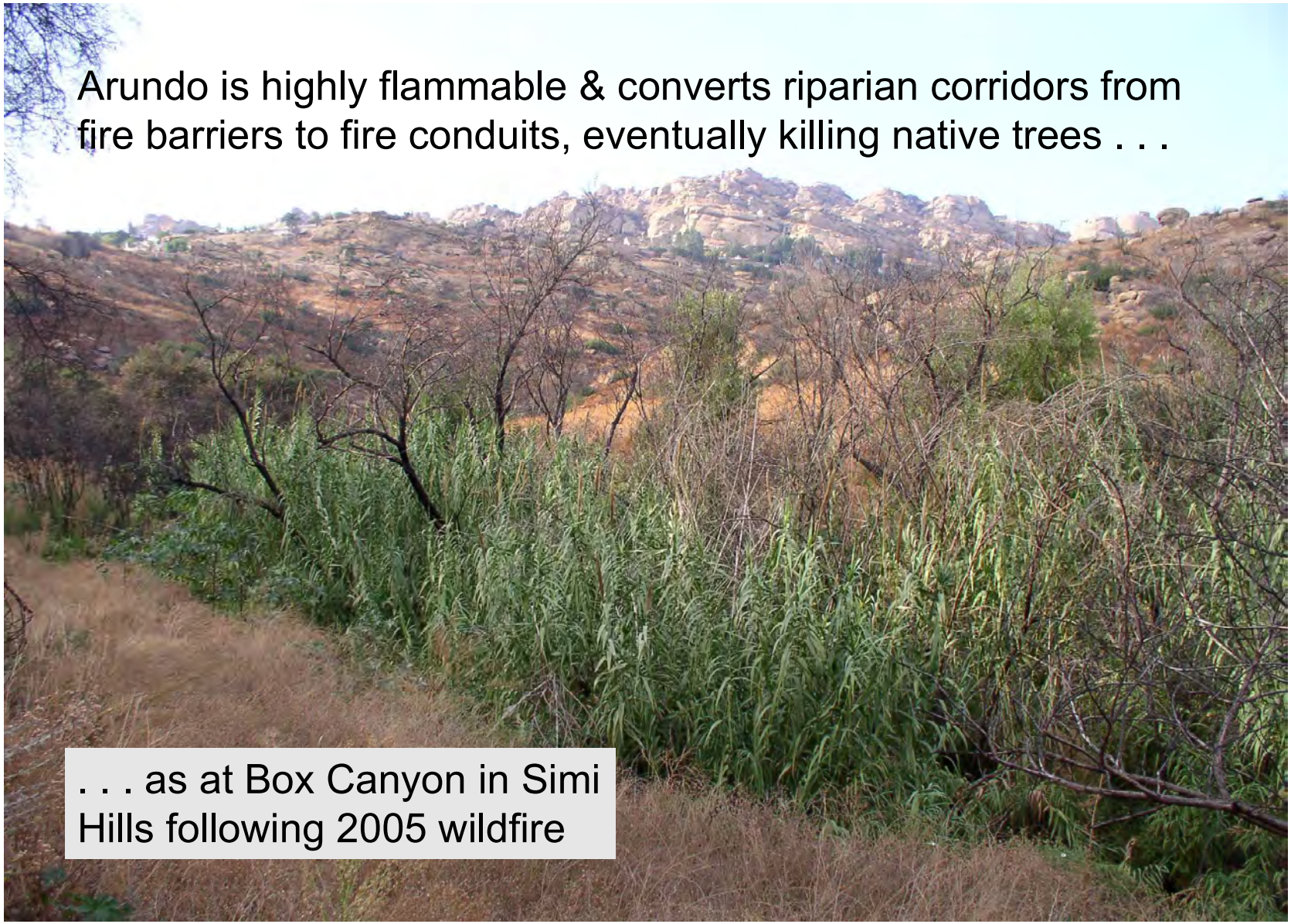
Conversion of Riparian Woodland to Arundo Monoculture on Santa Clara River Flood Channel

2 Post-Fire Study Areas
<Dec. 2021 fire, by Victoria Ave. bridge
<Jan. 2025 Auto Fire, 1/3 mile E bridge

Bill Neill, Riparian Repairs
for 2025 Cal-IPC Symposium

Arundo is highly flammable & converts riparian corridors from fire barriers to fire conduits, eventually killing native trees . . .



