

TEACHER'S GUIDE

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INTRODUCTION

The 44-page picture book **Who Needs a Forest Fire?** illustrates how humans have created unhealthy forests and dangerous conditions. Now we have catastrophic wildfires. But it was not always this way. The first inhabitants of the area used fire as a tool and kept the forest tended. The Native American people were treated harshly and unfairly when California became a beacon for gold seekers. Instead of embracing the knowledge and historical perspective of those who had lived in the area for over 13,000 years, the miners, pioneers and explorers rejected the careful work of those indigenous people and tried to eradicate their culture. They destroyed the fragile ecosystems that existed in harmony with the plants and animals.

The message of the story is about sharing information and resources and working together. In that spirit, I believe in reaching as many educators as possible. If you have anything to add or discover any errors in this guide, please let me know. I hope to keep this information as up-to-date as possible.

This guide is a collection of resources to provide teachers of K – Grade 4 with additional information so they can expand on the ideas in the book and dive a bit deeper. **California state educational standards** are addressed as noted.

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A NOTE TO EDUCATORS

Some of the activities, questions etc. are noted with a suggested grade level or age group. These are only guidelines. You know your students and what they may be ready for!

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THEMES

Appreciation of nature; fear of new things; respect for others; value of learning from others; value of natural resources; ecological harm; environmental stewardship; tradition and culture; broken promises; fairness; trust; partnership; money/material value

TOPICS

Forests; fires; Indigenous peoples/culture; California; California history; Gold Rush; Nature; Trees; ecosystems; soil; tools; smoke; fire prevention; fire preparedness; habitat

LEARNING OBJECTIVES

- Introduce California history in the context of Native American culture
- Present forest as an ecosystem that can change due to actions of living things
- Provide activities to engage learners with hands-on experiences
- Present questions for reflection on the text
- Present topics for further discussion as a class, small group or individual
- Provide connections to California state standards

Next Generation Science (NGSS)

Common Core: English Language Arts

History-Social Sciences

Health Education/Safety/Nutrition

Visual Arts

North American Assoc. for Environmental Education (NAAEE)

Calif. Education & the Environment Principles

(see Appendix B)

QUESTIONS TO PONDER

All Grade Levels

Before you read the book

What do you know about forest fires? What would you like to know? Use as many words as you can to

After you read the book

What does the author want you to learn from this book? Finish these sentences:

1 --- 1 h - 1:----

I can't believe . . .

I wonder why . . .

What surprised you in this book?

What are some ways we can avoid major fires?

Should people stop having campfires?

Should people be able to take what they want from the forest

Additional Grade 2-3

Should people interfere with nature?

We pour tons of water and retardant on fires. Is it the right way to handle big fires? What are other ways you could put out a small fire besides using water or retardant? What would you tell someone wanting to come to California in 1849?

What ways can you get people to be safer in forests? What do you want to tell them? What other events can affect the plants and animals that live in an ecosystem?

Additional Grade 4-5

Why do humans get to decide what happens to the trees?

Who should decide things like who owns the trees in the forest?

How should the forest be used? Or should it be used at all?

About 4 million homes in California are built in areas in danger of wildfire

Should people be allowed to build homes in these areas?

Things like gold or diamonds are just pieces of the earth. Why do we consider them so valuable?

Why do you think the author wrote this book?

FIRE

What is fire?

Lists of Fire Vocabulary:

CalFire list

National Parks Service list

U.S. Forest Service list

VIDEO: First Fires - Don Hankins, Pyrogeographer

Why does a fire burn?

A fire needs three things (called the Fire Triangle)

VIDEOS: Wildfire basics (series of videos 1-5 min. – PBS Learning Media

What is a flame?

TEDed talk - Why Wildfires are Necessary (about 4 minutes)

Forest fire without any sound.

360-Degree Video in Fire Research - Several videos (Grade 3+)

Types of fires in California

Different types of wildfires occur in many different ecosystems. Some of these fires are **not** rejuvenating.

LINKS: Forest ecology in your area: UCCE Fire in California

VIDEOS: Watch time-lapse video of wildfires in California 1910-2019

Collection of videos about chaparral and fire

Series of videos about California Fires

Activities: Locations of fires and weather

(Grades K-5)

Standards

K-ESS2-3; HSS-K.4.4

HSS-1.2.1; HSS-1.2.3; HSS-1.2.4

2-ESS2-2; 2-PS1-1; HSS-2.2.4

3-ESS2; HSS-3.1.1; 3.1.6.P; 3-ESS2-1

HSS-4.1.3; HSS-4.1.5

HSS-5.1.1; 5.1.6.P

NAAEE - Strand 1.A-C; Strand 2.A-B; Strand 2.3A, E; Strand 2.4.A, B, Strand 3.1.A; EEI-Prin. I-II

- Map the locations of major wildfires in California for the last two years Are there any patterns?
- Check the weather for the same time periods at the locations of major fires.

 Are there any patterns?
- Research temperatures (U.S. Climate data) for Sierra Nevada <u>and</u> your city or town. Make a chart comparing them.
- Draw/Write
 - K-2 Draw a picture and use as many words as you can to describe the fire.
 - 3-5 Write about what it would be like to see fire for the first time.

Resources

Interactive map of wildfire risk (WildfireRisk.org)

California Fire Weather (ProPublica.org)

Research temperatures (USC Climate data)

Fire Maps (Fire.ca.gov)

Check the weather (Weather.gov)

Wildfire control

VIDEO: The Danger of Embers

VIDEO: Should We Fight Wildfires With ... More Fire? 8-minute video (Grade 3+)

Equipment & Training

There are several levels of training to become a firefighter.

Programs for young people (US Forest Service)

Trucks and Equipment list (Cal Fire Prevention)

Activities: Firefighters & firefighting

(Grades K-5)

Standards

K-ESS3; K-PS3; K-ETS1

EEI-Prin V; NAAEE - Strand 1.A, C; 2.3.A; 3.1.A-C; 3.2.B-D; 4.A

Pre-activity discussion:

How many jobs can you think of that relate to fire-fighting?

