

Gardening in a Changing Climate



Presented by
UC Master Gardeners of Placer County



University of California
Agriculture and Natural Resources

UCCE Master Gardener Program

Who Are Master Gardeners?

Master Gardeners of Placer County

- ❖ Extend research-based, sustainable gardening and composting information
- ❖ Present accurate, impartial information to home gardeners
- ❖ Encourage public to make informed gardening decisions



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Who Are Master Gardeners?

Where to find us...

Online, in the Media, and Special Publications

- ❖ Hotline: Call **(530) 889-7388** or submit your questions online
- ❖ Website: pcmg.ucanr.org
- ❖ Facebook, Twitter, Instagram
- ❖ Gold Country Media monthly column
- ❖ *Curious Gardener* monthly newsletter and on our website
- ❖ *Gardening Guide and Calendar*



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Who Are Master Gardeners?

Where to find us...

Workshops, Fairs and Festivals and Special Events

- ❖ Speakers by Request
- ❖ Workshops (various venues, check website)
- ❖ Farmers' Markets (seasonal: Auburn, Roseville, Lincoln)
- ❖ Fairs and Festivals Booths (varies)
- ❖ Garden Faire (April)
- ❖ Mother's Day Garden Tour (May)



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Homepage pcmg.ucanr.org

The screenshot shows the homepage of the UC Master Gardeners of Placer County website. The top navigation bar includes links for "Placer Pests", "Gardening Essentials", "Gardening Year Round", "Vegetables", "Landscape Plants", "Fruits & Nuts", and "UC Gardening Guides". A search bar and a "GIVE" button are also present. The main content area features a banner image of sunflowers and a section titled "Upcoming Events" with a table of workshops. A sidebar on the left contains links for various services like pest management and email lists. A sidebar on the right provides a "HOTLINE UPDATE" and links for social media and other resources.

University of California
UC Master Gardeners of Placer County

Placer Pests | Gardening Essentials | Gardening Year Round | Vegetables | Landscape Plants | Fruits & Nuts | UC Gardening Guides

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Home
2021 Gardening Guide and Calendar
Join Our Email List
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School & Community Gardens
Curious Gardener Newsletter
About Master Gardeners
How to Become a Master Gardener
Contact Us
Placer/Nevada UCCE
For PC Master Gardeners Only

Upcoming Events

Event Name	Date
From Bambi to Thumper Zoom Workshop: An Integrated Strategy for the Management of Vertebrate Pests	3/13/2021
Growing Citrus in the Foothills Zoom Workshop	3/27/2021
Gardening in a Changing Climate	4/10/2021
Composting and Mulch Zoom Workshop	4/17/2021
Principles of Propagation Zoom Workshop	5/8/2021

[View More Events](#)

Virtual Gardening Workshops

To view previous workshops: [Recorded Virtual Gardening Workshops](#)

HOTLINE UPDATE

The Hotline office continues to be closed to all walk-in clients. We are, however, available to answer your gardening questions. You can submit them by using the Ask A Master Gardener link below or by leaving a message on our Hotline number shown at the bottom of this web page.

Connect With Us!

Ask a Master Gardener...

To learn more, [Click here.](#)

Placer County Vegetable

2021 Gardening Guide & Calendar - Vendor List U

Agenda

What is Climate Change?

The Science of Change

Adapting Gardening Practices

Be Fire Smart

Ask Questions



A Handout with links
is available on our website: pcmg.ucanr.org

What is Climate Change?

Measured in small increments

Changes add up over time

Can have a huge impact on our gardens



What is Climate Change?

Weather vs. Climate

Weather

What the temperature will be tomorrow or whether it will rain on Thursday.



Climate

Looks at long term (about 30 year) averages of daily weather.

Climate Change Vocabulary

- ❖ Mitigation
- ❖ Adaptation
- ❖ Phenology
- ❖ Synchrony
- ❖ Carbon sequestration
- ❖ Ecosystem services



Mitigation vs. Adaptation

Mitigation (of climate change):

Implementing actions to reduce the sources of greenhouse gas emissions.

Adaptation (to climate change):

Adjusting to actual and expected climate impacts

Can moderate harm

Can exploit beneficial opportunities

Phenology and Synchrony

Phenology Annual cycles of plants and animals

- ❖ Extremely sensitive to climate changes
- ❖ Not all species respond with the same speed

Synchrony Events that occur at the same time

- ❖ Climate change can disrupt species' interactions
- ❖ Plants bloom before pollinators are active
- ❖ Caterpillars emerge before migratory birds need to feed young



Carbon Sequestration

- ❖ Removing carbon from the atmosphere
- ❖ Storing it in a fixed molecule

In soil

In the ocean

In plants



Ecosystem Services

Ecosystem--a community of organisms and their Environment, functioning as an ecological unit

Ecosystem Services are the benefits of an ecosystem to human life, such as clean water, food, and the decomposition of organic matter.



The Science of Change

Here are a few examples of the most common ecological responses to climate change that scientists have documented:

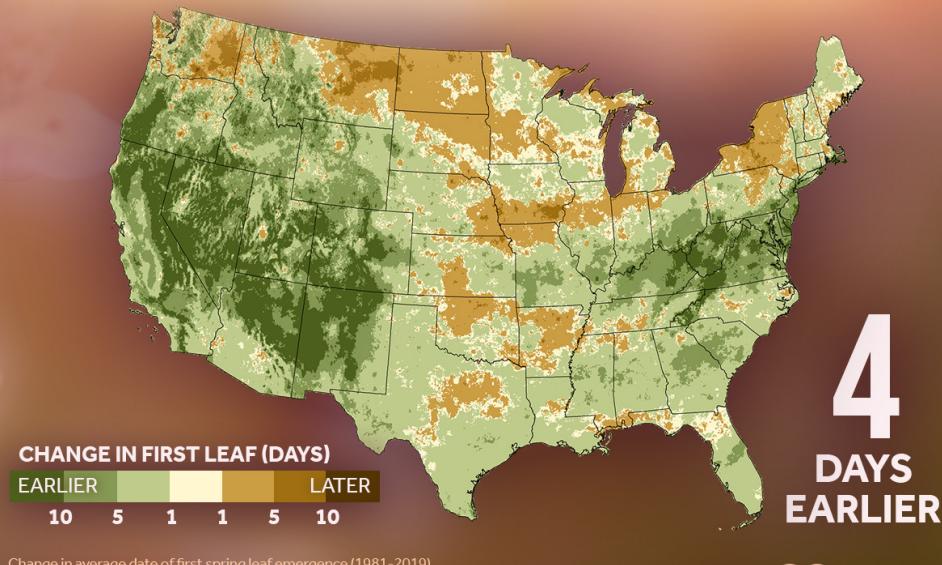
The Science of Change

Spring is arriving earlier:

