FUN ACTIVITIES & EXPERIMENTS THAT GET KIDS OUTDOORS

BACKYARD SCIENCE & DISCOVERY WORKBOOK

CALIFORNIA

GEORGE OXFORD MILLER

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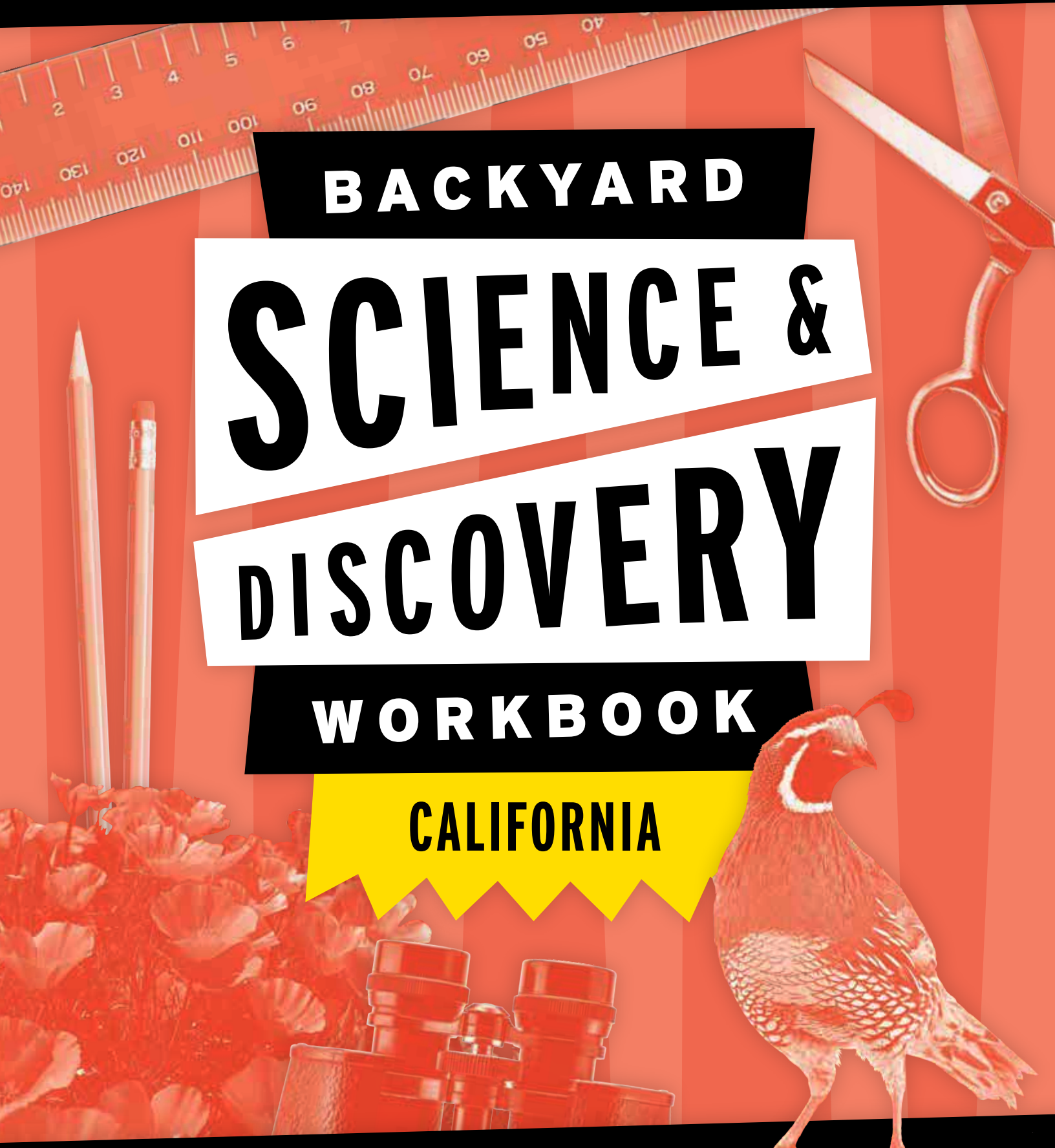

ADVENTURE PUBLICATIONS

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ABOUT THIS BOOK

With the highest mountains and the hottest deserts of any state, and 840 miles of Pacific coastline, California contains the greatest number of plant and animal species of any state in the country. The highest point in the Lower 48 states (Mount Whitney, 14,500 feet) and the lowest point in North America (Death Valley, 282 feet below sea level) are only 80 miles apart, so the wonders of nature that you can experience often change rapidly. Every year millions of people travel to California from around the world to see its spectacular mountains, rugged coastline, towering redwood forests, and national parks that rival Disneyland for excitement and adventure. And best of all, the magic and mystery of nature is right here in our home state, and if we look, in our own backyards.