After watching some of the videos below:

If you had to pick one, what job would you want?

Resources

Info about fire scientists

Fire-related jobs (Scientist cards)

Firefighting - Tribal fire crews (U.S. Dept. of Indian Affairs)

First Female Fire Lookouts (Smithsonian Magazine)

VIDEO: Part of the Fire Fighter Exam: Fire Fighters exam 1

VIDEO: Fire fighter training with ladder

VIDEO: Helmet-mounted cam: A firefighter enters a home on fire

VIDEO: Meet Firefighter Xochitl Hernandez of the Austin Fire Department

VIDEO: AR Firefighters Helmet video

VIDEO: Fire fighters – prison inmates (Forestry and Fire Recruitment Prog.)

California's Fire Prevention & Protection

40-page booklet about fire prevention

CalFire (California Department of Forestry and Fire Protection)

List of Fire organizations

Fire Safety (Safe Home)

Fuels Reduction Guide (CalFire)

VIDEO: The Goat Brigade: Preventing Wildfires with goats

Activities: Fire Safety & Prevention

(Grades K-5)

Standards

K-ESS3; K-PS3; K-ETS1; K-ESS3-2; K-ESS3-3; K-2ETS1-1; HSS-K.1.1-2; K.1.1.S; K.1.3.S; K.3.1.S; K.4.1.S; K.5.1.S 1-LS1-1; 1-PS4; 1.7.3.S; 1.1.4.S; 1.1.5.S; 1.4.1.S; 1.5.1.S; 1.7.2.S; 1.1.9.P; 2-LS2 3-ESS3-1; 3-LS4-4; 3-5-ETS1-1 4-ESS3-2; 4.1.1.S; 4.1.16.S; 4.1.5.S; 4.1.6.S; 4.3.2.S; 4.7.4.S; 4.7.6.S 5-ESS3-1; 5.1.3.P; 5.1.6.P EEI-Prin V; NAAEE -Strand 2.3.A, E; 2.4.A-E; 3.1.A-D; 3.2.B-D; 4.A-D

S Get prepared at home BEFORE a fire starts

Resources:

Find Your 5 (emergency preparation)

Smoke and Air Quality

What is smoke? (Information from the CDC)

Smoke can be helpful. It drives away insects and parasites, which attack some shrubs and trees. It reflects sunlight, keeping river water cool for salmon. Native Americans have used smoke from certain plants for purifying places. It's called **smudging**. Smoke is also used to clear away bees before collecting honey.

Smoke can cause some health problems but most people feel better once the smoke has cleared away. Smoke also releases **carbon dioxide** into the air. Too much carbon dioxide can damage the health of living things, so small fires are better than big ones.

Effects on produce after a fire (UCANR)

Heat, wind and ash (BBC)

How breathing wildfire smoke affects the body (NatGeo)

Activity: How is your Air?

(Grades K-5)

Standards
K-ESS3
HSS-1.2.4; HSS-1.4
HSS-3.5.2; 3.1, 3.2; 3.1.5.P;
HSS-4.1
5.1.3.P; 5.1.6.P;
NAAEE – Strand 1.A, C; 2.3.A; 2.4.A-E; 3.1.A-C; 4.A-D; EEI Prin. I-V

Find your Air Quality Index

Resources
AirNow Air Quality Index
PurpleAir Air Quality index

Other Cultures that use fire

Fire has been used as a tool all over the world, not just in California. In parts of the Amazon rainforest in and parts of Africa, it's been used as long as humans have been here.

Many places with rainforests and grasslands use "slash and burn" agriculture. In Australia the Aboriginal people used fire or "canbee" in the same way that California's Indigenous people did. In Japan, yakihata ('burned field' agriculture) is a farming technique rarely used now: clearing and burning forest land to grow food and using the ash as fertilizer. Shou Sugi Ban - Fire can help prevent fire and other types of damage. This method of burning wood has been used to fortify the home, especially in high-risk fire zones. Carrying fire (Pikunni)

Places to Visit

Bellflower, CA - Los Angeles County Fire Museum/Bellflower Fire Museum)
Benecia, CA Benecia Fire Museum
Hollywood and San Pedro, CA Los Angeles Fire Department Museum
Lindsey, CA Lindsey Fire Truck Museum
Long Beach, CA Long Beach Firefigher's Museum
Los Angeles, CA Los Angeles Old Plaza Fire House
Los Angeles, CA The African American Firefighter Museum
Nevada City, CA Firehouse No. 1 Museum

Sacramento, CA Sacramento Fire Museum
San Bernardino, CA California Fire History Museum
San Diego, CA San Diego Firehouse Museum
San Francisco, CA San Francisco Fire Department Fire Museum
San Jose, CA San Jose Fire Museum
Santa Clara, CA Santa Clara Fire Musuem
Sonora, CA Sonora Fire Museum
Ventura, CA AJ Comstock Fire Museum
Watsonville, CA Chief Gene Friend Museum

Games

(Grades K-2)

Standards: 2-PS1-1

Forest Fire Bingo Firefighting Bingo U.S. Forest Service word search puzzles

Other Curricula and Lesson Plans

FireWorks Ecological regions and fire Teaching Wildland Fire (K-12) (Californ

Teaching Wildland Fire (K-12) (California Fire Science Consortium)

Lesson Plans (upper elementary) (National Fire Protection Association)

Wildfire Friend or Foe? (Canadian Forestry Association)

Fire Ecology Curriculum (K-12) (U.S. Dept. of Agriculture)

Studying wildfires from space (4th grade math curriculum) (JPL-NASA)

Homes and wildfire (Frames Firewise curriculum)

CALIFORNIA

History of California

Article about California (National Geographic)
Calif. State library resource
History of the name 'California' (KCET)
Calafia - a black queen
Online Archive of California

Activity: California History Timeline

(Grades K-3)

Standards
HSS-K.5; HSS-2.1.3; CCSS-K.6
CCSS-1.4
CCSS-2.1.3; 2-ESS1-1
CCSS-3.3.3; 3-5-ETS-1
NAAEE

Create a timeline of California starting with the first humans

Resources

E-reference desk History of US states blog timeline Timeline from the Calif. Capitol Museum

Areas of California

Maps of California:

Calif. State Library - Maps

Maps of California - Humboldt State Univ.