- ❖ Leafing out and bloom events are generally happening earlier



SACRAMENTO SPRING COMING EARLIER



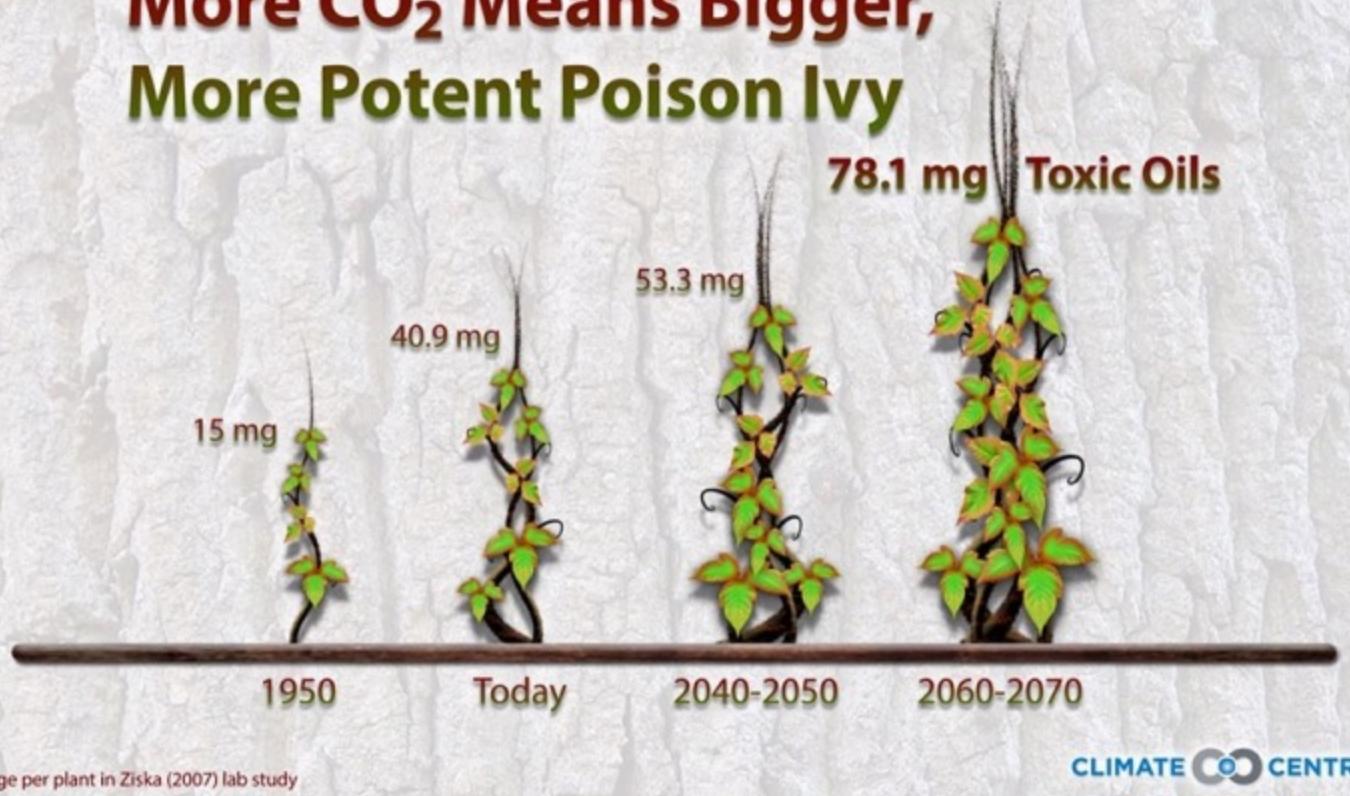
CLIMATE CO₂ CENTRAL

The Science of Change

- ❖ Rising temperatures mean pollen seasons will start earlier and last longer, causing an uptick in asthma and allergies



