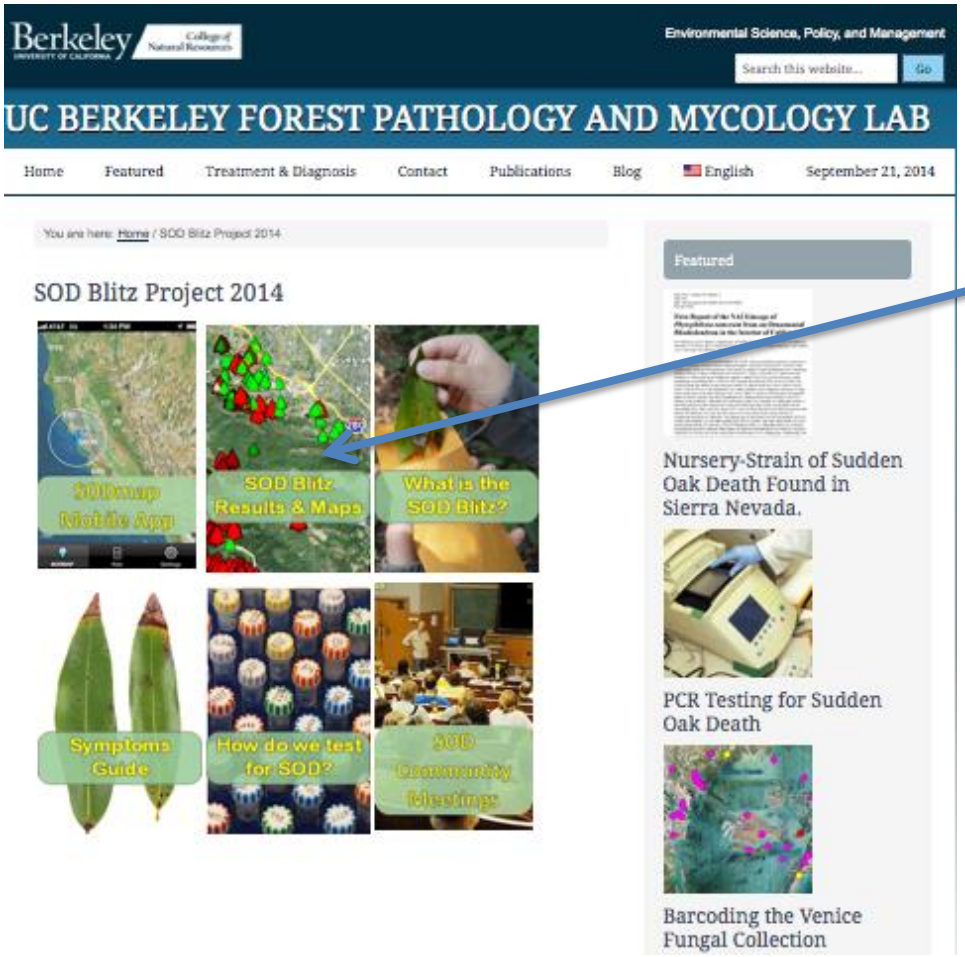
Big Sur


Cabrillo Hwy
Posts
Lafler Rock
1
3128 m
© 2014 Google
Data CSUMB SFML, CA OPC
Data LDEO-Columbia, NSF, NOAA
lat 36.218152° lon -121.733536° elev 640 m
Google
Eye alt 10.40 km