Library of Congress - Map of gold mining areas

The Autry Museum of the American West

Activity: California's Climate

(Grades K-5)

Standards

K-ESS2-1; K-ESS3-2

ES3a-c

3-ESS2-1; 3-ESS2-2; HSS-3.2.2

HSS-4.1.3; HSS-4.1.5

HSS-5.1.1

NAAEE- Strand 2.A; 2.2.A; 2.3.B; 2.4.A

A climograph displays precipitation and temperature for an area and is used to compare climates in different places.

Make a climograph

Resources:

CSUN climograph (suggested Grade 4)

Places to Visit

National Parks National Forests Day trips/hikes Forest Trails

Games

(Grades K-4)

Standards

HSS-K.2

HSS-1.3.3

HSS-3.4.3

HSS-4.1.3

California Bingo

California word search (see **Appendix A**)

CA state symbols coloring book

Other Curricula & Lesson Plans

California Frontier project H-California - Study of California Education-Resource-Guide (Bureau of Land Management) Teaching California California History-Social Science Project (UC Davis)



FORESTS & Watersheds

Forest Ecosystems

A forest is a specific eco-system and there are several types of forests in California. Another type is Chapparal.

Activities: Fire, Plants and Animals

(Grades K-5)

Standards

K-ESS3-1; CCSS.W.K.7

HSS-1.5.2

2-ESS1-1

3-LS4-3

4-LS1-1; HSS-4.1.5

5-ESS3-1; HSS-5.1.1

EEI-Prin.1-V

NAAEE - Strand 2.A; 2.2.A-D

- Make a chart of what native animals and plants do after a fire.
- Why do you think animals come back to a burned forest instead of finding a new forest (especially birds that can fly long distances)?

Resources

Living with Fire

Species of the Sierra Nevada

California to build largest wildlife crossing (current event story)

Sierra Nevada Predators and Their Prey

What are Watersheds?

Watersheds are not ecosystems or habitats, they are a different way of looking at an area of land. Watersheds are an area of land in which all the water on it, in it and that lands on it, drains to a specific place (in California it's usually the Pacific Ocean).

Activities: Creating a Watershed model

(Grades K-5)

<u>Standards</u> HSS-K.4.2 HSS-1.2.4 2-LS4; 2-ESS2-2 3-LS4-3

HSS-4.1.5; 4-ESS3-2 5-ESS; HSS-5.1.1

EEI-Prin. I-V

Here are two ways to create a watershed model

- **■** Understanding the watershed activity
- **▼** Watershed using a shower curtain

Build your watershed (SWEP)

Interactive watershed maps

Activities: Range Maps

(Grades K-4)

<u>Standards</u>

K-ESS3-1; CCSS.W.K.7 CCSS.W.1.5-8; HSS-1.2.1-4 2-LS4-1; 2-PS1-1 3-LS4-3; 3-LS4-4; HSS-3.1; HSS-3.2.2 HSS-4.1.5; HSS-4.2.1 HSS-5.1.1 EEI- Prin. II

- Compare the range maps of three mammals, three birds and 3 reptiles. What are some of the areas where they don't live and why do you think they don't live there?
- Create a map of your area and the wildlife that lives there

Resources

NAAEE Strand 2.A

Nature mapping info

Activity: Forest rangers

Standards Standards CCSS.W.K.7; HSS-k.3 CCSS.W.1.5-8; HSS-1.1 5-ESS3-1 EEI Prin. II

What does a forest ranger do?

Research how to become a forest ranger.

Resources

Why I Decided to Become a Forester Junior Forest Ranger Program

Native Plants

California's Native Plants

A **native** plant is one that will grow in a certain place naturally (without human intervention). It is able to survive in that particular habitat. You can say an Oak tree is a California native plant, but one type of Oak is native to one part of California. A different type of Oak might be native to a different part of California. Because California has several climate zones, California's native plants are divided

Activities: Identify Trees & Plants

(Grades K-5)

Standards

K-ESS3-3; 3-5-ETS1-1; 3-5-ETS1-2

into smaller zones as well.

2-LS4-1; HSS-2.2.4; 2-PS1-1

3-LS4-3

4-LS1-1

HSS-4.1.5

HSS-5.1.1

EEI-Prin. I

NAAEE- Strand 2.2.B

- Mow to ID a pine tree
- How to measure the height of a tree
- Learn how to use a plant key and then make one or your school grounds or neighborhood.

Resources

PlantID

I-Tree An interactive app to learn about trees

Know your Native Plants

Native plants know how to survive in their climate. Find out about your natives. California Native Plant Society

Activity: Compare Plants and Trees

(Grades K-5)

Standards

K-ESS₃₋₁

1-LS1

2-LS4-1; 2-PS1-1

3-LS4-3

HSS-4.1.5

HSS-5.1.1

EEI – Prin. I

- Find native plants or trees and graph their sizes.
- Pick one native plant or animal to write about. Find out what they need/eat, how long they live, and their Latin name.
- Compare leaves of plants in Sierra Nevada and a tropical climate. How are they different? Why?

Resources

Plants found in California forests (UCANR)

Trees native to California (CalScape)

Ancient Trees

California is home to some of the oldest trees on the planet. The famous Redwood forests are different than the forests of the Sierra Nevada—they have different climates and weather and very different ecosystems and habitats.

Habitats

Habitats are a question of "who lives where". People have several habitats (school, home, work). Plants and animals might also have several habitats or be limited to a very specific one.

Replanting the Forest

Tribal Ecorestoration

Planting using drones?