More CO₂ Means Bigger, More Potent Poison Ivy

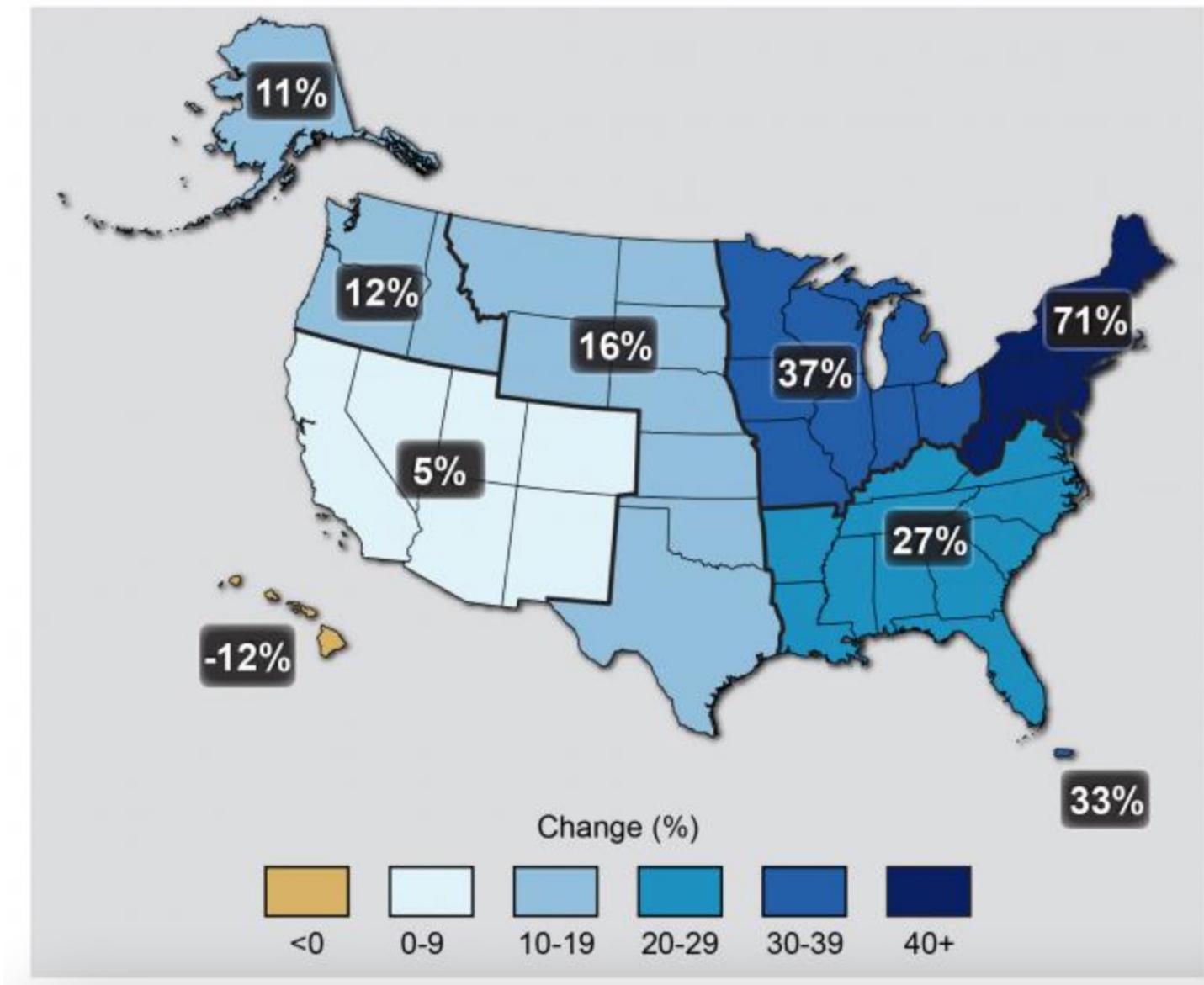


The Science of Change

- ❖ Frost and freeze damage threaten plants when an earlier spring is combined with more extreme winter storms.

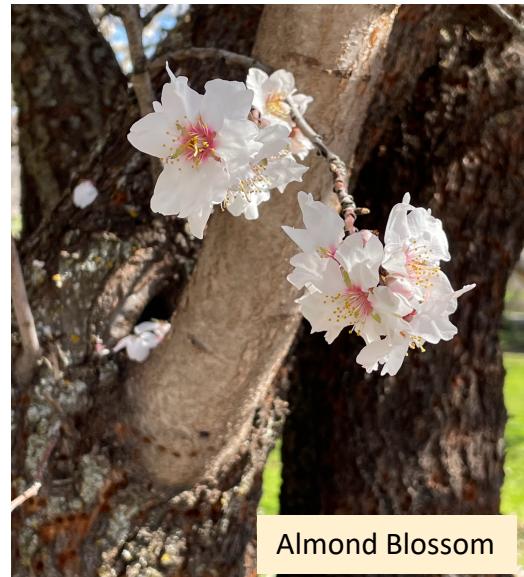


Observed Change in Very Heavy Precipitation



The Science of Change

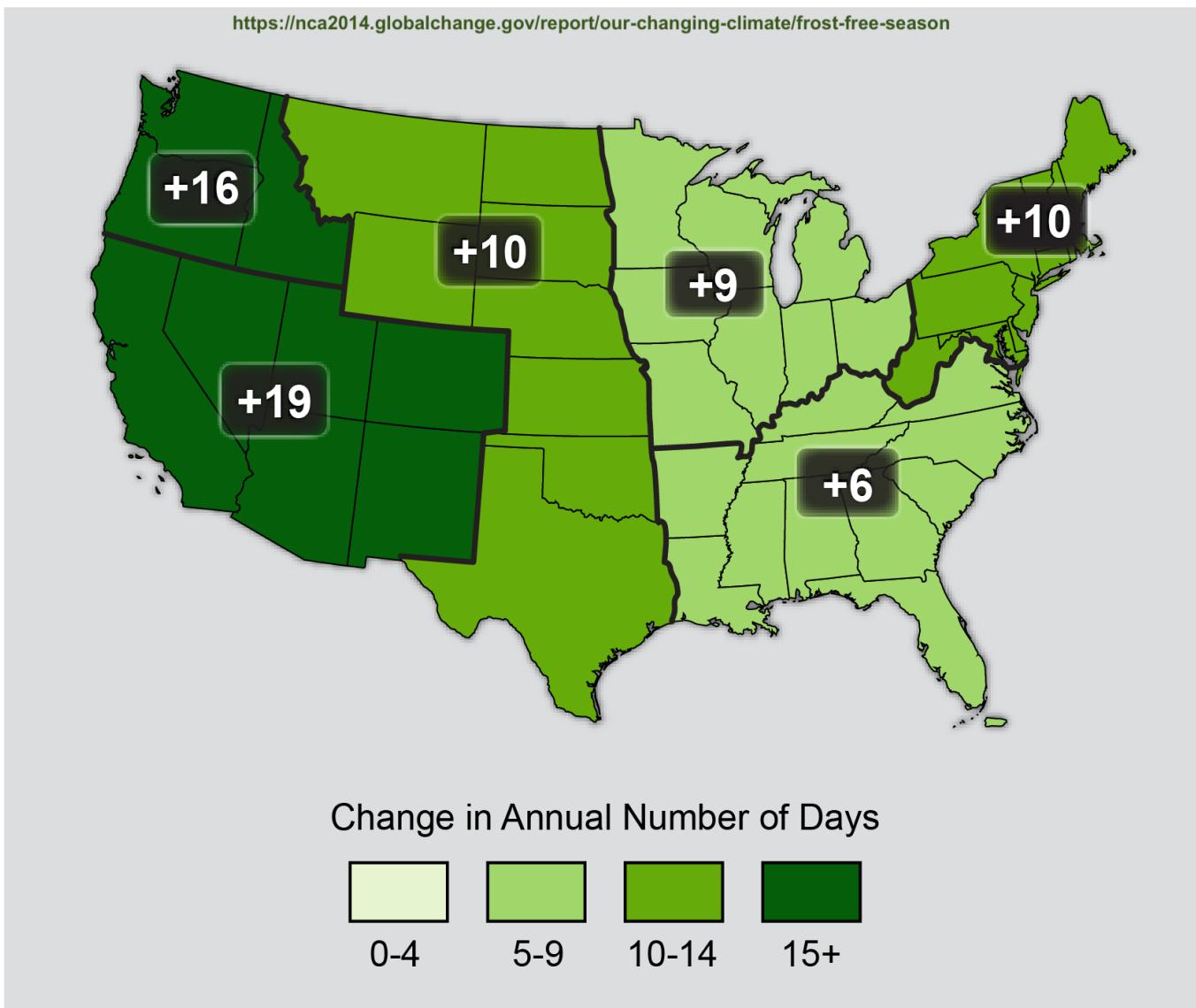
- ❖ Reduction in winter chilling is expected to impact fruit and nut trees through too few chilling hours for fruit set



