



Citizen Science: Invasive Mapping Project
Shannon Quigley-Raymond
June 6, 2019

Project funded in part through Proposition 1 “The Water Quality, Supply & Infrastructure Improvement Act of 2014” and the San Diego River Conservancy



RiverBlitz

- Twice a year since 2008
- 3 hour shifts
- Trained volunteer leaders
- Document: trash, invasive non-native plants, site condition issues



Targeted Sampling Design

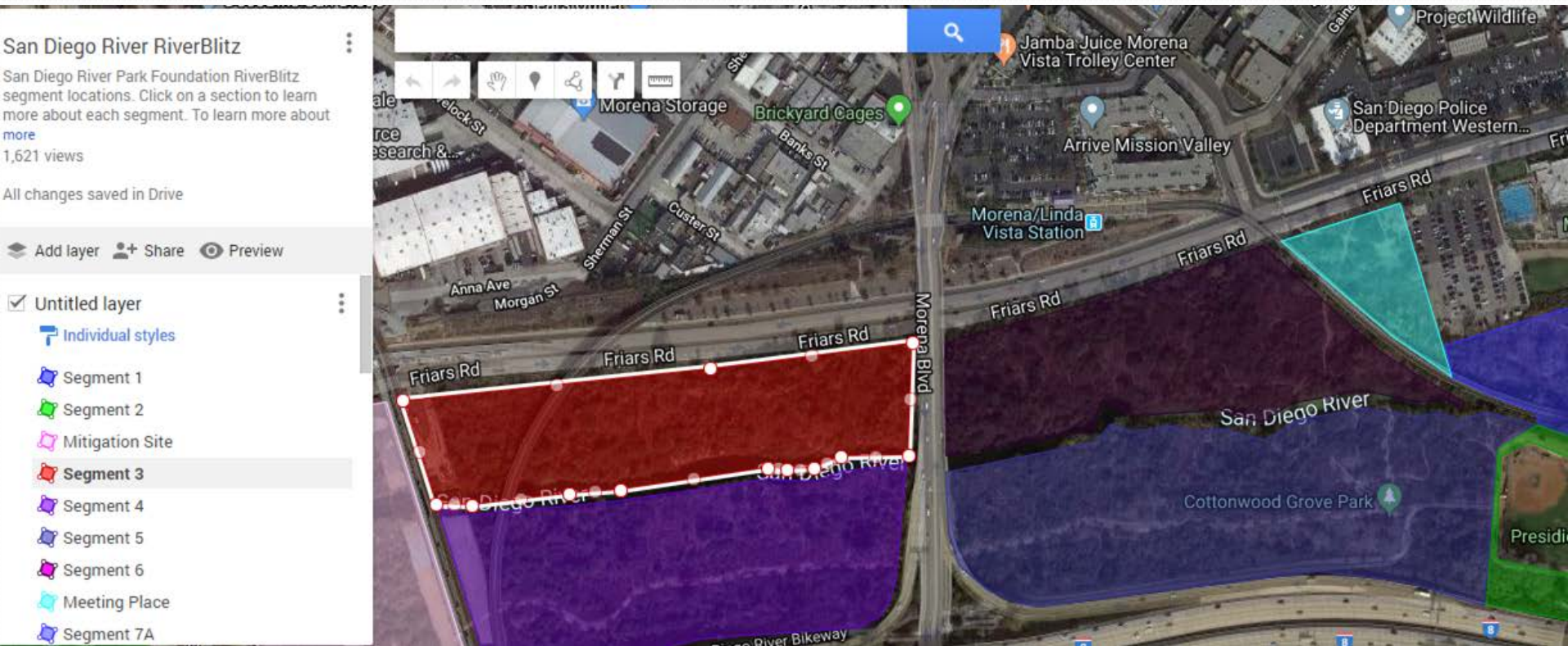
- Document the distribution and abundance of weeds along the lower San Diego River
- Report results to stakeholders and the public
- Collaborate and plan removal and enhancement projects
- Detect new and emerging threats
- Track change over time

Educate and empower participants





Discrete Survey Areas



RiverBlitz Volunteer Leaders

- No experience is necessary
- Attend 1-day training
 - office presentation
 - field practice
 - review printed materials
- Guide team in field
- Facilitate safe learning
- Collect accurate data
- Return gear and volunteers





Canary Island Date Palm

Phoenix canariensis



- Has a single, fibrous trunk and can reach a height of 66 feet.
- The leaves, or fronds, are long and resemble feathers. They can reach lengths of 20 feet.
- This palm produces small orange fruit.
- Native to the Canary Islands.