. . . as at Box Canyon in Simi Hills following 2005 wildfire

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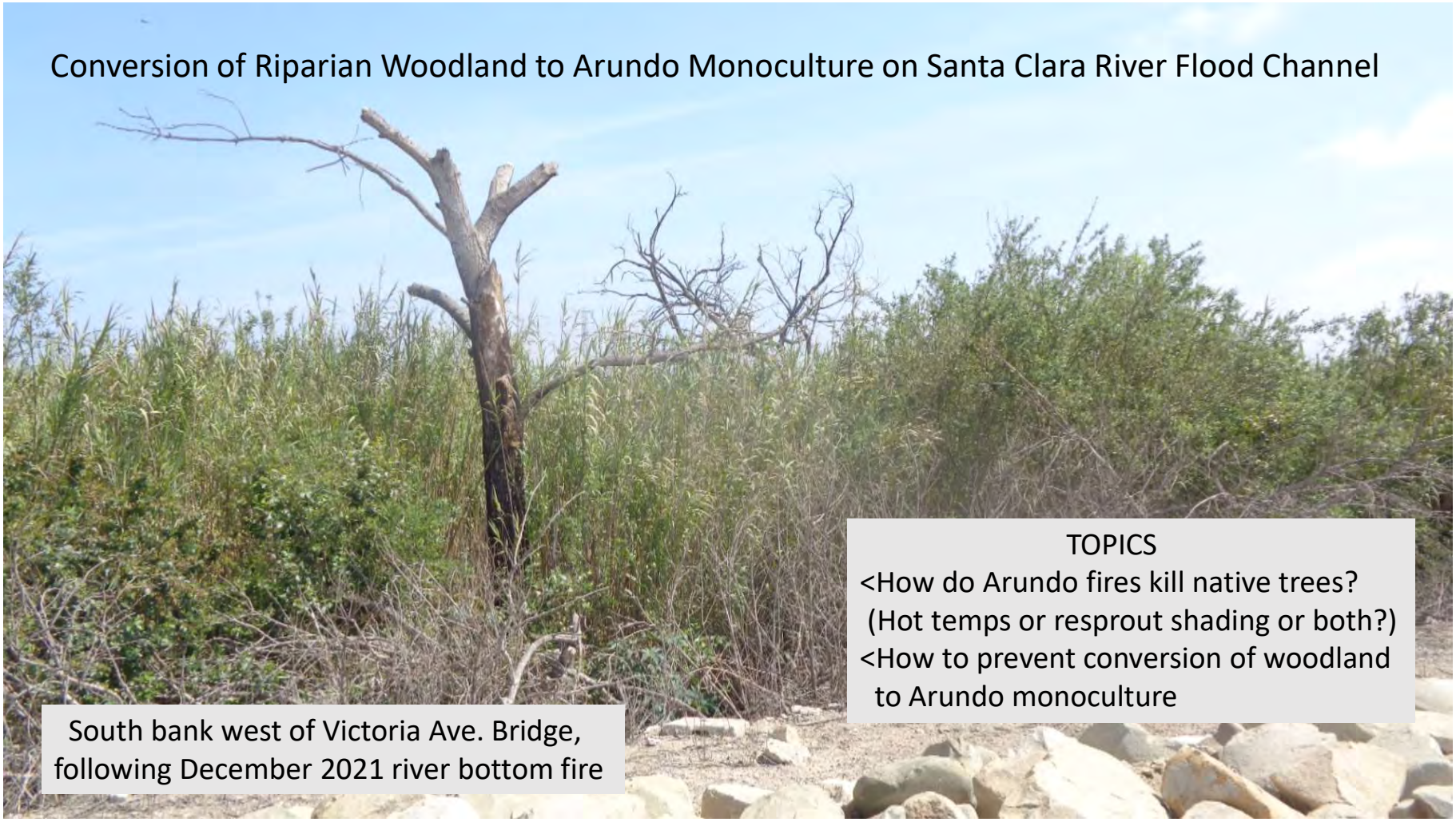
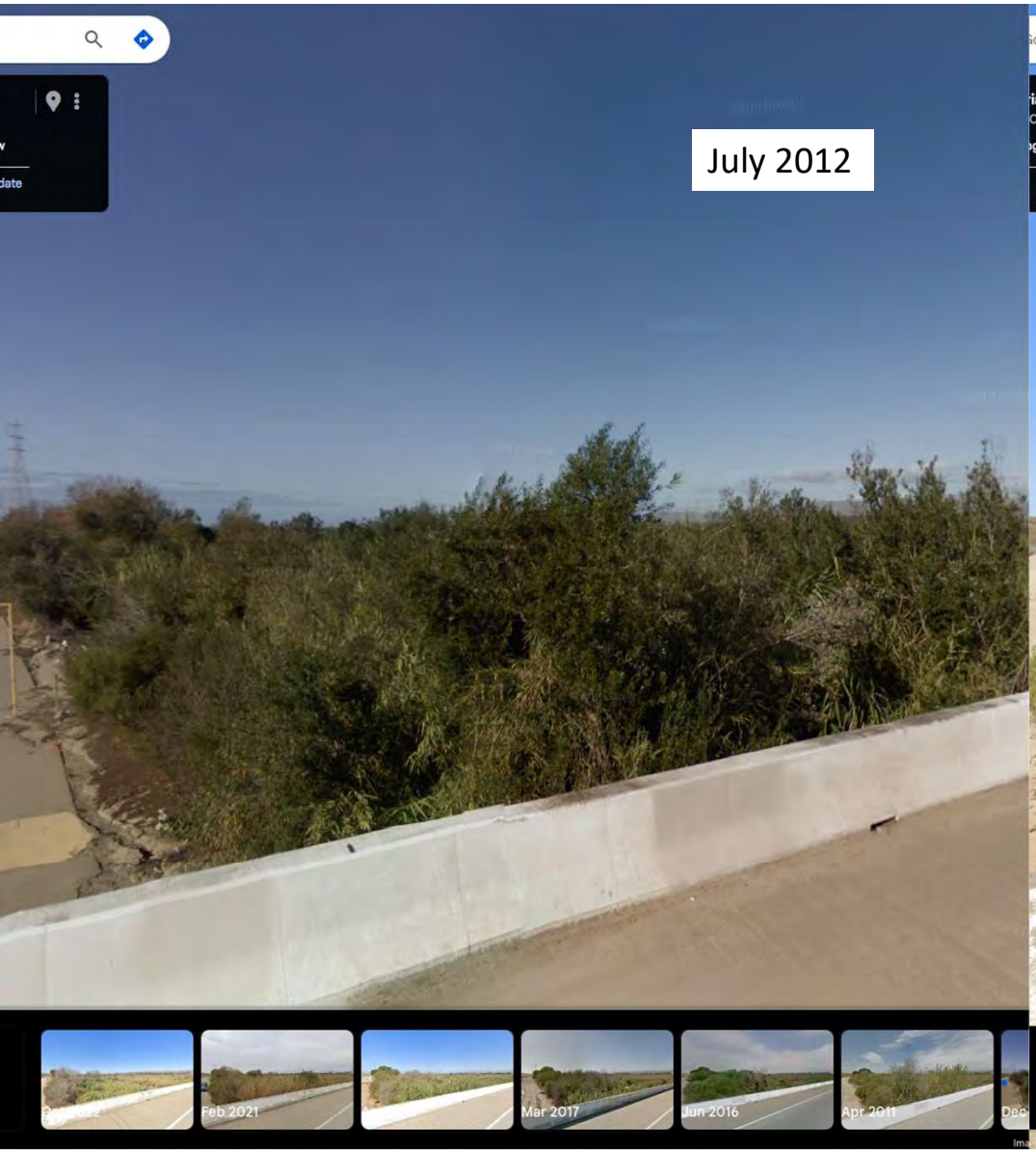