Drones later flies over the land firing seed-filled pods into the ground. The tech can cover areas where it's difficult for people to manually plant trees, like the steep side of a mountain. It can also work much more quickly, with each drone capable of planting 120 seeds per minute.

Native Animals

Native Animals

Several of California's native animal species are **endangered** and some are considered **keystone species** and some are both.

iNaturalist app

California Native Wildlife

Endangered list (Dept. Fish & Wildlife)

Beaver dams and wildfire, a stop-motion demonstration

Activity: Endangered & keystone Animals

(Grades 2-5)

Standards:

K-ESS2-2

1-LS1-1

3-LS2-1

4-LS1-1

EEI- Prin. II, V

Pick one species to research and write a report.

Resources:

Endangered Plant Species of California Biodiversity in Calif.

Activity: How to ID a bear

(Grades 2-3)

<u>Standards</u> 2-LS4-1; 2-PS1-1 3-LS4-2; 3-LS4-3 NAAEE

There is a lot of confusion about the grizzly bear and if it's extinct or not. The California Grizzly Bear is extinct however there are other grizzly bears that are NOT extinct. And people think they see California Grizzlies...

Learn how to tell a grizzly apart from a black or brown bear

Resources

Grizzly Bear Outreach Bear facial recognition Bear Smart

Places to Visit

California Museum, Sacramento, CA California Botanic Garden, Claremont, CA California State Parks Chapparal field trip

Games

Standards:

2-PS1-1

HSS-4.1.5

NAAFF

Games and activities (Discover the Forest)

Nature Bingo links:

Calif. Plant & Animal Bingo

Nature Neighborhood Bingo

Santa Cruz nature bingo

Nature Bingo

San Francisco Bay nature bingo

Play Snake-opoly

Other Curricula & Lesson Plans

Forest ecosystems and fires Trees (One Tree Planted)

NATIVE AMERICANS

TEACHING ABOUT CALIFORNIA'S INDIGENOUS PEOPLE

These are organizations that promote change in how we educate students about the cultures of the Native American people.

Oyate - organization reviewing educational materials with Native themes Native or Not? – American Indian in Children's Literature

Transforming Teaching and Learning about Native Americans (National Museum of the American Indian - Smithsonian)

Rethinking Thanksgiving

Podcast: Teaching Hard History - groundwork for teaching indigenous enslavement The Zinn Education Project - Teaching People's History

Getting to Know Native Land

Native Education for All - IllumiNative

Information about correct terminology and portraying non-white groups

Natural Curiosity: A Resource for Educators: The Importance of the Indigenous Perspectives in Children's Environmental Inquiry by Doug Anderson and Julie Comay. ISBN: 978-0-7727-2643-8

Check out the booklists on page XX!

Maps of Native Lands

Unratified Treaties map Time-lapse U.S. Native land loss 1776-1930

Native American Tribes

Native People of California (Nat Geo)

Nativeland.ca

California Museum

Washoe vocabulary words

Washoe Tribe information

Tribal languages

Source for historical photographs

Recommended material for teachers (UCLA)

National Congress of American Indians

Activity: Local Tribes

(Grades K-5)

Standards

HSS-K.6.3; CCSS.W.K.7

HSS-1.2.1; HSS-1.2.4; HSS-1.4.3; HSS-1.5.2-3; CCSS.W.1.5-8

HSS-2.1; HSS-2.4.1; HSS-2.4.3

HSS-3.1.1; HSS-3.1.2; HSS-3.2.1; HSS-3.2.2; HSS-3.4.5

HSS-4.1.5; HSS-4.2.1

5-ESS3-1; HSS-5.1.1; HSS-5.3.2

EEI-Prin. I-V; NAAEE Strand 1.A; Strand 2.2, 2.3, 2.4, 3.1, 3.2, 4

Research one Native American reservation in your state. Find out the size, population, location etc. (K-5)

What issues concern you? (3-5)

Write a letter to your (governor, county supervisor etc.) about it. (Grades 3-5)

Resources

Interactive map Nativeland.ca

California Indian History primary sources

California Indians

Native American Culture

Native Miwok legends and stories California Indian Storytelling Association List of resources about California Indian culture Research homes of indigenous people. What did they use to make them?

Natural Resources

Native Americans used and still use natural resource (or things from nature) for lots of things from shelter to medicine.

Activity: Making Soap

Standards
HSS-K.6.3; K-2-ETS1-1; K-2-PS1-1
HSS-2.1.1
3-LS4-3; 3-5-ETS1-1
HSS-4.1.5; HSS-4.2.1
HSS-5.1.1; 5-ESS3-1; 3-5-ETS1-1
EEI-Prin.I-III; NAAEE Strand 2.A, 2.2A, C; 2.3, 2.4, 3.1, 3.2, 4

★ How to make soap

Resources

Native Plants used by California Indians Resource from the California Botanic Garden Wildflowers and soap How to find soap plants

Food

Depending on what area of California they live in, the Native people eat what was available to them.

Pine nuts Elderberries Morel Mushrooms

Activity: Preparing Acorns

Standards
HSS-K.6.3
HSS-2.1.1; HSS-2.4.1
HSS-3.5.1
HSS-4.1.5
HSS-5.1.1
EEI-Prin. I-III; NAAEE

■ How to make acorn flour

Resources

Acorns

Make acorn flour

Basket Weaving

Washoe member Dat So La Lee became one of the most famous Native American basket weavers. Today her baskets can be seen at the Nevada State Museum and have an estimated worth of one million dollars.

VIDEO: About basketmaking (2 min.)