As a nature photographer, environmental journalist, and botanist, I've lived in, written about, and explored California and the Southwest almost all of my life. I spent many memorable summers with my father in Volcano in the Gold Country east of Sacramento. I backpacked magnificent national parks with my children before they could walk, camped with them, and enjoyed their sense of discovery as we hiked through majestic redwoods, panned for gold, and explored rugged coastlines. I believe kids (and adults) need to identify with the outdoors and learn to love the wonders of nature.

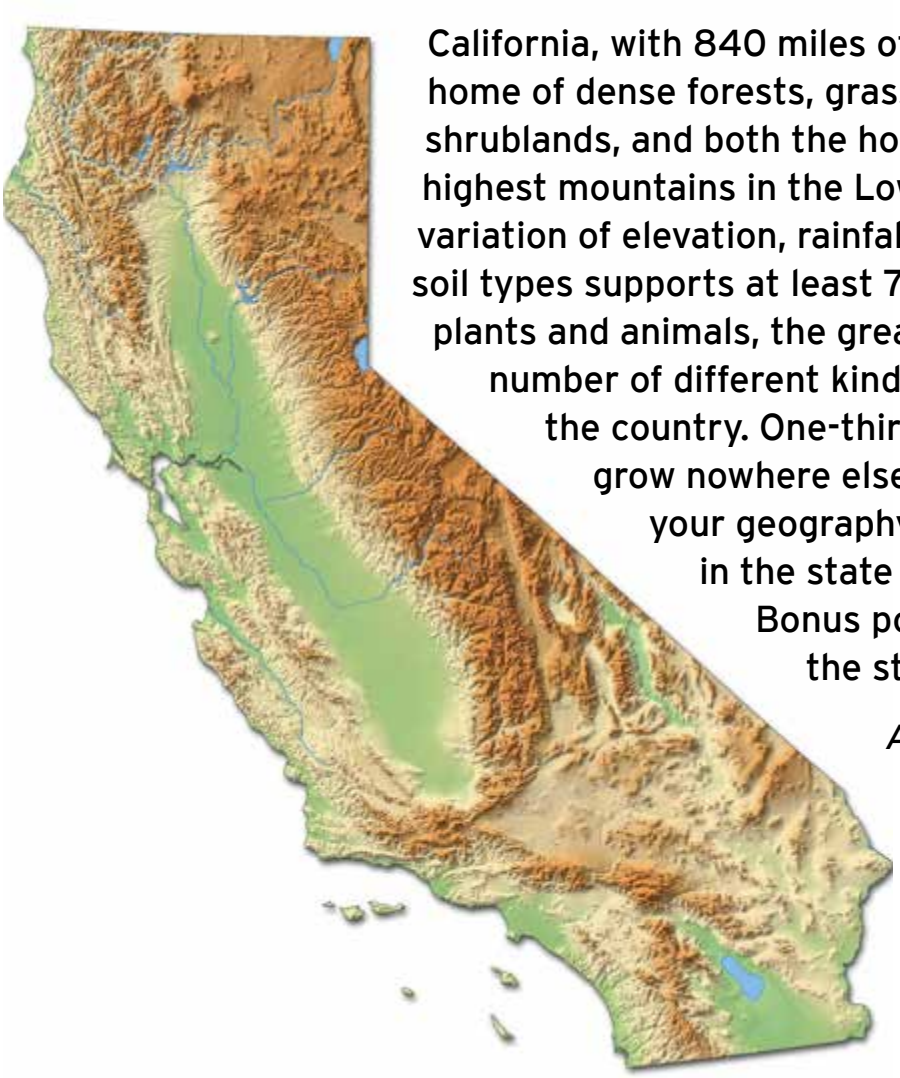
This book features **30 hands-on science projects**, such as raising native caterpillars, making mushroom spore prints, attracting moths and other insects with an ultraviolet light; **more than 20 simple, fun introductions** to the region's habitats, birds, seasons, and rocks and minerals; and more than **25 fun activities** to help you make hypotheses, observe nature, and learn about the world around you.

That's really the fun part: you really never know what you're going to find on any given day. It's a little like a treasure hunt, and if you keep good records and share what you find, your observations can even help scientists learn more about the world (or help you start off a career as a scientist).

So get outside, have fun, and share your discoveries!

George Oxford Miller

GEOGRAPHY OF CALIFORNIA



California, with 840 miles of Pacific coastline, is home of dense forests, grasslands, chaparral, oak-shrublands, and both the hottest deserts and the highest mountains in the Lower 48 States. This wide variation of elevation, rainfall, temperatures, and soil types supports at least 7,104 distinct species of plants and animals, the greatest **biodiversity** (total number of different kinds of life) of any state in the country. One-third of our native plants grow nowhere else in the world. Practice your geography, and label the regions in the state on the map to the left. Bonus points if you can name the state capital.

Answers on page 127!

State Capital	Sierra Nevada
Klamath Mountains	Transverse Ranges
Coast Ranges	Peninsula Ranges
Central Valley	Mojave and Sonoran Deserts

GET TO KNOW CALIFORNIA'S BIOMES

The best way to get to know your state—and backyard—is by understanding the natural neighborhoods within its borders: These are called biomes. A **biome** is a large, naturally occurring community of animals and plants that live in a region with a similar climate and environment.

