



BEAUTIFUL FEET BOOKS GEOGRAPHY, ECOLOGY

World Geography & Ecology

Science and Story *for* Seventh Through Ninth Grade

TEACHER GUIDE

BY REBECCA MANOR

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WORLD GEOGRAPHY AND ECOLOGY

SCIENCE & STORY FOR SEVENTH THROUGH NINTH GRADE

BY REBECCA MANOR

WITH CONTRIBUTIONS BY RYAN JOHNSON AND AUDRIA STORY

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World Geography and Ecology: Science & Story for Seventh Through Ninth Grade
by Rebecca Manor © 2023

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Layout and design by Ryan Maloney

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*Roy's Peak,
Wanaka, New Zealand*

HOW TO USE THIS GUIDE

Let's Get Started!

Scan the QR code to access an introductory video with the author, free downloads, and specific tips on how to best use this teacher's guide.



For those of you who prefer to read through instructions, we've summarized most of the information from the video here. You will notice other QR codes interspersed throughout the study. Access them for helpful tips, encouragement, check-in videos, and other resources to help you along your journey!

Geography and Ecology These two subjects come together in this study to help students understand both the *where* and *how* of place. Geography explains the structures of the world around us, while ecology explains the systems that support life in these places. Bringing these together results in a more thorough understanding of the earth and how it works. Adding stories to this mix of sciences brings an additional dimension of understanding, and one that is essentially human. I hope that you enjoy this three-part approach to studying our incredible planet and the people on it. Here are some tips on how to make the study work for you.

A note for those of you who have completed one of our "Around the World in Picture Books" studies or are coming from our History through Literature guides: This is a different program, one that embraces the heart of those, but also one that moves at a quicker pace, has scientific activities, and where literature takes on a secondary, not primary, role. The subjects of this study are geography and ecology. This is where students will focus most of their time and efforts. They will fill out a world map, label every country, and become familiar with geographical terms. The ecology component incorporates nearly 50 hands-on activities and covers natural cycles, ecosystems, biomes, and other scientific processes. These are the foundation of the study. Upon this foundation, the literature illuminates the human aspect, opening windows to the lives of real people in real places at specific points in history. This is not a language arts study. The books are included to be read and enjoyed.

Lessons and Pace There are 98 lessons in this study. The world is a big place, so there is a lot of ground (and ocean) to cover in one school year. Nearly every lesson will include coloring and labeling countries on the world map. Students will work on memorizing where each nation is located using online interactive quizzes.



Serengeti, Tanzania

In order to complete the study in one year, you will want to aim to do two to three lessons each week. For those who would like to spread the course out over two years, you can complete one to two lessons each week, taking the time to dig deeper into the countries and ecosystems that spark interest.

Each lesson is broken down by subject and color-coded to make it easy to incorporate as many or as few elements as you want. You'll find color-coded icons at the margin of each lesson for at-a-glance reference along with the following icons:



Internet Link

We have suggested an Internet link to view. While it has been deemed appropriate at the time of printing, the Internet is always changing, so supervise your child as you deem necessary.



Research

We've asked your student to research a topic. Developing research skills is important at this age. Guide them on how to use the library, Internet, and other resources responsibly.



Parental Warning

Sometimes books or videos contain material we'd like you to preview. This is a recognition that not all material may be appropriate for every student. Please access this information before your student. We have not flagged content related to evolution or climate change. Please see the following pages to learn more.

Student Portfolio Your student will need a notebook or portfolio in which to keep their work throughout this course. This may be a three-ring binder, a blog, or a composition notebook. Use what works best for your student.

Activities Throughout the study there are nearly 50 hands-on activities to help your student understand ecological principles and ideas. These activities use household items, and you will find a list of required items at the beginning of each lesson and in the Resource Packet available via the QR code on the previous page.

Vocabulary Geographic and ecological terms will be referenced throughout the study, and students will be instructed to define and record them in a glossary in their notebook. Use the glossaries in *DK Student Atlas*, *Wondrous Workings*, *Junk Drawer Ecology*, and other resources to help with these assignments. We have also included a glossary at the back of this guide.