Activity: Making Baskets

Standards:

HSS-K.6.3; K-2-PS1-1; K.Va:Cn11 HSS-1.5.2; 1.VA:Cn11 2.CA:Cn11; 2.VA:Re8

HSS-3.5.1; 3.VA:Cn11; 3.VA:Re8; 3-5-ETS1-1 HSS-4.1.5; HSS-4.2.1; 4.VA:Cn11; 4.VA:Re8

HSS-5.1.1 EEI-Prin. I-III

▼Weave a basket (see the links below)

Resources

Weave a basket from natural materials

Loom weaving

VIDEOS:

Pine needle basket

Pine needle basket 2

Places to Visit

Celebrate Native American Culture year round in California

California Places from 500nations.com

California Indian Museum and Cultural Center (Santa Rosa, CA)

Maidu Museum & Historic Site Roseville, CA

Chumash Indian Museum Thousand Oaks, CA

State Parks and Museums Interpreting Indian Culture and Heritage

https://media.visitcalifornia.com/story-inspiration/discover-story-ideas/celebrate-native-american-culture-year-round-in-california

Ways to support Native Americans

Native Food Alliance

How to be an Ally to Native Americans/Indigenous People

Curricula & Lesson Plans

California Indian History Curriculum & Lesson Plans

CA History Grade 4 curriculum site (could be used for younger grades)

Calif. Indian Enrichment Kits (from Calif. Indian Museum & Cult. Center)

Article about the 4th Grade curriculum and Native Americans

Ohlone (and Miwok, Yokut) Curriculum - East Bay Parks

Native Plants and People of California

Washoe Tribe lessons from Lesson Planet

The New American History

California Indian coalition curriculum

Teacher Resources (California Botanic Garden)



Bonus Activities

Try these coloring pages from book artist Sue Todd (www.suetodd.com). See her in action: https://vimeo.com/178057701

California Word Search

,	Д	Ε	I	٧	J	×	F	R	Ε	D	Ε	Ρ	D	S	Т	\subset	Υ	Q
`	Y	М	Н	٧	Ν	0	F	А	К	Н	R	G	I	Υ	Т	Ρ	×	S
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ACORN FOREST GOLDRUSH OAKTREE SANFRANCISCO WASHOE BEACH FORTYNINER PINENUT SIERRANEVADA WILDFIRE BEAR

GOLDEN NATIVE POPPY STATE YOSEMIT

About The Book: Who Needs a Forest Fire?



Learn why plants, animals and humans need fire

Understand how the Native American people of California used fire as a tool to keep the forest ecology strong

Discover what we can do to help forests and California's native plants and animals and avoid megafires

About the Author

Paula Henson's great great-grandparents came to California during the Gold Rush but they stayed in San Francisco and didn't strike it rich! Paula is an educator who writes children's fiction and non-fiction books relating to the environment, mainly about the importance of water. She is a history-loving, water-conserving former garden designer who has tended gardens (but not forests) in Los Angeles. Terra Bella Books

About the Illustrators

Sue Todd is a professional illustrator of books, magazines, posters and other print material for children and adults. She creates linocut prints with digital color in her yellow studio and gets her best ideas while cycling the nature paths of Toronto. Her art has been commissioned by clients in North America and the UK. In addition to commissioned illustration, she is working on writing and illustrating her own stories for children and playing around with digital portraiture on the iPad. Sue Todd

Emily Underwood is an artist and educator based in Central California. Blending her background in both science and art, she explores the natural world and its landscape histories through the mediums of painting, printmaking, and bookmaking. She also creates illustrations and interpretive artwork for researching scientists, museums, parks, and other agencies. **Underwood Illustration**

APPENDIX A

Books

Links to LISTS of Native American books

How to Tell the Difference - Evaluating Children's Book for Anti-Indian Bias California History Books for Kids
Heyday Books - children's book list
The Autry Museum book list
American Indians in Children's Literature - Book review blog
Index of Native Book Titles (recommended and not recommended)
Oyate Books - children's book list
Heyday Books - California Indian books
Birchbark Books - Children's book list
List of children's books written by Indigenous women
Native American History experience reading list

American Indian Library Association Youth Literature Award

Contemporary Native American Young Adult Books list



APPENDIX B

California State Educational Standards

KEY:

NGSS - Next Generation Science Standards

(https://www.cde.ca.gov/pd/ca/sc/ngSSstandards.asp)

CCSS ELA - Common Core State Standards – English Language Arts

(http://www.corestandards.org/read-the-standards/)

CCSS History-Soc. Sci - Common Core State Standards – History & Social Science

(https://www.cde.ca.gov/be/st/ss/documents/histsocscistnd.pdf)

NAAEE - North American Assoc. for Environmental Education – (only K-4 listed)

(https://cdn.naaee.org/sites/default/files/learnerguidelines_new.pdf)

EEI - Calif. Education & The Envir. Initiative Principles (https://www.californiaeei.org/epc/)

Health Educ./Safety/Nutrition – California Standards

(https://www2.cde.ca.gov/cacs/pe?order=0&page=0&perpage=10&mingrade=0&maxgrade=5&dl=0)

Visual Arts – California Arts Standards

(https://www2.cde.ca.gov/cacs/arts)

