

FUN ACTIVITIES & EXPERIMENTS THAT GET KIDS OUTDOORS



BACKYARD

SCIENCE &

DISCOVERY

WORKBOOK

ROCKY MOUNTAINS



GEORGE OXFORD MILLER

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ADVENTURE PUBLICATIONS

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ABOUT THIS BOOK

This workbook covers five states in the Northern, Middle, and Southern Rockies. Activities focus on the grass and shrublands east of the Rockies, the towering mountains and their various **ecosystems**, and the high, cold desert of the Colorado Plateau west of the Rockies. The Rocky Mountain region is one of the most diverse in North America in geography, geology, climate, and **biodiversity** (how many plants and animals live there).

You don't have to travel far in the Rockies to discover totally different worlds of nature. The temperature gets colder as you go higher in the mountains. For every 1,000 feet you travel up a slope, the temperature drops 3 degrees F. That's the same change as travelling hundreds of miles north. Climbing to the top of a 13,000-foot mountain is like taking a trip to the Arctic.

As a nature photographer, environmental journalist, and botanist, I've lived in the Mountain West almost all of my life. I backpacked and camped with my children and enjoyed the sense of discovery as we hiked wilderness trails. 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 sunprints, and 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

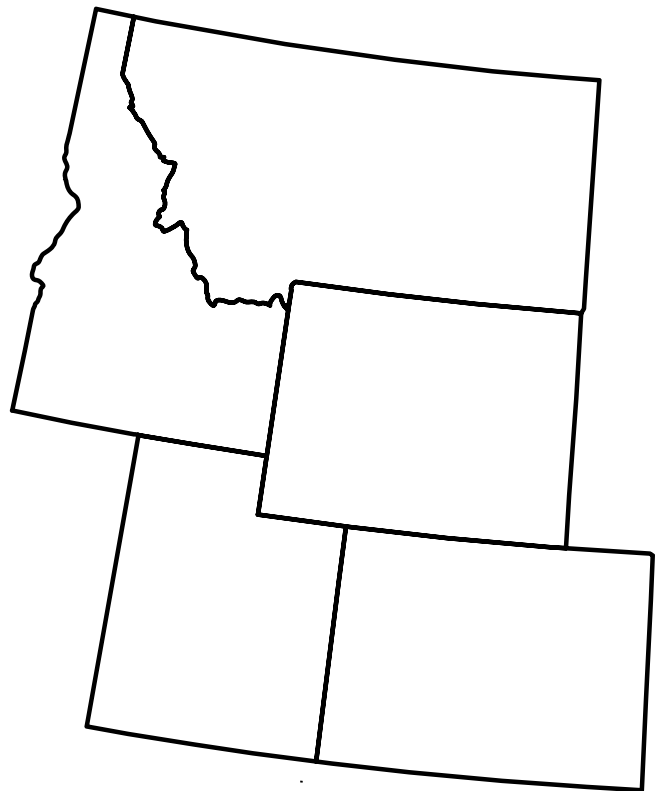
GEOGRAPHY OF

THE ROCKY MOUNTAINS REGION

The Rocky Mountains stretch from north to south across the western United States for 2,700 miles. Grassy plains and shrublands cover the eastern and western sides of the mountains, and the plants and animals change radically as you gain elevation up the slopes.