Rabbit Trails and Supplements Each section of this study includes suggested books for those of you who want to dig deeper or expand the study. None of these books is required. They are simply there for anyone who would like to use them. You will also notice that many lessons have a "Supplement" section that references Beautiful Feet Books' *Book of Nations* and the Resource Packet. The Resource Packet is a free download that includes websites, diagrams, and other printables to enrich your study. It's available through the QR code to the left. Other resources are also linked through the QR codes placed throughout this study.

For anyone who wants to dig into the demographics, national birds and animals, national parks, flags, and more for each country, *Book of Nations* is the resource for you! It's available for purchase at bfbooks.com and makes a wonderful additional reference for anyone looking to expand this study.

The Gift of Flexibility One of the greatest benefits of homeschooling is the flexibility and freedom you have to follow your children's unique interests and learning styles. We have built flexibility into this course to allow time for exploration. You can schedule the 98 lessons in this study to work around busy holiday seasons, travel, or weeks when the family is hit by the flu. Please don't feel bound by a preset schedule. You might also wonder, "Do I have to do every assignment, embark on every activity, read every library book?" No, not at all. We provide you with a feast of options from which you choose what is in alignment with your child's curiosity and desire and fits comfortably with your family's lifestyle.

Evaluation To the question "How do I know if my student is learning this?" remember the key indicators:

1. Are they asking good questions? Are they having lively discussions? Do they bring up the natural world at dinner and share what they've discovered? Do they randomly mention ecosystems on car rides?
2. Are they willing and able to share their thoughts and ideas about the characters and events in the stories they are reading? Can they apply some of those aspects to their own life experiences?
3. Are they showing up eager for the next story?

We hope you enjoy the adventure of learning about the wild and wonderful world! Share your work with us @beautifulfeetbooks. We love to see how you make our studies your own.



The Swiss Alps

A WORD ON EVOLUTION AND CLIMATE CHANGE

In our present culture, these two topics have become polarizing and contentious and yet, when studying geography and ecology, they are virtually unavoidable. Throughout this course, your student will encounter books, resources, videos, and websites that cite evolutionary time periods and raise the alarm on climate change. As a believer whose faith has shaped my views on these subjects, I understand the wariness many parents feel in exposing their children to beliefs that are outside of and may even conflict with deeply held convictions. We know ideas have consequences. The doomsday warnings on climate change have been linked to increased anxiety in our youth. Institutions and churches have split over the debate between evolution and creation. These are weighty issues, and they can affect how we view the world and others.

In the midst of this complexity, we at Beautiful Feet Books believe the world is an amazingly beautiful and awe-inspiring place. It's the reason we decided to create this curriculum. As we prepare our children to enter this incredible world, we want them to be equipped and wise as they approach all the contentious topics they will encounter in their lifetimes. With that in mind, I have not avoided content that includes evolutionary theory or climate change. In fact, it's nearly impossible to exist in the world without encountering these ideas in everyday life. To approach these topics thoughtfully and earnestly, here is what I suggest.

I invite you to take some time at the beginning of this program to discuss both issues with your child. Explain your beliefs and why you hold them. Initiate an ongoing dialogue with your child about your stance on creation and evolution and on climate change. These are wonderful opportunities to discuss your family's values and approach to geography and ecology. Having these important discussions with our children is one of the core reasons parents choose to homeschool. Here you can nurture your child as they gather information, weigh evidence, seek wisdom, and formulate their opinions with your loving support.

Once you have had this initial conversation with your student, I recommend you progress through the study, talking about these subjects when you deem necessary. Not every mention of these topics needs to be addressed or debated, as I believe this would detract from the course overall. And to foster the development of critical thinking skills, I've included a couple assignments that allow students to weigh the evidence on both sides. I have also provided links to resources that may be helpful in exploring these topics.

Curiosity is a natural response to this incredible planet that God gave us. While you may encounter challenging beliefs in this program, that is not the purpose of it. I want you and your student to see the world as intricately and miraculously beautiful. From the smallest microbe to the most massive glacier, this truly is a world of wonders. My faith is encouraged when I examine the natural world and see God's extravagance in so many details.

As you read stories set on every continent, I hope you are inspired to dig deeper, to dream of trips to visit new places, and to see the world not as a hopeless mess, but as a place worthy of our attention and care. I hope the human connections in this study make the world both smaller and more accessible while the wonder of ecology reveals its magnificent mysteries.