Standards Alignment

Activity	Page #	Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Book text Discussion and questions		K-ESS3-2, 3 CCSS-RI.K.1-8 CCSS-RIL.K-4-6 CCSS-SL.K.1-4 HSS-K.1.1-3 HSS-K.6.3 NAAEE Prin. I-II,V	1-LS3-1 CCSS-R.I.1.1-7 CCSS-SL.1.2 HSS-1.2.3-4 HSS-1.4.3 HSS-1.5.2 NAAEE Prin. I-II,V	2-ESS1-1 2-ESS2-1 CCSS- RI.2.6,2.7 CCSS-SL.2.2 CCSS-L.2.4-6 HSS-2.1 HSS-2.2.4 HSS-2.4.1 NAAEE Prin. I-V	3-LS4-3 3-LS4-4 3-5-ESS3-1 3-5-ETS-1 CCSS-RI.3.2- 7 HSS-3.1.2 HSS-3.2.2 HSS-3.2.4 HSS-3.5.2 NAAEE Prin. I-V	3-5-ESS3-1 3-5-ETS-1 CCSS- RI.4.7-8 HSS-4.2.5 HSS-4.3 HSS4.2 NAAEE Prin. I-V	5-ESS3-1 3-5-ESS3-1 3-5-ETS-1 HSS-5.1.1 HSS-5.3.2 Prin. I-V
			Ē	IRE			
Activity	Page #	Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
What is Fire? Vocabulary		K-2ETS1	K-2ETS1 HSS-1.2.1	K-2ETS1 SL2.1,3 Prin. I & II	SL3.1-2 Prin. I & II	HSS-4.1.3	
Why does fire burn?			1-PS4-1 1-LS3		3-ESS3		
Types of fires in California Locations of fire and weather		Prin.I-V K-ESS2-1,3 K-ESS2-2 HSS-K.4.4 NAAEE Strand1.A-C; 2.A-B; 2.3A; 2.4.A-B; 3.1.A Prin. I-II	HSS-1.2.1,3-4 NAAEE Strand1.A-C; 2.A-B; 2.3A; 2.4.A-B; 3.1.A Prin. I-II	2-ESS2-2 2-PS1-1 HSS-2.2.4 NAAEE Strand1.A-C; 2.A-B; 2.3A; 2.4.A-B; 3.1.A Prin. I-II	3-LS2; 3-LS1-2 HSS-3.1.1 NAAEE Strand1.A-C; 2.A-B; 2.3A; 2.4.A-B; 3.1.A Prin. I-II 3.1.6.P	HSS-4.1.3 HSS-4.1.5 NAAEE Strand1.A- C; 2.A-B; 2.3A; 2.4.A- B; 3.1.A Prin. I-II	HSS-5.1.1 Prin. I-II 5.1.6.P
Wildfire Control		NAAEE Strand 2.2	NAAEE Strand 2.2	2-ESS2-1 NAAEE Strand 2.2	NAAEE Strand 2.2	NAAEE Strand 2.2	

Equipment & Training Firefighters & firefighting	K-2-ETS1-1 K-ESS3-2 K-ESS3-3 K-ESS3-3 K-PS3 K-ETS1 HSS-K.1.2 HSS-K.3 NAAEE Strands: 1.A, C; 2.3.A; 3.1A-C; 3.2.B-D; 4.A Prin. V	K-2-ETS1 1-LS1-1 1-PS4 1.7.3.S NAAEE Strands: 1.A, C; 2.3.A; 3.1A-C; 3.2.B-D; 4.A Prin. V	K-2-ETS1-1 2-LS2 NAAEE Strands: 1.A, C; 2.3.A; 3.1A-C; 3.2.B-D; 4.A Prin. V	3-5-ETS-1 3-ESS3-1,3 3-LS4-4 L-ESS3-3 NAAEE Strands: 1.A, C; 2.3.A; 3.1A-C; 3.2.B-D; 4.A Prin. V 3.1.2 3.1.5.P	3-5-ETS-1 4-ESS3-2 HSS-4.5 NAAEE Strands: 1.A, C; 2.3.A; 3.1A-C; 3.2.B-D; 4.A Prin. V	3-5-ETS-1 5-ESS3-1 5.1.3.P 5.1.6.P 5-ESS3-1 Prin. V
Fire Safety/ Prevention	K-ESS3-2 K-ESS3-3 K-PS3 K-ETS1 K-2ETS1-1 HSS-K.1.1-2 NAAEE Strand 2.3.A & E 2.4.A-E 3.1.A-D 3.2.B-D 4.A-D Prin. V K-1.1.S K.1.2.S K.1.3.S K.4.1.S K.1.5.P	1-LS1-1 1-PS4 HSS-1.1.1 NAAEE Strand 2.3.A & E 2.4.A-E 3.1.A-D 3.2.B-D 4.A-D Prin. V 1.1.4.S 1.1.7.P 1.1.9.P 1.4.1.S 1.4.2.P 1.5.1.S 1.7.2.S 1.7.2.S	2-ESS2-1 2-LS2 NAAEE Strand 2.3.A & E 2.4.A-E 3.1.A-D 3.2.B-D 4.A-D Prin. V	3-ESS3-1 3-LS4-4 3-5-ETS1-1 NAAEE Strand 2.3.A & E 2.4.A-E 3.1.A-D 3.2.B-D 4.A-D Prin. V	4-ESS3-2 NAAEE Strand 2.3.A & E 2.4.A-E 3.1.A-D 3.2.B-D 4.A-D Prin. V 4.1.1.S 4.1.5.S 4.1.16.S 4.1.6.S 4.3.2.S 4.3.3.S 4.5.4.S 4.7.4.S 4.7.6.S 4.8.3.S	5-ESS3-1 Prin. V 5.1.3.P 5.1.6.P
Air Quality/ Smoke How is your Air?	K-ESS3 NAAEE Strand 1.A 1.C 2.3.A 2.4.A-E 3.1.A-C 4.A-D Prin. I-V	HSS-1.2.4 HSS-1.4 NAAEE Strand 1.A 1.C 2.3.A 2.4.A-E 3.1.A-C 4.A-D Prin. I-V	NAAEE Strand 1.A 1.C 2.3.A 2.4.A-E 3.1.A-C 4.A-D Prin. I-V	HSS-3.5.2 NAAEE Strand 1.A 1.C 2.3.A 2.4.A-E 3.1.A-C 4.A-D Prin. I-V 3.1.5.P	HSS-4.1 NAAEE Strand 1.A 1.C 2.3.A 2.4.A-E 3.1.A-C 4.A-D Prin. I-V	Prin. I-V 5.1.3.P 5.1.6.P
Fire in other cultures	K-ESS3.C Prin. II	HSS-1.2 HSS-1-4	2-ESS2-1 2.VA:Cn11	3-LS4.D HSS-3.5.2	Prin. II 4.VA:Cn11	CCSS- RL.5.2