You've probably heard of some biomes before. The five major biomes in the world are deserts, mountains, forests, grasslands, and water (aquatic environments). Each biome can be broken into smaller divisions.

California is home to three different terrestrial (land) biomes and the marine (ocean) biome:

1. Deserts and Dry Shrublands: Cacti, spiny plants, sagebrush (Southern California, Mojave and Colorado Deserts)

2. Temperate Conifer Forests: Pine, redwood, spruce, fir trees (Northern California coast and mountains, Sierra Nevada range)

3. Chaparral Woodlands and Grasslands: Mixture of grasses and shrubs, oaks, pines, and other trees (Coastal southern California, Interior Sierra Nevada foothills; now mostly cities, ranches, and farmland)

4. Marine: Coastal wetlands and Pacific Ocean

QUICK QUESTION

Which biome do you live in?

_____

_____

_____

DESERTS AND DRY SHRUBLANDS BIOME

Deserts have blazing-hot summers and get too little rain for trees and other plants with big leaves that need a lot of water to survive. Desert plants are known for their many extreme **adaptations** (physical features that help them survive harsh conditions). Cacti, the most famous desert kind of desert plant, have adapted so much that their leaves are now spines. A spiny cover helps shade the juicy stem and also protects it from thirsty animals. Yuccas, like the tall Joshua Tree, have rigid-sword-like leaves. Many desert bushes have tiny leaves that use very little water, and thorny limbs that discourage hungry animals from eating the leaves. Dry, low-elevation deserts have many cacti, and small bushes like Creosote Bush and Catclaw Acacia. Many desert flowers, like the Golden Poppy, don't bloom until it rains, and some seeds can lie **dormant** (like sleeping) in the soil for decades. Then when a good rainy season comes, thousands of seeds **germinate** (begin growing) at the same time and can cover large areas.

Badwater Basin in Death Valley, 282 feet below sea level, is the lowest point in North America.

QUICK QUIZ

Match the plant with its adaptation to survive hot, dry deserts.

A. Flowers wait to bloom until after a big rain

B. Tiny leaves that don't need much water

C. All spines and no leaves

D. Thorny limbs to keep animals from eating leaves

E. Sword-like leaves that animals can't eat

1.

2.

3.

4.

5.

Answers on page 128!

CONIFER FORESTS BIOME

A conifer is a tree that has tiny male cones with pollen instead of showy flowers. Wind blows the pollen to larger female cones, which produce the seeds. Some of the largest conifers, redwoods, have tiny cones. Coniferous forests are common along the northern coast and mountains, and high in the Sierra Nevada range. Among California's conifers are Giant Sequoias, the largest trees in the world, and Coastal Redwoods, which are the tallest. Another is a Bristlecone Pine named Methuselah, which is thought to be the oldest tree in the world at about 5,000 years old.

Conifers like redwoods, pines, firs, yews, and spruce have slender, smooth, needle-like leaves and woody cones. Others, like red-cedars, cypress, and junipers have scale-like leaves in long, braided-like strings. Red-cedars have woody cones while junipers have fleshy, berry-like cones loved by birds. All conifers in California are **evergreen**, which means they don't lose their leaves, or needles, in the winter. Various live oak species and many shrubs are also evergreen. **Deciduous** trees, like cottonwoods, willows, and oaks that grow at lower elevations, lose their leaves in the winter.

FUN FACTS

Tallest tree in the world: "Hyperion," 380 feet—a Coastal Redwood in Redwood National Park

Largest (most massive) tree: "General Sherman," 275 feet tall, 36.5 feet diameter at base, 52,508 cubic feet of wood—a Giant Sequoia in Sequoia National Park.

Oldest tree in the world: "Methuselah," 4,852 years old—a Bristlecone Pine in the White Mountains in Inyo National Forest.

QUICK QUIZ

California is home to 52 species of conifers. Some are ground-hugging and some are over 300 feet tall (that's one football field!).

Can you match these conifer leaves and cones with their trees?

1.

A. Bristlecone Pine

2.

B. Juniper

3.

C. Redwood

4.

D. Spruce

Answers on page 128!

CHAPARRAL WOODLANDS

In California, this bioregion covers much of the coastal woodlands, Central Valley grasslands, and the western slopes of southern mountain ranges. It includes the state's largest cities, from San Francisco south to Los Angeles and San Diego. Shrublands, grasslands, and forests of live oaks and pines grow from the coast into the low coastal mountain ranges.

San Francisco

Most of the region is frost-free all year with occasional inland light freezes. It is considered a **Mediterranean climate**, which occurs in only five areas of the world. It has mild summers and winters, with most of the rain occuring during the winter. The higher elevations have "hard" chaparral with evergreen bushes (they don't lose leaves in winter), while lower elevations have "soft" chaparral with **drought deciduous** plants (they lose their leaves in the dry summers). Chaparral plants are adapted to periodic fires (every 30–100 years), and many need fires to trigger their seeds to germinate (sprout).