Pampas Grass

Cortaderia jubata



- Leaves are up to 6 feet long and upright from base. The leaves are green and have sharp teeth.
- The flowers of the plant are white and resemble feathers.
- This plant disperses its seed through the wind.
- Native to South America.



AQUATIC INVASIVE IDENTIFICATION



WATER LETTUCE

PISTIA STRATIOTES



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

WATER PRIMROSE/FLOATING PRIMROSE WILLOW *Ludwigia species*



ECOLOGICAL THREAT:

- Forms dense mats in waterways reaching above and below surface
- Impedes water movement
- Blocks growth of native plants
- Reduces available habitat for waterbirds and fish

IDENTIFICATION:

- Bright, yellow flowers, normally 5 petals, blooms throughout summer
- Alternately arranged, slightly hairy, willow-like leaves



Alternate: A single leaf is attached at a node.

- Dense sprawling, tangled mat of vegetation, favors the margins of waterways
- Either found creeping along shoreline, floating on water surface, or growing upright



MANUAL DATA ENTRY



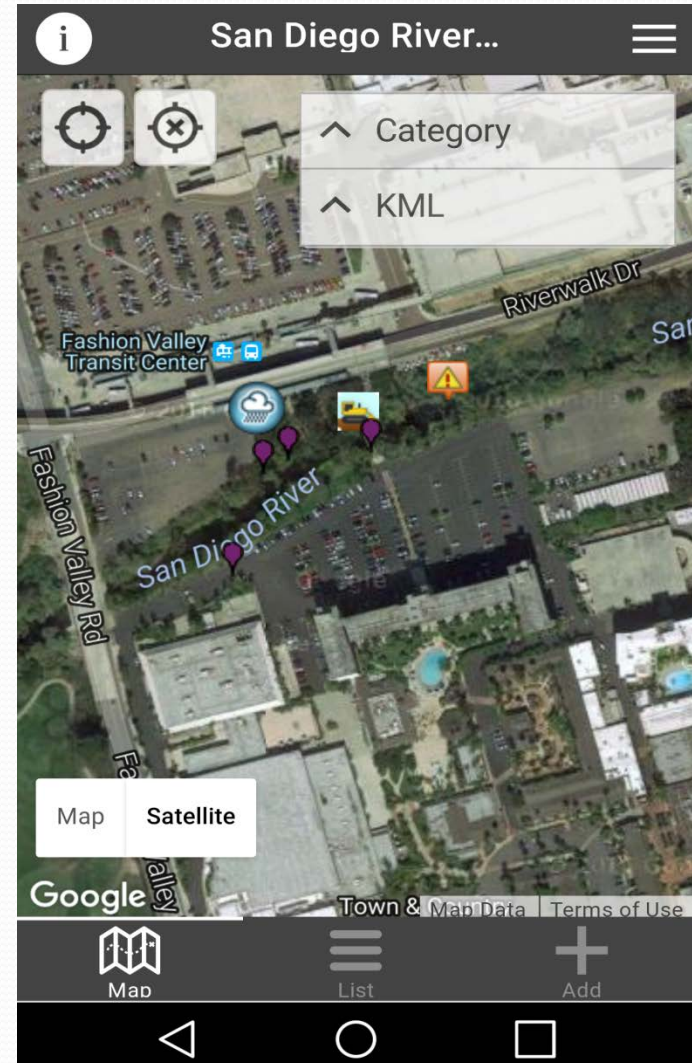
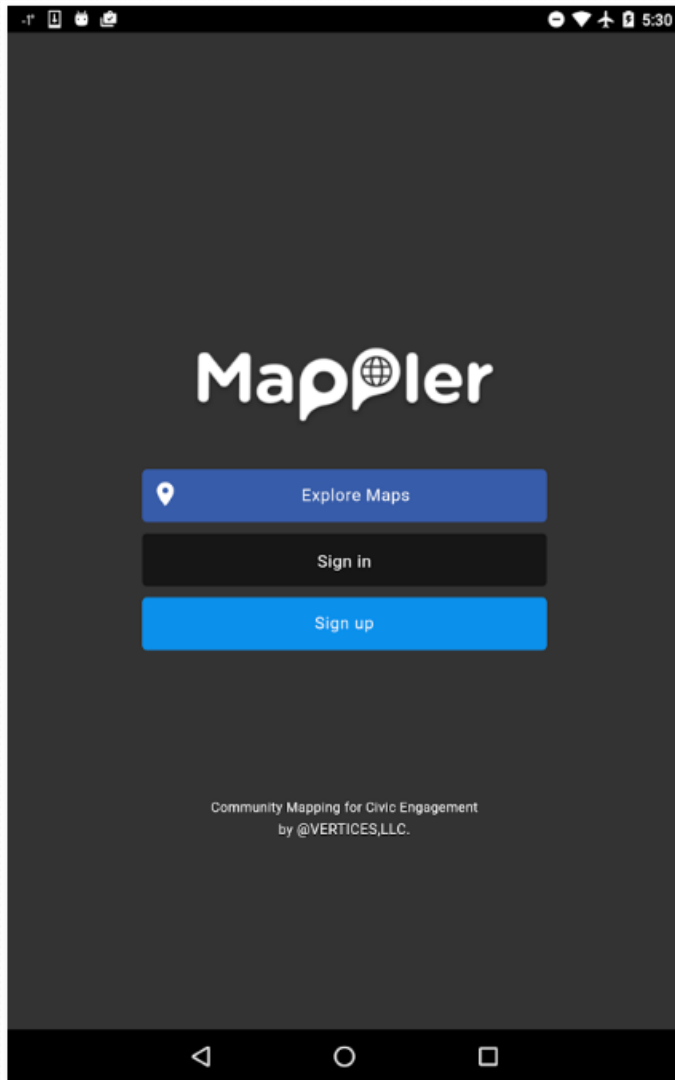
**RIP Grumpy
Cat!**



