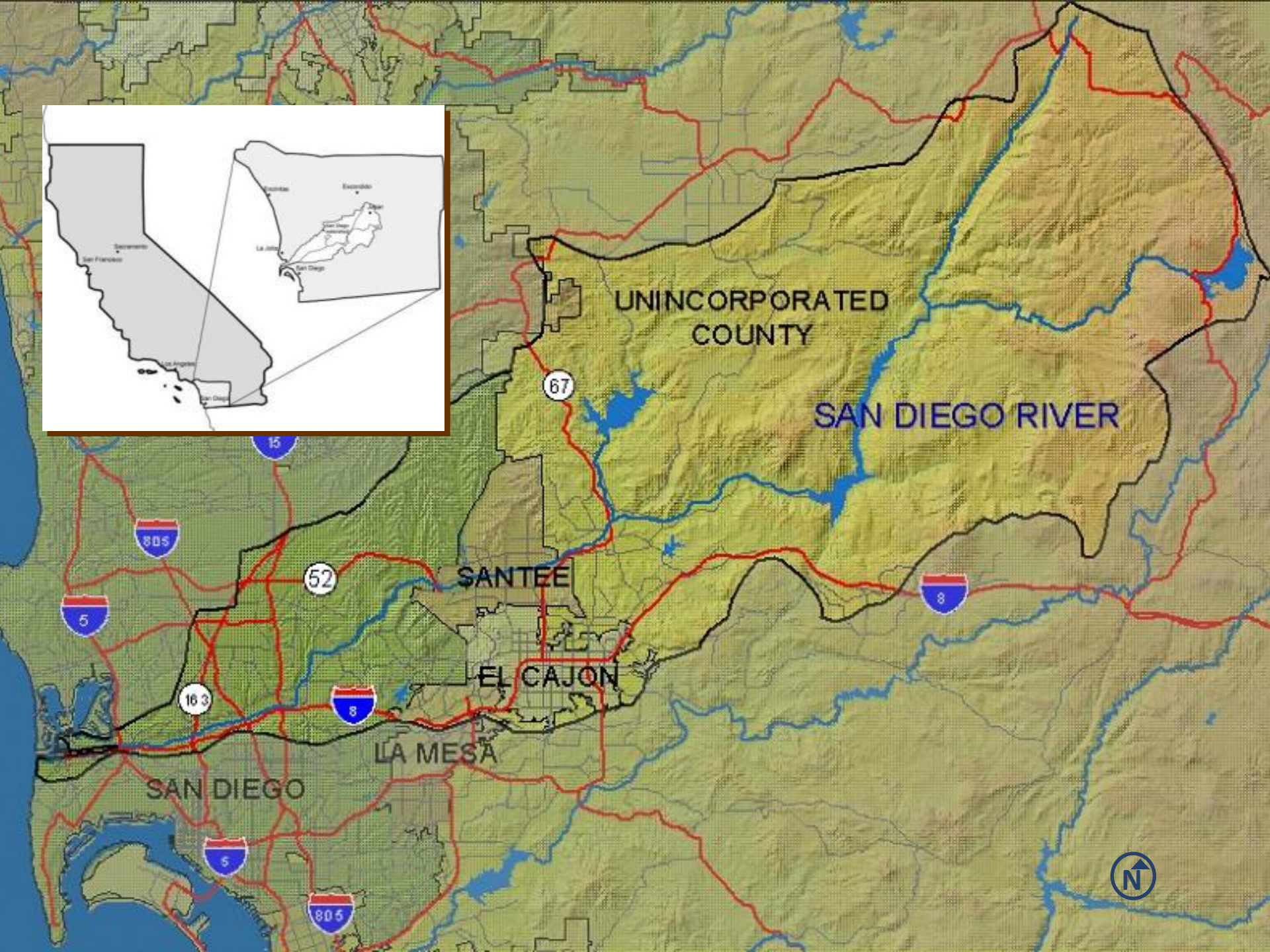
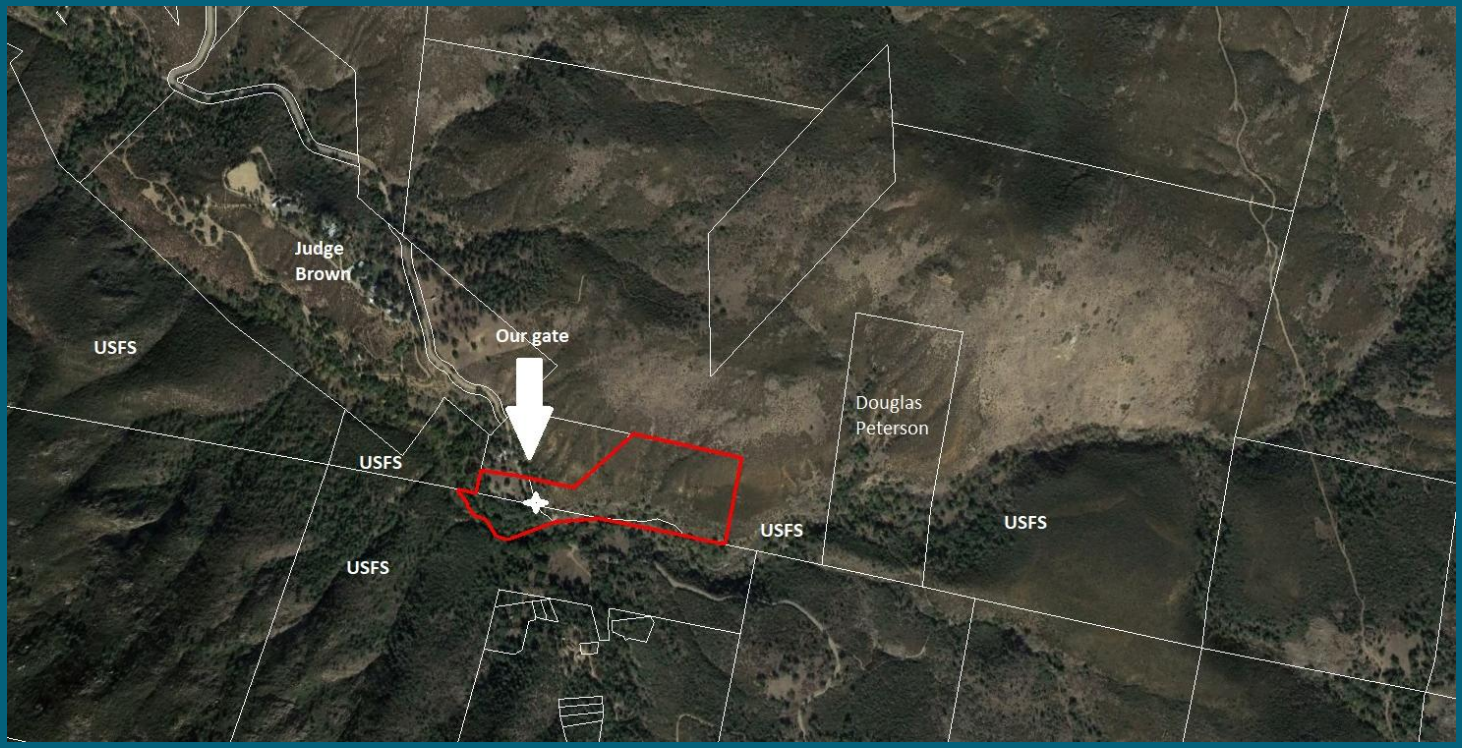
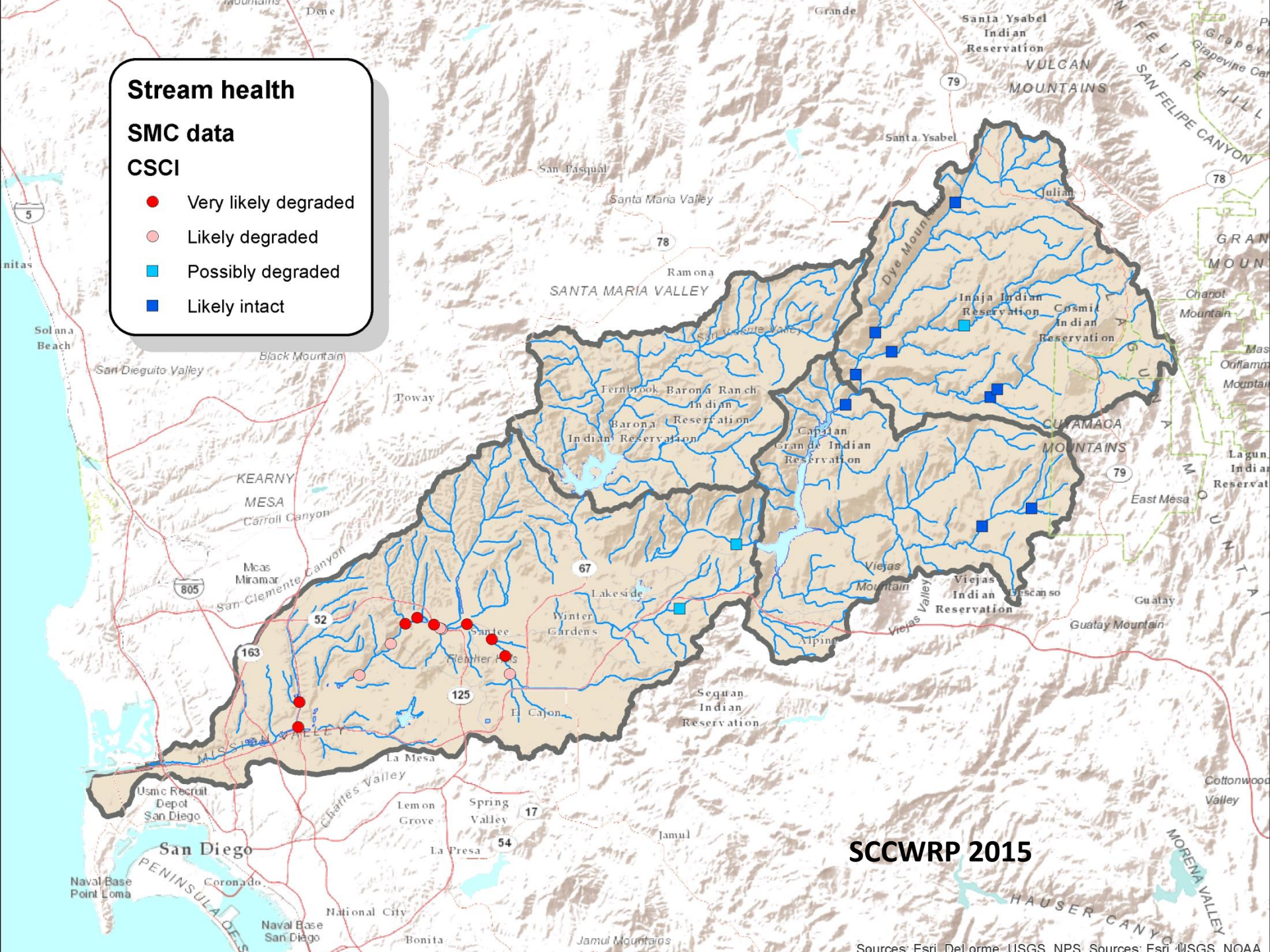
Headwaters Stream Assessment Results


UNINCORPORATED
COUNTY
SAN DIEGO RIVER
SANTEE
EL CAJON
LA MESA
SAN DIEGO
67
52
15
805
5
163
8
N

Boulder Ck Preserve
Fisherman's Camp




Stream health
SMC data
CSCI
Very likely degraded
Likely degraded
Possibly degraded
Likely intact
SCCWRP 2015
Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA

Project: Sustaining Healthy Tributaries to the Upper San Diego River

Funding Source: Proposition 84 Round 2: Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006

Administered By: California State Department of Water Resources

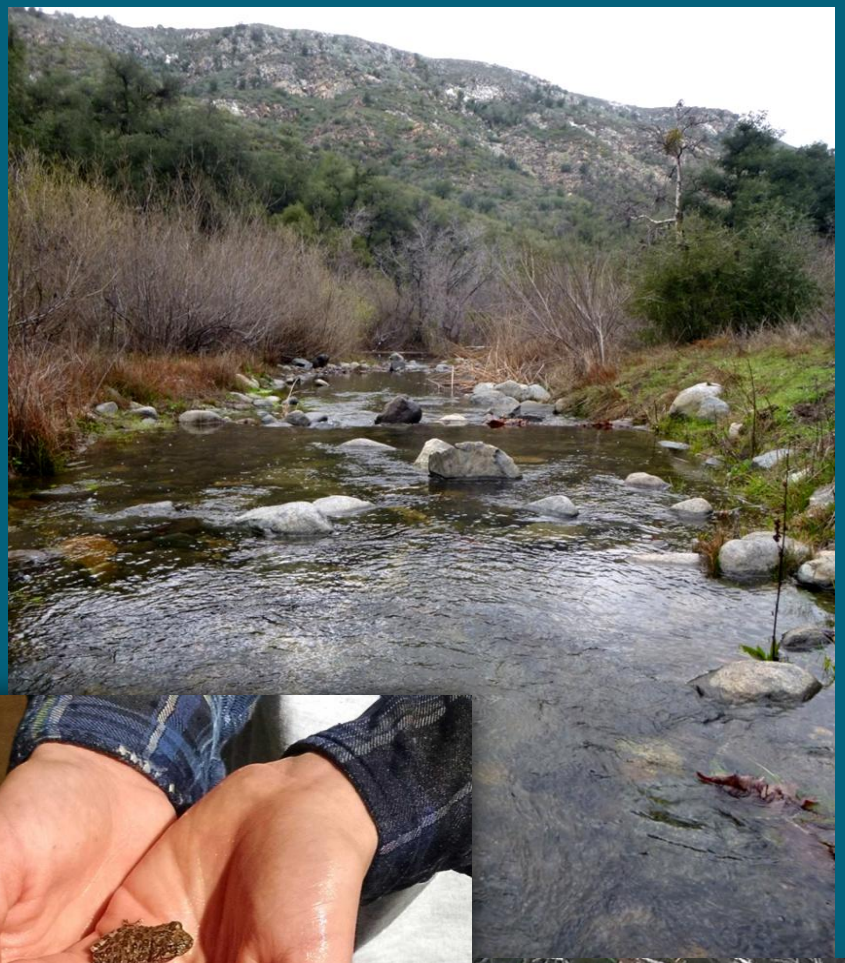
Sustaining Healthy Tributaries to the Upper San Diego River

- Monitoring
- Field assessments
- Focused studies
- On-the-ground restoration
- Data integration
- Public education and involvement.