TOPICS

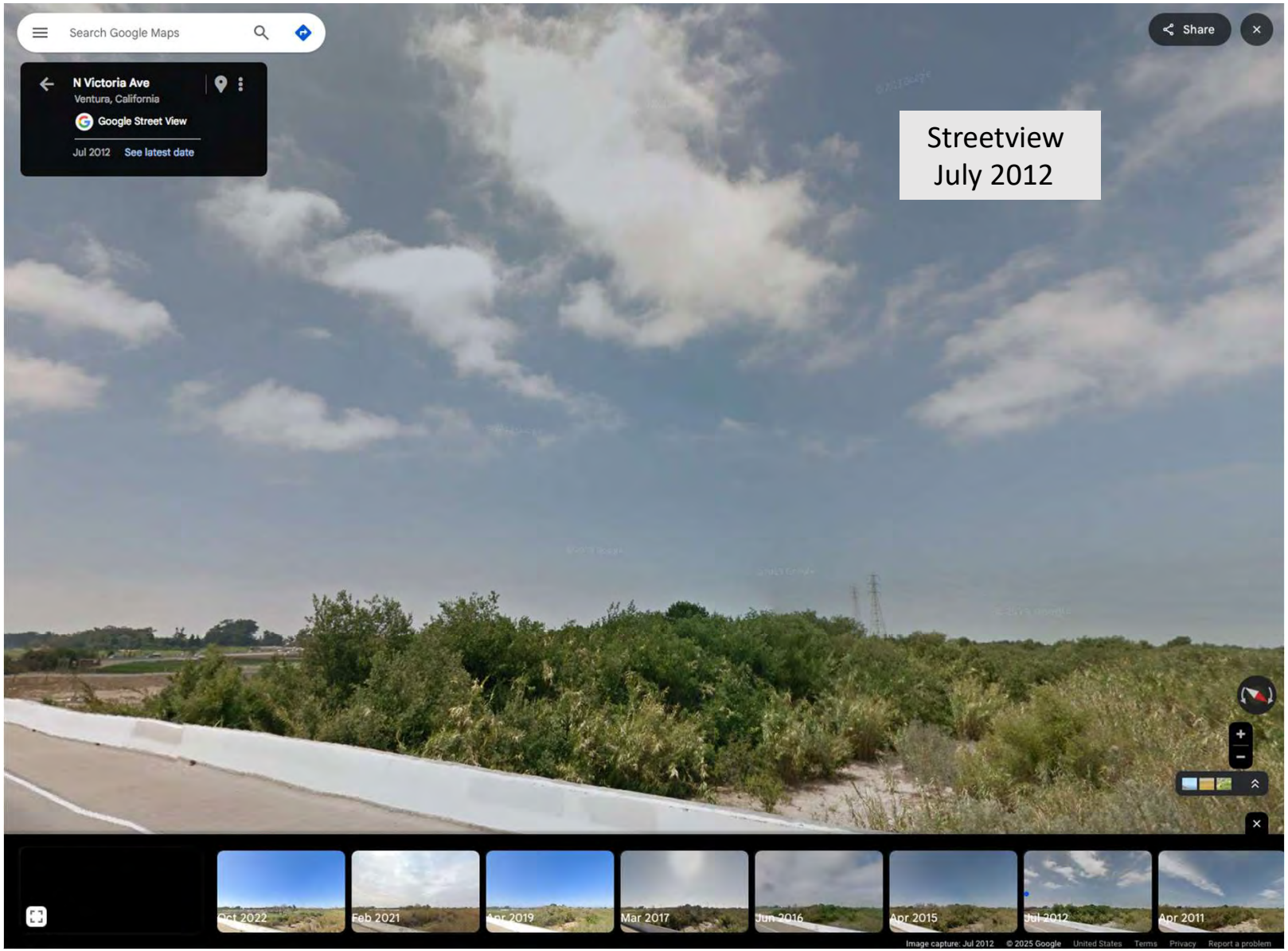
<How do Arundo fires kill native trees?
(Hot temps or resprout shading or both?)

<How to prevent conversion of woodland to Arundo monoculture

South bank west of Victoria Ave. Bridge, following December 2021 river bottom fire