PAPERLESS

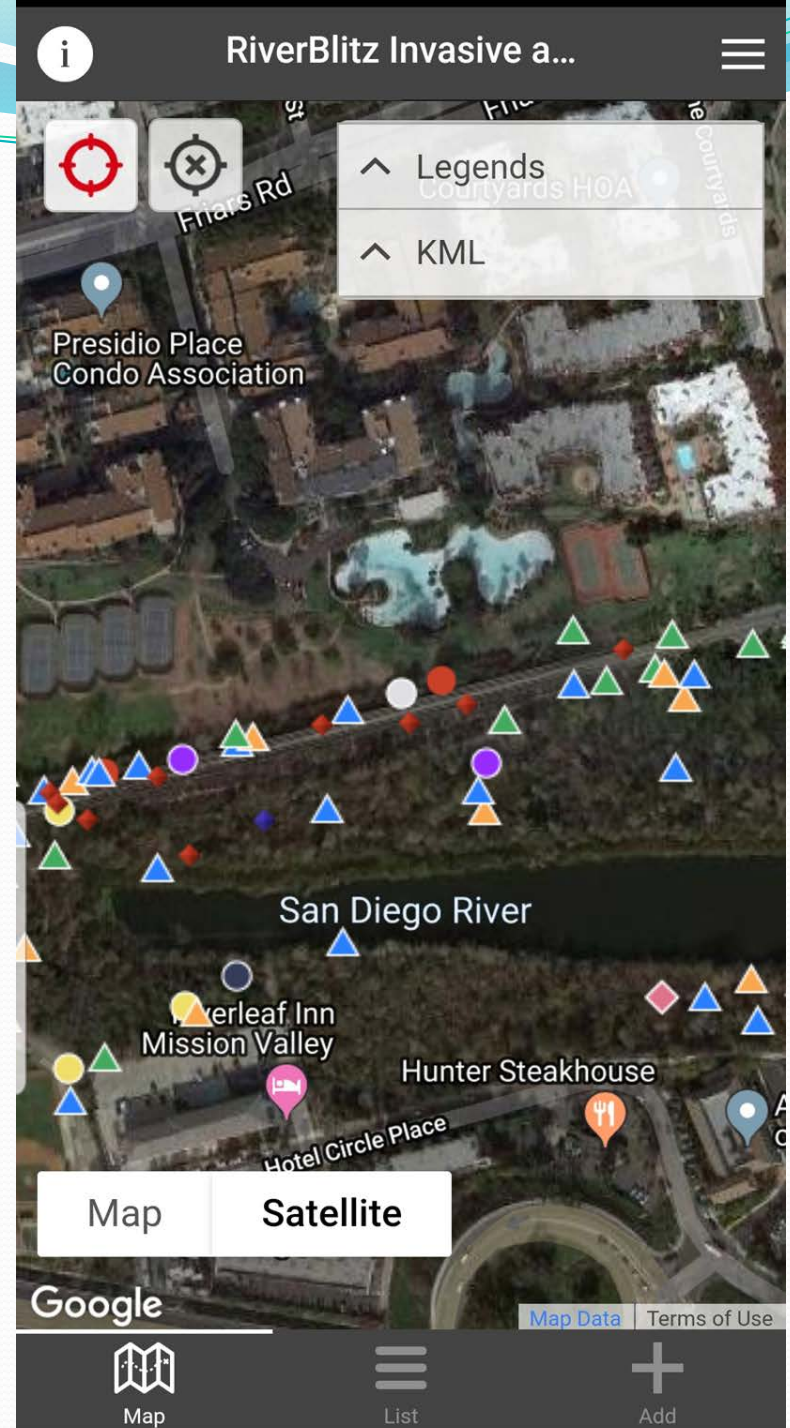


MapplerK2 Mobile Data Collection App For Android and iPhone

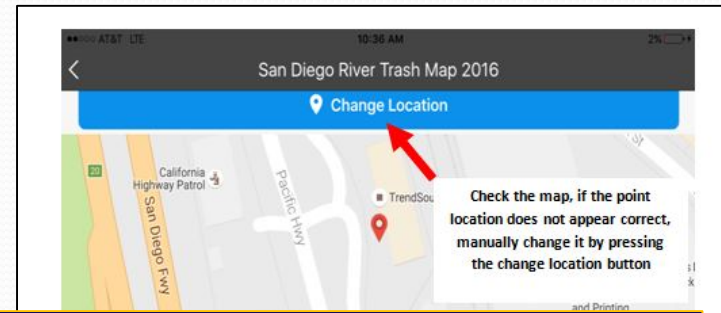


Why Mapper?

- Customizable form
- Multiple users at once under one login
- Unlimited logins
- Varying permission levels
- Data flagging
- Export zipped photos and data files




Installing and Using MapperK2




USERNAME: SDWMA
PASSWORD: SDWMA123




Site Name


* Category  Select from drop down list. See page 2 for category descriptions

Select

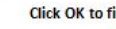
* Bags of Trash  Estimated quantity of trash in bags, fill in number only.

Bags of Trash


* Comments  See D. on Page 1. Further description of site, list of trash present, any hazardous waste, tools needed