SAN DIEGO
Integrated Regional Water Management

Boulder Creek Preserve

- 13.2 acre property
- Key place for conservation in order to protect Boulder Creek
- Flows into El Capitan Reservoir
- Burned in the Cedar Fire
- Fisherman's Camp; site for school groups and community field events



Enhancement of Boulder Creek Preserve

Invasive Removal

Native Planting

Environmental Monitoring

Hydromodification Studies

Boulder Creek Road Crossing

Diverting Dam

Education Program Development

TROUT in the CLASSROOM

Connecting Students with their Watersheds

WHAT STUDENTS DO:

* raise trout from eggs to fingerlings
* monitor tank water quality
* engage in stream habitat study
* appreciate water resources
* foster a conservation ethic
* understand ecosystem connectivity

>learn more

FOR TEACHERS

* lesson plans *
web resources
library

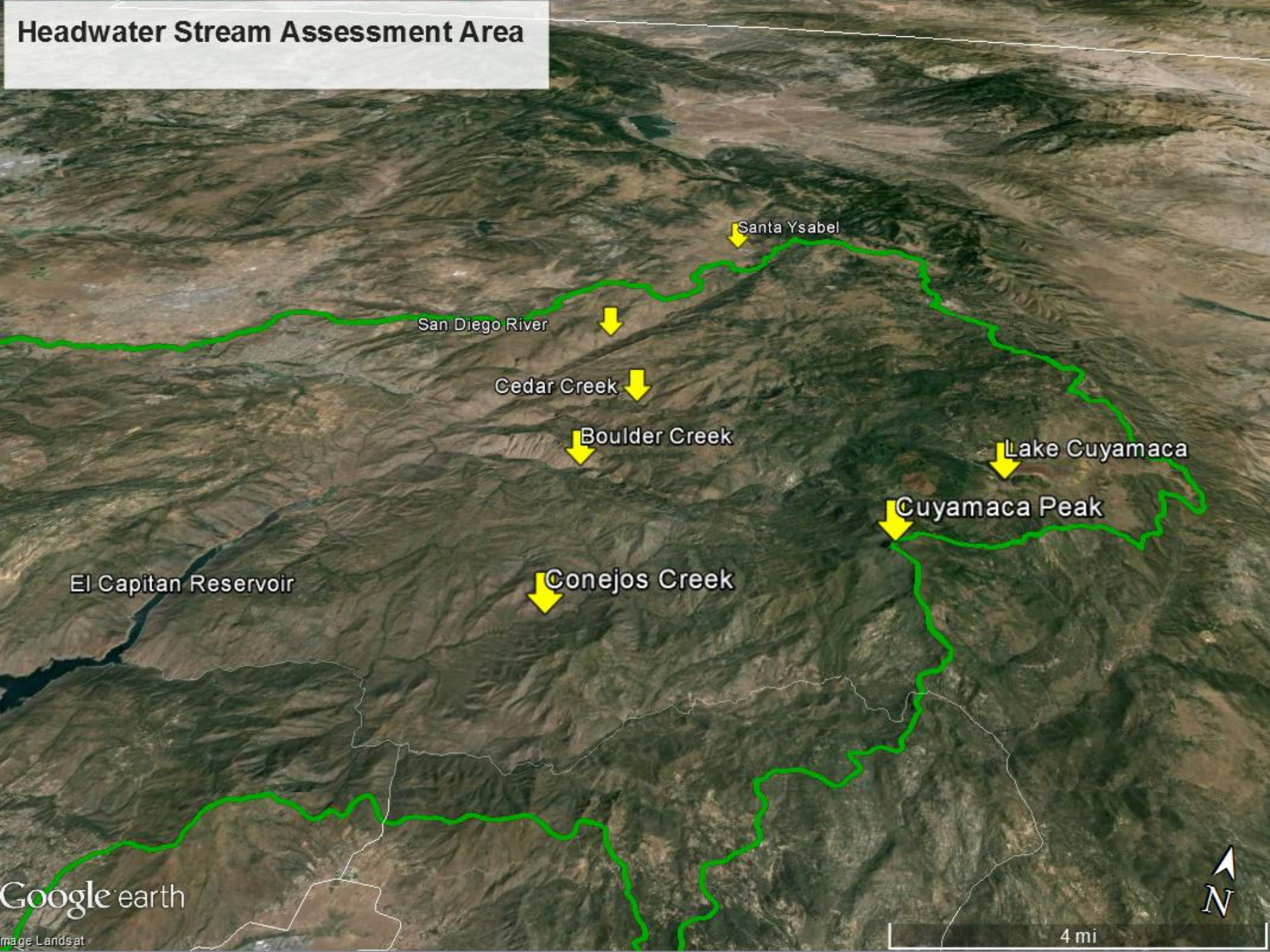
FAQ's

how to get started
trout care
tank & equipment

Stream Assessments

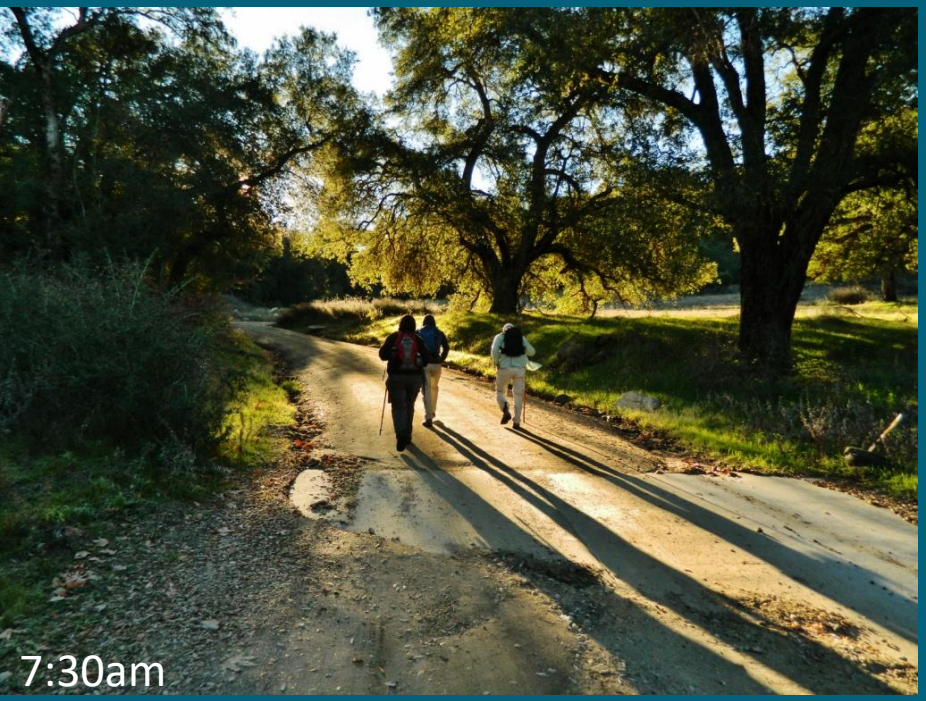
Exploring the upper tributaries to identify and document:

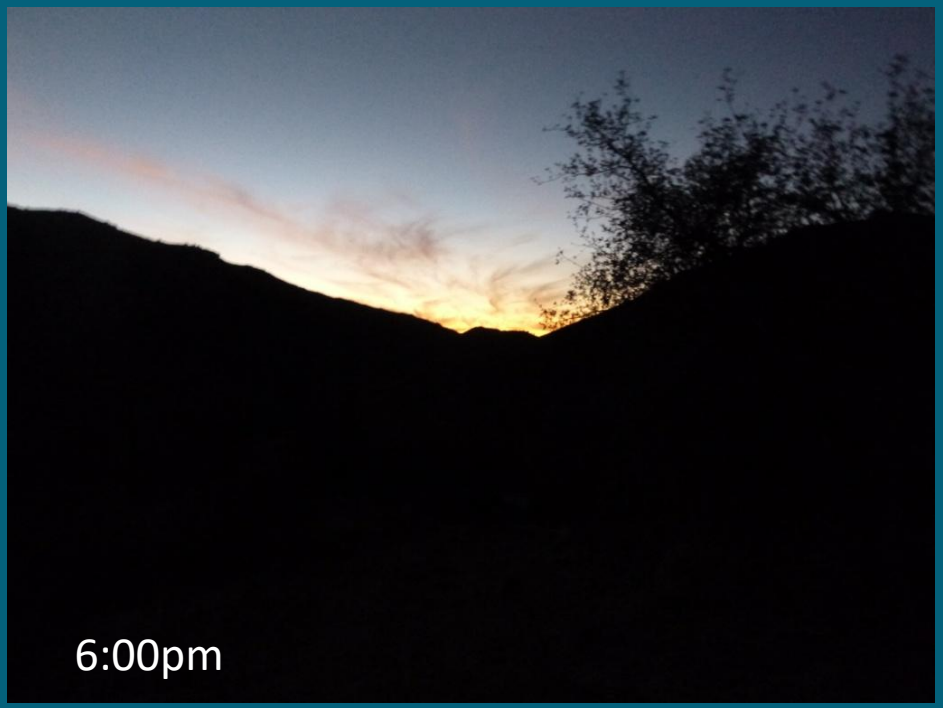
- Species of Special Concern
- Invasive, non-native species
- Hydromodification and erosion conditions
- Cultural resources

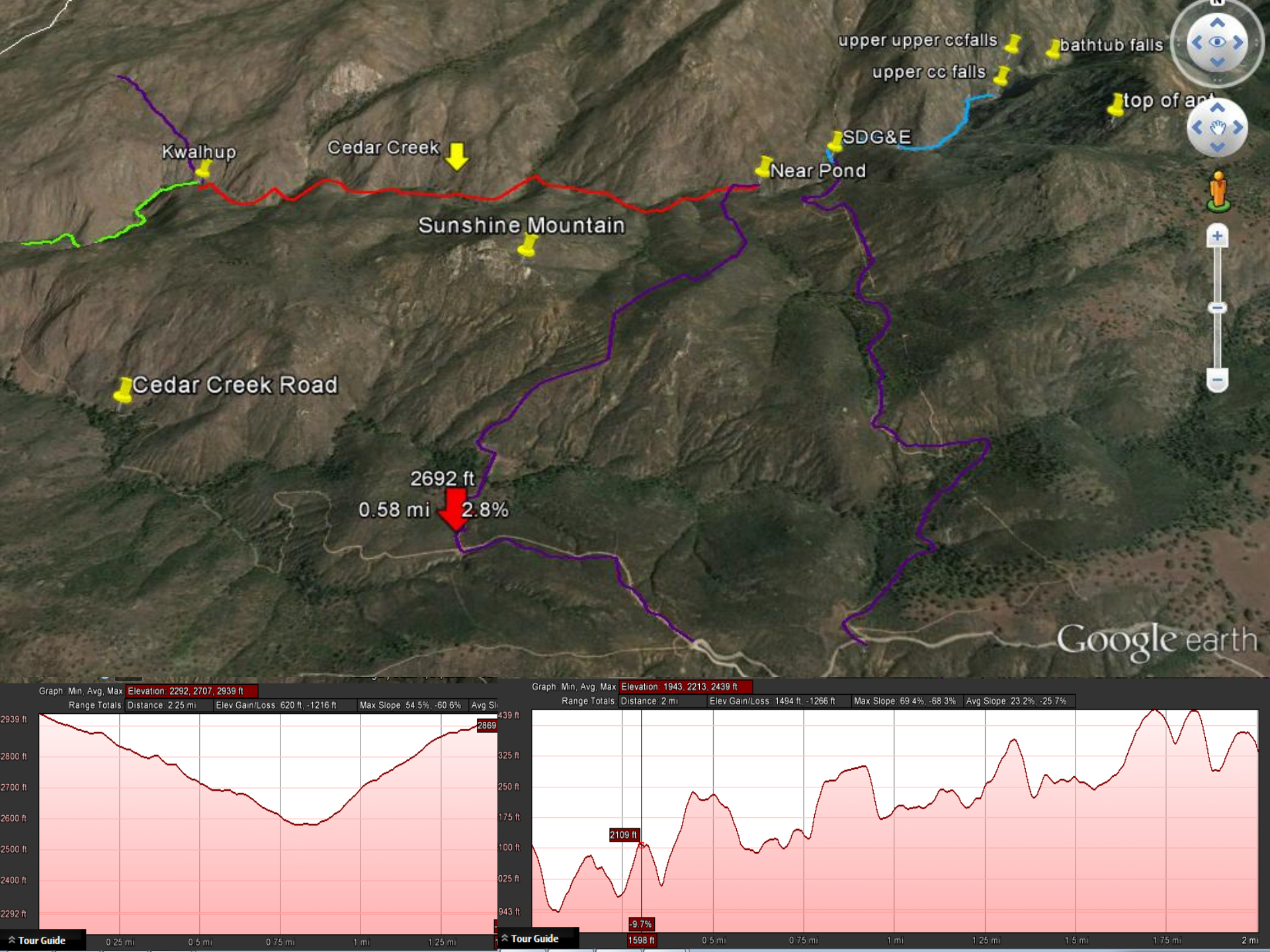

Headwater Stream Assessment Area
Santa Ysabel
San Diego River
Cedar Creek
Boulder Creek
Lake Cuyamaca
Cuyamaca Peak
El Capitan Reservoir
Conejos Creek
Google earth
mage Landsat
N
4 mi

Expectations, Ethics and Preparation for Stream Assessments

Expectations






upper upper ccfalls
bathtub falls
upper cc falls
top of ant
SDG&E
Near Pond
Kwalhup
Cedar Creek
Sunshine Mountain
Cedar Creek Road
2692 ft
0.58 mi
2.8%
Google earth
Graph: Min, Avg, Max Elevation: 2292, 2707, 2939 ft
Range Totals: Distance: 2.25 mi Elev Gain/Loss: 620 ft, -1216 ft Max Slope: 54.5%, -60.6%
2939 ft
2800 ft
2700 ft
2600 ft
2500 ft
2400 ft
2292 ft
2869
0.25 mi
0.5 mi
0.75 mi
1 mi
1.25 mi
Tour Guide
Graph: Min, Avg, Max Elevation: 1943, 2213, 2439 ft
Range Totals: Distance: 2 mi Elev Gain/Loss: 1494 ft, -1266 ft Max Slope: 69.4%, -68.3% Avg Slope: 23.2%, -25.7%
2109 ft
-9.7%
1598 ft
0.5 mi
0.75 mi
1 mi
1.25 mi
1.5 mi
1.75 mi
2 mi
Tour Guide

Avoiding a Poison Oak Rash


LAGERS

Please Practice LEAVE NO TRACE

Know Before You Go

- Be prepared! Remember food and water, and clothes to protect you from cold, heat and rain.
- Use maps to plan where you're going. Check them along the way so you'll stay on course and won't get lost.
- Remember to bring a leash for your pet and plastic bags to pick up your pet's waste.
- Learn about the areas you plan to visit. Read books, check online and talk to people before you go. The more you know, the more fun you'll have.

Stick To Trails and Camp Overnight Right

- Walk and ride on designated trails to protect trailside plants.
- Avoid stepping on flowers or small trees. Once damaged, they may not grow back.
- Respect private property by staying on designated trails.
- Camp only on existing or designated campsites to avoid damaging vegetation.
- Good campsites are found, not made. Don't dig trenches or build structures in your campsite.

Trash Your Trash and Pick Up Poop

- Pack it in, Pack it out. Put litter–even crumbs, peels and cores–in garbage bags and carry it home.
- Use bathrooms or outhouses when available. If not available, bury human waste in a small hole 6-8 inches deep and 200 feet or 70 big steps from water.
- Use a plastic bag to pack out your pet's poop to a garbage can.
- Keep water clean. Do not put soap, food, or human or pet waste in lakes or streams.