As European settlers moved west, they turned the inland valley grasslands into farmland and the coastal chaparral woodlands into large cities. Today, the populations of animals and plants that depended on the chaparral

woodlands and grasslands have been greatly reduced. The California Grizzly Bear, which lived in the low mountains and valleys, was hunted to **extinction** in California by 1922. The California Condor, the largest bird in North America, disappeared from the wild in 1987. But after years of captive zoo breeding, a small number have been reintroduced into a few wild locations. Look for them soaring overheard in Big Sur, Bitter Creek National Wildlife Refuge, and Pinnacles National Park.

California Condor

QUICK QUIZ

In the sentence, "The California Grizzly... was hunted to extinction." The word "extinction" means

A. Saved or protected

B. Moved to another area

C. All have been killed or they otherwise no longer exist

D. All have been sent to zoos

Answer on page 128!

MARINE BIOME

Not all forests in California are on land. Giant kelp forests grow just offshore in the marine biome. Oceans cover three-fourths of the world's surface and support an immense number of species of plant and animal life. The **Intertidal Zone**, where the tide washes onto the shore, has a rich and complex web of life. Kelp and other seaweeds, algae, bivalve mollusks (seashells and clams), crabs, sea worms and slugs, and thousands of fishes live in this zone. Gulls patrol the coastline, shorebirds probe the sandy beaches, and the surf washes up seashells along the shoreline.

Estuaries, the wetlands along the coast where freshwater rivers flow into the ocean, are one of the richest zones in the marine biome. The tide brings in nutrients that feed

Seashells wash up on California beaches.

seaweeds and marsh grasses. The small fish, crabs, clams, and other tiny organisms that live here are in turn eaten by larger fishes, gulls, wading birds, otters, seals, and sea lions. In the deeper waters of the bays and open ocean, called the **Pelagic Zone**, whales, dolphins, and large fishes feed on smaller fishes and plankton (tiny shrimp-like creatures). Monterey Bay, San Francisco Bay, and San Diego Bay, and their estuaries, are as rich in sea life as the hills, plains, and mountains are inland life.

Sea lions are common along the California coast.

QUICK QUIZ

In which zone in the marine biome would you most likely see each of these animals?

A. Whales _____

B. Seals and sea lions_____

C. Animals that live in seashells _____

Answers on page 128!

THEN VS. NOW

San Diego

Before settlers arrived in California and began mining gold, grazing cattle, and cutting timber, numerous groups of Native Americans lived on the bounties of nature: fish from the bays and rivers, fruit and acorns from the foothill woodlands, and wild game. Eventually, the small towns settled by the newcomers grew into cities and then into huge metropolises with millions of people. Naturally, most people wanted to live along the coast where the winters were mild, bays provided safe harbors for ships, and valleys could be farmed all year.

Today, most of the coastal chaparral woodlands in the southern half the state, and the plants and animals that lived there, have been replaced by cities. Farmers harvest crops year-round in the grasslands and valleys, and sawmills have cut 96 percent of the redwood forests. Over thousands of years, the grasses and shrubby plants of the chaparral adapted to survive long droughts and frequent

Coastal Redwood trunk

wildfires that periodically sweep across the hills and valleys. Today, wildfire is an ever-present danger to the people and towns in areas where wildfires naturally occur. Due to population growth and loss of habitat, about 250 species of plants and animals in California are threatened with extinction.

QUICK QUIZ

Which animals used to be common in large parts of California but are now rare or absent altogether?

A. California Condor

B. Bighorn Sheep

C. Desert Tortoise

D. Gray Wolf

E. California Grizzly Bear

F. All of them

Answer on page 128!

Grizzly Bear

CALIFORNIA STATE SYMBOLS

Another good way to get to know the region is by learning which plants, animals, and natural materials are California's state symbols. From the state bird and flower, which you might know already, to lesser-known categories, such as state amphibian, gemstone, or fossil, these symbols are usually selected because they have a long history with the state.

QUICK QUIZ

California, called "The Golden State," is rich in mineral resources. Which of the state symbols could you use to make fine jewelry?

A. Gold

B. Benitoite

C. Serpentine

D. All of them

Answer on page 128!

Dome of California's State Capitol building in Sacramento

California Valley Quail

Bird

Golden Poppy

Flower

California Grizzly Bear

Animal

Augustynolophus morrisi

Dinosaur

Saber-toothed Cat

Fossil

Desert Tortoise

Reptile

California Dog-face Butterfly

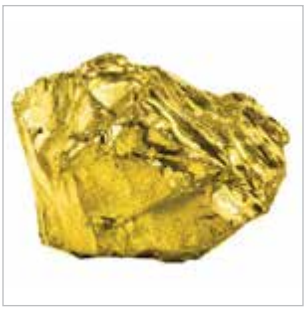
Insect

California Redwood

Tree

Benitoite

Gemstone



Native Gold

Mineral

Serpentine

Rock

INTRODUCED VS. INVASIVE

Over the course of the settlement of California, many plants and animals were **introduced** to the region. Some of these, such as apples, peaches, tomatoes, and cows, were introduced on purpose; they are **nonnative**, but haven't been a problem. Others that were introduced on purpose or accidentally spread quickly, often finding an environment with few **predators** or natural checks on their population.These species then became **invasive**, spreading uncontrollably and hurting native animals and plants.