* Date  Date will automatically populate

Aug 30, 2016

Time  Click OK to finish

10:35:48

 OK

Size Estimates: Diameter



Select

Not Applicable

Less than 2 inches
about an egg

2-4 inches egg to
softball

4-10 inches softball to
basketball

10-21 inches basketball
to an average tire

24-35 inches average
tire to twin mattress

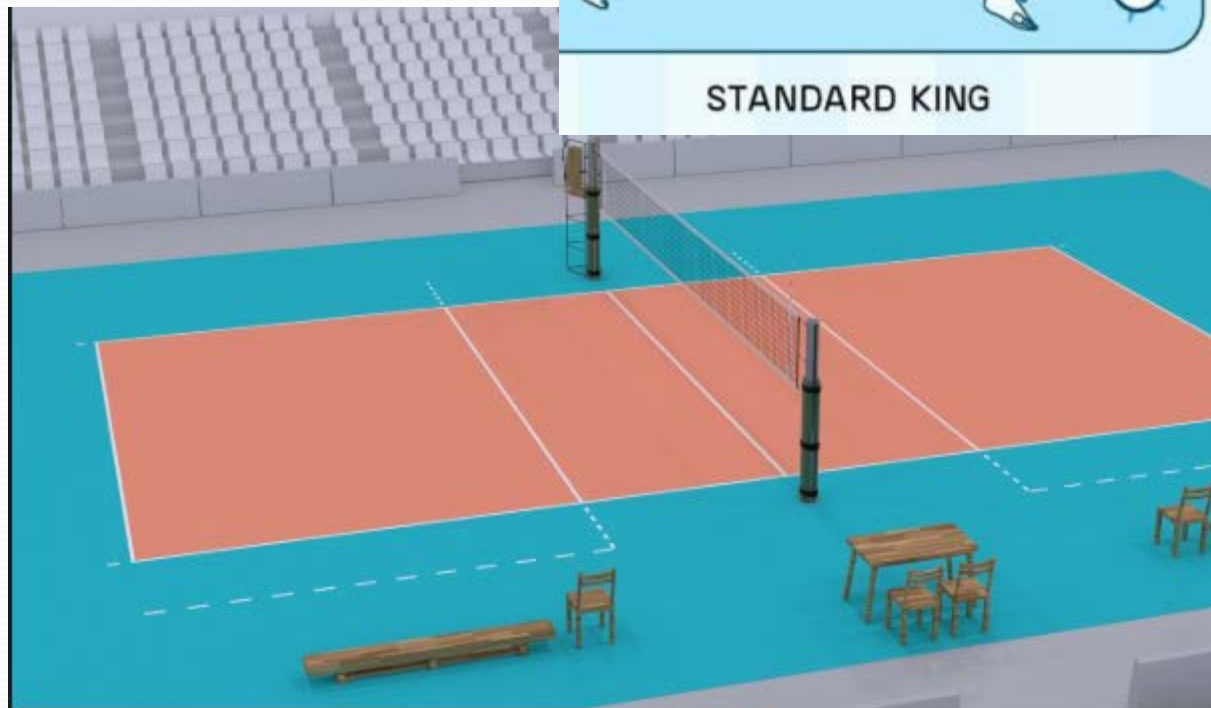
35-50 inches twin
mattress to full size
mattress

greater than 50 inches