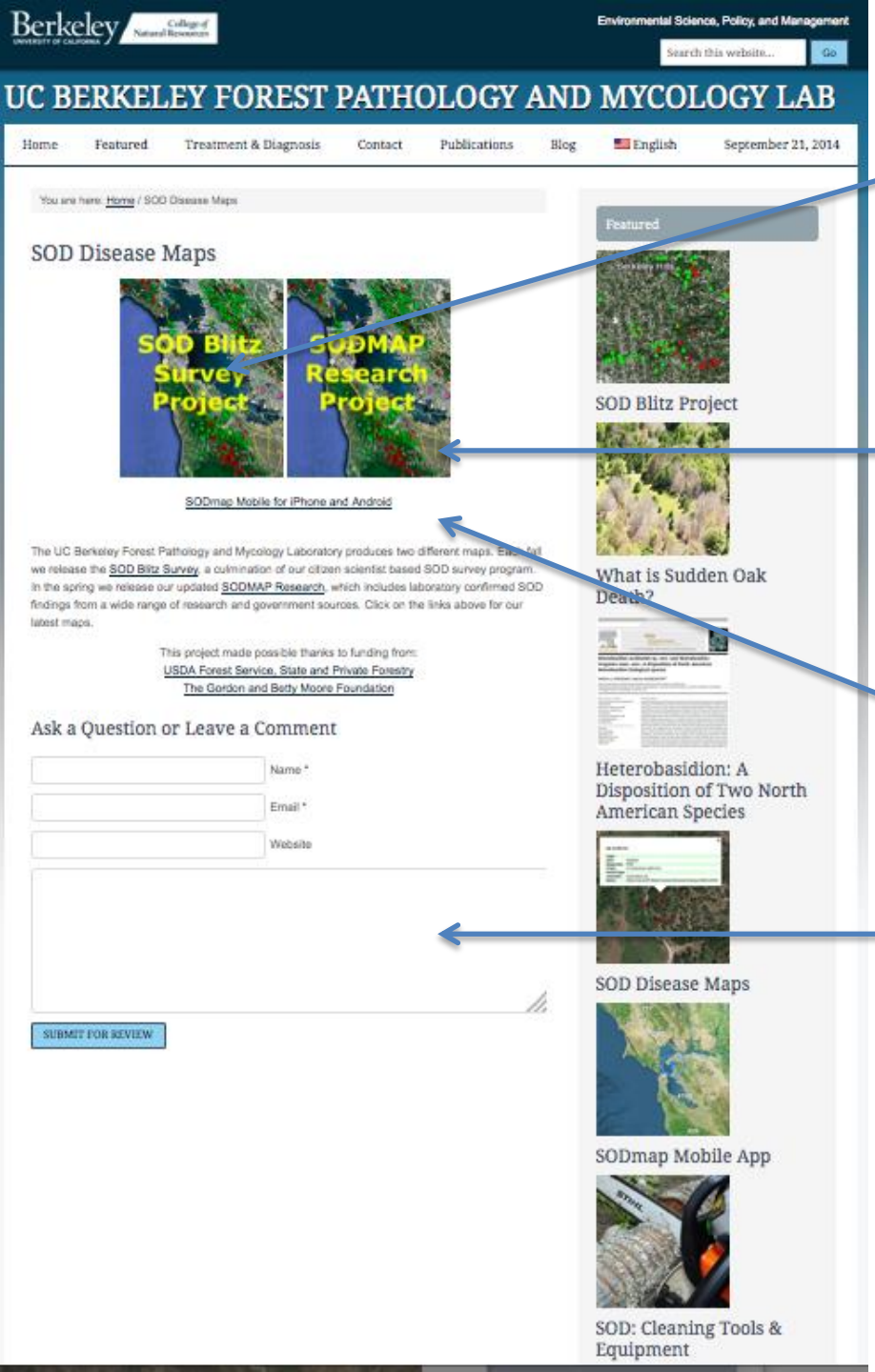
San Luis Obispo



To access results: www.sodblitz.org



Click here



Click here for SOD blitz results files

Click here for SODmap (complete Database, will include 2014 data By October 30)

Click here for info on SODmap mobile, App available for free both for iPhone And Android