My prayer is that all of the curricula I write encourages students to approach the world with the wisdom described in James 3:17, "But the wisdom from above is first pure, then peaceable, gentle, open to reason, full of mercy and good fruits, impartial and sincere" (ESV).

Happy exploring,

Rebecca J. Manor

If you would like some guidance on these discussions, here are some helpful resources. Their inclusion here is not an endorsement of any of these resources by me or Beautiful Feet Books:

Creationism and Evolution

Young Earth Creationism:
<https://answersingenesis.org/>
www.icr.org

Old Earth Creationism:
www.desiringgod.org/articles/our-old-earth

A Comparison of Young and Old Earth Creationism:
<https://thirdmill.org/answers/answer.asp/file/39925>

A Defense of Old Earth Creationism:
<https://reasons.org/explore/blogs/reflections/7-common-myths-about-old-earth-creationism>

A Critique of Old Earth Creationism:
www.icr.org/article/old-earth-creationism/

Intelligent Design Theory: <https://biologos.org/>

Are Evolution and Faith Not as Incompatible as Some May Argue?
www.christianitytoday.com/ct/2020/january-web-only/genealogical-adam-eve-evolution-joshua-swamidass.html

Finally, <https://peacefulscience.org/archive/> seeks to foster peaceful dialogue between scientists from across the ideological spectrum. This resource may be useful for advanced students.

Climate Change

Is human activity responsible for climate change? Arguments for and against:

<https://climatechange.procon.org/history-of-climate-change-debate/>

<https://climatechange.procon.org/>

REQUIRED LITERATURE & RESOURCES



DK Student Atlas

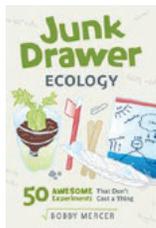
Packed with beautifully designed and detailed maps, this world atlas is the perfect companion for geography students. With 290 maps in total, it combines larger, traditional reference maps with smaller topic maps. These topics include industry, farming, climate, population, and the environment. Each theme will engage students, expanding their understanding of Earth and also making possible comparisons between different regions.



The Wondrous Workings of Planet Earth: Understanding Our World and Its Ecosystems

by Rachel Ignotofsky

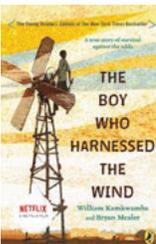
Making earth science accessible and entertaining through art, maps, and infographics, *The Wondrous Workings of Planet Earth* explains how our planet works from its diverse ecosystems and their inhabitants, to the levels of ecology, the importance of biodiversity, the cycles of nature, and more. Science- and nature-loving readers of all ages will delight in this utterly charming guide to our amazing home.



Junk Drawer Ecology

by Bobby Mercer

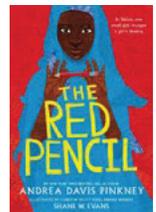
Kids of all ages can use recycled and repurposed household items to complete exciting and green ecology experiments. Fun, free science activities help kids of all ages learn about the science of our planet's ecology. Using free or low-cost things students already have around their homes, these activities are perfect for learning about our incredible planet. *Junk Drawer Ecology* will give inquisitive kids many hours of fun and help them learn at the same time.



The Boy Who Harnessed the Wind

by William Kamkwamba and Bryan Mealer

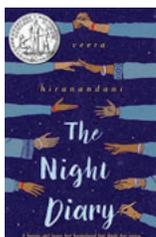
When a terrible drought struck William Kamkwamba's tiny village in Malawi, his family lost all of the season's crops, leaving them with nothing to eat and nothing to sell. William began to explore science books in his village library, looking for a solution. There, he came up with the idea that would change his family's life forever: he could build a windmill to generate electrical power. Students will love this incredible autobiography that introduces its readers to life in Malawi.



The Red Pencil

by Andrea Davis Pinkney, illustrated by Shane W. Evans

Life in Amira's peaceful Sudanese village is shattered when Janjaweed attackers arrive, unleashing unspeakable horrors. After losing nearly everything, Amira needs to find the strength to make the long journey on foot to safety at a refugee camp. She begins to lose hope, until the gift of a simple red pencil opens her mind—and all kinds of possibilities.