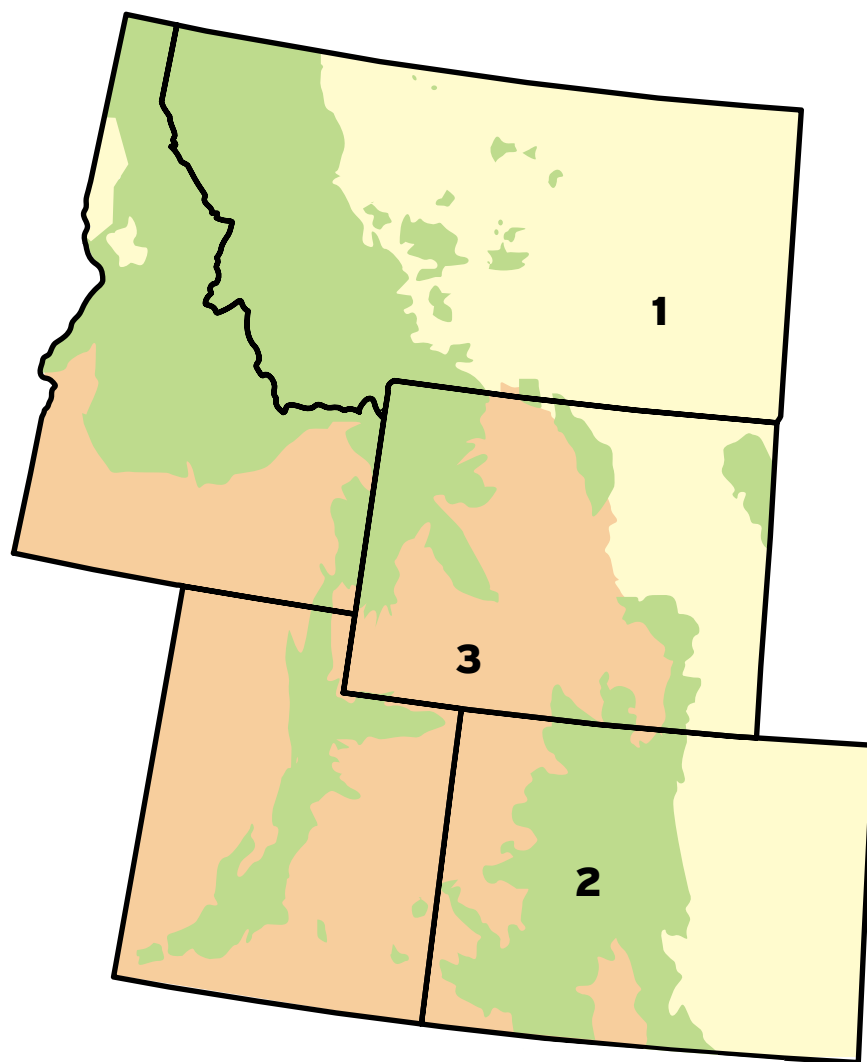
Beginning at about 6,000 feet (over 1 mile high), shrubby pinyon-juniper woodlands cover the foothills. Then tall pine-fir forests grow from about 7,000 feet to about 9,000 feet. Mixed spruce-fir forests reach up to the treeline at about 12,000 feet. Alpine tundra with low, ground-hugging plants surrounds the high peaks, many that top 14,000 feet (almost 3 miles) high. To the west, the Colorado Plateau is a vast high-desert tableland famous for its red-rock canyons, buttes, arches, deserts, and wilderness scenery.

Practice your geography and label the states on the map above. Bonus points if you can name the state capitals of each one.



CO _____
ID _____
MT _____

UT _____
WY _____



QUICK QUESTION

Which biome do you live in?

GET TO KNOW THE ROCKY MOUNTAINS REGION'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 broad 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 aquatic (water). Each biome can be broken into smaller and smaller divisions, often called bioregions or ecosystems.

The Rocky Mountain states are home to three major biomes, each with numerous ecosystems:



1. Grasslands

Grasslands, prairies, sage brushlands—east of Rockies and in mountain river valleys and on high plateaus



2. Rocky

Mountains
Foothills, plateaus, broad valleys, montane forests, subalpine conifer forests, alpine tundra



3. Colorado

Plateau High Desert
Canyons, buttes, mesas, badlands, sage brushlands—west of Rockies



GRASSLANDS BIOME

Want to see wildlife? Follow the grass. Grasses cover the lowland prairies, the broad, mountain river valleys, and the rolling plateaus. This is where American Bison, Pronghorns, Elk, and other grazing animals gather to feed, and to form large herds in the winter. Prairie dogs, jackrabbits, grouse, quail, prairie chickens, Western Meadowlarks, and Burrowing Owls find a happy home in the grasslands, except, that is, when Coyotes, wolves, Grizzly Bears, and hawks hunt them.

Grasslands and sage brushlands occur in regions with short summers and cold winters. Shortgrass prairies on the eastern side of the Rockies occur from the edge of the Great Plains through the semiarid foothills. Taller grasses thrive in the mountain valleys and high plateaus that get more moisture from snow and rain. In the spring, wildflowers can blanket the grasslands. Most of the native grasslands are now ranch and farm land.



Pronghorn

QUICK QUIZ

Grasslands provide seed-eating and insect-eating animals plenty of food, as well as cover to hide from **predators** (animals that eat other animals). Which of these animals eat seeds or insects? Which are **omnivores** (animals that eat seeds, insects, and also other animals)?