Starting October 30, you can ask SOD Related questions using this form

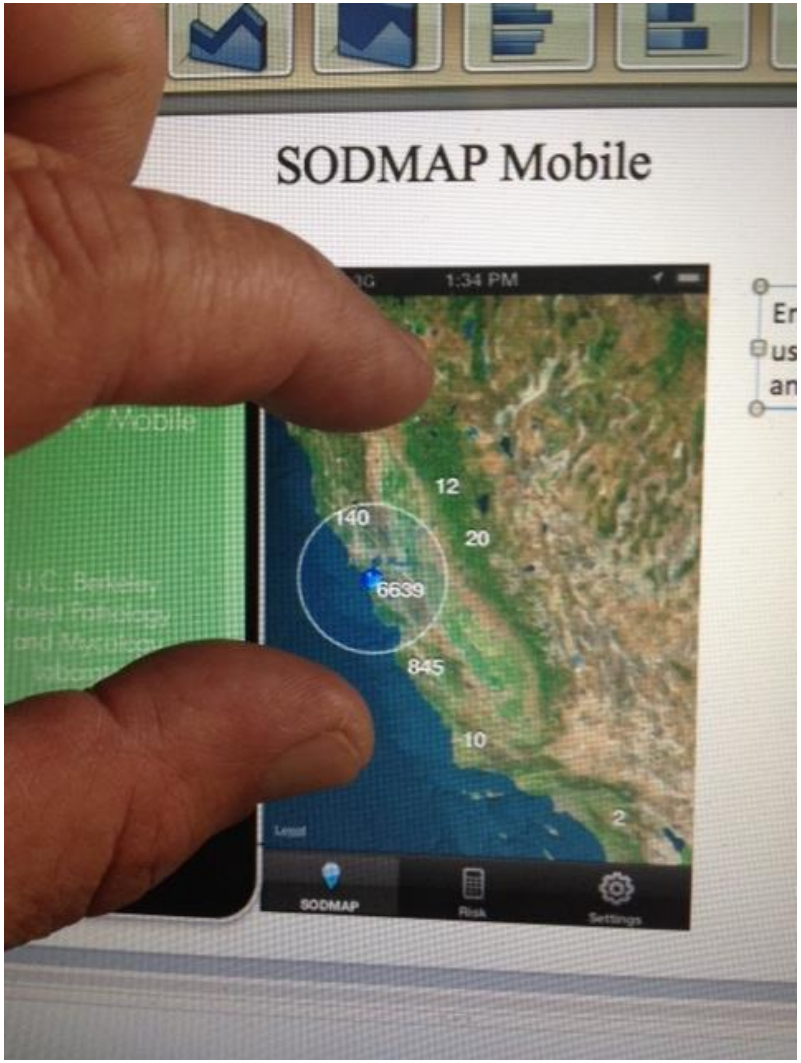
SOD management

- 1 Determine if there is risk of infection for oaks:
  - a) Are my oaks one of the following: Ca Coast Live Oak, Ca Black Oak, Shreve's Oak or Canyon Live Oak? If yes, then go to next step
  - b) Download SODmap at www.sodmap.org Is there one SOD positive tree (red icon) within 1000 m (moderate risk), or within 200 m (high risk)?
  - c) Use Sodmap mobile on your smart phone…