Leave It As You Find It

- Leave plants, rocks and historical items as you find them so others can enjoy them.
- Treat living plants with respect. Carving, hacking or peeling plants may kill them.

Be Careful With Fire

- Use a camp stove for cooking. Stoves are easier to cook on and create less impact than a fire.
- If you want to have a campfire, be sure it's needed and safe to build a fire in the area you're [illegible] existing fire rings to protect the ground from heat. Keep your fire small.
- Remember, a campfire isn't a garbage can. Pack out all trash and food.
- Before gathering any firewood, check local regulations.
- Burn all wood to ash and be sure the fire is completely out and cold before you leave.

Keep Wildlife Wild

- Observe wildlife from a distance and never approach, feed or follow them.
- Human food is unhealthy for all wildlife and feeding them starts bad habits.
- Protect wildlife and your food by securely storing your meals and trash.

Share Our Trails and Manage Your Pet

- Be considerate when passing others on the trail.
- Keep your pet under control to protect it, other visitors and wildlife.
- Listen to nature. Avoid making loud noises or yelling. You will see more wildlife if you are quiet.
- Be sure the fun you have outdoors does not bother anyone else. Remember, other visitors are there to enjoy the outdoors too.

leave no trace™

CENTER FOR OUTDOOR ETHICS

WWW.LNT.ORG

The member-driven Leave No Trace Center for Outdoor Ethics teaches people of all ages how to enjoy the outdoors responsibly. In its simplest form, Leave No Trace is about making good decisions to protect the world around you-the world we all enjoy. Through targeted education, research and outreach, the Center ensures the long-term health of our natural world. Do your part to pass our nation's outdoor heritage on to future generations by joining us at www.LNT.org.

Special thanks to SUBARU for the printing of this poster.

Preventing Weed Spread

Checklist E: Inspection & Cleaning

Clothing and Gear:

Check for soil, seeds, and plant material	Inspected	Cleaned
1. Hats		
2. Hoods		
3. Collars and cuffs		
4. Clothing folds or flaps		
5. Ventilation openings		
6. Pockets		
7. Zippers		
8. Straps or Velcro grips		
9. Belts or buckles		
10. Buttons, fasteners, and rivets		
11. Laces or ties		
12. Gloves		
13. Pant cuffs		
14. Socks		

Boots or Shoes:

Check for soil, seeds, and plant material	Inspected	Cleaned
1. Shoelaces or ties		
2. Straps or Velcro grips		
3. Shoe tongues		
4. Treads		

Avoiding the Instagram Effect

Hiker dies after being rescued at Three Sisters Falls

Cal Fire says man had medical issue while hiking

BY: City News Service
POSTED: 8:04 PM, Jun 16, 2015
UPDATED: 8:18 AM, Jun 17, 2015

JULIAN, Calif. - A 24-year-old man hiking with a group in the Cleveland National Forest near Julian died today from possible heat-related physical distress.

Paramedics and deputies arrived on rescue helicopters, located the group of hikers on the trail, and began first aid on the victim about 6 p.m., Sgt. Carlos Medina of the San Diego County Sheriff's Department said.

The victim was flown to Ramona for further medical treatment but died before getting to the

Hiker, 18, rescued near 3 Sisters Falls, died

(/staff/susan-shroder/)

By Susan Shroder (/staff/susan-shroder/) | 9:46 p.m. July 23, 2014

JULIAN — An 18-year-old who was rescued Tuesday near Three Sisters Falls died at a hospit
Examiner's Office said.

Yasmen Vidales, who lived with her parents in San Diego, had been hiking with a friend in Juli
agency said Wednesday. When they returned to a parking area at the trail head on Boulder Cr
unresponsive.

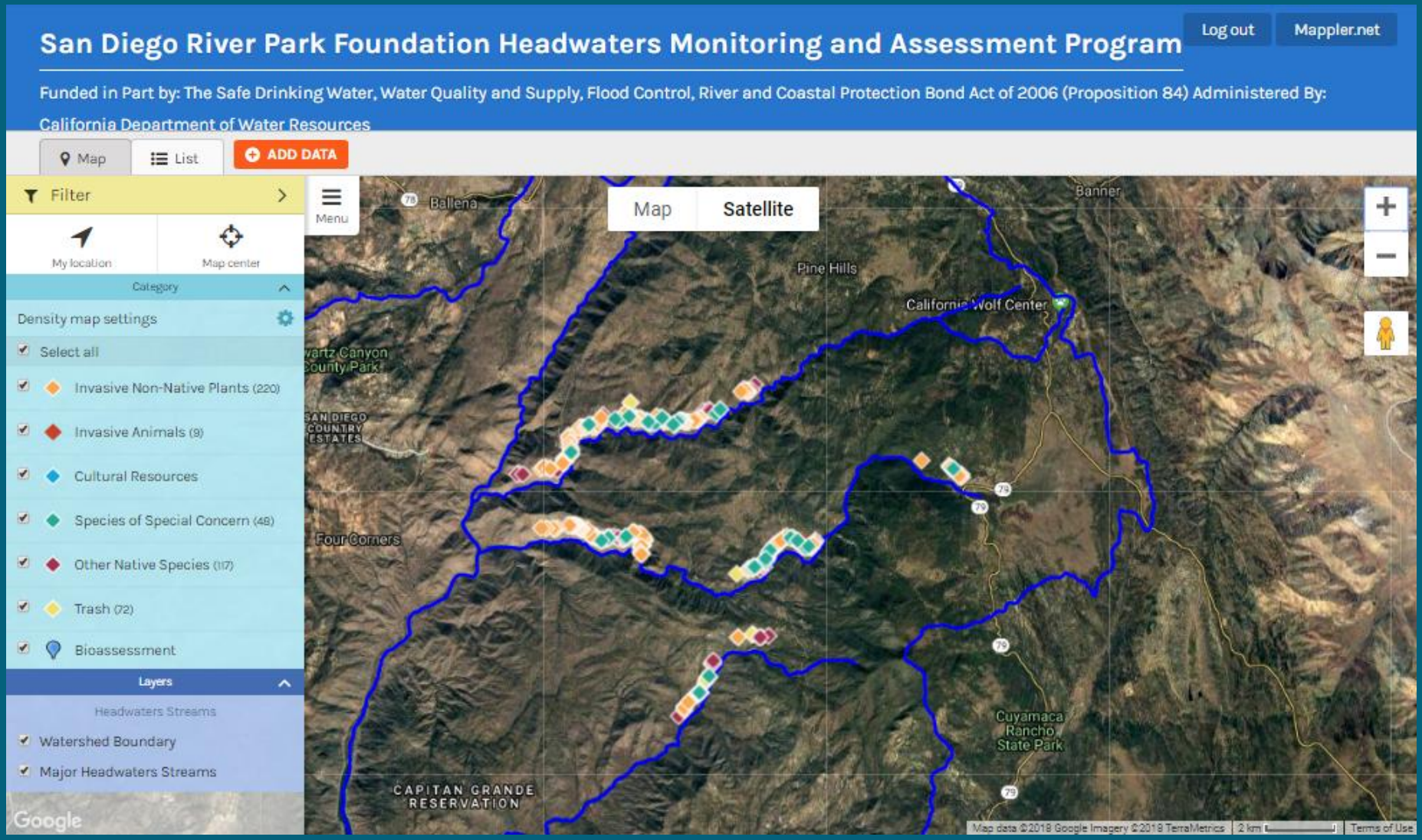
Cal Fire and sheriff's deputies responded about 4:15 p.m. and administered CPR, sheriff's Sgt

Vidales died shortly after being flown to Sharp Grossmont Hospital in La Mesa.

She had graduated in June from Chula Vista High School. Students returned Wednesday for th
school year.