		K.VA:Cn11	1.VA:Cn11 Prin. II	2.VA:Re8 Prin. II	Prin. II 3.VA:Cn11 3.VA:Re8	4.VA:Re8	HSS-5.1.1 Prin. II 5.VA:Cn11 5.VA:Re8			
Fire Bingo				2-PS1-1						
	CALIFORNIA									
Activity	Page #	Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5			
Calif. History Timeline		HSS-K.5 NAAEE CCSS-K.6	NAAEE CCSS-1.4	2-ESS-1-1 HSS-2.1.3 NAAEE	3-5-ETS-1 NAAEE CCSS-3.3.3	NAAEE				
Areas of California/ Maps		HSS-K.4.2	HSS-1.2.1 HSS-1.2.3	HSS-2.2.4		HSS-4.1.3				
California's Climate		K-ESS2-1 K-ESS3-2 NAAEE Strand 2.A 2.2.A 2.3.B 2.4.A	HSS-1.2.4 NAAEE Strand 2.A 2.2.A 2.3.B 2.4.A	NAAEE Strand 2.A 2.2.A 2.3.B 2.4.A	3-ESS2-1-2 3-LS4-4 HSS-3.2.2 NAAEE Strand 2.A 2.2.A 2.3.B 2.4.A	HSS-4.2.1 NAAEE Strand 2.A 2.2.A 2.3.B 2.4.A	HSS-5.1.1			
Games/Stat e symbols coloring book		HSS-K.2	HSS-1.3.3		HSS-3.4.3					
	FOREST									
Activity	Page #	Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5			
Forest Ecosystem/ fires		K-ESS3-1 CCSS.W.K.7 EEI Prin. I-V	HSS-1.5.2 EEI Prin. I-V	EEI Prin. I-V	3-LS4-3 EEI Prin. I-V	4-LS1-1 HSS-4.1.5 EEI Prin. I-V	5-ESS3-1 HSS-5.1.1 EEI Prin. I-V			
Forester Rangers		CCSS.W.K.7 HSS-K.3 EEI Prin II	CCSS.W.1.5- 8 HSS-1.1	EEI Prin II	EEI Prin II	EEI Prin II	5-ESS3-1 EEI Prin II			

		EEI Prin II				
What do they do if there's fire?	K-ESS3-1	1-L1-1	2-ESS1-1 2-LS4-1	3-LS4-3	4-LS1-1 4-LS1-2	
Watersheds / Model	HSS-K.4.2 EEI Prin. I-V	HSS-1.2.4 EEI Prin. I-V	2-LS4 2-ESS2-2 EEI Prin. I-V	3-LS4-3 EEI Prin. I-V	HSS-4.1.5 4-ESS3-2 EEI Prin. I-V	5-ESS3-1 HSS-5.1.1 EEI Prin. I-V
Range maps	K-ESS3-1 CCSS.W.K.7 NAAEE Strand 2.A EEI Prin. II	HSS-1.2.1-4 NAAEE Strand 2.A EEI Prin. II	2-LS4-1 2-PS1-1 HSS-2.2.4 NAAEE Strand 2.A EEI Prin. II	3-LS4-3 3-LS4-4 HSS-3.1 HSS-3.2.2 NAAEE Strand 2.A EEI Prin. II	HSS-4.1.5 HSS-4.2.1 NAAEE Strand 2.A EEI Prin. II	HSS-5.1.1 EEI Prin. II
Local Map/nature mapping	K-ESS3-1 CCSS.W.K.7 NAAEE	CCSS.W.1.5- 8 NAAEE	2-LS4-1 2-PS1-1 NAAEE	3-LS4-3 NAAEE	HSS-4.1.4 HSS-4.1.5 NAAEE	NAAEE
Forest Bingo	NAAEE	NAAEE	2-PS1-1 NAAEE	NAAEE	HSS-4.1.5	
		NATIV	<u>E PLANT</u>	<u>s</u>		
Tree ID	K-ESS3-3 EEI Prin. I	EEI Prin. I	2-LS4-1 2-PS1-1 HSS-2.2.4 EEI Prin. I	3-LS4-3 3-5-ETS1-1 EEI Prin. I	3-5-ETS1-1 4-LS1-1 HSS-4.1.5 EEI Prin. I	3-5-ETS1-1 HSS-5.1.1 EEI Prin. I
Compare Plants and Trees	K-ESS3-1 NAAEE Strand 2.2.A EEI Prin. I	1-LS1 NAAEE EEI Prin. I	2-LS4-1 2-PS1-1 HSS-2.2.4 NAAEE EEI Prin. I	3-LS4-3 NAAEE EEI Prin. I	HSS.4.1.5 EEI Prin. I	HSS-5.1.1 EEI Prin. I
Habitats/Tre e Parts	K-ESS3-1 NAAEE Strand 2.2.A EEI Prin. II	1-LS1-1 NAAEE Strand 2.2.A EEI Prin. II	2-LS4-1 NAAEE Strand 2.2.A EEI Prin. II	3-LS4-3 NAAEE Strand 2.2.A EEI Prin. II	4-LS1-1 NAAEE Strand 2.2.A EEI Prin. II	EEI Prin. II
Replanting	K-ESS2-3 K-ESS3-3 EEI Prin. 1-V	EEI Prin. 1-V	EEI IPrin. 1-V	3-5-ETS1 EEI Prin. I-V	3-5-ETS1 4-ESS3.A 3-5-ETS1-1 EEI Prin. I-V	3-5-ETS1 EEI Prin. I-V