Almond Blossom

Observed Increase in Frost-Free Season Length

<https://nca2014.globalchange.gov/report/our-changing-climate/frost-free-season>



SHORTER COLD SNAPS

CONSECUTIVE WINTER DAYS BELOW NORMAL



Most consecutive days that Dec-Feb average daily temperature is below NCEI 1981-2010 normal
Source: RCC-ACIS.org. Produced 1/22/2020

CLIMATE  CENTRAL

The Science of Change

- ❖ Invasive species are more responsive to climate changes, facilitating naturalization and invasion.

plantright.org







Resource List



How You Can Help

1 Don't plant
invasives

2 Buy beautiful
non-invasive
alternatives

3 To find resources
in your region, visit
PlantRight.org

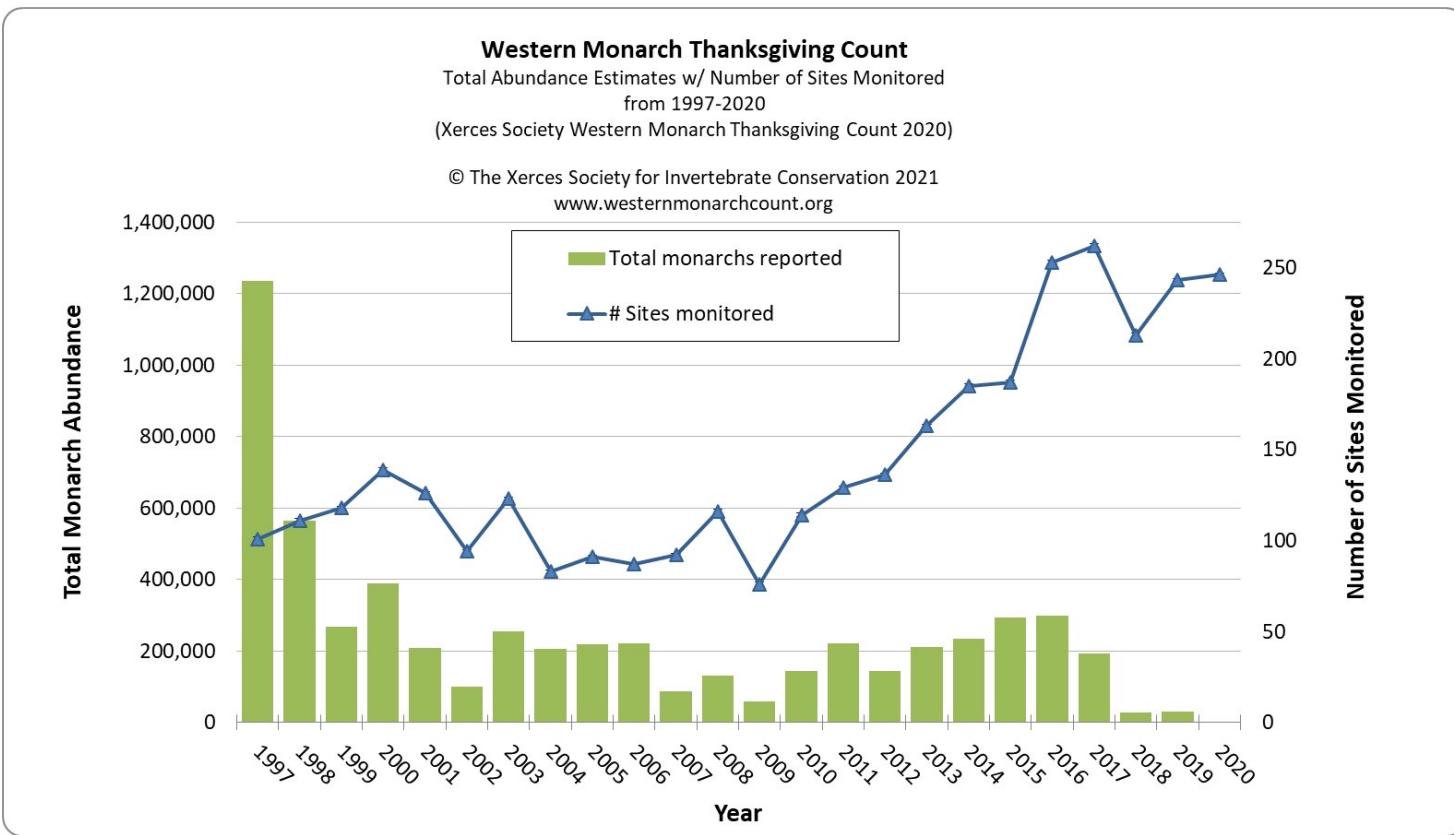


The Science of Change

- ❖ Extinctions have occurred
in hundreds of species

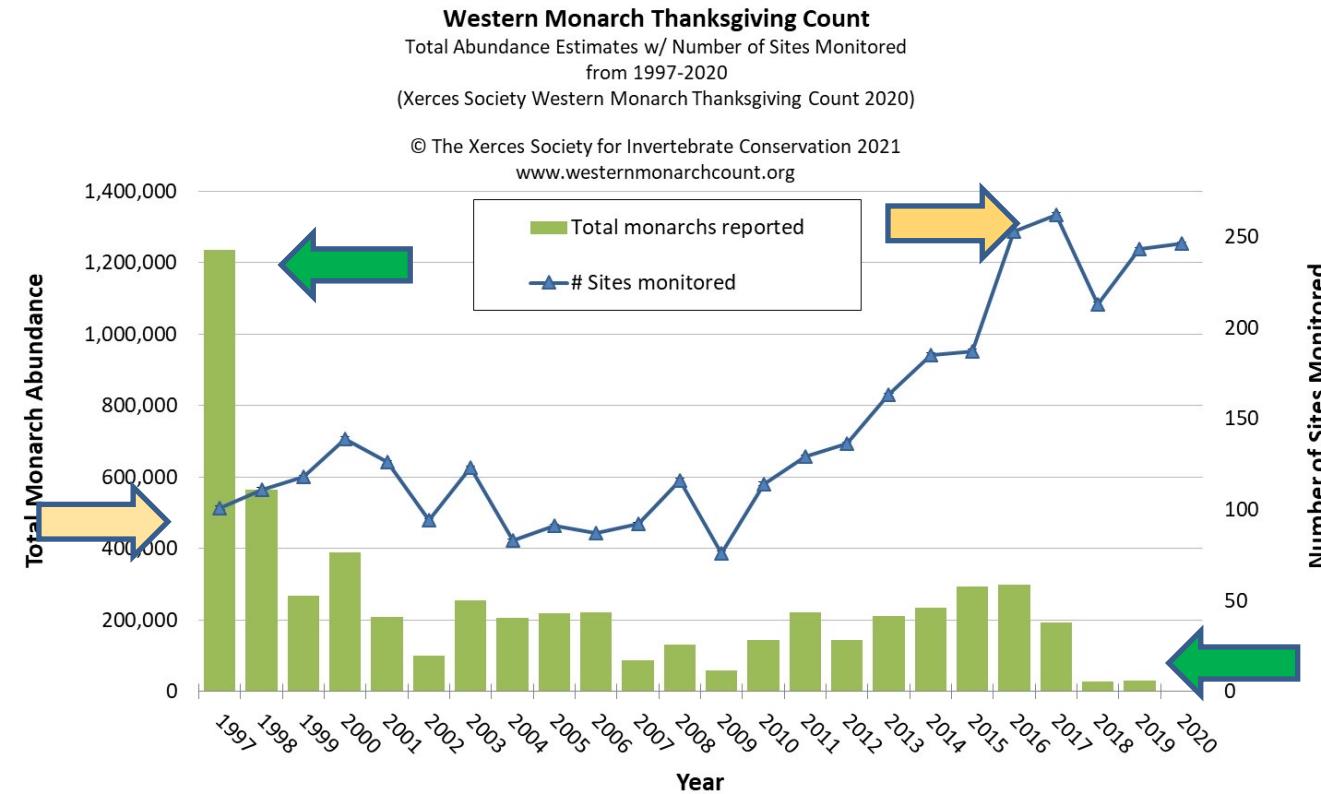


Where Have all the Monarchs Gone?



Unfortunately, to the surprise and dismay of many, only 1,914 monarchs were counted at all the sites. This is a shocking 99.9% decline since the 1980s.

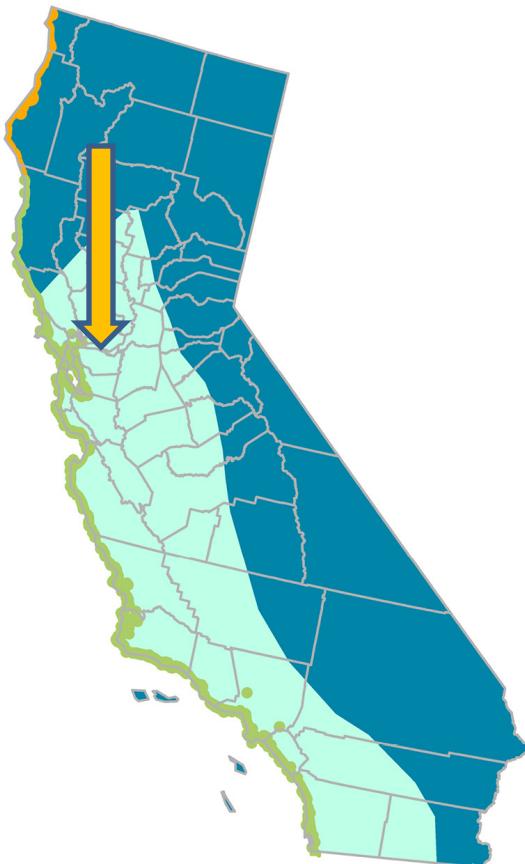
Where Have all the Monarchs Gone?



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Plant for Monarchs

Priority Action Zones in California for Recovering Western Monarchs



Priority #1

In the monarchs' first stopover zone, protect and plant early season native milkweed and nectar plants

In the coastal areas where monarchs overwinter, protect and restore overwintering habitat and plant native nectar plants

In coastal California, even planting California-native milkweed species such as narrowleaf milkweed (*Asclepias fascicularis*) can be problematic because the mild climate may prevent or delay these species from going dormant. This can cause disease and parasite build-up and natural life cycle disruption similar to that seen with non-native tropical milkweed (*A. curassavica*).

Priority #2

Protect and plant native milkweed and nectar plants

Plant native nectar plants



Climate Change Adaptation



Bumblebees Bite Leaves

Prompts plants to pollinate early when bees lack pollen

Bees bite the leaves of plants that are lacking flowers

Causing plants to bloom as much as

a month earlier than they normally would

May help both bee and plant resilience

The Science of Change

Plants react to extremes, not to averages.