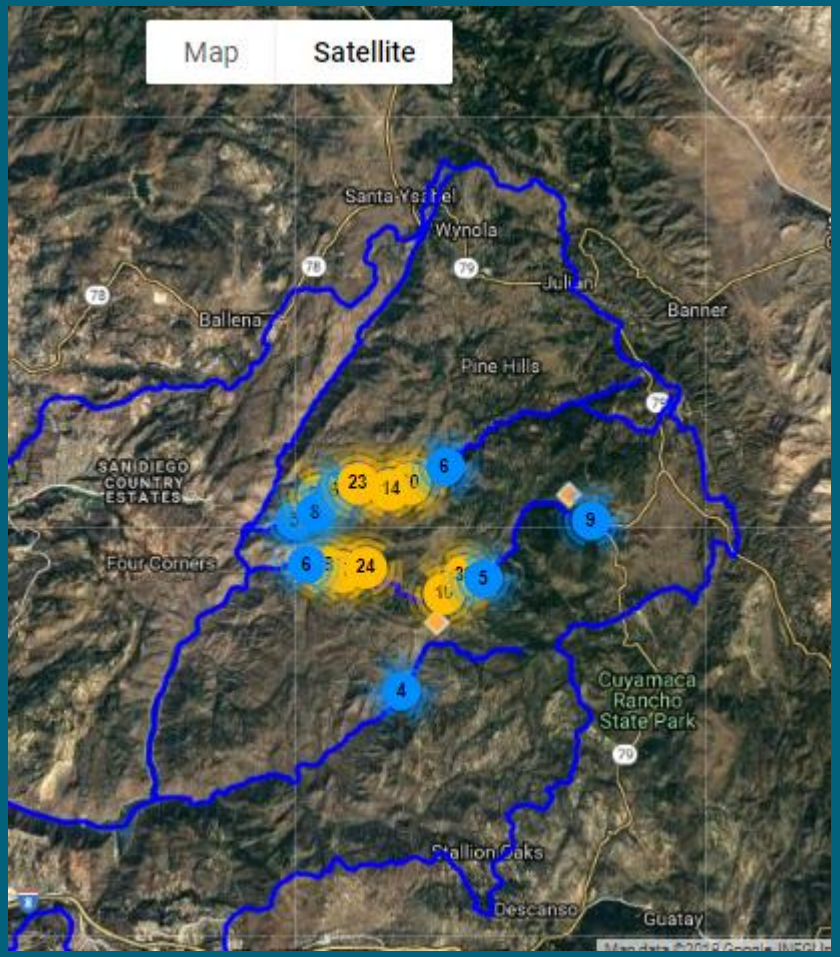

MEDICAL KIT.5
CATTLE
FERAL PIG
ORIGINAL
ORIGINAL
ORIGINAL
NOTEBOOK
WESTCOTT

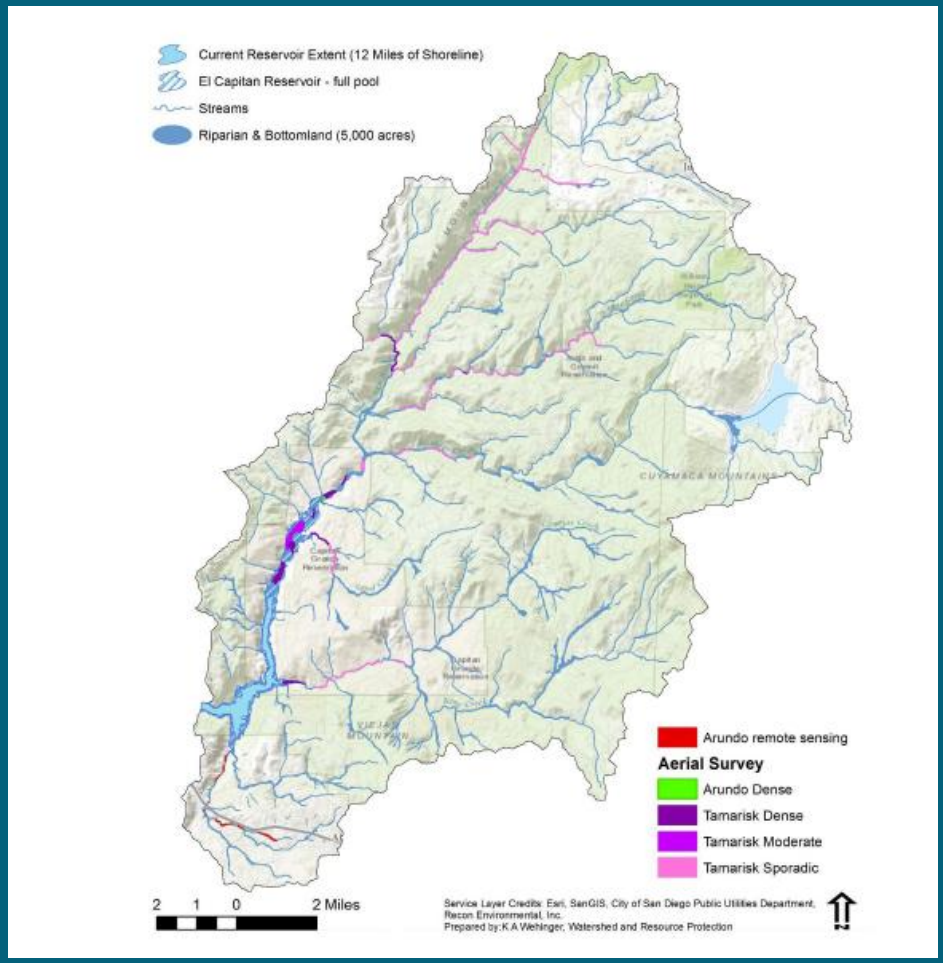
2016-2018 Results




HIKER

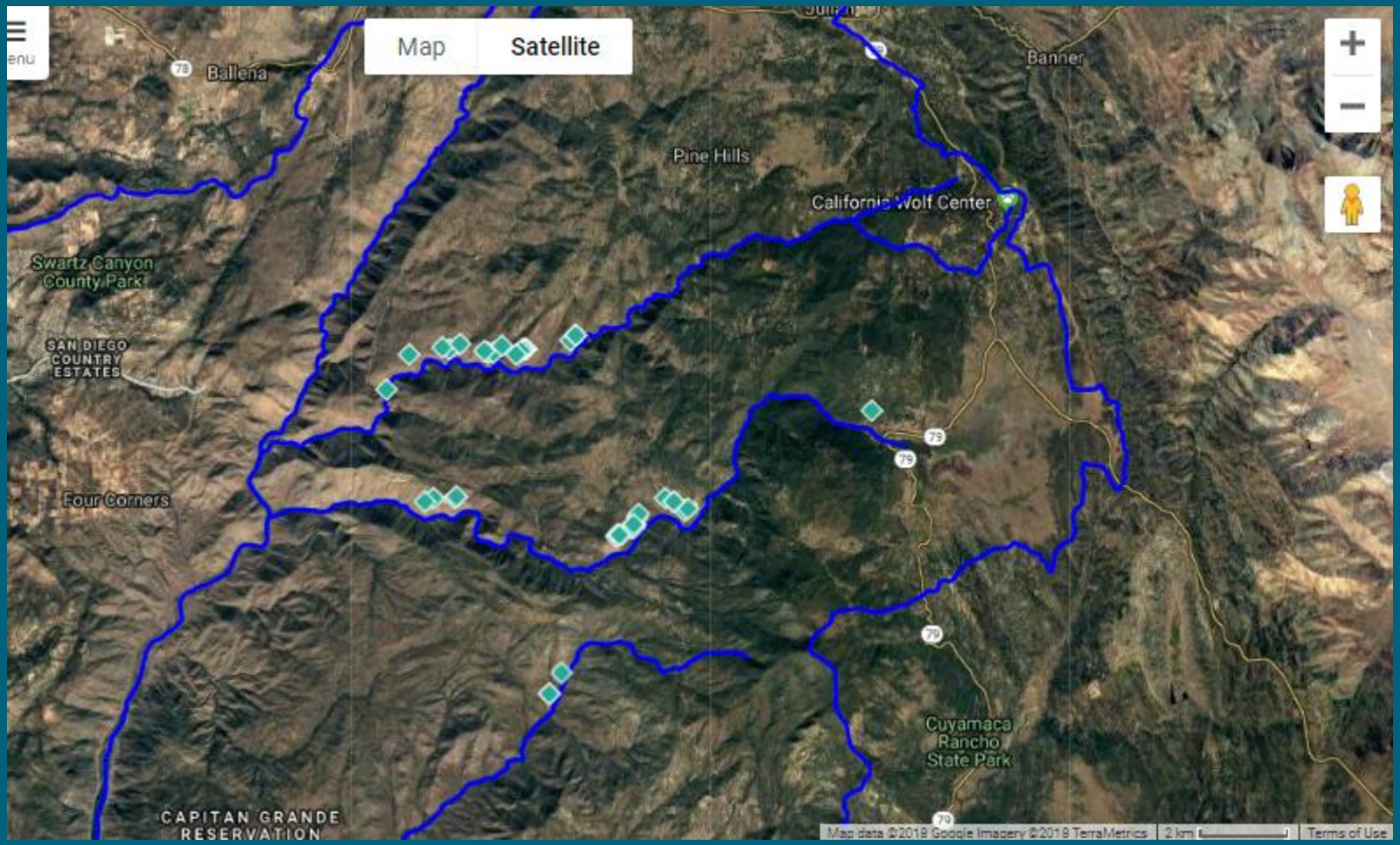
Invasive Plant Comparison

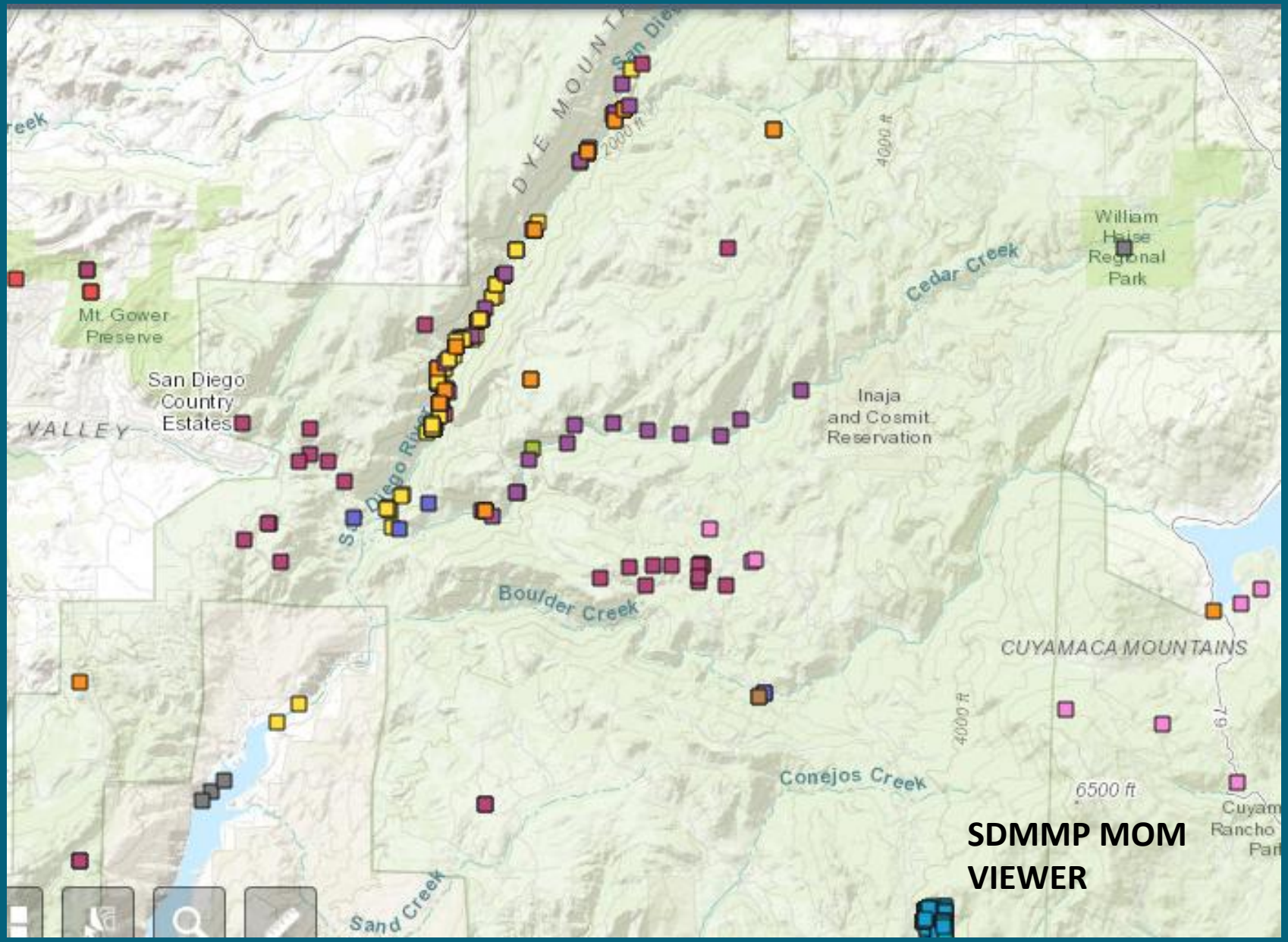




2015 K. Wehinger, City of San Diego

Species of Special Concern




Mt. Gower Preserve
San Diego Country Estates
VALLEY
Inaja and Cosmit Reservation
William Heise Regional Park
Cedar Creek
Boulder Creek
CUYAMACA MOUNTAINS
Conejos Creek
Sand Creek
6500 ft
4000 ft
SDMMP MOM VIEWER

Next Steps

- Complete missing pieces
  - Heise
  - “Big 12”
- Rotate sections every 3 years
- Integrate with additional monitoring activities
  - Bioassessment, CRAM, Flow
- Assess invasive removal efforts
- P84 R4

Acknowledgements

- Russell Barabe, CADFW
- Gary Strawn, SDFF, SDRPF, RWQCB
- Chad Loflen, RWQCB
- San Diego River Conservancy
- Ed Ervin
- W.E. Haas
- Helix Water District
- San Diego Fly Fishers
- Debbie Woodward, RWQCB
- Dr. Trent Biggs, SDSU
- RECON Native Plants
- Robert Fisher, USGS
- Bjorn Fredrickson,
- Emily Fudge, USFS
- Robert Lee Hamm, USFS
- Lance Criley, USFS
- San Diego Tracking Team
- Kumeyaay-Diegueño Land Conservancy
- City of San Diego Public Utilities Department
- County of San Diego

Acknowledgements cont'd

- Cindy Buxton
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- Brenna Augustus
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- Chandra
- Jiri
- Steve Allee
- John Caffery
- David Fleishman
- Brenda Koenig
- Jenn Frey
- Alex Walsh
- Ryan Lawler
- Benjamin Downing
- Callie Grant
- Joshua Sinshiemer
- Taylor Chase
- Jeff Castagnola
- Thomas Sumstine
- Kristine Purpura
- Allie Hermanson





SAN DIEGO RIVER PARK FOUNDATION CITIZEN SCIENCE PROGRAMMING:

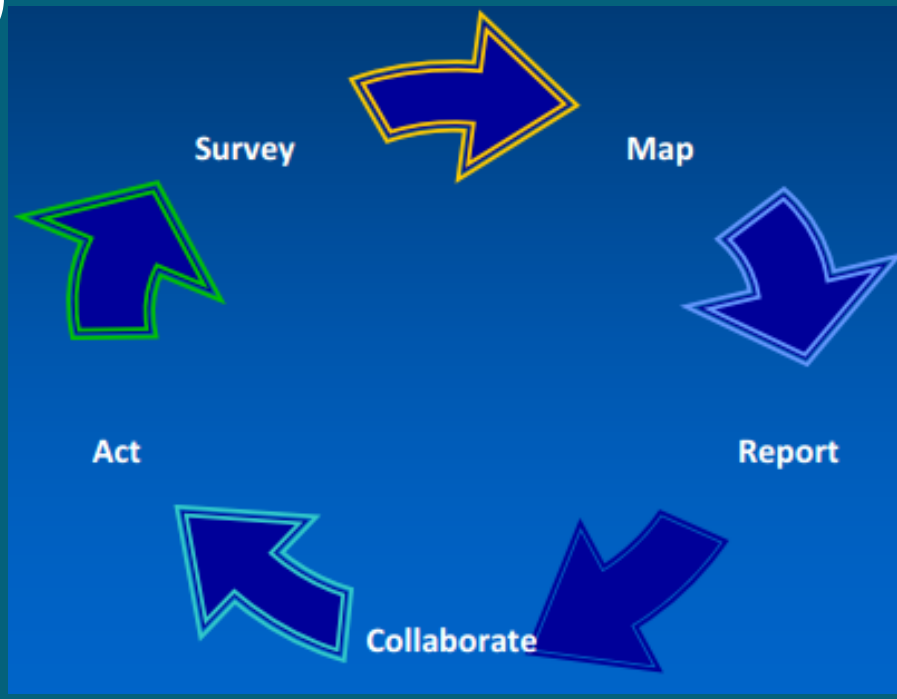
14 YEARS OF ENGAGING THE COMMUNITY IN CITIZEN SCIENCE ALONG THE SAN DIEGO RIVER

Shannon Quigley-Raymond
River Ecosystem Manager
The San Diego River Park Foundation
shannon@sandiegoriver.org
619-297-7380

Connect. Create. Conserve.

Volunteer Based Citizen Science Efforts

- RiverWatch Water Quality (2004)
- RiverBlitz (2008)
  - Invasive non-native plants
    - EDRR (2014)
  - Trash monitoring
  - Homeless encampments
- Bioassessment (2009)
- Special Studies (2011)
- Headwaters Amphibian Monitoring (2015)
- Headwaters Stream Assessments (2016)
- iNat, GSOB and ISHB (2016)



Communicating Data and the Information Exchange

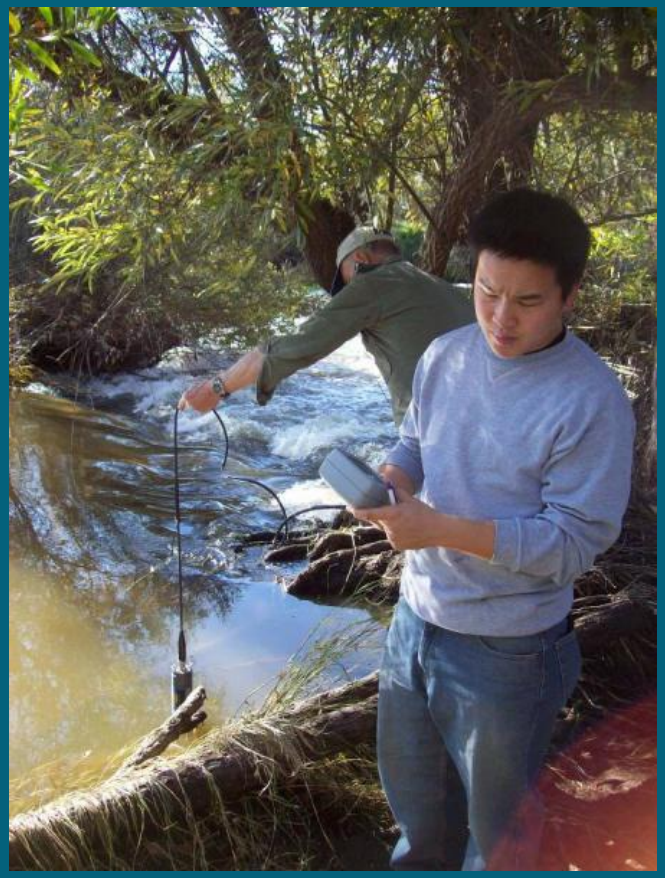
- SDRPF portals and reports
- FieldScope
- iNaturalist
- CalFlora
- What's Invasive?

Okay, you have a question…. Considerations for Setting up a Project

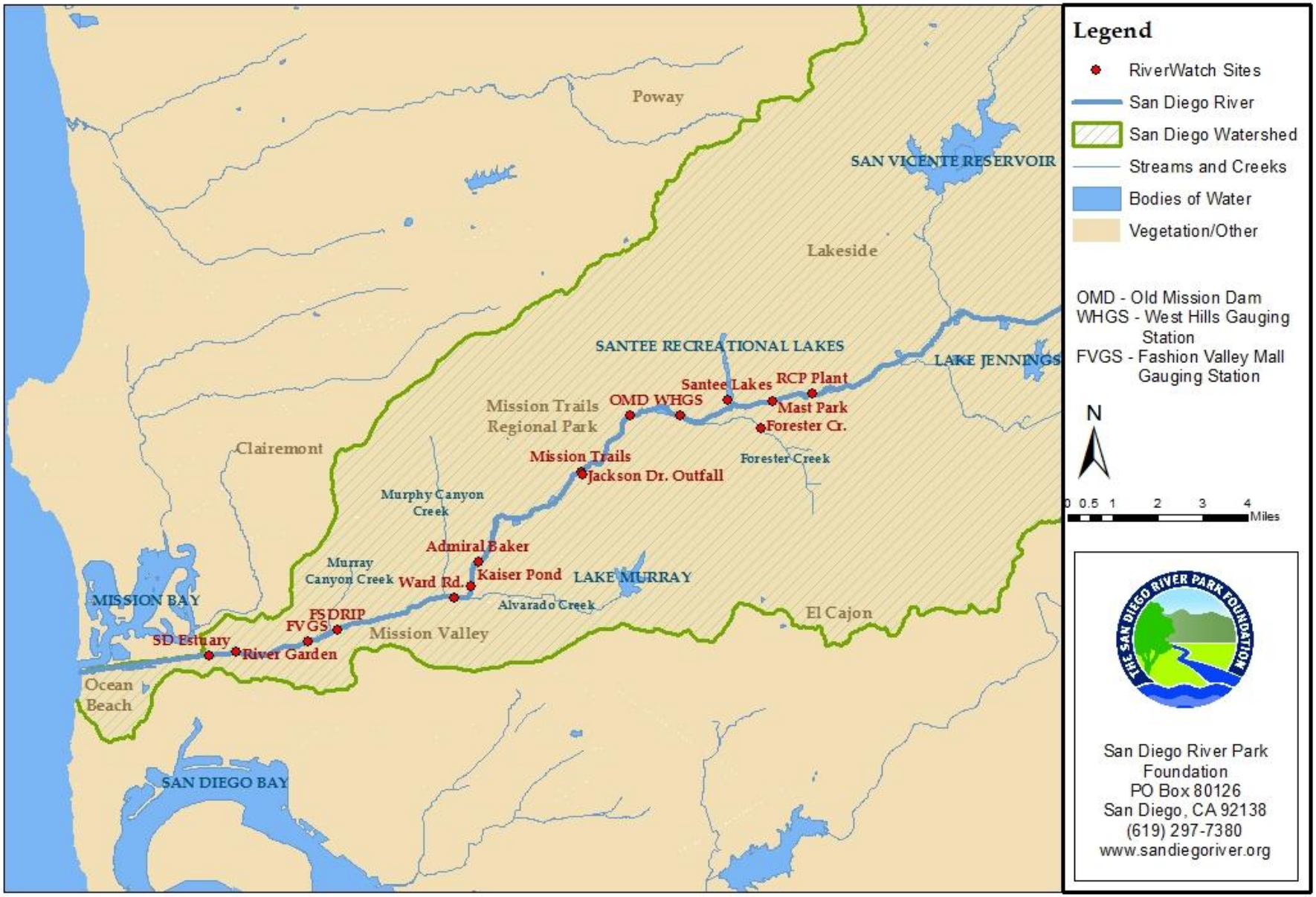
- Volunteer Base
  - Students
    - K-8
    - 9-12
    - College
  - Professors
  - General public
- Tiers of supervision
- Tiers of complexity
- Tiers of group sizes
- Tiers of training