A few familiar, but invasive, species:

American Bullfrog

Domestic Honeybee

Yellow Starthistle

Bull Thistle

Starling

House Sparrow

Pigeon

QUICK QUIZ

Which of the following animals is an introduced species in California?

A. Mountain Lion

B. Jackrabbit

C. Coyote

D. Cow

Answer on page 128!

Can you think of other introduced species in your area?
Hint: Most farm animals aren't from here! The same is true for many weeds.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

GETTING TO KNOW YOUR WEATHER

You know it gets really hot in the summer, but what's the hottest temperature you can remember? One hundred degrees, maybe 110? What do you think is the highest temperature recorded anywhere in the state? **Note:** It may not have reached this temperature where you live, but it did happen somewhere in the state.

MAKE A HYPOTHESIS

1. Highest maximum temperature in my state?

_____

_____

2. OK, and you've felt cold, too, maybe shivering at the bus stop or walking to school. So what do you think the coldest temperature recorded anywhere in your state is?

_____

_____

3. And do you like making a snowman or having snowball fights? Or how about

sledding down slopes or snowshoeing. Me too. Coastal California has warm winters and no snow, but the forests and mountains get lots of snow. What do you think the record is for the deepest snow on the ground anywhere in your state? A foot? Ten feet? More?

_____

_____

A FEW CALIFORNIA WEATHER RECORDS

HIGHEST TEMPERATURE RECORD

Location	Temp (°F)	Date
Death Valley National Park	130°	August 2020
Eureka	87°	September 2020
San Francisco	106°	September 2017
Los Angeles	113°	September 2010
San Diego	111°	September 1963

COLDEST TEMPERATURE RECORD

Location	Temp (°F)	Date
Boca	-45°	January 1937
Eureka	21°	December 1972
San Francisco	27°	December 1932
Los Angeles	28°	January 1949
San Diego	25°	January 1913

IS THE SUN SETTING EARLIER?!

In winter, you've probably noticed how it gets darker earlier. That happens because Earth is tilted on its axis, so certain parts of the planet get more daylight in some seasons than in others. If you've traveled very far north from where you live, you've probably noticed that the amount of daylight varies with **latitude** (how far north or south you are from the equator).

MAKE A HYPOTHESIS

1. What month do you think has the shortest day of the year in California?

_____

2. Which month has the longest day of the year in California?

_____

3. On the shortest day of the year where you live, what time is sunset?

_____

4. On the longest day of the year where you live, what time is sunset?

_____

LONGEST & SHORTEST DAYS ACROSS CALIFORNIA

The longest day of the year is known as the **summer solstice**; in the Northern Hemisphere that's when the North Pole is tilted the most toward the sun. The shortest day is known as the **winter solstice**; in the Northern Hemisphere that's when the North Pole is tilted the most away from the sun. At the summer solstice, the sun never goes below the horizon at the North Pole (24 hours of daylight), and at the winter solstice, the sun never rises (24 hours of night). At the **equator**, (the line around the Earth halfway between the North and South Poles) the days and nights are equal all year, at 12 hours each.

The date of each solstice varies a little each year. In the Northern Hemisphere, the half of the Earth north of the equator, the summer solstice always occurs between June 20 and June 22, and the winter solstice between December 20 and December 23.

In an upcoming solstice, the times to the right are when the sun will rise and set at the winter and summer solstice in several cities across California. The first is in the far north of the state, the middle two are in the middle, and the fourth city is in the far southern portion of the state. Notice how much longer the days are in the summer than in the winter. Hooray for long summer days!

WINTER SOLSTICE

Eureka
December 21
Sunrise: 7:37 am
Sunset: 4:52 pm

San Francisco
December 21
Sunrise: 7:21 am
Sunset: 4:54 pm

Los Angeles
December 21
Sunrise: 6:54 am
Sunset: 4:47 pm

San Diego
December 21
Sunrise: 6:47 am
Sunset: 4:46 pm

SUMMER SOLSTICE

Eureka
June 20
Sunrise: 5:45 am
Sunset: 8:51 pm

San Francisco
June 20
Sunrise: 5:47 am
Sunset: 8:34 pm

Los Angeles
June 20
Sunrise: 5:41 am
Sunset: 8:07 pm

San Diego
June 20
Sunrise: 5:41 am
Sunset: 7:59 pm

Source: esrl.noaa.gov/gmd/grad/solcalc

RECORD YOUR ACTIVITIES, DISCOVERIES & FINDS HERE

If you find something neat, make a sketch to the right to help you remember details so you can compare your drawing to a field guide or another reference later.