A. Prairie Dogs



B. Prairie Chickens



C. Meadowlarks



D. Bison



E. Coyotes

Answers on page 140!

QUICK QUIZ

Pronghorns, the fastest land animals in North America, can run 60 miles per hour, much faster than wolves or any other predator alive today. Why can they run so fast?

- A. They love to race cars and trains.
- B. They had to run fast when cheetahs and other predators lived in North America, more than 12,000 years ago.
- C. They are afraid of rattlesnakes.
- D. They like to get places fast.



Pronghorn

Answer on page 140!



MOUNTAIN BIOME

The Rocky Mountains Biome with its variety of **life zones** is really like a city with a mix of different kinds of neighborhoods. The zones are spaced at different elevations going up the slopes. Areas within each zone have similar temperatures and amounts of rain and snow. That's why each life zone has developed its own particular **ecosystem** of plants and animals that are adapted to its environmental conditions.

Going up a mountain slope, you'll pass through four very different life zone ecosystems. Starting at the bottom, you'll see:

1. **Pinyon-Juniper Woodlands** with small trees and scrubby bushes
2. **Montane Forests** with tall pines, firs, and aspen trees and many meadows and broad valleys
3. **Subalpine Forests** with tall Christmas-tree-like spruce and fir trees
4. **Alpine Tundra** where it's too cold for trees to grow; only low, ground-hugging wildflowers and bushes can survive. Not far below the surface is a layer of permafrost, which is ground that is permanently frozen year-round.



No trees grow above the treeline in the mountains.

LIFE ZONES

PINYON-JUNIPER WOODLANDS

Starting at the bottom of the mountain slopes, a scrubby woodland of pinyon pine and junipers extends upward from about 5,000 feet to 6,500 feet. Gambel oak and bushes like rabbitbrush and sagebrush join the mix. At the lower, drier elevations, the woodland blends in with the grasslands and shrublands, and at the higher elevations with more moisture, it merges with the taller mixed-conifer forests.



Pinyon-Juniper Woodlands

MONTANE CONIFER FORESTS

Mixed-conifer Forests with pines, firs, and aspen cover the mid-elevation mountain slopes up to about 10,000 feet. 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. Among conifers, pines, spruces, and firs have woody cones that produce nut-like seeds eaten by birds, chipmunks, and many other animals. Juniper trees have fleshy, berry-like cones loved by birds, especially in the winter.



Montane Forest

SUBALPINE FORESTS

Spruce and fir trees grow at high altitudes, from about 10,000 feet up to the treeline, above which it's too cold for trees to grow and lots of snow falls. They have slender, smooth, needle-like leaves and flexible limbs. Instead of breaking when they get covered with snow, the branches can easily bend so the snow slides off. All conifers in the Rockies, except the Subalpine Larch, are evergreen, which means they don't lose their leaves, or needles, in the winter. Deciduous trees, like aspens, cottonwoods, and maples, lose their leaves in the winter.



Subalpine Forest

ALPINE TUNDRA

The region surrounding the highest mountain peaks is free of snow only from mid-July through late August or September. With the freezing temperatures and only a month-or-so of a growing season, trees can't survive; only low, ground-hugging bushes and wildflowers with deep roots can withstand the long winters. As soon as the snow begins to melt, the flowers burst into glorious bloom in a race to produce their seeds before winter returns.



Alpine Tundra

QUICK QUIZ

Going up a mountain, you pass through five different life zones (like neighborhoods).

Which life zone neighborhood do you live in?

At a certain altitude (treeline) trees cannot grow. Which life zone is this?

What's the warmest life zone?

Answers on page 140!

QUICK QUIZ

The Rocky Mountain region is home to 19 species of conifers. The small Pinyon Pine is found at low elevations. It has small cones with large nut-like seeds. The mighty Ponderosa Pine is found at middle-elevations. The largest tree in the Rocky Mountain region, it can live over 500 years and reach 160 feet tall. At high elevations, spruce trees cover the mountainsides like a forest of Christmas trees. In the Alpine Tundra, the shrubby Subalpine Fir hugs the ground tightly to protect itself from the frigid winds. Can you match these conifer leaves and cones with their trees?

Spruce: short needle-like leaves and large cones

Ponderosa Pine: long needles, large cones

Pinyon Pine: short needles, small cone

Juniper: scale-like leaves, fleshy berries



A. Ponderosa Pine



B. Juniper



C. Pinyon Pine



D. Spruce



1.