The Night Diary

by Veera Hiranandani

It's 1947, and India, newly independent of British rule, has been separated into two countries: Pakistan and India. The divide has created much tension between Hindus and Muslims, and hundreds of thousands are killed crossing borders. Half-Muslim, half-Hindu twelve-year-old Nisha doesn't know where she belongs, or what her country is anymore. When Papa decides it's too dangerous to stay in what is now Pakistan, Nisha and her family become refugees and embark first by train but later on foot to reach her new home. This is a beautifully written story based on the author's family's experiences of the 1940s.

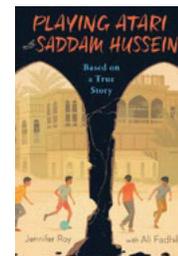
The Land I Lost: Adventures of a Boy in Vietnam
by Huynh Quang Nhuong

Huynh Quang Nhuong grew up in the highlands of Vietnam, next to the jungle teeming with wildlife. Encounters with tigers, wild hogs, and deadly snakes were as much a part of his life as tending the rice fields while on the back of his pet water buffalo, Tank. These fifteen tales will transport readers into a world of lush beauty and terrible danger—and a way of life that is gone forever. (NOTE: Some of these stories contain violent true stories of man's struggle against nature and animals.)



Playing Atari with Saddam Hussein: Based on a True Story
by Jennifer Roy with Ali Fadhil

At the start of 1991, eleven-year-old Ali Fadhil was consumed by his love for soccer, video games, and American television shows. Then, on January 17, Iraq's dictator, Saddam Hussein, went to war with thirty-four nations led by the United States. Over the next forty-three days, Ali and his family survived bombings, food shortages, and constant fear. Ali and his brothers played soccer on the abandoned streets of their Basra neighborhood, wondering when or if their medic father would return from the war front. Cinematic, accessible, and timely, this is the story of one ordinary kid's view of life during war.



The Endless Steppe
by Esther Hautzig

This is the remarkable true story of a family during one of the bleakest periods in history, a story that "radiates optimism and the resilience of the human spirit" (*Washington Post*). In June 1941, the Rudomin family is arrested by the Russians. They are accused of being capitalists, "enemies of the people." Forced from their home and friends in Vilna, Poland, they are herded into crowded cattle cars. Their destination: the endless steppe of Siberia. For five years, Esther and her family live in exile, weeding potato fields, working in the mines, and struggling to stay alive. But in the middle of hardship and oppression, the strength of their small family sustains them and gives them hope for the future.



WALK: Jamie Bacon's Secret Mission on the Camino de Santiago
by Esther Jantzen (Special Edition from Beautiful Feet Books)

The BFB Special Edition has been adapted for our customers and includes bonus content. Jamie Bacon is angry that his parents are making him walk 500 miles in Spain as part of their homeschooling plan. He's especially disappointed that, unexpectedly, Dad can't come along, so he'll be with just Mom and his sister Lily. But when Jamie meets a priest, Father Diego, on the plane and hears the backstory of the Camino de Santiago, he begins to get intrigued. And when he naively agrees to the request by two pilgrims to secretly carry a heavily taped envelope, unopened, all the way to Santiago de Compostela, Jamie is stuck with keeping his word and finishing the very long walk.

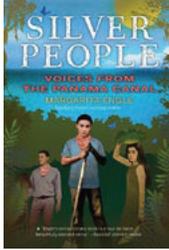


Wildheart: The Daring Adventures of John Muir
by Julie Bertagna, illustrated by William Goldsmith

This is an exuberant graphic bio of the life of John Muir. John Muir led an adventurous life, starting with his wild and playful boyhood in Scotland to his legendary exploits in America, where he became an inventor, a global explorer, and the first modern environmentalist—and even became friends with a president! His heart was always in the outdoors, and he aimed to experience all he could. Most importantly, though, John Muir told the world about the wonders of nature. His words made a difference and inspired people in many countries to start protecting planet Earth—and they still do.