0 inch
1
2
3
4
5
6
7
8
9
10

RECOMMENDED READING

Acorn, John. *Bugs of Northern California*. Lone Pine, 2002. (Children's book)

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GLOSSARY

Adaptations The features of a plant or animal that help it thrive where it lives from generation to generation.

Bio-blitz An organized count of plants and animals carried on for a set time period in a specific place.

Biome A community of animals and plants that live in a specific kind of climate and environment.

Biodiversity The number of different kinds, or species, of living things that live in an area.

Chemical element One of the 92 naturally occurring chemicals such as oxygen, carbon, etc., that make up all matter on Earth.

Commodities Farm products such as cattle, corn, and soybeans that are sold worldwide.

Conifer A tree that produces seeds in cones, such as pine, fir, and spruce trees.

Deciduous A tree or shrub that loses its leaves in the winter.

Dormant A sleep-like state when a plant or animal is not active.

Drought deciduous A plant that loses its leaves during dry conditions or during droughts.

Equator The midpoint on the earth's surface between the North and South Poles; the days and nights are always equal in length, and the latitude measurement is 0.

Estuaries The marshy area where a river flows into the ocean.

Evergreen A tree or shrub that doesn't lose its leaves and stays green all winter.

Extinction When all members of a plant or animal species are gone forever.

Extirpated Animals and plants that have been wiped out from their original habitat but may still live elsewhere.

Field Marks The size and colors of a bird that help identify it.

GLOSSARY

Fossil The preserved remains, remnant, imprint, or trace of a plant or animal from a past geologic age, such as a bone, tooth, footprint, petrified wood, or leaf imprint.

Genus name All living thing have a unique scientific name made up of two parts a genus, which is like an organism's last name, and which it shares with other related organisms, and its species name, which is like its first name. See *Scientific Name*.

Germinate When a seed sprouts and begins to grow.

Intertidal Zone The coastal area where tides wash in and out.

Introduced An animal or plant that was brought to an area (example: cows in the US).

Invasive An introduced species that outcompetes native plants and animals, harming the ecosystem.

Invertebrate animals All animals that do not have a backbone. For instance snails, clams, butterflies, beetles, ants.

Keystone species A plant or animal that many other plants and animals depend on to survive.

Killing frost When temperatures reach about 28° F., cold enough to freeze the water in most plants and kill them.

Latitude How far north or south a person or place is from the equator; the equator is at a latitude of 0; the North Pole is 90 degrees north.

Mediterranean climate A specific type of climate with dry summers and cool, wet winters.

Metamorphosis The process butterflies, moths, and bees pass through to change from larvae (caterpillars) to adults that can fly.

Milky Way Earth's home galaxy; all the stars you see in the sky are part of the Milky Way; the galaxy get its name for the milky band of light often visible that is caused by light reflecting off the dust in between the galaxy's stars

Mineral A chemical combination of two or more elements; individual elements (copper, gold) are considered minerals as well.

Mohs Hardness Scale The relative scale of mineral hardness, from the softest, talc (1), to the hardest, diamond (10).

Mutalistic A relationship between two organisms where each one gets something of value/or benefit.

Mycelia The thread-like filaments of fungi that connect to the roots of plants.

Native An animal, plant or organism found naturally in an area.

Nebula An enormous gas and dust cloud between stars where stars are born.

Nonnative An animal, plant, or organism not naturally found in an area; note that not all nonnative animals are invasive.

Northern Hemisphere The part of the Earth north of the equator.

Orion (constellation) A group of stars named for a hunter in ancient Greek mythology.

Pacific Flyway The route between the Rocky Mountains and the Pacific coastline that takes migrating birds from Canada to South America.

Pelagic Zone The open ocean with deep water.

Phenology The study of how the seasons and other natural cycles effect plants and animals over time.

Pleiades A cluster of seven dim stars barely visible with the unaided eye.

Predators Animals that eat other animals.

Rain shadow A region that receives little rainfall because a mountain range blocks the flow of moisture from the ocean. Death Valley is in the rain shadow of the Sierra Nevada range.

Rock A combination of two or more minerals.

GLOSSARY

Saprobes Mushrooms that feed on dead or dying material (often wood or plant parts).

Scientific name Because there are so many different plants and animals and other lifeforms, scientists give every organism a unique name, usually derived from Latin/Greek. This scientific name has two parts: a genus, which is like your last name, which you share with other relatives, and a species name, which is like your first name.

So if you want to talk about the American Robin, *Turdus migratorius* is the name that scientists would recognize all around the world. By the way, the scientific name for all humans is *Homo sapiens*.

Solstice, summer The longest day of the year when the Northern Hempisphere is pointed most directly at the sun; in the Northern Hemisphere it occurs June 20–22.

Solstice, winter The shortest day of the year when the Northern Hemisphere is pointed furthest away from the sun; in the Northern Hemisphere it occurs December 20–23.

