

Table 2:

Our Wicked Ways:
When Looking
Out for Ourselves
is Bad for
Everybody
Including
Ourselves

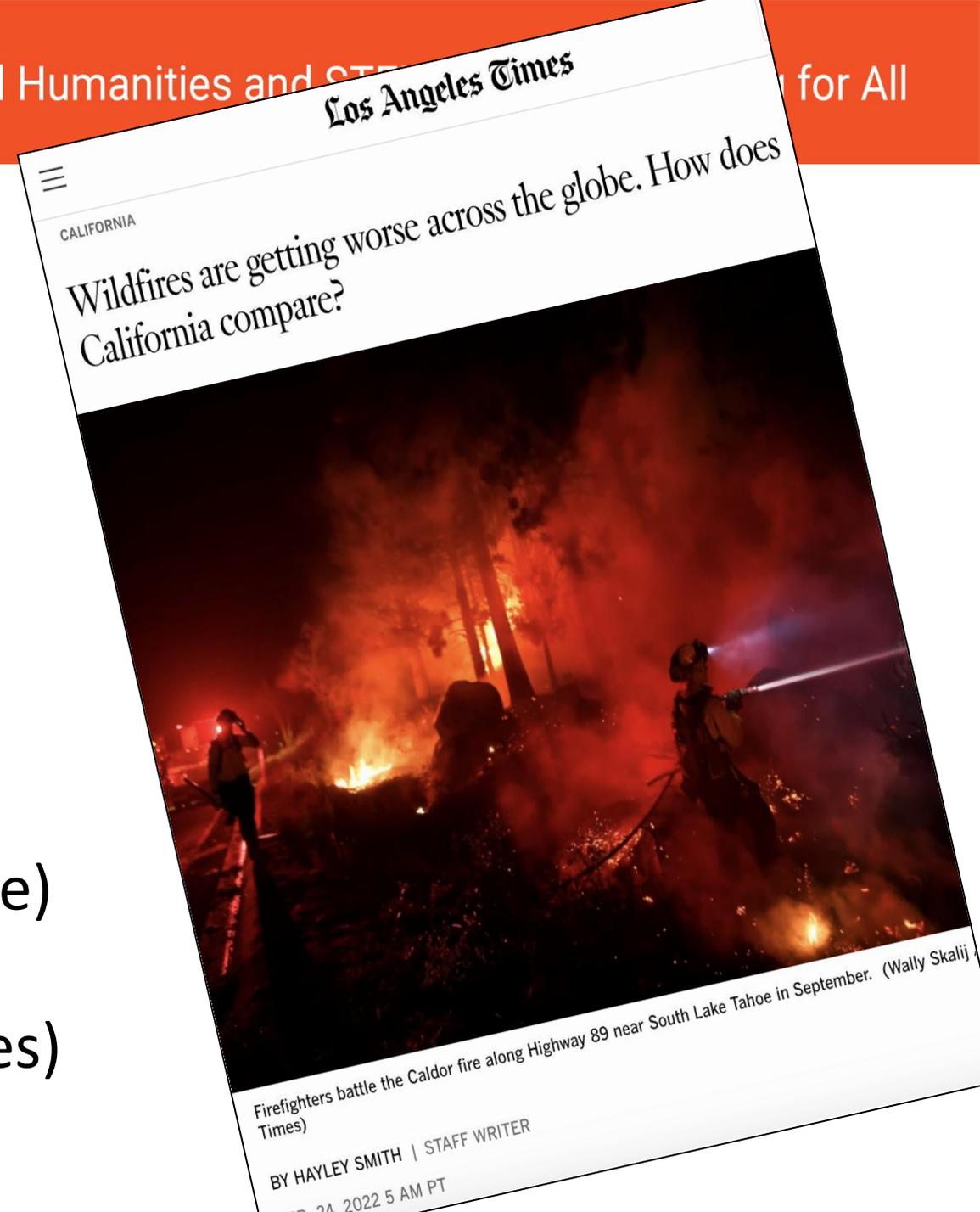
Arthur Grinath (Economics) and
Diane K. McDaniel (Geology and
Physical Sciences)