greater than full size
mattress

Size Estimate: Canopy/Area



STANDARD KING



Select

Not Applicable

1-50 sq ft paper to king size bed

51-250 sq ft larger than king size bed smaller than interior of a school bus

251-1000 sq ft interior of a school bus to half a volley ball court

1001-3000 square ft half a volley ball court to a full tennis court

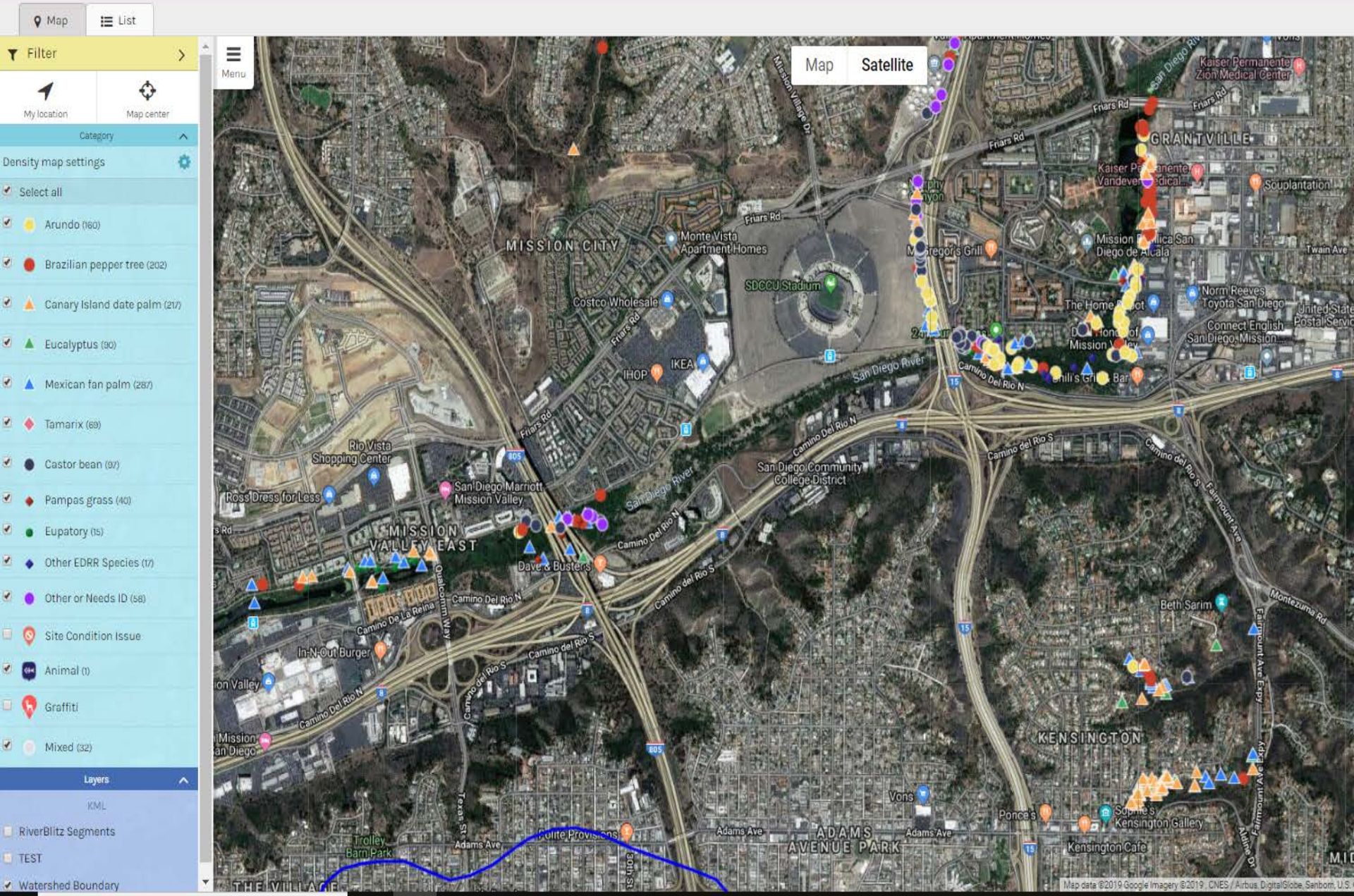
3001-5000 sq ft a tennis court to a basketball court