SODMAP Mobile

Tap “sodmap” icon

Enlarge screen view using your Index and thumb fingers

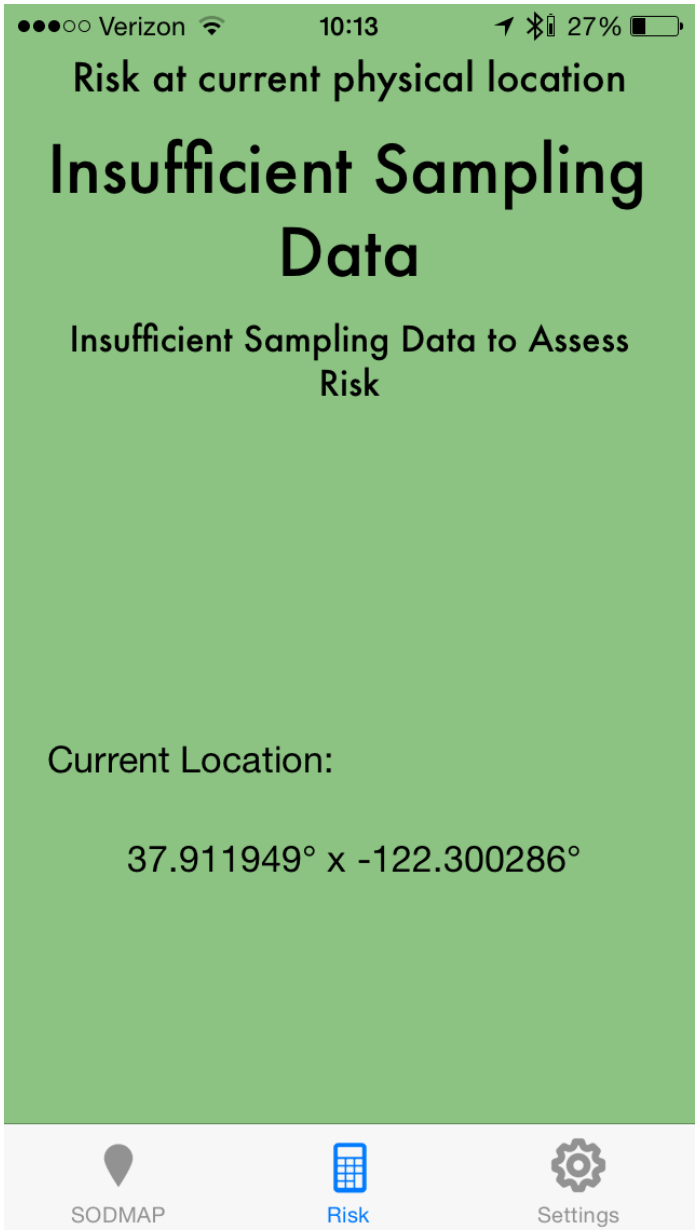


Red pins = SOD positive, tap to find out date and number

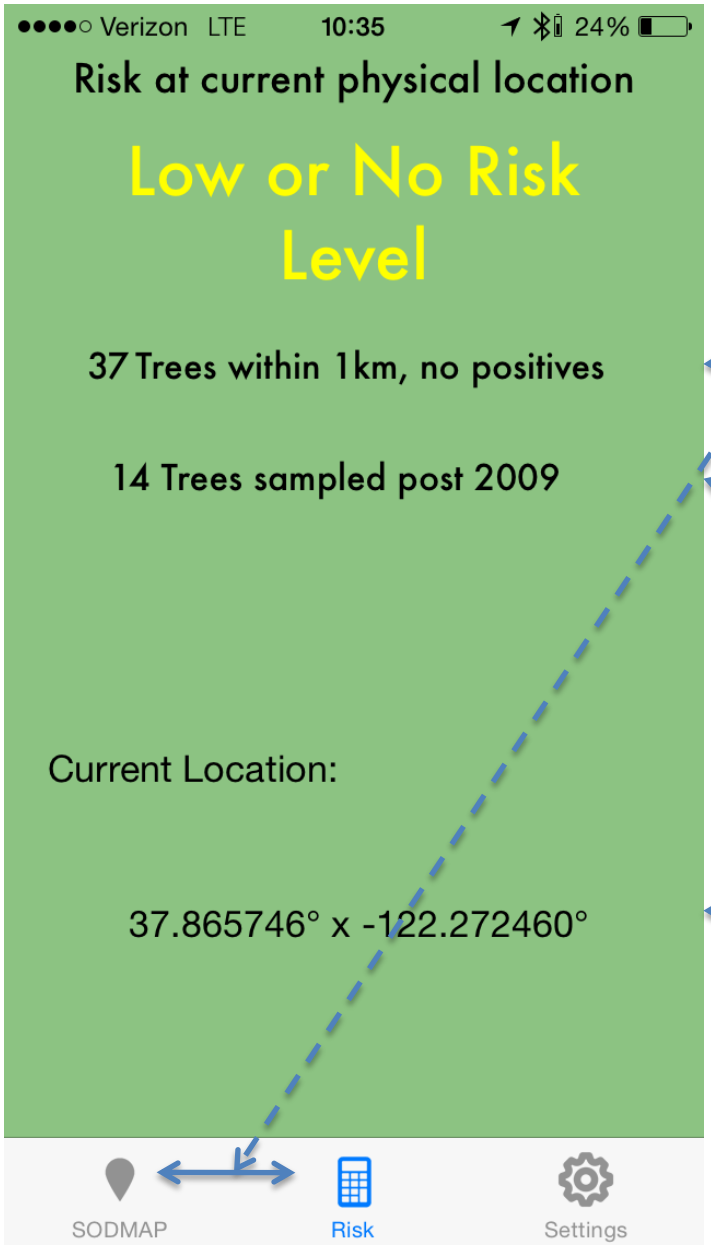
If tree is tagged:

- You will need to match tag number to tree code by:
  - a) clicking on icon in the SODmap on your computer and reading dialog box reporting both tag and tree code
  - b) using the downloadable excel file, using the year in the dialog box as a way to narrow search

Tap on risk icon



Risk where you are physically standing



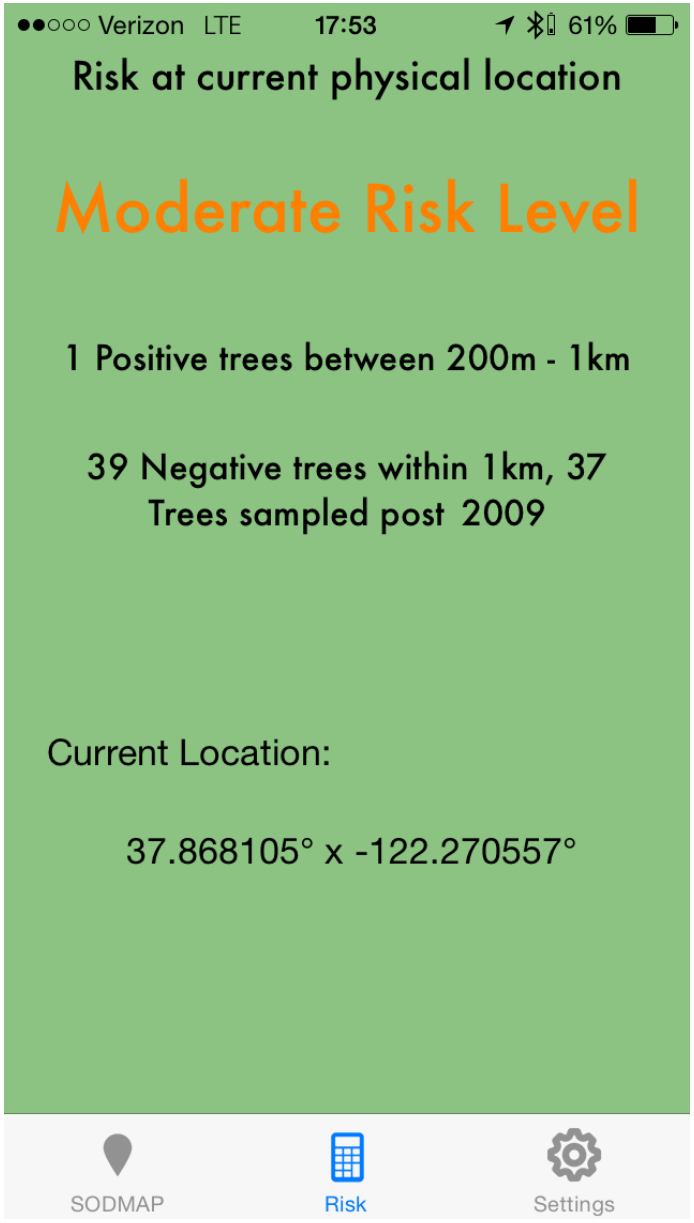
When assessing risk at a second location, remember to tap SODMAP button and then Risk button, in order to reset, otherwise you may get same warning as in the previous location