Species name All living thing have a unique scientific name made up of two parts: a genus name, which is like an organism's last name which it shares with other related organisms, and its species name, which is like its first name. See Scientific name.

Toxic Poisonous

Venomous An animal capable of delivering a toxin (venom) through a sting or a bite; rattlesnakes, bumblebees, and jellyfish are all venomous.

Vertebrate animals All animals that have a backbone.

QUICK QUIZ ANSWERS

Page 6, Get to Know California's Biomes

QUICK QUIZ ANSWERS

Page 9: A. 4; B. 2; C. 5; D. 1; E. 3

Page 11: 1. Spruce; 2. Redwood; 3. Bristlecone; 4. Juniper

Page 13: Answer C, All have been killed or they otherwise no longer exist

Page 15: A. Pelagic; B. Estuaries; C. Intertidal

Page 17: Answer F, All of them

Page 18: Answer D, All of them

Page 21: Answer D, Cow

Page 45: Answer E, All of the above

Page 50: Answer D, All of the above

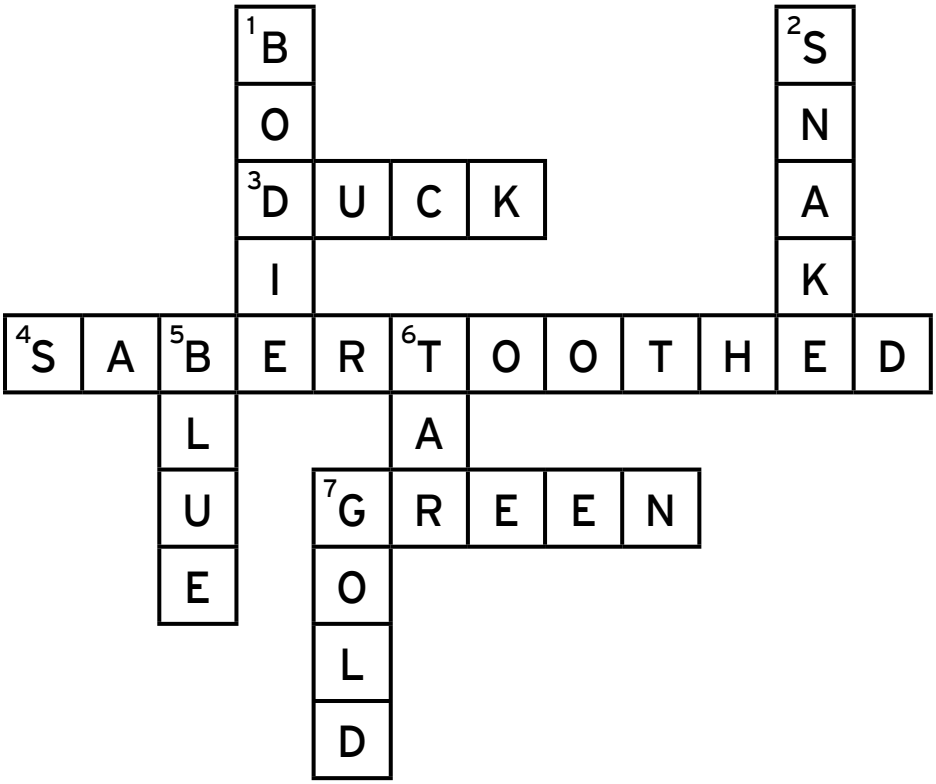
Page 76: 1. House Finch, 2. Northern Flicker, 3. Curved-bill Thrasher, 4. Great Blue Heron, 5. Red-tailed Hawk

Page 82: Answer F, All of them

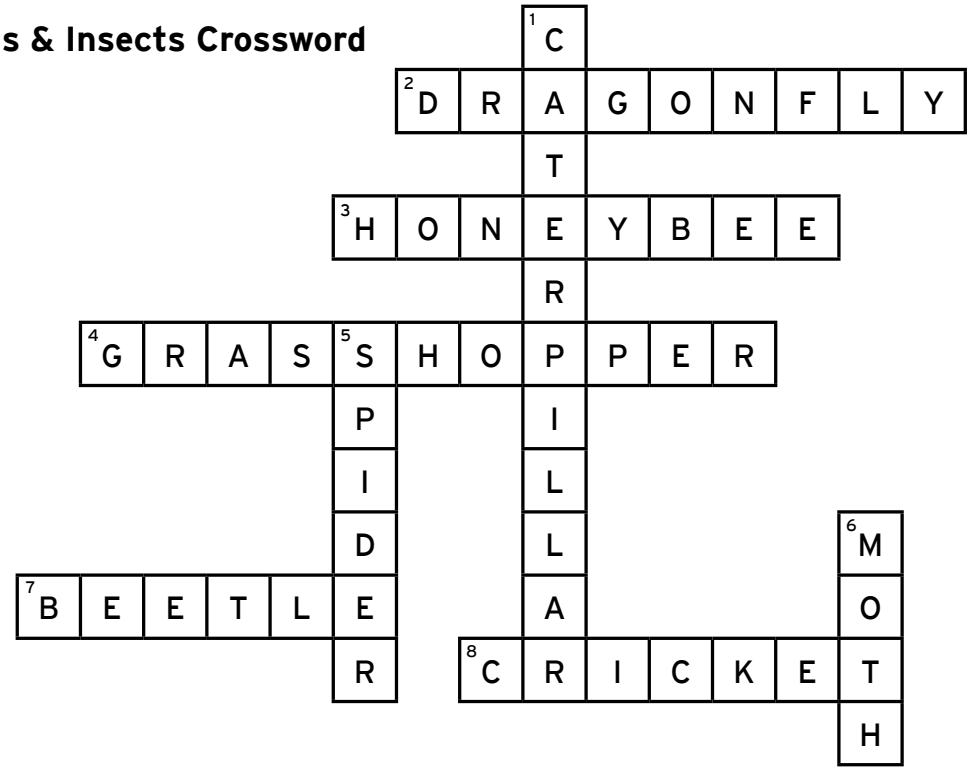
Page 86: B. Honeybee (A. is a Flower Fly and C. is a Spotted Tylosis Longhorn Beetle)