- ❖ Uncertainty; keep eyes on the weather
- ❖ Respond appropriately
- ❖ Protect what you have

Adapt Gardening Practices to Climate Change

- ❖ Monitor your Garden
- ❖ Improve and protect the soil
- ❖ Choose plants for our climate
 - California natives (and other low water plants)
- ❖ Support our native pollinators
 - Continuous floral resources
- ❖ Eliminate invasive plants
- ❖ Adapt your food garden

Monitor Your Garden

- ❖ Observe and keep a record
 - ❖ Document garden characteristics
 - ❖ Sun exposure
 - ❖ Soil type
 - ❖ Climate Zone
 - ❖ Water availability
 - ❖ Use hydrozones



Strengthen Soil's Ability to Store Carbon

- ❖ Apply compost, yard waste and other organic matter to feed microbes in the soil
 - ❖ Reduce—or eliminate-- tillage
 - ❖ Irrigate efficiently
 - ❖ Use cover crops
-
- ❖ Keep landscapes vegetated and soil hydrated for plants to grow and sequester carbon



Choose plants for our climate

California native plants support native animal species and are adapted to our growing conditions.

calscape.org

- ❖ 7988 plants native to California
- ❖ 644 native to my zip code
- ❖ 632 native to my **address**
- ❖ Advanced search to select

Resource List



CALSCAPE CONTACT CALSCAPE PLANTING GUIDE NURSERIES MY PLANT LISTS BUTTERFLIES

CALSCAPE SIGN IN



CALIFORNIA NATIVE PLANT SOCIETY
Calscape
Restore Nature One Garden at a Time

Search for California native plants by name

ADVANCED SEARCH



Enter a California address or click the map to see plants native to that location

California

7988 plants native to California



All Plants
7988



Trees
216



Shrubs
1451



Perennials
3700



Annuals
2216



Grasses
646



Succulents
188



Vines
92



Ferns
113



Sun
2844



Shade
586



Part Shade
2278



Groundcovers
825



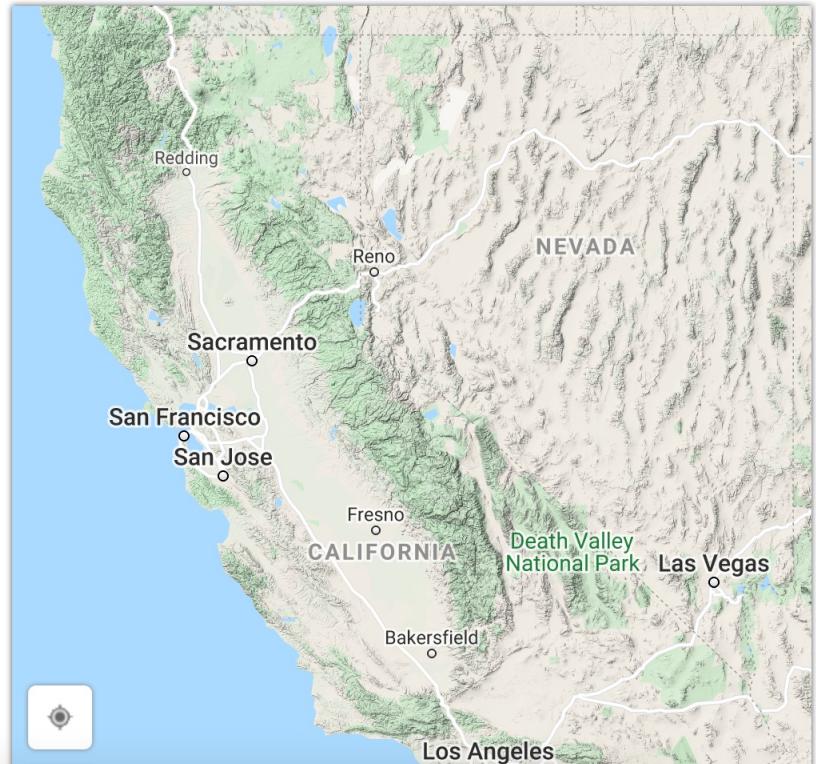
Butterfly Hosts
5079



Hedges
322



Bank Stabilization
305



Support our native pollinators

- ❖ More than 75% of flowering plants depend on pollinators
- ❖ 1 in 3 bites of food you eat is thanks to pollinators



Eliminate invasive plants

- ❖ Manage weeds and uninvited plants

Remember: Do not plant a pest!

Adapt your food garden

- ❖ Check planting dates
- ❖ Choose varieties for your area
- ❖ Monitor sun and water



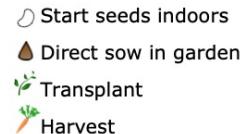
Resource List

Vegetable Planting Guide



Placer County Vegetable Planting Guide

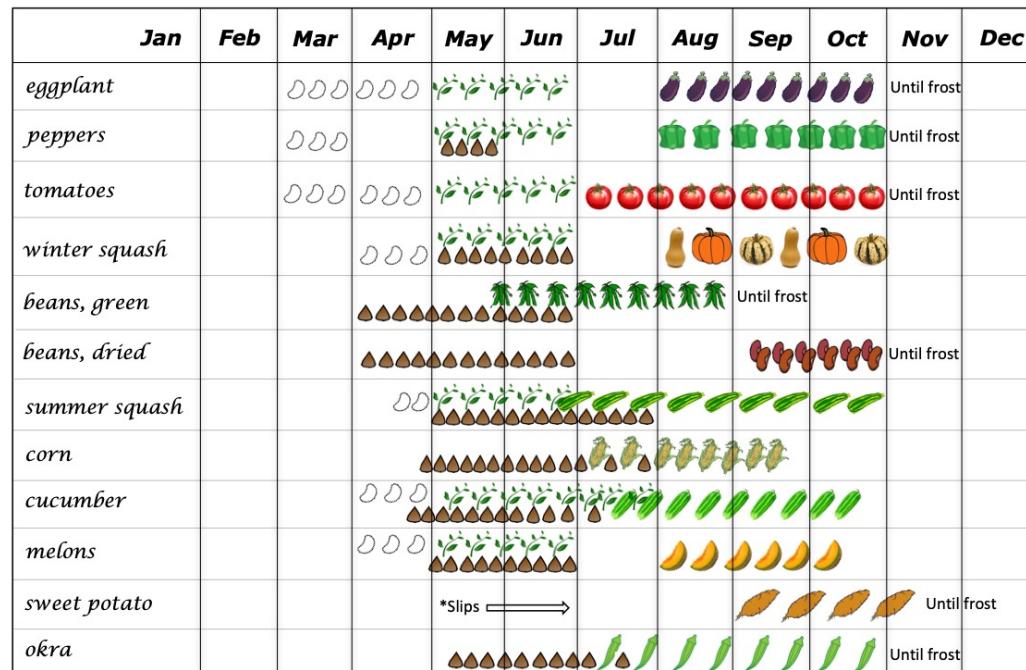
Version 3.0



The dates on this chart are for gardens at about 1200' of elevation. For Winter/Spring planting, gardeners at higher elevations should delay planting by about 2 weeks for every 1000' above 1200'. Gardeners at lower elevations should plant about 2 weeks earlier for every 1000' below 1200'.