5001-10000 sq ft 1-2 basketball courts

RiverBlitz Invasive and Site Condition Data

Powered by Mappler technology

<http://immappler.com/sdriverblitz/>



RiverBlitz Invasive and Site Condition Data

Powered by Mappler technology

Map | List

Filter

My location | Map center

Category


- Density map settings
- Select all
- Aruno (10)
- Brazilian pepper tree (20)
- Canary Island date palm (1)
- Eucalyptus (1)
- Mexican fan palm (2)
- Tamarix (1)
- Caster bean (1)
- Pampas grass (1)
- Eupatory (1)
- Other FDRR Species (1)
- Other or Needs ID (1)
- Site Condition Issues
- Animal (1)
- Graffiti
- Mixed (2)

Layers

Location Type: Invasive
Category: Mexican fan
Date: 2019-04-06
Time: 11:11:26
Image: [Thumbnail]
MORE

Item details

Invasive Plant



Location Type: Invasive Plant

Category: Mexican fan palm


Canopy Coverage: 51-250 sq ft larger than king size bed smaller than interior of a school bus

Comments: Right on riverside south

Date: 2019-04-06

Time: 11:11:26

Map | Satellite



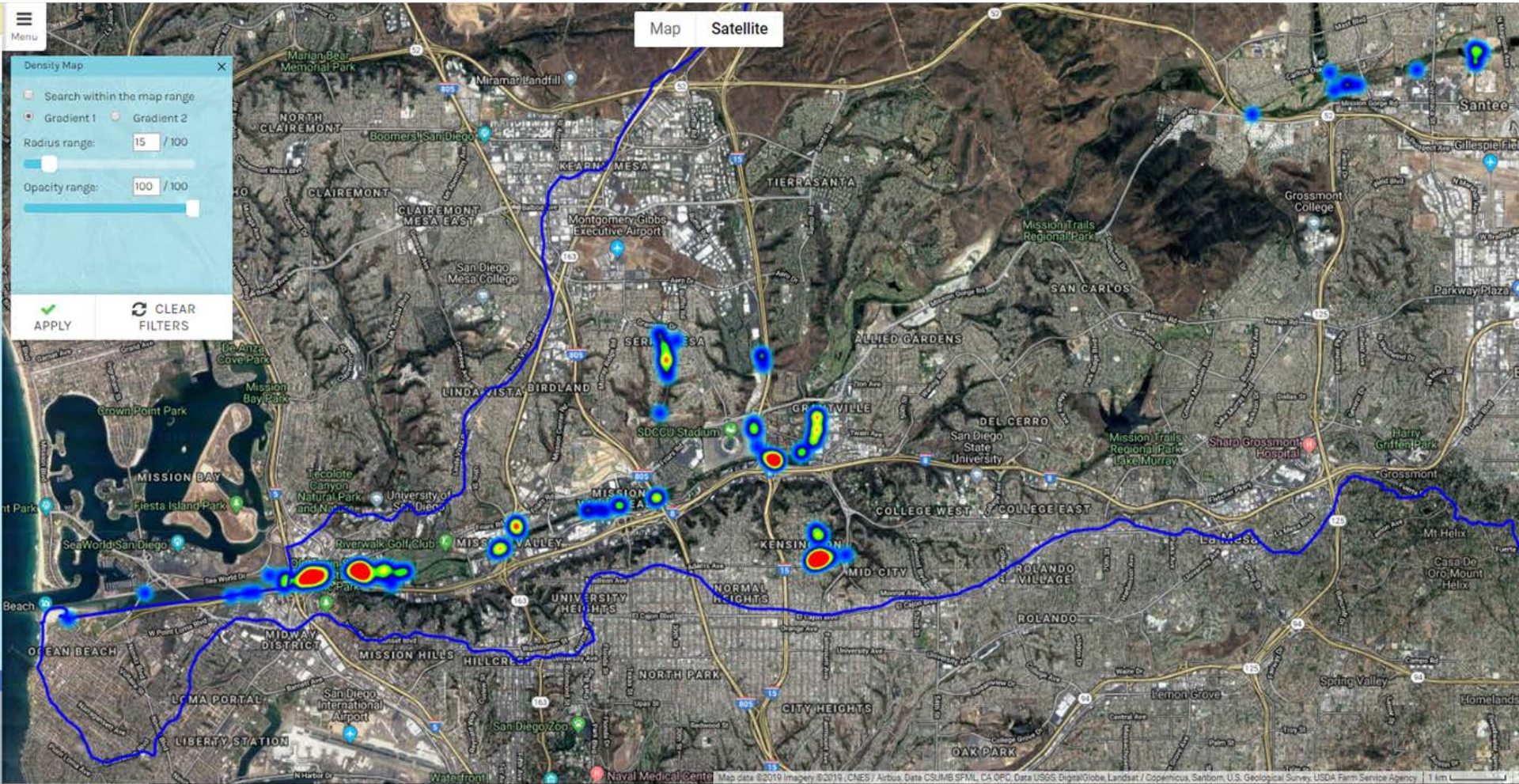
Forester Creek

Mt Soledad Fwy

Google

Map data ©2019 Imagery ©2019, DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency | Terms of Use | Report a map error

Heat Map for Canary Island Date Palms



State of the River

Invasive Plants: *Growth and Expansion*



Report:

Invasive non-native plant coverage is a factor of both the number of invasive plants and the canopy coverage of those plants. This year, invasive plant coverage increased primarily due to the growth of canopies and to a lesser extent, expansion of populations. Four of the ten sections dropped by one letter grade. The overall invasive non-native plant grade also declined from a B to a C in 2016. The good news is that a 52-acre invasive removal