RiverWatch

- Monthly
- 15 Sites
- YSI Sonde
- Nitrate and Phosphate



San Diego River Park Foundation RiverWatch Sites



San Diego River Park Foundation
PO Box 80126
San Diego, CA 92138
(619) 297-7380
www.sandiegoriver.org

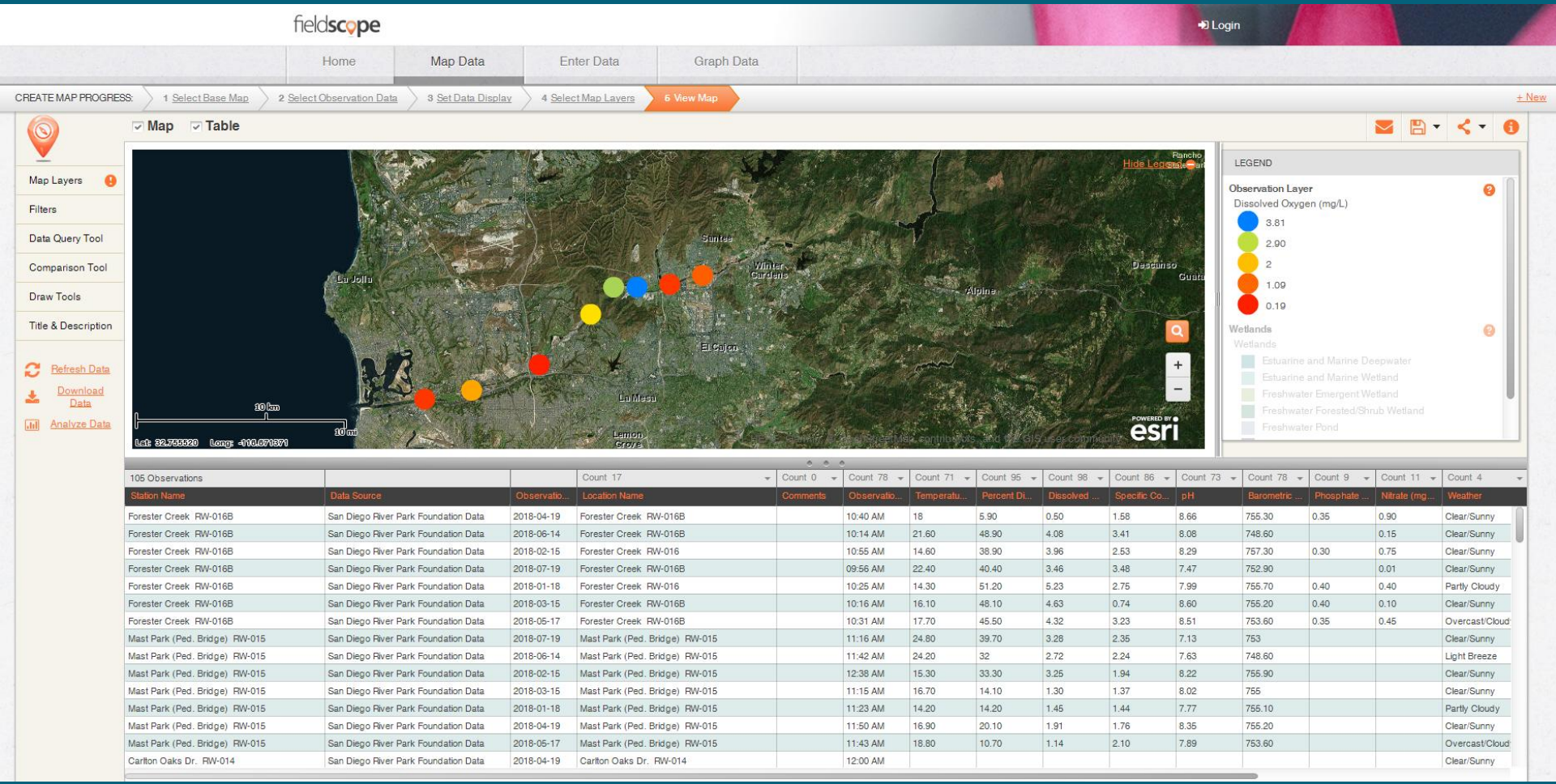
RiverWatch Team

Technical Advisory Committee	•Technical Questions •Protocol Consistency
Staff Program Coordinator	•Volunteer Coordination •Program Oversight •QA/QC
Volunteer Team Leaders	•Set the Schedule •Lead Volunteers •QA/QC
Interns	•Equipment Maintenance •Portal Data Processing
Volunteer Team Members	•Perform Monitoring

The Volunteer Office

The Lab

Public Access and Reporting FieldScope



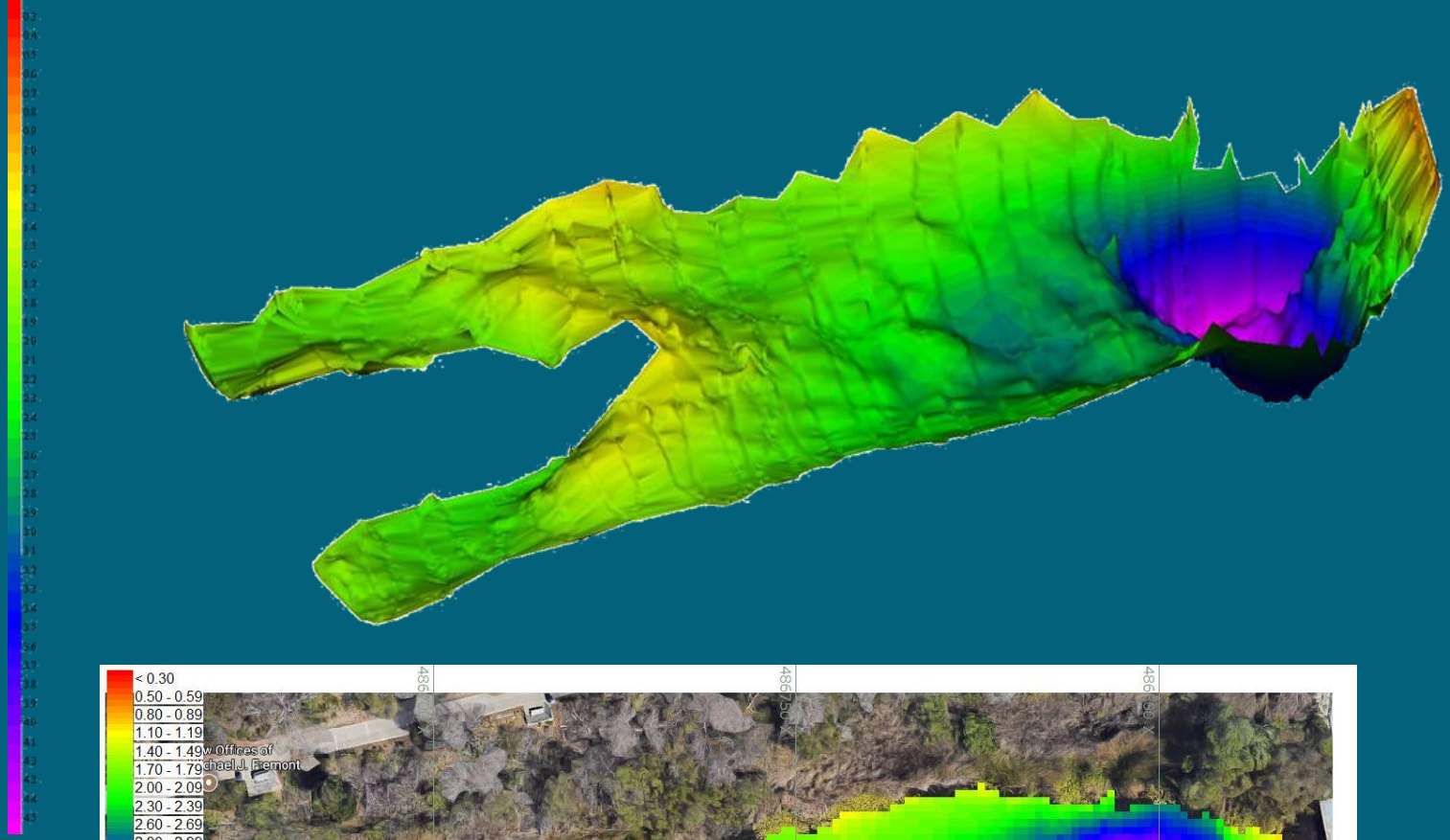
105 Observations

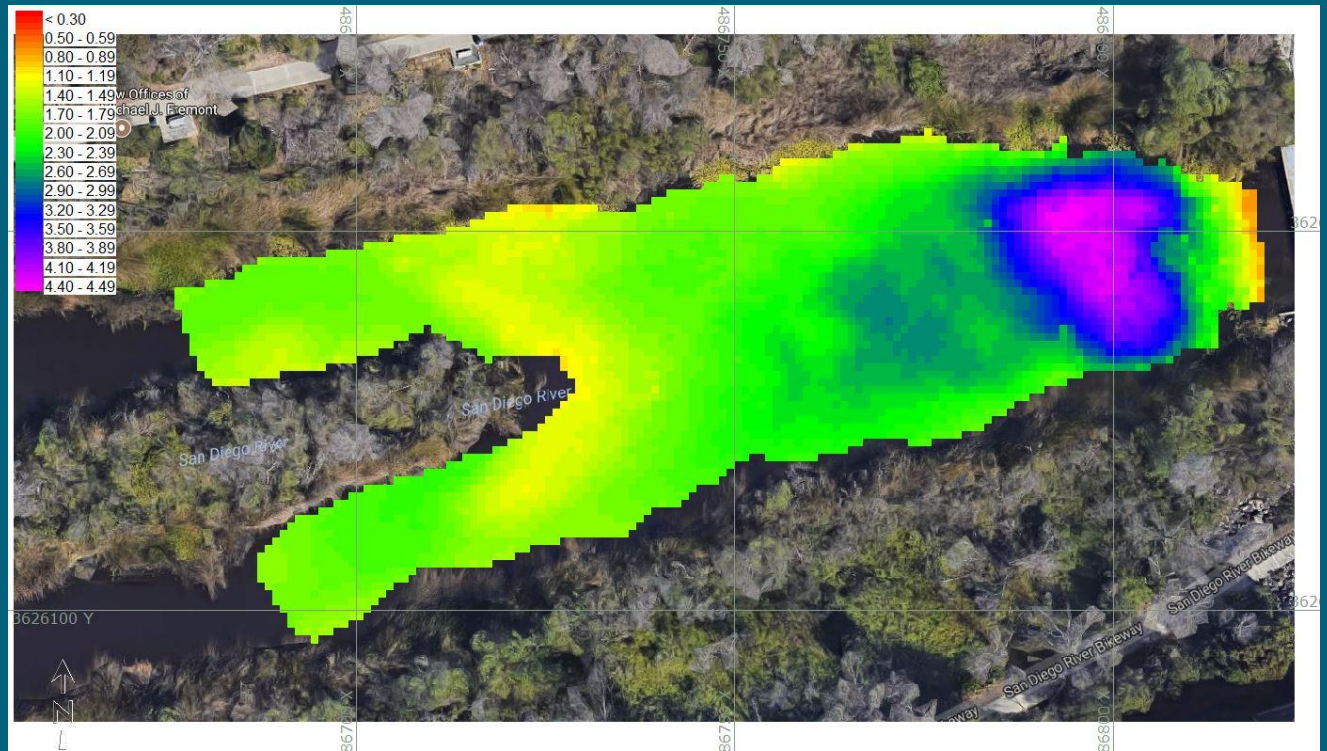
			Count 17	Count 0	Count 78	Count 71	Count 95	Count 98	Count 86	Count 73	Count 78	Count 9	Count 11	Count 4
Station Name	Data Source	Observatio...	Location Name	Comments	Observatio...	Temperatu...	Percent Di...	Dissolved ...	Specific Co...	pH	Barometric ...	Phosphate ...	Nitrate (mg...	Weather
Forester Creek RW-016B	San Diego River Park Foundation Data	2018-04-19	Forester Creek RW-016B		10:40 AM	18	5.90	0.50	1.58	8.66	755.30	0.35	0.90	Clear/Sunny
Forester Creek RW-016B	San Diego River Park Foundation Data	2018-06-14	Forester Creek RW-016B		10:14 AM	21.60	48.90	4.08	3.41	8.08	748.60		0.15	Clear/Sunny
Forester Creek RW-016B	San Diego River Park Foundation Data	2018-02-15	Forester Creek RW-016		10:55 AM	14.60	38.90	3.96	2.53	8.29	757.30	0.30	0.75	Clear/Sunny
Forester Creek RW-016B	San Diego River Park Foundation Data	2018-07-19	Forester Creek RW-016B		09:56 AM	22.40	40.40	3.46	3.48	7.47	752.90		0.01	Clear/Sunny
Forester Creek RW-016B	San Diego River Park Foundation Data	2018-01-18	Forester Creek RW-016		10:25 AM	14.30	51.20	5.23	2.75	7.99	755.70	0.40	0.40	Partly Cloudy
Forester Creek RW-016B	San Diego River Park Foundation Data	2018-03-15	Forester Creek RW-016B		10:16 AM	16.10	48.10	4.63	0.74	8.60	755.20	0.40	0.10	Clear/Sunny
Forester Creek RW-016B	San Diego River Park Foundation Data	2018-05-17	Forester Creek RW-016B		10:31 AM	17.70	45.50	4.32	3.23	8.51	753.60	0.35	0.45	Overcast/Cloud
Mast Park (Ped. Bridge) RW-015	San Diego River Park Foundation Data	2018-07-19	Mast Park (Ped. Bridge) RW-015		11:16 AM	24.80	39.70	3.28	2.35	7.13	753			Clear/Sunny
Mast Park (Ped. Bridge) RW-015	San Diego River Park Foundation Data	2018-06-14	Mast Park (Ped. Bridge) RW-015		11:42 AM	24.20	32	2.72	2.24	7.63	748.60			Light Breeze
Mast Park (Ped. Bridge) RW-015	San Diego River Park Foundation Data	2018-02-15	Mast Park (Ped. Bridge) RW-015		12:38 AM	15.30	33.30	3.25	1.94	8.22	755.90			Clear/Sunny
Mast Park (Ped. Bridge) RW-015	San Diego River Park Foundation Data	2018-03-15	Mast Park (Ped. Bridge) RW-015		11:15 AM	16.70	14.10	1.30	1.37	8.02	755			Clear/Sunny
Mast Park (Ped. Bridge) RW-015	San Diego River Park Foundation Data	2018-01-18	Mast Park (Ped. Bridge) RW-015		11:23 AM	14.20	14.20	1.45	1.44	7.77	755.10			Partly Cloudy
Mast Park (Ped. Bridge) RW-015	San Diego River Park Foundation Data	2018-04-19	Mast Park (Ped. Bridge) RW-015		11:50 AM	16.90	20.10	1.91	1.76	8.35	755.20			Clear/Sunny
Mast Park (Ped. Bridge) RW-015	San Diego River Park Foundation Data	2018-05-17	Mast Park (Ped. Bridge) RW-015		11:43 AM	18.80	10.70	1.14	2.10	7.89	753.60			Overcast/Cloud
Carlton Oaks Dr. RW-014	San Diego River Park Foundation Data	2018-04-19	Carlton Oaks Dr. RW-014		12:00 AM									Clear/Sunny