REQUIRED LITERATURE & RESOURCES



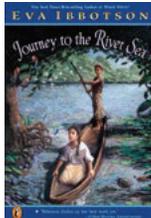
Silver People: Voices from the Panama Canal by Margarita Engle

In 1914, the world celebrated the opening of the Panama Canal, which connected the world's two largest oceans and signaled America's emergence as a global superpower. It was a miracle, this path of water where a mountain had stood—and creating a miracle is no easy thing. Thousands lost their lives, and those who survived worked under the harshest conditions for only a few silver coins a day. From the young “silver people” whose back-breaking labor built the Canal to the denizens of the endangered rainforest itself, this is the story of one of the largest and most difficult engineering projects ever undertaken, as only Newbery Honor-winning author Margarita Engle could tell it.



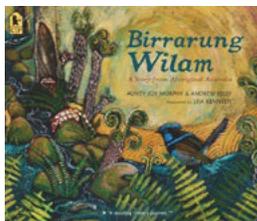
The Tapir Scientist: Saving South America's Largest Mammal by Sy Montgomery and Nic Bishop

If you've never seen a lowland tapir, you're not alone. Most of the people who live near the tapir habitat in Brazil's vast Pantanal (“the Everglades on steroids”) haven't seen the elusive snorkel-snouted mammal, either. In this arresting nonfiction picture book, Sibert winners Sy Montgomery and Nic Bishop join a tapir-finding expedition led by the Brazilian field scientist Pati Medici. Aspiring scientists will love the immediate, often humorous “you are there” descriptions of fieldwork, and gadget lovers will revel in the high-tech science at play, from microchips to the camera traps that capture the “soap opera” of tapir life.



Journey to the River Sea by Eva Ibbotson, illustrated by Kevin Hawkes

With the memorable characters and plot twists she brings to her best-selling fantasies, acclaimed author Eva Ibbotson has written a hair-raising novel, set in turn-of-the-last-century Brazil. Accompanied by Miss Minton, a fierce-looking, no-nonsense governess, Maia, a young orphan, sets off for the wilderness of the Amazon, expecting curtains of orchids, brightly colored macaws, and a loving family. But what she finds is an evil-tempered aunt and uncle and their spoiled daughters. It is only when she is swept up in a mystery involving a young Indian boy, a homesick child actor, and a missing inheritance that Maia lands in the middle of the Amazon adventure she's dreamed of. Readers of every generation will treasure Ibbotson's lush historical adventure that harkens back to the beloved classics of Frances Hodgson Burnett and Louisa May Alcott.



Birrarung Wilam: A Story from Aboriginal Australia by Aunty Joy Murphy and Andrew Kelly, illustrated by Lisa Kennedy

Yarra Riverkeeper Andrew Kelly and Aboriginal Elder of the Wurundjeri people Aunty Joy Murphy join to tell the Indigenous and geographical story of Melbourne's beautiful Yarra River—from its source to its mouth and from its prehistory to the present day. The writing dazzles with poetic descriptions of the trees, plants, and wildlife that thrive in harmony along the iconic waterway. Lush and vibrant acrylic paintings from Indigenous illustrator Lisa Kennedy make the mighty Yarra come to life—coursing under a starry sky, drawing people to its sunny shores, mirroring a searing orange sunset. Jewel-like details in the illustrations offer opportunities for discovery on every page. As gorgeous and powerful as the river itself, this stunner invites all to come to Wilam: home.

Where Is the Great Barrier Reef?

by Nico Medina, illustrated by John Hinderliter

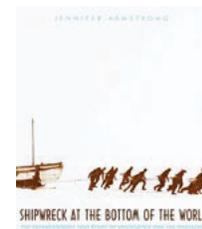
The Great Barrier Reef, off the coast of Australia, is the world's largest coral reef system. Stretching more than 1,400 miles, it provides a home to a wide diversity of creatures. Designated a World Heritage Site, this fascinating book shows this spectacular part of our planet.