Google Street View photos from Victoria Ave. bridge of south bank, west side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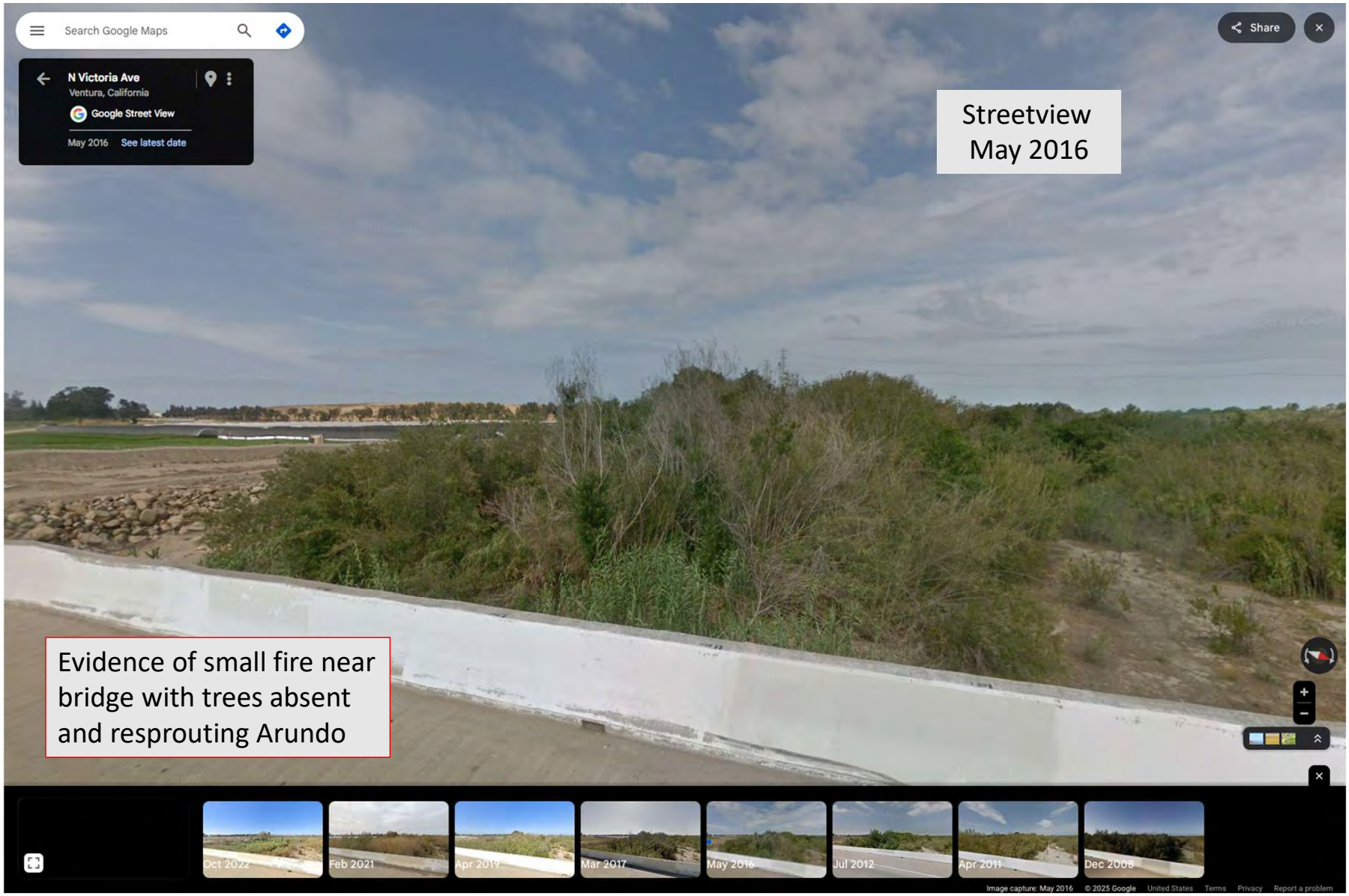
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Evidence of small fire near bridge with trees absent and resprouting Arundo
Oct 2022
Feb 2021
Apr 2019
Mar 2017
May 2016
Jul 2012
Apr 2011
Dec 2008
Image capture: May 2016 © 2025 Google United States Terms Privacy Report a problem

River bottom fire sends up heavy smoke near Victoria Avenue bridge

AI Overview

In December 2021, a river bottom fire, later named the Victoria Fire, occurred near Victoria Avenue in Ventura, California, causing heavy smoke and prompting road closures. The fire was estimated to have burned 32 acres and was caused by heavy, dry vegetation, including **wild bamboo** in the riverbed. Multiple agencies responded, including Ventura County Fire Department, Oxnard Fire, and Ventura City Fire. . . .


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N Victoria Ave
Ventura, California
Google Street View
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Streetview
October 2022
10 months after
Dense Arundo understory fueled hot fire --
stalks burned completely and tall trees killed
by heat and by resprouts shaded out
Image capture: Oct 2022 © 2025 Google United States Terms Privacy Report a problem