	NATIVE ANIMALS										
Endangered & keystone species		K-ESS2-2	1-LS1-1		3-LS2-1	4-LS1-1					
Bear ID		NAAEE	NAAEE	2-LS4-1 2-PS1-1 NAAEE	3-LS4-2 3-LS4-3 NAAEE	NAAEE					
		NATIVE AMERICANS									
Activity	Page #	Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5				
Maps of Native Lands		HSS-K.6.3	HSS-1.2.4	HSS-2.1.3 HSS-2.2 HSS-2.3.2	HSS-3.1.2 HSS-3.2.4 HSS-3.3.1 HSS-3.4.5	HSS-4.1.5 HSS-4.2.1	HSS-5.1.1 HSS-5.3.2				
Research one Nat. American Tribe		CCSS.W.K.7 HSS-K.6.3	HSS-1.2.4 HSS-1.4.3 HSS-1.5.2-3 CCSS.W.1.5	HSS-2.4.1 HSS-2.4.3	HSS-3.1.2 HSS-3.2.2 HSS-3.3.1 HSS-3.4.5	HSS-4.1.5 HSS-4.2.1	5-ESS3-1 HSS-5.1.1 HSS-5.3.2				
Native American Culture		HSS-K.6.3	HSS-1.4.3 HSS-1.5.3		HSS-3.2.1	HSS-4.2.1	HSS-5.1.2				
Artifacts, Names		HSS-K.6.3 K.VA:Cn11	HSS-1.2.4 HSS-1.4.3 HSS-1.5.2-3 1.VA:Cn11	2.VA:Cn11 2.VA:Re8	HSS-3.1.1 HSS-3.2.1 3.VA:Cn11 3.VA:Re8	HSS-4.2.1 .VA:Cn11 4.VA:Re8	HSS-5.1.1 5.VA:Cn11 5.VA:Re8				
Using Natural Resources/ Make Soap		K-2-ETS1-1 CCSS.W.K.7 HSS-K.6.3 EEI Prin.I-III	K-2-PS1-1 CCSS.W.1.5 -8 EEI Prin.I-III	K-2-PS1-1 HSS-2.1.1 EEI Prin.I-III	3-LS4-3 3-5-ETS1-1 HSS-3.5.1 EEI Prin.I-III	3-5-ETS1- 1 HSS-4.1.5 HSS-4.2.1 EEI Prin.I- III	3-5-ETS1-1 5-ESS3-1 HSS-5.1.1 EEI Prin.I-III				
Food		K-ESS2-2 K-LS1-1 HSS-K.6.3 EEI Prin. I-V K-VA.Pr4 K-VA.Pr6	1-LS1-1 HSS-1.2.4 EEI Prin. I-V 1.VA:Pr4 1.VA:Pr6	HSS-2.1.1 HSS-2.4.1 EEI Prin. I-V 2.VA:Pr4 2.VA:Pr6	3-LS3-3 3-LS4-4 HSS-3.2.2 HSS-3.5.1 EEI Prin. I-V	HSS-4.1.5 HSS-4.2.1 EEI Prin. I- V	5-LS2-1 HSS-5.1.1 EEI Prin. I-V 5.2.2.N				
Preparing Acorns		HSS-K.6.3 NAAEE – Strand 2 & 4 EEI Prin.I-III	NAAEE – Strand 2 & 4 EEI Prin.I-III	HSS-2.4.1 HSS-2.1.1 NAAEE – Strand 2 & 4 EEI Prin.I-III	HSS-3.5.1 NAAEE – Strand 2 & 4 EEI Prin.I-III	HSS-4.1.5 N NAAEE – Strand 2 & 4 EEI Prin.I-	HSS-5.1.1 EEI Prin.I-III				

Making	K-2-PS1-1	K-2-PS1-1	K-2-PS1-1	3-5-ETS1-1	3-5-ETS1-	3-5-ETS1-1
Baskets	HSS-K.6.3	HSS-1.5.2	EEI Prin.I-III	HSS-3.5.1	1	HSS-5.1.1
	EEI Prin.I-III	EEI Prin.I-III	2.VA:Cn11	EEI Prin.I-III	HSS-4.1.5	EEI Prin.I-III
	K.VA:Cn11	VA:Cn11	2.VA:Re8	3.VA:Cn11	HSS-4.2.1	5.VA:Cn11
				3.VA:Re8	EEI Prin.l-	5.VA:Re8
					4.VA:Cn11	
					4.VA:Re8	

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Jeff Brown and Faerthen Felix, UC Berkeley's Sagehen Creek Field Station www.sagehen.ucnrs.org/

Presented to the people of the Truckee-Tahoe region of California, the FOREST⇒FIRE project is a partnership between Nevada County Arts Council, Truckee-Donner Recreation and Park District and University of California, Berkeley – Sagehen Creek Field Station, with Educational and Environmental Outreach by Sierra Watershed Education Partnerships. We and FOREST⇒FIRE's creator, Llewellyn Studio, are grateful for the support of the California Arts Council, California Humanities – a non-profit partner of the National Endowment for the Humanities; Tahoe Truckee Excellence in Education Foundation; Tahoe Truckee Community Foundation, through the Nature Fund and Queen of Hearts Women's Fund; University of Nevada – Reno; Truckee Tahoe Airport District; and many other organizations and individuals.

In addition, Nevada County Arts Council and its partners stand in solidarity with all of Nevada County's Indigenous peoples. We acknowledge that our work takes place on the now occupied traditional lands of the Nisenan and Washoe people, who are the past, present and future stewards of this place. We make this first step in our journey to develop relationships and cultural competencies to truly support native sovereignty.





















University of Nevada, Reno

Who Needs a Forest Fire? was commissioned by Nevada County Arts Council for FOREST = FIRE, as presented to the people of the Truckee-Tahoe region of California. The book was created specifically for FOREST = FIRE in collaboration with the creator Llewellyn Studio and was made possible through the generous support of the Tahoe-Truckee Excellence in Education Foundation and the California Arts Council's Creative California Community grant program.



FOREST⇒FIRE anchors a larger movement, Future Forests, emerging now in California connecting the arts with issues of forest management and fire, so that residents can arrive at a healthier, more sustainable relationship with a force of nature that has always been here, and always will be.

Flowing thematically through past, present and future, the project will utilize works of contemporary art in various mediums including painting, textile, beadwork, narrative film, sculpture, scent, and photography among other modes. It will tell the story of how indigenous people, using low intensity fire, created and maintained the West's pre-European, old growth forest for thousands of years, of why our forests are currently in ecological collapse and what can be done immediately to prevent the loss of our Forest.

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