City	Approx. Elevation	Avg. Last Frost Date
Roseville	165'	3/15
Lincoln	165'	3/15
Rocklin	250'	3/23
Loomis	400'	3/26
Granite Bay	480'	3/26
Penryn	625'	3/26
Newcastle	950'	4/2
Auburn	1225'	4/2
Meadow Vista	1700'	4/9
Applegate	2000'	4/9
Weimar	2250'	4/9
Colfax	2425'	4/9
Foresthill	3225'	4/16

Warm Season Vegetables



Planting and harvest dates may vary between varieties; please check seed packets for details.

Frost dates are approximate due to recent climate changes and varying topography within Placer County.

Acknowledgments: Thank you to Professor Emeritus, Dr. Robert Norris at the UC Davis Plant Sciences Department and the El Dorado County Master Gardeners for the inspiration to create a local planting guide for Placer County.

Master Gardeners of Placer County can be reached at (530) 889-7388, or online at pcmg.ucanr.org.

*Sweet potato slips are rooted cuttings. Please go to sacmg.ucanr.edu/files/187714.pdf for more information.

When to Water

Test: Water if dry at 3-4 inches



Monitor Regularly

Avoid over watering.

NOTE: Drooping leaves does NOT always mean the need for
watering. Check the soil. Avoid overwatering. Roots can drown.

Build Your Basic Gardening Foundation and Become a More Informed Gardener

Build a great foundation of climate-conscious, earth-friendly gardening principles and knowledge tailored to the needs, climate and conditions of **gardens in Marin**. Dig in!

[Earth-Friendly Gardening](#)

[Site Analysis](#)

[Climate & Microclimate](#)

[Climate Change & Your Garden](#)

[Fire-Smart Landscaping](#)

[Soil](#)

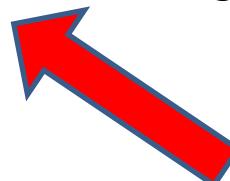
[Compost & Other Soil Amendments](#)

[Mulch](#)

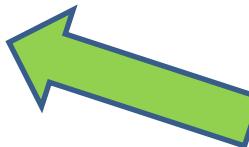
[Irrigation](#)

[Conserving Water & Energy](#)

[Minimizing Waste](#)



Remember, that Marin is a different climate zone than Placer County



Lots of info about gardening here

Climate Change & Your Garden

[http://marinmg.ucanr.edu/BASICS/CLIMATE CHANGE - YOUR GARDEN/](http://marinmg.ucanr.edu/BASICS/CLIMATE_CHANGE_-_YOUR_GARDEN/)

BACK TO BASICS

Climate Change Mitigation -

Be Part of the Solution!

How Can Gardeners Adapt for a Changing Climate?

CLIMATE & MICROCLIMATE

What is Your Climate Zone?

How to Assess Your Microclimate

Be Fire Smart



Photo UCANR

Be Fire Smart

Increased warming, drought, and insect outbreaks, due to climate change have increased wildfires and impacts to people and ecosystems in the Southwest.

Fire models project more wildfire and increased risks to communities across extensive areas.

Be Fire Smart

5 largest fires in California history

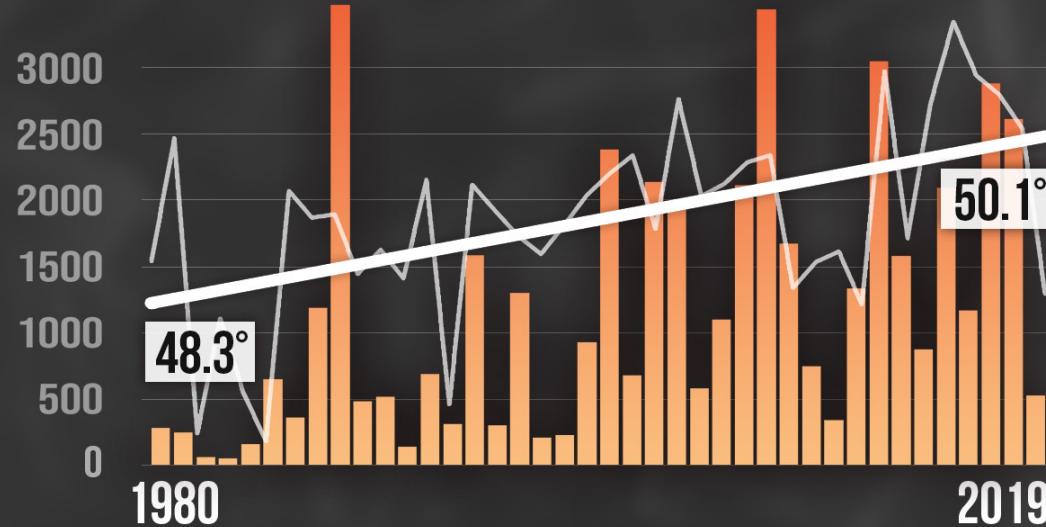
1. AUGUST COMPLEX FIRE August 2020 1,002,097 acres
2. MENDOCINO COMPLEX FIRE July 2018 459,123 acres
3. SCU LIGHTNING COMPLEX FIRE August 2020 396,624 Acres
4. LNU LIGHTNING COMPLEX FIRE August 2020. 363,220acres
5. CREEK FIRE Sept. 2020 322,089 acres

4 of these fires occurred in 2020

Be Fire Smart

HOTTER YEARS, HIGHER FIRE RISK ACRES BURNED ACROSS WESTERN STATES

(THOUSANDS OF ACRES)