Victoria Ave. Bridge, May 2025

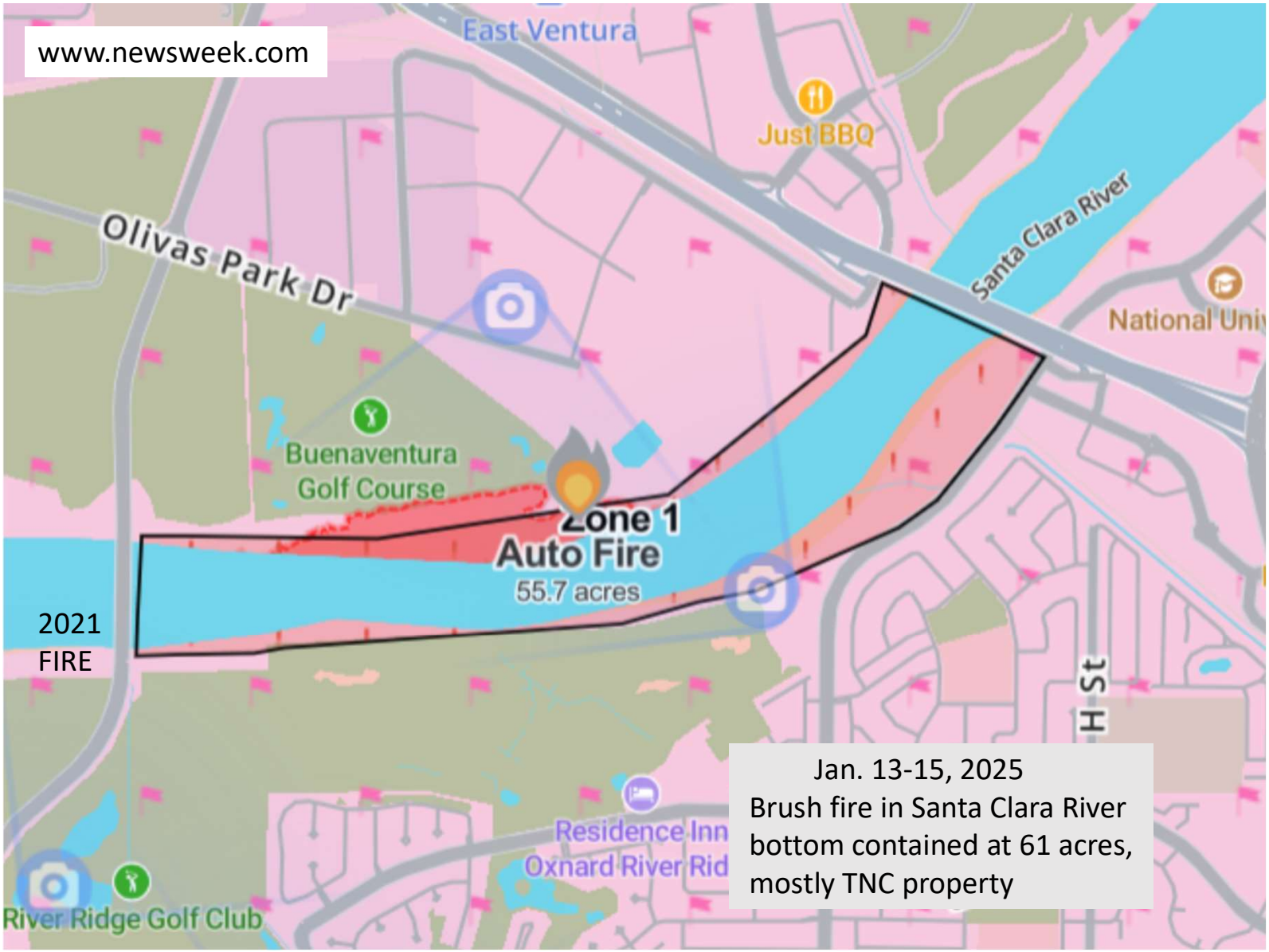
Auto Fire in Ventura County: Evacuations, Maps & Updates

The fire is burning in the river bottom off North Ventura Boulevard in Ventura.

[California Wildfires LIVE: New Blaze 'Auto Fire' Erupts In Ventura County | Los Angeles Wildfires]

Uploaded: Jan 14, 2025 ·

The California wildfires continue to escalate, with the recent outbreak of the Auto Fire in Ventura County adding to the already devastating situation. The Auto Fire, which ignited on January 13, ...



Victoria Ave. bridge

101 Fwy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Although nearly surrounded by dense Arundo, some groves of tall native trees are less infested
1 Acre
Layers
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Auto Fire woodland is less invaded,
with variable Arundo density
& isolated surviving native trees
May 2025, 4 months after fire

Because Arundo stalks did not burn completely to ash, fire temperatures presumably were cooler, and some tall trees were not burned.

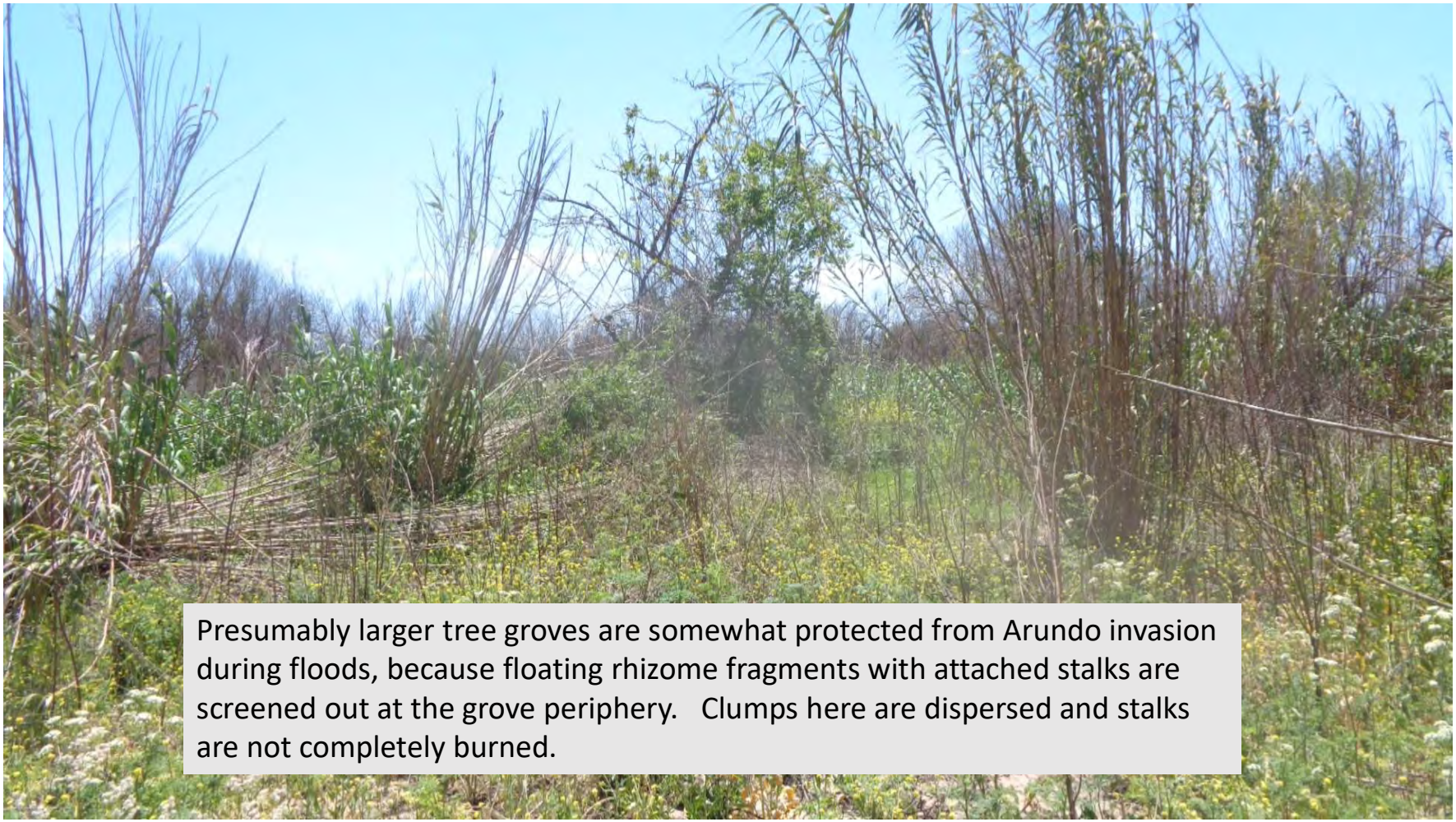
Isolated resprouting native trees on higher ground include walnut and Mexican elderberry.