Data Uses

- USBR Technical Memo
- Causal Analysis: Conductivity
- WQIP
- State of the River
- Monitoring Consortium
- Investigative actions (NO3)
- Enhancement projects
- Student and researcher uses


Pelican




< 0.30
0.50 - 0.59
0.80 - 0.89
1.10 - 1.19
1.40 - 1.49
1.70 - 1.79
2.00 - 2.09
2.30 - 2.39
2.60 - 2.69
2.90 - 2.99
3.20 - 3.29
3.50 - 3.59
3.80 - 3.89
4.10 - 4.19
4.40 - 4.49
San Diego River
San Diego River
San Diego River Bikeway
San Diego River Bikeway
3626100 Y

RiverBlitz

RiverBlitz

- Twice a year
- 2-3 hours
- Trained Volunteer Leaders
- Document: trash, invasive non-native plants, site condition issues

Tools

RiverBlitz: IPVRA

Invasive Plant Visual Rapid Assessment

Date: _____ *Team Members:* _____

GPS ID: _____ *Camera ID:* _____ *Segment ID:* _____

ID #	Common Name	#	Common Name
1.	Arundo	6.	Tamarisk
2.	Brazilian Pepper Tree	7.	Mixed*
3.	Canary Island Date Palm	8.	Castor Bean
4.	Eucalyptus	9.	Pampas Grass
5.	Mexican Fan Palm		

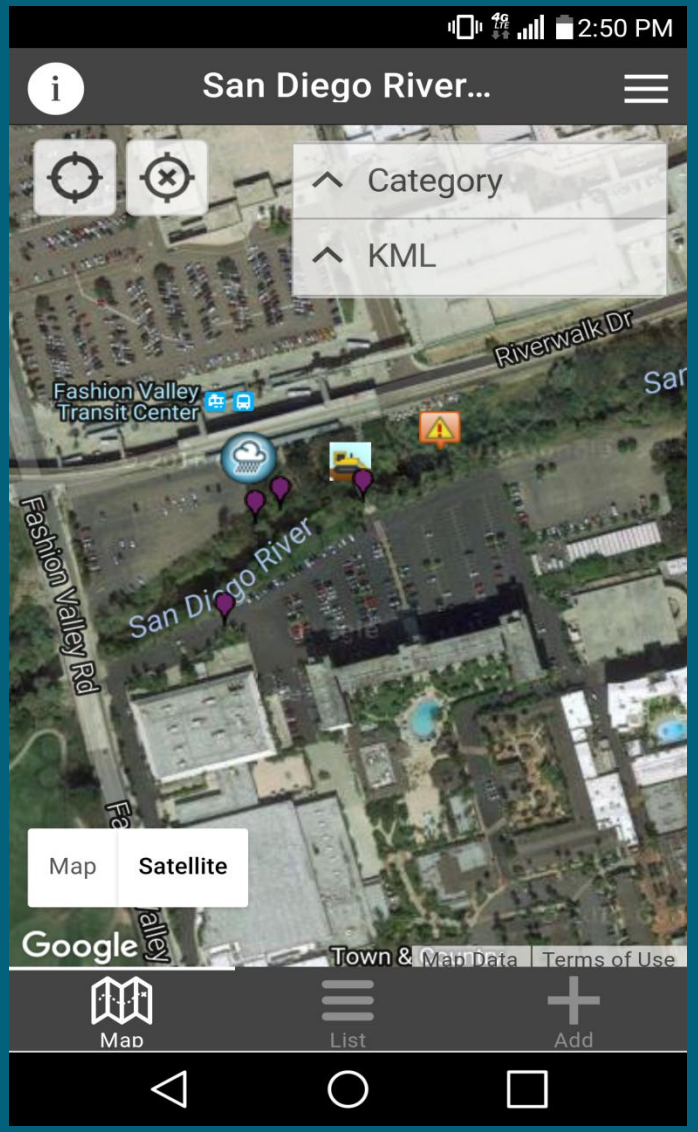
Waypoint	Invasive Type (ID #)	Canopy Cover (square feet)	Diameter** (inches)	Comments	Picture #
Example 167	7	60	5	*Fill this section with details, description or additional things to note. Ex. Plants clustered together on south bank of river #1, 4, & 8*	*150-152*

*Mixed (ID # 7) indicates that the canopies of two or more types of invasive plants overlap. Under **Comments** please list the ID numbers of specific mixture of invasive plants **See example in first row of table above.**

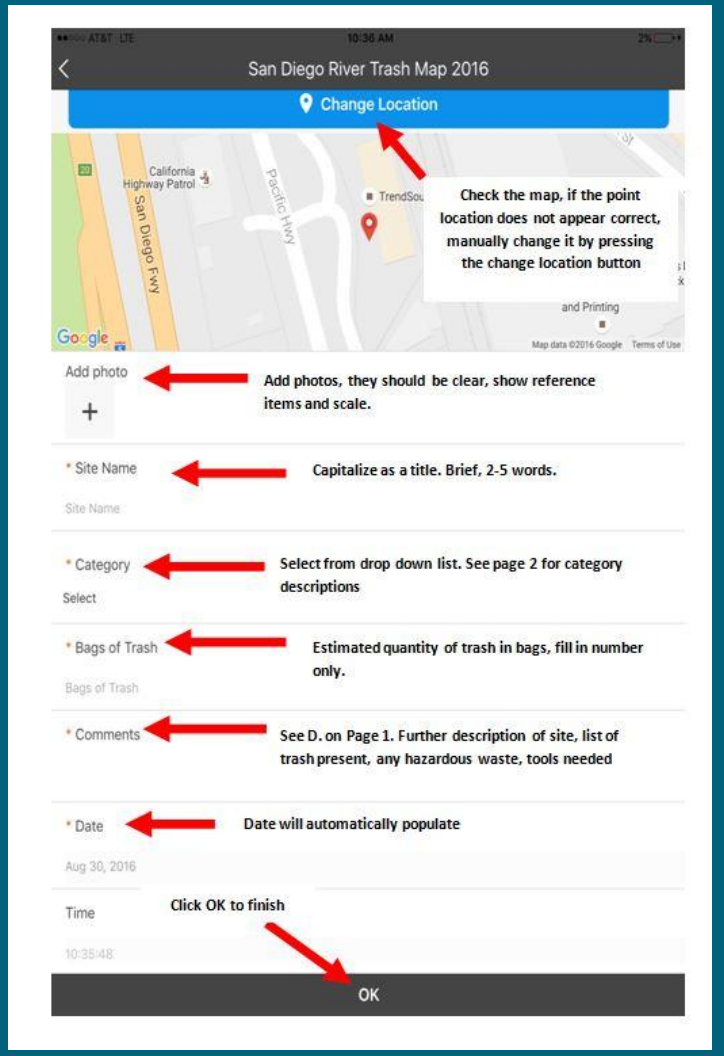
**Trunk diameter only recorded for trees with a diameter of 2 inches or more and at least head high (~ >6').


PAPERLESS

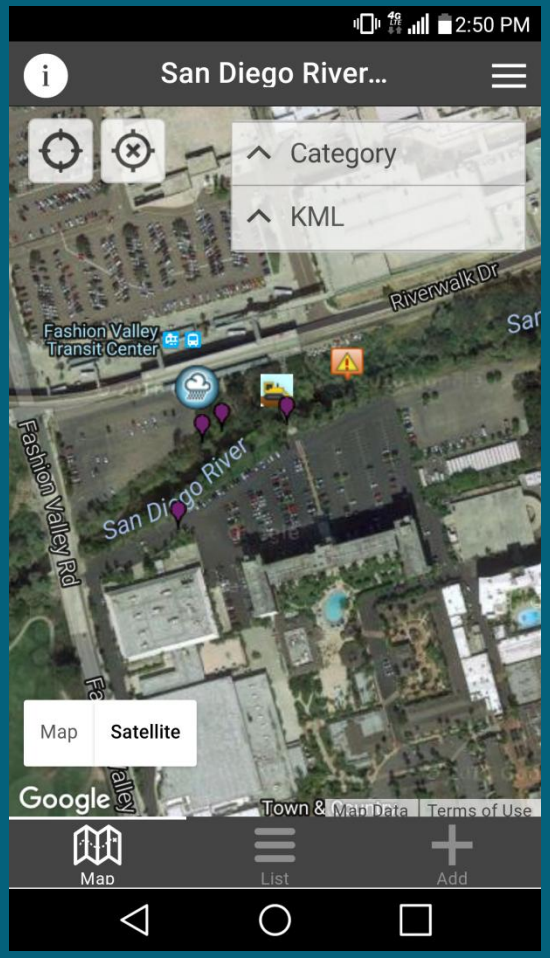
MapplerK2 Mobile Data Collection App For Android and iPhone

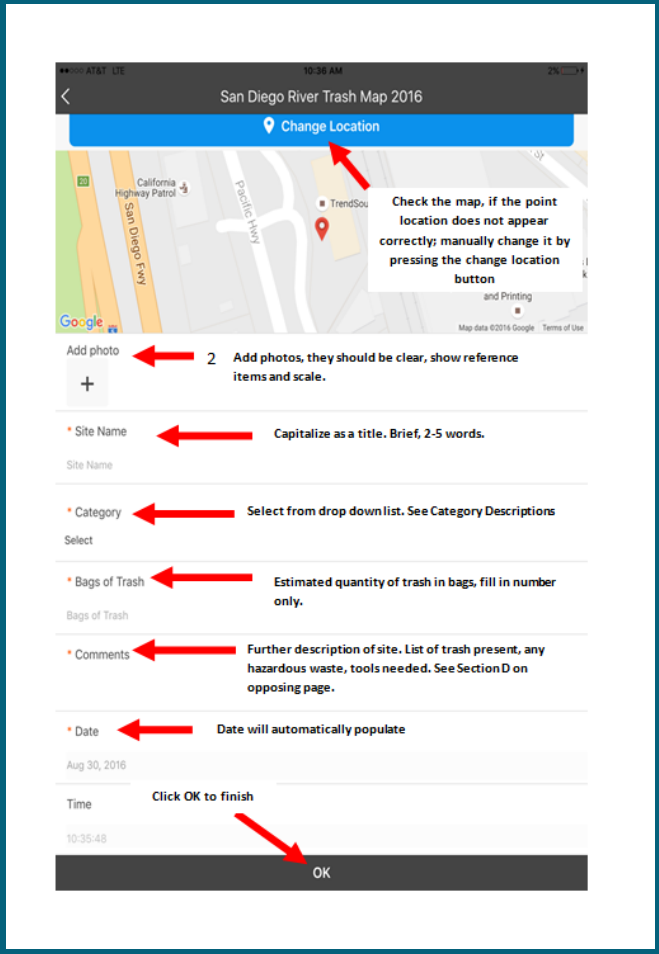


Installing and Using MapplerK2



Filling out Trash and Encampment Data on Mappler





Giant Reed
Arundo donax

- This plant can grow up to 26 feet high.
- This plant resembles a fusion of a corn stalk and bamboo.
- The leaves may appear green to blue-green or yellowish in winter.
- This plant may bare non-viable seeds.
- Native to the Mediterranean and the Middle East.

AQUATIC INVASIVE IDENTIFICATION

WATER LETTUCE

PISTIA STRATOITES

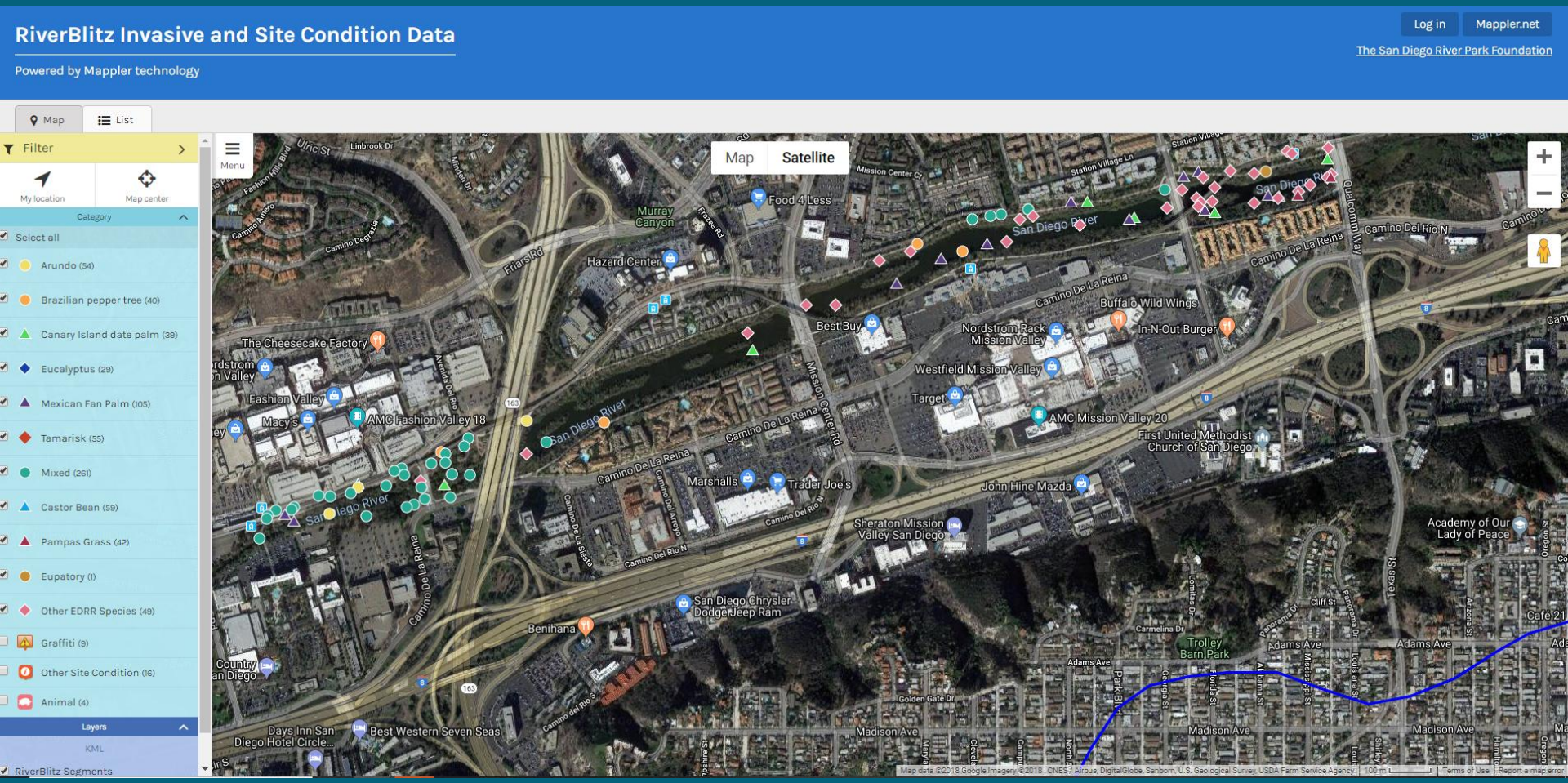
IDENTIFICATION:

- Free floating aquatic herb resembling a head of lettuce
- Leaves grow up to 6 inches long and form a circular arrangement in which all leaves are at a similar height called a rosette
- Dull light green color with ridged veins
- Leaves are soft, thick, velvety-hairy
- Spread by producing secondary rosettes
- Roots are long and feathery and hang below floating leaves

ECOLOGICAL THREAT:

- Grows in large mats that clog waterways and degrade water quality
- Mats block air-water interface, reducing water oxygen levels and negatively impacting fish populations
- Mats displace native aquatic plant communities
- Mats block sunlight from reaching submersed aquatic plants

Invasive Non-Native Plant Mapping



EARLY DETECTION INVASIVE MONITORING: AN ANNUAL UPDATE

In our 2014 State of the River Report, we reported that our volunteers and staff contributed to the regional Early Detection Rapid Response (EDRR) program by reporting occurrences of four of seven EDRR species.