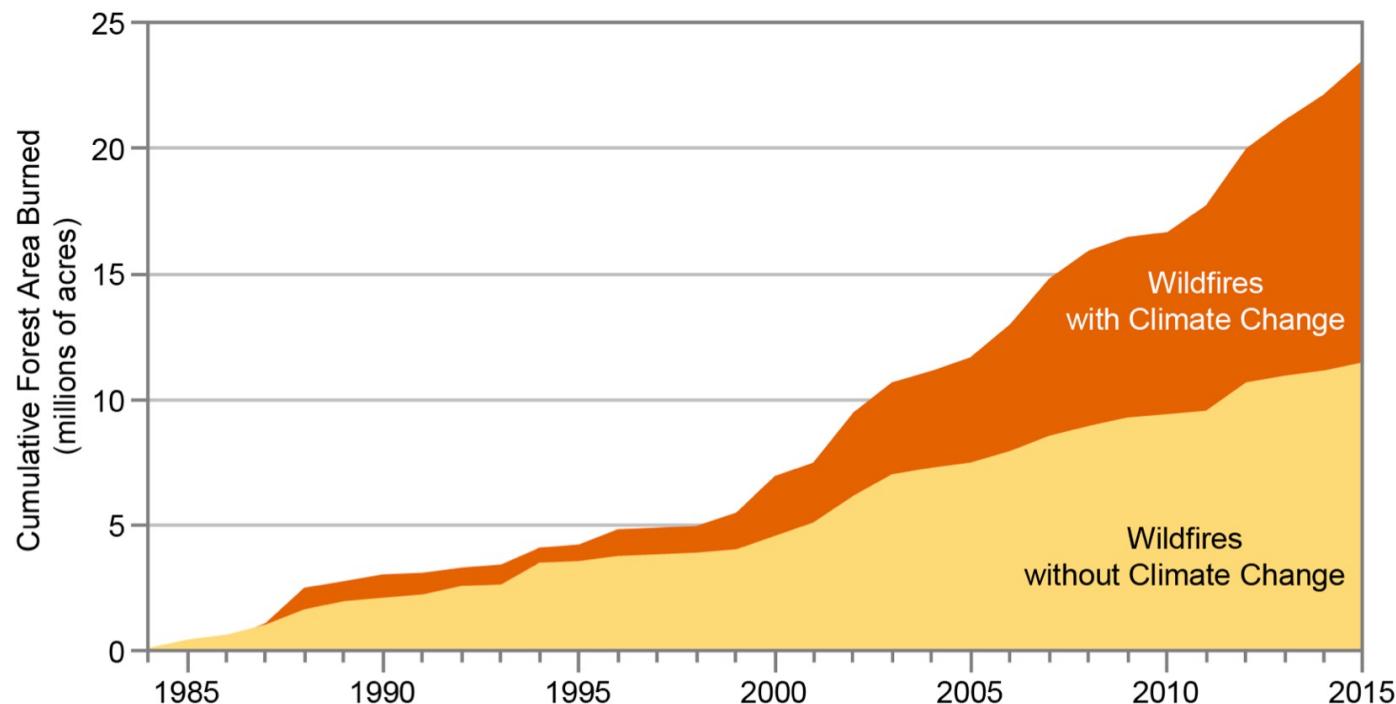


Total acres burned in the west calculated by summing acres burned across 11 states: AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, & WY. Avg annual temps (1980-2019) calculated by averaging temps across same states. Source: National Fire & Aviation Management FAMWEB Data Warehouse & NOAA/NCEI's Climate at a Glance

CLIMATE  CENTRAL

Be Fire Smart

Climate Change Has Increased Wildfire



The cumulative forest area burned by wildfires has greatly increased between 1984 and 2015, with analyses estimating that the area burned by wildfire across the western United States over that period was twice what would have burned had climate change not occurred. *From Figure 25.4 (Source: adapted from Abatzoglou and Williams 2016).*

Be Fire Smart

- ❖ Prepare defensible space
- ❖ Use fire resistant landscaping.

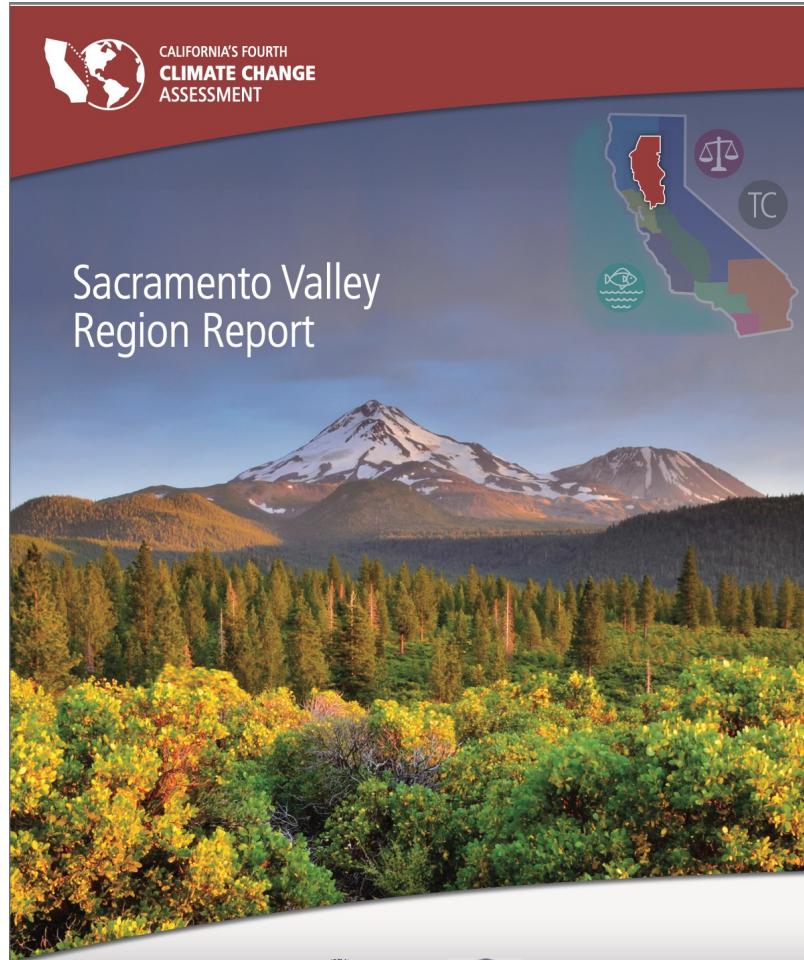
Ready Set Go!

Personal Wildfire Action Plan



Resource List

Fourth Climate Assessment Sacramento Valley



Thank You!

Any Questions?

Master Gardener Website: pcmg.ucanr.org

Master Gardener Hotline: **(530) 889-7388**

Composting Rot Line: **(530) 889-7399**



UC Master Gardeners of Placer County