A two-digit number in this line gives you more confidence

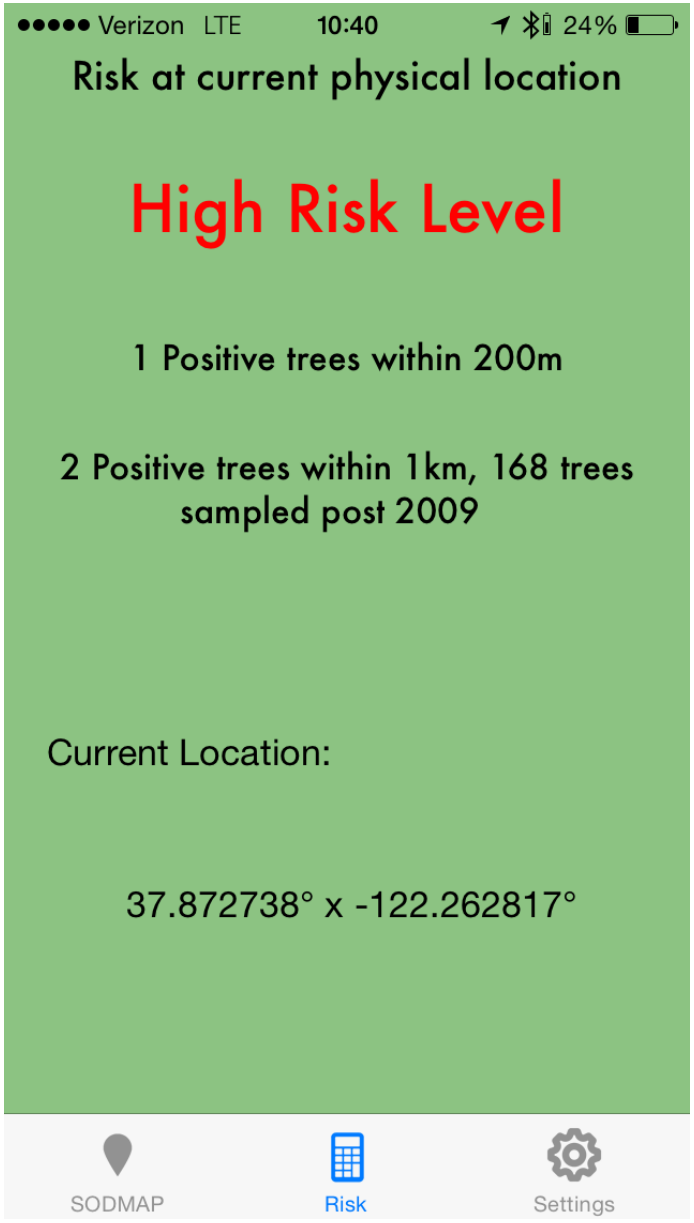
Number > 4 in this line gives you more confidence

Precise location and coordinates of user: You can record if needed

Stay alert but no need to do anything



May want to do something



Urgent to do something if you have Oaks and bays growing together

What to do and when to act

- Insufficient data or low risk
  - Keep monitoring your bay trees for infection, by participating in one of the many SOD blitzes in the Spring of each year. For info and details go to www.sodblitz.org
- Moderate or high risk
  - Do most of the significant yard work (e.g. pruning, grading, cutting dead trees) in the late summer or fall
  - Selectively remove “key” bay laurel trees in Summer and Fall
  - Apply a preventive phosphonate treatment to oaks at risk in the late Fall (after Halloween and before Xmas)

Which bays should I remove?

- Only up to 20 “ diameter, only if slope not too steep, and only if tree further than 10 yards from a stream
- Remove bays whose canopy drip line is within 10 yards of oak trunk if oak diameter is 35” or less, for larger oaks try to remove bays in a buffer area up to 15-20 yards from oak trunk
- Remove bays that are SOD infected after long drought (i.e. SOD positive in 2014 blitz) if frequency of positives 20% or lower

Drip-line to trunk distance (DTD)

If on a slope, or bay is upwind, increase distance 10 or 20 %

Preventive application of phosphonates (compounds that boost immunity)

- Oaks that are not infected, but in areas with moderate or high risk
- Between November 1st and December 15th is ideal to allow the oak to build its natural defenses
- Several products now registered
- Can apply by mixing with surfactant Pentrabark and apply on bark as high as possible avoiding contact with foliage
- Injections using new dosages: do not use label dose; in general volume of injection is increased and concentration of phosphonate reduced to avoid wood damage