The good news is that treatment started on all four of these populations in 2014 – a truly rapid response. Unfortunately, since then, Algerian sea lavender has also been confirmed along the river, and the presence of water lettuce was documented in Mission Valley in Segment 3. Water lettuce is of particular concern in ponded sections of the river because it impedes water flow, and its dense growth reduces light and provides mosquito habitat. The plant also reduces dissolved oxygen and pH in the water. Water lettuce has spread downstream to Section 2 and documented in Section 8 in Santee.

Also in 2015, Eupatory has spread to two downstream locations and one new smaller upstream location was identified. It now spreads from Section 3 to 5 in Mission Valley.

INVASIVES FOUND ON THE RIVER

1. French broom
   Identified at Eagle Peak Preserve near Julian and William Heise County Park
2. European sea lavender
   Found at the River Mouth and Forester Creek
3. Yellowflag Iris
   Found at Mission Valley Preserve and the Riverwalk Golf Course
4. Crofton weed or Eupatory
   Found in central Mission Valley in Section 4
5. Algerian sea lavender
   Found at the River Mouth and Forester Creek
6. Water lettuce
   Found in Mission Valley and Santee

NOT YET FOUND

7. Purple loosestrife
8. Red sesbania (or rattlebox)

We continue to watch for all of these species. Please report sightings along the San Diego River or its tributaries to us by calling (619) 297-7380 or emailing shannon@sandiegoriver.org.

Figure 7 Arundo Observations throughout Survey Area

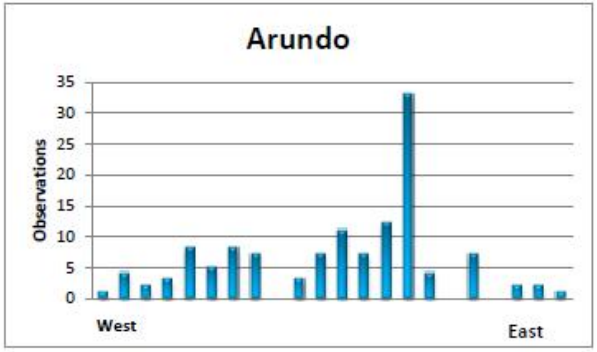


Figure 8 Arundo

Figure 9 Tamarisk Observations throughout Survey Area

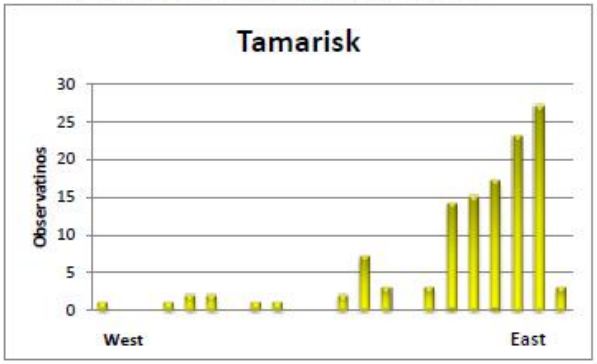


Figure 10 Tamarisk

Figure 9 Brazilian pepper tree Observations throughout Survey Area

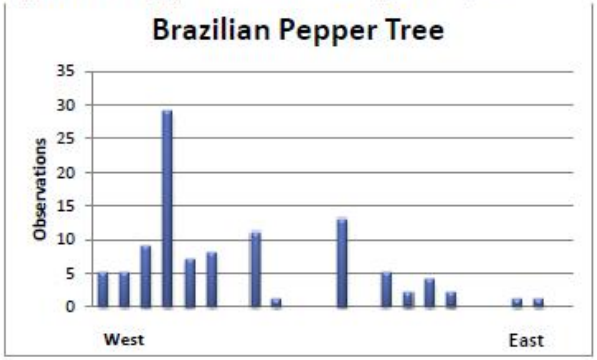


Figure 10 Pepper Tree

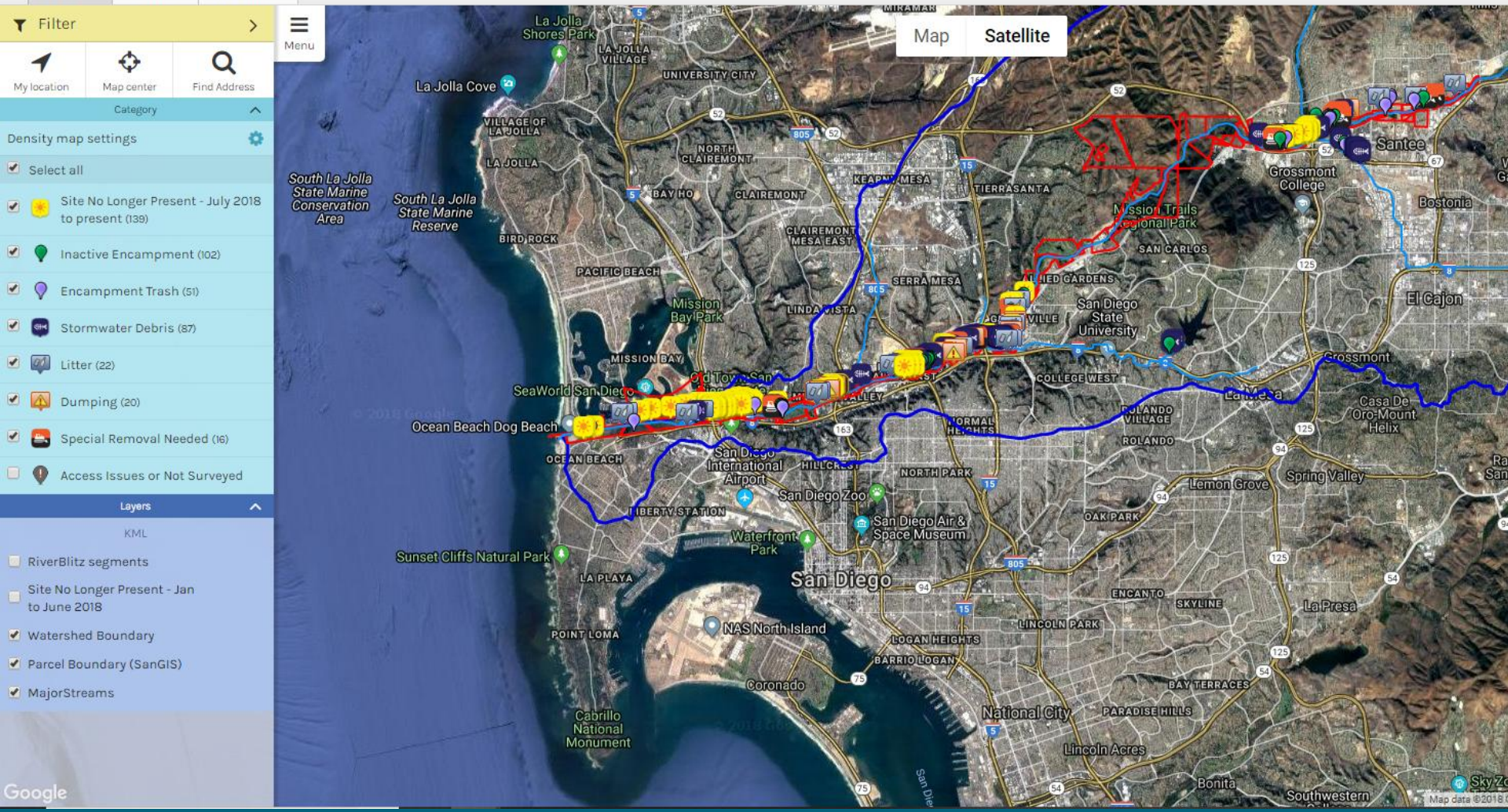
Data Uses

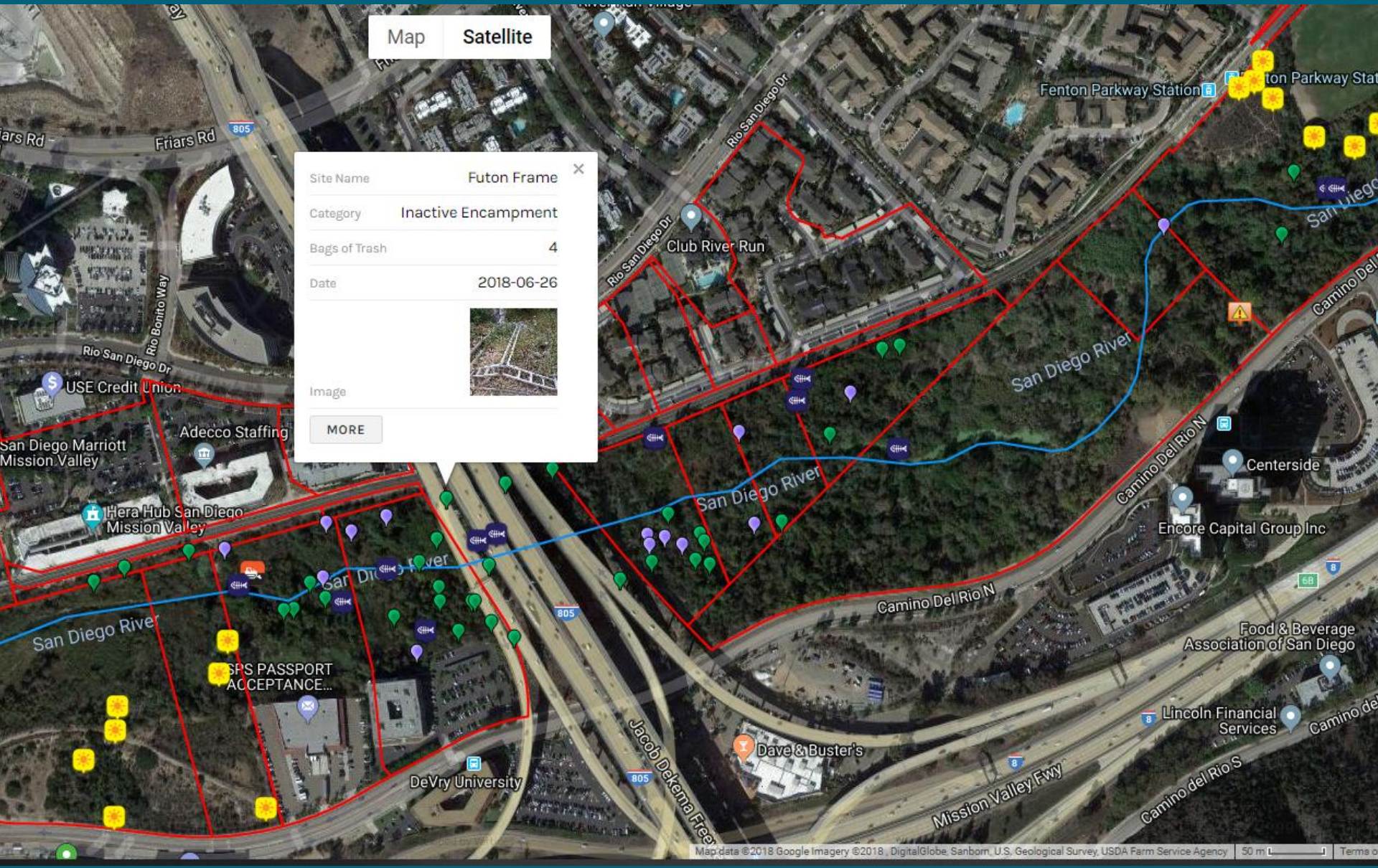
- Invasive removal, mitigation and enhancement projects
- Weed eradication master plan update
- EDRR
- Student and researcher projects

San Diego River Trash Cleanup 2018

Powered by Mappler technology

Map | List | Chart

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Hera Hub San Diego Mission Valley
San Diego River
Club River Run
Fenton Parkway Station
Centerside
Encore Capital Group Inc
Camino Del Rio N
Food & Beverage Association of San Diego
Lincoln Financial Services
Dave & Buster's
DeVry University
Jacob Dekema Freeway
Mission Valley Fwy
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Map data ©2018 Google Imagery ©2018 , DigitalGlobe, Sanborn, U.S. Geological Survey, USDA Farm Service Agency
50 m