Shipwreck at the Bottom of the World: The Extraordinary True Story of Shackleton and the Endurance

by Jennifer Armstrong

This is the extraordinary true story behind Ernest Shackleton's harrowing expedition to Antarctica on the *Endurance*—the ill-fated ship that became trapped in ice and sank to the ocean floor. Defying the odds, the crew made it back alive, bringing with them the astounding collection of photographs included in this critically acclaimed, timeless book. In August 1914, Ernest Shackleton and his crew sailed from England on the *Endurance* in an attempt to become the first team of explorers to cross Antarctica from one side to the other. Five months later and still 100 miles from land, their ship became trapped in ice. Defying the odds, the expedition survived another five months camping on ice floes, followed by a perilous journey through stormy seas to remote and unvisited Elephant Island. In a dramatic climax to this amazing survival story, Shackleton and five others navigated 800 miles of treacherous open ocean in a 20-foot boat to fetch a rescue ship.



***World Map* published by Beautiful Feet Books**

This world map is designed for use with this world geography program. Dimensions are 36" x 24", but map folds down to 12" x 9" for easy storage.



ADDITIONAL RECOMMENDED RESOURCES

Brilliant Maps for Curious Minds: 100 New Ways to See the World

by Ian Wright

Which countries don't have rivers? Which ones have North Korean embassies? Who drives on the "wrong" side of the road? How many national economies are bigger than California's? And where can you still find lions in the wild? You'll learn answers to these questions and many more in *Brilliant Maps for Curious Minds*. This one-of-a-kind atlas is packed with eye-opening analysis (Which nations have had female leaders?), whimsical insight (Where can't you find a McDonald's?), and surprising connections that illuminate the contours of culture, history, and politics.

Prisoners of Geography: Our World Explained in 12 Simple Maps (Illustrated Young Readers Edition)

by Tim Marshall, illustrated by Grace Easton and Jessica Smith

History is a story—and it's impossible to tell the whole tale without understanding the setting. In this eye-opening illustrated edition of the international bestseller *Prisoners of Geography*, you'll learn to spot connections between geography and world affairs in ways you never noticed before. With colorful maps that capture every continent and region, plus hundreds of illustrations, this one-of-a-kind atlas will inspire curious minds of all ages!

If you would like to add missionary biographies to your geography study, check out the following series:

Christian Heroes Then and Now

www.ywampublishing.com/c-70-christian-heroes-then-now.aspx

Hidden Heroes Missionary Stories

<http://hiddenheroesmissionarystories.com/>



Laguna Beach, California, United States

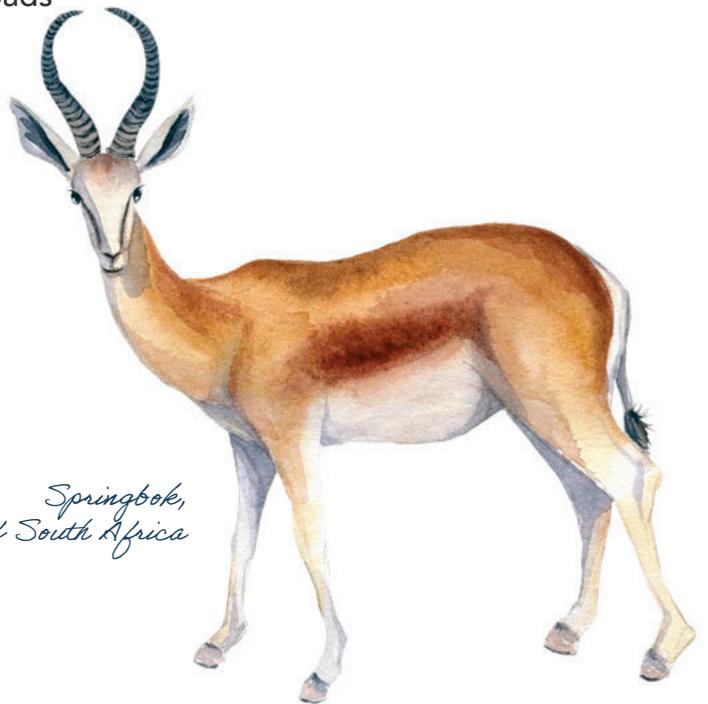


*Lignum Vitae,
National Flower of Jamaica*

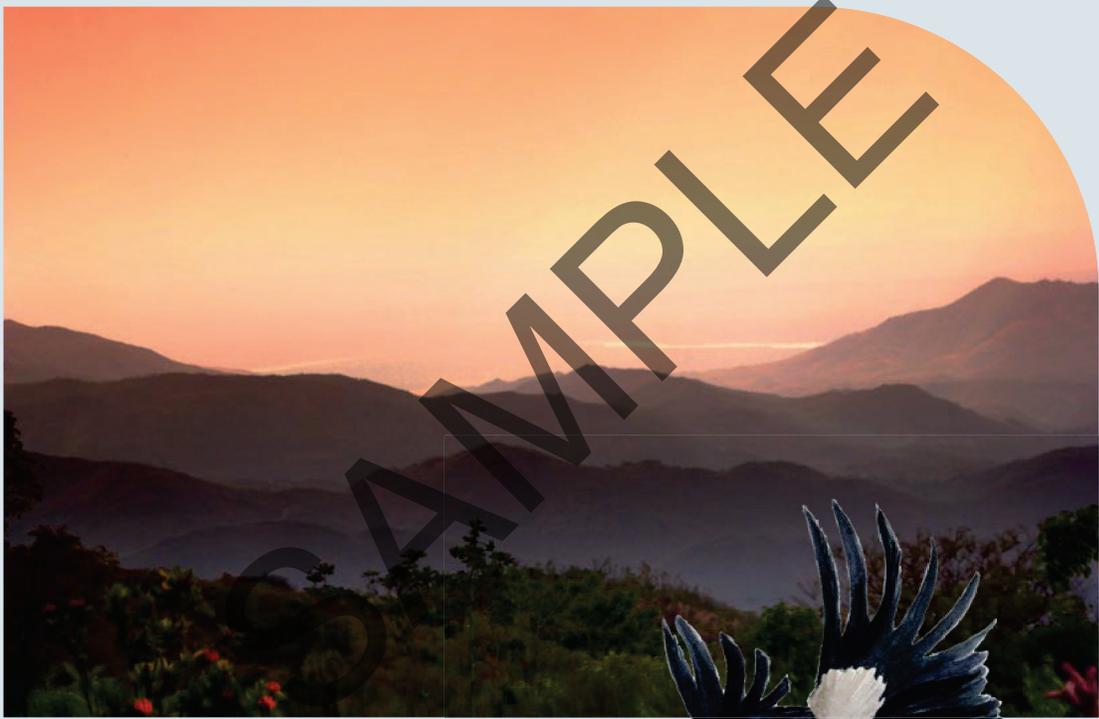
PART ONE

INTRODUCTION TO ECOLOGY

In this brief section, we will be exploring the fundamental elements of ecology. Don't worry, geography is coming soon! But in order to have a deep understanding of how our world works and how geography and ecology interact, we need to establish some basic principles. Over the next two weeks, you will investigate ecosystems, biomes, the flow of energy, and much more. There is a lot of information in this unit, but it does not need to be mastered. You're laying the groundwork for learning more as the study progresses. If you did not read *How to Use This Guide* (pages 2–3), please scan the QR code for essential information on this course and access to helpful downloads including the Resource Packet.



*Springbok,
National Animal of South Africa*



Sunset in Malawi



*White Stork,
National Bird of Lithuania*

LESSON 1

Required Materials *The Wondrous Workings of Planet Earth*

Activity Supplies Assorted craft supplies (construction paper, scissors, glue, markers, etc.)

ECOLOGY

- Introduce *The Wondrous Workings of Planet Earth: Understanding Our World and Its Ecosystems*, hereafter referred to as *Wondrous Workings*. Read pages 6–9. If you have already studied the information on these pages in a previous class, review it to refresh your knowledge. If this is new information, read carefully. Discussion and research prompts:

a. In the Introduction the author states, “Our planet is the only home we have. It is precious and needs our care.” Discuss this in light of Genesis 1:26–28. What do you think it means to “rule” or “have dominion” over something? Consider the description of a good ruler found in Proverbs 29:2. How does a good ruler care for his subjects?

b. If desired, do some research on the idea of limited resources. There are several resources that list timelines for when we could use up oil, natural gas, coal, and other resources. There are also scientists who dispute this. Research both sides of the debate and present your conclusion to your family or classmates. Remember, we are always going to prefer evidence that backs up our opinions, so be sure to research thoroughly and consider all the facts when drawing your conclusions.