Injections

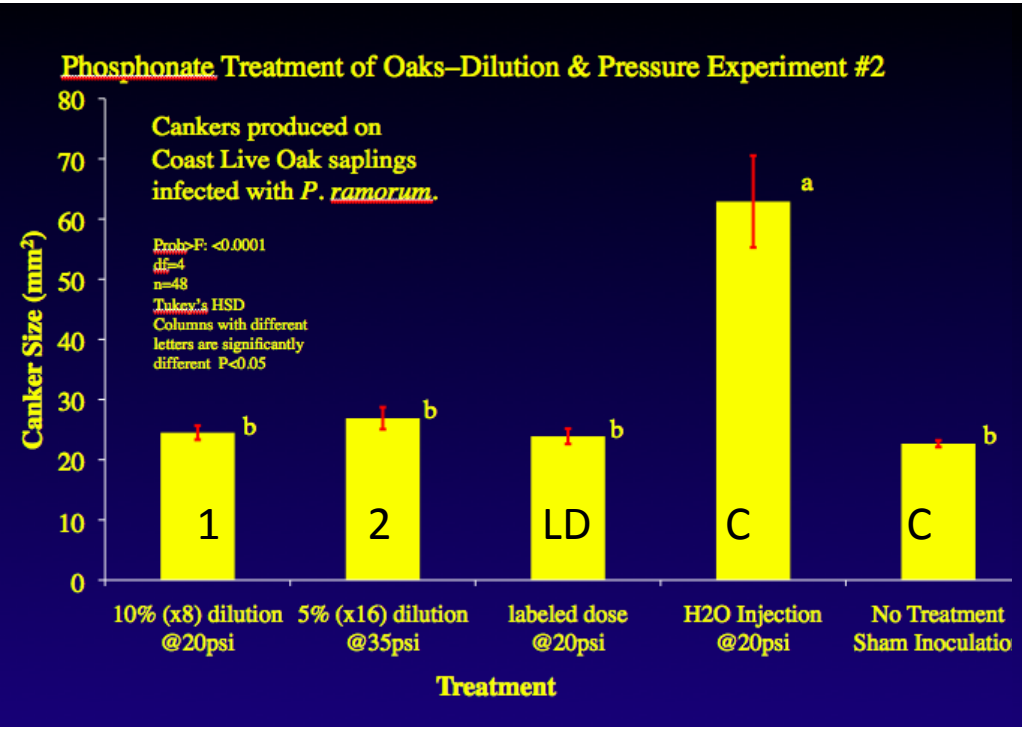
- As a rule of thumb one injection every 6 inches, all injections at the same height.
- Inject every two years, every time you inject, stagger injection points 2 inches up and 2 inches sideways
- Start as low as possible on trunk
- Avoid to inject under branch stubs or punks
- Injection should take 1-10 minutes max. If shorter then it was not absorbed by vessels, if longer then timing not good
- Good timing : warm breezy day, between 10 and 3 pm
- Leave holes unplugged

Injections using 40 mL and 35 PSI (Moderate Pressure)