On lower ground some willow trees retain crown foliage, indicating lower fire temperatures where Arundo is less abundant

Partial herbicide treatments conducted in May-June, 4-5 months after fire.

Photos show foliage yellowing from imazapyr in late August.


Tree survival depends on proximity of dense Arundo understory
Willow tree with unburned foliage
Burnt walnut tree with healthy resprouting foliage
Burnt willow tree with stressed resprouting foliage



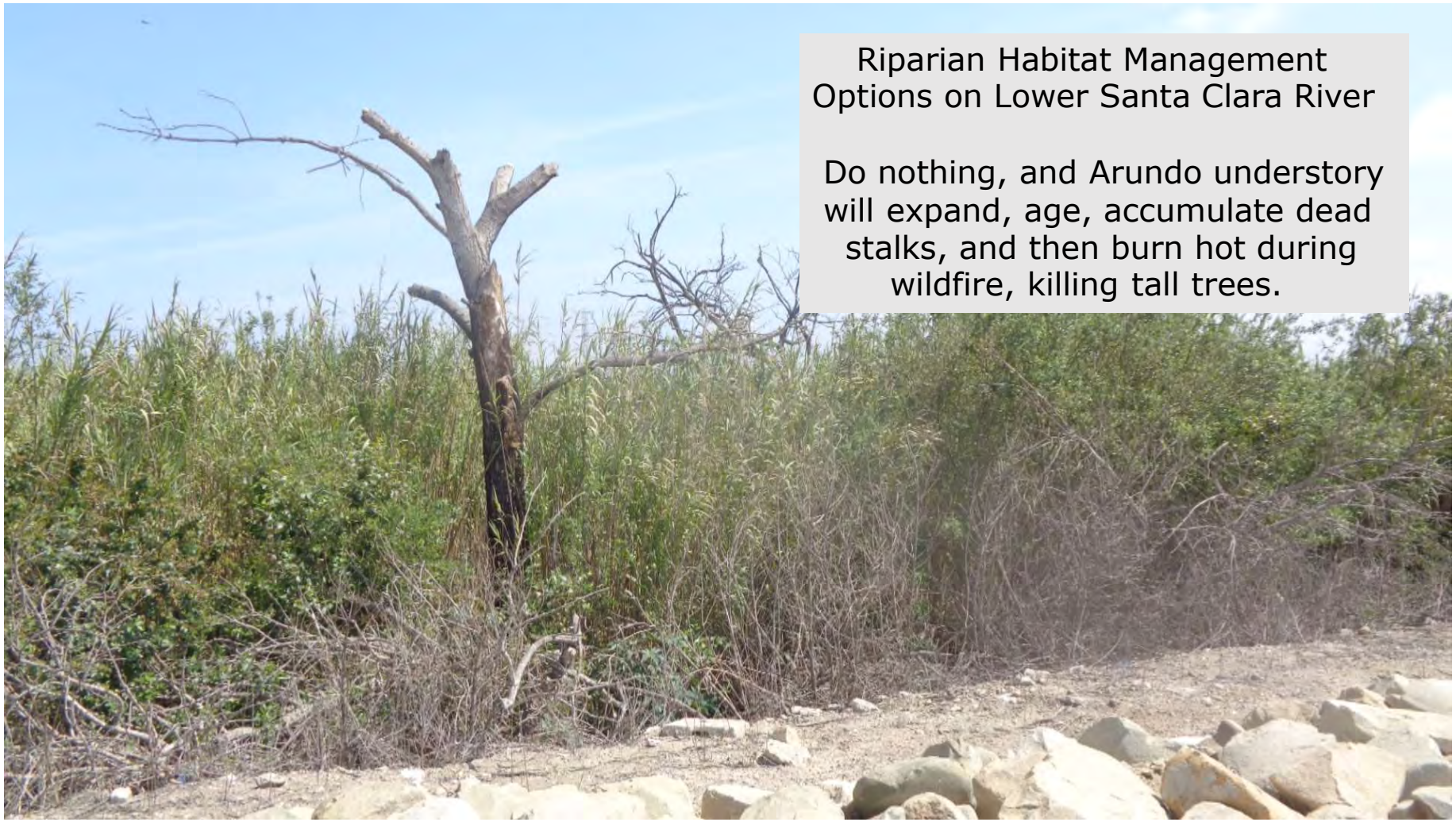
Presumably larger tree groves are somewhat protected from Arundo invasion during floods, because floating rhizome fragments with attached stalks are screened out at the grove periphery. Clumps here are dispersed and stalks are not completely burned.