2.



3.



4.

Answers on page 140!



COLORADO PLATEAU BIOME

This vast province is a dry tableland with mountains, deserts, woodlands, and grasslands. It covers large portions of Utah, Colorado, Arizona, and New Mexico. It is known for its incredible red-rock canyons, arches, and wilderness scenery, and it includes 25 national parks and monuments. The two towering mountain ranges on either side, the Rocky Mountains and the Sierra Nevada range in California, block the flow of moisture from both the east and west. The dry weather pattern creates a high, cold desert ranging from 5,000–7,000 feet high. Elsewhere in the region, the mountains reach 13,000 feet high. With the Colorado River as its only large river, the arid region is prone to water shortages during long droughts.

The rugged, rocky landscape may look tough, but the ecosystems (groups of plants and animals that live in similar environmental conditions) are extremely fragile. With little rainfall and long droughts, the delicate balance that allows plants and animals to survive is easily broken. In the last two centuries, cattle grazing, mining, oil drilling, and recently an increasing amount of tourism, especially off-road vehicles, have caused many plants and animals to suffer. Grizzly Bears, wolves, black-footed ferrets, lynx, wolverines, and river otters have been extirpated from the Colorado Plateau.



Fragile landscapes easily can be “loved to death” by overuse.

QUICK QUESTION

In the sentence, "Grizzly Bears, wolves, black-footed ferrets, lynx, wolverines, and river otters have been extirpated..."
The word "extirpated" means:

- A. Saved or protected
- B. Moved to another area
- C. Wiped out of their original range
- D. All have been sent to zoos

Answer on page 140!



Gray Wolf

What other animals in your state are endangered or have been extirpated?



THEN VS. NOW

Humans have lived in the Rocky Mountain region for more than 10,000 years. Native Americans developed large, complex communities with rock and adobe buildings and a network of roads and paths still visible. They farmed corn, beans and squash and hunted game. Many of the tribes still live on their ancestral homelands.

Large numbers of European settlers began arriving around two hundred years ago and started farms and ranches on the grasslands, gold and silver mines in the mountains, and oil and gas wells and coal mining across the region. Small towns grew into cities with millions of people. As the world's climate warms, severe droughts have killed much of the tree cover and super fires have burned millions of acres of forest. Even with all the changes and threats, an amazing amount of the region is still wild, with little environmental damage to the plants, animals, and the spectacular landscapes.



Petroglyphs, or rock art, at Newspaper Rock, Utah, are up to 2,000 years old.



Denver skyline

QUICK QUIZ

Many large wild animals still call the Rocky Mountains home. What animals might you spot in the many national parks and wild places of the Rocky Mountains region?

- A. Pronghorn
- B. Bighorn Sheep
- C. Elk
- D. Gray Wolf
- E. Mule Deer
- F. All of them

Answer on page 140!



Rocky Mountain Bighorn Sheep



Pronghorn

STATE SYMBOLS

Another good way to get to know the region is by learning which plants, animals, and natural materials are your state's official 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. Not every state has the same categories or names for state symbols, but they are still a good way to learn about your state and its wildlife.

QUICK QUIZ

The five Rocky Mountain states are rich in plants, wildlife, and natural resources. Which state symbols could be used to make fine jewelry?

- A. Garnet (Idaho)
- B. Sapphire (Montana)
- C. Yule Marble (Colorado)
- D. Topaz (Utah)
- E. All of the above

Answer on page 140!