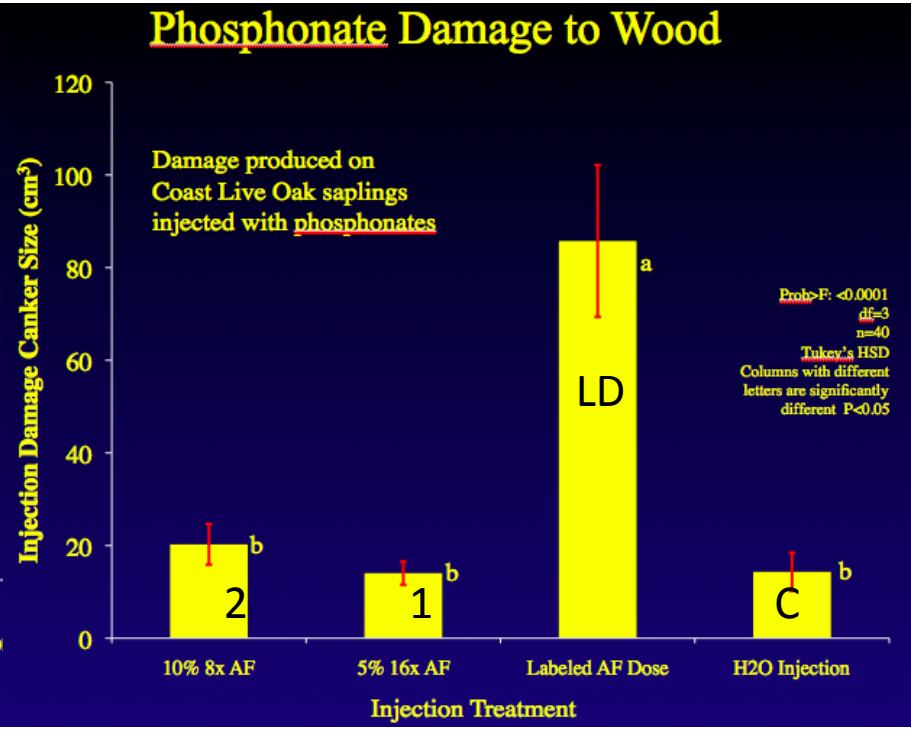
20 mL and 20 PSI (low pressure)

Treatment	Volume (ml)	Active Ingredient (% of label dose)	Injection Pressure (PSI)	Soil Amendment
~~Label Dose~~	10	100	20	none
1	20	10	20	none
2	40	5	35	none

Efficacy



Damage



The shorter the bar, the better for both efficacy and damage

- More on SOD treatment (sanitation, hazard reduction, etc.) and on other oak health issue at the meetings listed below. Remember that in a severe drought oak mortality is often due to causes other then SOD

Oak Health 101 Workshops – How to manage oaks with SOD, drought, and more:

- East Bay, Garber Park – Saturday 10/4/14, 10:00 am, 144 Evergreen Ln., Berkeley, CA, Garber Park Stewards, Contact: Shelagh Brodersen garberparkstewards@gmail.com
- Carmel Valley – Saturday 10/18/14, 10:00am, Meeting Room, Natural History Museum, Garland Ranch Regional Park, Map, Contact: Kerri Frangioso kfrangioso@ucdavis.edu
- Los Altos Hills – Sunday 10/19/14, 10:00 am, Oak Grove Picnic Area, Foothills Park, 3300 Page Mill Rd, Los Altos, CA, Map, Contact: Sue Welch sodblitz09@earthlink.net
- Berkeley, UC – Wednesday 10/22/14 1:00 pm, UCB SOD Treatment Training Workshop Info, Map Link, Register by Email – kpalmieri@berkeley.edu
- Sonoma – Thursday 10/23/14, 7:00pm, Luther Burbank Art and Garden Center, 2050 Yulupa Ave, Santa Rosa, CA, Contact: Lisa Bell lkbell@ucanr.edu

Other findings

- SOD now in Redwood National Park (Rizzo lab)
- SOD found in Eastern Trinity County (CDFA)
- SOD found on oaks in Monterey peninsula (McPherson and Garbelotto, UCB
- SOD found on an a single ornamental Rhodie in Sierra Nevada foothills (Garbelotto Rizzo) ERADICATED
- SOD becoming established in Jackson State Forest in Mendocino County

Conclusions

- SOD blitzes never fail to provide new information necessary to inform the public about risk and new infestations, especially using SODmap and the App Sodmap mobile
- In 2014 new outbreaks were discovered: San Francisco, Santa Cruz. Possibly Mount Diablo in Contra Costa
- BLITZES documented a decrease in infection level in some locations, while levels remain higher in others
- Where risk is high disease can be controlled by phosphonate applications using new dosages for injections first reported today and by selective removal of bay laurel trees
- SOD is still expanding even if it may contract locally during droughts

Thank you !

- Local BLITZ organizers and Sonoma Master Gardeners
- Our Funders: State and Private Forestry (USFS), The Gordon and Betty Moore Foundation, The National Science Foundation
- The volunteers aka “Blitzers”
- Doug Schmidt and Toni Mohr (U.C. Berkeley)