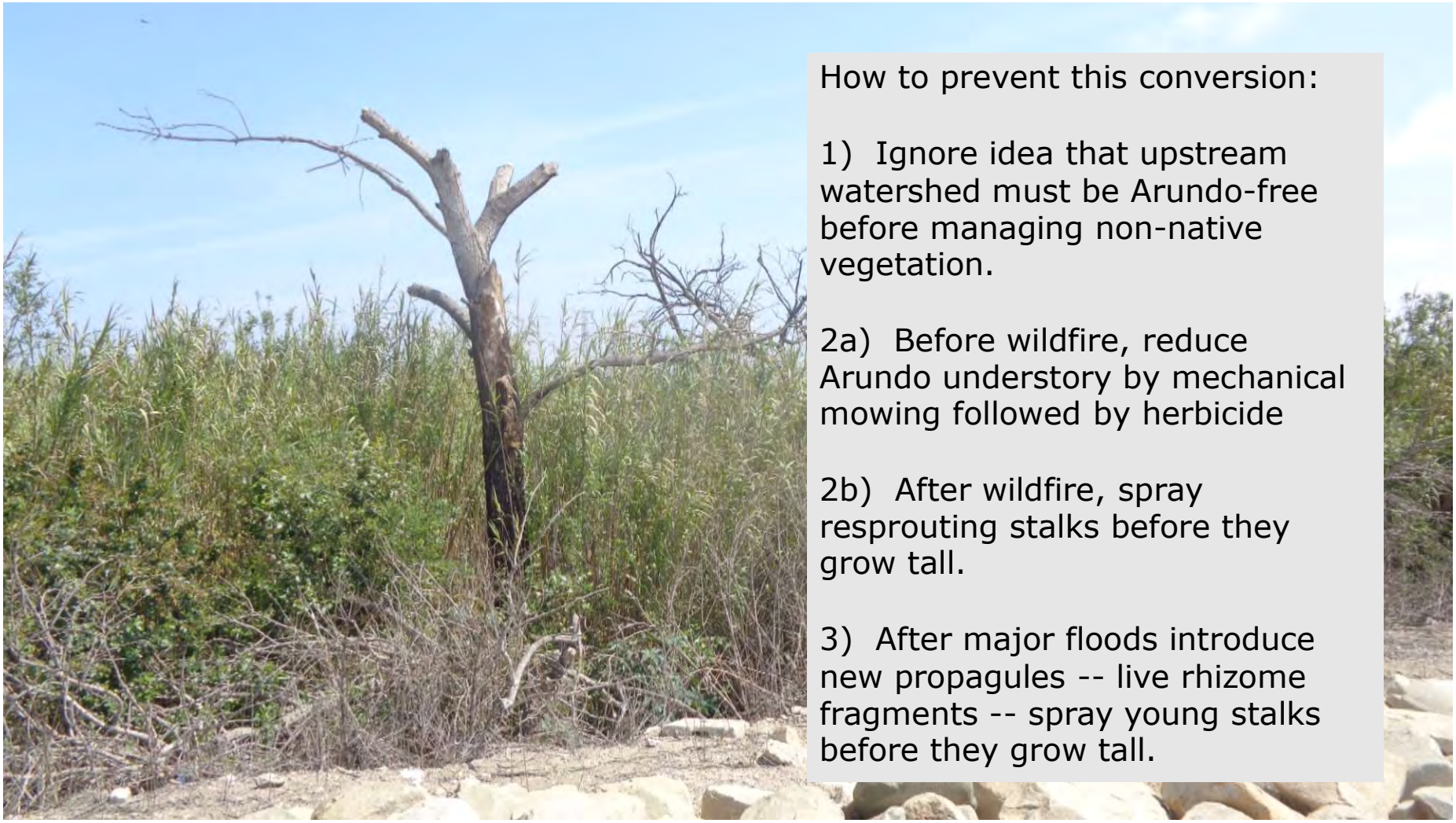
>Where Arundo clumps are abundant but not pervasive, stalks are not completely burned, and trees are resprouting at the base

>Where Arundo clumps are sparse, some trees retain foliage in upper branches

>Presumably, lower Arundo density in understory results in lower fire temperature with less tree mortality


5 months after Auto Fire, Arundo in former channel through woodland has grown past 15 feet tall, so opportunity for easy post-fire control was lost
June 2025


Riparian Habitat Management
Options on Lower Santa Clara River
Do nothing, and Arundo understory will expand, age, accumulate dead stalks, and then burn hot during wildfire, killing tall trees.



How to prevent this conversion:

1) Ignore idea that upstream watershed must be Arundo-free before managing non-native vegetation.