Forest fire – Getty Images
Sonoma County, California, USA

California Wildfires

- 2020:
 - 4.4M acres (4% of state)
 - 10K structures burned
 - 33 deaths
 - \$12 billion damage
- Crops/food supply
- Many sequoias destroyed
- Respiratory/cardiac health (toxic smoke)
- Soil erosion
- Floods and debris flows (e.g., mudslides)
- Contaminated water supply



California Wildfires

Causes:

- Megadrought
- Climate change
- Forest management practices

Rapid intensification of southwestern North America 2020-2021

A. Park Williams^{1,2}, Benjamin I. Cook^{2,3} and Jason E. Smerdon^{1,2}

A previous reconstruction back to 800 CE indicated that the 2000-2018 soil moisture deficit in southwestern North America was exceeded during one megadrought in the late-1500s. Here, we show that after exceptional drought severity in 2021, ~19% of which is attributable to anthropogenic climate trends, 2000-2021 was the driest 22-yr period since at least 800. This drought will very likely persist through

due to abundant 2020 and inter-annual variability. To understand the turn-of-the-century, we extended the SWNA tree-ring reconstruction using a tree-ring reconstruction

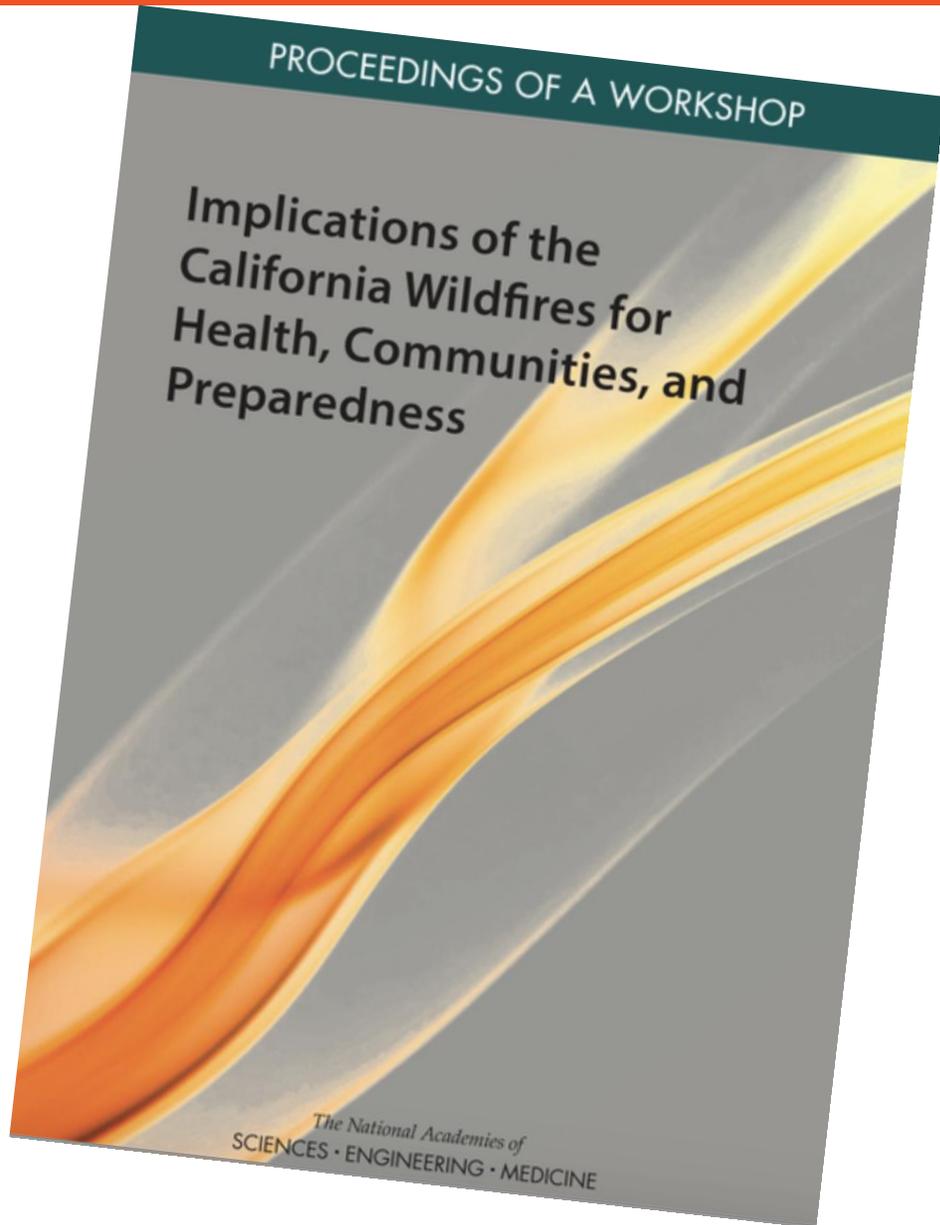
'Loading the dice': climate crisis could increase southern California wildfires