Topaz



Garnet



Sapphire

COLORADO



Rocky Mountain Bighorn Sheep

Animal



Lark Bunting

Bird



Western Painted Turtle

Reptile



Rocky Mountain Columbine

Flower



Colorado Blue Spruce

Tree



Stegosaurus

Fossil



Colorado Hairstreak Butterfly

Insect



Rhodochrosite

Mineral



Aquamarine

Gemstone



Yule Marble

Rock

STATE SYMBOLS

IDAHO



Appaloosa Horse
Horse



Mountain Bluebird
Bird



Peregrine Falcon
Raptor



Mock Orange (Syringa)
Flower



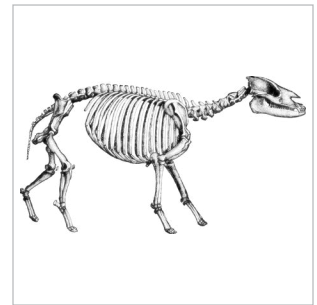
Western White Pine
Tree



Huckleberry
Fruit



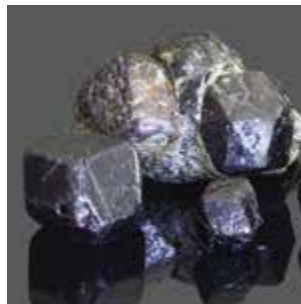
Potato
Vegetable



Hagerman Horse
Fossil



Monarch Butterfly
Insect



Star Garnet
Gem

MONTANA



Grizzly Bear

Animal



Western Meadowlark

Bird



Bitterroot

Flower



Ponderosa Pine

Tree



Duck-Billed Dinosaur

Fossil



Mourning Cloak Butterfly

Butterfly



Agate, Sapphire

Gemstones

STATE SYMBOLS

UTAH



Elk
Animal



California Gull
Bird



Gila Monster
Reptile



Sego Lily
Flower



Cherry
Fruit



**Native American
Rock Art**
Works of Art



Quaking Aspen
Tree



Allosaurus
Fossil



**European
Honeybee**
Insect



Copper
Mineral



Topaz
State Gem



Coal
Rock

WYOMING



American Bison

Animal



Meadowlark

Bird



Eastern Short-horned Lizard

Reptile



Indian Paintbrush

Flower



Wyoming Big Sagebrush

Shrub



Cottonwood

Tree



Triceratops

Dinosaur



Knightia

Fossil



Sheridan's Green Hairstreak Butterfly

Butterfly



Jade

Gemstone

INTRODUCED VS. INVASIVE

Over the course of the settlement of the Rocky Mountain region, many plants and animals were **introduced** to the region. Some of these, such as apples, peaches, and tomatoes, 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. These species then became **invasive**, spreading uncontrollably and hurting native animals and plants. Two examples are **feral** animals (domestic animals gone wild), such as cats and feral horses. Feral cats kill millions of birds and small mammals, like rabbits, every year. Feral horses become so numerous that they graze too much of the grasses and destroy the prairies, and then native animals cannot survive. But people love cats and horses, so there is no easy solution to the problems they create in the wild.

A few familiar, but invasive, species:



Toadflax



Tumbleweed



Russian Olive Tree



Feral Horse



Feral Cat



House Sparrow

QUICK QUIZ

In the sentence, "Two examples are feral cats and horses," what does feral mean?

- A. An animal that likes to play outdoors.
- B. An animal that was once domesticated but now lives in the wild.
- C. An animal that can't be trained.
- D. An animal that lives outside but comes home at night.

Answer on page 140!

QUICK QUIZ

Which of the following are introduced into the wild in the Rocky Mountain region?



A. Mountain Lion



B. Jackrabbit



C. Bald Eagle



D. House Sparrow

Answer on page 140!



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. From the high plains to the mountain forests and slopes, getting



outside and playing in the snow helps bring relief to the cold winter days. The alpine mountain passes and ski areas receive the most snow. What do you think the annual average snowfall is for your area? Two feet? Ten feet? More?

A FEW ROCKY MOUNTAIN

WEATHER RECORDS

STATE NAME	HIGHEST TEMP (°F)	LOWEST TEMP (°F)	RECORD ANNUAL SNOW RECORD (INCHES)
Colorado	115° (2019)	-61° (1985)	387"
Idaho	118° (1934)	-60° (1943)	400"
Montana	117° (1937)	-70° (1954)	200"
Utah	117° (1985)	-69° (1985)	411"
Wyoming	115° (1983)	-65° (1933)	500"

Source: Snow records via NOAA and recorded at official stations; other sites (resorts) may list higher totals



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 to the north or to the south of 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 where you live?

2. Which month has the longest day of the year where you live?

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?

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.

[illegible]

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

RECOMMENDED READING

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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.

Central Flyway The route between the Rocky Mountains and the central portion of the US that takes migrating birds from Canada to Central and South America.

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.

Continental Divide The general line in the US where water flows into the Pacific and water to the east flows into the Gulf of Mexico.

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

Ecosystem A large area that supplies all the food and shelter that the plants and animals living there need to survive.

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 zero.

GLOSSARY

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

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

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

Feral Domestic animals, like cats and horses, that survive in the wild.

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*.

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.

Killing frost When temperatures reach about 28 degrees, 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.

