## Giant reed (Arundo donax) Control on the San Luis Rey River Watershed from 2000 to 2021:

Persistence, Perspective and Patience (Transformation, but Still on the Wheel)

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San Luis Rey River: 2005, 2010, 2019 2005: Arundo light green 2010: Arundo is mowed 2019: Natives grown in

Google Earth nage © 2021 Maxar Technologies

#### San Luis Rey River: 2005 Arundo is dense lighter green vegetation



#### San Luis Rey River: 2010 Arundo is mowed, areas are open light <u>colored</u>



San Luis Rey River: 2019 No Arundo, natives grown in



Type of program: Single species, landscape level, goal- eradication Arundo donax, San Luis Rey Watershed

- Step 1: Map all Arundo on watershed, >650 acres
  - Used for: permitting, grant writing, cost estimates, right of entry, etc.
- Step 2: Obtain watershed-based permits

   CEQA MND, CDFW SAA 1600, 401 and 404, FWS Section
   (all permits completed within 2 years).
- Step 3: Secure grant funding, implement work
  - Nine large grants over 21 years, mostly state. 99% of watershed has had initial control (years 1-5).
- Step 4: Re-treat project areas for long term
  - Regional NCCP (SANDAG) funding for re-treatments (years 6-10).



## Mapping:

- >650 acres of Arundo on watershed
- 10k to map on aerials- most now done and online (Cal-IPC)
- >800 parcels, two RCD's, three cities, four tribes
- Multiple federal and state

listed species

- Nearly everyone wants Arundo gone: public, private >99% participation
  - Basically, if you have been on a property >5 years you get it





Figure 1. Treatment status of Arundo on the Santa Margarita and San Luis Rey Watersheds.

Arundo stands have been treated in the past Untreated- most areas will be treated, either under grants or mitigation

00.4705.95 1.9 Miles



### **Describe and document Impacts:**

- Fire
- Flood and geomorphic
- Water use
- Type conversion (crowd out natives- flora and fauna)

All threats to habitat (species), infrastructure and people



Sourde: Esri, DigitalGlobe, GeoEye, Earlinstar Geographics, CNES/Airbusr<mark>OS, D</mark>SDA, USGS, AEX. Getimapoing, Aerogrid, JGN, 13P, swisstopo, and the GIS User Computinity



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# Impact: Fire







# Impact: Water Quality







 For Southern CA: Arundo water use 15-20 acft/yr/ac, when actively growing

## Midway tips:

- More impacts > fundability
- Effective strategy > fundability
- Shovel ready > fundability
- More partners/support > fundability, especially at start

Funding sources and priorities change over time, be ready to shift

Was <u>Water</u> (bonds): SWCB, DWR, WCB, Coastal Conservancy

Now <u>Fuels/fire</u> and <u>biodiversity</u>: WCB, Cal Fire, State Conservancies







## **Treatment:**

- Treat: before (most effective control) or after reduction (cut stems or re-growth if mowed)
- Try to avoid cutting or breaking canes at base, foliar application needs to be on canes connected to rhizomes
- Foliar application may seem like more treatment up front, but high efficacy reduces subsequent applications in later years.
- Reduce if needed (large stands = fire risk, impact to succession)
   Mowing cost effective, or cut haul, chip- very expensive
- Re-veg only if needed (cuttings cheapest), many systems have natural recruitment, irrigation and hand water cost prohibitive

Fire risk usually requires reducing biomass if stands are large













### **Re-treatment:**

- This is the key to true success
- After 4-5 years of 'initial' treatment, you should be able to rotate treatment areas on a 2 or 3 year basis
- Inexpensive: for 50k a year, > 12 miles of river/streams
- Must find a good contractor (through, efficient, consistent)
- Use both glyphosate & imazapyr
- Trim the natives, DO NOT CUT the Arundo
- Challenging, but NOT impossible to get funding

Our region- San Diego: NCCP (SANDAG) County of Orange: SEP, Municipalities and Water Authority

Other: CDFA and fuel reduction





Figure 8. Mission RCD EMP re-treatments of Arundo on the Santa Margarita River Watershed: 143 points and 10.1 mi were re-treated in fall 2017, 159 points in fall 2015, 503 points in fall 2009, and 168 points in fall 2013 for the same area.



Santa Margarita River Watershed





Figure 10. San Luis Rey River EMP re-treatments of Arundo on Ostrich Creek: 2009, 2010 & 2011 (top) and 2012, 2014 & 2017 (below).

#### Arundo Re-treatment locations (points)



0.75

Miles