A firefighter douses flames during the Creek fire in unincorporated Madera county, California, on 7 September 2020. Photograph by [unreadable]

Global heating will cause 'megafires resistant to fire suppression practices' with 25% of land being burned by 2040

convergence of dangerous weather conditions, exacerbated by the climate crisis, has set the stage for southern California to see an increase in catastrophic wildfires over the coming decades, according to a new study.



Vulnerable Communities

(*cf. resilient communities*)

NAS report:

- Low income
- Migrant
- Indigenous
- Older adult
- Communities of color

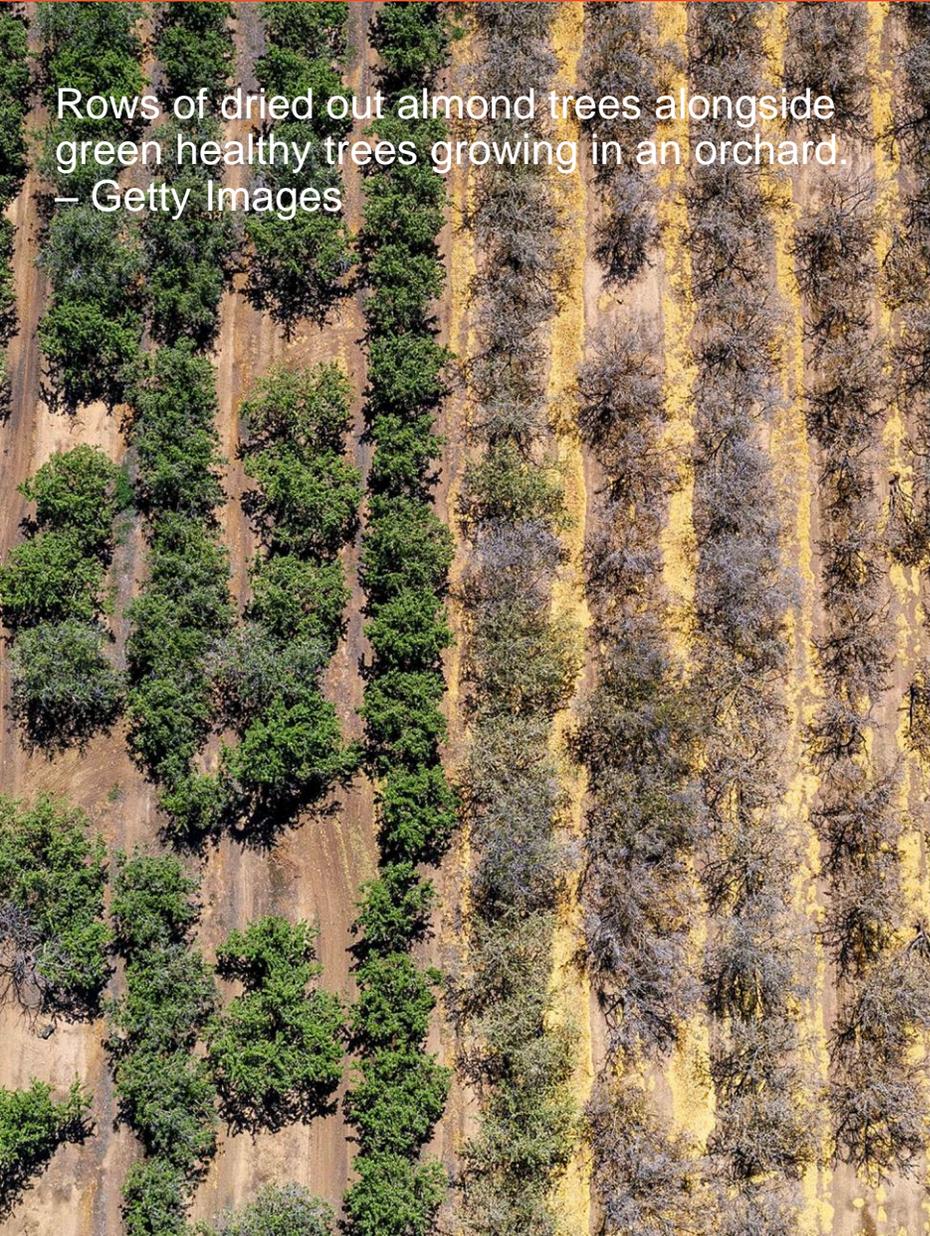
Also consider:

- Agricultural sector
- Tourism industry



What is a *Wicked* Problem?

- Potential consequences not well known
e.g., how bad fires may get, what systems are affected
- Information needed not well known
e.g., full costs, ecosystem responses, climate change...?
- Many potential approaches/solutions
Social, ecological, geological, political, economic, educational, cultural...
- solutions not absolute, but better or worse.
- bad solutions have real consequences.



Rows of dried out almond trees alongside green healthy trees growing in an orchard.
– Getty Images

Free Market & Individual Choice

- Free Market depends on Individual Choice
- We know what's best for us
- What can individuals do to deal with fire/drought?



Some Individual Actions?

(consider response, preparation, prevention...)

- Move
- Exit plans
- Stock emergency supplies
- Make house/farm fire resistant
- Get insurance
- Donate to local fire department



Will Individuals Take Action?

- Irrationality
- Cost of information
- Other market failures



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The New York Times
Biden Administration Announces Plan to Spend Billions to Prevent Wildfires
The plan is an expensive one, but it is only partially funded.



The Caldor fire in Eldorado National Forest near Pollock Pines, Calif., last year. Max Whitaker for The New York Times

By Alyssa Lukpat
Jan. 19, 2022

After a year that included one of the largest wildfires in California history and ended with an [unseasonably late blaze](#) that became the most destructive ever seen in Colorado, the Biden administration on Tuesday announced a 10-year, multibillion-dollar plan to reduce the fire risk on up to 50 million acres that border vulnerable communities.

“Big Picture” Actions

(again, consider response, preparation, prevention...)

- Slow down global warming (curb emission of greenhouse gases)
- Fire-fighting force
- Prescribed burns
- Changes to water rights
- Institute fire codes
- Economic assistance (e.g., vulnerable communities, agricultural sector)

A farmer plows a field in Wasco in the Central Valley of California that has turned to dust. – Getty Images



Free Market Does not do “Big Picture”

- Commons Problem
- Free Markets depend on property rights but cannot create them

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Highlights (presentation/discussion):

- Individuals and the free market are not well-equipped to solve wicked problems, which may require policy and governmental responses to be effective.
- Wicked problems benefit from the thinking of many disciplines, they are complex problem with solutions that are varied, complex, and have both good and bad effects.
- If we decide policy based on cost and benefit, how do we quantify well-being? How do we put a market value on air? On fire safety? On clean water? How much are we willing to pay to get the results we want?

Some resources cited here:

- <https://online.mason.wm.edu/blog/what-makes-a-wicked-problem>
- <https://www.stonybrook.edu/commcms/wicked-problem/about/What-is-a-wicked-problem>
- https://en.wikipedia.org/wiki/2020_California_wildfires
- <https://www.nap.edu/read/25622/chapter/4>
- <https://www.latimes.com/california/story/2022-02-24/wildfire-getting-worse-globally-how-california-compares>
- <https://www.washingtonpost.com/weather/2022/02/14/southwest-megadrought-worst-1200-years/>
- <https://www.nature.com/articles/s41558-022-01290-z.epdf>
- <https://www.c2es.org/content/wildfires-and-climate-change/>
- <https://www.theguardian.com/us-news/2022/feb/17/california-wildfires-increase-study>