Life zone The area going up a slope bounded by specific low and high elevations that has the same mix of plants and animals.

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

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).

Mutualistic 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 that lives 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.

Omnivore An animal that can survive by eating plants or other animals.

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

GLOSSARY

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

Permafrost Ground in the high mountains that is permanently frozen year-round.

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. The Colorado Plateau is in the rain shadow of the Rocky Mountains and the Sierra Nevada range.

River Basin The large area where all the rivers and streams drain into the same river.

Rock A combination of two or more minerals.

Saprobies 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 name, 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 half of the Earth 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 southern hemisphere of the Earth is pointed most directly at 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

Tributaries Smaller streams that flow into a larger river.

Vertebrate animals All animals that have a backbone.

QUICK QUIZ ANSWERS

Page 5: Denver, Colorado; Boise, Idaho; Helena, Montana;
Salt Lake City, Utah; Cheyenne, Wyoming

Page 9 top: Question 1: A, B, and C; Question 2: E

Page 9 bottom: Answer B

Page 12: Treeline: Tundra; Warmest: Pinyon-Juniper

Page 13: D: 2; A: 3; C: 1; B: 4

Page 15: Answer C, Wiped out of their original range

Page 17: Answer F, All of them

Page 18: Answers A, B, and D

Page 25: Answer B, A pet that was once tame but now lives
in the wild.
Answer D, House Sparrow

Page 32: North-facing

Page 47: Answer A, potato chips; Answer B, French Fries and
Answer C, sugar

Page 49: Answer E, All of the above

Page 57: Answer D, All of the above

Page 77: Idaho

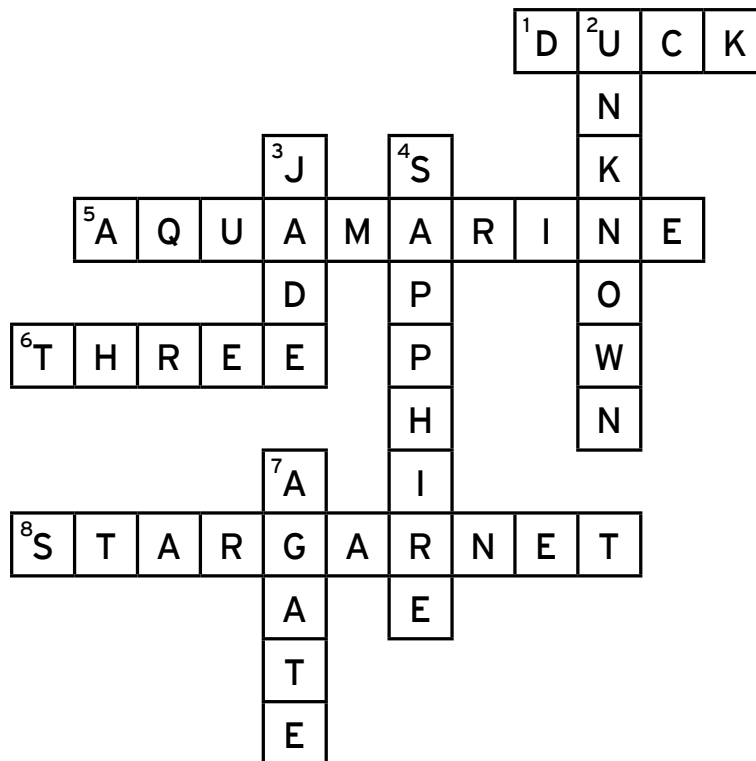
Page 88: 1. House Finch, 2. Northern Flicker, 3. Curved-bill
Thrasher, 4. Great Blue Heron, 5. Red-tailed Hawk