CROSSWORD ANSWERS

Page 67, Geology, Gemstones & Fossils Crossword



Page 93, Bugs & Insects Crossword



ABOUT THE AUTHOR

George Miller is a writer, nature photographer, and travel journalist with an MS in Zoology and Botany from the University of Texas at Austin. He wrote the award-winning books *Landscaping With Native Plants of Southern California*, *Wildflowers of Southern California*, *Wildflowers of Northern California*, and *Native Plant Gardening for Birds, Bees & Butterflies: Southern California*. He worked as an interpretive naturalist for the Austin Nature & Science Center, where he designed and taught middle school classes on wildlife and day camp programs. He has lived in California, Arizona, New Mexico, and Texas, and is a member of the Native Plant Societies of California and New Mexico. His website WildflowersNM.com covers more than 600 species of Southwest wildflowers, with descriptions, identification tips, and photos.

ACKNOWLEDGMENTS

On our many trips of discovery to the outdoors, my son and daughter, Koda and Heather, helped me see the mysteries and magic or nature with fresh eyes.

DEDICATION

This is dedicated to my grandchildren Colvin, Holden, and Armstrong, that they will learn to love the amazing riches of the natural world.

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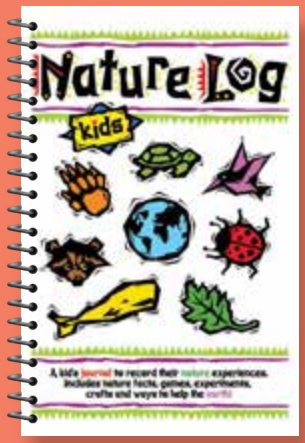

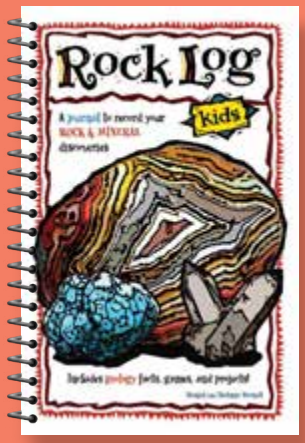

SAFETY NOTE

Nature is wonderful and amazing, and it's certainly nothing to be afraid of, especially if you use common sense and take precautions. This guide is intended for backyards and green spaces in California. These places should be pretty safe by definition, but make sure to have an adult with you when you're outside to supervise the activities in this book. And when you're outside, don't reach where you can't see, and be aware of potentially dangerous animals like bees, wasps, ticks, venomous spiders or snakes, and bothersome plants such as poison ivy.

There really aren't all that many dangerous creatures or plants, but if you know they can be found in your area, or if you have allergies (to bees or poison ivy, for instance), it's important to simply be aware that they may be out there. The best way to stay safe is to keep your distance from wild animals and avoid handling wildlife. Take photos or draw sketches instead. Also, wear gloves, the right clothing for the weather, and sunscreen (as needed), and pay attention to the weather and any potentially unsafe surroundings. **Remember:** You're responsible for your safety.

An especially important note: Don't use this book to help you identify which wild plants, berries, fruits, or mushrooms are safe to eat. Please leave the berries, fruits, and mushrooms you find for the birds, critters, and the bugs. Instead, get your snacks from the fridge!

Edited by Brett Ortler

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Fun Activities and Experiments That Get Kids Outdoors
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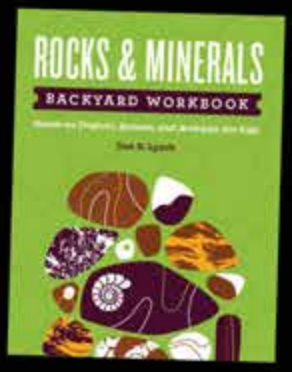

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