- Watch the following video titled “Intro to Ecology” on Khan Academy to learn more about the levels of ecological organization:

www.khanacademy.org/science/biology/ecology/intro-to-ecology/v/ecology-introduction

ACTIVITY

- Using the Levels of Ecological Organization at the top of pages 8–9 of *Wondrous Workings*, as well as the charts found in the Resource Packet, draw your own version of the chart and add it to your portfolio. You may draw and decorate this as you wish. Have fun with it! Be sure to label each level and include the definitions that appear on those pages:

Biosphere Everywhere life on Earth is found.

Biome A region defined by a specific climate (its temperature and precipitation) and certain types of animals and plants that have adapted to survive and thrive in that specific climate.

Ecosystem The interaction between all the living organisms and their nonliving environment in a certain place.

Community All the living beings within an ecosystem, such as plants, fungi, animals, and bacteria. Does not include the air, dirt, water, or other nonliving things.

Population A group of individuals of the same species that live within the same community.

Individual One specific living organism.

- Using the world map on page 8 of *Wondrous Workings*, locate where you live and identify the biome.



LESSON 2

Required Materials *Wondrous Workings*

Activity Supplies

Junk Drawer Ecology

Pencil, pens, markers or crayons

Paper

Hole punch

Yarn (or pipe cleaner)

Scissors

Pushpins

Magnets

Dry-erase markers

Sticky notes

Glue stick

ECOLOGY

- In the last lesson, we began studying ecology. Now we are going to dig a bit deeper to learn more about ecosystems and how energy flows through our planet. This can feel a bit complex, so take your time. Read pages 10–11 of *Wondrous Workings* and access the diagrams in the Resource Packet.
- If you want to develop a deeper understanding of the flow of energy, read through the information in the following link. You can even take a quiz to see how well you understand the concepts by clicking on the “Practice” link in the upper right-hand corner of the page:

www.ck12.org/earth-science/flow-of-energy-in-ecosystems/lesson/Flow-of-Energy-in-Ecosystems-HS-ES/

ACTIVITY

- Build a representation of a food chain and a food web. Turn to pages 83–91 of *Junk Drawer Ecology* and follow the instructions to create a yarn food chain and a yarn food web. When you have completed the projects, use them to explain the answers to the following questions:
 - a. What is an ecosystem?
 - b. Describe the flow of energy.
 - c. How does a secondary consumer differ from a producer?
 - d. What is an apex predator?
 - e. What purpose do decomposers serve?



Terrarium

LESSON 3

Required Materials *Wondrous Workings*, art supplies

Activity Supplies Terrarium supplies, if building your own from scratch, or a terrarium kit (See link in the Resource Packet.)

ECOLOGY

- Read pages 12–15 of *Wondrous Workings*. If desired, watch the following video to learn more about the science of taxonomy, classifying species:

“Introduction to Taxonomy” on the Eco Sapient YouTube channel

- Using the diagrams on page 12 of *Wondrous Workings* as a guide, draw your own Levels of Classification and Main Domains charts in your portfolio. Work on memorizing the levels of classification using the charts in the Resource Packet.

ACTIVITY

- In order to see an ecosystem at work, you will now work on creating one yourself. You will be building your own terrarium. This is an ongoing project that will take several days to complete. To begin, visit the following links to learn about terrariums and to see some examples:

“12 Year Old Terrarium - Life Inside a closed jar, Over a decade in isolation” on the Jartopia YouTube channel

“How to Create a Closed Native Terrarium | Ecosystem in a Jar” on the Natural World Facts YouTube channel

“Making a Bottle Terrarium + Closed Terrarium Basics” on the SerpaDesign YouTube channel

<https://mymodernmet.com/diy-terrarium/>

Once you have watched and read these resources, choose the type of terrarium you would like to make. There are several choices:

Closed tropical terrarium a self-sufficient ecosystem composed of humidity-loving plants

Bioactive terrarium a closed tropical ecosystem that also includes decomposers and a self-sustaining water cycle

Open terrarium can replicate nearly any ecosystem and will require some care

Tray/dish terrarium same as an open terrarium but in a tray

Hanging terrarium same as an open terrarium but often smaller and hung up

When you have made your choice, begin gathering the required materials. Terrarium kits can also be purchased online. Check the Resource Packet for details.