Figure 1 Percent of Trash Type by Volume

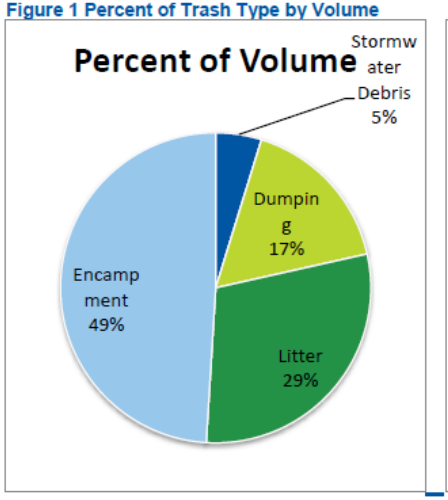


Figure 2 Percent of Trash Type by Sites

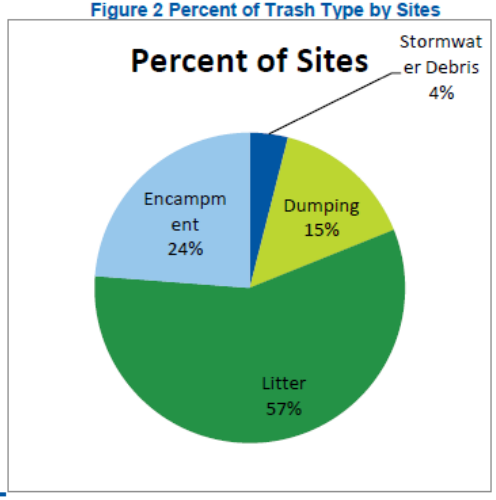
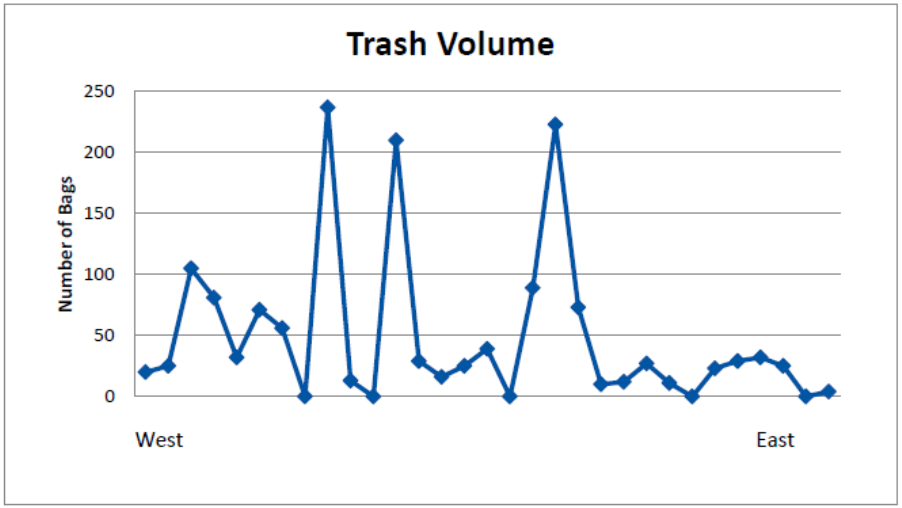


Figure 3 Number of Bags Per Segment

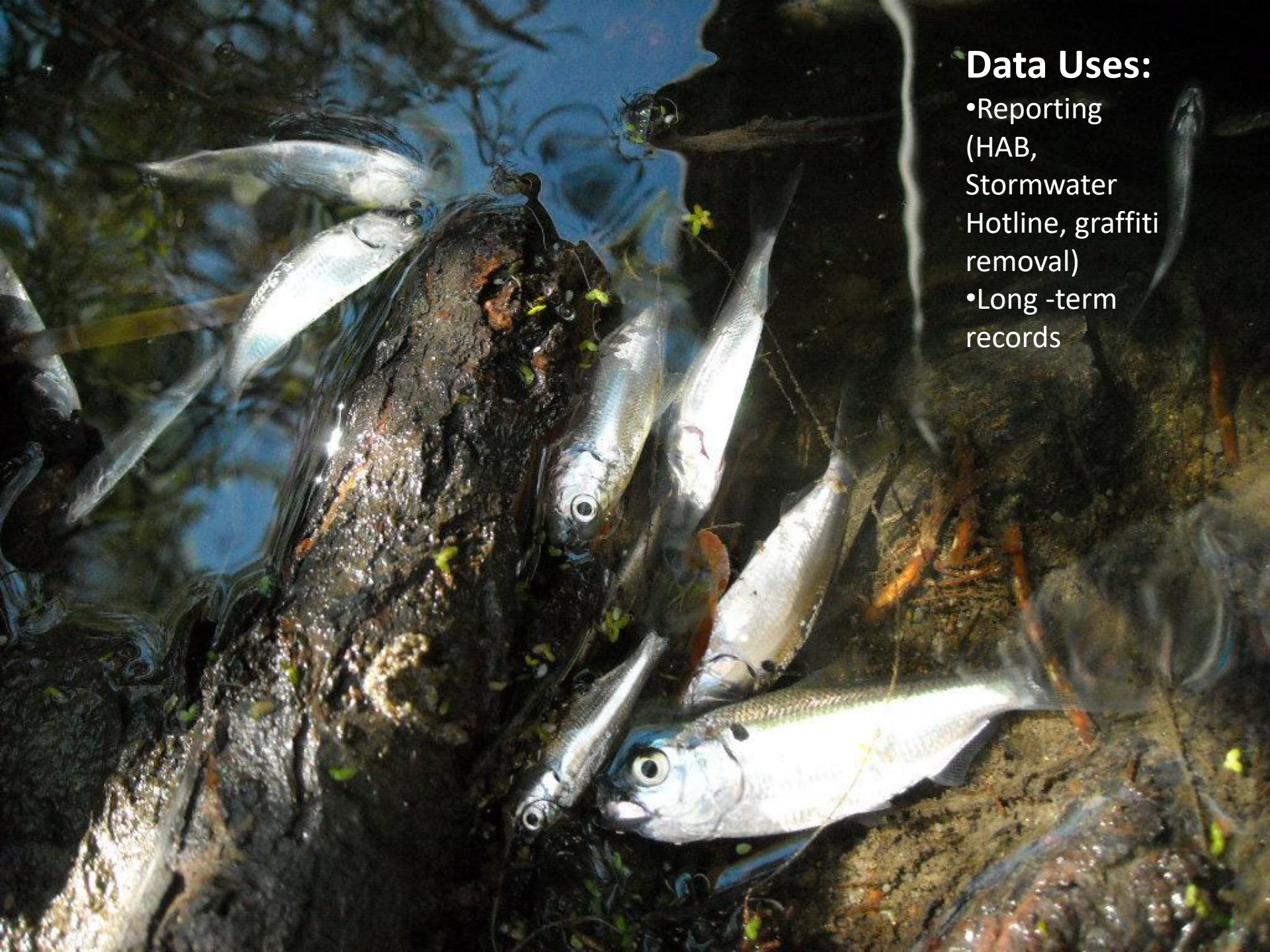


Data Uses

- 2. 5 million pounds of trash removed by SDRPF volunteers
- WQIP
- Trash Amendments
- Mayor, landowners, law enforcement, social services
- Trash capture
- Pubic outreach

Site Conditions

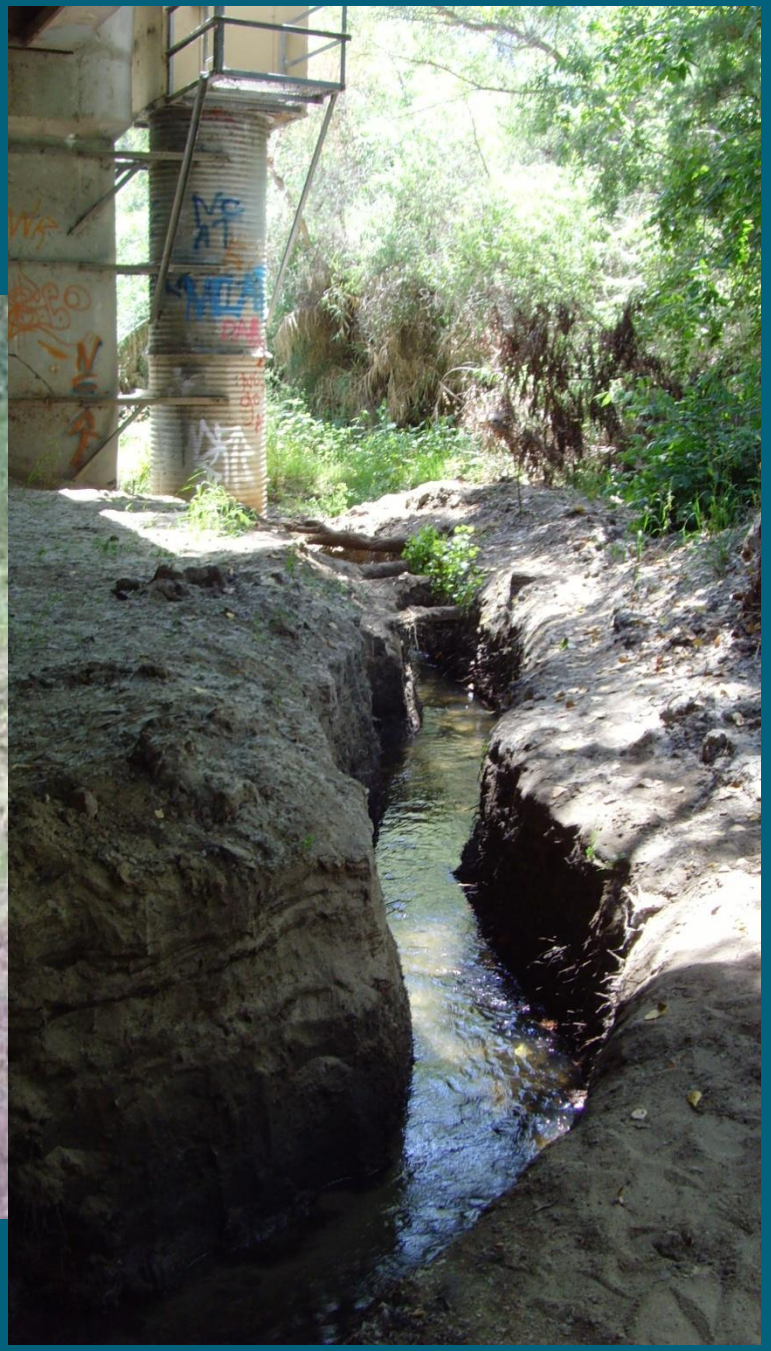
- Algal Blooms
- Odor
- Fish Kills
- Amenities and Aesthetics



Data Uses:

- Reporting (HAB, Stormwater Hotline, graffiti removal)
- Long -term records

What Else Can Our Citizen Monitors Do?




Version 1.0
Version 2.0

Gold Spotted Oak Borer

LEGEND

ee #	DBH	Condition
00	31"	good
01	16"	good
02	34"	good
03	23"	good
04	18"	good
05	40"	good
06	17"	good
07	28"	good
08	36"	good
09	34"	good
10	27"	good
11	30"	good
12	26"	good
13	24"	fair
14	25"	good
15	21"	good
16	22"	good
17	18"	good
18	35"	fair
19	39"	good
20	27"	fair
21	25"	good
22	27"	good
23	36"	good
24	18"	good
26	30"	good
27	19"	good
28	13"	good
29	19"	good
30	27"	good

Invasive Shot-Hole Borers + Fusarium Dieback

Monitoring Trap Guidelines

Authors: Akif Eskalen, Ph.D.[1]; John Kabashima, Ph.D.[2]; Monica Dimson[2]; Jan Gonzales[2]; Stacy Hishinuma, Ph.D.[3]; Richard Stouthamer, Ph.D.[1] **Photographs:** female beetle[1] - Gevork Arekalian/LA County Dept of Agriculture; bottle trap - Benjamin DiAnna[2]; all other images - Monica Dimson[2]

[1] UC Riverside; [2] UC Cooperative Extension; [3] USDA Forest Service, Forest Health Protection

WHEN TO TRAP

Monitoring for Invasive Shot-Hole Borer (ISHB), *Euwallacea* spp., and Fusarium Dieback can be challenging: the invasive pest complex has attacked over 260 different species, including common native, landscape, and agricultural trees.

Visual surveys are effective for identifying ISHB symptoms on individual trees, but may not be practical for several acres of inaccessible forest. In this case, monitoring traps can be installed to detect ISHB presence. A lure called quercivorol helps attract beetles to the trap. This document describes trap options and the process of trap installation and maintenance.

TRAP OPTIONS

Trap Type	Lindgren/Funnel Trap (A)	Panel Trap (B)	Bottle Trap (C)
How it Works	Insects encounter trap, tumble down through funnels, and fall into cup of preservative*	Insects that fly into trap become stuck on the sticky surface of the panel	Insects encounter upper bottle and tumble down into lower bottle of preservative*
Pros	• Lasts for multiple field seasons • Easy to service and	• Less expensive than Lindgren/Funnel trap • Less frequent service	• Less expensive than Lindgren/Funnel trap

Bioassessment

- Can:
  - Facilitate annual training
  - Loan equipment
  - Provide collection permit holder assistance
- Cannot:
  - Process samples $$

In addition, the San Diego River Park Foundation conducts regular trash cleanups and assessments of riparian conditions of the river. Detailed records of homeless encampments, trash locations and amounts of trash removed. and river conditions are maintained and distributed. Reports produced ...oundation were reviewed to assess the extent of trash within the ...to sources under the control of the Participating Agencies.

SAN DIEGO RIVER

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WHERE DOES THE DATA COME FROM?

Citizen science is research conducted by nonprofessional and/or amateur scientists, under the guidance of scientists and using scientific protocols.

The data provided by citizen scientists through the River Park Foundation's programs is valuable and extensive, allowing us to create and advance a work plan to promptly address issues.

Data is collected by volunteers through:

River Blitz: Volunteer teams are led by a trained captain, and collect data using handheld GPS units, digital cameras and data forms (such as sample below). Comprehensive surveys are conducted in April and October, with additional interim surveys conducted by the Park Watch and River Rescue Assessment Team volunteers.

Waypoint	Invasive ID (ID #)	Canopy Cover (square ft)	Diameter (inches)	Comments	Photo #
13	5	42	2 ft	Partially burned, 5 ft off N. side of trail	12
14	5	60	1 ft	west side of trail in the marsh	13
15	2	400	4 ft	Large tree w/ many off-shoots	14

RiverWatch: Volunteer teams collect water quality data using an electronic sonde, field forms and nutrient test kits. RiverWatch monitoring follows strict protocols (QA/QC procedures).

Data used in this report was collected by volunteers during our October 2015 River Blitz survey and monthly RiverWatch water quality monitoring for Water Year 2015 (October 2014-September 2015).

SWAMP Surface Water Ambient Monitoring Program

...s best suited to answering management questions about ...not be addressed at the aggregate watershed scale, for ...sessing resources and/or problems of particular ...stion(s) being addressed, targeted monitoring designs ...odels to allocate sampling sites and sampling ...istic component of the program, which has a consistent ...d statistical model, the targeted elements of the ...he most part been developed independently. In ...clusively in the lower watershed. Programs with ...elements include:

...program focusing on characterizing discharges from the
... collecting trend data for the receiving waters
...lation River Watch program focusing on water quality
...lation River Blitz program for invasive plants
...h and Wildlife fish community monitoring
...h and Wildlife / San Diego River Park Foundation

CONCLUSIONS

REFERENCES

Considerations for Setting up a Project

- Volunteer Base
  - Students
    - K-8
    - 9-12
    - College
  - Professors
  - General public
- Tiers of supervision
- Tiers of complexity
- Tiers of group sizes
- Tiers of training

Thank You

Contact Info:

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619-297-7380

THE SAN DIEGO RIVER PARK FOUNDATION

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Create.
Conserve.