project will soon begin that will eliminate 60+% of invasive coverage on the most densely infested section of the river in east Mission Valley. Continued regrowth and reestablishment in previously treated areas significantly added to declining grades. Seed sources in tributaries and on private properties as well as seed and root regrowth from previously restored areas demonstrates the need for increased funding for long-term coordination and treatment.

Quick Facts:

- Castor bean was the most prevalent species encountered, found at 25% of all sites.
- The addition of aquatic invasives in 2016 resulted in increased coverage in all areas but most drastically in Section 8 (central and eastern Santee), reducing the grade by one letter to a D.
- Occurrences of eupatory, an early detection rapid response species, now extends from Alvarado Creek west to Fashion Valley.

Grade:



SAN DIEGO RIVER

urbanized with the most pronounced hydromodification, trash, pesticide, and many of the issues identified in this

2.2 Revegetation

2.2.1 State of the River

Two programs exist (RiverBlitz and River) for trash, invasive non-native by volunteers of the San Diego decisions as well as track any program annual report that grades the overall best and F being the worst as shown

Table 1 San Diego River Park

Trash Bags per Acre	Invasive Percent Cover
<1	0-1.9
1.0-1.9	2-2.9
2.0-2.9	3-3.9
3.0-3.9	4-4.9
>4	>5