2a) Before wildfire, reduce Arundo understory by mechanical mowing followed by herbicide

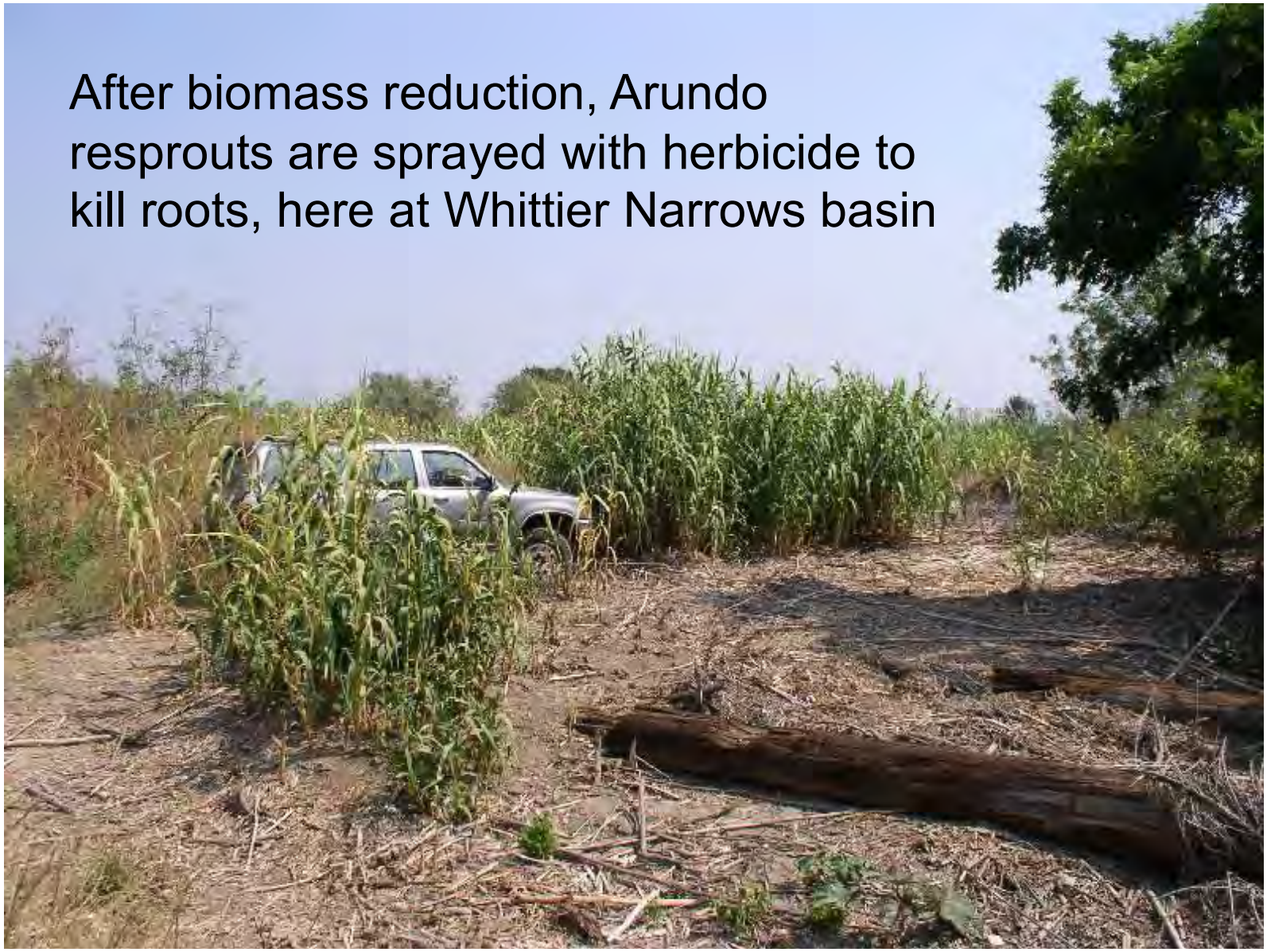
2b) After wildfire, spray resprouting stalks before they grow tall.

3) After major floods introduce new propagules -- live rhizome fragments -- spray young stalks before they grow tall.

Example of rotary mower that can clear Arundo understory between trees and on steep slopes

Following mowing or fire, Arundo resprouts grow rapidly from moist soil – here about 4 feet tall after 3 weeks at Whittier Narrows

After biomass reduction, Arundo resprouts are sprayed with herbicide to kill roots, here at Whittier Narrows basin



The Santa Clara River flows near Oxnard, California after a rain event in January 2019.
Photo credit – Santa Clara River Conservancy
Infrequent floods introduce Arundo propagules to woodland groves, which take root and sprout new stalks, that can be controlled before clumps grow large and numerous.

Post-fire Control of Arundo Resprouts on Big Tujunga Wash at Hansen Dam Basin

Wildfire in September 2016 burned understory of dense Arundo beneath taller trees.

When 6 feet tall, resprouting stalks were sprayed with imazapyr herbicide 7 weeks after fire. Willow tree resprouts were less than 2 feet tall.

After another 7 weeks, treated resprouts had stopped growing and turned yellow.

Post-fire Control of Arundo Resprouts on Big Tujunga Wash at Hansen Dam Basin

After additional herbicide treatments, by July 2018, 22 months after wildfire, Arundo was eliminated and replaced by thicket of native trees.

Without herbicide application, few native trees would have survived, where shaded by dense Arundo stalks 30 feet tall.

By removing biomass and allowing access, wildfire provides opportunity to control Arundo easily and cheaply. If opportunity is not taken, native trees are killed and Arundo invasion is intensified.

Treated post-fire Arundo resprouts at Big Tujunga Wash in San Fernando Valley, January 2017; followed by regeneration of riparian woodland

Fire burned hot due to dense Arundo understory, with burnt stalks vaporized; but post-fire herbicide treatment prevented fast-growing Arundo stalks from shading out reprouting tree foliage

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Conclusions:

>Dense Arundo understory causes hot fire that kills above-ground tree trunks, possibly also root crowns.

>Before fire, native trees can be protected by controlling Arundo locally, despite upstream infestation, and spraying resprouting rhizome fragments after floods.

>Post-fire herbicide treatment prevents resprouting Arundo stalks from shading out slower-growing resprouting tree foliage.

That's all, Folks!

Thank you!