Page 94: Answer F, All of them

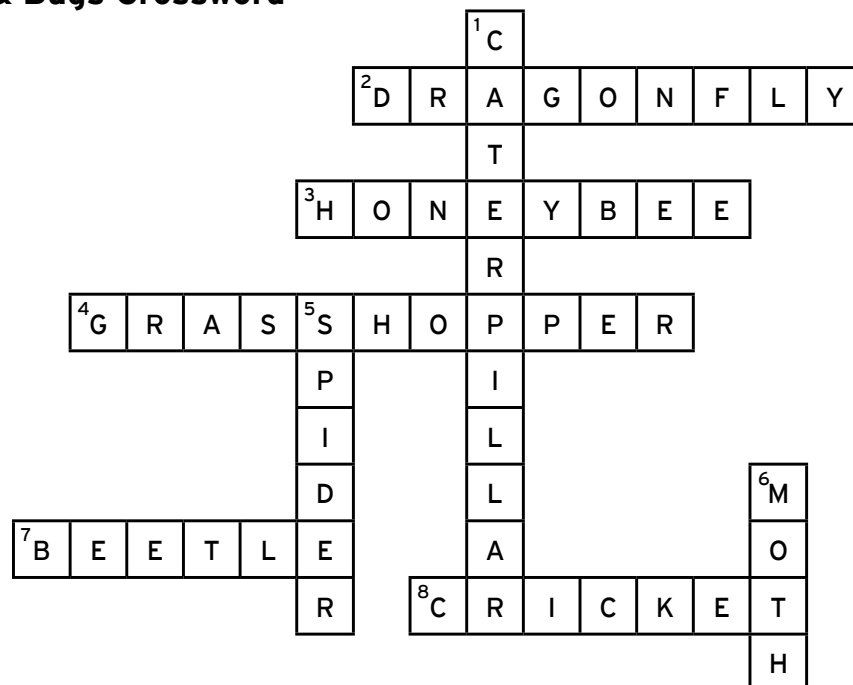
Page 98: B. Honeybee (A. is a Flower Fly and C. is a Spotted
Tylosis (Longhorn Beetle)

CROSSWORD ANSWERS

Page 80, Geology, Gemstones & Fossils Crossword



Page 105, Insects & Bugs 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 *Wildflowers of Colorado & Southern Wyoming*, *Landscaping With Native Plants of the Southwest*, and *Native Plant Gardening for Birds, Bees & Butterflies: Southwest*. 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. His website WildflowersNM.com covers more than 600 species of Western 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 of nature with fresh eyes.

DEDICATION

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

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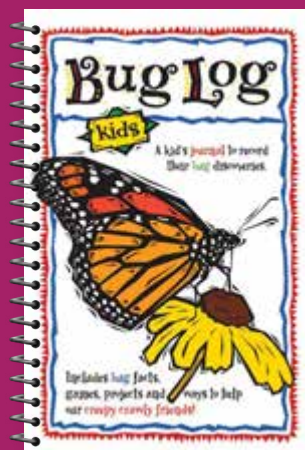
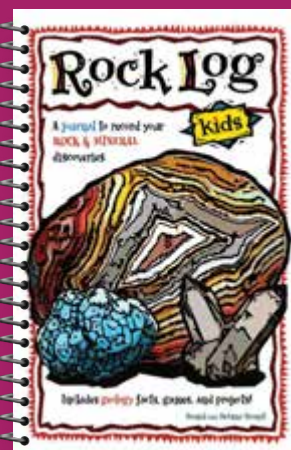
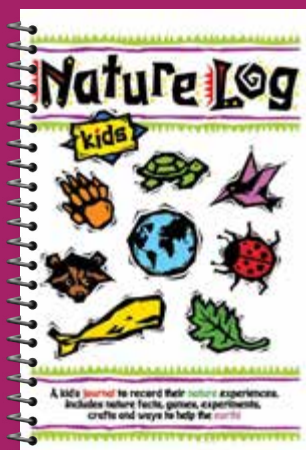
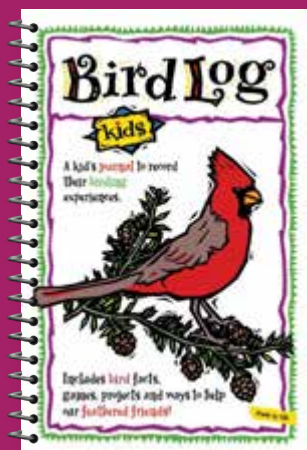
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SAFETY NOTE

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 the Rocky Mountains region. 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 proper 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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**Backyard Science & Discovery Workbook: Rocky Mountains
Fun Activities and Experiments That Get Kids Outdoors**

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TAKE A HANDS-ON APPROACH TO LEARNING ABOUT NATURE



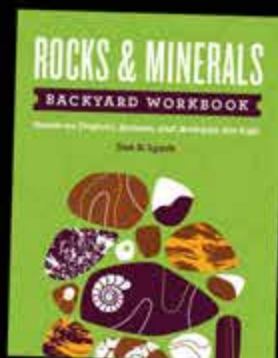
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