The overall grade for the lower San river where the proposed mitigation site is the lower San Diego River to be characteristics within the proposed of 8.3 bags collected per acre; invasive percent cover of 11.1; and 37.0. Approximately 84 percent of associated with illegal campsites, the River declined throughout most recent lower section of the river suggest years, the water quality is typically poor. It should be noted that 2015 Mission Valley Area, where the proposed An estimated 90 percent of local river also leads to periodic detrimental industrial tank leakage is found in Mission have an invasive canopy coverage mitigation site (The San Diego River

2.2.2 Vegetation Cor

Based on the San Diego Geographical the proposed mitigation site consists valley freshwater marsh, non-nativ

ATKINS



LINK BLUE SAN DIEGO



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	Potentially burned, 5 ft off of ground	12
14	5	60	1 ft	West side of tree in marsh	13
15	2	400	4 ft	Large tree w/ many off-shoots	14

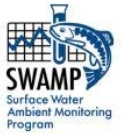


RiverWatch: Volunteer teams collect water quality data using an electronic sonde, field forms and nutrient test kits. RiverWatch monitoring follows strict protocols (QA/QC procedures).

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).

To view complete data on trash, invasive plants, and full water quality reports, please visit our Online Information Center: www.sandiegoriver.org/online_info_center.html

trash cleanups and assessments camps, trash locations and distributed. Reports produced the extent of trash within the of the Participating Agencies.



2014

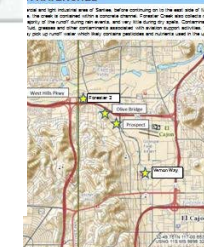
Watershed Monitoring and

Rester Creek, San Diego River Watershed

Inzales, B. Garcia, K. Hill, W. Bartholomew, B. Baigent, A. Faye es, San Diego State University



WATERSHED



METHODS

Table 1. Comparison of Field Measurements and San Diego River Measurements

Parameter	San Diego River Measurements	Field Measurements
Flow	2,000 - 2,100 (CFS)	2,070 - 2,170 (CFS)
Temp	20.1 - 20.1 (C)	20.1 - 20.1 (C)
Dissolved Oxygen	1.00 - 1.00 (mg/L)	1.00 - 1.00 (mg/L)
pH	8.07 - 8.07	8.07

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pH	8.07 - 8.07	8.07

CONCLUSIONS

San Diego River water quality monitoring is a critical component of the River Park Foundation's mission to protect and improve the San Diego River watershed. This report provides a comprehensive overview of the data collected during the October 2015 River Blitz survey and monthly RiverWatch water quality monitoring for Water Year 2015. The data shows that the San Diego River watershed is experiencing a decline in water quality, with increased trash, invasive plants, and poor water quality. This decline is likely due to a combination of factors, including urbanization, agriculture, and climate change. The data also shows that the San Diego River watershed is a highly diverse and productive ecosystem, with a wide variety of plant and animal life. This diversity is a key component of the watershed's resilience and ability to recover from disturbances. The data collected during the River Blitz survey and monthly RiverWatch water quality monitoring provides valuable information for the River Park Foundation and other stakeholders. This information can be used to develop and implement management plans to protect and improve the San Diego River watershed. The River Park Foundation is committed to protecting and improving the San Diego River watershed for the benefit of all San Diego residents. We encourage everyone to get involved in River Park Foundation programs and activities to help us achieve our mission.

San Diego River

Invasive Exotic Weed Eradication Masterplan



Prepared For:
City of San Diego
Metropolitan Waste Water Department
9192 Topaz Way
San Diego, CA 92123

Prepared By:
Burkhart Environmental Consulting 521-0363
4709 Biona Drive
San Diego, CA 92116
&
Kelly & Associates
11591 Polaris Drive
San Diego, CA 92126



April 2002

Plan Update

- Updated map and quantifications of invasive species
- Inventory of ongoing enhancement, restoration and invasive removal projects

Volunteer Recruitment

- VolunteerMatch
- HandsOn Network
- Meet-up groups
- Social media
- College campus
- Reader/Coffeeshop postings



Community Science

Volunteer Retention

- Meaningful work
- Positive/Fun
- One-on-one connections
- Thanks
- Hours Recognition Items
- LOA's Letters of Appreciation



Project Partners



Thank you to the thousands of volunteers who have contributed time, talents, sweat and even some blood to RiverBlitz and I.M.P.A.C.T events

Thank you

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